

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

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MAY 13, 2016

This is the fifth status report for the 2016 pinniped monitoring season and summarizes the observed predation and deterrent activities at Bonneville Dam from January 1 through May 13, 2016. Observations, which began on January 4, are conducted during daylight hours Monday through Friday and will continue to the end of May. This report can be found at:

<http://www.nwd-wc.usace.army.mil/tmt/documents/fish>

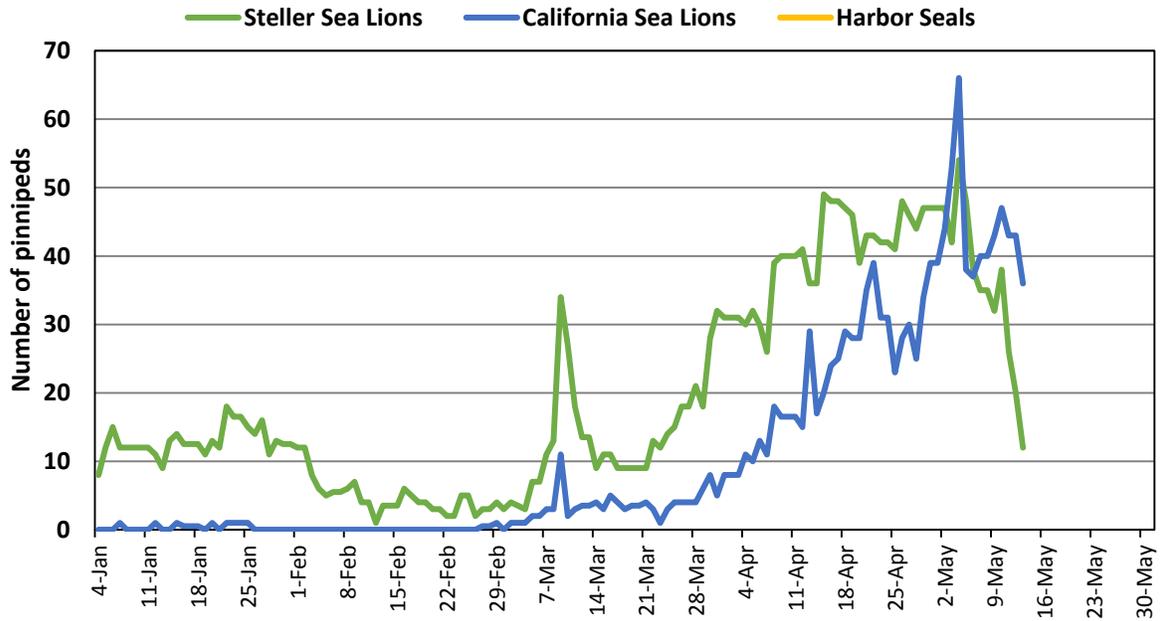
*PLEASE NOTE - All data presented here are preliminary as of the status report date. Predation figures are unexpanded (unless otherwise noted) and sea lion abundance estimates will likely change as the season progresses and data are proofed and analyzed. Final predation estimate data will be expanded 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**

