Final SEIS

Final Supplemental Environmental Impact Statement

To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines

Volume II — Appendices

JANUARY 2004

BLM

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Cover artwork compliments of Elizabeth I. Gayner. Drawing includes the Great gray owl (*Strix nebulosa*), an orchid (*Cypripedium montanum*), a mushroom (*Gyromitra californica*), and a snail (*Monadenia fidelis*).

Appendices

Appendix 1 - January 2001 Survey and Manage Standards and Guidelines
Appendix 2 - BLM Special Status Species Program and FS Sensitive Species Program
Appendix 3 - Oregon Natural Heritage Program Rankings
Appendix 4 - Proposed Standards and Guidelines for Alternative 3
Appendix 5 - Biological Evaluation for Threatened, Endangered, and Proposed Species and Forest Service Sensitive Species
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Appendix 1

Changes between Draft and Final

Minor corrections, explanations, and edits are not included in this list.

- Appendix 1 has been updated to reflect delegations from the RIEC and exemptions for wildland fire for resource benefits in all land allocations.

STANDARDS AND GUIDELINES

for
Survey and Manage

January 2001

Excerpted From

ATTACHMENT 1

to the Record of Decision
for Amendments to the Survey and Manage, Protection Buffer, and Related Mitigation Measures Standards and Guidelines

Includes explanatory notes from Regional Interagency Executive Committee (RIEC) Memorandums dated May 16, 2003, and July 31, 2003.

Lead Agencies: **Forest Service - U.S. Department of Agriculture**
Bureau of Land Management - U.S. Department of the Interior

Note: Table 1-1 referenced in these standards and guidelines is not included because it was updated as a result of the Annual Species Review Process for Fiscal Years 2001, 2002, 2003. The results of those updates are shown in this 2004 SEIS in the description of Alternative 1 in Chapter 2.

Sections IX, X, and XI of these Standards and Guidelines are not included here because they were not part of the Survey and Manage Standards and Guidelines. Those sections deal with certain cavity nesting birds, Canada lynx, and some bat roosts. Those sections are not proposed for removal or modification by any of the alternatives in this 2004 SEIS.

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TABLES AND EXHIBITS

Omitted. However, the current species placements by Survey and Manage category are shown in the Alternative 1 description in Chapter 2.

STANDARDS AND GUIDELINES

for Survey and Manage

All sections of this document are the complete compilation of standards and guidelines.

I. Introduction

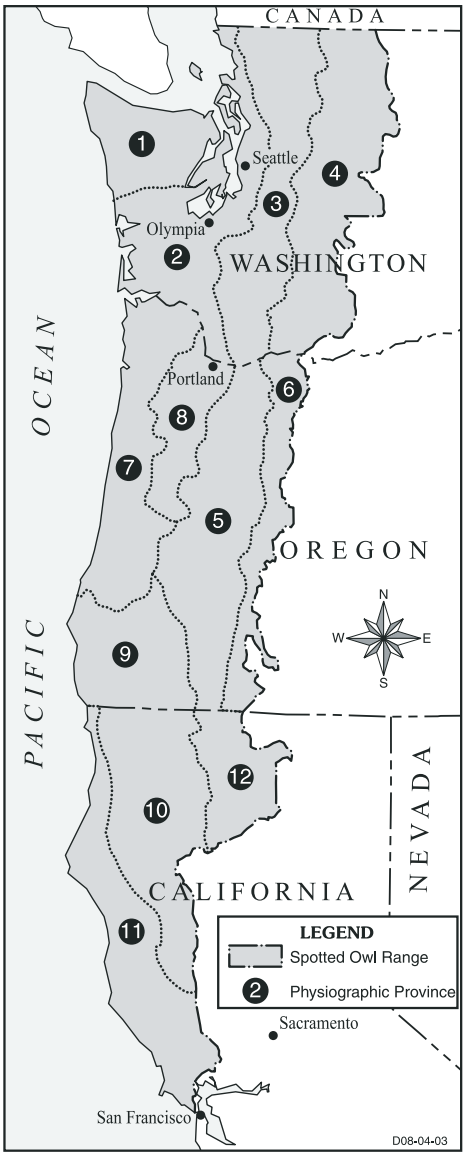
Existing Standards and Guidelines Are Amended

The standards and guidelines in the April 13, 1994, Northwest Forest Plan Record of Decision for Survey and Manage, Protection Buffers, Protect Sites From Grazing, Manage Recreation Areas to Minimize Disturbance to Species, and Provide Additional Protection for Caves, Mines, and Abandoned Wooden Bridges and Buildings That Are Used as Roost Sites for Bats (hereafter referred to as Survey and Manage and related mitigation measures) are removed in their entirety and replaced as described below. See Appendix B of the November *2000 FSEIS for Amendment to the Survey and Manage, Protection Buffers, and other Mitigation Measures* for a complete display of the standards and guidelines to be removed. Except for certain cavity-nesting birds and Canada lynx described below, all former Protect Sites from Grazing species and Protection Buffer species are now either Survey and Manage species as described in the standards and guidelines below, or are removed from these standards and guidelines because they do not meet the Survey and Manage basic criteria. Known sites are managed as specified for the category to which they are placed, but the land allocations associated with Protection Buffer species sites (unmapped Late-Successional Reserves and Managed Late-Successional Areas) are returned to their underlying or appropriate surrounding allocation.

Other elements of the Northwest Forest Plan not specifically addressed, and implementation memos and other policy interpretations not affected by changes in these standards and guidelines, are not changed. Exceptions to certain standards and guidelines for research or the Adaptive Management Process described in Chapter E of the Northwest Forest Plan Standards and Guidelines, for example, continue to apply to Survey and Manage as under the Northwest Forest Plan Record of Decision.

Physiographic Provinces

The 1994 Northwest Forest Plan Standards and Guidelines include two different province maps: physiographic provinces and planning provinces. The map of the 12 physiographic provinces appears on page A-3 of the Northwest Forest Plan Standards and Guidelines and is repeated here for reference (see Figure 1 - Physiographic Provinces). The physiographic provinces allow differentiation between areas of common biological and physical processes. Unless otherwise identified, references to “provinces”



in these standards and guidelines are to physiographic provinces. The 12 physiographic provinces are:

1. WA Olympic Peninsula
2. WA Western Lowlands
3. WA Western Cascades
4. WA Eastern Cascades
5. OR Western Cascades
6. OR Eastern Cascades
7. OR Coast Range
8. OR Willamette Valley
9. OR Klamath
10. CA Klamath
11. CA Coast Range
12. CA Cascades

Species Removed from Survey and Manage and other Standards and Guidelines

Species formerly included on Survey and Manage or related mitigation measures that are removed only because they are not closely associated with late-successional or old-growth forests (see Table 1-2) are already on, or are being considered for, the Agencies special status species programs. (Note: Table 1-2 is intentionally omitted. A copy can be viewed in Attachment 1 to the 2001 Record of Decision.) Known sites for these species will be managed until their disposition is clarified under the special status species programs or a decision is documented not to include them. For all other species removed from Survey and Manage or related mitigation measure, current "known sites" of these species are released for other resource activities.

Arthropod Guilds

For arthropods, references in these standards and guidelines to species or taxa apply only to these four functional groups, and no individual species will be added to Survey and Manage.

Land Allocations

These standards and guidelines apply to all land allocations.

II. Survey and Manage Basic Criteria

The Survey and Manage three basic criteria (see box) must be met for a species to be included in the Survey and Manage Standards and Guidelines. Species no longer meeting these criteria will be removed from Survey and Manage. The process for adding or removing a species is described in the Adaptive Management section. The following section describes "persistence" and the criteria used to determine when there is concern for persistence.

Species Persistence Objectives

For purposes of these standards and guidelines, species persistence objectives have been adapted from the Northwest Forest Plan ROD (page 44). In general, these objectives may be described as providing for roughly the same likelihood of persistence as that which was provided by the Northwest Forest Plan as originally adopted in the 1994 ROD.

Three Basic Criteria for Survey and Manage

1. *The species must occur within the Northwest Forest Plan area, or occur close to the NFP area and have potentially suitable habitat within the NFP area.*

2. *The species must be closely associated with late-successional or old-growth forest (see Exhibit A (Note: Exhibit A intentionally omitted here. It can be viewed in the 2001 Record of Decision.)).*

3. *The reserve system and other Standards and Guidelines of the Northwest Forest Plan do not appear to provide for a reasonable assurance of species persistence.*

More particularly, for vertebrate species, the Northwest Forest Plan specified use of the Forest Service viability provision in the National Forest System Land and Resource Management Planning Regulation for the National Forest Management Act of 1976, which reads in part as follows:

> *"Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.* (36 CFR 219.19.)

The 1994 ROD identified compliance with this Forest Service regulation as a goal across both Forest Service and BLM administered lands as a means of serving the important policy goal of protecting the long-term health and sustainability of all of the federal forests within the range of the northern spotted owl and the species that inhabit them (page 44). The Northwest Forest Plan ROD takes note of the fact that there is no specific or precise standard or technique for satisfying the viability provision (page 44), nor is there any requirement to conduct a viability analysis for each species. Instead, common sense and agency expertise must be used in making determinations of compliance with the viability provision (Seattle Audubon Society v. Moseley (W.D. Wash. 1992)). For non-vertebrate species, the Northwest Forest Plan satisfied "a similar standard (to the one reflected in the NFMA viability provision for vertebrate species) ... to the extent practicable" (page 44). These overall objectives are summarized simply as the "persistence" objectives for these standards and guidelines.

As part of the background to the Northwest Forest Plan, the FEMAT report provided assessment of the effects of various management options on species associated with late-successional and old-growth forests. This assessment was based on expert panel evaluation of the likelihood that each option presented in the FEMAT report would provide sufficient habitat on federally managed lands for various distribution patterns of species populations for 100 years. This assessment was documented in the Northwest Forest Plan Draft SEIS. Between the Draft SEIS and the Final SEIS for the Northwest Forest Plan, additional analysis was done for those species whose original outcomes were potentially inconsistent with the stated species persistence objectives. This additional analysis identified Survey and Manage as one mitigation measure that could improve the likelihood of meeting species persistence objectives, particularly for rare species and those about which little is known. Survey and Manage, along with other mitigation measures, was adopted in the ROD. These mitigation measures, along with the assessment of outcomes by panels of experts, were among the factors the signers of the ROD used to determine that species objectives, including those directed by the National Forest Management Act regulations, were met (see Northwest Forest Plan ROD, pages 43 to 47). This determination was upheld by the courts.

For the November 2000 Survey and Manage FSEIS, expert effects writers again used outcome statements as part of their assessment process. These outcome statements were modified from those used by FEMAT to better fit typical Survey and Manage species (rare or endemic species or species about which little is known).

Objectives for maintaining species persistence for these standards and guidelines are the same as those described in the Northwest Forest Plan ROD. The objectives recognize that there is uncertainty associated with the continued persistence of species. Even absent any human-induced effects, the likelihood that habitat will continue to support species' persistence can vary among species. For example, the continued persistence of rare species, whose entire range may comprise only a few acres, is inherently at greater risk due to natural disturbance than species with larger ranges and more locations, when considered over the long term. Thus, the achievement of species persistence is not subject to precise numerical interpretation and cannot be fixed at any one single threshold (see Northwest Forest Plan ROD, page 44).

In general, these standards and guidelines are designed to help the Northwest Forest Plan provide for the persistence of late-successional and old-growth forest related species.

Concern for Persistence

One of the basic criteria for applying the Survey and Manage mitigation to a species is concern for persistence. A **concern for persistence** exists when the reserve system and other standards and guidelines of the Northwest Forest Plan do not appear to provide a reasonable assurance of species persistence. **Little or no concern for persistence** exists when the reserve system and other standards and guidelines of the Northwest Forest Plan (other than Survey and Manage) provide a reasonable assurance of persistence. When this assurance of species persistence exists, the species may be removed from Survey and Manage.

Criteria Indicating a Concern for Persistence: One or more of the following criteria, which are to be considered in the context of the reserve system and other standards and guidelines of the Northwest Forest Plan, may indicate a concern for species persistence. These criteria must be considered aside from the Survey and Manage provisions, and must apply within the Northwest Forest Plan area.

- Low-to-moderate number of likely extant known sites/records in all or part of a species range.
- Low-to-moderate number of individuals.
- Low-to-moderate number of individuals at most sites or in most populations.
- Very-limited to somewhat-limited range.
- Very-limited to somewhat-limited habitat.
- Distribution within habitat is spotty or unpredictable in at least part of its range.

Criteria Indicating Little or No Concern for Persistence: Usually, most of the following criteria need to be met to indicate that a concern for persistence does not exist. These criteria must apply within the Northwest Forest Plan area.

- Moderate-to-high number of likely extant sites/records.
- High proportion of sites and habitat in reserve land allocations; or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a high probability that the habitat is occupied.
- Sites are relatively well distributed within the species range.
- Matrix Standards and Guidelines or other elements of the Northwest Forest Plan provide a reasonable assurance of species persistence.

Concern for persistence is based on existing knowledge and, therefore, may change over time. While concern will remain for some species that are truly rare, the concern for many species will be alleviated as more information is accumulated through pre-disturbance and strategic surveys, and considered with the criteria indicated above. A species for which there is no longer a concern for persistence will be removed from Survey and Manage as described in the adaptive management section.

Relative Rarity

The standards and guidelines subdivide species for which there is a concern for persistence by their relative rarity, as either "rare" or "uncommon". The relative rarity subdivision is based on such factors as numbers of populations, distribution, commonality of habitat, population trends, numbers of individuals, and so forth. Placement of species in management categories depends largely on their relative rarity as described below. Management directions for "rare" or "uncommon" species are not the same, because relative rarity changes the level of concern and, therefore, the management needed to provide for a reasonable assurance of persistence. Like concern for persistence, this subdivision is based on current knowledge and is changeable.

A determination that a species is "rare" is based on a combination of information, as described in the criteria for each category. A species may be rare if it has: (1) limited distribution; (2) a low number of sites or individuals per site; (3) highly specialized habitat requirements; (4) declining habitat or population trends; (5) reproductive characteristics that limit population growth rates; (6) restricted distribution pattern relative to range or potential habitat; and/or, (7) narrow ecological amplitude.

A determination that a species is "uncommon" is based on information that indicates a species may have: (1) more widespread distribution; (2) higher number of sites; (3) low-to-high number of individuals per site; (4) more stable populations or habitats; (5) less restricted distribution pattern relative to range or potential habitat; and, (6) moderate-to-broad ecological amplitude (see criteria under each category, later in this chapter).

III. Survey and Manage Categories

Introduction

These standards and guidelines are designed to provide approximately the same level of species protection as intended in the Northwest Forest Plan. Survey and Manage species are grouped into six categories (A-F) as shown below. The six categories are based on level of relative rarity, ability to reasonably and consistently locate occupied sites during surveys prior to habitat-disturbing activities, and the level of information known about the species or group of species.

The six categories help delineate species objectives and apply specific management direction, compared to the previous four Northwest Forest Plan categories, partly because each species is assigned to only one category for all or part of its range. The standards and guidelines describe the objective, assignment criteria, and management direction for each category.

The species included in Survey and Manage, and the category to which each species, or portion of the range of each species, is assigned, is shown on Table 1-1, Species Included in Survey and Manage Standards and Guidelines and Category Assignment. (Note: Table 1-1 intentionally omitted. Current species placement are shown in the Alternative

1 description in Chapter 2 of this SEIS.) The adaptive management section of these standards and guidelines define how to change species among the six categories and how to add or remove species from Survey and Manage, in response to new information.

These standards and guidelines apply within all land allocations; however, the Survey and Manage provision for each species will be directed to the range (or portion of range) of that species, to the particular habitats where concerns exist for its persistence, and to the management activities considered "habitat-disturbing" for that species. The Survey and Manage Standards and Guidelines will benefit species closely associated with late-successional and old-growth forests including certain amphibians, birds, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropod groups. Information about these species, acquired through application of these standards and guidelines, should facilitate project planning and adaptive-management changes.

The following text describes the six categories. The category discussions include additional information that clarifies the linkage between objectives and management actions of each category and describes the criteria for assigning species to the various categories. A taxon, or range-defined portion of a taxon, can be assigned to only one category.

Redefine Categories Based on Species Characteristics			
Relative Rarity	**Pre-Disturbance Surveys Practical**	**Pre-Disturbance Surveys Not Practical**	**Status Undetermined**
Rare	Category A - 56 species Manage All Known Sites Pre-Disturbance Surveys Strategic Surveys	Category B - 184 species Manage All Known Sites N/A Strategic Surveys	Category E - 33 species Manage All Known Sites N/A Strategic Surveys
Uncommon	Category C - 7 species Manage High-Priority Sites Pre-Disturbance Surveys Strategic Surveys	Category D - 16 species[1] Manage High-Priority Sites N/A Strategic Surveys	Category F - 10 species N/A N/A Strategic Surveys
[1] Includes three species for which pre-disturbance surveys are not necessary.			

Category A (Rare, Pre-Disturbance Surveys Practical)

Objective: Manage all known sites and minimize inadvertent loss of undiscovered sites.

Criteria for assigning a species to Category A are:

- The species is rare and all known sites or population areas are likely to be necessary to provide reasonable assurance of species persistence, as indicated by one or more of the following:
  - Low number of likely extant sites/records on federal lands indicates rarity.
  - Species poorly distributed within its range or habitat.
  - Limited number of individuals per site.
  - Highly specialized habitat requirements (narrow ecological amplitude).
  - Dispersal capability limited relative to federal habitat.
  - Microsite habitat limited.
  - Reproduction or survival not sufficient.
  - Low number of sites in reserves or low likelihood of sites or habitat in reserves.
  - Habitat fragmentation that causes genetic isolation.
  - Factors beyond management under the Northwest Forest Plan affect persistence, but special management under the Northwest Forest Plan will help persistence.
  - Declining habitat trend

and:

- Pre-disturbance surveys are practical.

Management Direction:

Manage All Known Sites: Current and future known sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. (See glossary for definition of "known site.")

Professional judgment, coupled with locally specific information and advice from taxa specialists about the species, may be used to identify occasional sites not needed for persistence. These exceptions will be reviewed by the REO. [The RIEC delegated these reviews to the Survey and Manage Intermediate Managers Group (IMG) (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage-Related Reviews).]

Surveys Prior to Habitat-Disturbing Activities: Surveys will be conducted at the project level prior to habitat-disturbing activities, and in accordance with Survey Protocols, to avoid loss of undiscovered sites by habitat-disturbing activities. Species sites found as a result of these surveys will be managed as known sites.

Strategic Surveys: The objective of strategic surveys in this category is to search for additional sites and to characterize the habitat, improving the ability of the Agencies to know where to survey and how to manage the species. These surveys will build upon and incorporate information from previous and ongoing surveys. Species sites found as a result of these strategic surveys will be managed as known sites.

Strategic Surveys may address one or more of the following:

- Are known sites still extant?
- What is the habitat of the species?
- Identify high-probability habitat for surveys to find new sites.
- Where else does the species occur? Find new sites.
- Collect habitat information to assist with managing the species.
- What is the status of the population (such as number of individuals, size)?
- What is the distribution of the species relative to the land allocations established in the Northwest Forest Plan?

Category B (Rare, Pre-Disturbance Surveys Not Practical)

Objective: Manage all known sites and reduce the inadvertent loss of undiscovered sites.

Criteria for assigning a species to Category B:

- Same criteria as Category A, except that pre-disturbance surveys are not practical.

Management Direction:

Manage All Known Sites: Same as Category A.

Strategic Surveys: The objective of strategic surveys in this category is to find additional new sites and to characterize the habitat, improving the ability of the Agencies to know where to survey and how to manage and conserve the species. To reduce the inadvertent loss of undiscovered sites, the Agencies will not sign NEPA decisions or decision documents for habitat-disturbing activities in old-growth forest (a sub-set of

late-successional forest - see glossary) in fiscal year 2006 (fiscal year 2011 for fungi) and beyond, unless either:

- strategic surveys have been completed for the province that encompasses the project area, or
- equivalent-effort surveys have been conducted in the old-growth habitat to be disturbed.

Strategic surveys build upon and incorporate information from previous and ongoing surveys. Species sites found as a result of strategic surveys will be managed as known sites. Strategic survey accomplishments, including completion by province, will be summarized in the annual report. "old growth" is specified in this standard and guideline to assure retention of what is assumed to be the highest quality potential habitat for Survey and Manage species until strategic surveys are completed or equivalent-effort surveys are conducted. "province" is specified as the geographic unit in which to assess completion of strategic surveys given that it represents the smallest, logical, well-defined area for which the results of strategic surveys likely could be compiled, analyzed, and presented with meaningful results.

Strategic Surveys may address one or more of the following:

- Are known sites still extant?
- What is the habitat of the species?
- Identify high-probability habitat for surveys to find new sites.
- Where else does the species occur? Survey high-probability habitat at highest risk to find new sites.
- What is the distribution of the species relative to the land allocations established in the Northwest Forest Plan?
- Collect habitat information to assist with managing the species.
- What is the status of the population (such as number of individuals, size)?

Category C (Uncommon, Pre-Disturbance Surveys Practical)

Objective: Identify and manage high-priority sites to provide for reasonable assurance of species persistence. Until high-priority sites can be determined, manage all known sites.

Criteria for assigning a species to Category C are:

- The species is uncommon, and not all known sites or population areas are likely to be necessary for reasonable assurance of persistence, as indicated by one or more of the following:
  - A higher number of likely extant sites/records does not indicate rarity of the species.
  - Low-to-high number of individuals per site.
  - Less restricted distribution pattern relative to range or potential habitat.
  - Moderate-to-broad ecological amplitude.
  - Moderate-to-high likelihood of sites in reserves.

and,

- Pre-disturbance surveys are practical.

Management Direction:

Manage High-Priority Sites: High-priority sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. Until a Management Recommendation is written addressing high-priority sites, either assume all sites are high priority, or local determination (and project NEPA documentation) of non-high priority sites may be made on a case-by-case basis with: (1) guidance from the Interagency Survey and Manage Program Manager; (2) local interagency concurrence (BLM, FS, USFWS); (3) documented consideration of the condition of the species on other administrative units as identified by the Program Manager - typically adjacent units as well as others in the species range within the province; and, (4) identification in ISMS. The Survey and Manage Program Manager will involve appropriate taxa specialists.

Professional judgment, coupled with locally specific information and advice from taxa specialists about the species, may be used to identify occasional high-priority sites not needed for persistence. These exceptions will be reviewed by the REO. [The RIEC delegated these reviews to the Survey and Manage IMG (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage Related Reviews).]

Surveys Prior to Habitat-Disturbing Activities: Surveys will be conducted at the project level prior to habitat-disturbing activities and in accordance with Survey Protocols. Sites found as a result of these surveys will be managed as described above under manage high-priority sites. Management Recommendations or Survey Protocols may specify habitats or conditions (e.g., seral stages) not needing surveys because "high-priority" sites are not expected to be found there.

Strategic Surveys: The objective of strategic surveys in this category is to gather information to either develop or revise Management Recommendations, which will include identifying high-priority sites for management and how to manage to provide for a reasonable assurance of species persistence. Strategic surveys build upon and incorporate information from previous and ongoing surveys. Sites found as a result of these surveys will be managed as described above under manage high-priority sites.

Strategic Surveys may address one or more of the following:

- What is the quality of the known sites (such as habitat characteristics, longevity and continuity of habitat, and the status and characteristics of the population)?
- What is the geographic distribution of sites and extent of the range of species within the area of the Northwest Forest Plan (such as distribution of sites in the Northwest Forest Plan reserve allocations and the connectivity of known sites, both spatially and temporally)?
- Where does the species occur? Find new high-priority sites.
- Obtain information on habitat requirements to help manage known sites (e.g., developing Management Recommendations and identifying high-priority sites).

Category D (Uncommon, Pre-Disturbance Surveys Not Practical or Not Necessary)

Objective: Identify and manage high-priority sites to provide for a reasonable assurance of species persistence. Until high-priority sites can be determined, manage all known sites.

Criteria for assigning a species to Category D:

- Same criteria as Category C, except that pre-disturbance surveys are not practical or are not necessary to meet objectives for species persistence because inadvertent loss of some undiscovered sites would not change level of rarity.

Some species for which pre-disturbance surveys are practical are placed in this category if there are a sufficient number of sites known to meet species objectives, and either Management Recommendations need to be written to define high-priority sites for management, or strategic surveys are needed to confirm distribution in reserves prior to future removal from Survey and Manage. These species are specifically identified on Table 1-1. (Note: Table 1-1 intentionally omitted.)

Management Direction:

Manage High-Priority Sites: Same as Category C.

Strategic Surveys: The objective of strategic surveys in this category is to gather information to either develop or revise Management Recommendations, which will include identifying high-priority sites for management and how to manage to provide for a reasonable assurance of species persistence. Strategic surveys build upon and incorporate information from previous and ongoing surveys. Sites found as a result of these surveys will be managed as described above under manage high-priority sites.

Strategic Surveys may address one or more of the following:

- What is the quality of known sites (such as habitat characteristics, longevity and continuity of habitat, and status and characteristics of population)?
- What is the geographic distribution of sites and extent of the species range within the area of the Northwest Forest Plan (such as distribution of sites in the Northwest Forest Plan reserve allocations and the connectivity of known sites, both spatially and temporally)?
- Where does the species occur? Find new high-priority sites.
- Obtain information on habitat requirements to help manage known sites (such as developing Management Recommendations and identifying high-priority sites).

Category E (Rare, Status Undetermined)

Objective: Manage all known sites while determining if the species meets the basic criteria for Survey and Manage and, if so, to which category (A, B, C, or D) it should be assigned.

Criteria for assigning a species to Category E:

- The number of likely extant sites/records and survey information on federal lands indicates possible rarity of the species; and
- Information is insufficient to determine whether Survey and Manage basic criteria are met or to determine what management is needed for a reasonable assurance of species persistence.

Management Direction:

Manage All Known Sites: Current and future known sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2

in the Northwest Forest Plan Final SEIS (USDA, USDI 1994a), and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations.

Professional judgment, coupled with locally specific information and advice from taxa specialists about the species, may be used to identify occasional sites not needed for persistence. These exceptions will be reviewed by the REO. [The RIEC delegated these reviews to the Survey and Manage IMG (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage Related Reviews).]

Strategic Surveys: The objective of strategic surveys in this category is to collect enough information to determine if the species meets the basic criteria for Survey and Manage, and to either place the species into the appropriate Survey and Manage category or remove the species from Survey and Manage.

Strategic surveys build upon and incorporate information from previous and ongoing surveys. Species sites found as a result of these surveys will be managed as known sites. In cases where the strategic survey indicates that there is still a concern for persistence, but the species is not closely associated with late-successional or old-growth forests, the species will be removed from Survey and Manage and considered for the Agencies special status species programs.

Strategic Surveys may address one or more of the following:

- Is the species closely associated with late-successional and old-growth forests?
  - Δ Revisit known sites, characterize the species habitat, and find new sites.
- Does the species occur within the Northwest Forest Plan area?
  - Δ Survey potential habitat near known sites.
- What is the appropriate management for the species?
  - Δ Does the species meet the basic criteria for Survey and Manage?
  - Δ What is the appropriate Survey and Manage category?

Category F (Uncommon or Concern for Persistence Unknown, Status Undetermined)

Objective: Determine if the species meets the basic criteria for Survey and Manage and, if so, to which category (A, B, C, or D) it should be assigned.

Criteria for assigning a species to Category F:

- The species is uncommon and the number of likely extant sites/records and survey information does not indicate rarity; and
- Information is insufficient to determine whether Survey and Manage basic criteria (including whether there is a concern for persistence) are met, or to determine what management is needed for reasonable assurance of species persistence.

Management Direction:

Manage known sites is NOT required for this category because species are uncommon, not rare, and species within this category will be assigned to other categories or removed from Survey and Manage as soon as new information indicates the correct placement. Until that time, inadvertent loss of some sites is not likely to change the level of rarity. Other management direction is yet to be determined.

Strategic Surveys: The objective of strategic surveys in this category is to collect enough information to determine if the species meets the basic criteria for Survey and Manage,

and to either place the species into the appropriate Survey and Manage category or remove the species from Survey and Manage. These surveys will build upon and incorporate information from previous and ongoing surveys. In cases where the strategic survey indicates there is still a concern for persistence, but the species is not closely associated with late-successional or old-growth forests, the species will be removed from Survey and Manage and considered for the Agencies special status species programs.

Strategic Surveys may address one or more of the following:

- Is the species closely associated with late-successional or old-growth forests?
- Does the species occur within the Northwest Forest Plan area?
- What is the appropriate management for the species?
  - Δ Does the species meet the basic criteria for Survey and Manage?
  - Δ What is the appropriate Survey and Manage category?
- What is the level of rarity?

IV. Adaptive Management Process

Introduction

The following adaptive management detail is designed to make the standards and guidelines more efficient for the Agencies to implement and more responsive to the needs of the species. The specific criteria for refining or changing species management are based on the strategies and objectives of the specific categories.

This process covers the acquisition, evaluation, and application of new information to move species between categories, remove species from Survey and Manage, add species to Survey and Manage, and develop or revise Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide. The process described here will not change the number of categories, their definition or objectives, or the specific defining criteria or management direction applicable to the categories. Changes of that type would fall under the general adaptive management discussion in the Northwest Forest Plan Record of Decision, pages E-12 through E-15.

The adaptive management process for Survey and Manage Standards and Guidelines includes three steps:

1. Acquiring new information relative to Survey and Manage species.
2. Evaluating new information.
3. Implementing changes or refinements to Survey and Manage.

These three steps are described individually below.

Acquiring New Information Relative to Survey and Manage Species

New knowledge may arise from various sources. New information concerning species status or needs, and efficiency of the standards and guidelines, will be generated mostly through strategic and pre-disturbance surveys and other implementation experience as done in the past. The Agencies will also use a data call, open conference, or other method of soliciting appropriate new information about Survey and Manage species to help locate new credible information needed for conduct of the Species Review Process. Sources of new information may also include taxa experts, resource specialists, scientists, data from Agency surveys, research, and members of academia and other publics. This

information is maintained primarily in the Interagency Species Management System (ISMS) database. New information may lead to adding, removing, or changing species assignments to Survey and Manage categories, as described below, or lead to changes to Management Recommendations and Survey Protocols, and changes to information needs identified in the Strategic Survey Implementation Guide, as described below and elsewhere in these standards and guidelines.

Evaluating New Information for Adding, Removing, or Changing a Species In Survey and Manage

A regional-level interagency group including taxa experts (see Species Review Process in Exhibit B), meeting at least annually, will weigh new information against the criteria below to determine if additions or deletions of species from Survey and Manage or changes of species among categories, are warranted. (Note: Exhibit B intentionally omitted. It can be viewed in the 2001 Record of Decision.) Partial information or proposals to add or change species will not obligate the Agencies to gather additional information.

New information presented for evaluation in considering changes to Survey and Manage should address the criteria described below, as appropriate. The basic criteria for Survey and Manage are key to the evaluation process when proposing to add, remove, or change a category.

Criteria for Adding Species to Survey and Manage

Species proposed for addition to the Survey and Manage Standards and Guidelines must be taxonomic entities published in appropriate peer-reviewed journals accepted by the scientific community and, based on currently available information, must meet all three of the basic criteria for Survey and Manage.

The new information to support addition of a species to Survey and Manage must address the three basic criteria including the specific factors used as a basis for determining concern for persistence. The factors must apply to at least an identified portion of the species range, on federal lands, within the Northwest Forest Plan area.

One or more of the following factors may indicate that persistence is a concern. These factors must be considered in the context of other standards and guidelines (other than those related to Survey and Manage) in the Northwest Forest Plan:

- Low-to-moderate number of likely extant known sites/ records in all or part of species range.

Three Basic Criteria for Survey and Manage

1. The species must occur within the Northwest Forest Plan area, or occur close to the NFP area and have potentially suitable habitat within the NFP area.

2. The species must be closely associated with late-successional or old-growth forest (see Exhibit A (Note: Exhibit A intentionally omitted here. It can be viewed in the 2001 Record of Decision.)).

3. The reserve system and other Standards and Guidelines of the Northwest Forest Plan do not appear to provide for a reasonable assurance of species persistence.

- Low-to-moderate number of individuals.
- Low-to-moderate number of individuals at most sites or in most populations.
- Very-limited to somewhat-limited range.
- Very-limited to somewhat-limited habitat.
- The distribution of the species within habitat is spotty or unpredictable in at least part of its range.

Criteria for Removing Species from Survey and Manage

When new information indicates that a species no longer meets the Survey and Manage basic criteria, the species will be proposed for removal from the Survey and Manage Standards and Guidelines.

New information to support removing a species from the Survey and Manage Standards and Guidelines may address any one of the three Survey and Manage basic criteria. If a species is proposed for removal from the Survey and Manage Standards and Guidelines because there is not a concern for its persistence, the new information must address specific factors indicating that persistence is not a concern as listed below. The factors must apply to at least an identified portion of the species range, on federal lands, within the Northwest Forest Plan area.

Usually, most of the following factors must be true to indicate that persistence is not a concern:

- Moderate-to-high number of likely extant sites/records.
- High proportion of sites and habitat are in reserve land allocations; or limited number of sites within reserves, but proportion or amount of potential habitat within reserves is high, and there is high probability that the habitat is occupied.
- Sites are relatively well distributed within the species range.
- Matrix Standards and Guidelines or other elements of the Northwest Forest Plan provide for reasonable assurance of species persistence.

Species removed from the Survey and Manage Standards and Guidelines because they are not closely associated with late-successional or old-growth forests, but are still of concern for persistence, will be considered for inclusion in the Agencies special status species programs.

Criteria for Changing a Species from One Category to Another in Survey and Manage

New information to support changing a species from one Survey and Manage category to another must address the specific criteria for the categories involved in the change. The new information must support the proposed change by showing how the species better meets the criteria for the proposed category.

The criteria for assigning a species to a different category are included under the Description of Categories section earlier in these standards and guidelines.

Analysis Process for New Information

The process for analyzing or evaluating new information pertaining to species will involve a panel of agency taxonomic experts, resource specialists, and managers similar to the process used to evaluate new information in 1999 and 2000 (see Species Review Process in Exhibit B (Note: Exhibit B intentionally omitted)). The panel of experts will convene at least once a year to evaluate and respond to new accumulated information and to propose changes to appropriate management of species under the Survey and

Manage Standards and Guidelines to the RIEC. [The RIEC delegated review of proposed changes as a result of the Annual Species Review to the RIEC Survey and Manage Subcommittee (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage Related Reviews).]

The panel will use the specific criteria and factors defined for making determinations regarding whether there is a concern for persistence and placement of species within individual categories of Survey and Manage. Because Survey and Manage includes species about which little is known, the number and combination of criteria and factors used in making a judgment about concern for persistence or appropriate placement of each species within individual categories will vary, depending on the species and the type and quality of information available. The application of the criteria in the analysis process necessarily relies on the professional judgments of the panel of experts.

For purposes of these evaluations, the factors and criteria listed in these standards and guidelines and applied to each species will constitute the foundation of the assumptions, criteria, factors, and logic to support the conclusions. Application of the information to the criteria will be documented in writing for the record. The recommendations from the panel will be disseminated to lead and cooperating agency taxa experts in draft form for at least 30 days to identify errors, conflicting information, or other evidence that should be included with the information presented by the panel to the RIEC. [The Annual Species Review process has been delegated to the RIEC Survey and Manage Subcommittee (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage Related Reviews).] Details of the Species Review Process will be available as administrative record for actions applying resultant changes in the future.

The Species Review Process proposed for future adaptive management changes under these standards and guidelines was developed and used in 1999 and again in 2000 for species analysis in the November 2000 Survey and Manage FSEIS (see Exhibit B). (Note: Exhibit B intentionally omitted.)

Implementing Changes or Refinements to Survey and Manage

Making Changes to Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide

Changes proposed to Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide as a result of new information pertaining to species, or new information resulting from application experience, will be made using the same process used to develop the original Recommendations and Protocols. Changes to Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide constitute administrative changes to the technical details of specific site management and surveys, and it is not anticipated such changes will require any further NEPA documentation.

Adding, Removing, and Changing Species Between Categories

The criteria and evaluation process for species that is presented in Exhibit B, and otherwise described in these standards and guidelines for use in future adaptive management changes, is designed to continue approximately the same level of assurance of persistence as intended by these standards and guidelines. (Note: Exhibit B intentionally omitted.) The process and results should be relatively consistent over time because the assumptions, criteria, and logic used in reaching determinations relating to species disposition under the Survey and Manage Standards and Guidelines will remain

constant. Proposed changes to assignments of species to categories and proposals to remove species from Survey and Manage, resulting from the periodic evaluations of new information, will be forwarded to the RIEC [The RIEC delegated review of the Annual Species Review process to the RIEC Survey and Manage Subcommittee (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage Related Reviews).] for review to ensure that current information about the species has been appropriately considered and weighed against the stated criteria, and that the resultant proposal continues to provide at least the level of protection intended by the standards and guidelines. Adaptive management changes to assignments of species will be jointly adopted by the BLM and Forest Service and included in the annual report, along with a summary of the information supporting the changes. Since the effects to species are expected to be consistent with the effects anticipated and described in the November 2000 Survey and Manage FSEIS, it is not anticipated such changes will require regular, annual NEPA documentation. The parameters for making adaptive changes are part of the standards and guidelines, and as long as the changes are within these parameters, they would not constitute a change in these standards and guidelines or constitute new information on effects not already anticipated and addressed in the above FSEIS. Prior to the annual application of results, the Agencies will examine whether the magnitude and nature of changes indicate a need for additional environmental analysis (e.g., an Environmental Assessment). The results of this examination will be documented and summarized in the Annual Status Report. It is not anticipated that changes made pursuant to the species review process will require regular, annual NEPA documentation for three major reasons. First, the parameters for making such changes are clearly delineated and part of these standards and guidelines. Second, adjustments made pursuant to the annual species review process are fully expected to occur and are included in the set of assumptions on which the effects analyses of the November 2000 Survey and Manage Final SEIS have been made. Third, the status of species relative to the standards and guidelines should remain consistent with, and at least as secure as, that reflected in the Final SEIS, given that the criteria guiding the species review process have been designed in large measure to achieve such consistency. The Agencies will evaluate such changes over time to ensure their application is having the intended result and their accumulated effects are within the scope anticipated by this SEIS. At some point in the future, if such effects rise to the level exceeding that scope, supplemental NEPA analyses can be expected to be conducted at appropriate intervals as necessary or advisable.

The Agencies will involve the public and keep resultant changes and their application visible to the public so potential concerns about application of the above criteria to any particular species or area may be surfaced. First, the Agencies will utilize a data call, open conference, or other method of soliciting appropriate new information about Survey and Manage species. Second, the annual report will be sent to individuals or groups who request it. Individuals and groups that would like to receive the annual report should write to the Interagency Survey and Manage Program Manager, c/o Regional Ecosystem Office, P.O. Box 3623, Portland, OR 97208-3623.

Public comments about species changes or anything else in the annual report are invited at any time, and should also be addressed to the Program Manager. Third, future Agency NEPA documents for habitat-disturbing activities will identify if any of these expected future changes in categories will be applied to the planned activity, or will reference a specific years assignments, as documented in the Annual Status Report, that appropriately applies to that activity or project. Specific public concerns about the application of a particular species assignment may be directed toward the activity applying the new assignment.

V. Management Recommendations

Management Recommendations are documents that address how to manage known sites (or manage high-priority sites) and that provide guidance to Agency efforts in conserving Survey and Manage species. They are written for the species range or, in rare cases, may apply to provinces within the range. They are the responsibility of management working closely with taxa experts; they are developed by taxa experts and land managers (at any administrative level) for use at field offices of the BLM and Forest Service. Because these documents describe site management, and for uncommon species, identify sites not needed to provide a reasonable assurance of persistence, they are subject to review by the REO. [The RIEC delegated these reviews to the Survey and Manage IMG (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage-Related Reviews.).] This review is to ensure they identify and integrate the habitat or life-history factors key to managing the species to the level of protection intended in the standards and guidelines.

Management Recommendations describe the habitat parameters (environmental conditions) that will provide for a reasonable likelihood of persistence of the taxon at that site. These parameters serve as the basis for site-specific decisions about the size of buffers to be applied and what management activities are appropriate within the site. The size of the area to be managed depends on the habitat and requirements for the species. Management may range from maintaining one or more habitat components (such as down logs or canopy cover) to complete exclusion from disturbance for many acres, and may allow loss of some individuals, areas, or elements not affecting continued site occupancy. In high fire frequency areas such as east of the Cascades or in the Klamath Provinces, specific consideration should be given to the acceptability of the use of prescribed fire in known sites to reduce the risk of future large-scale or high intensity fire, even if it entails some risk to individual site occupancy.

Management Recommendations for uncommon species should also identify high-priority sites that must be managed to provide for a reasonable assurance of persistence of the taxon (or the procedures for designating such sites locally), as well as sites that no longer need to be managed for the benefit of those species. Management Recommendations may also identify areas where it is no longer necessary to continue surveys prior to habitat-disturbing activities or strategic surveys for the taxon. The Management Recommendation may also provide information on natural history, current species status, species distribution, management goals and objectives, specific management actions or recommendations, monitoring needs, and needs for information and research to the extent such information supports management of known sites, identification of high-priority sites, and identification of survey priorities. Finally, where information about a species indicates the combination of manage known sites, pre-disturbance surveys, and strategic surveys (and other standards and guidelines of the Northwest Forest Plan) does not provide a reasonable assurance of persistence or does not provide the most efficient way of meeting the persistence objective, Management Recommendations may include additional or in-lieu direction, subject to appropriate NEPA analysis. Such direction may rely on habitat models and other valid scientific analyses that indicate a high probability of occupancy by the species.

Management Recommendations written prior to the Record of Decision for this SEIS may continue to be used until superseded by later versions. Existing Management Recommendations will be revised as new information indicates a need. Revised versions may be applied immediately but will normally be applied to NEPA decisions or decision documents signed 90 or more days after release of the Management Recommendation. In some cases they may include a specific effective date or other language indicating when they are to be applied, depending on when they are issued, what differences there are from the previous version, and the importance of those differences.

For species newly assigned to categories requiring management of known sites, either as a result of the Record of Decision amending Survey and Mange, or the annual species review process, manage known site direction applies to NEPA decisions or decision documents (for habitat-disturbing activities) signed after the effective date of the new assignment.

Note for Species for Which Grazing is Identified as a Concern: The 1994 Northwest Forest Plan ROD identified a concern for grazing impacts to some of the species now included in Survey and Manage. For these species, the 1994 Northwest Forest Plan language of "known and newly discovered sites of these species will be protected from grazing by all practical steps to ensure that the local population of the species will not be impacted" is to be included in Management Recommendations for these species. For the three species for which the Northwest Forest Plan indicated grazing was the ONLY concern (identified on Table 1-1), this phrase is the complete Management Recommendation and no other recommendations are imposed at this time. (Note: Table 1-1 intentionally omitted.)

Note for Former Protection Buffer Species Included in Survey and Manage but Without Approved Management Recommendations: Management of known sites will follow the Northwest Forest Plan Protection Buffer direction (see Section XI of these standards and guidelines), latest information (including that displayed in the November 2000 Survey and Manage FSEIS), and best professional judgment until a Management Recommendation is approved. This affects great gray owl, the fungus *Sarcasoma mexicana,* and Del Norte, Siskiyou Mountains, Larch Mountain, and Shasta salamanders.

VI. Surveys

Surveys Prior to Habitat-Disturbing Activities (Pre-Disturbance Surveys)

Some categories of species require that site-specific, pre-disturbance surveys be conducted prior to signing NEPA decisions or decision documents for habitat-disturbing activities. These are "clearance" surveys that focus on the project unit with the objective of reducing the inadvertent loss of undiscovered sites by searching specified potential habitats prior to making decisions about habitat-disturbing activities. They are done according to the Survey Protocol for each species and can use methods such as transects or plots that focus on priority habitats, habitat features, or involve the entire project area. These surveys are often referred to simply as pre-disturbance surveys. There are two types of pre-disturbance surveys. Pre-disturbance surveys are "practical" for species whose physiological characteristics make them likely to be located with reasonable effort. The second type, "equivalent-effort" surveys, are prescribed as mitigation for eight (8) mollusk species whose characteristics, such as extremely small size or irregular cycles when identifying characteristics are visible, make identification during pre-disturbance surveys less likely. The differences between these two types of pre-disturbance surveys, as well as the definition of habitat-disturbing activities, timing requirements for surveys, and the requirements for survey protocols are described in more detail below.

Habitat-Disturbing Activities

Habitat-disturbing activities are defined as those disturbances likely to have a significant negative impact on the species habitat, its life cycle, microclimate, or life support requirements. The evaluation of the scale, scope, and intensity of the anticipated negative impact of the project on habitat or life requirements should include an assessment of the type, timing, and intensity of the disturbing activity. "habitat-disturbing" is not necessarily the same as "rround-disturbing"; helicopter logging or logging over snow-

pack, for example, may not disturb the ground but might clearly affect microclimate or life cycle habitat factors. Conversely, an activity having soil-disturbing effects might not have a large enough scope to trigger a need to survey. Such a case would be the installation of a sign post within a campground. Routine maintenance of improvements and existing structures is not considered a habitat-disturbing activity. Examples of routine maintenance include pulling ditches, clearing encroaching vegetation, managing existing seed orchards, and falling hazard trees.

The line officer should seek specialists recommendations to help determine the need for a survey based on site-specific information. In making such determination, the line officer should consider the probability of the species being present on the project site, as well as the probability that the project would cause a significant negative effect on the species habitat or the persistence of the species at the site.

Pre-disturbance surveys are not required in the unusual circumstance such that a delay in implementation of the activity (to permit pre-disturbance surveys) would result in greatly increased and unacceptable environmental risk. Such circumstances are subject to review by the REO to ensure the urgency of the activity justifies the risk to species. [The RIEC delegated these reviews to the Survey and Manage IMG (May 16, 2003, RIEC memo re: Delegation of Authority for Survey and Manage-Related Reviews).]

Pre-disturbance surveys are not required for wildland fires for resource benefits in designated Wilderness. Wildland fires for resource benefits are prescribed fires that result from natural ignition, are consistent with the applicable land and resource management plan, are addressed in a fire management plan, and are burning within prescription. Even though prescriptions are written well in advance of the burn, pre-disturbance surveys are not required because they would be impractical given the large area covered by prescriptions and the irregular nature of natural ignitions, and because potential impacts to Survey and Manage species are limited because the objective of such fires is limited to mimicking natural processes and succession (1964 Wilderness Act, Section 2(a)) (FSM 2323.32). Exceptions to the pre-disturbance survey requirement may be proposed, subject to REO review, for other wildland fires for resource benefits in backcountry, Wilderness Study Areas, roaded natural, and similar areas where the objective of such fires is similar to those in Wilderness. [The RIEC has determined that pre-disturbance surveys are no longer required for wildland fires for resource benefits regardless of land allocation (July 31, 2003, RIEC memo re: Exception to Survey and Manage pre-disturbance survey requirements for wildland fire for resource benefits). See below.]

Exceptions to the pre-disturbance survey requirement may also be proposed for wildland fire for resource benefits in Late-Successional Reserves if the Late-Successional Reserve Assessment addresses the potential presence and likely effect on Survey and Manage species, and REO review of that aspect of the Assessment concludes such fire(s) will not prevent achievement of the persistence objectives of these standards and guidelines. [The RIEC has determined that pre-disturbance surveys are no longer required for wildland fires for resource benefits regardless of land allocation (July 31, 2003, RIEC memo re: Exception to Survey and Manage pre-disturbance survey requirements for wildland fire for resource benefits). See below.]

The following explanation is excerpted from the July 31, 2003, RIEC memo re: Exception to Survey and Manage pre-disturbance survey requirements for wildland fire for resource benefits.

No pre-disturbance surveys are required for wildland fires for resource benefits, regardless of land allocation, if the following conditions are met. No further REO or IMG review is required prior to implementation.

1. The fire is consistent with the Land and Resource Management Plan (Forest or District Plan).

2. *A fire management plan has been developed that addresses wildland fire starts and appropriate prescriptions for the area.*
3. *The fire is burning within prescription, and the prescription is designed for resource benefits. (Note: A prescription designed for resource benefits provides for an adequate level of structural components such as snags, coarse woody debris, litter/duff, and mid and overstory canopy. Typically, the fire has a low to moderate rate of spread and flame lengths less than 4-6 feet.)*
4. *In Late-Successional Reserves (LSRs) only:*
   a. *The LSR Assessment, supplement to the LSR Assessment, or other large-scale analysis addresses the potential presence and likely effect on Survey and Manage species.*
   b. *The Forest Supervisor or District Manager review of the LSR Assessment (and/or other documentation noted in 4.a., above) concludes that such fires will not prevent achievement of the persistence objectives of the standards and guidelines.*

Pre-Disturbance Survey Protocols

Survey Protocols for surveys prior to habitat-disturbing activities include instructions for locating the species. The instructions include such information as: likely habitat where the species is of concern, geographical area and substrate where the species is typically located, and timing of surveys to best locate the species, as well as appropriate search and sampling techniques, and detailed guidance for identifying the species. Supplemental information may include field identification guides and techniques for simple laboratory examination.

Pre-Disturbance Survey Protocols should also identify habitat conditions or locations, or criteria for identifying such conditions locally, where surveys are not needed for a reasonable assurance of persistence, and thus surveys are not needed. Such habitat may include, but not be limited to, seral stages, stand age, stand complexity, or stand origin, where occupied sites, if present, are likely incidental, non-viable, or otherwise not important for meeting overall species persistence objectives. For "uncommon" species, Survey Protocols should specify habitats or conditions (e.g., seral stages) not needing surveys because "high-priority" sites are not expected to be found there.

Existing Survey Protocols will be revised as new information indicates a need. Revised versions of protocols will normally apply to the next projects on which surveys are to be initiated. In some cases they may include a specific effective date, or other language indicating when they are to be applied, depending on when they are issued, what differences there are from the previous version, and the importance of those differences. The Record of Decision for November 2000 Survey and Manage SEIS does not invalidate existing Survey Protocols or previous surveys, and the Agencies may continue to use existing Survey Protocols in conducting pre-disturbance surveys until they are revised. Where these standards and guidelines require pre-disturbance surveys for species that required pre-disturbance surveys under the 1994 Northwest Forest Plan Standards and Guidelines (including mollusks requiring equivalent-effort surveys as mitigation), the requirement for pre-disturbance surveys continues to apply to all new activities with no break or grace period.

New Pre-Disturbance Survey Protocols will be prepared for species newly assigned to a category requiring surveys prior to habitat-disturbing activities, whether the category assignment is through these standards and guidelines, or a future assignment through the adaptive management process. The protocols will be prepared by the end of the fiscal year following the fiscal year the species was assigned. The decision date for activities to which these protocols apply will depend on the number of years a survey is required. If a protocol requires 1 year of surveys, activities may proceed for 1 additional fiscal year before pre-disturbance surveys are required, to allow time to conduct the required surveys. If a protocol requires two (2) years of surveys, activities may proceed for two (2) additional fiscal years before pre-disturbance surveys are required. For example, if a species is added to this category on January 1, 2001, the protocol will be prepared no

later than September 30, 2002, and (assuming a 1-year protocol) the protocol will apply to activities for which NEPA decisions or decision documents are signed after September 30, 2003. Preparation of a protocol earlier than the due date does not necessarily change the required effective date; the Agencies may need the additional lead time for training, surveys, and related project planning. Actual effective dates will be set in the Survey Protocol documents or the Agencies transmittal memos, but they will not be later than the above-described date.

Strategic surveys or other information may, in the future, expand the known range of a species requiring pre-disturbance surveys into areas not previously identified in Survey Protocols or ISMS-related species range maps. Confirmation of such expansions will occur with RIEC approval of the results of the annual species review process. Since protocols in these cases are already prepared, the survey requirement applies to activities whose NEPA decision or decision document is signed in the calendar quarter following the first full survey season (as defined in the protocol) after the expanded range is confirmed.

Timing Requirements for Pre-Disturbance Surveys

The intent of "surveys prior to habitat-disturbing activities" is to gather relevant information during the NEPA process so that it is available for the decision-maker before actions are taken. Ideally, this information would be available to the Interdisciplinary Teams during preparation of an EA or Draft EIS so it could be used in project analysis, formulation of alternatives, and evaluation of effects. Required surveys should be completed and their results included in an EA or Draft EIS whenever practicable. This would have the added advantage that results would be available during the public review and comment process.

Project schedules could be severely disrupted if the requirement for additional pre-disturbance surveys were imposed after the decision is made and final design, field layout, or contract preparation has begun. Therefore, the date of the decision is the cut-off date for the requirement to conduct "surveys prior to habitat-disturbing activities." In other words, once the decision is made no additional survey requirements are imposed; no NEPA analysis will have to be re-done and no decisions will have to be re-made because of additional survey requirements.

The date of the decision is the signing of the Decision Notice (for the BLM) or NEPA Decision (for the Forest Service). Grace periods for newly added species or increases in known range are described under Pre-Disturbance Survey Protocols above.

Application of Manage Known Sites Direction: Even though pre-disturbance surveys are completed prior to the NEPA decision or decision document, manage known site direction will typically be applied to additional sites of rare species incidentally discovered during other field work after the decision date but prior to sale dates (or for non-contract activities, actual on-the-ground application of work). Manage known site direction may also be applied to additional sites for uncommon species, depending upon factors such as the level of concern for persistence of the species and its habitat in and adjacent to the activity area.

Practical Pre-Disturbance Surveys

Identification of species for which surveys are practical is basic to helping define the categories of Survey and Manage. If pre-disturbance surveys are practical, the risk of inadvertent loss of undiscovered sites and the likelihood that management activities will be detrimental to meeting species persistence objectives can both be substantially reduced. Conducting practical pre-disturbance surveys also reduces the urgency to

locate sites through the use of strategic surveys, at least as compared to species for which pre-disturbance surveys are not practical.

The criteria below define when pre-disturbance surveys are practical or not practical. In general terms, the criteria are designed so that surveys will be found to be practical if a reasonable effort would be likely to determine the presence of a species on a specific area, although the criteria themselves should be used in making the determination, and no quantitative standard is implied. Put another way, practicality of surveys generally relates to the ability to confidently answer questions about species presence through surveys, while avoiding unreasonable costs or spending unreasonable amounts of time. The definition of practical is intended to be comparable to that described in the Northwest Forest Plan Record of Decision as being not "difficult" (see Appendix J2 of the Northwest Forest Plan FSEIS, and pages C-5 and C-6 in the Northwest Forest Plan Record of Decision). However, it is not anticipated that these surveys will find every site.

Surveys prior to initiation of habitat disturbance are considered "practical" if all of the following criteria apply. Surveys prior to habitat-disturbing activities are considered not practical if any of these factors do not apply.

- The taxon appears annually or predictably, producing identifying structures that are visible for a predictable and reasonably long time.
- The taxon is not so minuscule or cryptic as to be barely visible.
- The taxon can authoritatively be identified by more than a few experts, or the number of available experts is not so limited that it would be impossible to accomplish all surveys or identifications for all proposed habitat-disturbing activities in the Northwest Forest Plan area needing identification within the normal planning period for the activity.
- The taxon can be readily distinguished in the field and needs no more than simple laboratory or office examination to confirm its identification.
- Surveys do not require unacceptable safety or species risks.
- Surveys can be completed in two field seasons (approximately 7-18 months).
- Credible survey methods for the taxon are known or can be developed within a reasonable time period (approximately 1 year).

Equivalent-Effort Pre-Disturbance Surveys

Equivalent-effort surveys are an option for Category B species in old-growth, if strategic surveys are not completed within five (5) years (see strategic survey direction under Category B). The Survey and Manage Record of Decision also specifies "equivalent-effort" surveys as mitigation for eight species of mollusks whose characteristics make detection during such surveys less likely and, therefore, do not qualify as practical. Equivalent-effort surveys are pre-disturbance surveys conducted similarly to practical surveys (to the same intensity and effort--usually one field season and no more than two), according to written Survey Protocols, and during the times when the likelihood of detecting the species is highest. Because species characteristics make detection less likely, however, equivalent-effort surveys are only designed to locate the species if it occurs in an identifiable condition during a reasonable survey time period (no more than two field seasons). The survey is an "equivalent effort" to practical surveys, with protocol adjusted to deal with the one or more of the factors described above that make determining presence of the species unlikely.

There are only two differences between equivalent-effort surveys and practical surveys. One difference is that equivalent-effort surveys may need to accommodate one or more of the practicality factors listed above. The other difference is that equivalent-effort surveys are not expected to meet the description of "likely to determine the presence" of a species because the characteristics of these species make finding sites less certain.

Strategic Surveys

Introduction

Strategic surveys gather information at the landscape, population, or site-specific scale to address questions that relate to identified objectives for each category and address the need to manage for a reasonable assurance of species persistence. Information provided by strategic surveys (as well as research and other information-gathering efforts) will help address fundamental questions of Survey and Manage species, including: is there a concern for persistence; is the species rare or uncommon; is the species closely associated with late-successional forests; what is the appropriate management for the species; and, do the reserve land allocations and other standards and guidelines of the Northwest Forest Plan provide a reasonable assurance of species persistence? Strategic surveys can also help refine habitat descriptions and define geographic range and information needs for future surveys, and could also provide important information on population status, life history, and habitat use. All of these questions are to be set in the context of the objectives of the Northwest Forest Plan, of which the Survey and Manage mitigation measure is but a part. Strategic surveys are prescribed for all categories.

Information from strategic surveys feeds into the adaptive management process described later in these standards and guidelines, provides information for the development of Management Recommendations and pre-disturbance Survey Protocols, and provides information to better focus subsequent strategic surveys if needed. Strategic surveys provide information required in order to change species categories or remove them from Survey and Manage. These surveys also provide information to help establish or confirm direction for managing known sites, identifying high-priority sites, and conducting pre-disturbance surveys. Finally, for species with very few sites, strategic surveys may be the primary method for finding additional sites. Strategic surveys are different from □re-disturbance surveys (described earlier in these standards and guidelines) because they are focused on gathering information about the species and its habitat needs range-wide, and are not focused on determining presence or absence in specific areas prior to habitat-disturbing activities.

Various scales of strategic surveys are described below. The appropriate scales to be used, and the type of information to be gathered, are determined by the needs of each species and the needs or objectives suggested by the category to which they are assigned. However, strategic surveys are envisioned as □amples with sampling intensity dependent upon information needs and the characteristics of the species and the habitat. The information to determine range, habitat associations, distribution, ability to survey for, and meet other strategic survey objectives is expected to come from a series of samples distributed on the landscape. Once surveys have reasonably established those parameters, or further surveys are not expected to contribute significant additional information toward those objectives, strategic surveys may be considered completed. For some very rare species, this means strategic surveys may be complete even if few or no additional sites are found. The long-term benefit to Survey and Manage species comes from continuing to apply other Survey and Manage Standards and Guidelines over time, not continuing to do strategic surveys indefinitely.

Identifying Information Needs and Priorities

The first step toward identifying strategic survey needs is the identification of the persistence and management questions for each species. Three primary questions guide this process:

1. What are the primary concerns for species persistence?
2. How do we manage species and habitats to ensure species persistence?

3. Does the species need the Survey and Manage Standards and Guidelines to provide a reasonable assurance of persistence?

For planning purposes, information needs can be: (1) divided into species range and habitat associations; (2) to improve and direct species and habitat management; or, (3) directly relevant for dealing with specific persistence concerns. Information needs are compared with existing information (e.g., in ISMS and published literature) to determine current state of knowledge and to identify information gaps. These information gaps are considered in the context of existing management direction (e.g., what is the level of concern for persistence under other elements of the Northwest Forest Plan and within the present Survey and Manage category), to set the biological priorities for strategic surveys. Priorities are also determined by how the information may be used to increase management efficiency. If answers to these questions may lead to species changing categories or being removed from Survey and Manage, there is a benefit in reduced activity costs and reduced impacts to other forest management activities. Both the biological priorities and the management efficiency benefits must be described or quantified for display in the Strategic Survey Implementation Guide (see below) for use by management for setting survey priorities.

Strategic Survey Methods and Scales

Strategic Surveys may be accomplished through various methods, such as acquiring information from field surveys, herbaria, museums, literature, field units and other sources, and using various analytical tools such as building and validating habitat models. These methods are explored, developed, and analyzed for effectiveness and efficiency for acquiring the needed information. The selection of one or more of these methods depends, at least in part, on the scale that will best address the information need. The different approaches to strategic surveys will consider the contributions of various scales of surveys generally characterized as:

Broad-scale surveys designed to:

- Include multiple species.
- Provide information on species occurrence, distribution, range, and habitat associations.
- Address different Survey and Manage questions by stratifying the survey area into significant ecological or geographical units such as forest age class (e.g., young stand vs. old-growth) or land allocations (e.g., Late-Successional Reserves vs. Matrix lands).
- Refine habitat characterization.

Mid- to fine-scale surveys designed to:

- Refine habitat characterization.
- Provide information on how to manage species or their habitat, particularly at known sites.
- Provide information for the identification of high-priority sites for management.

Detailed studies (linked to research as appropriate) and other surveys designed to:

- Address specific questions and information needs (e.g., determining whether a species is still extant at a specific location, or conducting studies to examine specific disturbance effects on persistence of individuals at a site).

Species or surveys may be grouped for cost efficiency. Preliminary identification of available resources, including the administrative levels that will participate, is also a consideration.

Strategic Survey Implementation Guide

A Strategic Survey Implementation Guide displaying the known strategic survey needs for all species or species groups will be developed at the range-wide or regional scale, and generally be updated annually to reflect changes in information and priorities resulting from the previous years accomplishments or new information. The Strategic Survey Implementation Guide is, of necessity, dynamic, particularly during the first years while information needs are clarified. Additionally, changes to categories or other new information will lead to new questions. The plan, with annual updates, will help ensure deadlines listed in these standards and guidelines are met and identify the magnitude and likely duration of the strategic survey program (at least for currently known information needs) for planning and scheduling purposes. The document will help focus annual work planning on the priority information needs, provide information for long-range planning, and facilitate the grouping of surveys for efficiency. The Strategic Survey Implementation Guide is subject to review by the RIEC to ensure identified information needs and priorities will further the objectives of the Northwest Forest Plan. [This review has been delegated to the RIEC Survey and Manage Subcommittee (May 16, 2003 RIEC memo re: Delegation of Authority for Survey and Manage-related review).]

The Implementation Guide will include, by species or taxa group:

- A summary of the information needs proposed to be answered by the strategic survey.
- The benefits expected by answering each identified need, either in terms of increased assurance of species persistence or reduced costs or impacts.
- Identification of methods (and scale) that would best meet the information needs.
- Relative priorities or priority-setting criteria. Management will set relative priorities or describe priority-setting criteria using the other three elements (and within expected resource availability).

Implementation and Responsibility

Responsibility for the design and coordination of strategic surveys rests with the regional offices of the Forest Service and state offices of the BLM, in collaboration with the U.S. Fish and Wildlife Service and Research Agencies, to ensure consistency, and because strategic surveys are generally intended to address information across a species range within the Northwest Forest Plan area. Coordination with both research agencies and field units regarding new information, assistance for design and conduct of surveys, identification of management needs, and availability of needed resources is important as well. Survey design should build upon or complement previous strategic, extensive, or general regional surveys whether conducted at the regional or local scale. Responsibility for implementation and follow-up actions may be delegated to administrative units or groups of administrative units, particularly where the range of a species is essentially confined to those units or the units are in a better position to assemble appropriate resources. Implementation includes all aspects of the planning and conduct of surveys, research, or other information-gathering activities. This may include hiring of personnel, mobilizing crews, contracting, selecting survey sites, scheduling site visits, developing protocols, etc.

Information from strategic surveys (and other sources) is maintained primarily in the Interagency Species Management System (ISMS) database and on species distribution maps.

Analysis and Use of Results

Information from strategic surveys is used in the Species Review Process (see Exhibit B (intentionally omitted) and the Adaptive Management sections of these standards and

guidelines), is incorporated into Management Recommendations and pre-disturbance Survey Protocols, and becomes part of the existing information used in the future identification of information needs and priorities described above. All three of these uses may lead, directly or indirectly, to the need for additional information. Information from completed surveys, and the identification of new survey needs, will be incorporated into the Strategic Survey Implementation Guide as appropriate.

Specific objectives of strategic surveys vary by category, species, and management need. Strategic surveys for a species are considered to be complete when any one of the following four conditions apply, and the resultant information has been compiled and analyzed, as appropriate, and presented in the appropriate form for use by the target audience. This form may range from inputting the data into ISMS for use during the Species Review Process to preparing a summary of the data and related Management Recommendations to assist project planners. The four conditions are:

1. The objectives of the strategic surveys (such as specific information needs) have been accomplished and information is sufficient to conclude that existing or resultant management direction will provide a reasonable assurance of persistence.

2. The objectives of the strategic surveys (such as specific information needs) have been accomplished and further surveys are not likely to contribute additional significant information about distribution, relative rarity, range, habitat associations, how to conduct pre-disturbance surveys, or other strategic survey objectives.

3. Adequate sites or habitats for the species have been located and are appropriately managed to provide reasonable assurance of persistence for the species.

4. For species with very limited habitat, all known potential habitat of the species has been surveyed, and there is little likelihood that additional undiscovered sites of the species will be located by further surveying.

Strategic survey accomplishments will be summarized in the Survey and Manage Annual Report.

VII. Reports, Monitoring, and Review

Annual Status Reports

An interagency, Northwest Forest Plan area-wide annual status report (the annual report), will be prepared to display progress and identify products resulting from implementation of these standards and guidelines. The report will include, at a minimum, results of adaptive management changes, status of Management Recommendations and Survey Protocols, a summary of the Strategic Survey Implementation Guide (including the status of strategic surveys), status and results of ongoing monitoring, and important new management direction. This report is the primary tool for the public to find out about annual changes to species assignments and resultant application of surveys to Agency activities. The Agencies will establish a mailing list for all persons wishing to receive all or a part of this report. Until and unless the Agencies identify and publish an alternative source, such requests should be addressed to the Interagency Survey and Manage Program Manager, c/o Regional Ecosystem Office, P.O. Box 3623, Portland, OR 97208-3623.

Monitoring

The primary objective of monitoring relative to Survey and Manage species is to evaluate progress toward meeting species persistence objectives. Monitoring for the Survey and Manage Standards and Guidelines will continue to follow the monitoring direction included in the Northwest Forest Plan and will be further defined and adapted to the new categories described in these standards and guidelines. Modifications will build upon new information identified in the November 2000 Survey and Manage FSEIS and compiled in future years during the annual Species Review Process. Sources of new information that will contribute to monitoring, and help identify the specific monitoring questions, include pre-disturbance and strategic surveys, as well as publications, research results, public, academia, and other sources.

The Northwest Forest Plan Record of Decision monitoring section at pages E-4 through E-10 identifies three types of monitoring:

1. Implementation monitoring for the Northwest Forest Plan began in 1996 and has been conducted annually. Future Northwest Forest Plan implementation monitoring protocols will be revised as needed to fully cover these standards and guidelines.

2. Effectiveness monitoring for Survey and Manage is expected to be most appropriately addressed as part of the Biological Diversity effectiveness monitoring (as described in the Northwest Forest Plan Record of Decision, page E-8) and will focus on multiple species and habitat relationships. Also some of the special monitoring issues and situations discussed on pages E-10 and 11 are particularly relevant.

3. Validation monitoring questions described in the Northwest Forest Plan that relate to Survey and Manage substantially overlap with the questions that strategic surveys are designed to address. Strategic surveys and the annual analysis that is part of the Species Review Process are generally expected to contribute substantially to meeting validation monitoring objectives.

Review by the Regional Ecosystem Office

Three documents are referenced in these standards and guidelines: Management Recommendations, Survey Protocols, and Strategic Survey Implementation Guide. Each document plays an important role in accomplishing Survey and Manage objectives. As described for the particular document elsewhere in these standards and guidelines, they are typically written for the species range. The documents are the responsibility of management working closely with taxa experts; they are developed by taxa experts and land managers (at any administrative level) for use at field offices of the BLM and Forest Service. New or revised versions of these documents are subject to review by the REO to ensure they identify and integrate the habitat or life-history factors key to managing the species to the level of protection intended in the standards and guidelines. Other processes (e.g., exceptions to management of known sites, changes in categories resulting from the annual species analysis) are also subject to REO (or RIEC) review as described in these standards and guidelines. The REO or RIEC may develop criteria to exempt certain documents or processes from review. [The RIEC has delegated the reviews required in these Standards and Guidelines to the Survey and Manage IMG or the RIEC Survey and Manage Subcommittee (May 16, 2003 RIEC memo re: Delegation of Authority for Survey and Manage-related reviews).]

"Subject to review by the Regional Ecosystem Office" means review is required unless the REO has specifically provided an exemption. As described in the Northwest Forest Plan Standards and Guidelines, page E-16, the REO provides staff work and support to facilitate RIEC decisions. Although the standards and guidelines refer to REO review,

it is understood that the REO recommends to the RIEC who has responsibility for the decisions. The RIEC may delegate responsibility to complete these reviews. [The RIEC has delegated the reviews required in these Standards and Guidelines to the Survey and Manage IMG or the RIEC Survey and Manage Subcommittee (May 16, 2003 RIEC memo re: Delegation of Authority for Survey and Manage-related reviews).]

VIII. Additional Mitigation Measures

Manage Sites Known as of September 30, 1999, for Two Mollusk Species

For two mollusk species, *Megomphix hemphilli* south of Lincoln, Benton, and Linn Counties in Oregon, and *Monadenia churchi*, sites known as of September 30, 1999, will be managed as known sites.

Equivalent-effort Surveys for Eight Mollusk Species

Eight mollusk species, *Ancotrema voyanum, Deroceras hesperium, Helminthoglypta hertleini, Hemphillia pantherina, Monadenia chaceana, Monadenia fidelis klamathica, Monadenia fidelis ochromphalus,* and *Pristoloma articum crateris,* are not considered practical to survey for, but require equivalent-effort pre-disturbance surveys. Equivalent-effort surveys for five of the eight species will simply continue to follow the Survey Protocols previously in use under Category 2 of the Northwest Forest Plan. The development of Survey Protocols for the other three (*A. voyanum, M. f. klamathica,* and *M. f. ochromphalus*) would normally fall under the survey protocol phase-in language in these standards and guidelines, but since these species are rare, have limited ranges, and habitat-disturbing activities are limited only to grazing (see note at the end of Management Recommendations section), the Agencies are directed to prepare survey protocols and initiate surveys as soon as practicable.

Duration of Additional Mitigation

These two (2) additional mitigations for the 10 mollusks are to remain in effect until:

- For the two species receiving manage known sites as of September 30, 1999, continue this mitigation as long as they remain in Category F.

- For the eight (8) species receiving equivalent-effort surveys, continue this mitigation as long as the species remain in Categories B or E and strategic surveys are not completed. If species are still in Categories B or E when strategic surveys are completed, and information about these species, analyzed and considered through the Species Review Process, indicates the three management elements of *manage known sites, practical pre-disturbance surveys,* and continued *strategic surveys* will not provide a reasonable assurance of persistence, this mitigation will be retained.

The above conditions rely on the Species Review Process as described in the standards and guidelines, including its criteria for defining categories and defining concern for persistence. Like the process for changing species between categories, the above conditions and criteria are well defined and are expected to be implemented without further NEPA analysis.

IX, X, XI. Omitted

XII. Former Protection Buffer Species Without Management Recommendations

For former Protection Buffer species included in Survey and Manage but without approved Management Recommendations, management of known sites will follow the former Northwest Forest Plan Protection Buffer direction (except no LSRs or MLSAs are created), latest information (including that displayed in the November 2000 Survey and Manage FSEIS), and best professional judgment until a Management Recommendation is approved. Listed below is the former Protection Buffer direction for the five affected species: great gray owl and Del Norte, Siskiyou Mountains, Larch Mountain, and Shasta salamanders. This direction will be replaced with Management Recommendations prepared according to the Management Recommendations standards and guidelines.

Great Gray Owl: Within the range of the northern spotted owl, the great gray owl is most common in lodgepole pine forests adjacent to meadows. However, it is also found in other coniferous forest types. In some locations, such as on the Willamette National Forest west of the crest of the Cascade Range, at least some shelterwood harvesting seems to be beneficial for the species by opening up otherwise closed canopy cover for foraging. In doing so, consequences to species such as northern goshawk and American marten must be evaluated. Specific mitigation measures for the great gray owl, within the range of the northern spotted owl, include the following: provide a no-harvest buffer of 300 feet around meadows and natural openings and establish 1/4-mile protection zones around known nest sites. Within one year of the signing of the [1994 NWFP] Record of Decision for these standards and guidelines, develop and implement a standardized protocol for surveys; survey for nest locations using the protocol. Protect all future discovered nest sites as previously described.

Larch Mountain Salamander: Because of the narrow distribution of this species, mostly within the Columbia River Gorge, primary emphasis should be to survey and protect all known sites. Sites must be identified based on fall surveys conducted using a standardized protocol. Known sites are included within boundaries of conservation areas and under these guidelines, are not to be disturbed. Surveys are needed at additional sites in the forest matrix along the Columbia River Gorge. Key habitat is mossy talus protected by overstory canopy. Avoiding any ground-disturbing activity that would disrupt the talus layer where this species occurs is the primary means of protection. Once sites are identified, maintain 40 percent canopy closure of trees within the site and within a buffer of at least the height of one site-potential tree or 100 feet horizontal distance, whichever is greater, surrounding the site. Larger buffer widths are appropriate upslope from protected sites on steep slopes. Partial harvest may be possible if canopy closure can be retained; in such cases logging must be conducted using helicopters or high-lead cable systems to avoid disturbance of the talus layer. The implementation schedule for this species is the same as for [1994 NWFP] survey and manage components 1 and 2.

Siskiyou Mountain Salamander: This species occurs within an extremely narrow range on the Rogue River, Siskiyou, and Klamath National Forests. Its range does not fall within any of the Habitat Conservation Areas identified by the Interagency Scientific Committee in Oregon. Additional surveys conducted using a standardized protocol must be undertaken to delineate range and identify subpopulations. All populations must be protected by delineating an occupied site and avoiding disturbance of talus throughout the site, especially on moist, north-facing slopes, particularly in Oregon where Habitat

Conservation Areas do not incorporate species range. Because this species seems to require cool, moist conditions, a buffer of at least the height of one site-potential tree or 100 feet horizontal distance, whichever is greater, surrounding the site, must be retained around the outer periphery of known sites. Overstory trees must not be removed within the boundary of this buffer. The implementation schedule for this species is the same as for [1994 NWFP] survey and manage components 1 and 2.

Del Norte Salamander: This species occurs in talus slopes protected by overstory canopy that maintains cool, moist conditions on the ground. The species is a slope-valley inhabitant, and sometimes occurs in high numbers near riparian areas. Riparian Reserves, in combination with Late-Successional Reserves and other reserves, will offer some protection to the species but significant numbers also occur in upland areas. Additional mitigation options in this upland matrix include identifying locations (talus areas inhabited by the species) by using a standardized survey protocol [no longer required; the species is in Category D], then protecting the location from ground-disturbing activities. Designate a buffer of at least the height of one site-potential tree or 100-feet horizontal distance, whichever is greater, surrounding the location. Within the site and its surrounding buffer, maintain 40 percent canopy closure and avoid any activities that would directly disrupt the surface talus layer. Partial harvest within the buffer may be possible if 40 percent canopy closure can be maintained; in such cases, tree harvest must be conducted using helicopters or high-lead cable systems to avoid compaction or other disturbance of talus.

Shasta Salamander: This species is very narrowly distributed, occurring only in localized populations on the Shasta-Trinity National Forest. Only a small part of its range is included within Habitat Conservation Areas identified by the Interagency Scientific Committee (1990) (status within Late-Successional Reserves has not been determined). It occurs in association with limestone outcrops, protected by an overstory canopy. All known and future localities must be delineated and protected from timber harvest, mining, quarry activity, and road building within the delineated site, and a buffer of at least the height of one site-potential tree or 100 feet horizontal distance, whichever is greater, should surround the outcrop. Additional surveys conducted using a standardized protocol must be undertaken to identify and delineate all occupied sites within the species potential range.

Appendix 2

Changes between Draft and Final

Minor corrections, explanations, and edits are not included in this list.

- Added excerpts from the Agencies' Special Status Species Programs polices.
- Added tables showing species that are currently included in both the Survey and Manage and the individual Agency's Special Status Species Program.

Appendix 2

BLM Special Status Species Program
FS Sensitive Species Program

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Appendix 2

The following table presents a brief comparison of the Survey and Manage Standards and Guidelines, the BLM Special Status Species Program, and the Forest Service Sensitive Species Program. This table is for general comparisons only. Details of each Agency's programs are available in their respective manuals, 6840 for BLM, 2600 for Forest Service. Excerpts related to Special Status and Sensitive Species from the BLM and Forest Service Manual are included after the comparison table. Complete copies of the manual direction can be found on Agency websites.

Comparison Table

Survey and Manage	Special Status Species (SSS)		Sensitive Species (SS)	
	BLM OR/WA	**BLM CA**	**Forest Service Region 6**	**Forest Service Region 5**
Geographic Area Affected				
Northwest Forest Plan area: WA, OR, CA	BLM lands in Oregon and Washington	BLM lands in California	National Forests in Oregon and Washington	National Forests in California
Number of Categories				
Six categories: Based on level of rarity, ability to conduct pre-disturbance surveys, and level of knowledge.	Three Categories: 1. Sensitive (BS) (National) 2. Assessment (BA) (OR/WA supp.) 3. Tracking (BT) (OR/WA supp., not considered SSS for management purposes)	One category: Sensitive (BS) (National)	One category: Sensitive (SS) (National)	Two Categories: 1. Sensitive (SS) (National) 2. Watch List (R5 supp.).
Taxa Currently Included				
Birds Mammals Amphibians Bryophytes Mollusks Arthropods guilds (4) Vascular plants Fungi Lichens	Birds Mammals Fish Amphibians Reptiles Bryophytes Invertebrates including Mollusks Arthropods Vascular plants Fungi Lichens	Birds Mammals Fish Amphibians Reptiles Bryophytes Invertebrates including Mollusks Arthropods Vascular plants Fungi Lichens	Birds Mammals Fish Amphibians Reptiles Invertebrates including Mollusks Vascular plants Fungi Lichens	Birds Mammals Fish Amphibians Reptiles Bryophytes Invertebrates including Mollusks Vascular Plants Fungi Lichens

Survey and Manage	Special Status Species		Sensitive Species	
	BLM OR/WA	**BLM CA**	**Forest Service Region 6**	**Forest Service Region 5**
Criteria for Inclusion Descriptions of the state and global rankings and how they relate to Oregon Natural Heritage Program rankings are in Appendix 3.				
Meet all three: 1. The species must occur within the Northwest Forest Plan area; 2. The species must be closely associated with late-successional or old-growth forests; 3. The reserve system and other standards and guidelines of the Northwest Forest Plan do not appear to provide for a reasonable assurance of species persistence.	BS-Animals: ONHP Cat. 1, ODFW Critical, or WDFW Sensitive. BS-Plants: ONHP Cat. 1, ODA Candidate, or WDNR Threatened or Endangered. BA-Animals: ONHP Cat. 2 vertebrates only or some ODFW Peripheral. BA-Plants: ONHP Cat. 2 (no fungi) or WDNR Sensitive. BT-Animals: ONHP Cat. 3 or 4; ODFW Vulnerable, Rest of Peripheral, or Undetermined; or WDFW Candidate or Monitor. BT-Plants: ONHP Cat. 3 or 4; WDNR Review, Watch, Extinct/Extirpated; or State status 1, 2, or 3. State Director may also add species nominated by District Managers. Species only included if BLM has capability to significantly affect the conservation status through management.	BS-Animals: Identified in coordination with CDF&G. BS-Plants: California Native Plant Society List 1-B. Species only included if BLM has capability to significantly affect the conservation status through management.	Animals and fish: Federal ESA candidate species; Natural Heritage Rank G1, G2, G3, T1, T2, T3, N1, N2, N3, S1 or S2; Designated by OR or WA State as threatened or endangered; de-listed from ESA within last 5 years; or anadromous fish populations or ESUs identified in Region-wide status review by fishery and TES biologists as needing special management status, unless a compelling case is made not to add it. A species not meeting criteria may be included if adequate rationale and documentation demonstrates species' biological, rarity, or management concerns. Vascular Plants: Natural Heritage Rank G1, G2, G3, T1, T2, T3, or Species rank S1, S2, or S3 if evaluation using six factors (abundance, range, trend, protection, threat, and fragility) is high enough.	Animals and fish: Federal ESA candidate or proposed species; Natural Heritage Rank G1, G2, G3, T1, T2, T3, N1, N2, or N3; or designated by CA as threatened and endangered species. Plants: Federal ESA candidates, or Natural Heritage global ranking of G1, G2, G3, T1, T2, or T3 and life history facts are gathered by a team of botanists for evaluation for viability concerns or trends toward federal listing. Evaluation includes: abundance, range/distribution, trend, protection of occurrences, threat, and fragility/habitat specificity. Include only if FS management activities have potential to affect, and enough is known about species and habitat to evaluate management effects.

Survey and Manage	Special Status Species		Sensitive Species	
	BLM OR/WA	BLM CA	Forest Service Region 6	Forest Service Region 5
Objectives of the Program				
All: Manage for the persistence of species closely associated with late-successional and old-growth forests.	BS: Manage to ensure that actions do not contribute to the need to list under federal ESA.	BS: Manage to ensure that actions do not contribute to the need to list under federal ESA.	Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on NFS lands. Manage to preclude trends toward federal listing.	Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on NFS lands. Manage to preclude trends toward federal listing.
Required Management Actions				
Categories A, B, and E: Manage all sites per Management Recommendation. Categories C and D: Manage high-priority sites per Management Recommendation. Categories A and C: Conduct pre-disturbance surveys per Survey Protocol. All categories: Conduct strategic surveys. Documents, plans, and exceptions require review by the Regional Ecosystem Office.	BS: Develop and implement management plans that conserve species and their habitats. Ensure actions authorized, funded, or carried out by BLM do not contribute to the need to list species under ESA. Ensure activities affecting habitat are consistent with species management objectives. Conduct pre-project clearances for actions that would have significant effect on habitat needed to conserve species. Conduct distribution and status surveys. BA: Same as BS except pre-project clearances contingent on available fnding and personnel. BT: None.	BS: Develop and implement management plans that conserve species and their habitats. Ensure actions authorized, funded, or carried out by BLM do not contribute to the need to list species under ESA. Ensure activities affecting habitat are consistent with species management objectives. Conduct pre-project clearances for actions that would have significant effect on habitat needed to conserve species. Conduct distribution and status surveys.	Develop and implement management objectives for populations and/or habitat. Biological Evaluations must be completed for projects possibly affecting species, and include an analysis of the effects of the proposed action on species, their occupied habitat, or on any unoccupied habitat required for recovery.	Develop and implement management objectives for populations and/or habitat. Biological Evaluations must be completed for projects possibly affecting species, and include an analysis of the effects of the proposed action on species, their occupied habitat, or on any unoccupied habitat required for recovery.

Survey and Manage	Special Status Species		Sensitive Species	
	BLM OR/WA	BLM CA	Forest Service Region 6	Forest Service Region 5
What happens once we find one?				
Categories A, B, and E: Manage all sites per Management Recommendation. Categories C and D: Manage high-priority sites per Management Recommendation. Exceptions permitted with review by the Regional Ecosystem Office if documented as not needed for persistence.	BS: Analyze effects of the proposed action on potentially affected species. Request technical assistance, if appropriate, from FWS, NOAA Fisheries, or other qualified sources. Avoid taking actions that would contribute to the need to list under the ESA. BA: Analyze effects of the proposed action on potentially affected species. Avoid taking actions that would contribute to need to list under the ESA. Impacts considered on case-by-case basis in NEPA process. BT: Collection of occurrence data is encouraged and reported if observed. Not considered SSS for management purposes.	BS: Analyze effects of the proposed action on potentially affected species. Request technical assistance, if appropriate, from FWS, NOAA Fisheries, or other qualified sources. Avoid taking actions that would contribute to the need to list under the ESA.	The Biological Evaluation analyzes the proposed action and the significance of potential adverse effects on the population or its habitat within the area and on the species as a whole, and makes recommendations for removing, avoiding, or compensating for any adverse effect. The line officer with project approval authority makes the decision to allow or disallow impact, but the decision must not result in loss of species viability or create significant trends toward federal listing.	The Biological Evaluation analyzes the proposed action and the significance of potential adverse effects on the population or its habitat within the area and on the species as a whole, and makes recommendations for removing, avoiding, or compensating for any adverse effect. The line officer with project approval authority makes the decision to allow or disallow impact, but the decision must not result in loss of species viability or create significant trends toward federal listing.

Survey and Manage	Special Status Species		Sensitive Species	
	BLM OR/WA	BLM CA	Forest Service Region 6	Forest Service Region 5
Influence on Agency Management				
Management of occupied sites required regardless of local population, significance of habitat, or objective of conflicting activity.	May conduct other activities on some known sites. Must manage to avoid moving the species significantly toward listing. Species only included if BLM has capability to significantly affect the conservation status of the species through management.	May conduct other activities on some known sites. Must manage to avoid moving the species significantly toward listing. Species only included if BLM has capability to significantly affect the conservation status of the species through management.	May conduct other activities on some known sites. Biological Evaluation necessary to show loss of site or habitat will not result in loss of species viability or create significant trends toward federal listing. Species only included if sufficient information is available on habitat relationships, life history, etc., to evaluate potential effect.	May conduct other activities on some known sites. Biological Evaluation necessary to show loss of site or habitat will not result in loss of species viability or create significant trends toward federal listing. Species only included if sufficient information is available on habitat relationships, life history, etc., to evaluate potential effect.
How Changes are Made				
To move species: annually, examine new information, take recommendations from taxa specialists, and compare species information against criteria for category. Changes subject to review and issued by the Regional Forester/State Director. SEIS required to change categories or process.	State Office updates species lists periodically; changes are effective when the state agencies and ONHP and WHNP publish their updates. BLM Director could change National direction (BS). State Director could change OR/WA Supp. (BA and BT).	State Office updates species lists periodically; changes are effective when the state agencies publish their updates. BLM Director could change National direction (BS). State Director could designate additional categories.	Revisions to species lists made periodically as information and demand warrant. Species and taxa groups to include are purview of Regional Forester. Change in sensitive species direction would require national Forest Service Manual change.	Sensitive species list is dynamic and updated as needed. Change in sensitive species direction would require national Forest Service Manual change.

BA = BLM (Bureau) Assessment
BS = BLM (Bureau) Sensitive
BT = BLM (Bureau) Tracking
Cat - Category
CDF&G = California Department of Fish and Game
ESA = Endangered Species Act
ESU = Ecologically Significant Unit
FWS = U.S. Fish and Wildlife Service
NFS = National Forest System
NOAA Fisheries = National Marine Fisheries Service
ODA = Oregon Department of Agriculture
ODFW = Oregon Department of Fish and Wildlife
ONHP = Oregon Natural Heritage Program
SS = FS Sensitive Species
SSS = BLM Special Status Species
Supp. = Manual Supplement
TES = Threatened, Endangered, or Sensitive
WDFW = Washington Department of Fish and Wildlife
WDNR = Washington State Department of Natural Resources
WNHP = Washington Natural Heritage Program

BLM Manual 6840 - Special Status Species Management Excerpts

These are key BLM Manual 6840 references that apply to BLM designated sensitive species. This is not a complete listing of manual contents. The complete BLM manual 6840 Special Status Species Management can be viewed at **http://www.or.blm.gov/Resources/Special-Status_Species/6840_ManualFinal1.pdf.**

BLM Definition of sensitive species
6840 Glossary of Terms

Special status species includes the following:

(5) sensitive species are those designated by a State Director, usually in cooperation with the State agency responsible for managing the species and State Natural heritage programs, as sensitive. They are those species that: (1) could become endangered in or extirpated from a State, or within a significant portion of its distribution; (2) are under status review by the FWS [Fish and Wildlife Service] and/or NMFS [NOAA Fisheries]; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listed, proposed, candidate, or State listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are State listed, but which may be better conserved through application of BLM sensitive species status.

Conservation of species other than under the ESA

.01 Purpose. The purpose of this Manual Section is to provide policy and guidance, consistent with appropriate laws, for the conservation of special status species of plants and animals, and the ecosystems upon which they depend. These are species which are proposed for listing, officially listed as threatened or endangered, or are candidates for listing as threatened or endangered under the provisions of the Endangered Species Act (ESA); those listed by a State in a category such as threatened or endangered implying potential endangerment or extinction; and those designated by each State Director as sensitive. Conservation of special status species means the use of all methods and procedures which are necessary to improve the condition of special status species and their habitats to a point where their special status recognition is no longer warranted.

.02 Objectives. The objectives of the special status species policy are:

A. To conserve listed species and the ecosystems on which they depend.
B. To ensure that actions requiring authorization or approval by the Bureau of Land Management (BLM or Bureau) are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under provisions of the ESA or other provisions of this policy.

.04 Responsibility.

A. Director is responsible for the overall conservation of special status species, oversees implementation of the ESA on public lands, may designate BLM sensitive species, and makes any applications for project exemptions under Section 7 of the ESA to the Secretary of the Interior.

B. Assistant Director for Renewable Resources and Planning is responsible for the timely development, approval, and implementation of policy and procedures for carrying out the special status species conservation program.

C. Fish, Wildlife and Forests Group Manager is responsible for initiating and recommending policies, objectives, general procedures, and priorities relating to the conservation of special status species and overall coordination of the special status species program at the national level.

E. State Directors are responsible for:

1. Developing and implementing programs for the conservation of special status species within their states.
2. Coordinating the special status species program with adjoining BLM State Offices, State and other Federal agencies, various private organizations, and BLM constituents.
3. Establishing programs to determine which special status species occur on public land, the condition of the populations and their habitats, and how discretionary BLM actions affect those species and their habitats.
4. Designating BLM sensitive species, and periodically reviewing and updating the BLM sensitive species list, as appropriate, in coordination with State agencies that are responsible for fisheries, wildlife, and botanical resources and State Natural Heritage programs.
5. Ensuring that provisions for the conservation of special status species, particularly the objectives from approved recovery plans and conservation agreements, are incorporated in land use plans and subsequent activity and interdisciplinary level plans.
6. Ensuring that all actions comply with the ESA, its implementing regulations, and other directives associated with conserving special status species.
7. Ensuring appropriate consultations with the U. S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS).

F. Field Office Managers are responsible for implementing the special status species program within their area of jurisdiction by:

1. Conducting and maintaining current inventories for special status species on public lands.
2. Providing for the conservation of special status species in the preparation and implementation of recovery plans with which BLM has concurred, interagency plans, and conservation agreements.
3. Ensuring that all actions comply with the ESA, its implementing regulations, and other directives associated with conserving special status species.
4. Coordinating field office activities with Federal, State, and local groups to ensure the most effective program for special status species conservation.
5. Ensuring actions are evaluated to determine if special status species objectives are being met.
6. Ensuring all actions authorized, funded, or carried out by BLM follow the interagency consultation procedures as outlined in 50 CFR Part 402 - Interagency cooperation - Endangered Species Act of 1973, as amended.

.06 Policy. The policy of the BLM is described below.

E. Sensitive Species. State Directors, generally in cooperation with State agencies that are responsible for fisheries, wildlife, and botanical resources and State Natural Heritage programs, shall designate BLM sensitive species. The Director, in some cases, may designate BLM sensitive species. The protection provided by the policy for candidate species shall be used as the minimum level of protection for BLM sensitive species.

The State Director shall establish the process for developing, reviewing, maintaining, and coordinating with other agencies, organizations, and States to ensure the accuracy and completeness of the state's BLM sensitive species list. The sensitive species designation is normally used for species that occur on Bureau administered lands for which BLM has the capability to significantly affect the conservation status of the species through management. The State Director may designate additional categories of special status species as appropriate and applicable to his or her state's needs. The sensitive species designation, for species other than federally listed, proposed, or candidate species, may include such native species as those that:

1. Could become endangered in or extirpated from a state, or within a significant portion of its distribution in the foreseeable future.
2. Are under status review by FWS and/or NMFS.
3. Are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.
4. Are undergoing significant current or predicted downward trends in population or density such that federally listed, proposed, candidate, or State listed status may become necessary.
5. Have typically small and widely dispersed populations.
6. Are inhabiting ecological refugia, specialized or unique habitats. Or,
7. Are State listed, but which may be better conserved through application of BLM sensitive species status. Such species should be managed to the level of protection required by State laws or under the BLM policy for candidate species, whichever would provide better opportunity for its conservation.

.22 Conservation of species other than under the ESA. The ESA establishes policy, procedures, and requirements for the conservation of listed species, designated critical habitat, proposed species, and proposed critical habitat. BLM policy is broader than the ESA in that it addresses special status species that may be affected by BLM activities, as well as federally listed and proposed species. It is in the interest of the public and the affected special status species for BLM to undertake conservation actions for such species before listing is warranted or the designation of critical habitat becomes necessary. It is also in the interest of the public and the affected special status species for BLM to undertake conservation actions that improve the status of such species to the point where their special status recognition is no longer warranted. By doing so, BLM will have greater flexibility in managing the public lands to accomplish native species conservation objectives, while fulfilling other FLPMA [Federal Land Policy and Management Act] mandates.

A. Planning. The BLM should obtain and use the best available information deemed necessary to evaluate the status of special status species in areas affected by land use plans or other proposed actions and to develop sound conservation practices. Land use plans shall be sufficiently detailed to identify and resolve significant land use conflicts with special status species without deferring conflict resolution to implementation-level planning. Implementation-level planning should consider all site-specific methods and procedures which are needed to bring the species and their habitats to the condition under which the provisions of the ESA are not necessary, current listings under special status species categories are no longer necessary, and future listings under special status species categories would not be necessary.

C. Agreements, Assessments, and Cooperative Strategies for Conservation. The BLM shall work cooperatively with other agencies, organizations, governments, and interested parties for the conservation of plants and animals and their habitats to reduce, mitigate, and possibly eliminate the need for their identification as a special status species. Cooperative efforts are important for conservation based on an ecosystem management approach and will improve efficiency by combining efforts and fostering better working relationships. Stabilizing and improving

habitat conditions before a species is listed may allow more conservation and other management flexibility, reduce conflicts, and reduce the cost of conservation.

1. Requests for Technical Assistance on Candidate Species. The FWS and/or NMFS may have additional information on candidate species that was used as the basis for adding the species to the candidate species list. Although requests for technical assistance are not required by any statute, the BLM would best serve the interests of the public and the species involved by ensuring that the best scientific information available is used to make final decisions. To help ensure that the best scientific data are available, the BLM shall request technical assistance and information from the FWS and/or NMFS as needed on candidate species for use in the BLM decision-making process to avoid actions that contribute to the need to list. The FWS and/or NMFS often provide advisory recommendations for reducing adverse effects to candidate species.

2. Habitat Conservation Assessments and Conservation Agreements. In an effort to eliminate the need for listings under the ESA, the BLM shall participate in developing habitat conservation assessments leading to conservation agreements for proposed, candidate, and sensitive species, groups of species, or specific ecosystems. This is pursuant to the MOU [Memorandum of Understanding] (94-SMU-058, dated June 25, 1994) entered into by the BLM, U. S. Forest Service, FWS, NMFS, and the National Park Service to establish an interagency framework for cooperation and participation to achieve this objective. BLM's role in implementing the MOU is as follows:

   a. State Directors and line managers shall make available employees with appropriate skills and expertise to support cooperative efforts for the development and implementation of habitat conservation assessments and conservation agreements.
   b. State Directors and line managers should identify opportunities for habitat conservation assessments or, if none exists, initiate the development of these assessments and conservation agreements for the purpose of furthering the conservation of the subject species on BLM-administered and other lands.
   c. The BLM should use habitat conservation assessments to develop conservation agreements that outline the procedural assurance necessary to reduce, eliminate, or mitigate specific threats to proposed, candidate, or sensitive species; to develop an ecosystem management approach to conservation on Federal lands; to facilitate coordination and cooperation with others, such as States and private entities, to achieve species and habitat conservation through an ecosystem management approach that extends beyond Federal land.
   d. The BLM should be signatory to conservation agreements developed under the MOU if public land or BLM authorization is involved.
   e. Contingent upon results of habitat conservation assessments, applicable objectives of conservation agreements, and appropriate procedures to ensure adherence to all legal requirements in analyzing changes, the BLM should establish new management direction for habitat conservation. Where appropriate, this will include amendment or revision of land use plans to provide a basis for and commitment to the conservation of the species.

3. Other Cooperation and Coordination. Conservation activities in general would benefit from cooperation and coordination with other agencies, organizations, governments, and interested parties.

   a. The BLM in coordination with the FWS and/or NMFS and other interested entities should develop habitat conservation assessments and conservation agreements for any special status species that the Bureau feels would benefit from such an agreement.

b. The BLM should provide technical assistance to, and coordinate with appropriate State agencies and other agencies, organizations, or private landowners developing Habitat Conservation Plans.

c. The BLM should seek partnerships and cooperative relationships with other agencies, organizations, governments, and interested parties for the purposes of conservation of species and administration of the ESA. The BLM already has MOU's with several agencies and organizations. Partnerships beyond existing MOU's are encouraged. Partnerships and cooperative relationships should be sought with agencies that include, but are not limited to, the following:

(1) Other resource management and regulatory agencies, such as the Natural Resource Conservation Service, State fish and wildlife agencies, State forestry agencies, State water quality agencies, and municipal parks and recreation agencies.

(2) State and local governments, such as governor's offices, county commissioners, and city councils, county extension units, watershed councils, and resource conservation districts, and interested landowners.

(3) Federal advisory groups, such as Resource Advisory Councils, Provincial Advisory Boards, and Grazing Advisory Boards.

(4) Research entities, such as the Biological Resource Division of the U. S. Geological Survey, and university researchers.

(5) Professional societies, such as The Wildlife Society, the American Fisheries Society, and the Society for Ecological Restoration.

(6) Groups representing private sector interest in resources and resource uses, such as Trout Unlimited, National Audubon Society, The Nature Conservancy, National Cattlemen's Beef Association, and American Sports Tackle Manufacturers.

d. The BLM's role in partnerships and cooperative relationships should include, but not be limited to, developing conservation programs based on ecosystem management; providing expertise for programs affecting lands outside of the public land if benefits to BLM managed resources may result; and developing challenge cost-share projects to support conservation activities.

4. Ecosystem Management and Native Biodiversity. BLM management should take into consideration ecosystem management and the conservation of native biodiversity to reduce the likelihood of placing any native species on a special status species list.

a. For rangelands, the BLM shall take actions that progress towards the conditions indicating attainment of the Fundamentals of Rangeland Health (described in 43 CFR 4180.1) and associated standards (43 CFR 4180.2). Such actions would include management that restores, protects, or enhances those resources necessary to support, as site potential and BLM authorities allow, a full complement of native species in their historical proportions.

b. The BLM should participate in and coordinate with State Natural Heritage Programs.

c. The BLM should seek opportunities to conserve and improve special status species and habitats for native animals and wildlife in the development of land use plans, activity plans, and in other BLM-authorized, funded, or approved activities.

