

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 **tenth** weekly status report of 2010 and summarizes all pinniped predation monitoring and deterrent activities at Bonneville Dam from January 1 through **April 21**, 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 **53** 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 now more sea lions present per day on average so far this year compared to previous years (Figure 3). This is because far higher numbers of Steller sea lions are present (Figure 10) while numbers of California sea lions are down (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 **44** different California sea lions, at least **53** 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, a generally younger group of animals than we normally have seen in past years.

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. They have worked out most of the “bugs” and will set up to test it against observers later next week. 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	1,225	423	1,648
Steelhead	195	31	226
Sturgeon	5	1094	1099
Lamprey	1	1	2
Shad	21	11	32
Other	4	4	8
Smolt	1	3	4
Unknown	39	231	270

Chinook passage was **11,742** on **April 21**. To date, **5,919** steelhead and **63,743** Chinook have passed Bonneville through **April 21**, and this is more than every year except 2003 back to 2002. Total salmonid catch to date (**2,599** expanded by interpolating for weekends) is higher at this point than any year monitored (Figure 8). Weekly salmoinds taken over the past week was more than for all previous years at this point in the season (Figure 11). Chinook are the predominant prey species taken by both species of pinnipeds now (Figure 12). On **April 20**, Steller sea lions were observed to take **42** Chinook and California sea lions took **108**. 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 April, 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 (**1,682** expanded by interpolating for weekends), however Stellers have switched to salmonid prey as the Chinook

have 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

At least one California sea lion has been observed upstream of Bonneville Dam this past week, likely passing through the navigation lock. This has been known to occur almost every year since we began monitoring.

Prior to March 22 this year, we observed 10 events of cleptoparasitism (predators stealing prey from another predator). Since then, the incidence has increased every week. 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 at least **324** times. California sea lions to date have been observed to catch **1,420** salmonids, and Steller sea lions have been observed to catch **454** 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 **1,096** salmonids for California sea lions and about **778** 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 in the middle of the peak period of predation now. 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.

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

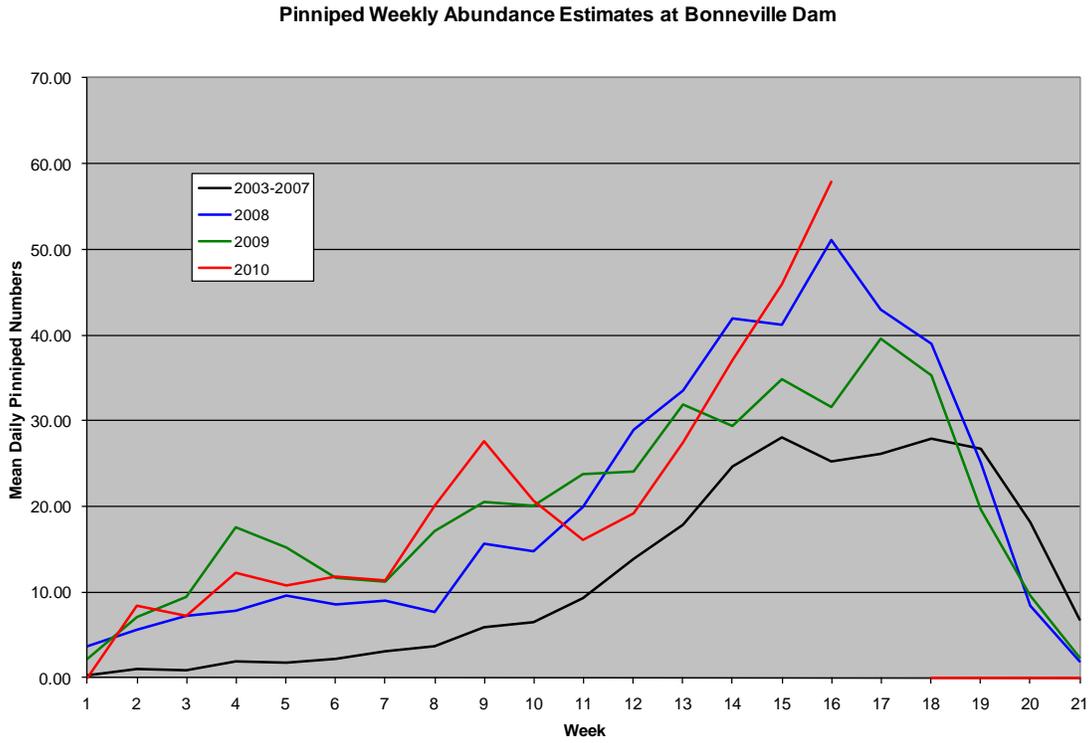


Figure 2. Daily pinniped abundance, by species, at Bonneville Dam, 2010.

