

**STATUS REPORT – PINNIPED PREDATION AND HAZING  
AT  
BONNEVILLE DAM IN 2007**

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This report is the seventh of regular status reports on the pinniped predation and hazing activities being conducted at Bonneville Dam in 2007.

## **PRELIMINARY RESULTS**

The first Steller sea lion (*Eumetopias jubatus*) was seen at Bonneville on December 10, 2006, the first California sea lion (*Zalophus californianus*) on January 8, 2007, and the first harbor seal (*Phoca vitulina*) on January 18, 2007. This is about one month earlier for the California sea lions to arrive than last year. We have seen as many as 9 Steller sea lions and 37 California sea lions at the dam so far on any given day (see Figure 1). The most number of sea lions total for one day so far was 39 on April 4. Most of the California sea lions seen were also observed previous years, with a few newcomers.

### **PREDATION FIGURES**

Unexpanded numbers for fish observed taken between January 8 and April 19 are:  
1,360 salmon/steelhead (see Figure 2)  
360 sturgeon (55 larger than 5 feet)(see Figures 2)  
13 Lamprey, 2 smolt, 372 unidentified (see Figure 2)

Total catch (Chinook in particular) has increased over the past few weeks, especially last week, as can be seen in Figure 2. At least 100 salmonids were observed taken on April 16. The Chinook run this year (Figure 3) is beginning now and topped 1,000 chinook a day on April 17. It looks like another later than average run, earlier than in 2006, and about the same as in 2005 (see Figures 4).

Steller sea lions are the primary predators of white sturgeon (*Acipenser transmontanus*) in the Bonneville Dam tailrace (only five taken by California sea lions). As Steller sea lion numbers declined, so did sturgeon catches. Observers recorded only 19 of the 360 sturgeon takes after hazing began.

Most salmonid species have been caught at PH 1 tailrace so far this year (660), followed by PH 2 (394) and the spillway (248), however most fish have been caught at the spillway each day last week.. Most unidentified fish were seen caught at the spillway (130), followed by PH 1 (125) and PH 1 (124). Most sturgeon were observed caught at the spillway (235), followed by PH 2 (107) and PH 1 (18). At least 18 salmonids and 8 unidentified fish have been seen caught elsewhere on the project, and more likely (data not fully entered). Steller sea lions account for 354 of the 360 sturgeon seen taken. California sea lions account for 1,351 of the 1,360

salmonids observed taken. California sea lions took approximately 207 additional unidentified fish (likely salmonids) while Stellers were seen to take approximately 172 additional unidentified fish (likely sturgeon). Harbor seals were observed to take 2 unidentified fish and have not been seen since hazing began.

### **HAZING IMPACTS**

Hazing began on February 28. The hazing was effective in reducing the number of Steller sea lions present and drastically reduced the number of sturgeon taken after this began ( Figure 2). Hazing also altered the behavior of the California sea lions in that they stayed farther away from the dam and did not surface as much. However, now that the Chinook run is beginning to pick up, fewer animals seem impacted by the hazing activities and remain in the tailrace. As the number of Chinook passing Bonneville Dam exceeded 1,000 per day on April 17, the boat hazing is no longer using seal bombs in the boat restricted zone to reduce the chance of harming or impacting salmon. In addition, with spill occurring, the boats are not allowed into that area for safety reasons, and many sea lions use this area as a sanctuary. Land based hazing at this location is mostly ineffective due to the distances involved. The spillway has become the area where most fish are taken lately.

### **OTHER ITEMS OF INTEREST**

**C404** was observed on March 28, 29, 31, April 2, 4, 5, 7, 13, and 16 in the Washington shore fish count window and in the tailrace area on most days. We now have multiple observers with sightings of C404 climbing over one of the floating orifice gates at Powerhouse 2 to the fishway. He has been seen to haul out on the corner collector concrete apron, but not on the trap yet. He also appears to be in the fishways before 5:00h and after 20:00h, so he is likely active at night.

**Trapping** occurred on April 18 and 19 with one California sea lion caught each day. They were transported to Astoria on the 19<sup>th</sup>, but I do not have any further information at this time whether they were released in Astoria or elsewhere. The sea lions are preferring to haul out on the concrete apron of the corner collector in large numbers, sometimes as many as 32 have been seen. Of the animals trapped on April 4, all have now returned to Bonneville.

