

FCRPS BiOp Implementation

2008 - 2018

July 2010

Location

Oregon, Washington & Idaho

Species

Snake River sockeye salmon

Partners

- Bonneville Power Administration
- Idaho Department of Fish & Game
- National Marine Fisheries Service (NMFS)
- Northwest Power & Conservation Council
- Oregon Department of Fish & Wildlife
- Shoshone-Bannock Tribe
- FCRPS RPAs #41, #42



Snake River Sockeye Hatchery Program

The Sockeye Salmon Captive Broodstock Program was initiated in 1991 following the Federal listing of Snake River sockeye as endangered. The BPA-funded captive broodstock program is co-managed by Idaho Department of Fish and Game and National Marine Fisheries Service (NMFS), with rearing facilities in Idaho, Washington, and Oregon.

Factors that led to listing

Snake River sockeye are native to Idaho's high mountain lakes. Today, Redfish Lake in the Stanley Basin supports the only remaining substantial run of Snake River sockeye.

Beginning early in the 1900s, dams were built on the upper Salmon River and at lake outlets, blocking access to high mountain lakes where sockeye spawn. Overfishing, habitat destruction, competition and predation from non-native species and other factors contributed to the decline of sockeye populations.

In 1990, the Shoshone-Bannock Tribes petitioned NMFS to list Snake River sockeye salmon under the 1973 Endangered Species Act and in 1991, NMFS listed Snake River sockeye salmon as endangered. At the time of listing, Snake River sockeye were declared by some to be "functionally extinct" because very few Snake River sockeye existed in the wild. During the entire decade of the 1990s, a total of 16 adult fish returned to Redfish Lake despite efforts to bolster the population.

Hatchery programs established as a 'safety net'

When it was initiated in 1991, the goal of the Snake River sockeye salmon Sawtooth Valley Project was to conserve and rebuild the population. It was designed as a "safety net" hatchery, to conserve the genetic material of the population and to maintain fish whose genes were as close as possible to those of their wild ancestors. NMFS scientists, in close collaboration with other agencies developed a successful program, as it has preserved 93 percent of the genetic diversity of the species. No other conservation hatchery program approaches that success rate.

The summers of 1999-2001 were milestones in the use of captive broodstock technology to help restore the region's ESA-listed salmon stocks. During that period,



Sockeye salmon at Eagle Fish Hatchery

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290 adults from captive brood-stock releases returned to Redfish Lake. In 2008, 650 adult fish returned, and in 2009, 833 Snake River sockeye returned to Redfish Lake.

As of July 15, 2010, 382,344 sockeye have passed the Bonneville Dam, and 1,509 sockeye have arrived at Lower Granite Dam, in the Snake River.

The sockeye hatchery program raises and releases fish at all life stages

Adult fish returning to the Basin to spawn are trapped in a weir at the Redfish Lake Creek and at the Sawtooth Hatchery in the Sawtooth Valley, just south of Stanley.

Adult sockeye turn bright red before spawning



Because an important goal of the program is to preserve the full range of genetic material from the species, biologists test every adult fish to determine its degree of relatedness to every other fish in the hatchery before spawning. Those kept to spawn in the hatchery represent the full spectrum of Snake River sockeye genetic material identified since the hatchery program began in 1991. A portion of the remaining adults are currently released to Redfish Lake for spawning in the wild.

Eggs collected from the hatchery broodstock are used in two ways. Fertilized eggs are planted in egg boxes in Alturas and Pettit lakes in the fall, to hatch out in the spring. Smolts are raised at the hatchery for 1-3 years, until they are ready to migrate at which point they are released to outlet streams in the Stanley Basin each spring, where they begin a 900+ mile journey to the Pacific Ocean.

Years of monitoring these strategies have shown that smolt releases yield the highest adult fish return rate. Additional release strategies are implemented to evaluate their effectiveness at emulating the natural life history of the species.

Moving Snake River sockeye to recovery

With the species' genes preserved and adult returns increasing, the program is preparing to address the long-term recovery objectives for the species. NMFS has identified an interim recovery goal of 1,000 wild adults to Redfish Lake and 500 adults to two additional lakes (currently Pettit and Alturas) over multiple generations.

Greater numbers of naturally-returning adult sockeye will help lay the groundwork for more fish reproducing in the wild. This is an important next step in the ultimate recovery of Snake River sockeye.

Current and proposed Snake River sockeye hatchery facilities

- The Eagle Fish Hatchery just outside of Boise, Idaho, is the primary facility for broodstock rearing and spawning.
- The Sawtooth Fish Hatchery near Redfish Lake is where fertilized eggs are transferred for culture through all life stages to release.
- The Manchester facility in Puget Sound maintains a duplicate gene pool of the Snake River sockeye adults for annual spawning.
- The Oxbow hatchery near Cascade Locks, Oregon, currently rears smolts for release at Redfish Lake.
- The new Springfield facility is under study as a possible site to provide incubation and early rearing facilities to increase overall production up to 1 million Snake River sockeye.