



**NOAA
FISHERIES**

Pacific Coastal Salmon Recovery Fund FY 2020 Report to Congress

TABLE OF CONTENTS

I. Executive Summary.....	1
II. Investments in Reversing Species' Declines.....	2
III. Measuring Progress and Tracking Funding.....	4
IV. First Harvest in 40 Years: Oregon's Grande Ronde Subbasin.....	5
V. Program Spotlight: Intensively Monitored Watersheds: Progress Towards achieving Salmon Recovery.....	5
PCSRF at Work: Featured Projects.....	6

Cover: Catherine Creek, Southern Cross Project, River Mile 44 near Union, Oregon. Post-construction multi-threaded channel looking upstream. Photo: Connor Stone, Grande Ronde Model Watershed.

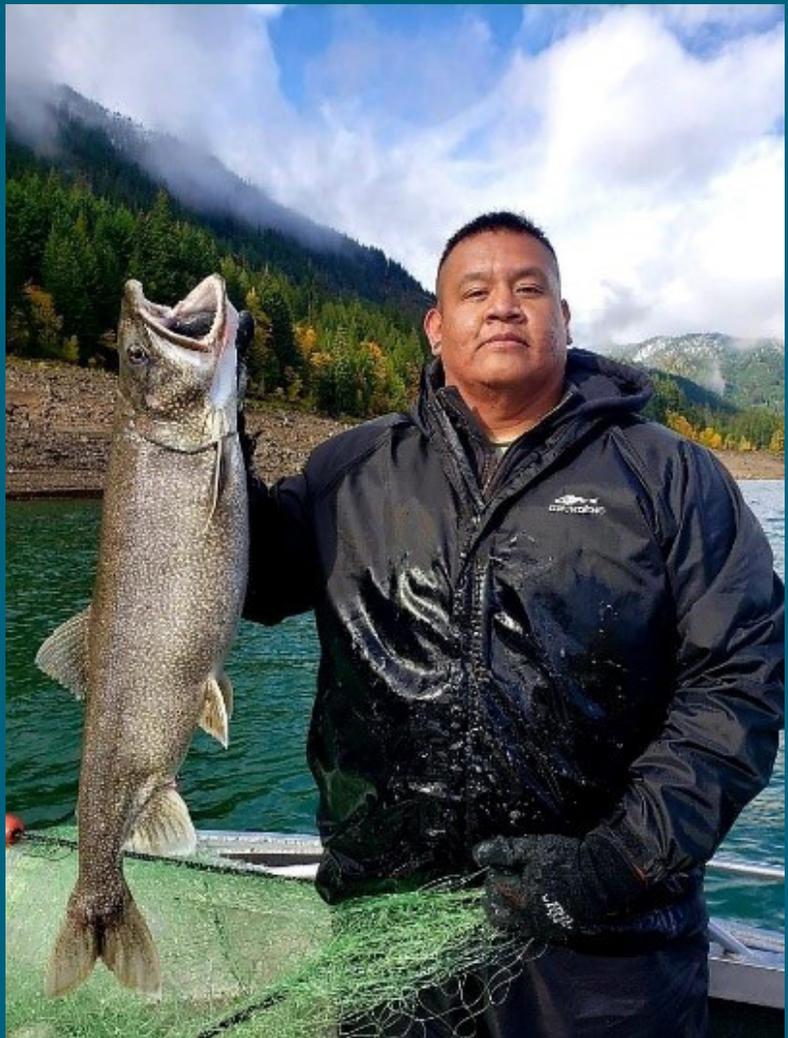


Juvenile coho salmon. Photo: California Department of Fish and Wildlife.

I. Executive Summary

Since 2000, Congress has provided funding for the protection, conservation, and restoration of Pacific salmon.¹ Through the Pacific Coastal Salmon Recovery Fund (PCSRF), the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) distributes those funds to states and tribes through competitive grants. Eligible projects include all phases of habitat restoration and protection activities that contribute to recovering Pacific salmon listed under the Endangered Species Act (ESA) or supporting Pacific salmon and steelhead species important to tribal treaty fishing rights and subsistence fishing.

