

Pacific Coastal Salmon Recovery Fund FY 2016 Report to Congress



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1989

Sacramento River winter-run Chinook are listed as threatened by National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA).

1991

Snake River sockeye are listed as endangered.

1992

Snake River spring/summer-run Chinook and Snake River fall-run Chinook are listed as threatened under ESA.

1994

Sacramento River winter-run Chinook are listed as endangered under ESA.

NMFS begins a complete review of the ESA status for salmon and steelhead along the West Coast.

1996

Central California Coast coho are listed as threatened.

1997

Upper Columbia River steelhead are listed as endangered. Snake River steelhead, S. Oregon/N. California Coasts coho, Central California Coast steelhead, and South-Central California Coast steelhead are listed as threatened.

1998

Southern California steelhead are listed as endangered. Lower Columbia River steelhead, Oregon Coast coho, and Central Valley steelhead are listed as threatened.

1999

Upper Columbia River spring-run Chinook are listed as endangered. Hood Canal summer-run chum, Ozette Lake sockeye, Puget Sound Chinook, Lower Columbia River Chinook, Columbia River chum, Upper Willamette River Chinook, Upper Willamette River steelhead, Middle Columbia River steelhead, California Coastal Chinook, and Central Valley spring-run Chinook are listed as threatened.

2000

Northern California steelhead are listed as threatened.

PCSRF is funded by Congress, dedicating funds to WA, OR, CA, and AK and regional tribes* to protect declining salmon populations.

Pacific Salmon Treaty Agreement is signed by the U.S. and Canada.

PCSRF Timeline

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 12,800 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 1,080,000 acres of salmon habitat
- Opened over 9,500 miles of streams to spawning fish
- Received \$1.3 billion in Congressionally appropriated funds
- Leveraged over \$1.6 billion in non-PCSRF contributions

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 (NWIFC) 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 (KRITFC) 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)).

Photos: opposite page, Brian Cluer, NOAA; cover, Megan Morlock, NOAA

Awards to States & Tribes

Millions of Dollars

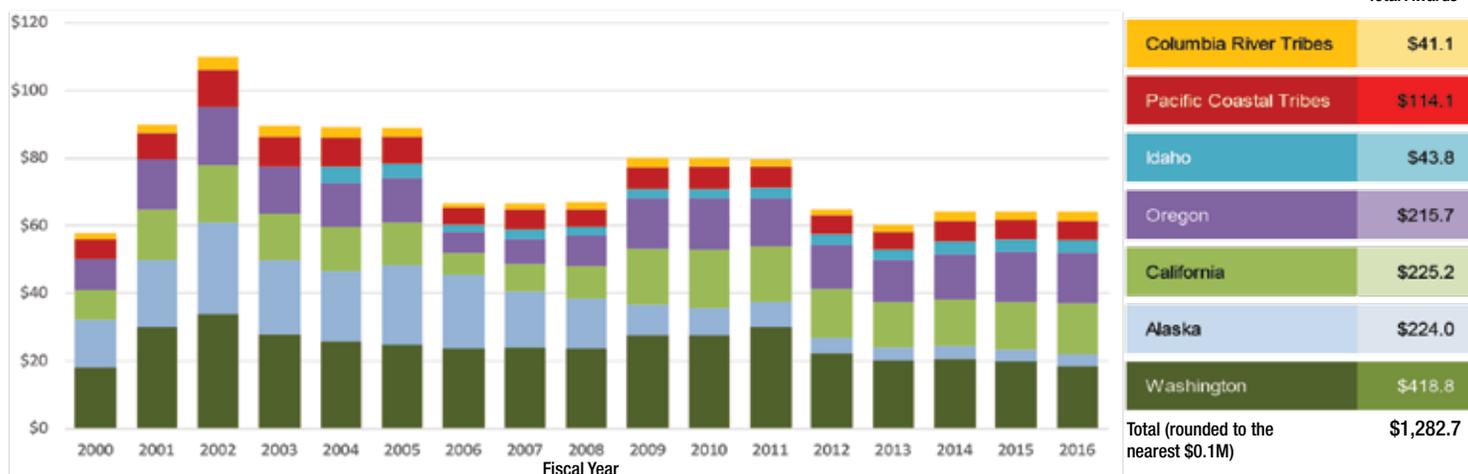


Exhibit 1: PCSRF Awards to States and Tribes (\$Millions)

