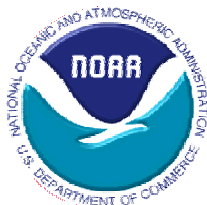


# **REPORT TO CONGRESS**

## **PACIFIC COASTAL SALMON RECOVERY FUND**

**FY 2000 through FY 2002**

**MAY 2003**



**U.S. Department of Commerce**  
**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**  
**NATIONAL MARINE FISHERIES SERVICE**

**Copies of this report may be obtained by contacting:  
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## **INTRODUCTION**

The Pacific Coastal Salmon Recovery Fund (PCSRF) was established by Congress in FY 2000 to provide grants to the States and Tribes to assist state, local, and tribal salmon conservation and recovery efforts. The PCSRF was requested by the Governors of the States of Washington, Oregon, California, and Alaska in response to Endangered Species Act (ESA) listings of west coast salmon and steelhead populations as well as the harvest restrictions placed on Southeast Alaskan fishers through the 1999 Pacific Salmon Treaty Agreement. The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) is the federal agency responsible for implementation of the PCSRF in conjunction with the States and Tribes.

The goal of the Pacific Coastal Salmon Recovery Fund is to make significant contributions to the conservation and restoration of sustainable Pacific salmon runs and the habitats upon which they depend to provide harvestable surpluses to support treaty and non-treaty fishing opportunities consistent with existing law. The PCSRF supplements existing federal, state, and tribal programs to foster development of federal-state-tribal-local partnerships in salmon recovery and conservation and promotes efficiencies and effectiveness in local recovery efforts through enhanced sharing and pooling of capabilities, expertise, and information.

The Pacific Coastal Salmon Recovery Fund is funding many successful projects that are beginning to show direct benefits to anadromous fish, such as salmon using newly opened or improved habitat. A majority of the PCSRF has been spent on habitat restoration activities as this is where the greatest needs exist for salmon recovery. The PCSRF program has also filled a vital need in its initial years by supporting recovery planning and building infrastructure so that the long-term goal of salmon recovery can be achieved. The recovery of sustainable salmon runs will require a substantial investment over several salmon life cycles. The time lag between physical cause and biological effect complicates the detection of changes in salmon abundance and trends. Thus, in most cases, it will be several to many years after restoration and recovery efforts are completed before the accrued benefits to salmon can be documented through increasing trends in salmon abundance. The declines in wild salmon populations have occurred over several decades and it will take many years to restore the productive habitat necessary to recover salmon and steelhead.

This report describes the distribution and use of the PCSRF by the States and Tribes through December 31, 2002, accounting for most, but not all, of PCSRF funding appropriated in FY 2000, FY 2001, and FY 2002. Due to sometimes lengthy time frames in getting these funds committed to specific projects, this report accounts for about 70 percent of the PCSRF funding appropriated through FY 2002. The remainder will be accounted for in future reports. Grant funds are awarded to the States and Tribes as appropriations become available, which normally occurs well after the start of the fiscal year. States and Tribes must prepare grant applications each year and submit them to NMFS. The grant applications then must go through the NOAA grants process, sometimes resulting in issuance of grant awards at the end of the fiscal year. This process is followed by state and tribal processes and cycles for screening and selecting priority projects and distributing the funds. Thus, much of the PCSRF funds are committed to projects in the year following the availability of appropriations. Actual project completion can take several additional years because of construction windows and the seasonal nature of salmonid work.

There are five program objectives for the PCSRF and performance measures are being developed for each. This planning framework will be used both to track annual performance of the program and to provide reporting metrics to assess long-term effectiveness of the program. The PCSRF projects and activities reported by the States and Tribes through December 2002 are collated together in this report under the following five program objectives.

- 1) **Salmon Habitat Restoration** - *Objective: To implement habitat improvements that restore ecosystem characteristics and processes and address priority factors limiting salmonid production.* This includes “on-the-ground” habitat projects that protect, preserve, restore and enhance salmon habitat and watershed functions, as well as property acquisitions for conserving salmon habitat.
- 2) **Salmon Planning and Assessments** - *Objective: To develop comprehensive plans or reports (e.g. recovery plans, watershed plans, subbasin plans, habitat inventory reports) that identify and prioritize factors limiting native salmonid production and address measures needed to eliminate limiting factors.* This includes recovery planning and participation in NMFS’ Technical Recovery Teams, watershed assessments including mapping/inventory for plans, subbasin planning, development of habitat inventory reports, support for watershed councils, and organizational infrastructure and staffing for local conservation groups and tribal entities.
- 3) **Salmon Enhancement** - *Objective: To conduct activities that enhance depressed stocks of wild anadromous salmonids through hatchery supplementation, reduction in fishing effort on depressed wild stocks, or enhancement of Pacific salmon fisheries on healthy stocks in Alaska.* This includes supplementation and salmon fishery enhancements.
- 4) **Salmon Research, Monitoring, and Evaluation** - *Objective: To conduct research and monitoring on salmonids and/or their habitat to 1) assess watershed health and salmonid recovery; 2) assess the effectiveness of habitat restoration actions; 3) improve long-term fisheries management; and, 4) implement the 1999 Pacific Salmon Treaty Agreement.* This includes investigations, studies, and validation monitoring.
- 5) **Outreach and Education** - *Objective: To educate constituencies on the value of, and actions taken for, conservation, restoration and sustainability of healthy Pacific salmonid populations and their habitat.* This includes workshops, forums, preparation of educational materials, training, and citizen participation.

Project summaries for over 2,000 projects funded from FY 2000 through FY 2002 are included in this report. Detailed project lists providing descriptions, locations, and funding amounts are available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>.

In this report, we review the funding history for the PCSRF and the Congressional direction for distribution of PCSRF funding to the States and Tribes. This is followed by a general summary of state and tribal processes for distributing PCSRF funds and summaries of funded projects under the five program objectives listed above. The report closes with a review of the PCSRF Workshops held in 2002, the status of performance measures for the program, and some highlights of the PCSRF program.

## HISTORY OF PCSRF FUNDING TO STATES AND TRIBES

In the first year of the PCSRF (FY 2000), Congress appropriated \$58 million to be used for: 1) salmon habitat restoration, 2) salmon stock enhancement, 3) salmon research, and 4) implementation of the Pacific Salmon Treaty Agreement and related agreements [Section 623(d)(3) of P.L.106-113]. The \$58 million PCSRF appropriation was distributed \$50 million to the States, \$6 million to Pacific Coastal Tribes, and \$2 million to Columbia River Tribes in accordance with P.L.106-113. The Conference Report (H. Rept.106-479) allocated the \$50 million by State (see Table 1). P.L.106-113 also authorized the FY 2000 appropriations and mandated that the PCSRF funds to States would be subject to a 25 percent non-federal match, and that administrative costs for States would be limited to 3 percent.

Authorization for appropriations through FY 2003 was provided in the FY 2001 Appropriations Act (P.L.106-553). PCSRF funds to the States were authorized for “salmon habitat restoration, salmon stock enhancement, and salmon research including the construction of salmon research and related facilities.” PCSRF funds to the Tribes were authorized for “salmon habitat restoration, salmon stock enhancement, salmon research, and supplementation activities.”

