

STATUS REPORT - PINNIPED PREDATION AND DETERRENT ACTIVITIES AT BONNEVILLE DAM, 2010

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http://www.nwd-wc.usace.army.mil/tmt/documents/fish/2010/sea_lion_hazing2010.html

This is the **ninth** weekly status report of 2010 and summarizes all pinniped predation monitoring and deterrent activities at Bonneville Dam from January 1 through **April 14**, 2010. Regular daylight observations began on January 8 and will continue to the end of May, five days per week. Weekends will not be regularly monitored this year, the same as for 2009. Final predation estimates will be expanded for hours and days not observed at the end of the observation season and these updated figures will be presented in our annual report.

Boat-based crews from Oregon Department of Fish and Wildlife (ODFW) and Washington Department of Fish and Wildlife (WDFW) began hazing sea lions within the Bonneville dam boat restricted zone (BRZ) and in downriver areas in January, and plan to continue through the end of May. The Columbia River Intertribal Fish Commission added hazing efforts in early March. The Corps has contracted U.S. Department of Agriculture (USDA) Wildlife Services to haze sea lions from March 1 through May 31, 2010 from dam structures and adjacent lands seven days per week, eight hours per day, during daylight hours.

PRELIMINARY RESULTS

All data presented here are preliminary as of the status report date. Predation figures are unexpanded and sea lion abundance estimates will likely change as the season progresses and data are proofed and analyzed, so please use these estimates with appropriate caution. A final report summarizing the results of the 2007 through 2010 evaluation years will be available later this year.

PINNIPED ABUNDANCE

We have seen as many as **52** Steller sea lions (*Eumetopias jubatus*) and **21** California sea lions (*Zalophus californianus*) at the dam on any given day (see Figures 1 and 2). There are about the same number of sea lions present per day on average so far this year compared to last year (Figure 3), however far higher numbers of Steller sea lions are present (Figure 10) and numbers of California sea lions are down substantially (Figure 9). The highest daily abundance estimate for all pinnipeds at Bonneville dam was **71** on **April 15**, which was the most we have ever documented. We have seen at least **40** different California sea lions, at least **52** Steller sea lions,

and one harbor seal (*Phoca vitulina*) since monitoring began. At least **25** of the California sea lions (C287, C417, C653, C697, C706, C779, C797, C805, C926, C934, C935, U19, U26, U31, B22, B63, B81, B194, B254, B258, B267, B295, B299, B301, B303) have been seen in previous years. So far, **21** individuals seen this year are currently on the list for removal. To date, 9 of those have been removed. Several new individuals have shown up the past few weeks.

Steller and California sea lions have begun to haul out or partially haul out on the rocks below the PIT tag building to the corner collector in the powerhouse two tailrace this week in large numbers in the early morning and late evening hours.

CRITFC set up cameras and recording systems March 2nd near the traps under funding from BPA in an attempt to enumerate pinniped numbers and take by video cameras. If successful, this technology could be used at other sites farther down the river where there are no observers.

PREDATION DATA

Unexpanded numbers for fish observed taken in the Bonneville Dam tailrace for 2010 are:

	<u>California Sea Lions</u>	<u>Steller Sea Lions</u>	<u>Total</u>
Chinook	773	245	1,018
Steelhead	195	30	225
Sturgeon	4	1093	1097
Lamprey	1	1	2
Shad	21	11	32
Other	4	4	8
Smolt	0	2	2
Unknown	34	223	257

Chinook passage was **7,749** on **April 15** (**5,271** steelhead, **23,188** Chinook, -11 coho through **April 15**), and this is much more than what had passed by this point in the past six years. Total salmonid catch to date (**1,721** expanded by interpolating for weekends) is as high as 2004 and 2008 was at this point (Figure 8). Salmonids taken over the past week was more than all previous years except 2008 at this point in the season (Figure 11). Chinook have now become the predominant prey species taken by both species of pinnipeds (Figure 12). On April 14, Steller sea lions were observed to take 47 Chinook and California sea lions took 82. Even though the predation figures are high, the percentage of the run taken to date is the lowest since 2003 (meaning a larger number of salmonids are passing earlier this year).

