Exploring the Northwest Power and Conservation Council's Fish and Wildlife Program

The nation's largest regional effort to protect and enhance our natural resources

This guide highlights some of the projects under way in the Columbia River Basin to mitigate the effects of hydropower dams on fish and wildlife. The projects aim to protect and enhance the fish and wildlife species that are an important part of our Northwest heritage. The projects highlighted in this guide are among hundreds that implement the Columbia River Basin Fish and Wildlife Program of the Northwest Power and Conservation Council. Under federal law, the Bonneville Power Administration, a power marketing agency under the United States Department of Energy, funds projects in the program that are recommended by the Council. Annual funding is around $250 million.

Legend
- Major Dam Without Fish Passage
- Major Dam With Fish Passage
- Columbia River Basin
- Anadromous Access:
  - Accessible
  - Blocked by Dams
  - Naturally Blocked

Map provided by the Bonneville Power Administration, Geospatial Services. The rivers shown on this map are significant to the Council's fish and wildlife program and have been highlighted for illustrative purposes.
Background

Historically, the Columbia River Basin supported a rich variety of fish and wildlife, including abundant runs of salmon and steelhead. Millions of salmon and steelhead returned from the ocean each year to spawn in rivers and tributaries throughout the 208,500 square miles of the basin. Returning adult fish spawned as far upriver in the Columbia as the headwaters at Columbia Lake, British Columbia, and migrated up the Snake River, the Columbia’s largest tributary, as far as Shoshone Falls, 615 miles from the confluence, and more than 980 miles from the Pacific Ocean. Wildlife such as deer, elk, moose, bear, song birds, and other species also populated the basin. Over time, the impact of development, recreation, logging, mining, agriculture, navigation, and the generation of hydroelectric power all combined to disrupt the habitat. By the 1990s, the return of returning fish had declined to about one million annually, and many wildlife populations had also been affected.

The Northwest Power Act of 1980 authorized the states of Idaho, Montana, Oregon, and Washington to form the Northwest Power and Conservation Council. The Council gives the states a voice in deciding their future energy, while also protecting and enhancing the fish and wildlife affected by dams on the Columbia and Snake rivers and their tributaries. Through the Council’s Columbia River Basin Fish and Wildlife Program, a portion of the money the Bonneville Power Administration earns from selling electricity is dedicated to fish and wildlife projects. It is the largest regional effort to protect and enhance fish and wildlife resources in the region.

A critical aspect of the project review and selection process is the use of independent scientific review of proposals for funding. The Council conducts a thorough review of proposed projects, including examination by an 11-member panel of independent scientists. The panel analyzes proposed projects using the scientific knowledge available to determine a project’s effectiveness, and evaluates the results of prior-year funded projects to measure their success.

The Council, tribes, state and federal fish and wildlife agencies, and the public participate in the review and selection process. The Council then recommends projects for funding, which allows us to implement the program in a timely manner and achieve important scientific and policy issues. For example, the Council appointed a scientific review team of experts in artificial production to provide an independent assessment of the basin’s hatchery programs to help improve artificial production and better understand the role such practices should play to recover endangered fish.

The program now directs approximately $250 million a year to more than 200 projects throughout the basin using a wide variety of approaches: land acquisition to protect and preserve healthy habitats; research to better understand fish behavior and help rebuild naturally spawning populations; construction, operation, and maintenance of fish hatcheries; improvements to passage systems to assist fish migration through and around dams; restoration efforts to improve spawning and rearing habitats in tributaries; and resident fish programs that mitigate the effects of dams while supporting public fisheries.

Oregon & Washington: White Sturgeon Habitats

White sturgeon, the largest freshwater fish species in North America, is unusual: they can live more than 100 years, and they’re not considered endangered even though they’re more than 65 inches long and that can take 25 years. They can grow to weigh well over 4,000 pounds if their passage isn’t blocked, they will swim to the ocean and back periodically; and they can spawn many times in their lives.

While sturgeon inhabit the Columbia for hundreds of miles inland, the construction of dams that span the mainstem Columbia and Snake rivers blocked passage to the ocean. The healthiest population today is the one that lives downstream of Bonneville Dam. These fish freely go back and forth to the ocean and some, marked with tags, have been found in coastal basins from California to British Columbia. Upstream, however, where sturgeon are impounded between dams, the populations are less numerous and reproduction is less successful.

