Pacific Coastal Salmon Recovery Fund

NOAA FISHERIES

FY 2021 Report to Congress

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Cover: Nisqually Estuary, Puget Sound, WA. Photo: Shutterstock
Below: Canoe in the slough on Lummi Island, WA. Photo: Shutterstock

I. Executive Summary

Since 2000, Congress has provided funding for the protection, conservation, and restoration of Pacific salmon.[1] The Pacific Coastal Salmon Recovery Fund (PCSRF), administered by the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), distributes 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 and trust fishing rights and native subsistence fishing.

This Fiscal Year (FY) 2021 report to Congress documents the program's contributions to Pacific salmon and steelhead restoration over the past 22 years (2000-2021). 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.

Below: Strips of Chinook salmon hang in a Kuskokwim River smokehouse. Photo: Debbie Maas, Alaska Department of Fish & Game

II. Investments in Reversing Species' Declines

Today, 28 ESA-listed salmon species are at risk or likely to become at risk of extinction on the West Coast. Many other populations not listed under the ESA have experienced substantial reductions from their historic abundance levels and face a multitude of threats including climate change. Pacific 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 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 native 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 service 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 for and support salmon recovery even if recovery is incremental and slow.[2] Salmon habitat restoration and monitoring projects continue to be key contributors in adding public value to local and regional economies. They provide jobs and revenue, as well as recreation and tourism opportunities. 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]

Furthermore, habitat restoration projects exemplify ecosystem services and mitigate forces against natural disasters and climate change. For example, floodplain restoration reduces flood risk and can lower flood insurance rates.[6] Planting native trees and vegetation naturally sequesters carbon and stores it in plants and soils, increasing nature's carbon storage. The greatest socio-economic implication of salmon recovery is in securing healthy ecosystems that ultimately provide vast public and private benefits for current and future generations.

Moreover, these projects support species that are culturally significant to West Coast tribes. For example, salmon are a culturally important first food source for the Cow Creek Umpqua (Nahánk^{h}uotana) people. The significance of returning salmon to the Tribe's Ancestral Homelands is tied to their cultural and spiritual identity. The Tribe feels it is their responsibility to protect and restore salmon (p^{h}ím). Salmon are their respected relatives and a part of their spiritual and cultural lifeways.

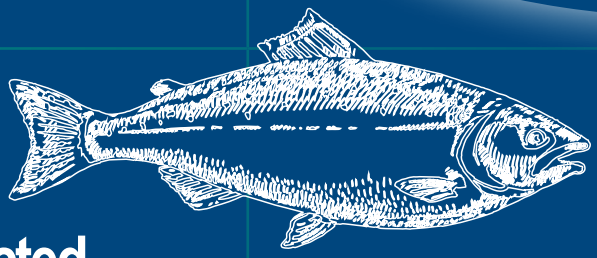
Above: Taking measurements before construction. Photo: Travis Mackie, CCBUTI. Left: Post construction culvert replacement. Photo: Taylor Allen, CCBUTI

Since 2000, PCSRF has:

Awarded $73.0 million (average/year)