In FY 2001, \$90 million was appropriated by Congress for the PCSRF prior to a government-wide rescission of 0.22 percent. This included \$54 million that was distributed in the Conference Report with \$18 million for Washington, \$10 million for Alaska, \$9 million for Oregon, \$9 million for California, \$6 million for Pacific Coastal Tribes, and \$2 million for Columbia River Tribes. An additional \$36 million provided for the PCSRF was distributed in the same proportion as the FY 2000 PCSRF funding, resulting in the total FY 2001 distribution shown in Table 1.

The FY 2002 appropriation provided \$110 million which was distributed in accordance with the Appropriations Committee’s Conference Report as shown in Table 1. The authorization continued from the FY 2001 Appropriations Act (P.L. 106-553).

In FY 2003, \$90 million was provided in the Omnibus Appropriation Bill (P.L. 108-7) enacted on February 20, 2003. Table 1 shows the Appropriations Committee’s Conference Report funding distribution prior to a government-wide rescission.

Table 1. Distribution of PCSRF funds (in millions) by Congress

	FY 2000	FY 2001	FY 2002	FY 2003
Washington	\$18.0	\$30.2	\$34.0	\$28.0
Alaska	\$14.0	\$19.5	\$27.0	\$22.0
California	\$ 9.0	\$15.1	\$17.0	\$14.0
Oregon	\$ 9.0	\$15.1	\$17.0	\$14.0
Pacific Coastal Tribes	\$ 6.0	\$ 7.4	\$11.0	\$ 9.0
Columbia River Tribes	\$ 2.0	\$ 2.5	\$ 4.0	\$ 3.0
TOTAL	\$58.0	\$89.8	\$110.0	\$90.0

## **Memoranda of Understanding (MOUs) with States and Tribal Commissions**

The FY 2000 Appropriations Conference Report (H. Rept.106-479) encouraged development of Memoranda of Understanding (MOUs) between NMFS and States/Tribes on distribution of PCSRF funds to qualifying projects, and that such MOUs would not require NMFS approval of individual projects, but would define recovery strategies for projects. In accordance with this Congressional direction, NMFS entered into MOUs with Washington, Alaska, California, Oregon, the Northwest Indian Fisheries Commission (on behalf of 20 western Washington treaty Tribes), the Columbia River Inter-Tribal Fish Commission (on behalf of four Columbia River Basin Tribes), and, in FY 2001, with the Klamath River Inter-Tribal Fish and Water Commission (on the behalf of four Klamath River Basin Tribes). The MOUs established processes for state/tribal distribution of the funds using criteria for effective use of the funds towards salmon recovery, including reporting requirements, monitoring and evaluation, and other measures to ensure full accountability and public access to the information and data collected with these funds. Non-Commission Tribes received PCSRF funds for specific projects through a NOAA Grant or Bureau of Indian Affairs contract.

## **STATE AND TRIBAL SUMMARIES**

### **Washington**

PCSRF funds for Washington were provided to the Salmon Recovery Funding Board (SRFB), a Washington State body created by the Washington State Legislature in 1999 to effectively invest federal and state funds for salmon habitat protection and restoration projects and related programs and activities that produce sustainable and measurable benefits for salmon and their habitat. The SRFB is supported by the Interagency Committee for Outdoor Recreation (IAC), a state agency that administers the project funding. The SRFB's role is to select the best salmon habitat project proposals and activities reflecting local priorities and the best available science. The IAC issues the funding contracts to the successful project sponsors.

The SRFB's mission, roles and responsibilities, and funding strategy can be found at <http://www.iac.wa.gov/salmonboard.htm>. The SRFB is responsible for design and oversight of the funding process, ensuring the best results are produced, and making adjustments when necessary. It conducts its work in consultation with the Governor and consistent with the state salmon strategy, *Extinction is Not an Option*. The SRFB carries out its mission by funding habitat projects recommended by lead entities that protect, preserve, restore, and enhance salmon habitat and watershed functions. It also funds activities that are integrally related to protecting or improving salmon habitat, especially those programs that increase the certainty and effectiveness of habitat projects or address issues involving multiple lead entity areas. The SRFB's work is performed with a comprehensive understanding of other efforts, activities, and programs integral to salmon recovery, including harvest and hatchery practices, hydropower operations, water quality issues, setting of instream flows, watershed planning unit activities, governance issues, and Northwest Power Planning Council programs. SRFB decisions are based on science and require that each funded project and activity be measured for success. The SRFB has specific policies for its granting process and funding strategy; the SRFB grant manual, *Policies and Project Selection*, and associated grant application materials list these policies in detail.

State and local governments, private landowners, conservation districts, Tribes, non-profit organizations, and special purpose districts are eligible to receive project funding for habitat restoration; acquisition of land, rights, and easements; and plans and assessments. All projects must come through one of the 26 geographically distributed “lead entity groups,” which are organizations of local or regional groups, including cities, counties, Tribes, non-profits and others, that create citizen committees to prioritize local habitat projects. The lead entity groups submit a prioritized list to the SRFB after a local technical advisory group has evaluated it, and it is subjected to review and prioritization by the citizen committee group. Once project lists are submitted, the lead entity representatives meet with a state technical panel, made up of scientists from different disciplines and representing the federal government, state government, local government, and private interest groups, to begin the review process. The SRFB uses a technical panel of scientists to provide statewide review of project proposals for scientific and technical merit. Final evaluation and SRFB decisions are based on published criteria and made in open public meetings.

In 1999, prior to the PCSRF, \$19.4 million of federal funds were awarded for salmon recovery to Washington through the U.S. Fish and Wildlife Service. Those federal funds, along with \$5.4 million in state funds, were awarded to 89 organizations that conducted 262 projects, which included \$12.2 million in non-federal matching funds and volunteer support. Information on these projects is not included in this report because they are outside the timeframe of the PCSRF.

Since 2000, PCSRF funds have supported 243 projects and activities, for a total of \$78.7 million and state funds have supported 150 projects and activities, for a total of \$42.8 million. In addition to the federal and state funding, 144 locally based organizations have matched with over \$48.7 million in cash and volunteer support. The distribution of Washington’s FY 2000 - FY 2002 PCSRF and state funds by program objective is shown in Table 2. A detailed listing of Washington’s projects with descriptions, locations and funding amounts is available at:

<http://www.nwr.noaa.gov/pcsr/index.htm>.

Table 2. Washington’s Projects by Program Objective (funds in thousands)

	Projects	PCSRF Funds	State Funds
Salmon Habitat Restoration	280	\$48,116	\$25,001
Salmon Planning and	112	\$29,588	\$17,844
Salmon Enhancement	1	\$1,000	\$0
TOTAL	393	\$78,704	\$42,845

Local needs for salmon recovery dollars continue to be greater than funding available. For the grant cycle ending April 2003, 215 project proposals totaling \$64 million were submitted to the SRFB for consideration of PCSRF and state funds.