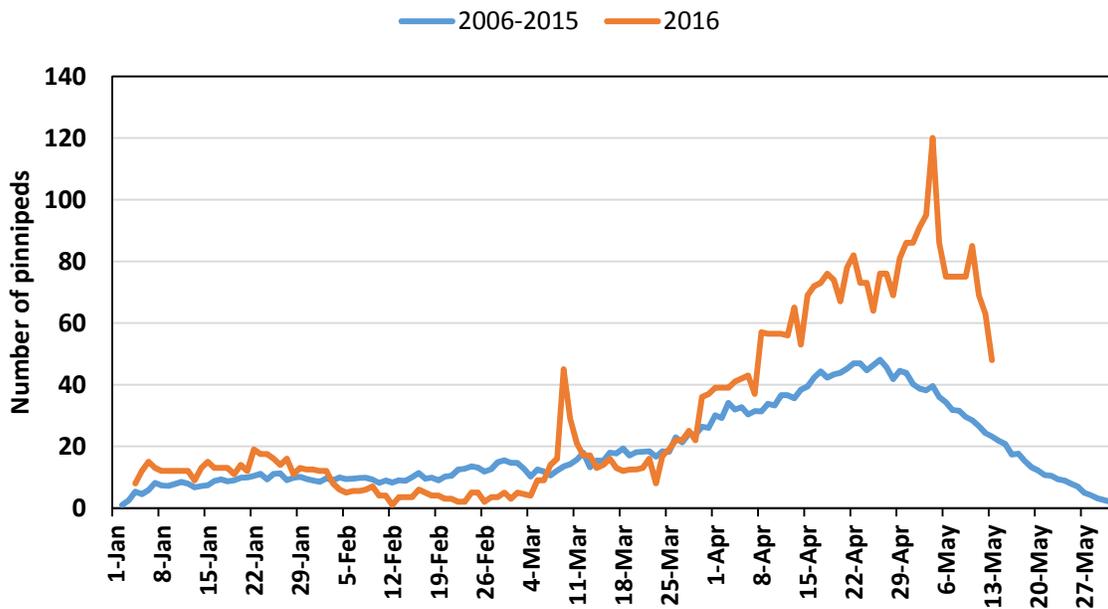
Steller sea lions (*Eumetopias jubatus*) have been present at Bonneville Dam throughout the 2016 observation period (figure 1). The daily average of Steller sea lions (SSL) through the months of January, February, March, and April has been 13, 5, 14, and 40 respectively. The maximum number of SSL observed on a single day at the dam was 54 on May 4. We have documented approximately 39 unique individual SSL thus far. Of these, 36 were observed in previous years and three were newly identified.

Samplers observed the first California sea lion (*Zalophus californianus*) on February 26 this year. The daily average of California sea lions (CSL) has increased from 4 in the month of March to 22 in the month of April. In May we have seen their abundance increase substantially. The maximum number of CSL observed on a single day at the dam was 66 on May 4. The maximum number of pinnipeds (CSL and SSL combined) on a single day was 120 also on May 4. We have documented 127 uniquely branded individual CSL through May 13. Of these, 89 have been seen in multiple seasons and 38 were newly identified.

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 13 in comparison with the 10 year average is shown in figure 2 below.

