

Redfish Lake Adult Sockeye Salmon Returns for 2008.

The 2008 adult return of Redfish Lake sockeye salmon to Idaho's Sawtooth Basin has reached numbers not seen in decades (Table 1, 2). As of the first of September, over 600 adults have been captured in Redfish Lake and traps in the Sawtooth Basin, or have entered the lake. This is more than the cumulative annual adult return since 1991, when the fish were listed as endangered under the ESA. As juveniles, Redfish Lake sockeye salmon migrate approximately 1,450 km down the Salmon, Snake, and Columbia Rivers to the ocean. On the way, they must navigate eight major hydroelectric dams on the Snake and Columbia Rivers. Maturing adults migrate back up to their natal rivers, aided by fish ladders at each of the eight dams, after spending one or two years in the ocean. Once the adults have passed the last dam, Lower Granite, they have another 750 km to go to enter Redfish Lake or be captured in adult traps in the Sawtooth Basin. Some of the adults will be allowed to spawn naturally in Redfish Lake and some will become part of the captive broodstock program, which is operated by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries Northwest Fisheries Science Center.

The high return of adult Redfish Lake sockeye salmon is likely due to a combination of factors, including an increased number of fish released from captive broodstock programs, good conditions during downstream and upstream migrations (river flow and temperature, and dam passage conditions), and favorable ocean conditions. The captive broodstock program has expanded from a starting point of 16 natural-origin adults that returned in the early 1990s to currently releasing hundreds of thousands of juvenile fish each year, demonstrating the success of the program in increasing the numbers of returning Redfish Lake sockeye salmon.

The weight of evidence suggests that the factors discussed above collectively contributed to the high adult returns in 2008. However, because of the historically small numbers of returning adults in the last several decades, there is an insufficient database against which data on Redfish Lake salmon from 2008 can be compared. Thus, it is not possible to determine the relative contribution of river and ocean conditions to juvenile and adult survival for Redfish Lake sockeye salmon. On the other hand, the estimate of adult survival from Lower Granite Dam to the Sawtooth Basin for 2008 is approximately 68 percent, which is among the highest values over the past 14 years (Table 1). This implies that conditions for migration of adults in the upper Snake and Salmon rivers were favorable in 2008.

The increase in sockeye returns was not unique to Redfish Lake, over 200,000 sockeye returned to the Columbia River Basin as a whole; this is approximately four times the ten-year average. Most of the sockeye salmon migrated to sub-basins of the mid- and upper Columbia River. Sufficient historical data exist for juvenile and adult sockeye salmon migrations in the mainstem of the Columbia River to support ongoing analysis to provide more precise estimates of the relative contribution of river and ocean conditions to sockeye salmon survival. These analyses may provide insights on how river and ocean conditions affected Redfish Lake sockeye salmon as well.

Table 1. Adult returns passing Lower Granite Dam (LGD) and returning to the area of Redfish Lake (Sawtooth Basin, Idaho). Data as of 2 September 2008, from Data Access in Real Time (DART: <http://www.cbr.washington.edu/dart/>, and Idaho Department of Fish and Game (IDFG).

Adult return year	Number of adults passing LGD (data from DART)	Number of adults returning to Sawtooth Basin (data from IDFG)	Percent survival from LGD to Sawtooth Basin
1995	3	0	0
1996	3	1	33
1997	27	0	0
1998	4	1	25
1999	14	7	50
2000	299	257	86
2001	36	26	72
2002	55	22	40
2003	14	3	21
2004	113	27	24
2005	19	6	32
2006	17	3	18
2007	52	4	8
2008	890	602	68

Table 2. Complete historical data on adult sockeye passing Lower Granite Dam (LGD). Data from Data Access in Real Time (DART: <http://www.cbr.washington.edu/dart/>).

Adult return year	Number of adults passing LGD
1975	209
1976	531
1977	458
1978	123
1979	25
1980	96
1981	218
1982	211
1983	122
1984	47
1985	34
1986	15
1987	29
1988	23
1989	2
1990	0
1991	8
1992	15
1993	12
1994	5
1995	3
1996	3
1997	27
1998	4
1999	14
2000	299
2001	36
2002	55
2003	14
2004	113
2005	19
2006	17
2007	52
2008	890