It is likely that most unknown fish caught by Steller sea lions were sturgeon before three weeks ago, while those unknown fish caught by California sea lions were Chinook or steelhead (Figure 4). Most sturgeon have been caught in powerhouse 2 tailrace, followed by the spillway then powerhouse 1 (Figure 5). Observed sturgeon catch has exceeded **1,000** already (**1,680** expanded by interpolating for weekends), however Stellers have begun to switch to salmonid prey as they Chinook become more abundant (Figure 6). A record high of **66** sturgeon were observed caught on March 1, most being in the 2 to 4 foot range (Figure 7).

DETERRENTS/TRAPPING

ODFW and WDFW deployed four sea lion traps at the corner collector of Bonneville powerhouse two on February 12. No animals were trapped this week.

To date, 11 California sea lions have been trapped, 9 removed and 2 released, and 4 Steller sea lions have been branded, tagged, and released. These traps will be used to mark California sea lions and Steller sea lions not previously captured and to remove animals that meet removal criteria, per removal authority granted to the states of Oregon, Washington, and Idaho by NOAA Fisheries under Section 120 of the Marine Mammal Protection Act. Acoustic tags may be fastened to some animals not on the list to help gain more information on movements and hunting behaviors from several acoustic sensor arrays that CRITFC will deploy and monitor between Bonneville Dam and the estuary.

SLEDs have been installed at all fishway entrances and no pinnipeds have breached these barriers.

Hazing by the states from boats began in January. Boat hazing continues to have some limited, local, short term impact in reducing predation in the tailrace, primarily from Steller sea lions. USDA hazing began the first week of March and will continue for seven days a week until the end of May.

OTHER ITEMS OF INTEREST

Prior to March 22 this year, we observed 10 events of cleptoparasitism (predators stealing prey from another predator). Three weeks ago, we observed 48 events, primarily Steller sea lions stealing Chinook from California sea lions. Two weeks ago we observed 71 events. Over the past week, Steller sea lions were observed to take only **3** sturgeon, while they took 138 salmonids (plus 21 unknown) and parasitized another 80 (plus **3** unknown). This is causing the California sea lions to catch more fish per individual. To date, Steller sea lions have stole fish from California sea lions just over **200** times. California sea lions to date have been observed to catch **968** salmonids, and Steller sea lions have been observed to catch **275** salmonids. But if the figures for cleptoparasitism are taken into account (even though they usually get in a few bites before the fish is stolen), then the figures would be closer to **768** salmonids for California sea lions and about **475** salmonids for Steller sea lions (these are all unexpanded figures). This points out that Steller sea lions are consuming a fair amount of Chinook so far this year as they took an observed 300 salmonids by the end of the season in 2009, and we still have the peak period of predation likely yet to come. In addition, because Steller sea lions have been observed swallowing adult salmonids whole at times on the surface, we may be underestimating the predation on Chinook and certainly steelhead by the Steller sea lions.

It should also be noted that although we observed over 50 Stellers sea lions at Bonneville, that does not mean all 50 animals were hunting at Bonneville that day. Most were hauled out on the rocks, and during the day they disperse, and roughly 20-30 are seen hunting at Bonneville while the remainder go elsewhere to hunt. The Steller sea lions seem to be spread out more than the California sea lions, who seem to prefer to concentrate near the dam.

Figure 1. Weekly (average daily) pinniped abundance at Bonneville Dam, 2002-2010.