This Fiscal Year (FY) 2020 report to Congress documents the program's contributions to Pacific salmon and steelhead restoration over the past 21 years (2000-2020). This report summarizes program-wide accomplishments, highlights the value of restoration work to the economies of local communities, and features projects that demonstrate the geographic breadth and extent of work completed to improve salmon habitat, maintain healthy salmon populations, and recover Pacific salmon and steelhead. The PCSRF program is vital to supporting state- and tribal-led restoration efforts and in fostering associated local partnerships to advance salmon recovery.



Kevin Seger, Yakama Nation Tribal Member and Sockeye Restoration Fish Technician holds up a targeted invasive Mackinaw species (Lake Trout). This non-native fish was originally introduced into Cle Elum Lake in 1920. Since 2013, the Yakama Nation began an aggressive gillnetting approach to eradicate this apex-predator from the lake. Photo: Brian Paul Saluskin, Yakama Nation Fish Passage Biologist III.

II. Investments in Reversing Species' Declines

Today, 28 salmon species are at risk or likely to become at risk of extinction on the West Coast and are protected under the ESA. Many other populations that are not listed under the ESA have experienced substantial reductions from their historic abundance levels and face a multitude of threats including climate change. Salmon are foundational to the region's ecology, and Chinook salmon, in particular, are important prey for endangered Southern Resident killer whales. Recovering abundant native salmon populations will also benefit communities through renewed commercial and recreational fishing opportunities and associated jobs. Many of these species are of profound cultural importance to West Coast Native American tribes, and the species' recovery is critical to meeting Federal obligations as stewards of tribal treaty and trust resources and to supporting tribal treaty fishing and subsistence fishing traditions.

In 2000, Congress established 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 NMFS administers funding to states and tribes to protect, conserve, and recover these populations (Exhibit 1).

Investing in threatened, endangered, and at-risk West Coast salmon populations provides public and ecosystem benefits. A recent study found that the public values salmon recovery and conservation efforts. Using a set of realistic habitat restoration scenarios, the study found that the average household was willing to pay and support salmon recovery even if recovery is incremental and slow.² Salmon habitat restoration and monitoring projects continue to be key contributors in providing jobs, income, recreation and tourism opportunities, and public value to local and regional economies. These projects also support species that are culturally significant to tribes along the West Coast. Several studies indicate that a \$1.0 million investment in watershed restoration, in which PCSRF and state matching funds play a significant role, creates between 13 and 32 jobs and between \$2.2 and \$3.4 million in economic activity.^{3,4,5}

A recent report⁶ by American Rivers, ECONorthwest, and Environmental Sciences Associates documents the economic outcomes of urban floodplain restoration (a type of restoration funded by PCSRF) on local and state budgets and tax revenue in Puget Sound.

Nationally, communities have seen substantial economic benefit when they invest in floodplain restoration, through:

- Reduced flood risk and lower flood insurance rates
- Increased property values
- Increased high-value development outside of the floodplain
- Increased jobs and economic activity
- Increased business and employee attraction and retention
- Increased tax revenue

In Puget Sound, floodplain restoration projects contributed:

- \$9.1-\$20.6 million in economic benefits
- \$166,000 -\$1.46 million in ecosystem services
- 24 full-time jobs and \$3.5 million in economic output
- 2:1 return on investment and \$67.3 million in tax revenue

Big Springs Lemhi River Confluence Restoration Phase 1 after construction (October 2019). Photo: Rob Richardson, Rio Applied Science and Engineering.

Since 2000, PCSRF has:



Photo: McKenzie River Watershed Council.



Photo: Kirk Handley, ODFW.

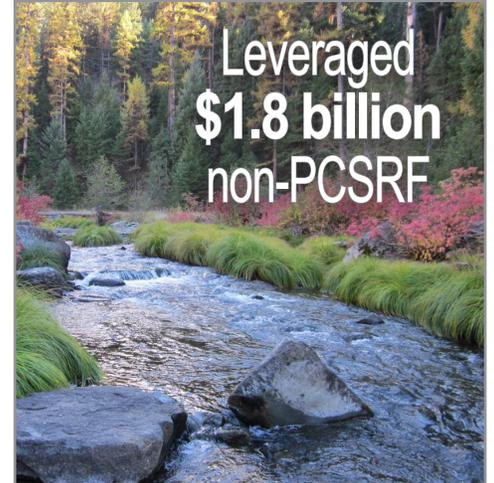


Photo: Kirk Handley, ODFW.