### **Alaska**

The PCSRF funds for Alaska were provided to the Alaska Department of Fish and Game (ADFG) to administer as requested by the Governor of Alaska. Funding has primarily been targeted for the Pacific Salmon Treaty region of Southeast Alaska (east of Cape Suckling) as directed by the Alaska State Legislature. A Southeast Sustainable Salmon Fund (SSSF) was established for Alaska’s PCSRF funds in 2000. A fourteen-member



Stakeholder Advisory Panel and an interagency Science Coordination Panel (which includes representatives from NMFS, U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Fish and Wildlife Service, State agencies, and the University of Alaska) advised ADFG on use of these funds. PCSRF funds were used for projects that complemented the Sustainable Fisheries Policy for the State of Alaska, adopted by the Alaska Board of Fisheries in March 2000, and for implementation of the 1999 Pacific Salmon Treaty Agreement. The policy and information on the SSSF panels are available at: <http://www.state.ak.us/adfg/geninfo/special/recovery/salrecov.htm>. The Stakeholder Advisory and Science Coordination Panels met in public sessions to determine high priority issues and recommend project funding for: 1) salmon research and monitoring; 2) salmon habitat stewardship and restoration; 3) increasing economic opportunities for Southeast Alaska salmon fishermen; and 4) cooperative salmon and habitat projects, including projects with Columbia River Tribes and Canada. The Alaska State Legislature has designated 60 percent of the SSSF funding (state fiscal years 2002 and 2003) for objectives identified by the Stakeholder Advisory Panel to provide economic opportunities (hatchery production, marketing, infrastructure, and education) for salmon fishermen east of Cape Suckling.

The distribution of Alaska's PCSRF funds by program objective is shown in Table 3. Alaska is continuing work on the full allocation of the FY 2001 and FY 2002 funds as of December 31, 2002. A detailed listing of Alaska's projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

Table 3. Alaska's Projects by Program Objective (funds in thousands)

	Projects	PCSRF Funds	State Funds
Salmon Habitat Restoration	1	\$154	\$0
Salmon Planning and Assessments	37	\$10,424	\$0
Salmon Enhancement	21	\$9,940	\$0
Salmon Research and Monitoring	61	\$9,908	\$4,625
Outreach and Education	13	\$2,428	\$0
TOTAL	132	\$32,854	\$4,625

## California

PCSRF funds for California were provided to the California Department of Fish and Game (CDFG) and incorporated into the Fisheries Restoration Grant Program (FRGP), which was established in 1981 in response to rapidly declining populations of salmon and steelhead trout and deteriorating salmonid habitat in California. This program is a collaborative effort that focuses on restoring anadromous fish habitat with the goal of ensuring the survival and protection of salmon and steelhead in coastal areas of California. A combination of federal and state funds support this program. More information on the grant program can be found at: <http://www.dfg.ca.gov/nafwb/fishgrant.html>.

Since 1981, the FRGP has catalyzed a collaborative effort that has resulted in approximately 2,000 projects, at a total approaching \$100 million in grant funds. The majority of these funds were awarded for habitat restoration projects that improve overhead cover, spawning gravels, and pool habitat; reduce or eliminate erosion and sedimentation impacts; screen sites where water is diverted for agricultural and urban

uses so fish remain in their habitat; and remove barriers to fish passage. Funds have also been awarded for activities that indirectly affect habitat restoration. Examples are cooperative fish rearing, acquisitions of riparian easements, research, project monitoring, watershed assessment and planning, support for watershed organizations, and public outreach and education.

Funding for the FRGP increased substantially in FY 1997/98 with the establishment of the Salmon and Steelhead Trout Restoration Account (SSTRA). In FY 2000/01, State Proposition 13 bond funds increased salmonid habitat restoration funding by \$25 million, and in FY 2002/03, State Proposition 40 bond funds will contribute \$8 million annually for three years to the SSTRA. This account will provide up to \$8 million per year through approximately June 2005.

Project grants are awarded by the FRGP through an annual competitive Request For Proposal (RFP) process. Proposals received undergo a rigorous technical review as well as a review by an advisory committee. The advisory committee, the California Coastal Salmonid Restoration Grants Peer Review Committee, evaluates each proposal, makes recommendations for funding, and provides the CDFG Director with a prioritized list of recommended proposals. The CDFG Director then makes final funding decisions.

The FY 2000 PCSRF funds had two categories of expenditures identified in the MOU between NMFS and CDFG: discretionary funds (30 percent of PCSRF funds) and non-discretionary funds (70 percent of PCSRF funds). The discretionary funds were targeted to projects having an immediate benefit over a large watershed scale and which could be initiated during the summer of 2000 low water flow period. The selection of projects was at the discretion of the CDFG Director in consultation with the California Secretary of the Resources Agency and the NMFS Southwest Regional Administrator. The FRGP awarded grants to 30 discretionary projects in coastal counties ranging from Del Norte County in northern California to Santa Barbara County on the south-central coast. The non-discretionary funds were allocated through the FRGP competitive RFP process. A total of 425 proposals requesting \$71.7 million were received in response to the RFP for FY 2000 PCSRF funds. In January of 2001, the Director approved 88 projects totaling \$6 million. Contracts and grants were awarded during the winter of 2001 and most of these projects commenced during the summer of 2001.

CDFG prepared two RFPs for FY 2001 PCSRF funds. The annual RFP for coastal salmon habitat restoration projects was released in February 2001, with a return date of May 2001; and another RFP targeted to coho salmon habitat restoration projects was released in November 2001, with a return date in January 2002. CDFG received a total of 355 proposals requesting \$54 million in response to both RFPs. Proposals were received from private individuals (including small and large landowners), watershed groups, local governments, Resource Conservation Districts, special districts, Tribes and federal and state government agencies. In February and March of 2002, the Director approved 139 projects. Contracts and grants were awarded during the winter and spring of 2002 and most of these projects commenced during the summer of 2002.

In order to track projects over time, CDFG joined NMFS and the Pacific States Marine Fisheries Commission in developing a database with a standard and usable format. The California Habitat Restoration Project Database (CHRPD) was created to manage and disseminate data about habitat restoration projects in California benefitting anadromous fish. In addition to serving as a comprehensive repository for information about California habitat restoration projects, the geo-referenced project locations in the

database enable geographical analyses of projects, aiding analysis of past trends and planning of future restoration work. The CHRPD has enabled CDFG to track funds for compliance with state funded project mandates. CDFG is also using the database to track the expenditure of federal dollars in terms of the number of contracts or grants awarded and dollars spent by project type.

The distribution of California's FY 2000 and FY 2001 PCSRF and state funds by program objective is shown in Table 4. FY 2002 funds have not been distributed as of December 31, 2002. A detailed listing of California's PCSRF projects with descriptions, locations and individual project funding amounts is available at:

<http://www.nwr.noaa.gov/pcsr/index.htm>.

Table 4. California's Projects by Program Objective (funds in thousands)

	Projects	PCSRF Funds	State Funds
Salmon Habitat Restoration	254	\$18,139	\$14,382
Salmon Planning and Assessment	131	\$4,102	\$4,495
Salmon Enhancement	14	\$38	\$290
Salmon Research and Monitoring	23	\$954	\$1,239
Outreach and Education	45	\$568	\$556
TOTAL	467	\$23,806	\$20,962

## Oregon

PCSRF funds for Oregon were provided to the Oregon Watershed Enhancement Board (OWEB). OWEB distributed the PCSRF funds in tandem with the state restoration funds, allowing flexibility to target investments to both meet local needs and achieve significant, long-term improvements in salmon and watershed health. Oregon is actively working toward salmon restoration through implementation of the *Oregon Plan for Salmon and Watersheds* (Oregon Plan), a comprehensive statewide effort initiated in 1997. OWEB has invested up to \$15 million annually from state lottery funds dedicated to watershed and salmon habitat improvement. Limitations on the use of state funds require that the majority of OWEB's state funds be spent for on-the-ground watershed enhancement projects. PCSRF funds provide OWEB the important flexibility for supporting watershed councils, watershed assessments, monitoring, and education and outreach, all of which are essential to achieving restoration of salmon and watershed health. By integrating use of the PCSRF funds into Oregon's existing infrastructure, which invests in voluntary salmon recovery and watershed enhancement efforts, OWEB is able to substantially enhance the effectiveness of the Oregon Plan in recovering salmonids.

