

**Pacific Coastal Salmon
Recovery Fund**

2015/2016 Report to Congress



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An introduction to the Pacific Coast Salmon Recovery Fund

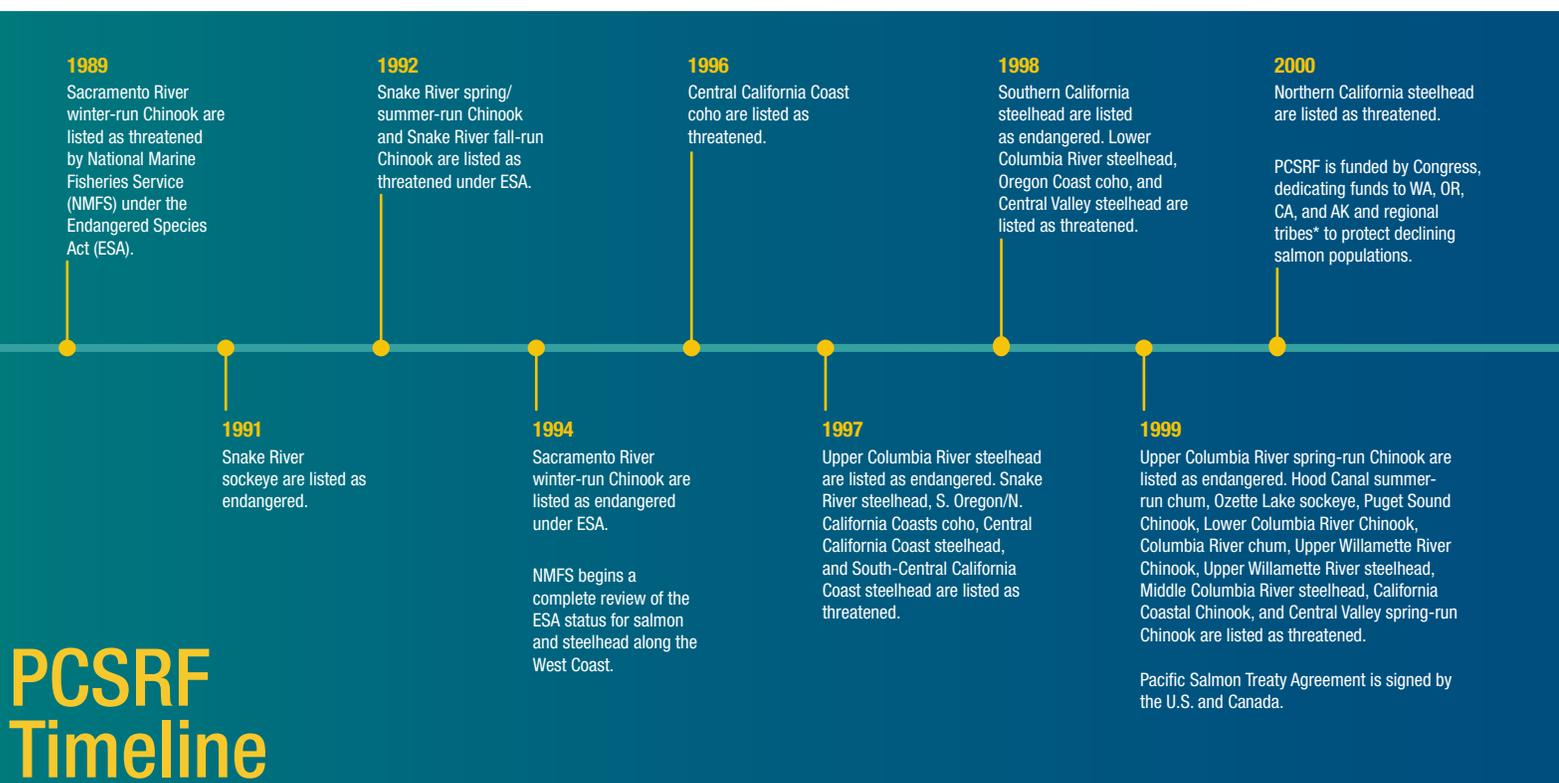
Human activities and environmental conditions have placed grave pressures on West Coast salmon.¹ Though remarkably adaptable species, decades of human land- and water-uses, harvest, and hatchery practices have contributed to the decline of many populations. Today, 28 salmon species face extinction on the West Coast and are protected under the Endangered Species Act (ESA). Many of these species are of profound cultural importance to West Coast Native American Tribes, and their recovery is critical to meeting Federal obligations as stewards of Tribal treaty and trust resources.

