

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

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**4/13/07**

This report is the sixth 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 26 California sea lions at the dam so far on any given day (see Figure 1). 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 12 are:  
740 salmon/steelhead (239 steelhead, 207 chinook, 294 salmonid)(see Figure 2)  
359 sturgeon (55 larger than 5 feet)(see Figures 2)  
8 Lamprey, 2 smolt, 325 unidentified (see Figure 2)

Total catch (salmonids in particular) has increased over the past few weeks, especially last week, as can be seen in Figure 2. The Chinook run this year (Figure 3) is just starting to show up now. 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 18 of the 359 sturgeon takes after hazing began.

Most salmonid species have been caught at PH 1 tailrace so far this year (394), followed by PH 2 (278) and the spillway (63). Most unidentified fish were seen caught at the spillway (114), followed by PH 2 (107) and PH 1 (98). Most sturgeon were observed caught at the spillway (235), followed by PH 2 (106) and PH 1 (18). At least 12 salmonids and 6 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 359 sturgeon seen taken. California sea lions account for 731 of the 740 salmonids observed taken. California sea lions took approximately 150 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. 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.

## **OTHER ITEMS OF INTEREST**

**C404** was observed on March 28, 29, 31, April 2, 4, 5 and 7 in the Washington shore fish count window and in the tailrace area on most days. One of our SCA observers saw C404 attempt to climb over one of the floating orifice gates at Powerhouse 2 six times before he eventually succeeded in entering the fishway. On April 4 he was hazed inside the Washington shore ladder three times with no affect. 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. We have also been noting 2-5 California sea lions working Tanner Creek before 6:00h, so the hazing may have caused some of the animals to begin to forage at night. We will try and make some night observations in the near future.

**Trapping** will likely occur again sometime next week, although fewer animals have been seen on the trap but rather on the concrete apron to the corner collector instead. Some mornings, there are no animals on the trap, this morning, there were seven. The Bonneville project crew recommended and implemented some improvements to the transfer cage and transport trailer. Specific safety issues were brought up after the first trap and haul and will be addressed by all parties involved. Of the animals trapped on April 4, one returned to Bonneville on April 10 and another April 12. The other two were not seen at Astoria today after being there for several days.