OWEB achieves strategic investment of public funds and cost-effective restoration through rigorous technical review of grant proposals, monitoring of restoration projects and results, and balanced board leadership and policy direction. OWEB's vision and strategies for implementing the Oregon Plan are set forth in OWEB's *Strategy for Achieving Healthy Watersheds in Oregon*. This document, as well as guidance to grant applicants can be found on OWEB's website at: <http://www.oweb.state.or.us>. OWEB's project selection process is guided by a 17-member board composed of one representative from each of Oregon's natural resource commissions, Tribes, five federal agencies, the land grant university extension service, and five citizens from different regions of the state. Criteria for assessing proposals and awarding funds are

established by Oregon administrative rule, and are applied through regional teams composed of federal and state natural resource field staff with first-hand knowledge of local conditions. These teams use their collective expertise to review grant applications and make funding recommendations to OWEB. More than 90 local watershed councils and 45 soil and water conservation districts are implementing restoration projects in Oregon, partnering with agencies and private interests, educating and involving people in restoration, and monitoring watershed conditions to understand the effectiveness of restoration work.

Between June 2000 and December 2002, OWEB invested a total of \$64.4 million in salmon recovery funds for: 1) salmon habitat restoration and watershed enhancement projects, 2) planning and assessment including watershed council support, technical assistance, and assessment of watershed conditions, 3) research and monitoring including state agency projects supporting watershed restoration, the State's Independent Multidisciplinary Science Team, data development and monitoring of watershed conditions, and 4) education and outreach. The distribution of Oregon's FY 2000 and FY 2001 PCSRF and state funds by program objective is shown in Table 5. FY 2002 funds have not been distributed as of December 31, 2002. A detailed listing of Oregon's PCSRF projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>.

Table 5. Oregon's Projects by Program Objective (funds in thousands)

	Projects	PCSRF Funds	State Funds
Salmon Habitat Restoration	308	\$1,424	\$37,206
Salmon Planning and Assessment	208	\$10,314	\$2,343
Salmon Research and Monitoring	92	\$7,603	\$2,126
Outreach and Education	91	\$3,226	\$134
TOTAL	570	\$22,567	\$41,809

OWEB also provided another \$8.6 million of state salmon habitat restoration and watershed enhancement funds as match for a Coastal Zone Management Act grant. These funds are not included in this report.

### **Pacific Coastal Tribes**

PCSRF funds for Pacific Coastal Tribes were distributed to 29 Tribes and/or their respective Tribal Commissions in Washington, Oregon and California. The funding was distributed to the Northwest Indian Fisheries Commission (NWIFC) on behalf of 20 western Washington treaty Indian Tribes; the Klamath River Inter-Tribal Fish and Water Commission (KITFWC) on behalf of four Klamath River Basin Tribes; the Round Valley Tribe in the Eel River Basin in California; the Confederated Tribes of the Chehalis Reservation in Washington; the Coquille Indian Tribe in Oregon; the Confederated Tribes of Grand Ronde in Oregon; and the Confederated Tribes of the Siletz Indians of Oregon. PCSRF funds were initially provided directly to the Yurok, Hoopa Valley, and Klamath Tribes; however, these Tribes joined with the Karuk Tribe to have the KITFWC obtain PCSRF funding on behalf of all four Klamath Basin Tribes in FY 2001.

The majority (about \$20 million) of the Pacific Coastal Tribes' PCSRF funds were provided to the NWIFC on behalf of 20 Northwest treaty Indian Tribes. The NWIFC is a Pacific Northwest tribal organization created in 1974 by Tribes party to the *U.S. v.*

Washington litigation that re-affirmed tribal treaty-reserved rights and established the Tribes as co-managers of the salmon resource with the State of Washington. The mission of the NWIFC is to assist member Tribes in conducting biologically sound fisheries and providing a unified voice on fisheries management and conservation issues. NWIFC member Tribes receiving PCSRF funds are the Nisqually, Squaxin Island, Puyallup, Jamestown S'Klallam, Port Gamble S'Klallam, Lower Elwha Klallam, Skokomish, Swinomish, Sauk-Suiattle, Upper Skagit, Tulalip, Makah, Stillaguamish, Muckleshoot, Suquamish, Nooksack, Lummi, Hoh, Quinault, and Quileute Tribes. The NWIFC Tribes used PCSRF funds to build upon tribal recovery programs that restore habitat to improve conditions essential to viable salmon populations; to conduct research and increase tribal capacity to improve the Tribes' understanding of what salmon need and how to most efficiently and effectively provide those needs; to supplement wild salmon stocks in a manner that does not impede their recovery; and to undertake hatchery reforms to minimize the impacts of artificial propagation on wild salmon. Additional information on NWIFC salmon recovery efforts is available at: <http://www.nwifc.org/recovery/>.

The distribution of the Pacific Coastal Tribes' FY 2000 - FY 2002 PCSRF funds by program objective is shown in Table 6. Not all of the FY 2002 funds were distributed as of December 31, 2002. A detailed listing of Pacific Coastal Tribes' PCSRF projects by Tribe with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

Table 6. Pacific Coastal Tribes' Projects by Program Objective (funds in thousands)

	Projects	PCSRF Funds
Salmon Habitat Restoration	66	\$4,304
Salmon Planning and Assessment	35	\$3,540
Salmon Enhancement/Supplementation	18	\$2,485
Salmon Research and Monitoring	88	\$6,511
Outreach and Education	3	\$124
TOTAL	210	\$16,964

### Columbia River Tribes

The Columbia River Tribes PCSRF funds were distributed to six Columbia River Tribes and/or their respective Tribal Commissions in Washington, Oregon, and Idaho. PCSRF funding was provided to the Columbia River Inter-Tribal Fish Commission (CRITFC) on behalf of four Columbia River Basin treaty Indian Tribes; the Colville Confederated Tribes; and the Shoshone-Bannock Tribes. All of the FY 2000 Columbia River Tribes' funding was provided to CRITFC. In FY 2001, PCSRF funding for Columbia River Tribes was extended to include the Colville Confederated Tribes and the Shoshone-Bannock Tribes.

The majority (about \$6.8 million) of the PCSRF funds for Columbia River Basin Tribes has been provided to CRITFC and its member Tribes. CRITFC was formed in 1977 by resolution of the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakama Nation. Additional information on CRITFC salmon recovery efforts is available at: <http://www.critfc.org/>.

The distribution of the Columbia River Tribes' FY 2000 - FY 2002 PCSRF funds by program objective is shown in Table 7. Not all of the FY 2002 funds were distributed as of December 31, 2002. A detailed listing of Columbia River Tribes' PCSRF projects by Tribe with descriptions, locations and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

Table 7. Columbia River Tribe's Projects by Program Objective (funds in thousands)

	Projects	Total
Salmon Habitat Restoration	35	\$2,938
Salmon Planning and Assessments	9	\$634
Salmon Enhancement	16	\$2,231
Salmon Research and Monitoring	16	\$1,603
Outreach and Education	3	\$43
TOTAL	76	\$7,449

## SALMON HABITAT RESTORATION PROGRAMS

Over \$150 million in PCSRF and state funds were committed to 960 habitat restoration projects through December 31, 2002. This represents about 52 percent of the funding for all salmon conservation and recovery projects reported herein. Salmon habitat restoration projects protect, preserve, restore and enhance salmon habitat and watershed functions, and include property acquisitions for conserving salmon habitat.