In 2000, Congress established the Pacific Coastal Salmon Recovery Fund (PCSRF) to reverse the decline of West Coast salmon populations in California, Oregon, Washington, Alaska, and Idaho. PCSRF is a competitive grants program through which the National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NMFS) administers funding to States and Tribes to

protect, conserve, and restore these populations. In addition to these efforts, the program plays a vital role in supporting Tribal treaty fishing rights and subsistence fishing traditions. The program is essential to preventing the extinction of threatened and endangered salmon populations and, in many cases, has contributed to stabilizing at-risk populations and has set the stage for their recovery.

PCSRF has awarded an average of \$76 million annually since 2000 (Exhibit 1). With this funding, States and Tribes have leveraged additional resources to collectively implement more than 12,100 projects to conserve West Coast salmon. Projects have restored and improved access to important spawning and rearing habitats. PCSRF-funded activities also include robust planning and monitoring programs that inform strategic prioritization of projects and track salmon conservation accomplishments.

¹ In this report, the term "salmon" is inclusive of both salmon and steelhead.



SINCE 2000, PCSRF HAS:

- Restored, created, or protected over 1,060,000 acres of salmon habitat
- Opened over 9,100 miles of streams to spawning fish
- Received \$1.2 billion in Congressionally appropriated funds
- Leveraged over \$1.4 billion in non-PCSRF contributions

Awards to States & Tribes

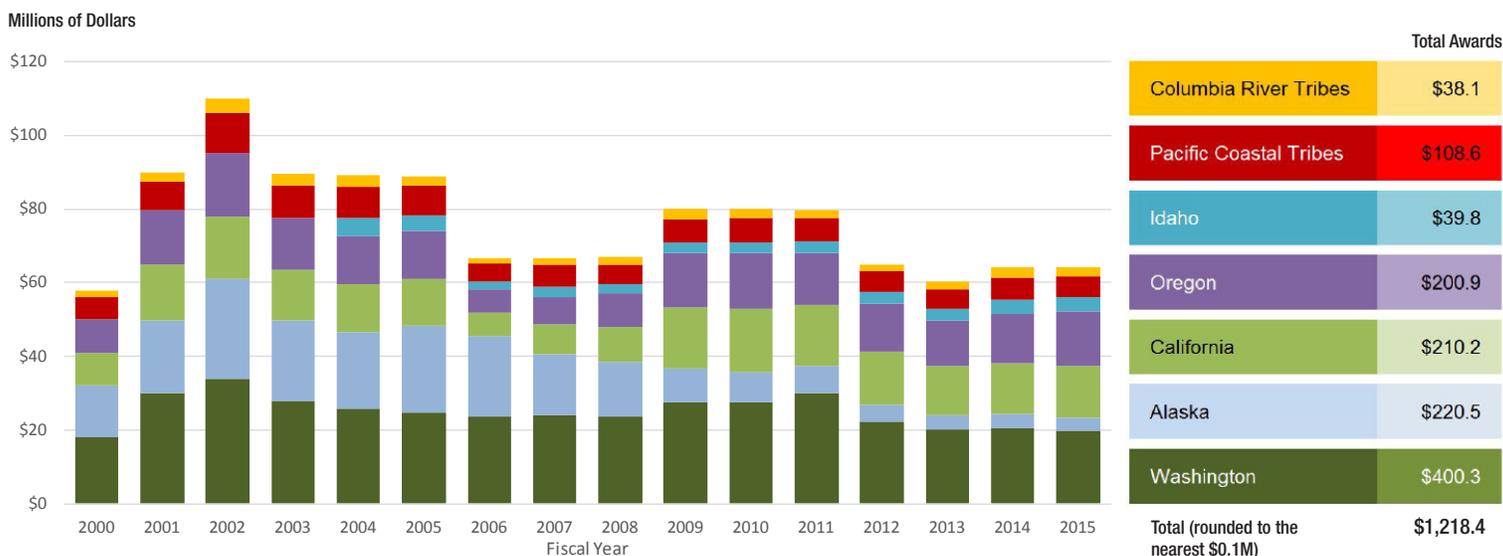


Exhibit 1: PCSRF Awards to States and Tribes (in millions)

2002

Species' range for endangered Southern California Coast steelhead is extended to the Mexico border.

