



Corps focusing on fish recovery

Federal dams on the lower Columbia and Snake rivers helped shape the modern Northwest, fueling the economy with affordable electricity, reducing the risk of flood damage and irrigating crops to feed the Nation. But they also affected the habitat of salmon and steelhead that migrate from the Columbia River Basin to the ocean and back. These fish had already been affected by more than a century of commercial fishing, mining and other human development.

In the 1990s, NOAA Fisheries listed the first Northwest salmon and steelhead under the Endangered Species Act (ESA). Eventually, 13 stocks were listed as threatened or endangered.

Under the Endangered Species Act, the U.S. Army Corps of Engineers, the Bureau of Reclamation and the Bonneville Power Administration, collectively called the Action Agencies, must consult with NOAA Fisheries to avoid jeopardizing listed fish.

Photo by Jim Wade



NOAA Fisheries' Biological Opinion guides operation of these dams, known as the Federal Columbia River Power System, to protect listed fish.

Today, federal agencies are working with states, tribes and others across the region to protect those fish affected by the dams, which in turn continue to provide great value to the Northwest.



ENVIRONMENTAL STEWARD

DISTRICT DEDICATED TO FISH RECOVERY

The Endangered Species Act

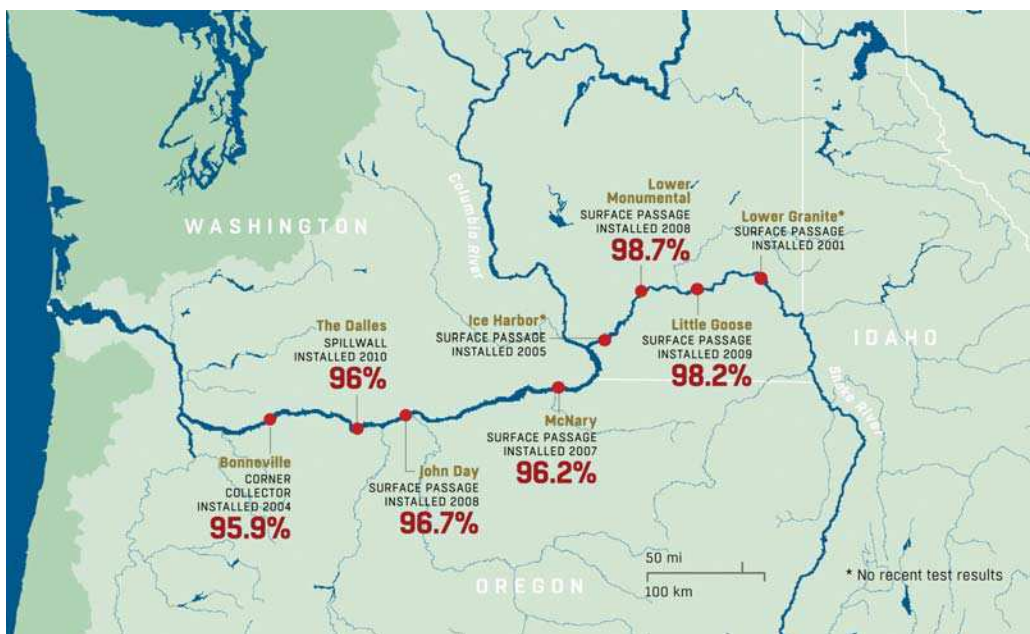
The Endangered Species Act (ESA) was signed on December 28, 1973, and provides for the conservation of species that are endangered or threatened and the conservation of the ecosystems on which they depend.

The ESA replaced the Endangered Species Conservation Act of 1969. It has been amended several times.

A "species" is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become an endangered species within the foreseeable future.

In the Columbia River Basin, there are 13 ESA-listed species of fish.

NOAA Fisheries and the U.S. Fish and Wildlife Service share responsibility for implementing the ESA. Generally, USFWS manages land and freshwater species, while NOAA Fisheries manages marine and "anadromous" species and has jurisdiction over 82 listed species.



Shown are the dates surface passage was installed and 2010-2012 test results where available for juvenile spring Chinook overall dam passage survival.