OR/WA BLM Policy Excerpts

These are excerpts from the BLM Oregon State Office policy (OR/WA Special Status Species) that was issued on November 5, 1990, as OR/WA BLM Instruction Memorandum No. OR-91-57. This policy was last updated on March 24, 2003, in OR/WA BLM Instruction Memorandum No. OR-2003-054. This is not a complete presentation of OR/WA BLM policy. The policy can be viewed at: **http://www.or.blm.gov/Resources/Special-Status_Species/or9157.htm.** Instruction Memorandum No. OR-2003-054 can be viewed at: **http://www.or.blm.gov/Resources/Special-Status_Species/IM_OR_2003-054.htm.**

Instruction Memorandum No. OR-2003-054

The BLM 6840 Manual provides overall direction and criteria for designating Bureau Sensitive species; it states the designation is normally used for species that occur on Bureau-administered land for which the BLM has the capability to significantly affect the conservation of the species through management (6840.06 E). The Manual also requires coordination with the States in the designation of Bureau Sensitive species. The OR/WA policy designates two additional categories, Bureau Assessment and Bureau Tracking. Bureau Sensitive, Bureau Assessment, and Bureau Tracking status in Oregon tiers to Oregon Natural Heritage Program's [ONHP] Lists 1 through 4. List 1 species are Bureau Sensitive species; List 2 species are Bureau Assessment species (except List 2 fungi and invertebrates which become Bureau Tracking); and List 3 and 4 species are Bureau Tracking species. In Washington State, the Washington Natural Heritage Program [WNHP] and State status determine Bureau Sensitive, Bureau Assessment, and Bureau Tracking species. The OR/WA State Director maintains final discretion for designating Bureau Sensitive species.

Policy

A. Bureau Sensitive Species (BS)

The intent of the Oregon-Washington Bureau sensitive list is for BLM to be able to respond more quickly than the Federal Register or State Listings to provide appropriate management for such species. Species eligible for addition to or deletion from the Federal Notice of Review and the State species lists are often known in advance of official publication. Generally, these are species restricted in their range and which have natural or human-caused threats to their survival.

For Bureau sensitive species where lands administered by BLM or actions have a significant effect on their status (Manual 6840.06 D), it is Oregon State Office policy that BLM Districts will protect, manage, and conserve those species and their habitats such that any Bureau action will not contribute to the need to list any of these species.

2. Bureau Sensitive Nominations

Nominations to the State director for addition or deletion to the Bureau sensitive list may be made at any time by the District Manager with justification including why the species is/is not biologically threatened or endangered throughout all or a significant portion of its range. All nominations must include the name of the preparer and convincing written justification based on such information as number, size, distribution, and trend of populations and their threats throughout the species' known range. Nominations must contain specific documentation, which justify eligibility as BS. This should include coordination with other BLM districts having the species, other agencies, states, and organizations as appropriate.

Nominations will be reviewed by State Office staff and other District specialists, as appropriate. Discrepancies between state lists (OR and WA) and nominations will be evaluated on the basis of species' biology and identifiable threats throughout its range. (Species eligible as BS by the appropriate WNHP or by ONHDB [Oregon Natural Heritage DataBase] lists but not eligible based on abundance and threat in other states will be included as assessment species.) An evaluation summary for each Bureau sensitive nomination will be made by State Office staff for the State Director. Determination of Bureau sensitive status will be made by the State Director.

3. Management

Manual 6840 policy for candidate species (.06 C) applies to Bureau sensitive species "For those species where lands administered by BLM or actions have a significant effect on their status, manage the habitat to conserve the species." This includes not only inventory at the appropriate time of year in advance of BLM actions (clearances), but also general inventory where needed to determine species distribution and status and monitoring to determine the species' requirements and trends. Management plans will be prepared when necessary and active management implemented where needed to prevent listing or to conserve the species. Progress toward meeting species management objectives will be monitored periodically. Impacts by BLM actions to the population and to the species as a whole will be determined in the environmental assessment (EA) process and the species will be protected or mitigated as appropriate so as to not contribute to the need to list the species. Population/occurrence data will be reported to ONHDB/WNHP/WADFG [Washington State Department of Fish and Game] as appropriate. Bureau sensitive species are to be included as priority species in land use plans (Manual Sections 6840.06 C and 1622).

B. Assessment Species

Plant and vertebrate species, which are not presently eligible for official federal or state status, but are of concern in Oregon or Washington may, at a minimum, need protection or mitigation in BLM activities. These species will be considered as a level of special status species separate from Bureau sensitive, and are referred to as assessment species.

2. Activities

Animal observation, plant population, and plant or animal habitat information will be recorded on sighting forms (e.g., BLM Form 6602-5, WNHP, ONHDB forms) when assessment species are located during any field inventory work (including clearances). Field survey forms (ONHDB form, WNHP form, ODFW [Oregon Department of Fish and Wildlife] Non-game Record Sheet, or similar forms) will be completed for these species and filed with the ONHDB, ODFW (Corvallis), WNHP, or WADFG as appropriate. Clearances will be done for all assessment species subject to limitations in funding or positions (see also E. Clearances below). Impacts to the population and to the species as a whole will be determined and recommendations for the species will be considered on a case-by-case basis through the environmental analysis process in balance with other resource considerations. These species may not necessarily affect all proposed actions, but where possible, steps should be taken to protect the species.

3. Maintenance and Update of the Assessment Species Lists

District Botanists and Wildlife Biologists will maintain at the district a list of the assessment species currently known or suspected on the district and will update the list whenever the ONHDB/WNHP/WADFG list is published.

C. Tracking Species

To enable an early warning for species which may become threatened or endangered in the future. Districts are encouraged to collect occurrence data on species for which more information is needed to determine status within the state or which no longer need active management. Until status of such species changes to federal or state listed, candidate or assessment species, "tracking species" will not be considered as special status species for management purposes.

2. Activities

Districts are encouraged to complete a sighting form for any tracking species when encountered during any fieldwork. Use of a rare plant field survey short sighting form is recommended for plants. Districts will submit copies of these forms to the ONHDB/WNHP/WADFG as appropriate for tracking. Special protection or management is discretionary.

D. Priorities

Along with federal candidate species and species designated by state government as threatened, endangered, or sensitive, Bureau sensitive species and their habitat will be considered priority species for inventory, planning, monitoring, and management within available funding and staffing.

A summary of required and optional actions for each category of special status species is presented in Table 1.

Table 2-1. Required (R) and optional (O) actions for special status species.

Status	Species[1] Oriented Inventory	Clearance	EA	Monitor[1]	[1]Projection/ Mitigation/ Management	FWS Consult./ Tech.As't
Bureau Sensitive	O	R	R	R[3]	R[3]	O (Tech. As't)[4]
State Listed[5]	O	R[6]	R[6]	R	O	O
Assessment Spp.	O	R[1]	R	O	O	O
Tracking Spp.	O	O	O	O	O	O

[1]Species-oriented inventory, monitoring, assessment species field clearances and active species management are contingent upon available funding and positions.
[3]For those species where lands administered by BLM or actions have a significant effect on their status.
[4]For any action which may contribute to the need to list a candidate or bureau sensitive species as state or federally listed.
[5]Actions will be done to follow state endangered species laws and to assist the state in achieving their management objectives for those species (MS 6840.06 E).
[6]For officially listed plants (Oregon only) and animals (Oregon and Washington).

F. Clearances

Guidance for general inventories is included in Manual Sections 1734 and 6600. Additionally, any area where a Bureau action may affect any Bureau sensitive or assessment species will be cleared prior to commencement of the action (Table 1). Impacts to these species will be evaluated through the EA process. Except for assessment species, they will be protected or mitigated and monitored in all BLM actions in conformance with other laws. See also assessment species section (B) of this memorandum for treatment of this category.

In complex habitat situations, positions or funding may be insufficient to allow adequate field clearances for assessment species prior to an action. In these situations Level 1 Inventory (Manual 1734.12 B.3.a), including data available from other federal and state agencies, State Heritage Programs, will be the minimum acceptable for clearances. In all other situations, clearances must be based on field inventory and must meet the following two criteria: (1) be done at a season appropriate to correctly identify any special status species which could occur in the subject area, and (2) be done by a person(s) qualified in recognition of the special status species and their habitats known or suspected in the geographic area where they will conduct inventories. These criteria apply for in-house, other agency, and contract surveys. Qualification standards will be developed by the Oregon State Office.

Previously completed clearances or surveys by other agencies (e.g. state Department of Fish and Wildlife) in an area may be used only if (1) additions of species to the lists of special status species since the date of the earlier clearance (inventory) include no species likely in any habitat in the subject area or (2) Bureau funding or positions are insufficient to conduct adequate field inventory for assessment species, and (3) they meet criteria 1 and 2 above. In situations when BLM could not have planned a site inventory during the appropriate season (e.g. off-season mining plan of operations), clearances may be based solely on available office data (including that at State Heritage Programs, other federal or state agencies), occurrence of potential special status species habitat, and/or familiarity with the particular area by a qualified person (criteria 2 above). In such situations the clearance documentation must be reviewed by the appropriate District Office Specialist (Botanist, Wildlife, or Fisheries Biologist).

G. Management Plans

Manual 6840 requires management plans for federal candidate and Bureau sensitive species where BLM lands or actions have a significant effect on their status (see Table 1). Districts are encouraged to review the habitats, biology, status, and threats of all special status species and to develop management plans for BS species as needed to conserve the species and habitats. Due to the variety of biological, spatial, and administrative factors and differences in management needs of species, the extent of protection, study, monitoring, and management are expected to vary greatly among species. Different strategies may be needed to provide the most efficient and effective management, for example: (1) one activity plan (HMP, Allotment MP, ACEC MP [Areas of Critical Environmental Concern Management Plan]) including all taxa in a particular habitat, (2) one plan including all species in a RA [Resource Area], or (3) species management guides covering a species' entire range prepared jointly with other districts or agencies. All plans should include specific management objectives. They should also provide adequate information to assist in determining the location and extent of protection; acceptable mitigation (where known); monitoring plan; studies and management actions needed. General guidance may be provided in interim plans, which succinctly describe differences in species management and protection requirements.

I. Special Status Species List Updates

Status changes are effective when published by the appropriate federal or state agency or heritage program database. At these times, districts will update lists for all categories of species, which they maintain. Species on these source lists, which are not presently known or suspected on BLM land, should be added if their occurrence becomes likely. To consolidate the most current information on status and occurrence available from U.S. Fish and Wildlife Service, Oregon Department of Agriculture, ONHDB, ODFW, WNHP, WADFG, and Bureau district offices, the state office will update and distribute federal listed, proposed, candidate, state, and bureau sensitive species lists annually in the first quarter of each calendar year. Assessment and tracking species lists will be maintained solely at the district level and update when source documents (e.g. ONHDB, ODFW, WNHP, WADFG) are published and as new occurrence data is available.

OR/WA BLM: Species included in both Survey and Manage and SSSP

Table 2-2 Survey and Manage Species included in the OR/WA BLM Special Status Species Program[1,2].

Species	Survey and Manage	BLM OR/WA
FUNGI		
Bridgeoporus nobilissimus	A	BA-O
LICHENS		
Bryoria pseudocapillaris	A	BA-O
Bryoria spiralifera	A	BA-O
Lobaria linita	A	BA-O
Teloschistes flavicans	A	BA-O
BRYOPHYTES		
Diplophyllum plicatum	B	BA-O
Herbertus aduncus	E	BA-O
Iwatsukiella leucotricha	B	BA-O
Kurzia makinoana	B	BA-O
Marsupella emarginata var. *aquatica*	B	BA-O
Orthodontium gracile	B	BA-O
Schistostega pennata	A	BA-O
Tritomaria exsectiformis	B	BA-O
Tritomaria quinquedentata	B	BA-O
VERTEBRATES		
Larch Mountain Salamander (*Plethodon larselli*)	A	BA-O
Siskiyou mountains salamander (*Plethodon stormi*)	D	BA-O
MOLLUSKS		
Cryptomastix hendersoni	A	BS-O
Deroceras hesperium	B	BS-O
Fluminicola n. sp. 3	A	BS-O
Fluminicola n. sp. 11	A	BS-O
Juga (O) n. sp. 2	A	BS-O
Lyogyrus n. sp. 1	A	BS-O
Monadenia fidelis minor	A	BS-O
Pristoloma arcticum crateris	A	BS-O
VASCULAR PLANTS		
Botrychium minganense	A	BA-O
Botrychium montanum	A	BA-O
Corydalis aquae-gelidae	A	BS
Cypripedium fasciculatum	C	BA-O

[1] Does not include BLM Oregon/Washington "Bureau Tracking" category.
[2] Special Status Species List - Updated April 14, 2003.
BA = Bureau Assessment, BS = Bureau Sensitive, O = in Oregon only.

CA BLM Manual Supplement Excerpts

These are excerpts from the California State Office, BLM Manual Supplement, Rel. No. 6-24, dated March 25, 1996. This is not a complete presentation of that supplement. The complete supplement can be viewed at: **http://www.ca.blm.gov/pdfs/pa_pdfs/biology_pdfs/6840.06-supplement.pdf.**

6840.06 - Special Status Plant Management

.01 Purpose. The purpose of this Manual Supplement is to provide policy and guidance specific to the conservation of Special Status Plants and the habitats on which they depend. These are plant species which are officially listed, proposed for listing, or candidates for listing as threatened or endangered (T/E) by the Secretary of the Interior under the provisions of the Endangered Species Act (ESA); those listed or proposed for listing by the State of California as rare, threatened, or endangered; and those designated by the California State Director as sensitive. Conservation in this Manual Supplement and pursuant to the ESA means the use of all methods and procedures which are necessary to bring such species and their habitats to the point at which the provisions of the ESA are not necessary, or there are no longer any threats to the continued existence of the other categories of Special Status Plants.

.02 Objectives. The objectives are:

A. To conserve T/E plants and the ecosystems on which they depend.

B. To ensure that actions authorized on BLM administered lands do not contribute to the need to list any other Special Status Plants under the provisions of the ESA.

.06 Policy. The policy of BLM-California is as follows:

C. Candidate Plant Species. The BLM will carry out management, consistent with the principles of multiple use, for the conservation of candidate plant species and their habitats and will ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as T/E. Specifically, BLM-California will:

1. Determine the distribution, abundance, reasons for current status, and habitat needs for candidate plant species occurring on lands administered by the BLM and evaluate the significance of BLM lands or actions in maintaining those species.

2. For those plant species where BLM lands or actions have a significant effect on their status, manage the habitat to conserve the species by:

   a. Including candidate plant species as priority species in land use plans (BLM MS 1622 - Supplemental Program Guidance for Renewable Resources).
   b. Developing and implementing rangewide and/or site-specific management plans for candidate plant species that include specific habitat and population management objectives designed for recovery, as well as the management strategies necessary to meet those objectives.
   c. Ensuring that BLM activities affecting the habitat of candidate plant species are carried out in a manner consistent with the objectives for managing those species.
   d. Monitoring populations and habitats of candidate plant species to determine whether management objectives are being met.

3. Request technical assistance from the FWS, and any other qualified source, on any planned action that may contribute to the need to list a candidate plant species as T/E.

4. Prepare biological evaluations that assess the effects of proposed actions that may adversely affect candidate plant species.

5. Take no action that adversely affects a candidate plant species without the approval of the State Director. Approval of such an action shall be contingent upon the State Director's judgment that the evidence in the biological evaluation is sufficient to ensure that the action will not result in the need to list the species in question as T/E.

D. Sensitive Plant Species. The California State Director may designate sensitive species. Sensitive plant species designated by the State Director will be given the same level of protection as candidate plants and all of the policy statements given for candidate species (.06 C, above) apply equally to sensitive plant species. Unless specifically excluded by the State Director all plants on List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere) of the most recent edition of the California Native Plant Society's *Inventory of Rare and Endangered Plants of California* that are on BLM lands or affected by BLM actions and that do not fall into one of the other categories of this section are designated as sensitive species in California.

E. State Listed Species. The BLM will carry out management for the conservation of plant species listed as rare, threatened, or endangered by the State of California. As a minimum, state listed plant species are to be given the same level of protection as candidate species and all of the policy statements given for candidate species (.06 C, above) apply equally to state listed species. Refer to California Manual Supplement 6840.2 for further guidance on State listed plants and animals.

CA BLM: Species included in both Survey and Manage and SSSP

There are no fungi, bryophytes, vertebrates, mollusks, or vascular plants that are currently included on both the Survey and Manage and California BLM Special Status Species Lists.

Table 2-3. Survey and Manage Species included in the California BLM Special Status Species Program[1].

Species	Survey and Manage	BLM CA
LICHENS		
Nephroma bellum	E	SS

[1] Sensitive Plant List - Updated October 7, 2002, and Sensitive Animal Species List - Updated September 23, 1999.

FS National Policy Excerpts

Sensitive Species - Key Policies and Requirements

These are key Forest Service Manual (FSM) 2670 references that apply to Forest Service designated sensitive species. This is NOT a complete listing of FSM Chapter 2670. The complete "Chapter 2670 - Threatened, Endangered, and Sensitive Plants and Animals can be viewed at: **http://www.fs.fed.us/im/directives/fsm/2600/2670-2671.txt.**

Additional FSM references on policy, responsibility, conservation strategies, etc., that relate to designated sensitive species are contained in FSM 2620, and selected excerpts follow the excerpts from FSM 2670.

Forest Service definition of sensitive species (FSM 2670.5):

19. Sensitive Species. Those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by:
    a. Significant current or predicted downward trends in population numbers or density. Significant current or predicted downward trends in habitat capability that would reduce a species existing distribution.

Management for sensitive species and delegation of sensitive species designation:

2672.1 - Sensitive Species Management. Sensitive species of native plant and animal species must receive special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing. There must be no impacts to sensitive species without an analysis of the significance of adverse effects on the populations, its habitat, and on the viability of the species as a whole. It is essential to establish population viability objectives when making decisions that would significantly reduce sensitive species numbers.

2672.11 - Identification of Sensitive Species. Regional Foresters shall identify sensitive species occurring within the Region. They shall examine the following sources as possible candidates for listing as sensitive species:

1. Fish and Wildlife Service or National Marine Fisheries Service candidates for Federal listing (categories 1 and 2) under Federal Register Notice of Review.
2. State lists of endangered, threatened, rare, endemic, unique, or vanishing species, especially those listed as threatened under State law.
3. Other sources as appropriate in order to focus conservation management strategies and to avert the need for Federal or State listing as a result of National Forest management activities.

Forest Service objectives for designated sensitive species:

2670.22 - Sensitive Species.

1. Develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions.
2. Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands.
3. Develop and implement management objectives for populations and/or habitat of sensitive species.

2670.44 - Regional Foresters. The Regional Foresters:

5. Ensure that specific management objectives and legal and biological requirements for the conservation of endangered, threatened, proposed, and sensitive plants and animals are included in Regional and Forest planning, and ensure that planning for those species common to two or more Forests is coordinated among concerned units.

2670.45 - Forest Supervisors. The Forest Supervisors:

2. Develop quantifiable recovery objectives and develop strategies to effect recovery of threatened and endangered species. Develop quantifiable objectives for managing populations and/or habitat for sensitive species.

2672.32 - Forest Plan Objectives for Sensitive Species. For sensitive species, include objectives in Forest plans to ensure viable populations throughout their geographic ranges. Once the objectives are accomplished and viability is no longer a concern, species shall not have "sensitive" status.

Forest Service policies for designated sensitive species:

2670.32 - Sensitive Species

1. Assist States in achieving their goals for conservation of endemic species.
2. As part of the National Environmental Policy Act process, review programs and activities, through a biological evaluation, to determine their potential effect on sensitive species.
3. Avoid or minimize impacts to species whose viability has been identified as a concern.
4. If impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole. (The line officer, with project approval authority, makes the decision to allow or disallow impact, but the decision must not result in loss of species viability or create significant trends toward Federal listing.)
5. Establish management objectives in cooperation with the States when projects on National Forest System lands may have a significant effect on sensitive species population numbers or distributions. Establish objectives for Federal candidate species, in cooperation with the FWS or NMFS and the States.

Forest Service responsibilities for designated sensitive species:

2670.42 - Deputy Chief for National Forest System. The Deputy Chief for National Forest System:

5. Approves the Forest Service portion of recovery objectives and completion dates for threatened, endangered, and sensitive species.

2670.43 - Director of Wildlife, Fish and Rare Plants, Washington Office. The Director, Wildlife, Fish and Rare Plants Staff, Washington Office:

1. Recommends Forest Service policies, programs, and procedures for conservation of endangered, threatened, proposed, and sensitive species of plants and animals on National Forest System lands or involving State and Private Forestry programs.
2. In cooperation with Forest Service Research, identifies research needs for threatened, endangered, proposed, and sensitive species.
3. Coordinates Forest Service programs for the conservation of threatened, endangered, proposed, and sensitive species with other agencies, organizations, and

groups concerned with management of and research on those species.

4. Coordinates with all concerned units the planning and management activities for species common to two or more Regions.
6. Nominates Forest Service members to recovery teams for those species with distributions in two or more Regions.
7. Interprets policy and regulations relative to lawsuits, appeals, and public inquiries regarding threatened, endangered, and sensitive species.

2670.44 - Regional Foresters. The Regional Foresters:

1. Formulate and coordinate the overall Regional Threatened, Endangered, and Sensitive Species Program to ensure compliance with law and policy.
2. Coordinate Regional programs with States and other Federal agencies, groups, and individuals concerned with the management of threatened, endangered, and sensitive species.
3. Ensure that Forest Service involvement in State and Private Forestry programs complies with requirements of law and policy.
4. Establish programs to determine which endangered, threatened, proposed, and sensitive plant and animal species occur on National Forest System lands and which species may be involved with State and Private Forestry programs.
5. Ensure that specific management objectives and legal and biological requirements for the conservation of endangered, threatened, proposed, and sensitive plants and animals are included in Regional and Forest planning, and ensure that planning for those species common to two or more Forests is coordinated among concerned units.
6. Recommend research needs for endangered, threatened, proposed, and sensitive species in the Region.
7. Develop Forest Service recovery strategies to implement approved Recovery Plans. Apportion recovery objectives among Forests. In cooperation with the FWS and States, establish recovery objectives in the absence of, or interim to, approved Recovery Plans; integrate these objectives with Regional and Forest Plans.
8. Identify and approve management strategies to achieve conservation.
9. Ensure that standards for biological evaluations are met (FSM 2672.42) for all Regional programs and activities.
15. Approve closures of National Forest System lands as necessary to protect habitats or populations of threatened, endangered, proposed, or sensitive species (36 CFR 261.70).

2670.45 - Forest Supervisors. The Forest Supervisors:

1. Ensure that legal and biological requirements for the conservation of endangered, threatened, and proposed plants and animals are met in Forest land and resource management planning; ensure compliance with procedural and biological requirements for sensitive species.
2. Develop quantifiable recovery objectives and develop strategies to effect recovery of threatened and endangered species. Develop quantifiable objectives for managing populations and/or habitat for sensitive species.
4. Determine distribution, status, and trend of threatened, endangered, proposed, and sensitive species and their habitats on Forest lands.
5. Coordinate Forest programs with other Federal agencies, States, and other groups and individuals concerned with the conservation of threatened, endangered, proposed, and sensitive species.

2670.46 - District Rangers. The District Rangers:

1. Ensure compliance with legal and biological requirements for the conservation of threatened, endangered, and proposed species in District land management and

project planning; ensure compliance with procedural and biological requirements for sensitive species.

2. Identify, manage, and protect essential and critical habitats to meet legal requirements and recovery objectives for Federally listed species; identify, protect, and manage habitat necessary to meet sensitive species objectives.
3. Coordinate District activities with interested State and Federal agencies, groups, and individuals concerned with the conservation of threatened, endangered, proposed, and sensitive species.
5. Prohibit the taking of threatened and endangered species of plants and animals except under FWS or NMFS permits. Prohibit the collection or taking of sensitive plants except as authorized by Regional policy.

Biological Evaluations:

2672.4 - Biological Evaluations. Review all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on endangered, threatened, proposed, or sensitive species. The biological evaluation is the means of conducting the review and of documenting the findings. Document the findings of the biological evaluation in the decision notice. Where decision notices are not prepared, document the findings in Forest Service files. The biological evaluation may be used or modified to satisfy consultation requirements for a biological assessment of construction projects requiring an environmental impact statement.

2672.41 - Objectives of the Biological Evaluation.

1. To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant or contribute to animal species or trends toward Federal listing of any species.
2. To comply with the requirements of the Endangered Species Act that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species.
3. To provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decisionmaking process.

2672.42 - Standards for Biological Evaluations. In order to meet professional standards, biological evaluations must be conducted or reviewed by journey or higher level biologists or botanists (FSM 2634). Biological evaluations shall include the following:

1. An identification of all listed, proposed, and sensitive species known or expected to be in the project area or that the project potentially affects. Contact the Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) as part of the informal consultation process for a list of endangered, threatened, or proposed species that may be present in the project area.
2. An identification and description of all occupied and unoccupied habitat recognized as essential for listed or proposed species recovery, or to meet Forest Service objectives for sensitive species.
3. An analysis of the effects of the proposed action on species or their occupied habitat or on any unoccupied habitat required for recovery.
4. A discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects.
5. A determination of no effect, beneficial effect, or □ay effect on the species and the process and rationale for the determination, documented in the environmental assessment or the environmental impact statement.
6. Recommendations for removing, avoiding, or compensating for any adverse effects.
7. A reference of any informal consultation with the Fish and Wildlife Service as well as a list of contacts, contributors, sources of data, and literature references used in developing the biological evaluation.

2672.43 - Procedure for Conducting Biological Evaluations. A suggested procedure for conducting and documenting findings of a biological evaluation is outlined in exhibit 1.

These are FSM 2620 references that apply (or may apply if they also are "management indicators") to designated sensitive species. This is NOT a complete listing of FSM Chapter 2620 contents. The complete Forest Service Manual "Chapter 2620 - Habitat Planning and Evaluation can be viewed at: **http://www.fs.fed.us/im/directives/fsm/2600/2620.txt.**

2620.1 - Authority. FSM 2600 Zero Code contains the general authorities related to the management of wildlife, fish, and threatened and endangered species habitat. Specific authorities for direction in this chapter are the Fish and Wildlife Conservation Act of September 15, 1960, also known as the Sikes Act (FSM 2601.1), and Part 219 of the Code of Federal Regulations (FSM 2601.1). In addition to these authorities relevant to habitat planning and evaluation, the Secretary of Agriculture's Policy on Fish and Wildlife, Department Regulation 9500-4 (DR 9500-4), directs the Forest Service to:

1. Manage "habitats for all existing native and desired non-native plants, fish, and wildlife species in order to maintain at least viable populations of such species."
2. Habitat must be provided for the number and distribution of reproductive individuals to ensure the continued existence of a species generally throughout its current geographic range.

2620.2 - Objectives. The broad objective of habitat planning and evaluation is to provide habitats to meet goals and objectives for wildlife and fish, including endangered, threatened, and sensitive animal and plant species set forth in land and resource management plans.

Specific objectives are to:

1. Integrate habitat planning into land management and project plans to meet National, Regional, and local objectives for wildlife and fish, including threatened, endangered, and sensitive animal and plant species.
2. Provide a sound base of information to support management decision-making affecting wildlife and fish, including endangered, threatened, and sensitive animal and plant species, and their habitats.
3. Identify opportunities and management strategies to maintain and improve habitats throughout the National Forest System.
4. Coordinate forest planning for wildlife and fish with State comprehensive planning conducted pursuant to the Fish and Wildlife Conservation Act, as amended by the Sikes Act (FSM 2601, item 6). Include in Forest plans and projects objectives required by the Act.
5. Achieve Service-wide consistency in how habitats of wildlife, fish, sensitive, threatened, and endangered species are evaluated and considered in land and resource management planning.

2620.3 - Policy.

1. Use management indicators to address issues, concerns, and opportunities for plants, wildlife, fish, and sensitive species habitats through all planning levels.
2. Provide habitat management direction to support recovery of Federally-listed species. Provide habitat management direction to ensure maintenance of viable populations generally well-distributed throughout their current range.
3. Evaluate the cumulative effects of proposed management activities on habitat capability for management indicators.
4. Specify in forest plans and project plans the standards, guidelines, and prescriptions needed to meet identified habitat goals and objectives for wildlife and fish, including endangered, threatened, and sensitive animal and plant species.

5. Monitor management indicators to evaluate compliance of management activities with plan direction, effectiveness of prescribed management, and validity of information used in habitat evaluation and planning.

2620.4 - Responsibility.

2620.42 - Director, Wildlife and Fisheries. The Director provides advice to field units to ensure Service-wide consistency in how habitats of wildlife and fish, including endangered, threatened, and sensitive animal and plant species are evaluated and considered in land management plans and projects.

2620.43 - Regional Forester. Each Regional Forester has the authority and responsibility to:

3. Approve Regional guidelines for evaluating and displaying wildlife and fisheries program results and values in Regional guides and Forest plans.
4. Ensure Region-wide consistency in standards, technologies, and methods used in habitat planning and evaluation and monitoring of wildlife and fish resources.
5. Coordinate conservation strategies and habitat planning for those species distributed over more than one Forest and coordinate these activities with the States, other Federal agencies, and others.
6. Coordinate with adjacent Station Directors to ensure that habitat planning needs, such as testing and refinement of habitat models and development of monitoring techniques, are included in programs of research.

2620.44 - Forest Supervisor. Each Forest Supervisor has the authority and responsibility to:

3. Coordinate conservation strategies and habitat planning for species limited in distribution to the forest with the States, other Federal agencies, and others.
4. Evaluate the cumulative effects of proposed management on habitat capability for wildlife and fish, including endangered, threatened, and sensitive animal and plant species.

2620.45 - District Ranger. Each District Ranger has the authority and responsibility to:

2. Implement management direction and ensure that standards and objectives for wildlife and fish, including endangered, threatened, and sensitive animal and plant species are met.

2621.2 - Determination of Conservation Strategies. To preclude trends toward endangerment that would result in the need for Federal listing, units must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project. To devise conservation strategies, first conduct biological assessments of identified sensitive species. In each assessment, meet these requirements:

1. Base the assessment on the current geographic range of the species and the area affected by the plan or project. If the entire range of the species is contained within the plan or project area, limit the area of analysis to the immediate plan or project area. If the geographic range of the species is beyond the plan or project area, expand the area of analysis accordingly.
2. Identify and consider, as appropriate for the species and area, factors that may affect the continued downward trend of the population, including such factors as: distribution of habitats, genetics, demographics, habitat fragmentation, and risk associated with catastrophic events.

3. Display findings under the various management alternatives considered in the plan or project (including the no-action alternative).

2622.01 - Authority. In the USDA Decision of Review of Administrative Appeals of the Beaverhead National Forest Land and Resource Management Plan of August 17, 1989, the Office of the Secretary interpreted the requirements of 36 CFR 219.19 and DR 9500-4 (sec. 2620.1) to require that plans should identify or be amended to identify known sensitive species and provide forest standards and guidelines that ensure conservation when an activity or project is proposed that would affect the habitat of a sensitive species. A forest plan must address biological diversity through consideration of the distribution and abundance of plant and animal species, and communities to meet overall multiple-use objectives.

1. Management direction in a forest plan shall contribute to the recovery of Federally listed threatened or endangered species (Endangered Species Act, 36 CFR 219.19).
2. Management of habitat provides for the maintenance of viable populations of existing native and desired non-native, wildlife, fish (36 CFR 219.19), and plant species (USDA Regulation 9500-4) generally well distributed throughout their current geographic range (sec. 2620.01).
3. Management of those plant and animal communities identified in Regional Guides or Forest Plans as issues that warrant special measures achieves overall multiple-use objectives (36 CFR 219.8, 219.12(b), 219.27).
4. Management direction in a forest plan shall include objectives for selected management indicators (36 CFR 219.19). Specify the following for plant and animal species, communities, and/or special habitats identified as major Forest Plan issues or as management indicators in the plan:

    a. Standards and guidelines for protection, viability, recovery, or restoration as appropriate to meet overall multiple-use objectives (36 CFR 219.27);
    b. The expected future conditions in terms of distribution and abundance of populations or habitats to meet overall multiple-use objectives (36 CFR 219.11; 219.26);
    c. The schedule for monitoring and evaluation of standards, guidelines, and objectives for plant and animal species, communities (36 CFR 219.27); and
    d. The discussion of any proposed type conversions. If any conversion results in a reduction in diversity, explanation must be provided as to why the conversion is necessary to achieve multiple use objectives (36 CFR 219.27).

Region 6 Policy Excerpts

These are excerpts from the Region 6, Regional Forester's November 28, 2000, 2670 letter to Forest Supervisors updating the Regional Forester's Sensitive Animal List and May 13, 1999, 2670 letter updating the Regional Forester's Sensitive Plant List. This is not a complete presentation of those letters. The Regional Forester's letters and the sensitive plant and animal lists can be viewed at: **http://www.or.blm.gov/surveyandmanage/USFS/USFS_Sensitive-Species-Management_Directives.htm.**

Species were identified for inclusion on the Regional Forester's Sensitive Species List for Animals if they met one or more of the follow criteria, and they occur on NFS lands or are highly likely to occur on Forest lands based on available habitat and range information.

- Listed as a U.S. Fish and Wildlife Service or National Marine Fisheries Service Federal candidate (C) species;
- Natural Heritage Ranking of G1, G2 or G3; T1, T2 or T3; N1, N2 or N3; S1 or S2;

- Designated by Oregon or Washington State as a Threatened or Endangered species;
- De-listed by the U.S. Fish and Wildlife Service or National Marine Fisheries Service during the past 5 years; or
- Anadromous fish populations or Evolutionarily Significant Units (ESUs) that were identified by a Region-wide status review by fishery and TES biologists as needing special management emphasis.

If a species met above criteria, it was included on to the list unless a compelling case was made not to add it. In addition, a species that did not meet the criteria may have been considered for inclusion on the list if adequate rationale and documentation was provided concerning the species' biology, rarity, or management concerns.

Beginning in 1999, the Regional Forester's Sensitive Plan list was revised based on a methodology that uses rankings of the Natural Heritage Program. In the future, the Regional Forester's Sensitive Plant list will be updated in sync with the Washington and Oregon Natural Heritage Program List changes.

All vascular plant species of global and national concern (G1-G3; T1-T3 ratings) are included. Species of state concern are also automatically on the list (S1-S2 ratings). Species with a rating of S3 are analyzed using factors such as abundance, range, trend, protection, threat, and fragility to construct a numerical rating. If a species' rating is high enough, that species is added to the list. This method is designed to minimize subjectivity in development of the Sensitive Plant List. It also documents a quantified assessment of whether there is rangewide concern for a species' viability.

Region 6: Species included in Survey and Manage and Sensitive Program

There are no fungi, lichens, bryophytes, or, mollusks that are currently included on both the Survey and Manage and Region 6, Regional Forester's Sensitive Species lists.

Table 2-4. Survey and Manage Species included in the Forest Service, Region 6, Regional Forester's Sensitive Species List[1].

Species	Survey and Manage	FS Region 6
VERTEBRATES		
Larch Mountain Salamander (*Plethodon larselli*)	A	SS
Siskiyou mountains salamander (*Plethodon stormi*)	A and D	SS-O
Van Dyke's salamander (*Plethodon vandykei*)	A	SS-W
Great Gray Owl (*Strix nebulosa*)	A	SS-W
VASCULAR PLANTS		
Botrychium minganense	A	SS-O
Botrychium montanum	A	SS-O
Coptis asplenifolia	A	SS-W
Coptis trifolia	A	SS-O
Corydalis aquae-gelidae	A	SS
Cypripedium fasciculatum	C	SS
Eucephalus vialis (Aster vialis)	A	SS-O
Galium kamtschaticum	A	SS-W

[1] Sensitive Species Plant List - Updated April 1999, and Sensitive Animal List - Updated November 15, 2000.

O = in Oregon only, W = in Washington only.

Region 5 Policy Excerpts

These are excerpts from the Region 5, Regional Forester's June 10, 1998, 2670 letter to Forest Supervisors updating the Sensitive Species list. This is not a complete presentation of that letter. The Regional Forester's letter, criteria for including plants and animals on the sensitive species list, and the Region 5 sensitive plant and animal lists can be viewed at: **http://www.fs.fed.us/r5/projects/sensitive-species/**.

The National Forest Management Act (NFMA) requires the Forest Service to "provide for a diversity of plant and animal communities" (16 U.S.C. 1604(g)(3)(B)) as part of our multiple use mandate. We must maintain "viable populations of existing native and desired non-native species in the planning area" (36 CFR 219.19). The Sensitive Species program is designed to meet this mandate and demonstrate our commitment to maintain biodiversity on National Forest System lands. The program is our proactive approach to conserving species to prevent a trend toward listing under the Endangered Species Act of 1973, and to ensure the continued existence of viable, well-distributed populations.

To be included on the list of sensitive animal species, we required that Forest Service management activities have a potential effect on the species and their habitats. Sufficient information also had to be available on habitat relationships, life history, etc., to allow evaluation of potential effects.

Sensitive species will be identified if they have any of the following rankings and they are on NFS lands in the region or are highly likely to occur on Forest lands based on habitat and range information and there is enough information to make a determination regarding effects of management activities.

- USDI, Fish and Wildlife Service federal candidates;
- Natural Heritage global ranking of G1(T1), G2(T2), or G3(T3); or
- Natural Heritage national ranking of N1, N2, or N3 (for animals).

A number of animal and plant species reviewed for the Sensitive Species revision did not meet all the criteria to be included on the Regional Forester's Sensitive List, but are of sufficient concern that we need to consider them in the planning process. These include species that are locally rare (as opposed to declining throughout their range), are of public concern, occur as disjunct populations, are newly described taxa, or lacking sufficient information on population size, threats, trend, or distribution. Such species make an important contribution to forest biodiversity and should be maintained under the provisions of NFMA, and addressed as appropriate through the NEPA process.

To help identify the "NFMA species" for tracking and analysis purposes forests should consider establishing a "Watch List" for plants and animals. To avoid confusion with California Department of Fish and Game's "Species of Special Concern," we recommend the term "Watch List." The Watch List will need to be dynamic, and updated as the need arises to reflect changing conditions and new information. The Watch List and supporting documentation should be retained in the planning file and considered during project planning. To analyze potential impacts to these species, consider the context, intensity, and duration of likely effects. Appropriate analysis may range from formal surveys to simple documentation of a lack of potential habitat. Do not incorporate analysis for the Watch List species into the Biological Evaluation, which is reserved for Sensitive Species.

Region 5: Species included in Survey and Manage and Sensitive Program

There are no fungi, lichens, bryophytes, or, mollusks that are currently included on both the Survey and Manage and Region 5, Regional Forester's Sensitive Species lists.

Table 2-5. Survey and Manage Species included in the Forest Service, Region 5, Regional Forester's Sensitive Species List[1].

Species	Survey and Manage	FS Region 5
VERTEBRATES		
Great Gray Owl (*Strix nebulosa*)	A	SS
VASCULAR PLANTS		
Bensoniella oregana, In California only	A	SS
Botrychium minganense, In OR and CA	A	SS
Botrychium montanum	A	SS
Cypripedium fasciculatum	C	SS
Cypripedium montanum	C	SS

[1] Sensitive Species Plant and Animal Lists - Updated June 1998.

Appendix 3

Changes between Draft and Final

Minor corrections, explanations, and edits are not included in this list.

- Added information on the Washington and California State Heritage Programs.
- Added a table that includes the Oregon Natural Heritage Program rankings for the 304 Survey and Manage species.

Appendix 3

Oregon Natural Heritage Program

The Oregon Natural Heritage Information Center (ONHIC) manages the Oregon Natural Heritage Program (ONHP). ONHIC participates in an international system for ranking rare, threatened, and endangered species throughout the world. The ranking system was developed by The Nature Conservancy and is now maintained by The Association for Biodiversity Information in cooperation with Heritage Programs or Conservation Data Centers (CDCs) in all 50 states, 4 Canadian provinces, and 13 Latin American countries. NatureServe represents the network of Heritage Programs and CDCs.

State and Global Rankings Definitions

The following definitions of state and global rankings were excerpted from pages 4 and 5 of Rare, Threatened, and Endangered Plants and Animals in Oregon, Oregon Natural Heritage Program, February 2001. This ranking information can be found on the internet at **http://oregonstate.edu/ornhic/tebook.pdf**. More details on the Heritage Ranking system and more definitions can be found at the NatureServe website at **http://www.natureserve.org/**.

The ranking is a 1-5 scale, primarily based on the number of known occurrences, but also including threats, sensitivity, area occupied, and other biological factors. In this book, the ranks occupy two lines. The top line is the Global Rank and begins with a "G." A "T" rank indicates the taxon has a trinomial (a subspecies, variety, or recognized race). A "Q" at the end of this line indicates the taxon has taxonomic questions. The second line is the State Rank and begins with the letter "S". The rankings are summarized below.

1 = Critically imperiled because of extreme rarity or because it is especially vulnerable to extinction or extirpation. Typically 5 or fewer occurrences.
2 = Imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation). Typically 6-20 occurrences.
3 = Rare, uncommon, or threatened. Not immediately imperiled. Typically 21-1,000 occurrences.
4 = Not rare and apparently secure with cause for long-term concern. Usually more than 100 occurrences.
5 = Demonstrably widespread, abundant, and secure.
H = Historical occurrence, formerly part of the native biota with the implied expectation that it may be rediscovered.
X = Presumed extirpated or extinct.
U = Unknown rank.
? = Not yet ranked or assigned rank is uncertain.

Since BLM uses the ONHP categories and the Forest Service uses the Global and State rankings, it is important to understand the relationship between the two in order to make comparisons. Natural Heritage Programs determine global and state rankings, and then consider these rankings to compile their own "list." ONHP and Washington (WNHP) use the Conservation Status Ranking system developed by the Network of State Natural Heritage Programs (NHPs) and CDCs. NHP ranks a species at a variety of levels: global (G1-5), taxon (T1-5), national (N1-5), and state (S1-5). The ranks are based on objective information about each taxon/element for a number of criteria including estimated number of individuals, extent of range or habitat, population trends, occupied habitat, threats, and other considerations.

List 1 contains taxa that are threatened with extinction or presumed to be extinct throughout their entire range.

List 2 contains taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon. These are often peripheral or disjunct species which are of concern when considering species diversity within Oregon's borders. They can be very significant when protecting the genetic diversity of a taxon. ONHP regards extreme rarity as a significant threat and has included species which are very rare in Oregon on this list.

List 3 contains species for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range.

List 4 contains taxa which are of conservation concern, but are not currently threatened or endangered. This includes taxa which are very rare, but are currently secure, as well as taxa which are declining in numbers or habitat but are still too common to be proposed as threatened or endangered. While these taxa currently may not need the same active management attention as threatened or endangered taxa, they do require continued monitoring.

ONHP considers the NHP ranking at each level and places a taxon/element into one of four categories relative to Oregon. This four-category system is used only in Oregon, California, and Hawaii. The system allows for further refinement of the national list based on local knowledge. For example, a species known only in four locations in Oregon would be ranked G-1. However, ONHP biologists may be aware that these four locations are in Wilderness with no anticipated threats. This species would be placed in a "lesser" category to maintain an awareness and monitoring of the population would continue.

Table 3-1. Comparison of ONHP List and Global/State Rankings.

ONHP Ranking (List)	Global/State Ranking included
1 - considered threatened or endangered[1]	G1, G2, some G3 depending upon threats and other information
2 - considered threatened or endangered in Oregon	S1, S2, some S3 depending upon threats and other information
3 - Review list, may be threatened but insufficient information	
4 - watch, of concern but currently appear abundant or secure	
Not on list	S4, S5, and some S3

[1] Not the same as state or federal threatened or endangered.

The WNHP considers the national rankings for their listings, but also considers Washington State Department of Natural Resources and Department of Fish and Wildlife input in their rankings. For example, rare species in Washington may be included on the WNHP endangered list (list 1), even though the species is common in Oregon. WNHPs list categories are endangered, threatened, sensitive, and watch.

In California, the state rank (S) is assigned much the same way as the global rank (G), except state ranks in California often also contain a threat designation attached to the S-rank. Threat ranks are not applied to S4 and S5. These threat ranks are:

S1 = Less than 6 element occurrences OR less than 1,000 individuals OR less than 2,000 acres.
S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known
S2 = 6-20 element occurrences OR 1,000-3,000 individuals OR 2,000-10,000 acres.
S2.1 = very threatened
S2.2 = threatened
S2.3 = no current threats known
S3 = 21-100 element occurrences or 3,000-10,000 individuals OR 10,000-50,000 acres.
S3.1 = very threatened
S3.2 = threatened
S3.3 = no current threats known

For California, BLM uses the California Native Plant Society List 1B to help identify sensitive plants. The following description of the California Native Plant Society lists is from their website. Table 3-2 shows the five different levels of rarity recognized by the Rare Plant Program.

Table 3-3 displays the Global and State ranks for species currently included in the Survey and Manage Program, along with the ONHP list ranking.

Table 3-2. California Native Plant Society, Rare Plant Program, Levels of Rarity.

List	Inventory, 6th Edition (2002)	# taxa	% of CA natives
1A	Presumed extinct in California	29	0.4
1B	Rare or endangered in California and elsewhere	1,021	16.2
2	Rare or endangered in California, more common elsewhere	417	6.6
3	Need more information	52	0.8
4	Plants of limited distribution	554	8.8
Total		2,073	32.9

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP *Species*	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	Global Rank	State Rank			ONHP List
			WA	OR	CA	
FUNGI						
Acanthophysium farlowii (Aleurodiscus farlowii)		G3?	S1?	S1?	NONE	3
Albatrellus avellaneus		G2	S2?	S1?	S1	1
Albatrellus caeruleoporus		G3?	S1	S1	S1	3
Albatrellus ellisii		G4	S2?	S2S3	S2	4
Albatrellus flettii		G4	S3	S4	S2	NL
Alpova alexsmithii		G2	S1	S2	NONE	1
Alpova olivaceotinctus		G2G3	NONE	S1	S2	3
Arcangeliella camphorata (Arcangeliella sp. nov. #Trappe 12382; *Arcangeliella* sp. nov. #Trappe 12359)		G2	S2	S2	NONE	1
Arcangeliella crassa		G2G4	NONE	NONE	S2S4	ND
Arcangeliella lactarioides		G2G3	NONE	S1	S2	3
Asterophora lycoperdoides		G3G5	S3	S3	S3	NL
Asterophora parasitica		G3G5	S3	S3	S3	NL
Baeospora myriadophylla		G2G4	S2	NONE	S1S3	ND
Balsamia nigrens (Balsamia nigra)		G3	NONE	S2	S2	3
Boletus haematinus		G2G3	S1	SP	S2?	ND
Boletus pulcherrimus		G2G3	S2	S2	S2	1
Bondarzewia mesenterica (Bondarzewia montana		G4?	S4?	S4	S3?	NL
Bridgeoporus nobilissimus (Oxyporus nobilissimus)		G2?	S2	S2?	S2	1
Cantharellus subalbidus		G4	S4	S4	S4	NL
Catathelasma ventricosa		G3G4	S2S3	S2S4	S2S4	3
Chalciporus piperatus (Boletus piperatus)		G4	S4	G4 S4	S4	NL
Chamonixia caespitosa (Chamonixia pacifica sp. nov. #Trappe #12768)		GU	S1S3	S1	S1S2	2
Choiromyces alveolatus		G3	S1	S2	S2S3	3
Choiromyces venosus		G4	NONE	S1	S1	2
Chroogomphus loculatus		GUT1Q	NONE	S2	NONE	1
Chrysomphalina grossula		G2G4	S2?	S1?	S1	3
Clavariadelphus ligula		G5	S3	S4	S2	NL
Clavariadelphus occidentalis (Clavariadelphus pistillaris)		G5	S2?	S4	S4	NL
Clavariadelphus sachalinensis		G5	S2?	S3	SU	3
Clavariadelphus subfastigiatus		G3?	S1?	S2?	S1S2	3
Clavariadelphus truncatus (syn. *Clavariadelphus borealis)*		G5	S4	S4	S4	NL
Clavulina castanopes v. *lignicola* (*Clavulina ornatipes*)		GUT3	S2?	S2?	S2?	3
Clitocybe senilis		G3G4Q	S2S3	S3?	NONE	3
Clitocybe subditopoda		G3G4	S1S3	S1S3	S1S3	3
Collybia bakerensis		G4	S3?	S4	S4	NL
Collybia racemosa		G2G3	S1S2	S1S2	S1S2	3

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP *Species*	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	Global Rank	State Rank			ONHP List
			WA	OR	CA	
FUNGI						
Cordyceps ophioglossoides		G3G4	S3S4	S3S4	S3S4	3
Cortinarius barlowensis (syn. *Cortinarius azureus*)		G3?	S3	S2	S2S3	2
Cortinarius boulderensis		G2G4	S2S4	S2S4	S1S3	3
Cortinarius cyanites		G3G4	S1?	S2S3	SH	3
Cortinarius depauperatus (*Cortinarius spilomeus*)		G3G4Q	S1S3	S1S3	S1S3	3
Cortinarius magnivelatus		G3	NONE	S3	S3	3
Cortinarius olympianus		G4?	S4?	S4	S3	NL
Cortinarius speciosissimus (Cortinarius rainierensis)		G4	S2S3	NONE	NONE	ND
Cortinarius tabularis		GU	SU	NONE	NONE	ND
Cortinarius umidicola (Cortinarius canabarba)		G2?	S1	NONE	NONE	ND
Cortinarius valgus		G3G4	S3	S3	S2S3	3
Cortinarius variipes		G2G3	S3	S1	NONE	3
Cortinarius verrucisporus		G3G4	S1S2	S2S3	S3	3
Cortinarius wiebeae		G2	NONE	S2	NONE	3
Cudonia monticola		G3	S2	S2S3	S1	3
Cyphellostereum laeve		G4	S1S3	NONE	NONE	ND
Dermocybe humboldtensis		G1G2	NONE	S1	S1?	1
Destuntzia fusca		G2	NONE	S1	S2	3
Destuntzia rubra		G2	NONE	SH	S2	1
Dichostereum boreale (Dichostereum granulosum)		G4?	S2S4	SU	SU	NL
Elaphomyces anthracinus		G3	NONE	S1	NONE	3
Elaphomyces subviscidus		G2G3	NONE	S1S2	NONE	3
Endogone acrogena		G1G3	S1S2	NONE	NONE	ND
Endogone oregonensis		G2G3	NONE	S2	NONE	3
Entoloma nitidum (Rhodocybe nitida)		G5	S1S3	NONE	S1S3	ND
Fayodia bisphaerigera (Fayodia gracilipes)		GUQ	SU	SU	SU	NL
Fevansia aurantiaca (Alpova sp. nov. #Trappe 1966) (*Alpova aurantiaca*)		G1	NONE	S1	NONE	3
Galerina cerina		G4	SU	S4	SU	NL
Galerina heterocystis		GUQ	SU	SU	SU	NL
Galerina sphagnicola		G3G4	NONE	NONE	NONE	ND
Gastroboletus imbellus		GU	NONE	SUSH	NONE	1
Gastroboletus ruber		G3	S3	S3	S1S2	3
Gastroboletus subalpinus		G4	NONE	S4	S3	NL
Gastroboletus turbinatus		G4	S4	S4	S4	NL
Gastroboletus vividus (*Gastroboletus* sp. nov. #Trappe 2897; *Gastroboletus* sp. nov. #Trappe 7515)		G2?	NONE	S1	S1S2	1
Gastrosuillus amaranthii (*Gastrosuillus* sp. nov. #Trappe 9608)		GHQ	NONE	NONE	SH	ND
Gastrosuillus umbrinus (*Gastroboletus* sp. nov. #Trappe 7516)		G1Q	NONE	NONE	S1	ND

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP *Species*	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	Global Rank	State Rank			ONHP List
			WA	OR	CA	
FUNGI						
Gautieria magnicellaris		G3G4	NONE	SU	SU	3
Gautieria otthii		G3G5	SU	SU	SU	3
Gelatinodiscus flavidus		G3	S2	S2	NONE	3
Glomus radiatum		G2G4	S1S3	S1S3	S1S3	3
Gomphus bonarii		G3?Q	S2?	S2?	S3?	3
Gomphus clavatus		G4	S4?	S4	S4?	NL
Gomphus kauffmanii		G2G4	S3?	S3?	S3?	3
Gymnomyces abietis (*Gymnomyces* sp. nov. #Trappe 1690, 1706, 1710; *Gymnomyces* sp. nov. #Trappe 4703, 5576; *Gymnomyces* sp. nov. #Trappe 5052; *Gymnomyces* sp. nov. #Trappe 7545; *Martellia* sp. nov. #Trappe 1700; *Martellia* sp. nov. #Trappe 311; *Martellia* sp. nov. #Trappe 5903)		G3G4	S1S2	S3S4	S3S4	NL
Gymnomyces nondistincta (*Martellia* sp. nov. #Trappe 649)		G1	NONE	S1	NONE	1
Gymnopilus punctifolius, In California		G3G4	S3	S3	S2?	3
Gyromitra californica		G4	S3	S2	S2	2
Hebeloma olympianum (Hebeloma olympiana)		G1G2	S1S2	NONE	NONE	ND
Helvella crassitunicata		G3	S3	S2	NONE	2
Helvella elastica		G4	S3	S3	S2	3
Hydnotrya inordinata (*Hydnotrya* sp. nov. #Trappe 787, 792)		G2	NONE	S2	S1	3
Hydnotrya subnix (Hydnotrya subnix sp. nov. #Trappe 1861)		G1	S1	NONE	NONE	ND
Hydropus marginellus (Mycena marginella)		G3	S3	S2	S1S2	3
Hygrophorus caeruleus		G2G3	S1	S2	SH	2
Hygrophorus karstenii		G4	SH	NONE	NONE	ND
Hygrophorus vernalis		G2	S1	NONE	S1	ND
Hypomyces luteovirens		G4	S3	S3	NONE	3
Leucogaster citrinus		G3G4	S2S4	S3S4	S1S2	3
Leucogaster microsporus		G3	S3	S3	S1S2	4
Macowanites chlorinosmus		G3?	S2	S3	S2	3
Macowanites lymanensis		G1G2	S1S2	NONE	NONE	ND
Macowanites mollis		G1G2	S1S2	S1	NONE	1
Marasmius applanatipes		G1G3	NONE	NONE	S1S3	ND
Martellia fragrans		G2G3	NONE	S1S3	S1S2	1
Martellia idahoensis		G2G3	NONE	S1	NONE	1
Mycena hudsoniana		G3	S3	S1S2	NONE	3
Mycena overholtsii		G2G4	S2S4	S2S4	S2S4	NL
Mycena quinaultensis		G3	S3	S2S4	S2S3	3
Mycena tenax		G3G4	S3S4	S2S3	S3S4	3
Mythicomyces corneipes		G2G4	S2?	S2?	NONE	2
Neolentinus adhaerens		G2G3	S1	NONE	NONE	ND
Neolentinus kauffmanii		G4	S4	S4	S4	NL

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP *Species*	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	Global Rank	State Rank			ONHP List
			WA	OR	CA	
FUNGI						
Nivatogastrium nubigenum		G4	NONE	S4	S4	NL
Octavianina cyanescens (*Octavianina* sp. nov. #Trappe 7502)		G2?	NONE	S1S2	S1S2	3
Octavianina macrospora		GH	NONE	SH	NONE	1
Octavianina papyracea		GH	NONE	NONE	SH	ND
Otidea leporina		G5	S3S4	S4	S4	NL
Otidea smithii		G2	S2	S2	S1	3
Phaeocollybia attenuata		G3	S3?	S3?	S2?	4
Phaeocollybia californica		G2?	NONE	S2?	S1?	1
Phaeocollybia dissiliens		G2G3	NONE	S2S3	NONE	3
Phaeocollybia fallax		G4?	S4?	S4?	S3	NL
Phaeocollybia gregaria		G1G2	NONE	S1S2	NONE	1
Phaeocollybia kauffmanii		G4	S4?	S4	S4	NL
Phaeocollybia olivacea		G2	SU	S2	S2	1
Phaeocollybia oregonensis (syn. *Phaeocollybia carmanahensis*)		G2?	S1	S2?	NONE	1
Phaeocollybia piceae		G3?	S3?	S3?	S1S2	4
Phaeocollybia pseudofestiva		G3	S2	S3?	S2S3	3
Phaeocollybia scatesiae		G3?	S2?	S3?	S2?	3
Phaeocollybia sipei		G3?	SU	S3?	NONE	3
Phaeocollybia spadicea		G3G4	S2	S3?	S2?	3
Phellodon atratus (Phellodon atratum)		G4	S3	S4	S4	NL
Pholiota albivelata		G3?	S3	S3?	S2?	3
Podostroma alutaceum		G3G4	S2	S2	S2	3
Polyozellus multiplex		G4?	S3	S3	S1	4
Pseudaleuria quinaultiana		G2	S2	S2	NONE	3
Ramaria abietina		G4	S2?	S2?	S3	3
Ramaria amyloidea		G3	S2?	S2?	S2S3	2
Ramaria araiospora		G4	S2S3	S4	S2S3	NL
Ramaria aurantiisiccescens		G3	S2	S3	S2	4
Ramaria botryis var. *aurantiiramosa*		GUT3	S2	S2?	S2	3
Ramaria celerivirescens		G4	S4	S4	S1S3	NL
Ramaria claviramulata		NONE	NONE	NONE	NONE	ND
Ramaria concolor f. marrii		GUT2T3Q	S1S2	NONE	S2	ND
Ramaria concolor f. tsugina		GUT3?Q	S2	S2?	S2	3
Ramaria conjunctipes var. *sparsiramosa (Ramaria fasciculata* var. *sparsiramosa)*		GUT3	S2	S2?	S3	3
Ramaria coulterae		G2G3	NONE	S2?	S2	3
Ramaria cyaneigranosa		G4	S3	S4	S2	NL
Ramaria gelatiniaurantia		G4	S3	S2?	S3	3
Ramaria gracilis		G4	S1S3	S2?	S1S3	3

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP *Species*	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	Global Rank	State Rank			ONHP List
			WA	OR	CA	
FUNGI						
Ramaria hilaris var. *olympiana*		GUT2Q	S1?	NONE	NONE	ND
Ramaria largentii		G3	S3	S2?	S3	3
Ramaria lorithamnus		G2	S2	NONE	NONE	ND
Ramaria maculatipes		G3	S2	S2?	S2	3
Ramaria rainierensis		G2	S2	S2	S1	3
Ramaria rubella var. *blanda*		GUT3	S3	S1?	S2	2
Ramaria rubribrunnescens		G2G3	S1	S2?	S1	3
Ramaria rubrievanescens		G4	S3	S4	S3	NL
Ramaria rubripermanens		G4	S1S3	S4	S2S3	NL
Ramaria spinulosa var. *diminutiva* (*Ramaria spinulosa*)		GUT2	S1S2	S1?	S1S2	1
Ramaria stuntzii		G4	S2S3	S4	S1S2	NL
Ramaria suecica		G5	NONE	S2?	NONE	3
Ramaria thiersii		G3	NONE	S2?	S2S3	3
Ramaria verlotensis		G1G2	S1	NONE	S2	ND
Rhizopogon abietis		G2G4	NONE	S1S3	S1S3	3
Rhizopogon atroviolaceus		G2G3	NONE	S2S3	NONE	3
Rhizopogon brunneiniger		G2G3	NONE	S1S3	S1S3	3
Rhizopogon chamaleontinus (*Rhizopogon* sp. nov. #Trappe 9432)		G1G2	NONE	S1S2	NONE	1
Rhizopogon ellipsosporus (*Alpova* sp. nov. # Trappe 9730)		G1G3	NONE	S1S3	S1S2	1
Rhizopogon evadens var. *subalpinus*		G3G4	S2S4	S3S4	S1S2	NL
Rhizopogon exiguus		G1G3	S1S3	S1S2	NONE	1
Rhizopogon flavofibrillosus		G2G3	NONE	S2	S1S2	3
Rhizopogon inquinatus		G2G4	NONE	S1S2	NONE	2
Rhizopogon truncatus		G4	NONE	S3	S2S4	4
Rhodocybe speciosa		G1G3	S1S3	NONE	NONE	ND
Rickenella swartzii (Rickenella setipes)		G4	S2S4	NONE	S1S3	ND
Russula mustelina		G4	SU	NONE	S2S4	ND
Sarcodon fuscoindicus		G3	S2	S2S3	S2	3
Sedecula pulvinata		G3	NONE	NONE	S2	ND
Sowerbyella rhenana (Aleuria rhenana)		G3G4	S1	S3	S2	3
Sparassis crispa		G4	S4	S4	S2S4	NL
Spathularia flavida		G4G5	S2	S3	S2	NL
Stagnicola perplexa		G2G4	S1S2	S1S2	NONE	2
Thaxterogaster pavelekii (*Thaxterogaster* sp. nov. #Trappe 4867, 6242, 7427, 7962, 8520)		G2	S1S2	S2	NONE	1
Tremiscus helvelloides		G4G5	S3	S4	S4	NL
Tricholoma venenatum		GUQ	SU	NONE	S3?	ND
Tricholomopsis fulvescens		G2G3	S1S2	SH	S1	2
Tuber asa (*Tuber* sp. nov. #Trappe 2302)		G3	NONE	S1	S1	3

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			WA	OR	CA	
FUNGI						
Tuber pacificum (*Tuber* sp. nov. #Trappe 12493)		G2	NONE	S1	NONE	3
Tylopilus porphyrosporus (Tylopilus pseudoscaber)		G4	S4	S4	S4	NL
LICHENS						
Bryoria pseudocapillaris		G1G2	S1	S1	S1	1
Bryoria spiralifera		G1	NONE	S1	S1	1
Bryoria subcana		G2G4	S1	S2	S1	2
Buellia oidalea		G3?	S1	S1	S3	3
Calicium abietinum		G4G5	S2S3	S3	S1S2	4
Calicium adspersum		G3G4	S1	S1	S1	2
Cetrelia cetrarioides		G4G5	S2	S2S3	NONE	3
Chaenotheca chrysocephala		G4G5	S4	S4	S2S4	NL
Chaenotheca ferruginea		G4G5	S4	S3	S1S3	4
Chaenotheca subroscida		G3G4	S2	S2S3	S2	3
Chaenothecopsis pusilla		G4G5Q	S2	S2	S2	3
Collema nigrescens		G5?	S1	S4S5	S3	NL
Dendriscocaulon intricatulum		G3G4Q	S2	S4	S1	NL
Dermatocarpon luridum		G4G5	S1S2	S1S2	S1	3
Fuscopannaria saubinetii (syn. *Pannaria saubinetii*)		G3G5	S1?	SU	S1?	NL
Heterodermia sitchensis		G2G3	NONE	S1	NONE	2
Hypogymnia duplicata		G4	S3	S2	NONE	3
Hypogymnia vittata (misspelled in FEMAT as *Hygomnia vittiata*)		G4G5	SNA	SNA	NONE	NL
Hypotrachyna revoluta		G4G5	S1	S1	S1S2	2
Leptogium burnetiae var. *hirsutum*		G5?	S1	S1	NONE	3
Leptogium cyanescens		G5	S1	S2	S1	3
Leptogium rivale		G3G5	S1	S3	SH	4
Leptogium teretiusculum		G4G5	NONE	S2?	S1	3
Lobaria linita		G4G5	S3	S1	S1	2
Lobaria oregana		G4G5	S3S4	S4	S2	NL
Microcalicium arenarium		G4G5	S1	S1	NONE	2
Nephroma bellum		G3G5	S2	S3S4	S1	NL
Nephroma isidiosum		G3G4	NONE	NONE	NONE	ND
Nephroma occultum		G3	S1	S3	NONE	4
Niebla cephalota		G1G3	S1	S1S2	S1S2	2
Pannaria rubiginosa		G4G5	S1	S2	S1	2
Peltigera pacifica		G3	S2?	S3?	NONE	NL
Platismatia lacunosa		G3G4	S2	S3	S1	3
Pseudocyphellaria perpetua (*P. mougiotiana* in FEMAT and NWFP. Also called *Pseudocyphellaria* sp. 1)		G2G4	NONE	S1	NONE	3

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP ***Species***	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	**Global Rank**	**State Rank**			**ONHP List**
			WA	**OR**	**CA**	
LICHENS						
Pseudocyphellaria rainierensis		G3G4	S3	S3	NONE	4
Stenocybe clavata		G3	SP	S3	SP	4
Teloschistes flavicans		G4G5	NONE	S1	S1	2
Tholurna dissimilis		G3G5	S2	S2	S1	2
Usnea hesperina		G4G5	S1?	S1S2	S1?	3
Usnea longissima		G3G4	S2	S2	S2	3
BRYOPHYTES						
Brotherella roellii		G2	SH	NONE	NONE	NL
Buxbaumia viridis		G3G4	S3S4	S3S4	S1	NL
Diplophyllum plicatum		G4	S2	S2	NONE	2
Herbertus aduncus		G5	S1	S1	NONE	2
Iwatsukiella leucotricha		G2G3	S2	S1	NONE	2
Kurzia makinoana		G2G3Q	S1	S1	S1	2
Marsupella emarginata var. *aquatica*		G5T3	NONE	S1	NONE	2
Orthodontium gracile		G5	NONE	S1	S2S3	2
Ptilidium californicum		G3G4	S4	S4	S2S3	NL
Racomitrium aquaticum		G3Q	S2	S2	S1	3
Rhizomnium nudum		G4	S4	S2	SNA	2
Schistostega pennata		G3G4	S3	S2	NONE	2
Tetraphis geniculata		G3	S3	S1	SNA	2
Tritomaria exsectiformis		G5	S2	S2	NONE	2
Tritomaria quinquedentata		G5	S1	S1	NONE	2
VERTEBRATES						
Larch Mountain salamander *Plethodon larselli*		G3	S3	S2	NONE	2
Shasta salamander *Hydromantes shastae*		G1	NONE	NONE	S1	ND
Siskiyou Mountains salamander *Plethodon stormi*		G2G3Q	NONE	S2	S1S2	1
Van Dyke's salamander *Plethodon vandykei*		G3	S3	NONE	NONE	ND
Great Gray Owl *Strix nebulosa*		G5	S1B[1]	S3	S1	4
Oregon Red Tree Vole *Arborimus longicaudus silvicola*		G3G4T1	NONE	S1	NONE	4
Oregon Red Tree Vole *Arborimus longicaudus longicaudus*		G3G4T3	NONE	S3S4	S1	
MOLLUSKS						
Cryptomastix devia		G2	S2	S1	NONE	1
Cryptomastix hendersoni		G1G2	S1	S1S2	NONE	1
Deroceras hesperium		G1G2	S1S2	S1S2	NONE	1
Fluminicola n. sp. 3		G1	NONE	S1	S1	1
Fluminicola n. sp. 11		G1	NONE	S1	NONE	1
Fluminicola n. sp. 14		G1G2	NONE	NONE	S1S2	ND
Fluminicola n. sp. 15		G1	NONE	NONE	S1	ND
Fluminicola n. sp. 16		G1	NONE	NONE	S1	ND

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP *Species*	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	Global Rank	State Rank			ONHP List
			WA	OR	CA	
MOLLUSKS						
Fluminicola n. sp. 17		G1	NONE	NONE	S1	ND
Fluminicola n. sp. 18		G1	NONE	NONE	S1	ND
Fluminicola n. sp. 19		G1	NONE	NONE	S1	ND
Fluminicola n. sp. 20		G1	NONE	NONE	S1	ND
Fluminicola seminalis		G2	NONE	SU	S2	3
Helminthoglypta talmadgei		G2G3	NONE	NONE	S2S3	ND
Hemphillia burringtoni		G1G2	S1S2	S1S2	NONE	1
Hemphillia glandulosa, In WA Western Cascades Physiographic Province		G2G3	S2S3	S1S3	NONE	2
Hemphillia malonei, In Washington		G1G2	S1S2	S1S2	NONE	1
Hemphillia pantherina		G1	S1	NONE	NONE	ND
Juga (O) n. sp. 2		G2	NONE	S2	NONE	1
Juga (O) n. sp. 3		G1G2	NONE	NONE	S1S2	ND
Lyogyrus n. sp. 1		G2	S2	S2	NONE	1
Lyogyrus n. sp. 2		G1	S1	S1	NONE	1
Lyogyrus n. sp. 3		G1	NONE	NONE	S1	ND
Monadenia chaceana		G2	NONE	S1S2	S2	1
Monadenia fidelis minor		G4G5T2	S2	S2	SRF	1
Monadenia troglodytes troglodytes		G1G2T1	NONE	NONE	S1	ND
Monadenia troglodytes wintu		G1G2T1	NONE	NONE	S1	ND
Oreohelix n. sp.		G1	S1	NONE	NONE	ND
Pristiloma arcticum crateris		G2G3T1	S1	S1	NONE	1
Prophysaon coeruleum		G4	S2	S3	S1S3	NL
Trilobopsis roperi		G1	NONE	NONE	S1	ND
Trilobopsis tehamana		G1	NONE	NONE	S1	ND
Vertigo n. sp.		G1	S1	NONE	NONE	ND
Vespericola pressleyi		G1	NONE	NONE	S1	ND
Vespericola shasta		G1	NONE	NONE	S1	ND
Vorticifex n. sp. 1		G1	NONE	NONE	S1	ND
VASCULAR PLANTS						
Arceuthobium tsugense mertensianae		G5T3T4	S3S4	S3S4	S3S4	NL
Bensoniella oregana		G3	NONE	S3	S2.2	1
Botrychium minganense		G4	S4	S3	S1.3	4
Botrychium montanum		G3G4	S3S4	S2	S1	2
Coptis asplenifolia		G5	S2	NONE	NONE	ND
Coptis trifolia		G5	S1	S1	NONE	2
Corydalis aquae-gelidae		G5T3	S2S3	S3	NONE	1
Cypripedium fasciculatum		G4	S3	S3	S3.2	2

Table 3-3. ONHP Rankings of Survey and Manage Species

TAXA GROUP ***Species***	*Note: Where taxon has more than one name indicated, first name is current accepted name, second one (in parentheses) is name used in NWFP (Table C-3).*	**Global Rank**	**State Rank**			**ONHP List**
			WA	**OR**	**CA**	
VASCULAR PLANTS						
Cypripedium montanum		G4	S4	S3S4	S4	4
Eucephalus vialis (Aster vialis)		G3	NONE	S3	S1	1
Galium kamtschaticum		G5	S3	NONE	NONE	ND
Platanthera orbiculata var. *orbiculata* (*Habenaria orbiculata*)		G5T4	S3	NONE	NONE	ND

[1]WHNP sometimes uses qualifiers in conjunction with the State rank to indicate breeding and non-breeding rank of migrant birds. S1B is for a very rare breeder.

NL = Not Listed
ND = Not Documented
NA = Not Applicable

Appendix 4

Changes between Draft and Final

Minor corrections, explanations, and edits are not included in this list.

- Clarified the criteria for species placements.
- Modified the Standards and Guidelines to reflect delegations from the RIEC and exemptions for wildland fire for resource benefits in all land allocations.

Appendix 4

Proposed
STANDARDS AND GUIDELINES

for Alternative 3 of this SEIS

January 2004

Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines

Lead Agencies: **Forest Service - U.S. Department of Agriculture**
Bureau of Land Management - U.S. Department of the Interior

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TABLE

Omitted. However, the current species placements by Survey and Manage category are contained in Chapter 2 in the description of Alternative 3. If Alternative 3 is selected in the Record of Decision, Table 1 will be included at that time.

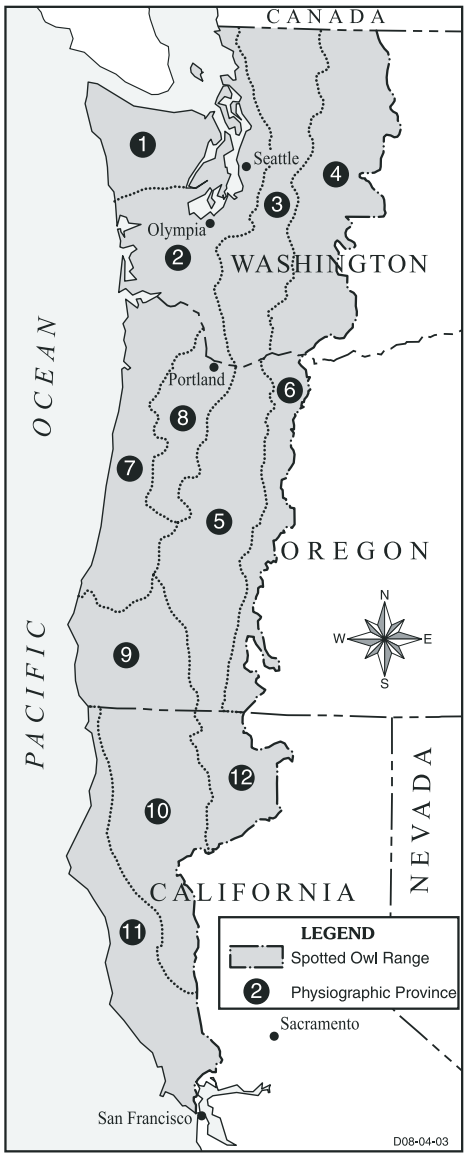
Proposed STANDARDS AND GUIDELINES for Alternative 3 of the 2003 Final SEIS

All sections of this document are the complete compilation of standards and guidelines for Alternative 3 in this (2004) Final SEIS.

I. Introduction

Proposed Standards and Guidelines

If Alternative 3 is selected in the Record of Decision, it would amend the standards and guidelines in the January 2001 Record of Decision for Amendments to the Survey and Manage, Protection Buffers, and other Mitigation Measures (hereafter referred to as Survey and Manage Standards and Guidelines). The existing standards and guidelines would be replaced by the standards and guidelines described below. Sections IX, X, and XI of the 2001 Standards and Guidelines are not included here because they were not part of the Survey and Manage Standards and Guidelines. Those sections deal with certain cavity-nesting birds, Canada lynx, and some bat roosts. Those sections are not proposed for removal or modification by Alternative 3. Sections IX, X, and XI of the 2001 Standards and Guidelines would remain in effect.



Other elements of the Northwest Forest Plan not specifically addressed, and implementation memorandums and other policy interpretations not affected by changes in these standards and guidelines, are not changed. Exceptions to certain standards and guidelines for research or the Adaptive Management Process described in Chapter E of the Northwest Forest Plan Standards and Guidelines, for example, continue to apply to Survey and Manage as under the Northwest Forest Plan Record of Decision.

Physiographic Provinces

The 1994 Northwest Forest Plan Standards and Guidelines include two different province maps: physiographic provinces and planning provinces. The map of the 12 physiographic provinces appears on page A-3 of the Northwest Forest Plan Standards and Guidelines and is repeated here for reference (see adjacent figure). The physiographic provinces allow differentiation between areas of common biological and physical processes. Unless otherwise identified, references to "provinces" in these standards and guidelines are to these physiographic provinces.

The 12 physiographic provinces are:

1. WA Olympic Peninsula
2. WA Western Lowlands
3. WA Western Cascades
4. WA Eastern Cascades
5. OR Western Cascades
6. OR Eastern Cascades
7. OR Coast Range
8. OR Willamette Valley
9. OR Klamath
10. CA Klamath
11. CA Coast Range
12. CA Cascades

Species Removed from Survey and Manage and other Standards and Guidelines

Species removed from Survey and Manage because they are not closely associated with late-successional or old-growth forests will be considered for the Agencies Special Status Species Programs. Known sites for these species will be managed until their disposition is clarified under the Special Status Species Programs or a decision is documented not to include them. For all other species (including the 4 arthropod functional groups) removed from the Survey and Manage mitigation measure, current "known sites" of these species are released for other resource activities.

Land Allocations

These standards and guidelines apply to all land allocations.

II. Survey and Manage Basic Criteria

The Survey and Manage three basic criteria (see box, next page) must be met for a species to be included in the Survey and Manage Standards and Guidelines. Species no longer meeting these criteria will be removed from Survey and Manage. The process for adding or removing a species is described in the Adaptive Management section. The following section describes "persistence" and the criteria used to determine when there is concern for persistence.

Criteria for Identifying Species Closely Associated with Late-Successional and Old-Growth Forests

Three Basic Criteria for Survey and Manage

1. The species must occur within the Northwest Forest Plan area, or occur close to the NFP area and have potentially suitable habitat within the NFP area.

2. The species must be closely associated with late-successional or old-growth forest (see Exhibit A (Note: Exhibit A intentionally omitted here. It can be viewed in the 2001 Record of Decision.)).

3. The reserve system and other Standards and Guidelines of the Northwest Forest Plan do not appear to provide for a reasonable assurance of species persistence.

The criteria listed below are adapted from the FEMAT report, with minor edits to make it applicable to Survey and Manage. A species is considered to be closely associated with late-successional and/or old-growth forests if it meets at least one of the following criteria:

- The species is significantly more abundant in late-successional and/or old-growth forest than in young forest in any part of its range. This is based on field study, occurrence records, or other information that satisfies the collective professional judgment of the panel recommending placement of species during the species review process.

- The species shows association with late-successional and/or old-growth forest (may reach highest abundance there) and the species requires habitat components that are contributed by late-successional and old-growth forest. This is based on field study, occurrence records, or other information that satisfies the collective professional judgment of the panel recommending placement of species during the species review process.

Species Persistence Objectives

In general, these standards and guidelines are designed to help the Northwest Forest Plan provide for the persistence of late-successional and old-growth forest related species. Objectives for maintaining species persistence for these standards and guidelines are the same as those described in the 1994 Northwest Forest Plan Record of Decision. The objectives recognize that there is uncertainty associated with the continued persistence of species. Even absent any human-induced effects, the likelihood that habitat will continue to support species persistence can vary among species. For example, the continued persistence of rare species, whose entire range may comprise only a few acres, is inherently at greater risk due to natural disturbance than species with larger ranges and more locations, when considered over the long term. Thus, the achievement of species persistence is not subject to precise numerical interpretation and cannot be fixed at any single threshold (Northwest Forest Plan ROD, p. 44).

Concern for Persistence

One of the basic criteria for applying the Survey and Manage mitigation measure to a species is concern for persistence. A concern for persistence exists when the reserve system and other standards and guidelines of the Northwest Forest Plan do not appear to provide a reasonable assurance of species persistence. Little or no concern for persistence exists when the reserve system and other standards and guidelines of the Northwest Forest Plan (other than Survey and Manage) provide a reasonable assurance of persistence. When this assurance of species persistence exists, the species may be removed from the Survey and Manage mitigation measure.

Criteria Indicating a Concern for Persistence. A combination of one or more of Criteria 1 through 9 and Criteria 10 or 11, considered in the context of the reserve system and other standards and guidelines of the Northwest Forest Plan, may indicate a concern for species persistence. These criteria must be considered separate from the Survey and Manage mitigation measure and must apply within the Northwest Forest Plan area.

1. Low number of likely extant known sites/records or low number of estimated sites predicted from statistical analysis of random grid surveys or comparable statistical surveys.
2. Low numbers of individuals throughout the species range.
3. Low number of individuals at most sites or in most populations.
4. Reproductive characteristics that limit population growth rates.
5. Found or suspected in only one physiographic province or a similar small area.
6. Limited habitat or narrow ecological amplitude within known or suspected range.
7. Not well distributed within range or habitat or distribution is unpredictable in a significant part of its range.
8. Declining habitat or populations in a significant part of its range.
9. Habitat fragmentation significant enough to cause genetic isolation.
10. Low proportion of sites and habitat in reserve land allocations or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a low probability that the habitat is occupied.
11. Matrix Standards and Guidelines or other elements of the Northwest Forest Plan do not provide for a reasonable assurance of species persistence.

Criteria Indicating Little or No Concern for Persistence. Any one of Criteria 1 through 9 or either Criteria 10 or 11 indicates that a concern for persistence may not exist. These criteria must apply within the Northwest Forest Plan area.

1. Moderate-to-high number of likely extant sites/records or moderate-to-high number of estimated sites predicted from statistical analysis of random grid surveys or comparable statistical surveys.
2. Moderate-to-high numbers of individuals throughout the species range.
3. Moderate-to-high number of individuals at most sites or in most populations.
4. Population growth rates are not limited by reproductive characteristics.
5. Found or suspected in more than one physiographic province or similar small area.
6. Habitat is not limited or moderate-to-broad ecological amplitude within known or suspected range.
7. Well distributed in a significant part of its range.
8. Stable or increasing habitat or populations in a significant part of its range.
9. Habitat continuity allows reasonable flow of genetic material.
10. Moderate-to-high proportion of sites and habitat in reserve land allocations; or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a moderate-to-high probability that the habitat is occupied.
11. Matrix Standards and Guidelines or other elements of the Northwest Forest Plan provide a reasonable assurance of species persistence.

Concern for persistence is based on existing knowledge and may change over time. While concern will remain for some species that are truly rare, the concern for many species will be alleviated as more information is accumulated through pre-disturbance and strategic surveys, and considered with the criteria indicated above. A species for which there is no longer a concern for persistence will be removed from the Survey and Manage mitigation measure as described in the adaptive management section.

III. Survey and Manage Categories

Introduction

Survey and Manage species are grouped into three categories (A, B, and E) as described below. The three categories are based on the ability to reasonably and consistently locate occupied sites during surveys prior to habitat-disturbing activities and the level of information known about the species.

The three categories help delineate species objectives and apply specific management direction. The standards and guidelines describe the objective, assignment criteria, and management direction for each category.

The species included in the Survey and Manage mitigation measure, and the category to which each species, or portion of the range of each species, is assigned, is shown on Table 1. (Note: this table intentionally omitted; however, category assignments are identified in the description of Alternative 3 in Chapter 2). The adaptive management

Survey and Manage Categories and Management Requirements.		
Pre-Disturbance Surveys Practical	**Pre-Disturbance Surveys Not Practical**	**Status Undetermined**
Category A - 56 species • Manage All Known Sites • Pre-Disturbance Surveys • Strategic Surveys	**Category B** - 184 species • Manage All Known Sites • N/A • Strategic Surveys	**Category E** - 33 species • Manage All Known Sites • N/A • Strategic Surveys

section of these standards and guidelines define how to change species among the three categories and how to add or remove species from Survey and Manage, in response to new information.

These standards and guidelines apply within all land allocations; however, the Survey and Manage mitigation measure for each species will be directed to the range (or portion of range) of that species, to the particular habitats where concerns exist for its persistence, and to the management activities considered "habitat-disturbing" for that species. The Survey and Manage Standards and Guidelines will benefit species closely associated with late-successional and old-growth forests including certain vertebrates, bryophytes, mollusks, vascular plants, fungi, and lichens. Information about these species, acquired through application of these standards and guidelines, should facilitate project planning and adaptive-management changes.

The category discussions include additional information that clarifies the linkage between objectives and management actions of each category and describes the criteria for assigning species to the various categories. A taxon, or range-defined portion of a taxon, can be assigned to only one category.

Category A (Pre-Disturbance Surveys Practical)

Objective: Manage all known sites and reduce inadvertent loss of undiscovered sites.

Criteria for assigning a species to Category A are:

- Pre-disturbance surveys are practical.

Management Direction:

Manage All Known Sites: Current and future known sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS, and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations. (See glossary for definition of known site.)

Professional judgment, coupled with locally specific information and advice from taxa specialists about the species, may be used to identify occasional sites not needed for persistence. Such exceptions must be approved by the line officer at the next level above the official responsible for the proposal.

Surveys Prior to Habitat-Disturbing Activities in Late-successional and Old-growth Forests: To reduce the loss of undiscovered sites, surveys will be conducted at the project level prior to habitat-disturbing activities in late-successional and old-growth forest stands. Pre-disturbance surveys are not required for stands which have not yet become late-successional and/or old-growth forest. Surveys will be done in accordance with Survey Protocols. Species sites found as a result of these surveys will be managed as known sites.

Strategic Surveys: The objective of strategic surveys is to search for additional sites and to characterize the habitat, improving the ability of the Agencies to know where to survey and how to manage the species. These surveys will build upon and incorporate information from previous and ongoing surveys. Species sites found as a result of these strategic surveys will be managed as known sites.

Strategic Surveys may address one or more of the following:

- Are known sites still extant?
- What is the habitat of the species?
- Identify high-probability habitat for surveys to find new sites.
- Where else does the species occur? Find new sites.
- Collect habitat information to assist with managing the species.
- What is the status of the population (such as number of individuals, size)?
- What is the distribution of the species relative to the land allocations established in the Northwest Forest Plan?

Category B (Pre-Disturbance Surveys Not Practical)

Objective: Manage all known sites and reduce the inadvertent loss of undiscovered sites.

Criteria for assigning a species to Category B:

- Pre-disturbance surveys are not practical.

Management Direction:

Manage All Known Sites: Same as Category A.

Surveys Prior to Habitat-Disturbing Activities in Late-successional and Old-growth Forests: Generally, pre-disturbance surveys are only prescribed for species for which they are practical. Pre-disturbance surveys are not required for this category. However, "equivalent-effort" surveys were prescribed as a mitigation measure (USDA, USDI 2001) for three Category B mollusk species (*Deroceras hesperium, Hemphillia pantherina,* and *Monadenia chaceana*) whose characteristics, such as small size and identifying characteristics, prevent them from being consistently located during site-specific surveys. To avoid inadvertent loss of undiscovered sites, "equivalent-effort" surveys will be conducted for these three mollusk species prior to habitat-disturbing activities. Equivalent-effort surveys would not be required in non-late-successional and non-old-growth forest stands. Equivalent-effort surveys will be done in accordance with Survey Protocols. This mitigation measure will continue as long as the species remain in Categories B or E and strategic surveys are not completed. Species sites found as a result of these surveys will be managed as known sites.

Strategic Surveys: The objective of strategic surveys in this category is to find additional new sites and to characterize the habitat, improving the ability of the Agencies to know where to survey and how to manage and conserve the species. To reduce the inadvertent loss of undiscovered sites, the Agencies will not sign NEPA decisions or decision documents for habitat-disturbing activities in old-growth forest (a sub-set of late-successional forest - see glossary) in fiscal year 2006 (fiscal year 2011 for fungi) and beyond, unless either: (1) strategic surveys have been completed for the province that encompasses the project area or (2) equivalent-effort surveys have been conducted in the old-growth habitat to be disturbed. (More information about equivalent-effort surveys can found in Section VI. Surveys.)

Strategic surveys build upon and incorporate information from previous and ongoing surveys. Species sites found as a result of strategic surveys will be managed as known sites. Strategic survey accomplishments, including completion by province, will be summarized in the annual report. □ld growth is specified in this standard and guideline to assure retention of what is assumed to be the highest quality potential habitat for Survey and Manage species until strategic surveys are completed or equivalent-effort surveys are conducted. Provinces are specified for completion of strategic surveys

because they represent the smallest, logical, well-defined area for which the results of strategic surveys likely could be compiled, analyzed, and presented with meaningful results.

Strategic Surveys may address one or more of the following:

- Are known sites still extant?
- What is the habitat of the species?
- Identify high-probability habitat for surveys to find new sites.
- Where else does the species occur? Survey high-probability habitat at highest risk to find new sites.
- What is the distribution of the species relative to the land allocations established in the Northwest Forest Plan?
- Collect habitat information to assist with managing the species.
- What is the status of the population (such as number of individuals, size)?

Category E (Status Undetermined)

Objective: Manage all known sites while determining if the species meets the basic criteria for Survey and Manage and, if so, to which category (A or B) it should be assigned.

Criteria for assigning a species to Category E:

- Information is insufficient for species currently on Survey and Manage to determine what management is needed for a reasonable assurance of species persistence or to determine whether the basic criteria are met.

Management Direction:

Manage All Known Sites: Current and future known sites will be managed according to the Management Recommendation for the species. Professional judgment, Appendix J2 in the Northwest Forest Plan Final SEIS (USDA, USDI 1994a), and appropriate literature will be used to guide individual site management for those species that do not have Management Recommendations.

Professional judgment, coupled with locally specific information and advice from taxa specialists about the species, may be used to identify occasional sites not needed for persistence. Such exceptions must be approved by the line officer at the next level above the official responsible for the proposal.

Surveys Prior to Habitat-Disturbing Activities in Late-successional and Old-growth Forests: Same as Category B.

Strategic Surveys: The objective of strategic surveys in this category is to collect enough information to determine if the species meets the basic criteria for Survey and Manage, and to either place the species into the appropriate Survey and Manage category or remove the species from Survey and Manage.

Strategic surveys build upon and incorporate information from previous and ongoing surveys. Species sites found as a result of these surveys will be managed as known sites. In cases where the strategic survey indicates that there is still a concern for persistence, but the species is not closely associated with late-successional or old-growth forests, the species will be removed from Survey and Manage and considered for inclusion in the Agencies Special Status Species Programs.

Strategic Surveys may address one or more of the following:

- Is the species closely associated with late-successional and old-growth forests?
  - Revisit known sites, characterize the species habitat, and find new sites.
- Does the species occur within the Northwest Forest Plan area?
  - Survey potential habitat near known sites.
- What is the appropriate management for the species?
  - Does the species meet the basic criteria for Survey and Manage?
  - What is the appropriate Survey and Manage category?

IV. Adaptive Management Process

Introduction

The detail provided in this section is designed to make the standards and guidelines efficient for the Agencies to implement and responsive to the needs of the species. The specific criteria for refining or changing species management are based on the objectives of the specific categories.

This process covers the acquisition, evaluation, and application of new information to (1) move species between categories; (2) remove species from Survey and Manage; (3) add species to Survey and Manage; and, (4) develop or revise Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide. The process described here will not change the number of categories, their definition or objectives, or the specific defining criteria or management direction applicable to the categories. Changes of that type would fall under the general adaptive management discussion in the Northwest Forest Plan Record of Decision (pp. E-12 through E-15).

The adaptive management process for Survey and Manage Standards and Guidelines includes three steps:

1. Acquiring new information relative to Survey and Manage species.
2. Evaluating new information for adding, removing, or changing a species in Survey and Manage.
3. Implementing changes or refinements to Survey and Manage.

These three steps are described individually below.

Acquiring New Information Relative to Survey and Manage Species

New information concerning species status or needs, and efficiency of the standards and guidelines, will be generated mostly through strategic and pre-disturbance surveys and other implementation experience. The Agencies will use a data call, open conference, or other method to gain new information about Survey and Manage species. Sources of new information may also include taxa experts, resource specialists, scientists, data from Agency surveys, research, members of academia, and other publics. This information is maintained primarily in the Interagency Species Management System (ISMS) database. New information may lead to: (1) adding, removing, or changing species assignments to Survey and Manage categories, as described below; (2) changes to Management Recommendations and Survey Protocols; and, (3) changes to information needs identified in the Strategic Survey Implementation Guide, as described in these standards and guidelines.

Evaluating New Information for Adding, Removing, or Changing a Species in Survey and Manage

A regional-level interagency group including taxa experts, meeting at least annually, will weigh new information against the criteria below to determine if additions or deletions of species from Survey and Manage or changes of species among categories, are warranted (see the 2001 ROD, Attachment 1, Exhibit B). Partial information or proposals to add or change species will not obligate the Agencies to gather additional information.

New information presented for evaluation in considering changes to Survey and Manage should address the criteria described below, as appropriate. The basic criteria for Survey and Manage are key to the evaluation process when proposing to add, remove, or change a category.

Criteria for Adding Species to Survey and Manage

Species proposed for addition to the Survey and Manage Standards and Guidelines must be taxonomic entities published in appropriate peer-reviewed journals accepted by the scientific community and, based on currently available information, must meet all three of the basic criteria for Survey and Manage. Species with uncertainty about any of the three basic criteria or how to effectively manage them for a reasonable assurance of persistence will not be added to Survey and Manage.

The new information to support addition of a species to Survey and Manage must address the three basic criteria including the specific factors used as a basis for determining concern for persistence. The factors must apply to at least a significant identified portion of the species range, on federally managed lands, within the Northwest Forest Plan area.

Criteria Indicating a Concern for Persistence. A combination of one or more of Criteria 1 through 9 and Criteria 10 or 11, considered in the context of the reserve system and other standards and guidelines of the Northwest Forest Plan, may indicate a concern for species persistence. These criteria must be considered separate from the Survey and Manage mitigation measure and must apply within the Northwest Forest Plan area.

1. Low number of likely extant known sites/records or low number of estimated sites predicted from statistical analysis of random grid surveys or comparable statistical surveys.
2. Low numbers of individuals throughout the species range.
3. Low number of individuals at most sites or in most populations.
4. Reproductive characteristics that limit population growth rates.
5. Found or suspected in only one physiographic province or a similar small area.
6. Limited habitat or narrow ecological amplitude within known or suspected range.
7. Not well distributed within range or habitat or distribution is unpredictable in a significant part of its range.
8. Declining habitat or populations in a significant part of its range.
9. Habitat fragmentation significant enough to cause genetic isolation.
10. Low proportion of sites and habitat in reserve land allocations or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a low probability that the habitat is occupied.
11. Matrix Standards and Guidelines or other elements of the Northwest Forest Plan do not provide for a reasonable assurance of species persistence.

Criteria for Removing Species from Survey and Manage

When new information indicates that a species no longer meets the Survey and Manage basic criteria, the species will be removed from the Survey and Manage Standards and Guidelines.

New information to support removing a species from the Survey and Manage Standards and Guidelines may address any one of the three Survey and Manage basic criteria. If a species is proposed for removal from the Survey and Manage Standards and Guidelines because there is not a concern for its persistence, the new information must address specific factors indicating that persistence is not a concern. The factors must apply to at least a significant identified portion of the species range, on federally managed lands, within the Northwest Forest Plan area.

Criteria Indicating Little or No Concern for Persistence. Any one of Criteria 1 through 9 or either Criteria 10 or 11 indicates that a concern for persistence may not exist. These criteria must apply within the Northwest Forest Plan area.

1. Moderate-to-high number of likely extant sites/records or moderate-to-high number of estimated sites predicted from statistical analysis of random grid surveys or comparable statistical surveys.
2. Moderate-to-high numbers of individuals throughout the species range.
3. Moderate-to-high number of individuals at most sites or in most populations.
4. Population growth rates are not limited by reproductive characteristics.
5. Found or suspected in more than one physiographic province or similar small area.
6. Habitat is not limited or moderate-to-broad ecological amplitude within known or suspected range.
7. Well distributed in a significant part of its range.
8. Stable or increasing habitat or populations in a significant part of its range.
9. Habitat continuity allows reasonable flow of genetic material.
10. Moderate-to-high proportion of sites and habitat in reserve land allocations; or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a moderate-to-high probability that the habitat is occupied.
11. Matrix Standards and Guidelines or other elements of the Northwest Forest Plan provide a reasonable assurance of species persistence.

Species removed from the Survey and Manage Standards and Guidelines because they are not closely associated with late-successional or old-growth forests, but are still of concern for persistence, will be considered for inclusion in the Agencies Special Status Species Programs. Known sites for these species will be managed until their disposition is clarified under the Special Status Species Programs or a decision is documented not to include them.

Criteria for Changing a Species between Categories

New information to support changing a species from one Survey and Manage category to another must address the specific criteria for the categories involved in the change. The new information must support the proposed change by showing how the species better meets the criteria for the proposed category.

The criteria for assigning a species to a different category are included under the Survey and Manage Categories section.

Analysis Process for New Information

The process for analyzing or evaluating new information pertaining to species will involve a panel of agency taxonomic experts, resource specialists, and managers (see the 2001 ROD, Attachment 1, Exhibit B). The panel of experts will convene at least once a year to evaluate and respond to new accumulated information. The panel of experts will transmit proposed changes to species management under the Survey and Manage Standards and Guidelines to the RIEC or its delegate.

The panel will use the specific criteria and factors defined for making determinations regarding whether there is a concern for persistence and placement of species within individual categories of Survey and Manage. Because Survey and Manage includes species about which little is known, the number and combination of criteria and factors used in making a judgment about concern for persistence or appropriate placement of each species within individual categories will vary, depending on the species and the type and quality of information available. The application of the criteria in the analysis process necessarily relies on the professional judgments of the panel of experts.

For purposes of these evaluations, the factors and criteria listed in these standards and guidelines and applied to each species will constitute the foundation of the assumptions, criteria, factors, and logic to support the conclusions. Application of the information to the criteria will be documented in writing. The recommendations from the panel will be disseminated to lead and cooperating agency taxa experts in draft form for at least 30 days to identify errors, conflicting information, or other evidence that should be included when the information is presented to the RIEC or its delegate. Details of the annual species review process will be available as part of the administrative records for future activities that apply the resultant changes.

Implementing Changes or Refinements to Survey and Manage

Making Changes to Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide

Changes proposed to Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide as a result of new information pertaining to species, or new information resulting from application experience, will be made using the same process used to develop the original recommendations and protocols. Changes to Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide constitute administrative changes to the technical details of specific site management and surveys. It is anticipated that such changes will not require further NEPA documentation.

Adding, Removing, and Changing Species Between Categories

The criteria and evaluation process for species that is described in these standards and guidelines for use in future adaptive management changes, is designed to continue approximately the same level of assurance of persistence as intended by the Northwest Forest Plan Standards and Guidelines. The process and results should be relatively consistent over time because the assumptions, criteria, and logic used in reaching determinations relating to species disposition under the Survey and Manage Standards and Guidelines will remain constant. Proposed changes to assignments of species to categories and proposals to remove species from Survey and Manage, resulting from the periodic evaluations of new information, will be forwarded to the RIEC or its delegate for review to ensure that current information about the species has been appropriately

considered and weighed against the stated criteria. Adaptive management changes to assignments of species will be jointly adopted by the BLM and Forest Service and included in the annual report, along with a summary of the information supporting the changes. Since the effects to species are expected to be consistent with the effects anticipated and described in the Final SEIS, it is not anticipated such changes will require regular, annual NEPA documentation. The parameters for making adaptive changes are part of the standards and guidelines, and as long as the changes are within these parameters, they would not constitute a change in these standards and guidelines or constitute new information on effects not already anticipated and addressed. Prior to the annual application of results, the Agencies will examine whether the magnitude and nature of changes indicate a need for additional environmental analysis (e.g., an environmental assessment). The results of this examination will be documented and summarized in the annual status report. It is not anticipated that changes made pursuant to the annual species review process will require regular, annual NEPA documentation for three major reasons. First, the parameters for making such changes are clearly delineated and part of these standards and guidelines. Second, adjustments made pursuant to the annual species review process are fully expected to occur and are included in the set of assumptions on which the effects analyses have been made. Third, the status of species relative to the standards and guidelines should remain consistent with, and at least as secure as, that reflected in the Final SEIS, given the criteria guiding the annual process has been designed in large measure to achieve such consistency. The Agencies will evaluate such changes over time to ensure their application is having the intended result and their accumulated effects are within the scope anticipated by this SEIS. At some point in the future, if such effects rise to the level exceeding that scope, supplemental NEPA analyses can be expected to be conducted at appropriate intervals as necessary or advisable.

The Agencies will involve the public and keep resultant changes and their application visible to the public so potential concerns about application of the above criteria to any particular species or area may be surfaced. First, the Agencies will utilize a data call, open conference, or other method of soliciting appropriate new information about Survey and Manage species. Second, the annual report will be sent to individuals or groups who request it. Individuals and groups that would like to receive the annual report should write to the Interagency Survey and Manage Program Manager, c/o Regional Ecosystem Office, P.O. Box 3623, Portland, OR 97208-3623. Public comments about species changes or anything else in the annual report are invited at any time, and should also be addressed to the program manager. Third, future agency NEPA documents for habitat-disturbing activities will identify if any of these expected future changes in categories will be applied to the planned activity, or will reference a specific years assignments, as documented in the annual status report, that appropriately applies to that activity or project. Specific concerns about the application of a particular species assignment may be directed toward the activity applying the new assignment.

V. Management Recommendations

Management Recommendations are documents that address how to manage known sites and provide guidance to agency efforts in conserving Survey and Manage species. They are written for the species range or, in rare cases, may apply to provinces within the range. They are the responsibility of management working closely with taxa experts; they are developed by taxa experts and land managers (at any administrative level) for use at field offices of the BLM and Forest Service. Because these documents describe site management, they are subject to review by the Survey and Manage Intermediate Managers Group (IMG). This review is to ensure Management Recommendations identify and integrate the habitat or life-history factors key to managing the species to the level of protection intended in the standards and guidelines.

