The Columbia River Basin

Field Guide

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

Northwest Power and Conservation Council

851 S.W. Sixth Avenue
Suite 1100
Portland, Oregon 97204

What is the Columbia River Basin Fish and Wildlife Program?

The Northwest Power and Conservation Council is charged by the 1980 Northwest Power Act to develop a program to protect, mitigate, and enhance fish and wildlife affected by hydroelectric development in the Columbia River Basin. The four projects highlighted in this brochure represent the variety of activities that are funded through the Council's Columbia River Basin Fish and Wildlife Program. Many entities propose projects that help to implement the program, including federal and state agencies, tribal governments, universities, local watershed groups, and private landowners. The Council recommends projects for funding to the Bonneville Power Administration, which currently directs approximately $150 million annually to over 200 projects throughout the basin. Critical to the Council's funding recommendation decisions is the role of independent science review.

Independent Scientific Review: A Cornerstone of Sound Decisionmaking

All projects funded under the Northwest Power and Conservation Council's Columbia River Basin Fish and Wildlife Program are required by The Northwest Power Act to undergo review by an independent science panel. Panel members are chosen based on recommendations from the National Research Council. The program also uses a second, related panel of scientists to provide advice to the region on key scientific issues.

Independent scientific review is an established tradition in research and development programs in the United States and much of the world. Such reviews help decisionmakers separate scientific variables from other political, economic, and cultural considerations to help ensure that environmental decisionmaking reflects the best scientific knowledge of the day.

The wildlife habitat information was supplied by the Northwest Habitat Institute: www.nwhi.org

The rivers shown on this map are significant to the Council's fish and wildlife program and have been highlighted for illustrative purposes.

Columbia River Gorge

Photograph by Stephen Sasser

"The land was ours before we were the land's."

Robert Frost

Historically, the Columbia River Basin has supported a rich variety of fish and wildlife, including abundant runs of salmon and steelhead. Between 11 and 16 million wild salmon and steelhead returned from the ocean each year to spawn in rivers and tributaries throughout the 258,500 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 900 miles from the Pacific Ocean.

Wildlife such as deer, elk, moose, bear, song birds, and other small mammals 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 number 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 energy future, while also protecting, mitigating, and enhancing the fish and wildlife affected by the dams on the Columbia and Snake rivers. 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 nation.

A critical aspect of the project review and selection process is the use of independent science. 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 best 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 also participate in the review and selection process. The Council then recommends projects for funding to Bonneville to implement the program. Funding also goes toward examining 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 improve artificial production and better understand the role such practices should play to recover endangered fish.

The program now directs approximately $150 million a year to over 200 projects throughout the basin using a wide variety of approaches: land acquisition to protect and preserve healthy habitats; research to help rebuild naturally spawning populations; construction, operation, and maintenance of fish hatcheries; improvements to passage systems to assist fish movement through and around the 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.

This brochure highlights four ongoing projects, reviewed by the Council and funded by Bonneville, to help explain the work being done to restore an important part of our Northwest heritage. They are representative of many other projects currently being implemented throughout the basin to benefit fish and wildlife populations.

The Northeast Oregon Wildlife Mitigation Project: "Precious Land"

The Northeast Oregon Wildlife Mitigation Project began as an opportunity to return a parcel of canyon land in Wallowa County to its original owners, the Nez Perce Tribe, to manage as a wildlife preserve.

In the mid-1990s, the tribe, working with the Trust for Public Land, a non-profit organization dedicated to land preservation, purchased the Chief Joseph Ranch, a 10,300-acre parcel of land, to provide diverse habitat, native grasslands, and riparian stream bank habitat for the many kinds of wildlife living there. The project was designed to manage high quality canyon grassland to benefit targeted wildlife species, as well as Endangered Species Act-listed summer steelhead, and serves as partial mitigation for the wildlife losses attributed to the lower Snake River complex of dams.