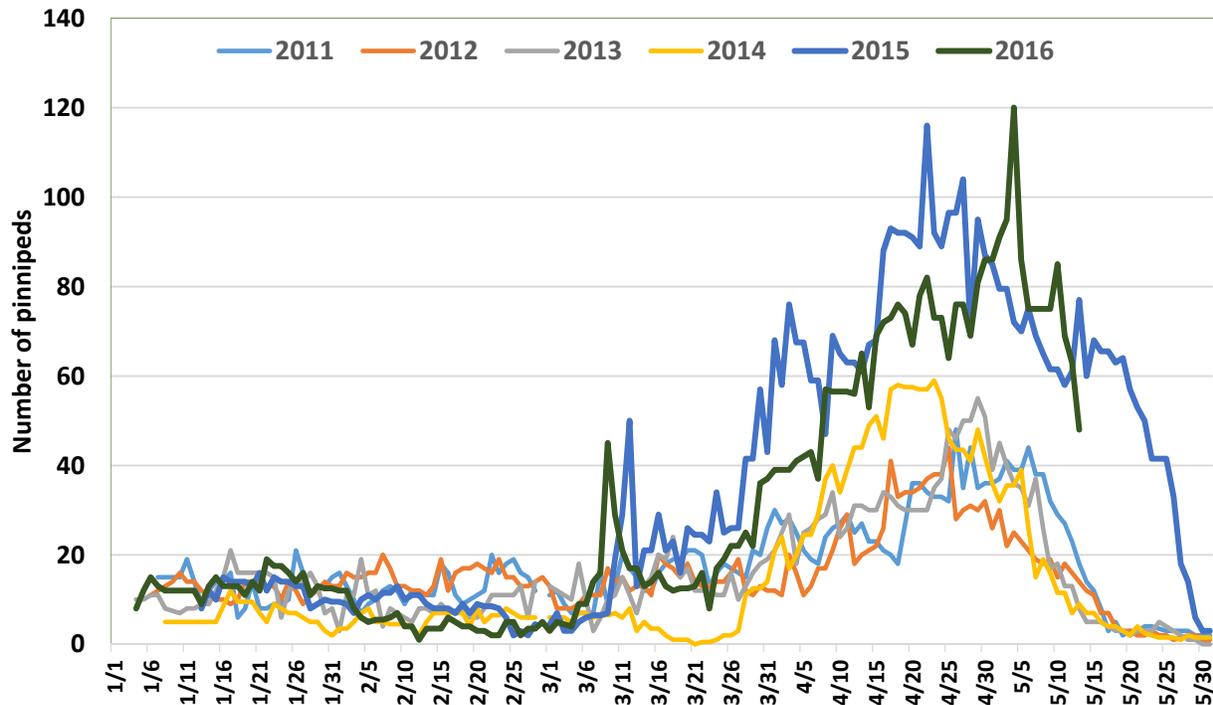


**Figure 1. Maximum daily count of pinnipeds by species (interpolated for weekends) through May 13, 2016 at Bonneville Dam.**



**Figure 2. California and Steller sea lion combined maximum daily count (interpolated for weekends) at Bonneville Dam through May 13 of 2016 versus the ten year average.**

This year the number of sea lions at the dam was more comparable to 2015 than any other of the past five years (Figure 3). Typically, the peak sea lion abundance has occurred in April while this year it occurred in early May.



**Figure 3. California and Steller sea lion combined daily abundance (interpolated for weekends) at Bonneville Dam January 1 through May 13 for 2011 – 2016.**

### **PREDATION DATA**

During the first week of May, Chinook salmon (*Oncorhynchus tshawytscha*) catches increased dramatically. On May 3 we observed 329 fish catches, a daily high for the season. Of these, 301 were Chinook salmon catches. So far, we have observed a total of 3,804 Chinook and 96 Steelhead (*Oncorhynchus mykiss*) catches (Table 1). Seventy percent of the total salmonid catches were by CSL. Cleptoparasitism by SSL on CSL was observed during 383 catches.

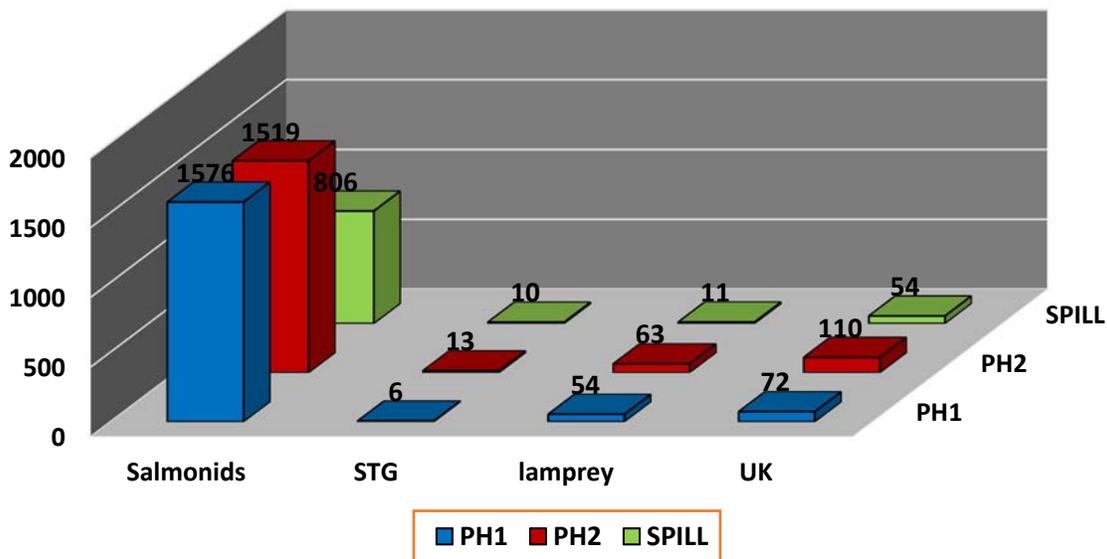
The number of observed white sturgeon (*Acipenser transmontanus*) catches has remained low this season (Table 1). Similar to 2015, there have been few observed sturgeon catches thus far. Of the 29 sturgeon catches observed, the majority have been at powerhouse 2 followed by the Spillway and then powerhouse 1 (figure 4). Sturgeon catch typically ranged in size from less than 2 feet up to 4 feet. The largest of the sturgeon caught was by an SSL and estimated to have been over 7 foot.