Management Recommendations describe the habitat parameters (environmental conditions) that will provide for a reasonable likelihood of persistence of the taxon at that site. These parameters serve as the basis for site-specific decisions about what management activities are appropriate within the site. The size of the area to be managed depends on the habitat and requirements for the species. Management may range from maintaining one or more habitat components (such as down logs or canopy cover) to complete exclusion from disturbance for many acres, and may allow loss of some individuals, areas, or elements not affecting continued site occupancy. In high-fire frequency areas such as east of the Cascades or in the Klamath Provinces, specific consideration should be given to the acceptability of the use of prescribed fire in known sites to reduce the risk of future large-scale or high-intensity fire, even if it entails some risk to individual site occupancy.

Management Recommendations may also identify areas where it is no longer necessary to continue surveys prior to habitat-disturbing activities or strategic surveys for the taxon. The Management Recommendation may also provide information on natural history, current species status, species distribution, management goals and objectives, specific management actions or recommendations, monitoring needs, and needs for information and research to the extent such information supports management of known sites and identification of survey priorities. Finally, where information about a species indicates the combination of manage known sites, pre-disturbance surveys, and strategic surveys (and other Northwest Forest Plan Standards and Guidelines) does not provide a reasonable assurance of persistence or does not provide the most efficient way of meeting the persistence objective, Management Recommendations may include additional or in-lieu direction, subject to appropriate NEPA analysis. Such direction may rely on habitat models and other valid scientific analyses that indicate a high probability of occupancy by the species.

Management Recommendations written prior to the Record of Decision for this SEIS may continue to be used until superseded by later versions. Existing Management Recommendations will be revised as new information indicates a need. Revised versions may be applied immediately but will normally be applied to NEPA decisions or decision documents signed 90 or more days after release of the Management Recommendation. In some cases, revised Management Recommendations may include a specific effective date or other language indicating when they are to be applied, depending on when they are issued, what differences there are from the previous version, and the importance of those differences.

Note for Former Protection Buffer Species Included in Survey and Manage but Without Approved Management Recommendations: Management of known sites will follow the Northwest Forest Plan Protection Buffer direction (see Section XI of the 2001 standards and guidelines), latest information (including that displayed in the November 2000 Survey and Manage Final SEIS), and best professional judgment until Management Recommendations are approved for the following species: great gray owl, Siskiyou Mountains salamander, Larch Mountain salamander, and Shasta salamander.

VI. Surveys

Surveys Prior to Habitat-Disturbing Activities (Pre-Disturbance Surveys)

Category A requires that site-specific, pre-disturbance surveys be conducted prior to signing NEPA decisions or decision documents for habitat-disturbing activities. These

surveys focus on the project unit with the objective of reducing the inadvertent loss of undiscovered sites by searching specified potential habitats prior to making decisions about habitat-disturbing activities. They are done according to the survey protocol for each species and can use methods such as transects or plots that focus on priority habitats, habitat features, or involve the entire project area. These surveys are often referred to simply as pre-disturbance surveys. There are two types of pre-disturbance surveys. Pre-disturbance surveys are practical for species whose physical characteristics make them likely to be located with reasonable effort. The second type, equivalent-effort surveys, are prescribed as mitigation for some mollusk species whose characteristics, such as extremely small size or irregular cycles when identifying characteristics are visible, make identification during pre-disturbance surveys less likely. The differences between these two types of pre-disturbance surveys, as well as the definition of habitat-disturbing activities, timing requirements for surveys, and the requirements for survey protocols are described in more detail below.

Pre-disturbance surveys, including equivalent-effort surveys, are not required for stands which have not yet become late-successional or old-growth forest. The unit proposing the project will be responsible for applying the following definition in making the determination whether a forest stand is late-successional.

> **Late-successional forests** - Forest stands consisting of trees, structural attributes, supporting biological communities, and processes associated with old-growth and/or mature forests (USDA, USDI 1994a). Forest seral stages that include mature and old-growth age classes (USDA, USDI 1994a). These stands exhibit increasing stand diversity, patchy multi-layered canopy, trees of several age classes, larger standing dead trees (snags), large woody debris, and species that represent the potential natural community (FEMAT 1993). Age is not a defining characteristic but has been used as a proxy or indicator in the past. Minimum ages varied depending on the site quality, species, rate of stand development.

Habitat-Disturbing Activities

Habitat-disturbing activities are defined as those disturbances likely to have a significant negative impact on the species habitat, its life cycle, microclimate, or life support requirements. The evaluation of the scale, scope, and intensity of the anticipated negative impact of the project on habitat or life requirements should include an assessment of the type, timing, and intensity of the disturbing activity. Habitat-disturbing activities are not the same as ground-disturbing activities. For example, helicopter logging or logging over snow-pack may not disturb the ground, but might clearly affect microclimate or life cycle habitat factors. Conversely, an activity having soil-disturbing effects might not have a large enough scope to trigger a need to survey (i.e. installation of a sign post within a campground). Routine maintenance of improvements and existing structures is not considered a habitat-disturbing activity. Examples of routine maintenance include pulling ditches, clearing encroaching vegetation, managing existing seed orchards, and falling hazard trees.

The line officer should seek specialists recommendations to help determine the need for a survey based on site-specific information. In making such determination, the line officer should consider the probability of the species being present on the project site, as well as the probability the project would cause a significant negative effect on the species habitat or the persistence of the species at the site.

Pre-disturbance surveys are not required in the unusual circumstance that a delay in implementation of the activity (to permit pre-disturbance surveys) would result in greatly increased and unacceptable environmental risk. Such circumstances are subject to approval by the line officer at the next level above the official responsible for the proposal.

The RIEC has determined that pre-disturbance surveys are no longer required for wildland fires for resource benefits regardless of land allocation (July 31, 2003, RIEC memorandum re: Exception to Survey and Manage Pre-disturbance Survey Requirements for Wildland Fire for Resource Benefits). A wildland fire for resource benefit is a fire that results from natural ignition (i.e. lightning strike) and is permitted to burn because it is resulting in resource benefits, is consistent with the land and resource management plan, is consistent with the fire management plan, and is burning within prescription. No pre-disturbance surveys are required for wildland fires for resource benefits, regardless of land allocation, if the following conditions are met.

1. The fire is consistent with the land and resource management plan (Forest or District Plan).
2. A fire management plan has been developed that addresses wildland fire starts and appropriate prescriptions for the area.
3. The fire is burning within prescription, and the prescription is designed for resource benefits. (Note: A prescription designed for resource benefits provides for an adequate level of structural components such as snags, coarse woody debris, litter/duff, and mid and overstory canopy. Typically, the fire has a low to moderate rate of spread and flame lengths less than 4-6 feet.)
4. In Late-Successional Reserves only:
   a. The Late-Successional Reserve Assessment, supplement to the Late-Successional Reserve Assessment, or other large-scale analysis addresses the potential presence and likely effect on Survey and Manage species.
   b. The Forest Supervisor or District Manager review of the Late-Successional Reserve Assessment (and/or other documentation noted in 4.a., above) concludes that such fires will not prevent achievement of the persistence objectives of the Survey and Mange Standards and Guidelines.

Pre-Disturbance Survey Protocols

Survey Protocols for pre-disturbance surveys include instructions for locating the species. The instructions include such information as: (1) likely habitat where the species is of concern; (2) geographical area and substrate where the species is typically located; (3) timing of surveys to best locate the species; (4) appropriate search and sampling techniques; and, (5) detailed guidance for identifying the species. Supplemental information may include field identification guides and techniques for simple laboratory examination.

Pre-disturbance survey protocols should also identify habitat conditions or locations, or criteria for identifying such conditions locally, where surveys are not needed for a reasonable assurance of persistence. Such habitat may include, but not be limited to, seral stages, stand age, stand complexity, or stand origin, where occupied sites, if present, are likely incidental, non-viable, or otherwise not important for meeting overall species persistence objectives.

Existing Survey Protocols will be revised as new information indicates a need. Revised versions of protocols will normally apply to the next projects on which surveys are to be initiated. In some cases, they may include a specific effective date or other language indicating when they are to be applied, depending on when they are issued, what differences there are from the previous version, and the importance of those differences.

New pre-disturbance survey protocols will be prepared for species newly assigned to a category requiring surveys prior to habitat-disturbing activities, whether the category assignment is through these standards and guidelines, or a future assignment through the adaptive management process. The protocols will be prepared by the end of the fiscal year following the fiscal year the species was assigned. The decision date for activities to which these protocols apply will depend on the number of years a survey is

required. If a protocol requires 1 year of surveys, activities may proceed for 1 additional fiscal year before pre-disturbance surveys are required, to allow time to conduct the required surveys. If a protocol requires 2 years of surveys, activities may proceed for 2 additional fiscal years before pre-disturbance surveys are required. For example, if a species is added to Category A on January 1, 2004, the protocol will be prepared no later than September 30, 2005, and (assuming a 1-year protocol) the protocol will apply to activities for which NEPA decisions or decision documents are signed after September 30, 2006. Preparation of a protocol earlier than the due date does not necessarily change the required effective date; the Agencies may need the additional lead time for training, surveys, and related project planning. Actual effective dates will be set in the Survey Protocol documents or the Agencies transmittal memorandums, but they will not be later than the above-described date.

Strategic surveys or other information may, in the future, expand the known range of a species requiring pre-disturbance surveys into areas not previously identified in Survey Protocols or ISMS-related species range maps. Confirmation of such expansions will occur with RIEC approval of the results of the annual species review process. Since protocols in these cases are already prepared, the survey requirement applies to activities whose NEPA decision or decision document is signed in the calendar quarter following the first full survey season (as defined in the protocol) after the expanded range is confirmed.

Timing Requirements for Pre-disturbance Surveys

The intent of "surveys prior to habitat-disturbing activities" is to gather relevant information during the NEPA process so that it is available for the decision-maker before actions are taken. Ideally, this information would be available to Interdisciplinary Teams during preparation of an EA or Draft EIS so it could be used in project analysis, formulation of alternatives, and evaluation of effects. Required surveys should be completed and the results included in an EA or Draft EIS whenever practicable. This would have the added advantage that results would be available during the public review and comment process.

Project schedules could be severely disrupted if the requirement for additional pre-disturbance surveys were imposed after the decision is made and final design, field layout, or contract preparation has begun. Therefore, the date of the decision is the cut-off date for the requirement to conduct "surveys prior to habitat-disturbing activities." In other words, once the decision is made no additional survey requirements are imposed; no NEPA analysis will have to be re-done and no decisions will have to be re-made because of additional survey requirements.

The date of the decision is the signing of the NEPA decision or decision document. Grace periods for newly added species or increases in known range are described under pre-disturbance survey protocols.

Application of Manage Known Sites Direction: Even though pre-disturbance surveys are completed prior to the NEPA decision or decision document, manage known site direction will typically be applied to additional sites of rare species incidentally discovered during other field work after the decision date but prior to sale dates (or for non-contract activities, actual on-the-ground application of work).

Practical Pre-disturbance Surveys

Identification of species for which surveys are practical is basic to helping define the categories of Survey and Manage. If pre-disturbance surveys are practical, the risk of inadvertent loss of undiscovered sites and the likelihood that management activities will be detrimental to meeting species persistence objectives can both be substantially

reduced. Conducting practical pre-disturbance surveys also reduces the urgency to locate sites through the use of strategic surveys, at least when compared to species for which pre-disturbance surveys are not practical.

The criteria define when pre-disturbance surveys are practical or not practical. In general terms, the criteria are designed so that surveys will be practical if a reasonable effort would be likely to determine the presence of a species on a specific area, although the criteria themselves should be used in making the determination, no quantitative standard is implied. Put another way, practicality of surveys generally relates to the ability to confidently answer questions about species presence through surveys, while avoiding unreasonable costs or spending unreasonable amounts of time. The definition of practical is intended to be comparable to that described in the Northwest Forest Plan Record of Decision as being not difficult (see Appendix J2 of the Northwest Forest Plan Final SEIS, and pp. C-5 and C-6 in the Northwest Forest Plan Record of Decision). However, it is not anticipated that these surveys will find every site.

Surveys prior to habitat-disturbing activities are considered practical if all of the following criteria apply. Surveys prior to habitat-disturbing activities are considered not practical if any of these factors do not apply.

- The taxon appears annually or predictably, producing identifying structures that are visible for a predictable and reasonably long time.
- The taxon is not so minuscule or cryptic as to be barely visible.
- The taxon can be authoritatively identified by more than a few experts, or the number of available experts is not so limited that it would be impossible to accomplish all surveys or identifications for all proposed habitat-disturbing activities in the Northwest Forest Plan area needing identification within the normal planning period for the activity.
- The taxon can be readily distinguished in the field and needs no more than simple laboratory or office examination to confirm its identification.
- Surveys do not require unacceptable safety or species risks.
- Surveys can be completed in two field seasons (approximately 7-18 months).
- Credible survey methods for the taxon are known or can be developed within a reasonable time period (approximately 1 year).

Equivalent-Effort Surveys

Equivalent-effort surveys are an option for Category B species in old-growth, if strategic surveys are not completed in fiscal year 2011 for fungi or in fiscal year 2006 for other species (see strategic survey direction under Category B). Equivalent-effort surveys were also prescribed as a mitigation measure in the 2001 Record of Decision for certain mollusk species whose characteristics, such as small size and identifying characteristics, prevent them from being consistently located during site-specific surveys. Equivalent-effort surveys are pre-disturbance surveys conducted similarly to practical surveys (to the same intensity and effort-usually one field season and no more than two), according to written Survey Protocols, and during the times when the likelihood of detecting the species is highest. Because species characteristics make detection less likely, equivalent-effort surveys are only designed to locate the species if it occurs in an identifiable condition during a reasonable survey time period (no more than two field seasons). The survey is an "equivalent-effort" to practical surveys, with protocol adjusted to deal with one or more of the factors described above that make determining presence of the species unlikely.

There are only two differences between equivalent-effort surveys and practical surveys. One difference is that equivalent-effort surveys may need to accommodate one or more of the practicality factors listed above. The other difference is that equivalent-effort surveys

are not expected to meet the description of "likely to determine the presence" of a species because the characteristics of these species make finding sites less certain.

Strategic Surveys

Introduction

Strategic surveys are used to gather information at the landscape, population, or site-specific scale to address questions that relate to identified objectives for each category and address the need to manage for a reasonable assurance of species persistence. Information provided by strategic surveys (as well as research and other information-gathering efforts) will help address fundamental questions of Survey and Manage species, including: (1) is there a concern for persistence? (2) is the species rare? (3) is the species closely associated with late-successional forests? (4) what is the appropriate management for the species? and, (5) do the reserve land allocations and other standards and guidelines of the Northwest Forest Plan provide a reasonable assurance of species persistence? Strategic surveys can also help refine habitat descriptions, define geographic range and information needs for future surveys, and provide important information on population status, life history, and habitat use. All of these questions are to be set in the context of the objectives of the Northwest Forest Plan. Strategic surveys are prescribed for all categories.

Information from strategic surveys feeds into the adaptive management process in these standards and guidelines, provides information for the development of Management Recommendations and pre-disturbance Survey Protocols, and provides information to better focus subsequent strategic surveys if needed. Strategic surveys provide information required in order to change species categories or remove them from Survey and Manage. These surveys also provide information to help establish or confirm direction for managing known sites and conducting pre-disturbance surveys. Finally, for species with few sites, strategic surveys may be the primary method for finding additional sites. Strategic surveys are different from pre-disturbance surveys because they are focused on gathering information about the species and its habitat needs range-wide, and are not focused on determining presence or absence in specific areas prior to habitat-disturbing activities.

There are various scales of strategic surveys. The appropriate scales to be used, and the type of information to be gathered, are determined by the needs of each species and the needs or objectives suggested by the category to which they are assigned. However, strategic surveys are envisioned as samples with sampling intensity dependent upon information needs and the characteristics of the species and the habitat. The information to determine range, habitat associations, distribution, ability to survey for, and meet other strategic survey objectives is expected to come from a series of samples distributed on the landscape. Once surveys have reasonably established those parameters, or further surveys are not expected to contribute significant additional information toward those objectives, strategic surveys may be considered completed. For some very rare species, this means strategic surveys may be complete even if few or no additional sites are found. The long-term benefit to Survey and Manage species comes from continuing to apply other Survey and Manage Standards and Guidelines over time, not continuing to do strategic surveys indefinitely.

Identifying Information Needs and Priorities

The first step toward identifying strategic survey needs is the identification of the persistence and management questions for each species. Three primary questions guide this process:

1. What are the primary concerns for species persistence?
2. How do we manage species and habitats to ensure species persistence?
3. Does the species need the Survey and Manage Standards and Guidelines to provide a reasonable assurance of persistence?

For planning purposes, information needs can be: (1) divided into species range and habitat associations; (2) to improve and direct species and habitat management; or, (3) directly relevant for dealing with specific persistence concerns. Information needs are compared with existing information (e.g., in ISMS and published literature) to determine current state of knowledge and to identify information gaps. These information gaps are considered in the context of existing management direction (e.g., what is the level of concern for persistence under other elements of the Northwest Forest Plan and within the present Survey and Manage category), to set the biological priorities for strategic surveys. Priorities are also determined by how the information may be used to increase management efficiency. If answers to these questions may lead to species changing categories or being removed from Survey and Manage, there is a benefit in reduced activity costs and reduced impacts to other forest management activities. Both the biological priorities and the management efficiency benefits must be described or quantified for display in the Strategic Survey Implementation Guide (see below) for use by management for setting survey priorities.

Strategic Survey Methods and Scales

Strategic surveys may be accomplished through various methods, such as acquiring information from field surveys, herbaria, museums, literature, field units and other sources, and using various analytical tools such as building and validating habitat models. These methods are explored, developed, and analyzed for effectiveness and efficiency for acquiring the needed information. The selection of one or more of these methods depends, at least in part, on the scale that will best address the information need. The different approaches to strategic surveys will consider the contributions of various scales of surveys generally characterized as:

Broad-scale surveys designed to:

- Include multiple species.
- Provide information on species occurrence, distribution, range, and habitat associations.
- Address different Survey and Manage questions by stratifying the survey area into significant ecological or geographical units such as forest age class (e.g., young stand vs. old-growth) or land allocations (e.g., Late-Successional Reserves vs. Matrix).
- Refine habitat characterization.

Mid- to fine-scale surveys designed to:

- Refine habitat characterization.
- Provide information on how to manage species or their habitat, particularly at known sites.

Detailed studies (linked to research as appropriate) and other surveys designed to:

- Address specific questions and information needs (e.g., determining whether a species is still extant at a specific location, or conducting studies to examine specific disturbance effects on persistence of individuals at a site).

Species or surveys may be grouped for cost efficiency. Preliminary identification of available resources, including the administrative levels that will participate, is also a consideration.

Strategic Survey Implementation Guide

A Strategic Survey Implementation Guide displaying the known strategic survey needs for all species or species groups will be developed at the range-wide or regional scale, and generally be updated annually to reflect changes in information and priorities resulting from the previous year accomplishments or new information. The Strategic Survey Implementation Guide is, of necessity, dynamic, particularly during the first years while information needs are clarified. Additionally, changes to categories or other new information will lead to new questions. The plan, with annual updates, will help ensure deadlines listed in these standards and guidelines are met and identify the magnitude and likely duration of the strategic survey program (at least for currently known information needs) for planning and scheduling purposes. The document will help focus annual work planning on the priority information needs, provide information for long-range planning, and facilitate the grouping of surveys for efficiency. The Strategic Survey Implementation Guide is subject to review by the RIEC or its delegate (currently the RIEC Survey and Manage Subcommittee) to ensure identified information needs and priorities will further the objectives of the Northwest Forest Plan.

The implementation guide will include, by species or taxa group:

- A summary of the information needs proposed to be answered by the strategic survey.
- The benefits expected by answering each identified need, either in terms of increased assurance of species persistence or reduced costs or impacts.
- Identification of methods (and scale) that would best meet the information needs.
- Relative priorities or priority-setting criteria. Management will set relative priorities or describe priority-setting criteria using the other three elements (and within expected resource availability).

Implementation and Responsibility

Responsibility for the design and coordination of strategic surveys rests with the regional offices of the Forest Service and state offices of the BLM, in collaboration with the U.S. Fish and Wildlife Service and research agencies, to ensure consistency, and because strategic surveys are generally intended to address information across a species range within the Northwest Forest Plan area. Coordination with both research agencies and field units regarding new information, assistance for design and conduct of surveys, identification of management needs, and availability of needed resources is important as well. Survey design should build upon or complement previous strategic, extensive, or general regional surveys whether conducted at the regional or local scale. Responsibility for implementation and follow-up actions may be delegated to administrative units or groups of administrative units, particularly where the range of a species is essentially confined to those units or the units are in a better position to assemble appropriate resources. Implementation includes all aspects of the planning and conduct of surveys, research, or other information-gathering activities. This may include hiring of personnel, mobilizing crews, contracting, selecting survey sites, scheduling site visits, developing protocols, etc.

Information from strategic surveys (and other sources) is maintained primarily in the ISMS database and on species distribution maps.

Analysis and Use of Results

Information from strategic surveys is used in the annual species review process (see the Adaptive Management section), is incorporated into management recommendations and pre-disturbance survey protocols, and becomes part of the existing information used in the future identification of information needs and priorities. All three of these uses may lead, directly or indirectly, to the need for additional information. Information from completed surveys, and the identification of new survey needs, will be incorporated into the Strategic Survey Implementation Guide as appropriate.

Specific objectives of strategic surveys vary by category, species, and management need. Strategic surveys for a species are considered to be complete when any one of the following four conditions apply, and the resultant information has been compiled and analyzed, as appropriate, and presented in the appropriate form for use by the target audience. This form may range from inputting the data into ISMS for use during the annual species review process to preparing a summary of the data and related management recommendations to assist project planners. The four conditions are:

1. The objectives of the strategic surveys (such as specific information needs) have been accomplished and information is sufficient to conclude that existing or resultant management direction will provide a reasonable assurance of persistence.

2. The objectives of the strategic surveys (such as specific information needs) have been accomplished and further surveys are not likely to contribute additional significant information about distribution, range, habitat associations, how to conduct pre-disturbance surveys, or other strategic survey objectives.

3. Adequate sites or habitats for the species have been located and are appropriately managed to provide reasonable assurance of persistence for the species.

4. For species with very-limited habitat, all known potential habitat of the species has been surveyed, and there is little likelihood that additional undiscovered sites of the species will be located by further surveying.

Strategic survey accomplishments will be summarized in the annual report.

VII. Reports, Monitoring, and Review

Annual Status Reports

An interagency, Northwest Forest Plan area-wide annual status report (the annual report), will be prepared to display progress and identify products resulting from implementation of these standards and guidelines. The report will include, at a minimum, (1) results of adaptive management changes; (2) status of Management Recommendations and Survey Protocols; (3) a summary of the Strategic Survey Implementation Guide (including the status of strategic surveys); (4) status and results of ongoing monitoring; and, (5) important new management direction. This report is the primary tool for the public to find out about annual changes to species assignments and resultant application of surveys to agency activities. The Agencies will establish a mailing list for all persons wishing to receive all or a part of this report. Until and unless the Agencies identify and publish an alternative source, such requests should

be addressed to the Interagency Survey and Manage Program Manager, c/o Regional Ecosystem Office, P.O. Box 3623, Portland, OR 97208-3623.

Monitoring

The primary objective of monitoring relative to Survey and Manage species is to evaluate progress toward meeting species persistence objectives. Monitoring for the Survey and Manage Standards and Guidelines will follow the monitoring direction included in the Northwest Forest Plan and will be further defined and adapted to the categories described in these standards and guidelines. Sources of new information that will contribute to monitoring, and help identify the specific monitoring questions, include pre-disturbance and strategic surveys, as well as publications, research results, public, academia, and other sources.

The Northwest Forest Plan Record of Decision monitoring section (pp. E-4 through E-10) identifies three types of monitoring: implementation, effectiveness, and validation.

1. Implementation monitoring for the Northwest Forest Plan began in 1996 and has been conducted annually. Future Northwest Forest Plan implementation monitoring protocols will be revised as needed.

2. Effectiveness monitoring for Survey and Manage is expected to be most appropriately addressed as part of the Biological Diversity effectiveness monitoring (Northwest Forest Plan Record of Decision, p. E-8) and will focus on multiple species and habitat relationships. Also some of the special monitoring issues and situations discussed on pages E-10 and E-11 are particularly relevant.

3. Validation monitoring questions described in the Northwest Forest Plan that relate to Survey and Manage substantially overlap with questions that strategic surveys are designed to address. Strategic surveys and the annual analysis that is part of the annual species review process are generally expected to contribute substantially to meeting validation monitoring objectives.

Review by the Regional Ecosystem Office

As described in the Northwest Forest Plan Standards and Guidelines, page E-16, the REO provides staff work and support to facilitate RIEC decisions. Although the standards and guidelines refer to REO review, it is understood that the REO recommends to the RIEC who has responsibility for the decisions. The RIEC may delegate responsibility to complete these reviews. The RIEC delegated the reviews required in these standards and guidelines to the Survey and Manage Intermediate Managers Group (IMG) or the RIEC Survey and Manage Subcommittee in a May 16, 2003, memorandum re: Delegation of Authority for Survey and Manage-Related Reviews. "subject to review by ..." the line officer at the next level above the official responsible for the proposal, the RIEC Survey and Manage Subcommittee, Survey and Manage IMG, REO, or RIEC means review is required unless an exemption has specifically been provided.

Three documents are referenced in these standards and guidelines: Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide. Each document plays an important role in accomplishing Survey and Manage objectives. As described for the particular document elsewhere in these standards and guidelines, they are typically written for the species range. The documents are the responsibility of management working closely with taxa experts; they are developed by taxa experts and land managers (at any administrative level) for use at field offices of the BLM and Forest Service. New or revised versions of management recommendations and survey

protocols are subject to review by the Survey and Manage IMG to ensure they identify and integrate the habitat or life-history factors key to managing the species to the level of protection intended in the standards and guidelines. New or revised versions of the Strategic Survey Implementation Guide and changes resulting from the Annual Species Review are subject to review by the RIEC Survey and Manage Subcommittee. Exceptions to management of known sites are subject to review by the line officer at the next level above the official responsible for the proposal. The Survey and Manage IMG, RIEC, or RIEC Survey and Manage Subcommittee may develop criteria to exempt certain documents or processes from review.

VIII. Additional Mitigation Measures

This section is reserved and will be determined when a Record of Decision is issued. Where appropriate, additional mitigation measures included in the 2001 Record of Decision have been incorporated into these standards and guidelines.

IX, X, XI. Omitted

XII. Former Protection Buffer Species Without Management Recommendations

For former Protection Buffer species included in Survey and Manage but without approved management recommendations, management of known sites will follow the former Northwest Forest Plan Protection Buffer direction (except no Late-Successional Reserves or Manage Late-Successional Areas are created), latest information (including that displayed in the 2000 Survey and Manage Final SEIS), and best professional judgment until a management recommendation is approved. Listed below is the former Protection Buffer direction for the four affected species: great gray owl and Siskiyou Mountains, Larch Mountain, and Shasta salamanders. This direction will be superseded when management recommendations are prepared according to these standards and guidelines.

Great Gray Owl: Within the range of the northern spotted owl, the great gray owl is most common in lodgepole pine forests adjacent to meadows. However, it is also found in other coniferous forest types. In some locations, such as on the Willamette National Forest west of the crest of the Cascade Range, at least some shelterwood harvesting seems to be beneficial for the species by opening up otherwise closed canopy cover for foraging. In doing so, consequences to species such as northern goshawk and American marten must be evaluated. Specific mitigation measures for the great gray owl, within the range of the northern spotted owl, include the following: provide a no-harvest buffer of 300 feet around meadows and natural openings and establish 1/4-mile protection zones around known nest sites. Within 1 year of the signing of the [1994 Northwest Forest Plan] Record of Decision for these standards and guidelines, develop and implement a standardized protocol for surveys; survey for nest locations using the protocol. Protect all future discovered nest sites as previously described.

Siskiyou Mountains Salamander: This species occurs within an extremely narrow range on the Rogue River, Siskiyou, and Klamath National Forests. Its range does not fall within any of the Habitat Conservation Areas identified by the Interagency Scientific Committee in Oregon. Additional surveys conducted using a standardized protocol

must be undertaken to delineate range and identify subpopulations. All populations must be protected by delineating an occupied site and avoiding disturbance of talus throughout the site, especially on moist, north-facing slopes, particularly in Oregon where Habitat Conservation Areas do not incorporate species range. Because this species seems to require cool, moist conditions, a buffer of at least the height of one site-potential tree or 100 feet horizontal distance, whichever is greater, surrounding the site, must be retained around the outer periphery of known sites. Overstory trees must not be removed within the boundary of this buffer. The implementation schedule for this species is the same as for [1994 Northwest Forest Plan] survey and manage components 1 and 2.

Larch Mountain Salamander: Because of the narrow distribution of this species, mostly within the Columbia River Gorge, primary emphasis should be to survey and protect all known sites. Sites must be identified based on fall surveys conducted using a standardized protocol. Known sites are included within boundaries of conservation areas and under these guidelines, are not to be disturbed. Surveys are needed at additional sites in the Matrix along the Columbia River Gorge. Key habitat is mossy talus protected by overstory canopy. Avoiding any ground-disturbing activity that would disrupt the talus layer where this species occurs is the primary means of protection. Once sites are identified, maintain 40 percent canopy closure of trees within the site and within a buffer of at least the height of one site-potential tree or 100 feet horizontal distance, whichever is greater, surrounding the site. Larger buffer widths are appropriate upslope from protected sites on steep slopes. Partial harvest may be possible if canopy closure can be retained; in such cases logging must be conducted using helicopters or high-lead cable systems to avoid disturbance of the talus layer. The implementation schedule for this species is the same as for [1994 NWFP] survey and manage components 1 and 2.

Shasta Salamander: This species is very narrowly distributed, occurring only in localized populations on the Shasta-Trinity National Forest. Only a small part of its range is included within Habitat Conservation Areas identified by the Interagency Scientific Committee (1990) (status within Late-Successional Reserves has not been determined). It occurs in association with limestone outcrops, protected by an overstory canopy. All known and future localities must be delineated and protected from timber harvest, mining, quarry activity, and road building within the delineated site, and a buffer of at least the height of one site-potential tree or 100 feet horizontal distance, whichever is greater, should surround the outcrop. Additional surveys conducted using a standardized protocol must be undertaken to identify and delineate all occupied sites within the species potential range.

Appendix 5

Changes between Draft and Final

Minor corrections, explanations, and edits are not included in this list.

- Added a discussion related to BLM Species of Concern.
- Modified Table 5-1 to include BLM Species of Concern.

Appendix 5

BIOLOGICAL EVALUATION
for
Federal Threatened, Endangered, and Proposed Species
and Forest Service Sensitive Species

and
an Analysis of Effects on
Bureau of Land Management Special Status Species

Final Supplemental Environmental Impact Statement
To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines
January 2004

Lead Agencies: Forest Service - U.S. Department of Agriculture
Bureau of Land Management - U.S. Department of the Interior

Introduction

This biological evaluation was prepared to meet Forest Service policy described in the Forest Service Manual (FSM) 2672.4. This biological evaluation addresses the three alternatives analyzed in the Final Supplemental Environmental Impact Statement (SEIS) To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines. The current Survey and Manage Standards and Guidelines are contained in the Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2001 Record of Decision), which amended the Northwest Forest Plan (1994 Record of Decision), which amended the land management planning documents for National Forests and Bureau of Land Management (BLM) Districts within the range of the northern spotted owl. The underlying need and the purposes for developing the SEIS are described in Chapter 1 of the Final SEIS and are incorporated by reference.

This biological evaluation addresses the potential effects of removing or modifying the Survey and Manage Standards and Guidelines on: (1) species listed or proposed for listing under the Endangered Species Act (ESA) as endangered or threatened species; (2) habitat designated or proposed for designation under ESA as critical habitat; (3) species listed as sensitive by the Regional Foresters in Forest Service Regions 5 and 6; (4) Oregon and Washington BLM sensitive, assessment, State listed as Threatened and Endangered, or Federal candidate species hereafter referred to as special status species; and, (5) California BLM special status species. No other changes to the Northwest Forest Plan are being considered in this SEIS.

A biological evaluation is required for Forest Service actions per the FS Manual, Section 2670. The BLM does not prepare biological evaluations to analyze effects on listed, proposed and other special status species (e.g. candidates and sensitive species). However, in order to provide a comprehensive analysis, BLM OR/WA and CA special status species along with Federal listed and proposed species and critical habitat are included in this biological evaluation.

Description of Alternatives

The SEIS assesses three alternatives. ***Alternative 1*** is the no-action alternative and would retain the existing Survey and Manage Standards and Guidelines. Under ***Alternative 2***, the proposed action, the Forest Service and BLM would amend the 28 land and resource management plans within the range of the northern spotted owl to remove the existing Survey and Manage Standards and Guidelines. The Forest Service and BLM also reviewed the 296 Survey and Manage species to determine their eligibility for the Regional Forester's Sensitive Species lists and BLM Special Status Species lists. Species removed from Survey and Manage that are eligible for the Agencies' Special Status Species lists are expected to be added to those lists. Under ***Alternative 3***, the Forest Service and BLM would amend 28 land and resource management plans within the range of the northern spotted owl by modifying the Survey and Manage Standards and Guidelines. Modifications would include: (1) removing the uncommon species category and all requirements pertaining to them; (2) eliminating the requirement to conduct pre-disturbance surveys in non-late successional and non-old-growth forest stands; and, (3) changing review requirements for excepting known sites from management. Like Alternative 2, species removed from the Survey and Manage Standards and Guidelines are expected to be added to the Agencies' Special Status Species lists if they meet the criteria for inclusion.

The reader is referred to Chapter 2 of the SEIS for a complete description of the alternatives being evaluated. Where apparent discrepancies occur between the descriptions of the alternatives as presented in this biological evaluation and in Chapter 2 of the SEIS, the text of the SEIS takes precedence.

Determinations

The purpose of this biological evaluation is to determine the potential effects of the SEIS alternatives on threatened and endangered species and their designated or proposed critical habitat occurring on Forest Service and BLM managed lands. This evaluation also makes a determination on the potential impacts of the alternatives on Forest Service sensitive species and BLM Special Status Species.

These determinations of effects result from an analysis of the potential changes to the species' baselines that may occur as a result of implementing one of the SEIS alternatives. Changes to the baseline are measured against the baseline that was assumed to occur prior to the implementation of the action. For this SEIS, the baseline subject to change by the proposed action alternatives is the baseline established at the time of the Northwest Forest Plan as amended by the January 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage Protection Buffer and other Mitigation Measures and Standards and Guidelines.

At the time the Northwest Forest Plan was developed, acre projections of Survey and Manage sites could not be precisely identified, either in terms of actual number of acres or by specific location. Survey and Manage species were assumed to be quite rare and few sites were known for nearly all of these species. As a result, the original Northwest Forest Plan 1994 Biological Evaluation/Assessment and associated Biological Opinion could not and did not identify any specific contribution of Survey and Manage known sites to sensitive species viability or to recovery of species listed or proposed under the Endangered Species Act (ESA). No contribution to the environmental baseline for Threatened, Endangered, and Proposed species or Forest Service sensitive species or BLM special status species was assumed. Because it was never assumed the Survey and Manage Standards and Guidelines contributed to these species' recovery or viability, the present proposal to remove or modify the Survey and Manage Standards and Guidelines and associated removal of acres from managed known site direction, would not alter the environmental baseline described for threatened, endangered, proposed, sensitive, and special status species in any previous analyses.

The No-Action Alternative (Alternative 1) would result in no changes to the environmental baseline. Currently up to 26,600 acres have been identified for management under the Survey and Manage Standards and Guidelines. The number of acres may increase up to 207,000 acres over the next 25 years.

Under Alternative 2, the removal of all species from the Survey and Manage species list would result in up to 16,700 acres of forested habitat in Matrix and Adaptive Management Area land allocations being removed from managed known site direction. If all 16,700 acres are removed from managed known site direction, this would represent 0.2 percent of the federally-managed late-successional and/or old-growth (approximately 8 million acres) habitat in the range of the northern spotted owl. Projected over the next 25 years, the amount of acres to be protected by the Forest Service Sensitive Species policy and BLM Special Status Species Policy is expected to increase to approximately 44,000 acres, 163,000 acres less than what would be protected under Alternative 1. These 163,000 acres are approximately 2 percent of federally managed late-successional and/or old-growth (approximately 8 million acres) habitat in the range of the northern spotted owl. For comparison, approximately 200,000 acres of Matrix (some of it currently in late-successional forest condition) have received protection as Riparian Reserves since the

Northwest Forest Plan Record of Decision. This is based on additional information and site-specific analysis during the first 6 years of Northwest Forest Plan implementation (USDA, 2000).

Under Alternative 3, the removal of species from the Survey and Manage species list in all or part of the species' range would result in approximately 10,100 acres of forested habitat in Matrix and Adaptive Management Area land allocations being removed from managed known site direction. If 10,100 acres are removed from managed known site protection, this would represent approximately 0.1 percent of the federally managed late-successional and/or old-growth habitat in the range of the northern spotted owl. Projected out over the next 25 years, the amount of acres to be protected by Survey and Mange under this alternative is expected to increase to approximately 87,000 acres, 120,000 acres less than what would be protected under Alternative 1. These 120, 000 acres are approximately 1.5 percent of federally managed late-successional and/or old-growth habitat in the range of the northern spotted owl. For comparison, approximately 200,000 acres of Matrix, some of it currently in late-successional forest condition, has received additional protection as Riparian Reserve. This is based on additional information and site-specific analysis during the first 6 years of Northwest Forest Plan implementation (USDA 2000).

Throughout this section, the reader is referred to Chapter 3&4 of the SEIS for a more complete discussion of potential effects of the alternatives being evaluated. Where apparent discrepancies occur between the descriptions of the alternatives as presented in this biological evaluation and in Chapter 3&4 of the SEIS, the text of the SEIS takes precedence.

Proposed, Threatened, and Endangered Species and Designated or Proposed Critical Habitat

This section discusses the expected effects to species listed as threatened or endangered, or proposed for listing, under the ESA of 1973, as amended. Species have been grouped where effects and rationales are the same. The following discussion includes all federally endangered, threatened, or proposed species, and designated and proposed critical habitat on National Forest and BLM administered lands in the Northwest Forest Plan area.

Northern Spotted Owl (*Strix occidentalis caurina*) - *May affect, but not likely to adversely affect the northern spotted owl; may affect, but not likely to adversely affect designated critical habitat*

Background and Affected Environment. Management of northern spotted owls and their habitat on federally managed lands was an important consideration in the design of the Northwest Forest Plan. This species received extensive attention in the Northwest Forest Plan Final SEIS and its supporting documents. The Northwest Forest Plan Final SEIS (USDA, USDI 1994a, pp. 3&4-211 through 3&4-245 and Appendices G, J.1, and J.3) provides the basis for concluding that the Northwest Forest Plan would serve as the federal agency contribution to spotted owl recovery.

An April 12, 1994, letter from the Northwest Forest Plan SEIS Team Leader to the U.S. Fish and Wildlife Service specifically addressed the contribution to spotted owl habitat which would accrue from implementation of the Survey and Manage Standards and Guidelines. This discussion states that the expected small scale of late-successional forest areas that would be retained for the Survey and Manage Standards and Guidelines would have a negligible beneficial effect on the maintenance of spotted owl populations.

This negligible effect results from the fact that the federal recovery strategy for spotted owl population is primarily designed to retain and manage large blocks of late-successional habitat to provide for population clusters of spotted owl pairs (Biological Assessment of the Draft SEIS, October 1993). Most Survey and Manage sites are small in comparison (most are less than 1 acre; some are more than 10 acres).

An additional component of the Northwest Forest Plan spotted owl strategy was assurance of successful spotted owl dispersal among the large reserves, through their relatively close proximity. Based upon empirical movement data and population modeling, the distance between reserves is adequate to ensure dispersal between adjacent reserves. In addition, the retention and restoration of late-successional forest in Riparian Reserves and the 100-acre owl activity centers would contribute to spotted owl dispersal by providing foraging and roosting habitat for dispersing spotted owls. Again, viewed in the larger context, the Survey and Manage Standards and Guidelines would be expected to have a negligible beneficial effect on owl populations.

The Northwest Forest Plan Final SEIS anticipated that some Matrix and Adaptive Management Area undergoing future timber harvest would be suitable spotted owl habitat and would be occupied by spotted owls (USDA, USDI 1994a, Appendix J3, p. J3-8). Therefore, the anticipated rate of timber harvest in the Matrix and Adaptive Management Areas was included as part of the analysis of effects to spotted owls in the Final SEIS. The Northwest Forest Plan Final SEIS analysis concluded that the expected timber harvest would be compatible with spotted owl habitat management objectives. The loss of spotted owl habitat in the Matrix and Adaptive Management Areas was anticipated to occur in a manner which would allow the habitat to re-grow and spotted owl populations to stabilize in the Late-Successional Reserves and Congressionally Reserved Areas.

Management of large blocks of habitat and Matrix has occurred consistent with what was anticipated in the Northwest Forest Plan Final SEIS. The most common activities inside Late-Successional Reserves are silvicultural thinning of non-late-successional stands (with a general goal of developing late-successional forests), and risk management (fuels reduction) in the drier forest types. After 6 years of implementing the Northwest Forest Plan, there were fewer impacts to the spotted owl population in Matrix and Adaptive Management Areas than were originally anticipated due to lower than anticipated timber harvest (including an increased focus on thinning rather than old-growth stands), the effects of the Survey and Manage mitigation measure, legal challenges, and the designation of more Riparian Reserve acreage than originally modeled.

An analysis of spotted owl demographic areas, prepared as part of the effectiveness monitoring of the Northwest Forest Plan, has provided information on the owl population. The 1999 results indicate a slightly slower decline in the spotted owl population and a stabilization of the female survival rates, when compared to a similar analysis from 1993 (Forsman et al. 1996). These conclusions are consistent with projections from the Northwest Forest Plan Final SEIS analysis.

In addition, meta-analysis was conducted on all 16 spotted owl demographic study areas in Washington, Oregon, and northern California. Results of this analysis indicate that female survival rates and reproductive rates were not declining over time (Franklin et al. 1999) as had been reported in earlier analyses. That is, recent evidence indicates that while spotted owl populations continue to decline consistent with what was anticipated in 1994, the rate of decline of spotted owls (based on female survival and reproductive rates) has slowed. This result is based on many different studies from throughout the range of the northern spotted owl. The estimated rate of decline in this 1998 meta-analysis of spotted owl data was 3.9 percent, with a 95 percent confidence interval of

0.925 - 0.997. This means that the population could be declining by as much as 7.5 percent per year, or by as little as 0.3 percent per year.

Critical habitat for the northern spotted owl was designated on January 15, 1992 (57 FR 1796). Federal agencies have continued to manage the spotted owl critical habitat in compliance with the Endangered Species Act, consulting on activities that may affect critical habitat. The Final SEIS analysis assumed no contribution from spotted owl critical habitat above that already provided by the Northwest Forest Plan.

Environmental Consequences and Comparison of Alternatives. Alternative 1 would have no effect on spotted owls or designated critical habitat. Alternatives 2 and 3 would have similar effects on spotted owl habitat management across the Northwest Forest Plan area, which is the meaningful scale for consideration of spotted owl populations. Large reserves and other components of the Northwest Forest Plan would continue to provide habitat blocks for population clusters and dispersal conditions for individual spotted owls under all of the alternatives.

Although all species could be removed from Survey and Manage under Alternative 2 and some species removed under Alternative 3, the patches of late-successional forest that would be returned to underlying land allocations and potentially available for timber harvest would not lower the amount of habitat or change the distribution of habitat originally expected to be available to spotted owls. While Survey and Manage areas may have benefited dispersing spotted owls by providing additional structure and habitat complexity to the harvested area through the next stand rotation, these benefits are negligible when compared to the contribution of Riparian Reserves and Matrix Standards and Guidelines.

One difference that should be noted between the action alternatives and the no-action alternative are potential effects on the red tree vole (*Arborimus longicaudus)*. The red tree vole is a prey species of the northern spotted owl. Under all alternatives, the red tree vole would have sufficient habitat to support stable populations within the Northwest Forest Plan area except for the northern Coast Range of Oregon. (See also the red tree vole effects discussion in Chapter 3&4 of the Final SEIS.) In the northern Oregon Coast Range, the species is extremely low in number, with fragmented habitat on federal land, owing to land ownership patterns.

In December 2003, the Regional Interagency Executive Committee determined that the red tree vole no longer meets the criteria for inclusion as a Survey and Manage species in the mesic portion of the its range (see Figure 1). In addition, the Oregon Natural Heritage Program has reclassified the northern Oregon coast range population of red tree voles (north of Highway 20 and west of the Willamette Valley) as an intraspecific taxon "critically imperiled because of extreme rarity … making it especially vulnerable to extinction" (T1). With this change in classification, this portion of the population meets the criteria for inclusion on the Forest Service sensitive species and BLM special status species lists and protection as outlined in the Sensitive/Special Status Species section below.

Under Alternative 1, the northern mesic and xeric portions of the red tree vole range would remain in the Survey and Manage Standards and Guidelines. Under Alternatives 2 and 3, all areas of the red tree vole's range would be eliminated from the Survey and Manage Standards and Guidelines. However, because the north Oregon coast area is classified as a "T1" by the Oregon Natural Heritage Program, it is assumed that the north coast portion of the population would be placed on the Forest Service sensitive species list and the BLM special status species list.

The contribution of red tree voles as prey varies in different portions of the range of the spotted owl, from a low of 1 percent (of total prey items) of the diet to a high of 6 percent.

CANADA
MONTANA
WASHINGTON
Seattle
Spokane
Wenatchee
Olympia
Missoula
PACIFIC OCEAN
Tillamook
Portland
Salem
Eugene
OREGON
IDAHO
Boise
Coos Bay
Roseburg
Medford
Klamath Falls
NEVADA
Elko
Arcata
Redding
CALIFORNIA
Reno
Ukiah
Sacramento
San Francisco
LEGEND
Biological Zone
North Mesic
Mesic
Xeric
Spotted Owl Range
BLM Office
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
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In some circumstances, red tree voles may represent a higher proportion of the diet of individual spotted owls. In coastal southwestern Oregon, the red tree vole made up 50 percent of the prey items consumed by two owl pairs, although due to their small size these voles provided only 16 percent of the total biomass of the diet (Forsman et al. 1984). Any effects on spotted owls would be greatest for resident spotted owls, because they are dependent on prey availability within their individual home range. Red tree voles do not represent a large portion of the diet of most spotted owls and the Matrix, where increased risk from management activities would occur, was not expected to provide long-term habitat for resident spotted owls under the original Northwest Forest Plan design. However, surveys for red tree voles have been done primarily in the Matrix due to the nature of the proposed actions and, as a result, most of the red tree vole protection measures have been put in place in the Matrix. Therefore, most of the effect of removing red tree voles from the Survey and Manage Standards and Guidelines would occur due to changes in how the Matrix land allocation would be managed.

Neither the No-Action Alternative nor the two action alternatives will affect the original basis for the assessment or the conclusions of the effects to spotted owls as presented in the Northwest Forest Plan Final SEIS. Congressionally Reserved Areas and Late-Successional Reserves will continue to be managed for late-successional habitat in the Northwest Forest Plan area and provide for spotted owl breeding clusters. Because Congressionally Reserved Areas, Late-Successional Reserves, and the Riparian Reserve system are intertwined or in close proximity, adequate dispersal habitat for spotted owls will continue to be provided. The potential difference between alternatives has no effect on the spotted owl habitat management strategy because it results in only negligible and minor losses in the amount of habitat. The Northwest Forest Plan Final SEIS assumptions and conclusions relative to a spotted owl 4(d) rule and critical habitat remain valid as described above. None of the alternatives in this SEIS would affect the conclusions of the Northwest Forest Plan Final SEIS that spotted owls will be adequately provided for under the Northwest Forest Plan or the conclusions in the associated 1994 Biological Opinion. Therefore, the determination for Alternative 1 is *no effect* for northern spotted owl and its critical habitat. For Alternatives 2 and 3 the determination is *may effect, but not likely to adversely affect* the northern spotted owl and *may effect, but not likely to adversely affect* its critical habitat.

Marbled Murrelet (*Brachyramphus marmorata*) - *No effect*

Background and Affected Environment. Management of the marbled murrelet and its habitat on federally managed lands was an important component in the design of the Northwest Forest Plan. Therefore, this species received extensive attention in the Northwest Forest Plan Final SEIS and its supporting documents. That Final SEIS (pp. 3&4-245 through 3&4-249 and Appendices G and J2) provides a detailed explanation of the basis for concluding that the Northwest Forest Plan would serve as the federal agency contribution to marbled murrelet recovery. Additional information was provided in the April 12, 1994, letter from the SEIS Team Leader to the U.S. Fish and Wildlife Service. Where it occurs, critical habitat for marbled murrelet on federally managed lands is located within the boundaries of Late-Successional Reserves.

The management strategy for marbled murrelets in the Northwest Forest Plan includes two primary components: (1) protection and development of marbled murrelet nesting habitat inside the large reserves near the coast; and, (2) retention of all current and future known marbled murrelet nest sites in all land allocations and protecting occupied habitat. Location of murrelet nest sites is ensured by requiring protocol surveys of potential habitat for marbled murrelet prior to management activities.

Management of the Congressionally Withdrawn Areas and Late-Successional Reserves has occurred as expected. The most common activity in the coastal areas is the silvicultural thinning of stands within Late-Successional Reserves to encourage late-

successional forest development. After 6 years of implementing the Northwest Forest Plan, there were fewer impacts to the late-successional forest in the Matrix and Adaptive Management Areas than was originally expected, due to lower than anticipated timber harvest and more Riparian Reserve acreage than originally modeled.

Even with removing pre-disturbance surveys and protected areas for Survey and Manage species, there is no new information that would substantially alter the conclusions of the Northwest Forest Plan Final SEIS concerning marbled murrelets nor is there is a change in the basic protections put in place for the murrelet as part of the original Northwest Forest Plan.

Environmental Consequences and Comparison of Alternatives. The primary difference between the two action alternatives would be the number of species removed from the Survey and Manage list and the concomitant acres removed from managed known site direction; much of which is outside the range of the marbled murrelet. Despite eliminating protection for Survey and Manage sites in the future, the level of protection for habitat currently occupied by marbled murrelet would not be reduced, since marbled murrelet surveys and habitat protection measures would remain in place regardless of Survey and Manage species locations. All located murrelet nest sites would be protected under existing Northwest Forest Plan Standards and Guidelines for the murrelet. Red tree vole sites, 10+ acre sites, are outside the range of the murrelet or qualify for protection under the Forest Service sensitive species or BLM special status species policies. The determination for all alternatives is *no effect* for marbled murrelet and its critical habitat.

Bald Eagle (*Halieatus leucocephalus*) - *No effect*

Background and Affected Environment. Breeding and wintering populations of the bald eagle occur throughout the Northwest Forest Plan area and are addressed in the Pacific States Bald Eagle Recovery Plan (USDI FWS 1986) and the Oregon-Washington Bald Eagle Working Team Implementation Plan (Washington DFW 1990). Agencies survey extensively for bald eagles. Management of the bald eagle includes preparation of site-specific management plans and providing protection zones and management areas, as needed, for the species and its habitat. Management guidelines delineated in these plans address the potential loss of habitat from timber harvest activities, the distribution goals identified in the recovery plan, and to some extent, human disturbance.

This species is not essentially dependent on late-successional habitat, but it is linked to large trees near riparian habitat for roosting and nesting. Under the Northwest Forest Plan, Riparian Reserves are identified along all streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. These reserves were identified in the Matrix after other designated areas (such as Late-Successional Reserves) had been identified. The bald eagle was proposed for delisting in July 1999 and a final decision and rule will be published by the U.S. Fish and Wildlife Service.

Environmental Consequences and Comparison of Alternatives. All alternatives in this SEIS would have similar effects on bald eagle habitat management. Removal of species from Survey and Manage will not change the environmental baseline for the bald eagle or result in changes to impacts to this species that were not anticipated in the original analysis of the Northwest Forest Plan and subsequent analyses. The current requirements to conduct specific surveys and develop site management plans for bald eagles greatly reduces any potential effect from changes in the Survey and Manage Standards and Guidelines. Riparian Reserves help maintain and restore riparian structures and functions important to bald eagle recovery. None of the alternatives in the SEIS will affect the original basis for the assessment of the effects to bald eagles and

conclusions in the Northwest Forest Plan Final SEIS. Therefore, for the three alternatives, the determination is *no effect* for bald eagle. No critical habitat has been designated for bald eagles.

California red-legged frog (*Rana aurora draytonii*) - *No effect*

Background and Affected Environment. The most important habitat for California red-legged frog is aquatic and riparian. This species is known to sometimes move through moist forest habitat during dispersal. Within the Northwest Forest Plan area, the listed range of the species may include some portions of the Mendocino and Shasta-Trinity National Forests and the Redding BLM Resource Area. This area has poor quality potential habitat (lack of narrow, incised channels and pools, dry chaparral/knobcone pine habitat, etc.). Few historical sightings for this species have been recorded in its limited potential range in the Northwest Forest Plan area. The Recovery Plan for the California red-legged frog was released on May 28, 2002. The Recovery Plan identified reasons for decline and threats to survival. It established Core Areas for recovery of the species, none of which are in the Northwest Forest Plan area.

Anticipated Impacts from Implementation of the Action Alternatives. The proposed changes in Survey and Manage Standards and Guidelines under Alternatives 2 and 3 would not affect the riparian-associated habitat of the California red-legged frog. The elevation bands that the species is most likely to occur in do not overlap with the areas most likely to be managed in either action alternative; therefore, the action alternatives are expected to have no effect on the species (Bratch 2000, pers. comm.).

Under all alternatives, the Agencies would survey for listed species in the vicinity of proposed projects. These surveys are designed to have a high likelihood of locating populations of California red-legged frogs irrespective of whether surveys are also done for Survey and Manage species. In addition, the species habitat will be provided a high level of protection through implementation of Aquatic Conservation Strategy objectives and the reserve land allocations. Therefore, there are no anticipated impacts to this species from either action alternative._Implementation of either action alternative will have *no effect* on the California red-legged frog or its critical habitat.

Canada Lynx (*Lynx canadensis*) - *No effect*

Background and Affected Environment. In general, lynx are associated with habitats that are southern extensions of the boreal forests. Lynx are highly specialized predators whose primary prey is the snowshoe hare (*Lepus americanus*). Lynx have evolved to survive in areas that receive deep snow. Snowshoe hares use forests with dense understories that provide forage, cover to escape from predators, and protection during extreme weather. Generally, earlier stages of successional forest have greater understory structure than do mature forests and support higher hare densities. However, mature forests can also provide snowshoe hare habitat, as openings appear in the canopy of mature forests when trees succumb to disease, fire, wind, ice, or insects, and the understory develops. Lynx concentrate their hunting activities in areas where hare activity is relatively high. Lynx are thought to use late-successional and old-growth forests for denning.

The Canada lynx was listed by the U.S. Fish and Wildlife Service as a threatened species within the conterminous United States, effective April 24, 2000. Concurrent with the listing process, a national interagency Lynx Conservation Assessment and Strategy (LCAS) (Ruediger et al. 2000) was developed to provide a consistent and effective approach to conservation of Canada lynx on federally managed land in the conterminous United States. The Lynx Conservation Assessment and Strategy identifies 17 risk factors in 4 different categories-factors affecting lynx productivity, lynx mortality, lynx movements, and other large-scale risk factors. Risk factors identify activities or existing

conditions that could adversely affect either individuals or groups of lynx. Within the range of the Northwest Forest Plan, the primary risk factors for lynx are: forest type conversion and precommercial thinning in snowshoe hare habitat (primary lynx prey); fire exclusion that prevents natural disturbance processes; roads and winter recreational trails; and lack of a lynx monitoring strategy.

On February 7, 2000, the Forest Service and the U.S. Fish and Wildlife Service entered into a Canada Lynx Conservation Agreement. In August 2000, the BLM signed a similar agreement with the U.S. Fish and Wildlife Service. As part of the Conservation Agreements, the Forest Service and BLM agreed to prepare an evaluation of any proposed action using the best currently available scientific information, including the LCAS and the Lynx Science Report (Ruggerio et al. 2000) to determine whether the activity could affect lynx. If the evaluation indicates an activity is likely to adversely affect the lynx, the agency will not authorize the activity until Forest Plans are revised to incorporate additional measures for lynx. The Mt. Baker-Snoqualmie and Okanogan-Wenatchee are the only National Forests within the Northwest Forest Plan area with lynx habitat.

At the request of the Oregon State Office, a BLM review was conducted using the Criteria and Procedures for Lynx Habitat Mapping and Recommendations for Oregon and Washington contained in the July 28, 2000, memorandum from the Lynx Biology Team to the Lynx Steering Committee. These mapping criteria and procedures were provided as guidance to field units from the Lynx Steering Committee in their August 22, 2000, letter. Based on these criteria and procedures, the BLM concludes that no Canada lynx habitat occurs on BLM administered lands within these Districts/Resource Areas in western Oregon, and that actions administered by the BLM in western Oregon are not likely to impact lynx.

Anticipated Impacts from Implementation of the Action Alternatives. Under the action alternatives, species would be removed from Survey and Manage in all or part of their range in the Northwest Forest Plan area. This is not expected to affect lynx. Removal of species from Survey and Manage will not change the environmental baseline for the lynx or result in changes to impacts to this species that were not anticipated in the analysis of the Northwest Forest Plan and subsequent analyses. Future activities including, but not limited to, timber harvest, road construction, or application of prescribed fire, might be proposed on these "returned" sites, but would be evaluated for their direct and indirect effects to lynx under the auspices of the ESA.

There is no suitable habitat for lynx in western Oregon and habitat for lynx in Washington is found only on the Okanogan-Wenatchee and a very small portion of the Mt. Baker Snoqualmie National Forests. The lynx was not listed when the plan was consulted on originally and Survey and Manage protections are not considered necessary for species recovery. For BLM administered lands, the alternatives will have no effect on lynx or its habitat, since BLM administered lands contain no suitable habitat for lynx in the planning area. Because of the provisions in the February 7, 2000, Forest Service Conservation Agreement and August 2000 BLM Conservation Agreement; the lack of suitable habitat for Canada lynx on Forest Service and BLM administered lands within the Oregon Northwest Forest Plan area; and the dispersed nature and small size (mainly less than 1 acre) of Survey and Manage species known sites in Washington, all alternatives are expected to have *no effect* on the Canada lynx. No critical habitat has been designated for lynx.

Gray Wolf (*Canis lupus*) - *No effect*

Background and Affected Environment. The range of the gray wolf includes portions of the Northwest Forest Plan area, including the northern Cascade Range in Washington. Gray wolves are not closely associated with late-successional forest, but use a variety of

open and forested habitat that support deer, elk, and other species that are their primary prey, as well as areas supporting small mammal populations.

Anticipated Impacts from Implementation of the Action Alternatives. Removal of species from Survey and Manage will not change the environmental baseline for the wolf or result in changes to impacts to the wolf that were not anticipated in the analysis of the Northwest Forest Plan and subsequent analyses. Because gray wolves are not dependent on late-successional forest, the loss of the small (less than 1 acre patches), isolated patches of late-successional forest that are currently protected under existing Survey and Manage Standards and Guidelines would have a negligible effect on habitat for the wolf. None of the alternatives in this SEIS will affect the original basis for the assessment of the effects to gray wolves and conclusions in the Northwest Forest Plan Final SEIS. Therefore, for all alternatives, the determination is *no effect* for gray wolves.

Grizzly Bear (*Ursus arctos*) - *No effect*

Background and Affected Environment. The range of the grizzly bear includes portions of the Northwest Forest Plan area, including the Okanogan-Wenatchee and Mt. Baker-Snoqualmie National Forests in the Cascade Range of Washington. Grizzly bears are not closely associated with late-successional forests, but use a variety of habitats, including forested areas for hiding and cover. Grizzly bears are sensitive to human disturbance.

Anticipated Impacts from Implementation of the Action Alternatives. Both action alternatives would have nearly identical effects on grizzly bear habitat. Because grizzly bears are not dependent on late-successional forest, the small (less than 1 acre patches), isolated patches of late-successional forest that would be protected under the Survey and Manage Standards and Guidelines would have minimal effect on habitat for this species. None of the alternatives in this SEIS will affect the original basis for the assessment of the effects to grizzly bears and conclusions in the Northwest Forest Plan Final SEIS. Therefore, for all alternatives, the determination is *no effect* for grizzly bear. The grizzly bear has no designated critical habitat.

Listed or Proposed Plant Species Associated with Late-Successional Forests

No currently listed or proposed plant species occur within late-successional forests.

Listed and Proposed Fish and Designated and Proposed Critical Habitat - *No effect*

All actions/projects proposed on Forest Service or BLM administered lands must be designed to follow the Aquatic Conservation Strategy of the Northwest Forest Plan. As proposed projects are designed and analyzed for effects to listed fish or critical habitat, needs of the fish species and habitat elements required to follow the Aquatic Conservation Strategy will be identified. Table 5-1 includes proposed or listed fish species and proposed or designated critical habitat in the Northwest Forest Plan area.

Alternatives 2 and 3 would not alter this assessment process; therefore, there would be no change in effect as a result of the removal or modification of the Survey and Manage Standards and Guidelines when compared to the No-Action alternative. Designated or proposed critical habitat for listed fish corresponds well with Riparian Reserves of the Aquatic Conservation Strategy in the Northwest Forest Plan. Due to low acreage, the small size and dispersed nature of managed known sites, no effects are anticipated on listed or candidate fish or designated or proposed critical habitat. Removal of species from Survey and Manage will not change the environmental baseline for listed fish

species or result in changes to impacts to these species which were not anticipated in the analysis of the Northwest Forest Plan and subsequent analyses. For all alternatives, the determination is *no effect* for listed fish species and designated or proposed critical habitat.

Table 5-1. Proposed or listed fish species and proposed or designated critical habitat in the Northwest Forest Plan area, including Evolutionarily Significant Units (ESU) and Distinct Population Segments (DPS).

Species	ESU, DPS, or Critical Habitat	Status
Chinook Salmon (*Oncorhynchus tshawytscha*)	California Coastal	Threatened
	Central Valley spring-run	Threatened
	Sacramento River winter-run	Endangered
	Snake River spring/summer-run	Threatened
	Snake River fall-run	Threatened
	Upper Columbia River spring-run	Endangered
	Upper Willamette River	Threatened
	Lower Columbia River	Threatened
	Puget Sound	Threatened
	Critical habitat for Sacramento River winter-run ESU	Designated
	Critical habitat for Snake River spring/summer-run ESU	Designated
	Critical habitat for Snake River fall-run ESU	Designated
Coho Salmon (*Oncorhynchus kisutch*)	Central California Coast	Threatened
	Oregon Coast	Threatened
	Southern Oregon/ Northern California Coast	Threatened
	Critical habitat for Central California Coast ESU	Designated
	Critical habitat for Southern Oregon/ Northern California Coast ESU	Designated
Chum Salmon (*Oncorhynchus keta*)	Hood Canal summer-run	Threatened
	Columbia River	Threatened
Sockeye Salmon (*Oncorhynchus nerki*)	Snake River	Endangered
	Critical habitat for Snake River ESU	Designated
Steelhead Trout (*Oncorhynchus mykiss*)	Upper Columbia River	Endangered
	Lower Columbia River	Threatened
	Snake River Basin	Threatened
	Middle Columbia River	Threatened
	Upper Willamette River	Threatened
	Northern California	Threatened
	Central California Coast	Threatened
	Central Valley	Threatened
Bull Trout (*Salvelinus confluentus*)	Coastal-Puget Sound	Threatened
	Columbia River	Threatened
	Klamath River	Threatened
	Critical habitat for Klamath River DPS	Proposed
	Critical habitat for Columbia River DPS	Proposed
Lost River sucker (*Deltistes luxatus*)		Endangered
	Critical habitat	Proposed
Shortnose sucker (*Chasmistes brevirostris*)		Endangered
	Critical habitat	Proposed

Listed or Proposed Species not Associated with Late-Successional Forests - *No effect*

The Survey and Manage Standards and Guidelines were developed to address persistence concerns for species associated with late-successional forest. The listed or proposed species identified below occur within the Northwest Forest Plan area, but are (1) not known to occur on federally managed lands in the Northwest Forest Plan area; (2) their presence in the Northwest Forest Plan area is peripheral, transitory, or unaffected by forest management; or, (3) they do not inhabit coniferous forest or if found in forested habitat are not associated with late-successional and old-growth forests. Any habitat protected by the Survey and Manage Standards and Guidelines is likely to be late-successional conifer forest. Therefore, any changes to the Survey and Manage Standards and Guidelines would have no bearing on these species (or their critical habitat, if designated or proposed) and would not affect the conclusions of the Northwest Forest Plan Final SEIS. For the following listed or proposed species, implementation of any of the alternatives is expected to have *no effect.*

Vascular Plants

Sonoma alopecurus	*Alopecurus aequalis* var. *sonomensis*
MacDonald's rockcress	*Arabis macdonaldiana*
Marsh sandwort	*Arenaria paludicola*
Applegate's milkvetch	*Astragalus applegatei*
Clara Hunt's milkvetch	*Astragalus clarianus*
Tiburon paintbrush	*Castilleja affinis* ssp. *neglecta*
Golden Indian paintbrush	*Castilleja levisecta*
Howell's spineflower	*Chorizanthe howellii*
Sonoma spineflower	*Chorizanthe valida*
Baker's larkspur	*Delphinium bakeri*
Yellow larkspur	*Delphinium luteum*
Willamette daisy	*Erigeron decumbens* var. *decumbens*
Menzies' wallflower	*Erysimum menziesii*
Gentner's mission-bells	*Fritillaria gentneri*
Marin dwarf-flax	*Hesperolinon congestum*
Showy stickseed	*Hackelia venusta*
Water howellia	*Howellia aquatilis*
Beach layia	*Layia carnosa*
Burke's goldfields	*Lasthenia burkei*
Contra costa goldfields	*Lasthenia cojugens*
Western lily	*Lilium occidentale*
Large-flowered wooly meadowfoam	*Limnanthes floccose* spp. *grandiflora*
Bradshaw's lomatium	*Lomatium bradshawii*
Agate desert-parsley	*Lomatium cookii*
Kincaid's lupine	*Lupinus sulphereus* var. *kincaidii*
Pt. Reyes clover lupine	*Lupinus tidestromii* var. *layneae*
Tidestrom's clover lupine	*Lupinus tidestromii* var. *tidestromii*
Many-flowered navarretia	*Navarretia leucocephala* ssp. *plieantha*
Slender orcutt grass	*Orcuttia tenuis*
Yreka phlox	*Phlox hirsuta*
Hairy (rough) popcorn flower	*Plagiobothrys hirtus*
Calistoga allocarya	*Plagiobothrys strictus*
Napa bluegrass	*Poa napensis*
Nelson's checkermallow	*Sidalcea nelsoniana*
Wenatchee Mountain checkermallow	*Sidalcea oregana* var. *calva*
Kenwood Marsh checkermallow	*Sidalcea oregana* var. *valida*
Ladies'-tresses	*Spiranthes diluvialus*
Kneeland Prairie penny-cress	*Thlaspi californicum* (*montanum* var. *californicum*)
Showy Indian clover	*Trifolium amoenum*

Invertebrates

Conservancy fairy shrimp	*Branchinecta conservatio*
Vernal pool fairy shrimp	*Branchinecta lynchi*
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*
Mission blue butterfly	*Icaricia icarioides missionensis*
Fender's blue butterfly	*Icaricia icarioides fenderi*
San Bruno elfin butterfly	*Incisalia mossii bayensis*
Vernal pool tadpole shrimp	*Lepidurus packardi*
Lotis blue butterfly	*Lycaeides argyrognomon lotis*
Shasta (placid) crayfish	*Pacifastacus fortis*
Callippe silverspot butterfly	*Speyeria callippe callippe*
Behren's silverspot butterfly	*Speyeria zerene behrensii*
Oregon silverspot butterfly	*Speyeria zerene hippolyta*
Myrtle's silverspot butterfly	*Speyeria zerene myrtleae*
California freshwater shrimp	*Syncaris pacifica*

Fish

Tidewater goby	*Eucyclogobius newberryi*
Delta smelt	*Hypomesus transpacificus*
Oregon chub	*Oregonichthys* (*Hybopsis*) *crameri*

Birds

Western snowy plover (coastal populations)	*Charadrius alexandrinus nivosus*
Brown pelican	*Pelcanus occidentalis*
California clapper rail	*Rallus longirostris obsoletus*

Mammals

Point Arena mountain beaver	*Aplodontia rufa nigra*
Steller's (northern) sea lion	*Eumetopias jubatus*
Columbian white-tailed deer	*Odocoileus virginianus leucurus*
Salt marsh harvest mouse	*Reithrodontomys raviventris*

Forest Service Sensitive and BLM Special Status Species - *No impact*

Background and Affected Environment. This section addresses sensitive species currently listed in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and special status species in the BLM within the Northwest Forest Plan area (see Table 5-2 at the end of this appendix).

The sensitive species policy includes species for which there is a documented concern for viability within one or more administrative units within the species' historic range (FSM 2670.22, WO Amendment 2600-95-7). The designation of "sensitive" by a Regional Forester carries a requirement to analyze the impacts of proposed projects in a biological evaluation (FSM 2670). In the Northwest Forest Plan area, more than 450 species are listed as sensitive by Regions 5 and 6, including more than 350 plant species. Some of these species are associated with late-successional habitats.

The BLM Special Status Species list includes those species that are (1) OR/WA BLM Sensitive, Assessment, State Threatened and Endangered, or Federal Candidate Status, and are documented or suspected on one or more BLM Districts within the Northwest Forest Plan area; and (2) California BLM Special Status Species. The BLM conducts analyses on Special Status Species where the BLM has the capability to significantly affect their conservation status. Per BLM 6840 Manual and OR/WA and CA 6840 policies, agency actions should not contribute to listing of the species under the ESA.

Many sensitive plant species are associated with special/unique habitats including alpine fellfields, subalpine meadows, cliffs, talus, springs and seeps, bogs, fens, carrs, and riparian corridors. Of these, only riparian corridors would be classified as occurring in late-successional habitat. Other plant taxa may occur in forested habitats, yet be associated with early-seral conditions. Still other species have distribution and occurrence patterns controlled by geology or rock types such as serpentine. Perhaps, some of these affinities are more likely in eastside habitats where water is more limiting than those areas found in west-side forests.

Anticipated Impacts from Implementation of the Action Alternatives. Out of 296 Survey and Manage species, 36 species are already included on the BLM and Forest Service Special Status Species lists. These species would remain on the Special Status Species lists under all alternatives. None of the mollusks, fungi, lichens, or bryophytes on the Survey and Manage list are currently included on the sensitive species lists for Region 6 of the Forest Service. A few are included on the Region 5 sensitive species list.

Most of the habitat managed under the Survey and Manage Standards and Guidelines is likely to be late-successional conifer forest. Therefore, for terrestrial sensitive species occurring within the Northwest Forest Plan area, but not associated with late-successional and old-growth forests, removing or modifying the Survey and Manage Standards and Guidelines would have no impact on these species.

The Forest Service conducts surveys for sensitive species, as needed, in the areas where actions or projects are proposed to occur. Where surveys are conducted, they have a reasonable probability of locating individuals and populations of sensitive species, irrespective of whether surveys are conducted for Survey and Manage species. In situations where surveys are not conducted and habitat is present, occupancy of the habitat is assumed. In the Forest Service, the biologist must do a biological evaluation to determine project effects on the species and habitat and make a determination whether the proposed action could impact individuals or habitat and contribute to a trend towards federal listing or cause a loss of viability to the population or species. If the biologist determines the project will have "no impact" on the species or it may impact individuals, but is not likely to lead towards a trend to federal listing or loss of viability, the project can proceed. If the project would contribute to a trend towards federal listing or cause a loss of viability to the population or species, the proposed project design must be re-evaluated. Since sensitive species will be protected under the Sensitive Species policy with or without the Survey and Manage mitigation measure, there would be no difference in impacts to sensitive species between the SEIS alternatives.

An effects analysis for OR/WA and CA BLM Special Status Species may utilize a variety of tools such as project field surveys, habitat associations, conservation strategy guidance and information, professional expertise, and technical information. Contingent upon the results of the analysis, the project may be modified or buffered to ensure conservation objectives are met and there is not a contribution to the need to list a species under the ESA. BLM Special Status Species will be conserved under existing policy direction regardless of the presence or absence of the Survey and Manage Standards and Guidelines.

The Aquatic Conservation Strategy provides additional protection for sensitive aquatic species and obligate riparian plant species. All projects proposed on National Forest System lands must meet the Aquatic Conservation Strategy of the Northwest Forest Plan. As proposed projects are designed and analyzed for effects on Sensitive aquatic species, species needs and habitat elements required to meet Aquatic Conservation Strategy will be identified. The proposed SEIS alternatives would not alter this assessment process.

Given that approximately 80 percent of the Northwest Forest Plan area (and 86 percent of currently existing late-successional forests) is in reserves, habitat used by late-

successional and old-growth forest related sensitive and special status species is likely to be protected by the reserve system. There may be greater uncertainty about some late-successional and old-growth forest related species, such as those with limited distribution or those that are highly intolerant of disturbance. However, the design of the reserve system provides additional assurance that late-successional and old-growth forest related species are adequately protected.

The Forest Service sensitive species and BLM special status species policy requirements (including Forest Service biological evaluations), the reserve system, and the Aquatic Conservation Strategy provide consideration and protection for the habitat of late-successional and old-growth forest related sensitive and special status species. Based on the above information, the impacts of all alternatives on sensitive species associated with late-successional and old-growth forest habitat would be trivial. This conclusion is based substantially on the fact that none of the alternatives would markedly alter the environmental baseline previously analyzed as part of the Northwest Forest Plan and subsequent analyses. None of the alternatives would impact the viability of any sensitive or special status species. Therefore, for Forest Service sensitive species and BLM special status species, the determination for all alternatives is *no impact.*

For terrestrial sensitive species occurring within the Northwest Forest Plan area, but not associated with late-successional and old-growth forests, removing or modifying the Survey and Manage Standards and Guidelines would have *no impact.*

Cumulative Effects

Since a determination of *no effect* for all listed species (except northern spotted owls) and *no impact* for all Forest Service sensitive species has been made, no cumulative impacts are expected as a result of implementation of any alternative. Since direct effects on northern spotted owls are expected to be minimal, no discernable cumulative effects are anticipated on this species.

Summary

The Northwest Forest Plan Final SEIS (1994) Biological Assessment of species listed under the ESA assumed that the contribution to their survival from management of known sites for Survey and Manage species would be minimal. This conclusion was based on the assumptions that: (1) the amount of late-successional habitat that would be managed as Survey and Manage species known sites would be minimal compared to the 24 million acres of federally managed land included in the range of the northern spotted owl; (2) the actual locations of Survey and Manage species' sites were unpredictable at the time the Northwest Forest Plan consultation was conducted; and, (3) the managed sites are, mostly, in patches as small as 2 acres. The Biological Opinion completed under that consultation did not anticipate a specified amount of incidental take, but rather deferred the discussion of incidental take to consultation for specific and programmatic activities that would implement the Northwest Forest Plan.

The Northwest Forest Plan Final SEIS Biological Assessment stated that Survey and Manage mitigation measures were expected to retain acreage of late-successional forest throughout the range of the northern spotted owl; however, Survey and Manage sites were likely to occur in small patches and have a long-term effect similar to green-tree and old-growth retention provisions. Green tree and old-growth retention in watersheds will provide some benefit to spotted owls in the long term. Over a period of 100 years or so, these provisions will provide additional structural diversity to forest stands, which would improve the stand's ability to serve as owl habitat, even after being harvested

(USDA, USDI 1994a, Appendix G, p. G-37). In the Biological Opinion (p. 12) from the U.S. Fish and Wildlife Service, Survey and Manage or Protection Buffer provisions are not specifically included in the environmental baseline for any of the species addressed.

Under the action alternatives, forested habitat in Matrix and Adaptive Management Area land allocations would be returned to the underlying land allocation unless occupied by other species that warrant protection due to the removal of the Survey and Manage mitigation measure. The acres were never counted as protected habitat in the Biological Assessment for the Northwest Forest Plan (1994).

For the above reasons, an analysis of effects for listed or proposed species from the Northwest Forest Plan Final SEIS shows no substantial contribution would accrue to listed or proposed species from the management of known sites for Survey and Manage species. The "release" of late-successional habitat currently managed under the Survey and Manage Standards and Guidelines to the underlying land allocation should not be considered as a change in the environmental baseline for listed or proposed species that was consulted on for the Northwest Forest Plan. Hence, listed or proposed species would have no changes in their status and no adverse effects as a result of the action alternatives.

Alternative 1 would have *no effect* on any proposed or listed species or any Forest Service sensitive or BLM special status species. The proposed action alternatives *may affect, but are not likely to adversely affect* the northern spotted owl and its designated critical habitat. The proposed action alternatives would have no effect on marbled murrelets and would have no effect on their designated critical habitat. The action alternatives have no effect on the bald eagle, Canada lynx, gray wolf, grizzly bear, California red-legged frog, plants, fish, and those listed or proposed species not associated with late-successional or old-growth forests. For all alternatives, the determination is *no effect* for listed and proposed plants and critical habitats. The action alternatives are not likely to jeopardize the continued existence of or adversely modify proposed critical habitat for any plant proposed for listing. For aquatic and terrestrial sensitive species or sensitive species not associated with late-successional or old-growth forests, the action alternatives will have *no impact*.

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Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
AMPHIBIANS					
Aneides flavipunctatus	Black salamander	-	SS	BA-O	-
Ascaphus truei	Tailed frog	-	-	BA-O	-
Batrachoseps attenuatus	California slender salamander	-	SS	BA-O	-
Batrachoseps wrighti	Oregon slender salamander	-	SS	SS-O	-
Dicamptodon copei	Cope's giant salamander	-	SS	BA-O	-
Plethodon elongatus	Del Norte salamander	-	SS	BA-O	-
Plethodon larselli	Larch Mountain salamander	-	SS	BA-O	-
Plethodon stormi	Siskiyou Mountain Salamander	-	SS	BA-O	-
Plethodon vandykei	Van Dyke's salamander	-	SS	-	-
Rana aurora aurora	Northern red-legged frog	-	-	BA-O	-
Rana boylii	Foothill yellow-legged frog	SS	SS	BA-O	SS
Rana cascade	Cascade frog	-	-	BA-O	-
Rana pipiens	Northern leopard frog	SS	SS	-	-
Rana pretiosa	Oregon spotted frog	SS	SS	FC	-
Rana luteiventris	Columbia spotted frog	-	SS	-	-
Rhyacotriton cascadae	Cascade torrent salamander	-	SS	BA	-
Rhyacotriton kezeri	Columbia torrent salamander	-	SS	SS-O	-
Rhyacotriton olympicus	Olympic torrent salamander	-	SS	-	-
Rhyacotriton varriegatus	Southern torrent salamander	SS	SS	-	-
BIRDS					
Accipiter gentiles	Northern goshawk	-	-	SS-O	-
Aechmophorus clarkia	Clarke's grebe	-	SS	-	-
Agelaius tricolor	Tricolored blackbird	-	SS	BA-O	SS
Ammodramus savannarum	Grasshopper sparrow (WV)	-	-	BA-O	-
Amphispiza bilineata	Black-throated sparrow	-	-	BA-O	-
Athene cunicularia	Burrowing owl	-	-	-	SS
Bartramia longicauda	Upland sandpiper	-	SS	-	-
Branta candensis leucopareia	Aleutian Canada goose (wintering)	-	SS	SS	-
Bucephala albeola	Bufflehead	-	SS	-	-
Buteo regalis	Ferruginous hawk	-	-	SS-O	-
Centrocerpus urophasianus phaios	Greater sage grouse	-	SS	SS	-
Chordeiles minor	Common nighthawk (WV)	-	-	SS-O	-
Coccyzus americanus	Yellow-billed cuckoo	SS	SS	FC	-
Coturnicops noveboracensis	Yellow rail	-	SS	SS-O	-
Cypseloides niger	Black swift	-	SS	-	-
Dolichornyx oryzivorus	Bobolink	-	SS	-	-
Elanus leucurus	White-tailed kite	-	-	BA-O	-
Empidonax wrightii	Gray flycatcher	-	SS	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
BIRDS					
Emipdonax traillii	Willow flycatcher	SS	-	-	-
Eremophila alpestris strigata	Streaked horned lark	-	-	FC	-
Falco columbarius	Merlin (EC)	-	-	BA-O	-
Falco peregrinus anatum	American peregrine falcon	-	SS	SS	-
Falco peregrinus tundrius	Arctic peregrine falcon	-	-	SS	-
Gavia immer	Common loon	-	SS	-	-
Grus canadensis	Sandhill crane	SS	SS	-	-
Histronicus histronicus	Harlequin duck	-	SS	BA-O	-
Icteria virens	Yellow-breasted chat (WV)	-	-	SS-O	-
Ixobrychus exilis hesperis	Western least bittern	-	SS	BA-O	-
Melanerpes lewis	Lewis' woodpecker (WV, KM, WC, EC, CB)	-	-	SS-O	-
Myiarchus cinerascens	Ash-throated flycatcher	-	SS	-	-
Oceanodroma furcata	Fork-tailed storm petrel	-	-	BA-O	-
Otus flammeolus	Flammulated owl (EC, BM, BR)	-	-	SS-O	-
Pelecanus erythrorhynchos	American white pelican (EC, BR)	-	-	BA-O	-
Picoides albolarvatus	White-headed woodpecker (KM, WC, EC, BM, HP)	-	-	SS-O	-
Picoides arcticus	Black-backed woodpecker (KM, WC, EC, BM)	-	-	SS-O	-
Picoides tridactylus	Three-toed woodpecker (WC, EC, BM)	-	-	SS-O	-
Pipilo chlorurus	Green-tailed towhee	-	SS	-	-
Podiceps auritus	Horned grebe	-	SS	BA	-
Podiceps grisegena	Red-necked grebe	-	SS	SS-O	-
Podiceps nigricollis	Eared grebe	-	SS	-	-
Pooecetes gramineus affinis	Oregon vesper sparrow (WV, KM)	-	-	SS-O	-
Progne subis	Purple martin (CR, WV, KM, WC, EC)	-	-	SS-O	-
Ptychoramphus aleuticus	Cassin's auklet	-	-	BA-O	-
Seiurus noveboracensis	Northern waterthrush	-	-	BA-O	-
Speotyto (=Athene) cunicularia hypugaea	Burrowing owl (WV, KM, HP, CB, BM)	-	-	SS-O	-
Strix nebulosa	Great gray owl	SS	SS	-	-
Sturnella neglecta	Western meadowlark (WV)	-	-	SS-O	-
Tringa melanoleuca	Greater yellowlegs	-	SS	-	-
Tympanuchus phasianellus	Sharp-tailed grouse	-	SS	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
FISH					
Catostomus sp.	Salish sucker	-	SS	-	-
Catostomus rimiculus ssp.	Jenny Creek sucker	-	-	BA-O	-
Catostomus snyderi	Klamath large-scale sucker	-	SS	BA-O	-
Cottus tenuis	Slender sculpin	-	SS	-	-
Gila coerulea	Blue chub	-	SS	-	-
Lampetra lethophaga	Pit-Klamath brook lamprey	-	SS	-	-
Lampetra similis	Klamath River lamprey	-	SS	-	-
Lavina exilicauda chi	Clear Lake hitch	SS	-	-	-
Mylophardon conocephalus	Hardhead	SS	-	-	-
Oncorhynchus clarkii	Coastal run cutthroat trout	SS	-	-	-
Oncorhynchus clarki clarki	Coastal cutthroat trout Puget Sound Olympic Peninsula Oregon Coast Southern Oregon Coast	-	SS	FC-O	-
Oncorhynchus clarki lewisi	Westslope cutthroat trout	-	SS	-	-
Oncorhynchus keta	Chum salmon Puget Sound/Strait of Georgia Pacific Coast	-	SS	SS-O	-
Oncorhynchus kisutch	Coho salmon Puget Sound/Strait of Georgia Southwest WA/Lower Columbia River	-	SS	FC	-
Oncorhynchus mykiss	Interior redband trout	-	SS	-	-
Oncorhynchus mykiss	Steelhead trout Klamath Mountain Province ESU N California Province ESU	SS	-	-	-
Oncorhynchus mykiss irideus	Steelhead trout Oregon Coast	-	SS	FC-O	-
Oncorhynchus mykiss irideus	Steelhead trout Klamath Mountain Province	-	SS	-	-
Oncorhynchus mykiss pop 7	McCloud River redband trout	SS	-	-	-
Oncorhynchus nerka	Sockeye salmon Lake Pleasant Quinault Lake Baker River	-	SS	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
FISH					
Oncorhynchus tshawytscha	Chinook salmon Washington Coast Oregon Coast Southern Oregon Mid-Columbia River spring run Deschutes River summer/fall run	-	SS	SS	-
Oncorhynchus tshawytscha	Chinook salmon Central Valley ESU, spring run Central Valley ESU, fall run Upper Klamath/Trinity ESU, spring run Upper Trinity River ESU, fall run	SS	-	-	-
Oncorhynchus tshawytscha	Chinook salmon S. OR and CA coastal ESU, spring run	SS	-	BA	-
Oregonichthys kalawatseti	Umpqua Oregon chub	-	SS	SS-O	-
Prosopium coulteri	Pygmy whitefish	-	SS	-	-
Rhinichthys cataractae ssp.	Millicoma dace	-	-	SS-O	-
Rhinichthys evermanii	Umpqua dace	-	SS	-	-
Novumbra hubbsi	Olympic hubbsi	-	SS	-	-
MAMMALS					
Antrozous pallidus	Pallid bat	-	-	-	SS
Antrozous pallidus pacificus	Pacific pallid bat	-	SS	-	SS
Brachylagus idahoensis	Pygmy rabbit	-	SS	-	-
Corynorhinus townsendii (Plecotus townsendii townsendii)	Townsend's or Pacific western big-eared bat	SS	SS	SS-O	SS
Eschrichtius robustus	Gray whale	-	-	SE-O	-
Euderma maculatum	Spotted bat	-	SS	-	-
Gulo gulo luteus	California wolverine	SS	SS	ST-O	-
Lasiurus blossevillii	Western red bat	SS	-	-	-
Martes pennanti pacifica	Pacific fisher	SS	SS	SS-O	-
Myotis ciliolabrum	Small-footed myotis	-	-	-	SS
Myotis evotis	Long-eared myotis	-	-	-	SS
Myotis thysanodes vespertinus	Pacific fringe-tailed bat	-	SS	BA-O	SS
Ovis canadensis canadensis	Rocky mountain bighorn sheep	-	SS	-	-
Sciurus griseus	Western gray squirrel	-	SS	-	-
Sorex bairdii bairdii	Baird's shrew	-	SS	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
MAMMALS					
Sorex bairdii permiliensis	Baird's shrew	-	SS	-	-
Sorex pacificus cascadensis	Pacific shrew	-	SS	-	-
Sorex pacificus pacificus	Pacific shrew	-	SS	-	-
Tadarida brasiliensis	Brazilian free-tailed bat	-	-	BA-O	-
Thomomys mazama melanops	Western pocket gopher	-	SS	-	-
INVERTEBRATES					
Anodonta californiensis	CA floater (freshwater)	SS	-	-	-
Helisoma newberryi newberryi	Great Basin rams-horn (snail)	SS	-	SS-O	-
Juga (Calibasis) acutifilosa	Scalloped juga (snail)	SS	-	-	-
Juga (Calibasis) occata	Topaz juga (snail)	SS	-	-	-
Pisidium (Cyclocalyx) ultramontanum	Montane peaclam	SS	-	SS-O	-
Poiltes mardon	Mardon skipper	-	SS	FC	-
REPTILES					
Chrysemys picta	Painted turtle	-	SS	SS-O	-
Clemmys marmorata marmorata	Northwestern pond turtle	SS	SS	SS-O	-
Clemmys marmorata pallida	Southwestern pond turtle	-	-	-	SS
Contia tenuis	Sharptail snake	-	SS	-	-
Lampropeltis getula	Common kingsnake	-	SS	BA-O	-
Lampropeltis zonata	California mountain kingsnake	-	SS	-	-
Lampropeltis zonata zonata	St. Helena mountain kingsnake	-	-	-	SS
Masticophis taeniatus	Striped whipsnake	-	SS	-	-
VASCULAR PLANTS					
Abronia umbellata ssp. *breviflora*	Pink sand-verbena	-	SS	SE-O	SS
Agoseris elata	Tall agoseris	-	SS	BA	-
Agrostis borealis	Arctic bentgrass	-	SS	-	-
Agrostis hendersonii	Henderson's bentgrass	-	-	SS-O	-
Agrostis howellii	Howell's bentgrass	-	SS	SS-O	-
Allium jepsonii	Jepson's onion	-	-	-	SS
Allium peninsulare	Peninsular onion	-	SS	BA-O	-
Amsinckia lunaris	Bent-flowered fiddleneck	-	-	-	SS
Androsace elongata ssp. *acuta*	California rockjasmine	-	SS	BA-O	-
Anemone nuttalliana	Cutleaf anemone	-	SS	-	-
Anemone oregana var. *felix*	Bog anemone	-	SS	BA-O	-
Antennaria parvifolia		-	SS	-	-
Antirrhinum subcordatum	Dimorphic snapdragon	SS	-	-	-
Arabis koehleri var. *koehleri*	Koehler's rockcress	-	-	SS-O	-
Arabis modesta	Rogue canyon rockcress	-	SS	BA-O	-
Arabis macdonaldiana	McDonald's rockcress	SS	-	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Arabis platysperma	Broad-seeded rockcress	-	-	BA-O	-
Arabis sparsiflora var. *atrorubens*	Sickle-pod rockcress	-	SS	BA-O	-
Arabis suffrutescens var. *horizontalis*	Crater Lake rockcress	-	SS	SS-O	-
Arctostaphylos hispidula	Hairy manzanita	-	SS	BA-O	-
Arctostaphylos klamathensis	Klamath manzanita	-	-	-	SS
Arnica viscosa	Mt. Shasta arnica	-	SS	-	-
Artemisia campestris ssp. *borealis* var. *wormskioldii*	Field sagewort	-	SS	-	-
Artemisia ludoviciana ssp. *estesii*	White sagebrush	-	SS	-	-
Artemisia pycnocephala	Coastal sagewort	-	-	BA-O	-
Asplenium septentrionale	Grass-fern	-	SS	BA-O	-
Aster curtus	White-topped aster	-	-	ST-O	-
Aster gormanii	Gormans aster	-	SS	SS-O	-
Aster sibiricus var. *meritus*	Subalpine aster	-	SS	-	-
Aster vialis	Wayside aster	-	SS	ST-O	-
Astragalus arrectus	Palouse milkvetch	-	SS	-	-
Astragalus australis var. *olympicus*	Cotton's milkvetch	-	SS	-	-
Astragalus californicus	California milkvetch	-	-	BA-O	-
Astragalus microcystis	Dwarf milkvetch	-	SS	-	-
Astragalus peckii	Peck's milkvetch	-	SS	ST-O	-
Astragalus rattanii var. *jepsonianus*	Jepson's milkvetch	-	-	-	SS
Astragalus tener var. *ferrisiae*	Ferris's milkvetch	-	-	-	SS
Astragalus tyghensis	Tygh Valley milkvetch	-	SS	-	-
Balsamorhiza hookeri var. *lanata*	Wooly balsamroot	-	-	SS-O	SS
Balsamorhiza macrolepis var. *macrolepis*	Big-scale balsamroot	-	-	-	SS
Balsamorhiza sericea	Silky balsamroot	-	-	-	SS
Bensoniella oregana	Oregon bensoniella	SS	SS	SS-O	-
Bolandra oregana	Oregon bolandra	-	SS	SS-O	-
Botrychium ascendens		-	SS	-	-
Botrychium campestre		-	SS	-	-
Botrychium crenulatum		-	SS	-	-
Botrychium hesperium		-	SS	-	-
Botrychium lanceolatum		-	SS	BA	-
Botrychium lineare		-	SS	-	-
Botrychium lunaria		-	SS	-	-
Botrychium minganense	Mingan's moonwort	-	SS	BA-O	-
Botrychium montanum	Mountain grape-fern	-	SS	BA-O	-
Botrychium paradoxum		-	SS	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Botrychium pedunculosum		-	SS	-	-
Botrychium pinnatum	Pinnate grape-fern	-	SS	BA	-
Botrychium pumicola	Pumice grape-fern	-	SS	ST-O	-
Brodiaea coronaria ssp. *rosea*	Indian Valley brodiaea	SS	-	-	-
Brodiaea terrestris	Dwarf clusterlily	-	-	BA-O	-
Bulbostylis capillaries	Sand sedge	-	-	BA-O	-
Calamagrostis breweri	Brewer reedgrass	-	SS	BA-O	-
Calochortus coxii	Crinite/Cox's mariposa lily	-	-	SE-O	-
Calochortus greenei	Greene's mariposa lily	-	-	SS-O	SS
Calochortus howellii	Howell's mariposa lily	-	SS	ST-O	-
Calochortus indecorus	Sexton Mt. mariposa lily	-	-	SE-O	-
Calochortus longebarbatus var. *longebarbatus*		SS	SS	-	SS
Calochortus monanthus	Shasta River mariposa	-	-	-	SS
Calochortus monophyllus		-	SS	BA-O	-
Calochortus nitidus	Broad-fruit mariposa lily	-	-	SS	-
Calochortus nutudus		-	SS	-	-
Calochortus persistens	Siskiyou mariposa lily	-	-	FC-O	-
Calochortus umpquaensis		-	SS	SE-O	-
Calycadenia oppositifolia	Butte County calycadenia	-	-	-	SS
Calystegia atriplicifolia ssp. *buttenesis*	Butte County morning-glory	-	-	-	SS
Camassia howellii	Howell's camas	-	SS	SS-O	-
Camissonia graciliflora	Slender-flowered evening-primrose	-	SS	BA-O	-
Campanula lasiocarpa		-	SS	-	-
Campanula shetleri	Castle Crags bellflower	SS	-	-	SS
Cardamine pattersonii		-	SS	-	-
Carex abrupta	Abrupt-beaked sedge	-	-	BA-O	-
Carex anthoxanthea		-	SS	-	-
Carex atrata var. *atrosquama* (WA tracks as *C. atrosquama*)		-	SS	-	-
Carex atrata var. *erecta* (*C. heteroneura*)		-	SS	-	-
Carex brevicaulis	Short-stemmed sedge	-	-	BA-O	-
Carex capillaris		-	SS	-	-
Carex capitata	Capitate sedge	-	-	BA-O	-
Carex chordorrhiza		-	SS	-	-
Carex circinata		-	SS	-	-
Carex comosa	Bristly sedge	-	SS	BA	-
Carex crawfordii	Crawford's sedge	-	SS	BA-O	-
Carex densa		-	SS	-	-
Carex diandra	Lesser-panicled sedge	-	-	BA-O	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Carex dioica var. *gynocrates* (WA tracks as *C. dioica*)		-	SS	-	-
Carex eleocharis	Needleleaf sedge	-	SS	BA	-
Carex flava		-	SS	-	-
Carex gigas	Siskiyou sedge	-	SS	BA-O	-
Carex gynodynama	Olney's hairy sedge	-	-	BA-O	-
Carex hystericina		-	SS	-	-
Carex integra	Smooth beaked sedge	-	-	BA-O	-
Carex interior		-	SS	-	-
Carex lasiocarpa	Slender sedge	-	-	BA-O	-
Carex livida	Pale sedge	-	SS	BA-O	SS
Carex macrochaeta	Longawn sedge	-	SS	BA	-
Carex nervina	Sierra nerved sedge	-	SS	BA-O	-
Carex norvegica		-	SS	-	-
Carex obtusata		-	SS	-	-
Carex pauciflora		-	SS	-	-
Carex pluriflora	Many-flowered sedge	-	SS	BA	-
Carex praticola	Meadow sedge	-	-	BA-O	-
Carex proposita		-	SS	-	-
Carex retrorsa	Retrorse sedge	-	-	BA-O	-
Carex rostrata		-	SS	-	-
Carex saxatilis var. *major*		-	SS	-	-
Carex scirpoidea var. *scirpoidea*		-	SS	-	-
Carex scirpoidea var. *stenochlaena*		-	SS	-	-
Carex serratodens		-	SS	BA-O	-
Carex stylosa		-	SS	-	-
Carex sychnocephala		-	SS	-	-
Carex tenuifolia		-	SS	-	-
Carex vallicola		-	SS	-	-
Carex xerantica		-	SS	-	-
Cassiope lycopodioides		-	SS	-	-
Castilleja ambigua ssp. *humboldtiensis*	Humbolt Bay owl's-clover	-	-	-	SS
Castilleja chambersii	Chamber's paintbrush	-	-	SS-O	-
Castilleja chlorotica	Green-tinged paintbrush	-	SS	SS-O	-
Castilleja cryptantha		-	SS	-	-
Castilleja mendocinensis	Mendocino Coast paintbrush	-	-	-	SS
Castilleja rubicundula ssp. *rubicundula*	Pink creamsacs	-	-	-	SS
Castilleja rupicola	Cliff paintbrush	-	-	BA-O	-
Castilleja schizothricha	Split-hair paintbrush	-	SS	BA-O	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Castilleja thompsonii		-	SS	-	-
Ceanothus confuses	Rincon ridge ceanothus	-	-	-	SS
Ceanothus divergens	Calistoga ceanothus	-	-	-	SS
Chaenactis suffrutescens	Shasta chaenactis	SS	-	-	SS
Chaenactis thompsonii		-	SS	-	-
Chaenactis xantiana	Desert chaenactis	-	-	BA-O	-
Chamaesyce ocellata ssp. *rattanii*	Stony Creek spurge	-	-	-	SS
Cheilanthes covillei	Coville's lip-fern	-	-	BA-O	-
Cheilanthes intertexta	Coastal lipfern	-	SS	BA-O	-
Chlorogalum angustifolium	Narrow-leaved amole	-	SS	BA-O	-
Chlorogalum pomeridianum var. *minus*	Dwarf soaproot	-	-	-	SS
Chrysolepis chrysophylla		-	SS	-	-
Chrysosplenium tetrandrum		-	SS	-	-
Cicendia quadrangularis	Timwort	-	-	BA-O	-
Cicuta bulbifera	Bulb-bearing water-hemlock	-	SS	BA	-
Cimicifuga elata	Tall bugbane	-	SS	SS	-
Cirsium ciliolatum	Ashland thistle	-	-	SS-O	-
Clarkia biloba ssp. *brandegeae*	Brandegee's clarkia	-	-	-	SS
Clarkia borealis ssp. *arida*	Shasta clarkia	-	-	-	SS
Clarkia gracilis ssp. *albicaulis*	White-stemmed clarkia	-	-	-	SS
Clarkia heterandra	Small-fruited clarkia	-	SS	BA-O	-
Clarkia mildrediae ssp. *mildrediae*	Mildred's clarkia	-	-	-	SS
Clarkia mosquinii	Mosquin's clarkia	-	-	-	SS
Claytonia lanceolata var. *pacifica*		-	SS	-	-
Clintonia andrewsiana	Andrew's beal-lily	-	SS	BA-O	-
Cochlearia officinalis	Spoonwort	-	-	BA-O	-
Collinsia sparsiflora var. *bruceae*		-	SS	-	-
Collomia mazama	Mt. Mazama collomia	-	SS	SS-O	-
Coptis aspleniifolia		-	SS	-	-
Coptis trifolia		-	SS	-	-
Cordylanthus maritimus ssp. *palustris*	Salt-march birds-beak	-	SS	SE-O	SS
Cordylanthus tenuis ssp. *pallescens*		SS	-	-	SS
Corydalis aquae-gelidae	Cold-water fumewort/cordydalis	-	SS	SS	-
Cryptantha crinita	Silky cryptantha	-	-	-	SS
Cryptantha leiocarpa	Seaside cryptantha	-	-	BA-O	-
Cryptantha milobakeri	Milo Baker's cryptantha	-	SS	BA-O	-
Cryptantha rostellata		-	SS	-	-
Cryptogramma stelleri		-	SS	-	-
Cupressus bakeri	Baker's cypress	-	SS	BA-O	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Cyperus acuminatus	Short-pointed cyperus	-	-	BA-O	-
Cyperus bipartitus		-	SS	-	-
Cypripedium fasciculatum	Clustered lady's-slipper	SS	SS	SS-O	-
Cypripedium montanum	Mountain lady's slipper	SS	-	-	-
Cypripedium parviflorum		-	SS	-	-
Damasonium californicum		-	SS	-	-
Delphinium leucophaeum	White rock larkspur	-	-	SE-O	-
Delphinium nudicaule	Red larkspur	-	SS	BA-O	-
Delphinium nuttallii	Nuttall's larkspur	-	-	BA-O	-
Delphinium oreganum	Willamette Valley/Oregon larkspur	-	-	SS-O	-
Delphinium pavonaceum	Peacock larkspur	-	-	SE-O	-
Delphinium viridescens		-	SS	-	-
Dicentra pauciflora	Few-flower bleedingheart	-	SS	BA-O	-
Dodecatheon austrofrigidum	Frigid shootingstar	-	SS	SS	-
Draba aurea		-	SS	-	-
Draba cana		-	SS	-	-
Draba howellii	Howell's whitlow-grass	-	SS	SS-O	-
Draba longipes		-	SS	-	-
Dryas drummondii		-	SS	-	-
Elatine brachysperma	Short-seeded waterwort	-	-	BA-O	-
Eleocharis atropurpurea		-	SS	-	-
Enemion stipitatum	Dwarf isopyrum	-	-	BA-O	-
Epilobium nivium	Snow Mountain willowherb	SS	-	-	-
Epilobium oreganum	Oregon willowherb	SS	SS	SS-O	SS
Epilobium siskiyouense		-	SS	-	-
Eriastrum brandegeae	Brandegee's eriastrum	SS	-	-	SS
Ericameria arborescens		-	SS	BA-O	-
Erigeron cervinus	Siskiyou daisy	-	SS	BA-O	-
Erigeron howellii	Howell's daisy	-	SS	SS	-
Erigeron oreganus	Gorge fleabane	-	SS	SS	-
Erigeron peregrinus ssp. *peregrinus* var. *peregrinus*	Subalpine fleabane	-	-	BA-O	-
Erigeron peregrinus ssp. *peregrinus* var. *thompsonii*		-	SS	-	-
Erigeron petrophilus		-	SS	-	-
Erigeron salishii		-	SS	-	-
Eriogonum alpinum Engelm.	Trinity buckwheat	SS	-	-	-
Eriogonum lobbii	Lobb's buckwheat	-	SS	BA-O	-
Eriogonum nervulosum	Snow Mountain buckwheat	SS	-	-	SS