Photo: Connor Stone, Grande Ronde Model Watershed.



Photo: Meta Loftsgaarden, OWEB.

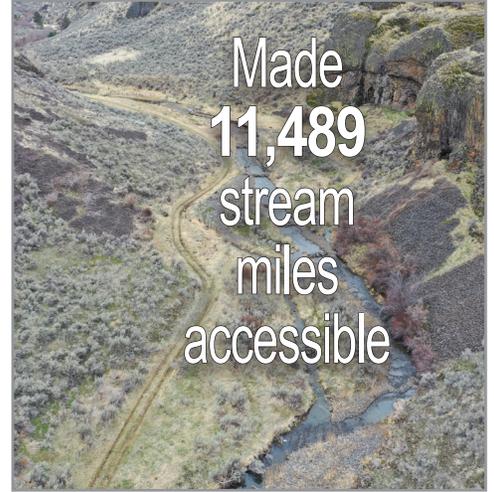
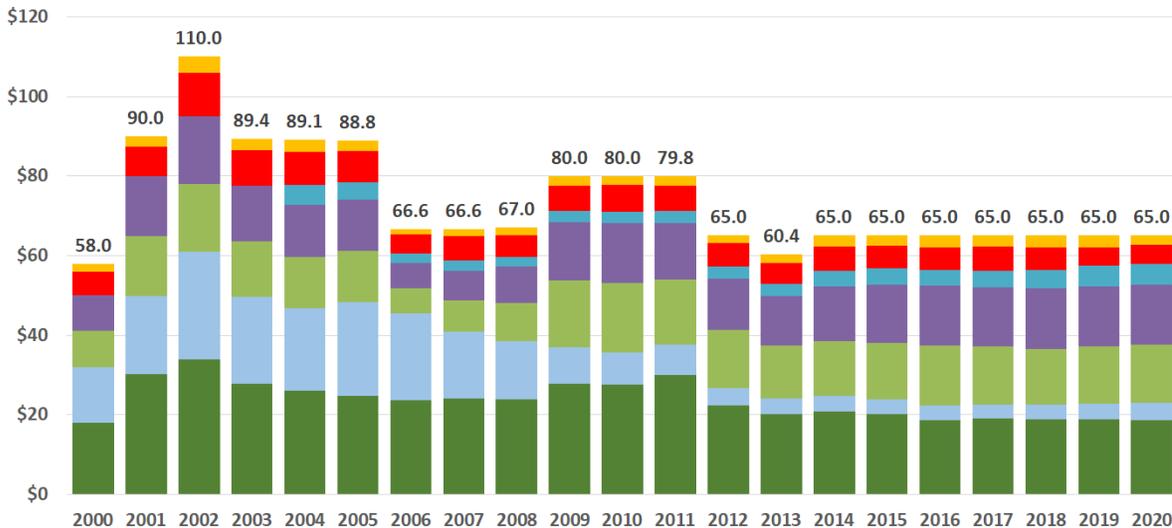


Photo: Gilliam Soil and Water Conservation District.

Millions of Dollars



Total Awards

Columbia River Tribes	\$52.2
Pacific Coastal Tribes	\$135.0
Idaho	\$63.3
Oregon	\$276.7
California	\$283.5
Alaska	\$239.9
Washington	\$495.1
Total	\$1,545.6

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

Due to rounding to the nearest \$0.1M, the total does not equal the sum of the state and tribal award totals.

III. Measuring Progress & Tracking Funding

To ensure we can measure and evaluate progress and outcomes from PCSRF investments, 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: <http://www.webapps.nwfsc.noaa.gov/pcsrp>.