Measuring Progress & Tracking Funding

All PCSRF recipients report on a standard list of metrics for all projects (Exhibit 2). In aggregate, these metrics provide estimates of program-wide accomplishments funded with PCSRF, State-matching, and other partner funds. PCSRF's project and performance metrics database is available online at: www.webapps.nwfsc.noaa.gov/pcsrp

Output	Performance Measure	FY2016	FY2000-FY2016
Instream Habitat	Stream Miles Treated	114	2,484
Wetland Habitat Projects	Acres Created	0	2,115
	Acres Treated	81	29,678
Estuarine Habitat Projects	Acres Created	0	2,353
	Acres Treated	90	5,382
Land Acquisition Projects	Acres Acquired or Protected	4,755	268,890
	Stream Bank Miles Acquired or Protected	323	5,178
Riparian Habitat Projects	Stream Miles Treated	555	10,933
	Acres Treated	7,047	120,917
Upland Habitat Projects	Acres Treated	4,612	642,899
Fish Passage Projects	Number of Barriers Removed	123	3,198
	Stream Miles Opened	395	9,550
	Number of Fish Screens Installed	3	1,926
Hatchery Fish Enhancement Projects	Number of Fish Marked for Management Strategies	15,136,758	340,332,128
Research, Monitoring & Evaluation Projects	Miles of Stream Monitored	49,704	490,705

Exhibit 2: Summary of PCSRF Program-wide Performance Measures, FY 2000-2016†

†Reflects annual and accumulated totals at the time database queried for report (November 2, 2016).

Allocations by Project Type

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 emphases 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.

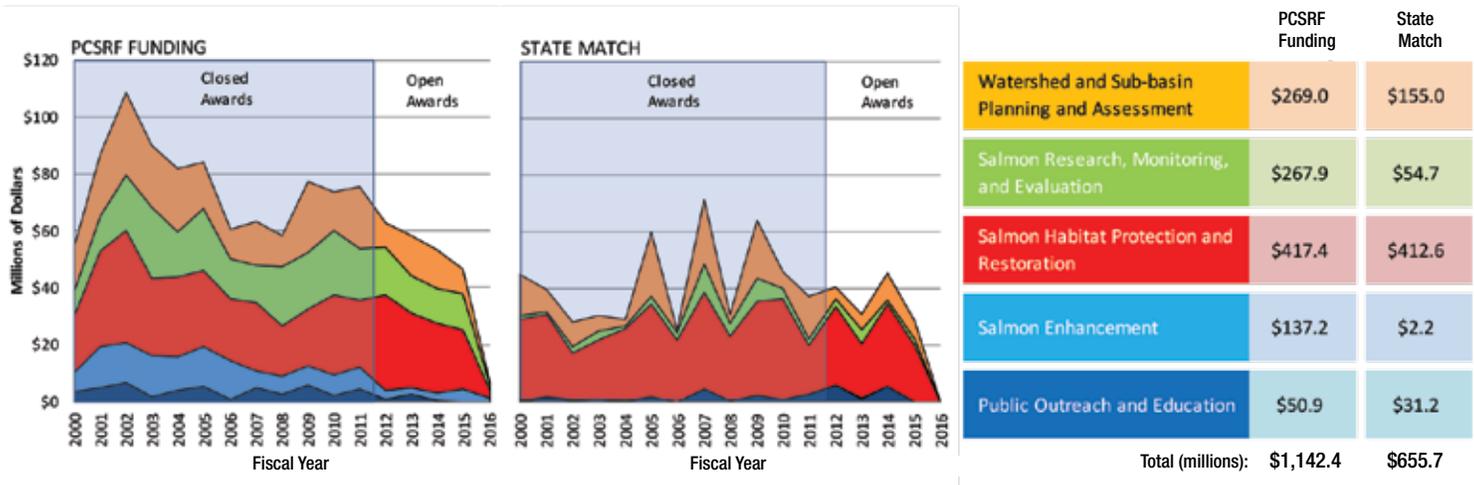


Exhibit 3: PCSRF and State Funding Allocations by Project Type^{††}

^{††} 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.