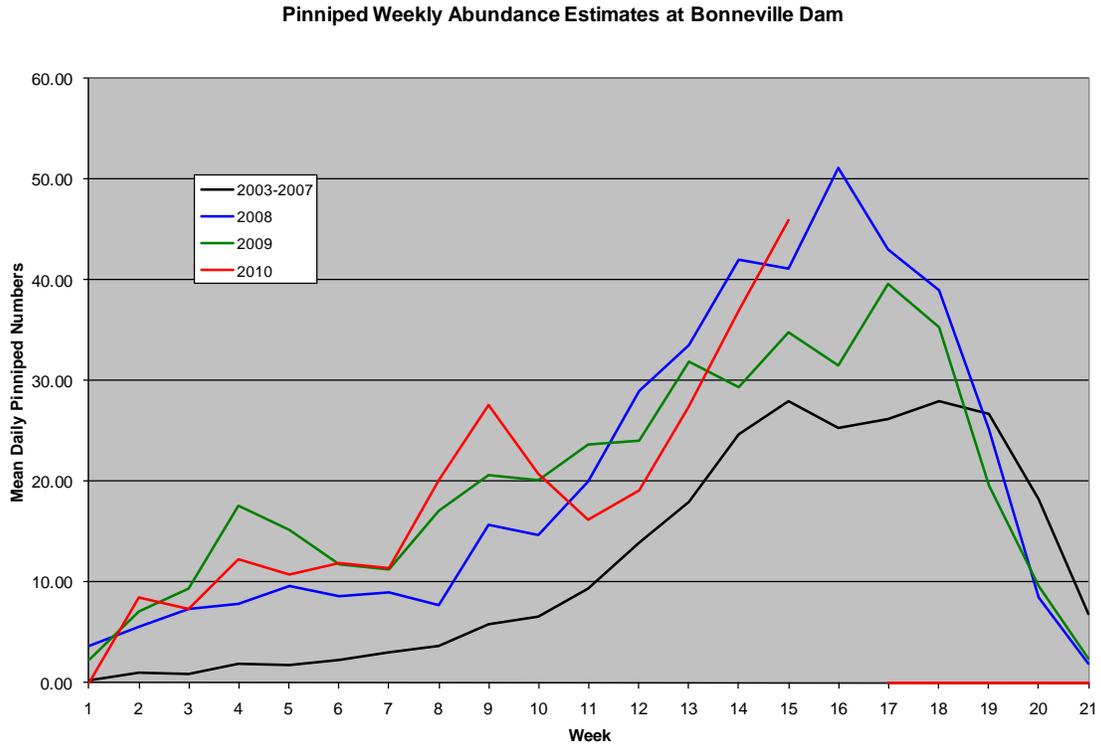


Figure 2. Daily pinniped abundance, by species, at Bonneville Dam, 2010.

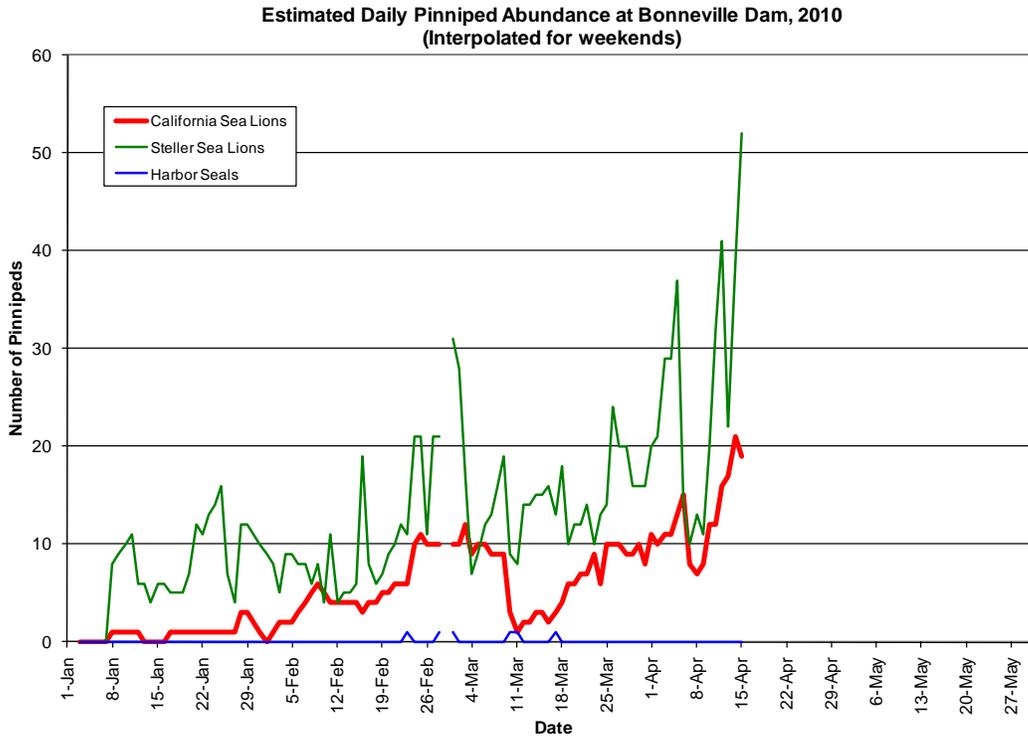


Figure 3. Average daily presence of pinnipeds, by species, to date (**April 15**) for each year at Bonneville Dam.