The property's somewhat limited access, and the possibility of future land acquisitions, made it strategically attractive. Since the initial purchase of the ranch in 1996, the project has used land acquisition and management as a tool to improve habitat conditions for native species. All project lands lie within the lower Grande Ronde watershed and have a special significance for the Nez Perce Tribe. Until the arrival of white settlers, this rugged and lush country in northeastern Oregon was home to the Wallowa band of Nez Perce for thousands of years. The project represents the first land the tribe has owned in Wallowa County since the Nez Perce War in 1877. In a simple ceremony, on a rainy spring day, people gathered in Joseph Canyon to commemorate the historic return and renewed ownership of the Nez Perce to their ancestral home. The blessing named the land in Nez Perce "Hetewisniix Wetes," or "Precious Land."

Joseph Canyon from the east side

Photograph by Ron Cronin

Currently, 15,359 acres have been purchased and are being managed in perpetuity for wildlife and watershed benefits. The project's goal is to ultimately obtain 16,500 acres of land. Approximately 14.6 miles of perennial streams are being managed to improve riparian habitat conditions to benefit wildlife and ESA-listed Snake River steelhead. Native plants are being restored through a combination of techniques, including removal of domestic livestock, noxious weed control, and the re-establishment of native species on disturbed sites. Additionally, 123 acres of low-productivity agricultural land will be converted back to native bunchgrasses, trees, and shrubs.

The overall goal of the project is to protect, restore, and manage the canyon land for the benefit of native species like elk, big horn sheep, quail, and other wildlife while protecting native vegetation and the watershed.

The Hungry Horse Mitigation Program

The Hungry Horse Mitigation Program, sponsored by Montana Fish, Wildlife and Parks, began in 1992 to address fish losses associated with the construction and operation of Hungry Horse Dam.

The Hungry Horse dam isolated approximately 38 percent of the Flathead Lake drainage and changed the physical and biological characteristics of the lake and river. The program's goals are to restore and reconnect critical habitat, reduce the negative interactions between native and non-native fish, and improve dam operations for native trout recovery.

Emery Creek before

Photograph by Grant Grisak

Emery Creek after

Photograph by Gary Michael

The Flathead River system in northeast Montana is a regional stronghold for migrating westslope cutthroat trout, part of Montana's natural heritage. Installation of the dam completely blocked fish migrations from Flathead Lake to the South Fork Flathead River upstream. In order to improve fish passage to critical spawning and rearing habitat, the program initiated several culvert replacement projects. These combined projects re-opened 16 percent of the available spawning and rearing habitat to migratory fishes in the reservoir system, and monitoring surveys have shown significant increases in adult and juvenile fish upstream of each passage improvement site. The program is also using innovative natural channel restoration techniques to improve native fish habitat throughout the upper Flathead River drainage. In one instance, improvements to Emery Creek included removing sections of a logging road that had distorted the natural meandering of the stream causing habitat degradation and creating barriers to fish migration. The improvements enhanced fish habitat and restored a two-mile section of channel to aid the spawning and rearing habitat for native trout.

Dam operations had also created unnatural flow and temperature fluctuations in the Flathead River downstream of Hungry Horse Dam. In 1996, a temperature control structure was installed on the dam to correct the problem. It allows dam operators to take water from the appropriate depth in the reservoir so the water flowing through the dam turbines matches the natural, seasonal temperature pattern in the river. As a result, normal temperatures were restored in the Flathead River downstream of the dam which has helped to increase favorable stream and habitat conditions for fish.

The Cle Elum Supplementation and Research Facility

The Cle Elum Supplementation and Research Facility in Washington state is a one-of-a- kind research program and the premier supplementation research hatchery in the world.