Reversing species' declines

Of the 20 salmon species with sufficient monitoring data to evaluate trends, two species continue 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.



Toome Roorda



Salmon in Lower Granite Trap, Ben Sanford, NOAA



Oregon Watershed Enhancement Board

Investing in salmon restoration spurs economic growth for local communities

Salmon restoration benefits fish populations and their habitats, but the value of these investments goes far beyond recovering threatened and endangered species. The financial investments in habitat restoration contribute to local communities and their economies. In fact, the “restoration economy” in the United States employs approximately 126,000 workers and annually generates approximately \$9.5 billion in economic output.ⁱ This activity indirectly “supports an additional 95,000 jobs and \$15.0 billion in economic output through indirect (business-to-business) linkages and increased household spending.”ⁱ

In Oregon alone, habitat restoration projects generated as many as 6,400 jobs and more than \$977 million between 2001 and 2010.ⁱⁱ Several studies indicate that a \$1.0 million investment in watershed restoration, of which PCSRF and State matching funds play a significant role, creates between 13 and 32 jobs and \$2.2 and \$3.4 million in economic activity (Exhibit 4).^{iii, iv, v}

Every dollar invested in salmon restoration travels through the economy in several ways. PCSRF State and Tribal grantees contract with local watershed groups, conservation agencies, land trusts, and other entities to manage habitat restoration projects. In turn, those agencies contract with local businesses and suppliers to carry out the work. These partners contribute funding on top of PCSRF dollars. This cost-sharing model increases the economic benefits realized in local communities.

Investing in restoration also provides communities with longer-term economic stability, including future job creation in rebuilt fisheries and coastal tourism and higher property values.^{iv} In fact, an analysis of three NOAA-funded coastal restoration projects found that each dollar invested returns more than \$15 in long-term net economic benefit.^{vi}

The jobs and economic benefits of salmon restoration activities are largely realized in the local and rural communities, many of which face economic challenges. Approximately 80 percent of habitat restoration investments are spent in the county in which the project sponsor is located, and over 90 percent is spent within the State. These economic benefits truly are localized and provide important stability to economically distressed communities.^{vii}

Project Type	Definition	Jobs/\$1M	Economic Output/\$1M
In-stream	Enhancing stream habitat and function	14.7	\$2,203,851
Riparian	Restoring riparian habitat function, enhancing and restoring native riparian vegetation	19.0 - 23.1	\$2,310,128
Wetland	Restoring wetland and estuarine habitat	17.6	\$2,259,422
Reconnection	Restoring the flow of water to coastal systems and floodplains	14.6	
Fish Passage	Removing barriers to fish passage (culverts and dams), screening to protect fish from water withdrawals	15.2 - 18.2	\$2,240,281
Upland	Managing agricultural water, juniper, and noxious weeds	15.0	\$2,476,290
Others	Undertaking multiple activities in one comprehensive restoration project	14.7	\$2,270,862
		Average	16.3 - 17.0
			\$2,311,468

Exhibit 4: Economic Effects per \$1.0 Million Invested in Forest and Watershed Restoration Projects^{iii, iv}

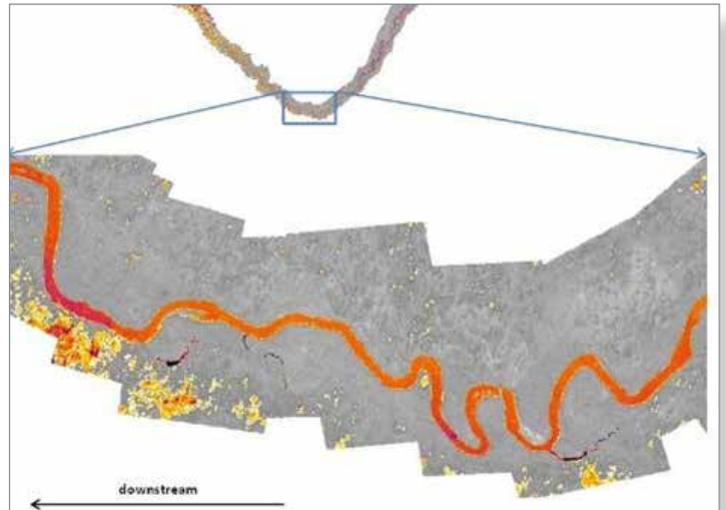
Salmon Stronghold Research & Assessment

Across the west coast of North America, salmon populations are facing unprecedented threats from rising water temperatures and rapidly changing environmental conditions. Although these changes are already impacting Alaska, the abundance of healthy watersheds across a diversity of landscapes can serve as buffers and critical strongholds for all species of Pacific salmon — provided we are able to maintain and protect the habitat. The PCSRF program through the Alaska Sustainable Salmon Fund (AKSSF) has supported several projects to understand the impacts of environmental changes and strategically prioritize conservation efforts.