## **SUMMARY**

California sea lion numbers and salmonid take have increased over the past few weeks. Chinook counts are finally starting to climb now. Steller sea lion presence has been dramatically reduced, resulting in substantial declines in predation on white sturgeon near the dam. Hazing has been less effective at reducing California sea lion numbers and predation, but observers and hazing personnel have reported changes in sea lion behaviors. These changes include increased travel between tailraces in response to hazing, less time spent at the surface during foraging, and less time spent close to dam structures. Chinook salmon are the primary prey item for California sea lions at Bonneville Dam, are only beginning to arrive, so it is uncertain what impact hazing might have on sea lion predation in the long-term as the run increases and more sea lions travel to Bonneville Dam.

Figure 1. Daily minimum pinniped abundance.

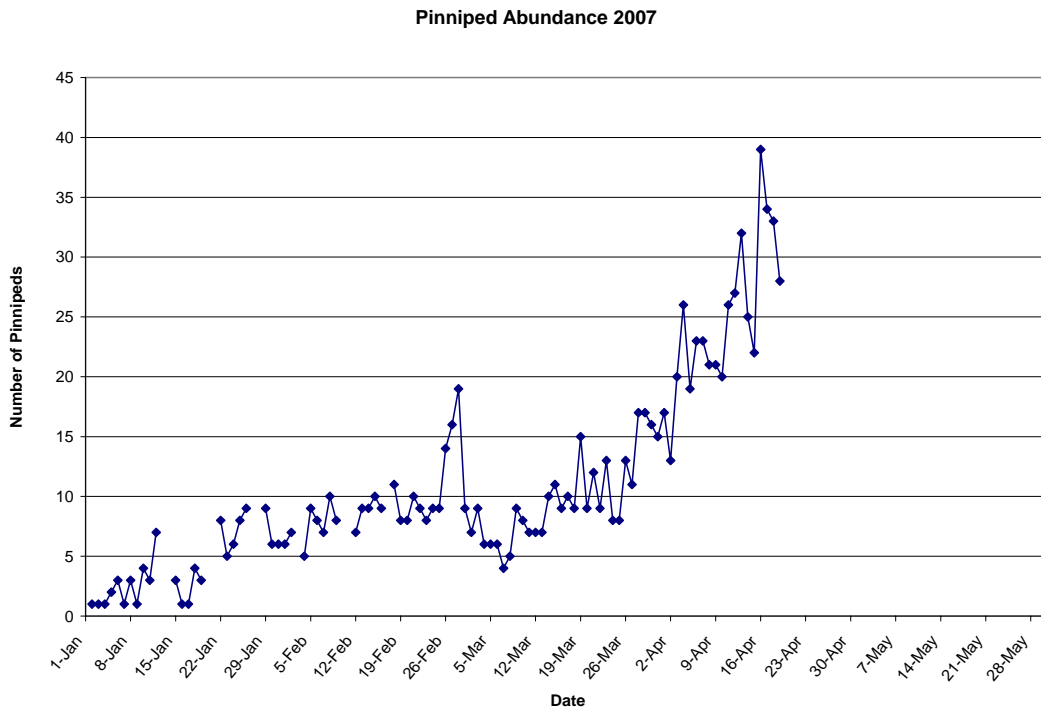


Figure 2. Daily salmonid, sturgeon, and unknown fish predation by pinnipeds

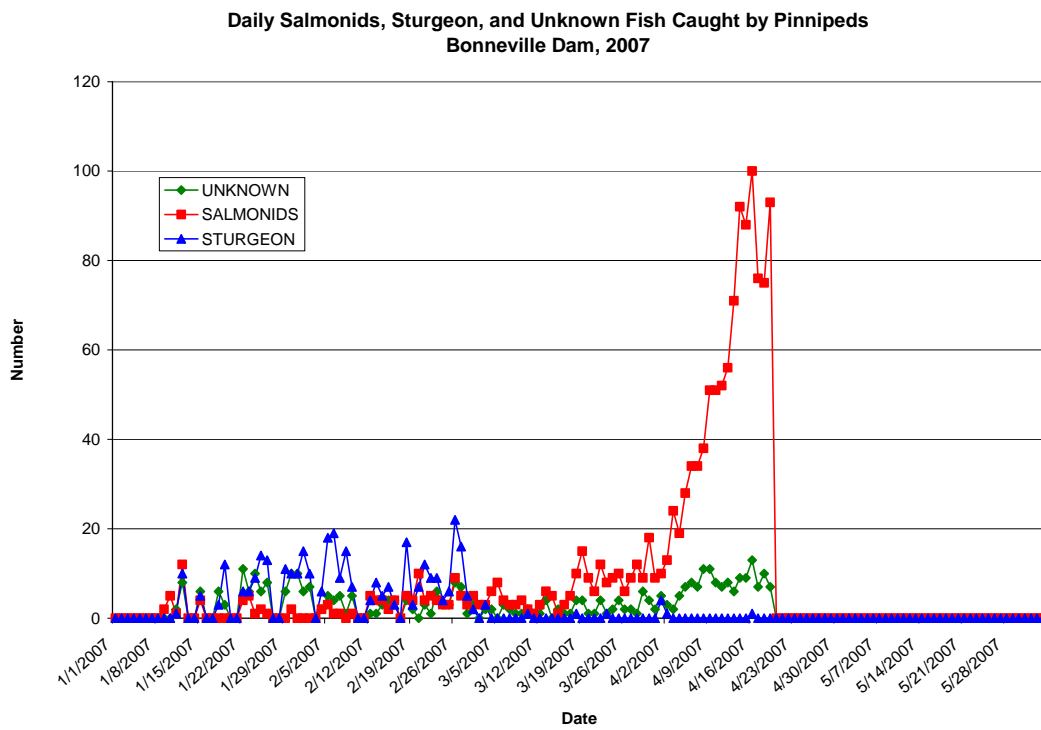


Figure 3. Total daily salmonid passage (steelhead and Chinook) at Bonneville Dam, 2007.

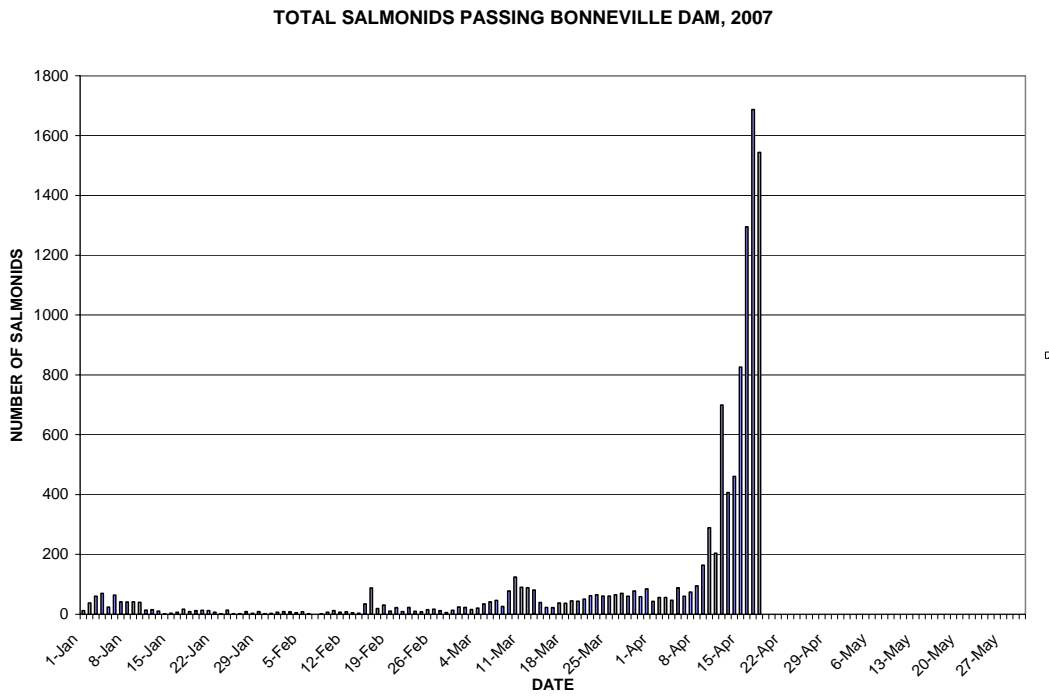


Figure 4. Daily Chinook passage at Bonneville Dam in 2005, 2006, and the 10 year average.