Project Type	Performance Measure	FY2020	FY2000-FY2020
Instream Habitat Projects	Stream Miles Treated	86	3,003
Wetland Habitat Projects	Acres Created	0	2,115
	Acres Treated	33	30,114
Estuarine Habitat Projects	Acres Created	0	2,353
	Acres Treated	1	7,278
Land Acquisition Projects	Acres Acquired or Protected	5,432	281,025
	Stream Bank Miles Acquired or Protected	19	5,280
Riparian Habitat Projects	Stream Miles Treated	1,300	13,440
	Acres Treated	14,705	148,652
Upland Habitat Projects	Acres Treated	11,062	667,696
Fish Passage Projects	Number of Barriers Removed	81	3,700
	Stream Miles Opened	275	11,489
	Number of Fish Screens Installed	23	1,994
Hatchery Fish Enhancement Projects	Number of Fish Marked for Management Strategies	501,656	373,599,148

Project Type	Performance Measure	FY2020	FY2000-FY2020
Research, Monitoring & Evaluation Projects	Miles of Stream Monitored	18,714	563,464

Exhibit 2: Summary of PCSRF Program-wide Performance Measures, FY 2000-2020

Reflects annual and accumulated totals at the time the database was queried for this report (November 30, 2020).

Exhibit 3 highlights funding allocations by project category. Since its inception, habitat restoration and monitoring have remained central emphases of the PCSRF program. 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 ESA-listed salmon over time. PCSRF funds continue to play a key role in advancing salmon recovery and improving the status of vulnerable populations in the face of climate change and other threats.

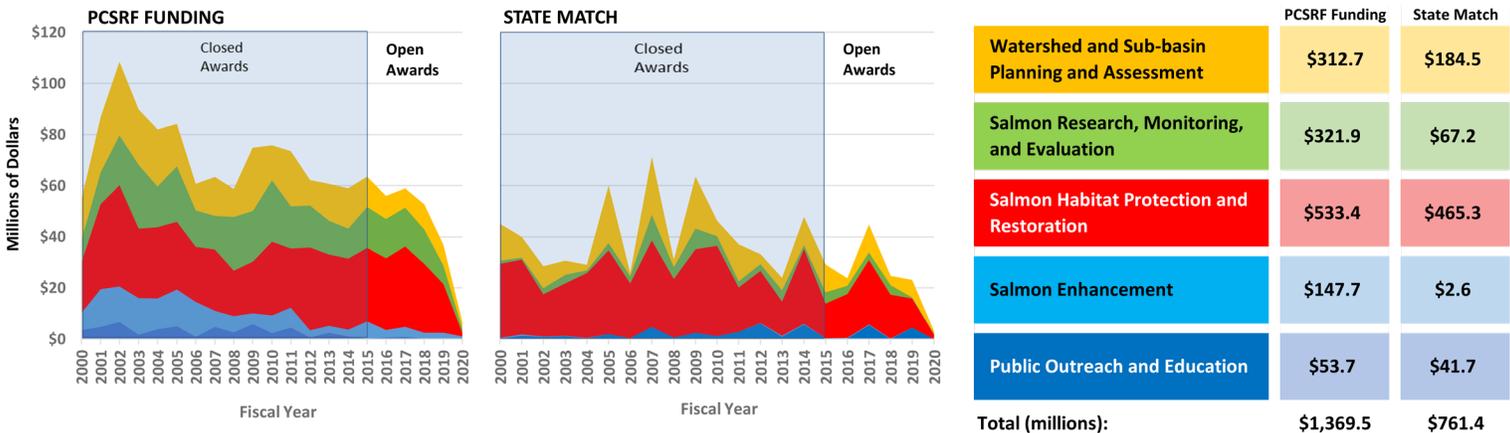


Exhibit 3: PCSRF and State Funding Allocations by Project Type

Due to rounding to the nearest \$0.1M, the totals for the PCSRF Funding and State Match columns do not equal the sum of the categories. Additionally, the sum of total funding allocated across project types does not equal the total PCSRF awards presented in Exhibit 1. Not all awarded funds have been allocated to projects for the more recent fiscal years (Open Awards). Most awards more than five years old have expended available funds (Closed Awards).