For example, many salmon streams on the Kenai Peninsula already exceed temperature thresholds that are detrimental to salmon, making local cold water refugia critically important for sustainability. Cook Inletkeeper, a nonprofit organization dedicated to clean water and healthy fisheries in Cook Inlet, used PCSRF funding to collect thermal data on key salmon streams on the Kenai Peninsula to identify cold water habitat for prioritization in land conservation efforts.

In another PCSRF-funded project, The Nature Conservancy developed a model to predict stream flow changes, such as increased frequency and severity of flood events, which could severely impact salmon productivity by flushing away salmon eggs and spawning beds. The Nature Conservancy model provides a predictive framework to prioritize mitigation strategies and habitat conservation efforts in Southeast Alaska.

PCSRF funding also supports habitat conservation projects to maintain and protect important salmon habitat through conservation easements, instream flow reservations (preserving stream flows and lake levels for all life stages of salmon), and statutory protection through listing in the Anadromous Waters Catalog.



Above: Thermal profile of Nilichik River (darker colors indicate cooler temperatures)

Below: Groundtruthing thermal data on the Kenai Peninsula. Photo: Cook Inletkeeper

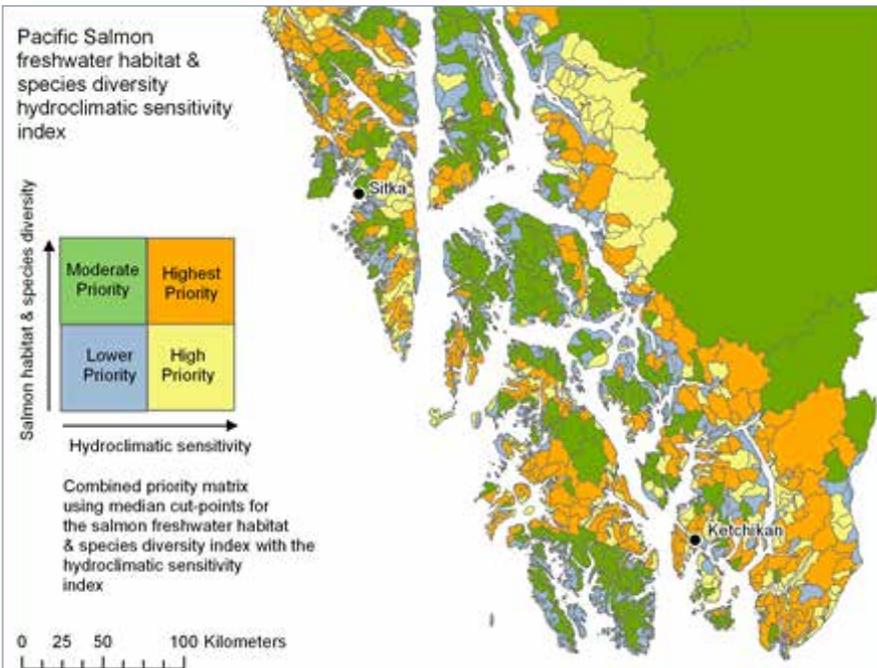




Left: One of several glaciers feeding the salmon-rich Taku River. An area likely to see increased discharge year-round as glaciers melt at higher rates.
Photo: Debbie Maas

Bottom, left: Climate Change Sensitivity Index for Pacific Salmon Habitat in Southeast Alaska. Shanley CS, Albert DM (2014) PLOS ONE 9(8): e104799. doi: 10.1371/journal.pone.0104799

SALMON STRONGHOLD RESEARCH & ASSESSMENT
 PCSRF Funds: \$133,500
 Match & Other Contributions: \$52,100
 Target Species: Un-listed Chinook, coho, sockeye, chum, pink, steelhead



Intensively Monitored Watershed Program - Lower Columbia Complex

How do we ensure our salmon habitat restoration actions are recovering salmon? The answer is to concentrate restoration actions on a landscape-scale and focus on the fish response to those actions.