Safe Fish Passage at the Dams

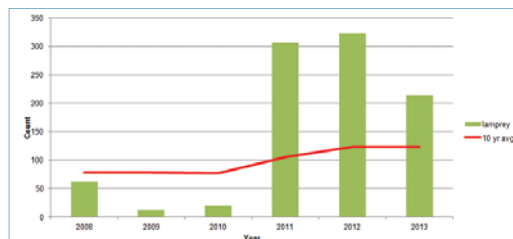
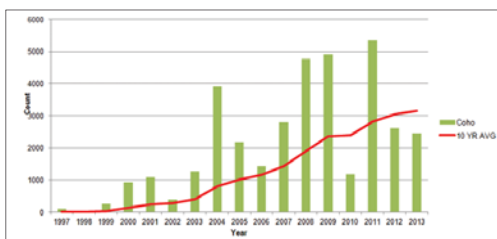
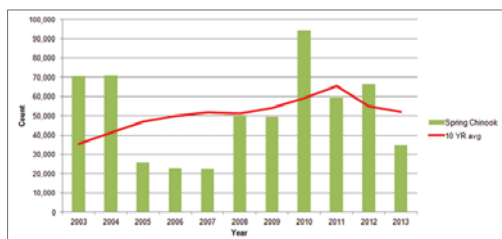
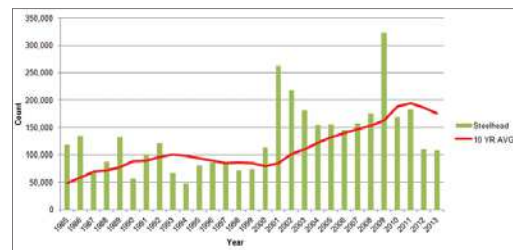
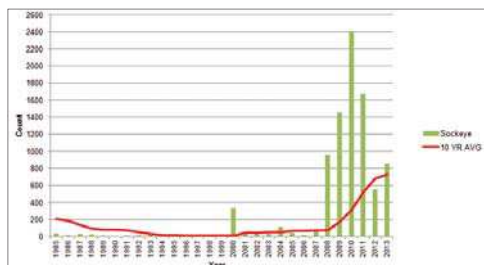
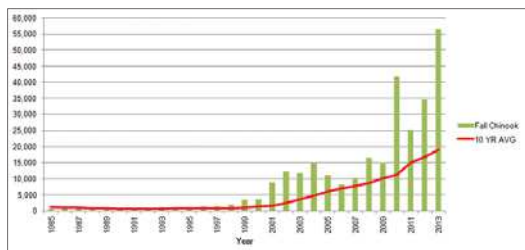
The federal dams in the Columbia River Basin (known as the Federal Columbia River Power System) provide nearly 40 percent of the region's electricity. In addition to clean hydropower, they also provide flood risk management, irrigation, navigation and recreation. Like salmon and steelhead, these dams are treasured resources, vital to the region's culture and economy.

Most salmon and steelhead in the Columbia River Basin encounter one or more hydroelectric dams as they migrate to and from the ocean.