2005

PCSRF Performance Framework of goals and measures is developed and implemented.

Central California Coast coho are reclassified as endangered. Lower Columbia River coho are listed as threatened.

2007

Puget Sound steelhead are listed as threatened.

NMFS implements a competitive selection process to allocate PCSRF funds among grantees to improve the likelihood that funded projects address limiting factors.

2010

PCSRF implements a second phase of performance metric reporting to more comprehensively track project implementation data to support scientific analyses and adaptive management.

2004

Idaho is added as a PCSRF recipient recognizing upstream spawning habitat as critical to Pacific salmon and steelhead survival.

2006

Upper Columbia River steelhead are upgraded to threatened status.

2009

Nevada is added as a PCSRF recipient, recognizing the historic geographic extent of anadromous fish in the Columbia Basin.

2012

Congress adds Alaska Tribes to the pool of applicants eligible for PCSRF funding.

* Pacific Coastal Tribes include the Northwest Indian Fisheries Commission (NMIFC) on behalf of twenty western Washington treaty tribes (Hoh Indian Tribe, Jamestown S'Klallam Tribe, Lower Elwha Klallam Tribe, Lummi Nation, Makah Nation, Muckleshoot Tribe, Nisqually Indian Tribe, Nooksack Tribe, Port Gamble S'Klallam Tribe, Puyallup Tribe of Indians, Quileute Indian Tribe, Quinault Indian Nation, Sauk-Suiattle Tribe, Skokomish Tribe, Squaxin Island Tribe, Stillaguamish Tribe, Suquamish Tribe, Swinomish Tribe, Tulalip Tribes, and Upper Skagit Tribes); the Klamath River Inter-Tribal Fish & Water Commission (KRITFWC) on behalf of four Klamath Basin tribes (Hoopa Valley Indian Tribe (CA), Karuk Tribe (CA), Klamath Tribes (OR), and Yurok Tribe (CA)); and tribes not associated with a tribal commission (Round Valley Indian Tribes (CA), the Chehalis Tribe (WA), Coquille Indian Tribe (OR), the Confederated Tribes of the Grand Ronde (OR), and the Confederated Tribes of Siletz Indians (OR)). Beginning in 2012, Congress expanded the definition of Pacific Coastal Tribes to include approximately 229 federally recognized tribes in Alaska.

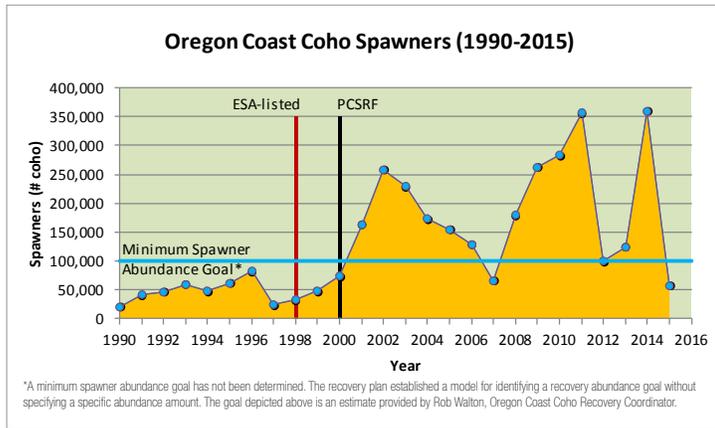
Columbia River Tribes include the Columbia River Inter-Tribal Fish Commission (CRITFC) on behalf of four tribes (Nez Perce Tribe (ID), Confederated Tribes of the Umatilla Indian Reservation (OR), Confederated Tribes of the Warm Springs Reservation (OR), and the Confederated Tribes and Bands of the Yakama Nation (WA)); and tribes not affiliated with a tribal commission (Confederated Tribes of the Colville Reservation (WA), and the Shoshone-Bannock Tribes (ID), Shoshone Paiute Tribes of the Duck Valley Indian Reservation (NV)).

Reversing species' declines

Of the 19 salmon species with sufficient monitoring data to evaluate trends, only one species continues to exhibit a declining trend. Of the others, 13 are exhibiting stable trends in abundance and five are exhibiting increasing trends. Nearly all of these species were listed during the 1990s, in part, due to alarming declines in abundance. While most species remain below their recovery goals, the sustained stable and increasing trends represent noteworthy successes in preventing extinctions and dramatic turnarounds from the numbers we witnessed in the 1990s. Changes in ocean conditions, harvest management, hatchery practices, hydropower dam operations, as well as habitat restoration efforts have all contributed to the improvements in status.