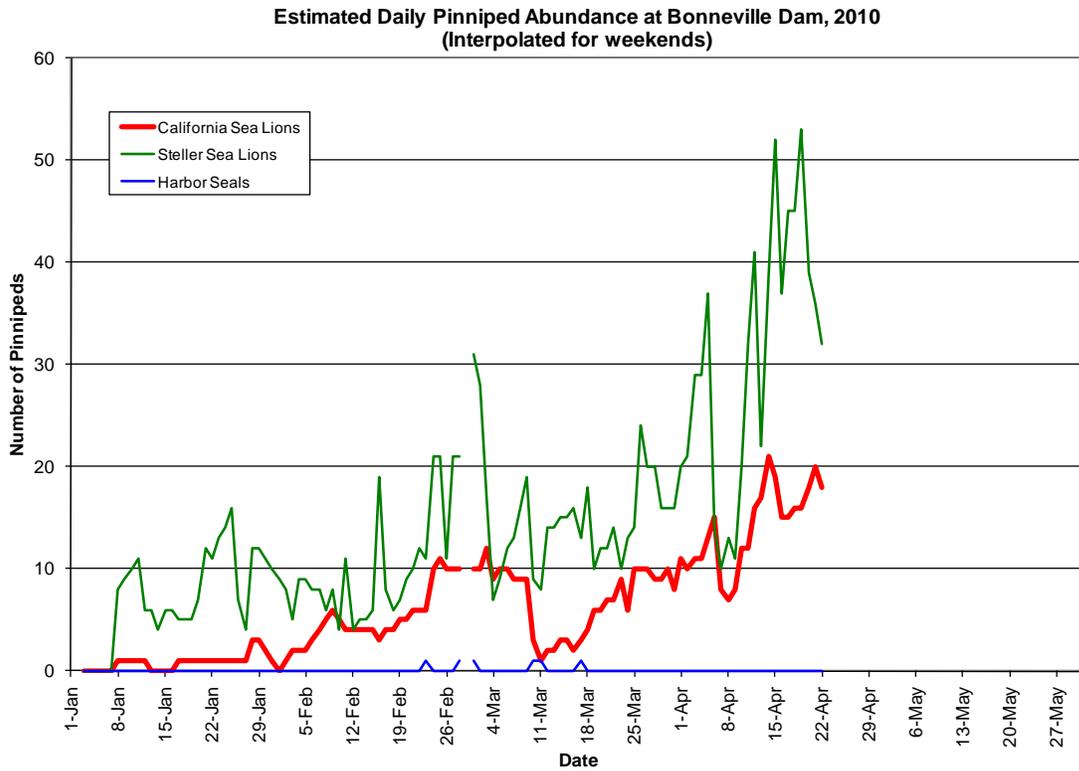


Figure 3. Average daily presence of pinnipeds, by species, to date (**April 15**) for each year at Bonneville Dam.