## **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.

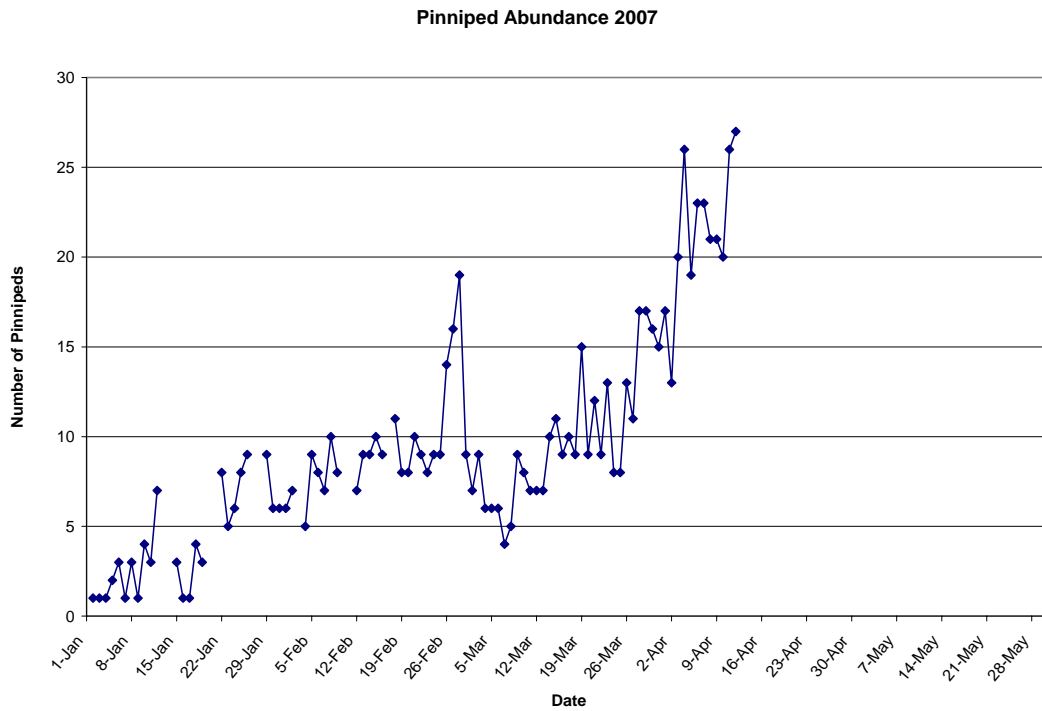


Figure 2. Daily salmonid, sturgeon, and unknown fish predation by pinnipeds

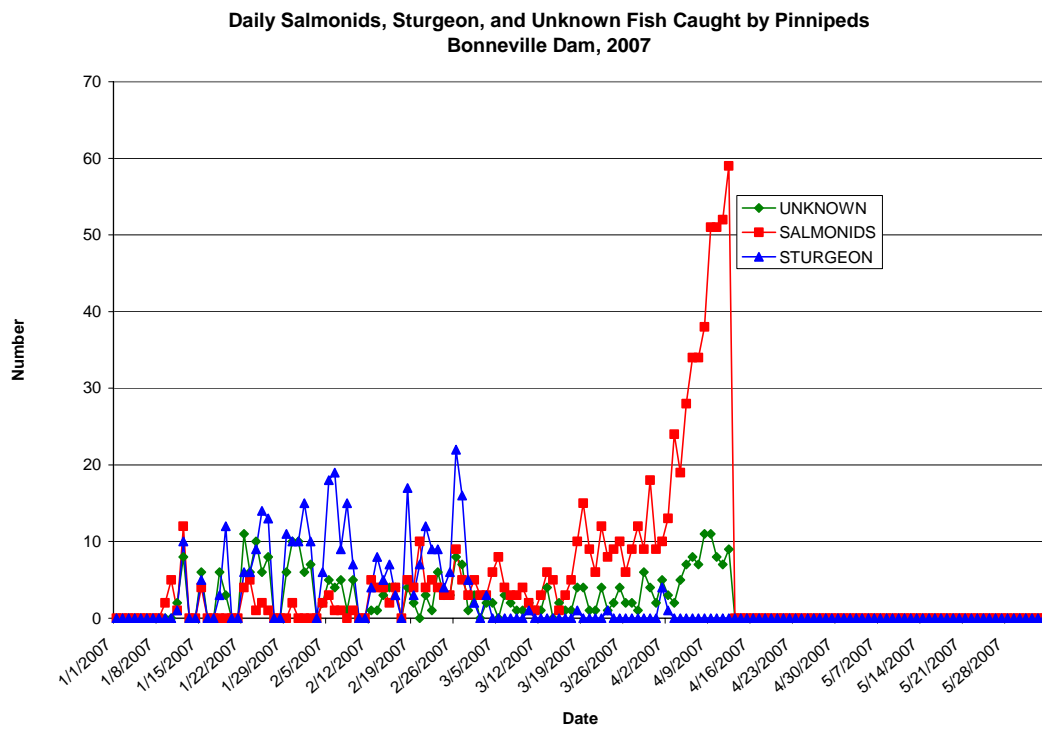


Figure 3. Total daily salmonid passage (steelhead and Chinook) at Bonneville Dam, 2007.

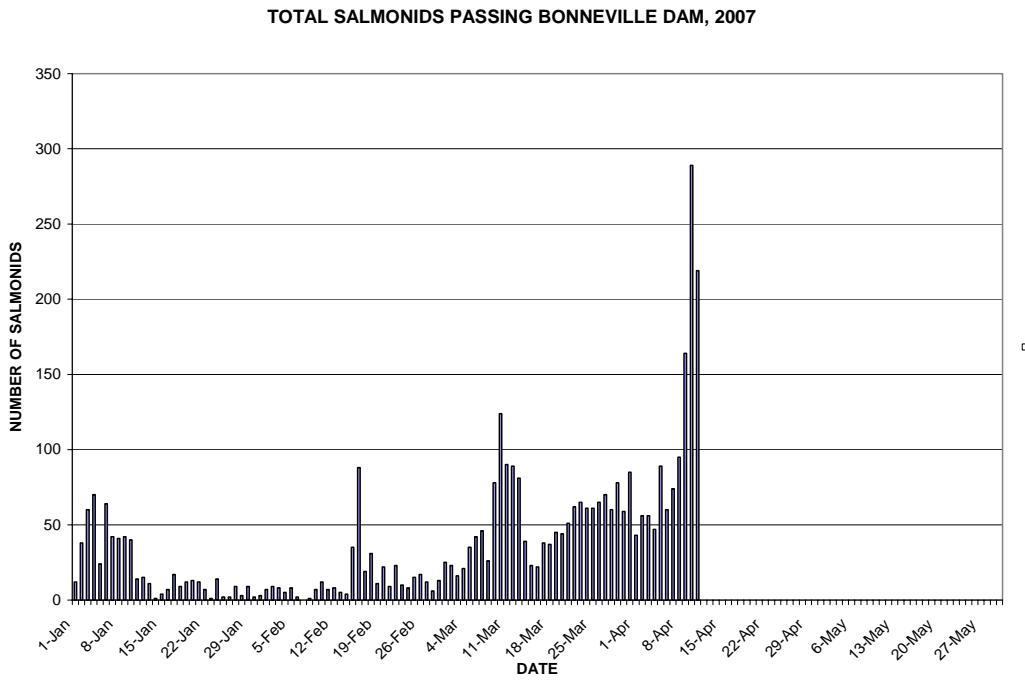


Figure 4. Daily Chinook passage at Bonneville Dam in 2005, 2006, and the 10 year average.