The Washington State Intensively Monitored Watershed (IMW) Program funded by PCSRF and Washington State through the Salmon Recovery Funding Board (SRFB) looks at watersheds in four salmon recovery regions, and compares the number of salmon from watersheds where habitat restoration was done to similar watersheds nearby without such actions. Comparing treated watersheds with untreated watersheds allows us to determine if changes in fish survival and productivity are due to restoration efforts or other factors.

The Lower Columbia IMW Complex in southwest Washington consists of three similar watersheds: Mill, Abernathy and Germany Creeks. Mill Creek is the control (no restoration), while Abernathy and Germany Creeks are treatment watersheds where restoration actions are implemented and responses monitored. In the Abernathy Creek watershed federal, state, local, and non-profit organizations, in addition to the Cowlitz Indian Tribe, are collaborating on the most comprehensive watershed-level restoration and monitoring effort in the region.

Over the last four years the Cowlitz Indian Tribe has implemented several in-stream habitat restoration projects in the Abernathy Creek watershed in support of the IMW (see Table) with additional funding from other partners: Lower Columbia Fish Recovery Board, Ecotrust (using NOAA Restoration Center funding), and the Pacific States Marine Fisheries Commission.

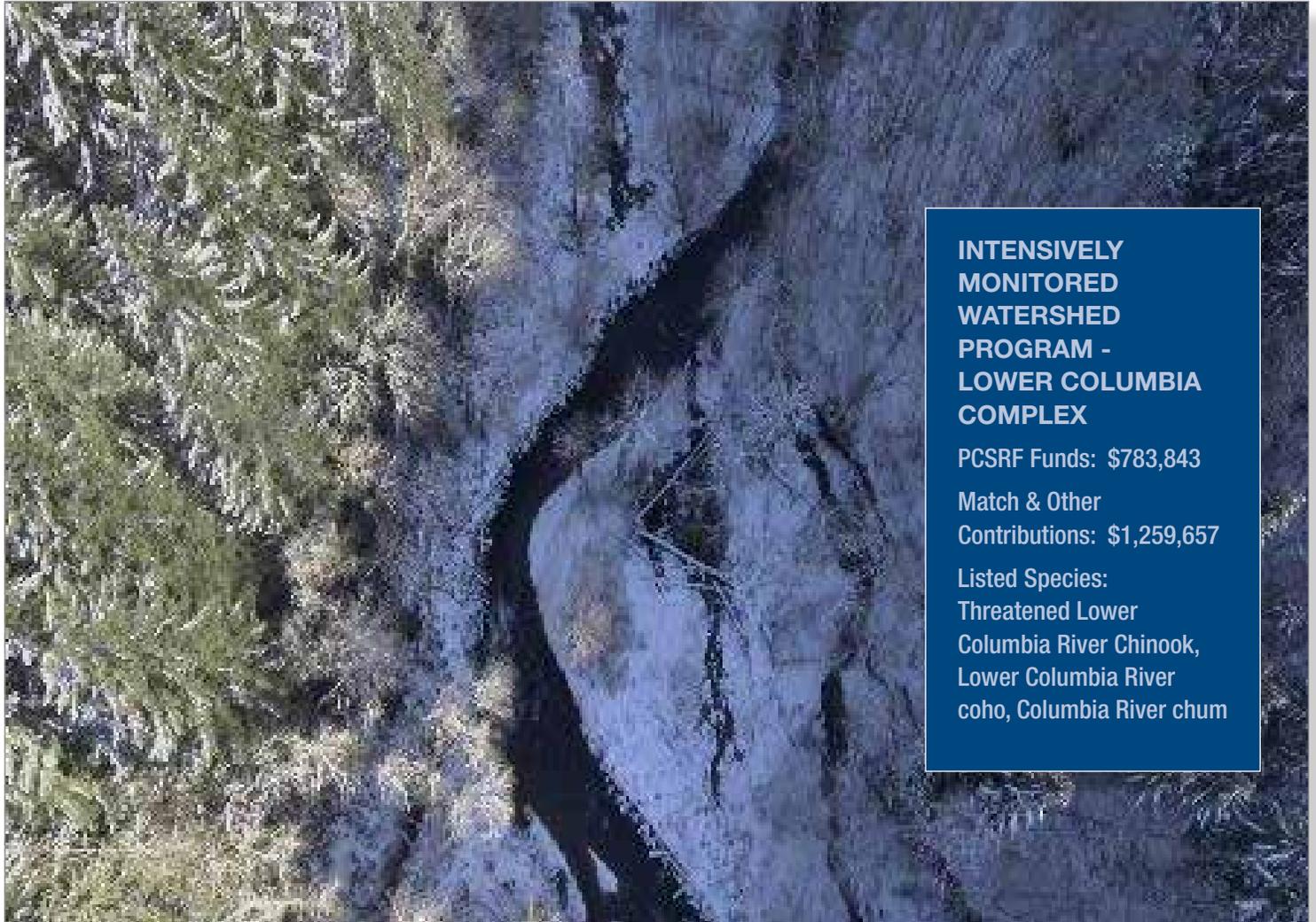
Right: Aerial view of wood placement at the confluence of Cameron and Abernathy Creeks, in the winter after construction.
 Photo: Inter-Fluve, Inc.