During the second week of May the total number of observed catches began to decline. Of these catches the proportion of them that were Chinook also decreased from the previous weeks as the proportion of lamprey increased. There have been 128 lamprey catches, 108 of those by CSL and 20 by SSL (Table 1). The majority of lamprey take has occurred at powerhouse 2, followed by powerhouse 1, and then spillway (Figure 4).

**Table 1. Observed fish catches by pinnipeds at Bonneville Dam through May 13, 2016.**

Prey	Steller Sea Lion	California Sea Lion	Total
Chinook	1,118	2,687	3,805
Steelhead	40	56	96
Sturgeon	26	3	29
Unknown	110	126	236
Smolt	5	10	15
Shad	7	24	31
Lamprey	20	108	128
Other	20	10	30
Pikeminnow	1	1	2
<b>Total</b>	<b>1,347</b>	<b>3,025</b>	<b>4,372</b>

Note: these are raw numbers



**Figure 4. Observed pinniped catches of salmon, sturgeon, lamprey, and unknown by location at Bonneville Dam, 2016.**

Adult salmonid consumption (Chinook salmon and Steelhead combined) by CSL and SSL has exceeded that of the 10-year average (Figure 5). Estimated consumption of salmon through May 13, expanded for daylight hours not sampled, is 8,360 (Table 2). This exceeds last seasons estimated consumption of 7,049 for this time period. Estimated consumption of Chinook salmon by CSL and SSL is 5,677 and 2,434 respectively.