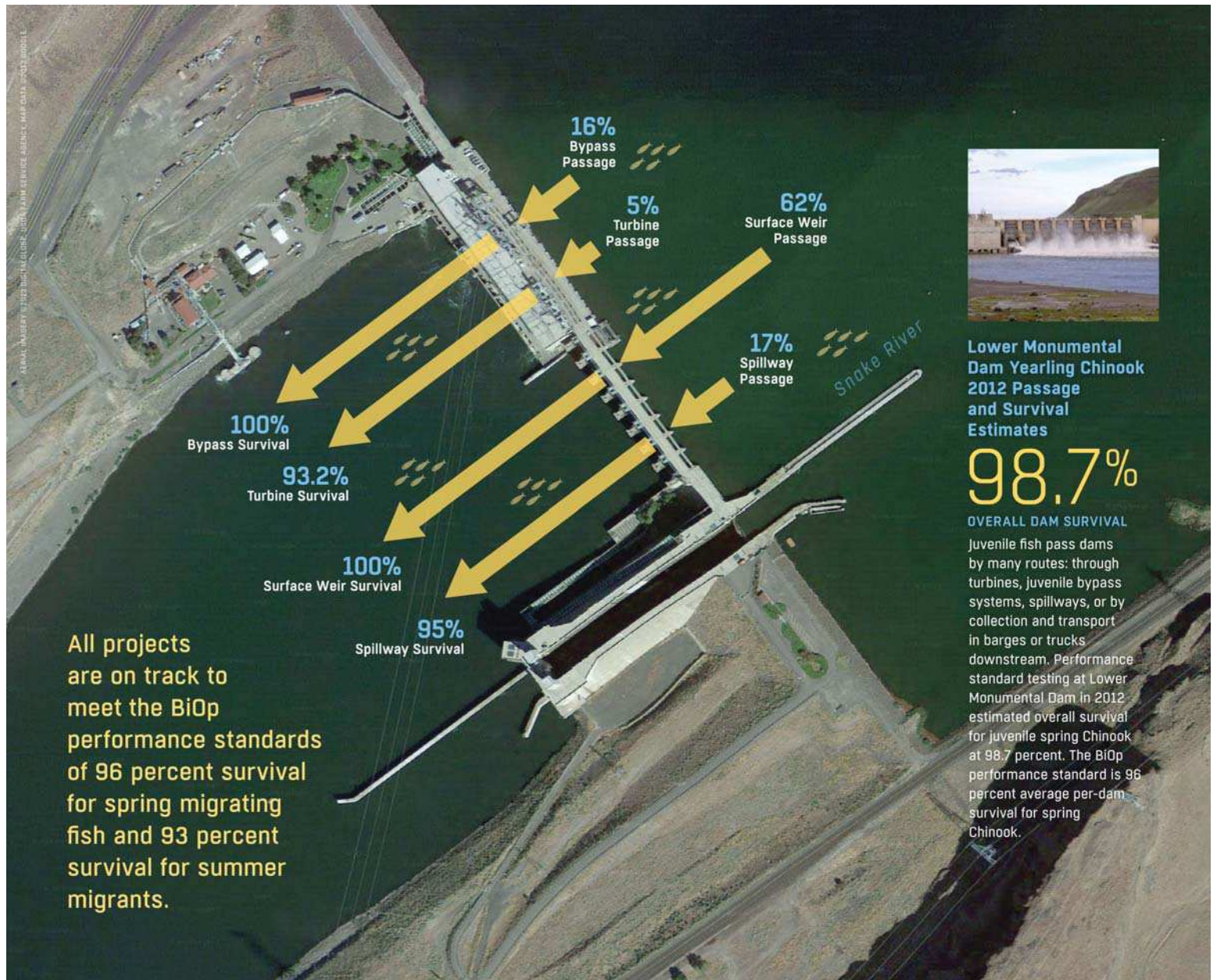
All Walla Walla District dams which include McNary on the Columbia River and Ice Harbor, Lower Monumental, Little Goose and Lower Granite on the Snake River have fish passage, like spillway wiers to help juvenile fish migrate to the Pacific Ocean. They also have fish ladders that help returning adult fish pass through dams en route to their spawning grounds. The FCRPS BiOp sets high standards for juvenile fish passage - 96 percent average per dam survival for spring migrating fish and 93 percent for summer migrants.

Meanwhile, federal agencies continue to research and implement improvements at the dams that increase survival for both adult fish and juvenile fish.

