

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

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This report is the fourth of regular status reports on the pinniped predation and hazing activities being conducted at Bonneville Dam in 2007. This will be the last report to include the **Background** section, as it will not change.

Background

This year it was determined to conduct what amounts to a maximum effort of non-lethal hazing with current tools available and within some restrictions for the use and conduct of hazing relating to fish passage issues and personnel safety concerns. In brief, the Corps has contracted USDA to conduct hazing of pinnipeds from the decks and shorelines of Bonneville Dam from dawn to dusk, seven days a week, beginning March 1 and ending May 31. Initially this was to include two hazers per shift, but USDA was unable to supply manpower to meet that requirement, so one hazer is present at most times and roams the project, although there is some overlap hours where both hazers are present. The states, NOAA, tribes, and others are participating with hazing from boats with the same schedule. Sometimes there will be two or more boats present, but typically one boat. Hazing consists of the use of crackershells, rubber bullets, and seal bombs from the boats only. When salmonid passage reaches 1000 per day, no seal bomb use will be allowed within the boat restricted zone. Other limitations on distance from fishway entrances and structures were determined and are being followed. Working as a team, the intent is to chase animals away from the face of the powerhouse and fishway and the boats can chase them out of the tailrace area.

We are also continuing our observation of predation on salmonids and sturgeon and began regular observations on January 8. Sea Lion Exclusion Devices (SLED's) were installed at Powerhouse 2 entrances on January 10, at Powerhouse 1 and B branch entrances the week of January 22, and Cascades Island today, March 9 (it had been dewatered). The Floating Orifice Gate barriers (FOG's) are to be installed in the next week or so at Powerhouse 2, but the orifices are closed, so no entry can occur. Acoustic deterrents were increased and installed and running at all fishway entrance areas by mid-January.

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 10 California sea lions at the dam so far in one day (February 28)(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 March 29 are:
301 salmon/steelhead (181 steelhead, 28 chinook, 92 salmonid)(see Figure 2)
354 sturgeon (55 larger than 5 feet)(see Figure 2)
8 Lamprey, 2 smolt, 233 unidentified (see Figure 2)

Hazing Impacts

Hazing actually began on February 28, for much of the day. February 28 was a practice day for hazing personnel from participating agencies, and full-time daylight hazing began on March 1. The previous three reports compared pre- and post-hazing figures but it now becomes a difficult comparison as conditions are much less equal. From now on we will look at trends through the season and occasionally with previous years.

PINNIPED ACTIVITY

Pinniped abundance has begun to increase over the past week (Figure 1), primarily because of new California sea lions. Steller sea lions are typically seen only once or twice a day now, with up to three seen early in the morning. Once hazing begins, they are usually chased out of the tailrace area successfully. However new California sea lions are beginning to show up now and the Chinook run is still to come.

SALMONID AND STURGEON CATCH

Total catch (salmonids in particular) has increased over the past week as can be seen in Figure 2. However, the Chinook run is just starting to show up and a better result will be how many salmonids are caught by the end of the season compared to the 2,500-3,500 over the past few years.

Steller sea lions are the primary predators of white sturgeon (*Acipenser transmontanus*) in the Bonneville Dam tailrace (only one taken by California sea lions). As Steller sea lion numbers declined, so did sturgeon catches. Observers recorded only 13 of the 354 sturgeon takes after hazing began.

Most salmonid species have been caught at PH 1 tailrace so far this year (181), followed by PH 2 (110) and the spillway (15). Most unidentified fish were seen caught at the spillway (93), followed by PH 2 (71) and PH 1 (69). Most sturgeon were observed caught at the spillway (231), followed by PH 2 (105) and PH 1 (18). Next report I will update the pinniped/prey species break-out.

OTHER ITEMS OF INTEREST

C404 was observed on March 29 in the tailrace of powerhouse 2 and subsequently seen up at the count station window. He was observed for several hours exploring the ladder from the base, in and out of the Adult Fish Facility, and above the count station. All SLEDS are in place and he

looks quite large, so we believe he may have jumped over one of the floating orifice gates. More to come on this as the season progresses.

Summary

California sea lion numbers and salmonid take have increased over the past week. Chinook counts are still low but starting to show up in small numbers daily (less than 10 per day). 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.