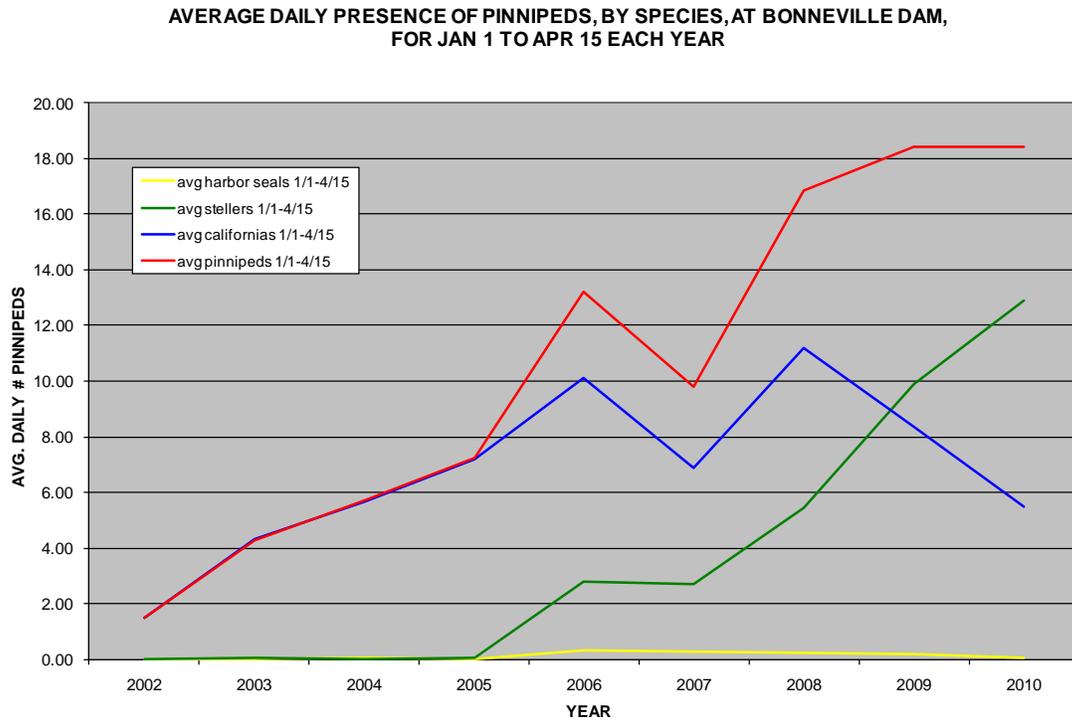


Figure 4. Major prey species taken by Pinniped species at Bonneville Dam, 2010.

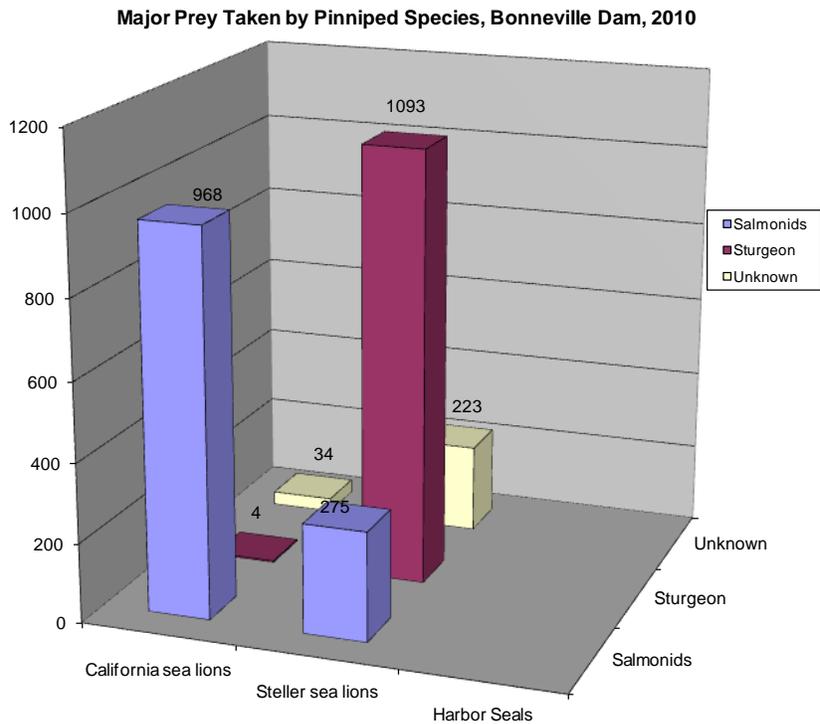


Figure 5. Major prey species taken by Pinnipeds by location, 2010.