Fish survival rates

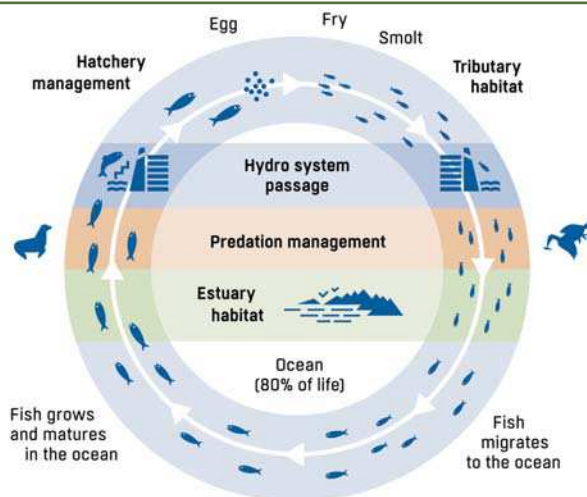


WARDSHIP



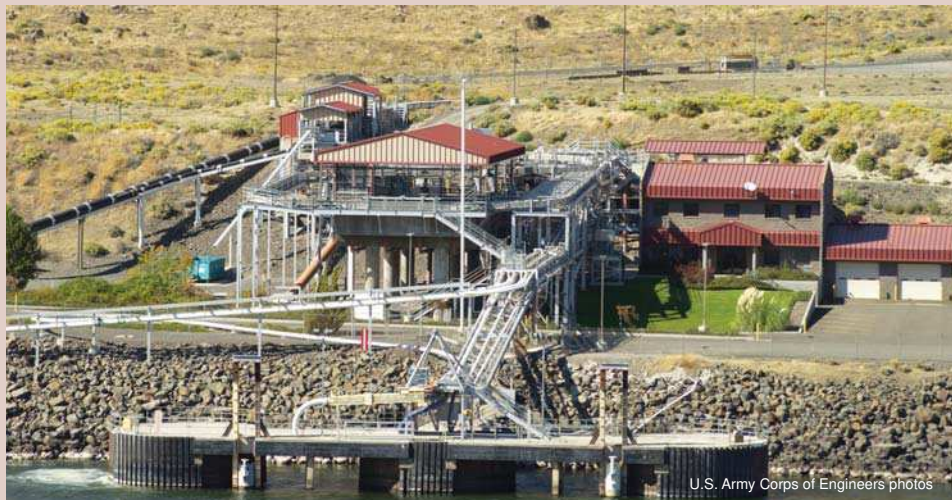
Helping salmon and steelhead throughout their life cycle

Salmon and steelhead rely on many environments as they grow and mature, each with its own survival challenges. The Action Agencies take a comprehensive approach to address impacts, with hydro system passage, predation management, and improving habitat and hatcheries.



You Tube Fish Passage Video

Fish Facilities



Top Left: Lower Monumental Lock and Dam's fish facility. Above: Jerry Harmon, fisheries research biologist, moves a fish across the adult fish trap at Lower Granite Lock and Dam. Left: Sockeye salmon.



Walla Walla District operates fish facilities at McNary Lock and Dam, Ice Harbor Lock and Dam, Lower Monumental Lock and Dam, Little Goose Lock and Dam, and Lower Granite Lock and Dam.

Lower Granite Juvenile Fish Facility

The Walla Walla District of the U.S. Army Corps of Engineers is upgrading the Lower Granite Lock and Dam Juvenile Fish Facility (JFF). Fish facility improvements are an important part of the Corps' mission to save salmon and other endangered or threatened species. The overall upgrade includes "daylighting" the current below-ground juvenile fish transportation piping from the dam to the juvenile fish facility to an above-ground flume configuration.

Upgrades are planned to occur in phases. The intent is to improve juvenile fish survival and increase operational reliability of the bypass and collection system. When upgrades are complete, long-term operations and maintenance costs should also be reduced.

Annually, millions of juvenile fish pass over, around or through Lower Granite each year, with an average juvenile survival rate of about 95 to 96 percent. Any incremental improvement in juvenile fish survival is significant when this many fish are migrating over, around or through the dam.

In addition to juvenile survival benefits, the Corps is also addressing reliability of a system that was built in the early 1970s. We have learned much since that time, and National Oceanic and Atmospheric Administration (NOAA) Fisheries criteria has evolved largely in part to advancements made in screened bypass systems on the Snake and Columbia rivers. Many of the features that were state of the art in the 1970s no longer comply with NOAA Fisheries criteria for these types of facilities. The Corps is addressing Lower Granite improvements to improve both fish survival at the dam and longer-term system survival, with the ultimate goal of improving adult fish returns.

The Corps previously upgraded its lower Snake River juvenile fish facilities at Ice Harbor Lock and Dam, Lower Monumental Lock and Dam, and Little Goose Lock and Dam during the 1980s and 1990s. These improvements contributed to juvenile survival improvement, which leads to the ultimate goal of improved adult fish returns when those juveniles return from the ocean several years later.

NOAA Fisheries Biological Opinion for operation of the Federal Columbia River Power System

The 31 federal dams in the Federal Columbia River Power System (FCRPS) have fueled the region's economic growth for more than 70 years, providing nearly 40 percent of the region's electric power supply as well as flood control, irrigation, navigation and recreation.