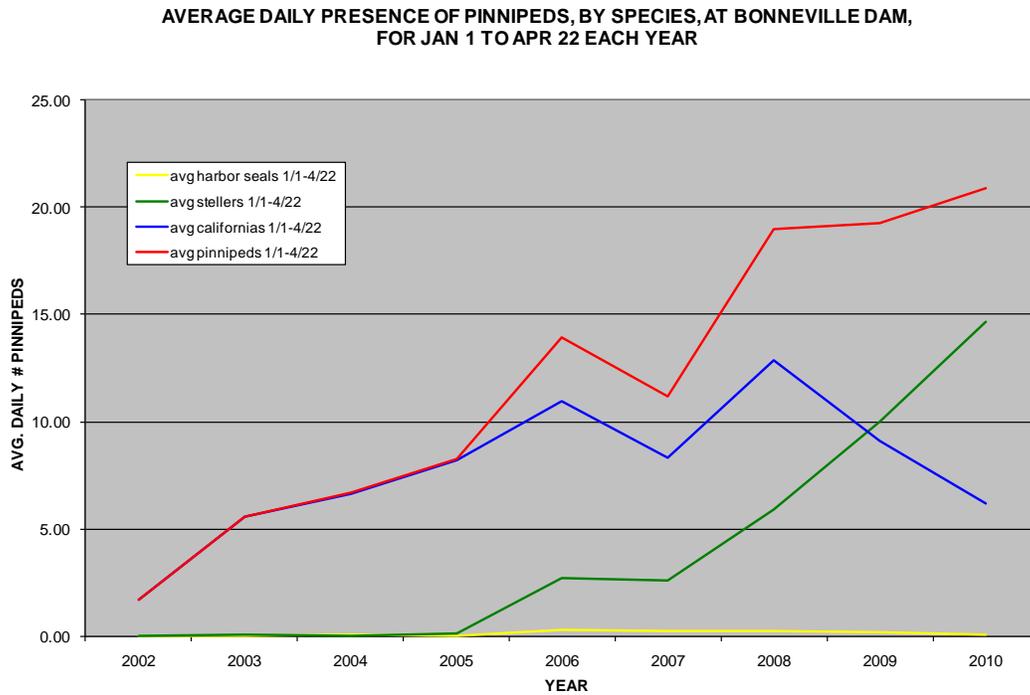


Figure 4. Major prey species taken by Pinniped species at Bonneville Dam, 2010.

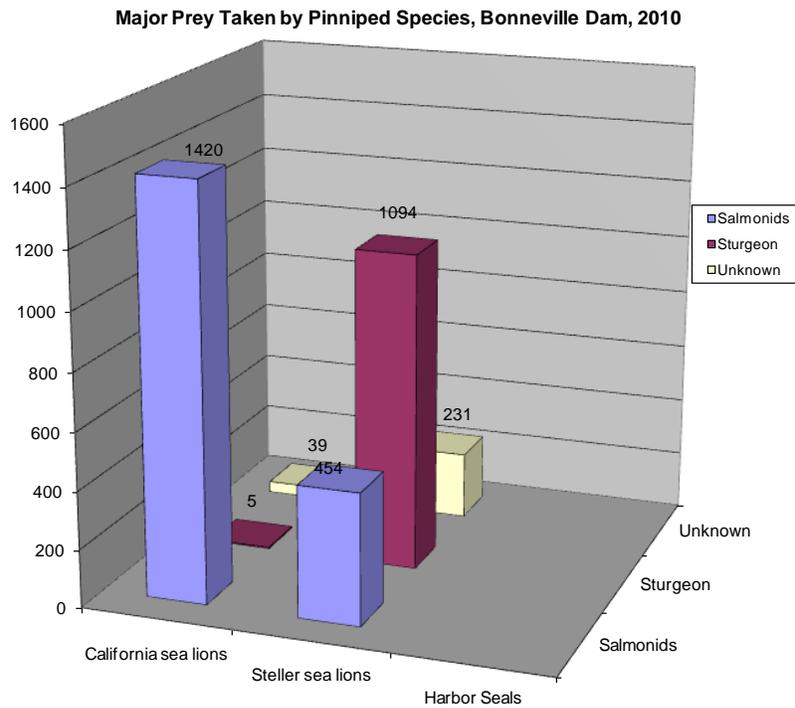


Figure 5. Major prey species taken by Pinnipeds by location, 2010.