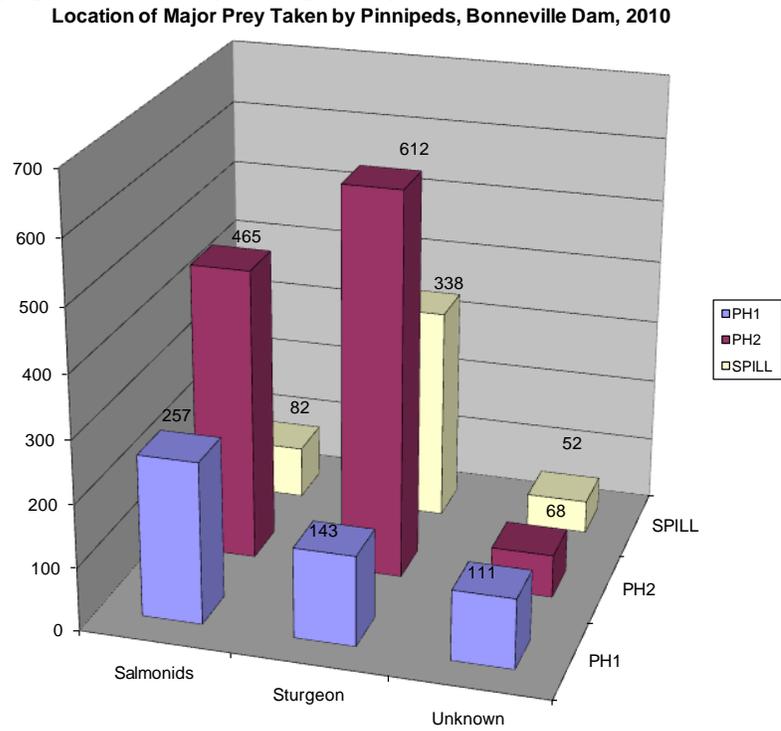


Figure 6. Daily cumulative observed sturgeon catch at Bonneville Dam, 2006-2010.

