

STATUS REPORT – PINNIPED PREDATION AND DETERRENT ACTIVITIES AT BONNEVILLE DAM, 2016

Patricia L Madson & Bjorn van der Leeuw

Fisheries Field Unit
U.S. Army Corps of Engineers
Bonneville Lock and Dam
Cascade Locks, OR 97014

MAY 31, 2016

This is the sixth and final status report for the 2016 pinniped monitoring season and summarizes the observed predation and deterrent activities at Bonneville Dam from January 1 through May 31, 2016. Observations were conducted during daylight hours Monday through Friday. This report can be found at: <http://www.nwd-wc.usace.army.mil/tmt/documents/fish>

PLEASE NOTE - All data presented here are preliminary as of the status report date. Predation figures are unexpanded (unless otherwise noted) and sea lion abundance estimates will likely change as the season progresses and data are proofed and analyzed. Final predation estimate data will be expanded to adjust for the number of daylight hours and days not observed as well as “unknown” prey species consumed for the final report. The final report summarizing the results of the 2016 Pinniped Monitoring Program will be available in the fall of this year.

PINNIPED ABUNDANCE

During the past two weeks we have seen a large decline in the numbers of both California (*Zalophus californianus*) and Steller (*Eumetopias jubatus*) sea lions (Figure 1). California sea lion (CSL) abundance decreased from 37 in mid-May to 1 by the end of May. The first CSL was observed on February 26. The daily average of CSL was 4 in March, 22 in April, and 31 in May. The maximum number of CSL observed on a single day at the dam was 66 on May 4. We have documented approximately 131 uniquely branded individual CSL through May 31. Of these, 89 have been seen in multiple years and 42 were newly identified.

Steller sea lions (SSL) were present when observations began January 4, increasing in number through April before departing by the end of May (Figure 1). The daily average of SSL was 13 in January, 5 in February, 14 in March, 40 in April, and 21 in May. The maximum number of SSL observed on a single day at the dam was 54 on May 4. We have documented approximately 39 unique individual SSL this season. Of these, 36 were observed in previous years and three were newly identified.

The maximum number of pinnipeds (CSL and SSL combined) on a single day was 120 on May 4 which surpassed the previous record of 116 on April 22, 2015.

Point counts are taken at powerhouse 1, spillway, powerhouse 2, Tower Island, and Tanner Creek throughout the day to monitor the number of pinnipeds present at Bonneville Dam.

Pinniped abundance (CSL and SSL combined) for 2016 through May 31 in comparison with the 10 year average is shown in figure 2 below.

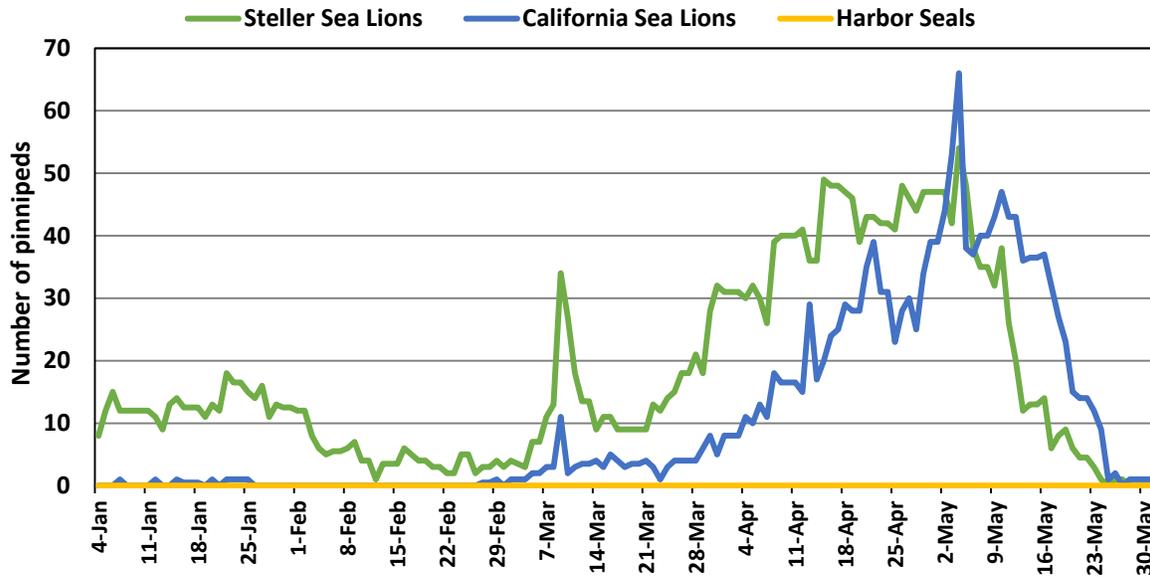


Figure 1. Maximum daily count of pinnipeds by species (interpolated for weekends) through May 31, 2016 at Bonneville Dam.