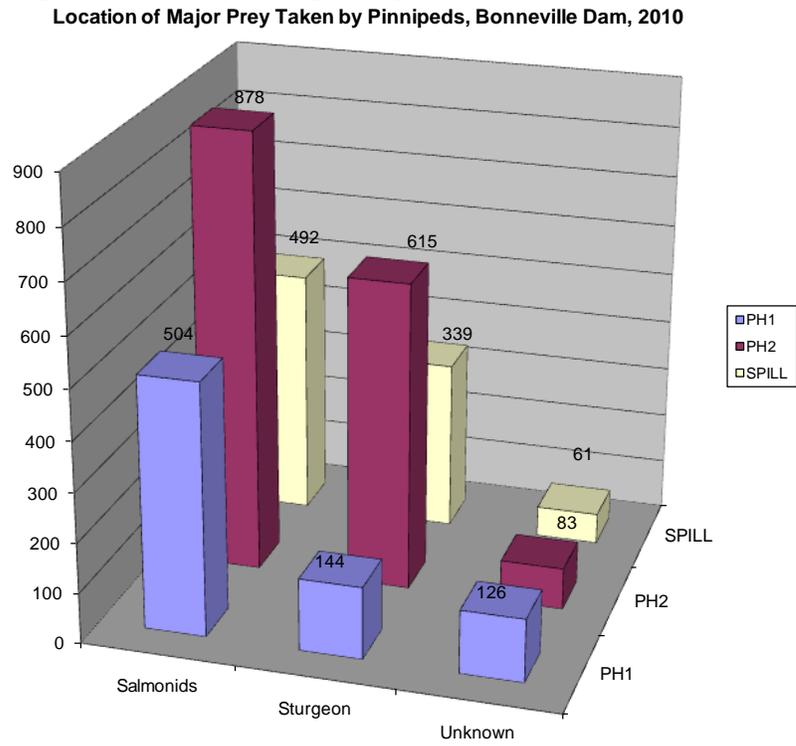


Figure 6. Daily cumulative observed sturgeon catch at Bonneville Dam, 2006-2010.

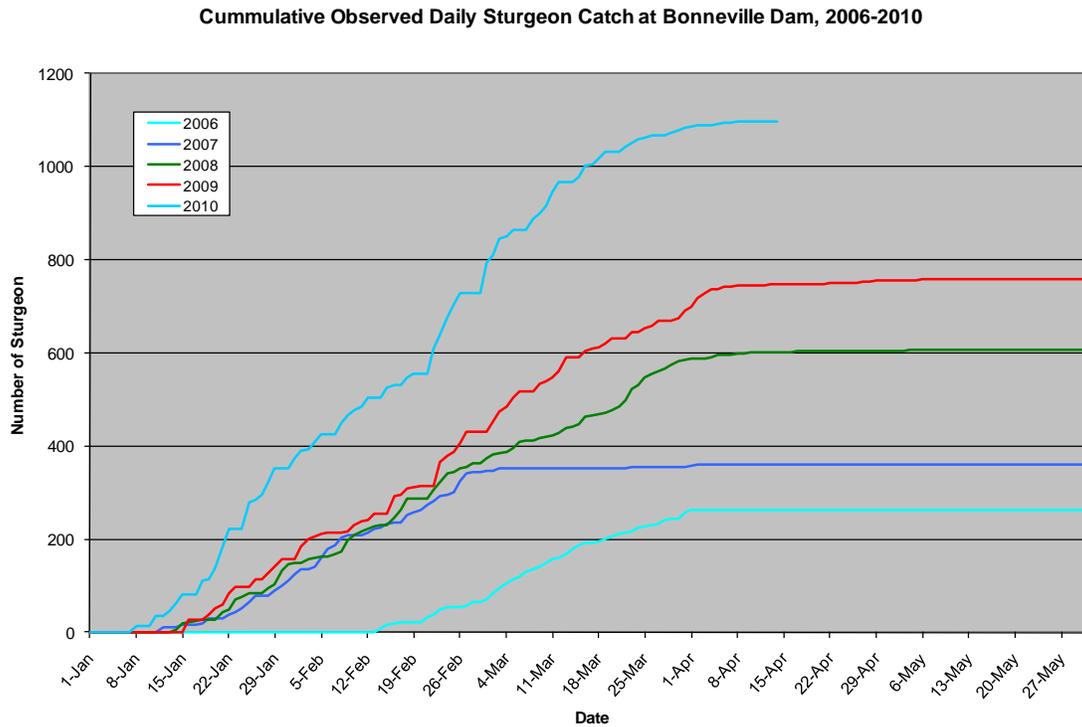


Figure 7. Size of sturgeon caught by pinnipeds at Bonneville Dam, 2006-2010.