Received $1.6 billion in appropriations

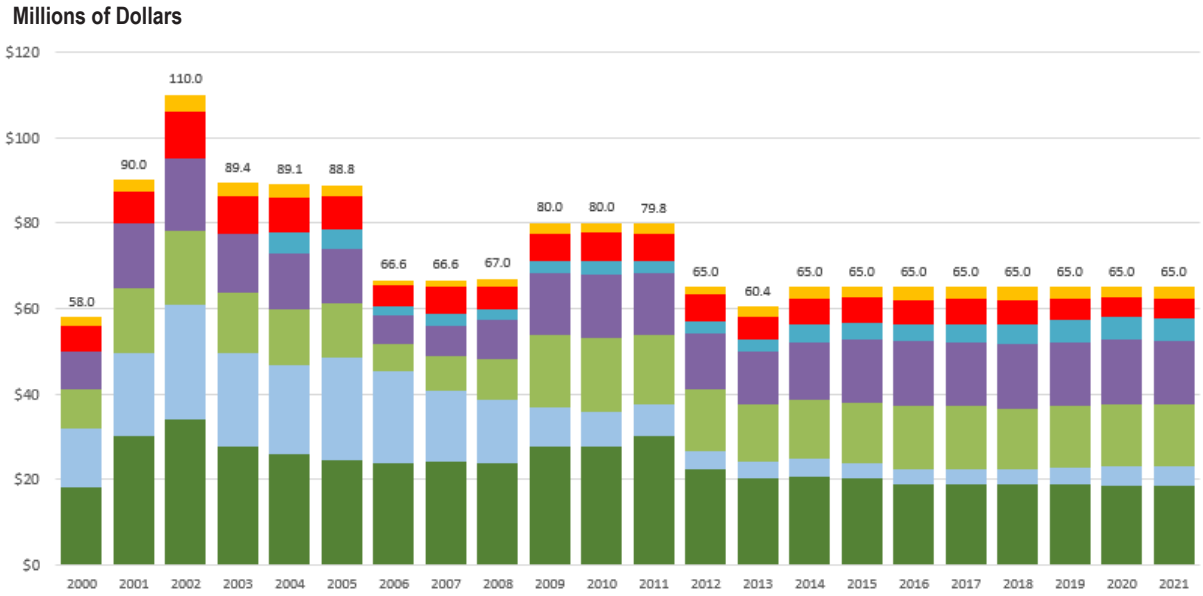
Leveraged $1.8 billion non-PCSRF contributions



Made 11,694 stream miles accessible

Protected, restored, and created 1,168,765 acres of salmon habitat

Assisted partners to leverage resources to implement 15,060 projects



Total Awards	
Columbia River Tribes	$54.9
Pacific Coastal Tribes	$139.7
Idaho	$68.6
Oregon	$291.6
California	$297.9
Alaska	$244.3
Washington	$513.7
Total	$ 1,610.6

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

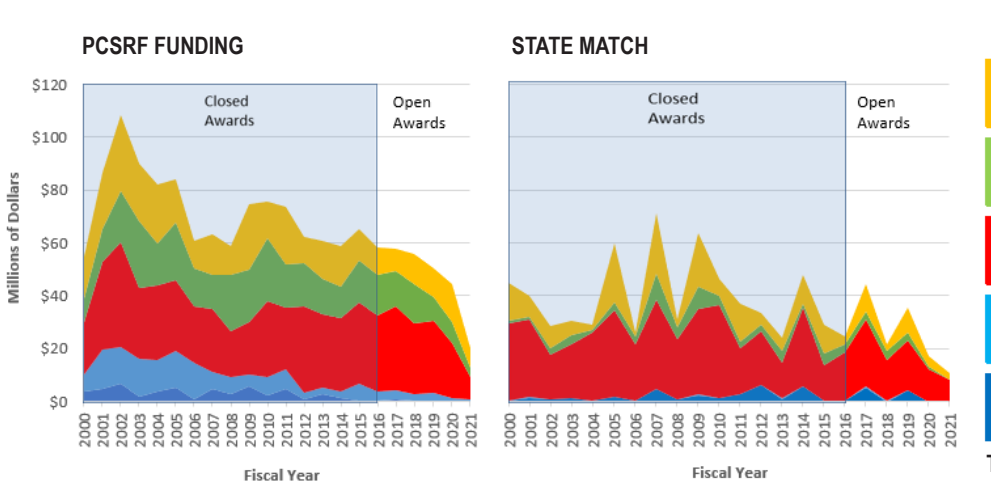
To ensure we can measure and evaluate progress and outcomes with PCSRF funds, all PCSRF recipients report on a standard list of metrics for all projects (Exhibit 2). In aggregate, these metrics provide estimates of program-wide accomplishments funded with PCSRF, state-matching, and other partner funds. PCSRF's project and performance metrics database is available online at: http://www.webapps.nwfsc.noaa.gov/pcsrf.

