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USACE PMP Update – 7 May 2020

2020 MAY UPDATE: PINNIPED ABUNDANCE AND SALMON PREDATION AT BONNEVILLE LOCK AND DAM

Fisheries Field Unit

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This is a status report for the pinniped monitoring program at Bonneville Dam and summarizes the observed pinniped abundance at Bonneville Dam from 17 July, 2019 through 6 May, 2020. A final report will be compiled after the season and will be available in the fall of 2020.

Abundance sampling has been continuous, while predation sampling began based on a 20-animal BiOp initiated trigger. As such, spring predation sampling did not start until 13 April 2020. Despite COVID 19-induced travel and work restrictions, pinniped sampling is in compliance with BiOp specifications and is ongoing. However, due to COVID 19 logistical constraints, this report does not contain estimates of observed predation. These data have been collected and will be presented once analyzed.

Previous reports and related PMP information can be found at the link below:

<http://pweb.crohms.org/tmt/documents/FPOM/2010/Task%20Groups/Task%20Group%20Pinnipeds/>

PLEASE NOTE - All data presented here are preliminary as of the status report date. Predation numbers and abundance estimates are unexpanded and will change as data are proofed and analyzed. Final predation estimate data will be expanded to adjust for hours and days not observed as well as "unknown" prey species consumed for the final report. The final report summarizing the results of the 2019-2020 Pinniped Monitoring Program will be available in the fall of 2020.



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BACKGROUND

Concerns regarding an increased number of pinnipeds at Bonneville Dam during the fall and winter and their potential associated impacts on endangered salmonids led to a request by NOAA to monitor the abundance and number of fish killed by these pinnipeds. In response to these concerns, and to fulfill the requirements set forth in the Federal Columbia River Power System Biological Opinion (NMFS 2019) – which outlines operational criteria for dams to protect ESA-listed fish – the U.S. Army Corps of Engineers, the Fisheries Field Unit initiated a fall and winter pinniped monitoring program to fulfill the Reasonable and Prudent Alternatives defined in the predation management strategy of the Biological Opinion and to provide estimates of pinniped abundance, fish predation, and deterrence strategies. This progress report documents the monitoring of pinniped presence at Bonneville Dam from 17 July, 2019 through 6 May, 2020.

Similar to last year's fall and winter monitoring period, we manipulated previously used spring sampling methods to fit the fall and winter conditions of the Columbia River system. We sampled the priority tailrace (as determined by planned winter outages) and sampled only that tailrace four hours per day in a stratified random fashion whenever the daily abundance counts were greater than 20 pinnipeds (as per study plan provided and approved by NOAA, March 2017). The planned outages for winter maintenance in 2019 took place at Power House 1, and as such, Power House 2 tailrace was prioritized for fish predation observations through 31 December, 2019.

The spring sampling period began on 1 January, 2020. Per the interim 2019 BiOp predation sampling did not start until the 20 pinniped trigger was met on 13 April 2020. Sampling has been continuous after the trigger was met. Both power house tailraces are being monitored using the same stratified random fashion with three independent, 4 hour sampling hours being spread across the two tailraces. Methods and assumptions for observations and estimates of fish predation are captured in the previous year's annual report (Tidwell et al. 2020). These methods consist of visual observation of predation events that are incorporated by fish and pinniped species separately into a probability based estimation calculation to assess the mean level of predation each week. Bootstrap sampling of these estimates provide bounded estimates of predation by week, for each fish species, and by each species of pinniped. Due COVID 19 social distancing restrictions and the in-season nature of this update, the data have not been vetted through a QA/QC process and therein cannot be provided at this time. Final (bounded) estimates will be provided after the season has completed and the data have been reviewed and analyzed.



Estimates of abundance are made by sampling across the tailrace and at known haul-out sites on Bonneville Project in the early morning hours when animals are most easily observed. Each site is independently counted and aggregated to provide a project wide estimate of pinnipeds each day. Counts are interpolated across weekends and holidays.

Thus, the data provided herein, are the daily project wide abundance estimates between 17 July, 2019 and 06 May, 2020. A final update with expanded fish predation estimates will be available after 31 May, 2020.

PINNIPED ABUNDANCE

We present abundance data using the maximum number of individuals counted during a comprehensive tailrace point count and interpolated for days not observed. For inter- and intra-year comparison of abundance estimates, we report average daily abundance with standard deviation as measures of variance.

Fall and Winter Abundance: 17 May, 2019– 31 December, 2020

Steller Sea Lion (SSL; *Eumetopias jubatus*) were first observed returning to the dam on 17 July 2019. They were sporadically observed in small numbers until the first week of September, after which there were 10 or more animals at the dam daily. Between 17 July and 31 December 2019 there was an average of $31.8 \pm \text{SD } 16.5$ (Figure 1). There were no California Sea Lions (CSL; *Zalophus californianus*) documented during the fall and winter sampling period. Two Harbor Seals (*Phoca vitulina*) were observed near the dam on 28 and 29 August 2019.

During the fall and winter period, we documented 53 SSLs as individuals based on the high point count on 15 October 2019. However, due to the low level of branding for SSL the identification of individuals stands at a count of 5 animals.

Spring Abundance: 01 January, 2020 – 7 May, 2020

Steller Sea Lions have averaged 9.5 animals ± 10.3 SD between 1 January and 6 May 2020 (Figure 1). California Sea Lions have averaged 0.9 animals ± 3.3 SD during the same period. The SSL observed on 1 January were remnant from the fall and winter period. The first CSL was observed on 3 March 2020. No Harbor Seals were observed during the spring period.