The projects were designed to address factors limiting salmon productivity (e.g., lack of off-channel rearing habitat; simplified habitat; and low winter survival) by reconnecting side channels and floodplains and installing log structures on over seven miles of stream. Several more habitat restoration projects are planned.

IMW researchers are collecting and analyzing post-implementation data to quantify habitat changes and fish response. The results are beginning to take shape with shifts in fish behavior observed. A statistical analysis suggests that five years of post-project data should show changes to salmon populations in the watershed in response to habitat restoration projects. Stay tuned.

Project	Construction Year	Project Cost
Two Bridges	2012	\$574,300
5A Side Channel	2014	\$112,600
Sitka Spruce Site	2015	\$184,400
Wisconsin Site	2016	\$321,800
Midway Site	2016	\$305,000
Cameron Site	2016	\$432,900
Headwaters Site Design	2016	\$112,500
Total		\$2,043,500





**INTENSIVELY
MONITORED
WATERSHED
PROGRAM -
LOWER COLUMBIA
COMPLEX**

PCSRF Funds: \$783,843
Match & Other
Contributions: \$1,259,657

Listed Species:
Threatened Lower
Columbia River Chinook,
Lower Columbia River
coho, Columbia River chum



*At top: Aerial view of valley bottom with creek meandering across a former road bed. Active side channels created by the project are visible on both sides of the main channel.
Photo: Inter-Fluve Inc.*

*Above: Channel-spanning logjam secured by Manila rope in Abernathy Creek one month after construction.
Photo: Eli Asher, Cowlitz Indian Tribe*



*Above: Aerial view of re-meandered segment of Abernathy Creek showing off-channel habitat and newly formed channel-spanning log jam, four years post-construction.
Photo: Inter-Fluve, Inc.*

Pole Creek Project

Historically, water withdrawal from multiple diversions from Pole Creek resulted in lengthy segments of stream that were completely dry during the irrigation season. In 1982, Salmon Falls Land and Livestock consolidated their diversions into one diversion and converted to sprinkler irrigation. However, the minimal flows generally remained insufficient in quality or quantity for anadromous salmonids.

By utilizing a combination of partners and funding the Pole Creek Project implemented several actions to enhance instream flows.

- Installed a new pipeline and sprinkler irrigation equipment that reduced the overall amount of water previously required. As a result, irrigation equipment no longer rolls across Pole Creek during operation.
- Installed two ground water wells to supplement the surface water source.
- Removed two fish barriers (one culvert and one diversion).
- Installed an irrigation diversion with a fish screen to keep fish in the stream.
- Extended commercial electrical power to run wells and irrigation system. This replaced a hydro-electric plant that required 6 cubic feet per second (cfs) of water for operation.
- Replaced an old electric fence with a new permanent riparian fence to protect streambanks and riparian vegetation from livestock damage.
- Installed an off-channel livestock-water system and closed the existing livestock crossings to reduce bank erosion and instream disturbance from livestock.