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Eriogonum prociduum		-	SS	SS-O	-
Eriogonum tripodum	Tripod buckwheat	SS	-	-	-
Eriogonum umbellatum var. *glaberrimum*	Sulphurflower buckwheat	-	-	SS-O	-
Eriophorum chamissonis	Russet cotton-grass	-	SS	BA-O	-
Eriophorum viridicarinatum		-	SS	-	-
Eritrichium nanum var. *elongatum*		-	SS	-	-
Erodium macrophyllum	Large-leaved filaree	-	-	BA-O	-
Eryngium petiolatum		-	SS	-	-
Erysimum menzeisii ssp. *concinnum*	Wallflower	-	-	BA-O	-
Erythronium citrinum var. *roderickii*	Roderick's fawnlily	SS	-	-	SS
Erythronium elegans	Coast range fawnlily	-	SS	ST-O	-
Erythronium howellii	Howell's adder's-tongue	-	SS	SS-O	-
Eschscholzia caespitosa	Gold poppy	-	SS	BA-O	-
Euonymus occidentalis		-	SS	-	-
Festuca elmeri	Elmer's fecsue	-	SS	BA-O	-
Filipendula occidentalis	Queen-of-the-Forest	-	SS	SS	-
Frasera umpquaensis	Umpqua swertia	SS	SS	SS-O	-
Fritillaria eastwoodiae	Butte County missionbells	SS	-	-	-
Fritillaria camschatcensis	Kamchatka missionbells	-	SS	BA	-
Fritillaria glauca	Siskiyou fritillaria	-	SS	BA-O	-
Fritillaria pluriflora	Adobe lily	-	-	-	SS
Fritillaria purdyi	Purdy's fritillary	-	SS	BA-O	-
Galium serpenticum var. *scotticum*	Scott Mtn. bedstraw	-	-	-	SS
Galium serpenticum var. *warnernse*	Warner Mt. bedstraw	-	-	SS-O	-
Gentiana douglasiana		-	SS	-	-
Gentiana glauca		-	SS	-	-
Gentiana newberryi var. *newberryi*	Newberry's gentian	-	SS	BA-O	-
Gentiana plurisetosa	Bristly gentian	-	SS	SS-O	-
Gentiana setigera	Waldo gentian	SS	SS	SS-O	SS
Gentianella tenella	Slender gentian	-	SS	BA	-
Geum rivale		-	SS	-	-
Geum rossii var. *depressum*		-	SS	-	-
Geum triflorum var. *campanulatum*	Western red avens	-	SS	BA-O	-
Gilia millefoliata	Seaside gilia	-	-	SS-O	SS
Hackelia hispida var. *disjuncta*		-	SS	-	-
Hackelia taylorii		-	SS	-	-
Harmonia doris-nilesiae	Niles's harmonia	-	-	-	SS
Harmonia hallii	Hall's harmonia	-	-	-	SS
Harmonia stebbinsii	Stebbins's madia	-	-	-	SS

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Hastingsia atropurpurea	Purple-flowered rush-lily	-	SS	SS-O	-
Hastingsia bracteosa	Large-flowered rush-lily	-	SS	ST-O	-
Hazardia whitneyi var. *discoidea*	Whitneys bristleweed	-	SS	BA-O	-
Hesperolinon adenophyllum	Glandular western flax	-	-	-	SS
Hesperolinon breweri	Brewer's dwarf flax	-	-	-	SS
Hesperolinon drymarioides	Drymaria-like dwarf flax	SS	-	-	SS
Hesperolinon serpentinum	Napa western flax	-	-	-	SS
Hesperolinon tehamense	Tehama County western flax	-	-	-	SS
Heuchera grossulariifolia var. *tenuifolia*		-	SS	-	-
Horkelia congesta ssp. *congesta*	Shaggy horkelia	-	-	SS-O	-
Horkelia hendersonii		SS	-	-	SS
Horkelia tridentata ssp. *tridentata*	Three-toothed horkelia	-	SS	BA-O	-
Howellia aquatilis	Water howellia	SS	-	-	-
Hydrocotyle verticillata		-	SS	BA-O	-
Iliamna bakeri	Baker's globe-mallow	SS	-	SS-O	SS
Iliamna latibracteata	California globe-mallow	-	SS	BA-O	-
Iliamna longisepala		-	SS	-	-
Isopyrum stipitatum		-	SS	-	-
Ivesia longibracteata	Castle Crags ivesia	SS	-	-	SS
Ivesia pickeringii	Pickering's ivesia	SS	-	-	SS
Juncus leiospermus var. *leiospermus*	Red Bluff dwarf rush	-	-	-	SS
Kalmiopsis fragrans	Fragrant kalmiopsis	-	SS	SS-O	-
Keckiella lemmonii	Bush beardtongue	-	SS	BA-O	-
Lasthenia macrantha ssp. *prisca*	Large-flowered goldfields	-	-	SS-O	-
Lathyrus holochlorus	Thin-leaved peavine	-	-	SS	-
Layia septentrionalis	Colusa layia	-	-	-	SS
Legenere limosa	Legenere	-	-	-	SS
Lewisia cantelovii	Cantelow's lewisia	SS	-	-	SS
Lewisia columbiana var. *columbiana*	Columbia lewisia	-	SS	BA-O	-
Lewisia columbiana var. *rupicola*	Rosy lewisia	-	-	BA-O	-
Lewisia cotyledon var. *purdyi*	Purdy's lewisia	-	SS	SS-O	-
Lewisia leana	Lee's lewisia	-	SS	BA-O	-
Lewisia stebbinsii	Stebbins' lewisia	SS	-	-	-
Lilium kelloggii	Kellogg's lily	-	SS	BA-O	-
Lilium occidentale	Western lily	-	-	-	SS
Limnanthes floccosa ssp. *bellingeriana*	Bellinger's meadow-foam	SS	SS	SS-O	SS
Limnanthes floccosa ssp. *pumila*	Dwarf (wooly) meadow-foam	-	-	ST-O	-
Limnanthes gracilis var. *gracilis*	Slender meadow-foam	-	SS	SS-O	-
Limonium californicum	Western marsh-rosemary	-	SS	BA-O	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Linanthus bolanderi		-	SS	-	-
Linanthus harknessii ssp. *condensatus*		SS	-	-	-
Linanthus nuttallii ssp. *howellii*	Mt. Tedoc linanthus	SS	-	-	SS
Liparis loeselii		-	SS	-	-
Lipocarpha occidentalis	Western lipocarpha	-	-	BA-O	-
Lobelia dortmanna		-	SS	-	-
Loiseleuria procumbens		-	SS	-	-
Lomatium engelmannii	Englemann's desert-parsley	-	SS	BA-O	-
Lomatium laevigatum		-	SS	-	-
Lomatium suksdorfii		-	SS	-	-
Lomatium tracyi	Tracy's lomatium	-	SS	BA-O	-
Lomatium watsonii		-	SS	-	-
Lotus rubriflorus	Red-flowered lotus	-	-	-	SS
Lotus stipularis	Stipuled trefoil	-	SS	BA-O	-
Lupinus antoninus	Anthony Peak lupine	SS	-	-	-
Lupinus aridus ssp. *ashlandensis*		SS	SS	-	-
Lupinus constancei	The Lassics lupine	SS	-	-	-
Lupinus dalesiae	Quincy lupine	-	-	-	SS
Lupinus tracyi		-	SS	-	-
Luzula arcuata		-	SS	-	-
Lycopodiella inundata	Bog club-moss	-	SS	BA	-
Lycopodium complanatum	Ground cedar	-	SS	BA-O	-
Lycopodium dendroideum		-	SS	-	-
Madia doris-nilesiae	Nile's madia	SS	-	-	-
Madia stebbinsii	Stebbins' madia	SS	-	-	-
Meconella oregana	White fairy poppy	-	SS	SS	-
Microseris bigelovii	Coast microseris	-	-	BA-O	-
Microseris borealis		-	SS	-	-
Microseris douglasii ssp. *douglasii*	Douglas' microseris	-	SS	BA-O	-
Microseris howellii	Howell's microseris	-	SS	ST-O	-
Microseris laciniata ssp. *detlingii*	Detling's microseris	-	SS	SS-O	-
Mimulus bolanderi	Bolander's monkeyflower	-	SS	BA-O	-
Mimulus evanescens	Dissapearing monkeyflower	-	SS	SS-O	SS
Mimulus jungermannioides		-	SS	-	-
Mimulus pulsiferea		-	SS	-	-
Mimulus suksdorfii		-	SS	-	-
Mimulus tricolor	Three-colored monkeyflower	-	SS	BA-O	-
Minuartia decumbens	The Lassics sandwort	SS	-	-	-
Minuartia howellii	Howell's sandwort	-	-	-	SS

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Minuartia rosei	Peanut sandwort	SS	-	-	-
Minuartia stolonifera	Scott Mountain sandwort	SS	-	-	SS
Monardella douglasii var. *venosa*	Veiny monardella	-	-	-	SS
Monardella purpurea	Siskiyou monardella	-	SS	BA-O	-
Monardella villosa ssp. *globosa*	Robust monardella	-	-	-	SS
Montia diffusa		-	SS	-	-
Montia howellii		-	SS	-	-
Navarretia heterandra	Tehama navarretia	-	-	BA-O	-
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	-	-	-	SS
Navarretia tagetina		-	SS	-	-
Nemacladus capillaris	Slender nemacladus	-	SS	BA-O	-
Nephroma bellum		-	-	-	SS
Neviusia cliftonii	California snow-wreath	SS	-	-	SS
Nicotiana attenuata		-	SS	-	-
Oenothera wolfii	Wolf's evening-primrose	-	-	ST-O	SS
Ophioglossum pusillum	Adder's tongue	-	SS	BA-O	-
Orthocarpus pachystachyus	Shasta orthocarpus	-	-	-	SS
Otidea onotica		-	-	-	SS
Oxytropis borealis var. *viscida*		-	SS	-	-
Oxytropis campestris var. *gracilis*		-	SS	-	-
Parnassia fimbriata var. *hoodiana*		-	SS	-	-
Parnassia kotzebuei		-	SS	-	-
Parnassia palustris var. *neogaea*		-	SS	-	-
Paronychia ahartii	Ahart's paronychia	-	-	-	SS
Pedicularis howellii	Howell's lousewort	SS	SS	BA-O	-
Pedicularis rainierensis		-	SS	-	-
Pellaea andromedaefolia	Coffee fern	-	SS	BA-O	-
Pellaea brachyptera		-	SS	-	-
Pellaea breweri		-	SS	-	-
Pellaea mucronata ssp. *mucronata*	Bird's-foot tern	-	SS	BA-O	-
Penstemon barrettiae		-	SS	-	-
Penstemon filiformis	Thread-leaved beardtongue	SS	-	-	SS
Penstemon glaucinus	Blue-leaf beardtongue	-	SS	SS-O	-
Penstemon peckii		-	SS	-	-
Penstemon personatus	Closed-throated beardtongue	-	-	-	SS
Perideridia erythrorhiza	Red-rooted lampah	-	SS	SS-O	-
Petrophyton cinerascens		-	SS	-	-
Phacelia argentea	Silvery phacelia	-	-	ST-O	-
Phacelia cookei	Cooke's phacelia	SS	-	-	SS

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Phacelia greenei	Scott Valley phacelia	SS	-	-	SS
Phacelia inundata	Playa phacelia	-	-	SS-O	-
Phacelia leonis	Siskiyou phacelia	-	-	-	SS
Phacelia minutissima		-	SS	-	-
Phlox hendersonii		-	SS	-	-
Phlox hirsuta	Yreka phlox	SS	-	-	-
Physaria didymocarpa var. *didymocarpa*		-	SS	-	-
Pilularia americana	American pillwort	-	SS	BA-O	-
Pityopus californica		-	SS	-	-
Plagiobothrys figuratus ssp. *corallicarpus*	Coral seeded allocarya	-	SS	SS-O	-
Plagiobothrys glyptocarpus	Sculptured allocarya	-	SS	BA-O	-
Plagiobothrys greenei	Greene's popcorn flower	-	-	BA-O	-
Plagiobothrys lamprocarpus	Shiny-fruited allocarya	-	-	SE-O	-
Plagiobothrys salsus	Desert allocarya	-	-	BA-O	-
Plantago macrocarpa	North Pacific plantain	-	SS	BA-O	-
Platanthera chorisiana		-	SS	-	-
Platanthera obtusata		-	SS	-	-
Platanthera sparsiflora		-	SS	-	-
Poa laxiflora		-	SS	-	-
Poa nervosa var. *nervosa*		-	SS	-	-
Poa unilateralis	San Francisco bluegrass	-	-	BA-O	-
Pogogyne floribunda	Profuse-flowered pogogyne	-	-	SS-O	SS
Polemonium carneum		-	SS	-	-
Polemonium chartaceum	Mason's Jacobsladder	SS	-	-	-
Polemonium viscosum		-	SS	-	-
Polystichum californicum	California swordfern	-	SS	BA	-
Potamogeton diversifolius	Rafinesque's pondweed	-	-	BA-O	-
Potamogeton foliosus var. *fibrillosus*	Fibrous pondweed	-	-	BA-O	-
Potentilla breweri		-	SS	-	-
Potentilla diversifolia var. *perdissecta*		-	SS	-	-
Potentilla nivea		-	SS	-	-
Potentilla quinquefolia		-	SS	-	-
Potentilla villosa var. *parviflora*		-	SS	BA-O	-
Puccinellia howellii	Howell's alkali-grass	-	-	-	SS
Raillardella pringlei	Showy raillardella	-	-	-	SS
Ranunculus austro-oreganus	Southern Oregon buttercup	-	-	SS-O	-
Ranunculus cooleyae		-	SS	-	-
Ranunculus populago		-	SS	-	-
Ranunculus reconditus		-	SS	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Rhamnus ilicifolia	Hollyleaf redberry	-	SS	BA-O	-
Rhynchospora californica	California beaked-rush	-	-	-	SS
Rhynchospora capitellata	Brownish beakrush	-	-	BA-O	-
Ribes cereum var. *colubrinum*		-	SS	-	-
Romanzoffia thompsonii	Thompson's mistmaiden	-	SS	SS-O	-
Rorippa columbiae	Columbian yellowcress	SS	SS	SS	SS
Rotala ramosior	Lowland toothcup	-	-	BA-O	-
Rubus acaulis		-	SS	-	-
Rupertia hallii	Hall's rupertia	-	-	-	SS
Sagittaria sanfordii	Sanford's arrowhead	-	-	-	SS
Salix delnortensis	Del Norte willow	-	SS	BA-O	-
Salix glauca		-	SS	-	-
Salix tweedyi		-	SS	-	-
Salix vestita var. *erecta*		-	SS	-	-
Sanguisorba menziesii		-	SS	-	-
Sanicula marilandica		-	SS	-	-
Saxifraga cernua		-	SS	-	-
Saxifraga hitchcockiana		-	SS	-	-
Saxifragopsis fragarioides	Strawberry saxifrage	-	SS	BA-O	-
Scheuchzeria palustris		-	SS	-	-
Scirpus pendulus	Rufous bulrush	-	SS	BA-O	-
Scirpus subterminalis	Water clubrush	-	SS	BA-O	-
Scribneria bolanderi		-	SS	-	-
Sedum albomarginatum	Feather River stonecrop	-	-	-	SS
Sedum laxum ssp. *heckneri*	Heckner's stonecrop	-	SS	BA-O	-
Sedum moranii	Rogue River stonecrop	-	SS	SS-O	-
Sedum oblanceolatum	Applegate stonecrop	-	SS	SS-O	-
Sedum paradisum	Canyon Creek stonecrop	-	-	-	SS
Senecio eurycephalus var. *lewisrosei*	Cut-leaved ragwort	-	-	-	SS
Senecio flettii	Flett's groundsel	-	SS	BA-O	-
Senecio hesperius	Western ragwort	-	SS	SS-O	-
Sidalcea campestris	Meadow checkermallow	-	-	SS-O	-
Sidalcea hirtipes		-	SS	-	-
Sidalcea malachroides	Maple-leaved sidalcea	-	SS	SS-O	SS
Sidalcea malviflora ssp. *patula*	Dwarf checkermallow	-	SS	SS-O	SS
Sidalcea oregana ssp. *eximia*	Coast checkerbloom	-	-	-	SS
Sidalcea robusta	Butte County checkermallow	-	-	-	SS
Silene douglasii var. *oraria*		-	SS	-	-
Silene hookeri ssp. *bolanderi*	Bolander's catchfly	-	SS	BA-O	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Silene seelyi		-	SS	-	-
Sisyrinchium hitchcockii	Hitchcock's blue-eyed grass	-	-	SS-O	-
Sisyrinchium sarmentosum		-	SS	-	-
Sisyrinchium septentrionale		-	SS	-	-
Smilax jamesii	English Peak greenbriar	SS	-	-	SS
Sophora leachiana	Western necklacepod	-	SS	SS-O	-
Spiranthes porrifolia		-	SS	-	-
Stellaria humifusa	Creeping chickweed	-	-	BA-O	-
Streptanthus brachiatus ssp. *brachiatus*	Socrates Mine jewel-flower	-	-	-	SS
Streptanthus brachiatus ssp. *hoffmanii*	Freed's jewel-flower	-	-	-	SS
Streptanthus glandulosus var. *hoffmannii*	Hoffmann's jewel-flower	-	-	-	SS
Streptanthus howellii	Howell's streptanthus	SS	SS	SS-O	-
Streptanthus morrisonii ssp. *morrisonii*	Morrison's jewel-flower	-	-	-	SS
Streptanthus morrisonii ssp. *elatus*	Three Peaks jewel-flower	-	-	-	SS
Streptanthus morrisonii ssp. *hirtiflorus*	Dorr's cabin jewel-flower	-	-	-	SS
Streptanthus morrisonii ssp. *kruckebergii*	Kruckeberg's jewel-flower	-	-	-	SS
Streptopus strepoides var. *brevipes*	Kruhsea	-	-	BA-O	-
Suksdorfia violacea	Violet suksdorfia	-	SS	BA-O	-
Sullivantia oregana	Oregon sullivantia	-	SS	SS	-
Synthyris pinnatifida var. *lanuginosa*		-	SS	-	-
Talinum sediforme		-	SS	-	-
Tauschia howellii		SS	SS	-	-
Tauschia stricklandii	Strickland's touschia	-	SS	BA-O	-
Teucrium canadense ssp. *viscidum*		-	SS	-	-
Thalictrum dasycarpum		-	SS	-	-
Thelypodium brachycarpum	Short-podded thelypody	-	SS	BA-O	-
Thelypodium howellii ssp. *howellii*		-	SS	-	-
Trillium angustipetalum	Siskiyou trillium	-	SS	BA-O	-
Trifolium jokerstii	Butte County golden clover	-	-	-	SS
Trifolium thompsonii		-	SS	-	-
Trimorpha elata		-	SS	-	-
Triteleia hendersonii var. *leachiae*	Leach's brodiaea	-	SS	SS-O	-
Triteleia ixioides ssp. *anilina*	Sierra brodiaea	-	SS	BA-O	-
Triteleia laxa	Ithuriel's spear	-	SS	BA-O	-
Utricularia gibba	Humped bladderwort	-	SS	BA-O	-
Utricularia intermedia		-	SS	-	-
Utricularia minor	Lesser bladderwort	-	-	BA-O	-
Vaccinium myrtilloides		-	SS	-	-
Veratrum insolitum		-	SS	-	-

Table 5-2. Sensitive species in Forest Service Regions 5 (California) and 6 (Washington and Oregon) and Special Status Species for BLM Oregon/Washington and California within the Northwest Forest Plan area (Range of the Northern Spotted Owl).

Scientific Name	Common Name	Region 5	Region 6	OR BLM	CA BLM
VASCULAR PLANTS					
Viola primulifolia ssp. *occidentalis*	Western bog violet	SS	SS	SS-O	-
Wolffia borealis	Dotted water-meal	-	SS	BA-O	-
Wolffia columbiana	Columbia water-meal	-	SS	BA-O	-
Woodwardia fimbriata		-	SS	-	-
Zigadenus micranthus var. *fontanus*	Small-flowered death camas	-	-	BA-O	-

SS=Bureau Sensitive or Forest Service Sensitive
BA=Bureau Assessment
SS-O = Bureau Sensitive in Oregon only
BA-O = Bureau Assessment in Oregon only
ST-O = Listed by the State of Oregon as threatened
FC = Federal candidate for listing as threatened or endangered
FC-O = Federal candidate for listing as threatened or endangered in Oregon
- = indicate species not included, which may result from species not occurring in the state.

Some birds are listed only in specific ecoregions. These ecoregions are:
BM = Ochoco, Blue, and Wallowa Mountains
BR = Basin and Range
CB = Columbia Basin
CR = Coast Range
EC = East Cascade Range
HP = High Lava Plains
KM = Klamath Mountains
WV = Willamette Valley
WC = West Cascade Range and Crest

Some fish are included only for certain Evolutionarily Significant Units (ESU), and are noted.

Appendix 6

Changes between Draft and Final

- This is a new appendix.
- This appendix contains responses to public comments received during the 90-day public comment period.

Appendix 6

Response to Comments

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Response to Comments

Introduction

The public comment period for the Draft Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines (Draft SEIS) began on May 23, 2003, and closed on August 22, 2003. Individuals; interest groups; organizations; businesses; elected officials; state, local, and other federal agencies; and Tribes were invited to comment on the Draft SEIS.

During the 90-day public comment period, more than 5,100 comments were received in the form of letters, postcards, facsimiles, and e-mails (collectively referred to as letters). Letters were received from a variety of interests including: individuals, organizations, businesses, Advisory Committees, and Federal and State Agencies. Letters were received from 49 of the 50 states and from three foreign countries (Canada, England, and Germany). More than 3,000 letters originated from Washington, Oregon, and California.

All of the letters received during the public comment period were processed and the substantive comments were compiled into "comment statements." Comment statements are summary statements that identify and describe specific issues or concerns identified in the letters. Unique concerns generated their own comment statement and similar concerns voiced in multiple letters were grouped into one comment statement. The processing of letters should not be thought of as a tally of votes. All letters are treated equally and are not given weight by number, organizational affiliation, or other status of the respondents. All comments were reviewed and the Agencies used information provided in the letters during the preparation of the Final SEIS.

Thirty-eight letters were received after the close of the comment period. These letters were reviewed and any substantive information they contained was considered during the preparation of the Final SEIS.

Organization of this Appendix

This appendix contains the comment statements and responses. After analyzing the comment statements as described above, the Interagency SEIS Team grouped the related topics to avoid duplication and, then, responded to the comments. The comments and responses are intended to be explanatory in nature; if there are any inadvertent contradictions between this Appendix and the text of the Final SEIS, the Final SEIS prevails.

Letters received during the comment period from federal, state, and local governments are included in Appendix 7.

Summary

1. Comment: The Draft SEIS does not make clear how many species fall into the group designated as "insufficient habitat" under Alternative 2. The summary shows that under Alternative 2, 47 species would have "insufficient habitat." The environmental consequences discussion is not consistent with the summary. There are also inconsistencies in the number of species where there is "insufficient information" to determine an outcome.

Response: The numbers have been changed to be consistent throughout the document.

2. Comment: The Species Mitigation section in the summary is unclear. The Final SEIS should use "shall" instead of "could."

Response: The Potential Mitigation sections in Chapter 2 have been expanded to accurately describe the potential mitigation. Mitigation was not included as a part of Alternative 2 to inform the Responsible Officials of the consequences of mitigation. The Responsible Officials will decide whether to adopt the mitigation in the Record of Decision.

3. Comment: Table S-2 should be clarified to reflect actual, not rounded, numbers.

Response: The rounding of the numbers reflects the precision of the calculations.

4. Comment: The Final SEIS needs to better explain the factors that will be used in making the decision.

Response: Chapter 1 includes an explanation of the purposes for this SEIS, which are the factors that will be used in making the decision.

5. Comment: The Draft SEIS indicates the Survey and Manage mitigation measure was added to "provide additional certainty" for rare species. There is no certainty that these species will persist.

Response: The Survey and Manage mitigation measure was added to the Northwest Forest Plan to provide benefits to amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropods. The text in the summary has been changed.

Chapter 1

Need

6. Comment: The Survey and Manage mitigation measure was revised in 2001. The changes have not been implemented long enough to know whether the mitigation measure will prove effective at both protecting species and providing economic stimulus to the Northwest Forest Plan area.

Response: The purpose of this SEIS is not to analyze whether existing Survey and Manage Standards and Guidelines are effective. One of the purposes for this SEIS is to meet the terms of the Settlement Agreement that the Secretaries of Agriculture and Interior signed. A term of the settlement agreement was that the Agencies would supplement the 2000 Final SEIS by considering an alternative that replaces the Survey and Manage mitigation measure with existing Special Status Species Programs to achieve the goals of the Northwest Forest Plan through a more streamlined process. The 2000

Final SEIS did not analyze removing the Survey and Manage Standards and Guidelines. The preparation of this SEIS meets that term of the Settlement Agreement.

7. Comment: The need for changes to the Survey and Manage mitigation measure should be driven by the requirements of species.

Response: The need in this SEIS is the same as was stated in the 1994 Northwest Forest Plan "… protect the long-term health of our forests, our wildlife and our waterways …," "Where sound management policies can preserve the health of forest land, [timber] sales should go forward," and "… produce a predictable and sustainable level of timber sales and nontimber resources that will not degrade or destroy the environment." This SEIS is addressing the fact that the Survey and Manage Standards and Guidelines are frustrating the Agencies' ability to protect the long-term health of forests, wildlife, and waterways because they substantially restrict forest health treatments and thinning in reserves. They also prevent timber sales that were predicted in the Northwest Forest Plan from being implemented.

8. Comment: If "resource management goals" equates to timber harvest goals, then this should be made clear in the Final SEIS.

Response: One of the needs in the Northwest Forest Plan was to "produce a predictable and sustainable level of timber sales." This is consistent with the Agencies' multiple-use missions. This SEIS makes it clear that timber will be harvested.

9. Comment: There is no legitimate, legal reason to remove or modify the Survey and Manage mitigation measure just because the impacts have been greater than anticipated.

Response: This SEIS displays the impacts of removing the Survey and Manage mitigation measure so that the public and the Responsible Official can understand the consequences of choosing between the three alternatives and how each alternative meets the need and purposes of this SEIS.

10. Comment: The Draft SEIS provides no documentation to support the claim that the Survey and Manage mitigation measure is frustrating the Agencies' ability to protect the long-term health of forests, wildlife, and waterways or that it is restricting forest health treatments.

Response: Documentation to support these claims has been added to Chapter 1.

11. Comment: The purpose and need described in the Draft SEIS are narrow which led to a narrow range of alternatives. This undermines the fundamental purpose of NEPA which is to consider, evaluate, and compare the environmental consequences of all reasonable alternatives.

Response: The Agencies do not believe the purpose and need expressed for the Northwest Forest Plan is narrow. This SEIS includes all reasonable alternatives that would meet the need for healthy forest ecosystems and a predicable sustainable supply of timber to the extent these are frustrated by the Survey and Manage Standards and Guidelines. This focus is consistent with the Northwest Forest Plan and the 2000 Survey and Manage Final SEIS. This SEIS is a supplement to the Northwest Forest Plan Final SEIS and the 2000 Survey and Manage Final SEIS. Combining the alternatives in those SEISs with the three alternatives in this SEIS shows that 16 alternatives have been considered in detail. The alternatives ranged from protecting all old growth to continuing the land and resource management plans that existed prior to the Northwest Forest Plan to having a Survey and Manage mitigation measure to not having a Survey and Manage mitigation measure.

Purpose

Settlement Agreement

12. Comment: The Final SEIS should discuss the settlement agreement process and the identities and roles of any interveners.

Response: After the Douglas Timber Operators and American Forest Resource Council filed their lawsuit in Oregon, ONRC Fund, Northwest Ecosystem Alliance, Gifford Pinchot Task Force, American Lands Alliance, Umpqua Watersheds, Siskiyou Regional Education Project, Klamath Siskiyou Wildlands Center, and Northcoast Environmental Center filed a lawsuit in the Western District of Washington challenging that the Survey and Manage mitigation measure was not sufficient to protect species associated with late-successional and old-growth forests. ONRC Fund intervened in the Douglas Timber Operators et al. suit, and Douglas Timber Operators intervened in the ONRC Fund et al. suit. The ONRC Fund et al. lawsuit was transferred from the Western District of Washington to Oregon, so that the two lawsuits could be presented in front of the same judge.

Before litigation in the ONRC Fund et al. lawsuit progressed very far, the settlement in the Douglas Timber Operators et al. lawsuit was reached. ONRC Fund was not involved in the settlement agreement discussions, nor were they a party to the settlement. Recognizing the 2001 Survey and Manage Record of Decision might soon be replaced, the parties to the ONRC Fund et al. lawsuit agreed to stay their lawsuit.

13. Comment: The SEIS should discuss why the government settled the Douglas Timber Operators et al. lawsuit so quickly and examine how vigorously the government defended itself.

Response: As described in the SEIS, the government has numerous reasons for re-examining the Survey and Manage mitigation measure.

14. Comment: The terms of the settlement agreement have been met by issuing the Draft SEIS. No changes to the Survey and Manage Standards and Guidelines are required.

Response: The terms of the settlement agreement included more than issuing a Draft SEIS. In addition to issuing the Draft SEIS, the settlement agreement also requires the Agencies to publish a Final SEIS, prepare a Biological Assessment to determine the effects of the alternatives on species listed under the Endangered Species Act, consult with the U.S. Fish and Wildlife Service and NOAA Fisheries to the extent required by the Endangered Species Act, and issue a Record of Decision. The Agencies are continuing their efforts to meet all the terms of the settlement agreement. The settlement agreement does not require that a specific decision be made. The Responsible Officials will make a reasoned choice among the alternatives based on the information contained in this SEIS.

Conserve Rare and Little Known Species

15. Comment: The Survey and Manage mitigation measure is working as intended; it is protecting rare species. The solution may lie in redesigning or eliminating a few timber sales rather than the Survey and Manage mitigation measure.

Response: The efficacy of the Survey and Manage Standards and Guidelines is not at issue. The issue is that the Agencies need to meet all of the goals of the Northwest Forest Plan. The existing Survey and Manage Standards and Guidelines are causing

unnecessary effects on other programs and frustrating the Agencies' ability to meet all of the goals of the Northwest Forest Plan which includes predictable and sustainable timber outputs.

16. Comment: The Draft SEIS (p. 4) states that pre-disturbance surveys are required for 69 species. Most administrative units are only required to complete surveys for 1 to 18 species and many species can be surveyed concurrently. This information should be disclosed in the Final SEIS.

Response: This information has been added in the Final SEIS.

17. Comment: If project areas are identified during out-year planning, delays caused by a 2-year survey protocol are minimal.

Response: The Agencies do include time to meet the Survey and Manage Standards and Guidelines into planning for routine projects. What frustrates line officers is when unplanned, non-routine things happen. For example, if a homeowner adjacent to federally managed lands requests to install a new water pipe across those lands because their current line has failed, the line officer must inform them that replacing their water line may take 1 to 2 years to comply with Survey and Manage Standards and Guidelines. Or, a line officer must tell the public that it will take an additional 1 or 2 years to replace the road to a popular recreation area that was destroyed during a flood because of the pre-disturbance surveys required under the Survey and Manage Standards and Guidelines.

18. Comment: It seems illogical to point to undesirable changes in habitats due to wildfire as a justification to reduce protection for rare, uncommon, and little known species, while encouraging late-successional and old-growth habitat alteration by regeneration harvest.

Response: Most (86 percent) of the existing late-successional forest is protected in reserve land allocations under the Northwest Forest Plan. The remaining 14 percent of the late-successional forest is in Matrix or Adaptive Management Areas. This remaining 1.1 million acres of late-successional forest is the primary source for harvest in support of the Probable Sale Quantity (PSQ). The Northwest Forest Plan recognized that the late-successional and old-growth forests in Matrix and Adaptive Management Areas would be harvested and disclosed that effect. The analysis shows that late-successional forest is actually increasing at 2.5 times the rate of loss that occurs through stand replacement fire and harvest. Changes caused by wildfires occur in all land allocations and can destroy late-successional and old-growth forest in all land allocations including reserves. Reducing unnatural build up of fuels helps reduce the risk of wildfires, which protects late-successional and old-growth forest in reserves.

19. Comment: The Survey and Manage mitigation measure was originally identified because the BLM and Forest Service regulations were insufficient to conserve rare and little known species.

Response: The Survey and Manage Standards and Guidelines were added to the Northwest Forest Plan as a mitigation measure to provide additional protection for species that are closely associated with late-successional or old-growth forests and where there was uncertainty whether other elements of the Northwest Forest Plan (such as reserves or other standards and guidelines) would provide a reasonable assurance of persistence. The Northwest Forest Plan did not examine applying the existing Special Status Species Programs to these species.

20. Comment: The Special Status Species Programs do not have a basis in law or other binding regulation. They are policy, which is not subject to litigation.

Response: Neither the Survey and Manage mitigation measure or the Special Status Species Programs are required by law. The laws that the Agencies are authorized under and bound by apply equally to the Survey and Manage mitigation measure and the Special Status Species Programs. Policy may or may not be subjected to litigation, but decisions to implement federal actions that are based on policy can be litigated.

21. Comment: The trend away from natural resource protection and towards resource extraction does not meet the legal standards in the Multiple-Use Sustained-Yield Act.

Response: The Agencies do not believe that striving to implement the Northwest Forest Plan which reduced timber production by more than 80 percent from previous levels, represents a trend away from natural resource protection. The purpose and need of this SEIS is to attain the Northwest Forest Plan goals of healthy forest ecosystems and predicable and sustainable timber outputs. The Northwest Forest Plan goals have their origin in the Agencies' multiple use missions.

For the BLM, this is based in the Federal Land Policy and Management Act of 1976 (FLPMA) where Congress defined "multiple use" management for the BLM as "management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people." FLPMA requires that the public lands be managed in a manner which provides for "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values."

The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. With the Multiple-Use Sustained-Yield Act of 1960, Congress directed the Forest Service to manage national forests for multiple uses and benefits and for the sustained yield of renewable resources such as water, forage, wildlife, wood, and recreation. Multiple use means managing resources for a combination of uses to benefit the American people while ensuring the productivity of the land and protecting the quality of the environment.

22. Comment: The "anticipatory" nature of the Draft SEIS is inadequate to address the study and protection of species.

Response: This SEIS discloses, to the public and the Responsible Officials, the reasonably foreseeable consequences of the alternatives on components of the environment. The Responsible Officials can then make a reasoned choice among the alternatives.

23. Comment: Removing species from the Survey and Manage Standards and Guidelines without scientifically-defined studies is inconsistent with adaptive management and lacks scientific rigor.

Response: Scientifically defined studies are only one source of information that informs adaptive management. Experience at implementing projects and programs also informs adaptive management. Available information relevant to the analysis, including scientific studies, was utilized in analyzing environmental consequences.

24. Comment: The Draft SEIS repeatedly reaffirms the Agencies intention to avoid activities that lead to listing of species under the Endangered Species Act. The preferred alternative predicts the extirpation of species.

Response: The Final SEIS does not predict the extirpation of species. The Final SEIS discloses that 51 species in all of their range and 6 species in part of their range would

have insufficient habitat (including known sites) to support stable populations under Alternative 2. The Final SEIS also describes mitigation that eliminates those adverse effects. Applying mitigation is an option that the Responsible Officials may choose when making their decision.

25. Comment: The best and most efficient way to protect individual species is to protect vast tracts of biologically diverse habitat.

Response: One of the key elements of the Northwest Forest Plan is a system of reserves that encompasses 80 percent of federally managed lands in the planning area. Late-Successional Reserves were designed to serve as habitat for late-successional and old-growth forest related species. These reserves, in combination with the other allocations and standards and guidelines to maintain legacy components of late-successional and old-growth forests in the Matrix, will maintain a functional, interconnected, late-successional and old-growth forest ecosystem. Nothing in the SEIS changes these elements of the Northwest Forest Plan.

26. Comment: If the Survey and Manage Standards and Guidelines are designed to help the Northwest Forest Plan to provide for a reasonable assurance of persistence of late-successional and old-growth forest associated species, why are they being removed? Is the important policy goal of protecting the long-term health and sustainability of all federal forests within the range of the northern spotted owl and the species that inhabit them no longer important?

Response: The proposed action is intended to meet both needs identified in the Northwest Forest Plan, the need to provide for healthy forest ecosystems and the need for a sustainable supply of timber and other forest products. The fundamental elements of the Northwest Forest Plan species conservation strategy (reserves, Aquatic Conservation Strategy, and all other standards and guidelines) remain intact. In addition, the Agencies' Special Status Species Programs provide for species management under Alternative 2; and, under Alternative 3, the Agencies' Special Status Species Programs and the Survey and Manage mitigation measure provide for species management.

27. Comment: If there is insufficient information to draw a conclusion, why are the Agencies proposing to eliminate the Survey and Manage Standards and Guidelines rather than increasing research?

Response: The outcome of "insufficient information to determine an outcome" is true for the existing Survey and Manage mitigation measure, as well as the other two alternatives in the Final SEIS. In the 9 years since the Survey and Manage Standards and Guidelines were added as a mitigation measure to the Northwest Forest Plan, there is still inadequate information to determine an outcome for these species. While insufficient information exists for certain species, there is sufficient information to make a reasoned choice among the alternatives.

28. Comment: Federally managed lands must provide a refuge for high-risk species because protections on state and private lands are lacking.

Response: There is no law that requires federally managed lands to be a refuge for high-risk species. The acres of known sites potentially released under the proposed action are small in size and of a dispersed nature compared to the size and distribution of the Northwest Forest Plan reserve network. The fundamental elements of the Northwest Forest Plan species conservation strategy (reserves, Aquatic Conservation Strategy, and all other standards and guidelines) remain intact.

29. Comment: Species which meet the three Survey and Manage criteria (p. 243) but are not included on the Special Status Species lists will fall through the cracks; many of these are little known species.

Response: While some species were not determined to be eligible for inclusion on the Agencies' Special Status Species lists, the provisions of the Northwest Forest Plan other than Survey and Manage remain intact. These provisions were designed to maintain a functional, interconnected, late-successional and old-growth forest ecosystem that provides habitat for these species.

30. Comment: Many salmon and steelhead stocks are at risk, and some are listed under the Endangered Species Act. Eroding the Survey and Manage Standards and Guidelines would put these and other fish populations at even greater risk.

Response: The Aquatic Conservation Strategy is the part of the Northwest Forest Plan that was implemented to benefit fish. There are no fish species included in the Survey and Manage Standards and Guidelines. The analysis in the Final SEIS and the Biological Evaluation concludes that removing the Survey and Manage mitigation measure will have no effect on fish listed as threatened or endangered under the Endangered Species Act.

31. Comment: The Draft SEIS claims that the Special Status Species Programs will suffice without providing any evidence. The Final SEIS should substantiate this claim.

Response: The Draft SEIS discloses the differences between the Survey and Manage mitigation measure and the Special Status Species Programs (see Appendix 2). The Draft SEIS also disclosed the impacts of the different policies in a comparative form through the analysis of the alternatives. The Final SEIS retained and expanded the discussions that were included in the Draft SEIS.

32. Comment: One of the criteria for a species to be considered for Survey and Manage is its association with late-successional and old-growth forests. The Draft SEIS focuses on rarity of species and fails to specifically mention the conservation of species associated with late-successional and old-growth forests.

Response: This SEIS supplements the Northwest Forest Plan Final SEIS which focused on the management of late-successional and old-growth related species. This SEIS discloses that the Survey and Manage mitigation measure is for species that are thought to be closely associated with late-successional and old-growth forest. This SEIS also describes the Agencies longstanding policy for the conservation of rare and little known species that underlies the Northwest Forest Plan.

Reduce Cost and Effort

33. Comment: The entire Northwest Forest Plan should be reevaluated with greater attention given to maintaining the social and economic aspects of the original balance.

Response: Reevaluating the Northwest Forest Plan is beyond the scope of this SEIS.

34. Comment: Is cost savings the major reason for preferring Alternative 2?

Response: Cost is not the sole reason. The preferred alternative is based on the analysis of how the alternatives meet the stated purposes and need of this SEIS. The section on the preferred alternative has been expanded and provides rationale for that designation.

35. Comment: The difference in annual cost between the no-action alternative and the proposed action is only $7-8 million. The Agencies should augment its budget requests by the modest amount necessary to implement the Survey and Manage mitigation measure.

Response: This SEIS shows the difference in short-term cost between Alternative 1 (the no-action alternative) and Alternative 2 to be $18.4 million. The difference of $7-8 million is long-term costs. Both Agencies have requested funds for the Survey and Manage mitigation measure. However, it is up to Congress to appropriate adequate funds.

36. Comment: Where a species is sufficiently common to occur in high enough densities to render sale units inoperable or unfeasible, there may be a strong case for removal of the species during the next Annual Species Review. Alternately, line officers already have discretion to determine that pre-disturbance surveys are not necessary (see Draft SEIS, p. 22, and BLM Information Bulletin No. OR-2002-235).

Response: Species must meet three basic criteria to be included in Survey and Manage:

1. The species must occur within the Northwest Forest Plan area, or occur close to the Northwest Forest Plan area and have potentially suitable habitat within the Northwest Forest Plan area,
2. The species must be closely associated with late-successional or old-growth forest, and
3. The reserve system and other standards and guidelines of the Northwest Forest Plan do not appear to provide for a reasonable assurance of species persistence.

Having high enough densities to render sale units inoperable or unfeasible does not prove or disprove any of the three criteria.

The 2001 Record of Decision did provide exceptions for pre-disturbance surveys for wildland fire for resource benefit in backcountry, Wilderness Study Areas, roaded natural and similar areas where the objective of such fires is similar to those in Wilderness or Late-Successional Reserves if certain conditions are met (and have now been extended to all land allocations). None of these exceptions apply to timber sales in Matrix or Adaptive Management Areas.

BLM Information Bulletin No. OR-2002-253 states that "The line officer should seek specialists' recommendations to help determine the need for a survey based on site-specific information. In making such determination, the line officer should consider the probability of the species being present on the project site, as well as the probability that the project would cause a significant negative effect on the species habitat or the persistence of the species at the site. Key to this statement is the determination as to whether the project would result in a 'significant negative effect' to the species or habitat at the project site. Often survey protocols list types of activities that do not trigger the need to survey and are helpful in making this determination. If the determination is made that there is not a likelihood of a 'significant negative effect' from implementation of the proposed activity then no surveys are needed." Little is known about most Survey and Manage species. Because of this lack of information, it is difficult to conclude that a timber sale will not have a "significant negative effect."

37. Comment: The Draft SEIS has underestimated the costs of mitigation for species with insufficient habitat under Alternative 2. How can species be recovered at an annual cost of only $0.6 million?

Response: The potential mitigation described for Alternative 2 is not to "recover" the species; it is to mitigate for the adverse effects caused by the alternative. Mitigation for most of these species involves managing known sites which incurs little expense. Mitigation for some species includes pre-project clearances. If agency personnel must

survey for a taxa group (such as lichens) anyway, adding several more species to the survey list will incur little additional expense.

38. Comment: The proposal to transfer Survey and Manage species onto the BLM Special Status Species list does not accomplish the stated purposes of reducing costs in the Draft SEIS.

Response: This SEIS does not propose to transfer all Survey and Manage species onto the Agencies' Special Status Species lists. Only species that meet the individual Agency's criteria will be considered for inclusion. This SEIS discloses that the costs for managing species under both Alternatives 2 and 3 are less than under Alternative 1. The purpose stated in this SEIS was to reduce costs and efforts not eliminate them.

39. Comment: The Draft SEIS mischaracterizes delays caused by the Survey and Manage mitigation measure. The delays have actually been caused by the Agencies' failure to implement the requirements in a timely manner.

Response: A recent review of National Forests in northern California found that "Survey protocols are time consuming to implement and survey windows are often less than several weeks in length due to inclement weather conditions. Project delays are often due to survey windows being too short" (USDA Forest Service 2003a). This is the kind of delay that this SEIS is characterizing.

40. Comment: The Agencies continue to undermine the Northwest Forest Plan rather than putting a good faith effort toward making it work.

Response: The Agencies accomplishment reports and the results of implementation monitoring show that the Agencies have been implementing the Northwest Forest Plan in good faith. The results of the Fiscal Year 2002 implementation monitoring report indicate 98 percent compliance with the Northwest Forest Plan requirements.

41. Comment: The high cost and complexity of the Survey and Manage mitigation measure was not disclosed or thoroughly considered before it was adopted.

Response: The high cost and complexity of the Survey and Manage mitigation measure was not anticipated when it was adopted in 1994. Agency experience with implementing Survey and Manage since 1994 has provided information to allow a more accurate assessment of costs and complexities. This SEIS does disclose the complexity and cost of the Survey and Manage Standards and Guidelines, so did the 2000 Survey and Manage Final SEIS.

42. Comment: The current estimated cost to implement the Survey and Manage mitigation measure is $26 million. Congress will never approve such a large amount of money for a mitigation measure that is not required by either law or regulation.

Response: The high cost of implementing the Survey and Manage mitigation measure was disclosed in the 2000 Survey and Manage Final SEIS. Congress has appropriated money to fund the Survey and Manage mitigation measure.

43. Comment: The Agencies reduced the Survey and Manage requirements in 2001. Those amendments have significantly reduced costs.

Response: The 2000 Final SEIS did not reduce the requirements of Survey and Manage. The alternatives in the 2000 Final SEIS considered ways to: (1) better identify the management needed; (2) clarify language; (3) eliminate inconsistent and redundant direction; and, (4) establish a process that better responded to new information. Alternative 1, the no-action alternative, in this SEIS is the alternative that was selected for

implementation in the 2001 Record of Decision. The cost of the no-action alternative in this SEIS is compared to the costs of the action alternatives in this SEIS, not to the other alternatives analyzed in the 2000 Final SEIS.

44. Comment: Cost should be discussed in the context of distinguishing the cost of species management via Survey and Manage versus Special Status Species Programs.

Response: This SEIS compares and contrasts costs between the Survey and Manage and the Special Status Species Programs. See the Cost of Management Section in Chapter 3&4.

45. Comment: The overlap between the Survey and Manage Standards and Guidelines and the Special Status Species Programs increases the funding, time, and resources that could be utilized for other activities.

Response: The Survey and Manage mitigation measure and the Special Status Species Programs do overlap and this SEIS discloses the effects of eliminating that overlap. Where species are currently included in Survey and Manage and as a special status species, the species has been managed primarily under the Survey and Manage Standards and Guidelines.

Healthy Forests and Timber Outputs

46. Comment: The Survey and Manage mitigation measure is only one factor, and not necessarily the major factor, in preventing timber goals from being met.

Response: The language in Chapter 1 has been changed to acknowledge that Survey and Manage is only one of the factors that is preventing the Agencies from achieving the goals of the Northwest Forest Plan.

47. Comment: Fires are burning more intensely than they would have under more natural fuel conditions in much of the Northwest Forest Plan area. This situation should be addressed through appropriate, science-based forest management.

Response: A purpose of this proposed action is to increase the Agencies' ability to implement hazardous fuels treatment projects designed to improve forest health and to implement the National Fire Plan. The question of how successfully the Agencies are implementing "appropriate, science-based forest management" is outside the scope of this SEIS.

48. Comment: The implication throughout the Draft SEIS is that thinning and fuels reduction projects are seriously obstructed by Survey and Manage. This is not true.

Response: The text in the Draft SEIS has been changed to reflect that most of the conflicts with fuels reduction projects occur in National Forests in northern California. A review of the Northwest Forest Plan in Region 5 found that "high priority treatments in WUI's (Wildland Urban Interface areas) take longer and are more costly due to the survey and manage requirements." "Forests have willing and eager partners who want to help implement the NFP (National Fire Plan), but such partners have expressed frustration with the extended planning time, management constraints, and high costs." and "Survey and Manage protection buffers have affected approximately 30% of the project areas proposed. The majority of fuels treatments and timber management activities are excluded within protection buffers" (USDA Forest Service 2003a). The constraining effect of the Survey and Manage mitigation measure on fuels reduction and thinning projects allow fires to burn hotter and grow larger which, in turn, destroys habitat for many Survey and Manage species.

49. Comment: The Draft SEIS has failed to provide any support to the statement that reintroducing fire at the landscape scale has become nearly impossible.

Response: The analysis of environmental consequences shows that under the proposed action more acres would be treated and costs would be reduced. This would increase the Agencies' ability to implement projects designed to improve forest health and to implement the National Fire Plan.

50. Comment: Timber volume was not a goal, but rather an outcome of the Northwest Forest Plan. Timber should be seen as a by product of good stewardship, not an inflexible goal.

Response: No specific goal for timber harvest was established in the Purpose and Need for this SEIS. The purpose and need for this SEIS does include predictable and sustainable timber outputs as predicted in the Northwest Forest Plan. This SEIS discloses the effects of the alternatives on timber output. The analysis in this SEIS does not have the precision necessary to re-declare the PSQ for National Forests or BLM Districts. This SEIS does not authorize timber sales.

51. Comment: Line officers must be free to actively manage federal lands for the health of the land.

Response: This SEIS explores removing the Survey and Manage mitigation measure and relying on the Agencies' Special Status Species Programs to protect rare or little known species. Under the Special Status Species Programs, line officers have more flexibility to exercise management options.

52. Comment: Information gathering surveys are foregone under Alternative 2.

Response: All of the Agencies' Special Status Species Programs have provisions for information gathering surveys.

53. Comment: The Draft SEIS implies that the 2002 wildfires are a result of the Survey and Manage mitigation measure. This inference is untrue.

Response: That language has been removed and does not appear in the Final SEIS.

54. Comment: Instead of stating "the effects of survey and manage were underestimated" in 1994 (Draft SEIS, p. 4), the Agencies should state the allowable timber harvest was overestimated. Survey and Manage was not a mistake or misprint; the calculation of its effects on PSQ was in error.

Response: The calculation of the Survey and Manage mitigation measure on PSQ in 1994 was based on what was known at that time. It was not an overestimate, a mistake, or a misprint. When the Agencies began to implement the Survey and Manage Standards and Guidelines and gain more information, this information allowed a more accurate analysis. For instance, *Prophysaon coeruleum* (blue-gray tail-dropper) a small slug was known from 10 sites in Oregon and Washington prior to 1994, but by 2000 it had been recorded more than 6,000 times.

Decision to be Made

55. Comment: Decisions on managing public lands and the wildlife that depend on them should reflect public opinion, not the minority view of special interests. The Agencies have a duty to steward and manage public lands in a sustainable manner.

Response: The Agencies conducted scoping and included a public comment period to consider input from the public. The purpose and need for this SEIS is based on the legal requirements for managing public lands and resources. The choice among alternatives will be based on information in this SEIS which includes public input and legal requirements.

56. Comment: The phenomena of "avoidance" and "abandonment" of projects reflect decisions made on the ground by line officers, not necessarily the effects of implementing the Survey and Manage Standards and Guidelines.

Response: There may be reasons other than Survey and Manage that cause line officers to avoid or abandon projects; this SEIS focused on projects that were avoided or abandoned because of the Survey and Manage Standards and Guidelines.

57. Comment: Is reducing the Agencies' cost, time, and effort associated with rare and little known species conservation simply a desire on the part of the Agencies, or is there a legal basis?

Response: There is no legal basis for reducing costs. However, the Agencies are responsible to taxpayers to reduce costs when the same level of service can be provided less expensively. One of the reasons for reconsidering this mitigation measure is the settlement of a lawsuit where the plaintiffs asserted that Survey and Manage violates laws under which the Agencies manage public lands.

Scoping

58. Comment: The Draft SEIS, in the scoping section, stated that "some comments suggested ending all commercial logging everywhere in the Northwest." The issue of ending all commercial logging everywhere was identified as "not pertinent to this analysis." This issue is pertinent. The Sierra Club campaign to "End Commercial Logging on Public Lands" is widely publicized and supported. The Agencies need to rethink the commercial approach to forest management.

Response: The underlying needs to which the Agencies are responding in this SEIS "are healthy forest ecosystems and a sustainable supply of timber and other forest products, to the extent these are frustrated by the Survey and Manage Standards and Guidelines." Even though the Sierra Club campaign to "End Commercial Logging on Public Lands" is widely publicized it does not respond to either healthy forests or a sustainable supply of timber. The Agencies' manage public lands in compliance with existing laws that compel the Agencies to manage for multiple uses which includes timber harvest.

Chapter 2

Background for Survey and Manage Standards and Guidelines

59. Comment: The Survey and Manage mitigation measure represents a proactive attempt to understand rare and little known components of the forest ecosystem.

Response: The Survey and Manage mitigation measure was added to the Northwest Forest Plan because it was unknown if the elements of the Northwest Forest Plan (such as reserves or other standards and guidelines) would provide a reasonable assurance of persistence for rare and little known species. The Agencies' Special Status Species

Programs are also a proactive approach to species management that seek to avoid actions that would contribute to a need to list species under the Endangered Species Act.

60. Comment: The Agencies should reconsider the Survey and Manage mitigation measure to determine if the high cost is justified by the limited and unverified benefit.

Response: The Agencies are re-examining the Survey and Manage mitigation measure. Alternative 2 proposes to remove the Survey and Manage mitigation measure and rely on other elements of the Northwest Forest Plan and existing Special Status Species policy to provide for rare and little known species. The analysis in this SEIS will allow the Responsible Officials to determine if the costs of the Survey and Manage Standards and Guidelines are worth the benefits they provide.

61. Comment: The Survey and Manage mitigation measure should be kept because it protects Late-Successional Reserves and Riparian Reserves that are supposedly off limits to timber harvest.

Response: The Northwest Forest Plan Standards and Guidelines for Late-Successional Reserves and Riparian Reserves encourage the use of silvicultural practices to accelerate the development of overstocked, young plantations into stands with late-successional and old-growth forest characteristics, and to reduce the risk of large-scale disturbances and unacceptable loss of habitat. The Survey and Manage Standards and Guidelines were not added to limit these activities. Placing such projects off limits would not protect these reserves, but rather, increase their exposure to catastrophic loss or delay development of late-successional forest.

62. Comment: Alternative 2 should not be selected because it eliminates most protection for ancient forests.

Response: The Survey and Manage mitigation measure was not added to the Northwest Forest Plan to protect ancient forests. Late-Successional Reserves were created to protect and enhance conditions of late-successional and old-growth forest ecosystems. This SEIS does not change the boundaries of Late-Successional Reserves or the standards and guidelines for their management.

63. Comment: The proposed action is not a minor change in standards and guidelines.

Response: The Survey and Manage Standards and Guidelines were added late in the development of the Northwest Forest Plan. When considered in the context of the whole Northwest Forest Plan, removing the Survey and Manage Standards and Guidelines is a minor change.

64. Comment: If Alternative 2 is selected, there would be no Survey and Manage species to act as monitors of late-successional forest health.

Response: Survey and Manage species are not, and were never intended to be, monitors of late-successional forest.

65. Comment: Retaining the Survey and Manage Standards and Guidelines will serve the larger interests of the public, not narrow, commercial interests.

Response: The Northwest Forest Plan was based on the Forest Ecosystem Management Assessment Team (FEMAT) report. The FEMAT was chartered in April 1993 by former President Clinton to write a scientifically based plan for "protecting the long-term health of our forests, our wildlife, and our waterways ... in balance with ... a predictable and sustainable level of timber sales and non-timber resources ..." These goals have their origin in the Forest Service and BLM multiple-use missions.

66. Comment: If the biological opinions have shown that timber sales would harm certain watersheds or endangered anadromous fish and have been curtailed, then the Survey and Manage Standards and Guidelines are working and should be left as is.

Response: The purpose of the Survey and Manage mitigation measure is not to protect watersheds or endangered anadromous fish. Other provisions of the Northwest Forest Plan protect watersheds and anadromous fish.

67. Comment: Although the relative percentage of land allocated to Late-Successional Reserves may mimic natural disturbance regimes, the actual percentage of late-successional and old-growth forest in reserves does not. Survey and Manage is needed to retain late-successional and old-growth forests in other land allocations.

Response: Survey and Manage was not added to the Northwest Forest Plan to increase late-successional and old-growth forest in other land allocations. The small amount and distribution of the Survey and Manage sites are inconsequential to the large Late-Successional Reserves. Changing land allocations to increase the amount of late-successional and old-growth forest in reserves is outside the scope of this SEIS.

68. Comment: Even though the Survey and Manage Standards and Guidelines are expensive and time consuming, they are needed to protect rare species whose late-successional and old-growth habitat has been substantially diminished.

Response: One of the issues that led to the creation of the Northwest Forest Plan was the loss of late-successional and old-growth habitat. The Northwest Forest Plan created Late-Successional Reserves in response to this issue. These reserves, in combination with the other land allocations and standards and guidelines, will maintain a functional, inter-connected, late-successional and old-growth forest ecosystem. The reserves are designed to serve as habitat for late-successional and old-growth forest related species. Nothing in the SEIS changes the boundaries or purpose of the Late-Successional Reserves.

69. Comment: The Northwest Forest Plan was developed as a compromise between the timber industry and the environmental community. This proposal seeks to eliminate that compromise.

Response: The purposes of this proposal are to better implement the Northwest Forest Plan which struck a balance between healthy forest ecosystems and a predictable and sustainable supply of timber from federally managed lands. In return for retaining about 80 percent of the land base and 86 percent of existing late-successional and old-growth forest in reserves, some late-successional and old-growth forest in Matrix was designated for harvest as part of the 1.1 billion board feet estimated PSQ. Changes since the 1994 Record of Decision have added to the reserves and decreased the estimated PSQ to 805 million board feet (MMBF). This SEIS does not increase harvest levels; in fact, it shows harvest levels would decrease under all alternatives.

70. Comment: The Survey and Manage Standards and Guidelines should not be removed. The Northwest Forest Plan was developed by achieving consensus of all stakeholders.

Response: The Northwest Forest Plan considered many diverse points of view, but was not the result of a consensus. Both environmental and industry groups filed lawsuits against the Northwest Forest Plan shortly after the Record of Decision was signed in 1994.

71. Comment: The process used to identify species to be included in the Survey and Manage mitigation measure did not recognize the relative importance of federally managed lands or active management on the species in question.

Response: The process used to identify species to be included in Survey and Manage goes back to the FEMAT. The FEMAT assembled panels of experts to assess the likelihood of meeting various population stability and distribution outcomes for 1,120 species for 7 of their 10 options, including Option 9, the basis for the Northwest Forest Plan (USDA et al. 1993, pp. IV-40 through IV-49, IV-77, and IV-185). Although the majority of these species, including the northern spotted owl and all other threatened or endangered species, rated well, the panels could not confidently say that Option 9 would provide for stable, well-distributed populations for 100 years across federally managed lands for some of the lichens, bryophytes, fungi, arthropods, mollusks, and other species. This process did recognize the importance of federally managed lands.

72. Comment: The Survey and Manage Standards and Guidelines should not be changed. They are an integral component of the Northwest Forest Plan that ensures the health of old-growth forests and the viability of native species.

Response: The Survey and Manage mitigation measure is not an integral component of the Northwest Forest Plan. The Northwest Forest Plan network of reserves and other designated areas, along with many other standards and guidelines, were designed to work together to provide healthy old-growth forests and viability of species associated with late-successional and old-growth habitats. The Survey and Manage mitigation measure was added late in the development of the Northwest Forest Plan to increase the likelihood of stable, well-distributed populations of species about which little was known across federally managed lands or to decrease the likelihood of their extirpation on federally managed lands in the Northwest Forest Plan area. This SEIS analyzes removing the Survey and Manage mitigation measure and relying on the Agencies' Special Status Species Programs to increase the likelihood of stable, well-distributed population of little known species associated with late-successional and old-growth forest. The Agencies' Special Status Species Programs have the goal of preventing species from being listed under the Endangered Species Act. Maintaining stable populations and decreasing the likelihood of extirpation are similar to the objectives the Agencies strive to meet to prevent listings under the Endangered Species Act.

73. Comment: Instead of removing the Survey and Manage Standards and Guidelines, the Agencies should request funding from Congress to adequately fund all of the requirements of the Northwest Forest Plan.

Response: Both Agencies have requested funds necessary for the Northwest Forest Plan, but it is up to Congress to appropriate adequate funds. Survey and Manage has been funded.

74. Comment: The Survey and Manage Standards and Guidelines should be modified to allow managing the undergrowth so fires can be controlled.

Response: Under the existing Survey and Manage Standards and Guidelines, management recommendations have been written to address the need for hazardous fuels treatments.

Relationship of Alternatives to Existing Management Plans

75. Comment: The SEIS does not amend land and resource management plans to include Special Status Species lists or address developing and implementing management objectives for populations and/or habitat of these species.

Response: This SEIS proposes to amend 28 land and resource management plans by removing the Survey and Manage mitigation measure from them. Special Status Species lists are developed by the Agencies based on existing policy, not through land and resource management plans.

Alternative 1

76. Comment: The Draft SEIS fails to accurately describe the no-action alternative. The Survey and Manage Standards and Guidelines include both monitoring (strategic surveys) and mitigation (pre-disturbance surveys).

Response: The no-action alternative is accurately described. The Survey and Manage Standards and Guidelines constitute the mitigation measures which were added to the Northwest Forest Plan in 1994 and amended in 2001. Strategic surveys are not monitoring; they are a method of gathering information about species to determine if they meet the Survey and Manage basic criteria. Pre-disturbance surveys are conducted to prevent the inadvertent loss of species sites.

77. Comment: The no-action alternative must be considered "no logging" of old-growth habitat.

Response: In accordance with NEPA, the no-action alternative is the one which continues current management. In the Record of Decision for the Northwest Forest Plan, the Responsible Officials considered permanently protecting all late-successional and old-growth forests (i.e. no logging of old-growth habitat) and rejected that alternative. Revisiting that decision is outside the scope of this SEIS.

Standards for Inclusion

78. Comment: The list of Survey and Manage Species should be expanded.

Response: Both Survey and Manage Standards and Guidelines and Special Status Species Programs have provisions for adding species when they meet the criteria for inclusion.

79. Comment: Alternatives 1 and 3 still include species because of a concern for persistence that is based on only one criterion. For there to be a concern for persistence, both limited numbers and limited habitat should be necessary.

Response: Alternative 1 lists six criteria for determining whether there is a concern for persistence. Alternative 3 lists eleven criteria. One or more of these criteria must be met and then considered in the context of the reserve systems and other standards and guidelines before determining there is a concern for persistence.

Species Categories

80. Comment: The Draft SEIS is proposing to put the red tree vole in a category requiring protection of only high-priority sites.

Response: This SEIS does not propose to change the red tree vole from one category to another. As noted in the description of Alternative 1 (see Chapter 2) the red tree vole is currently assigned to Category C in a portion of its range. Only high-priority sites are managed for uncommon species in Categories C.

Surveys Prior to Habitat-Disturbing Activities and Site Management

81. Comment: If funding is unavailable for surveys, then timber sales should be stopped.

Response: Timber sales are stopped until required surveys are done.

82. Comment: The Survey and Manage Standards and Guidelines are inflexible and do not allow the use of professional judgment to determine whether habitat is suitable or unsuitable.

Response: The current Survey and Manage Standards and Guidelines do allow this flexibility. They state "The line officer should seek specialists' recommendations to help determine the need for a survey based on site-specific information. In making such determination, the line officer should consider the probability of the species being present on the project site, as well as the probability that the project would cause a significant negative effect on the species habitat or the persistence of the species at the site."

83. Comment: Surveys prior to habitat-disturbing activities should be required. Interdisciplinary teams cannot formulate alternatives and evaluate effects without surveys.

Response: Only 66 of the 296 Survey and Manage species require pre-disturbance surveys to determine the presence of species in a project area. Interdisciplinary teams have been able to formulate alternatives and evaluate effects for the Survey and Manage species that do not require surveys.

84. Comment: The Agencies have changed the survey requirement from all "ground disturbing activities" to only those with "significant" adverse effects. Many activities will not be mitigated.

Response: This SEIS makes no such change. The 2001 Record of Decision made the change from "ground-disturbing activities" to "habitat-disturbing activities."

85. Comment: Many of the criteria listed under "Ability to Reasonably and Consistently Conduct Pre-Disturbance Surveys" are difficult or impossible to meet for fungi.

Response: The criteria were adopted in the 2001 Record of Decision for Survey and Manage and are part of the No-Action Alternative. They are not being changed in this SEIS. Many fungi species are in Category B and do not require pre-disturbance surveys because it is not practical to survey for them.

86. Comment: The statement that protection buffers can be 600 acres is misleading.

Response: The text in the Final SEIS has been changed to describe the one species, *Bridgeoporus nobilissimus*, that requires a 600-acre buffer. If a new site is found, a 600-acre buffer will be managed as the known site until a management plan is written. The management plan for the site will establish the actual buffer.

Inventories

87. Comment: The Survey and Manage mitigation measure focuses only on a limited part of the habitat and does not include the 84 percent of Northwest Forest Plan lands outside of the Matrix. As a result, there is not a scientifically-sound method for determining whether populations are rare or isolated. There is a need to know where rare and vulnerable species, their habitats, and the extent of their populations occur.

Response: One type of strategic survey in the Survey and Manage Standards and Guidelines is a region-wide survey based on the selection and sampling of random plots for Survey and Manage species. The objectives of the surveys are to estimate these species abundances throughout the Northwest Forest Plan area and determine if species are associated with late-successional/old-growth habitats and reserve land allocations.

Field surveys and the statistical analysis have been completed for lichens, bryophytes, and vascular plants. Field surveys for mollusks and fungi will be completed soon with statistical analysis expected to be completed early in 2004. Red tree vole field surveys will be completed in early 2004 and a statistical analysis is expected to be completed by summer 2004. The Agencies have committed funds to complete this work. The results of the statistical analyses will provide information about habitats and extent of populations for the current Survey and Manage species. This information will be available for use by the Agencies no matter which alternative is selected. The Special Status Species Programs also include provision for broad-scale inventories.

88. Comment: Strategic surveys are critical to science and the understanding of organisms associated with late-successional and/or old-growth forests.

Response: Strategic surveys are not done because they are critical to science or to increase the understanding of these organisms. Those are objectives for research. Strategic surveys are done to gather information at the landscape, population, or site-specific scale to address the three basic criteria for inclusion in Survey and Manage (are they late-successional, old-growth related? do the reserves provide for them? and do they occur within the Northwest Forest Plan area?).

Adding/Removing Species

89. Comment: The process for adding and/or removing species has not worked well during the past 2-3 years because they do not include fair and impartial provisions.

Response: The Annual Species Review that adds or removes species from the Survey and Manage mitigation measure follows a defined process using specified criteria and is conducted by agency taxa experts. Existing agency policies use the process developed by Oregon Natural Heritage Information Center and NatureServe to provide basic information for adding species to the Agencies' Special Status Species lists.

90. Comment: How does the adaptive manage part of the process work? If sites are "so numerous that it results in an unfeasible sale" is adaptive management working?

Response: The adaptive management process of Survey and Manage is the Annual Species Review. It has three components: (1) Acquiring new information relative to Survey and Manage species; (2) Evaluating new information; and, (3) Implementing changes or refinements to Survey and Manage. New information can be acquired in many ways; the most common method is through pre-disturbance surveys or strategic surveys. A regional-level interagency group including taxa experts weighs new information against criteria to determine if additions or deletions of species from Survey and Manage or changes of species among categories are warranted. The Annual Species Review has happened three times since the Survey and Manage Record of Decision (January 2001). The following changes were made based on these reviews:

- 59 species were removed from Survey and Manage in all or part of their range;
- 40 species were placed in different categories for all or part of their range; and
- 51 species had their ranges changed.

The adaptive management process is working but it takes time to gather the information necessary to change management for a given species.

Alternative 2

91. Comment: The Special Status Species Programs are concurrently under development and revision and may soon be discontinued.

Response: The Special Status Species Programs have been in place since the 1980's. These policies are routinely reviewed and revised and this SEIS expects review and revision to continue in the future. The Forest Service intends to issue National Forest Management Act implementing regulations (aka planning regulations), which include viability provisions, in the near future. It is not anticipated that the those regulations will be inconsistent with the assumptions in this SEIS.

92. Comment: Although the reserves will retain their designation, the amount of activity allowed in the reserves will be increased.

Response: Nothing in this SEIS allows more activities in the reserve land allocations than were described in the Northwest Forest Plan Final SEIS.

93. Comment: Alternative 2 is more complex than the Survey and Manage Standards and Guidelines because it relies on four different sets of standards depending on which state and which agency manages the land.

Response: Under Alternative 2, the Survey and Manage Standards and Guidelines would be removed and the Agencies would rely on their existing policies for their Special Status Species Programs. As stated, there are four different sets of standards depending on which state and agency manages the land. However, each agency will follow their own policy which reduces the complexity for managing individual species.

94. Comment: The proposed action lacks specifics on the proposal to create "special status programs."

Response: The proposed action would not create special status species programs. The BLM Special Status Species policies and the Forest Service Sensitive Species policies pre-date and underlie the Northwest Forest Plan. These policies are referred to collectively in this SEIS as the Agencies' Special Status Species Programs. None of the alternatives in this SEIS would create or change these policies. Appendix 2 contains information on the existing special status species policies.

Policy Objectives - Special Status Species

95. Comment: If the Special Status Species Programs were fully functional, many species currently listed under the Endangered Species Act would not have had to be listed.

Response: The reasons for listing species under the Endangered Species Act are complex and consider circumstances beyond the Agencies' control such as activities on private lands.

96. Comment: The differences between the Survey and Manage Standards and Guidelines and the Special Status Species Programs warrant further evaluation in the Final SEIS. For example, the Draft SEIS inaccurately refers to "requiring coordination" when there is no such requirement.

Response: In addition to the discussion in Chapter 2, Appendix 2 compares the Survey and Manage Standards and Guidelines with the Agencies' Special Status Species Policies. Coordination is part of the Special Status Species Policies. In the BLM, State Directors are responsible for coordinating the special status species policy with adjoining BLM State Offices, State and other Federal agencies, various private organizations, and BLM constituents (BLM Manual 6840.04.E). In the Forest Service, Regional Foresters coordinate Regional policies with States and other Federal agencies, groups, and individuals concerned with the management of threatened, endangered, and sensitive species (Forest Service Manual 2670.44). Regional Foresters are also responsible for coordinating conservation strategies and habitat planning for those species distributed

over more than one Forest and coordinating these activities with States, other Federal agencies, and others (Forest Service Manual 2620.43).

97. Comment: Is "the important policy goal of protecting the long-term health and sustainability of all federal forests within the range of the northern spotted owl and the species that inhabit them" no longer important?

Response: This remains an important goal. While some species were not determined to be eligible for inclusion on the Agencies' Special Status Species lists, the provisions of the Northwest Forest Plan other than Survey and Manage remain intact. These provisions were designed to maintain a functional, interconnected, late-successional and old-growth forest ecosystem that provides habitat for these species.

98. Comment: The preferred alternative leaves protection for species to the Special Status Species Programs. These policies are not designed for species recovery.

Response: The goal of the Special Status Species Programs is to manage habitat so that listing species under the Endangered Species Act is not necessary. Species recovery activities are specifically designed to recover species that are already listed under the Endangered Species Act.

99. Comment: The outcomes in the Draft SEIS depend on robust Special Status Species Programs. How can this SEIS assume that the Agencies' Special Status Species Programs will be implemented when they have never been funded adequately?

Response: This SEIS assumes that the Special Status Species Programs will be implemented in accordance with existing manual direction.

Standards for Inclusion

100. Comment: The Regional Forester and State Director appear to be political appointees. Modifying the Special Status Species lists by Regional Foresters and State Directors would be political rather than scientific under Alternative 2.

Response: Regional Foresters and State Directors are not political appointees. Scientists (such as biologists) provide scientific information to be used when the Special Status Species lists are updated. However, this information can be conflicting because resource conditions and processes differ from administrative unit to administrative unit. Scientific information can also differ from site to site because individual scientists may focus on different aspects of species requirements. The Regional Foresters and State Directors are in a position to integrate scientific information from several sources and determine which species to add to or remove from their Special Status Species list.

101. Comment: Add the "insufficient habitat" species under Alternative 2 to the Special Status Species lists. This would allow the Agencies the flexibility to consider new data in the future and change the status of these species without going through a lengthy, unnecessary SEIS process.

Response: These species did not meet the criteria for inclusion on the Agencies' Special Status Species lists in all or a part of their range. No environmental analysis process, such as an SEIS, is necessary for adding species to or removing species from the Special Status Species lists.

102. Comment: Alternative 2 should mandate either the addition of species to the Special Status Species lists for the region where it was previously unknown, or if numerous populations are found, then possibly a review of retaining the species on any of the lists.

Response: Alternative 2 assumed the use of existing Special Status Species Programs. Those policies already have provision for adding and removing species from the Special Status Species lists.

103. Comment: How the Agencies select and manage sensitive species is not outside the scope of this proposal. In fact, it is critical to developing a proposal that maximizes the achievement of Northwest Forest Plan resource objectives.

Response: The impetus for this SEIS is a Settlement Agreement that requires the analysis of removing the Survey and Manage mitigation measure and relying on the "existing Forest Service and BLM Special Status Species Programs." Existing national and local policy set the parameters for how species are selected for inclusion on the Special Status Species lists. This SEIS is only using the existing policy and is not suggesting or making any change to that policy. Each agency has its own process for changing policy.

104. Comment: The Draft SEIS considers only 130 of these Survey and Manage species for inclusion on the Special Status Species lists. This does not meet the basic premise of the Northwest Forest Plan to conserve late-successional and old-growth associated species.

Response: Direction in agency manuals permits or encourages use of State or Heritage rankings to serve, at least in part, as the basis for meeting the criteria for inclusion. In order to determine Survey and Manage species eligibility for inclusion as special status species, in October 2002, the Agencies contracted with the Oregon Natural Heritage Information Center to evaluate all Survey and Manage species for global and state rankings for Washington, Oregon, and California. For some of the current Survey and Manage species, the global and state rankings were not high enough for them to be included on the Agencies' Special Status Species lists. Between Draft and Final SEIS, the Agencies received the final Heritage rankings and Survey and Manage species were again reviewed. As a result, additional Survey and Manage species were found to meet the Agencies' criteria for inclusion on one or more Special Status Species lists.

105. Comment: Alternative 2 should mandate immediate species additions to the Special Status Species lists.

Response: Agency policy delegates the authority to determine which species will be included on the Special Status Species lists to the Regional Foresters and State Directors. Using this SEIS to mandate immediate species additions would be contrary to existing policy.

106. Comment: The Draft SEIS does not give adequate details, as to what exactly would happen to special status species, once the Survey and Manage Standards and Guidelines are removed.

Response: The Agencies' Special Status Species Program Managers have reviewed ranking information provided by the Oregon Natural Heritage Information Center and other information (e.g. ISMS data) and determined that 152 species meet the criteria for inclusion on one or more of the Agencies' Special Status Species lists. Chapter 3&4 in the Final SEIS describes the impacts to all of the current Survey and Manage species, if the Survey and Manage Standards and Guidelines are removed and species that qualify are added to the Agencies' Special Status Species lists.

107. Comment: The Special Status Species criteria for inclusion do not bear a rational relationship to the objectives for Survey and Manage species.

Response: The criteria for inclusion as a special status species is different than the criteria for inclusion in the Survey and Manage mitigation measure because their

origins are different. The Survey and Manage mitigation measure was designed for rare and little known species that were thought to be associated with late-successional and old-growth forest in the Northwest Forest Plan area. The Special Status Species Programs were designed to include species in all locations where Forest Service and BLM management actions could contribute to the need for listing under the Endangered Species Act.

108. Comment: The BLM includes species only if the BLM has the capability to significantly affect the conservation status through management.

Response: If BLM management would not significantly affect the conservation of a species, then logically the species would not need to be included on the BLM Special Status Species list. For example, if a species occurs at higher elevation and BLM only manages lands of lower elevation then there is no reason for BLM to include the species on their list.

109. Comment: The assumption that state Natural Heritage Programs can manage the species tracking and ranking responsibilities for additional taxa, let alone taxa groups not considered before (e.g. fungi in California) is significant and warrants further evaluation.

Response: Natural Heritage Programs are part of NatureServe. NatureServe represents a network of member programs comprising 74 independent centers that collect and analyze data about the plants, animals, and ecological communities of the Western Hemisphere. Known as natural heritage programs or conservation data centers, these programs operate in all 50 states, in 11 provinces and territories of Canada, and in many countries and territories of Latin America and the Caribbean. The role of these programs is to collect, analyze, and distribute detailed scientific information about the biological diversity found within their jurisdictions. Natural heritage programs are the leading source of information on the precise locations and conditions of rare and threatened species and ecological communities. Consistent standards for collecting and managing data allow information from different programs to be shared and combined regionally, nationally, and internationally. The nearly 800 staff from across the network are experts in their fields, and include some of the most knowledgeable field biologists and conservation planners in their regions.

110. Comment: The BLM OR/WA policy creates two categories, assessment and tracking, that are different then bureau sensitive. The SEIS must disclose the different requirements of the assessment and tracking categories.

Response: The differences in requirements are disclosed in Appendix 2 under the OR/WA BLM policy excerpts section.

Project Analysis

111. Comment: The proposed changes would allow federal agencies to implement timber sales or other actions without obtaining the concurrence of expert wildlife agencies on any project that can be shoehorned into the National Fire Plan.

Response: The Agencies must consult with the U.S. Fish and Wildlife Service or NOAA Fisheries only when threatened or endangered species are involved. Because none of the Survey and Manage species are listed under the Endangered Species Act, the Agencies do not have to consult on effects to Survey and Manage species under any of the alternatives.

112. Comment: Alternative 2 would allow forest managers to make ecologically sound management decisions while protecting certain sensitive species, as was envisioned in FEMAT's Option 9.

Response: Under the Special Status Species Programs, line officers have more flexibility to exercise management options than under the Survey and Manage Program. The line officer responsible for approving projects will still have to document that the project will not contribute to the need to list a species that is on the Special Status Species list. The rationale for this decision must be disclosed in an EA for the BLM and in a biological evaluation for the Forest Service.

113. Comment: The Draft SEIS fails to provide reasonable assurances that Alternative 2 would meet the objectives of preventing the need for listing species under the Endangered Species Act.

Response: Under Alternative 2, the Agencies' Special Status Species Programs would be used to conserve rare and little known species that are currently included in the Survey and Manage mitigation measure and that are eligible for inclusion on a special status species list. This SEIS assumes the BLM Special Status Species policies and the Forest Service Sensitive Species policies will be implemented as written. These policies guide the Special Status Species Programs and their objectives are to ensure that agency actions do not contribute to a need for listing species under the Endangered Species Act.

114. Comment: Under Alternative 2, who will determine if loss would "create significant trend toward listing," "contribute to need to list", or "loss of species viability?" How would the determinations be made?

Response: The official responsible for the project will decide if going forward with the project will contribute to the need to list any sensitive species and, for the Forest Service, if it will cause a loss of species viability. This decision must be supported by analysis either in an environmental assessment or a biological evaluation. The policy for BLM in OR/WA requires that for the Sensitive and Assessment category species impacts to the population and the species as a whole be considered in the environmental assessment. The Forest Service policy for biological evaluations states that "It must be prepared by a journey-level biologist or botanist and include: (1) sensitive species that may be present; (2) identification of occupied and unoccupied habitat; (3) an analysis of the effects of the proposed action on the species or their occupied habitat; (4) a discussion of cumulative effects; (5) a determination of no effect, beneficial effect, or may affect; and, (6) recommendations for avoiding or mitigating any adverse effects."

115. Comment: The best habitat may be available and still be unoccupied. The Draft SEIS makes the statement about assuming habitat is occupied. Who makes this assumption?

Response: Assuming that habitat is occupied is an analytical option available to management. It is a conservative approach. Assuming that there is habitat in the project and that it is occupied for purpose of analysis would provide the official responsible for the project with information about how the project would affect the species if it were present.

Site Management

116. Comment: The discussion in the Draft SEIS Surveys Prior to Habitat-Disturbing Activities is relevant to wildlife, but not plant species. This discussion needs to include plants.

Response: The text in the section describing Surveys Prior to Habitat-Disturbing Activities for Alternative 2 has been changed to better describe the options available for various taxa.

117. Comment: It is impossible to understand how site management works without a species survey program, since surveys are optional.

Response: Most of the species currently in the Survey and Manage Standards and Guidelines do not require surveys prior to habitat-disturbing activities, yet field units are able to determine that projects can go ahead without threatening the existence of the species. It is assumed that some surveys would still occur under the Agencies' Special Status Species Programs. The analysis in the Final SEIS now describes the assumptions regarding when surveys would or would not occur under Alternatives 2 and 3.

118. Comment: Alternatives 2 and 3 should include provisions to protect known sites to prevent extirpation.

Response: The Agencies' Special Status Species Programs provide for managing known sites when they are needed to avoid contributing to the need to list a species. The analysis in the Final SEIS now describes assumptions regarding when site management would occur under Alternatives 2 and 3.

119. Comment: It is hard to tell what the actual proposal is for any given species under Alternative 2. Many species are assumed to maintain stable populations due to site management and surveys, but actually doing site management and surveys for a species is not made clear in the alternative descriptions. The alternative descriptions also fail to clearly identify mitigation.

Response: Alternative 2 assumes species will be added to the Agencies' Special Status Species Programs. The analysis in the Final SEIS now contains a description of the assumptions regarding when site management and surveys would occur under those programs.

The text describing potential mitigation has been changed to better describe specifically what would occur if mitigation were selected.

Conservation Strategies

120. Comment: Have conservation strategies for sensitive species ever been developed? Who would write these strategies and where is the funding?

Response: Conservation Strategies and Conservation Agreements are developed as needed. Both the BLM and Forest Service have written conservation strategies for a few species. The BLM in California has begun to include conservation strategies for sensitive species in Resource Management Plans. The strategies can be developed at the State/Regional level or the field level. The funding would come out of base or project funding.

Inventories

121. Comment: The Draft SEIS states "Inventories are encouraged where needed to support biological evaluations and establish management objectives for conservation of sensitive species. Inventories are not required." These statements are contradictory. Surveys will not be completed under Alternative 2.

Response: The statements are not contradictory. Saying that "inventories are not required" does not mean the Agencies are prohibited from completing inventories.

Reports, Monitoring, and Review

122. Comment: Adaptive management, monitoring, and the three important working documents: Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide will be lost under Alternative 2.

Response: Management Recommendations, Survey Protocols, and the Strategic Survey Implementation Guide will all continue to exist and would be available for use by field units if the Survey and Manage mitigation measure is removed. This SEIS proposes no changes to adaptive management or monitoring required by the Northwest Forest Plan.

123. Comment: The Survey and Management Standards and Guidelines provide information essential to measure the effectiveness of management.

Response: Survey and Manage was not added to the Northwest Forest Plan to measure the effectiveness of management. Effectiveness monitoring was included to meet that need and this SEIS does not change any monitoring requirement of the Northwest Forest Plan.

124. Comment: The annual Survey and Manage Report will no longer be required, which will reduce the public's ability to understand what is happening in our national forests.

Response: The annual Survey and Manage report is not the only source of information about what is happening in the Northwest Forest Plan area. The BLM publishes an accomplishment report every year. The Regional Ecosystem Office (REO) also publishes reports on various aspects of the Northwest Forest Plan including an annual monitoring report. Links to various reports can be found at www.or.blm.gov/nwfp.htm.

125. Comment: The proposed action does not include any mechanism for monitoring or conserving the 30 species in the "insufficient information" group.

Response: The proposed action would be monitored under existing Northwest Forest Plan monitoring provision and individual field unit monitoring.

126. Comment: Without firm direction for surveys and follow-up monitoring, how can adaptive management be implemented as required by the Northwest Forest Plan?

Response: The Agencies' Special Status Species Programs have provisions for monitoring. Results from monitoring along with data from the field, as well as data from publications, research results, the public, academia, and other sources will be used in the adaptive management process described in the Northwest Forest Plan. The monitoring requirements of the Northwest Forest Plan are not changed by this SEIS.

Potential Mitigation

127. Comment: Possible mitigation is identified for adverse effects on species, but not on adverse effects on resource outputs. Is it possible to reduce the adverse effects on resource outputs (cost of project planning, cost of survey and manage, reduced employment, etc.) without removing the Survey and Manage Standards and Guidelines?

Response: Alternative 3 in this SEIS explores this idea.

128. Comment: What analysis indicated that mitigation in the form of continued site management and/or pre-project clearances would effectively eliminate the adverse effects of the alternatives?

Response: The analysis was done by comparing the differences in management under the alternatives. The differences between the alternatives were management of known sites and for some species conducting pre-disturbance surveys.

129. Comment: What guidelines, if any, would be employed to eliminate the adverse effects under Alternative 2?

Response: Adverse effects to species are identified in this SEIS based on the management actions under each alternative. The section on potential mitigation has been rewritten to describe what must be done to eliminate the adverse effects if the Responsible Officials choose to apply mitigation.

130. Comment: Why is mitigation not a required part of Alternative 2? Does the "potential mitigation" automatically apply?

Response: Mitigation measures were not included as part of Alternative 2 to inform the Responsible Officials of the benefits and cost of mitigation. NEPA implementing regulations require agency's to "Include appropriate mitigation measures not already included in the proposed action or alternatives" and include a discussion of "Means to mitigate adverse environmental impacts." The text of the section on potential mitigation has been rewritten.

131. Comment: Failure to require mitigation violates the Endangered Species Act and the diversity provision of the National Forest Management Act.

Response: The Endangered Species Act does not require mitigation of Survey and Manage species. The Responsible Officials will decide if management under the Northwest Forest Plan without the Survey and Manage mitigation measure will still meet the diversity provision of the National Forest Management Act.

132. Comment: The Final SEIS should expand the discussion on mitigation. The discussion should specify the proposed mitigation measures for individual species and make specific commitments to require mitigation in the Record of Decision.

Response: The text of the section on potential mitigation has been expanded and now includes a table showing potential mitigation by species.

133. Comment: Because mitigation measures are optional, it is likely some administrative units would not apply them.

Response: The Responsible Officials (Secretaries of Agriculture and Interior) and not individual administrative units will decide whether to adopt mitigation. If mitigation is adopted, it would be required of all applicable field units.

134. Comment: How would mitigation be implemented and who would lead coordination?

Response: If the Responsible Officials choose to apply mitigation, the field units will be responsible for its implementation. Coordination would not be necessary because the SEIS clearly identifies what is required.

Alternative 3

Standards for Inclusion

135. Comment: The criteria under Alternative 3 addressing concern for persistence reflect a higher threshold than Alternative 1.

Response: The concern for persistence threshold is higher in Alternative 3 because the Standards and Guidelines for uncommon species were removed for Survey and Manage. The analysis in this SEIS did not find changing the threshold affected the viability of the species.

Species Categories

136. Comment: Alternative 3 eliminates strategic surveys and management of known sites for the 13 species in Category F. What if these species are rare in all or part of their range?

Response: The objective of Category F is to determine if the species meets the basic criteria for Survey and Manage. Management of known sites is NOT required for this category because species are uncommon, not rare, and inadvertent loss of some sites is not likely to change the persistence of the species. Experience shows that most of the species that are in Category F are removed from Survey and Manage because they do not meet the basic criteria or they are commonly found.

137. Comment: The "uncommon" category should remain in Survey and Manage and let the Annual Species Review winnow out unnecessary sites or less uncommon species.

Response: Alternative 1 keeps the uncommon species in Survey and Manage and allows the adaptive management process to winnow out unnecessary sites or less uncommon species.

138. Comment: Uncommon species should be retained and regarded as indicators for unlisted '"rare" species and potential conservation where unlisted "rare" species co-occur.

Response: There are not facts or evidence that the uncommon species co-occur with unlisted species let alone serve as indicators of their health.

Surveys Prior to Habitat-Disturbing Activities and Site Management

139. Comment: Eliminating surveys in younger forests will miss species on legacy components.

Response: A species must meet three basic criteria to be included in the Survey and Manage Standards and Guidelines. The second criterion is "The species must be closely associated with late-successional or old-growth forest." Some species are found in younger stands but they are using "legacy components" such as large down wood or snags that are left from the previous stand. Matrix and Adaptive Management Area Standards and Guidelines have provisions to retain legacy components of late-successional and old-growth forests. These should provide habitat for most species that need late-successional and old-growth components in younger stands.

The analysis of environmental consequences for each species considered the effects of not surveying in non-late-successional and/or non-old-growth forests. The effects

determinations considered numerous factors including the extent of the reserve system, Matrix and Adaptive Management Area Standards and Guidelines, provisions for species management under the alternative, species range/distribution/populations, species life history and habitat needs, and the location and number of known sites.

140. Comment: Changing the review process for excepting sites and survey requirements could degrade ecosystems.

Response: For the species remaining in the Survey and Manage mitigation measure, the requirements for reviews are not changed and no reviews have been eliminated. The process for review is changed in that exceptions to known site management would be approved by the line officer at the next level above the official responsible for the proposal, as opposed to approval by the REO. The analysis in this SEIS did not find that changing the review process would degrade ecosystems.

141. Comment: Under Alternative 3, what is a "reasonable effort" for determining the presence of a species in a specific area? Who will determine if questions about species presence can be "confidently" answered through surveys?

Response: The term "reasonable effort" refers to the practicality of doing surveys prior to habitat-disturbing activities. Surveys are practical if characteristics of the species (such as size, regular fruiting) and identifying features result in being able to reliably locate the species, if the species is present, within one or two field seasons and with a reasonable level of effort. Characteristics determining practicality of surveys include: individual species must be of sufficient size to be detectable; the species must be readily distinguishable in the field or with no more than simple laboratory or office examination for verification of identification; the species is recognizable, annually or predictably producing identifying structures; and the surveys must not pose a health or safety risk. Survey protocols are designed to "confidently" determine the presence of a species on a given area.

142. Comment: The criteria for pre-disturbance surveys are not true or practical for fungi since all of the criteria must apply. Equivalent-effort surveys need to begin immediately for Category B species.

Response: Most fungi are included in Category B, because pre-disturbance surveys are not practical. Alternative 3 in the 2000 Survey and Manage Final SEIS, which this SEIS supplements, proposed equivalent-effort surveys for fungi. That alternative was not selected in the 2001 Record of Decision. Revisiting that decision is beyond the scope of this SEIS.

143. Comment: The Draft SEIS states that exceptions to known site management do not require approval by the REO. The REO is best qualified to see the big picture and is less susceptible to local political pressure to produce timber and jobs.

Response: Alternative 3, if selected, would change the exception for known site management from the REO to the line officer at the next level above the official responsible for the proposal. Alternative 3 does not change the criteria used to make the decision and this SEIS analysis showed no effect to species habitat as a result of this change.

Potential Mitigation

144. Comment: Alternative 3 is unacceptable because of the adverse effects to the Oregon red tree vole within a portion of its range. This destroys the balance in the Northwest Forest.

Response: In between Draft and Final SEIS, the ranking for the red tree vole was modified by the Oregon Natural Heritage Information Center to reflect rarity and threats to the red tree vole within the northwest coast portion of Oregon. Due to this modified ranking, both BLM Oregon and Region 6 Forest Service have assumed this species would be added to their Special Status Species lists.

Alternatives Considered but Eliminated from Detailed Study

145. Comment: The Common Sense Alternative addresses each of the decision-making factors described in the Draft SEIS and should have been considered in detail.

Response: While the Common Sense Citizen's Alternative may address all of the decision-making factors, it would change the basic land allocations that were a core component of the Northwest Forest Plan. The 1994 Final SEIS, which this SEIS supplements, did include an alternative that did not harvest late-successional and old-growth forests. That alternative was not selected in the Record of Decision. Revisiting that decision is beyond the scope of this SEIS.

146. Comment: The Final SEIS should include a detailed study of the "no old-growth harvest" alternative or a similar alternative.

Response: The 1994 Final SEIS, which this SEIS supplements, did include an alternative that did not harvest late-successional and old-growth forests. That alternative was not selected in the Record of Decision. Revisiting that decision is beyond the scope of this SEIS.

147. Comment: The "no logging" alternative should have been considered in detail.

Response: Not harvesting timber would not fulfill the need in this SEIS because the need for timber outputs from the Northwest Forest Plan would not be met. In addition, fuel treatment projects that include commercial timber harvest would not be undertaken. This would leave many forests at risk of catastrophic wildfire and compromise forest health which is also a need of this SEIS.

148. Comment: If Survey and Manage surveys cannot be implemented, then the Agencies should avoid logging late-successional and old-growth forests.

Response: The 1994 Final SEIS, which this SEIS supplements, did include an alternative that did not harvest late-successional and old-growth forests. That alternative was not selected in the Record of Decision. Revisiting that decision is beyond the scope of this SEIS.

149. Comment: The Draft SEIS fails to consider creative solutions to meeting the purpose and need. One creative solution would be to designate the entire range of the northern spotted owl as a National Preserve or Wilderness Area.

Response: The designation of a National Preserve or Wilderness Area is done by Congress and is outside the scope of this SEIS.

150. Comment: The alternative to strengthen the Survey and Manage Standards and Guidelines should not have been eliminated from further study.

Response: Alternative 3 in the 2000 Survey and Manage Final SEIS, which this SEIS supplements, proposed strengthening Survey and Manage requirements. It included

pre-disturbance surveys for 322 species, and known site management for 346 species. That alternative was not selected in the 2001 Record of Decision. Revisiting that decision is beyond the scope of this SEIS.

151. Comment: An alternative should be considered that increases the effectiveness of the Survey and Manage mitigation measure. This could include stronger enforcement of the Survey and Manage Standards and Guidelines.

Response: The Agencies have no facts or evidence to conclude the effectiveness of the Survey and Manage mitigation measure needs to be increased or that stronger enforcement is needed.

152. Comment: All species originally included on the list in 1994 should be restored to the list and protected.

Response: The decision to remove species was done in the 2001 Survey and Manage Record of Decision and subsequent Annual Species Reviews. Revisiting those decisions is outside the scope of this SEIS.

153. Comment: Coordinating the Special Status Species programs for the two agencies is not outside the scope of the SEIS.

Response: How the Agencies manage and coordinate their Special Status Species Programs does not address the purpose and need for this proposal. Coordinating agency policies and/or programs is an administrative function and nothing in this SEIS prevents the Agencies from coordinating their Special Status Species Programs at any time. The BLM Special Status Species policies and the Forest Service Sensitive Species policies are national in scope and their management and coordination go well beyond the Northwest Forest Plan area. Therefore, this alternative is outside the scope of this SEIS.

Comparison of Alternatives

154. Comment: Adopting Alternative 2 will result in a return to single-species management.

Response: The Survey and Manage Program and Special Status Species Programs are all single species management programs. Alternative 2 would only remove the Survey and Manage Standards and Guidelines from the Northwest Forest Plan. All other elements would remain intact and the Northwest Forest Plan would continue to be an ecosystem-based plan.

155. Comment: This proposal undermines the Northwest Forest Plan's sensible, reasonable way to attain long-term viability of old-growth forests, while still providing for economic and ecological incentives.

Response: The Northwest Forest Plan Final SEIS concluded that under the Northwest Forest Plan there is a high likelihood of a functioning, inter-connected, late-successional and old-growth forest ecosystem. There is no new information that substantially alters that conclusion. The analysis in this SEIS shows that none of the alternatives would alter that conclusion.

156. Comment: Alternative 1 best protects aquatic/riparian Survey and Manage species and the entire aquatic ecosystem.

Response: The Aquatic Conservation Strategy is the core component of the Northwest Forest Plan that best protects water quality and provides benefits for listed fish and aquatic/riparian species.

157. Comment: Alternative 1 best provides for a "reasonable assurance of persistence" by adopting the "viability" provision and applying it to BLM lands.

Response: There is no law or statute that requires the BLM to meet the Forest Service viability provisions.

158. Comment: Alternative 1 should be selected because it preserves more species.

Response: The purpose and need for this SEIS is not to "preserve more species." The purpose and need is to attain the Northwest Forest Plan goals of healthy forest ecosystems and predicable and sustainable timber outputs.

159. Comment: If logging continues in late-successional forests, measures must be in place to preserve the late-successional and old-growth associated species.

Response: The analysis of effects in this SEIS shows that timber harvest and little known species of plants and wildlife can coexist in late-successional forests without the Survey and Manage mitigation measure.

160. Comment: The Survey and Manage mitigation measure should be retained because it protects plants, fungi, and animals and keeps them from being pushed towards extinction.

Response: The Agencies' Special Status Species Programs have the goal of not contributing to the need to list a species under the Endangered Species Act. In meeting that goal, the Special Status Species Programs also protect plants, fungi, and animals.