The FCRPS is operated to support multiple species of listed and unlisted fish. Numerous biological opinions have guided these operations since the first Columbia Basin stocks were listed. NOAA Fisheries, as the regulatory agency for ocean fish, is responsible for BiOps for anadromous fish (salmon and steelhead). US Fish and Wildlife Service is the regulatory agency for native fish, including bull trout and sturgeon, and issues BiOps governing actions for those fish.

But an approach that relies on hydropower operations alone will not recover the species. Many other factors have contributed to the salmon's decline, including overharvest, hatchery practices, degraded habitat and ocean conditions.

Under these BiOps and other laws and authorities, the federal action agencies carry out a wide range of actions to help listed fish at all stages of their lifecycle. This includes habitat restoration, hatcheries to jump-start nature, improved river conditions, better survival past dams and harvest management.

Jan. 17, 2014: The 2014 Supplemental BiOp. NOAA Fisheries issued a supplemental biological opinion confirming that improvements at federal dams on the Columbia and Snake rivers, rehabilitation of habitat, and other actions are benefiting federally protected salmon and steelhead as much as or more than anticipated five years ago. The supplemental BiOp analyzed research and monitoring results from the first five years of work under the original biological opinions.

Predator Management

Birds, fish, and marine mammal predation are a major cause of mortality for ESA-listed juvenile and adult fish in the Columbia River Basin. Populations of Caspian terns and double-crested cormorants have increased over the past two decades in the Columbia River estuary and in the mid-Columbia region. Northern pikeminnow and bass also prey on juvenile salmon and steelhead.

California sea lions and stellar sea lions consume substantial numbers of adult spring Chinook salmon, sturgeon and winter steelhead below Bonneville Dam.

Federal and state agencies are cooperating to reduce predation. Programs to redistribute Caspian terns, deter and block sea lions from fish ladders, and reduce the northern pikeminnow population through sport angling have been successful in decreasing the loss of adult and juvenile salmon to predation.

Avian Predation

Caspian terns and double-crested cormorants are a growing threat to juvenile chinook and steelhead in the Columbia River estuary, consuming an estimated 24.6 million juvenile Chinook and steelhead that reached the estuary in 2010.

Caspian terns nest primarily on East Sand Island. Since 2009, the Corps has built four alternative nesting sites to help lure the birds out of the estuary. As a result, the Corps has been able to reduce the size of the nesting acreage on East Sand Island.

Cormorants are a more recent threat. In 1989, the cormorant nesting population on East Sand Island totaled only about 100 pairs. By 2010, there were 13,596 breeding pairs on the Island – the largest double-crested cormorant colony in western North America.

The Biological Opinion

The Endangered Species Act (ESA) requires that any federal agency proposing an action that may have an effect on an ESA-listed fish – issuing a permit, spending money, taking a direct action on fish habitat – consult with the U.S. Fish and Wildlife Service or NOAA Fisheries (i.e., regulatory agencies).

The agency proposing the action (known as the action agency) will commonly complete a biological assessment on potential effects to the fish or its habitat and submit it to the regulatory agency(ies). The regulatory agency then renders a Biological Opinion to the action agency making the proposal.

The intent of a BiOp is to ensure that the proposed action will not reduce the likelihood of survival and recovery of a ESA-listed species. A BiOp usually also includes conservation recommendations that further recovery of the specific ESA-listed species. The BiOp includes Reasonable and Prudent measures as needed to minimize any harmful effects, and may require monitoring and reporting to ensure that the action is implemented as described.

Adaptive Management

Adaptive management is the process of adjusting management actions and/or directions based on new information. Because adaptive management uses program results to help design and implement new actions, monitoring, evaluation and feedback are the foundation of its design. Stakeholder participation and input is a key part of the process.



Caspian terns feeding on salmon. Terns and double-crested cormorants consumed an estimated 24.6 million juvenile Chinook and steelhead that reached the estuary in 2010.

Caspian terns and double-crested cormorants also nest on islands in the mid-Columbia River, where they also prey on juvenile salmon and steelhead. Key nesting sites in the mid-Columbia are Crescent Island in Lake Wallula+, Goose Island in Potholes Reservoir and Foundation Island at the north end of Potholes Reservoir.

Avian predation wires installed at dams are an effective deterrent to gulls and other birds that hunt near the tailraces of dams to prey on the juveniles as they pass. Wires installed at John Day Dam in 2010 reduced gull predation by an estimated 76 percent.