IV. First Harvest in 40 Years: Oregon's Grande Ronde Subbasin

Since 1986, coho salmon populations have been extirpated from the Grande Ronde subbasin of the lower Snake River. Poorly designed hatchery programs, in-basin habitat changes, construction of the Columbia River hydropower system, and historical overfishing contributed to the extirpation of coho salmon in the Grande Ronde subbasin. Historically, the Grande Ronde subbasin and its tributaries supported fisheries that were an important part of tribal cultures and economies.

Since 2017, PCSRF has contributed over \$1.2 million to the Nez Perce Tribe's coho salmon reintroduction program in the Lostine River with the goal of restoring Snake River coho salmon populations to levels of abundance and productivity sufficient to support a sustainable run capable of an annual harvest within the Grande Ronde subbasin.

In addition to the reintroduction efforts, PCSRF has partially funded ongoing habitat improvement efforts implemented by the State of Oregon, the Confederated Tribes of the Umatilla Reservation, and other partners within the subbasin to further support a healthy coho salmon population. Habitat improvements have included:

- Improving forest health through proper forest management.
- Improving irrigation and water quality.
- Adding large wood to tributaries to increase floodplain interaction and habitat complexity.
- Constructing multi-connected side channels to promote year-round juvenile rearing and potential spawning habitats.
- Planting native vegetation along the riverbanks to reduce excess sediment entering the streams and to provide shade to reduce stream temperatures.

As a result of reintroductions and habitat improvements by the Confederated Tribes of the Umatilla Reservation, the Nez Perce Tribe, and the State of Oregon, coho salmon are returning to the Grande Ronde subbasin of the lower Snake River basin in record numbers. More than 5,000 adult coho salmon have passed Bonneville Dam on their way to the Grande Ronde subbasin in 2020, allowing the first recreational fishery to open in four decades since they were extirpated (B. Johnson, personal communication, November 6, 2020).

Because of this program, coho salmon are once again spawning in the wild, and tribal members are exercising their treaty reserved right to fish.

V. Program Spotlight: Intensively Monitored Watersheds: Progress Towards Achieving Salmon Recovery

In the past two decades, PCSRF has contributed \$24.0 million to Intensively Monitored Watersheds (IMW) across the Pacific Northwest. IMWs are long-term, large-scale research projects designed to gauge the effectiveness of stream habitat restoration for native salmon and steelhead. Recently, these IMWs were evaluated to determine whether habitat restoration has improved juvenile salmon survival and led to an increase in adult returns.

A 2019 report⁷ found that the majority of IMWs demonstrated a positive fish response even though most are still in early phases of habitat restoration and monitoring. Twelve of 16 IMWs reported increases in juvenile salmon and four reported significant increases in adult salmon returns due to the removal of barriers. Project types that have demonstrated short-term significant benefits of increased spawning distribution and juvenile life-history diversity include floodplain and side-channel connectivity projects and instream large wood placement projects. These project types contribute to habitat diversity, which is a common limiting factor for many populations of salmon and steelhead.



Idaho Fish & Game and Biomark crew conducting mark-recapture electrofishing survey in the Upper Lemhi River. Photo: Stacey Feecken, Fisheries Biologist, Idaho Fish and Game.

Watershed-scale improvements in habitat require time, effort, and community support. Watersheds have been degraded for over a century, and it will take sustained investments across a broad geography and over many decades to recover salmon populations. Restoring a minimum of 20 percent of a watershed is needed to result in a noticeable biological response.⁸ However, the short-term positive responses in natural habitat processes and salmon survival observed through IMWs suggest that future successes will continue to build upon current and previous restoration efforts.