161. Comment: The Proposed Action significantly reduces species protection and increases logging.

Response: Removing the Survey and Manage Standards and Guidelines will not increase logging beyond what was in the anticipated in the Northwest Forest Plan Final SEIS. All alternatives would result in a decrease in PSQ. As for species protection, while some species were not determined to be eligible for inclusion in the Agencies' Special Status Species Programs, the provisions of the Northwest Forest Plan other than Survey and Manage remain intact. These provisions were designed to maintain a functional, interconnected, late-successional and old-growth forest ecosystem that provides habitat for these species.

162. Comment: Alternative 2 seems to be aimed at eliminating actions that are essential to ecosystem management.

Response: Ecosystem management is defined in FEMAT as a strategy or plan to manage ecosystems to provide for all associated organisms, as opposed to a strategy or plan for managing individual species. None of the alternatives would eliminate or change the principal aspects of ecosystem management in the Northwest Forest Plan: large reserves, Aquatic Conservation Strategy, and standards and guidelines other than Survey and Manage Standards and Guidelines. The Survey and Manage Program and the Special Status Species Programs manage for individual species; thus, these programs are not true ecosystem management, and are, in fact, inconsistent with the principles of ecosystem management.

163. Comment: The ultimate result of Alternative 2 will be more species listed under the Endangered Species Act.

Response: Since the program for prohibiting federal management from contributing to the need to list species under the Endangered Species Act remains in place for all alternatives, the Agencies do not anticipate more listings under Alternative 2 than would occur under any of the other alternatives.

164. Comment: The statutory and regulatory obligations of the Forest Service and the BLM do not allow the Agencies to violate the most basic premise of the Endangered Species Act.

Response: Violation of the Endangered Species Act involves the unauthorized take of a threatened or endangered species. Removing the Survey and Manage mitigation measure would not violate the Endangered Species Act because none of the species covered by Survey and Manage are listed under the Endangered Species Act.

165. Comment: Continuing to log late-successional and old-growth forests will speed their degradation. The proposed changes will degrade water quality, old-growth forests, salmon habitat, and rare species associated with old forests.

Response: The issue of continuing to log late-successional and old-growth forest is beyond the scope of this SEIS. None of the alternatives would degrade water quality, old-growth forests, or salmon habitat. As for rare species associated with old forests, while some species were not determined to be eligible for inclusion in the Agencies' Special Status Species Programs, the provisions of the Northwest Forest Plan other than Survey and Manage remain intact. These provisions were designed to maintain a functional, interconnected, late-successional and old-growth forest ecosystem that provides habitat for these species.

166. Comment: Causing extirpation of even a single species could unravel the entire ecosystem.

Response: This is a basic misconception. Species are constantly "extirpated" from local areas without causing an entire ecosystem to "unravel." The analysis in the Northwest Forest Plan Final SEIS concluded that the old-growth forest ecosystem would continue and increase under the selected Alternative 9 without application of the Survey and Manage mitigation measure (USDA, USDI 1994a, p. 3&4-46).

167. Comment: The monetary cost saving is not worth the adverse effects to species.

Response: Monetary costs are not, and should not be, the only consideration. The costs involved are more than monetary in nature. The Survey and Manage Standards and Guidelines are affecting forest restoration projects which have implications or "costs" to the late-successional forest ecosystem and the species that inhabit them. The Agencies disagree that speculative, unknown, or immeasurably small increases in the risks to species habitat should be avoided, no matter the cost.

168. Comment: The Draft SEIS states that under Alternative 2, approximately 1,096,000 acres would be made available for timber harvest, while under Alternative 1 (which retains the Survey and Manage Standards and Guidelines) about 933,000 acres are available for timber harvest. In a regional planning area of 24.5 million acres, these numbers represent 4.5 percent and 3.8 percent respectively of the total planning area. This is hardly an appreciable difference in the supply and availability of timber and other forest products.

Response: Dividing by the total 24.5 million acres in the planning area is misleading because about 80 percent of the planning area is in reserves and is not available for timber harvest. Only about 4.5 million acres in Matrix and Adaptive Management Areas are dedicated to timber harvest. This SEIS discloses the changes in acres available for harvest and the effects on PSQ.

169. Comment: Logging will be allowed in 20,000 acres of old-growth forest that was protected in the Northwest Forest Plan.

Response: The Record of Decision for the Northwest Forest Plan accepted the harvest of some late-successional and old-growth forest in Matrix as part of the 1.1 billion board feet estimated as the PSQ. This was in return for having about 80 percent of the land base and 86 percent of the late-successional and old-growth forest in reserves. Removing the Survey and Manage mitigation measure does not decrease the amount of late-successional and old-growth forest that was protected by the Record of Decision in 1994.

170. Comment: Alternative 3 should not be selected because it could lead to the demise of several species. Trying to avoid insufficient habitat for a species via mitigation is gambling with species existence.

Response: Every choice involves some risk. The issue is the degree of risk the Responsible Officials are willing to accept and at what cost.

Range of Alternatives

171. Comment: The Agencies should develop an alternative that modifies the Survey and Manage Standards and Guidelines so they are feasible to implement and less subject to lawsuits that stop timber sales in the Matrix.

Response: The Northwest Forest Plan was created in part to end the legal gridlock over forest management in the Pacific Northwest. It is probably not feasible to design an alternative that would be less subject to lawsuits. The complex and voluminous requirements of the Survey and Manage Standards and Guidelines have become a bountiful source for legal interpretation. Any attempt to modify the Northwest Forest Plan or the Survey and Manage mitigation measure is also likely to become the subject of lawsuits.

172. Comment: The Agencies should consider a broad range of alternatives because there is great uncertainty about many Survey and Manage species.

Response: This SEIS considers two action alternatives and eleven alternatives not considered in detail. In addition, this SEIS supplements previous Environmental Impact Statements that examined additional alternatives.

173. Comment: The Draft SEIS has failed to consider an alternative that would uphold existing protections for aquatic, rare, and uncommon species.

Response: The current Survey and Manage Standards and Guidelines are the existing protection for rare and uncommon species some of which are aquatic. This is Alternative 1 or the No-Action alternative in this SEIS. Other aquatic species are protected by the Aquatic Conservation Strategy.

174. Comment: The Draft SEIS fails to identify sustainable, sensible, realistic approaches to meeting the Northwest Forest Plan. Sustainability alternatives or goals need to be considered.

Response: This SEIS does not alter any of the Northwest Forest Plan goals. In fact, it is an attempt to better meet all of those goals.

175. Comment: The Draft SEIS failed to consider an alternative that would modify the inflexible and complex management recommendations in the Survey and Manage Standards and Guidelines, instead of removing them completely.

Response: Alternative 3 modifies the existing Survey and Manage Standards and Guidelines.

176. Comment: The underlying need for some action is clear, but it may be possible to craft an alternative that avoids the time and fiscal costs of the current Survey and Manage requirements without putting as many Survey and Manage species at increased risk or severe range restriction/population isolation. The Final SEIS should explore the possibility of developing an alternative that eliminates more species from the Survey and Manage requirements while continuing to include the "Category A" pre-disturbance surveys for a larger number of the rare Survey and Manage species.

Response: Alternative 3 in this SEIS explores this idea. It removes the ""uncommon" species from the Survey and Manage Standards and Guidelines while retaining the rare species in the Survey and Manage Standards and Guidelines.

177. Comment: An alternative should be considered that changes the "base" acreages in the Matrix and Adaptive Management Areas, and the resultant PSQ.

Response: Changing the Northwest Forest Plan land allocations are outside of the scope of this SEIS.

178. Comment: Other alternatives to reducing costs would be to have the timber companies pay for pre-disturbance and strategic surveys.

Response: It is not possible to charge a timber company for surveys when they are done before the sales are offered at auction.

179. Comment: A new alternative needs to be developed and analyzed that would permit only those species that qualify under existing land management laws to be moved from Survey and Manage into the Agencies' Special Status Species Programs. Only plant and vertebrates species qualify as special status species on BLM managed lands.

Response: The BLM derives much of its authority from FLPMA (Federal Land and Policy Management Act). FLPMA does not have a viability provision like the National Forest Management Act. It also does not restrict the BLM to only include plants and vertebrates in the Special Status Species Program. In part the BLM derives its authority for the Special Status Species Program from the Endangered Species Act which is not limited to plants and vertebrates.

180. Comment: An alternative should be considered that only allows cutting trees less than 100 years of age.

Response: The 1994 Final SEIS, which this SEIS supplements, included an alternative that did not harvest late-successional and old-growth forests. That alternative was not selected in the Record of Decision. Revisiting that decision is beyond the scope of this SEIS.

181. Comment: An alternative should be considered that bans all clearcutting.

Response: Banning clearcutting does not respond to the purpose and need of this SEIS and is therefore outside the scope of this SEIS.

182. Comment: A more cautionary approach should be considered. A cautionary approach would include a careful review of species, their status, and the effectiveness of current measures.

Response: Alternative 1 includes a careful review of species, their status, and the effectiveness of current measures through the Annual Species Review Process.

183. Comment: The Final SEIS should consider an alternative that directly links to Natural Heritage sensitive lists.

Response: The Agencies' Special Status Species Programs provide a link to Natural Heritage Program rankings.

184. Comment: The Agencies should consider an alternative that refrains from pre-disturbance surveys in Matrix and shifts emphasis to strategic survey efforts and pre-disturbance surveys in reserves.

Response: This alternative is addressed in this SEIS under the section titled Alternatives Considered but Eliminated from Detailed Study.

185. Comment: An alternative should be considered that limits harvest activities on federally managed lands to second growth. If harvest were limited to second-growth forests, pre-disturbance surveys would not be needed.

Response: The 1994 Final SEIS, which this SEIS supplements, did include an alternative that did not harvest late-successional and old-growth forests. That alternative was not selected in the Record of Decision. Revisiting that decision is beyond the scope of this SEIS. Alternative 3 explores the idea of not requiring pre-disturbance surveys in second-growth forests.

186. Comment: Without any scientific support, the Draft SEIS (p. 50) makes the claim that "There are no meaningful differences in environmental consequences between alternatives for any of the following environmental components: Aquatic Ecosystem, Late-Successional Forest Ecosystem, Air Quality, Water Quality, Soil Productivity, Threatened and Endangered Species, and Species Associated with Early-Seral Forest."

Response: Page 50 in the Draft SEIS contained Table 2-7 Summary of Environmental Consequences. The evidence to support this summary table is found in Chapter 3&4 - Affected Environment and Environmental Consequences.

187. Comment: Table 2-7 in the Draft SEIS is misleading. The Agencies use more than one baseline to misrepresent the No-Action alternative as compared to the other alternatives. The effect of the No-Action alternative on timber harvest should be zero, not minus 130 mmbf. The effect of the No-Action alternative on employment related to both timber harvest and wildlife surveys should be zero, instead of minus 1180 and plus 533 respectively.

Response: Table 2-7 in the Draft SEIS is a summary of the environmental consequences disclosed in Chapters 3&4. Chapter 3&4 describes the baseline used in this SEIS as the current declared PSQ which is 805 MMBF. The analysis in this Final SEIS shows that continuing to implement the No-Action Alternative will depress the PSQ by 130 MMBF and will consequently change current employment by reducing jobs in the Lumber and Wood Products industry and increasing survey-related jobs.

Chapter 3&4

Incomplete or Unavailable Information

188. Comment: The timber volume estimates presented in the Draft SEIS may be based on incomplete, inaccurate, or flawed data, and the internal disagreement and scientific uncertainty regarding projected PSQ has not been fully disclosed in the Draft SEIS. If standing volume estimates are inflated, it could lead to harvesting above sustained-yield levels on Matrix and Adaptive Management Area lands.

Response: The determinations of the sustainable harvest levels are made at the individual administrative unit level. BLM Districts and National Forests use the best available information to assess the existing inventory, and project future volume. The Current Vegetation Survey (CVS) is a peer-reviewed, scientifically-accepted method of inventory which is being applied across the region to compile data for such uses. The methodology used in making PSQ estimates in this SEIS is disclosed in the timber harvest section.

189. Comment: The Draft SEIS (pp. 156 and 192) suggests that 80-year old stands are functional, late-successional habitat. Many 80-year old natural stands do not function as late-successional habitat, nor will most plantations once they reach 80 years of age. A science-based definition of late-successional habitat based on ecological function rather than stand age should be used in this Draft SEIS.

Response: In the Draft SEIS (p. 156), the reference to "late-successional as stands over 80 years old" is part of a direct quote from Johnson et al. 1993 used to describe how PSQ was modeled in the Northwest Forest Plan. This is not meant as a definition of late-successional forests. The definition of late-successional forest has been updated between Draft and Final SEIS to describe ecological functions and state that age is not a defining factor.

190. Comment: The Draft SEIS (p. 63) implies that stands that are just starting to become late-successional provide equally valuable habitat for rare and uncommon species as stands that are fully-developed old growth. The Final SEIS must disclose that these stands are valuable as future old-growth, but have limited value for many species that may require stands hundreds of years old.

Response: The referenced page simply states that the development of late-successional forest is 2.5 times the rate of loss through stand replacement fire and harvest. Species included in Survey and Manage are those species associated with late-successional and/or old-growth forests. Just as stands on the younger end of the late-successional, old-growth spectrum are not habitat for all Survey and Manage species, all old-growth forests are not habitat for all of the Survey and Manage species either. Many Survey and Manage species utilize a range of habitat conditions and many of those species can use stands on the younger end of the late-successional, old-growth spectrum with remnant structure. For those species associated with very old trees, the analysis of environmental consequences considers the habitat needs of these species in conjunction with the management provided under each alternative.

191. Comment: A priority should be placed on surveying the reserve land allocations to verify the assumption that neither the reserves nor the standards and guidelines provide a reasonable assurance of species persistence.

Response: A region-wide random survey for Survey and Manage fungi (189 species), lichens (43 species), bryophytes (17 species), vascular plants (12 species), mollusks (19

species), and red tree vole are nearing completion. The objectives of the surveys were to estimate species' abundances throughout the Northwest Forest Plan area and determine if species are associated with late-successional/old-growth habitats and reserve land allocations. Some of this information was used in the 2003 Annual Species Review and more is expected to be available for the 2004 Annual Species Review.

192. Comment: The Draft SEIS split species into two categories, those with habitat sufficient to support stable populations and those with habitat insufficient to support stable populations. Not enough lands have been surveyed to determine these outcomes.

Response: In the Draft SEIS, there were 30 species for which there was insufficient information to determine an outcome. For the remaining species, while there may be incomplete or unavailable information (such as lack of surveys over all lands), there was enough credible science to determine a reasonably foreseeable outcome and to allow a reasoned choice among alternatives as required by the Council on Environmental Quality (CEQ) regulations.

193. Comment: What will be the consequences of the proposed action for all the species that are still little known? The existence of incomplete or unavailable scientific information triggers the requirements of 40 CFR 1502.22. The Final SEIS must disclose and analyze "the costs of uncertainty [and] the costs of proceeding without more and better information."

Response: When encountering a gap in information, the question implicit in the CEQ regulations (40 CFR 1502.22(a)) on incomplete or unavailable information was posed: Is this information "essential to a reasoned choice among alternatives?" While additional information would often add precision to estimates, the basic data and central relationships are sufficiently well established that any new information would not likely reverse or nullify relationships. Though new information would be welcome, no missing information is essential to a reasoned choice among the alternatives.

For all alternatives, the Draft SEIS discloses when there is "insufficient information to determine an outcome." Although credible science is not available to support the determination of an outcome for some species, there is enough overall information to support a reasoned choice among the alternatives.

Assumptions and Information Common to All Alternatives

194. Comment: The Draft SEIS (p. 64) implies there should be sufficient late-successional forest habitat in reserves, well enough distributed to provide security for all species associated with those habitats. The environmental consequences discussion, as well as FEMAT, demonstrates that the reserves are not adequate for all species.

Response: The Draft SEIS (p. 64) states only that the objectives of reserves are to provide for protection and development of late-successional forest. The determination of environmental consequences considered numerous factors including the extent of the reserve system, Matrix and Adaptive Management Area Standards and Guidelines, provisions for species management under the alternatives, species range/distribution/populations, species life history and habitat needs, and the location and number of known sites.

195. Comment: The Draft SEIS (pp. 64-66) needs to reflect not only the Northwest Forest Plan land allocations, but what has actually transpired under the Northwest Forest Plan. Under the Salvage Logging rider (P.L. 104-19), the spatial pattern of cutting did

not comply with Northwest Forest Plan land allocations. More than 2,000 acres of Late-Successional Reserves were harvested without any Survey and Manage pre-disturbance surveys. These activities, along with thinning in reserves, impact projections with respect to decadal changes and assumptions about the development of late-successional forest in the future, and need to be added to this discussion.

Response: As described in the 2000 Survey and Manage Final SEIS (which this current SEIS tiers to and supplements), the REO conducted an analysis of the effects of these sales within the Northwest Forest Plan area. The REO concluded that at the ecosystem-wide scale, overall habitat conditions on federally managed lands within the range of the northern spotted owl have not been changed to an extent that would diminish the ability of conservation strategies adopted by the 1994 Record of Decision to achieve their intended objectives. The REO also concluded that the underlying assumptions used for the broad-scale analysis of habitats, species ranges, existing and future conditions, and conservation strategies in the 1994 Northwest Forest Plan Final SEIS would not be affected by the release or harvest of any or all of these sales.

196. Comment: The Draft SEIS assumes that 137 species have "potential for stochastic events, low number of individuals, limited distribution, and narrow ecological amplitude." The Final SEIS should provide rationale to support this assumption, rather than simply stating they cannot be controlled.

Response: The rationale is summarized in the analysis of environmental consequences for these species. Appendix 8 was added to this Final SEIS. It presents excerpted information about each species from FEMAT, Appendix J-2 to the Northwest Forest Plan Final SEIS, and the 2000 Survey and Manage Final SEIS. A more comprehensive discussion can be found in the 2000 Survey and Manage Final SEIS. When an EIS supplements a previous EIS, the subsequent EIS need only summarize the issues discussed in the broader environmental impact statement and incorporate by reference the discussions from the broader statement (40 CFR 1502.20).

197. Comment: The Draft SEIS (p. 64) asserts the Northwest Forest Plan Final SEIS and FEMAT made conclusions. The Northwest Forest Plan Final SEIS and FEMAT documents are not decisive, only the ROD, which included the original Survey and Manage mitigation measure, is decisive.

Response: The conclusions referred to on page 64 are the analytical conclusions found in the analysis of environmental consequences.

198. Comment: The statements about implementation monitoring in the Draft SEIS (pp. 66-67) must be withdrawn. Determinations are made about compliance with the standards and guidelines without any comprehensive on-the-ground reviews of implementation, and without taking any measurements.

Response: Questionnaires along with field reviews were used in annual implementation monitoring of the Northwest Forest Plan to gather information regarding compliance with standards and guidelines. Measurements of environmental parameters were included during field reviews as determined by the local review team.

199. Comment: The Northwest Forest Plan will not achieve its objectives of maintaining a functional and interconnected late-successional old-growth ecosystem if habitat is insufficient to support stable populations of Survey and Manage species. Substantially altering the Northwest Forest Plan as proposed in this Draft SEIS would be fundamentally destroying the entire plan.

Response: The fundamental elements of the Northwest Forest Plan conservation strategy are (1) a network of late-successional and other reserves distributed across the landscape;

(2) an aquatic conservation strategy; and, (3) a series of broadly stated standards and guidelines that guide management actions across the planning area or apply specifically outside reserve areas. Survey and Manage was not a fundamental element but a mitigation measure added late in the process. The Northwest Forest Plan Final SEIS concluded that there was a high probability (80 percent) of a functional, interconnected late-successional, old-growth ecosystem. This determination was made prior to the addition of the Survey and Manage mitigation measure to the Northwest Forest Plan.

200. Comment: The Draft SEIS (p. 63) lists assumptions which are nothing more than a recitation of various (and highly selective) facts. Whenever the Agencies make a statement about how much of the Northwest Forest Plan area is reserved, they must disclose how much of the reserved area is not late-successional, old-growth forest.

Response: Figure 3&4-2 of the draft SEIS shows how much forest in the reserves is currently late-successional forest. It also depicts the development of late-successional forests over time in both reserve and non-reserve land allocations.

201. Comment: The Draft SEIS (p. 64) states the Late-Successional Reserves were designed around the most ecologically significant late-successional forest. The Final SEIS should discuss the level of impact that has already occurred in Late-Successional and Riparian Reserves.

Response: The Draft SEIS (p. 64) states "The existing distribution and spatial patterns of this late-successional forest are the result of past land management activities, natural disturbances, and the land allocations designated prior to the Northwest Forest Plan. The Northwest Forest Plan reserved all remaining ecologically significant old growth (LS/OG1 and LS/OG2) as Late-Successional Reserves. The land allocations and associated standards and guidelines of the Northwest Forest Plan provided a new direction for retention, protection, and development of late-successional forests." Figure 3&4-2 of the Draft SEIS shows how much forest in the reserves is currently late-successional forest. It also depicts the development of late-successional forests over time in both reserve and non-reserve land allocations.

202. Comment: The Draft SEIS states there will be 2.7 million acres in late-successional conditions in 50 years. The Final SEIS should identify a scientific basis for this assertion.

Response: The seral stage acreage data used for the Northwest Forest Plan inside and outside of the reserves served as the basis for these estimates. The Northwest Forest Plan anticipated rates of harvest for each decade along with an assumed rate of stand replacement fire. These assumptions were used to simulate reductions in the amount of late-successional forest each decade. Growth of the remaining forest across the Reserves and Matrix was advanced for each decade to simulate growth and development across the seral stages. The combinations of these factors resulted in the projection of a 2.7-million acre increase in late-successional forest conditions in 50 years. Given that actual harvest of late-successional forest has been less than anticipated under the Northwest Forest Plan (not offering full PSQ) these projections are conservative at least for the first decade.

203. Comment: Why was "high risk of extirpation" used as the basis for describing the outcomes of the analysis of environmental consequences for the alternatives and on what basis were these determinations made?

Response: The terminology was taken from the Northwest Forest Plan Final SEIS (Appendix J2) and FEMAT definition of species outcome D: "Habitat is inadequate to maintain the species and would result in species extirpation from federal lands within the range of the northern spotted owl." The Draft SEIS stated that "a high risk of extirpation is also similar to the 2000 Survey and Manage Final SEIS outcome of habitat is insufficient

to support stable populations of the species." The terminology was used to sharply compare and contrast the alternatives.

Several comments expressed concern at the use of "High Risk of Extirpation" to describe the outcomes in the SEIS. Others expressed confusion due to the different way outcomes were described in the Draft SEIS compared to the previous (2000) Survey and Manage Final SEIS. As a result of these comments, the description of outcomes in the Final SEIS has been revised to be consistent with the 2000 Survey and Manage Final SEIS. See the Introduction to Chapter 3&4 for a complete description of outcomes.

The determination of an outcome for a particular species was based on numerous factors including: (1) the extent of the reserve system; (2) Matrix and Adaptive Management Area Standards and Guidelines; (3) provisions for species management under the Survey and Manage or Special Status Species Programs; (4) species range, distribution, and populations; (5) species life history and habitat needs; and, (6) the number and location of known sites. Information from FEMAT; the Northwest Forest Plan Final SEIS; the 2000 Survey and Manage Final SEIS; the 2001, 2002, and 2003 Annual Species Reviews; and the ISMS database, along with the professional knowledge of biologists and botanists, was used to make the determination.

Cumulative Impacts

204. Comment: Cumulative impacts must be considered. Changes to the Survey and Manage Standards and Guidelines, along with proposed changes to the Aquatic Conservation Strategy, will affect the long-term health of the ecosystem.

Response: Given the programmatic nature of this SEIS, most of the environmental consequences discussed represent a general projection of the accumulated effects of management actions. The analysis from the earlier Northwest Forest Plan Final SEIS and the 2000 Survey and Manage Final SEIS address cumulative effects in detail and are incorporated by reference. The analysis in the Final SEIS for proposed changes to the Aquatic Conservation Strategy showed no effects to species or the long-term health of the ecosystem. Therefore, proposed changes to the Aquatic Conservation Strategy do not have cumulative effects for this analysis.

205. Comment: Many changes that affect land management in the Northwest Forest Plan area are proposed at this time: (1) this SEIS; (2) the Aquatic Conservation Strategy SEIS; (3) the Healthy Forests Initiative; (4) streamlining the National Environmental Policy Act through the NEPA Task Force; (5) new Categorical Exclusions for fuel reduction activities; (6) the viability provision in the National Forest Management Act regulations; (7) re-evaluation of the endangered species status for the northern spotted owl and the marbled murrelet; (8) revision of BLM Resource Management Plans (due to the O&C settlement agreement); (9) revised appeal regulations; and, (10) changes to other laws such as the Endangered Species Act and the Migratory Bird Act. Together, these changes are significant. The Agencies must make an effort to address the cumulative effect of these changes in a single NEPA analysis.

Response: The section on cumulative effects in Chapter 3&4 has been revised to include a discussion of these other efforts. There is nothing in the Healthy Forests Initiative that exempts activities from meeting Northwest Forest Plan Standards and Guidelines. Categorical Exclusions do not exclude projects from the requirements of the Survey and Manage or Special Status Species Programs. The Forest Service recently revised their appeal regulations. The revised appeal regulations do not exclude projects from meeting existing requirements. The Forest Service intends to issue National Forest Management Act implementing regulations in the near future. It is not anticipated that those regulations will compel any changes to the SEIS.

The other efforts mentioned either are not yet completed or are just proposals that have yet to be acted on. The proposals/initiatives as of this date do not individually or collectively have cumulative effects for the species analyzed in this SEIS because the outcomes of the proposals are speculative at this time. They will be appropriately assessed when decisions are actually made.

206. Comment: A foreseeable action that should be considered in the Final SEIS is the management plan for all non-federal forests in Washington, based on the "Forest and Fish Report."

Response: This was analyzed in the 2000 Survey and Manage Final SEIS (which this current SEIS tiers to and supplements).

207. Comment: The cumulative effects of projects undertaken pursuant to the current proposal will exceed those undertaken pursuant to the current Northwest Forest Plan. The Agencies cannot rely on the Northwest Forest Plan Final SEIS analysis.

Response: The analysis from the earlier Northwest Forest Plan Final SEIS and the 2000 Survey and Manage Final SEIS address cumulative effects in detail and are incorporated by reference. The environmental consequences analysis and conclusions of this SEIS has considered new information while compiling and deriving information from these documents. In addition, given the programmatic nature of this SEIS, most of the environmental consequences discussed represent a general projection of the accumulated effects of management actions. The environmental consequences section in this SEIS discloses that the cumulative effects will not exceed those disclosed in the Northwest Forest Plan. For example, the Northwest Forest Plan Final SEIS projected PSQ to be 1.1 billion board feet, the highest PSQ projected in this SEIS is less than that amount.

208. Comment: The cumulative effects of proposed, foreseeable, and past chemical projects when mixed with the removing the Survey and Manage mitigation measure on all listed species, especially sensitive amphibians, need to be disclosed.

Response: The environmental consequences of the alternatives to amphibians were considered in this SEIS. This SEIS does not analyze any site-specific project nor does it authorize projects. Field units proposing projects are responsible for preparing the necessary NEPA documents.

Background for Effects Analysis

209. Comment: The analysis of environmental consequences assumes there will be similarities to outcomes for species under the Special Status Species Programs and the Survey and Manage Program. This assumption is flawed because of the differences between the programs. The discretion emphasized for the Special Status Species Programs (pp. 71-72) has led to inconsistencies in management between administrative units and provided fuel for appeals against agency actions.

Response: The Survey and Manage Standards and Guidelines and the Agencies' Special Status Species Programs have similar objectives in that they both provide species-specific management.

In general, the Survey and Manage Standards and Guidelines are designed to help the Northwest Forest Plan provide for a reasonable assurance of persistence of rare and uncommon late-successional and old-growth forest associated species for which the reserves do not appear to provide for persistence. The objective is to provide roughly the same likelihood of persistence as that provided by the Northwest Forest Plan. In particular, the Northwest Forest Plan specified use of the Forest Service viability

provision in the National Forest System Land and Resource Management Planning Regulation for the National Forest Management Act of 1976 (36 CFR 219.19). This viability provision requires that fish and wildlife habitat be managed to maintain viable populations of existing native and desired non-native vertebrate species. The Northwest Forest Plan Record of Decision identified compliance with this Forest Service regulation as a goal across both Forest Service and BLM administered lands.

Special Status Species Programs seek to further the objectives of the Endangered Species Act by preventing future listings of species as threatened or endangered, to help maintain the diversity and viability of species populations on Forest Service managed lands, and to meet other habitat and species conservation objectives.

The Special Status Species Programs allow more discretion by allowing greater management flexibility at the field level than the Survey and Manage Standards and Guidelines. While Survey and Manage dictates the need for pre-disturbance surveys for 66 species, the Special Status Species Programs allow for professional judgment and the use of other tools to determine the need for survey and the potential effect of the project upon the species at the project and population scale. In addition, the Special Status Species Programs allow for greater flexibility in how actual sites are managed. Survey and Manage provides Management Recommendations which allow for little flexibility in how sites are managed. Under the Special Status Species Programs, field-level biologists and botanists use their professional knowledge and the latest information (including Management Recommendations) to make site-specific recommendations to their managers on how best to manage a site.

It is not expected that the various uses of professional judgment affect overall species management objectives for the Special Status Species Programs. The discretion allowed by professional judgment is constrained by program objectives that include managing species to ensure actions do not contribute to the need to list species under the Endangered Species Act. Discretion is also constrained by Forest Service objectives for maintaining viable populations in habitats distributed throughout the species range.

210. Comment: The Draft SEIS (p. 72) states that implementing Survey and Manage "generally adds protection and reduces risk to species." This fact is almost lost in the analysis when the SEIS repeatedly states there is little difference between alternatives. The direct and indirect benefits of Survey and Manage must be repeated throughout the SEIS analysis for each species or group of species and whenever the assertion is made that the alternatives have similar outcomes.

Response: The analysis has been revised to clarify the difference between the alternatives for all species, particularly for species with habitat insufficient to support stable populations or with insufficient information to determine an outcome under all alternatives.

211. Comment: The environmental consequences of the proposed changes under Alternative 2 have been underestimated. For little known species, information on distribution, habitat needs, and potential impacts will remain unknown because surveys will no longer be required. In the absence of this information, these species will be given virtually no protection in the Special Status Species Programs because there is insufficient information to determine risk.

Response: The analysis for these species shows that an outcome cannot be determined due to lack of information. In most cases, this is due to the rarity of the species. In fact, for 12 of these species there are no known sites. Although the Survey and Manage Standards and Guidelines under Alternatives 1 and 3 generally add protection and reduce risk to species (compared to Alternative 2), they have not as yet resolved the inadequate information needed to determine the outcome for these species.

212. Comment: The Draft SEIS (p. 17) admits that the Survey and Manage Standards and Guidelines are more protective than the Special Status Species Programs. The Agencies cannot assume there will be similar outcomes from applying these programs.

Response: The Draft SEIS (p. 17) states that where a species has been included in the Survey and Manage and the Agencies' Special Status Species Programs, the species has been managed primarily under Survey and Manage. This is because the Survey and Manage Standards and Guidelines generally meet or exceed the requirements of the Special Status Species Programs. Stating that the Survey and Manage Standards and Guidelines can contain additional requirements compared to Special Status Species Programs is not a determination that a species would receive more protection if included in Survey and Manage. The outcomes for species were based on analyzing the effects to species of management under the alternatives. It was not assumed that Survey and Manage and Special Status Species Programs contain identical requirements.

Overall Adequacy of Environmental Consequences

213. Comment: The environmental consequences for each taxonomic group are vague. Several conclude with a section entitled "Summary and Possible Mitigation" which discusses activities to mitigate adverse impacts under the proposed action. Mitigation measures are optional and the predicted environmental consequences are speculative.

Response: The environmental consequences describe the effects of the alternative both with and without mitigation. If mitigation were not applied, the effects will be as described for the proposed action without mitigation.

214. Comment: The Draft SEIS does not adequately address the realities of what will happen if the Survey and Manage Standards and Guidelines are removed. Species not included in the Special Status Species Programs will receive no special consideration or protection during project planning. Species which are included in the Special Status Species Programs will not receive the same level of protection as Survey and Manage, despite the implications to that effect on page 135 and elsewhere in the Draft SEIS.

Response: Excerpts of Forest Service and BLM policy requirements for the Special Status Species Programs are included as Appendix 2 in the Final SEIS. The assumption used for analysis is that these policies will be implemented as written. If the Agencies do not implement their policies as described, the predicted environmental consequences will be invalid.

While some species were not determined to be eligible for inclusion in the Agencies' Special Status Species Programs, the provisions of the Northwest Forest Plan other than Survey and Manage (reserves, Aquatic Conservation Strategy, and all other standards and guidelines) remain intact. These provisions were designed to maintain a functional, interconnected, late-successional and old-growth forest ecosystem that provides habitat for these species.

215. Comment: The periodic statements that a species occupies "protected" sites (e.g., *Hypogymnia duplicata*) fail to account for the fact that habitat-disturbing activities can occur in "protected" areas such as Reserves. Many of the known sites were found during pre-disturbance surveys.

Response: Because of the Aquatic Conservation Strategy and the standards and guidelines associated with Riparian Reserves and Late-Successional Reserves, these land allocations were assumed to provide a high degree of protection for Survey and Manage species. Activities are allowed in reserves but only within the context of Aquatic Conservation Strategy and Late-Successional Reserve objectives.

The analysis in this SEIS shows that the Aquatic Conservation Strategy provides for a high degree of protection for aquatic and riparian associated species that may be locally rare, but have a wide distribution. Species that occur only in a few locales would be at a slightly increased risk compared to widely-distributed aquatic or riparian species from habitat-disturbing activities under the Aquatic Conservation Strategy. Even though there could be short-term effects at the site scale, application of the Aquatic Conservation Strategy would yield functioning riparian and aquatic ecosystems at the landscape level in the long term. All alternatives include the same protective measures to reduce the risk to aquatic-dependent flora and fauna at the site scale such as riparian buffers and associated standards and guidelines.

Late-Successional Reserves are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl. These reserves are designed to maintain a functional, interconnected, late-successional and old-growth forest ecosystem.

The analysis for *Hypogymnia duplicata* shows that Riparian Reserves as well as known site management, pre-project clearances, and strategic surveys results in an outcome of "habitat sufficient to support stable populations in the Northwest Forest Plan area."

216. Comment: The Draft SEIS failed to analyze the environmental effects of reverting to the older legal requirements for managing species diversity and viability. The proposed action would remove the only viability regulations these species have ever been afforded. The Final SEIS must correct this oversight.

Response: The Survey and Manage Standards and Guidelines are not a viability regulation. The viability and diversity provisions in the Forest Service' planning regulations (36 CFR 219) have been in effect since 1982. None of the alternatives in this SEIS would remove or modify those regulations. The Forest Service intends to issue revised planning regulations in the near future. It is not anticipated that the revised regulations will compel any changes to the SEIS.

217. Comment: The Draft SEIS fails to consider the effect on viability of not maintaining disjunct or unique populations of rare and old-growth associated species. The Draft SEIS has not utilized viability prescriptions such as Population Viability Analysis. The information that is presented does not allow the public or the decision makers to conclude that species viability is ensured.

Response: For most if not all of the species included in Survey and Manage, not enough information is known to run Population Viability Analyses. Nor was this one of the purposes of this analysis. While Population Viability Analysis can be a useful tool to determine species conservation status and needs, it is not useful when little is known about the species. Almost two-thirds of the Survey and Manage species are known from fewer than 20 locations in the Northwest Forest Plan area.

Information used to determine outcomes (to be used for the purpose of comparing alternatives) in this SEIS included distribution, range, populations, life history, and habitat needs. Much of this information came from the 2000 Survey and Manage Final SEIS and was incorporated by reference. In addition, information from the 2001, 2002, and 2003 Annual Species Reviews was used. The effects analysis section discloses those species with "habitat insufficient to support stable populations" in a portion of the species range, and does consider the effects of disjunct or unique populations that may be at risk due to implementation of either Alternative 2 or 3.

218. Comment: The Draft SEIS fails to consider the extreme variability in abundance and distribution of Survey and Manage species across their ranges.

Response: The Draft SEIS considered abundance and distribution in the Northwest Forest Plan area.

219. Comment: The Final SEIS must address the adequacy of existing regulatory mechanisms, population, habitat, disease, etc., to ensure that trends toward listing are avoided.

Response: Assessments of "trends toward listing" are not part of this SEIS. These assessments are made at the project level by local biologists and botanists.

220. Comment: The Draft SEIS failed to use the best scientific information developed in the 2002 and 2003 Annual Species Review.

Response: Information from the 2002 Annual Species Review was used in the analysis of environmental consequences for the Draft SEIS. Between Draft and Final SEIS, the 2003 Annual Species Review was completed and was incorporated in the Final SEIS.

221. Comment: The Draft SEIS says there are species with habitat insufficient to support stable populations where this outcome "is not a result of federal actions." These species were not identified in the Draft SEIS. The actual number of species with habitat insufficient to support stable populations may be understated because there are at least 30 more species where there is insufficient information. The Final SEIS should identify all species with habitat insufficient to support stable populations and which risks are not a result of federal actions.

Response: The species with habitat insufficient to support stable populations (not due to federal action) under all alternatives were identified in the environmental consequences for each species. They were further identified in Table 3&4-10 in the Draft SEIS. The species for which there is insufficient information to determine an outcome were identified separately since it is unknown if habitat is insufficient to support stable populations.

222. Comment: Are the species with habitat insufficient to support stable populations, not caused by federal action, equally at risk under all alternatives?

Response: Yes, under Alternatives 1 and 3, when the analyses show that there is "habitat insufficient to support stable populations" for a species, this outcome is the same for Alternative 2 as well. Although the Survey and Manage Standards and Guidelines under Alternatives 1 and 3 generally add protection and reduce risk to species (compared to Alternative 2), they do not change the outcome of habitat insufficient to support stable populations. However, many of these are species with few known sites or populations. For species that receive management under Alternative 1 that are not included in the Agencies' Special Status Species Programs, the lack of species management would increase the risk to these species. Potential mitigation has been identified that reduces the risk.

223. Comment: The Draft SEIS many times uses the logic that it is okay to extirpate a species from portions of its range because it will still exist elsewhere. It is not legal to extirpate a species from significant portions of its range because it will lead to listing under the Endangered Species Act. The Final SEIS needs to disclose the effects to genetically isolated factions of species or subspecies.

Response: The Draft SEIS merely displayed the environmental consequences of removing the Survey and Manage Standards and Guidelines, and what the resultant effect would be. The environmental consequences did not conclude that "it is okay to extirpate a species." Regarding isolated factions or subspecies, when relevant to

understanding effects to species, the effects analysis section does disclose when "habitat is insufficient to support stable populations" in a portion of the species range.

224. Comment: Does the Draft SEIS (p. 82) assessment of impacts to species recognize the Agencies have a "goal" to burn almost 500,000 acres of forest per year mostly without doing surveys?

Response: The Draft SEIS described the goal for annual fuel treatments as 476,000 acres. This is the historic natural wildfire level. The Draft SEIS estimates that annually it is likely that over 110,000 acres of that will occur through wildfire, and another 70,000 acres will occur from wildfire that burns in a way that meets agency resource objectives. Neither of these would require pre-project surveys, since it would be impossible to predict where to conduct surveys prior to these natural ignitions.

That leaves approximately 290,000 acres that the Agencies would like to treat to meet the historic natural fire level. However, due to budget and staffing constraints, the Agencies realize that only about 190,000 acres of fuel reducing projects are likely to occur. For all alternatives, surveys or pre-project clearances would be completed for these projects according to current Survey and Manage or Special Status Species Program requirements for species that qualify for these programs. The Final SEIS discloses the estimated acreage that would be surveyed under each of the alternatives.

225. Comment: The Draft SEIS (p. 68) asserts that "Overall, environmental consequences cannot be attributed to a single set of standards and guidelines, such as Survey and Manage." This statement renders moot the entire analysis! If environmental consequences cannot be determined, how can the SEIS claim to have evaluated them?

Response: The environmental consequences specific to the Survey and Manage Standards and Guidelines can and have been analyzed. The quote was taken out of context. The paragraph that contains the quoted sentence begins with the statement that "The analysis of environmental consequences in this SEIS must be understood in the context of the overall Northwest Forest Plan." It further states that "The overall strategy in the Northwest Forest Plan is comprised of a combination of seven different land allocations and many different standards and guidelines." The purpose of this section is simply to point out that the Survey and Manage Standards and Guidelines were added as a mitigation measure to Alternative 9 of the Northwest Forest Plan and are not a "stand alone" program.

226. Comment: It is difficult to evaluate the effects of the alternatives without range maps or tables that display species presence/absence by administrative unit.

Response: Although maps were not included, the ranges of species were considered in the SEIS analysis. The SEIS analysis included consideration of all available data for the Survey and Manage species, including range maps, number of sites by administrative unit, and land allocations of those sites.

227. Comment: Nowhere in the Draft SEIS is the cost of transferring species from Survey and Manage to the Special Status Species Programs evaluated.

Response: The analysis in the Cost of Management section includes costs for species management under the Agencies' Special Status Species Programs for Alternatives 2 and 3.

228. Comment: The Draft SEIS failed to consider and disclose critical information about each species. The Draft SEIS failed to consider (1) the 10 Natural Heritage Program

factors for determining conservation status; (2) patch size; (3) edge effects; (4) dispersal; and, (5) connectivity. The Draft SEIS also failed to specify a time period for conservation.

Response: The analysis of environmental consequences was based on numerous factors including: (1) the extent of the reserve system; (2) Matrix and Adaptive Management Area Standards and Guidelines; (3) provisions for species management under the Survey and Manage or Special Status Species Programs; (4) species range, distribution, and populations; (5) species life history and habitat needs; and, (6) number and locations of known sites. Information from FEMAT; the Northwest Forest Plan Final SEIS; the 2000 Survey and Manage Final SEIS; the 2001, 2002, and 2003 Annual Species Reviews; and the ISMS database, along with the professional knowledge of biologists and botanists was used to make the determination.

A timeframe for conservation has been added to the Final SEIS. It is the same timeframe used in the species analysis in the Northwest Forest Plan (100 years).

229. Comment: The Draft SEIS lacks a thorough analysis of the complementary coarse-scale, fine-scale approach to managing rare species. The Draft SEIS does not fully disclose the risks of relying solely on coarse-filter approaches to species conservation, especially since the reserves are not functioning as intended and will not do so for 100 years or more. The coarse-filter approach only will not ensure the viability of wildlife.

Response: The Agencies are not relying solely on a coarse-filter approach. The Special Status Species Programs are a fine-filter approach and provide for individual species management.

230. Comment: The Final SEIS must analyze the effects on species that were removed from the Survey and Manage program as a result of the Annual Species Reviews (see Draft SEIS, p. 66).

Response: The proposed action is to remove the existing Survey and Manage Standards and Guidelines. Therefore, only those species included under the Survey and Manage Standards and Guidelines are analyzed. The 2000 Survey and Manage Final SEIS analyzed the effects to species that would be removed from Survey and Manage in the future. The 2000 Final SEIS and Record of Decision concluded that no further NEPA analysis was needed when these species either changed management categories or were removed from Survey and Manage during the Annual Species Review.

231. Comment: The Draft SEIS frequently states that species "have habitat insufficient to support stable populations." Then, it declares that this is not a result of federal actions and no alternatives or mitigation could be proposed. Please clarify.

Response: There are two groups of species that are considered to "have habitat insufficient to support stable populations" under Alternatives 2 and 3. One group has habitat insufficient to support stable populations under all three alternatives due to factors such as stochastic events (i.e. natural events such as wildfire or flooding) and limited potential habitat on federally managed lands. The Agencies are unable to manage habitat to support stable populations of these species because stochastic events are beyond their control and the Agencies do not control activities on non-federal lands. The analysis that mitigation may not improve the outcome for many species goes back to the analysis for the Northwest Forest Plan SEIS (found in Appendix J2). It was again determined in the 2000 Final SEIS that for many species implementing the Survey and Manage Standards and Guidelines was still inadequate to maintain habitat sufficient to support stable populations.

A second group of species that "have habitat insufficient to support stable populations" results from management actions associated with implementation of Alternative 2 or 3. Mitigation is described that would mitigate these adverse impacts.

232. Comment: The Agencies should explain how 1.1 million acres of late-successional forest in the Matrix and Adaptive Management Areas can be extensive enough to affect PSQ levels but be insignificant for rare species persistence.

Response: Most (86 percent) of the existing late-successional forest is protected in the Northwest Forest Plan under the reserve land allocations. The remaining 14 percent of late-successional forest is in the Matrix. These 1.1 million acres of late-successional forest in the Matrix are the primary source for harvest in support of the PSQ. On most administrative units, the PSQ is heavily dependent on harvesting late-successional forest for 3 to 5 more decades until early-successional stands begin to mature and become available for harvest. Because of this dependence, harvest schedules indicate about 90 percent (709 MMBF annually) of PSQ over the next decade is dependent on harvest of late-successional forest. The analysis of environmental consequences of the proposed action on species was based on numerous factors including: (1) the extent of the reserve system; (2) Matrix and Adaptive Management Area Standards and Guidelines; (3) provisions for species management under the Survey and Manage or Special Status Species Programs; (4) species range, distribution, and populations; (5) species life history and habitat needs; and, (6) the number and location of known sites.

233. Comment: Protecting known sites acreage for Survey and Manage species will ensure that fragments of late-successional and old-growth forest persist in the Matrix. These projected acreages should be used for assessing the environmental impacts of the three alternatives, since they are used for assessing the projected reduction in PSQ.

Response: The known site acreage was assessed in the environmental consequences to late-successional forest ecosystem. The analysis of environmental consequences for species was based on numerous factors including the number and location of known sites. Matrix Standards and Guidelines include provisions for retaining late-successional, old-growth legacy components. These provisions were added specifically to provide for rare species associated with late-successional and/or old-growth forest.

234. Comment: The Draft SEIS does not disclose, evaluate, or analyze what "habitat insufficient to support stable populations" for species may mean in terms of effects on overall forest or ecosystem health. This is a serious shortcoming given that the Purpose and Need indicates that one of the primary needs for the proposed action is to provide for forest and ecosystem health. It also failed to analyze the economic loss due to this outcome.

Response: FEMAT and the Northwest Forest Plan assessed the likelihood of maintaining a functional and interconnected, late-successional forest ecosystem. The ecosystem assessments were based upon diversity, function, dynamics, and spatial patterns of the late-successional forest ecosystem. Three attributes were assessed: (1) abundance and ecological diversity; (2) processes and function; and, (3) connectivity. The assessment concluded that there was a high probability (80 percent) of a functioning, interconnected late-successional forest ecosystem. Because the amount of forest habitat that is managed for known sites under the Survey and Manage Standards and Guidelines is so small when compared to the 20 million acres of reserves, the rating of the likelihood of maintaining a functional and interconnected, late-successional forest ecosystem would not substantively vary among the three alternatives. Moreover, variation associated with implementation of the alternatives is likely to be insignificant when compared to the effects of successional disturbance processes and because of the high natural variability of the forest ecosystems. Given that approximately 80 percent of the Northwest Forest Plan area (and 86 percent of currently existing late-successional forests) is in reserves,

most late-successional and old-growth forest related species are likely to be adequately protected by the reserve system. There may be greater uncertainty about some late-successional and old-growth forest related species, such as those that have limited distribution and that are highly intolerant of disturbance. The analysis shows that some species have habitat insufficient to support stable populations under any alternative due to factors beyond the control of the BLM and Forest Service. It also shows that some species have habitat insufficient to support stable populations due to the proposed action. Mitigation has been described that would remove these adverse effects. Beyond habitat, the effect of the loss of a species either singly or collectively on overall ecological diversity and processes is largely unknown. However, if these species are truly rare, while their loss may affect diversity and process on a small scale, it is unlikely it would affect overall diversity and process at the Northwest Forest Plan level.

The Socioeconomic Section describes the economic effects of the alternatives. The analysis shows that while species have a variety of non-consumptive use values, they do not have consumptive use value.

235. Comment: A reference is made in the Draft SEIS (pp. 19-20) that the Survey and Manage Standards and Guidelines are to be applied in conjunction with other Northwest Forest Plan Standards and Guidelines as well as local land and resource management plans. The Draft SEIS does not contain any discussion of the impact of these other standards and guidelines or land and resource management plans on the persistence of the various Survey and Manage species.

Response: A complete analysis of land allocations and the other standards and guidelines are found in the Northwest Forest Plan Final SEIS, which this SEIS supplements. Where other standards and guidelines are important to the analysis of environmental consequences for a particular species, they are included in the discussion.

236. Comment: For purposes of analysis, the Draft SEIS should not include Bureau Assessment species because no management is required.

Response: Management for the Bureau Assessment category is similar to Bureau Sensitive except pre-project clearances are subject to available personnel and funding. It was assumed in this SEIS that those sites needed to avoid a trend toward federal listing for species would be managed. Pre-project clearances would be completed subject to limitations in funding or positions. It is likely that methods other than field surveys would be used for these clearances. This is because field-level funding is limited and staff workloads are heavy. The agency must still analyze the effect of a planned management action on a species in an EA and provide appropriate management that does not increase the likelihood that the species will become listed under the Endangered Species Act.

237. Comment: Several thresholds for species persistence are provided among the alternatives. These thresholds may be misplaced, others are unclear, and together they may confuse the effects of the different alternatives. The meaning of "stable, well-distributed" needs clarification relative to types of distribution patterns (gaps, isolated refugia).

Response: The objective for the analysis of environmental consequences was to determine if habitat is sufficient to support stable populations under the alternatives, not to determine thresholds for species persistence. While the Survey and Manage and Special Status Species Programs vary in their requirements, each program is described in the SEIS. The analysis of environmental consequences is based on an assumption that each program would be implemented as written.

Definitions of the terms relating to distribution patterns are found in the 2000 Survey and Manage Final SEIS which this current SEIS supplements.

238. Comment: Each of the Northwest Forest Plan SEISs (1994, 2000, and 2003) has used different approaches to analyzing and disclosing effects on rare and little known species. This makes it difficult to track the effects of proposed changes and masks significant issues.

Response: Between Draft and Final SEIS, the description of outcomes for species were made consistent with those used in the 2000 Survey and Manage Final SEIS.

239. Comment: The Agencies failed to use the best available science to develop this proposal. The Agencies used only federal "experts" in the Draft SEIS process.

Response: With the advent of the Survey and Manage Program, the Agencies hired or identified highly-qualified taxonomic experts to assist in the overall management of the Survey and Manage program. Most of the identified experts have PhDs, are tied to the Pacific Northwest Research Station, and remain engaged in the most recent research regarding their taxonomic group. Because this Final SEIS also tiers back to the 2000 Final SEIS and the 1994 Northwest Forest Plan Final SEIS, it also incorporates by reference the analysis and information provided by experts involved in those planning efforts. For the Northwest Forest Plan, this included panels of agency experts for each Survey and Manage taxa.

240. Comment: The Draft SEIS (p. 64) lists requirements for management under the Northwest Forest Plan designed to provide for "retention, protection, and development of late-successional forest." No evidence is provided that these requirements are being followed.

Response: Monitoring of the Northwest Forest Plan indicates the Agencies have a high degree of fidelity in implementing the standards and guidelines as written. The 2002 field season marked the seventh consecutive year of the Northwest Forest Plan implementation monitoring program. This program is designed to determine whether the Record of Decision and its corresponding standards and guidelines are consistently followed across the Northwest Forest Plan area. Overall, compliance in meeting the Northwest Forest Plan Standards and Guidelines was 98 percent for the 32 projects and watersheds monitored in 2002 (Baker 2003).

241. Comment: The Draft SEIS proposed significant changes to the Northwest Forest Plan that will require Habitat Conservation Plans on state, county, and private timberlands to be re-evaluated. The Draft SEIS must consider the environmental impacts and social costs of re-negotiating these Habitat Conservation Plans.

Response: Only the northern spotted owl was anticipated to have effects as a result of implementation of either Alternative 2 or 3. The Biological Evaluation (included as Appendix 5) concluded that the two action alternatives "may effect, but are not likely to adversely effect" the northern spotted owl and its critical habitat. Effects are anticipated to be minor to this species, owing to the dispersed nature of the Survey and Manage species habitat that would be released under the action alternatives, and the small size of most of these habitat areas. It is not expected that these minor effects to the spotted owl will result in the need to renegotiate Habitat Conservation Plans for spotted owls with private companies or county and state governments. Since the action alternatives would not affect other listed species, Habitat Conservation Plans for other species would not need to be renegotiated.

242. Comment: The species effects analyses are not adequate because they do not evaluate the level of uncertainty regarding likelihood of species persistence under the

three alternatives. An additional evaluation of the level of uncertainty relative to each species' effects is needed. High uncertainty results increases the subjectivity of the persistence finding, which could be addressed by additional mitigation.

Response: The Draft SEIS does address the level of uncertainty. For some species an outcome was not determined due to a lack of information. For those where an outcome was determined, the Draft SEIS used a standard of reasonable certainty. The taxa experts were reasonably certain of the outcome.

Aquatic Ecosystem

243. Comment: What are the effects of increased activities such as timber harvest and road building in riparian/aquatic habitats under the proposed action?

Response: The Northwest Forest Plan Final SEIS (p. 3&4-80) states that the effects of the alternatives on aquatic and riparian species are a function of: (1) the Riparian Reserve scenario; (2) the amount of land in Late-Successional Reserves; (3) the amount of land in Key Watersheds; (4) allocations of land contained within Key Watersheds; (5) road mileage restrictions within Key Watersheds; (6) restrictions on road construction in inventoried roadless areas in Key Watersheds; (7) the amount of inventoried roadless areas in Matrix; and, (8) the inclusion of a comprehensive watershed restoration program. The amount of habitat associated with known sites is inconsequential compared to the overall acreage of Riparian Reserves. There is no increase in timber harvest and associated road building under any alternative compared to the amount analyzed under the Northwest Forest Plan Final SEIS. The outcome described in the Northwest Forest Plan Final SEIS which states that Aquatic Conservation Strategy provides a high level of protection to aquatic habitats and associated species is unchanged.

Late-Successional Forest Ecosystem

244. Comment: The discussion of the 4 percent decadal rate of disturbance needs to be explained and context needs to be established. Four percent per decade equates to 40 percent per century, and that is on top of natural disturbances which may be accelerated due to global climate change. The rate of disturbance (timber harvest) would be considerably larger under Alternative 2 than it would be under Alternatives 1 or 3. Referring to this as "small" and of "no meaningful difference in environmental consequences" seems misleading. Ninety to 100 MMBF more timber would be harvested under Alternative 2 than under Alternative 1.

Response: The rate of disturbance discussed in this section relates to the percentage of land that is modified, not the PSQ level. Under all alternatives, between 2.5 to 4 percent of existing late-successional forest in the Matrix and Adaptive Management Area land allocations would be modified per decade by management actions such as partial cut harvests, regeneration harvests, and prescribed fire. Modifications due to management do not necessarily equate to habitat destruction. In relation to long-term and regional ecological objectives, the environmental consequences associated with the rates of management disturbance per decade are small in comparison to the large extent of reserves and the large range of natural variability. In addition, under all alternatives, late-successional and old-growth forest is anticipated to be replaced due to aging of existing stands across the Northwest Forest Plan area in the long term at a rate 2.5 times greater than the rate of current anticipated harvest. The amount of logging under the action alternatives does not exceed the amount analyzed in the Northwest Forest Plan Final SEIS.

245. Comment: The Northwest Forest Plan emphasizes the importance of remnant, old-growth patches in maintaining a functional, interconnected late-successional forest ecosystem. Mitigation measures (including Survey and Manage) provide "well distributed patches of late successional forest that serve for dispersal of mobile species such as the northern spotted owl ..." Removing the Survey and Manage Standards and Guidelines cancels out the contribution of these late-successional patches. These patches will not function as intended in the Northwest Forest Plan if they are available for timber harvest.

Response: Removing the Survey and Manage Standards and Guidelines could release existing known sites for timber harvest. The effect of this change is anticipated to have little effect on the northern spotted owl due to the small size and dispersed nature of the known sites compared to the overall size and distribution of Late-Successional Reserves. None of the alternatives would exceed the scope of impacts originally consulted upon in 1994.

Northwest Forest Plan Standards and Guidelines for Matrix provide for retention of legacy elements of late-successional forest after harvest such as snags, large green trees, and down logs. There are also provisions for retaining old-growth fragments in watersheds where little remains. Also, due to Special Status Species Program management, it is expected that additional patch retention will continue to occur as a result of species management under these species programs.

246. Comment: Late-Successional Forest Ecosystem Paragraph 3, p. 76 is confusing and misleading because it combines standards and guidelines (i.e., 100-acre owl activity centers) with the agency's projection of 81,000 acres, or 1 percent of Late-Successional Reserves to be managed for Survey and Manage species.

Response: The paragraph describes all of the various land allocations and standards and guidelines that are important to maintaining ecological processes.

247. Comment: The Final SEIS must address landscape connectivity for species with limited dispersal abilities such as the Survey and Manage species. This issue has never been fully addressed. The Draft SEIS (p. 77) states that late-successional and old-growth connectivity was a major attribute of the Northwest Forest Plan but the plan really only accommodates species that can disperse well.

Response: This was included in the analysis in the Draft SEIS (p. 77). The analysis states, "Because the amount of forest habitat that is managed for known sites under the Survey and Manage Standards and Guidelines is so small when compared to the 20 million acres of reserves, the rating of the likelihood of maintaining a functional and interconnected, late-successional forest ecosystem would not substantively vary among the three alternatives." The Draft SEIS considered habitat connectivity and life history requirements such as dispersal in the analysis of environmental consequences for each species.

248. Comment: The Draft SEIS (pp. 77-78) makes an assertion that the "most substantial affect" of Survey and Manage is its conflict with prescribed fire. How can this be when the Draft SEIS (p. 83) states, "Under all alternatives, exceptions to pre-disturbance or pre-project clearances would be allowed? None of the alternatives would change the acres available for burning through wildland fire for resource benefits."

Response: The quoted statements refer to wildland fire for resource benefits. Wildland fire for resource benefits involves allowing naturally-ignited fires (such as those cause by lightning strikes) to burn within prescribed parameters. There is no difference between the alternatives for this type of treatment. There is a difference between the alternatives for hazardous fuel treatments. Hazardous fuel treatments involve the use of human-

induced underburning of forest stands to reduce fuel loading as well as other tools, like thinning, mechanical, and hand treatments.

249. Comment: The Late-Successional Forest Ecosystem section needs to talk about forest health. Disturbance, whether natural or managed, can create biodiversity and habitat for species.

Response: The section does include discussions of disturbance. It states that "the Northwest Forest Plan and this SEIS assume a continuation of succession and disturbance processes that interrupt succession." Assumptions used in this SEIS also include the natural variability in successional process rates and directions. The late-successional forest ecosystems in the Northwest Forest Plan area are dynamic and have historically experienced varying levels of disturbance. A complete discussion can be found in the Northwest Forest Plan Final SEIS, which this SEIS supplements. The analysis of environmental effects for this SEIS concludes that in relation to long-term and regional ecological objectives, the environmental consequences associated with the rates of management disturbance per decade are small in comparison to the large extent of reserves and the large range of natural variability. Within the late-successional forest ecosystems in the Northwest Forest Plan area, in order for species to persist, they would likely need some tolerance for disturbance at least at the population level. Tolerance for disturbance by species at the population level is needed because the forest ecosystems are dynamic and have historically experienced levels of disturbance as described above.

250. Comment: The proposed action fails to protect the microclimate associated with old-growth forests. Edge effects from small buffers will cause loss of species even from small, protected sites. The Agencies have not conducted monitoring to show that the small buffers work.

Response: Under the Agencies' Special Status Species Programs, site management is at the discretion of individual line officers, but sites must be managed across the landscape in such a way so as to not lead towards loss of viability or Federal listing. Field level botanists and biologists will utilize recent research and their own professional knowledge in making recommendations to line officers on how best to manage the site. This may entail managing populations, managing individual sites, maintaining corridors, excluding disturbance from many acres, or modifying the project to leave more snags, down logs, canopy cover or other microhabitat features to maintain the species within the general planning area.

Water Quality

251. Comment: The Agencies should provide documentation to support the assertion that listings of 1,700 additional miles of streams under section 303(d) of the Clean Water Act was "not new information." The Agencies should also provide documentation to support the assertion that these listings were not related to failures of the Northwest Forest Plan, but was due to "more information being available and a greater emphasis on water quality in recent years."

Response: The analysis of environmental consequences for the Northwest Forest Plan Final SEIS acknowledged that up to 90 percent of stream miles on federally managed lands within the range of the northern spotted owl in Oregon are moderately or severely impaired (regardless of whether they were listed under section 303(d)). The impairment is what is important to the analysis of environmental consequences, not the listing (which is a procedural step). The analysis concluded that "even if changes in land management practices and comprehensive restoration programs are initiated, it is possible no

alternative will completely recover all degraded aquatic systems within the next 100 years. However, all alternatives, except Alternatives 7 and 8, will reverse the trend of degradation and begin recovery of aquatic ecosystems."

Soil Productivity

252. Comment: The Draft SEIS does not adequately address the impact on soil productivity of removing the four arthropod functional groups, as well as numerous fungi, from the Survey and Manage mitigation measure. Keeping the existing Survey and Manage list allows the Agencies to keep track of soil organisms until more is known about the effect of timber harvest and road construction on soils. These species are important to soil productivity and are not included in the Special Status Species Programs.

Response: Arthropods receive only strategic surveys under Alternative 1. While such information could inform future decision making, keeping track of a species in and of itself does not cause an environmental consequence; therefore, there is no difference in environmental consequences between the alternatives.

Most of the fungi receive known site management under Alternative 1. Although some of these sites could be disturbed during management activity under the proposed action (where not included in the Agencies' Special Status Species Programs), there are provisions in the Northwest Forest Plan Standards and Guidelines that provide for maintaining soil productivity.

Under all alternatives, soil management prescriptions and best management practices would prevent unacceptable degradation of the soil and related productivity.

Wildland and Prescribed Fire

253. Comment: The Draft SEIS (pp. 4 and 81) reports that the Biscuit fire "consumed nearly 500,000 acres," which is misleading. The Draft SEIS (p. 81) states that only 77 percent of the 500,000 acres in the Biscuit fire was subject to at least 26 percent tree mortality. The Final SEIS should present the facts and avoid exaggeration with the use of phrases such as "consumed nearly 500,000 acres."

Response: The word "consumed" is not used in the effects analysis on page 81. The word "burned" is used to describe the acres affected by the Biscuit fire. The word "consumed" was used in Chapter 1 (p. 4) and has been removed.

254. Comment: The Draft SEIS (p. 81) description of the Biscuit fire is misleading. Areas with moderate fire intensity (26 percent mortality) should not be lumped with areas of high fire intensity (100 percent mortality).

Response: The table on page 81 shows the severity of the major fires that burned on the Umpqua National Forest and the Siskiyou National Forest. Each forest used a slightly different system to describe tree mortality and fire intensity. The Umpqua National Forest used three categories to describe tree mortality (<25%, 25-90 %, and >90%). The Siskiyou National Forest used five categories to describe tree mortality (0-10%, 10-25%, 25-50%, 50-75% and 75-100%). Both National Forests were consistent in their use of the terms moderate-high fire intensity as being greater than 26 percent tree mortality. Therefore, this was used to compare the two fires in Table 3&4-3.

255. Comment: The assumption that timber sale acres treated with regeneration harvest would not need to be treated for fuels reduction after harvest (Draft SEIS, p. 82) is not

a valid assumption. Slash created by regeneration harvest constitutes the heaviest fuel loading in any of the fuel models used for predicting fire behavior.

Response: Regeneration harvests normally include treatment of slash as part of the project. The assumption is only that regeneration harvests would not require a separate hazardous fuels treatment because slash would be treated as part of the regeneration harvest project. Since slash (i.e. hazardous fuels) are already treated on those acres they were not considered in the acres potentially available for hazardous fuels treatment for purposes of this analysis.

256. Comment: The numbers and assumptions used in the effects analysis for the fuels reduction discussion (Draft SEIS, pp. 84-85) may not be accurate. On at least one BLM district, mechanical treatment costs between $200 and $300 per acre and hand cutting, piling, and burning can cost up to $1,300 per acre depending on level of difficulty. These figures are significantly different from those in the Draft SEIS.

Response: Mechanical treatment costs can vary widely depending on the method used. For the 2000 Survey and Manage Final SEIS, the costs for both prescribed fire and mechanical treatment were obtained from the field and averaged to arrive at the figure used in the analysis. The figure was carried forward for the analysis in this SEIS.

257. Comment: The cost projections of species protection for fuels reduction projects and the acreage available under the various alternatives are apparently based on the short-term history of Survey and Manage. The cost projections do not seem to take into account the mechanisms for modifying Survey and Manage, such as the annual species review.

Response: The cost projections are based on the cost of species protections for the species currently included in Survey and Manage. Although some species may be removed from Survey and Manage under future annual species reviews, unless an entire taxa group is eliminated, the costs of surveys remains the same (if there is 1 lichen on the survey list or 10 lichens on the survey list, a survey must still be completed).

258. Comment: Where does the Draft SEIS stated figure of $550 per acre additional costs for working around Survey and Manage sites originate? The Agencies do not pay for untreated acres; if a known site requires special treatment, it may not be managed.

Response: This is the cost for managing the site assuming treatment will occur. The assumption is applied across all the alternatives. The cost was obtained from local agency administrative units during the 2000 Survey and Manage Final SEIS. The figure was carried forward for use in this SEIS.

259. Comment: It is unclear how removing Survey and Manage will prevent catastrophic wildfires. Many of the 7 million acres that burned in 2002 were outside the Northwest Forest Plan area.

Response: The SEIS does not state that the proposed action will eliminate catastrophic wildfires. It only states that more acres would be treated and costs would be reduced thereby increasing the ability to implement projects designed to improve forest health and to implement the National Fire Plan.

260. Comment: Undergrowth should be managed to control fires.

Response: A combination of prescribed fire and mechanical treatments are used to treat hazardous fuels. Both of these methods remove undergrowth.

261. Comment: The Draft SEIS claims that under Alternative 2, the annual acres available for fuel treatments would increase compared to Alternative 1. The requirement to survey before prescribed burns was eliminated in the 2001 Record of Decision and subsequent annual species reviews. Funding and staffing are the real constraints to implementing fuel reduction projects, not Survey and Manage.

Response: The programmatic nature of this SEIS requires an assumption that the Northwest Forest Plan will be implemented as written. This includes an assumption of funding and staffing levels. This assumption is held constant across all alternatives. The requirement to survey before prescribed burns was not eliminated in the 2001 Record of Decision. The exception to pre-disturbance surveys mentioned in the 2001 Record of Decision is for wildland fires for resource benefits.

262. Comment: The Draft SEIS discussion of fire fails to acknowledge the high degree of variability in fire behavior. Even where natural fire regimes include frequent recurring fire, there is a high standard deviation, and long periods of relative calm between disturbances.

Response: The Background and Affected Environment Section for Wildland and Prescribed Fire describes the variation in the historical fire regime and the consequences of fire suppression on these historical regimes.

263. Comment: The Draft SEIS fire discussion fails to acknowledge that regeneration harvest increases the risk and hazards associated with wildfire. Recent experience on the Umpqua National Forest confirms that when wildfires hit young plantations they tend to increase in intensity and rate of spread.

Response: The analysis in the Northwest Forest Plan Final SEIS concluded that the risk of large-scale wildfires in northern spotted owl habitat is greatest within the dry provinces and that the elevated risk is primarily due to fire suppression (and not regeneration harvest). Vegetative changes as a result of proactive fire and fuels management, including thinning and prescribed fire, will reduce the risk of large-scale loss of late-successional and old-growth forests through wildfire and restore fire-dependent, old-growth species. It is also important to note that with a drought and extreme fire indices, fire severity is high irrespective of the fuel loading.

264. Comment: Table 3&4-4 should show the total cost comparison for both pre-disturbance surveys and actual fuel treatments.

Response: Tables that give more detailed descriptions of both the acres of hazardous fuel treatments and the cost of surveys have been added to Chapter 3&4 of the Final SEIS.

Bryophytes

265. Comment: For 6 of the 15 species of bryophytes listed in the SEIS, the taxonomist was unable to evaluate the impact of the three alternatives due to a lack of information. Only 1 of the 15 species would be included in the Special Status Species Programs. Many of these species will be placed at unnecessary risk.

Response: Under Alternatives 1 and 3, when the analyses show that there is "insufficient information to determine an outcome," this is the same for Alternative 2 as well. Although the Survey and Manage Standards and Guidelines under Alternatives 1 and 3 generally add benefit to species (compared to Alternative 2), they have not as yet resolved the inadequate information needed to determine the outcome for these species. However, many of these are species with few known sites or populations. For species where there is "insufficient information to determine an outcome" that receive

management under Alternative 1 but are not included in the Agencies' Special Status Species Programs, it is unknown if the lack of species management will increase the risk to these species.

The introduction to Chapter 3&4 was revised to include this explanation.

In addition, between the Draft and Final SEIS, *Buxbaumia viridis*, *Rhizomnium nudum*, and *Tetraphis geniculata* have been recommended for addition to the Special Status Species Programs within the species' ranges.

266. Comment: *Brotherella roellii* is known from only a few sites, and there is not enough information to determine an outcome. Protection of known sites and surveys should continue. Why is *Brotherella roellii* not included in the Special Status Species Programs?

Response: In the Northwest Forest Plan area, this species is only known from five historical sites. It is unknown if these sites are still extant. This species is not included in the Agencies' Special Status Species Programs under Alternative 2. Although the Survey and Manage Standards and Guidelines under Alternatives 1 and 3 add benefit to the species, it is unknown if the lack of species management under Alternative 2 will increase the risk to the species.

Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. *Brotherella roellii* received no State rankings for either California or Oregon, and for Washington is only known from historical occurrences. None of these State rankings meet the criteria for addition to any of the Agencies' Special Status Species Programs. Region 6 of the Forest Service listed additional rationale why they did not recommend this species for their Sensitive Species Program, including the lack of information on: population trends, area of occupancy, and range. Region 5 of the Forest Service also listed this lack of information on range as one of the reasons for not including the species in their Sensitive Species Program.

267. Comment: The Draft SEIS (p. 83) discloses that *Buxbaumia viridis* "is known from four sites in Northern California three of which occur on National Forest System lands. These three sites occur outside of reserves. Given the low number of sites, the loss of any sites could affect populations to the point of leading to 'habitat insufficient to support stable populations.'" This species would not be included in the Forest Service Sensitive Species program. This will lead to the loss of the species from the state of California.

Response: Between Draft and Final SEIS, this species was determined to qualify for the Forest Service Sensitive Species Program in California. The analysis of environmental consequences was updated to show that habitat (including known sites) is sufficient to support stable populations in the Northwest Forest Plan area.

268. Comment: There are only two population clusters of *Diplophyllum plicatum*. One population cluster on the Olympic National Forest is outside of Reserves. How is it possible that *Diplophyllum plicatum* would have habitat sufficient to support stable populations under Alternative 2 if "loss of habitat and populations would limit the gene flow and dispersal capability for this species especially between the two larger populations?" Why is *Diplophyllum plicatum* not Sensitive in Region 6 of the Forest Service?

Response: Many of the sites within the population cluster on the Olympic Peninsula are within reserve land allocations, and most of the sites on Coos Bay BLM are also in reserves. While there may be a loss of genetic interchange and dispersal capability between these two populations, by including the species on BLM lands in Oregon, the interconnectivity of these populations is assumed to continue.

Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. The species ranks out as a G4 S2, for both Oregon and Washington. BLM Oregon recommends adding the species to its Special Status Species Program as Bureau Assessment. However, Region 6 of the Forest Service has recommended not adding the species because of the lack of feasibility of field identification.

269. Comment: *Herbertus aduncus* would not be included in the Forest Service Sensitive Species Program. If the species is rare and limited in distribution, and there is insufficient information to determine what the effects would be under Alternative 2, why not include it in the Sensitive Species Program?

Response: Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. Although this species as listed as S1, critically impaired and especially impaired with extirpation for both Oregon and Washington, Region 6 of the Forest Service determined that it is infeasible to survey for this species, and recommended that the species not be added to their Sensitive Species Program at this time. This species is not documented or suspected in California.

270. Comment: *Kurzia makinoana* would not be included in the Forest Service Sensitive Species Program. With only four known sites and insufficient information to determine an outcome, why not include it in the Sensitive Species Program?

Response: Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. Although this species is ranked S1, critically impaired and especially vulnerable to extirpation, Regions 5 and 6 of the Forests Service determined that the species should not be added to their Sensitive Species Programs due to the infeasibility to conduct field surveys. Region 6 also cited taxonomic uncertainty.

271. Comment: *Marsupella emarginata* var. *aquatica* would not be included in the Forest Service Sensitive Species Program. With only two known sites, both on National Forest System lands, how can there be habitat sufficient to support stable populations in the Northwest Forest Plan area? How was the outcome determined?

Response: Since this species occurs on rocks in streams, all known (and potential undiscovered sites) occur within Riparian Reserve land allocations under the Northwest Forest Plan. These allocations, coupled with the Aquatic Conservation Strategy, provide strong protection for riparian and aquatic species. Since the two known sites for this species occur in a wider ranging area (the Mt. Baker Snoqualmie in Washington and the Willamette National Forest in Oregon) it is assumed that the Aquatic Conservation Strategy will adequately address the conservation of this species.

272. Comment: *Herbertus aduncus*, *Kurzia makinoana*, *Tritomaria quinquedentata*, *Rhizomnium nudum*, and *Marsupella emarginata* var. *aquatica* are species where the Special Status Species program only applies to BLM in some of their ranges. Why are these species not protected on Forest Service managed land? Is there a scientific reason to not afford protection on most of the available habitat?

Response: Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. Although these species have rare to very rare State rankings indicating a high vulnerability to extirpation, the Forest Service determined not to add these species to their Sensitive Species Program because it is infeasible to conduct surveys.

273. Comment: Although *Schistostega pennata* and *Tetraphis geniculata* have a similar number of known sites in the Northwest Forest Plan area, *Schistostega pennata* "has habitat sufficient to support stable populations" while *Tetraphis geniculata* has "habitat

insufficient to support stable populations" caused by management under Alternative 2. Why is *Schistostega pennata* assumed to be included in the Forest Service' Sensitive Program in Washington and Oregon, while *Tetraphis geniculata* is assumed to be included only in Oregon (Table 3&4-l), particularly since the mitigation for *Tetraphis geniculata* recommends protection of known sites?

Response: Between Draft and Final SEIS, the Agencies reviewed their recommended Special Status Species Programs placements for this species. Region 6 of the Forest Service recommends adding *Tetraphis geniculata* to its Sensitive Species Program in Washington as well as Oregon. This recommendation, coupled with earlier recommendations to add the species to BLM Oregon and California, removes the need for mitigation, as there is no longer habitat (including known sites) insufficient to support stable populations for this species under Alternative 2.

274. Comment: Many species such as *Tritomaria exsectiformis* are included in the Special Status Species program in Oregon and Washington, but not California. No scientific reason is provided for excluding California. Survey and Manage species in California are to be pushed into extinction without even being documented.

Response: Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. Although Strategic Surveys for this species have been ongoing since 2000, this species is not known to occur in California. Therefore, the Heritage Program did not give this species a ranking for California. The nearest known location for this species is more than 100 miles from the California border.

Fungi

275. Comment: The first group of 44 fungal species is supposed to consist of species which "have not been recorded since institution of the Survey and Manage fungi lab in 1996." Table 3&4-l shows this not to be the case. For nine species, there are more known sites at present than in 2000.

Response: The numbers of likely extant sites are those found by the Fungi Lab and others since 1996. The latest ISMS data was used and broken down by date and administrative unit. Records indicate that none of these species have been located, and that all existing records are historic. The ISMS database includes these records of historic sites.

276. Comment: Only 3 of the 44 species listed in the Draft SEIS have no known sites; for the rest, the present range is 1-10 known sites on federally managed land, and 1-17 sites on all lands. Are the outcomes for all of these species really the same under all three alternatives? Strategic surveys would continue under Alternatives 1 and 3, and if not completed by 2011 would preclude habitat-disturbing activities. Under Alternative 2, only 25 percent of these species would be classified as "sensitive" which requires protecting known sites and possibly completing some surveys. Given that known sites do exist for most of these species, and that additional sites have been discovered, the outcome is more favorable under Alternatives 1 and 3.

Response: The analysis of environmental consequences has been revised to better display the differences between the alternatives for these species. Under Alternatives 1 and 3, when the analysis shows that there is "habitat (including known sites) insufficient to support stable populations" for a species, this outcome is the same for Alternative 2 as well. Although the Survey and Manage Standards and Guidelines under Alternatives 1 and 3 generally add benefits to species (compared to Alternative 2), they do not change the outcome. However, many of these are species with few known sites or populations. For species with "habitat (including known sites) insufficient to support

stable populations" under all alternatives that receive management under Alternative 1 but are not included in the Agencies' Special Status Species Programs, the lack of species management would increase the risk to these species. Potential mitigation has been identified to reduce the risk. The introduction to Chapter 3&4 was revised to include this explanation.

277. Comment: With so many limitations on where and when fungi produce fruiting bodies, chances are good that the 44 fungi listed as not observed in the past 30 years do, in fact, occur within the area, but have not been rediscovered. Because the Agencies do not have records, it does not mean the fungi have been extirpated.

Response: The analysis states only that they may have already been extirpated based on the fact that they have not been observed for more than 30 years. Even if they have not been extirpated, they are extremely rare and are assumed to have "habitat (including known sites) insufficient to support stable populations under all alternatives."

278. Comment: For the group of 44 fungi on page 94 and the group of 83 fungi on pages 94-95, is the lack of newly discovered sites due to lack of survey effort? Is the lack due to verified scarcity?

Response: For many of these species, pre-disturbance surveys are not practical. The Agencies are currently conducting random grid surveys (a form of strategic survey) for fungi. The results of these strategic surveys should provide information for estimating species abundance and assist in determining their scarcity. Although pre-disturbance surveys have not been conducted for these species, field botanists, professional mycologists, and others often gather and document species discovered through other field work. Based on these incidental efforts, very few of these species have had additional site discoveries. Lacking a statistical verification of the species abundance, it has been assumed that these species are relatively scarce.

279. Comment: For the group of 83 fungi species, the statement "very low number of occurrences (1-10 sites since 1996)" is inaccurate based on an examination of Table 3&4-l. The best available scientific information, which is the "known sites present" column rather than the 2000 Final SEIS, must be used. Also, if 1996 is used as the baseline, that information must appear in Table 3&4-l. For many of these species, there has been no change in the number of sites since 2000, but that does not mean additional sites were not found between 1996 and 2000.

Response: The analysis was revised to state that most have had only 1 to 10 sites discovered since 1996. The known sites at present were used in the analysis. 1996 was not used as the baseline, but rather was mentioned to illustrate the point that these species have a very low number of occurrences and few new sites have been recently discovered. 1996 is an important date since this was when a concerted effort to address their conservation was begun.

280. Comment: Twenty-three of the 83 species have 10 or more known sites. It is premature to conclude that they would have "habitat (including known sites) insufficient to support stable populations under all the alternatives."

Response: Although some species have more than 10 known sites, the SEIS analysis still considered these to be a low number of sites.

281. Comment: For the 13 species given a favorable outcome under all three alternatives (p. 95), the number of known sites is not necessarily greater than those 83 species for which an unfavorable outcome is given, or even the previous 44 species in the first category. What is the basis for placing species with a similar number of sites in different categories with different outcomes? With respect to these 13 species, as well as those

listed on page 96, is the analysis based on the most recent data, which is contained in Table 3&4-l? The reference only identifies the 2000 Final SEIS and the ISMS database.

Response: As stated in the analysis of environmental consequences, the reason that these 13 species have "habitat (including known sites) sufficient to support stable populations under Alternative 2" is that a substantial number of their known sites are located in reserves. The analysis for all the species is based on the most recent data.

282. Comment: With respect to the 24 endemic species, *Phaeocollybia fallax* not *Ramaria rubripermanens* is the third "uncommon" species left unprotected under Alternative 3, and thus has "habitat (including known sites) insufficient to support stable populations."

Response: *Phaeocollybia fallax* was added to the list as having "habitat (including known sites) insufficient to support stable populations." *Ramaria rubripermanens* was included because it is uncommon in a part of its range.

283. Comment: What is the basis for the different categories and different outcomes for fungi species? Many of these species have a similar number of known sites. The Draft SEIS should have used the most recent data and should have explained the criteria for stating that 127 species equally have "habitat (including known sites) insufficient to support stable populations" under all three alternatives.

Response: The Draft SEIS used the most recent data. The criteria are described and includes the following: (1) whether the species have been observed in the Northwest Forest Plan area in the last 30 years; (2) a suspicion that some species may already be extirpated; (3) the number of occurrences; (4) the location of known sites (in or out of reserves); (5) inclusion in the Special Status Species Programs; and (6) the potential for connectivity or gene flow between sites. For the species with "habitat (including known sites) insufficient to support stable populations" under all alternatives, many of these species have not been observed in the Northwest Forest Plan area in more than 30 years, many may already be extirpated, or there are a very low number of occurrences. This has not changed since the 2000 Survey and Manage Final SEIS was completed.

284. Comment: The Draft SEIS states that many species of fungi would have "habitat (including known sites) insufficient to support stable populations within the Northwest Forest Plan area." When fungal species are lost, the fundamental foundation of forest health is jeopardized. These fungi are not well studied and should be analyzed to determine their level of importance in forests' growth.

Response: Some fungi species have "habitat (including known sites) insufficient to support stable populations in the Northwest Forest Plan" under all alternatives. Although the Survey and Manage Standards and Guidelines under Alternatives 1 and 3 generally add benefit to species (compared to Alternative 2), the benefits do not change the outcome. Mitigation is identified for Alternative 2 to provide similar benefits to Alternatives 1 and 3 but mitigation does not change the outcome. For fungi species that have "habitat (including known sites) sufficient to support stable populations" under Alternatives 1 and 3 but that have "habitat (including known sites) insufficient to support stable populations" under Alternative 2, mitigation is described that would eliminate this adverse effect and change the outcome. It is true that dispersal, reproduction, and connectivity are still not well understood for any of the fungi considered in this SEIS. There are approximately 50 fungi that are included in at least one Special Status Species Program under the proposed action. There is nothing in the proposed action that would preclude further studies of the role fungi play in forest health.

285. Comment: The 109 fungi that are endemic to the Northwest are especially important because they only occur in the planning area. Alternative 2 only includes 52

species in the Agencies' Special Status Species Programs, and may not include endemic species. All these species rely on the little remaining old growth on public lands.

Response: While some species were not determined to be eligible for inclusion in the Agencies' Special Status Species Programs, the provisions of the Northwest Forest Plan other than Survey and Manage (reserves, Aquatic Conservation Strategy, and all other standards and guidelines) remain intact. These provisions were designed to maintain a functional, interconnected, late-successional and old-growth forest ecosystem that provides habitat for these species.

Lichens

286. Comment: Many ISMS sites overlap and may erroneously indicate more "sites" than there actually are (in other words, there are actually fewer numbers of "sites" than indicated).

Response: The ISMS database contains information about existing locations of Survey and Manage Species and about areas which were surveyed for specific species. While it is possible that data errors occur in ISMS, much work on the part of the field offices and the ISMS staff has accomplished great increases in data integrity and completeness to fix most of the data problems stemming from that early pre-deployment data entry. Known sites from ISMS were just one source of information used in the effects analysis. Biologists and botanists familiar with each species considered the information from ISMS along with many other factors.

287. Comment: In Oregon and Washington, *Chaenotheca chrysocephala* is a relatively common late-successional and old-growth associated species and does not require significant conservation effort at this time. In northern California, it is less frequent and may warrant some level of conservation.

Response: A total of 34 new sites have been recorded since the 2000 Final SEIS. During Step 1 of the 2003 Annual Species Review, the Lichen Taxa Team determined this new information is not substantial based on the small number of sites. This species is still considered rare and information is limited regarding distribution, ecology, and abundance in the Northwest Forest Plan area.

288. Comment: There is not sufficient information to make a determination for *Chaenotheca chrysocephala*. This species needs strategic surveys. Alternately, this species should be included in the Special Status Species Programs as sensitive in all three states.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. According to ONHP rankings, this species appears to be relatively secure both at the global (G4G5) and State scales (S2S4 in California, S4 both in Oregon and Washington).

289. Comment: *Pseudocyphellaria rainierensis* is not assumed to be included in any of the Agencies' Special Status Species Programs. This species is rare in Washington. It occurs in the oldest stands. There is a high risk of loss of sites and "habitat (including known sites) is insufficient to support stable populations" at the southern limit of its range in Oregon. FEMAT discloses that extirpation of (this) species in the region would equate to the extinction of the species. The Draft SEIS indicates that due to species abundance on the Willamette National Forest and the Northwest Forest Plan Standards and Guidelines, this species would maintain stable populations and/or distributions range-wide. This is inconsistent with FEMAT. Since this species is rare, why is it not included in the Special Status Species Programs?

Response: Under Alternative 2, this species has habitat (including known sites) sufficient to support stable populations range-wide in the Northwest Forest Plan. The analysis is not inconsistent with FEMAT because additional information has been gathered in the last several years. Between Draft and Final SEIS, Region 6 of the Forest Service recommended that this species be added to their Sensitive Species Program in Oregon and Washington. BLM Oregon does not recommend the species for addition to its Special Status Species Program, due to the List ranking (3). Mitigation has been identified that would eliminate the adverse effects in the portion of the species range on BLM managed lands in Oregon.

290. Comment: Based on the recent increase in the number of sites for many lichens, the Draft SEIS too quickly dismisses species as equally having "habitat (including known sites) insufficient to support stable populations" under all alternatives. Surveys would identify and protect additional sites under Alternative l, thereby reducing risk.

Response: The analysis has been revised to clarify the difference between the alternatives for all species, particularly where species have "habitat (including known sites) insufficient to support stable populations" or there is "insufficient information to determine an outcome" under all alternatives.

291. Comment: *Nephroma occultum* is dependent on dispersing into forests older than Matrix rotation age. If *Nephroma occultum* is managed by leaving only a clump of reserve trees in the middle of a regeneration harvest, and the surrounding forest will be continually clearcut every 80 or so years, the clump will never have the opportunity to colonize into surrounding forests and will eventually die out. The Draft SEIS claims *Nephroma occultum* would have sufficient habitat, even under Alternative 2, because it would be protected in Reserves. However, the Draft SEIS gives no documentation that it has been found in sufficient numbers in Reserves. *Nephroma occultum* is an upland species and cannot depend on Riparian Reserves to protect it. The Draft SEIS also indicates, because *Nephroma occultum* is a Northwest Forest Plan endemic, that "extirpation of these species in the region would equate to the extinction of the species."

Response: The analysis of environmental consequences (Draft SEIS, p. 112) does state that 30 percent of the known sites for this species are within reserve land allocations. The analysis of environmental consequences has been revised to acknowledge the importance of propagule sources for maintaining populations of this species. It also acknowledges that existing Matrix Standards and Guidelines for green tree and legacy component retention may not provide adequate propagule sources for this particular species.

Mitigation has been identified in the SEIS that would eliminate the adverse effects to this species in Oregon. Mitigation on BLM Oregon managed lands would consist of the management known sites and pre-project clearances.

292. Comment: The Draft SEIS incorrectly states pre-disturbance surveys are conducted for *Nephroma occultum* under Alternative 1.

Response: At the time of the Draft SEIS, *Nephroma occultum* was a Category A species under Survey and Manage. Category A requires pre-disturbance surveys. Between Draft and Final SEIS the 2003 Annual Species Review was completed which moved this species from Category A to Category C. Pre-disturbance surveys are also required for Category C species.

293. Comment: *Nephroma occultum* is assumed to be added to the Sensitive Species Program in Washington. There is a high risk of loss of sites on federally managed lands in Oregon, which could result in "habitat (including known sites) insufficient to support stable populations" in this portion of the range. Why is it not assumed to become Sensitive in Oregon?

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. In between the Draft and Final SEIS, the Agencies reviewed the recommended placements of this species. Region 6 of the Forest Service now recommends adding this species to its Sensitive Species Program in Oregon as well as Washington. This species is List 3, and the BLM Oregon recommends the species as Tracking.

294. Comment: *Bryoria pseudocapillaris* is a rare coastal lichen species. There are only five federally known sites in California and Oregon (one of the five known sites is in a reserve). Known sites for this species in Washington are on non-federal land. Strategic surveys would help locate other sites. This species should be added to the Special Status Species Programs in California. Where is the rationale for excluding this species? It has "habitat (including known sites) insufficient to support stable populations" under all alternatives. The risk to the species becomes greater when portions of the range are left unprotected.

Response: The Final SEIS discloses the differences in risk between the three alternatives for those species with an outcome of "habitat (including known sites) insufficient to support stable populations" under all alternatives.

Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. Although this species is listed as S1 in California, considered critically impaired and especially vulnerable to extirpation, Region 5 of the Forest Service did not recommend this species for addition to its Sensitive Species Program, due to lack of information on habitat association in California. BLM California recommends adding this species to its Special Status Species Program.

Strategic surveys have been conducted for this species since 2000. It is unknown if additional surveys would find additional sites.

295. Comment: *Bryoria spiralifera* is a rare species. None of the known sites are in reserves. Strategic surveys would help locate other sites. This species should be included in the Special Status Species Programs as sensitive. Where is the rationale for excluding this species? It has "habitat (including known sites) insufficient to support stable populations" under all alternatives. The risk becomes greater when portions of the range are left unprotected.

Response: The level of risk under each of the three alternatives is more fully displayed and discussed in the Final SEIS. Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. This species is recommended for addition to the Special Status Species Programs in a significant portion of the species range, including BLM Oregon, BLM California, and Region 6 of the Forest Service in Oregon. It is not recommended for addition in Washington, because it is not known to occur there. In California, the State ranking is S1, indicating the species is critically impaired and especially vulnerable to extirpation. The species is not added to Sensitive Species Program in Region 5 because that Agency determined there was a lack of information on the habitat association in California.

Strategic surveys for this species have been ongoing since 2000. It is unknown whether additional surveys would discover additional sites.

296. Comment: *Bryoria subcana* is rare and only one known site is in reserves. Strategic surveys have already improved knowledge about species and would continue to do so. This species receives only discretionary protection in the Special Status Species Programs because it is included as an assessment species. This species should be included as sensitive.

Response: Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. This species did not meet the criteria for inclusion in BLM Oregon's Sensitive species category. The species was listed as List 2 by ONHIC, which results in the species being recommended for inclusion as Bureau Assessment. The intent of the Assessment species is similar to the Sensitive category: to prevent the species from being listed. Management for this species as Assessment will provide for the management of sites and surveys in accordance with this goal.

The species is listed as S1 in California and Washington and S2 in Oregon. These ranks indicate the species is impaired and at least very vulnerable to extirpation. The species is not listed in any of the other Special Status Species Programs (Forest Service Regions 5 and 6, and BLM California), due to a lack of information on habitat association or inability to conduct field surveys.

297. Comment: *Buellia oidalea* is a rare lichen species and has "habitat (including known sites) insufficient to support stable populations." There are only four known sites (2 of the 4 in reserves) on federally managed land. This species should be included in the Special Status Species Programs as sensitive.

Response: Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. This species did not meet the criteria for inclusion in the Agencies' Special Status Species Programs. Rankings for this species globally are G3?, with State ranks of S3 for California, and S1 for both Washington and Oregon, and a List 3 for Oregon. BLM Oregon added the species to its Tracking category. BLM California and Region 5 of the Forest Service indicated that the species has not been documented and is not strongly suspected to occur on lands they manage. Although critically impaired and especially vulnerable to extirpation in Oregon and Washington, Region 6 of the Forest Service recommended this species not be included in its Sensitive Species Program, due to a lack of information on the species response to disturbance, population trends, and known threats.

298. Comment: How come *Calicium abietinum* and *Calicium adspersum* are not given greater protection? If there is insufficient information to determine outcomes, how will information be obtained if the Survey and Manage program is dismantled? Information on *Calicium adspersum* is incorrect in stating that "there are no known sites on federally managed land." The species is known from the BLM "Little Sinks" ACEC in the Coast Range of Oregon.

Response: Recommended addition of species to the Special Status Species Programs is tiered to the ONHP rankings and listings. Rankings indicate that *Calicium abietinum* is apparently secure globally, with a G4G5 ranking. State rankings indicate that the species is somewhat rare, with an S1S2 rank for California, S2S3 for Washington, and a less rare rank of S3 for Oregon. The species is included as a Tracking species in BLM Oregon. For the other agencies, the species was determined to not meet their criteria for addition to their Special Status Species Programs. Both Region 5 of the Forest Service and BLM California indicated that the species is not documented nor strongly suspected to occur on lands they manage. Region 6 of the Forest Service concluded that there is a lack of information on population trends, range, and survey feasibility in their recommendation not to add the species to its Sensitive Species Program.

Calicium adspersum is considered to be rarer, with Global ranks of G3G4, but State ranks of S1 for all three states, indicating the species is critically impaired and especially vulnerable to extirpation. Because of this rarity, both BLM Oregon and Region 5 of the Forest Service recommend adding this species to their Special Status Species Programs. BLM California and Region 6 of the Forest Service both indicated that the species is not strongly suspected to occur on lands they manage in making the determination not to recommend the species for addition to their Special Status Species Programs. No sites

of this species are known to occur on any federally managed land within the Northwest Forest Plan area. There is currently no record of a site in the Little Sinks Area of Critical Environmental Concern (ACEC) in ISMS. If there is a single extant site on federally managed lands, it would not change the analysis that this species is poorly known in the Northwest Forest Plan area and there is insufficient information to determine how stability and distribution would be affected by the alternatives.

The Agencies' Special Status Species Programs all have provisions for monitoring. Results from monitoring along with data from the field, as well as data from publications, research results, the public, academia, and other sources will be used in the adaptive management process described in the Northwest Forest Plan. This SEIS does not change the monitoring requirements contained in the Northwest Forest Plan.

299. Comment: Why is *Cetrelia cetrarioides* assumed to become Sensitive in Washington State? This species is often found in riparian forests, and in various age classes. Why would it be Sensitive at all and why not in Oregon too, where it is considered rare?

Response: The recommendations for species additions to Special Status Species Programs are tiered to the ONHP rankings. This species receives a higher (more rare) rank for Washington (S2) than Oregon (S2S3). The rankings indicate not only the number of sites/populations of the species, but also the potential threats. The S2 ranking indicates the species is impaired and very vulnerable to extirpation. Based on these ranks, the Forest Service recommends the species for addition to its Sensitive Species Program in Washington, but not in Oregon.

300. Comment: There is not sufficient information to make a determination for *Chaenotheca ferruginea*. This species needs strategic surveys. Alternately, this species should be included in the Special Status Species Programs as sensitive in all three states.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. According to these ranks, this species appears to be relatively secure at the global (G4G5) scale with varying degrees of rarity at the State scales (S1S3 in California, S3 and List 4 in Oregon and apparently secure, with an S4 in Washington). The species was not recommended for addition to the Special Status Species Program by BLM California because it is not documented and they considered the species infeasible to conduct field surveys. Regions 5 and 6 of the Forest Service both determined that the species' State ranks did not meet their criteria for addition to their Sensitive Species Programs. BLM Oregon recommends adding the species as Tracking.

Strategic surveys for this species have been ongoing since 2000.

301. Comment: Strategic surveys would help locate and protect *Chaenotheca subroscida* sites on federally managed lands. Alternately, this species should be included in the Special Status Species Programs as sensitive in all three states.

Response: Strategic surveys have been ongoing for this species since 2000. Additional surveys may or may not locate additional sites. In the Northwest Forest Plan area, this species is considered rare with only four known sites.

The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. For this species, the global ranks indicate some apparent security for the species (G3G4), with varying rarity at the State scales (S2 in California and Washington, and S2S3 and List 3 in Oregon). BLM Oregon recommends this species as Tracking in Oregon, because the ONHIC List ranking for this species is List 3. Region 6 recommends adding this species to its Sensitive Species Program in both Oregon and

Washington. BLM California and Region 5 of the Forest Service do not recommend the species for inclusion in their Special Status Species Programs due to the infeasibility to conduct field surveys.

302. Comment: Strategic surveys would help locate and protect *Chaenothecopsis pusilla* sites on federally managed land.

Response: Strategic surveys for this species have been ongoing since 2000. Owing to the rarity of this species within the Northwest Forest Plan area, it is unknown whether additional surveys would result in locating additional sites. Strategic surveys help locate and provide information, but do not alone provide for the protection of sites.

303. Comment: Strategic surveys would help obtain information about *Cladonia norvegica*. There is not enough information to make a determination of risk for this species.

Response: Between Draft and Final SEIS, this species was removed from Survey and Manage during the 2003 Annual Species Review.

304. Comment: Why is *Collema nigrescens* assumed to be added to the Sensitive list in Washington? This riparian lichen apparently is not old-growth restricted. Why would it be Sensitive at all, and why not in Oregon, too?

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. The Agencies' Special Status Species Programs cover a wide-range of habitat types, and addition to the list does not depend on whether a species is associated with old growth. For this species, the global ranks indicate some apparent security for the species (G5?), with varying rarity/security at the State scales (S1 in Washington, S4S5 in Oregon, and S3 in California). Because of the low State ranking for Oregon, this species is not recommended for addition to either the Region 6 or BLM Oregon Special Status Species Programs. However, in Washington, due to the rarity and concern for this species expressed through an S1 ranking, the species is recommended for addition to the Region 6 Sensitive Species Program in Washington. Both BLM California and Region 5 of the Forest Service do not recommend the species for inclusion in their Special Status Species Programs because global and state rankings indicate there is no immediate concern for the species.

305. Comment: Forest Service places weight on a variety of factors including a taxon's global ranking, specifically taxa ranked Gl-G3. While *Lobaria oregana* does occur on Forest Service managed lands, its global ranking is G4. Although rare, due to its global rank *Lobaria oregana* was not considered eligible for Sensitive listing. This taxon is on the BLM's special status list. This specific example points out the inability of the Special Status Species Programs to ensure conservation of late-successional species across the Northwest Forest Plan area.

Response: The Global ranking for this species is G4G5. This ranking indicates that the species is not rare, abundant, apparently secure, and demonstrably widespread at the global scale. The California state ranking is S2, indicating that the species is imperiled because of rarity and is very vulnerable to extirpation. Region 5 of the Forest Service determined that because of the global ranking, adding the species to its Sensitive Species Program is not warranted at this time.

306. Comment: There is not sufficient information to make a determination for *Collema nigrescens*. Strategic surveys would increase information for this species and lead to better protection during riparian restoration projects.

Response: Strategic surveys for this species have been ongoing since 2000. It is unknown whether additional strategic surveys would provide enough information to help make a determination of effects to this species. A determination was made in the Final SEIS that this species would have sufficient habitat to support stable populations in the Northwest Forest Plan area under all three alternatives.

307. Comment: For *Dendriscocaulon intricatulum* outside of southern Oregon (Coos, Curry, Douglas, Jackson, and Josephine Counties), there is a high risk of loss of known sites on Forest Service managed lands in Oregon and California and BLM lands in Oregon where not protected by reserves. This species should be included in the Special Status Species Programs as sensitive.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. Based on these rankings, the species appears to be apparently secure at the global scale (G3G4Q), with a varying degree of rarity/security at the State scale. For Oregon, the S4 ranking indicates that the species is not rare and is apparently secure. It is not recommended for addition to the Special Status Species Programs in Oregon because of the State ranking. For Washington, the species is ranked as S2, and Region 6 of the Forest Service recommends including the species in its Sensitive Species Program in Washington. In California, the State ranking of S1 indicates the species is critically imperiled and vulnerable to extirpation. BLM California recommends adding the species to its Special Status Species Programs; however, Region 5 of the Forest Service recommends not adding the species to their list, due to taxonomic uncertainty regarding the species.