This project facilitates a restored hydrologic cycle within Pole Creek, with near natural peak and base flows. Most notably, during the late summer irrigation period, instream flow has been increased by 50%. Now 75% of the flow remains in Pole Creek where previously only 25% remained. This flow increase extends 4.5 miles down the length of Pole Creek, and substantially adds flows to another 8 miles of the Salmon River. When combined with the other ongoing or anticipated objectives on both public and private lands within Pole Creek, this change in minimum flow provides enhanced access to 7 miles of critical habitat upstream of the Pole Creek diversion.

Implementation of this project required the close collaboration and shared resources of a dozen partners, and represents the broad-based partnerships necessary to implement successful restoration projects.



*Above, right: New fish screen.
Source: Life on the Range
video produced by the
Idaho Rangeland Resource
Commission*

*Right: Pole Creek on Salmon
Falls Ranch, after restoration.
Irrigation equipment no
longer crosses Pole Creek.
Source: Life on the Range
video produced by the
Idaho Rangeland Resource
Commission*





*Left: Restored flow in Lower Pole Creek.
Photo: Steve Stuebner*

Below, left: New off-channel water system for livestock.

Source: Life on the Range video produced by the Idaho Rangeland Resource Commission



Pole Creek project partners:

- Bonneville Power Administration
- Custer Soil and Water Conservation District
- Idaho Department of Fish and Game
- Idaho Department of Water Resources
- Idaho Governor's Office of Species Conservation
- Idaho Department of Transportation
- Natural Resources Conservation Service
- NOAA Fisheries
- Salmon Falls Land and Livestock (Landowners)

POLE CREEK PROJECT

PCSRF Funds: \$850,000

Match & Other Contributions: \$1,662,850

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

Watch a video about the Pole Creek Project at:

<https://youtu.be/n1ighBPnjd0>

Mill Creek at Potter's Ponds

PCSRF funds have played an integral role in meeting the salmon recovery priorities of the Confederated Tribes of the Warm Springs Reservation of Oregon (Warm Springs Tribes) and benefiting the local economy.

With leveraged funding from the Oregon Watershed Enhancement Board, Pelton Round-Butte Fund, and Bonneville Power Administration, PCSRF funds supported the design and restoration of two miles of Mill Creek at the former Potter's Ponds. In the 1950's, construction of these log storage ponds interrupted natural processes and reduced rearing and spawning habitat for listed summer steelhead and non-listed Chinook salmon.

The Potter's Pond project was the result of four separate projects that addressed key factors limiting steelhead and Chinook productivity. The removal of lateral berms and floodplain grading improved the creek's connectivity to the floodplain. Reconfiguring the main channel, creating meanders and pool habitat, constructing side channels and alcoves, and placing spawning substrate, large wood, and boulders improved instream habitat complexity and diversity in the stream reach. Grading the floodplain also expanded existing wetland areas. Planting of native vegetation improved riparian habitats and controlled erosion at the site.

All life stages of salmon benefited from this project. Direct benefits include an expected increase in overall freshwater survival and growth by providing diverse habitats. In addition, the project restores self-sustaining fluvial processes (e.g., floodplain connection, dense riparian vegetation, wood recruitment) that will continue to benefit salmon by creating and maintaining complex habitats.

In 1855, the United States entered into a treaty with the Warm Springs Tribes and pledged to honor their ancestral rights, including the right to fish and hunt in all of their usual and accustomed places. Those rights are at the foundation of Tribal subsistence and culture. The Potter's Pond project contributes to ensuring sustainable, harvestable salmon populations exist for Tribal member use.

Additional benefits come in the form of job creation, including local economic benefits from the use of central Oregon contractors and locally sourced native plants.



Above: Channelized main channel before restoration.

Below: Re-meandered main channel after restoration.

Photos: Warm Springs Tribes' Branch of Natural Resources - Fisheries Department



Below: Beaver activity at project site after restoration.