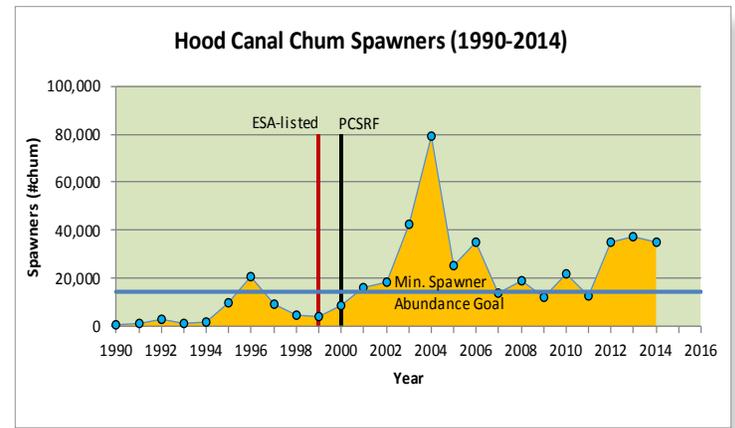
In addition to reversing species' declines, several populations are rebounding. Examples include:

Oregon Coast coho were listed as threatened in 1998, as the spawning population had declined from historical levels in excess of 750,000 fish to less than 25,000 fish. Today, the run size is highly variable, but has averaged over 200,000 fish (2006-2015). In 2011 and 2014, returns exceeded 350,000 fish. While other considerations exist, such returns suggest the species is at or near their delisting abundance goal.



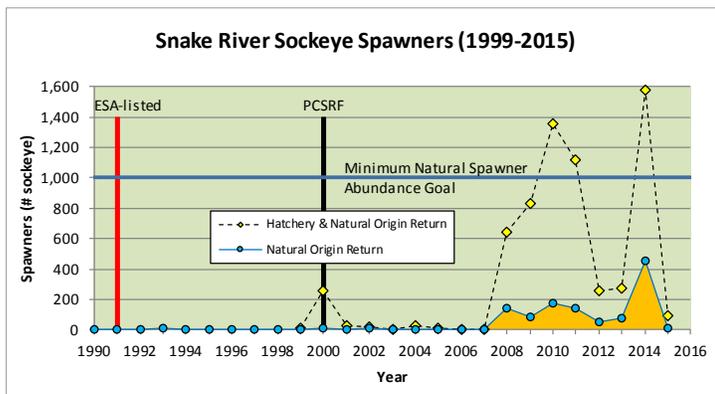
Data source: Oregon Department of Fish and Wildlife

Hood Canal summer-run chum were listed as threatened in 1999, and all populations were at a high risk of extinction. Following a spawning population of just 770 fish in 1990 and the initiation of an innovative hatchery supplementation effort, the species currently has an average spawning population of nearly 25,000 fish (2005-2014) and most populations are nearing their delisting abundance goals. *[Note: 2015 escapement estimates are currently not available]*



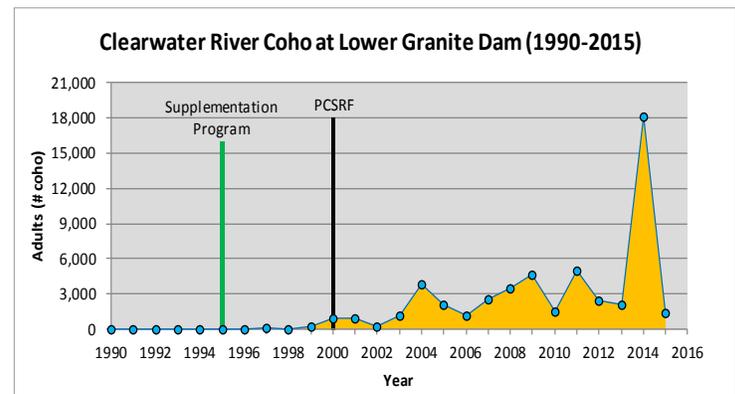
Data source: Northwest Fisheries Science Center

Snake River sockeye were listed as endangered in 1991. In 1994 only one fish returned to Redfish Lake. A captive propagation program rescued the species from extinction. Since 2008, adult returns have averaged nearly 770 fish, with natural returns averaging 143 fish (2008-2015). The averages were even higher prior to the disastrous drought year of 2015 when low water and high water temperatures prevented fish from reaching their spawning grounds (mortality rates between Bonneville Dam and McNary Dam were 85 percent).