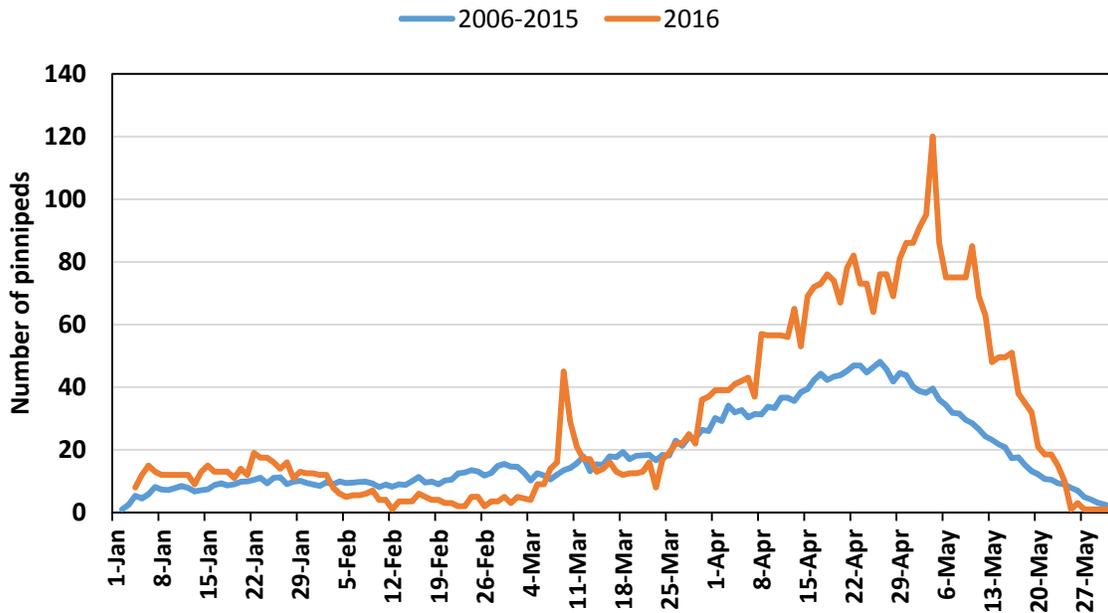


Figure 2. California and Steller sea lion combined maximum daily count (interpolated for weekends) at Bonneville Dam January 1 through May 31.

PREDATION DATA

During the last two weeks of May the total number of observed catches declined considerably as the pinnipeds were departing. In total, observed adult salmonid catch by pinnipeds was 4,196 through May 31. Of these, 4,094 were Chinook (*Oncorhynchus tshawytscha*) and 102 were steelhead (*Oncorhynchus mykiss*). There have been 231 lamprey catches, 191 of those by CSL and 40 by SSL (Table 1). The majority of lamprey take has occurred at powerhouse 2, followed by powerhouse 1, and then spillway (Figure 3).

Table 1. Observed fish catches by pinnipeds at Bonneville Dam through May 31, 2016.

Prey	Steller Sea Lion	California Sea Lion	Total
Chinook	1,150	2,944	4,094
Steelhead	43	59	102
Sturgeon	26	3	29
Unknown	111	145	256
Smolt	5	10	15
Shad	8	41	49
Lamprey	40	191	231
Other	23	14	37
Pikeminnow	1	1	2
Total	1,407	3,408	4,608