### Washington

The SRFB funded 280 habitat restoration projects with \$48.1 million in PCSRF and \$25.0 million State funds. A detailed description and funding for each Washington habitat restoration project is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>. A summary of the funding for the following habitat restoration project types used by Washington is shown in Table 8.

- 1) *Estuarine/Marine Nearshore*. This includes those items that affect or enhance fish habitat below the ordinary high water mark of the water body. Items include work conducted in or adjacent to the intertidal area and in subtidal areas. Items may include beach restoration, bulkhead removal, dike breaching, plantings or plant management, and tide channel reconstruction.
- 2) *Instream Diversion*. This includes projects that affect or provide for the withdrawal and return of surface water, such as screening of fish from the actual water diversion (dam, headgate), the water conveyance system (both gravity and pressurized pump), and bypass of fish back to the stream.
- 3) *Instream Passage*. This includes projects that affect or provide fish migration up and downstream to include road crossings (bridges and culverts), barriers (dams, log jams), fishways (ladders, chutes, pools), and log and rock weirs.
- 4) *Instream Habitat*. This includes freshwater projects that address or enhance fish habitat below the ordinary high water mark of the water body. Elements include work conducted on or next to the channel, bed, bank, and floodplain by adding

or removing rocks, gravel, or woody debris. Other items necessary to complete these projects may include livestock fencing, water conveyance, and plant removal and control.

- 5) *Riparian Habitat*. This includes freshwater, marine near-shore, and estuarine projects that affect or will improve the riparian habitat outside of the ordinary high water mark or in wetlands. Projects may include plantings or plant management, livestock fencing, stream crossings, and water supply.
- 6) *Upland Habitat*. This includes projects at sites that may affect water quality and quantity important to fish, occurring above the riparian or estuarine area. Elements can include the timing and delivery of water to the stream; sediment and water temperature control; plant removal, control, and management; and livestock fencing and water supply.
- 7) *Acquisition*. This includes the purchase of land, access, or utilization of rights in fee title or by perpetual easement. Rights or claims may be acquired, provided the value can be established or appraised.

Table 8. Salmon habitat restoration projects in Washington (funds in thousands)

	Projects	PCSRF Funds	State Funds
Estuarine/Marine	3	\$624	\$0
Instream Diversions	10	\$1,020	\$675
Instream Passage	64	\$9,296	\$2,350
Instream Habitat	63	\$5,768	\$6,845
Riparian Habitat	20	\$1,164	\$935
Upland Habitat	22	\$2,584	\$943
Acquisition	59	\$17,063	\$5,820
Acquisition and Restoration	36	\$9,527	\$6,950
Acquisition and	3	\$1,070	\$483
TOTAL	280	\$48,116	\$25,001

## Alaska

PCSRF funding has been concentrated on habitat assessments and salmon planning to determine where funds for habitat restoration could best be used. One restoration demonstration project was funded to showcase innovative fish habitat protection and restoration techniques not currently used in Southeast Alaska. Other restoration efforts are being conducted by watershed councils, and are reported under "Salmon Planning and Assessment Programs," below. A detailed listing of Alaska's PCSRF projects with descriptions, locations, and funding amounts is available at:

<http://www.nwr.noaa.gov/pcsrp/index.htm>.

## California

CDFG provided \$32.5 million for 254 habitat restoration projects. A detailed listing of California's habitat restoration projects with descriptions, locations and funding amounts is available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>. A summary of the funding for the eight types of projects described below is shown in Table 9.

- 1) *Conservation Easements to Protect/Improve Water Quality and Quantity*. These projects acquire, from willing sellers, riparian buffer strips along coastal rivers and streams to protect key salmon and steelhead habitat.
- 2) *Instream Barrier Modification*. These projects modify or remove barriers to migration or emigration.
- 3) *Instream Habitat Restoration*. These projects consist of structures designed to provide overhead cover, reduce bank erosion, sort spawning gravels, and increase the frequency and depth of pool habitats.
- 4) *Riparian Restoration*. These projects involve restoration and revegetation in or adjacent to the stream channel.
- 5) *Instream Bank Stabilization*. These projects stabilize or reduce bank erosion.
- 6) *Watershed Restoration (Upslope)*. These projects include removing or storm proofing roads that are contributing sediments to the stream, stabilizing eroding areas of the hill slope that are outside of the stream channel, and revegetating the riparian area or upslope areas of the watersheds.

Table 9. Salmon habitat restoration projects in California (funds in thousands)

	Projects	PCSRF Funds	State Funds
Conservation Easement / Riparian Buffers	5	\$305	\$5,205
Instream Barrier Modification	31	\$4,430	\$604
Instream Habitat Restoration	48	\$1,932	\$935
Fish Passage	19	\$1,887	\$1,422
Riparian Restoration	50	\$1,264	\$971
Instream Bank Stabilization	27	\$410	\$582
Watershed Restoration (Upslope)	55	\$5,550	\$4,375
Fish Ladder	1	\$32	\$18
Fish Screening of Diversions	5	\$512	\$143
Project Monitoring for Completed Projects	4	\$46	\$57
Project Maintenance	4	\$69	\$29
Tailwater Management	3	\$285	\$0
Water Conservation Measures	2	\$1,417	\$42
TOTAL	254	\$18,139	\$14,383



## Oregon

OWEB committed a total of \$38.6 million for 308 locally sponsored habitat restoration projects designed to recover Pacific salmon and restore and enhance watershed health as shown in Table 10. Because the state constitution limits use of 65 percent of dedicated state funds to on-the-ground projects, OWEB targets Oregon's investment of PCSRF funds to activities supporting habitat restoration activities rather than toward funding the projects themselves. A detailed listing of Oregon's habitat restoration projects with descriptions, locations and funding amounts is available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>.

Oregon initiated a watershed restoration project program in 1995. Watershed councils, soil and water conservation districts, and other groups implement projects that are identified as priorities in watershed assessments and that involve local citizens and landowners. Local groups use the *Oregon Aquatic Habitat Restoration and Enhancement Guide*, developed specifically for the Oregon Plan to design projects that follow sound recovery and restoration methods. These projects result in a wide variety of watershed improvements, including:

- 1) creation of salmon habitat in critical stream reaches;
- 2) removal of barriers to salmon migration;
- 3) enhancement of riparian, wetland, and estuarine areas;
- 4) reduction of point and non-point sources of water pollution;
- 5) reduction of non-natural erosion to streams;
- 6) increase instream water flows to benefit salmon; and
- 7) acquisition of interests in land and water to protect salmon and watershed health.

Table 10. Salmon habitat restoration projects in Oregon (funds in thousands)

	Projects	PCSRF Funds	State Funds
Salmon Habitat Restoration	315	\$1,424	\$32,458
Salmon Habitat Restoration - Acquisition	13	\$0	\$4,748
TOTAL	328	\$1,424	\$37,206

## Tribes

Twenty Indian Tribes used \$7.2 million of PCSRF funds for 101 salmon habitat restoration projects. A short description of each Tribe's work is provided below. A detailed listing of tribal PCSRF habitat restoration projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>.