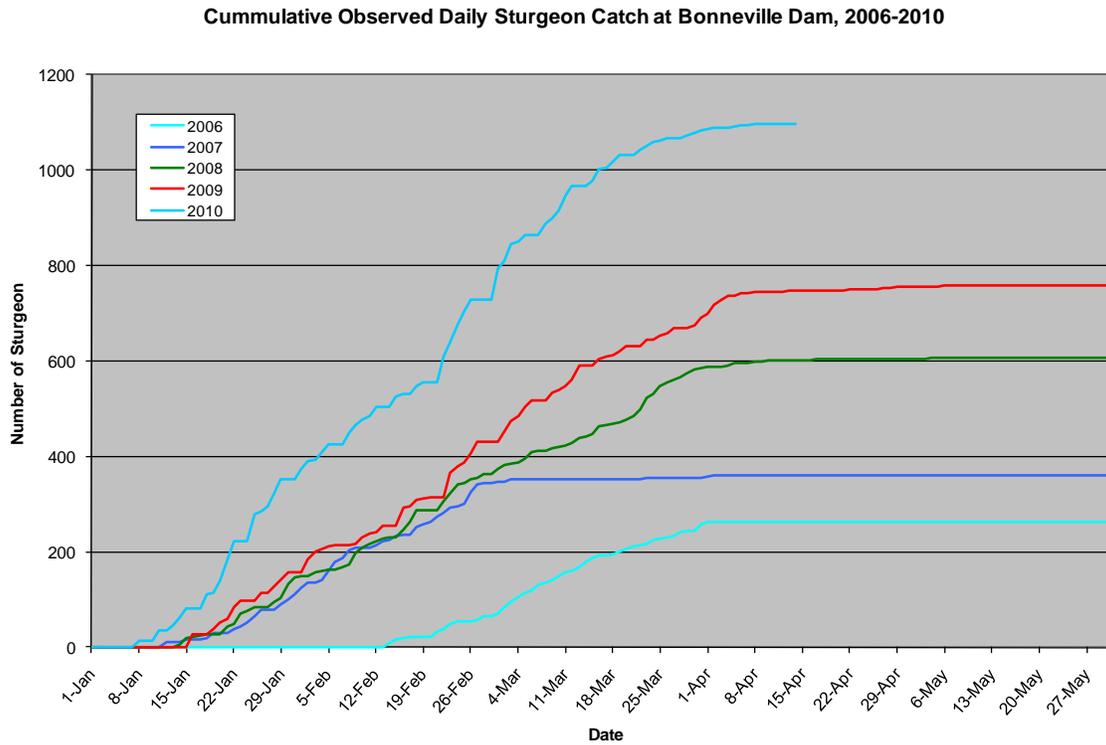


Figure 9. Weekly (average daily) California sea lion abundance at Bonneville Dam, 2002-2010.

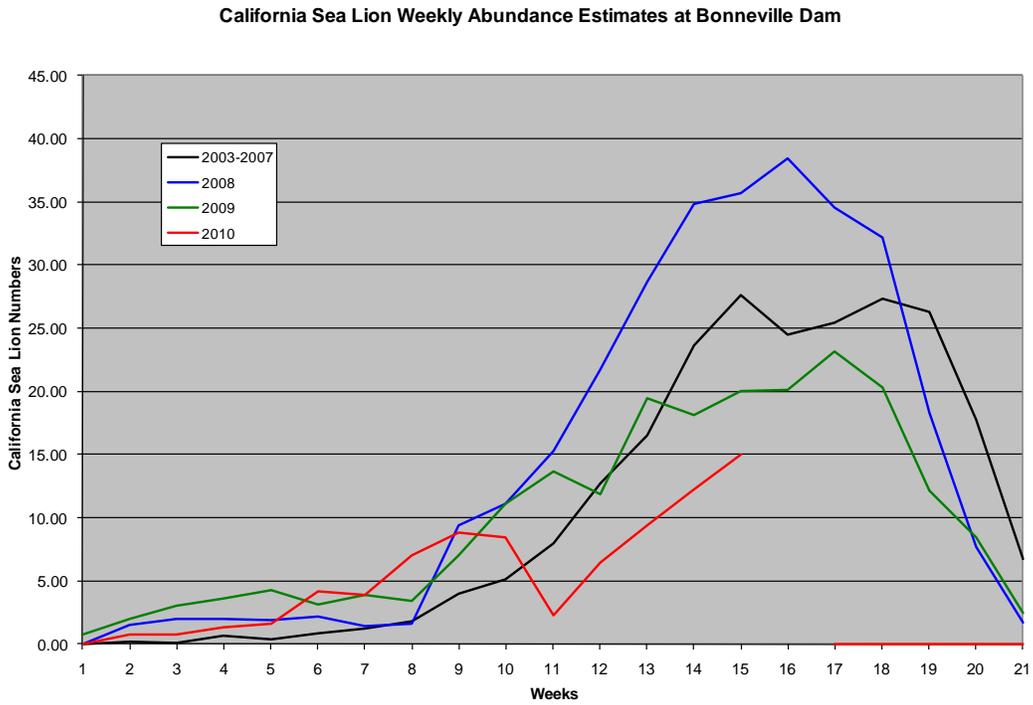


Figure 10. Weekly (average daily) Steller sea lion abundance at Bonneville Dam, 2002-2010.