Note: these are raw numbers

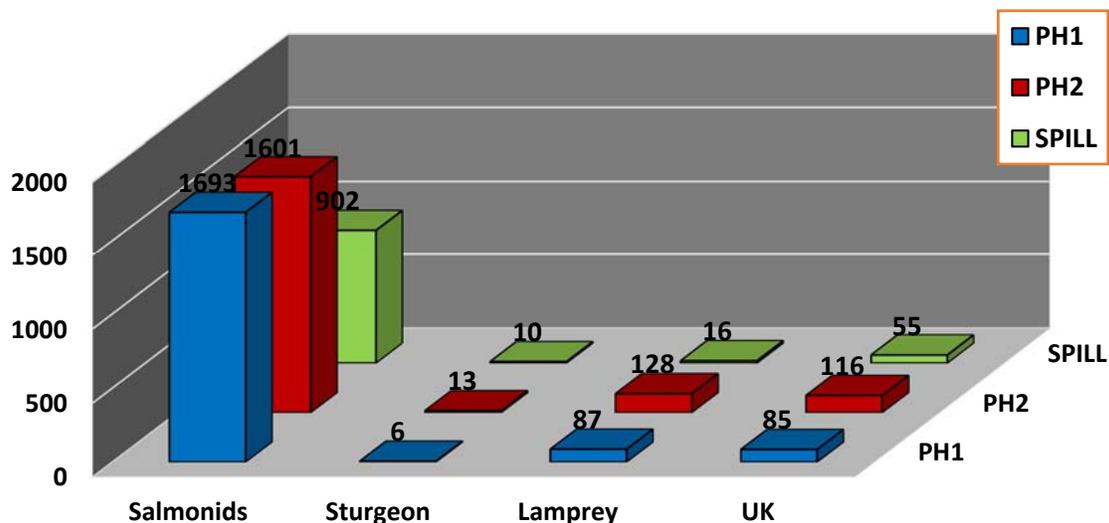


Figure 3. Observed pinniped catches of salmon, sturgeon, lamprey, and unknown fish species by location at Bonneville Dam, 2016.

The estimated consumption of adult salmonids (Chinook salmon and Steelhead combined) by CSL and SSL was more than twice that of the ten year average (Figure 4). Estimated consumption of adult salmonids through May 31, expanded for daylight hours not sampled, is 8,986 (Table 2). California sea lions took 71% of the estimated salmonid catch while SSL took 29%. Preliminary data suggests that pinnipeds consumed an estimated 5.5% of the migrating adult salmonids in the Bonneville Dam tailrace during the January 1 to May 31 timeframe. Estimated consumption of Chinook salmon by CSL and SSL is 6,267 and 2,459 respectively.

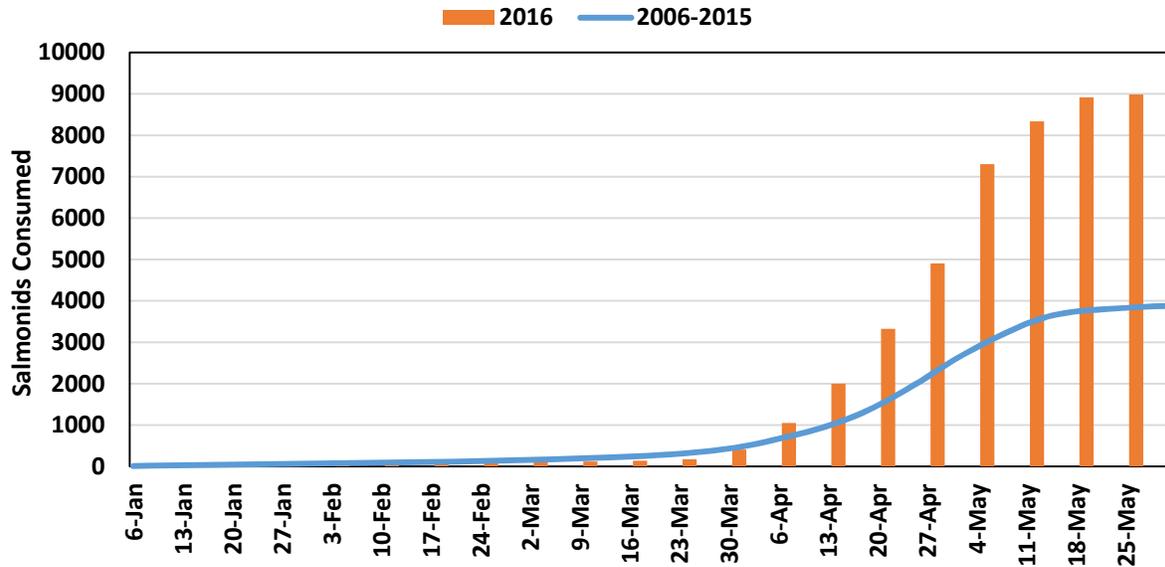


Figure 4. Pinniped cumulative consumption estimate of adult salmonids at Bonneville Dam from January 1 through May 31 not adjusted for unknown catches. The ten year average is the blue line.

Table 2. Estimated consumption of adult salmonids by pinnipeds at Bonneville Dam through May 31, 2016.