Project Type	Performance Measure	FY2021	FY2000-FY2021
Instream Habitat Projects	Stream Miles Treated	104	3,107
Wetland Habitat Projects	Acres Created	1	2,116
	Acres Treated	34	30,148
Estuarine Habitat Projects	Acres Created	0	2,353
	Acres Treated	123	7,401
Land Acquisition Projects	Acres Acquired or Protected	7,702	288,727
	Stream Bank Miles Acquired or Protected	20	5,300
Riparian Habitat Projects	Stream Miles Treated	102	13,542
	Acres Treated	2,174	150,826
Upland Habitat Projects	Acres Treated	4,432	672,128
Fish Passage Projects	Number of Barriers Removed	91	3,791
	Stream Miles Opened	205	11,694
	Number of Fish Screens Installed	2	1,996
Hatchery Fish Enhancement Projects	Number of Fish Marked for Management Strategies	10,215,259	383,814,407
Research, Monitoring & Evaluation Projects	Miles of Stream Monitored	8,374	571,838

Exhibit 2: Summary of PCSRF Program-wide Performance Measures, FY 2000-2021

Reflects annual and accumulated totals at the time the database was queried for this report (November 29, 2021).

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.



	PCSRF Funding	State Match
Watershed and Sub-basin Planning and Assessment	$337.9	$191.7
Salmon Research, Monitoring, and Evaluation	$332.8	$70.0
Salmon Habitat Protection and Restoration	$572.8	$490.1
Salmon Enhancement	$149.7	$2.6
Public Outreach and Education	$53.3	$41.7
Total (millions):	**$1,446.5**	**$796.2**

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 5 years old have expended available funds (Closed Awards).