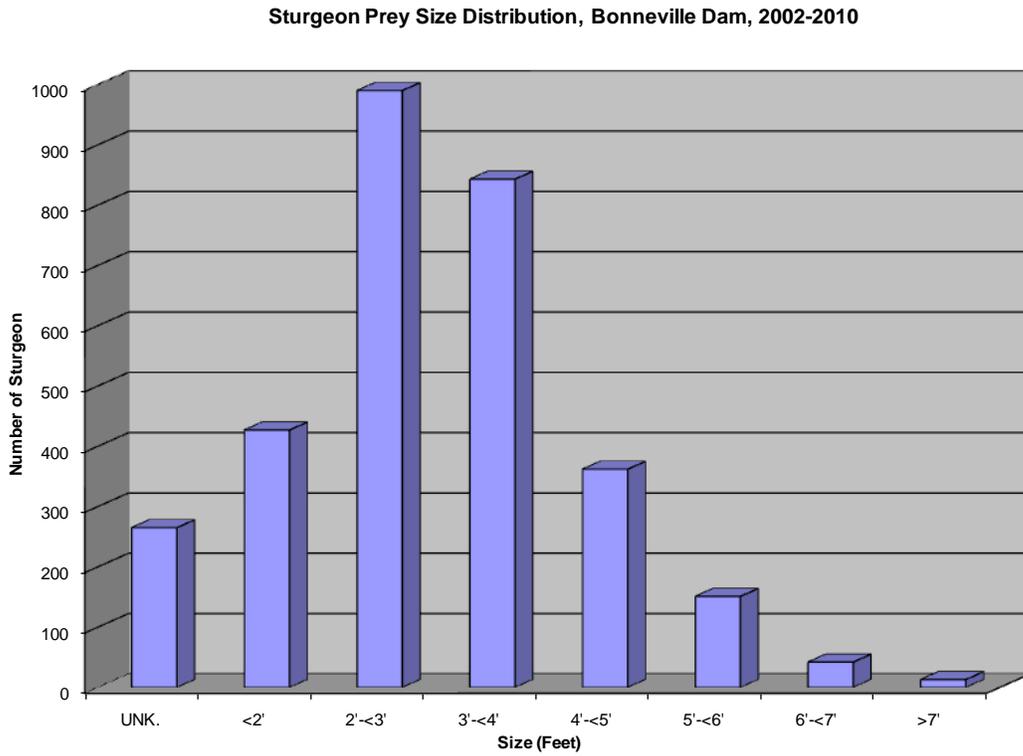


Figure 8. Daily cumulative salmonid catch (interpolated for weekends) at Bonneville Dam, 2002-2010.