Prey	Steller Sea Lion	California Sea Lion	Total
Chinook	2,459	6,267	8,726
Steelhead	130	130	260
Total	2,589	6,397	8,986

Pinniped predation of white sturgeon (*Acipenser transmontanus*) has dropped greatly from the ten year average (Figure 5). Similar to 2015, few sturgeon catches were observed this year. No sturgeon catches were observed over the past two weeks. The 2016 estimated consumption of sturgeon through May 31, expanded for daylight hours not sampled, is 86.

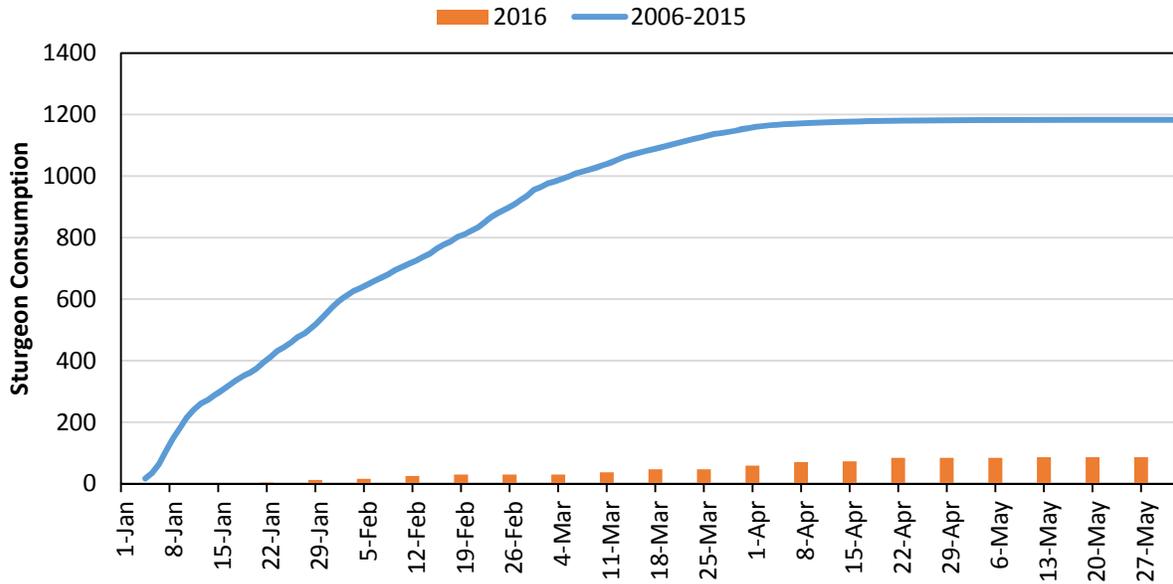


Figure 5. Pinniped cumulative consumption estimate of white sturgeon from January 1 through May 31, at Bonneville Dam. The ten year average is the blue line.

OTHER ITEMS

Up to three sea lions were observed at The Dalles Dam tailrace feeding on salmonids this year. One branded CSL has been observed in the Bonneville pool for multiple years. Another branded CSL was last seen on May 4 by fisheries personnel at The Dalles Dam and was subsequently sighted by one of our observers on May 13 in the Bonneville Dam tailrace indicating that it moved back downstream voluntarily.

DETERRENTS & TRAPPING

Sea lion exclusion devices (SLEDs) were deployed at powerhouse 2 on October 26, 2015 and the remaining SLEDs were installed by March 5, 2016. Specifically, the SLEDs at powerhouse 1 were installed on March 1, 2016.

After several SSL were observed climbing over the floating orifice gates (FOGs) at powerhouse 2 and entering the fishway, wood panels were placed on top of the FOGs to prevent this behavior from recurring. To date there have been no additional reports of sea lions accessing the fishway channel via the FOGs.

Boat-based hazing by Columbia River Inter-Tribal Fish Commission (CRITFC) began on March 7 and finished for the year on May 16th. Dam-based hazing of pinnipeds by USDA began on March 8 and ran through May 31.

Pinniped management activities by the states of Oregon and Washington have concluded at Bonneville Dam for 2016. The last day of trapping was May 24. There were 59 CSL removed this year under the section 120 permit. Fifty CSL were branded at Bonneville Dam in 2016. Additional information about these activities can be found at Oregon Department of Fish & Wildlife's California sea lion management website:

<http://www.dfw.state.or.us/fish/SeaLion>