Data source: Idaho Department of Fish and Game

Clearwater River coho - Coho in Idaho's Clearwater River are a culturally significant species for the Nez Perce Tribe. In 1986, though never listed under the ESA, the species was extirpated from the Clearwater Basin. Today, thanks to a PCSRF-funded hatchery supplementation program begun in 1995 by the Nez Perce Tribe, an average of more than 4,200 fish survive the 500-mile journey back to the Clearwater Basin (2006-2015). In fact, returns in 2014 prior to the drought were in excess of 18,000 fish.



Data source: Fish Passage Center

Performance Measures

Output	Performance Measure	FY2014	FY2015	FY2000-FY2015
Instream Habitat Projects	Stream Miles Treated	409	178	2,370
Wetland Habitat Projects	Acres Created	0	0	2,115
	Acres Treated	156	431	29,597
Estuarine Habitat Projects	Acres Created	50	0	2,353
	Acres Treated	315	426	5,292
Land Acquisition Projects	Acres Acquired or Protected	2,080	6,120	264,135
	Stream Bank Miles Acquired or Protected	30	255	4,855
Riparian Habitat Projects	Stream Miles Treated	1,284	512	10,378
	Acres Treated	7,421	6,680	113,870
Upland Habitat Projects	Acres Treated	12,133	4,511	638,287
Fish Passage Projects	Number of Barriers Removed	139	125	3,075
	Stream Miles Opened	709	363	9,155
	Number of Fish Screens Installed	15	11	1,923
Hatchery Fish Enhancement Projects	Number of Fish Marked for Management Strategies	10,954,992	11,015,605	325,195,370
Research, Monitoring and Evaluation Projects	Miles of Stream Monitored	9,194	13,264	441,001

Exhibit 2: Summary of PCSRF Program-wide Performance Measures, FY 2000-2015†

†Reflects annual and accumulated totals at the time database queried for report (March 22, 2016).

Allocations by Project Type

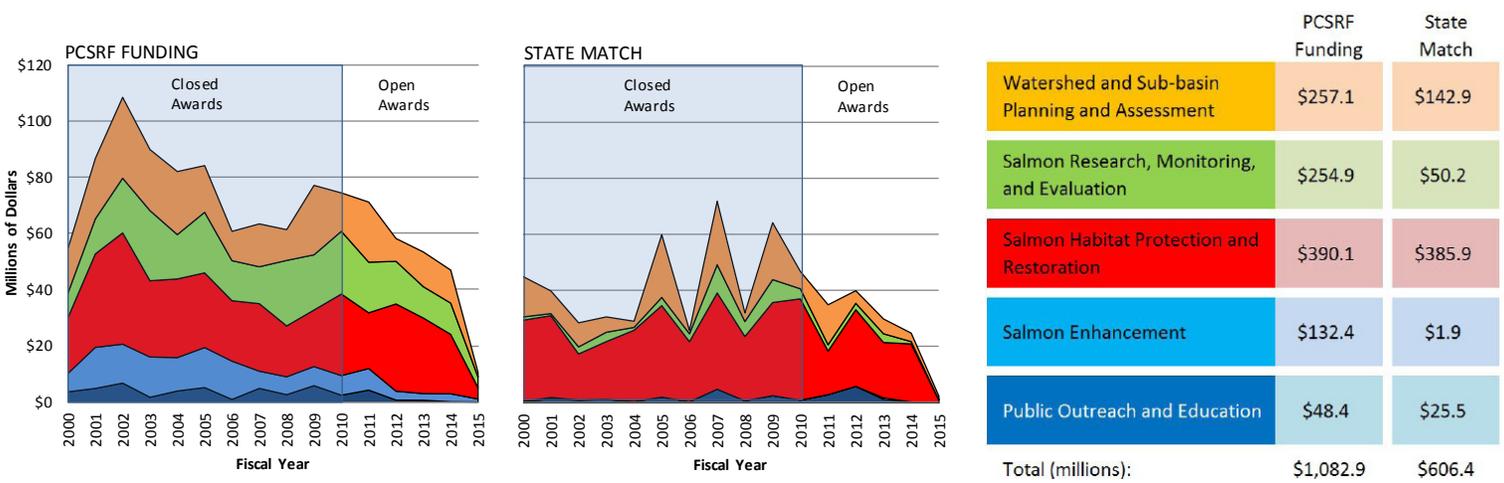


Exhibit 3: Funding Allocations by Project Type††

†† The sum of total funding allocated across project types does not equal the total of PCSRF awards presented in Exhibit 1.