PCSRF at Work: Featured Projects



ALASKA

Project: Sustaining Salmon Populations in a Warming Climate

PCSRF Funds: \$93,769

Matching & Other Funds: \$32,820

Targeted Species: Sockeye, Chinook, Chum, Coho, Pink Salmon, Steelhead (non-ESA listed species)



CALIFORNIA

Project: Mill Creek Dam Fish Passage Project

PCSRF Funds: \$513,339

NOAA Restoration Center: \$700,000

Matching & Other Funds: \$263,027

Targeted Species: Central California Coast Coho (E)



IDAHO

Project: Big Springs Lemhi River Confluence Restoration (Phases 1 -3)

PCSRF Funds: \$795,116

Matching & Other Funds: \$457,973

Targeted Species: Snake River Basin Steelhead (T), Snake River Spring/Summer-run Chinook Salmon (T)



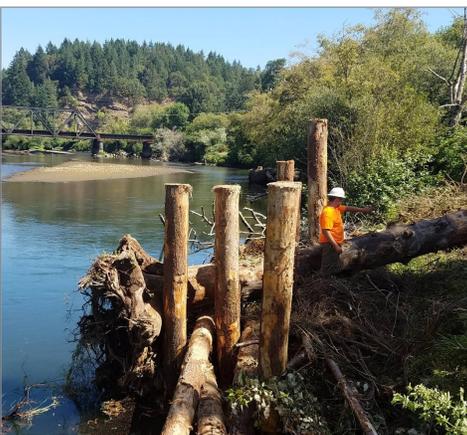
OREGON

Project: Project: Bird Track Springs Fish Habitat Restoration

PCSRF Funds: \$506,964

Matching & Other Funds: \$3,332,452

Targeted Species: Snake River Basin Steelhead (T), Snake River Spring/Summer-run Chinook Salmon (T)



WASHINGTON

Project: Kalama 1A Tidal Restoration

PCSRF Funds: \$325,477

Matching & Other Funds: \$80,253

Targeted Species: Lower Columbia River Chinook Salmon (T), Lower Columbia River Coho Salmon (T), and Lower Columbia River Steelhead (T)

(T) denotes species listed as "threatened" and (E) denotes species listed as "endangered" under the ESA.

For additional project information: Visit FY 2020 Featured Projects at
<https://storymaps.arcgis.com/stories/d83ea6d152364794b11ac0507951d7d9>

Footnotes and References

- ¹ In this report, the reference to 28 “species listed under the Endangered Species Act” includes evolutionarily significant units and distinct population segments that are listed as threatened or endangered and the term “salmon” is inclusive of both salmon and steelhead.
- ² Lewis, D.J., S.J. Dundas, D.M. Kling, D.K. Lew, S.D. Hacker (2019). The non-market benefits of early and partial gains in managing threatened salmon. PLoS ONE:14(8):e0220260 (<https://doi.org/10.1371/journal.pone.0220260>).
- ³ Cullinane Thomas, C., C. Huber, K. Skrabis, and J. Sidon. 2016. Estimating the economic impacts of ecosystem restoration – Methods and case studies. U.S. Geological Survey Open-File Report 2016-1016, 98 p. (<http://dx.doi.org/10.3133/ofr20161016>).
- ⁴ Edwards, P.E.T., A.E. Sutton-Grier and C.E. Coyle. 2013. Investing in nature: Restoring coastal habitat blue infrastructure and green job creation. Marine Policy 38:65-71.
- ⁵ Nielsen-Pincus, M., and C. Moseley. 2013. The Economic and Employment Impacts of Forests and Watershed Restoration. Restoration Ecology 21 (2), 207-214.
- ⁶ Parsons, B., L. Marshall, M. Buckley, and J. Loos. 2020. Economic Outcomes of Urban Floodplain Restoration: Implications for Puget Sound. June 2020. <https://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2020/06/05111836/AR-Economic-Outcomes-Report.pdf>
- ⁷ Haskell, C.A., A.L. Puls, K. Griswold. 2019. Key Findings and Lessons Learned from Pacific Northwest Intensively Monitored Watersheds. Pacific Northwest Aquatic Monitoring Partnership. 63 pages. Available at <https://www.pnamp.org/document/15052>.
- ⁸ Roni, P., G. Pess, T. Beechie, and S. Morley. 2010. Estimating Changes in Coho Salmon and Steelhead Abundance from Watershed Restoration: How Much Restoration is Needed to Measurably Increase Smolt Production? North American Journal of Fisheries Management. 30.1469-1484.10.1577/M09-162.1.



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