308. Comment: *Dermatocarpon luridum* is assumed to be protected by the Aquatic Conservation Strategy. The environmental consequences section fails to mention the cumulative effects of the proposed changes to the Aquatic Conservation Strategy. Strategic surveys are still needed. Alternately, this species should be included in the Special Status Species programs as sensitive.

Response: The Aquatic Conservation Strategy Final SEIS does not propose any changes to the Aquatic Conservation Strategy, rather it provides clarification of existing language. The Aquatic Conservation Strategy Objectives are intended to be applied at the fifth-field watershed scale. Because this species also has a broad range, it is expected that the application of the Aquatic Conservation Strategy will be compatible with and provide ample conservation for this species.

The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. Based on the rankings, the species appears to be apparently secure at the global scale (G4G5), with a varying degree of rarity/security at the State scales. In Oregon, the species is ranked as S1S2, List 3. The species is recommended for inclusion as a Tracking species by BLM Oregon and Sensitive by Region 6 of the Forest Service. For California, the species is listed as S1, which indicates the species is critically impaired and very vulnerable to extirpation. However, BLM California determined there is insufficient information to add the species to their Special Status Species Program, and Region 5 of the Forest Service determined that the Global and State rank does not warrant listing of the species.

Strategic surveys have been ongoing for this species since 2000.

309. Comment: Strategic surveys could help find additional sites of *Fuscopannaria saubinetii*. New taxonomic information has revealed that collections previously thought to be this species are not. Voucher specimens in the Northwest Forest Plan area need to be re-examined. This species should be included in the Special Status Species Programs as sensitive in all three states.

Response: Strategic surveys for this species have been ongoing since 2000. It is unknown whether additional strategic surveys would provide additional information, because of the apparent rarity of this species.

Due to taxonomic uncertainties that need additional work, this species was not recommended for addition to the Special Status Species Programs. Region 6 of the Forest Service had additional rationale for not adding the species, which included a lack of information on population trends, known threats, area of occupancy, and range.

310. Comment: *Heterodermia sitchensis* is known from only one site in the Northwest Forest Plan area. This coastal lichen was not encountered on any of the Coastal Lichen Study plots (Glavich et al. 2002). This species should be included in the Special Status Species Programs as sensitive. The assessment category is not sufficient because surveys are discretionary.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings and listings. There are no documented or suspected sites in the Northwest Forest Plan area in California; therefore, the species is not recommended for the inclusion in the Special Status Species Programs in California. Region 6 of the Forest Service recommends adding this species to its Sensitive Species Program in Oregon, but not in Washington because the species is not documented or suspected in Washington.

For BLM Oregon, this species was ranked as a List 2, which would add the species to its Bureau Assessment list. Although the Bureau Assessment category allows for more discretion in conservation management of the species than Bureau Sensitive, the end goals of the two categories are the same: to prevent the federal listing of species. Pre-project clearances and the management of known sites are two key management components of both categories in order to meet this goal. It is expected that sites will be managed and pre-project clearances conducted as needed.

311. Comment: *Hypogymnia duplicata* is assumed to become Sensitive in Oregon only, ostensibly because there are relatively high numbers of sites on the Mt. Baker-Snoqualmie National Forest. This species is restricted to specific habitats and is considered poorly disturbed and rare on the Mt. Baker-Snoqualmie National Forest. Why is it not included in the Special Status Species Program in Washington?

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. For Washington, the species is ranked as S3, which indicates that the species is not immediately imperiled. In addition, most of the sites in Washington are within reserve land allocations, so current threats to the species in this portion of the range are minimal.

312. Comment: *Hypogymnia vittata* is not included in the Special Status Species programs. Strategic surveys are needed to determine if this species occurs in the Northwest Forest Plan area.

Response: Strategic surveys for this species have been ongoing since 2000. These surveys have not located any sites of this species. It is unknown how much survey effort is needed to conclude the species does not occur within the Northwest Forest Plan area.

313. Comment: Strategic surveys would help locate new sites of *Hypotrachyna revoluta*, which increases the chance of its persistence in the Northwest Forest Plan area. Alternately, this species should be included in the Special Status Species Programs as sensitive.

Response: Strategic surveys for this species have been ongoing since 2000. It is unknown whether additional strategic surveys would find additional sites, because of the apparent rarity of this species.

This species is recommended for addition to the Special Status Species Programs in Region 6 and BLM Oregon. The species is recommended as Bureau Assessment in BLM Oregon. Although the Bureau Assessment category allows for more discretion in conservation management of the species than Bureau Sensitive, the end goals of the two categories are the same: to prevent the federal listing of species. Pre-project clearances and the management of known sites are two key management components of both categories in order to meet this goal. It is expected that sites will be managed and pre-project clearances conducted as needed.

The species has not been documented on Region 5 or BLM California managed lands, and it is not recommended for addition to the Special Status Species Programs in California.

314. Comment: Taxonomic issues make it difficult to verify *Leptogium burnetiae* var. *hirsutum* with certainty. Strategic surveys are needed. Alternately, this species should be included in the Special Status Species Programs as sensitive in all three states.

Response: Strategic surveys for this species have been ongoing since 2000. It is unknown whether additional strategic surveys would find additional sites or if they would resolve taxonomic issues.

The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. This species is recommended for inclusion in the Forest Service Sensitive Species Program in Region 6. BLM Oregon recommends the species for addition as Tracking because the ONHP ranking for this species is List 3. The species is not documented in California, and it is not recommended for inclusion in either Special Status Species Program in California.

315. Comment: If new information has increased the number of sites from one to eight, it is reasonable to conclude that strategic surveys would identify and protect additional sites of *Leptogium cyanescens*. Alternately, this species should be included in the Special Status Species Programs as sensitive.

Response: Strategic surveys for this species have been ongoing since 2000. It is unknown whether additional strategic surveys would find additional sites because of the apparent rarity of this species.

The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. This species is recommended for inclusion in the Forest Service Sensitive Species Program in Region 6. BLM Oregon recommends the species for addition as Tracking because the ONHP ranking for this species is List 3. In California, the species is listed as S1 which indicates the species is critically impaired and especially vulnerable to extirpation. However, BLM California determined that there is a lack of information on habitat association as rationale for not including the species in its Special Status Species Programs. Region 5 of the Forest Service determined that the Global (G5) rank did not warrant including this species in its Sensitive Species Program.

316. Comment: *Leptogium rivale* is assumed to be protected by the Aquatic Conservation Strategy. The environmental consequences section fails to mention the cumulative effects of the proposed changes to the Aquatic Conservation Strategy. The risk to this species will not be reduced if the Aquatic Conservation Strategy is changed.

Response: The Aquatic Conservation Strategy Final SEIS does not propose any changes to the Aquatic Conservation Strategy, rather it provides clarification of existing language. Because this species is a wide-ranging (in the Northwest Forest Plan area) species, it is still assumed that the Aquatic Conservation Strategy Objectives will adequately lower the risk of site loss. Under all three alternatives there is "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area."

317. Comment: The number of known sites for *Leptogium teretiusculum* increased from one to seven in a short time. Additional surveys would find and protect more sites, which would increase the viability of this species. This species should be included in the Special Status Species as sensitive in both Oregon and California where it is known to occur.

Response: Strategic surveys for this species have been ongoing since 2000. It is unknown whether additional strategic surveys would find additional sites because of the apparent rarity of this species.

The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. The species was not recommended for addition to the Special Status Species Programs in Oregon or California. Although State rankings indicate that the species is considered rare in both States (S1 in California and S2?, List 3 in Oregon), the species does not meet the criteria for addition to the Special Status Species Programs in either State. For BLM Oregon, the List 3 ranking means the species is recommended as a Tracking species. For Region 6 of the Forest Service, it was determined there is taxonomic uncertainty regarding this species, and Region 6 recommended not adding the species to its Sensitive Species Program. For both Region 5 of the Forest Service and BLM California, there are no documented occurrences. Also BLM California determined there is insufficient information to recommend adding the species to its Special Status Species Program.

318. Comment: *Lobaria linita* should be included in the Special Status Species Programs as a sensitive species. BLM assigns this species to the Assessment category. Surveys are needed to determine if reserves protect this species.

Response: No sites are known from BLM California or Region 5 managed lands in the Northwest Forest Plan area. Because this species is not documented on those lands, BLM California and Region 5 of the Forest Service recommended not adding the species to their Special Status Species Programs. In Oregon, the species is added to the Special Status Species Programs for both Region 6 and BLM Oregon.

For BLM Oregon the addition to the Special Status Species Program is as Bureau Assessment. Although the Bureau Assessment category allows for more discretion in conservation management of the species than Bureau Sensitive, the end goals of the two categories are the same: to prevent the federal listing of species. Pre-project clearances and the management of known sites are two key management components of both categories in order to meet this goal. It is expected that sites will be managed and pre-project clearances conducted as needed.

319. Comment: Surveys would reduce the risk to *Lobaria oregana* by locating and protecting sites in northern California where it reaches the southern extent of its range. The Forest Service in Region 5 should include this species in its Sensitive Species Program.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. For California the species is ranked as S2, meaning the

species is imperiled because of rarity and it is very vulnerable to extirpation. Region 5 of Forest Service recommends not adding this species to its Sensitive Species Program because Globally (G4G5) the species appears secure, with minimal threats.

320. Comment: *Microcalicium arenarium* should be included in the Special Status Species Programs in all three states. Surveys would help find sites or confirm rarity. If there is insufficient information to determine an outcome, how will information be obtained if the Survey and Manage program is dismantled?

Response: The species is not documented in California, and the Natural Heritage Program did not rank the species in California. For this reason, the Agencies do not recommend the species for inclusion on their Special Status Species lists in California.

For Washington and Oregon the species is ranked as S1, critically impaired and especially vulnerable to extirpation. Region 6 of the Forest Service does not recommend the species for addition in either Washington or Oregon due to a lack of information on population trends and area of occupancy, and the infeasibility of field surveys. BLM Oregon recommends adding this species to its Special Status Species Program.

Strategic surveys conducted since 2000, incidental surveys, surveys for other species, and lichenologist survey and research work have failed to document this species on federally managed land in the Northwest Forest Plan area.

321. Comment: *Nephroma isidiosum* is not known to occur in the Northwest Forest Plan area. Strategic surveys are needed to determine its presence.

Response: Strategic surveys conducted since 2000, incidental surveys, surveys for other species, and lichenologist survey and research work have failed to document this species in the Northwest Forest Plan area.

322. Comment: *Niebla cephalota* is a rare species that occurs in all three states. It should be included in the Special Status Species Programs as sensitive.

Response: This species is recommended for inclusion in Special Status Species Programs everywhere except Region 5 of the Forest Service. The species is not recommended for inclusion there because there is little habitat for this species on Region 5 managed lands.

For BLM Oregon, the addition to the Special Status Species Program is as a Bureau Assessment species. Although the Bureau Assessment category allows for more discretion in conservation management of the species than Bureau Sensitive, the end goals of the two categories are the same: to prevent the federal listing of species. Pre-project clearances and the management of known sites are two key management components of both categories in order to meet this goal. It is expected that sites will be managed and pre-project clearances conducted as needed.

323. Comment: *Platismatia lacunosa* is assumed to be added to the Sensitive list in Washington, even though it is found on alders and other hardwoods in a mix of stand ages, as well as on old *Chamaecyparis nootkatensis* and *Thuja plicata.* Why is it assumed to be added to the Sensitive list?

Response: The Special Status Species Programs include species considered as rare that are associated with any habitat types. These programs do not focus only on species associated with older forests, but instead includes species in younger forests, meadows, grasslands, mixed age stands, generalists, etc.

This species is recommended as Sensitive in Washington for Region 6 of the Forest Service due to the State ranking. That ranking, S2, indicates that the species is imperiled because of rarity of other factors that make it very vulnerable to extirpation.

324. Comment: *Platismatia lacunosa* is vulnerable with no protection from the Special Status Species Programs in California. This species occurs in all three states in the Northwest Forest Plan area. It should be included as sensitive in all three states.

Response: The species is not documented to occur in the Northwest Forest Plan area in California. Because of this, the species is not recommended for inclusion in the Special Status Species Programs in that State.

325. Comment: *Pseudocyphellaria perpetua* is a rare species with only four known sites (all in Oregon). This species should be included in the Special Status Species Programs as sensitive. Surveys are needed to find and protect this rare, endemic species.

Response: This species is not documented in Washington or California. The Agencies did not recommend the species for inclusion in their Special Status Species Programs in either Washington or California. In Oregon, the species is ranked as S1, indicating the species is critically imperiled and especially vulnerable to extirpation. Region 6 of the Forest Service recommends not adding this species to its Sensitive Species Program due to a lack of information on population trends and known threats, and infeasibility of field surveys. The species is also listed as List 3 by ONHIC in Oregon. Because of this List ranking, BLM Oregon recommends this species as Tracking.

326. Comment: *Ramalina pollinaria* was removed from the Survey and Manage Program in 2002 because it is not associated with late-successional and/or old-growth forests. This rare lichen species should be included in the Special Status Species Programs in Oregon and California.

Response: Species previously removed from Survey and Manage prior to the Draft SEIS being published are not considered or addressed in this document. The Final SEIS addresses the removal or modification of the Survey and Manage Standards and Guidelines and the effects to species currently included in the Survey and Manage Program.

327. Comment: *Ramalina thrausta* is assumed to be a Forest Service Sensitive species in Washington and California. This species should also be included as a Forest Service Sensitive species in Oregon because there is "habitat (including known sites) insufficient to support stable populations" in the Northwest Forest Plan area under Alternative 2. The BLM should also include this species in its Special Status Species Program. The amended Aquatic Conservation Strategy will not protect this species from "enhancement" projects.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. For Oregon, this species was ranked as a List NL and S3. For BLM Oregon, the NL listing means that the species is not considered at risk and is not recommended for addition to the Special Status Species Programs. For Region 6, the species Global (G4G5) and State rank are the reasons the species is not recommended for listing. Globally, the species appears to be apparently secure, and at the State scale the species is not immediately imperiled. For California, the species was not ranked by the Natural Heritage Program, although there is one documented site in the far northern part of the state. Because of the likelihood the species does not occur on BLM land in California, the species is not recommended for listing there.

Between Draft and Final SEIS, this species was removed from Survey and Manage during the 2003 Annual Species Review.

328. Comment: *Stenocybe clavata* is an endemic, poorly known species. It is known from Oregon and suspected to occur in Washington. This species should be included in the Special Status Species program as sensitive. This Pacific Northwest endemic pin lichen is truly rare. If there is insufficient information to determine an outcome, how will information be obtained if the Survey and Manage program is dismantled?

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. This species is ranked globally as G3, indicating the species is not immediately imperiled. State rankings for Washington is S3 and for Oregon are S3 and List 4, indicating that at the State level the species is also not immediately imperiled. Because of these rankings the Agencies decided not to recommend this species for inclusion in their Special Status Species Programs. Region 6 also lists a lack of information on population trends as part of their rationale for not adding the species.

329. Comment: *Teloschistes flavicans* is a rare species with only two known federal sites (none in reserves). This species should be included in the Special Status Species Programs as sensitive.

Response: The species is recommended for addition as Sensitive for BLM California and Region 6 Forest Service in Oregon. For Region 5 Forest Service, the species is not recommended for addition as there are no documented occurrences on their lands; in addition Region 5 determined there was a lack of information on known threats. For Region 6 Forest Service in Washington, the species is not documented, and ONHIC does not rank the species for Washington State. Because of this, the species was not recommended for addition to the Forest Service Sensitive Species Program in Washington. For BLM Oregon, the species is ranked as List 2 by ONHIC. BLM Oregon recommends adding this species as Bureau Assessment. Although the Bureau Assessment category allows for more discretion in conservation management of the species than Bureau Sensitive, the end goals of the two categories are the same: to prevent the federal listing of species. Pre-project clearances and the management of known sites are two key management components of both categories in order to meet this goal. It is expected that sites will be managed and pre-project clearances conducted as needed.

330. Comment: *Tholurna dissimilis* is a worldwide, rare species. The BLM Assessment category is not sufficient to protect this species. This species should be included as a Sensitive species throughout the Northwest Forest Plan area.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. The species is recommended for inclusion in the Forest Service Sensitive Species Program in Region 6. In California, with an S1 ranking indicating the species is critically impaired and especially vulnerable to extirpation, BLM adds the species as Sensitive. Region 5 cites a lack of information on habitat association and range, including the fact there are not documented occurrences on Region 5 managed lands in the Northwest Forest Plan area, as reasons not to include this species in its Sensitive Species Program.

The species is ranked as List 2 by ONHIC. BLM Oregon recommends adding this species as Bureau Assessment. Although the Bureau Assessment category allows for more discretion in conservation management of the species than Bureau Sensitive, the end goals of the two categories are the same: to prevent the federal listing of species. Pre-project clearances and the management of known sites are two key management components of both categories in order to meet this goal. It is expected that sites will be managed and pre-project clearances conducted as needed.

331. Comment: *Usnea Hesperina* is a rare lichen with only seven known federal sites (none in reserves). This species should be included in the Special Status Species Programs as sensitive.

Response: Table 3&4-8 in the Final SEIS indicates that there are 17 known sites of this species; 7 sites were known at the time of the 2000 Final SEIS.

The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. The species is globally ranked as G4G5 indicating apparent security. At the State scale there are varying degrees of rarity, with an S1 ranking for Washington, an S1S2, List 3 ranking for Oregon, and an S1? ranking for California. These State rankings indicate that the species is critically imperiled and especially vulnerable to extirpation in Washington and California, and imperiled and vulnerable to extirpation in Oregon.

Region 6 does not recommend including the species as Sensitive due to a lack of information on population trends, known threats, and survey infeasibility. Region 5 of the Forest Service does not recommend including the species as Sensitive due to taxonomic certainty and because there are no documented sites on lands they manage. BLM California does not recommend the species for inclusion in its Special Status Species Program because there are no documented sites on lands they manage.

The List ranking, used by the BLM in Oregon to determine recommendations to its Special Status Species Program, indicates uncertainty and insufficient information to make a strong List determination. Because of the List 3 ranking, BLM Oregon does not recommend this species for addition to its Special Status Species Program, but does recommends adding the species as Tracking.

332. Comment: Why, under Alternative 2, would *Usnea longissima* be listed by the Forest Service in Oregon and Washington, but not by the BLM? Many of the known sites for the species are on BLM administered land in these two states. Conservation should not ignore areas where strong populations exist. Rather, those populations may be key to retaining the species.

Response: The recommendations for additions to the Special Status Species Programs are tiered to ONHP rankings. In Oregon, the State rank for this species is S1S2, and in Washington the State rank is S2. Both ranks indicate the species is imperiled because of rarity or other factors, and is very vulnerable to extirpation. Because of these State ranks and other factors, Region 6 Forest Service recommended the species for addition to its Sensitive Species Program in both Oregon and Washington. However, BLM Oregon uses the ONHIC List rankings to determine species additions to its Special Status Species Program. For *Usnea longissima* the species is considered a List 3, which indicates that not enough information is known about the species to determine the species status. BLM Oregon does not add List 3 species to its Special Status Species Program. Despite the species not being recommended for addition to the BLM Oregon Special Status Species Program, the environmental consequences section of the Final SEIS discloses that Alternative 2 would result in "habitat (including known sites) sufficient to provide stable populations in the Northwest Forest Plan area" for this species.

Vascular Plants

333. Comment: Only Alternative 1 protects *Arceuthobium tsugense* ssp. *Mertensianae*.

Response: The analysis shows that this species has "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area" under Alternatives 2 and 3 because a majority of sites are located in reserve land allocations.

334. Comment: There are very few known sites of *Botrychium minganense*. Will it be adequately protected on BLM managed land, where it is classified as a Tracking species?

Response: The analysis shows that one of the reasons the species would have "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area" under Alternative 2 is because habitat is known to occur in reserve land allocations (including on BLM lands). The species will be adequately protected on BLM lands.

335. Comment: *Coptis asplenifolia* and *Coptis trifolia* do not appear to be well protected on BLM managed lands under Alternative 2.

Response: *Coptis asplenifolia* does not occur on BLM managed lands included in the Northwest Forest Plan area. *Coptis trifolia* is included in the BLM Special Status Species Program where it occurs on BLM managed lands included in the Northwest Forest Plan (Oregon). The analysis shows that due to inclusion in the Agencies' Special Status Species Programs (Forest Service in Washington for *Coptis asplenifolia* and *Coptis trifolia* and BLM in Oregon for *Coptis trifolia*) as well as the fact that habitat is known to occur in reserve land allocations, the species would have "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area" under Alternative 2.

336. Comment: The description for *Cypripedium montanum* is inconsistent. It states this species has "habitat (including known sites) insufficient to support stable populations in the Northwest Forest Plan area" in a portion of its range but then says it would stabilize in a pattern similar to its reference distribution.

Response: The description of effects was revised between Draft and Final SEIS and the language regarding the pattern of stable populations was removed for Alternatives 2 and 3.

Arthropods

337. Comment: Eliminating management (strategic surveys, managing high-priority sites) for these four arthropod functional groups when there is insufficient information to estimate the effects of the different alternatives is not based on good science.

Response: Arthropods do not receive site management under Survey and Manage. Arthropods are Category F species so only strategic surveys are currently required. Some strategic surveys have already been completed for arthropods. Additional strategic surveys would not be completed under the action alternatives. While information from additional strategic surveys could inform future decision making, it would not dictate the decision; therefore, no management action can be directly tied to strategic surveys.

338. Comment: The Forest Service does not include arthropods in its Sensitive Species programs.

Response: Individual arthropod species are eligible for inclusion in Sensitive Species Programs. The arthropods included under Survey and Manage are functional groups. Groups of species are not considered for inclusion.

Mollusks

339. Comment: Some Survey and Manage species are confined to small patches of habitat within a very limited range (e.g., *Oreohelix* n. sp. and *Hemphillia pantherina*). Others are found in small patches scattered over a broader area, but are still vulnerable

to disturbance because of very limited habitat. Because these species may occur outside reserve land allocations, they are vulnerable to extirpation. How can these species be protected from prescribed burns, thinnings, and other management activities, if surveys are discontinued?

Response: Numerous factors including: (1) the extent of the reserve system; (2) Matrix and Adaptive Management Area Standards and Guidelines; (3) provisions for species management under the Survey and Manage or Special Status Species Programs; (4) species range, distribution, and populations; (5) species life history and habitat needs; and, (6) the number and location of known sites were all considered when determining the effect of the proposed action for a species. For *Hemphillia pantherina*, the analysis showed that the species would have "habitat (including known sites) insufficient to support stable populations in the Northwest Forest Plan area" under Alternative 2 due to species rarity, specific habitat requirements, and the lack of inclusion in the Special Status Species Programs. In between Draft and Final SEIS, this species was recommended for inclusion as Sensitive in Washington by Region 6. For *Oreohelix* n. sp. 1, the analysis disclosed that this species would have "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area" due to inclusion in the Special Status Species Programs where pre-project clearances and known site management would occur.

340. Comment: For the first group of 14 mollusks evaluated, it is assumed that under Alternative 2, all eligible species would be included on special status species lists. However, in light of previous policies, would the four undescribed (new) species be considered for those lists? These four new species are some of the rarest species in this group.

Response: It is assumed that all eligible species, including the four undescribed species, will be included on special status species lists as described in the SEIS.

341. Comment: Why has BLM in Washington never been required to survey for *Oreohelix* n. sp. l? They manage land within the described range of that species.

Response: The Spokane District Resource Management Plan was not amended to include the Northwest Forest Plan Standards and Guidelines. The Northwest Forest Plan does not apply to any BLM managed lands in Washington State.

342. Comment: Can the stated conclusion for *Monadenia fidelis minor* be justified? It is known from only a few scattered sites in a relatively small area of the northeastern Cascades and eastern Columbia Gorge of Oregon. The evaluation under Alternative 2 (Draft SEIS, p. 129) accepts that existing provisions and BLM listing "would not prevent or compensate for loss of known sites or population areas" then concludes that it has "habitat (including known sites) sufficient to support stable populations range-wide in the Northwest Forest Plan area."

Response: Between Draft and Final SEIS, this species was determined to qualify for the Forest Service Sensitive Species Program in Oregon and Washington. The analysis of environmental consequences was updated to show that the species has habitat (including known sites) sufficient to support stable populations in all of its range in the Northwest Forest Plan area.

343. Comment: How come *Prophysaon coeruleum* is not included on the Special Status Species Programs in California and Washington? The conclusion for the analysis is questionable. The Draft SEIS did not recognize the taxonomic uncertainty for this species. Range-wide persistence for these non-vertebrate species is important, especially since *Prophysaon coeruleum* is not a single species, but a complex of six or more species.

Response: *Prophysaon coeruleum* was determined to qualify for the Forest Service Sensitive Species Program in Washington. Between Draft and Final SEIS, this species was also determined to qualify for the Forest Service Sensitive Species Program in California. The analysis of environmental consequences was updated to show that the species has habitat (including known sites) sufficient to support stable populations in all of its range in the Northwest Forest Plan area.

Preliminary, unpublished genetic evidence may suggest the presence of multiple genetic clades within *Prophysaon coeruleum*. However, these populations cannot be considered as separate species until they are formally described.

344. Comment: With only four known sites, and the admission that any undiscovered sites would be critical, is there any logic to the conclusion that protection of three of its four known sites is sufficient to insure persistence of *Deroceras hesperium*? It should be listed as Sensitive on National Forest System lands.

Response: Between Draft and Final SEIS, this species was determined to qualify for the Forest Service Sensitive Species Program in Oregon and Washington. The analysis of environmental consequences was updated to show that the species has habitat (including known sites) sufficient to support stable populations in all of its range in the Northwest Forest Plan area.

345. Comment: Possible mitigation measures are identified for 12 mollusk species which were determined to have "habitat (including known sites) insufficient to support stable populations" in all or significant portions of their ranges under Alternative 2. These mitigation measures are not implemented as part of Alternative 2 and should not be considered to alleviate the consequences of that action.

Response: The environmental consequences of both the proposed action and the proposed action with mitigation are described.

346. Comment: All 39 mollusk species included in Survey and Manage are either endemic to the Northwest Forest Plan area, or most of their range lies within this area. If they are not protected in the Northwest Forest Plan area, they will be extirpated as a species. Eight of these species are already candidates for listing under the Endangered Species Act.

Response: The analysis of environmental consequences considered only the Northwest Forest Plan area, which does include the entire range for most of the 39 mollusk species analyzed. All three alternatives include protection for species and habitats associated with late-successional and old-growth forests, including the reserve system and other standards and guidelines of the Northwest Forest Plan. None of the three alternatives produced an expected outcome of "habitat (including known sites) insufficient to support stable populations" for all 39 species. While some of the species may be candidates for listing under the Endangered Species Act, all of these species are currently on the Survey and Manage list because of concerns for persistence. These concerns were included in the analysis of environmental consequences.

347. Comment: The analysis for mollusks should consider 2003 data, since there is a considerable increase in the number of sites for 19 mollusks. With respect to Alternative 1, would an examination of more recent data, which shows more sites (see Table 3&4-l), change the outcome or degree of uncertainty for *Ancotrema voyanum*, *Helminthoglypta talmadgei*, *Monadenia chaceana*, *Monadenia fidelis minor*, *Pristiloma arcticum crateris*, and *Prophysaon coeruleum*?

Response: The outcome under Alternative 1 for these six species was either stable populations in a pattern similar to reference distribution, or stable populations in a

pattern altered from reference distribution. None of these six species was considered to have "habitat (including known sites) insufficient to support stable populations" in all or a portion of its range under Alternative 1. These outcomes would not change based on the new sites found since the Draft SEIS was issued. While more sites have been discovered for these species, they are largely in clusters within the known distribution pattern, and none of these six species are considered to be extremely rare. The understanding of other important factors has not changed, including extent of range, habitat associations, distribution of habitat, degree of protection in reserves, and distribution of populations.

Between Draft and Final SEIS, *Ancotrema voyanum* was removed from the Survey and Manage Program during the 2003 Annual Species Review.

348. Comment: The Final SEIS should better explain how the Aquatic Conservation Strategy will not lead to an outcome of insufficient habitat for aquatic mollusks. Planned and unplanned habitat-disturbing activities occur in Riparian Reserves. The Aquatic Conservation Strategy will not compensate for loss of site protection or pre-project clearances. Since 18 of these species have fewer than 10 sites, it is critical that all known sites be protected to avoid insufficient habitat for these species in all or part of their range.

Response: The SEIS has been revised to include a better description of the assumptions regarding the Aquatic Conservation Strategy. The relevant assumption regarding the aquatic mollusks is that the Aquatic Conservation Strategy provides for a high degree of protection for aquatic and riparian associated species that may be locally rare, but have a wide distribution. Species that occur only in a few locales would be at a slightly increased risk compared to widely-distributed aquatic or riparian species from habitat-disturbing activities under the Aquatic Conservation Strategy. The analysis of environmental consequences has been revised for those aquatic mollusks with an extremely limited range and few known sites.

349. Comment: Pre-disturbance surveys are not required for several mollusk species based on technical unfeasibility. There are trained malacologists that can identify specimens.

Response: This analysis did not consider technical feasibility. The criteria for survey practicality are described in the current Survey and Manage Standards and Guidelines. It is practical to survey for species in Categories A and C. Under Alternatives 1 and 3, species placement into Categories A and C is considered in the Annual Species Review. Under Alternative 2, some of the Agencies' Special Status Species Programs have guidelines for technical feasibility. This analysis did not analyze possible changes to these criteria or how they were applied in assigning species to the Special Status Species Programs in Alternative 2. The environmental consequences of removing pre-disturbance survey requirements for some species are described in Chapter 3&4. Under Alternatives 1 and 3, there is already a system in place using trained malacologists for identifying and verifying voucher specimens collected from the field.

350. Comment: The Draft SEIS presumes that all information collected by surveyors is accurate. Frest and Johannes (2000) found that mollusk surveyor detection and identification accuracy rates range anywhere from 100 percent to 0 percent.

Response: The effects analysis did not assume that all information collected by surveyors is entirely accurate. A small error rate does not change the overall conclusions for the mollusk species analyzed, because it would not substantially change basic information on distribution, range, abundance, proportion of habitat or sites protected in reserves, etc. Many species records have been verified by trained malacologists both within and outside the agencies (noted in the ISMS database). This is true for species with very

few known sites, many of which represent museum records or research by independent scientists. In these cases, error rates could have a greater effect on conclusions but are likely to be low. In addition, the interdisciplinary SEIS team included the interagency malacologist, and all specimens are reviewed by him for accuracy. Based on his experience with the field units, he has a good understanding of which units have difficulty in identification work, and what portions of a species range may have other similar looking species. In the analysis of environmental consequences, these discrepancies were utilized in making species effects determinations.

351. Comment: Alternative 2 will result in site losses for *Cryptomastix devia, Cryptomastix hendersoni*, *Fluminicola* n. sp. 11, *Hemphillia burringtoni*, *Hemphillia glandulosa* (WA Western Cascades), *Hemphillia malonei* (in Washington), *Juga* (O) n. sp. 2, *Lyogyrus* n. sp. 2, *Monadenia troglodytes troglodytes*, *Monadenia troglodytes wintu*, *Oreohelix* n. sp., *Trilobopsis roperi*, *Trilobopsis tehamana*, *Vespericola shasta*, *Pristiloma arcticum crateris*, *Prophysaon coeruleum*, *Deroceras hesperium*, *Hemphillia pantherina*, *Vertigo* n. sp. and *Vespericola pressleyi*, which will contribute to a trend towards listing for these species. The Agencies should protect all known sites for these species.

Response: The analysis shows that while some known sites may be lost; these losses are constrained by Special Status Species Program objectives that include maintaining viable populations and ensuring that actions do not contribute to the need to list under the Endangered Species Act. Where and when sites are needed to ensure actions do not contribute to listing, they will be protected. Therefore, these species have "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area."

352. Comment: *Pristiloma arcticum crateris, Hemphillia pantherina*, *Vertigo* n. sp., *Vespericola pressleyi, Ancotrema voyanum, Helminthoglypta talmadgei, Monadenia chaceana, Monadenia fidelis minor*, and *Prophysaon coeruleum* should be listed as Sensitive.

Response: In between Draft and Final SEIS, the Agencies' Special Status Species Program Managers reviewed the recommended species placements. Through that additional review, some of these species are now recommended for inclusion in the Special Status Species Programs within all of their ranges: *Hemphillia pantherina*, *Vertigo* n. sp., *Vespericola pressleyi, Pristiloma arcticum crateris, Monadenia fidelis minor*, and *Prophysaon coeruleum*. These species are no longer considered to have "habitat (including known sites) insufficient to support stable populations in the Northwest Forest Plan area" under Alternative 2. In addition, *Monadenia chaceana* was recommended for addition to the Forest Service' Sensitive Species Program in Oregon.

Between Draft and Final SEIS, *Ancotrema voyanum* was removed from Survey and Manage during the 2003 Annual Species Review.

Under Alternative 2, *Helminthoglypta talmadgei* and *Monadenia chaceana,* would have habitat (including known sites) insufficient to support stable populations in the California portion of its range due to lack of inclusion in the Forest Service' Sensitive Species Program in Region 5. However, these species do have sufficient habitat (including known sites) range-wide in the Northwest Forest plan area to support stable populations. Mitigation is identified in the Final SEIS which would eliminate the adverse effects in Region 5 under Alternative 2. This includes conducting pre-project clearances and managing known sites on National Forest System lands in Region 5. In addition, the fundamental elements of the Northwest Forest Plan species conservation strategy (reserves, Aquatic Conservation Strategy, and all other standards and guidelines) remain intact under Alternative 2.

353. Comment: To prevent *Cryptomastix devia, Cryptomastix hendersoni*, *Fluminicola* n. sp. 11*, Hemphillia burringtoni*, *Hemphillia glandulosa* (WA Western Cascades), *Hemphillia*

malonei, (in Washington), *Juga* (O) n. sp. 2, *Lyogyrus* n. sp. 2, *Monadenia troglodytes troglodytes*, *Monadenia troglodytes wintu*, *Oreohelix* n. sp. 1, *Trilobopsis roperi*, *Trilobopsis tehamana*, and *Vespericola shasta* from being listed, all known sites of these species should be protected. All of these species should be placed on the Sensitive Species list, and surveys should be conducted.

Response: These species were recommended for addition to the Agencies' Special Status Species Programs in all or most of their ranges.

Amphibians

354. Comment: Alternative 2 will result in site losses for both the Larch Mountain and Van Dyke's salamanders, which will contribute to a trend towards listing for both species. The Draft SEIS (p. 138) states that loss of even a single site may pose a risk to maintaining populations. Inconsistencies in management at the site level, a lack of expertise at the field unit level, and the requirement to only manage sites if an activity would cause a trend toward listing, will not result in stable, well-distributed populations.

Response: The SEIS acknowledges that loss of a site may pose a risk to maintaining stable, well-distributed populations for these species. This is true under all alternatives. The analysis states that management discretion in the Special Status Species Programs (under Alternative 2) is constrained by program objectives that include maintaining viable populations in habitats throughout their geographic range on National Forest System lands and ensuring that actions do not contribute to the need to list under the Endangered Species Act. If an activity would result in loss of a site (and therefore pose a risk to maintaining viable populations) Special Status Species Programs policy would require avoiding or modifying the activity to avoid such a loss.

355. Comment: New studies indicate that land use impacts on amphibians may be more detrimental than assumed in the 1994 Northwest Forest Plan SEIS and the 2000 Survey and Manage SEIS. Two new studies appeared in the June 2003 issue of Conservation Biology. One study found that protection of riparian buffers alone was not as highly correlated with high abundances of salamanders as was the percentage of disturbed area in the watershed (Wilson and Dorcas 2003). The second study found that effects of alternative silvicultural treatments such as thinning on salamander populations were not significantly different from those of clearcuts (Knapp et al. 2003).

Response: The two studies were reviewed. All three alternatives in the Draft SEIS include management of species' sites, and include evaluation of species' persistence relative to proposed management actions that might affect known sites, including the effects of riparian management and silvicultural practices if those activities are proposed. In this regard, the effects of these issues would be similar across all three alternatives.

356. Comment: Forest Service and BLM biologists were close to completing conservation strategies for these four salamanders under the Survey and Manage mitigation measure, but that effort was put on hold pending the development of the SEIS. As the strategies have never been finalized, let alone implemented and evaluated, it seems premature to replace them without a more thorough and scientifically rigorous risk assessment and impacts analysis.

Response: No taxa team efforts relative to Survey and Manage salamanders have been put "on hold" pending development of the Draft or Final SEIS. Amphibian taxa team work has continued. A "conservation strategy" for one species, the Siskiyou Mountains salamander, has been under development for more than a year, and progress has been made since January 2003. A "conservation strategy" has not been underway for the other three salamanders because they are Category A and all sites are managed for persistence.

Direction from the 1994 ROD, (and re-stated in the 2001 Survey and Manage ROD) is currently being used as the recommendation for site management for these species. This direction has been in use since surveys for these were required beginning in 1997.

357. Comment: The Shasta salamander will experience higher risk under Alternative 2 than under Alternative 1. A relatively high proportion of known sites occur within the Matrix land allocation which, if not managed for the species, would result in a trend towards listing. This species is already included in another Federal management plan and this plan may allow the species to become relatively stable in numbers and distribution. However, this document has outdated survey procedures, habitat definitions, and management direction, which may render it ineffective.

Response: This species has "habitat (including known sites) sufficient to support stable populations range-wide in the Northwest Forest Plan area" under Alternative 2. The analysis states that management discretion in the Special Status Species Programs (under Alternative 2) is constrained by program objectives that include maintaining viable populations in habitats throughout their geographic range on National Forest System lands and ensuring that actions do not contribute to the need to list under the Endangered Species Act. If an activity would pose a risk to maintaining viable populations or contribute to the need to list under the Endangered Species Act, Special Status Species Programs policy would require avoiding or modifying the activity to avoid such an outcome.

Also, all of the tools developed for the Survey and Manage program (survey methodology, site management recommendations, habitat descriptions, etc.) will be available for use in implementing the noted Federal management plan for this species and in the Agencies' Special Status Species Programs.

358. Comment: The northern population of the Siskiyou Mountains Salamander will experience higher risk under Alternative 2 than under Alternative 1. Alternatives 2 and 3 would not result in stable, well-distributed populations. Inconsistencies in management at the site level, a lack of expertise at the field unit level, the requirement to only manage sites if an activity would cause a trend toward listing, and the relatively low number of known sites that occur in reserve land allocations may contribute to a trend towards listing for the northern population of the Siskiyou Mountains salamander.

Response: This species has "habitat (including known sites) sufficient to support stable populations range-wide in the Northwest Forest Plan area" under Alternative 2. The analysis states that management discretion in the Special Status Species Programs (under Alternative 2) is constrained by program objectives that include maintaining viable populations in habitats throughout their geographic range on National Forest System lands and ensuring that actions do not contribute to the need to list under the Endangered Species Act. If an activity would pose a risk to maintaining viable populations or contribute to the need to list under the Endangered Species Act, Special Status Species Programs policy would require avoiding or modifying the activity to avoid such an outcome.

Tools created under the Survey and Manage Program, such as management recommendations and survey protocols, would also be available for use by field personnel as they implement the policies of the Special Status Species Programs.

359. Comment: The southern population of the Siskiyou Mountains Salamander, particularly the Scott Bar population, will have "habitat (including known sites) insufficient to support stable populations" under Alternative 2 due to low numbers of known sites. It is uncertain if the Special Status Species Programs would provide meaningful protection for this population. The Final SEIS should include mitigation to

protect the Scott Bar population. The Forest Service should continue conducting pre-disturbance surveys to increase knowledge and ensure the species is protected.

Response: The environmental consequences section discloses that the Scott Bar population will have "habitat (including known sites) insufficient to support stable populations" under all alternatives due to species rarity. The Siskiyou Mountain Salamander is assumed to be included in the Forest Service Sensitive Species Program in California, and site management and pre-project clearances will be an integral part of species management in the Scott Bar area.

360. Comment: There are no Late-Successional Reserves in the range of the Siskiyou Mountains Salamander. Late-Successional Reserves will not secure the viability of this species.

Response: The location of Late-Successional Reserves was not a factor in determining that this species would have "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area" under any of the alternatives (except for the Scotts Bar population which has insufficient habitat under all alternatives).

361. Comment: Alternative 2 threatens the continued viability of amphibians within the planning area. The Draft SEIS concedes that Alternative 2 will not adequately address the paucity of information and great uncertainty about these species. The Draft SEIS (p. 141) then asserts the proposed action would achieve "stable, well-distributed populations" throughout the Northwest Forest Plan area.

Response: The analysis shows that the four species of salamanders currently included in the Survey and Manage mitigation measure would have "habitat (including known sites) sufficient to support stable populations range-wide in the Northwest Forest Plan area" under any alternative. While the analysis describes some uncertainty due to discretion in implementation methodology under the proposed action, it also acknowledges that this discretion is constrained by Special Status Species Program objectives that include maintaining viable populations in habitats throughout their geographic range on National Forest System lands and ensuring that actions do not contribute to the need to list under the Endangered Species Act. If an activity would pose a risk to maintaining viable populations or contribute to the need to list under the Endangered Species Act, Special Status Species Program policy would require avoiding or modifying the activity to prevent such an outcome.

Great Gray Owl

362. Comment: The Draft SEIS should compare and contrast the effects of Alternatives 2 and 3 to the standards provided under Survey and Manage Category A. The sentence *"The Agencies' Special Status Species Programs, which provide for surveys and the management of known sites, could only provide added benefit for this species"* appears to contrast Alternative 2 to alternatives in the Northwest Forest Plan, some of which had no specific protection measures for the great gray owl. The above sentence appears to indicate that management under Alternative 2 would provide benefits above and beyond those provided by Alternative 1. Under Alternative 2, the great gray owl would receive no protection under any of the Special Status Species Programs. The Draft SEIS also fails to mention strategic survey efforts to gather home range size and habitat association information for this species.

Response: This SEIS compares and contrasts the effect of implementing the three alternatives described in Chapter 2. The purpose of the species analysis in this SEIS is to determine if habitat (including known sites) is sufficient to support stable populations within the Northwest Forest Plan area under the alternatives. Analyses in FEMAT

and the Northwest Forest Plan Final SEIS are relevant because they include effects of implementing alternatives without additional mitigation measures. Great gray owl would be included as a Sensitive Species for the Forest Service in Washington and California. Information would be gathered that would assist in adaptive management for the species.

363. Comment: The Draft SEIS appears to rely heavily on the effects analysis performed for great gray owl in 1994. New information gathered during pre-disturbance surveys indicates that tens of thousands of acres have been surveyed for this species since 1995 and there are only 114 known sites within the Northwest Forest Plan area.

Response: Numerous factors including: (1) the extent of the reserve system; (2) Matrix and Adaptive Management Area Standards and Guidelines; (3) provisions for species management under the Survey and Manage or Special Status Species Programs; (4) species range, distribution, and populations; (5) species life history and habitat needs; and, (6) the number and location of known sites were considered for the analysis of environmental consequences in this SEIS.

364. Comment: Great gray owl is assumed to be a tracking species only on BLM managed lands, which does not provide for any pre-disturbance surveys or site protection. How many of the 114 owl sites are on BLM managed land? How would this lack of protection adequately protect the viability of a species with spotty distribution and low numbers?

Response: The analysis of environmental consequences considered all relevant information, including the assumed placement on the BLM's Special Status Species list as Tracking. The provisions of the Northwest Forest Plan (without Survey and Manage) provide a 100 percent likelihood of providing habitat to allow the great gray owl population to stabilize, but with significant gaps in the historic distribution across federally managed land. There is "habitat (including known sites) sufficient to support stable populations in the Northwest Forest Plan area" under all of the alternatives analyzed in this SEIS.

Oregon Red Tree Vole

365. Comment: It is unknown to what extent Riparian Reserves (given their composition, slope position, and spatial arrangement) provide habitat or connectivity for red tree voles.

Response: This is true, but the same can be said for all forest types and for upland areas as well. Although many people have suggested that tree voles are weak dispersers and will be harmed by lack of connectivity, there is virtually no data to support or disprove this conjecture. Although many people have expressed their opinions on this issue, dispersal capabilities of tree voles are virtually unknown, and there is no data on their ability to disperse through forests of different age classes. This being said, it is logical to assume that tree voles will probably be able to disperse through forests in riparian areas as well as in upland areas. Many tree voles have been found in riparian areas, and there is no reason to think that they will not be able to use these areas as dispersal habitat as well as nesting habitat

366. Comment: Predictive models have shown that red tree voles are not well protected by the system of Late-Successional Reserves.

Response: Predictive models are only as good as the assumptions that are built into them. In the case of the tree vole, even the best models will contain unsubstantiated assumptions about the dispersal capabilities and habitat relationships of the species. By

building models that assume worst-case scenarios regarding the ability of tree voles to disperse through young forest, or persist in young forests, it is easy to paint a disturbing picture.

367. Comment: Alternatives 2 and 3 will not create or sustain viable populations of the red tree vole. Because it will not be included in the Special Status Species programs, all 706 known sites on federally managed land will lose protection and be destroyed if they are on Matrix lands. No sites are even known outside of federally managed land. Removing the Survey and Manage Standards and Guidelines for red tree vole reduces the chances of Outcome A to 73 percent, below the 80 percent screen which mandated further analysis under the Northwest Forest Plan. The only sure way to ensure persistence of the red tree vole is to continue conducting surveys and managing known sites. The historic distribution of this species has been lessened dramatically.

Response: It is incorrect to say that "…no sites are even known outside of federally managed lands." Some recent sites have been located on state and private lands (Forsman unpublished data, Black unpublished data). For example, tree voles still occur on McDonald State Forest, and also occur in diets of some pairs of spotted owls that occupy sites where the predominant land ownership is private land. The current known sites could be lost over many years as lands in the Matrix and Adaptive Management Areas are gradually disturbed through management. The FEMAT panel gave the red tree vole a 0 percent likelihood of extirpation under Option 9. The analysis shows that with the large amounts of federally managed lands in reserve land allocations and Matrix and Adaptive Management Area Standards and Guidelines, there would be sufficient habitat (including known sites) to support stable populations range-wide in the Northwest Forest Plan area. In addition, between Draft and Final SEIS, the red tree vole was determined to be eligible for the Agencies' Special Status Species Programs in the northern Coast Range of Oregon.

368. Comment: The Oregon red tree vole is the main source of prey for the northern spotted owl, and this must be mentioned in the text.

Response: Tree voles typically comprise 8-30 percent of the prey captured by spotted owls in the Oregon Coast Ranges and central Cascades (Forsman et al. 1984, Forsman et al. in review).

369. Comment: The red tree vole is an old-growth associated animal. More than 70 percent of known sites are on federally managed land and there is "uncertainty about the role of young forests in the population ecology of red tree voles." Their known habitat in federally managed old-growth forests must be protected. At the very least, surveys are needed prior to management activities in older forests. If Alternative 2 is adopted, there is a good chance habitat will be insufficient to support stable populations of red tree voles in the northern Oregon Coast range.

Response: The assertion that tree voles are "old-growth associates" is probably an oversimplification of a very complex relationship. While a number of studies have suggested that tree voles are most abundant in mature forests and old forests, many of those studies have also found tree voles or tree vole nests in young stands, including fairly high numbers in some cases. In addition, many of the tree voles actually captured have been captured in young forests. Although tree voles may find their optimum habitat in older forests, much of the debate about young stands as tree vole habitat is based on conjecture as opposed to actual data. The FEMAT panel gave the red tree vole a 0 percent likelihood of extirpation under Option 9. The analysis shows that with the large amounts of federally managed lands in reserve land allocations and the Matrix and Adaptive Management Area Standards and Guidelines there would be sufficient habitat to support stable populations range-wide in the Northwest Forest Plan area. The analysis does show that due to the paucity of federally managed land in the northern

Oregon Coast Range, there is insufficient habitat to support stable populations under any alternative. However, in between Draft and Final EIS, the vole has been recommended for addition to both Region 6 and BLM Oregon Special Status Species Programs in the northern Oregon Coast Range.

370. Comment: The Draft SEIS does not adequately disclose the impacts to red tree voles. The Draft SEIS falsely assumes that red tree vole are only at-risk on the northern Oregon Coast Range when in fact they are at risk in large parts of the northern-mesic and southern-xeric parts of their range.

Response: The analysis focused on the northern Oregon Coast Range as the area where tree voles are most at risk because there is evidence that tree voles were once fairly common in that region, and because tree voles will likely receive little protection in that region because most of the area is private or state ownership. Concerns about the persistence of tree voles in interior southwest Oregon, and the northern Oregon Cascades are warranted, but in both of those areas there is reason to believe that the problems may have as much to do with natural limitations on tree voles as opposed to factors that can be influenced by management. Data from spotted owl diets in the interior southwest region of Oregon suggest that tree voles are very locally distributed or absent in much of the region, probably because most of that region is too hot and dry to support tree voles. The 2000 Survey and Manage Final SEIS concluded that in the portion of the red tree vole's range located on the Klamath National Forest in northern California and the dry conifer forest surrounding the Rogue and Illinois Valleys in southern Oregon, there is insufficient information to determine how any alternative would affect distribution and stability. It further states that red tree vole habitat becomes more isolated with progressively less connectivity towards the edges of this zone where it intergrades with oak woodlands. Tree voles will probably always have a risk to persistence in that region, regardless of management.

371. Comment: More than 50 percent of the red tree vole's range is on non-federal land where they will be extirpated over time, and the red tree vole is at-risk on more than 50 percent of its range on federally managed lands. Contrary to assertions in the Draft SEIS, it is unlikely that the red tree vole would stabilize in a pattern similar to its reference condition.

Response: The objective under the Northwest Forest Plan was to maintain tree voles within their known distribution on federally managed lands. No assumptions were made about persistence of tree voles on non-federal lands. With the Northwest Forest Plan, it should be possible to maintain tree voles within their historic distribution on federally managed lands, except for areas where federally managed lands are limited, or in areas at the edge of the range, where conditions may be unsuitable for tree voles for completely natural reasons (e.g., interior southwest Oregon). In addition, it is probably wrong to assert that tree voles will be extirpated on all non-federal land. It is known that tree voles still occur on some non-federal lands, and it is possible that they will continue to do so, especially in areas where non-federal and federally managed lands are intermixed.

372. Comment: The Draft SEIS (p. 146) mischaracterizes Appendix J2 of the Northwest Forest Plan Final SEIS by asserting that it predicted a greater than 80 percent likelihood of Outcome A with the application of Riparian Reserve Scenario 1. Appendix J2 only stated there was an increased likelihood of attaining 80 percent. It is unknown to what extent Riparian Reserves (given their composition, slope position, and spatial arrangement) provide habitat or connectivity for red tree voles.

Response: The panel evaluation of tree voles was done before the Agencies adopted the wider riparian buffers that eventually became part of the Northwest Forest Plan. So, if anything, the panel would probably have given tree voles a higher score, as a result of the

increased protections that were eventually adopted. It is not definitively known to what extent Riparian Reserves provide habitat or connectivity for tree voles, but the same can be said for old-growth uplands, young forests, and clear-cuts. Except for a handful of radio-collared voles, there is not actual data on dispersal of tree voles. So all comments about dispersal and connectivity relative to tree voles are based mostly on conjecture, and this includes all of the published and unpublished literature on the species. In the absence of real data on dispersal, it is logical to assume that the addition of large areas of mature and old forest in riparian buffers will improve conditions for tree voles, regardless of composition, slope, or spatial arrangement.

373. Comment: The Draft SEIS must use the best available information on red tree voles including the results of the 2002 Annual Species Review.

Response: All currently available information was considered in this SEIS, including the results of the 2003 Annual Species Review which removed the red tree vole from Survey and Manage in the mesic portion of the species range.

374. Comment: The necessity of continuing pre-disturbance surveys for the red tree vole may depend on the status of the northern spotted owl. This information should be in the biological evaluation and the environmental consequences discussion of the red tree vole.

Response: In the 2000 Survey and Manage Final SEIS, it was determined the Survey and Manage mitigation measure would have an insignificant effect on the maintenance of spotted owl populations. This was due to the small scale and isolated nature of the resultant late-successional and old-growth forest areas outside of reserves. The analysis of environmental consequences shows the release of all the acres of known sites under the action alternatives would have little effect on the northern spotted owl due to small size and dispersed nature of the known sites compared to the overall size and distribution of Late-Successional Reserves. The U.S. Fish and Wildlife Service is currently reviewing the status of the northern spotted owl; however, this effort has not been completed. The Biological Evaluation (see Appendix 5) contains a discussion on the role of red tree voles in the diet of the northern spotted owl. Under all three alternatives, there is habitat sufficient to support stable populations of red tree vole range-wide in the Northwest Forest Plan area.

Threatened and Endangered Species

375. Comment: The programmatic biological assessment prepared by the Agencies in 1994 indicates the buffers associated with the Survey and Manage mitigation measure will retain some older forests that will provide some habitat for spotted owls. Removing the Survey and Manage mitigation measure will allow these buffers to be cut and cause the loss of otherwise protected spotted owl habitat. This, plus the loss of protection for red tree voles, an important spotted owl prey species, will require re-consultation on the Northwest Forest Plan's effects on spotted owls.

Response: See Appendix 5 for the Biological Evaluation that addresses the effects of the alternatives upon the spotted owl. Briefly, as identified in 1994 discussions with the U.S. Fish and Wildlife Service regarding the Northwest Forest Plan, the contribution to spotted owl habitat which would accrue from implementation of the Survey and Manage Standards and Guidelines was expected to be small in scale and have negligible beneficial effect on the maintenance of spotted owl populations. This negligible effect results from the federal recovery strategy for spotted owl populations primarily being designed to retain and manage large blocks of late-successional habitat to provide for population clusters of spotted owl pairs (Biological Assessment of the Northwest Forest Plan Draft SEIS, October 1993). Most Survey and Manage sites are small in comparison (for most Survey and Manage species, site management is less than 1 acre).

Predicted harvest levels identified in this Final SEIS are less than those identified in the Northwest Forest Plan, including the rate and amount of spotted owl habitat to be removed or modified. The Northwest Forest Plan Final SEIS analysis concluded that the expected timber harvest would be compatible with spotted owl habitat management objectives of the Northwest Forest Plan.

The red tree vole, which under Alternatives 2 and 3, would not be included as a Survey and Manage species, and is assumed to be in the Special Status Species Programs only in the northern Oregon Coast portion of its range, is indeed a prey species of the northern spotted owl. The contribution of red tree voles as prey varies in different portions of the range of the spotted owl, from a low of 1 percent (of total prey items) of the diet to a high of 30 percent. Because red tree voles do not represent a large portion of the diet of most resident spotted owls and the Matrix and Adaptive Management Areas are not expected to provide long-term habitat for resident spotted owls, any effect to spotted owls from reductions of red tree vole populations is likely to be low.

376. Comment: The analysis of effects to northern spotted owls includes no recent range-wide demographic data and no actual analysis of impacts to this species from removing an additional 26,000 acres of old-growth forest from actual nest stands (how much foraging habitat would be lost in addition?). The Draft SEIS improperly dismisses this concern based on the argument that the Northwest Forest Plan is not resulting in as much logging as originally intended. What are the implications of increasing logging levels in suitable spotted owl habitat, if the Survey and Manage Standards and Guidelines are eliminated? The PSQ of 805 million board feet projected under this Survey and Manage change may now be far too high.

Response: It is not the purpose of this SEIS to provide a population analysis nor does the scale of impacts to the northern spotted owl warrant that discussion. There is no 2003 meta-analysis data available at this time. In the 2000 Survey and Manage SEIS, it was determined the Survey and Manage mitigation measure would have an insignificant effect on the maintenance of spotted owl populations. This was due to the small scale and isolated nature of the resultant late-successional and old-growth forest areas outside of reserves. The analysis of environmental consequences shows the release of up to 26,000 acres of known sites under the action alternatives would have little effect on the northern spotted owl due to small size and dispersed nature of the known sites.

377. Comment: Commercial thinning and clearcutting within suitable spotted owl habitat causes habitat degradation which allows the barred owl to out-compete the spotted owl. This was never analyzed in the Northwest Forest Plan Final SEIS. The Final SEIS must fully disclose and analyze the extent to which commercial thinning and clearcutting of mature, closed-canopy forest may allow favorable conditions for barred owl incursions into such areas, and the resulting impacts on northern spotted owls. This disclosure must analyze the reduced protections and increased logging that will result from eliminating the Survey and Manage Standards and Guidelines.

Response: Analysis of commercial thinning and clearcutting suitable spotted owl habitat is beyond the scope of this SEIS. The analysis in this SEIS was focused on the effects of removing or modifying Survey and Manage requirements. The management and the protections for the northern spotted owl have not been changed. The analysis of environmental consequences shows the release of up to 26,000 acres of known sites under the action alternatives would have little effect on the northern spotted owl due to the small size and dispersed nature of the known sites. It is likely that the potential removal of these acres will not have a bearing on whether barred owls may move in to these potential project units, due to the small size of these buffers relative to the larger project in which they are located.

378. Comment: The Draft SEIS (and the Biological Evaluation) states that the Survey and Manage mitigation measure has an insignificant effect on maintaining spotted owl populations due to the small scale and isolated nature of areas managed as known sites. The number of acres involved is not important. What is important is whether the habitat components necessary for survival can be obtained. The important components from a wildlife habitat standpoint (distribution, function, and connectivity) do not depend on acreages or percentages of land allocations.

Response: Those areas released from protection do not provide suitable habitat of sufficient stand size and aggregation to substantively benefit the northern spotted owl. These areas are too small and too isolated to provide the necessary functions. In addition, the Northwest Forest Plan as the federal lands contribution towards recovery of the species, does not rely on the protection or maintenance of spotted owl pairs in the Matrix, instead the strategy focuses on long-term development of large-scale reserves.

379. Comment: The proposed changes to the Northwest Forest Plan are a departure from science and would harm water quality and cause possible extinction of salmon and steelhead. The proposed action would reduce the habitat for endangered species, including fish, marbled murrelets, and spotted owls.

Response: The proposed action does not change any of the components of the Aquatic Conservation Strategy or its associated standards and guidelines which provides for habitat and water quality to benefit aquatic and riparian species. Implementation of this SEIS would not reduce the available habitat set aside for the northern spotted owl or the marbled murrelet. This SEIS concludes that the action alternatives have no effects or are not likely to adversely affect these species.

380. Comment: For the northern spotted owl, the small size and dispersed nature of the protected sites to be released is irrelevant; these areas are important because they contain red tree vole active nests, a primary prey species for the spotted owl. How many sites will be released under Alternative 2 and 3 for this species?

Response: Table 3&4-1 shows the number of known sites for species. The analysis shows that even releasing all of the currently known Survey and Manage sites would have little effect on the northern spotted owl.

For red tree vole, at the publication of the Draft SEIS, 706 sites were known. Some of these sites are in reserves and will continue to benefit from those land allocations. Sites in the Matrix are released for other management purposes, but these sites are expected to be disturbed gradually. A good estimate would be that 2.5-4 percent of the red tree vole sites in the Matrix would be disturbed per decade, in keeping with the amount of predicted late-successional and old-growth disturbance.

381. Comment: The Draft SEIS fails to identify how many acres of suitable spotted owl nesting and foraging habitat would be lost annually as a result of removing the Survey and Manage mitigation measure.

Response: The analysis of environmental consequences determined that harvest levels identified in this Draft SEIS are less than those identified in the Northwest Forest Plan, including the rate and amount of spotted owl habitat to be removed or modified. The Northwest Forest Plan Final SEIS analysis concluded that the expected timber harvest would be compatible with spotted owl habitat management objectives of the Northwest Forest Plan.

382. Comment: The Draft SEIS does not contain updated information on the status of key indicator species such as the marbled murrelet. Has the status improved, remained the same, or is the species declining? There has been no attempt to model the habitat

consequences as a result of logging in the Matrix and Adaptive Management Areas. The Draft SEIS also fails to provide adequate details as to what exactly would happen to threatened species in the Special Status Species programs.

Response: The management of threatened and endangered species under the Northwest Forest Plan and the relevant Special Status Species Programs have not been modified in this SEIS. The large majority of known sites, and the acres that would be released under Alternative 2, are outside the range of this species. Any specific project that would impact the marbled murrelet would require a Biological Assessment and consultation with the U.S. Fish and Wildlife Service to ensure the project is compatible with conservation objectives for this species.

Costs of Management

383. Comment: Does the cost analysis take into account the species recently removed from the Survey and Manage list? Does it account for species expected to be removed as a result of Strategic Survey information?

Response: The short-term costs shown for Alternative 1 are based on actual program management costs for Fiscal Year 2003 along with pre-disturbance survey costs for species that are currently on the Survey and Manage list. The cost for pre-disturbance surveys assumes full program implementation (since 1999, the Agencies have offered timber sales at only 35 percent of the PSQ on average). The long-term costs shown for Alternative 1 assume there will be a reduction of costs over time due, in part, to an expectation that species would be removed. The costs have been modified in the Final SEIS due to more refined information on actual and predicted costs for the Survey and Manage and Special Status Species Programs.

384. Comment: The Draft SEIS assumes there will be no cost associated with implementing species surveys under the Special Status Species Programs. This assumption is not true.

Response: The Agencies have had lengthy experience in implementing Special Status Species Programs. The costs for Alternative 2 are based on the experience and knowledge of Special Status Species program managers. In the Final SEIS, these costs have been updated to reflect additional analysis from the Special Status Species Program Managers. The costs for Alternative 3 are based largely on implementation costs for Alternative 1 since the majority of the Survey and Manage program would be retained under this alternative. The analysis includes costs for species management (including pre-project clearances) under the Agencies' Special Status Species Programs for Alternatives 2 and 3.

385. Comment: Transferring species to the Special Status Species Programs will result in far greater costs than those projected in the SEIS. The Agencies will be required to survey for and manage species on all Forest Service and BLM-administered lands in Washington, Oregon, and northern California, not just in the Northwest Forest Plan area.

Response: The Cost of Management Section has been revised to include a description of this issue. It states that under all alternatives, it is assumed that eligible species would be added to the Agencies' Special Status Species Programs. These programs cover entire states, so species could be added outside the Northwest Forest Plan area. The costs outside the Northwest Forest Plan area were not calculated because they are outside the scope of the SEIS; however, they would be the same under all alternatives.

386. Comment: The amount of survey work done under Alternatives 2 and 3 is not likely to decline compared to Alternative 1. Although surveys ordinarily do not occur

in young stands for old-growth-associated species, some of the species included in the Special Status Species Programs are found in habitats other than old growth. Surveys in stands of many ages would continue and the assumptions related to costs need checking.

Response: The analysis in the Cost of Management Section for Alternatives 2 and 3 was revised to include a more detailed description of situations that could result in both increases and decreases in pre-disturbance surveys. The biggest difference in pre-disturbance costs between Alternatives 1 and 2 is that surveys would be eliminated for great gray owl (in Oregon) under Alternative 2. The biggest difference in pre-disturbance costs between Alternatives 1 and 3 is that under Alternative 3 surveys would be eliminated in stands that are not late-successional.

387. Comment: The 2000 Final SEIS estimated annual cost to implement the Survey and Manage program at $29 million. The Draft SEIS estimated the cost for the No-Action Alternative as only $25.9 while the action alternatives range from $7.5 to $11.8 million. The Draft SEIS does not explain the dramatic decrease in the estimate to implement the No-Action Alternative between the 2000 Final SEIS and this SEIS.

Response: Survey and Manage costs have had a downward trend over the past 3 years. The estimated cost also reflects a savings accomplished by the removal of some species from Survey and Manage and elimination of requirements to conduct pre-disturbance surveys for some species through the 2001, 2002, and 2003 Annual Species Reviews.

388. Comment: The Draft SEIS failed to consider all the costs of removing the Survey and Manage mitigation measure, including air and water pollution, flooding, loss of topsoil, global warming, loss of biodiversity, adversely impacted tourism industry, etc.

Response: The effects of Alternative 2 on air and water pollution are analyzed in the Water Quality, Air Quality, and Aquatic Ecosystem sections. The effects of Alternative 2 on biological diversity are determined by the effects on species. That analysis is found in the individual taxa sections. The Late-Successional Forest Ecosystem section also contains an analysis of the effect of the proposed action on the forest ecosystem as a whole. The effects of Alternative 2 on floodplains are found in the Critical Elements of the Human Environment section. The effects of the proposed action on loss of topsoil, global climatic warming, and tourism were not analyzed in this SEIS because none of the alternatives change the assessment of outcomes described in the Northwest Forest Plan Final SEIS (which the current SEIS supplements).

389. Comment: It is not clear in the Costs of Management discussion (Draft SEIS, pp. 153-154) which costs apply to what acreages.

Response: The annual pre-disturbance survey costs apply to all acres where habitat-disturbing activities (timber harvest, hazardous fuel management, and other projects) would occur under each alternative. The Wildland and Prescribed Fire Section describes the acres of annual hazardous fuels treatment for each alternative. The timber harvest acres are based on the amount needed to achieve the projected PSQ for each alternative (as described in the Timber Harvest Section). The "other miscellaneous projects" was held constant at 4,040 acres across all alternatives and was based on the analysis from the 2000 Survey and Manage Final SEIS.

Timber Harvest

390. Comment: Twenty-five (25) years seems like an unreasonably long time to complete pre-disturbance surveys, it does not seem to justify completely eliminating the surveys as proposed under Alternative 2.

Response: The 25 years to complete pre-disturbance surveys was an analytical assumption used in calculating the effects of the alternatives on PSQ for timber harvest. It was not used as a purpose and need for the proposed action. A complete description of the purpose and need for the proposed action is found in Chapter 1. Also, surveys are not "completely eliminated" under Alternative 2.

391. Comment: If, for the red tree vole in the Central Range, continuing pre-disturbance surveys is not necessary to meet management objectives, why the projected (25 percent of the total) increase in acreage of protected sites under Alternative 1? Will all the increased acreage from discovered sites come from surveys in the Central Range?

Response: In the Draft SEIS, red tree vole accounted for approximately 25 percent of the total projected acreage of managed sites under Alternative 1. This includes both inside and outside of the central range. The projections assume that red tree voles would continue to be identified at the current rate of discovery for the area outside of the Central Range. Management of sites within the central range is based on reduced find rate of 40 percent of current levels to account for the management of high priority sites and incidental site identification.

Between Draft and Final SEIS the 2003 Annual Species Review was completed. The red tree vole was removed from Survey and Manage in the mesic portion of its range which includes much of the central range.

392. Comment: A clear statement of the baseline PSQ should be provided in the Final SEIS.

Response: The Draft SEIS described the current baseline PSQ for the Northwest Forest Plan as 805 MMBF.

393. Comment: The Draft SEIS fails to recognize that the PSQ must also be reduced due to Survey and Manage Standards and Guidelines.

Response: Since 1999, the Agencies have offered between 148 and 400 MMBF annually or an average of 35 percent of the PSQ. The reduced level of offerings is partly attributable to the reductions in the lands available for harvest related to the management of known sites. Projections of management of known sites and PSQ estimates in the 2000 Survey and Manage Final SEIS and this Final SEIS are to provide relative comparisons of the alternatives; they do not set harvest levels. Sustainable harvest levels are developed under the planning processes in each of the individual National Forest and BLM Districts. Adjustments to the sustainable harvest levels are considered during the individual administrative units plan revisions and are based upon the accumulation of specific unit level effects.

394. Comment: In the Draft SEIS, the PSQ volume reduction does not indicate if it represents saw log, "other wood", or both.

Response: The estimated PSQ for comparison of alternatives does not include the 10 percent "other wood." This will be clarified in the Final SEIS.

395. Comment: It is unclear how the Agencies extrapolated from the existing 26,000 acres in managed sites to 207,000 acres in the future. The Final SEIS must explain the methodology.

Response: A description is provided in the Projection of Acres of Managed Sites discussion in the Timber Harvest section of the Final SEIS. The ISMS database was used to establish the number of sites associated with species under the alternatives as well as the detection rates for these species. Professional judgment along with experience

from the field units were used to determine the average number of acres managed for a site by taxa. Additional factors were then incorporated to account for the lack of full PSQ implementation, the increased emphasis on thinning, avoidance of harvest in older forest conditions or where Survey and Manage species are likely to encumber sales, and abandonment of portions of sale areas. The description of the methodology was expanded to better explain how the acres where derived.

396. Comment: Why are the projections of the 1994 Final SEIS with respect to PSQ and Survey and Manage used as baselines for evaluating consequences?

Response: The PSQ baseline to compare effects is the currently declared PSQ of 805 MMBF. The Northwest Forest Plan PSQ estimate was 1.1 billion board feet.

397. Comment: Do the 1995-1998 figures (Figure 3&4-4) include the Salvage Logging Rider sales? Does Figure 3&4-5 take into account adaptive management, i.e., removing some species and sites from protection?

Response: Figure 3&4-4 includes Salvage Logging Rider sales. Adaptive management of removing species and sites from protection is taken into account in projecting the acres of known sites into the future.

398. Comment: Why is reference made only to the Oregon BLM regeneration harvest timber sales reduction, rather than the Agencies as a whole?

Response: This information was provided as an example of the magnitude in which regeneration harvest has been constrained in recent years. It was not critical in supporting a conclusion for this SEIS.

399. Comment: Where does the Northwest Forest Plan mandate a particular PSQ, or state that late-successional trees must be harvested from the Matrix and Adaptive Management Areas to reach it?

Response: The Northwest Forest Plan predicted a PSQ of 1.1 billion board feet. PSQ levels are established based on a set of forest management assumptions including the intensity of harvest, the acreage available for harvest, and the types of forest available. When these assumptions were modeled for the Northwest Forest Plan, harvest of mature forest was selected first while younger forest in the Matrix matures and becomes available for harvest in future decades. The Relationship of PSQ and Late-Successional Forest section describes the effects of that modeling.

400. Comment: Does the downward adjustment of PSQ by 15 percent to account for the larger acreage in Riparian Reserves consider that not all Riparian Reserve acreage is late-successional forest?

Response: Yes, Riparian Reserves extend across all forest conditions and these revised estimates incorporated the overall reduction in the lands available for harvest. The adjustments to PSQ were made by the individual administrative units using their best available information. Increased estimates in Riparian Reserves were cited as the most common reason PSQ was adjusted. Other issues considered at the local level also contributed to the reductions.

Socioeconomic Effects

401. Comment: This section should be expanded to incorporate a discussion of the study conducted by Forest Community Research on the "Assessment of the Northwest

Economic Adjustment Initiative" and the sustained high unemployment rate for Oregon since the adoption of the Northwest Forest Plan.

Response: The Agencies are aware of the research by the Forest Community as described in the "Assessment of the Northwest Economic Adjustment Initiative." Employment levels are discussed in the environmental consequences to the extent they are affected by the alternatives. There are factors that contribute to the sustained high unemployment rate for the state that are not related to the adoption of the Northwest Forest Plan. Analyzing the unemployment rate for the State of Oregon is outside of the scope of this analysis.

402. Comment: It does not appear that any economic assessment was ever completed on the costs and benefits associated with the Survey and Manage mitigation measure. What about the costs to companies trying to develop projects on federally managed lands?

Response: A cost-benefit analysis was not done. As discussed in the Socioeconomic Effects section of the Draft SEIS "The Northwest Forest Plan Final SEIS (1994 Final SEIS) addressed socioeconomic effects." Specifically, the 1994 Final SEIS (p. 420) addressed the issue of cost -benefit analysis stating "This section does not present an analysis of the costs and benefits associated with the various alternatives in this SEIS. As stated in the regulation [40 CFR 1502.23], 'For purposes of complying with the ACT [NEPA], the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations.'"

Government costs associated with implementing the Survey and Manage Standards and Guidelines and Special Status Species Programs are analyzed in the cost of management section. Costs for private companies to develop projects on public lands are beyond the scope of the analysis for this SEIS.

403. Comment: The social and economic analysis fails to take into account the value of ecosystem services (i.e., the value of clean water, clean, air, abundant wildlife). The analysis also fails to consider the value of recreation (fishing, hunting, rafting, hiking, camping, bird and wildlife watching) and the impacts of harvesting old-growth on recreational activities.

Response: The value of ecosystem services (i.e., the value of clean water, clean, air, abundant wildlife) were not analyzed because the effects of the proposed action on clean water, clean air, and late-successional ecosystems would not be different than those identified in the Northwest Forest Plan Final SEIS. The SEIS analysis contained in the Mineral Resources, Recreation Resources, and Special Forest Products discussions shows that potential conflicts for recreation activities would be less under Alternative 2 compared to Alternatives 1 and 3.

404. Comment: Since PSQ is much lower in recent years than expected, why is there not a greater decrease in employment? Does one type of logging (i.e. thinning) generate more jobs than other types (i.e. clearcutting)?

Response: The analysis of effects is limited to those resulting from the provisions of alternatives in this SEIS. There is a decrease of between 4-16 percent (as related to total harvest level) in lumber and wood product jobs. The analysis is based on all lumber and wood product industry jobs and does not vary with type of harvest.

405. Comment: If the Survey and Manage mitigation measure is curtailed, survey-related jobs will be lost. Survey-related jobs provide important seasonal employment that supports our economy.

Response: The SEIS analysis shows the effects to both timber-related and survey-related jobs for all alternatives.

406. Comment: The SEIS conclusion that Alternative 2 would have fewer conflicts than Alternatives 1 and 3 does not make sense. Surveys for species, whether it is 10 or 100, still need to be conducted for these mineral, recreation, and other projects.

Response: Alternative 2 manages fewer species which reduces conflicts. Pre-disturbance surveys can result in the need to manage known sites. Management of known sites causes conflict in addition to surveys. The analysis has been clarified to show that the impacts are correlated to both pre-disturbance surveys and known site management.

407. Comment: The SEIS fails to address the fact that the northwest economy is no longer dependent upon logging old growth.

Response: An analysis of the degree that the northwest economy is dependent on logging of old growth is beyond the scope of this analysis.

408. Comment: The SEIS is biased by portraying survey-related jobs as paying less and having less security than timber products jobs.

Response: Based on "Wage Rates in Oregon, Lumber and Wood Products and Survey Related Occupations, 2000," derived from the Oregon Employment Department, Oregon Wage Information 2001, the weighted average for survey related jobs is $10.91 and the weighted average of timber related jobs is $15.61 for 2000. There is no statement in the Draft SEIS that survey-related jobs are less secure than timber-related jobs.

409. Comment: The Draft SEIS contains a chart showing the hourly wages for survey-related occupations; a similar chart for wood products occupations should be included for comparison. This would help the public and decision-makers make informed decisions.

Response: The analysis now contains a single table that shows the changes in employment, hourly wage, and changes in annual personal income for both survey and lumber/wood product related jobs.

Other Environmental Consequences

410. Comment: There are some things that cannot be reversed, recreated, or replaced. Mature forests of old and rare trees is one such thing.

Response: The harvest of old-growth forest under the alternatives is described in the Irreversible and Irretrievable Impacts section of the SEIS. The total acreage of late-successional and/or old-growth forest harvested under all alternatives would be less than projected in the Northwest Forest Plan Final SEIS.

Appendices

Appendix 2

411. Comment: What happens to species that do not meet the "impact" threshold for individual Agencies, but do for agency actions combined? For example, saving sites by one agency may not be "significant," but if both Agencies in all states manage sites it would have a significant effect.

Response: Both Agencies utilize the Natural Heritage Programs rankings to help identify concerns about species at the state and global scale. The Heritage rankings look at the global and state level populations and assess the cumulative threats to those populations. Although the Agencies have different criteria for adding species to their Special Status Species Programs, species are added when the State rankings indicate a higher level of concern for the species and the individual agency determines they have the skills, capability, or possibility of affecting the management of the species. When the analysis in this SEIS indicated that a species would have "habitat (including known sites) insufficient to support stable populations in the Northwest Forest Plan area" because they were not included in an agency's Special Status Species Program, mitigation was identified that could eliminate this adverse effect. In addition, the fundamental elements of the Northwest Forest Plan species conservation strategy (reserves, Aquatic Conservation Strategy, and all other standards and guidelines) remain intact.

Appendix 5

412. Comment: The Biological Evaluation in this Draft SEIS (Appendix 5) demonstrates how little consideration is given to Sensitive species. Effects of a proposed action are usually evaluated for Sensitive species as a group with little or no consideration given to individual species.

Response: Analysis conducted through a Biological Evaluation uses the most up to date information, and if species can be grouped, due to similar habitat types or similar impacts, that is done in order to expedite the analysis. In the case of this SEIS, the impacts to these species are similar.

413. Comment: The Biological Evaluation contained in the Draft SEIS presents no information about the status and trends of Survey and Manage species. Numerous species are not even mentioned. The Biological Evaluation is missing many elements required by the Forest Service Manual.

Response: The Biological Evaluation only needs to address those species currently listed by Regions 5 and 6 of the Forest Service as Sensitive. Most of the Survey and Manage species are not currently listed as Sensitive, and no discussion of these species is necessary. However, the effects of all three alternatives to the Survey and Manage species is presented in the environmental consequences section of Chapter 3&4. The Biological Evaluation addresses all of the required components.

414. Comment: Did the Biological Evaluation development team include a botanist? Most of the Survey and Manage species fall within the responsibilities of the botany programs of the responsible agencies.

Response: The Biological Evaluation displayed in the Final SEIS includes approval from a fisheries biologist, a botanist, and a wildlife biologist who were involved in its preparation.

415. Comment: The Biological Evaluation was not reviewed by at least one of the specialists whose names appear on the signature lines of the document. One of the specialists was contacted to inquire about information that was missing. The specialist stated that he had not contributed to the Biological Evaluation and he had not been asked to read the Draft SEIS.

Response: The Biological Evaluation displayed in the Final SEIS includes the needed review and approval by the appropriate resource specialists. At the time of the Draft SEIS, the draft Biological Evaluation had not yet been approved by the individuals listed on the signature line.

416. Comment: The Biological Evaluation states that "the species [California red-legged frog] will be provided a high level of protection through implementation of Aquatic Conservation Strategy objectives…" The Aquatic Conservation Strategy, as amended, will not require consideration of site-specific impacts. The effects to the California red-legged frog have not been adequately disclosed.

Response: The Final SEIS incorporates new information regarding this species, and discloses that under the Recovery Plan for this species, no Core Areas for recovery are within the Northwest Forest Plan area. The Aquatic Conservation Strategy and Riparian Reserves will continue to provide protection for this species, but those standards and guidelines alone would not necessarily be enough to provide for the recovery of the species. For projects that may impact important habitat for this listed species, it is expected that surveys would be conducted to determine presence or absence, and a discussion of potential impacts and consultation with the U.S. Fish and Wildlife Service would be conducted.

417. Comment: The draft Biological Evaluation (BE) states nothing in the Draft SEIS would alter the Aquatic Conservation Strategy assessment process and there would be no impact on sensitive aquatic species as a result of removing or modifying the Survey and Manage Standards and Guidelines. This conclusion is "based substantially on the fact that none of the alternatives would markedly alter the environmental baseline previously analyzed as part of the Northwest Forest Plan and subsequent analyses." This conclusion is flawed. The Draft SEIS understates the potential effect of the proposed action, in tandem with proposed changes to the Aquatic Conservation Strategy, on the environmental baseline.

Response: None of the alternatives would markedly alter the environmental baseline for sensitive aquatic species. While Alternatives 2 and 3 would remove protective measures for some of the aquatic Survey and Manage species that do not qualify as Special Status Species, the number of these sites, acreage of these areas, and broad scale over which they are located across the landscape are such that they provide minimal additions when assessing the baseline condition for sensitive aquatic species. The Aquatic Conservation Strategy Final SEIS underscores the goal of assessing Aquatic Conservation Strategy Objectives at the fifth-field watershed scale. For sensitive aquatic species, this should provide a strong foundation for their conservation. In addition, for each sensitive aquatic species listed in the Agencies' Special Status Species Programs, an analysis of each project that may affect the species or its habitat must be conducted, and the project must be designed to ensure that the species does not trend towards federal listing.

418. Comment: The Biological Evaluation should not assume that the baseline of species conservation established in the past (1994) is still valid. The Biological Evaluation asserts the proposed alternatives would not exceed the scope of impacts consulted on in 1994. Since then, more than 20 species of salmon have been listed under the Endangered Species Act, which indicates the level of change that can occur within a decade.

Response: Because the Northwest Forest Plan provides the federal lands contribution towards recovery of the spotted owl, and plays a significant role for other threatened and endangered species, the 1994 baseline continues to be used. At this time, there is no new information that indicates the 1994 baseline is no longer valid. If new information were to indicate that the baseline established in 1994 is incorrect, or that threats and concerns to the threatened and endangered species the Northwest Forest Plan encompasses are greater than originally thought, a re-evaluation of the baseline would be warranted.

Miscellaneous

Special Status Species Programs

419. Comment: The BLM did not consider the Ninth Circuit Court's observation that "the O&C Act makes it clear that the primary use of the O&C Lands is for sustained yield timber production, and that wildlife protection on O&C Lands is not a goal authorized by the O&C Act" when it wrote or revised the 6840 policy.

Response: The BLM 6840 policy is applied to species, not to lands. If the BLM can, within its existing authorities for managing O&C Lands, manage those lands in a manner that avoids placing these species in danger of being listed for protection under the Endangered Species Act, it is their policy to do so. The authority for this policy is 16 U.S.C. § 1531(c)(1), where Congress declared its policy that Federal agencies utilize their authorities in furtherance of the purposes of the Endangered Species Act. The BLM has interpreted this to mean that it should conserve resources in a manner which would not lead species to becoming threatened with extinction.

420. Comment: As data is gathered on listed species, it should be added to the database (and easily accessible for research to add data) and the rankings should be updated periodically.

Response: The data that the Agencies gather is available to researchers and the Natural Heritage Programs.

421. Comment: The evaluation of Survey and Manage species for inclusion in the Agencies' Special Status Species Programs was hurried and not coordinated.

Response: The Agencies began reviewing Survey and Manage species for inclusion in the Special Status Species Programs in November 2002 and finished in March 2003 in anticipation of the Draft SEIS. Numerous meetings and conference calls were held amongst the Agencies and States or Regions to understand the rationale that each used to include or not include a species. The Survey and Manage taxa experts were also asked to review the placements and provide feedback to the Special Status Species Programs managers. In between Draft and Final SEIS, the Oregon Natural Heritage Information Center issued updated rankings and the Agencies again evaluated Survey and Manage species for inclusion in their Special Status Species Programs. The evaluation and re-evaluation were methodical and coordinated.

422. Comment: The Agencies will not benefit from the credibility of the Natural Heritage Programs, unless the linkage between the Natural Heritage Rankings and the Special Status Species Programs are made more formal. The Agencies can ignore Heritage Program listings, which diminishes the scientific basis and defensibility of the Special Status Species Programs.

Response: Natural Heritage Program rankings are one factor the Agencies consider when evaluating species for inclusion in their Special Status Species Programs. A factor such as the Agencies ability to significantly affect the conservation status of species may override Natural Heritage Program ranking because no matter what action the Agency does it will not affect the conservation of the species.

423. Comment: The OR/WA BLM relies entirely on the ONHP list 1 ranking to determine which species will be listed and managed as Bureau Sensitive. The ONHP List 1 ranking includes only those "taxa that are threatened with extinction throughout their range." By default, every Bureau Sensitive species is worthy of consideration for listing under the Endangered Species Act. To our knowledge, BLM has never proposed a species for listing under the Endangered Species Act. Thus, BLM is applying a double standard. BLM accepts ONHP's ranking system to exclude species from the Special Status Species Program and list species as Assessment or Tracking species, but apparently does not agree that ONHP List 1 species should be considered for listing as threatened or endangered or be managed as if they were listed as such.

Response: BLM Oregon adds species ranked as List 1 to its Special Status Species Program as Sensitive. The List 1 status denotes that the species is threatened with extinction/extirpation throughout their range. For the large majority of these species, the level of "threat" associated with the risk of extirpation is considerably much lower than the threats associated with federally listed threatened and endangered species, even though the same terminology is used in both instances. Most of the List 1 species are not strong candidates for listing under the Endangered Species Act, but are of high concern. By listing these species as Sensitive, BLM Oregon reviews proposed actions in the context of conservation needs for these species, and conducts surveys and provides site management as needed to prevent these species from becoming federally listed.

424. Comment: Are undescribed species eligible for inclusion in the Special Status Species Programs?

Response: There is no policy that precludes undescribed species from being included in the Special Status Species Programs.

425. Comment: Final inclusion by the Forest Service is up to the Regional Forester following a review that includes implementation feasibility. The current Survey and Manage program already considered feasibility in the 2001 Record of Decision.

Response: The terminology being used here is different for the two different programs. Under Survey and Manage, feasibility is only discussed in terms of the practicality to conduct pre-disturbance surveys. A species is not removed from Survey and Manage because it is infeasible to conduct surveys. The 2001 Record of Decision makes no reference to management feasibility.

For Region 5 Forest Service, species meeting Global and State rankings for inclusion in Sensitive Species Program are further reviewed to determine if the Agency can effectively manage the species. This review includes an assessment of survey practicality and whether enough is known about the species to provide for proper management.

426. Comment: For the BLM Sensitive category, species must be candidates for Endangered Species Act listing or may be included if other factors apply. The Survey and Manage Standards and Guidelines catch species at an earlier point in decline and must be applied.

Response: Candidate species are taxa for which the U.S. Fish and Wildlife Service has sufficient information on their status and threats to support proposing the species for listing as endangered or threatened under the Endangered Species Act, but for which

issuance of a proposed rule is currently precluded by higher priority listing actions. BLM policy is broader than the Endangered Species Act in that it addresses special status species that may be affected by BLM activities, as well as federally listed, proposed, and candidate species.

427. Comment: Sensitive category lists are developed on a national scale, and do not protect locally rare species which are abundant elsewhere. The Survey and Manage categories are based on local abundance, even for portions of a range if abundance varies.

Response: Both Forest Service and BLM have national policies for Special Status Species Programs. However, Regional Foresters and State Directors are responsible of designating sensitive species for their local area based on available information about the species in local areas.

428. Comment: The Forest Service Sensitive Species Program does not apply to non-vascular plants. How will the Forest Service prevent a trend toward listing for non-vascular plants?

Response: There is no policy that prevents the Forest Service from including non-vascular plants in their Sensitive Species Program.

429. Comment: What criteria were used to develop Table 2-8 in the Draft SEIS? It is unclear what criteria are used to include or exclude species from the Special Status Species Programs.

Response: The criteria for including species in the Agencies' Special Status Species Programs are disclosed in the policy excerpts contained in Appendix 2.

430. Comment: How is it possible to allow site losses under the Special Status Species Programs and claim the Forest Service viability requirements are met when the Forest Service has never determined what a viable population is for a given species?

Response: The Forest Service standard is "In order to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area." The determination for viability required in Forest Service regulations are done at the land and resource management plan level. The Secretary of Agriculture will make those determinations when signing the Record of Decision for this SEIS. Project-level effects for the Forest Service are determined by completing a biological evaluation. The biological evaluation analysis must (1) identify any direct, indirect or cumulative effects resulting from the project in relation to existing conditions and other related projects; (2) identify whether the project would have no effect, beneficial effect, or adverse effect on the species; and, (3) contain recommendations for removing, avoiding, or compensating for any adverse effects. If any adverse effects are expected, the analysis must identify whether they would be significant enough to cause a trend to federal listing or a loss of viability.

431. Comment: Why does this SEIS only assume species are added to the Special Status Species Programs? Without an explicit commitment, there is no way to know which, if any, species will be managed as sensitive under the proposed action.

Response: Underlying the Northwest Forest Plan is the BLM's Special Status Species program and the Forest Service' Sensitive Species program. These programs are referred to collectively in this SEIS as the Agencies' Special Status Species Programs. These programs seek to further the objectives of the Endangered Species Act by preventing future listings of species as threatened or endangered, to help maintain the diversity and viability of species populations on Forest Service managed lands, and to meet other

habitat and species conservation objectives. Species are included in these programs by the Regional Foresters and State Directors using national and regional policies. Because the action alternatives in this SEIS only propose to remove the Survey and Manage Standards and Guidelines and the Regional Foresters and State Directors have not exercised their authority to add species to their Special Status Species lists, this SEIS only assumes that species will be added to the Special Status Species Programs. Language has been added to Chapter 2 to clarify why the word "assume" is used.

432. Comment: The Special Status Species Programs are not adequate because they do not include a clear, well-described, and documented process for adding or removing species.

Response: The criteria for including species in the Special Status Species Programs are disclosed in the policy excerpts contained in Appendix 2. The criteria for using information from the Natural Heritage Programs are clear and well described.

433. Comment: The Special Status Species Programs are inadequate because they do not include a specific, standardized process for species monitoring.

Response: The monitoring required under the Northwest Forest Plan will continue under all alternatives in this SEIS. One of the types of monitoring required is effectiveness monitoring. The primary question that effectiveness monitoring is designed to answer is, "To what extent are the goals and objectives of the Forest Plan being achieved?" This includes species associated with late-successional forest ecosystems. In addition, all of the Agencies' Special Status Species Programs have provisions for monitoring.

434. Comment: The Special Status Species Programs are inadequate because they have limited learning objectives. Increased knowledge is essential for effective management of rare and little known taxa.

Response: All of the Agencies' Special Status Species Programs have provision for conducting inventories. In addition, the Natural Heritage Programs routinely collect and use new information in their global and state rankings.

435. Comment: The Special Status Species Programs do not have an effective adaptive management process. It is essential to learn from past efforts and improve the effectiveness of future management actions.

Response: The adaptive management requirements of the Northwest Forest Plan apply to all of the alternatives in this SEIS.

436. Comment: There are at least four different Special Status Species Programs within the range of the northern spotted owl. Some species may be on one list but not others. There is no scientific or policy basis for this inconsistency.

Response: The Forest Service and BLM were created under different laws and have differing statutory requirements that are reflected in different policies for the Special Status Species Programs. These policies contain different criteria for inclusion which resulted in species being on some lists and not others.

437. Comment: The absence of ISMS, or other similar databases, under the Special Status Species Programs could impede conservation planning and monitoring.

Response: The Agencies have ongoing efforts to capture and keep data in an electronic format that can be shared. The costs for such a data repository for species information have been included in the cost for Alternative 2.

438. Comment: In 2001, the Oregon slender salamander was considered for designation as a candidate for federal listing and later proposed for inclusion in the Survey and Manage program (See 2002 Annual Species Review for amphibians). This species does not receive any pre-project surveys or any specific site management, even though it is included in the Special Status Species Programs. Land management actions are adversely affecting the species. The U.S. Fish and Wildlife Service decision to include this species as a candidate for listing under the Endangered Species Act has been deferred until the Agencies determine whether to include this species in the Survey and Manage program. Potential inclusion in the Survey and Manage program has precluded listing to this point. Given previous management in the Special Status Species Programs, it is likely this species may become a candidate for listing if either action alternatives is selected. This scenario is likely to play out for other Survey and Manage species as well. This issue has not been adequately addressed in the Draft SEIS.

Response: The Oregon Slender salamander did not meet the basic criteria for inclusion in the Survey and Manage Program, and was not proposed for addition. The species is being managed under the Agencies' Special Status Species Programs. Under those programs, the Agencies have discretion on when surveys are needed and when sites are managed. Each project is evaluated to determine the level of potential effect to the species, whether to conduct surveys or provide site management, and whether specific mitigation is needed in order to prevent a trend towards listing or a loss of viability. Currently surveys and site management do occur for this species, to varying levels.

Natural Heritage Programs

439. Comment: The Oregon Natural Heritage Program (ONHP) rankings may not reflect species status on the most appropriate or useful scale for conservation purposes. Survey and Manage species with few sites in the Northwest Forest Plan area, but with many sites outside the Northwest Forest Plan area, may be considered secure by ONHP. Thus, they would not be included in the Special Status Species Programs (Draft SEIS, p. 46). This could lead to loss of sites at the edge of the species range and isolation of populations from the main range of the species.

Response: The Northwest Forest Plan area encompasses the range of the northern spotted owl, but does not necessarily encompass the range of many of the Survey and Manage species. A species may be more abundant outside the Northwest Forest Plan area. ONHP rankings may indicate that at the State level the species is secure. Agencies would likely not recommend these species for inclusion in their Special Status Species Programs. However, the analysis in the environmental consequences section is limited to the Northwest Forest Plan area. Species abundance or rarity, and threats outside the Northwest Forest Plan area were not used in species' evaluations. The analysis in this SEIS does disclose if a species has "habitat (including known sites) insufficient to support stable populations" in a portion of its Northwest Forest Plan area range. In such a case, mitigation has been identified that could eliminate the adverse effects.

440. Comment: There are taxonomic groups for which heritage programs have very little information. It will require considerable effort to gather such information, information that is already available under the Survey and Manage Program.

Response: All information relevant to completing a ranking was provided to the heritage programs, including information gathered under the Survey and Manage Program.

441. Comment: The Draft SEIS relies on Natural Heritage Program rankings for many Survey and Manage species. This information was provided in only 2 weeks by a single contractor; this is not enough time to read and digest information on lichens, fungi, and other little-known species and then assign rankings. The Natural Heritage Program

rankings in the Draft SEIS need further review and evaluation before they are solidified in the Final SEIS.

Response: There has been considerable review of the rankings in between Draft and Final SEIS. The global and/or state ranks for some species have changed. In addition, each Agency reviewed the ranking information again to determine if additional species met the criteria for inclusion in their Special Status Species Programs.

Law, Regulation, or Policy

442. Comment: What management is proposed for species assumed to be included in the Special Status Species Programs, between the signing of the Record of Decision and the modification of the Agencies' Special Status Species Program lists?

Response: Species would continue to be managed under the Survey and Manage Standards and Guidelines until the Agencies have updated their Special Status Species Program lists.

443. Comment: All letters should be considered whether generated by individuals or organizations, including duplicates and forms.

Response: All letters were considered.

444. Comment: The Draft SEIS makes clear that the decision whether to add Survey and Manage species to the Special Status Species Programs is "separate from this proposal." This is because the Agencies want to make sure that they do not have to do NEPA for future changes to the Special Status Species Programs. This is risky because the ONRC v. Forsgren case and the Kern v. BLM case clearly point the need for new analyses and updated land and resource management plans when significant species issues arise.

Response: The two referenced court decisions were preceded by another case which is more closely analogous to the present situation. This is the Northcoast Environmental Center v. Glickman case in which the Ninth Circuit affirmed the dismissal of an attempted NEPA challenge to an agency "program" for addressing the root disease affecting Port-Orford-cedar on the grounds that the Agencies had not prepared an EIS. The Ninth Circuit clarified that the time for the agency to prepare a NEPA document was at the time an action was proposed that would actually affect the environment. Simply preparing a strategy for how the agency would address the issue in future plans was not "ripe" for judicial review. Similarly here, placing species on or off a list of species on which the BLM may have special concerns, has no environmental effect which itself must be analyzed first in a NEPA document. Only when the agency proposes some action or group of actions which would actually affect the physical environment of these species would there be a need for the agency to prepare a NEPA document.

445. Comment: The Draft SEIS never explains how the Agencies can make a decision in which scores of species have "habitat (including known sites) insufficient to support stable populations in the Northwest Forest Plan area" and still comply with the Endangered Species Act, the Multiple-Use Sustained-Yield Act, and internal directives to conserve species and prevent future listings.

Response: None of the species are listed for protection under the Endangered Species Act. Under all alternatives the policies and programs designed at a national level for reducing the likelihood that species would need protection under the Endangered Species Act remain in place. In addition, the fundamental elements of the Northwest Forest Plan species conservation strategy (reserves, Aquatic Conservation Strategy, and other standards and guidelines) remain intact.

446. Comment: In 1992, the BLM Oregon State Office published "Fish and Wildlife 2000: A Vision For The Future." Among the objectives stated in the document is: "Protect the full range of genetic diversity for plants and animals on public land ecosystems." It is inappropriate to amend the Survey and Manage mitigation measure without an explanation of how this SEIS complies with this policy.

Response: BLM's "Fish and Wildlife 2000: A Vision for the Future" is not policy but a strategy to guide the programs into the next century. The Special Status Species Programs and the extensive reserves provided under the Northwest Forest Plan should protect the range of genetic diversity represented by the Survey and Manage species.

447. Comment: While the National Forest Management Act and the Multiple-Use Sustained-Yield Act provide for wildlife management on National Forest System lands, these acts do not override the Organic Act provisions that these lands be managed for timber production and sustaining water flows. The Agencies cannot take actions that defeat the legislative intent of the Forest Service' Organic Act.

Response: The National Forests under the Northwest Forest Plan are being managed in a manner which provides for a permanent supply of timber and protects the supply of water from these forests.

448. Comment: The Survey and Manage program was never needed to protect the viability of species or to ensure that agency actions did not cause a species to warrant listing under the Endangered Species Act. The process used to include species in the Survey and Manage mitigation measure was beyond what was needed or required under the laws and regulations (ESA, NFMA, FLPMA, and O&C Act) that govern the Agencies.

Response: Former President Clinton chartered the Forest Ecosystem Management Assessment Team (FEMAT) to write a scientifically based plan for "protecting the long-term health of our forests, our wildlife, and our waterways ... in balance with ... a predictable and sustainable level of timber sales and non-timber resources ..." within the range of the northern spotted owl. FEMAT created nine options to meet the dual needs. Option 9 became the basis for the Northwest Forest Plan. In this option, approximately 80 percent of the federally managed lands in the Northwest Forest Plan area were allocated to reserves. After analyzing Option 9 FEMAT reported, *"[t]he lack of information on the species and their responses to habitat manipulations coupled with the large proportion that are inherently rare and/or locally endemic and likely sensitive to habitat disturbance gave the expert panels and our Team little confidence to predict many species/groups would find habitat well distributed within the range of the northern spotted owl for the next 100 years."* In the Northwest Forest Plan Final SEIS Appendix J-2 another group of scientists reported similar findings and recommended mitigation measures to increase the likelihood of a stable, well-distributed population of the species across federally managed lands or to decrease the likelihood of their extirpation on federally managed lands. At that time, the Secretaries of Agriculture and Interior decided to apply the Survey and Manage mitigation measure to provide additional benefits to species, particularly since the estimated cost of doing so was low.

Existing Survey and Manage Requirements

449. Comment: All sites are high priority when dealing with rare species.

Response: The categories of manage all known sites or manage high-priority sites were established in the 2001 Survey and Manage Record of Decision. This SEIS does not propose to revisit that decision.

450. Comment: Some species lack survey protocols in spite of the Northwest Forest Plan Record of Decision requirement that surveys for all species begin by 1996.

Response: All of the requirements for survey protocol development for those Survey and Manage species requiring pre-disturbance surveys have been completed.

451. Comment: The Agencies are inappropriately delaying strategic surveys well beyond the timelines contemplated in the Northwest Forest Plan. The Draft SEIS lacks any accountability mechanism to ensure that strategic surveys are completed. All old-growth logging must stop until strategic surveys are completed and high-priority sites identified and protected.

Response: The 2001 Survey and Manage Record of Decision established timeframes for strategic surveys for Category B species. Strategic surveys for Category B fungi are to be completed by Fiscal Year 2011 and all other Category B species by Fiscal Year 2006. If the strategic surveys for Category B are not completed, the 2001 Survey and Manage Record of Decision specifies that the Agencies will stop harvesting old-growth or must conduct equivalent-effort surveys prior to habitat-disturbing activities to avoid inadvertent loss of sites. The Agencies are working diligently toward completing strategic surveys as required by the 2001 Record of Decision. Information about what has been completed and what is being planned can be found at http://www.or.blm.gov/surveyandmanage/.