Not all awarded funds have been allocated to projects for the more recent fiscal years.

Exhibit 3 highlights funding allocations by project category. While PCSRF funding levels generally have declined since 2002, habitat restoration and critical monitoring have remained central tenets of the program, as seen in Exhibit 3. While other project categories contribute to PCSRF goals, implementing on-the-ground restoration actions is vital to salmon recovery, and consistent monitoring ensures PCSRF investments are effectively meeting the needs of listed species.

Western Alaska Subsistence Monitoring

Western Alaska salmon stocks form the backbone of an Alaska Native subsistence economy that has thrived on the Yukon-Kuskokwim Delta for thousands of years. Approximately 430,000 salmon are harvested annually by subsistence users in the region, requiring regular monitoring to ensure stocks remain sufficiently abundant to support fisheries. In some Kuskokwim River communities, residents harvest as much as 650 pounds of salmon per capita annually, comprising a significant portion of local diets throughout the year.

Unfortunately, several years of below average Chinook salmon runs in the Yukon and Kuskokwim rivers have resulted in unprecedented closures to subsistence salmon fishing, interfering with traditional cultural practices and threatening food security.



Above: A local technician holds a radio telemetry tag inserted into a Yukon River chum salmon. Photo: Sean Larson

Left: Sockeye salmon harvested in the Bethel Test Fishery (Kuskokwim River) help determine inseason run timing and abundance. Photo: Alaska Department of Fish and Game

Below: Salmon hang on drying racks at a Kuskokwim River subsistence fish camp. Photo: Odin Miller

To help ensure the sustainability of the runs that contribute to these subsistence fisheries, the Alaska Sustainable Salmon Fund (AKSSF) supports projects that monitor salmon escapement in a variety of drainages across Western Alaska to inform management decisions and maintain subsistence harvest opportunities.

Monitoring strategies vary to meet the needs of each drainage.

- On the Chena River, a major spawning tributary of the Yukon, a counting tower, sonar, and carcass counts are used to estimate Chinook salmon escapement by age, sex, and length.
- On the Anvik River, the largest producer of summer chum salmon in the Yukon River drainage, a sonar is used to enumerate salmon.
- On the lower Kuskokwim River, harvest data gathered from subsistence users on the fishing grounds are used to develop a model for total catch to manage fisheries inseason.
- At Telaquana Lake, a weir is used to estimate sockeye salmon escapement to a tributary of the Kuskokwim River.

AKSSF has also funded several genetic baseline projects that help differentiate related salmon stocks in Western Alaska, facilitating mixed stock analyses for pre-season run forecasts and inseason management.



WESTERN ALASKA SUBSISTENCE MONITORING

PCSRF Funds: \$7,950,899

Match & Other Contributions: \$1,870,118

Target Species: Chinook salmon, sockeye salmon, chum salmon

Qwuloolt Estuary Restoration Project

The Qwuloolt, meaning “marsh” in the Lushootseed language, is located within the Snohomish River floodplain approximately three miles upstream from its outlet to the Puget Sound. The Snohomish River watershed, drains 1,856 square miles of the western Cascades to Puget Sound and supports significant runs of coho, Chinook, chum, and pink salmon; as well as steelhead, cutthroat, and bull trout. Today, only 17 percent of intact estuary area remains in the Snohomish River delta, reducing the Chinook production capacity to between 40-60 percent of historic levels.

In 2015, the Tulalip Tribes, in a broad-based interagency and community effort, completed the Qwuloolt Estuary Restoration Project to restore historic tidal processes and an estuary intertidal marsh system to approximately 400 acres of isolated floodplain in the lower Snohomish River estuary, in Marysville, Washington.

Restoration work included channel excavation and ditch filling, treatment of invasive reed canary grass, restoration of more than one mile of historic and new creek channel with riparian plantings, construction of approximately 4,000 feet of the west setback levee, and breaching the Ebey Slough levee.



