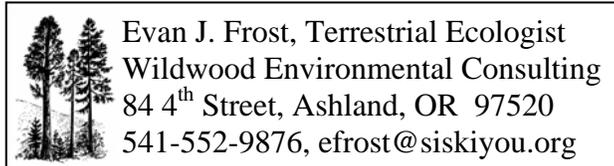


**Investigating the Effects of Livestock Grazing on  
Greene's Mariposa Lily (*Calochortus greenei*)  
in the Cascade-Siskiyou National Monument:  
2004 Study Plan Revision**

Prepared for World Wildlife Fund, Klamath-Siskiyou Ecoregion Program      April 2004



**I. Continue resurveys of known *Calochortus* populations**

In 2003, WEC resurveyed 39 populations of *Calochortus greenei* (CAGR) in three primary areas of the Monument that are subjected to differential grazing utilization by livestock. In the course of conducting this work, 20 previously unrecorded populations of this species were also discovered and documented:

Study Area	Livestock Utilization	CAGR Populations	
		Resurveyed	New
Area 1	High to moderate	16	8
Area 2	Moderate to low	15	8
Area 3	Essentially ungrazed	8	4

In 2004, we will continue resurveying previously known CAGR populations, including those remaining in the three target areas above and also a fourth area (which contains the last known cluster of 10-15 populations in the Cascade Siskiyou National Monument (CSNM)). Our goal is to resurvey another 20 CAGR populations, bringing the total sample to ~70% of the CSNM's known populations of this species.

**II. Assess *Calochortus* herbivory as a function of livestock movement patterns**

This component of the study will attempt to address the question of whether existing levels and timing of livestock grazing are affecting *Calochortus greenei* in any direct way, by comparing levels of herbivory within CAGR populations: 1) before livestock are allowed access to these areas and 2) immediately after they are moved onto other pastures. During each survey period, we will measure the number of plants in each population that show evidence of grazing and classify herbivory as either by mammals when plants are browsed in a clipped manner or by insects when leaves exhibit holes or other signs of damage that are not the result of ungulates. Any other evidence of livestock impact (trampling, "cow pies") will also be measured.

This protocol will be applied to two pastures where livestock and CAGR populations co-occur. Levels of herbivory will be compared with CAGR populations located outside livestock allotments.

### **III. Survey suitable CAGR habitat**

Several areas of the CSNM have been poorly surveyed with respect to CAGR and other rare plants. Depending on time and resource constraints, we would like to survey some of these areas to search for additional CAGR populations. Specifically, we propose to survey areas that have been identified as high quality CAGR habitat but do not have documented populations. Discovery of additional populations would increase our overall sample size of CAGR populations, which will serve as the foundation for a GIS-based landscape analysis of CAGR distribution and livestock utilization patterns (described in initial study design write-up).