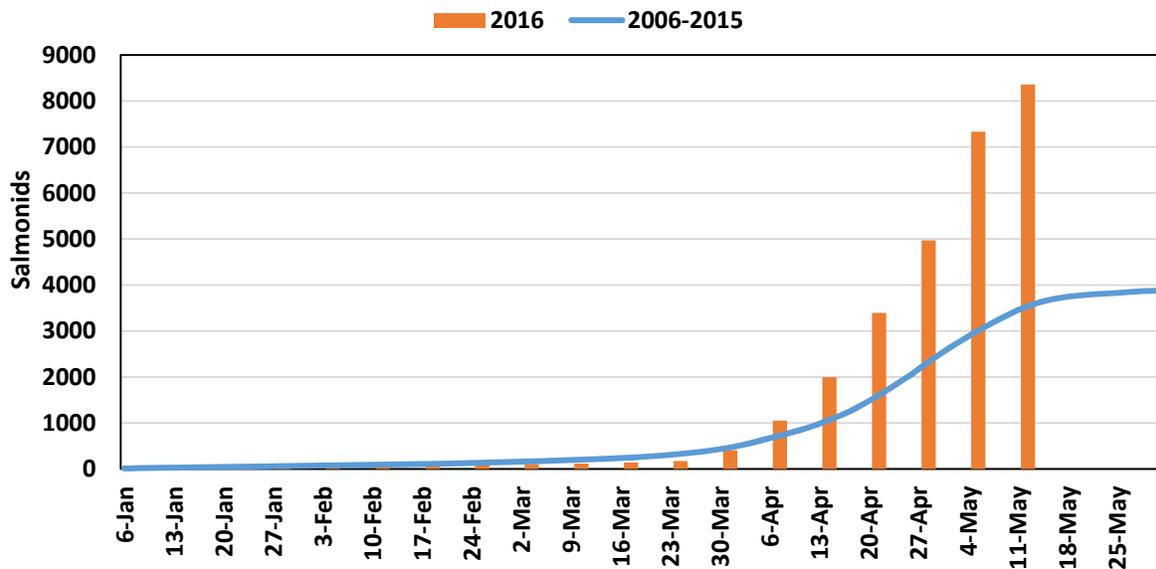
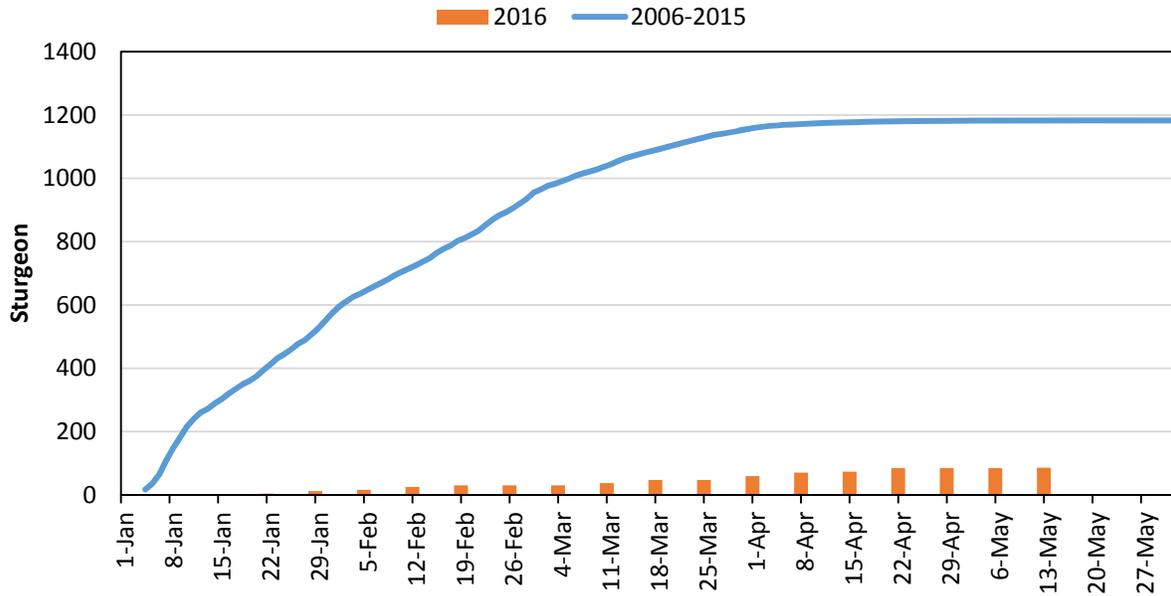


Figure 5. Salmonid cumulative consumption estimate versus the ten year average of adult salmonids consumption at Bonneville Dam.

Table 2. Estimated consumption by pinnipeds at Bonneville Dam through May 13, 2016.

Prey	Steller Sea Lion	California Sea Lion	Total
Chinook	2,434	5,677	8,111
Steelhead	124	125	249
<b>Total</b>	<b>2,558</b>	<b>5,802</b>	<b>8,360</b>

Catches of Sturgeon have dropped greatly from the ten year average consumption as seen in figure 6 but is similar to the past two years. One sturgeon catch was observed over the past two weeks. Estimated consumption of sturgeon through May 13, expanded for daylight hours not sampled, is 86.



**Figure 6. White Sturgeon cumulative consumption estimate versus the ten year average of white sturgeon consumption at Bonneville Dam.**

## **DETERRENTS & TRAPPING**

Sea lion exclusion devices (SLEDs) were deployed at powerhouse 2 on October 26, 2015 and at powerhouse 1 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. CRITFC plans to haze Mondays, Thursdays, and Fridays.

Dam-based hazing by USDA began on March 8. USDA will be hazing seven days a week for 8 hour shifts. We have observed that hazing has a short term effectiveness as pinnipeds are quickly returning after each hazing event.

Pinniped management activities by the states of Oregon and Washington are currently underway at Bonneville Dam. Information about these activities can be found at Oregon Department of Fish & Wildlife's California sea lion management website at:

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