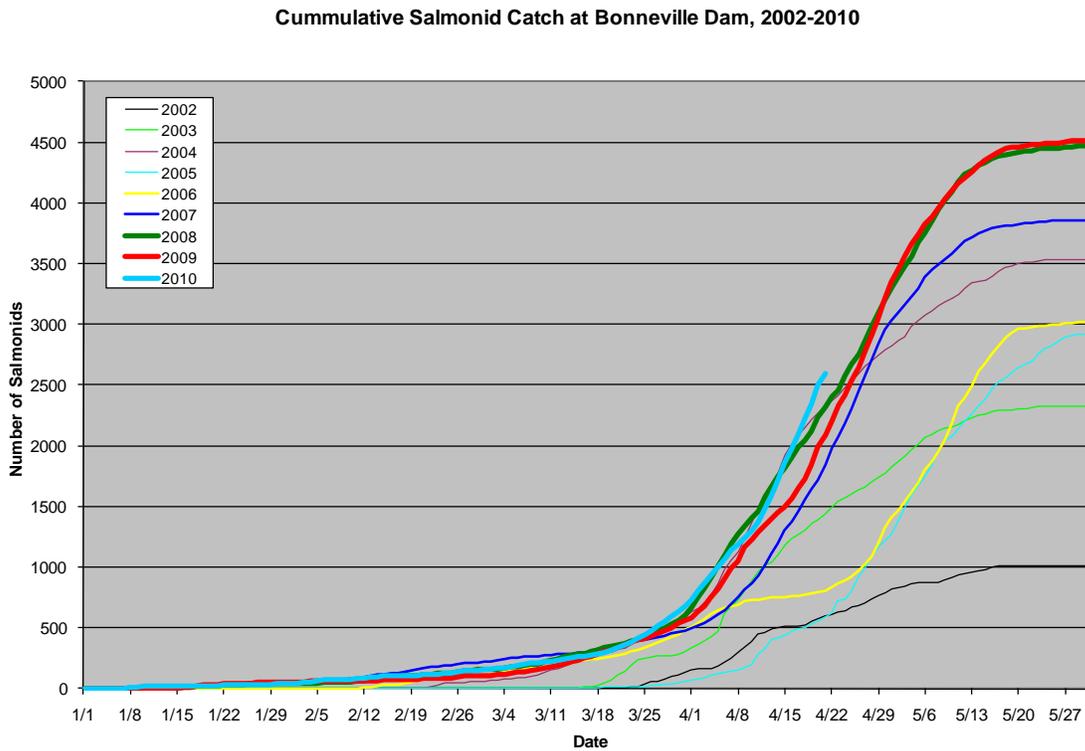


Figure 9. Weekly (average daily) California sea lion abundance at Bonneville Dam, 2002-2010.

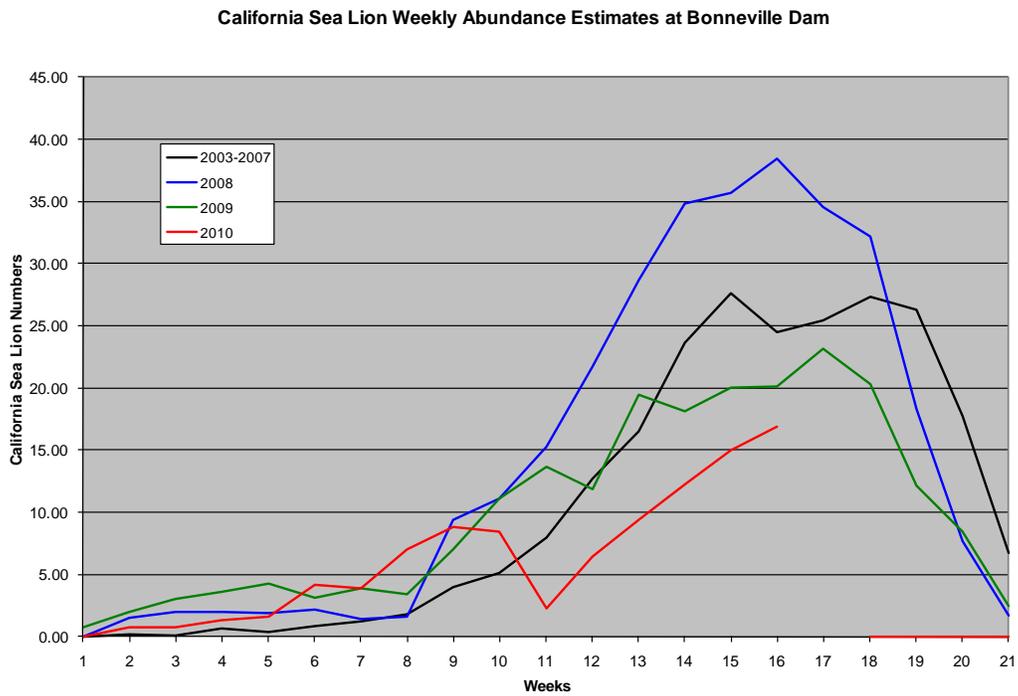


Figure 10. Weekly (average daily) Steller sea lion abundance at Bonneville Dam, 2002-2010.