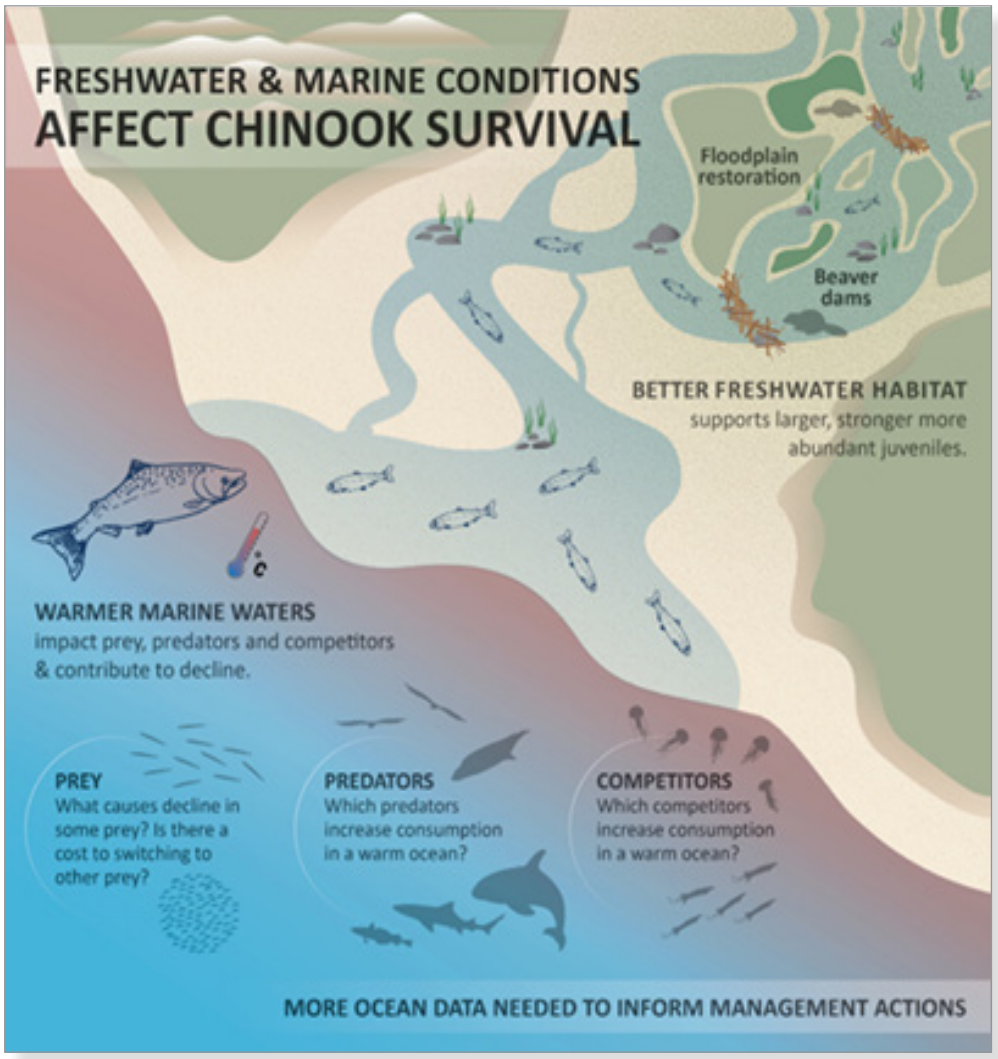
IV. Habitat Offers Hope

At every stage within the life cycles of Pacific salmon, it is a fight for survival that is becoming increasingly difficult with warming ocean conditions. A recent study from the NOAA's Northwest Fisheries Science Center shows that increasing sea surface temperatures in the ocean are decreasing the number of salmon that return to freshwater to spawn (Figure 1).

Even the largest populations of Chinook salmon are being challenged as oceans warm. It is likely that salmon will continue to experience increasingly lower survival rates while living in the ocean, and only drastic increases in total surviving juvenile salmon will help mitigate the predicted impacts from climate change.

Though these data are alarming, there is hope in reviving population numbers through habitat restoration and improvements to freshwater and estuarine environments. Existing salmon habitat can no longer support as many juvenile fish as it previously did. One strategy to improve salmon productivity is to create new high-quality habitat for juvenile salmon by reconnecting floodplains and reducing habitat fragmentation. In Oregon, the Salmon River estuary showed a significant increase in Chinook and coho salmon after more than 60 percent of the dikes and tide gates were removed from the tidal marshes within this estuary. While habitat restoration can benefit all size classes of juvenile salmon, they are most beneficial to smaller juveniles (40-60 mm), which are also the most abundant and most likely to reside in these freshwater habitats longer before migrating.

Habitat availability and life-history diversity are both important to the resilience and productivity of salmon populations. Diverse, dynamic habitat is important to Pacific salmon growth and survival. Life-history diversity is important to the resilience and productivity of salmon populations because each life-history type represents a different survival pathway. The stronger and more resilient juvenile salmon are, the more likely they are to survive in the ocean. Increasing the availability of high-quality habitat offers hope for the future of salmon and those that depend on them.



Above: Figure 1. Freshwater and marine conditions and Chinook salmon survival (Crozier, et al. 2021)
Below: Salmon River Estuary. Photo: Carey Smith, Pacific Coast Joint Venture

PCSRF at Work: Featured Projects

ALASKA

Project: Environmental Drivers of Chinook Productivity
PCSRF Funds: $321,568
Matching & Other Funds: $87,500
Targeted Species: Chinook salmon (non-ESA listed species)

CALIFORNIA

Project: Chorro Creek Ecological Reserve Floodplain Restoration
PCSRF Funds: $960,654
Matching & Other Funds: $337,652
Targeted Species: South-Central California Steelhead (T)

IDAHO

Project: Two Mile Meadow Stream and Meadow Restoration
PCSRF Funds: $253,161
Matching & Other Funds: $709,097
Targeted Species: Snake River Basin Steelhead (T)

OREGON

Project: Opal Springs Dam Volitional Fish Passage Project
PCSRF Funds: $2,371,416
Matching & Other Funds: $10,990,032
Targeted Species: Middle Columbia River Steelhead (T)

WASHINGTON

Project: Pilchuck Dam Removal Restoration Project
PCSRF Funds: $169,249
Matching & Other Funds: $1,129,974
Targeted Species: Puget Sound Steelhead (T)
and Puget Sound Chinook salmon (T)

(T) denotes species listed as "threatened" under the ESA

For additional project information: Visit FY 2021 Featured Projects at
www.fisheries.noaa.gov/west-coast/endangered-species-conservation/pacific-coastal-salmon-recovery-fund

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. (www.americanrivers.org/wp-content/uploads/2020/06/ AR-Economic-Outcomes-Report.pdf)

[7] Crozier, L. G., B. J. Burke, B. E. Chasco, D. L. Widener, R. W. Zabel (2021). Climate change threatens Chinook salmon throughout their life cycle. Communications Biology:4 (222): (https://doi.org/10.1038/s42003-021-01734-w).

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