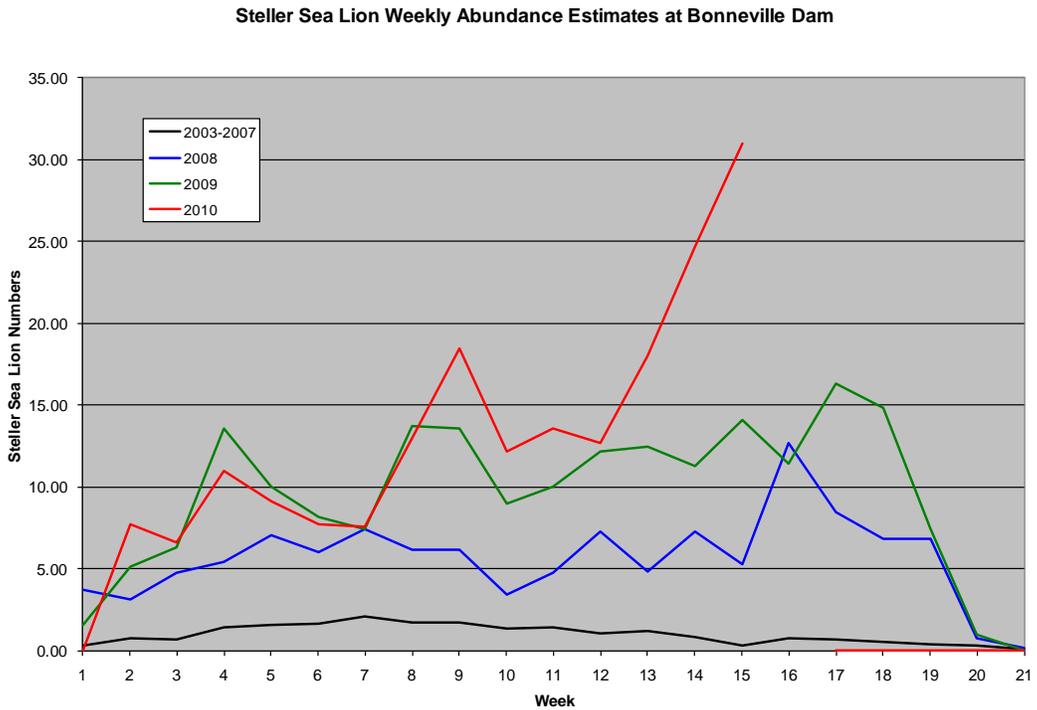


Figure 11. Weekly (average daily) salmonid consumption estimates by all pinnipeds at Bonneville Dam, 2002-2010.

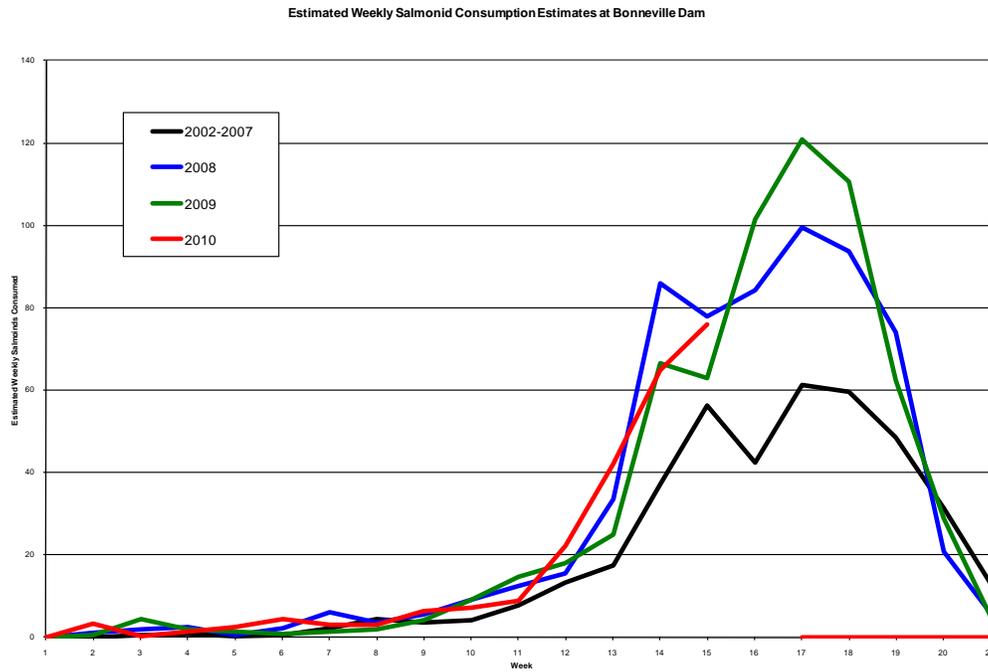


Figure 12. Unexpanded salmonid, sturgeon, and unknown prey caught by pinnipeds at Bonneville Dam in 2010.