The project restored natural hydrologic connections and functions to two stream systems, providing unrestricted fish access to 16 miles of upstream spawning and rearing habitat, and addressed high priority actions identified in the Puget Sound Chinook Recovery Plan. This project increased the amount of tidal marsh and habitat complexity and reduced habitat fragmentation, providing significant improvements in Chinook salmon abundance, productivity, and diversity.

In addition to NOAA, other contributors included the Tulalip Tribes, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Environmental Protection Agency, Natural Resources Conservation Service, State of Washington, and National Fish and Wildlife Foundation.



Above: Pre-project aerial picture of Qwuloolt Estuary, May 2009. Source: Google Earth. Inset: Snapshot from drone flight of Qwuloolt Estuary post project, 9 April 2016. Photo: Tulalip Tribes

Left: Levee breach, August 28, 2015. Photo: Tulalip Tribes

Below: Qwuloolt Estuary post project, April 2016. Photo: Tulalip Tribes

View a time lapse of levee breach:

<http://video-monitoring.com/timelapse/tulalip/slideshow.htm>



QWULOOLT ESTUARY RESTORATION PROJECT

PCSRF Funds: \$359,600

Match & Other Contributions: \$20,140,400

Listed Species: Threatened Puget Sound Chinook and Puget Sound steelhead

Wapiti Meadow Conservation Easement

The Wapiti Meadow Conservation Easement Project purchased a conservation easement and implemented habitat protection and restoration work to benefit spawning and rearing of Chinook salmon and steelhead.

The conservation easement limits development and protects riparian resources on 129 acres of the Wapiti Meadow Ranch into perpetuity. Portions of three streams occur in the easement: Johnson Creek, Cox Creek, and Forstrum Creek. The easement provides protection of 0.75 miles of documented Chinook salmon and steelhead spawning and rearing habitat in Johnson Creek, a tributary to the East Fork South Fork Salmon River, and its tributary, Cox Creek.

Restoration work included addressing fish passage barriers and carrying out instream and riparian habitat improvements.

- Two irrigation diversions (Cox Creek and Forstrum Creek) were modified to avoid stranding fish in off-channel upland areas and increase stream flow. Both reduced direct and in-direct mortality in the reaches.
- Two road-crossing culverts (Cox Creek) were replaced with bridges. This opened up 0.3 miles of rearing habitat to Chinook and steelhead, which have been documented utilizing the full range of this habitat.
- Instream habitat complexity was enhanced with the placement of 15 structures along 1,000 feet of Cox Creek using 45 logs. These structures encourage stream sinuosity and pool formation, which benefit juvenile Chinook and steelhead.
- Riparian habitat was improved along Cox Creek with the removal of reed canary grass from 0.6 acres along 0.3 miles of stream and replanting native vegetation. Plantings included black hawthorn, golden current, mountain alder, red-osier dogwood, woods rose, black cottonwood, Booths willow, sandbar willow, and Geyers willow. Plantings will be maintained by the Nez Perce Tribe.
- Approximately 22 acres of riparian habitat was protected from livestock by installing 1,000 feet of new fence and repairing an additional 1,400 feet of existing fence along the streams in the easement.

Over time, the plantings and protected riparian area will benefit the physical habitat for fish by increasing stream bank stability, reducing channel warming, and contributing to channel complexity. These changes in the stream's physical environment will also provide cover, thermal refuge, and invertebrate prey species for rearing juvenile salmon and steelhead.

WAPITI MEADOW CONSERVATION EASEMENT

PCSRF Funds: \$1,000,000

Match & Other Contributions: \$389,708

Listed Species: Threatened Snake River spring/summer-run Chinook, Snake River steelhead



Above: Reed canary grass on Cox Creek (before removal), 2011. Photo: Wesley Keller, Nez Perce Tribe

Below: New box culvert on Cox Creek, 2012. Photo: Wesley Keller, Nez Perce Tribe



This project was a collaboration between the Wapiti Meadow Ranch owner, Nez Perce Tribe, and Rocky Mountain Elk Foundation. Funding was provided by PCSRF, Bonneville Power Administration, Nez Perce Tribe, and the Wapiti Meadows Ranch.

Ladd Creek and Ladd Marsh Wildlife Area Restoration

The restoration of Ladd Creek and Ladd Marsh, near La Grande, Oregon, improved fish passage and rearing habitat for Snake River spring/summer-run Chinook salmon and Snake River steelhead. Juvenile Chinook use the lower reaches of Ladd Creek for rearing, while summer steelhead use Ladd Creek for spawning and juvenile rearing.