The Confederated Tribes of the Chehalis Reservation used PCSRF funds to help fund the Upper Chehalis Voluntary Restoration Program. The funds have been expended on public and private lands, in partnership with concerned and willing landowners, and focused on habitat projects, including the following: increasing aquifer recharge, storage, and delay of an additional 12 acre feet of surface water, decreasing sedimentation, road abandonment (7,800 feet), reestablishing access to productive salmonid habitat, replacing or abandoning culverts (12), protecting and restoring riparian functions, excluding livestock (11,000 feet, 8 acres), reconnecting fragmented off-channel habitat, restoring annual ingress and egress (12 acres), restoring plant

diversity and age structure, and revegetating riparian, off-channel, and wetland areas (12 acres). As important, PCSRF funds have allowed the Chehalis Tribe to leverage an additional \$78,000 of in-kind services (cash, materials, land set-asides, technical input, and labor).

The Confederated Tribes of the Colville Reservation used PCSRF funds to complete an evaluation of the effectiveness of supplementing surface water with groundwater in Omak Creek to lower water temperature and increase flow. Omak Creek is located entirely within the boundaries of the Colville Confederated Tribes' Reservation and is unique in that it is the only tributary of the Okanogan River on the U.S. side of the border that has not been severely altered by water withdrawals or man-made impediments to fish. The Colville Tribes are undertaking a number of restoration projects in Omak Creek and the water supplementation was intended to provide a short-term reduction in temperature while long-term restoration efforts, particularly riparian restoration activities, take hold. However, the study indicated that water supplementation would not be an effective measure in this context. As a result of this information the Colville Tribes will focus their resources on more aggressive riparian restoration activities.

The Coquille Indian Tribe used PCSRF funds for road improvement in the Coquille River Basin of Oregon. Work projects included decommissioning of 1.52 miles of road and removal of 12 culverts to reduce sedimentation risk and road density. The Tribe replaced 15 culverts and cleaned 140 culverts on 14.2 miles of road. Eight armored rolling dips were installed and two road bank failures were reconstructed and stabilized. The road prism on 11.5 miles of road was brushed. Disturbance areas on all work sites were mulched and seeded.

The Confederated Tribes of Grand Ronde replaced four culverts that were barriers to upstream fish passage in Agency Creek, a tributary of the Willamette River. The culverts were replaced with appropriately sized culverts that allow upstream and downstream passage of all life stages of salmonids, opening about 7.1 miles of spawning and rearing habitat in Kuri Creek, West Fork Agency Creek Lower, West Fork Agency Creek Upper, and Wind River.

The Hoopa Valley Tribe used PCSRF funds for diversion screening on Supply Creek. The Hoopa Valley Tribe operates water withdrawal systems on several streams within the reservation to provide for domestic and agricultural uses. The objective was to design and construct a single intake structure to reduce mortality of outmigrant salmonids in Supply Creek which supports fall chinook, coho, and steelhead.

The Jamestown S'Klallam Tribe is working on a cooperative estuary restoration project with Clallam County on Jimmy-Come-Lately Creek to restore the lower creek to a functional salmon-producing creek and foster recovery of summer chum salmon. This includes relocation of the lowest one-half mile of the creek to its historical channel, channel restoration, removal of fill in an estuary at the site of an old log dump, and estuary restoration near the mouth of the creek.

The Klamath Tribes addressed water quality problems in the Upper Klamath Basin above Upper Klamath Lake in south-central Oregon. PCSRF funds were used to assess and address non-point source water pollution in the mainstem Sprague River, a major tributary to Upper Klamath Lake through which a disproportionately large amount of the overall nutrient load enters the lake system.

The Lower Elwha Tribe participated in ongoing activities targeting the removal of two dams on the Elwha River and the ultimate recovery process for the Basin's salmon stocks. The Tribe worked to develop water quality standards for hatchery production during dam removal, refine the salmon recovery plan, identify short-term recovery goals for Elwha River chinook, and monitor beach erosion of the berm that protects the remaining Elwha River Estuary.

The Makah Tribe completed construction of engineered log-jam structures in the lower mainstem of the Sekiu River, and the first year of monitoring associated with the project. This project will contribute to salmon habitat recovery by increasing channel complexity and decreasing stream energy in a section of the Sekiu River that is critically important for chinook spawning and rearing, and for coho salmon rearing.

The Nez Perce Tribe restored salmon access to pristine habitats within the Lolo Creek watershed and reduced sedimentation from at-risk culverts. A culvert survey was conducted to determine culvert replacement sites, and two culverts were replaced within Mox and Chamook Creeks (both in the Lolo Creek drainage area). The Tribe is protecting salmonid habitat in Mill Creek and John's Creek, both tributaries to the South Fork Clearwater River, from further degradation by cattle grazing through the replacement and construction of new riparian protection/cattle exclusion fencing. In the Lapwai Creek watershed, the Nez Perce Tribe is planning on removing an old railroad prism and small bridges to restore a more normal stream function to Lapwai Creek and increase fish rearing/spawning habitat.

The Quinault Nation is increasing production of Queets River wild coho by enhancing the river's nutrient content through distribution of spawned hatchery salmon carcasses in the watershed. The effectiveness of hatchery carcass distribution within the Queets River system operates under the hypothesis of decreased spawner abundance that has led to a decrease in nutrient influx, and a resulting decrease in the systems carrying capacity.

The Round Valley Indian Tribes utilized PCSRF funds to implement a road closure and road repair program that has improved approximately 13 miles of a remote roadway system within the North Fork Eel River watershed to reduce or eliminate the amount of road-related sediment entering tributaries of the river. The Tribes also used PCSRF funds to initiate work on a multi-year project to restore nearly two and a half miles of Mill Creek to a biotically productive and stable stream system capable of supporting salmonid life cycle requirements. PCSRF funds were used to acquire heavy equipment for stream restoration and road repair tasks which allows the Tribes to fix problems such as road and stream bank failures quickly, preventing sediment and debris from entering into a stream in the time it would take to locate and transport rented equipment to remote locations. Finally, the Round Valley Indian Tribes used PCSRF funds to purchase a greenhouse for a tree nursery program that will eventually supply the Tribes with native riparian vegetation for stream restoration projects.

The Shoshone-Bannock Tribes used PCSRF funds for restoration of salmon passage, rearing, and spawning habitat improvements. The Tribe worked with other agencies and governments to reduce habitat fragmentation and improve stream function.

The Confederated Tribes of Siletz Indians of Oregon used PCSRF funds off reservation over a broad geographic area focusing on salmonid habitat restoration in a series of Oregon estuaries. The Siletz Indians formed a cooperative agreement with the U.S.