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Thus far during the spring period, we have documented 43 SSLs as individuals based on the high point count on 23 April 2020. However, due to the low level of branding for SSL the identification of individuals stands at a count of 12 animals.

We had one day on 31 March 2020 when 34 CSL came to the dam. The following day there were five CSL and then all CSL left the dam until 7 April when low numbers returned. This one day pulse of CSL likely coincides with the dissipating Smelt (*Eulachon spp.*) run further downstream of the dam. During the rest of the spring period we have documented a high of seven CSL at the dam, four of which are branded individuals.

DISCUSSION

Relative to the 10 year average the abundance of SSL during the fall and winter is significantly higher. During the spring period the SSL abundance is slightly less than the 10 year average (Figure 1). The CSL abundance this year relative to the 10 year average is significantly less (Figure 1). The one day spike of CSL is not unprecedented and has been observed before. The low numbers of CSL near the dam suggests that management has reduced recurrence of offending individuals, but the recruitment of three un-branded animals suggests that new animals are still finding the dam.

USDA hazers have been actively working on the dam to deter pinnipeds since 1 March and will continue through the end of May. Tribal boat-based hazing initiated in March and ceased due to COVID 19-induced social distancing constraints. The death of Bobby Begay, a Columbia River Inter-Tribal Fish Commission fisheries Biologist who operated the pinniped hazing boat, is a significant loss to the biological and salmon recovery community. Our appreciation and condolences go out to his partners, colleagues, and family.

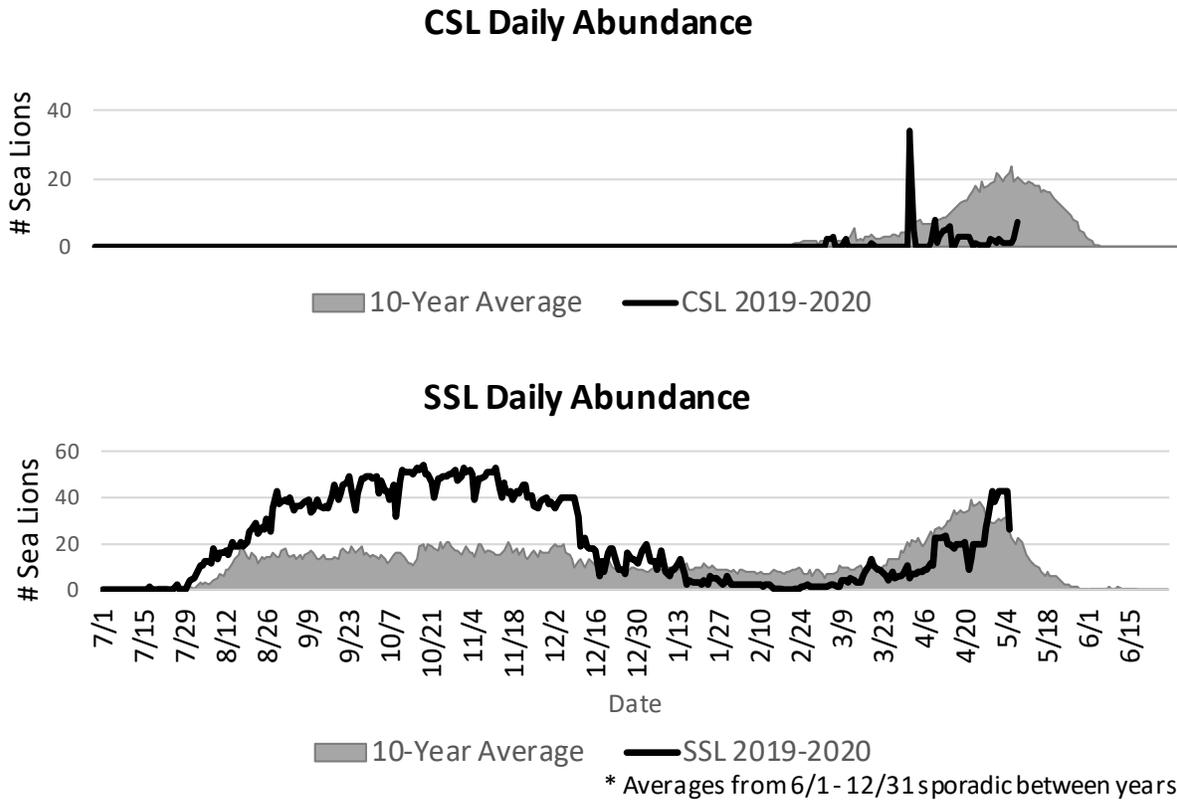


Figure 1. Comparison of estimated abundance of each pinniped species at Bonneville Dam between the 10-year running average and the current year.



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LITERATURE

NMFS (National Marine Fisheries Service). 2000. Federal Columbia River Power System Biological Opinion.

NMFS (National Marine Fisheries Service). 2019. Federal Columbia River Power System Biological Opinion.

Tidwell, K.S., B.K. van der Leeuw, L.N. Magill, B.A. Carrothers, and R. H. Wertheimer. 2018. Evaluation of pinniped predation on adult salmonids and other fish in the Bonneville Dam tailrace, 2017. U.S. Army Corps of Engineers, Portland District Fisheries Field Unit. Cascade Locks, OR. 54pp.