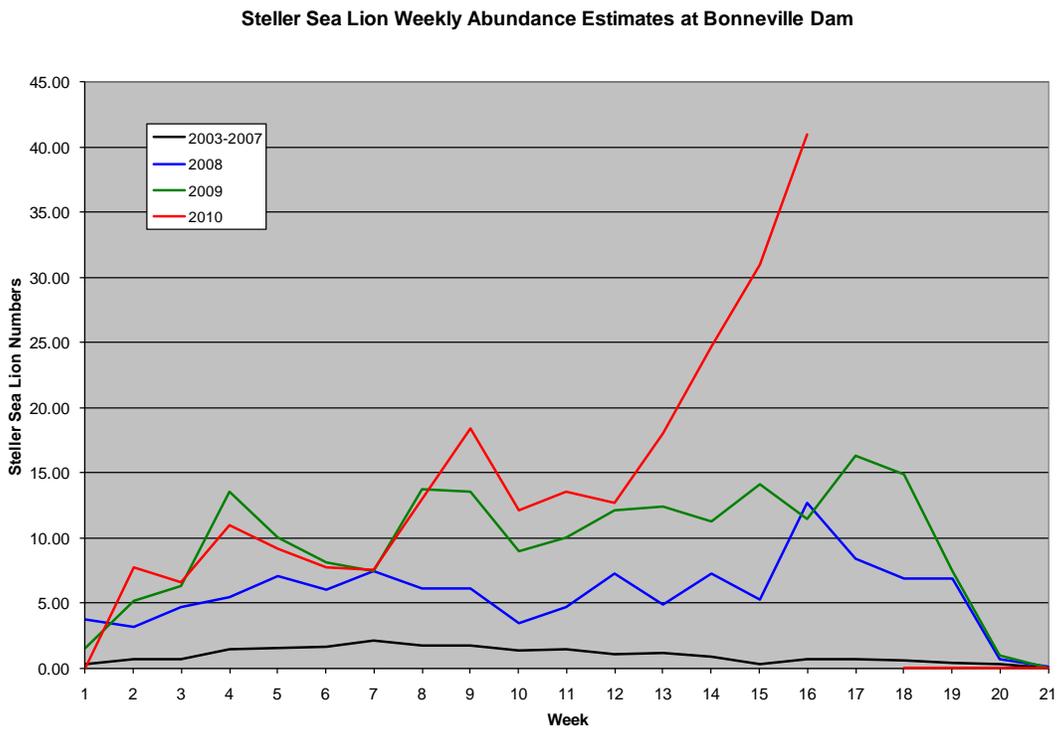


Figure 11. Weekly (average daily) salmonid consumption estimates by all pinnipeds at Bonneville Dam, 2002-2010.

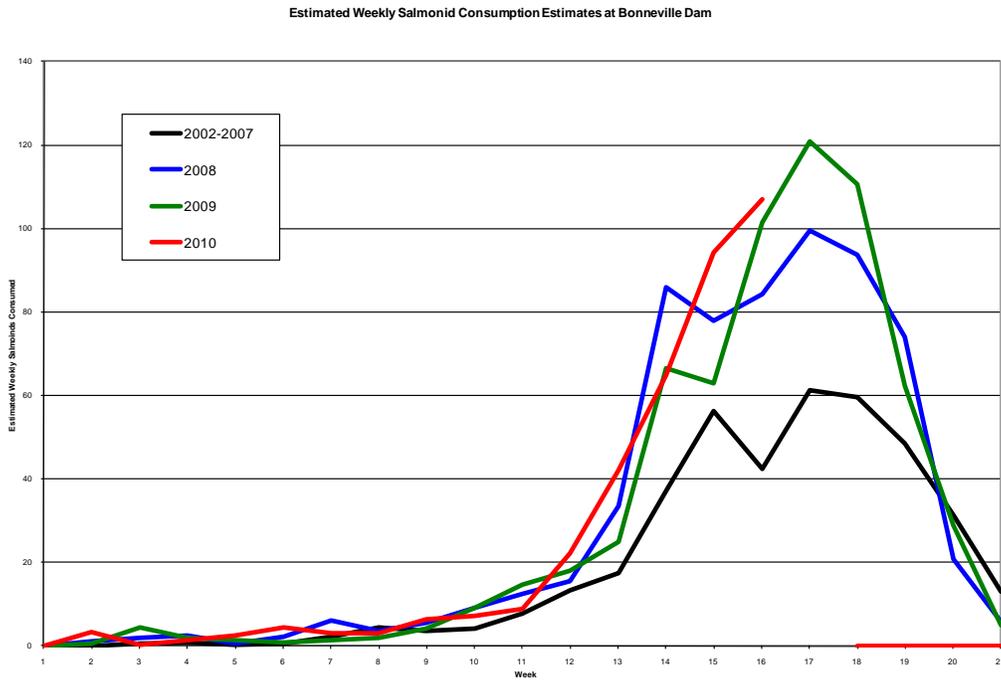


Figure 12. Unexpanded salmonid, sturgeon, and unknown prey caught by pinnipeds at Bonneville Dam in 2010.