Forest Service, U.S. Fish and Wildlife Service, Environmental Protection Agency, Oregon Sea Grant and two regional watershed councils. The mixture of various funds has allowed the partners to more completely describe the effects of estuarine habitat restoration on fish populations and other aquatic organisms. The Tribe has focused on examining the efficacy of various types of estuarine restoration projects across a broad range of estuary types. The Tribe has viewed this as a critical need for all parties involved in salmon restoration. Long-term project goals include: 1) restoring previously diked bottom land (degraded farm pastures) to natural tidally influenced salt marsh wetlands, 2) examining success rates (levels of fish use) for varying (partial or full dike removal, full or partial channel construction) marsh restoration techniques, 3) examining use of large wood structures across estuarine habitats and identifying future restoration opportunities, and 4) examining use of eel grass and mudflat habitats and identifying future restoration opportunities. During the last grant cycle the Siletz Tribe evaluated pre-treatment restoration sites across 600 acres of abandoned bottom lands. Evaluation included defining bathymetry and marsh topography, tidal mixing, salinities, temperatures, plant communities, large wood, eel grass, and mudflat distribution, as well as fish distribution and abundance.

The Skokomish Tribe is removing and replacing a number of culverts, tidal gates, and dikes that are hampering salmon migration and rearing within the Tribe's reservation. Success of projects is being monitored by placing smolt traps in areas that have been re-opened to assess increased production.

The Suquamish Tribe, in conjunction with the City of Bremerton and the State of Washington, is working to restore salmon access to prime spawning and rearing habitat in more than 85 percent of the Gorst Creek watershed that has been blocked since the early 1900s.

The Tulalip Tribes, along with the Stillaguamish, Swinomish, and Upper Skagit Tribes, completed streamside-fencing along Katie Creek in the Stillaguamish River Basin. The fencing was installed to prevent cattle from having direct access to the creek.

The Confederated Tribes of the Umatilla Indian Reservation used PCSRF funds to acquire and protect spawning and rearing habitat for naturally producing salmonids. The Tribe acquired habitat in the Iskuulpa Creek (formerly Squaw Creek) subbasin, which contains approximately 23 miles of anadromous and resident fish habitat and over 50 miles of riverine habitat. The Tribe also purchased 24 acres (total acreage is 49 acres when cost-share funding is included) on Minthorn Springs. Surface springs located at river mile 63.3 (Minthorn Springs) are 6 degrees colder than the mainstem and are the most important summer rearing habitat for juvenile salmonids in the mid-Umatilla River. The Tribe is also acquiring grazing rights on riparian areas through the BIA-administered grazing leases and/or conservation easements on private lands presently grazed by livestock. The Tribe is also purchasing 8.79 cfs of agriculture water right (John Gregory [Cooper] Water Right) in the Grande Ronde River Basin.

The Confederated Tribes of the Umatilla Indian Reservation also used PCSRF funds to protect and restore habitat and provide instream passage for salmonids in the Walla Walla River Basin. The Tribe also made fish passage improvements in Mission Creek to enhance habitat for improved natural production of anadromous salmonids in the Umatilla River Basin. To enhance restoration efforts, the Tribe supplemented a tribal operated native plant nursery that provides locally adapted plants for riparian restoration projects in the Umatilla, Walla Walla, and Grande Ronde Basins.

The Confederated Tribes of the Warm Springs Reservation of Oregon used PCSRF funds for watershed restoration efforts. In the Deschutes River subbasin where over 20 miles of riparian enclosure fencing has been placed in past years, the Tribe has increased fence patrols and treatments for noxious weeds and juniper encroachment are needed to reach the desired results for these riparian protection projects. The Tribe purchased a new diversion screen to eliminate entrainment of salmonids at Farmers Canal, an 80 cfs diversion on the mainstem Hood River.

The Confederated Tribes of the Warm Springs Reservation of Oregon also used PCSRF funds for a John Day watershed restoration program consisting of construction of riparian corridor grazing fences. The Tribe was able to lease the John Forrest Ranch area, prime salmon habitat, and eventually purchased the property.

The Confederated Tribes and Bands of the Yakama Nation used PCSRF funds for several habitat restoration projects. To reverse habitat degradation in Ahtanum Creek (a tributary to the Yakima River) from grazing, the Tribe is fencing about 14 miles of the creek and revegetating the riparian zone. Nine off-channel stock watering sites are being constructed. The Tribe contributed to reconstruction of two fishways to increase fish passage over Castille Falls, providing 45 miles of spawning and rearing habitat for spring chinook and approximately 60 miles for steelhead. The Tribe also contributed to the Hanson Ponds Floodplain Restoration Project on the Yakima River. In a headwater meadow complex known as Starvation Flats in the Dry Creek-Status Creek-Yakima River system, a road was obliterated and revegetated. This will improve stream channel geomorphic function, restore riparian habitat, increase summer baseflow, and improve water quality through sediment and temperature reduction.

The Yurok Tribe implemented upslope restoration activities in McGarvey Creek, a tributary to the Lower Klamath River that has consistently been documented as an important spawning and rearing stream for coho salmon. Six instream habitat structures were constructed in an unnamed tributary to McGarvey Creek to increase habitat diversity and increase its value to spawning and rearing salmonids. The Tribe also undertook a habitat restoration project in Blue Creek, the largest tributary to the Lower Klamath River containing the healthiest populations of anadromous salmonids in this subbasin. The Tribe also planted native conifer species throughout the riparian corridor in the project areas.

## **SALMON PLANNING AND ASSESSMENT PROGRAMS**

Over \$86 million in PCSRF and state funds were committed to 575 salmon planning and assessment projects. This represents about 29 percent of the funding for all salmon conservation and recovery projects reported herein. Salmon planning and assessment projects covered recovery planning and participation in technical recovery teams, watershed assessments including mapping/inventory for plans, subbasin planning, support for watershed councils, and organizational infrastructure and staffing for local conservation groups and tribal entities.

### **Washington**

The SRFB provided \$29.6 million of PCSRF and state funds for 112 planning and assessment projects and activities. These projects include local assessments/studies, implementing the Forest and Fish Agreement, building regional capacity, nearshore

projects, instream flows, and other programs and activities. They include feasibility studies; channel migration studies; reach-level, near-shore, and estuarine assessments; and inventories of barriers, unscreened water diversions, and landslide hazard areas. A feasibility study could include assessing the willingness of landowners to allow access to their land for a habitat restoration project or to consider selling a property interest. The results of proposed assessments must directly and clearly lead to identification, siting, or design of habitat protection or restoration projects. Assessments intended for research purposes, monitoring, or to further general knowledge and understanding of watershed conditions and function, although important, are not eligible for SRFB funding. Assessments must be closely coordinated with other assessments and data collection efforts in the watershed and with federal, tribal, state, regional, and local organizations to prevent duplication and ensure the use of appropriate methods and protocols. To improve coordination, lead entities and applicants are encouraged to partner with each other. Assessments and studies must be completed within two years unless the project sponsor can justify additional time. A detailed listing of Washington's PCSRF planning and assessment projects and activities with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

Of the \$29.6 million PCSRF funds that the SRFB provided for planning and assessments, \$12 million (\$4 million in each fiscal year in accordance with Congressional intent stipulated in the appropriations) was provided to the Washington Department of Natural Resources (DNR) to support Washington's Forest and Fish Agreement. DNR used the funds to design and construct hydrography and forest roads databases, map upland slopes and update landslide inventories, increase staffing capacity for field work to implement new Forest and Fish rules, and improve public access and review of proposed forest practice activities. An additional \$836,000 was provided to DNR in FY 2001 for development of a Habitat Conservation Plan for the Fish and Forest Agreement.