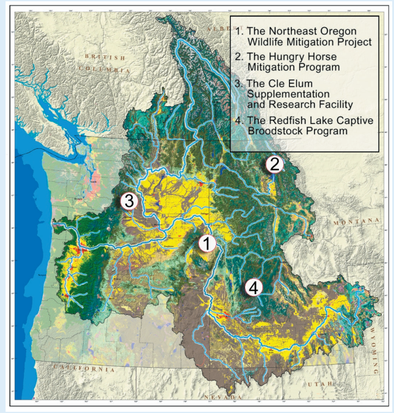
The Cle Elum facility integrates its operations with the natural production of wild populations of fish. Begun in 1997 and sponsored by the Yakama Tribe, their goal is to boost the production of wild fish through supplementation techniques and to evaluate the program's long-term success.

Cle Elum Supplementation and Research Facility

Photograph by Dave Fast

The facility randomly collects adults from spawning wild spring chinook as they return to the Yakima River. The eggs are divided into two groups. One group is reared under standard best hatchery rearing practices, and the other group experiences what is called Semi Natural Treatment (SNT)—surroundings that mimic the natural environment such as camouflage paint on walls, overhead and instream cover, and underwater feeders. The study will help to determine if rearing under more natural conditions increases the survival of young fish once they are released into the wild. The hatchery adults are expected to spawn in the wild to increase the natural production of spring chinook.

2001 was the first year that the hatchery fish returned, and the results were encouraging: The supplementation facility saw about seven times as many adult fish come back per hatchery spawner compared to the wild spawners. Research is now focusing on the spawning channel to determine the reproductive potential of the returning supplementation fish—a very important issue in order to evaluate the long-term success of the project. The ultimate goal is not only to see a large return of adults, but the successful reproduction of those fish into the next generation.



Meeting the Needs of People
Protecting our Natural Heritage

The Redfish Lake Captive Broodstock Program

The Redfish Lake Captive Broodstock Program is working to restore Snake River sockeye salmon in the central mountains of Idaho in the Sawtooth National Recreation area.

Precipitous declines of Snake River sockeye salmon led to their federal listing as endangered in 1991. In that same year, the Idaho Department of Fish and Game began the captive brood program to preserve the existing population and prevent their extinction. The fish are unique because they are the only population of sockeye salmon in the Snake River drainage. They are distinguished in their toughness as well: They travel farther than any other North American sockeye population—900 miles—to reach the ocean; they travel to the highest elevation; and they are the most southerly population of sockeye in North America.

The program produces eggs, juveniles, and adults for re-introduction to Stanley Basin waters, and uses adaptive management techniques in its operation to continuously monitor and evaluate the effectiveness of the program. Emphasis is placed on developing genetically diverse broodstocks each year using the region's best practices. Juvenile monitoring using PIT tag technology, adult return monitoring, and adult sonic telemetry studies provides critical information to evaluate the program's re-introduction strategies. The program's methods and results are also reviewed by a team of technical experts to determine the effectiveness of the work and to guide the program's direction. The Shoshone-Bannock Tribes and the University of Idaho play a major role in this process, as well as in the on-the-ground work.

To date, the program has returned over 300 anadromous sockeye salmon to Idaho. In 1999, the first hatchery-produced sockeye salmon returned to the Stanley Basin. That year, seven adults returned to spawn. In 2000, the program experienced its first significant return of hatchery-produced adults. Two hundred fifty-seven sockeye salmon returned to collection facilities on Redfish Lake Creek and

Redfish Lake

Photograph by Lance Hebdon

the upper Salmon River at the IDFG Sawtooth Fish Hatchery, and the majority of those adult returns were released to the system for natural spawning. In 2001, 26 hatchery-produced adults returned to collection facilities in Idaho, and in 2002, 21 hatchery-produced adults returned to the Stanley Basin.

The ultimate goal of the program is to re-establish sockeye salmon runs to Stanley Basin waters that will support both sport and treaty harvest opportunities. In the near-term, the program is focused on preventing further population loss, maintaining genetic diversity, and increasing species abundance.

Northwest Power and Conservation Council

851 S.W. Sixth Avenue
Suite 1100
Portland, Oregon 97204

Telephone: 503-222-5161
Toll free: 800-452-5161
Web site: www.nwcouncil.org