Photo: Warm Springs Tribes' Branch of Natural Resources - Fisheries Department



MILL CREEK AT POTTER'S PONDS

PCSRF Funds: \$574,600

Match & Other Contributions: \$996,087

Listed Species: Threatened Middle Columbia River steelhead



*Potter's Ponds in operation in 1966. Note the simplified stream channel routed around the impoundments.
Image: Bureau of Indian Affairs*



*Potter's Ponds after restoration, 2015.
Photo: Warm Springs Tribes' Branch of Natural Resources - Fisheries Department*

*Below: Potter's Ponds after restoration, 2015.
Photo: Warm Springs Tribes' Branch of Natural Resources - Fisheries Department*



Pine Gulch Creek Instream Flow Enhancement Project

The Pine Gulch Creek Instream Flow Enhancement Project provides benefits not only toward the recovery of a listed coho salmon population on the brink of extirpation, but also by helping make a local community more resilient to drought. In a watershed north of San Francisco that is seeing an ever increasing demand for water resources, this project demonstrates that the farmer and fish can successfully co-exist. Pine Gulch Creek is the principal source of fresh water to Bolinas Lagoon and contributes about one half of the Lagoon's freshwater inflow. This flow is especially important to coho salmon in the summer when the remaining tributary streams dry up or are reduced to very low flows.

The Pine Gulch Creek watershed provides habitat for federally listed Central California Coast coho salmon and California Coast steelhead trout. Coho populations were self-sustaining until the 1970s. Recent surveys have affirmed the presence of coho salmon and steelhead in the watershed. Sedimentation, lack of pool shelter, and water quantity are the factors limiting coho salmon production.

This project constructed four off-stream water storage ponds and installed screened intake structures so farmers could use winter water diversions to fill the storage ponds and no longer divert water from the stream during the summer low-flow conditions. The amounts of water withdrawn will be monitored and comply with the

water right permits granted by the State Water Resources Control Board.

Moving water withdrawals to winter when stream flows are greater allows more water to remain in Pine Gulch Creek during the low-flow period of the year without appreciably altering peak flows. This restores a more natural hydrograph to the creek, benefits coho salmon by improving juvenile rearing conditions during the critical summer months, and still provides farmers the water they need. This project represents a win for salmon, and a win for the community.



Above right: Pine Gulch Creek downstream of Pond 2 diversion point, February 25, 2015. Photo: Elise Suronen, Marin Resource Conservation District

Right: Pine Gulch Creek. Photo: Elise Suronen, Marin Resource Conservation District



PINE GULCH CREEK INSTREAM FLOW ENHANCEMENT PROJECT

PCSRF Funds:
\$2,452,500

Match & Other Contributions:
\$86,400

Listed Species:
Endangered Central California Coast coho



*Pond 3B before construction.
Photo: Elise Suronen, Marin
Resource Conservation
District*



*Pond 3B after construction.
Photo: Elise Suronen, Marin
Resource Conservation
District*



*Pond 3B looking northwest
from photo point 3, February
10, 2016.
Photo: Elise Suronen, Marin
Resource Conservation
District*



*Group Volunteer Meeting.
Photo: Casey Del
Real, Marine Resource
Conservation District*



*Fresh Run Farm field.
Photo: Marin Organic*

PCSRF LESSONS LEARNED

- The continued ability to support projects and programs through all stages of a salmon's life cycle is critical to the success of salmon conservation and recovery.
- The development and implementation of a robust performance reporting system, as well as effective monitoring approaches, are critical to assessing progress towards goals.
- Success involves securing willing partners and local landowners, which requires concerted investments in local coordination, planning, and technical assistance.
- Projects that address habitat factors limiting salmon production ensure program funds efficiently maximize their benefit to salmon.
- Projects that restore natural ecosystem processes provide lasting benefits to salmon and local communities.
- As observed by long-term monitoring, cumulative project investments over time have resulted in sustained and increased returns of salmonids and expanded distribution into habitats that populations have not occupied for decades.
- PCSRF's monitoring and assessment efforts are showing that PCSRF is making a difference in habitat and species recovery.



Mill Canyon. Photo: Jeremy Notch, NOAA

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National Marine Fisheries Service

1315 East-West Highway
SSMC 3, F/PR
Silver Spring, Maryland 20910
www.nmfs.noaa.gov

Copies of this Report may be obtained by contacting:

Barry Thom
National Marine Fisheries Service
West Coast Region
1201 NE Lloyd Blvd., Suite 1100
Portland, Oregon 97232
barry.thom@noaa.gov

An online version of this Report is available at: <http://www.westcoast.fisheries.noaa.gov>