

Status of Snake River White Sturgeon Associated with the Hells Canyon Complex (E.3.1-6, Chapter 1)

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I. Introduction

“Idaho Power Company (IPC) operates nine hydroelectric projects on the Snake River downstream of Shoshone Falls, including the three facilities (Brownlee, Oxbow and Hells Canyon dams) in the Hells Canyon reach of the Snake River and collectively known as the Hells Canyon Complex (HCC). In 1996, IPC initiated a study to evaluate the status of white sturgeon in the reaches associated with the HCC as part of their efforts to relicense these projects. Consultation efforts with the Aquatic Resources Work Group (ARWG), which consist of regional representatives from state, federal, tribal, and public entities, identified white sturgeon as one of several aquatic species affected by the HCC. The ARWG expressed concern over impacts to the viability and persistence of sturgeon populations in the Snake River that are isolated by IPC dams.” (Page 2, Paragraph 2)

The white sturgeon study covered the length of the Snake River from Lower Granite Dam to Swan Falls Dam. The portion of the research below the Salmon River was conducted by the Nez Perce Tribe. The Applicant’s researchers used methodologies that have been successful throughout the Columbia River system. Set lines and gill nets were used to capture and release white sturgeon. The fish were weighted, measured, and aged. In addition, a number of fish were equipped with radio telemetry to follow their movements over time. Fish were examined to determine their spawning condition and this information was used to estimate the potential number of white sturgeon that may spawn in each reach of the river in a year. The researchers were only able to catch fish larger than 92 cm (36 inches) total length (TL) which leaves a segment of the population undefined. The research community has not been able to devise a technique for sampling smaller sturgeon. However, the estimates obtained from fish 92 cm TL provided a robust estimate of population size.

II. Conclusions

1. “6.1. Swan Falls–Brownlee Reach

Based on the sampling we conducted throughout the study area, the status of the white sturgeon population in the Swan Falls to Brownlee Dam reach is poor. Catch rates and overall numbers of sturgeon sampled in this reach were very low, with most fish captured near the upper end of the reach between Swan Falls and Walters Ferry. Recruitment levels appear to have remained poor since earlier IDFG surveys, and the population consisted primarily of subadult and adult sturgeon, with few fish less than 92 cm TL. The

continuing presence of some small sturgeon indicates that some recruitment is occurring but at low levels. The averaged relative weights for all sturgeon captured in this reach were similar to those for the Hells Canyon population; however, sturgeon in Brownlee Reservoir had a significantly lower condition factor than other sturgeon in Snake River reservoirs. Severe water quality degradation, particularly in the lower river and Brownlee Reservoir, appears to be limiting white sturgeon in this reach. The presence of a small population currently composed of predominantly mature adults, few new recruits, and few annual spawners suggests that future recruitment will remain low, perhaps below the levels necessary to sustain the population.” (Page 18, Paragraph 2)

“6.2. Brownlee–Hells Canyon Reach

The status of the white sturgeon population in the reaches between Brownlee and Hells Canyon dams is poor and appears not to have changed over the past 30 years since few wild white sturgeon remain in either pool. The capture of only three adult sturgeon in Hells Canyon Reservoir suggested that opportunities for reproduction are infrequent. The absence of small sturgeon also indicated that no recent recruitment has occurred. Simulated recruitment for white sturgeon in Oxbow and Hells Canyon reservoirs indicated that recruitment was limited by larval export, spawner limitations, and poor water quality.” (Page 18, Paragraph 3)

“6.3. Hells Canyon–Lower Granite Reach

The sturgeon population between Hells Canyon and Lower Granite dams is the largest population in the Snake River upstream of Lower Granite Dam. Juvenile fish less than 92 cm TL continue to dominate the population, and size groups greater than 92 cm TL have steadily increased since the 1970s. Survival estimates were similar to rates observed in several Snake River populations, and the trend of mean relative weights showed that fish condition has not declined since earlier surveys conducted from 1972 to 1975 and from 1982 to 1983. Reproductive readiness of female sturgeon was also comparable with reproductive readiness typically expected in white sturgeon populations. The current sturgeon population below Hells Canyon Dam exhibits what could be considered a reasonably healthy population structure, based on the relative abundance, wide range of size classes, and stages of maturity from immature juveniles to reproducing adults.” (Page 19, Paragraph 1)

“6.4. Telemetry

A total of 35 white sturgeon—comprising 9 females (ranging in maturity from previtellogenic to spent condition), 10 males (ranging in maturity from nonreproductive to reproductive condition) and 5 fish of unknown sex—were fitted with radio and sonic transmitters between Swan Falls Dam and the mouth of the Salmon River.”.... “The predominantly localized movement behavior by white sturgeon suggested that several sections of the Snake River, particularly in reaches below Swan Falls and Hells Canyon dams, provide suitable habitat for several life history functions that include feeding, rearing, overwintering, and spawning.” (Page 19, Paragraph 2)

Response: The BLM agrees with the study conclusions.

III. Study Adequacy

The BLM agrees that the study is adequate. The white sturgeon study has met the objectives of determining the status of white sturgeon in the HCC study area. It has been conducted using a comprehensive scientific fisheries methodology that produced state of the art results.

IV. BLM Conclusions and Recommendations

Conclusions

Swan Falls-Brownlee (Reach 1)

- The population is low and may not be sufficient to sustain itself.
- Recruitment of young is occurring but is very low.
- The majority of the population resides in the first eight miles below Swan Falls Dam to Walters Ferry.
- The river from Walters Ferry to Brownlee Reservoir has severe water quality degradation that appears to be limiting white sturgeon survival.

Brownlee-Hells Canyon (Reaches 2 and 3)

- The status of the white sturgeon population in the Hells Canyon and Oxbow pools is low and has not changed in 30 years.
- Opportunities for recruitment are infrequent and no recent recruitment has occurred.
- Modeling indicated that recruitment was limited by larval export, spawner limitations, and poor water quality.
- The anoxic water conditions in Brownlee Reservoir have severely limited sturgeon survival.
- No sturgeon were sampled from Oxbow Dam to Brownlee Dam (12 miles) but a few are believed to exist. Water quality is extremely poor.
- Very few white sturgeon are present in the 25-mile-long reach from Hells Canyon Dam to Oxbow Dam.
- Water quality degradation and spawning habitat are limiting reproduction and survival in Hells Canyon Reservoir.

Hells Canyon-Lower Granite (Reach 4)

- This reach has the largest population of white sturgeon in the Snake River upstream of Lower Granite Dam and is estimated at approximately 3,625 fish over 92 cm TL.
- Juveniles less than 92 cm TL dominate the population and have continued to increase since the sampling of the 1970s.
- The condition of the fish is good and the reproductive readiness of females was comparable to what is typically expected of healthy populations.
- The reach exhibits a reasonably healthy population structure based on the relative abundance, wide range of size classes, and stages of maturity from immature juveniles to reproducing adults.

Recommendations

The BLM supports recommendations to improve white sturgeon habitat and spawning success in all of the Hells Canyon Complex reservoirs. Measures to increase white sturgeon populations to levels that would sustain fishable populations are supported by the BLM. Poor water quality in Brownlee Reservoir has been responsible for white sturgeon mortalities in the past. The Applicant should devise reservoir management approaches to resolving the water quality problems. Brownlee Reservoir appears to have the greatest opportunity for population expansion when water quality problems are resolved.