452. Comment: The Agencies have changed the purpose of the Survey and Manage Program without explanation by doing away with the "protection buffer" mitigation measure.

Response: The decision to include "protection buffer" species in the Survey and Manage mitigation measure was made in the 2001 Record of Decision. This SEIS does not propose to revisit that decision.

453. Comment: The Draft SEIS proposes to do away with the requirement to survey caves for bats during three seasons of the year. Bats had some of the lowest viability rating of any mammal species during the Northwest Forest Plan Final SEIS analysis process.

Response: The Draft SEIS does not propose to modify any requirements for bats. Standards and guidelines for bats are found in Section XI of Attachment 1 to the 2001 Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and Related Mitigation Measures Standards and Guidelines. The Draft SEIS (p. 237) specifically states that Sections IX, X, and XI are not included because those sections are not proposed for removal or modification by any of the alternatives in this SEIS.

O&C Act

454. Comment: The Agencies failed to consider the O&C Act of 1937 and the National Forest Management Act in making the eligibility determinations for the various species and moving them into Special Status Species' Programs.

Response: The Agencies are not "moving" existing Survey and Manage species into the Special Status Species Programs by this decision. The species would be included in these programs or not because of the criteria used for designating whether a species has "special status." The Agencies have identified these programs as being in effect for eligible species as part of the consequences and effects of removing the Survey and Manage Standards and Guidelines. The Agencies have simply recognized that some of these species will be accorded the benefits of those programs because they meet the criteria for inclusion. The Special Status Species Programs are intended to work in conjunction with, and in accord with, existing authorities of the Agencies in managing public lands. Thus, by definition, simply determining eligibility of species for these special programs could not be in conflict with those authorities. Whether these existing

statutory authorities would allow certain protective measures for these species is a different question from their eligibility for the programs. One of the major activities of these programs is simply tracking and assessing the status of these species. It is difficult to understand how this activity would be in conflict with the existing statutory authorities for managing public lands.

National Forest Management Act

455. Comment: Irrespective of BLM's lack of viability requirements, if species viability is not maintained, species become eligible for listing under the Endangered Species Act. Are the Agencies advocating allowing species to decline to the point listings become warranted?

Response: The Agencies' Special Status Species policies are designed to prevent agency management programs from creating the need to list any species.

456. Comment: The Northwest Forest Plan is the bare minimum legal protection for species associated with old-growth forests and was only acceptable to Judge Dwyer after the mitigation measures were added.

Response: Judge Dwyer did not review the Northwest Forest Plan before mitigation measures were added. This was not an issue in the case presented to him. He was never asked whether the Northwest Forest Plan would be acceptable without mitigation.

457. Comment: The Forest Service is attempting to treat sensitive species similar to management indicator species by monitoring only habitat rather than maintaining viable populations of these species as required by the National Forest Management Act. The Ninth Circuit Court of Appeals has clarified the Forest Service' obligation under NFMA to maintain well-distributed viable population of species. (Neighbors of Cuddy Mountain v. Alexander, 303 F.3d 1059, 1069-1070 (9th Cir. 2002); Idaho Sporting Congress v. Rittenhouse, 305 F.3d 957, 971-973 (9th Cir. 2002) et al.). These cases, including the Alexander and Rittenhouse decisions, specifically disavow the "proxy-on-proxy" habitat monitoring approach that the Forest Service has relied on since the holding in Inland Empire Public Lands Council v. U.S. Forest Service, 88 F.3d 754 (9th Cir. 1996). In Inland Empire, the court upheld the Forest Service' reading of the NFMA regulations to allow the agency to monitor habitat for management indicator species rather than the populations of the species themselves. The holdings in Alexander and Rittenhouse indicate the Forest Service must actually survey for management indicator species and track their viability accordingly. Given these recent developments in the Ninth Circuit pertaining to the illegality of the "proxy-on-proxy" approach, the Forest Service must be cautious in its use of the Sensitive Species Program to maintain viability.

Response: The Alexander decision cited in this comment does not stand at all for the proposition that such an approach is "illegal." The Ninth Circuit in that opinion first dealt with the issue of whether the case should have been dismissed as moot because the logging had been completed. The Court said that relief for a violation of the NFMA duty to provide habitat for viable populations of species was not limited to simply putting a stop to the logging, but could also include creating mitigation to the damage caused by the logging. The second issue was whether the allegations that the Forest Service had failed to monitor the populations of the management indicator species was ripe for review. The only issue here was whether such a challenge would survive a motion to dismiss on the basis that the allegation was prematurely raised. The Court said that in considering such motions for dismissal, the court must construe all allegations in the light most favorable to the plaintiff and that sufficient connection to an actual action had been placed between the allegedly insufficient monitoring and a decision which was reviewable by the Court that the issue was ripe for court review and should not have

been dismissed. The species of concern in that case was the pileated woodpecker, and the allegation was that the particular timber sales at issue did not follow the Forest Plan requirements for its protection. Ruling that an issue was "ripe" for decision is a far cry from a ruling that the plaintiffs were right on the issue. There is nothing in this opinion specifically disavowing the Ninth Circuit's previous ruling in the Inland Empire Public Lands Council case regarding the use of habitat monitoring for determining viability of management indicator species.

The Ninth Circuit in the Rittenhouse case also stops far short of "specifically disavowing" the Inland Empire Public Lands Council case. In fact, the Ninth Circuit went to some care to point out why such a proxy-by-proxy approach was accepted in that case. The situation before the Court in Rittenhouse included evidence from the Forest Service' own experts that the habitat it was monitoring to determine whether the forest was meeting the viability standard for the pileated woodpeckers was inaccurately portrayed in the data. The Court held that relying on habitat by proxy in the face of such evidence would be arbitrary and capricious. While the Court expressly encouraged the monitoring of the management indicator populations themselves, it explicitly stopped short of saying such monitoring was required. The problem the Forest Service had in Rittenhouse was that it tried to use data it had on acres of land dedicated to old-growth habitat as a surrogate for pileated woodpecker habitat even though its own scientists said that it would be improper to equate the two, since much of the dedicated acres did not yet have the stand characteristics needed by the woodpeckers. Rather than disavowing the Ninth Circuit decision in Inland Empire Public Lands Council, the Court took pains to say it was not disavowing that approach, but merely finding that in the facts of the present case the habitat monitoring system would not work.

The Agencies are well aware of these cases, and note the cautions you have noted. The Agencies are still of the opinion that they can, with reasonable accuracy, maintain a database on the habitat characteristics that support these old-growth dependent species in order to monitor whether habitat for viable populations of these species is provided. This approach was accepted by the Ninth Circuit in the Inland Empire Public Lands Council case, and contrary to the statements made in this comment, the Ninth Circuit has not subsequently disavowed that ruling.

458. Comment: The 1994 Final SEIS disclosed that large numbers of species would decline under the coarse-scale management scheme embodied in Alternative 9. The analysis made clear that additional mitigation was necessary to ensure diversity and viability as required by the National Forest Management Act. Removing the Survey and Manage mitigation measure would likely violate the National Forest Management Act.

Response: The analysis in the 1994 Final SEIS did not determine the Survey and Manage mitigation measure was necessary to ensure diversity and viability as required under NFMA. The Record of Decision for the Northwest Forest Plan stated that by its own terms, the viability regulation applies only to vertebrates (USDA, USDI 1994b, p. 44). The Record of Decision further stated that it satisfied the requirements of the viability regulation only for vertebrate species (USDA, USDI 1994b, p. 45).

In fact, the analysis in the 1994 Final SEIS showed that for many species, even with the Survey and Manage mitigation measure, there would still be a risk of extirpation (USDA, USDI 1994a, p. J2-20, 23).

National Environmental Policy Act

459. Comment: NEPA is explicitly designed to ensure decision-makers are fully informed about environmental consequences before making decisions. NEPA requires EISs to fairly and honestly evaluate all alternatives against a common baseline. The Draft SEIS has failed to do this.

Response: Each alternative is analyzed for effect to species, employment, personal income, timber harvest, acres available for hazardous fuels treatment as well as the costs of program management and hazardous fuel treatments.

460. Comment: Since this is a supplemental EIS, the purpose and need cannot be different than the original EIS.

Response: The need in this SEIS is the same as the 1994 Northwest Forest Plan SEIS.

Editorial

461. Comment: Page 242 of the Draft SEIS refers to Table 1-2. I could not find Table 1-2. Table 1-1 is also missing.

Response: The two tables mentioned were intentionally omitted as noted on pages 237 and 239 in the Draft SEIS. The Final SEIS has been updated to better identify the tables that were omitted and directs the reader to where that information can be found. For example, Table 1-1 displays category assignments for Survey and Manage Species. The current category assignment can be found in the description of Alternative 1, the No-Action Alternative, in Chapter 2.

462. Comment: The text is erroneous in giving the arthropod functional groups protection under Alternative 2 (see Table 2-8 in the Draft SEIS).

Response: The text on page 16 has been modified. Table 2-8 from the Draft SEIS has been updated, revised, and split into alternative specific tables in the Final SEIS. As noted, the description of Alternative 2 in the Final SEIS does not indicate that the four arthropod functional groups are assumed to be added to the Special Status Species Programs. The arthropod functional groups were not included because the Special Status Species programs include individual species not functional groups of species.

463. Comment: The description of *Coptis asplenifolia* should read "southern extent," not extant.

Response: This typographical error has been corrected in the Final SEIS.

464. Comment: Table 2-4 should distinguish between BLM Sensitive and Assessment since the protection level is markedly different.

Response: Tables 2-3 and 2-4 in the Draft SEIS have been updated. These tables were designed to indicate the number of species eligible to be included in the Agencies' Special Status Species Programs. The Final SEIS contains "new" alternative specific tables for Alternatives 2 and 3 that distinguish between BLM Sensitive and Assessment.

465. Comment: The Draft SEIS is unreadable. The 300-some pages could be condensed in the executive summary so that the public could readily understand what is discussed.

Response: Efforts have been made to make the Final SEIS readable. The Summary has also been updated.

466. Comment: The Final SEIS should spell out acronyms that are not used frequently.

Response: Efforts have been made to spell out acronyms that are used infrequently. The Final SEIS also contains a list of acronyms and abbreviations.

467. Comment: The glossary should include definitions of "voucher" and "thallophytic" (lichens).

Response: "Voucher" has been added to the glossary. The definition of lichens was modified and removed the term "thallophytic".

468. Comment: The numbers from Table 2-5 (Draft SEIS, p. 37) should be included in the table on page 285.

Response: As suggested, the numbers are now included in the table contained in Appendix 4.

469. Comment: The text must clarify how many species require pre-disturbance surveys. Page 12 shows 69; Table 2-2 and p. 22 show 64.

Response: The text has been clarified. There are currently 66 Survey and Manage species that require pre-disturbance surveys.

470. Comment: Table 2-6 should read "58" species for pre-disturbance surveys under Alternative 3.

Response: That information has been corrected.

471. Comment: Table 2-8 should describe Categories A - F at least once and preferably at the bottom of each page. The taxa group should be listed at the top of each page.

Response: Table 2-8 from the Draft SEIS has been updated, revised, and split into alternative specific tables in the Final SEIS. A footnote briefly explaining the Survey and Manage categories has been added to the alternative specific tables for Alternatives 1 and 3. The alternative specific tables include the taxa group at the top of each page.

472. Comment: Please explain what "reasonable assurance" and "persistence" mean. The Draft SEIS (p. 19) identifies "provide a reasonable assurance of persistence" as a major program goal.

Response: This terminology was used in the 2000 Survey and Manage Final SEIS and is used in describing the standards for inclusion in the current Survey and Manage Standards and Guidelines. While "reasonable assurance" is not defined in the 2000 Final SEIS, the word reasonable means not extreme or excessive, moderate or fair. Assurance means the state of being sure or certain. The definition of persistence is found in the glossary.

473. Comment: The myriad aspects of distribution that need consideration are not clearly identified in the Draft SEIS. The 2000 Survey and Manage SEIS (Appendix J) included a more detailed explanation of persistence or distribution. That explanation may appear complex, but it is only more comprehensive. The Final SEIS should clearly explain persistence.

Response: The same aspects of distribution were considered for this SEIS. Since this SEIS supplements the 2000 Survey and Manage SEIS, this information was not repeated.

474. Comment: There are no Special Status Species categories listed for *Dendriscocaulon intricatulum* in Washington and Oregon on Table 2-8 in the Draft SEIS, but there are in California? Was the line for Washington and Oregon intentionally left blank?

Response: This species is recommended for addition to the Special Status Species Programs for the BLM in California and for the Forest Service in Washington.

475. Comment: The column with the outcome "habitat insufficient to support stable populations under any alternative" on Table 3&4-10 is not clear. The Final SEIS should explain how this was determined in a reference or footnote to the table.

Response: The introduction to Chapter 3&4 has been revised to include a more comprehensive discussion of the outcomes.

Miscellaneous

476. Comment: The Draft SEIS did not address earlier comments (December 2000) related to proposed additions to the Survey and Manage species list. The scalloped moonwort (*Botrychium crenulatum*) should be added back onto the Survey and Manage list.

Response: The SEIS proposes to remove or modify the Survey and Manage Standards and Guidelines, and does not make any proposal to add or remove individual species. Additions to the Survey and Manage list can be proposed through the Annual Species Review process outlined in the 2001 Record of Decision. Proposals to add or remove species through that process are evaluated to determine if the species meets the basic criteria for inclusion as Survey and Manage.

477. Comment: What are "Congressionally Reserved Areas?"

Response: Congressional Reserved Areas are defined in the glossary.

478. Comment: The Agencies must seriously consider the comments and recommendations from their own experts on the Survey and Manage Program whether those comments were submitted through official channels or as private citizens.

Response: All comments, including those from internal agency personnel, were considered.

479. Comment: Allowing 1,000-acre clearcuts is only going to start huge confrontations with environmental organizations.

Response: None of the alternatives in this SEIS would allow 1,000-acre clearcuts.

480. Comment: Why do I have to send my comments to the Argonne National Lab? Is the current administration trying to exclude the public?

Response: The current administration is not trying to exclude the public. Comments were sent to Argonne National Laboratory (Argonne) because the Agencies contracted with them to help analyze public comments.

481. Comment: It is disturbing that there is not an available person to whom I can address my comments.

Response: The Draft SEIS included a letter announcing its release. That letter included information on where to send comments and notified readers that they could contact Jerry Hubbard, SEIS Team Logistics Coordinator, via hardcopy mail, telephone, or facsimile.

482. Comment: It is unclear whether any of the alternatives are as protective as the Protection Buffer direction on pp. 266-267, and this should be clarified. What does the protection of known sites consist of for each of these species now?

Response: Alternative 1, the No-Action Alternative, is the current Survey and Manage Standards and Guidelines. The information contained on pages 266-267 of the Draft SEIS are part of Alternative 1. The decision to include the "protection buffer species" into the Survey and Manage mitigation measure was done in the 2001 Record of Decision. Revisiting that decision is outside the scope of this SEIS. The management recommendation for the current Survey and Manage species can be found at http://www.or.blm.gov/surveyandmanage/.

Appendix 7

Changes between Draft and Final

- This is a new appendix.
- This appendix contains copies of comment letters from Federal, State, and Local government agencies received during the 90-day public comment period.

Appendix 7

Comment Letters from Fedeal, State, and Local Government Agencies

This appendix contains comment letters from Federal, State, and local government agencies. No comment letters were received from elected officials. A number of Provincial Advisory Committees (PACs) were established by the Northwest Forest Plan. One of the PACs, the California Coast PAC, provided comments and their letter is also included in this appendix.

The Environmental Protection Agency (EPA) has a legal obligation under Section 309 of the Clean Air Act to review and comment on environmental impact statements. Their letter reviewing the Draft SEIS appears at the beginning of this appendix.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: ECO-088

AUG - 6 2003

98-071-AFS

Richard C. Prather. Team Leader
Survey and Manage, EAD/900
Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL. 90439

Dear Mr. Prather:

We have reviewed the draft Supplemental Environmental Impact Statement (EIS) entitled **To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines for the Northwest Forest Plan; National Forests and Bureau of Land Management Districts in Washington, Oregon and California Within the Range of the Spotted Owl.** We have conducted this review in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The draft EIS examines three alternatives. Alternative 1, the no-action alternative continues implementation of all current Survey and Manage mitigation measures for several hundred species closely associated with old growth forests in the Northwest Forest Plan (NFP) area. The requirements are designed to help the NFP provide for reasonable assurance of persistence of late-successional and old-growth forest associated species. Alternative 2, the proposed action, would amend U.S. Forest Service (USFS) and Bureau of Land Management (BLM) guidelines in the NFP area to remove the Survey and Manage mitigation requirements from the NFP. Some species included in the Survey and Manage requirements could still receive treatment under lead agencys' special status programs. Alternative 3 would amend USFS and BLM guidelines in the NFP area to modify Survey and Manage measures by 1) removing thirty-two species in the "uncommon" species category from survey and manage requirements; 2) eliminating pre-disturbance survey requirements in non-old growth areas/ late successional areas; 3) changing review requirements for excepting known sites from management; and 4) potential changes in pre-disturbance survey requirements in cases of wildland fire.

We have rated the EIS EC - 2 (Environmental Concerns). We concur that the underlying need for some action is clear, but believe that it may be possible to craft an alternative that avoids the time and fiscal costs of the current Survey and Manage requirements without putting as many Survey and Manage species associated with NFP old growth and late successional forests at increased risk of extirpation or severe range restriction/population isolation. The EIS should explore the possibility of developing such an alternative that ~~includes~~ eliminates more species from the Survey and Manage requirements while continuing to include the rigorous "Category A" pre-disturbance survey protections for a larger number of the rare Survey and Manage species.

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There are two important areas where the EIS needs additional analysis and explanation. First, the EIS should describe in more detail how the BLM and USFS special status species programs proposed in Alternative 2 to replace the existing Survey and Manage requirements, would be applied to provide protection for the 304 Survey and Manage species and 4 arthropod guilds. Second, the EIS should expand the present discussion on mitigation measures for individuals and groups of Survey and Manage Species in Chapters 3 & 4, specify proposed mitigation measures for individual species or groups and make specific commitments to completing them in the Record of Decision (ROD).

This rating and a summary of our comments will be published in the *Federal Register*. A copy of the rating system used in conducting our review is enclosed for your reference. Thank you for the opportunity to review this draft EIS. If you would like to discuss these issues, please contact Jonathan Freedman at (206) 553-0266.

Sincerely,

Judith Leckrone Lee

Judith Leckrone Lee, Manager
Geographic Unit

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

P.O. Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

July 28, 2003

Mr. Richard C. Prather
Survey and Manage
Argonne National Laboratory
EAD/900
9700 South Cass Avenue
Argonne, IL 60439

Dear Mr. Prather:

Thank you for the opportunity to comment on the National Environmental Policy Act (NEPA)/supplemental Draft Environmental Impact Statement (DEIS) for the 2670 (FS)/to remove or modify the survey and manage mitigation measure standards and guidelines; to achieve the objectives originally established in the Northwest Forest Plan for diversity and little known species at risk located within the range of the Northern Spotted Owl in Washington, Oregon and California. We reviewed the environmental checklist and have the following comments:

Washington Department of Ecology appreciates the importance of achieving resources protection objectives while minimizing dollar expenditures. Both the preferred alternative, (#2) and the additional alternative for change (#3), seek to do this. However, we caution that removing the survey and manage provisions as recommended in alternatives #2 and #3, may cause greater costs to be incurred in the future.

Our experience in Washington is that past forest road and harvest management practices by the USFS have left a legacy of stream habitat restoration needs downstream of USFS Lands. Many of these streams (E.G. Canyon Creek in the Nooksack drainage, and the South Fork Skokomish River) have already incurred decades of impacts to water quality and stream beneficial uses. Costs for these impacts are born largely by the people of Washington, along with the Federal Government, is now annually spending millions of dollars to rectify watershed and stream habitat impacts.

Increased logging and road building that would result from proposed alternatives #2 and #3 may adversely impact water quality and the aquatic environment if actions are not taken to protect these resources.

The biological opinion (E.G. Page 310) describes that proposed alternatives would not exceed the scope of impacts originally consulted on in 1994. This timeframe is nearly 10 years. Within this time Washington has seen much of our state included in ESA listings for salmon. We include this information as an example of the level of change that can occur within a decade, and the importance of not assuming that a baseline of species conservation issues established in the past is still valid.

COUNTY OF SISKIYOU

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RICHARD D. BARNUM
DIRECTOR

WAYNE L. VIRAG
ASSISTANT DIRECTOR

August 1, 2003

Survey and Manage
Argonne National Laboratory
EAD/900
9700 South Cass Avenue
Argonne, IL 60439

Dear Sirs:

Subject: Comment, Draft Supplemental Environmental Impact Statement, To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines

I believe the DSEIS adequately and reasonably addresses the risks of extirpation and adequacy of information concerning the Survey and Manage species. Alternative 2, With Mitigation which eliminates the high risk of extirpation is the appropriate decision. Alternative 2 With Mitigation, under the Northwest Forest Plan, strikes a reasonable balance between protection and management and appears to be legally defensible, especially in light of the risk of loss to other resources and infrastructure from inaction on public forest lands.

Thank you for providing this opportunity to comment.

Sincerely,

Siskiyou County Planning Department
Richard D. Barnum, Planning Director

James W. De Pree

James W. De Pree
Natural Resource Specialist

JWD:lrf
cc. Siskiyou County Board of Supervisors
Senator Dianne Feinstein
Senator Barbara Boxer
Representative Wally Herger
Peg Boland, Klamath National Forest
Sharon Heywood, Shasta-Trinity National Forest
Howard Moody, County Administrator

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The following excerpt was received from Charles J. Hurliman, Tillamook County Commissioner, via the internet. The comment is repeated in its entirety.

> Alternative 2, proposed Action In general thjis section needs to talk about forest health, 1) a healthy forest can vigorously renew itself across the landscape and recover from a wide range of distrubances 2) a healthy forest provides a diversity of stand structures that provides habitat for many native specis and essential ecosystem processes 3) a healthy forest provides for the human needs of values, uses, products and services. We need to show in this section that Disturbance can create Biodiversity. And Managed Disturbance can create habitat for species. We talk in this section as if disturbance is not positive.

DOUGLAS COUNTY

BOARD OF COMMISSIONERS

DOUG ROBERTSON JOYCE MORGAN DAN VANSLYKE

1036 S.E. Douglas Ave., Room 217 • Roseburg, Oregon 97470 • (541) 440-4201

August 5, 2003

Survey and Manage
Argonne National Laboratory
EAD/900
9700 South Cass Avenue
Argonne, IL 60439

RE: Draft Supplemental Environmental Impact Statement to remove or modify the Survey and Manage Mitigation Measure Standards and Guidelines.

Dear Sirs:

The Board of Commissioners of Douglas County, Oregon appreciates this opportunity to review and comment on the Draft Supplemental Environmental Impact Statement on the survey and manage standards and guidelines. Attached to this letter are our comments on the Draft Supplemental Environmental Impact Statement.

It is our opinion that the preferred action is to eliminate the survey and manage standards and guidelines in their entirety. The program is not only unnecessary given the other program requirements of the agencies, but it simply does not provide a significant benefit given its cost.

Respectfully submitted,
The Board of Commissioners
of Douglas County, Oregon

Joyce Morgan, Chair

Dan Van Slyke, Commissioner

Doug Robertson, Commissioner

C\letters\Survey and manage draft supplemental EIS
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[redacted]

[redacted]

United States Department of Agriculture | Forest Service | Mendocino N.F. Supervisor's Office | 825 N. Humboldt Avenue
Willows, CA 95988
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File Code: 1500
Date: June 20, 2003

Survey and Manage
Argonne National Laboratory
EAD/900
9700 South Cass Avenue
Argonne, IL 60439

Dear Content Analysis Team:

The California Coastal Provincial Advisory Committee (CCPAC) is one of the 12 Provincial Advisory Committees established to advise federal agencies on implementation of the Northwest Forest Plan (NWFP). The province covered by the CCPAC includes the US Forest Service (USFS), Bureau of Land Management (BLM), and National Park Service (NPS) lands in northwestern California from Redwood Creek south to Point Reyes National Seashore and west of the Sacramento River basin. The CCPAC has long been recognized as one of the most active PACs in the NWFP area and has submitted comments and passed resolutions on numerous items over the past eight years. The CCPAC has followed the issues involving the implementation of the Survey and Manage Program from the initial stages of the NWFP and submitted comments on the SEIS for the changes implemented in 2001.

All the non-federal members of the CCPAC present at the June 11-12, 2003, meeting unanimously agreed to forward the following comments pertaining to the Draft Supplemental Environmental Impact Statement (DSEIS) To Remove or Modify the Survey and Manage Mitigation Measure Standard and Guidelines.

"The primary concern with the DSEIS is that the Preferred Alternative (Alternative 2) proposes drastic changes to the program which had just been revamped in 2001. The members feel that the changes made to the Survey and Manage Program in 2001 have not had a chance to be implemented long enough to know whether or not the new program will prove effective in both protecting species and providing economic stimulus to the NWFP area. The non-federal members of the CCPAC feel that implementation of the NWFP, and its various components, is inherently a long-term process. The 2001 Survey and Manage Program has only been implemented for two years which is an entirely inadequate amount of time in which to judge a program of this scope and nature. The types of drastic changes contained in the Preferred Alternative are not rational at this time.

Appendix 8

Changes between Draft and Final

- This is a new appendix.
- This appendix includes excerpts that were incorporated by reference into the Draft and Final SEISs. Excerpts are from the 1994 Final SEIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (1994 SEIS (J2)) and the 2000 Final SEIS for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (2000 Final SEIS).

Appendix 8

Previous Analyses Incorporated by Reference

The following table contains excerpts from the 1994 Final SEIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (1994 SEIS (J2)) and the 2000 Final SEIS for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (2000 Final SEIS). These excerpts are not exact quotes. Minor, editorial changes have been made. For example, when a species was included within a group, "these species" has been changed to "the species" or "this species"; "their ranges" has been changed to "its range." Also, most acronyms and abbreviations have been spelled out. The information contained in the 2000 Final SEIS column focuses on Alternative 1 because Alternative 1 was selected for implementation in the January 2001 Record of Decision.

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Acanthophysium farlowii (Aleurodiscus farlowii)	0-50-25-25	Past harvest and site preparation has eradicated many populations. Taxonomy, distribution, reproductive biology, and ecology are not well known. Species may have potential ecological or economic importance. Mitigation might improve rating. The protection of known populations will reduce the risk of extirpation. Surveys will provide baseline data on the species which can determine the effects of forest management practices on their distribution, frequency, habitat requirements, general ecology, and reproduction, and is expected to result in an improved rating for the species (pp. J2-188 to 189).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Concern is a function of its rarity and possibly loss of historic habitat and not related to the design or possible implementation of alternatives. It is not possible to predict in advance which species will benefit (from mitigation) and to what extent. With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Species is unlikely to have stable populations under any alternative, largely due to the very low numbers of occurrence. Alternative 1 will reduce concerns to rare species by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Albatrellus avellaneus	2-42-38-18	Sometimes collected for food, but rarely harvested commercially. Very scattered populations. Occurs primarily or exclusively in old-growth, but commonly with mixed hardwoods. Harvest of coastal forests has eradicated many, maybe most populations. Many sites are on coastal non-federal land. Management of these sites may be crucial to survival. Rating reflects scarcity and uncertainty of future status of suitable habitat (p. J2-174). Mitigation may improve rating. Mitigation should reduce risk of extirpation and reduce the number of isolated populations (p. J2-175).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Albatrellus caeruleoporus	2-42-38-18	Sometimes collected for food, but rarely harvested commercially. Very scattered populations. Occurs primarily or exclusively in old-growth, but commonly with mixed hardwoods. Harvest of coastal forests has eradicated many, maybe most populations. Many sites are on coastal non-federal land. Management of these sites may be crucial to survival. Rating reflects scarcity and uncertainty of future status of suitable habitat (p. J2-174). Mitigation may improve rating. Mitigation should reduce risk of extirpation and reduce the number of isolated populations (p. J2-175).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Albatrellus ellisii	42-32-20-7	Sometimes collected for food, but rarely harvested commercially. Very scattered populations. Occurs primarily or exclusively in old-growth, but commonly with mixed hardwoods. Harvest of coastal forests has eradicated many, maybe most populations. Many sites are on coastal non-federal land. Management of these sites may be crucial to survival. Rating reflects scarcity and uncertainty of future status of suitable habitat (p. J2-174). Mitigation may improve rating. Mitigation should reduce risk of extirpation and reduce the number of isolated populations (p. J2-175).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Albatrellus flettii	42-32-20-7	Sometimes collected for food, but rarely harvested commercially. Very scattered populations. Occurs primarily or exclusively in old-growth, but commonly with mixed hardwoods. Harvest of coastal forests has eradicated many, maybe most populations. Many sites are on coastal non-federal land. Management of these sites may be crucial to survival. Rating reflects scarcity and uncertainty of future status of suitable habitat (p. J2-174). Mitigation may improve rating. Mitigation should reduce risk of extirpation and reduce the number of isolated populations (p. J2-175).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Alpova alexsmithii	0-35-50-15	Endemic to mature old-growth forests of the Cascades at mid- to upper mid-elevations. The type locality is close to a road in a heavily used recreation area. Road widening could infringe on the population. Known from only seven collections from widely disjunct populations. Surveys in similar habitats between known localities are needed to further understand distribution and ecology. Continued protection of the type locality in Mt. Rainier National Park and Oregon localities should minimize risk of extirpation (pp. J2-115 to 116).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Alpova olivaceotinctus	0-35-50-15	A single collection is known from the range of the northern spotted owl. Extensive timber harvest around the single locality may have extirpated part of the population. The distribution of this species is very poorly known. Survey of federal land near the known locality on private land is needed to determine if the populations exist there in similar habitats that can be protected. Protection of such habitats would lessen risk of a southward reduction of the northern limits of the species. Mitigation should minimize the risk of extirpating the species in the northernmost limits of its range (pp. J2–116 to 117).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Arcangeliella camphorata (*Arcangeliella* sp. nov. #Trappe 12382; *Arcangeliella* sp. nov. #Trappe 12359)	0-0-60-40	#Trappe 12382: Rare endemic known only from localities in southwest Oregon at mid- to high-elevations in mature, old-growth stands. Extensive logging in these forests has removed much of the mature, old-growth habitat in which the species occurs. Most likely, there are many locally endemic fungi in the Siskiyou mountains, but intensive exploration has never been undertaken. Protection of type localities and adjacent, similar habitats will reduce risk of extirpation. Protection of the type localities plus the larger populations they represent in the area will reduce risk of extirpation (pp. J2–137 to 138). #Trappe 12359: Extensive logging has removed most of the mature to old-growth coastal forests of Oregon, thereby removing habitat for the species. Intensive recreational use may also have an impact on the species through trampling and soil compaction. Protection of type and paratype localities could lessen the present substantial risk of extirpation. Discovery and protection of new populations may also decrease risk of extirpation (pp. J2-140 to 141).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Arcangeliella crassa	0-35-50-15	Species has a common locus of abundance in the Mt. Shasta/Mt. Lassen region. Cutting of *Abies* forests may have removed and degraded habitat for the species. The condition of historical locations is not known. Mitigation could improve viability rating for the species. A system of refugia and potential remnant, dispersal habitat will increase the viability rating for the species and reduce the risk of extirpation (pp. J2–118 to 119).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Arcangeliella lactarioides	0-35-50-15	Species has a common locus of abundance in the Mt. Shasta/Mt. Lassen region. Cutting of *Abies* forests may have removed and degraded habitat for the species. The condition of historical locations is not known. Mitigation could improve viability rating for the species. A system of refugia and potential remnant, dispersal habitat will increase the viability rating for the species and reduce the risk of extirpation (pp. J2–118 to 119).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Asterophora lycoperdoides	40-30-25-5	Found in late-successional forests. Past actions are unknown; however, populations may have been reduced by extensive removal of late-successional coastal forests. Air pollution could cause decline since the hosts primarily are ectomycorrhizal fungi. General distribution known but precise distribution and details are poorly known. Mitigation will protect known populations and improve rating by assuring that suitable habitats are provided. Mitigation would most importantly provide baseline information on distribution, frequency, and productivity as well as reproduction and ecology (pp. J2-214 to 215).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Asterophora parasitica	40-30-25-5	Found in late-successional forests. Past actions are unknown; however, populations may have been reduced by extensive removal of late-successional coastal forests. Air pollution could cause decline since the hosts primarily are ectomycorrhizal fungi. General distribution known but precise distributions and details are poorly known. Mitigation will protect known populations and improve rating by assuring that suitable habitats are provided. Mitigation would most importantly provide baseline information on distribution, frequency, and productivity as well as reproduction and ecology (pp. J2-214 to 215).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Baeospora myriadophylla	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of individual species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Species is unlikely to have stable populations under any alternative, largely due to the very low numbers of occurrence. Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Balsamia nigrens	0-18-60-23	Most of the suitable habitat has been developed for housing, used for grazing, logged, or otherwise been drastically disturbed or altered. Only one of the three known localities is on federal land in the Northwest Forest Plan area. The other two are on private land. Rating reflects rarity and natural history plus concern for loss of habitat. Mitigation (protection of the single site on federally managed land) will reduce the risk of extirpation (p. J2-154).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Boletus haematinus	2-52-28-18	Management in high elevation *Abies* forests in California may have removed habitat for *Boletus haematinus*. Specific sites of species occurrences are not well known. Mitigation could improve rating for localities which occur outside of Late-Successional Reserves. Protection of known locations and managing for old-growth stands within areas where species are suspected to occur should reduce risk of extirpation (pp. J2–106 to 107).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Boletus pulcherrimus	2-52-28-18	Logging of low-elevation forests may have removed habitat for *Boletus pulcherrimus*. Specific sites of species occurrences are not well known. Mitigation could improve rating for localities which occur outside of Late-Successional Reserves. Protection of known locations and managing for old-growth stands within areas where species are suspected to occur should reduce risk of extirpation (pp. J2–106 to 107).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Bondarzewia mesenterica (Bondarzewia montana)	30-25-30-15	Some populations may have been eliminated by past logging, but in general its range is above elevations of most intense harvest. Potential climate change may affect southern extant of species, reducing some of the few sites in the FEMAT region. Air pollution likely a problem in more developed areas. Need more detailed distribution information, and to determine if it is confined to *Abies* as a host species. Mitigation, including survey which may find sufficient additional sites, may improve rating. Protection of known populations will reduce risk of extirpation (pp. J2-187 to 188).	Species has multiple sites or clusters of sites that are nested within a web of potential interconnections (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Bridgeoporus nobilissimus (Oxyporus nobilissimus)	10-25-43-22	Occurs in late-successional forests, especially in old-growth and ancient stands and requires very large diameter substrates. The removal of old-growth forests through logging has had an impact. It is considered rare and in need of protection. Air pollution and global climate change could directly or indirectly cause the decline of this species. Mitigation may not improve the rating of this species but could prevent the extirpation of known populations and extinction. Mitigation may prevent this fungus from extirpation, although it is extremely rare, so there is uncertainty about its viability. It will be difficult to restore its natural distribution and frequency, especially at low elevations in areas previously occupied with late-successional forests (pp. J2-185 to 186).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Cantharellus subalbidus	10-33-38-13	Regularly harvested commercially for food. Harvesting could have long-term effects on distribution, frequency, reproduction, and productivity as well as genetic variability. Poor air quality may cause a decline. Long-term studies of productivity/reproduction and evaluation of genetic variability within and between populations from different habitats are needed to evaluate the effects of harvesting, forest management practices, and environmental factors. Mitigation will provide information that can be used to evaluate short and long-term effects of harvesting and forest management on distribution, growth, and reproduction. Such data will also be valuable for determining the impact of air pollution and global climate change (pp. J2-159 to 160).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Catathelasma ventricosa	0-18-60-23	Species has a broad distribution but is rare in the range of the Northwest Forest Plan. Two of the three localities are subject to heavy recreational use. The widely disjunct localities suggest a more extensive range than is now known, at least in suitable habitats with suitable hosts. Protection of known localities will reduce risk of extirpation of the species from the range of the northern spotted owl. Inventory of nearby suitable habitats may reveal the species to be more common than is now known (pp. J2-178 to 179).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Chalciporus piperatus (*Boletus piperatus*)	17-43-40-0	Loss of low-elevation, old-growth forests and coastal Sitka spruce forests has contributed to loss of habitat, and potential isolation of populations. Mitigation could improve rating by protecting existing low-elevation and coastal Sitka spruce old-growth forests, along with managing for additional stands to achieve old-growth condition (pp. J2-105 to 106).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to lack of knowledge of species population biology, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 244).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Chamonixia caespitosa (*Chamonixia pacifica* sp. nov. #Trappe #12768)	0-35-50-15	Only known from nine collections. Logging of coastal forests has left little of the mature or old-growth forest in which this species has been found. The disjunct nature of its distribution between coastal Oregon and Skagit watershed localities in Washington suggests the need for more extensive survey of the intervening areas. Preservation of mature, old-growth coastal forests will reduce risk of extirpation. This rare endemic will be at a reduced risk of extirpation if known localities are protected, and suitable habitat is provided by managing for mature and old-growth forests in northern coastal Oregon (pp. J2-142 to 143).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Choiromyces alveolatus	0-18-60-23	Species has a common locus of abundance in the Mt. Shasta/Mt. Lassen region. Cutting of *Abies* forests may have removed and degraded habitat for the species. The condition of historical locations is not known. Mitigation could improve viability rating for the species. A system of refugia and potential remnant, dispersal habitat will increase the viability rating for the species and reduce the risk of extirpation (pp. J2–118 to 119).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Choiromyces venosus	0-18-60-23	Despite extensive collecting for truffles in North America, it has been found only once at a locality in Oregon in a mature Douglas-fir stand. Locality is a relatively low-elevation section surrounded by non-federal land that has been extensively logged. Effects on the edge of its distribution are unknown. Complete protection of the collection locality and unlogged stands in the vicinity is needed to prevent extirpation from North America (pp. J2-155 to 156).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Chroogomphus loculatus	5-50-28-18	Very rare and locally endemic. Species has not been seen in at least four collecting trips to the Lamb Butte Scenic Area since the types were collected and they have not been found elsewhere. Mitigation could reduce risk of extirpation and improve viability of species at known locations. Protection of known locations and expanding the area to include nearby, similar, habitats will lessen the risk of extirpation. Designation of Mycological Special Interest Area for the species will also benefit a number of other rare or endemic species which also occur here (pp. J2-107 to 109).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Chrysomphalina grossula	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of individual species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns to rare species by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Clavariadelphus ligula	55-25-15-5	Clearcutting mature forests has undoubtedly reduced the number of populations by removing habitat. Past actions were a concern in the original rating. If the species is threatened by atmospheric factors (e.g., pollution, climate change) it seems likely that this would result indirectly through impacts on the overstory trees. Species taxonomy and distribution are not well known. Need studies of reproductive biology. Mitigation, especially in management of Matrix, could improve rating. Protection of known populations will reduce risk of extirpation (pp. J2-214 to 216).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Clavariadelphus occidentalis (*Clavariadelphus pistillaris*)	55-25-15-5	Clearcutting mature forests has undoubtedly reduced the number of populations by removing habitat. Past actions were a concern in the original rating. If the species is threatened by atmospheric factors (e.g., pollution, climate change) it seems likely that this would result indirectly through impacts on the overstory trees. Species taxonomy and distribution are not well known. Need studies of reproductive biology. Mitigation, especially in management of Matrix, could improve rating. Protection of known populations will reduce risk of extirpation (pp. J2-214 to 216).	Species has pattern of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Clavariadelphus sachalinensis	55-25-15-5	Clearcutting mature forests has undoubtedly reduced the number of populations by removing habitat. Past actions were a concern in the original rating. If the species is threatened by atmospheric factors (e.g., pollution, climate change) it seems likely that this would result indirectly through impacts on the overstory trees. Species taxonomy and distribution are not well known. Need studies of reproductive biology. Mitigation, especially in management of Matrix, could improve rating. Protection of known populations will reduce risk of extirpation (pp. J2-214 to 216).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Clavariadelphus subfastigiatus	55-25-15-5	Clearcutting mature forests has undoubtedly reduced the number of populations by removing habitat. Past actions were a concern in the original rating. If the species is threatened by atmospheric factors (e.g., pollution, climate change) it seems likely that this would result indirectly through impacts on the overstory trees. Species taxonomy and distribution are not well known. Need studies of reproductive biology. Mitigation, especially in management of Matrix, could improve rating. Protection of known populations will reduce risk of extirpation (pp. J2-214 to 216).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Clavariadelphus truncatus (syn. *Clavariadelphus borealis*)	55-25-15-5	Clearcutting mature forests has undoubtedly reduced the number of populations by removing habitat. Past actions were a concern in the original rating. If the species is threatened by atmospheric factors (e.g., pollution, climate change) it seems likely that this would result indirectly through impacts on the overstory trees. Species taxonomy and distribution are not well known. Need studies of reproductive biology. Mitigation, especially in management of Matrix, could improve rating. Protection of known populations will reduce risk of extirpation (pp. J2-214 to 216).	Species has pattern of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Clavulina castanopes v. *lignicola* (*Clavulina ornatipes*)	65-35-0-0	Widespread in FEMAT region, especially northward. Harvest of old growth reduced populations but species is not threatened. Impacts of potential global warming might displace population northward. Impacts of atmospheric pollution most likely would act indirectly by changes in dominant trees. Mitigation not required for survival. Include species in general surveys of fleshly fungi. Monitor southern populations as indicators of global warming. Mitigation will not improve rating (pp. J2-209 to 210).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Clitocybe senilis	0-40-38-23	Habitat for the species has been reduced by logging old-growth forests, especially at lower elevations. Air pollution could result in the decline of the species. Accurate distributions for the species are not available and its ecology and habitat requirements need further study. Mitigation will improve the rating for the species. Mitigation to protect known populations may reduce the risk of extirpation. Surveys will provide baseline data on the distribution and habitat requirements of the species and may improve its rating (pp. J2-181 to 183).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Clitocybe subditopoda	0-40-38-23	Habitat for the species has been reduced by logging old-growth forests, especially at lower elevations. Air pollution could result in the decline of the species. Accurate distributions for the species are not available and its ecology and habitat requirements need further study. Mitigation will improve the rating for the species. Mitigation to protect known populations may reduce the risk of extirpation. Surveys will provide baseline data on the distribution and habitat requirements of the species and may improve its rating (pp. J2-181 to 183).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Collybia bakerensis	40-35-15-10	Habitats for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Collybia racemosa	40-30-25-5	Found in late-successional forests. Past actions are unknown; however, populations may have been reduced by extensive removal of late-successional coastal forests. Air pollution could cause decline since the hosts primarily are ectomycorrhizal fungi. General distribution known but precise distribution and details are poorly known. Mitigation will protect known populations and improve rating by assuring that suitable habitats are provided. Mitigation would most importantly provide baseline information on distribution, frequency, and productivity as well as reproduction and ecology (pp. J2-214 to 215).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Cordyceps ophioglossoides	40-30-25-5	Found in late-successional forests. Past actions are unknown; however, populations may have been reduced by extensive removal of late-successional coastal forests. Air pollution could cause decline since the hosts primarily are ectomycorrhizal fungi. General distribution known but precise distribution and details are poorly known. Mitigation will protect known populations and improve rating by assuring that suitable habitats are provided. Mitigation would most importantly provide baseline information on distribution, frequency, and productivity as well as reproduction and ecology (pp. J2-214 to 215).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Cortinarius barlowensis (syn. *Cortinarius azureus*)	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).
Cortinarius boulderensis	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Cortinarius cyanites	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Cortinarius depauperatus (*Cortinarius spilomeus*)	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).
Cortinarius magnivelatus	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Cortinarius olympianus	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of the disturbance events, all alternatives would provide inadequate habitat (p. 244). Species is unlikely to have stable populations under any alternative, largely due to the very low numbers of occurrence. Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Cortinarius speciosissimus (Cortinarius rainierensis)	0-2-83-15	Considered rare, with only one or a few known collections. Past actions unknown for certain; however, any perturbation of late-successional forests, e.g., logging, may influence present day distributions, especially in mid to low-elevation forests. Air pollution can cause the decline of the species. Overall distribution and ecology is poorly known. Mitigation will preserve the known populations and determine the overall distribution of the species within the Northwest Forest Plan. Mitigation will likely improve rating, and will reduce risk of extirpation of known populations. It will also provide baseline information for the species, which can be used in long-term monitoring to determine effects on species viability (pp. J2-170 to 171).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Cortinarius tabularis	5-50-28-18	The distribution, frequency, and ecology of this species require extensive study. Rating reflects lack of knowledge of the uncommon ectomycorrhizal species and uncertainties about the long-term effects of management practices and environmental conditions (air pollution). Details of habitat requirements are poorly known. Mitigation can improve the rating (pp. J2-168 to 170).	There is insufficient information to reach any conclusion regarding stability and distribution (p. 247). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Cortinarius umidicola (Cortinarius canabarba)	0-2-83-15	Considered rare, with only one or a few known collections. Past actions unknown for certain; however, any perturbation of late-successional forests, e.g., logging, may influence present day distributions, especially in mid to low-elevation forests. Air pollution can cause the decline of the species. Overall distribution and ecology is poorly known. Mitigation will preserve the known populations and determine the overall distribution of the species within the Northwest Forest Plan. Mitigation will likely improve rating, and will reduce risk of extirpation of known populations. It will also provide baseline information for the species, which can be used in long-term monitoring to determine effects on species viability (pp. J2-170 to 171).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Cortinarius valgus	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Cortinarius variipes	0-2-83-15	Considered rare, with only one or a few known collections. Past actions unknown for certain; however, any perturbation of late-successional forests, e.g., logging, may influence present day distributions, especially in mid to low-elevation forests. Air pollution can cause the decline of the species. Overall distribution and ecology is poorly known. Mitigation will preserve the known populations and determine the overall distribution of the species within the Northwest Forest Plan. Mitigation will likely improve rating, and will reduce risk of extirpation of known populations. It will also provide baseline information for the species, which can be used in long-term monitoring to determine effects on species viability (pp. J2-170 to 171).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Cortinarius verrucisporus	0-2-83-15	Past logging may have affected overall distribution. Poor air quality could cause decline since the species is ectomycorrhizal. General distribution is known but overall distribution, frequency, habitat requirements, general ecology, and reproduction are poorly understood. Mitigation will improve rating by protecting known populations and can determine if there are additional populations within Northwest Forest Plan area. In addition, it will provide baseline data on distribution, frequency, habitat requirements, general ecology, and reproduction which will help evaluate the effects of forest management practices, air pollution, and other factors on populations (pp. J2-172 to 173).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Cortinarius wiebeae	0-2-83-15	Past logging may have affected overall distribution. Poor air quality could cause decline since the species is ectomycorrhizal. General distribution is known but overall distribution, frequency, habitat requirements, general ecology, and reproduction are poorly understood. Mitigation will improve rating by protecting known populations and can determine if there are additional populations within Northwest Forest Plan area. In addition, it will provide baseline data on distribution, frequency, habitat requirements, general ecology, and reproduction which will help evaluate the effects of forest management practices, air pollution, and other factors on populations of the species (pp. J2-172 to 173).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Craterellus tubaeformis (syn. *Cantharellus tubaeformis)*	10-33-38-13	Regularly harvested commercially for food. Harvesting could have long-term effects on distribution, frequency, reproduction, and productivity as well as genetic variability. Poor air quality may cause a decline. Long-term studies of productivity/reproduction and evaluation of genetic variability within and between populations from different habitats are needed to evaluate the effects of harvesting, forest management practices, and environmental factors. Mitigation will provide information that can be used to evaluate short and long-term effects of harvesting and forest management on distribution, growth, and reproduction. Such data will also be valuable for determining the impact of air pollution and global climate change (pp. J2-159 to 160).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Cudonia monticola	70-30-0-0	Harvest of old growth has drastically reduced populations in the FEMAT region. Reproductive biology, local abundance, and distribution are not well known. Mitigation could improve rating. It should prevent extirpation of the species, and will likely improve the original rating. Mitigation will also provide baseline information on the distribution, frequency, habitat requirements, general ecology, and reproduction (pp. J2-189 to 190).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Cyphellostereum laeve	40-35-25-0	Late-successional habitats have been reduced by logging but it is widely distributed and not at risk of isolation or extirpation. Air pollution and global climate change could cause a decline. Details of ecology, life history, and reproduction are lacking. Specific distributions have not been mapped. Mitigation will improve rating and provide needed information on the distribution, frequency, general ecology, habitat requirements, and reproduction (pp. J2-116 to 117).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Dermocybe humboldtensis	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Destuntzia fusca	0-35-50-15	Logging of suitable habitat or sites of known populations has removed mycorrhizal hosts and impacted populations. Further exploration of known habitats is needed to assess population health. Protection of all localities will reduce the high risk of extirpation. The species occupies low to lower-mid elevation mature and old-growth forests that have been heavily logged. Species is at high risk of extirpation; preservation of populations and nearby, similar habitat will reduce that risk (pp. J2-119 to 121).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Destuntzia rubra	0-35-50-15	*Destuntzia rubra* is known from only five locations. Logging of suitable habitat or sites of known populations has removed mycorrhizal hosts and impacted populations. Further exploration of known habitats is needed to assess population health. Protection of all localities will reduce the high risk of extirpation. The species occupies low to lower-mid elevation mature and old-growth forests that have been heavily logged. It is at high risk of extirpation; preservation of populations and nearby, similar habitat will reduce that risk (pp. J2-119 to 121).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Dichostereum boreale (Dichostereum granulosum)	0-50-25-25	Past harvest and site preparation has eradicated many populations. Taxonomy, distribution, reproductive biology, and ecology are not well known. Species may have potential ecological or economic importance. Mitigation might improve rating. The protection of known populations will reduce the risk of extirpation. Surveys will provide baseline data which can determine the effects of forest management practices on distribution, frequency, habitat requirements, general ecology, and reproduction (pp. J2-188 to 189).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Elaphomyces anthracinus	0-18-60-23	Rare, but widely distributed, truffle known from less than 50 collections since it was described from Italy in 1832. Found only once in the range of the northern spotted owl. The Oregon locality is a heavily used recreation area. Fruiting occurs only in very restricted habitats for reasons unknown. Mitigation includes inventory of the single known locality in Oregon for populations and designating appropriate areas outside developed campgrounds as a Mycological Special Interest Area to protect the population. Protection of the habitat of the single known location in Oregon will reduce the risk of extirpation within the range of the northern spotted owl (pp. J2-156 to 157).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Elaphomyces subviscidus	0-18-60-23	Both Oregon locations are in heavily used recreation areas and subject to soil compaction from trampling. The Prospect area has been extensively logged. Inventory type locality and Three Creeks Lake locality to determine extent of local populations and establish a special interest area to protect the type locality. Protecting the type locality and additional known populations will reduce risk of extirpation (pp. J2-157 to 158).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Endogone acrogena	0-18-60-23	Rare, endemic species. Extensive logging in low-elevation old growth has probably eliminated most of the habitat characteristic. Remaining low-elevation, old-growth Douglas-fir/ western hemlock stands have not been thoroughly explored for hypogenous fungi. Remaining habitat in the areas of the type locality and other known localities should be inventoried to determine extent of populations. Type locality and other known populations should be protected. Protection of type and other localities will reduce the risk of extirpation of the species (pp. J2-176 to 178).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Endogone oregonensis	0-18-60-23	Rare, local endemic species. Known localities are in areas of extensive logging that removed appropriate habitat and hosts, or of current heavy recreational use that may result in trampling and soil compaction. Habitats have been intensively surveyed only in a few localities. Intervening areas are poorly known. Intensively inventory remaining habitat within the known range. Protect type localities by establishment of Mycological Species Interest Areas. Preservation of type localities and protection of localities on federal and state lands will reduce the risk of extirpation of the species (pp. J2-113 to 114).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Entoloma nitidum (Rhodocybe nitida)	0-40-38-23	Rare to uncommon in late-successional forests. Habitat has been reduced by logging of old-growth forests, especially at lower elevations. Air pollution could result in the decline of the species. Accurate distributions are not available and ecology and habitat requirements need further study. Mitigation will improve the rating for this species. Mitigation to protect known populations may reduce the risk of extirpation. Surveys will provide baseline data on the distribution and habitat requirements (pp. J2-181 to 183).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Fayodia bisphaerigera (Fayodia gracilipes)	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Fevansia aurantiaca (*Alpova* sp. nov. #Trappe 1966) (*Alpova aurantiaca*)	0-0-60-40	Rare, local endemic known only from the type locality. Extensive timber harvest in the vicinity may have removed much of the mature forest near the type locality beyond the scenic corridor. For lack of intensive survey, the extent of the population of this species is unknown beyond the type locality. Protection of the type locality and adjacent, similar habitats will reduce risk of extirpation. Protection of the type locality plus the larger populations it represents in the area will reduce risk of extirpation (pp. J2-139 to 140).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Galerina cerina	40-35-25-0	Late-successional habitats have been reduced by logging but these are widely distributed and not at risk of isolation or extirpation. Air pollution and global climate change could cause a decline in the species. Details of ecology, life history, and reproduction are lacking. Specific distributions have not been mapped. Mitigation will improve rating and provide needed information on the distribution, frequency, general ecology, habitat requirements, and reproduction (pp. J2-116 to 117).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).
Galerina heterocystis	40-35-25-0	Late-successional habitats have been reduced by logging but these are widely distributed and not at risk of isolation or extirpation. Air pollution and global climate change could cause a decline in the species. Details of ecology, life history, and reproduction are lacking. Specific distributions have not been mapped. Mitigation will improve rating and provide needed information on the distribution, frequency, general ecology, habitat requirements, and reproduction (pp. J2-116 to 117).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).
Galerina sphagnicola	40-35-25-0	Late-successional habitats have been reduced by logging but these are widely distributed and not at risk of isolation or extirpation. Air pollution and global climate change could cause a decline in the species. Details of ecology, life history, and reproduction are lacking. Specific distributions have not been mapped. Mitigation will improve rating and provide needed information on the distribution, frequency, general ecology, habitat requirements, and reproduction (pp. J2-116 to 117).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Gastroboletus imbellus	0-2-83-15	Very rare and locally endemic. Species has not been seen in at least four collecting trips to the Lamb Butte Scenic Area since the types were collected and they have not been found elsewhere. Mitigation could reduce risk of extirpation and improve viability of species at known locations. Protection of known locations and expanding the area to include nearby, similar habitats will lessen the risk of extirpation. Designation of Mycological Special Interest Area for the species will also benefit a number of other rare or endemic species which also occur here (pp. J2-107 to 109).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Gastroboletus ruber	67-22-8-3	Rare endemic known from 16 collections. Most known localities are in already protected areas (wilderness areas, national parks), although some are in heavily used recreational areas. The type locality experiences particularly intense recreational use. Continue preservation of localities now in Wilderness or National Park status. Attempt to relocate the type locality and, if found, provide protection with designation of Mycological Interest Area. Protection of the type locality and continued protection of other known localities will minimize risk of extirpation (pp. J2-109 to 110).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Gastroboletus subalpinus	70-30-0-0	May be impacted by recreational use, camping, trampling, and soil compaction (most known localities are in campgrounds). Occurrence between disjunctions of known local abundance is unknown. Presumably more common than now recognized; protection of habitat in representative localities of local abundance would lessen the risk of serious depletion of populations pending better information on distribution. Preservation of locally abundant population free of heavy recreational use would minimize the chances of serious depletion of this endemic species through trampling, soil compaction, etc. (pp. J2-102 to 103).	Species has multiple sites or clusters of sites that are nested within a web of potential interconnections (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Gastroboletus turbinatus	70-30-0-0	The coastal localities are in areas of heavy recreational use, potentially subject to trampling and soil compaction. Siskiyou and Klamath Mountain localities have a history of extensive logging. Continue preservation of habitat as already accomplished in designated wilderness and botanical areas and National Parks. Protect the type locality. Continued preservation of suitable habitats will eliminate risk of extirpation (pp. J2-102 to 103).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Gastroboletus vividus (*Gastroboletus* sp. nov. #Trappe 2897; *Gastroboletus* sp. nov. #Trappe 7515)	0-0-60-40	#Trappe 2897: Rare endemic known only from localities in southwest Oregon at mid- to high-elevations in mature, old-growth stands. Extensive logging in these forests has removed much of the mature, old-growth habitat in which the species occurs. Most likely, there are many locally endemic fungi in the Siskiyou mountains, but intensive exploration has never been undertaken. Protection of type localities and adjacent, similar habitats will reduce risk of extirpation. Protection of the type localities plus the larger populations they represent in the area will reduce risk of extirpation (pp. J2–137 to 138). #Trappe 7515: The type locality is in a heavily used recreational site. Intensively survey the high-elevation, old-growth mountain hemlock stands of Crater Lake National Park for populations with special emphasis on areas outside developed recreational sites. Establish a Mycological Special Interest Area to preserve the type locality. Preservation of the type locality will reduce the risk of extirpation of the species (pp. J2-143 to 144).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Gastrosuillus amaranthii (*Gastrosuillus* sp. nov. #Trappe 9608)	0-0-60-40	#Trappe 9608: Local endemic, known only from the type collection. Heavy recreational use of the area may impact the populations from the recreational development, soil compaction, etc. The area has never been surveyed for fungi, so extent of the population is unknown. Protection of the type locality and nearby, similar habitats and maintenance of 180-year rotations in the general area will reduce the risk of extirpation (pp. J2-146 to 147).	While no sites are currently found in the Northwest Forest Plan area, it could occur here and meets the criteria for inclusion under the Survey and Manage Standards and Guidelines. There is no clear risk to the distribution and abundance from any action within the planning area. While there is considerable uncertainty based on currently available information, the species will not be stable under any alternative. It does not seem possible to design an alternative consistent with the purpose and need that could eliminate much or all risk to the long-term population stability of the species (p. 246).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Gastrosuillus umbrinus (*Gastroboletus* sp. nov. #Trappe 7516)	0-0-60-40	#Trappe 7516: Local endemic, known only from the type collection. The type locality is in a heavily used recreational site. Only known from this location, but probably present in nearby, similar old-growth mountain hemlock forests. Intensively survey the high-elevation, old-growth mountain hemlock stands of Crater Lake National Park for populations of this species with special emphasis on areas outside developed recreational sites. Establish a Mycological Special Interest Area to preserve the type locality. Preservation of the type locality will reduce risk of extirpation (pp. J2-143 to 144).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Gautieria magnicellaris	0-35-50-15	Widely distributed but rare ectomycorrhizal false truffle, only known from a dozen collections. Known only from two locations in the range of the northern spotted owl. The California locality is in an area of extensive logging. The locality in Oregon has had heavy recreational use prior to its closure as a campground. Inventory both known localities and nearby areas for extent of populations; initiate process of designating a Mycological Area at Deadfall Meadows on the Klamath National Forest in California. This is an important area mycologically and supports a diversity of fungus species including a high concentration of rare and/or endemic species of fungi. Protection of habitats in the two known localities will reduce extirpation of the species in the range of the northern spotted owl (pp. J2-121 to 122).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Gautieria otthii	0-35-50-15	Wide ranging but rare fungi. Known localities are in areas subject either to extensive logging or heavy recreational use. The wide distributions suggest that the species may be more common than now known, although extensive collecting in the range of the northern spotted owl over the last century has resulted in few known collections. Mitigation may improve rating. Protection of known localities will reduce the risk of extirpation (pp. J2-123 to 124).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Gelatinodiscus flavidus	0-35-38-28	Saprobe or weak pathogen. Limited to needles, cones, and twigs of Alaska yellowcedar. Impact of acid rain not known. Potential global warming may shift range northward and possibly eliminate species from the range of the northern spotted owl. Need more information on distribution. Mitigation (survey) might improve rating and protection of known populations would reduce risk of extirpation (p. J2-200).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Glomus radiatum	0-18-60-23	Species has a broad distribution, but is rare in the range of the northern spotted owl. Two of the three localities are subject to heavy recreational use. The widely disjunct localities suggest a more extensive range than is now known, at least in suitable habitats with suitable hosts. Protection of known localities could reduce the risk of extirpation from the range of the northern spotted owl. Inventory of nearby suitable habitats may reveal the species to be more common than is now known (pp. J2-178 to 179).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Gomphus bonarii	57-22-18-3	Uncommon to rare, but sometimes fruits abundantly in a limited area. Edible and sought for that reason, but not marketed commercially. Past clearcutting of old-conifer stands has eradicated populations. Taxonomic relationships unknown. Probably need to identify and protect habitats, rather than specific sites. This genus easily identified in the field and should be a key genus in surveys of late-successional conifer stands. Mitigation is likely to improve rating. It will provide baseline data on the species from which we can determine the effects of forest management practices on distribution, frequency, habitat requirements, general ecology, and reproduction (pp. J2-162 to 163).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to lack of knowledge of species population biology and the difficulty of reliably identifying the species, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 244).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Gomphus clavatus	57-22-18-3	Uncommon to rare, but sometimes fruits abundantly in a limited area. Edible and sought for that reason, but not marketed commercially. Past clearcutting of old-conifer stands has eradicated populations. Taxonomic relationships unknown. Probably need to identify and protect habitats, rather than specific sites. This genus easily identified in the field and should be a key genus in surveys of late-successional conifer stands. Mitigation is likely to improve rating. It will provide baseline data on the species from which we can determine the effects of forest management practices on distribution, frequency, habitat requirements, general ecology, and reproduction (pp. J2-162 to 163).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to lack of knowledge of species population biology, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 244).
Gomphus kauffmanii	57-22-18-3	Uncommon to rare, but sometimes fruits abundantly in a limited area. Edible and sought for that reason, but not marketed commercially. Past clearcutting of old-conifer stands has eradicated populations. Taxonomic relationships unknown. Probably need to identify and protect habitats, rather than specific sites. This genus easily identified in the field and should be a key genus in surveys of late-successional conifer stands. Mitigation is likely to improve rating. It will provide baseline data on the species from which we can determine the effects of forest management practices on distribution, frequency, habitat requirements, general ecology, and reproduction (pp. J2-162 to 163).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology and the difficulty of reliably identifying the species, all alternatives provide sufficient habitat (including known sites) to all the species to stabilize in a pattern different from its reference distribution (p. 244).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Gymnomyces abietis (*Gymnomyces* sp. nov. #Trappe 1690, 1706, 1710; *Gymnomyces* sp. nov. #Trappe 4703, 5576; *Gymnomyces* sp. nov. #Trappe 5052; *Gymnomyces* sp. nov. #Trappe 7545; *Martellia* sp. nov. #Trappe 1700; *Martellia* sp. nov. #Trappe 311; *Martellia* sp. nov. #Trappe 5903)	0-0-60-40	#Trappe 1690, 1706, 1710: This rare endemic is known only from 3 collections at upper mid-elevations of the western Oregon Cascades, Willamette National Forest, in mature to old-growth stands of grand fir, noble fir, Pacific silver fir and mountain hemlock. Protection of similar habitats between the known localities will reduce risk of extirpation. Establishment of a Mycological Special Interest Area in the vicinity of Lamb Butte Scenic Area will provide protection for this species. Continued protection of present localities, along with locating and protecting additional populations will reduce risk of extirpation (pp. J2-149 to 150). #Trappe 4703, 5576: This rare endemic is known only from 2 collections in relict stands of mature noble fir at upper mid-elevations of Marys Peak, Siuslaw National Forest. Protection of all noble fir stands in the Oregon Coast Range will reduce risk of extirpation of this species (pp. J2-147 to 148). #Trappe 7516: Local endemic, known only from the type collection. The type locality is in a heavily used recreational site. Only known from this location, but probably present in nearby, similar old-growth mountain hemlock forests. Intensively survey the high-elevation, old-growth mountain hemlock stands of Crater Lake National Park for populations with special emphasis on areas outside developed recreational sites. Establish a Mycological Special Interest Area to preserve the type locality. Preservation of the type locality will reduce risk of extirpation (pp. J2-143 to 144). #Trappe 1700: Very rare and locally endemic. Species has not been seen in at least four collecting trips to the Lamb Butte Scenic Area since the types were collected and they have not been found elsewhere. Mitigation could reduce risk of extirpation and improve viability of species at known locations. Protection of known locations and expanding the area to include nearby, similar, habitats will lessen the risk of extirpation. Designation of Mycological Special Interest Area for the species will also benefit a number of other rare or endemic species which also occur here (pp. J2-107 to 109).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Gymnomyces abietis continued		*Martellia* sp. nov. #Trappe 311; *Gymnomyces* sp. nov. #Trappe 5052: Rare endemic known only from the type collections. The type locality for the species is a heavily used recreation area. Trampling and soil compaction may have serious impacts. Monitoring and surveys should be conducted to determine the extent of the populations. Minimizing disturbance in the type localities and nearby similar habitats, in addition to monitoring for impacts, and providing adequate protection for known locations, should lessen the risk of extirpation. Protection of the type locality and relatively undisturbed, similar habitats on Mt. Hood may reduce risk of extirpation (pp. J2-148 to 149). *Martellia* sp. nov. #Trappe 5903: The range of the species is possibly broader than indicated, but surveys of similar habitats in the Oregon Cascades are needed to determine the broader distribution. Mitigation would include maintaining protection of known localities and similar habitats in the central Oregon Cascades Range. Continued protection, including fire control, will minimize risk of extirpation (pp. J2-151 to 152).	
Gymnomyces nondistincta (*Martellia* sp. nov. #Trappe 649)	0-0-60-40	Rare endemic known only from the type collections. The type locality for the species is a heavily used recreation area. Trampling and soil compaction may have serious impacts. Monitoring and surveys should be conducted to determine the extent of the populations. Minimizing disturbance in the type localities and nearby similar habitats, in addition to monitoring for impacts, and providing adequate protection for known locations, should lessen the risk of extirpation. Protection of the type locality and relatively undisturbed, similar habitats on Mt. Hood may reduce risk of extirpation (pp. J2-148 to 149).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Gymnopilus punctifolius	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of individual species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). There is insufficient information to determine an outcome for this species (pp. 163 and 191).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Gyromitra californica	70-30-0-0	This species is potentially at risk of overexploitation for local use. There is inadequate information on the reproductive biology. Taxonomy is still unresolved. Monitor species and control harvest as necessary to protect species viability, or prevent risk of local extirpation. Determine distribution of populations relative to Late-Successional Reserve and Matrix allocations. Develop database of known locations and determine if management is necessary to protect known populations. Within harvest areas in the Matrix, aggregate leave trees, maintain amounts of coarse woody debris that are representative of the natural stand conditions, and minimize site disturbance during treatments. Mitigation will provide baseline information on the distribution, frequency, habitat requirements, general ecology, and reproduction. Control of commercial harvest is necessary and may prevent decline in species viability (pp. J2-191 to 192).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Hebeloma olympianum (Hebeloma olympiana)	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Helvella crassitunicata	0-35-38-28	Although past clearcutting has probably destroyed some sites, scarcity of known sites was the primary basis for rating. Impacts of acid rain or potential global warming not known. Need more information on distribution and specific sites. Almost nothing known of reproductive biology. Mitigation might improve rating. Protection of known populations may reduce risk of extirpation (pp. J2-201 to 202).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Helvella elastica	0-35-38-28	Although past clearcutting has probably destroyed some sites, scarcity of known sites was the primary basis for rating. Impacts of acid rain or potential global warming not known. Need more information on distribution and specific sites. Almost nothing known of reproductive biology. Mitigation might improve rating. Protection of known populations may reduce risk of extirpation (pp. J2-201 to 202).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Hydnotrya inordinata (*Hydnotrya* sp. nov. #Trappe 787, 792)	0-0-60-40	The range of the species is possibly broader than indicated, but surveys of similar habitats in the Oregon Cascades are needed to determine the broader distribution. Mitigation would include maintaining protection of known localities and similar habitats in the central Oregon Cascades Range. Continued protection, including fire control, will minimize risk of extirpation (pp. J2-151 to 152).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Hydnotrya subnix (*Hydnotrya subnix* sp. nov. #Trappe 1861)	0-0-60-40	Logging in vicinity of known location may have impacted population or removed suitable habitat. The present extent of logging in the type locality since the type was collected in 1969 is unknown. Only been found once, and the collector has not visited the area since. The area and surrounding remaining stands should be rechecked for this species. Protection of the type locality or nearby mature Pacific silver fir stands may prevent extirpation of the species if it still exists. Protection of known location may save the species from extirpation, assuming it still exists (pp. J2-152 to 153).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Hydropus marginellus (*Mycena marginella*)	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of individual species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to the rarity of the species ands the lack of knowledge of the species population biology and the unpredictable nature of the disturbance events, all alternatives would provide inadequate habitat (p. 244). Species is unlikely to have stable populations under any alternative, largely due to the very low numbers of occurrence. Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Hygrophorus caeruleus	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Hygrophorus karstenii	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).
Hygrophorus vernalis	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Hypomyces luteovirens	40-30-25-5	Found in late-successional forests. Past actions are unknown; however, populations may have been reduced by extensive removal of late-successional coastal forests. Air pollution could cause decline since the hosts primarily are ectomycorrhizal fungi. General distribution known but precise distribution and details are poorly known. Mitigation will protect known populations and improve rating by assuring that suitable habitats are provided. Mitigation would most importantly provide baseline information on distribution, frequency, and productivity as well as reproduction and ecology (pp. J2-214 to 215).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Leucogaster citrinus	0-35-50-15	Rare but widely distributed endemic species. Most of the known collections are in Matrix in areas with an extensive logging history. Known only from 10 collections since it was described in 1899. Continue protection of type locality and inventory populations. Mitigation will likely improve rating. Protection of the type locality and an Oregon locality will reduce risk of extirpation of this species (pp. J2-124 to 125).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Leucogaster microsporus	0-35-50-15	Much of the area where this species occurs has been subjected to extensive logging or recreational use. Only known from 7 locations. Inventory areas of known localities, especially the type locality, for populations; initiate process of establishing a Mycological Special Interest Area at the type locality; continue preservation of the Quartz Creek Big Trees area of the Gifford Pinchot National Forest. Preservation of the type localities will reduce risk of extirpation of the species (pp. J2-125 to 126).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Macowanites chlorinosmus	20-30-40-10	Rare, local endemic species. Known localities are in areas of extensive logging that removed appropriate habitat and hosts, or of current heavy recreational use that may result in trampling and soil compaction. Habitats have been intensively surveyed only in a few localities. Intervening areas are poorly known. Intensively inventory remaining habitat within the known range. Protect type localities by establishment of Mycological Species Interest Areas. Preservation of type localities and protection of localities on federal and state lands will reduce the risk of extirpation of the species (pp. J2-113 to 114).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Macowanites lymanensis	0-12-72-17	Extremely rare, local endemic, known only from type locality. Species may be impacted by recreational use, camping, trampling, and soil compaction. Species only known from this one location. Protection of type locality could lessen risk of extirpation. Discovery and protection of new locations for the species may also lessen risk of extirpation (pp. J2-127 to 128).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Macowanites mollis	0-35-50-15	Known only from two localities. The Larch Mountain locality has a history of extensive logging. Inventory both localities for extent of populations. Initiate process of establishing a Mycological Special Interest Area in Mt. Rainier National Park to protect type locality. Consider that process for the Larch Mountain locality if the species is relocated there. Protection of known localities will reduce risk of extirpation (pp. J2-128 to 129).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Marasmius applanatipes	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Martellia fragrans	0-35-50-15	Species has a common locus of abundance in the Mt. Shasta/Mt. Lassen region. Cutting of *Abies* forests may have removed and degraded habitat for the species. The condition of historical locations is not known. Mitigation could improve viability rating for the species. A system of refugia and potential remnant, dispersal habitat will increase the viability rating for the species and reduce the risk of extirpation (pp. J2–118 to 119).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Martellia idahoensis	0-35-50-15	The disjunct distribution of this species in Oregon and the disjunctions of those localities from its more common populations in Idaho suggest that it may be more common than now known. Further attention should be devoted to finding other populations, especially in old-growth true fir stands, to determine how rare it really is. Continued protection of the two localities of occurrence and general retention of old-growth true fir habitats will provide as good a protection for this species as can be recommended at this time. Protection of the known localities will lessen risk of extirpation from Oregon (pp. J2-129 to 130).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in over 30 years. The species is potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (p. 244).
Mycena hudsoniana	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