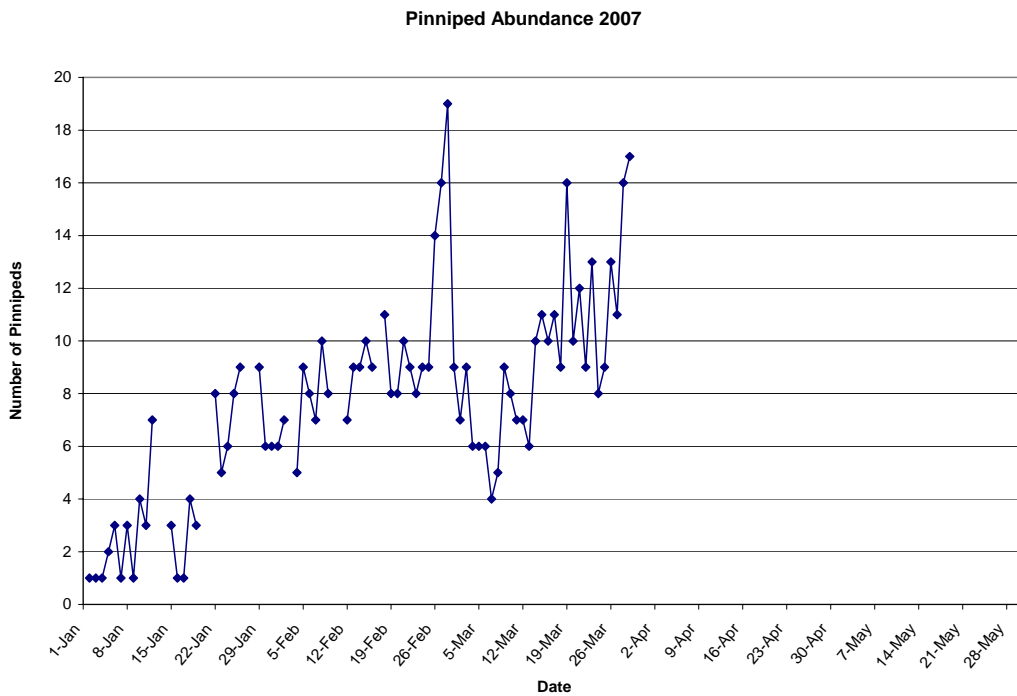


Figure 2. Daily salmonid, sturgeon, and unknown fish predation by pinnipeds.

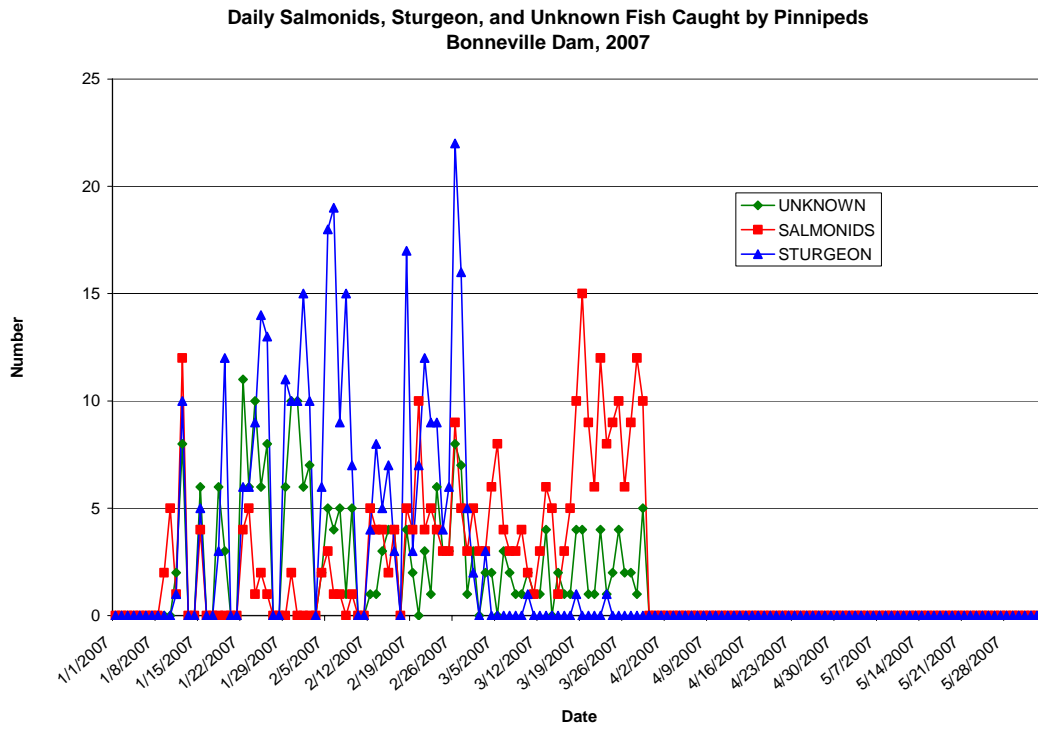


Figure 3. Sturgeon size distribution of those taken by pinnipeds.