Ever since 1987, the Oregon and Washington departments of fish and wildlife and Columbia and River Columbia Indian tribes have been collaborating on a research project, funded largely through the Council’s fish and wildlife program, to better understand this mysterious species. High flows in the spring once provided a signal to sturgeon that it was time to move upstream to spawn. However, these flows have been reduced by upstream dams, affecting spawning. The most effective way to restore spawning has been the removal of flood debris in the spring, a technique that has shown some success in the lower Columbia River in northern Idaho downstream from Libby Dam in Montana.

In 2013, Oregon, Washington, and the tribes continued their efforts to examine factors affecting system passage and migration and recovery and mitigation efforts and guide future actions through 2017. Research conducted on the species data on growth and survival, as well as the proportion of the total population represented by different ages of fish. Recommendations include providing sturgeon passage by removing passive rearing and netting facilities and sea lions, particularly Steller sea lions, affects sturgeon between Bonneville Dam and the ocean.

In the late 1980s and early 1990s, huge quantities of sturgeon were harvested in the lower Columbia River. However, the stocks declined and eventually, overfishing and development, overfishing became such a problem that the species was listed as threatened in Washington and Oregon imposed site restrictions on harvest beginning in 1995. The stock rebounded, and commercial and sport harvest was allowed. However, in 1999, increasing sea lion predation and declines in young sturgeon, Oregon and Washington closed within sturgeon commercial and recreational fisheries harvest downstream from Bonneville Dam in January of 2014. Oregon and Washington are assessing the population segment to determine when harvest might resume.

Upstream from Bonneville Dam, listed, but successful tribal and recreational harvests are still allowed in Bonneville, the Dalles, and John Day Reservoirs. Led by the Columbia River Inter-Tribal Fish Commission, the tribes are planning to construct a salmon passage facility in the Vallecito River Basin of Central Washington to raise fish to release in rivers where populations are less abundant and less productive than below Bonneville Dam.

Washington: Upper Columbia Spring Chinook Salmon

Like many other West Coast salmon and steelhead species, upper Columbia spring Chinook salmon, once numerous in Columbia River tributaries of north Central Washington, began a precipitous decline in the 1960s and 1970s. Initially, the run declined to less than 5 percent of its historic size. Today, a recovery effort is underway, but progress is slow.

There were many causes for the decline: overfishing, changes in habitat, water temperature and water chemistry, reduced river flows, competition with nonnative salmon, and changes in river flows. Researchers estimate that 80 percent of the decline can be attributed to changes in river flows over the past 50 years.

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Idaho: Lake Pend Oreille Kokanee

Lake Pend Oreille kokanee (landlocked sockeye salmon) are exceedingly popular with anglers, but kokanee are also prey for anadromous salmon species, lake trout. Beginning in the mid-1960s, the kokanee population in Lake Pend Oreille declined precipitously as a result of several factors, including competition with introduced mullus shrimp, changes in kokanee spawning-habitat, and predation by lake trout.

Beginning in the late 1990s, the lake trout population grew very rapidly, and predation pushed the kokanee population to critically low levels that forced the closure of the fishery in 2000. Suppressing the lake trout population became a focus of the Lake Pend Oreille Fishery Recovery Project of the Idaho Department of Fish and Game at that time.

Starting in 2004, the project contracted a commercial fishing business to remove lake trout using gill nets and trap nets. An incentive program was also initiated to encourage anglers to harvest the fish. Using acoustic telemetry, biologists identified spawning and nursery areas where netting would be most effective. The recovery program evaluates the broader effectiveness of removal by monitoring the population decline, as well as the response of desirable fish like kokanee, bull trout, and rainbow trout.

The netting and angler bounty programs have been highly effective, reducing over 50,000 lake trout and resulting in the collapse of the population. As hoped, the rest of the Lake Pend Oreille fishery has responded favorably. Adult kokanee abundance, which peaked at 3.6 million fish in 2007, dropped to approximately 15,000 fish, rebounded to over 1 million in 2013 and 2014. The kokanee population is stable or increasing, and estimated rainbow trout growth has improved to 1970s and 1980s levels. The kokanee fishery that was closed from 2000–2002 has rebounded.

While the recovery of the Lake Pend Oreille fishery has been highly effective, the removal of lake trout continues to address problems that threaten the long-term sustainability of the kokanee population. For example, kokanee predation by lake trout.

Future work to protect and enhance the species includes improving passage at tributary dams, mitigating lake trout predation on spawning streams; improving conditions in flood plains where juvenile kokanee grow; and removing nonnative shrimp and predation by rainbow trout will be top priorities. The program will also evaluate the most effective hatchery programs to eventually sustain an annual harvest of 300,000 kokanee, including tribal, commercial, and recreational harvest, and maintaining a trophy fishery for rainbow trout.