Work began in 2009 with restoration of the Ladd Creek channel to its near-historic natural configuration and creation of more than 40 acres of wetland (Oregon Watershed Enhancement Board project number: OWEB 206-350). In 2015, the project was completed with installation of the Highway 203 Bridge, which connected the previously constructed reach of East Fork Ladd Creek and Ladd Creek (Oregon Watershed Enhancement Board project number: OWEB 213-5045).

Realigning the channelized portions of stream into natural meandering stream channels resulted in a gain of approximately two miles of stream length and increased sinuosity. Channel work also improved hydraulic connectivity and activation of floodplains and wetlands, which act as natural storage reservoirs.

Specific project objectives included: replacing channelized and incised reaches of the various forks of Ladd Creek with natural meandering channels with accessible floodplain habitats; removing undersized culverts that restricted fish passage; increasing both quantity and quality of rearing habitat for anadromous and resident salmonids; promoting natural, stable stream channels and in-stream habitat diversity; improving water quality (i.e., decreasing sediment, improving nutrient exchange, reducing summer water temperatures, increasing summer flow); increasing groundwater storage and recharge; and restoring former wetland habitats for riparian and wetland species. All improvements are available and accessible to the public.



Project partners included the Confederated Tribes of the Umatilla Reservation, Oregon Department of Fish and Wildlife, Oregon Department of Transportation, Grande Ronde Model Watershed, Bonneville Power Administration, Union County, and Federal Aviation Administration.



Above: Pre-project, March 29, 2007. Looking south along Pierce Road. Photo: Oregon Department of Fish and Wildlife



Above: Post-project, May 1, 2012. Looking south from Pierce Road. Photo: Oregon Department of Fish and Wildlife

Left: New Highway 203 Bridge, March 14, 2016. Looking east with the new Ladd Creek channel in the background. Photo: Oregon Department of Fish and Wildlife

LADD CREEK AND LADD MARSH WILDLIFE AREA RESTORATION

PCSRF Funds: \$180,600

Match & Other Contributions: \$1,166,700

Listed Species: Threatened Snake River spring/summer-run Chinook and Snake River steelhead

Shasta River Fish Passage - Grenada Irrigation District Dam Removal and Fish Screen Installation

This project improved habitat conditions and passage for coho salmon. Previously, the Grenada Irrigation District (GID) and Huseman Ditch Water Users (Huseman) shared a single diversion takeout for irrigation from the Shasta River. The concrete structure spanned the Shasta River channel. A fish screen and bypass flow return was located at the GID pump station. There was no upstream fish passage after the dam was installed.

The water users had water rights totaling 52 cubic feet per second (cfs). To satisfy those water rights, the diversion had to be active all year.

The property irrigated under the Huseman right was 4.9 miles downstream from the shared diversion dam takeout. An earthen canal conveyed water down to the users.

Under this project the two diversions were separated.

The Huseman right was moved downstream 4.9 miles to a new pump station with an on-channel fish screen installed and the earthen canal was abandoned. This relocation allows 12 cfs of water right to remain instream for an additional 4.9 miles. In addition, the conveyance losses associated with the old earthen canal are retained instream too.

The original diversion dam take out was removed and the river channel restored. The GID irrigation canal was decommissioned and GID's antiquated pumping station was replaced with a new pumping station, along with an on-channel fish screen.

These improvements eliminated an impoundment, provided unimpeded fish passage, and restored the river's natural hydraulic function.

Project Accomplishments:

- Reduced the diversion impacts to salmonids.
- Restored fish passage for all life stages to 23 miles of stream.
- Separated the two diversions leaving 12 cfs of water in the river for an additional 4.9 miles.

Project partners included the Grenada Irrigation District, National Fish and Wildlife Foundation, and Wildlife Conservation Board.



Above: Grenada Irrigation District/Huseman dam, diversion headgate structure, before removal, March 2012. Photo: Mark Elfgen

Below: Grenada Irrigation District screen functioning after construction, January 2014. Photo: Mark Elfgen.



SHASTA RIVER FISH PASSAGE - GRENADA IRRIGATION DISTRICT DAM REMOVAL AND FISH SCREEN INSTALLATION

PCSRF Funds: \$1,045,700

Match & Other Contributions: \$1,677,100

Listed Species: Threatened Southern Oregon/Northern California Coast coho



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