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Mycena overholtsii	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Mycena quinaultensis	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Mycena tenax	40-35-15-10	Habitat has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns to rare species by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Mythicomyces corneipes	40-35-15-10	Habitat has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Neolentinus adhaerens	0-40-38-23	Considered rare and known populations are few. Habitats have been reduced by logging of old-growth forests at low to mid-elevations. Air pollution could result in its decline. Accurate distributions are not available. There is inadequate information on ecology and habitat requirements. Mitigation will provide baseline data on the distribution and habitat requirements as well as improve its rating. Known populations would be protected (pp. J2-183 to 184).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Neolentinus kauffmanii	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Nivatogastrium nubigenum	55-25-20-0	Mitigation includes maintain abundant coarse woody debris in habitats occupied by this species. Provision of abundant, advance-decayed coarse woody debris as substrate for this fungus will minimize risk of extirpation (pp. J2-110 to 111).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Octavianina cyanescens (*Octavianina* sp. nov. #Trappe 7502)	0-0-60-40	Very rare and locally endemic. Species has not been seen in at least four collecting trips to the Lamb Butte Scenic Area since the types were collected and they have not been found elsewhere. Mitigation could reduce risk of extirpation and improve viability of species at known locations. Protection of known locations and expanding the area to include nearby, similar habitats will lessen the risk of extirpation. Designation of a Mycological Special Interest Area for the species will also benefit a number of other rare or endemic species which also occur here (pp. J2-107 to 109).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Octavianina macrospora	0-2-83-15	Type localities subject to heavy recreational use with attendant trampling and soil compaction. Collected in the 1930's, localities need historical research to identify the precise localities. Relocate type localities, conduct intensive inventory for populations in those localities and nearby areas with similar habitat. Establish Mycological Special Interest Areas to preserve the type localities or, if those localities have been disturbed to the point that mature to old-growth habitat no longer exists, seek nearby locations on federal land for preservation. Preservation of type localities of this extremely rare endemic will reduce the high risk of extirpation (pp. J2-131 to 132).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Octavianina papyracea	0-2-83-15	Type localities subject to heavy recreational use with attendant trampling and soil compaction. Collected in the 1930's, localities need historical research to identify the precise localities. Relocate type localities, conduct intensive inventory for populations in those localities and nearby areas with similar habitat. Establish Mycological Special Interest Areas to preserve the type localities or, if those localities have been disturbed to the point that mature to old-growth habitat no longer exists, seek nearby locations on federal land for preservation. Preservation of type localities of this extremely rare endemic will reduce the high risk of extirpation (pp. J2-131 to 132).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Otidea leporina	70-30-0-0	Widespread, but uncommon. Needs taxonomic study. Mitigation could improve proposed new rating, not original rating. Mitigation will provide baseline information on the distribution, frequency, habitat requirements, general ecology, and reproduction. It will reduce the risk of extirpation, and may improve habitat for the species within Matrix lands (pp. J2-192 to 193).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Otidea smithii	70-30-0-0	Widespread, but uncommon. Needs taxonomic study. Mitigation could improve proposed new rating, not original rating. Mitigation will provide baseline information on the distribution, frequency, habitat requirements, general ecology, and reproduction. It will reduce the risk of extirpation, and may improve habitat for the species within Matrix lands (pp. J2-192 to 193).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Phaeocollybia attenuata	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Phaeocollybia californica	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Phaeocollybia dissiliens	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Phaeocollybia fallax	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Phaeocollybia gregaria	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Phaeocollybia kauffmanii	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Phaeocollybia olivacea	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).
Phaeocollybia oregonensis (syn. *Phaeocollybia carmanahensis*)	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Phaeocollybia piceae	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Phaeocollybia pseudofestiva	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Phaeocollybia scatesiae	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).
Phaeocollybia sipei	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Phaeocollybia spadicea	45-38-12-5	Logging in low-elevation forests has removed extensive habitat for the species. Poor air quality could cause decline. The genus is currently under investigation. Therefore, improved knowledge of the number of species and their distributions and ecology is forthcoming. Mitigation will preserve known populations and allow for a comprehensive mapping of all species within the range of the northern spotted owl. It will also provide improved continuity between populations of species in coastal forests. Long-term monitoring will help to evaluate the long-term health of late-successional, low-elevation forests. Mitigation should improve the rating. It will lower the risk of extirpation of isolated populations as well as prevent further isolation of existing populations. Development of late-successional forest on both non-federal and federal lands in coastal areas would provide better connectivity of species (pp. J2-167 to 168).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Phellodon atratus (Phellodon atratum)	67-27-7-0	Past harvest has greatly reduced the number and extent of populations. Taxonomy, reproductive biology, and the species-specific host range of mycorrhizal associates are not well known. Mitigation might improve rating, and will provide baseline data on distribution, abundance, and ecology (pp. J2-175 to 176).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to the rarity of the species ands the lack of knowledge of the species population biology and the unpredictable nature of the disturbance events, all alternatives would provide inadequate habitat (p. 244). Species is unlikely to have stable populations under any alternative, largely due to the very low numbers of occurrence. Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Pholiota albivelata	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of the species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to the rarity of the species ands the lack of knowledge of the species population biology and the unpredictable nature of the disturbance events, all alternatives would provide inadequate habitat (p. 244). Species is unlikely to have stable populations under any alternative, largely due to the very low numbers of occurrence. Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Podostroma alutaceum	70-30-0-0	Past clearcutting of old-growth conifer stands has eradicated populations. Since this species reappears in the same site, but is rare, information is needed on identifying specific sites of populations. Reproductive biology is not well known. This species may have potential for biological control of wood decay fungi. Mitigation is needed to protect species from extirpation. Protection of known populations will reduce risk of extirpation. Survey will provide baseline information on the distribution, frequency, habitat requirements, general ecology, and reproduction (pp. J2-194 to 195).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Polyozellus multiplex	22-43-27-8	Non-habitat factors include some commercial harvest, marketed fresh to upscale chefs. Potentially affected by atmospheric pollution. Potential global warming may move range northward. Distribution and specific locations in this region are not well known. Information is needed on reproductive biology and factors which limit establishment of species. Mitigation may improve rating. Protection of known populations will reduce risk of extirpation (pp. J2-161 to 162).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Pseudaleuria quinaultiana	0-35-38-28	Rare saprobe, endemic to the Pacific Northwest. Past harvest of low-elevation, late-successional stands in Olympics and coastal Washington and Oregon probably destroyed prior populations. Increased recreational use in vicinity of known sites could threaten survival. Effects of potential global warming or increased air pollution not known. Inadequate information about possible other sites. Mitigation will probably not improve rating, but may be required to prevent extirpation. Protection of known populations may reduce risk of extirpation (pp. J2-207 to 208).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria abietina	55-20-18-8	Species is closely related with late-successional forests. Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria amyloidea	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria araiospora	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria aurantiisiccescens	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria botryis var. *aurantiiramosa*	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria celerivirescens	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria claviramulata	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria concolor f. marrii	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244.).
Ramaria concolor f. tsugina	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria conjunctipes var. *sparsiramosa* (*Ramaria fasciculata* var. *sparsiramosa)*	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Ramaria coulterae	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria cyaneigranosa	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria gelatiniaurantia	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria gracilis	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria hilaris var. *olympiana*	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria largentii	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria lorithamnus	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria maculatipes	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria rainierensis	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria rubella var. *blanda*	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria rubribrunnescens	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria rubrievanescens	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria rubripermanens	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria spinulosa var. *diminutiva* (*Ramaria spinulosa*)	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Ramaria stuntzii	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria suecica	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). Species has not been observed in the Northwest Forest Plan area in 30 years or more. Potentially extirpated within the Northwest Forest Plan area. Based on currently available information, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244).
Ramaria thiersii	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data for the species from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Ramaria verlotensis	55-20-18-8	Habitat has been reduced by logging, especially low to mid-elevation forests. Air pollution could cause a decline. Effects due to global climate change are uncertain. Overall distributions are unknown. Further information on frequency, reproduction, habitat requirements, and general ecology is needed. Mitigation is likely to improve rating. It will preserve known populations and type localities, determine overall distribution for species, and provide baseline information on the frequency, habitat requirements, and general ecology. Protection of known populations will reduce risk of extirpation. Surveys will provide baseline data from which we can determine the effects of forest management practices on distributions, frequency, biology, and reproduction. Mitigation should reduce the number of isolated populations across the landscape (pp. J2-165 to 166).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Rhizopogon abietis	55-25-20-0	Some localities are in designated wilderness or recreational areas; other localities are in areas with a history of extensive logging or intensive recreational use. Known from widely scattered but only a few localities in the range of the northern spotted owl. Mitigation includes establishing a Mycological Special Interest Area at Deadfall Meadows, Klamath National Forest. Continue protection of other localities. Protection of habitats in known localities will reduce risk of extirpation (pp. J2-111 to 113).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Rhizopogon atroviolaceus	55-25-20-0	Some localities are in designated wilderness or recreational areas; other localities are in areas with a history of extensive logging or intensive recreational use. Known from widely scattered but only a few localities in the range of the northern spotted owl. Mitigation includes establishing a Mycological Special Interest Area at Deadfall Meadows, Klamath National Forest. Continue protection of other localities. Protection of habitats in known localities will reduce risk of extirpation (pp. J2-111 to 113).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Rhizopogon brunneiniger	0-35-50-15	Extensive logging has impacted populations or restricted distribution. Most of the known localities are in areas that have been extensively logged. Known from only 5 collections. The widely dispersed, known localities suggest this species may become more common than now recognized. Inventory type locality on the Mt. Hood National Forest and the Deadfall Meadows area on the Klamath National Forest for populations and initiate process of establishing Mycological Special Interest Area. Protection of type locality at Barlow Camp, and the Deadfall Meadows area (which contains a concentration of local endemics and other rare species) will reduce the risk of extirpation (pp. J2-132 to 133).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Rhizopogon chamaleontinus (*Rhizopogon* sp. nov. #Trappe 9432)	0-0-60-40	Rare endemic known only from localities in southwest Oregon at mid to high-elevations in mature, old-growth stands. Extensive logging in these forests has removed much of the mature, old-growth habitat in which the species occurs. Protection of type localities and adjacent, similar habitats will reduce risk of extirpation. Protection of the type localities plus the larger populations they represent in the area will reduce risk of extirpation (pp. J2–137 to 138).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Rhizopogon ellipsosporus (*Alpova* sp. nov. # Trappe 9730)	0-0-60-40	Rare endemic known only from localities in southwest Oregon at mid to high-elevations in mature, old-growth stands. Extensive logging in these forests has removed much of the mature, old-growth habitat in which the species occurs. Protection of type localities and adjacent, similar habitats will reduce risk of extirpation. Protection of the type localities plus the larger populations they represent in the area will reduce risk of extirpation (pp. J2–137 to 138).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
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Rhizopogon evadens var. *subalpinus*	0-35-50-15	The disjunctions in known distribution may be an artifact, insofar as mountain hemlock stands are more or less continuous in the Oregon Cascades. Further attempts to collect the species may reveal it is less rare than thought. Protection of high-elevation, old-growth mountain hemlock and true fir stands should adequately minimize risk of extirpation. Preservation of habitat over the range of the species should adequately prevent extirpation (pp. J2-133 to 135).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Rhizopogon exiguus	0-35-50-15	The type locality is in a heavily used recreational area, with attendant trampling and soil compaction. Other localities are in areas with histories of extensive logging. Known only from four localities. Initiate the process of establishing a Mycological Special Interest Area for protection of type locality; inventory other localities to determine extent of populations. Protection of the type locality and Mary's Peak will reduce the risk of extirpation (pp. J2-135 to 136).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Rhizopogon flavofibrillosus	0-35-50-15	Wide ranging but rare fungi. Known localities are in areas subject either to extensive logging or heavy recreational use. The wide distributions suggest that the species may be more common than now known, although extensive collecting in the range of the northern spotted owl over the last century has resulted in few known collections. Mitigation may improve rating. Protection of known localities will reduce the risk of extirpation (pp. J2-123 to 124).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Rhizopogon inquinatus	0-35-50-15	Known localities are in areas with extensive history of logging or present, intensive recreational use. Known from only four collections. Inventory populations at known localities in the South Santiam Watershed; initiate process of establishing a Mycological Special Interest Area at one or both South Santiam localities. Protection of at least one of the South Santiam localities will reduce risk of extirpation of the species in Oregon (pp. J2-136 to 137).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Rhizopogon truncatus	55-25-20-0	Some localities are in designated wilderness or recreational areas; other localities are in areas with a history of extensive logging or intensive recreational use. Known from widely scattered but only a few localities in the range of the northern spotted owl. Mitigation includes establishing a Mycological Special Interest Area at Deadfall Meadows, Klamath National Forest. Continue protection of other localities. Protection of habitats in known localities will reduce risk of extirpation (pp. J2-111 to 113).	There is insufficient information to reach any conclusion regarding stability and distribution patterns for the species (p. 240). There is insufficient information to determine how any alternative would affect distribution and stability (p. 247).
Rhodocybe speciosa	0-40-38-23	Considered rare and known populations are few. Habitats have been reduced by logging of old-growth forests at low to mid-elevations. Air pollution could result in its decline. Accurate distributions are not available. There is inadequate information on ecology and habitat requirements. Mitigation will improve rating for the species. It will provide baseline data on the distribution and habitat requirements as well as improve its rating. Known populations would be protected (pp. J2-183 to 184).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Rickenella swartzii (Rickenella setipes)	40-35-25-0	Late-successional habitats have been reduced by logging but it is widely distributed and not at risk of isolation or extirpation. Air pollution and global climate change could cause a decline. Details of ecology, life history, and reproduction are lacking. Specific distributions have not been mapped. Mitigation will improve rating and provide needed information on the distribution, frequency, general ecology, habitat requirements, and reproduction (pp. J2-116 to 117).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Russula mustelina	5-50-28-18	Species occurs in low-elevation forests. Much of its habitat and range has probably been destroyed or modified by logging. Poor air quality may cause a decline. The distribution, frequency, and ecology require extensive study. Mitigation will preserve known populations and determine where additional populations occur within the range of the northern spotted owl. Mitigation will provide baseline data from which we can determine the effects of forest management practices on its distribution, frequency, habitat requirements, general ecology, and reproduction. Mitigation should prevent extirpation and reduce the number of isolated populations across the landscape (pp. J2-168 to 170).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Sarcodon fuscoindicus	67-27-7-0	Past harvest has greatly reduced the number and extent of populations. Taxonomy, reproductive biology, and the species-specific host range of mycorrhizal associates are not well known. Mitigation might improve rating, and will provide baseline data on distribution, abundance, and ecology (pp. J2-175 to 176).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Sedecula pulvinata	0-35-50-15	Species has a common locus of abundance in the Mt. Shasta/ Mt. Lassen region. Cutting of *Abies* forests may have removed and degraded habitat for the species. The condition of historical locations is not known. Mitigation could improve viability rating for the species. A system of refugia and potential remnant, dispersal habitat will increase the viability rating for the species and reduce the risk of extirpation (pp. J2–118 to 119).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Sowerbyella rhenana (Aleuria rhenana)	0-35-38-28	Clearcutting undoubtedly destroyed some populations, but no documentation. Taxonomy well established, but urgent need to identify specific sites. No information on reproductive strategy. Mitigation might improve rating if survey located numerous other sites. It will reduce the risk of extirpation (pp. J2-197 to 198).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Sparassis crispa	67-25-5-3	Extensive harvest of low-elevation old growth has resulted in a marked decline. Commercial and domestic harvest for food reduces the number of fruiting bodies available to produce spores for dissemination. Also reduces availability as food for non-human vertebrates. Effects of atmospheric factors likely act through impacts on host trees. Monitoring commercial harvest and assembling region-wide data should provide better information on distribution. Need better information on destructiveness to host, if any, and on reproductive strategy of species. If research determines that harvest reduces populations, then control of harvest would increase rating. It seems unlikely that other mitigation could improve rating, except in the very long run (>100 yr) because of the difficulty in producing very old trees quickly. Not implementing mitigation may decrease viability in certain parts of its range (pp. J2-211 to 212).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). While there is a high level of uncertainty due to a lack of specific population biology knowledge, relatively low collecting efforts, and the difficulty in reliably identifying the species, the species is unlikely to have stable populations under any alternative, largely due to the low number of occurrences. Alternative 1 reduces concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Spathularia flavida	70-30-0-0	Harvest of old growth has drastically reduced populations in the FEMAT region. Reproductive biology, local abundance, and distribution are not well known. Mitigation could improve rating. It should prevent extirpation of the species, and will likely improve the original rating. Mitigation will also provide baseline information on the distribution, frequency, habitat requirements, general ecology, and reproduction (pp. J2-189 to 190).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Stagnicola perplexa	40-35-15-10	Habitat for the species has been reduced by logging of old-growth forests. Air pollution could result in the decline of the species. The overall distributions are not available and ecology and habitat requirements are not fully understood. Mitigation will improve rating. Surveys will provide baseline data on the overall distributions and habitat requirements of individual species as well as improve rating. Known populations at risk, or those that are rare and locally distributed, would be protected. Mitigation will reduce risk of extirpation (pp. J2-180 to 181).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Thaxterogaster pavelekii (*Thaxterogaster* sp. nov. #Trappe 4867, 6242, 7427, 7962, 8520)	0-0-60-40	Extensive logging has removed most of the mature to old-growth coastal forests of Oregon, thereby removing habitat for the species. Intensive recreational use may also have an impact on the species through trampling and soil compaction. Protection of type and paratype localities could lessen the present substantial risk of extirpation. Discovery and protection of new populations may also decrease risk of extirpation (pp. J2-140 to 141).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Tremiscus helvelloides (syn. *Phlogiotis helvelloides*)	35-30-25-10	Clearcutting, especially in riparian edges and across seasonal stream beds, has undoubtedly reduced number of populations. Collecting for domestic consumption, scientific, or educational use should be monitored and, if necessary, controlled. No existing evidence that harvest reduces populations, but the potential exists. Identify specific populations and protect from unnatural disturbances, including road and trail building, and fish habitat improvement. Monitor known populations. If necessary, limit public access and/or discourage scientific or educational collecting. Small populations, scarcity of local populations, and vulnerability of habitat are threats which can be mitigated by district and regional action. Mitigation should have a positive effect on existing populations and could result in increased number of populations (pp. J-208 to 209).	Species has patterns of distribution with limited potential for connectivity between isolated sites or site clusters (p. 240). While there is a moderate level of uncertainty due to lack of knowledge of species population biology, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 244).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Tricholoma venenatum	0-2-83-15	Considered rare, with only one or a few known collections. Past actions unknown for certain, however, any perturbation of late-successional forests, e.g., logging, may influence present day distributions, especially in mid to low-elevation forests. Air pollution can cause the decline of the species. Overall distribution and ecology is poorly known. Mitigation will preserve the known populations and determine the overall distribution of the species within the Northwest Forest Plan. Mitigation will likely improve rating, and will reduce risk of extirpation of known populations. It will also provide baseline information for the species, which can be used in long-term monitoring to determine effects on species viability (pp. J2-170 to 171).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Tricholomopsis fulvescens	0-40-38-23	Considered rare and known populations are few. Habitats have been reduced by logging of old-growth forests at low to mid-elevations. Air pollution could result in its decline. Accurate distributions are not available. There is inadequate information on ecology and habitat requirements. Mitigation will improve rating. It will provide baseline data on the distribution and habitat requirements as well as improve its rating. Known populations would be protected (pp. J2-183 to 184).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Tuber asa (*Tuber* sp. nov. #Trappe 2302)	0-0-60-40	Extensive logging has removed most of the mature to old-growth coastal forests of Oregon, thereby removing habitat for the species. Intensive recreational use may also have an impact on the species through trampling and soil compaction. Protection of type and paratype localities could lessen the present substantial risk of extirpation. Discovery and protection of new populations may also decrease risk of extirpation (pp. J2-140 to 141).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
FUNGI			
Tuber pacificum (*Tuber* sp. nov. #Trappe 12493)	0-0-60-40	#Trappe 12359: Extensive logging has removed most of the mature to old-growth coastal forests of Oregon, thereby removing habitat for the species. Intensive recreational use may also have an impact on the species through trampling and soil compaction. Protection of type and paratype localities could lessen the present substantial risk of extirpation. Discovery and protection of new populations may also decrease risk of extirpation (pp. J2-140 to 141).	Species has highly isolated occurrences (sites) with little potential for gene flow between them (p. 239). With such limited numbers and distributions, any additional protected population might contribute substantially to the species meeting persistence objectives (p. 243). While there is a moderate level of uncertainty due to the rarity of the species, the lack of knowledge of species population biology, and the unpredictable nature of disturbance events, all alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 244). Alternative 1 will reduce concerns by requiring management of all known sites and strategic surveys to find additional sites (p. 245).
Tylopilus porphyrosporus (*Tylopilus pseudoscaber*)	17-43-40-0	Loss of low-elevation old-growth and coastal Sitka spruce forests has contributed to loss of habitat, and potential isolation of populations. Mitigation could improve rating by providing for low-elevation, old-growth habitat, well-distributed throughout the coastal and low-elevation areas. Protection of existing low-elevation and coastal Sitka spruce old-growth forests, along with managing for additional stands to achieve old-growth condition should improve viability rating (pp. J2-104 to 106).	Species is distributed in groups or clusters of occurrences (isolated site clusters), with potential for gene flow among subpopulations within the groups and little potential for gene flow between the isolated groups (p. 240). While there is a moderate level of uncertainty due to a lack of knowledge of species population biology, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 243). Species is unlikely to have stable populations under any alternative, largely due to the very low numbers of occurrence. Alternative 1 will reduce concerns to rare species by requiring management of all known sites and strategic surveys to find additional sites (p. 245).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Bryoria pseudocapillaris	0-12-59-29	One of the rare, oceanic-influenced lichens. The species is an epiphyte that occurs within sight of the ocean. Species distributions are poorly known. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values and due to the coastal highway. Recreational developments inadvertently destroy much of the potential habitat of the species. Rating reflects the limited potential for federal management along the immediate coast and the few known sites for the species. The low rating also reflects the uncertain future, as it may even be destroyed on federal lands in an effort to develop recreational areas. Mitigation could improve the rating. Protection of known sites will preserve this element of biodiversity on the coast (pp. J2-243 to 246).	Management of known sites would help maintain current distribution of populations on federally managed lands. Due to the rarity of the species, management of known sites may not ensure sufficient distribution to maintain stable populations over time. Recreation and recreational development would continue to contribute to the loss of undocumented sites and could eliminate unknown populations. All alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 292).
Bryoria spiralifera	0-12-59-29	One of the rare, oceanic-influenced lichens. The species is an epiphyte that occurs within sight of the ocean. This species is only known from the Samoa Peninsula in Humboldt County, California. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values. Rating reflects the limited potential for federal management along the immediate coast and the few known sites for the species. The low rating also reflects the uncertain future, as it may even be destroyed on federal lands in an effort to develop recreational areas. Mitigation could improve the rating. Protection of known sites will preserve this element of biodiversity on the coast (pp. J2-243 to 246).	Management of known sites would help maintain current distribution of populations on federally managed lands. Due to the rarity of the species, management of known sites may not ensure sufficient distribution to maintain stable populations over time. Recreation and recreational development would continue to contribute to the loss of undocumented sites and could eliminate unknown populations. All alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 292).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Bryoria subcana	0-12-59-29	One of the rare, oceanic-influenced lichens. The species is an epiphyte that occurs within sight of the ocean. This species is specific to *Picea* along the coastal bays and streams in a few sites in Alaska, British Colombia and it is found on conifers, lignum, and sand hills in one site in Oregon and two in California. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values. Rating reflects the limited potential for federal management along the immediate coast and the few known sites for the species. The low rating reflects its uncertain future, as it may even be destroyed on federal lands in an effort to develop recreational areas. Mitigation could improve the rating. Protection of known sites will preserve this element of biodiversity on the coast (pp. J2-243 to 246).	Management of known sites would help maintain current distribution of populations on federally managed lands. Due to the rarity of the species, management of known sites may not ensure sufficient distribution to maintain stable populations over time. Recreation and recreational development would continue to contribute to the loss of undocumented sites and could eliminate unknown populations. All alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 292).
Buellia oidalea	0-12-59-29	This rare, oceanic-influenced species ranges from Baja, Mexico to Vancouver Island, British Colombia. Within the range of the Northwest Forest Plan it is known only from three sites in Washington. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values. Rating reflects the limited potential for federal management along the immediate coast and the few known sites for the species. The low rating reflects the uncertain future, as it may even be destroyed on federal lands in an effort to develop recreational areas. Mitigation could improve the rating. Protection of known sites will preserve this element of biodiversity on the coast (pp. J2-243 to 246).	There are high concerns for this species because of low number of known sites, low numbers of individuals, limited distribution, and narrow ecological amplitude (USDA et al. 1993; Appendix J2 in USDA, USDI 1994b). Management of known sites would help maintain the current distribution of populations on federally managed lands. Since this species has restricted distribution, few known sites, and few sites on federally managed land, the management of known sites would not increase the likelihood of maintaining stable populations within the Northwest Forest Plan area. While there is a high level of uncertainty because of limited distribution and limited populations, few populations on federally managed land, and limited potential suitable habitat on federally managed land, all alternatives would provide inadequate habitat (including known sites) to maintain *Buellia oidalea* (p. 307).
Calicium abietinum	22-46-29-3	This is a diminutive species that is poorly known or collected in the Pacific Northwest. Positive identification requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habitat. Mitigation may improve the rating (p. J2-236).	There is still limited information on the distribution, ecology, and abundance in the Northwest Forest Plan area. The relatively few records probably reflect the lack of widespread surveys and the small size of these lichens. Information is limited on distribution, abundance, and habitat associations for *Calicium abietinum*. Because so little is known, there is insufficient information to determine how any alternative would affect the distribution and stability of this species (p. 290).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Calicium adspersum	22-46-29-3	This is a diminutive species that is poorly known or collected in the Pacific Northwest. Positive identification of the species requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habit of the species. Mitigation may improve the rating. The species is a valuable indicator of forest continuity (p. J2-236).	*Calicium adspersum* is still poorly known in the Northwest Forest Plan area and there is limited information available regarding its distribution, habitat, and abundance. There is uncertainty regarding the identification of the historical record, whether this species occurs in the Northwest Forest Plan area, and if it is closely associated with late-successional or old-growth forests (USDA, USDI Species Review Panel 1999b). Based on current information, this species has limited distribution in the Northwest Forest Plan area, or may not occur in this region at all, so management of known sites may not increase the likelihood of maintaining stable populations. Management of known sites would help maintain the current distribution of populations. There is insufficient information regarding this species to determine how any alternative would affect distribution and stability (p. 302).
Cetrelia cetrarioides	9-54-32-5	The species occurs as epiphytes on trees within the riparian areas. Many of the lichen species are known to be dispersal limited (Esseen et al. 1981). Much of the suitable habitat has been harvested. *Cetrelia cetrarioides* occurs widely in British Columbia and Alaska. It has been found at nine sites in the Northwest Plan study area. Increased human population growth at the lower elevations as well as degraded air quality pose risks to the viability of the species. Rating reflects the documented association with mature riparian vegetation. Mitigation will improve the rating (p. J2-239).	*Cetrelia cetrarioides* occurs primarily in riparian forests and hardwood stands, but also in moist forests at low to mid-elevation (McCune and Geiser 1997), and in a range of stand ages (USDA, USDI Species Review Panel 1999b). Since 1993, the number of known sites has increased from 6 to 49 sites, with 24 recent federal sites. It is uncertain if this species is closely associated with late-successional or old-growth forests. Current information suggests that *Cetrelia cetrarioides* has a widespread geographic range within the Northwest Forest Plan area, has a widespread but spotty distribution within this range, and occurs in isolated site clusters. Management of known sites would help maintain the current distribution of this species across its range in the Northwest Forest Plan area. While there is a moderate level of uncertainty, Alternative 1 would provide sufficient habitat (including known sites) to allow *Cetrelia cetrarioides to* stabilize in a pattern similar to its reference distribution (p. 305).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Chaenotheca chrysocephala	22-46-29-3	This is a diminutive species that is poorly known or collected in the Pacific Northwest. Positive identification of the species requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habit of the species. Mitigation may improve the rating (p. J2-236).	There is still limited information on the distribution, ecology, and abundance in the Northwest Forest Plan area. The relatively few records probably reflect the lack of widespread surveys and the small size of these lichens. Information is limited on distribution, abundance, and habitat associations for *Chaenotheca chrysocephala*. Because so little is known, there is insufficient information to determine how any alternative would affect the distribution and stability of this species (p. 290).
Chaenotheca ferruginea	22-46-29-3	Diminutive species that is poorly known or collected in the Pacific Northwest. Positive identification requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habit of the species. Mitigation may improve the rating. The species is a valuable indicator of forest continuity (p. J2-236).	There is still limited information on the distribution, ecology, and abundance in the Northwest Forest Plan area. The relatively few records probably reflect the lack of widespread surveys and the small size of this lichen. Information is limited on distribution, abundance, and habitat associations for *Chaenotheca ferruginea*. Because so little is known, there is insufficient information to determine how any alternative would affect the distribution and stability of this species (p. 290).
Chaenotheca subroscida	22-46-29-3	Diminutive species that is poorly known or collected in the Pacific Northwest. Positive identification requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habit of the species. Mitigation may improve the rating (p. J2-236).	*Chaenotheca subroscida* is poorly known in the Northwest Forest Plan area. Little is known about the distribution, habitat, and abundance of this species. Because of the difficulty with accurate identification of specimens, it is uncertain if this species occurs in the Northwest Forest Plan area. It is also unknown if this species is closely associated with late-successional or old-growth forests (USDA, USDI Species Review Panel 2000b). The geographic and biological distribution patterns are unknown at this time. Based on current information, this species has limited distribution in the Northwest Forest Plan area, or may not occur in this region at all, so management of known sites may not increase the likelihood of maintaining stable populations. Management of known sites would help maintain the current distribution of populations. There is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 302).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Chaenothecopsis pusilla	22-46-29-3	Diminutive species that is poorly known or collected in the Pacific Northwest. Positive identification requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habit of the species. Mitigation may improve the rating (p. J2-236).	*Chaenothecopsis pusilla* is poorly known in the Northwest Forest Plan area. Little is known about the distribution, habitat, and abundance of this species. Because of the difficulty with accurate identification of specimens, it is uncertain if this species occurs in the Northwest Forest Plan area. It is also unknown if this species is closely associated with late-successional or old-growth forests (USDA, USDI Species Review Panel 2000b). The geographic and biological distribution patterns of *Chaenothecopsis pusilla* are unknown at this time. Based on current information, this species has limited distribution in the Northwest Forest Plan area, or may not occur in this region at all, so management of known sites may not increase the likelihood of maintaining stable populations of this species. In all action alternatives, management of known sites would help maintain the current distribution of populations. There is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 302).
Collema nigrescens	9-54-32-5	This species occurs as epiphytes on trees within riparian areas. *Collema nigrescens* has been collected from ranges as disparate as southeast Alaska and the Galapagos Islands in Ecuador. It has been found in 11 sites in Oregon and 3 sites in Washington. In most occurrences within the Northwest Forest Plan study area, it has been found on hardwoods, most commonly *Quercus garryana*. Much of the suitable habitat has been harvested. Increased human population growth at the lower elevations as well as degraded air quality pose risks to the viability of the species. Rating reflects the documented association with mature riparian vegetation. Mitigation will improve the rating (p. J2-239).	*Collema nigrescens* has a broad global distribution and occurs in western North America from Alaska to California (Purvis et al. 1992 and McCune and Geiser 1997). There are relatively few documented locations for *Collema nigrescens* north of the OR Klamath Physiographic Province through Washington. There are 28 known sites for this part of the Northwest Forest Plan area; 16 are recent federal sites (Table F-2). The range for this species has been split into two geographic areas: (1) the OR Klamath, CA Klamath, and CA Coast Range Physiographic Provinces; and, (2) Washington and Oregon except the OR Klamath Physiographic Province. There is insufficient information regarding *Collema nigrescens* in Washington and Oregon outside of the OR Klamath Physiographic Province to determine how any alternative would affect its distribution and stability (p. 271).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Dendriscocaulon intricatulum	0-20-52-28	*Dendriscocaulon intricatulum* is most common in the Pacific Northwest in a variety of late-successional forest types. Much of the suitable habitat has been harvested. This species is very sensitive to air pollutants. Rating reflects the low number of known sites as well as the narrow ecological tolerance of this rare species. Mitigation may improve the rating (p. J2-229).	*Dendriscocaulon intricatulum* is a cryptic lichen and may be difficult to locate; it has the potential to be overlooked because of its small size. *Dendriscocaulon intricatulum* is a Pacific Northwest endemic ranging from southeast Alaska to northern California (USDA, USDI Species Review Panel 1999b). Since 1993, the number of known sites in the Northwest Forest Plan area has increased from 1 to 72, with 66 recent sites on federally managed land (USDA, USDI 2000b; Appendix J2 in USDA, USDI 1994b; and USDA, USDI Species Review Panel 1999b and 2000b). The majority of recent sites are reported from southern Oregon (USDA, USDI Species Review Panel 1999b and 2000b). The taxonomy of *Dendriscocaulon intricatulum* is being revised (USDA, USDI 2000b and USDA, USDI Species Review Panel 1999b). While there is a moderate level of uncertainty, all alternatives would provide sufficient habitat (including known sites) to allow this species to stabilize in a pattern similar to its reference distribution (p. 295).
Dermatocarpon luridum	10-47-27-16	This species is truly aquatic and will die if desiccated. It is found on rocks in streams where it provides habitat for aquatic invertebrate populations. It is found in higher order streams that experience greater stream flow fluctuations and flooding. Streams where the species occurs are at low to mid elevations. This species has been found discontinuously in northern and southern British Columbia, Oregon, Colorado, Virginia and northern Europe. In the Northwest Forest Plan area, it is known only from Silver Creek Canyon in Silver Falls State Park, Oregon (Marion County). Acid rain may have an impact. This species is very sensitive to siltation and fluctuation of water flows. Species distributions are poorly known. Much of the suitable habitat has experienced habitat siltation and other disturbances (p. J2-242).	The number of known sites in the Northwest Forest Plan area has increased to 13, with 6 recent federal sites. This species grows on rock in or alongside lakes, small streams, and rivers, across a broad elevational range from 1,000 to 6,500 feet (McCune and Geiser 1997; USDA, USDI 2000b). About half the known sites are on federally managed land and all federal sites are located in Riparian Reserves (USDA, USDI 2000b and USDA, USDI Species Review Panel 1999b). While there is a moderate level of uncertainty due to rarity of the species and lack of knowledge, all alternatives would provide sufficient habitat (including known sites) to allow this species to stabilize in a pattern similar to its reference distribution. Concern for this aquatic lichen is not high because of the provisions for riparian areas in the Aquatic Conservation Strategy (p. 297).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Fuscopannaria saubinetii (syn. *Pannaria saubinetii*)	17-56-23-4	Species does not colonize a stand until it is over 140 years old (p. J2-232). Much of the suitable habitat has been harvested. This species is very sensitive to air pollution. Late-Successional Reserves will provide habitat if the species occurs in reserves. Riparian Reserves also provide suitable habitat. Rating reflects the close association with old-growth stands and the slow colonization rates. Mitigation will improve the rating (p. J2-233). Mitigation should maintain or increase the populations of this lichen (p. J2-234).	*Pannaria saubinetii* has a broad global distribution. It is widespread and occurs in various habitats and stand ages, on trees (mainly hardwoods), shrubs, and mossy rocks in moist hardwood and conifer forests, and riparian areas from low to mid-elevation, mainly west of the Cascade crest (McCune and Geiser 1997 and USDA, USDI Species Review Panel 1999b). Since 1993, the number of known sites in the Northwest Forest Plan area has increased from 12 to 145, with 114 recent federal sites (USDA, USDI Species Review Panel 2000b). At this time, there is an unknown concern for its persistence, as the reserve land allocations, and other standards and guidelines of the Northwest Forest Plan are likely to provide for stable populations of *Pannaria saubinetii* on federally managed lands within the Northwest Forest Plan area (USDA, USDI Species Review Panel 1999b, 2000b, and 2000c). All alternatives would provide sufficient habitat (including known sites) to allow this species to stabilize in a pattern similar to its reference distribution (p. 307).
Heterodermia sitchensis	Not rated	Not analyzed in J2.	*Heterodermia sitchensis* has not been documented in the Northwest Forest Plan area. This species is known to occur in British Columbia, and it is suspected that suitable habitat may exist in the Northwest Forest Plan area (USDA, USDI Species Review Panel 1999b and 2000b). The geographic and biological distribution pattern of this lichen is unknown. Information regarding distribution, abundance, and habitat, is limited. There is insufficient information regarding the species to determine how any alternative would affect its distribution and stability (p. 300).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Hypogymnia duplicata	0-20-63-17	*Hypogymnia duplicata* is found in coastal, low-elevation to wet windswept sites and is more common northward into British Columbia and Alaska. It occurs in areas with frequent and large quantities of fog and rainfall. Most of the suitable habitat in the coast ranges and in the Olympics has been harvested. There are four known sites in the Northwest Plan study area. This species is listed as threatened in Oregon by the State Natural Heritage Program. Rating reflects the optimism that other localities of this species may exist that are not documented at this time and that those stands will be protected in the late-successional reserve system. Mitigation could improve the rating (p. J2-227).	*Hypogymnia duplicata* is a Pacific Northwest endemic. It occurs from Alaska to northwestern Oregon. There are relatively high numbers of sites on the Mt. Baker-Snoqualmie National Forest. Concerns have decreased in northern Washington because of the increase in number of known sites, although it is still restricted to specific habitat conditions and considered to be poorly distributed and rare. While there is a moderate level of uncertainty, all alternatives would provide habitat (including known sites) sufficient to allow it to stabilize in northwest Washington in a pattern different from its reference distribution. South of this area and throughout the rest of its range in the Northwest Forest Plan area, with a high level of uncertainty, all alternatives would provide inadequate habitat (including known sites) to maintain the species.
Hypogymnia vittata (misspelled in FEMAT as *Hygomnia vittiata*)	Not rated	Not analyzed in J2.	*Hypogymnia vittata* has not been documented in the Northwest Forest Plan area. This species is known to occur in British Columbia, and it is suspected that suitable habitat may exist in the Northwest Forest Plan area (USDA, USDI Species Review Panel 1999b and 2000b). The geographic and biological distribution patterns of this lichen are unknown. Information regarding distribution, abundance, and habitat is limited. There is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 300).
Hypotrachyna revoluta	Not rated	Not analyzed in J2.	*Hypotrachyna revoluta* has a broad global distribution, and is reported to occur in western North America from coastal Alaska to California (Purvis et al. 1992 and McCune and Geiser 1997). There is only one known site in the Northwest Forest Plan area and it occurs on federally managed land (USDA, USDI Species Review Panel 1999b and 2000b). The geographic and biological distribution patterns of this lichen are unknown. Information regarding distribution, abundance, and habitat is limited. There is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 300).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Leptogium burnetiae var. *hirsutum*	9-54-32-5	This species occurs as epiphytes on trees within riparian areas. Much of the suitable habitat has been harvested. Increased human population growth at the lower elevations as well as degraded air quality pose risks to the viability of the species. Rating reflects the documented association with mature riparian vegetation. Mitigation will improve the rating (p. J2-239).	This species is known from only three sites in the Northwest Forest Plan area; one site is known on federally managed land and this has been reported since 1993 (see Table F-2). Current information suggests that *Leptogium burnetiae* var. *hirsutum* occurs in a very limited geographic range within the Northwest Forest Plan area, it is limited to a small portion of this range, and it occurs in isolated sites. Management of known sites would help maintain the current distribution of populations on federally managed lands in the Northwest Forest Plan area. However, since there are few known sites on federally managed land, the management of known sites may not increase the likelihood of maintaining stable populations for this species distributed in a pattern similar to its reference distribution on federally managed lands within the Northwest Forest Plan area. Because this species is considered rare, and there are few known sites on federally managed land, there is insufficient information to determine how any alternative would affect its distribution and stability (p. 284).
Leptogium cyanescens	9-54-32-5	This species occurs as an epiphyte on trees within riparian areas. *Leptogium cyanescens* has a broad distribution, ranging from Ecuador to Alaska and including most of eastern North America. Only one record has been located from the Northwest Plan area. It was found growing on a shrub in the Dunn State Forest in Oregon (Benton County). Throughout its range, it appears to grow most abundantly on hardwoods and shaded rocks. Much of the suitable habitat has been harvested. Increased human population growth at the lower elevations as well as degraded air quality pose risks to the viability of the species. Rating reflects the documented association with mature riparian vegetation. Mitigation will improve the rating (p. J2-239).	*Leptogium cyanescens* is rare and occurs in all three states, but information is limited on its distribution, habitat, and abundance in this region. There are six known sites; only three are recent sites on federally managed land. It is thought to occur in a moderately widespread geographic range within the Northwest Forest Plan area, but the distribution within that overall range is unknown due to little available information. Current information suggests the reference distribution is isolated sites. Management of known sites would help maintain the current distribution of populations on federally managed lands in the Northwest Forest Plan area. However, since there are few known sites on federally managed land, the management of known sites may not increase the likelihood of maintaining stable populations for this species distributed in a pattern similar to reference distribution on federally managed lands within the Northwest Forest Plan area. Because this species is considered rare, and there are few known sites on federally managed land, there is insufficient information to determine how any alternative would affect its distribution and stability (p. 284).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Leptogium rivale	10-47-27-16	This species is truly aquatic and unlike most other lichens will die if desiccated. It is found on rocks in streams where it provides habitat for aquatic invertebrate populations. Streams where the species occurs are at low to mid elevations. *Leptogium rivale* is known from two mid-order streams in the H.J. Andrews and one stream in the Bitterroot Mountains of Montana. Acid rain may have an impact on the species. This species is very sensitive to siltation and fluctuation of water flows. Much of the suitable habitat has experienced habitat siltation and other disturbances. Species distributions are poorly known (p. J2-242).	*Leptogium rivale* occurs in all three states. It is an aquatic lichen endemic to western North America. Since 1993, the number of known sites in the Northwest Forest Plan area has increased from 2 to 37 in Washington and Oregon, with 28 recent federal sites and additional undocumented locations. Most known sites are on federally managed land and all federal sites occur within Riparian Reserves. While there is a moderate level of uncertainty due to rarity of the species and lack of knowledge, all alternatives would provide sufficient habitat (including known sites) to allow *Leptogium rivale* to stabilize in a pattern similar to its reference distribution. However, concern for this species is not high because of the provisions for riparian areas in the Aquatic Conservation Strategy (p. 297).
Leptogium teretiusculum	9-54-32-5	The species occurs as epiphytes on trees within riparian areas. Only five records exist for *Leptogium teretiusculum* in regional herbaria. One record exists for Oregon, at Scout Lake, east of the Cascade Crest (Jefferson County). Much of the suitable habitat has been harvested. Increased human population growth at the lower elevations as well as degraded air quality pose risks to the viability of the species. Rating reflects the documented association with mature riparian vegetation. Mitigation will improve the rating (p. J2-240).	*Leptogium teretiusculum* is poorly known in the Northwest Forest Plan area. Information is limited on its distribution, habitat, and abundance in this region. *Leptogium teretiusculum* appears to be rare in the Northwest Forest Plan area based on the number of reported sites (USDA, USDI Species Review Panel 1999b). The species is known from seven sites, from northern Washington to southwest Oregon (USDA, USDI Species Review Panel 2000b). Since 1993 there have been three sites reported from federally managed land. However, survey efforts have been limited. Current information suggests that *Leptogium teretiusculum* has a widespread geographic range within the Northwest Forest Plan area, has a widespread but spotty distribution within this range, and occurs in isolated sites. It is uncertain if *Leptogium teretiusculum* is closely associated with late-successional or old-growth forests; it is typically found on rock, soil, and the bark of deciduous trees (McCune and Geiser 1997, and USDA, USDI Species Review Panel 2000b). Based on current information, *Leptogium teretiusculum* has a limited distribution in the Northwest Forest Plan area, so management of known sites may not increase the likelihood of maintaining a stable population of this species due to its presumed rarity. Because so little is known about this species, there is insufficient information to determine how any alternative would affect its distribution and stability (p. 305).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Lobaria linita	0-20-52-28	*Lobaria linita* is most common in the Pacific Northwest in a variety of late-successional forest types. It is known from 10 sites in Washington and one in Oregon. It grows epiphytically on trees and tundra low shrubs, and over boulders and mosses. Much of the suitable habitat has been harvested. This species is very sensitive to air pollutants. It is fairly large or distinct so it is easy to identify and its distributions are fairly well known relative to other lichen species. Rating reflects the low number of known sites as well as the narrow ecological tolerance of this rare species. Mitigation may improve the rating for the species (p. J2-229).	Since 1993, the number of known sites has increased from 10 to 89, with 42 recent federal sites. Typically, only a few individuals are present in a local population (USDA, USDI 2000b). *Lobaria linita* is presently thought to have a geographic distribution that is limited within the Northwest Forest Plan area, and is further limited to a small portion of that overall range. The species is considered to have a reference distribution of isolated sites. Throughout its range in the Northwest Forest Plan area, while there is a high level of uncertainty, all alternatives would provide inadequate habitat (including known sites) to maintain the species. This is because *Lobaria linita* is known from few sites that are widely separated geographically, populations are typically small, and populations may be vulnerable to stochastic events (p. 280).
Lobaria oregana	17-56-23-4	Species does not colonize a stand until it is over 140 years old (p. J2-232). Much of the suitable habitat has been harvested. This species is very sensitive to air pollution. Late-Successional Reserves will provide habitat if the species occurs in reserves. Riparian Reserves also provide suitable habitat. Rating reflects the close association with old-growth stands and the slow colonization rates. Mitigation will improve the rating (p. J2-233). Mitigation should maintain or increase the populations of this lichen (p. J2-234).	The number of known sites has increased from 42 to 544 in Oregon and Washington. Only 7 sites are reported from California. There is a high concern for this species in California because it is restricted in distribution and known from few sites. Management of known sites would help maintain current distribution (p. 273). Because of limited distribution in California, and the few sites on federally managed lands, all alternatives would provide inadequate habitat to maintain this species. The level of uncertainty is moderate due to lack of knowledge abut this species in this part of its range, and the potential for stochastic events to affect populations (p. 274).
Microcalicium arenarium	22-46-29-3	This is a diminutive species that is poorly known or collected in the Pacific Northwest. Positive identification requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habit of the species. Mitigation may improve the rating (p. J2-236).	There is still limited information on the distribution, ecology, and abundance in the Northwest Forest Plan area. The relatively few records probably reflect the lack of widespread surveys and the small size of this lichen. Information is limited on distribution, abundance, and habitat associations for M*icrocalicium arenarium*. Because so little is known, there is insufficient information to determine how any alternative would affect the distribution and stability of these species (p. 290).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Nephroma bellum	17-56-23-4	Species does not colonize a stand until it is over 140 years old (p. J2-232). Much of the suitable habitat has been harvested. This species is very sensitive to air pollution. Late-Successional Reserves will provide habitat if the species occurs in reserves. Riparian Reserves also provide suitable habitat. Rating reflects the close association with old-growth stands and the slow colonization rates. Mitigation will improve the rating (p. J2-233). Mitigation should maintain or increase the populations of this lichen (p. J2-234).	Since 1993, the number of known sites in the Northwest Forest Plan area has increased from 9 to 135, with 117 recent federal sites. Current information indicates that *Nephroma bellum* may be a common species in the Northwest Forest Plan area. At this time, there is an unknown concern for its persistence, as the reserve land allocations and other standards and guidelines of the Northwest Forest Plan are likely to provide for stable populations on federally managed lands within the Northwest Forest Plan area (USDA, USDI Species Review Panel 1999b, 2000b, and 2000c). All alternatives would provide sufficient habitat (including known sites) to allow this species to stabilize in a pattern similar to its reference distribution (p. 307).
Nephroma isidiosum	Not rated	Not analyzed in J2.	*Nephroma isidiosum* has not been documented in the Northwest Forest Plan area. This species is known to occur in British Columbia, and it is suspected that suitable habitat may exist in the Northwest Forest Plan area (USDA, USDI Species Review Panel 1999b and 2000b). The geographic and biological distribution patterns of this lichen are unknown. Information regarding distribution, abundance, and habitat, is limited for *Nephroma isidiosum*. There is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 300).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Nephroma occultum	0-20-52-28	*Nephroma occultum* is a Pacific Northwest endemic which occurs almost exclusively in stands greater than 200 years old. This species is known from only five sites in the United States. All but one known occurrence have been reported from pristine, old-growth forest of approximately 400 years of age. Much of the suitable habitat has been harvested. This species is very sensitive to air pollutants. This species is listed as endangered by the Oregon Natural Heritage Program. This is a fairly large, distinct species so it is easy to identify and its distributions are fairly well known relative to other lichens. Rating reflects the low number of known sites as well as the narrow ecological tolerance of the species. Mitigation may improve the rating (p. J2-229).	*Nephroma occultum* is a western North American endemic occurring from British Columbia to southern Oregon. It is a canopy lichen that is rarely and unpredictably found in litter fall on the forest floor, making it difficult to confidently determine its presence in a stand. Since 1993, the number of sites reported for this species in the Northwest Forest Plan area has increased from 21 to about 100, with 74 recent sites on federally managed land; about 30 percent occur in reserve land allocations. It occurs in older, moist conifer forests, from low to mid-elevation on the west slope of the Cascades in Oregon and Washington (USDA, USDI 2000b and McCune and Geiser 1997). Management of known sites would help maintain the current distributions of populations on federally managed lands. It is unknown if current knowledge of *Nephroma occultum* represents its true rarity, given the difficulty surveying them, and because of limited survey efforts to date. While there is a high level of uncertainty, all alternatives would provide habitat (including known sites) sufficient to allow this species to stabilize in a pattern different from its reference distribution (pp. 293-295).
Niebla cephalota	0-12-59-29	This species is one of the rare, oceanic-influenced lichens. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values and due to the coast highway. Recreational development on federal lands inadvertently destroys much of the potential habitat for this species. Rating reflects the limited potential for federal management along the immediate coast and the few known sites for the species. Mitigation could improve the rating (p. J2-245).	Management of known sites would help maintain the current distribution of populations on federally managed lands. However, it would not increase the likelihood of maintaining stable populations. Surveys would increase protection; however, few new populations are likely to be discovered. Because the species has extremely limited distributions and small populations, and few populations are on federally managed land, there is a high level of uncertainty that all alternatives would provide inadequate habitat to maintain this species in the Northwest Forest Plan area (p. 286).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Pannaria rubiginosa	0-20-52-28	*Pannaria rubiginosa* is most common in the Pacific Northwest in a variety of late-successional forest types. Rare throughout its range, *Pannaria rubiginosa* has been reported very discontinuously from British Columbia to North Carolina. It has been reported from only two locations in the study area: Fisherman's Bend, a BLM recreational site near Salem, Oregon; and the Seattle Park area of Mt. Rainier (Pierce County, Washington). Much of the suitable habitat has been harvested. This species is very sensitive to air pollutants. It is a fairly large or distinct species so it is easy to identify and its distributions are fairly well known relative to other lichen species. Rating reflects the low number of known sites as well as the narrow ecological tolerance of this rare species. Mitigation may improve the rating (p. J2-230).	*Pannaria rubiginosa* is considered rare in the Northwest Forest Plan area. There are high concerns for this species because of low number of known sites, low numbers of individuals, limited distributions, and narrow ecological amplitudes. *Pannaria rubiginosa* has a broad global distribution (Purvis et al. 1992). In 1993, it was only known from two sites in Oregon (Appendix J2 in USDA, USDI 1994b), but is now known from a total of 17 sites within the Northwest Forest Plan area; 8 are recent federal sites. Current information suggests that *Pannaria rubiginosa* has a widespread geographic range within the Northwest Forest Plan area, its distribution is limited throughout this range, and it occurs in isolated sites. All alternatives would provide sufficient habitat (including known sites) to allow *Pannaria rubiginosa* to stabilize in a pattern similar to its reference distribution, although with a high level of uncertainty (p. 307).
Peltigera pacifica	17-56-23-4	Species does not colonize a stand until it is over 140 years old (p. J2-232). Much of the suitable habitat has been harvested. This species is very sensitive to air pollution. Late-Successional Reserves will provide habitat if the species occurs in reserves. Riparian Reserves also provide suitable habitat. Rating reflects the close association with old-growth stands and the slow colonization rates. Mitigation will improve the rating (p. J2-233). Mitigation should maintain or increase the populations of this lichen (p. J2-234).	*Peltigera pacifica* was included in the nitrogen-fixing lichen group for the FEMAT analysis. A major concern for this species was not rarity, but potential air pollution effects over the 100-year timeframe used in the assessment. Since 1993, the number of known sites has increased from 6 to 46 sites, with 29 recent federal sites. There are additional undocumented locations (USDA, USDI Species Review Panel 1999b). It is uncertain if the species is closely associated with late-successional or old-growth forests. Current information suggests that *Peltigera pacifica* has a widespread geographic range within the Northwest Forest Plan area, has a limited distribution within this range, and occurs in isolated sites. While there is a moderate level of uncertainty, Alternative 1 would provide sufficient habitat (including known sites) to allow *Peltigera pacifica* to stabilize in a pattern similar to its reference distribution (p. 305).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Platismatia lacunosa	9-54-32-5	The species occurs as epiphytes on trees within riparian areas. *Platismatia lacunosa* ranges from south central Alaska to central Oregon. It appears to be most common in coastal BC and Alaska. Twenty- four occurrences have been reported in the Northwest Plan area, primarily from wet Douglas-fir forests and foggy coastal or valley forests. Much of the suitable habitat has been harvested. Increased human population growth at the lower elevations as well as degraded air quality pose risks to the viability of these species. Rating reflects the documented association with mature riparian vegetation. Mitigation will improve the rating for the species (p. J2-240).	Since 1993, the number of known sites in the Northwest Forest Plan area has increased from 9 to 55, with 42 recent federal sites. It appears to occur in a wide range of habitats, from mid to late-seral conditions in moist riparian forests and cool upland sites (McCune and Geiser 1997). Current information suggests that *Platismatia lacunosa* has a widespread geographic range within the Northwest Forest Plan area, is widespread but spotty within its range, and occurs in isolated site clusters. This species is currently considered to be closely associated with late-successional or old-growth forests (USDA, USDI Species Review Panel 1999b). While there is a moderate level of uncertainty because the species occurs primarily at lower elevations and it is unknown at this time how much potential habitat exists on federally managed land, Alternative 1 would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 299).
Pseudocyphellaria perpetua (misapplied name – *P. mougiotiana* in FEMAT. Also called *Pseudocyphellaria* sp. 1 in Management Recommendation)	0-12-59-29	This species is one of the rare, oceanic-influenced lichens. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values and due to the coast highway. Recreational development on federal lands inadvertently destroys much of the potential habitat for this species. Rating reflects the limited potential for federal management along the immediate coast and the few known sites for the species. Mitigation could improve the rating (p. J2-245).	The majority of known sites for this species are on private land. Management of known sites would help maintain populations on federally managed lands, but would not provide protections for those populations on private land. Taxonomic uncertainty with this species is unresolved. Because this taxon has an extremely limited distribution and population size, and few populations are on federally managed land, there is insufficient information to determine the impacts to population distribution and stability as a result of implementing the Northwest Forest Plan (p. 293).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Pseudocyphellaria rainierensis	0-20-52-28	*Pseudocyphellaria rainierensis* is a Pacific Northwest endemic which occurs almost exclusively in stands greater than 200 years old. This species is known from five old-growth forest sites in Oregon and 11 sites in Washington. Much of the suitable habitat has been harvested. This is a fairly large, distinct species so it is easy to identify and its distributions are fairly well known relative to other lichen species. Rating reflects the low number of known sites as well as the narrow ecological tolerance of the species. Mitigation may improve the rating (p. J2-229).	*Pseudocyphellaria rainierensis* is rare in Washington and throughout most of the rest of its range, although several large, scattered populations exist in large tracts of suitable habitat on the Willamette National Forest in Oregon. This species occurs primarily in the oldest stands on the landscape and is rarely found in stands less than 400 years old. Since 1993, the number of known sites has increased from 9 to more than 113, with 98 recent federal sites. About 40 percent of these recent federal sites are in reserve land allocations (USDA, USDI Species Review Panel 2000b). This species is found in cool, humid old-growth conifer forests, from low to mid-elevations west of the Cascade crest. It grows on lower boles and in the lower canopy in interior forest conditions (McCune and Geiser 1997 and USDA, USDI 2000b). It is limited and sporadic in its distribution and is often absent in what appears to be suitable habitat (USDA, USDI Species Review Panel 2000b). Typically, only a few individuals are present in a local population (USDA, USDI 2000b and USDA, USDI Species Review Panel 2000b). This species still considered rare (McCune and Geiser 1997; USDA, USDI 2000b). There is a high level of uncertainty under all alternatives associated with providing a stable population of *Pseudocyphellaria rainierensis* on federally managed lands within the Northwest Forest Plan area. While there is a high level of uncertainty, all alternatives would provide habitat (including known sites) sufficient to allow *Pseudocyphellaria rainierensis* to stabilize in a pattern different from its reference distribution on federally managed lands within the Northwest Forest Plan area (p. 282).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Stenocybe clavata	22-46-29-3	This diminutive species is poorly known or collected in the Pacific Northwest. Positive identification requires microscopic examination. Much of the suitable habitat has been harvested. Rating reflects the documented close association with old-growth stands and the textural and substrate specific habit of the species. Mitigation may improve the rating. This species is a valuable indicator of forest continuity (p. J2-236).	*Stenocybe clavata* is endemic to the Pacific Northwest. The number of known sites in the Northwest Forest Plan area has increased from "suspected to occur" in 1993 (Appendix J2 in USDA, USDI 1994b), to about 11 (in Oregon and Washington) (see Table F-2) with only limited survey effort. There is limited habitat data available for this species, and it is uncertain if *Stenocybe clavata* is closely associated with late-successional or old-growth forests (USDA, USDI Species Review Panel 2000b). Current information suggests that *Stenocybe clavata* has a moderate geographic range in the Northwest Forest Plan area, has a widespread but spotty distribution within this range, and occurs in isolated sites. Management of known sites would help maintain the current distribution of populations. There is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 302).
Teloschistes flavicans	0-12-59-29	This species is one of the rare, oceanic-influenced lichen. It occurs discontinuously from Ecuador to Oregon. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values and due to the coast highway. Recreational development on federal lands inadvertently destroys much of the potential habitat for this species. Rating reflects the limited potential for federal management along the immediate coast and the few known sites for the species. Mitigation could improve the rating (p. J2-245).	Management of known sites would help maintain the current distribution of populations on federally managed lands. However, it would not increase the likelihood of maintaining stable populations. Surveys would increase protection; however, few new populations are likely to be discovered. Because the species has extremely limited distributions and small populations, and few populations are on federally managed land, there is a high level of uncertainty that all alternatives would provide inadequate habitat to maintain this species in the Northwest Forest Plan area (p. 286).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Tholurna dissimilis	0-20-63-17	*Tholurna dissimilis* is found on windswept, stunted trees in the montane subalpine fog zone, and in the upper canopy of old-growth Douglas-fir trees. It is rare in the study area, but occurs with increasing frequency in British Columbia, Northwest Territories and Alaska. Known collections in the study area are most often from slow-growing, stunted trees at timberline (e.g. *Abies lasiocarpa, Tsuga mertensiana*). Most of the suitable habitat in the coast ranges and in the Olympics has been harvested. Rating reflects the optimism that other localities of this species may exist that are not documented at this time and that those stands will be protected in the Late-Successional Reserve system. Mitigation could improve the rating for this species (p. J2-227).	*Tholurna dissimilis* is known from three widely scattered locations in the Oregon Cascades, all on federally managed land (USDA, USDI 2000b). There are no recent federal sites reported from Oregon (Table F-2). The rarity of *Tholurna dissimilis*, its sparseness, and stunted condition suggest that conditions at the southernmost site are near the limit for its growth (Pike 1972). Known populations in Oregon are at high elevations in timberline or alpine situations (USDA, USDI 2000b). This habitat is limited in extent in the Oregon Cascades. Current information suggests that south of the Columbia River, the species has a very limited distribution and is limited to a small portion of that range. Based on what is currently known about this species in Oregon, there is insufficient information regarding *Tholurna dissimilis* in Oregon to determine how any alternative would affect its distribution and stability (p. 276).
Usnea hesperina	0-12-59-29	This species is one of the rare, oceanic-influenced lichens. Most of the suitable habitat is private land and has been modified due to its high scenic and recreational values. This species is known only from the Sutton Creek Recreation area, an area recommended for special management (p. J2-245). Protection of known sites could improve the rating and help to preserve biodiversity along the coast (p. J2-246).	Management of known sites would help maintain the current distribution of populations on federally managed lands. Due to the rarity of the species, management of known sites may not ensure sufficient distribution to maintain stable populations over time. Recreation and recreational development would continue to contribute to the loss of undocumented sites and could eliminate unknown populations. All alternatives would provide inadequate habitat (including known sites) to maintain the species (p. 292).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
LICHENS			
Usnea longissima	9-54-32-5	The species occurs as epiphytes on trees within riparian areas. *Usnea longissima* ranges from Alaska to northwest California, but appears most abundant in the north central portion of this range. Twenty-seven occurrences were found in the Northwest Plan area, mostly from low to mid-elevation wet coniferous or mixed coniferous-hardwood forests and swamps. *Usnea longissima* also occurs in Europe where it is well documented to have experienced marked declines and local extirpation. Much of the suitable habitat has been harvested. Increased human population growth at the lower elevations as well as degraded air quality pose risks to the viability of the species. Rating reflects the documented association with mature riparian vegetation. Mitigation will improve the rating (pp. J2-239 to 241).	There are 10 recent sites reported from California and southern Oregon in Curry, Josephine, and Jackson Counties (see Table F-2). *Usnea longissima* is on the California Lichen Society's Red List for Del Norte, Humboldt, and Mendocino Counties. The majority of the known sites on federally managed land are in reserve land allocations. It occurs in various habitats and stand ages, especially riparian and wetland communities (McCune and Geiser 1997 and USDA, USDI Species Review Panel 1999b). A recent study in the Oregon Coast Range reports large populations in late successional or old-growth forests on ridges and upper slopes (Keon 1999 and USDA, USDI Species Review Panel 2000b). Because of the limited distribution of this species in California and southwest Oregon, and the few sites on federally managed land, all alternatives would provide inadequate habitat (including known sites) to maintain the species. The level of uncertainty associated with this outcome is high for Alternative 1 (p. 279). There are about 100 recent federal sites in Washington and in Oregon outside of Curry, Josephine, and Jackson Counties (see Table F-2). The majority of the known sites on federally managed land are in reserve land allocations. This species is widespread and may be locally abundant. It occurs in various habitats and stand ages, especially riparian and wetland communities (McCune and Geiser 1997 and USDA, USDI Species Review Panel 1999b). While there is a high level of uncertainty, Alternative 1 would provide habitat (including known sites) sufficient to allow species to stabilize in a pattern different from its reference distribution. However, the risk is probably not high under any alternative, and may be localized in certain geographic areas (p. 278).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
BRYOPHYTES			
Brotherella roellii	Not rated	Extremely rare species endemic to the Washington Cascades north of Snoqualmie Pass. Included as a Protection Buffer species in Northwest Forest Plan Standards and Guidelines (ROD, p. C-27).	Only known from five historical collections within the area of the Northwest Forest Plan. Geographic and biological distribution remains unknown. Included as a Protection Buffer species because it was thought to be rare and endemic to northern Washington. Management of currently known sites would not increase the likelihood that it would maintain stable populations in the Northwest Forest Plan area, regardless of management applied to sites. This species has not been observed since the early 1900's, so it is uncertain if it is still extant in the Northwest Forest Plan area. There is insufficient information to determine how any alternative would affect the distribution and stability of this species (pp. 222-223).
Buxbaumia viridis	90-10-0-0	All rated alternatives would provide 88 percent or greater likelihood of providing habitat of sufficient quality, distribution, and abundance to support stable populations either well distributed when measured against their historic range or distributed with gaps in their historic distribution on federal land (SEIS, p. 3&4-133).	Information suggests that the species has a widespread geographic range and has a widespread but spotty distribution within its range in the Northwest Forest Plan area. Its biological distribution is unknown. Because of concerns for its rarity, it was included as a Protection Buffer species in the Scientific Analysis Team report and in the Northwest Forest Plan. The number of known sites has greatly increased for this species since the FEMAT analysis. The increase in the number of known sites since 1993 may reduce the level of concern for this species, and it may not be as rare as previously thought. Alternative 1 would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (pp. 235-237).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
BRYOPHYTES			
Diplophyllum plicatum	10-30-30-30	Coastal occurrences have been decimated by logging old-growth spruce. Only known Oregon occurrences are from old-growth reserves. Knowledge of distribution and ecology is inadequate. Species is especially sensitive to acid precipitation and global climate change. Air quality could be detrimental to Cascade populations in Washington. The species rarity may preclude the effectiveness of mitigation. Additional inventories will identify areas needing protection where current distribution is unknown. Protection of existing populations will enable dispersal to developing late-successional or old-growth stands elsewhere in the landscape (pp. J2-85 to 86). Rating was the same under all alternatives due to the rarity of this species. No standards and guidelines could be described that would avoid all risk of extirpation on federal lands (SEIS, p. 3&4-133).	Little is known about the habitat and ecological requirements. Rated as having a low likelihood of having habitat of sufficient quality, distribution, and abundance to support a stable, well-distributed population. Mitigation may not be effective because of the species rarity. While there is a high level of uncertainty due to lack of knowledge, all alternatives would provide sufficient habitat (including known sites) for the species to stabilize in a pattern similar to its reference distribution (pp. 224 and 227).
Herbertus aduncus	Not rated	Species was not rated due to lack of information (FEMAT, p. IV-102).	Circumboreal (occurs in northern latitudes), and is known in western North America from Alaska south to Oregon. The species is abundant in British Columbia, becomes rare in Washington, and is very rare in Oregon. Habitat data is limited. There are currently 9 known sites in the Northwest Forest Plan area. Limited geographic range within the Northwest Forest Plan area and its distribution is limited to a small portion within its range where it occurs in isolated sites. Because of the low number of known sites, there is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 229).
Iwatsukiella leucotricha	Not rated	Species was not rated due to lack of information (FEMAT, p. IV-102).	Occurs in Asia and the Pacific Northwest. Two known sites in Northwest Forest Plan area, in northwestern Oregon, are not on federally managed lands. Habitat information is limited (USDA, USDI Species Review panel 1999b). Information suggests the species has an extremely limited geographic range within the Northwest Forest Plan area, and its distribution is limited to a small portion within its range where it occurs in isolated areas. Because of the low number of known sites, there is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 229).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
BRYOPHYTES			
Kurzia makinoana	91-3-3-3	Very little is known about the abundance, distribution, and ecology of this species in the region. An uncommon and poorly-known species. Mitigation will stabilize populations on federal lands at existing levels, while populations on non-federal land are not anticipated to recover. Mitigation could not prevent losses from air pollution (pp. J2-87 to 88).	There is current taxonomic debate surrounding this species and closely related species within the genus *Kurzia*. Due to taxonomic confusion, there is a high level of uncertainty regarding its distribution pattern. There is insufficient information to determine how any alternative would affect the distribution and stability for this species (p. 224).
Marsupella emarginata v. *aquatica*	0-30-60-10	Known only from one location in western North America, on stream draining Waldo Lake. Improved recreational access to the lake has caused decline. Water quality has deteriorated, which may cause adverse affects on the species. Increased hiker impacts, and the construction of a new footbridge at a trail crossing could destroy one of the known populations. Inventories and monitoring are needed to determine distribution and abundance. Mitigation would determine whether recreational activity is having deleterious effect on species, and would improve the rating. Additional inventory would vastly improve its chances of viability, and the protection of existing populations would improve the chances of dispersal downstream to other drainages (pp. J2-89 to 90). Rating was the same under all alternatives due to the rarity of this species. No standards and guidelines could be described that would avoid all risk of extirpation on federal lands (SEIS, p. 3&4-133).	For the FEMAT analysis, it was rated as having a low likelihood of having habitat of sufficient quality, distribution, and abundance to support a stable, well distributed population across federal lands, and a high likelihood of being confined to refugia. There is only one recent site reported on federally managed land, near the previously known location for this species. Taxonomic experts do not concur in the recognition of the variety *aquatica*, making it difficult to determine the taxon's distribution and rarity. Until this issue is resolved, it is difficult to determine the taxon's distribution and rarity within the Northwest Forest Plan area. Geographic and biological distribution of this species remains unknown. There is insufficient information to determine how any alternative would affect the distribution and stability of this species. However, because there have been limited survey efforts for this species, it is unknown how well the current knowledge reflects the rarity or distribution patterns. Management of known sites under all alternatives will contribute to providing for stable populations of the species (pp. 224-225).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
BRYOPHYTES			
Orthodontium gracile	Not rated	Species was not rated due to lack of information (FEMAT, p. IV-102).	Species has a broad global distribution. In North America, it is only known from the coastal redwood forests in southern Oregon and northwestern California. A recent attempt to relocate the species at the two historical locations in southern Oregon was unsuccessful, but a different species of the genus was found, *Orthodontium lineare*. It is uncertain if the species is extant in southern Oregon, and now there is uncertainty regarding the identification of voucher specimens from the Northwest Forest Plan area. Current information suggests that the geographic range is very limited in the Northwest Forest Plan area, only two sites are known on federally managed lands, and its distribution is limited to a small portion within its range. Biological distribution is unknown. Current information indicated the species has a narrow amplitude, occurring only in coastal redwood forests, and the amount of this habitat on federally managed lands is limited. For these reasons, there is insufficient information to determine how any alternative would affect its distribution and stability (pp. 227-228).
Ptilidium californicum, In California	100-0-0-0 (California only)	Logging has decimated populations. Air pollution also is a potential problem. Occurrences on federal vs. non-federal lands should be documented to determine how much can be protected. Mitigation would stabilize the populations and ensure their viability. Extensive losses on non-federal lands may compromise effectiveness of mitigation. Protection of existing populations will enable dispersal to developing late-successional or old-growth stands elsewhere (pp. J2-90 to 91).	Due to abundance of sites in Oregon and Washington, this species is included only in Survey and Manage for California. In California, current information suggests that the species has a very limited geographic distribution, limited to a small portion within its range where it occurs in isolated site clusters. The viability concerns expressed by taxonomic experts had been for California populations only. Where the species reaches the southern extant of its range, it has a limited distribution and is rare. This species would benefit from the requirements in the Northwest Forest Plan to retain old-growth fragments in watersheds where little late-successional forest exists. While there is a moderate level of uncertainty due to the low number of sites, environmental stochasticity, and limited knowledge of its distribution, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (pp. 220-221).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
BRYOPHYTES			
Racomitrium aquaticum	Not rated	Species was not rated due to lack of information (FEMAT, p. IV-102).	Habitat information is limited. Reported from 30 sites in the Northwest Forest Plan area; 6 have been reported since 1993. Habitat information is limited. Difficult to identify species, and there is uncertainty surrounding the identification for some collections from known sites. Until collections are verified, the number of known sites and the distribution within the Northwest Forest Plan area is unknown. Because of the low number of known sites, there is insufficient information regarding this species to determine how any alternative would affect the distribution and stability (pp. 229- 230).
Rhizomnium nudum	97-3-0-0	Species is uncommon and rare. Almost exclusively associated with riparian zones. Dependant on shade, wet soils, organic litter, and humid microclimate. All rated alternatives would provide 88 percent or greater likelihood of providing habitat of sufficient quality, distribution, and abundance to support stable populations either well distributed when measured against its historic range or distributed with gaps in its historic distribution on federal land (SEIS, p. 3&4-135).	Current information suggests that the species has a moderate geographic range within the Northwest Forest Plan area, with a widespread but spotty distribution within its range, and it occurs in isolated site clusters. While there is a moderate level of uncertainty due to lack of knowledge, all alternatives would provide for the species to stabilize in a pattern similar to its reference distribution (pp. 225-227).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
BRYOPHYTES			
Schistostega pennata	100-0-0-0	Included as a Protection Buffer species in Northwest Forest Plan Standards and Guidelines. Occurs only in mature western red cedar forests in the Olympic National Forest and the WA Cascades. Mitigation activities include surveying to determine the presence and distribution; and, where located, maintaining decay class 3, 4 and 5 logs and greater than 70 percent closed-canopy forest habitats for shade. Shelterwood and thinning prescriptions for timber harvest will cause their demise, as logs dry out (ROD, p. C-27).	It was rated by the FEMAT bryophyte panel as having a high likelihood of having habitat of sufficient quality, distribution, and abundance to support a stable, well-distributed population across federally managed lands. This rating reflected a high level of confidence the species would be well distributed due to prescriptions for riparian areas. However, concerns for its rarity were noted in the Scientific Analysis Team Report, and it was included as a Protection Buffer species in the Northwest Forest Plan. There is no substantial new information that would change the assumptions and effects analysis of the Northwest Forest Plan. However, new sites have been found in recent years with only limited survey effort. It is uncertain how many additional sites of this species will be found through surveys, and whether it has the potential to maintain stable populations across its range. While there is a moderate level of uncertainty (due to lack of information, species rarity, and limited distribution), all alternatives would provide sufficient habitat (including known sites) to allow for it to stabilize in a pattern similar to its reference distribution in the Northwest Forest Plan area (pp. 232-233).
Tetraphis geniculata	Not rated	Fairly rare species. Included as a Protection Buffer species in Northwest Forest Plan Standards Guidelines. Mitigation activities include surveying to determine the presence and distribution; and, where located, maintaining decay class 3, 4, and 5 logs and greater than 70 percent closed-canopy forest habitats for shade. Shelterwood and thinning prescriptions for timber harvest will cause their demise, as logs dry out (ROD, p. C-27).	The number of known sites in the Northwest Forest Plan area has increased from 6 to 31 since 1993, with 24 recent federal sites. It has a spotty distribution and where it occurs, it is often associated with a closely related species *Tetraphis pellucida*. The species has a moderate geographic range within the Northwest Forest Plan area, its distribution is limited throughout this range, and it occurs in isolated site clusters. Because this species has a limited distribution in the Northwest Forest Plan area, management of known sites alone may not be able to provide for stable populations. While there is a moderate level of uncertainty (due to lack of information, species rarity, and limited distribution) all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution in the Northwest Forest Plan area (pp. 232-233).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
BRYOPHYTES			
Tritomaria exsectiformis	0-30-40-30	Known primarily from riparian areas subject to considerable trampling by recreationists. Acid precipitation may pose threats. Additional inventory needed for this species in order to determine abundance and distribution. Mitigation would certainly improve rating for this species. Protection of existing populations will allow dispersal downstream and into other drainages, where new populations may become established (p. J2-94). Rating was the same under all alternatives due to the rarity of this species. No standards and guidelines could be described that would avoid all risk of extirpation on federal lands (SEIS, p. 3&4-133).	Known from 10 sites in the Northwest Forest Plan area. There were three sites known as of 1993; seven sites have been discovered on the Deschutes National Forest since that time. It was included in the Rare Species group for the FEMAT analysis, and was rated as having a low likelihood of having habitat of sufficient quality, distribution, and abundance to support a stable, well distributed population across federally managed lands; and was given a high likelihood of being confined to refugia or extirpated. Current information suggests the species has a limited geographic distribution, limited to a small portion within its range, and occurs in isolated site clusters where it does exist. The species is known from few sites, and current information indicates it is rare and limited in distribution. However, because there have been limited survey efforts, it is unknown how well the current knowledge reflects its rarity or distribution patterns. Management of known sites under all alternatives will contribute to providing for stable populations. There is insufficient information to determine how any alternative would affect the distribution and stability because of the few known sites and lack of knowledge (p. 225).
Tritomaria quinquedentata	Not rated	Known in Oregon only from Saddle Mountain State Park in the northern Coast Range (FEMAT, p. IV-108). Species was not rated due to lack of information (FEMAT, p. IV-102).	Known from four sites within the Northwest Forest Plan area, and there are no new sites reported since 1993. Habitat data is limited. The association of this species with late-successional or old-growth forests is uncertain. Current information suggests that this species has very limited geographic range within the Northwest Forest Plan area, and its distribution is limited to a small portion within this range where it occurs in isolated sites. Pre-disturbance surveys are considered not practical, given the difficulty locating and identifying them in the field, and the potential difficulty in accurately identifying specimens. Because of the low number of sites, there is insufficient information regarding this species to determine how any alternative would affect its distribution and stability (p. 229).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
VERTEBRATES			
Larch Mountain salamander *Plethodon larselli*	75-20-5-0	Disturbance of occupied sites may have caused local losses. Rare and locally endemic. About 64 percent of range is on federal land; of this, 56 percent is in Late-Successional Reserves or Congressionally Reserved Areas. Extent of the reserved lands, especially measures to ensure protection of talus are key. Road building and other ground-disturbing activities are primary threat to species. Primary locality is within Columbia River Gorge and, thus, protected as reserve. Possible mitigation measures were identified for this species (p. J2-424).	The range of the Larch Mountain salamander is not well delineated and is limited. Originally thought to be restricted to the Columbia River Gorge, numerous sites are now known away from the Gorge. From relatively recent surveys, the range has been extended approximately 42 miles (67 kilometers) to the north and it has been found south of Mt. Hood. Total area encompassed by known sites has increased from 411,846 acres (166,672 hectares) in 1980 to 2,901,240 acres (1,174,116 hectares) in 2000 (USDA, USDI Species Review Panel 2000b). Currently, there are 111 known sites; 28 in Oregon and 83 in Washington (USDA, USDI Species Review Panel 2000b). 67 known sites are located on federally managed lands; 41 sites are located in Late-Successional Reserves, 4 sites in Administratively Withdrawn Areas, 7 sites in Congressionally Withdrawn Areas, 8 sites in Adaptive Management Areas, and 7 sites in Matrix (USDA, USDI Species Review Panel 2000b). All action alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to the reference distribution on federally managed lands within the Northwest Forest Plan area. Mitigation measures reduce the chance of inadvertent loss of sites from management activities (p. 349).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
VERTEBRATES			
Shasta salamander *Hydromantes shastae*	0-40-40-20	Has smallest total range of any amphibian in the Pacific Northwest. About 66 percent of its range is federal; of this, 69 percent is in the Matrix under Alternative 9 and 7 percent is protected within Late-Successional Reserves or Congressionally Reserved Areas. Small population size creates great uncertainty whether species will persist over the long run, even with protective buffers. Rating reflects extremely localized distribution of this species and risk of extirpation due to small population size. No mitigation could be described for this species (p. J2-425).	In the Northwest, this species is the least known salamander with an extremely limited range (USDA, USDI 1994b, Appendix J2). It occurs only in California near Shasta Lake. This species had a slightly broader range historically; inundation of the species' habitat by the creation of Shasta Lake likely fragmented and reduced habitat, diminishing and isolating populations. There have been 51 sites discovered that likely represent about 14 populations. Most sites were reported over 2 decades ago; it is not known how many sites are still extant. There is no information currently available to address the size of individual populations in terms of species relative abundances. Federally managed lands figure prominently as habitat for this animal (USDA, USDI 1994b). In 1999, about 70 percent of both known sites and the known range were on federally managed lands. All three action alternatives effectively provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to the reference distribution on federally managed lands within the Northwest Forest Plan area. Mitigation may reduce the chance of inadvertent loss of sites from management activities (p. 343).
Siskiyou Mountains salamander *Plethodon stormi*	50-30-15-5	Species has an extremely small range. About 77 percent of its range is on federal land; of this 25 percent is within Late-Successional Reserve or Congressionally Reserved Areas. Most of its range (65 percent) on federal lands is within the Applegate Adaptive Management Area. Decline of species may result from genetic isolation of subpopulations and small population size. Overall population size will decline if harvest and other practices on the nonfederal portion of the species' range disrupt habitat. Long-term persistence is also uncertain due to small population size and risk of loss to catastrophic events. Because of small population size, there will be some risk of extirpation regardless of protective measures undertaken. Possible mitigation was identified for this species (p. J2-427).	The Siskiyou Mountains salamander has a limited geographic range. In Oregon, it is widespread but spotty within its range. Currently, there are 187 known sites of this species. In Oregon, this salamander occurs in an Adaptive Management Area (about one-third of the total range and two-thirds of the known sites). All known occurrences for this species are within the general range of the Northwest Forest Plan, with 176 sites (94 percent) on federally managed lands and 50 sites (26 percent) are in Late-Successional Reserves or withdrawn land allocations. The species appears to have a higher density of site localities and greater connectivity among sites in Oregon. While there is uncertainty due to lack of knowledge regarding how site prioritization would affect salamanders, Alternative 1 would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to the reference distribution (p. 351).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
VERTEBRATES			
Van Dyke's salamander *Plethodon vandykei*	0-20-58-23	May be declining, but causes are unknown. Only 8 known localities; few in Late-Successional Reserve. Many surveys have been done but species not found in suitable habitat--habitat may not be limiting. Past loss of rocky habitat due to road building and loss of streamside cover may have contributed to population decline. Species is endemic to range of northern spotted owl, and occurs in scattered isolated subpopulations. Rating reflects species naturally patchy distribution and cannot be significantly increased through additional habitat protection. Because of possible population decline and rarity, extirpation risk is significantly high for all alternatives. Protection of known sites will significantly reduce risk of extirpation (p. J2-420).	This species occurs in three areas of Washington, but only populations in the Cascade Range are included under the Survey and Manage Standards and Guidelines. In the Cascade Range, the species range is very limited. Only eight sites were known in 1994 and half of the range in the Cascades was thought to be on federally managed lands (USDA, USDI 1994a). Currently, there are 31 known sites (USDA, USDI Species Review Panel 1999b and 2000b). In addition to this species rarity, concern for the maintenance of the few, scattered populations in the Cascade Range stems from its potential low dispersal ability, low reproductive rate, and narrow habitat and microclimate requirements that are sensitive to disturbance (USDA, USDI 2000 and USDA, USDI Species Review Panel 2000b). All three action alternatives provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to the reference distribution on federally managed lands within the Northwest Forest Plan area in the Cascade Range. Mitigation may reduce the chance of inadvertent loss of undiscovered sites from management activities (p. 346).
Great Gray Owl *Strix nebulosa*	Not rated	Not evaluated in J2.	Great gray owls have been documented over much of the Cascade Range in Oregon and Washington, though nesting has not been confirmed in some of these new areas. Based on its known distribution, the great gray owl is presumed to be moderately widespread in its geographic range within the Northwest Forest Plan area. All three action alternatives would manage habitat identified for continued use and occupancy by great gray owls. Management Recommendations would be prepared that describe the use of prescribed fire or other methods to maintain meadow foraging habitat, and would delineate the management area for great gray owls using current knowledge of the species home range size and habitat needs. Alternatives 1, 2, and 3 would provide sufficient habitat (including known sites) to allow the great gray owl to stabilize in a pattern similar to its reference distribution (p. 364).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
VERTEBRATES			
Oregon Red Tree Vole *Arborimus longicaudus* (*Phenacomys longicaudus* in J2)	73-25-2-0	The red tree vole is more abundant in late-successional forest than young forest, and appears to be closely associated with older forests. Because they are small and live almost exclusively in the canopy of conifers, they probably have limited dispersal capabilities. Past forest management practices have resulted in fragmentation and conversion of late-successional forests to young, even-aged forests, and these practices are believed to have reduced numbers of red tree voles. The slightly low rating for red tree voles was partially a result of poor information on abundance, distribution, and dispersal capabilities. Mitigation can improve habitat conditions for red tree voles. "In fact, we believe the Late-Successional Reserves will support large populations, and connectivity between reserves will be provided by the Riparian Reserves, and the additional late-successional patches in the matrix." FEMAT panel ratings were partially a result of poor information on abundance, distribution, and dispersal capabilities of the species (p. J2-474).	Since 1995, 323 stands were located that contained confirmed red tree vole nest trees. Although approximately 93 percent of federally managed lands in the northern Coast Range are in Late-Successional Reserves or Late-Successional Reserve-like in their management, land management practices on nonfederal lands reduces the potential connectivity between these blocks of federally managed lands (USDA, USDI, 2000a, p. 391). Under Alternative 1, the red tree vole is expected to have sufficient habitat (including known sites) to maintain stable populations distributed in a pattern similar to its reference distribution on federally managed lands within these zones, but with a high degree of uncertainty. The cumulative effects of land ownership under Alternative 1 will likely provide sufficient habitat to allow the species to stabilize in a pattern different from the reference distribution because land ownership patterns strongly influence the species' future distribution within the Northern Coast Range and Southern Willamette Valley Margin Sub zones (p. 393).
MOLLUSKS			
Cryptomastix devia	0-7-50-43	Species distribution has declined due to forest management and urban area development. This species will receive substantial protection from the Riparian Reserves where it does occur on federal land. Mitigation is possible and would substantially decrease the likelihood of extirpation of the species from federal lands covered by this decision, and would increase the likelihood of maintaining the species well distributed, or well-distributed with gaps, within its range (p. J2-308).	*Cryptomastix devia* has a moderate overall geographic range and its distribution within that range is widespread and even. This species is thought to occur in sites and clusters with multiple avenues of connectivity. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow it to stabilize in a pattern different from its reference distribution (p. 325).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Cryptomastix hendersoni	27-22-25-27	Habitat is on talus and in springs and seeps, and is subject to disturbance from roads, railroads, and quarrying operations. Habitat has been severely modified on Gifford Pinchot. Restoration and recolonization in near future are not likely for areas where the species has been locally extirpated. Known locations on federal land all occur within Late-Successional Reserves. Mitigation is possible. This should provide a high level of assurance that the species would be maintained on federal lands (p. J2-309).	*Cryptomastix hendersoni* has overall limited geographic ranges and its distribution within its range is limited to a small portion. *Cryptomastix hendersoni* is thought to occur in isolated site clusters. There is high concern that the species could experience loss of connectivity and that populations could become restricted to refugia, some populations may be lost, or that the continued existence might be threatened. Habitat associations for the species remain poorly understood. There is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).
Deroceras hesperium	30-30-20-20	Species was originally quite widely distributed on the west side of the Cascades, but now is only known from 3 locations. The 3 known locations are on the Olympic Peninsula. The rating reflects uncertainty about the number of species locations that would be protected by Riparian Reserves or Late-Successional Reserves. Given this uncertainty, there is some likelihood that the species could be extirpated from some parts of its range. Mitigation is possible. Surveys for the species and protection of small buffers could be effective in providing for a very large percentage of the species' known and currently unknown sites. This should provide a high level of assurance that the species would be maintained on federal lands (p. J2-346).	*Deroceras hesperium* appears to be particularly rare. Two new sites have been recorded since 1994 bringing the total known sites in the ISMS database to five. Published descriptions and illustrations are available (Pilsbry 1939 and 1948, and USDI 1999), but verified reference specimens are not available and no photographs exist. It is difficult to identify in the field. It has a widespread overall geographic range and its distribution is widespread but spotty. For *Deroceras hesperium*, while there is a high level of uncertainty under every alternative, Alternative 1 would provide inadequate habitat (including known sites) to maintain the species (p. 329).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Fluminicola n. sp. 3	35-30-15-20	Species is known from only three sites, which are small, cold springs in shaded areas with gravel-cobble substrate. The species may be photophobic. Species has been impacted by lowered water tables, spring diversions, and livestock that trample and pollute spring habitats. Occurs in springs high above the floodplain. Recent habitat degradation and rarity contributed to the rating, which could be improved considerably by proper implementation of option 9. Mitigation is possible and should include inventories of springs and seeps, and protection of sites where this species occurs from water diversions, grazing, mining, timber cutting, and organic enrichment (p. J2-358).	Information on both geographic and reference distributions is fragmentary or entirely unavailable for *Fluminicola* n. sp. 3, because historically, collections were undertaken in limited geographic areas and a majority of the Survey and Manage mollusk species were undiscovered or unrecognized as distinct species until recently. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions, and habitat associations, all alternatives would provide sufficient habitat (including known sites) to allow *Fluminicola* n. sp. 3 to stabilize in a pattern similar to its reference distribution (p. 326).
Fluminicola n. sp. 11	35-30-15-20	Occurs in a narrow and shallow small, cold spring run on cobbles and gravel. Associated with habitats containing monkey flower *Mimulus* and water cress *Rorippa*. A narrow endemic, historically probably restricted to a few spring runs tributary to the middle Klamath River drainage, Jackson County, Oregon. Presently known from a single site, apparently on BLM land. Known localities are within a Late-Successional Reserve and Tier 1 watershed. Mitigation is possible (p. J2-367).	*Fluminicola* n. sp. 11 has an unknown geographic range and its distribution within its range is also unknown. So little historical information is available on the distribution of *Fluminicola* n. sp. 11, that the reference distribution of this species is considered to be unknown. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. For *Fluminicola* n. sp 11, while there is a moderate level of uncertainty for Alternative 1, the alternative would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution. The moderate level of uncertainty associated with this alternative is due to a lack of knowledge about the historic and current distributions and habitat associations (p. 327).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Fluminicola n. sp. 14	40-20-20-20	Known from six sites in tributaries to the upper Sacramento and Pit Rivers in Shasta County, California. The species occurs within a Tier 1 watershed. With one possible exception within the Shasta National Forest, all sites are on private land. Spring diversions and modifications are extensive in the area of occurrence. The rating given for this species indicates a concern about cumulative effects since the species predominately occurs on private land. Mitigation is possible (p. J2-370).	*Fluminicola* n. sp. 14 has an unknown geographic range and its distribution within its range is also unknown. So little historical information is available on the distribution of this species that the reference distribution is considered to be unknown. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. There is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions, and habitat associations for this species. All alternatives would provide sufficient habitat (including known sites) to allow *Fluminicola* n. sp. 14 to stabilize in a pattern similar to its reference distribution (p. 327).
Fluminicola n. sp. 15	40-20-20-20	All known sites are on private land; however, they are interspersed with extensive federal lands. Most suitable habitat is in Shasta National Forest and Whiskeytown-Shasta-Trinity National Recreation Area. The rating given for this species indicates a concern about cumulative effects since the species predominately occurs on private land. Mitigation is possible (p. J2-371).	Information on both geographic and reference distributions is fragmentary or entirely unavailable for *Fluminicola* n. sp. 15 because, historically, collections were undertaken in limited geographic areas and a majority of the Survey and Manage mollusk species were undiscovered or unrecognized as distinct species until recently. *Fluminicola* n. sp. 15 has an unknown geographic range and its distribution within its range is limited to a small portion. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Fluminicola n. sp. 16	25-30-25-20	Known from 16 sites, all along the Sacramento River in the vicinity of Shasta Springs. About half the sites are on private land and half are on the Shasta National Forest. The rating given for this species indicates a concern about cumulative effects since the species predominately occurs on private land. Mitigation is possible. The species may be associated with other endemic *Fluminicola* spp. and *Juga* (*Oreobasis*) n. sp. 3 so protection of habitat may be mutually beneficial (p. J2-372).	*Fluminicola* n. sp. 16 has an unknown geographic range and its distribution within its range is limited to a small portion. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. There is a high level of uncertainty because of limited information and lack of knowledge about suitable habitat and dispersal capabilities. All alternatives would provide habitat (including known sites) sufficient to allow *Fluminicola* n. sp. 16 to stabilize in a pattern different from its reference distribution (p. 326).
Fluminicola n. sp. 17	25-30-25-20	Presently known from only three sites in the vicinity of Shasta Springs complex, which has been operated as a resort since at least the 1880's. All known sites are on private land owned by the St. Germain Foundation. However, at least an equal number of sites are expected to occur on federal land. The rating given for this species indicates a concern about cumulative effects since the species predominately occurs on private land. Mitigation is possible (p. J2-372).	*Fluminicola* n. sp. 17 has an unknown geographic range and its distribution within is range is also unknown. So little historical information is available on the distribution of this species that the reference distribution of this species is considered to be unknown. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow *Fluminicola* n. sp. 17 to stabilize in a pattern different from its reference distribution (p. 326).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Fluminicola n. sp. 18	40-20-20-20	Known from four sites in the upper Sacramento and Pit Rivers, Shasta County, California. Two sites are on federal land and two are on private. The rating reflects uncertainty regarding the persistence of habitat supporting the species on nonfederal land and management of habitat on federal land. Riparian Reserves should provide good protection on federal land and improve the rating significantly. Mitigation is possible. The combination of these actions should ensure that this species will continue to exist on federal lands due to the proposed actions and remain well distributed within its natural range (p. J2-374).	*Fluminicola* n. sp. 18 has an unknown geographic range and its distribution within the range is also unknown. There is a high level of uncertainty because of limited information and lack of knowledge about suitable habitat and dispersal capabilities although it is thought to occur in isolated sites. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow *Fluminicola* n. sp. 18 to stabilize in a pattern different from its reference distribution (p. 326).
Fluminicola n. sp. 19	30-20-30-20	Only known from a single cold spring near Hat Creek in the Pit River drainage in Lassen National Forest. Suspected to also occur in Lost Creek, but not yet verified. Since this species is only known or suspected to occur outside the planning area, it is difficult to assess how implementation of option 9 will influence its distribution. If it does occur in the planning area the Riparian Reserves should provide good protection. Mitigation is possible (p. J2-375).	*Fluminicola* n. sp. 19 has an unknown geographic range and its distribution within the range is limited to a small portion. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow *Fluminicola* n. sp. 19 to stabilize in a pattern different from its reference distribution (p. 326).
Fluminicola n. sp. 20	30-20-30-20	Only known from two sites in Lost Creek, Lassen National Forest, Shasta County, California. The creek has been modified for small-scale hydropower development by Pacific Gas & Electric, which may alter the water table and affect surface discharge in the area. There are private in holdings in the drainage also. The Lost Creek site is a relatively recent lava flow restricting the water table to within 10 feet of the surface. This condition makes the area extremely susceptible to drying when vegetation is removed. Mitigation is possible (p. J2-376).	*Fluminicola* n. sp. 20 has an unknown geographic range and its distribution within the range is limited to a small portion. This species is thought to occur in isolated sites. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow *Fluminicola* n. sp. 20 to stabilize in a pattern different from its reference distribution (p. 326)

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Fluminicola seminalis	30-25-25-20	Historically, occurred in the Sacramento, McCloud, and Pit Rivers. Recent events like construction of dams, the spill of the herbicide metam sodium (Vapam) in 1991, and the Burney fire of 1992 and subsequent salvage logging have all caused significant impacts to the population. The species is now about 95% extirpated from its former range in the Sacramento River. Pacific Gas & Electric dams have destroyed habitat and stressed populations. Upper Sacramento River immediately along the river is mostly private land. Rating reflects recent loss of most of the population due to habitat degradation and a chemical spill, and occurrence on nonfederal land. Mitigation is possible (p. J2-377).	*Fluminicola seminalis* has an overall limited geographic range and its distribution within that range is limited. This species is thought to occur in multiple sites and/or clusters with limited connectivity. There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow it to stabilize in a pattern different from its reference distribution (p. 326).
Helminthoglypta talmadgei	27-40-27-7	The species is generally associated with rock talus (probably limestone), so could be disturbed by road construction, and may also be disturbed by removal of forest cover. One site is on tribal land and 2 are possibly on private land. The actual situation for the species could in fact be poorer than is reflected in the initial rating. Mitigation is possible. This should provide a high level of assurance that the species would be maintained on federal lands (p. J2-312).	There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. The species has a moderate overall geographic range and its distribution within the range is widespread, but spotty. It is thought to occur in multiple sites and/or clusters with limited connectivity. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow this species to stabilize in a pattern different from its reference distribution (p. 326).
Hemphillia burringtoni	33-27-20-20	All known sites are on the Olympic Peninsula including the Olympic National Forest, Olympic National Park, and Bush Pacific State Park. The portion of the range on nonfederal land is unknown, but past management of the Willapa Hills may have contributed to a significant reduction in species range. The rating for the species is based on the possible reduction from its historic distribution, the lack of knowledge of its current status, and the lack of specific protection in the Olympic Adaptive Manage Area. Mitigation is possible. In combination, mitigation should substantially reduce the likelihood of species extirpation from federal land (p. J2-347).	There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Hemphillia burringtoni* has a moderate overall geographic range and its distribution within the range is widespread, but spotty. It is thought to occur in multiple sites and/or clusters with limited connectivity. For *Hemphillia burringtoni*, while there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, Alternative 1 would provide habitat (including known sites) sufficient to allow this species to stabilize in a pattern different from its reference distribution (p. 326).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Hemphillia glandulosa	20-33-30-17	The extent of the species' current range is unknown, but historic sites were located on the Olympic National Forest and Olympic National Park and may still be extant. The rating is based on the large historic range reduction, uncertainty about the species' current status, and lack of knowledge of how well existing locations are protected by the features of Alternative 9. Mitigation should be applied within the species range, currently thought to be restricted to the Olympic Peninsula. In combination, mitigation should substantially reduce the likelihood of species extirpation from federal land (p. J2-349).	Based on pre-disturbance surveys, *Hemphillia glandulosa* are more common than previously thought and although they have been collected from at least 100 sites, they are still considered uncommon. There is a moderate level of uncertainty because of limited information and lack of knowledge about suitable habitat and dispersal capabilities. It occurs in multiple sites and/or clusters with limited connectivity. *Hemphillia glandulosa* has a widespread overall geographic range and its distribution is limited throughout its range. While there is a moderate level of uncertainty due to a lack of knowledge about current distribution, habitat requirements, and taxonomic affinities, Alternative 1 would provide habitat (including known sites) sufficient to allow this species to stabilize in a pattern different from its reference distribution (p. 332).
Hemphillia malonei	28-28-25-18	Species range is thought to be restricted to the western end of the Columbia River Gorge. The rating is based on the restricted range of the species and uncertainty about the possible effects of activities proposed in Late-Successional Reserves. Mitigation is possible. Surveys for the species and protection of small buffers could be effective in providing for a very large percentage of the species' known and currently unknown sites. This should provide a high level of assurance that the species would be maintained on federal lands (p. J2-349).	Based on pre-disturbance surveys, *Hemphillia malonei* is more common than previously thought. It has been collected from at least 100 sites and is still considered uncommon. There is a moderate level of uncertainty because of limited information and lack of knowledge about suitable habitat and dispersal capabilities. It occurs in multiple sites and/or clusters with limited connectivity. *Hemphillia malonei* has a limited overall geographic range, and its distribution is limited throughout its range. While there is a moderate level of uncertainty due to a lack of knowledge about current distribution, habitat requirements, and taxonomic affinities, Alternative 1 would provide habitat (including known sites) sufficient to allow this species to stabilize in a pattern different from its reference distribution (p. 332).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Hemphillia pantherina	32-25-22-22	The species is only known from the original type locality at Miller Creek Crossing on the Gifford Pinchot. It has not been relocated at the site, or located at any other site. No sites are known from nonfederal lands. Mitigation is problematic since the species is so poorly known. If sites can be located, they can probably be easily protected (p. J2-351).	*Hemphillia pantherina* appears to be particularly rare, known from a single specimen (Branson 1975). Its occurrence at the type locality has not been reconfirmed since the type specimen was collected. Repeated visits to the type locality have failed to relocate this species. However, similar species of the same genus have been found on several occasions. There is a high level of uncertainty due to limited information and lack of knowledge about its suitable habitat and dispersal capabilities. *Hemphillia pantherina* is thought to occur in isolated sites. Alternative 1 would provide inadequate habitat (including known sites) to maintain the species, with a high level of uncertainty (p. 330).
Juga (O) n. sp. 2	Not rated	Not included in J2.	There is a high concern that this species could experience a loss of connectivity and that populations could become restricted to refugia, that some populations might be lost, or that the continued existence of the species might be threatened. *Juga (Oreobasis*) n. sp. 2 has an unknown geographic range and the distribution within its range is limited to a small portion. There is a high level of uncertainty because of limited information and lack of knowledge about suitable habitat and dispersal capabilities. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).
Juga (O) n. sp. 3	40-10-30-20	Currently known from six sites confined to a few creeks in the Mt. Hood National Forest and Columbia Gorge National Scenic Area, Multnomah and Hood River Counties. Rating is based on fairly limited information and reflects concerns about impacts to suitable habitats on private land. Mitigation is possible. The combination of these actions should ensure that the species will continue to exist on federal lands due to the proposed actions and remain well distributed within its natural range (p. J2-386).	There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. There is a high level of uncertainty because of limited information and lack of knowledge about suitable habitat and dispersal capabilities. *Juga (Oreobasis)* n. sp. 3, is thought to occur in isolated sites. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Lyogyrus n. sp. 1	40-10-30-20	Historical distribution unknown. Presently known from the central and eastern portions of the Columbia Gorge. This taxon has been recently recognized and its distribution is poorly known which mainly accounts for its rating. Concerns about cumulative effects also had an influence. Mitigation is possible. The combination of these actions should ensure that the species will continue to exist on federal lands due to the proposed actions and remain well distributed within its natural range (p. J2-396).	There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Lyogyrus* n. sp. 1 has an unknown geographic range and its distribution within its range is limited to a small portion. There is limited information and a lack of knowledge about suitable habitat and dispersal capabilities for this species as well. While there is uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 327).
Lyogyrus n. sp. 2	50-10-20-20	Presently known from only two lakes, one in Ferry County and the other in Wenatchee National Forest, Chelan County, Washington. Mitigation is possible. Not found in oligotrophic lakes, will tolerate eutrophication to some degree. Application of chemical herbicides to control macrophytes will cause mortality (p. J2-397).	There is a high concern that the species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Lyogyrus* n. sp. 2 has an unknown geographic range and its distribution within its range is limited. While there is uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 327).
Lyogyrus n. sp. 3	30-20-20-30	Presently known from only two sites; one is a large spring near the boundary of Shasta National Forest and the other is a spring-influenced area in the Pit River. All sites are on private land. Mitigation is possible (p. J2-398).	There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Lyogyrus* n. sp. 3 has an unknown geographic range and its distribution within its range is limited to a small portion. There is limited information and a lack of knowledge about suitable habitat and dispersal capabilities for this species as well. While there is uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 327).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Monadenia chaceana	23-37-27-13	The species range is restricted to a relatively small area around the Shasta and Little Shasta Rivers. Most of the known sites are on nonfederal land. Of 7 known species locations, 6 are on nonfederal land. The current rating is based largely on federal land, so a rating that included the effects of other lands would likely project a higher risk level. Mitigation would substantially increase the likelihood that the species would remain well distributed within its range on federal land (p. J2-317).	This species has a limited range, few known sites, and is difficult to authoritatively identify without verification by an expert. Since 1994, known sites for *Monadenia chaceana* have approximately tripled to a total of 48 current federal sites. This species has a moderate overall geographic range and its distribution within that range is widespread, but spotty. It is also thought to occur in multiple sites and/or clusters with limited connectivity. Alternatives 1 and 2 would provide inadequate habitat (including known sites) to maintain the species, with a high level of uncertainty (p. 331).
Monadenia fidelis minor	43-35-22-0	Species occurs in springs, seeps, and talus slopes. Species is currently very rare. The use of talus in dam building in the Columbia Gorge probably significantly reduced the number of local populations of the species. The species range is restricted to the Columbia Gorge, and a significant part of the range falls outside the range of the Northern Spotted Owl. The rating for the species reflects its local distribution and rarity, and the judgment that activities in Late-Successional Reserves could have negative impacts on some local populations. Mitigation is possible. This should provide a high level of assurance that the species would be maintained on federal lands (p. J2-324).	This species has a limited known range and/or a low number of known sites. There is a high concern that the species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Monadenia fidelis minor* has an overall limited geographic range and its distribution within its range is limited to a small portion. There is limited information and a lack of knowledge about the suitable habitat and dispersal capabilities for *Monadenia fidelis minor.* This species is thought to occur in multiple sites and/or clusters with limited connectivity. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).
Monadenia troglodytes troglodytes	33-37-17-13	The species habitat is generally shrub covered or lightly forested limestone talus. Known species locations are largely on federal land. Thus, there is a real likelihood that the species could be extirpated from a number of its sites. The most likely disturbance is road building across the limestone talus where the species is located. Mitigation is possible, but may be difficult. Additional surveys and protection, especially prior to road building, would virtually eliminate the risk of species extirpation from federal land (p. J2-330).	There is a high concern that the species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Monadenia troglodytes troglodytes* is thought to occur in multiple sites and/or clusters with limited connectivity. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Monadenia troglodytes wintu	33-37-17-13	The species has a restricted range along the Pit River arm of Shasta Lake, and is known from only a handful of locations within the range. Most of the species locations on federal land fall within administrative withdrawals. Species locations within administrative withdrawals should receive some substantial protection. The species is a federal Category 2 candidate. Specific protection of known sites would virtually eliminate the risk of extirpation. Additional surveys and protection would significantly increase the likelihood that the species would remain well distributed within its range (p. J2-331).	There is a high concern that the species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Monadenia troglodytes wintu* is thought to occur in multiple sites and/or clusters with limited connectivity. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).
Oreohelix n. sp.	40-35-15-10	The species is known from only a single site on the Wenatchee National Forest near Lake Chelan. This is a newly discovered species whose description has not yet been published. Thus, the rating for the species is based largely on uncertainty about how the alternative would affect the species. Mitigation is possible. Surveys for the species and protection of small buffers could be effective in providing for a very large percentage of the species' known and currently unknown sites. This should provide a high level of assurance that the species would be maintained on federal lands (p. J2-331).	There is a high concern that the species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Oreohelix* n. sp. has an overall limited geographic range and its distribution within that range is widespread, but spotty. *Oreohelix* n. sp. is thought to occur in multiple sites and/or clusters with limited connectivity. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for *Oreohelix* n. sp., Alternative 1 would provide sufficient habitat (including known sites) to allow *Oreohelix* n. sp. to stabilize in a pattern similar to its reference distribution (p. 326).
Pristoloma arcticum crateris	40-37-17-7	The species is thought to occur in subalpine and alpine habitats in association with leaf litter or cushion plants. The species is only known from one site in Crater Lake National Park. Surveys for the species and protection of small buffers could be effective in providing for a very large percentage of the species' known and currently unknown sites. This should provide a high level of assurance that the species would be maintained on federal lands (p. J2-333).	*Pristiloma arcticum crateris* may be difficult to locate and identify in the field because of its small size and cryptic habits. There are 13 known sites in the ISMS database for this species; five have been verified by taxa experts. There is a moderate level of uncertainty due to limited information and lack of knowledge about suitable habitat and dispersal capabilities. *Pristoloma articum crateris* is thought to occur in isolated site clusters. While there is a moderate level of uncertainty, Alternative 1 would provide inadequate habitat (including known sites) to maintain the species (p. 330).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Prophysaon coeruleum	50-25-15-10	No locations are currently known. Historic sites were on nonfederal land, but their status is currently unknown. The rating for the species is based on failure to relocate historic sites; conversion of much of the historic range to urban area; and uncertainty about the effects of the proposed action. Mitigation is problematic because of the rarity of the species (p. J2-352).	In Washington, only a single site was recorded prior to 1994; since then, pre-disturbance surveys have discovered three additional sites. This species was not known to occur in California prior to 1994, and pre-disturbance surveys since then have discovered three sites. As a result, this species is still considered to be rare in Washington and California. In conclusion, if *P. coeruleum* is simply a highly variable species, while there is a moderate level of uncertainty due to lack of knowledge regarding trend in current distribution and unresolved taxonomic identities of specimens recorded as this species, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern different from its reference distribution (p. 339).
Trilobopsis roperi	37-30-23-10	Of the known species locations, three are on private land, one is in Matrix, and one is now under Shasta Lake. The rating for *T. roperi* reflects the finding that much of the species range is in Matrix, and the species is not expected to be directly benefited by Riparian Reserves. Thus, there is a significant chance that local populations could be eliminated, which could result in the species being restricted to refugia. Mitigation is possible. Protection of known sites would reduce the likelihood of species extirpation from federal land (p. J2-334).	There is a high concern that the species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Trilobopsis roperi* has very limited overall geographic range and its distribution within its range is limited throughout. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations, Alternative 1 would provide habitat (including known sites) sufficient to allow this species to stabilize in a pattern different from its reference distribution (p. 327).
Trilobopsis tehamana	Not provided	The species is weakly associated with riparian zones. Some of its locations are in rockslides, but these are probably within riparian areas. Taxonomy of the species needs to be clarified to determine if the northern and southern populations represent distinct species. The population on federal land could probably be sustained under appropriate management. Mitigation is possible. In combination, the mitigation would substantially increase the likelihood that *T. tehamana* would remain relatively well distributed within its range on federal land (p. J2-335).	There is a high concern that the species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Trilobopsis tehamana* has a very limited overall geographic range and its distribution within that range is limited to a small portion. While there is a high level of uncertainty due to lack of knowledge about the historic and current distributions and habitat associations, Alternative 1 would provide sufficient habitat (including known sites) to allow *Trilobopsis tehamana* to stabilize in a pattern similar to its reference distribution (p. 327).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Vertigo n. sp.	35-25-25-15	The species is known from only two sites along the Hoko River in the northwestern Olympic Peninsula. This is a newly discovered species whose description has not yet been published, and whose range is very poorly understood. The known sites are from nonfederal land, so management of nonfederal lands may have a significant effect on the future distribution of the species. The FEMAT rating for the species is based largely on uncertainty about the total range of the species and the type of riparian standards that will be applied within the Olympic Adaptive Management Area. Mitigation is possible (p. J2-337).	There is a high concern that the species could experience a loss of connectivity and that populations could become restricted to refugia, that some populations might be lost, or that the continued existence of the species might be threatened. *Vertigo* n. sp. has an unknown geographic range and its distribution within the range is limited to a small portion and is thought to occur in isolated site clusters. There is a low level of uncertainty that all alternatives would provide sufficient habitat (including known sites) to allow *Vertigo* n. sp. to stabilize in a pattern similar to its reference distribution (p. 326).
Vespericola pressleyi	20-40-30-10	The distribution of the species is very localized, and it is only known from four locations within that distribution. Of the four known locations, two are in wilderness, one is in the Hayfork Adaptive Management Area, and one is on private land. The rating reflects the rare and localized nature of the species distribution and uncertainty about the fate of one or more of the localized populations under Alternative 9. Mitigation is recommended for riparian habitats. However, the species is only partly riparian associated, so mitigation in other habitats is also possible (p. J2-340).	There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Vespericola pressleyi* has a very limited overall geographic range and its distribution within its range is limited throughout. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).
Vespericola shasta	30-33-27-10	Under Alternative 9, two of the known locations are in Late-Successional Reserves, one is in Matrix, one is in a mixture of Matrix and Administratively Withdrawn, two others are in Administratively Withdrawn, two are on private land, and one is in a state park. Mitigation is possible and should be applied within riparian habitats and caves. The mitigation should provide high likelihood that the species would not be extirpated from federal land, and would increase the likelihood that it would remain well distributed (p. J2-341).	There is a high concern that this species could experience a loss of connectivity and populations could become restricted to refugia, some populations might be lost, or the continued existence of the species might be threatened. *Vespericola shasta* has a very limited overall geographic range and its distribution within its range is limited throughout. While there is a moderate level of uncertainty primarily due to lack of knowledge about the historic and current distributions and habitat associations for this species, all alternatives would provide habitat (including known sites) sufficient to allow the species to stabilize in a pattern different from its reference distribution (p. 326).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
MOLLUSKS			
Vorticifex n. sp. 1	30-20-20-30	Historically, appears to have been confined to Pit River in Shasta, Modoc, and Lassen Counties, California. Currently known from only three sites in Shasta County all known sites are on private land. Mitigation is possible (p. J2-407).	This species is characterized by having a limited known range and/or occurrence at a low number of known sites. *Vorticifex* n. sp. 1 occurs on rocky substrate in flowing water in a large, pristine spring complex. It is known from two sites in Shasta County, California, and a limited number of additional sites are suspected to occur in the Shasta National Forest (Frest and Johannes 1999c). There is a moderate level of uncertainty because of limited information and lack of knowledge about suitable habitat and dispersal capabilities of *Vorticifex* n. sp. 1. The species occurs in isolated sites, has extremely limited overall geographic range, and its distribution is limited to a small portion of its range. In conclusion, while there is a moderate level of uncertainty due to the possibility that stochastic disturbance events might eliminate some populations, all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 333).
VASCULAR PLANTS			
Arceuthobium tsugense mertensianae	0-50-50-0	This species provides habitat for marbled murrelets and spotted owls (p. J2-253). Harvest of many forests over 700 years has reduced habitat considerably. Association with very old stands and the limited amount of this habitat contributed to the rating. Late-successional and old-growth fragments are important. Greatest concern for northern portion of its range. Protecting all stands greater than 600 years containing western hemlock and *A. tsugense* would provide protection for this species (p. J2-254). Maps of known populations will increase management abilities. Studies investigating germination and establishment requirements could increase success in introduction. Mitigation benefits would be increased nesting habitat for marbled murrelets, spotted owls, flying squirrels, and other arboreal mammals (p. J2-255).	Under all alternatives this species is expected to have sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 314). The majority of sites for this species occur in reserve land allocations and there is a moderate level of uncertainty due to lack of knowledge (effect of stochastic events) (p. 318).

Species	FEMAT	1994 SEIS (J@)	2000 Final SEIS
VASCULAR PLANTS			
Bensoniella oregana	0-0-50-50	Occurs on specific meadow and stream edge habitat on soils derived from ancient sedimentary rocks - soil moisture is critical factor in its distribution. Communities have been impacted by timber harvesting, grazing, road construction, maintenance, and fire suppression. Only one population known from federal lands in California, others privately owned. Cumulative effects very important for this species. Forest Practices Act Standards and Guidelines inadequately protect this species (p. J2-259). Mitigation for this species is most important in California, but additional protection in Oregon may be warranted to compensate for declining California populations. May continue to be restricted to refugia despite measures to protect known sites. It may not be possible to offset expected results from nonfederal lands. Until more complete inventories are conducted it is difficult to assess the long-term future (p. J2-260).	Known to have potential habitat in reserve land allocations that would not typically be subject to pre-disturbance surveys. While there is a moderate level of uncertainty due to lack of knowledge (effects of stochastic events and predictability of historic patterns of distribution), the management efforts identified for this species would provide sufficient habitat (including known sites) to allow it to stabilize in a pattern similar to its reference distribution in all of the alternatives (p. 317).
Botrychium minganense	30-50-20-0	Many Oregon populations have been threatened by logging, grazing, and recreation. The past effect of these activities are unknown. Species occurs occasionally on private lands, but insufficient information is available for cumulative effects analysis. All documented Washington populations are on Forest Service land, but this probably reflects a higher survey intensity on federal lands. Reevaluation of the rating may be warranted in light of recently discovered populations in Washington. It may be likely that the newly discovered populations are afforded protection. Mitigation will be necessary until a rangewide reanalysis is completed (p. J2-262). Monitoring studies will be effective in determining how much protection is required to maintain viable populations (p. J2-263).	It is no longer a concern in Washington because of the number of sites in reserve land allocations. While there is a moderate level of uncertainty due to lack of knowledge (predictability of historic patterns of distribution), all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (pp. 316-317).
Botrychium montanum	30-50-20-0	Logging has reduced habitat (p. J2-264). All populations documented from Washington are in Forest Service ownership; however, this probably reflects a higher survey intensity on federal lands. Rating reflected the limited number of sightings and the close association with old-growth. Likely additional populations will be discovered during inventories. Mitigation could increase rating (p. J2-265). Other *Botrychium* species often co-occur and would be protected (p. J2-266).	Known to have potential habitat in reserve land allocations that would not typically be subject to pre-disturbance surveys. While there is a moderate level of uncertainty due to lack of knowledge (effects of stochastic events and predictability of historic patterns of distribution), the management efforts identified for this species would provide sufficient habitat (including known sites) to allow it to stabilize in a pattern similar to its reference distribution in all of the alternatives (p. 317).

Species	FEMAT	1994 SEIS (J@)	2000 Final SEIS
VASCULAR PLANTS			
Coptis asplenifolia	0-10-90-0	Strongly associated with old-growth, found only in very old stands. Harvest of very old stands in the coast range have likely extirpated many populations. Oregon populations may represent glacial relict populations. The higher elevation sitings of this species in Oregon suggest it may be influenced by climate, limited to colder temperatures, and may be affected by global climate change (p. J2-268). The two currently known populations in Oregon occur on state-owned lands. Additional populations most likely occur in the Tillamook State forest and adjacent private lands. The rating reflects the limited number of known sites and the close association with very old stands. Surveys will be highly effective in delineating additional populations. Mitigation may be unsuccessful in maintaining viable populations of this species in Oregon due to the relictual nature of the populations (p. J2-269).	Known to have potential habitat in reserve land allocations that would not typically be subject to pre-disturbance surveys. While there is a moderate level of uncertainty due to lack of knowledge (effects of stochastic events and predictability of historic patterns of distribution), the management efforts identified for this species would provide sufficient habitat (including known sites) to allow it to stabilize in a pattern similar to its reference distribution in all of the alternatives (p. 317).
Coptis trifolia	20-30-50-0	Occurs on dead wood. Has medicinal properties for which it is collected and marketed, could threaten local populations (p. J2-270). Management of state, private and Warm Springs Indian Reservation lands could affect viability of the disjunct Oregon populations. Only two populations have been documented within the area considered, but the rating reflected that additional populations would be discovered. Protection of small wetland habitats within late-successional and old-growth forests was considered key. Implementation of mitigation could elevate the rating somewhat, but would always reflect the uncertain future of disjunct populations. Likely additional populations will be discovered (p. J2-271).	Known to have potential habitat in reserve land allocations that would not typically be subject to pre-disturbance surveys. While there is a moderate level of uncertainty due to lack of knowledge (effects of stochastic events and predictability of historic patterns of distribution), the management efforts identified for this species would provide sufficient habitat (including known sites) to allow it to stabilize in a pattern similar to its reference distribution in all of the alternatives (p. 317).

Species	FEMAT	1994 SEIS (J@)	2000 Final SEIS
VASCULAR PLANTS			
Corydalis aquae-gelidae	10-48-40-2	Hydroelectric projects, timber harvest, road-building, and fish habitat improvement projects have resulted in losses of individuals and habitat (p. J2-272). Few populations occur on non-federal lands. Cumulative effects not considered important. The rating reflects the importance of riparian protection to this species which is restricted to cold-flowing streams on the Mt. Hood and Gifford Pinchot National Forests and nearby BLM land. The largest populations occur in undisturbed old-growth, often in perennially wet stream headwaters. Rating can be increased significantly with mitigation. Increasing buffer width on headwaters and intermittent streams within the species' range would reduce likelihood of the species being restricted to refugia. Road closures that reduce sedimentation within the range would be beneficial. Mitigation would eliminate likelihood of extirpation (p. J2-273).	While there is a moderate level of uncertainty due to lack of knowledge (predictability of historic patterns of distribution), all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 318).
Cypripedium fasciculatum	0-8-37-55 (Cascades) 0-43-38-20 (Klamath)	May take up to 20 years before a seedling reaches reproductive maturity. Fragmentation of habitat, fire suppression, trampling, and collection of plants for horticultural purposes have contributed to population declines. In California, losses due to timber harvest (p. J2-275). Most populations on federal lands; non federal lands not considered an important factor. Populations tend to be small and scattered. Fire may play an important role in life cycle. Investigation of role of fire and prescribed burns could be important to reducing likelihood of extirpation. Mitigation could significantly increase rating (p. J2-276). Mitigation should result in the maintenance of this species over its range in the Cascades. The completion of current research projects and the resulting conservation strategy for this species will strengthen the management of this species. Likelihood of extirpation should be significantly reduced if mitigation is implemented (p. J2-279).	The species has a relatively high number of extant sites, has low to high numbers of individuals per site, and moderate to broad ecological amplitude (p. 318). While there is a moderate level of uncertainty due to lack of knowledge (predictability of historic patterns of distribution), applying the Survey and Manage Standards and Guidelines to the entire range of the species within the Northwest Forest Plan area in the action alternatives would improve the chances for the species to stabilize in a pattern similar to its reference distribution (p. 319).

Species	FEMAT	1994 SEIS (J@)	2000 Final SEIS
VASCULAR PLANTS			
Cypripedium montanum	0-25-75-0 (east Cascades) 0-21-52-27 (west Cascades)	Fire suppression, logging, and collection for the horticultural trade have resulted in extirpation of populations (p. J2-281). Widely distributed. Populations have been documented from state and private land, ownership patterns were considered important for this species, particularly in areas of patchwork ownership. The ratings reflect the perceived precipitous decline of this species from its historic distribution within the range of the northern spotted owl and the requirements for specific standards and guidelines for management of this species. Implementation of specific management guidelines could significantly increase rating (p. J2-282).	The species has a relatively high number of extant sites, has low to high numbers of individuals per site, and moderate to broad ecological amplitude (p. 318). While there is a moderate level of uncertainty due to lack of knowledge (predictability of historic patterns of distribution), applying the Survey and Manage Standards and Guidelines to the entire range of the species within the Northwest Forest Plan area in the action alternatives would improve the chances for the species to stabilize in a pattern similar to its reference distribution (p. 319).
Eucephalus vialis (Aster vialis)	0-48-52-0	At risk due to fragmentation of habitat resulting from loss of populations on private land. The largest populations occur on private land; these may be key to long-term viability on federal land. Rating reflects concern that a threshold may have been passed due to highly fragmented populations, fire suppression, and plantation forestry, beyond which long-term population viability is uncertain. The range is so fragmented that population interactions on a wide scale probably will not occur. Requires natural, "delicate" disturbance, with the role of fire important to viability (p. J2-256). Implementation of mitigation could significantly decrease species being restricted to refugia. Effectiveness will depend on acquisition/conservation easements on nonfederal land. Prescribed fire may be effective (p. J2-258).	Known to have potential habitat in reserve land allocations that would not typically be subject to pre-disturbance surveys. This species would stabilize in a pattern different from its reference distribution under all alternatives with a moderate level of uncertainty (due to lack of knowledge on historic patterns of distribution) (p. 317).
Galium kamtschaticum	0-70-30-0	Majority of sites are in old-growth coniferous forests (p. J2-283). Trampling is a potential threat. No known populations on non-federal lands. Numerous populations occur on the edge of the Mt. Baker Snoqualmie National Forest. Loss of habitat may contribute to reduced viability. The rating reflects the limited distribution of this species. Current data reveals most populations occur in Late-Successional Reserves, while others are found in congressionally designated areas, administratively withdrawn areas, and Matrix areas. Mitigation could increase rating, but this species will probably never be well-distributed throughout range (p. J2-284).	The species no longer meets the basic criteria for Survey and Manage in the WA Western Cascades Physiographic Province of the Mt. Baker-Snoqualmie National Forest and would be removed from the Survey and Manage Standards and Guidelines in this area. While there is a moderate level of uncertainty due to lack of knowledge (predictability of historic patterns of distribution), all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 317).

Species	FEMAT	1994 SEIS (J@)	2000 Final SEIS
VASCULAR PLANTS			
Platanthera orbiculata var. *orbiculata* (*Habenaria orbiculata*)	0-50-50-0	Timber harvest has reduced habitat. Cumulative effects are unknown. The rating reflects the current restriction of the species known range within the Mt. Baker-Snoqualmie National Forest, the limited amount of suitable lower elevation habitat, and the slow recolonization ability of the species. Mitigation could significantly improve rating, but it is unlikely the species will ever be well-distributed throughout its range due to past management actions (pp. J2-285 to 287).	There is a moderate to high likelihood of sites occurring in reserves. While there is a moderate level of uncertainty due to lack of knowledge (predictability of historic patterns of distribution), all alternatives would provide sufficient habitat (including known sites) to allow the species to stabilize in a pattern similar to its reference distribution (p. 318).
ARTHROPODS			
Canopy herbivores (south range)	66-29-4-2	Frequent and broad-scale application of insecticides has an adverse affect. Past timber harvest at low-elevation forests has reduced the diversity of habitat. Rating reflects uncertainty about future global change, as well as lack of knowledge of the distribution and habitat dynamics of this group. Mitigation is likely to slightly improve the rating (pp. J2-294 to J2-295).	The primary reason arthropods were included in Survey and Manage was a concern that their ecological functions may not persist in the south range. Adequate studies of taxonomy, species distribution, and habitat dynamics are lacking. There continues to be insufficient information upon which to determine an outcome (p. 321).
Coarse wood chewers (south range)	65-21-10-4	Past management has fragmented the mature forested landscape. Arthropods dependant upon large, coarse woody debris are especially vulnerable to reduced population levels or extinction. Knowledge of coarse woody debris chewers in the southern region is inadequate to allow even speculation on possible species extinctions that have already taken place. Global change may pose a long-term risk to this species group. Frequent and broad-scale application of insecticides has an adverse affect. As with all arthropod groups, there is a significant lack of information on taxonomy, distribution, and habitat dynamics. Suggested surveys would improve knowledge and improve our ability to address management decisions. The review has determined that mitigation could further benefit these species (pp. J2-296 to J2-297).	New information since 1994 does not substantially alter the basic assumptions or conclusions of the Northwest Forest Plan Final SEIS that expressed a concern that their ecological functions may not persist in the south range. However, there continues to be insufficient information upon which to determine an outcome (pp. 320-321).

Species	FEMAT	1994 SEIS (J2)	2000 Final SEIS
ARTHROPODS			
Litter and soil dwelling species (south range)	60-20-15-6	The climate variables in the south result in greater fragmentation of mesic habitats. The patchiness of the habitats, the complexity of the litter layer itself because of more diverse origins, makes extirpation more likely in the south than in the northern environments. Management practices which have increased the likelihood of intense fire or which have already negatively impacted soil/litter organisms are important factors. Proper inventories are sorely needed to provide adequate knowledge for management decisions. Global change may pose a long-term risk to this species group. Frequent and broad-scale application of insecticides has an adverse affect. Benefits of mitigation will be the development and maintenance of diverse soil and litter communities. Further studies will be required to evaluate the effectiveness of any mitigation, as well as the basis for refinement of techniques (pp. J2-298 to 300).	New information since 1994 does not substantially alter the basic assumptions or conclusions of the Northwest Forest Plan Final SEIS that expressed a concern that their ecological functions may not persist in the south range. However, there continues to be insufficient information upon which to determine an outcome (pp. 320-321).
Understory and forest gap herbivores (south range)	47-45-5-4	Broad group with some species very restricted and others widely distributed. Distribution reflects distribution of vegetation. Species associated with forest gaps are especially vulnerable. For the rest, diversity is greater in the southern range. Forest harvest and subsequent replanting is likely to have vegetation patterns different from natural disturbances. Lack of accurate inventory and survey information makes it impossible to assess the impact of past actions. Global change may pose a long-term risk, as climate changes would affect the disturbance regime and distribution of plant communities. Frequent and broad-scale application of insecticides has an adverse affect. Mitigation could improve rating for this group. Benefits include enhanced population levels of species and maintenance of adequate representation to assure proper ecosystem function (pp. J2-301 to 302).	New information since 1994 does not substantially alter the basic assumptions or conclusions of the Northwest Forest Plan Final SEIS that expressed a concern that their ecological functions may not persist in the south range. However, there continues to be insufficient information upon which to determine an outcome (pp. 320-321).

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Final Supplemental Environmental Impact Statement

To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines

Volume II — Appendices