## **Alaska**

ADFG used \$10.4 million of its PCSRF funds for the following two types of salmon planning and assessment projects. A detailed listing of these projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

- 1) *Watershed evaluation and assessment studies.* ADFG used \$7.9 million of PCSRF funds for 27 projects. These projects include information to begin determining where watershed assessments, habitat restoration, and salmon habitat stewardship should be focused in Southeast Alaska. These projects include identifying, mapping, and making available on the web, to resource managers, and the public, information on important salmon habitats. Funds have also been allocated to projects for identifying blockages to fish passage, planning efforts to address invasive species issues, developing a process for identifying and protecting near-shore and other marine habitat that is particularly important to salmon, and working with other agencies, communities, and the public to avoid, minimize or mitigate adverse impacts to salmon and salmon habitat.
- 2) *Public involvement and capacity building.* ADFG used \$2.5 million of PCSRF funds for 10 projects. They include support for participation in planning for international watersheds (U.S.-Canada), support for scientific review and recommendations on the use of PCSRF funds in Alaska, and assistance for

development and operations of community watershed stewardship councils.

## California

CDFG provided \$8.6 million for 131 salmon planning and assessment projects. A summary of the funding for the four types of projects listed below is shown in Table 11. A detailed listing of California's PCSRF planning and assessment projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>.

The types of planning and assessment projects in California are:

- 1) *Watershed Organizational Support*. These projects assist locally based nonprofit watershed restoration organizations, or any public entity, that generates public and landowner support for anadromous salmonid habitat restoration of local watersheds.
- 2) *Public Involvement and Capacity Building*. These projects provide for public involvement in support of watershed health for anadromous salmonids, and capacity building within regional/county efforts that are directed towards specific salmon and steelhead habitat restoration efforts.
- 3) *Watershed Evaluation, Assessment, and Planning Projects*. These projects provide a complete and detailed process of watershed evaluation and assessment that culminates in completion of an integrated plan containing site-specific and clearly prioritized recommendations for work that will lead to the restoration of salmonid habitat in a watershed.
- 4) *Watershed Assessment Projects*. These projects assess both the physical and social aspects of the watershed to determine "keystone" corrections for restoring anadromous salmonid habitats. These projects provide clearly prioritized site specific restoration actions needed to improve or restore anadromous salmonids in the watershed.

Table 11. Salmon planning and assessment projects in California (funds in thousands).

	Projects	PCSRF Funds	State Funds
Watershed Evaluation, Assessment, and Planning	54	\$1,394	\$1,597
Assessment Project	28	\$924	\$870
Watershed Organization Support	34	\$1,231	\$820
Americorps Program	2	\$0	\$548
Public Involvement and Capacity Building	13	\$553	\$660
TOTAL	131	\$4,102	\$4,495

## Oregon

OWEB provided \$12.6 million for 208 salmon planning and assessment projects. Funding provided for the three project areas described below is shown in Table 12. A detailed listing of Oregon's PCSRF planning and assessment projects and activities with

descriptions, locations and funding amounts is available at:  
<http://www.nwr.noaa.gov/pcsr/index.htm>.

- 1) *Locally sponsored assessments of watershed conditions.* Using a template designed by the State in collaboration with federal resource agencies, local watershed councils and soil and water conservation districts conduct watershed assessments to determine where, within a given watershed, work is needed to restore natural processes or features related to fish habitat and water quality. Watershed assessments enable local groups to 1) identify features and processes important to salmon habitat and water quality; 2) determine how natural processes are influencing those resources; 3) understand how human activities are affecting salmon habitat and water quality; and 4) evaluate the cumulative effects of land management practices over time.
- 2) *Technical assistance to watershed councils, soil and water conservation districts, and individual landowners* for engineering design, conservation planning, fluvial geomorphology, and other technical services supporting restoration project implementation. Technical assistance funding is necessary to enhance the quality of local restoration activities and to support implementation of the federal Conservation Reserve Enhancement Program. Lack of resources supporting technical design, planning, permitting, and application of technology is a significant constraint that impedes on-the-ground restoration work. This allocation by OWEB directly supported project development and implementation by 21 local watershed groups around the state.
- 3) *Support for the capacity of local watershed councils to undertake restoration activities.* More than 90 watershed councils are established in Oregon, implementing restoration projects, partnering with agencies and private interests, educating and involving people in restoration, and monitoring watershed conditions to understand the effectiveness of restoration work. Watershed councils are composed of volunteers from local Oregon communities. They provide a forum for citizens, landowners, businesses, government, and other stakeholders to discuss local watershed conditions and to collaborate on restoration opportunities. OWEB grants support a variety of watershed council operations, including: salaries and support for council coordinators; training of council coordinators; materials used by coordinators to conduct council business; and restoration action planning for council coordinators. Watershed councils and soil and water conservation districts also use OWEB funding to purchase assessment equipment, hire watershed consultants, and do watershed mapping necessary for assessment. The template used by these groups is the *Oregon Watershed Assessment Manual* developed by OWEB. The manual helps ensure that local groups accurately assess watershed conditions, which in turn enables them to strategically plan salmon recovery and watershed restoration actions where the investment of time and money will yield the best results. Watershed assessments have been completed throughout much of the state, particularly in the coastal, Willamette, and Deschutes Basins. Additional assessments are planned for or are underway in other Basins that are key to recovering listed salmonids.



Table 12. Salmon planning and assessment projects in Oregon (funds in thousands).

	Projects	PCSRF Funds	State Funds
Locally Sponsored Assessments of Watershed Conditions	76	\$3,642	\$707
Technical Assistance to Watershed Councils, Soil and Water Conservation Districts and Individual Landowners	33	\$1,118	\$177
Watershed Council Support	99	\$5,554	\$1,459
TOTAL	208	\$10,314	\$2,343

### Tribes

Seventeen Indian Tribes used \$4.2 million of PCSRF funds for 44 salmon planning and assessment projects. A short description of each Tribe's work is provided below. A detailed listing of tribal PCSRF salmon planning and assessment projects with descriptions, locations and funding amounts is available at:

<http://www.nwr.noaa.gov/pcsrp/index.htm>.

The Confederated Tribes of the Colville Reservation used PCSRF funding to facilitate increased participation in regional salmon recovery planning and coordination activities in the Upper Columbia. This is a priority for the Colville Tribes since integration with other regional efforts is essential to the success of salmon recovery and protection activities throughout the region. Activities included participation on the Technical Review Team, Regional Technical Team, Upper Columbia Salmon Recovery Board, Okanogan Basin Technical Working Group, State Lead Entities, and other regional planning efforts. In addition to improving integration between various recovery activities, participation in these forums is also a valuable avenue for developing and identifying additional funding sources to augment the PCSRF.

The Hoopa Valley Tribe conducted road assessments at Hostler and Sockish Creeks to identify segments of road within the watershed that need storm-proofing, decommissioning, or upgrading to reduce impacts to water quality and fish habitat. The project involves walking approximately 46 miles of road within the Hostler and 36 miles of road within the Sockish Creek watersheds.

The Jamestown S'Klallam Tribe is planning riparian corridor protection and restoration work along the Dungeness River. Aerial photos of the Dungeness River corridor were taken and are being used by the Tribe and other local agencies for restoration planning, analysis of stream channel changes, and assessment of habitat conditions. The Tribe also participated in the completion of an overall salmon recovery strategy for the North Olympic Peninsula through the North Olympic Peninsula Salmon Recovery Lead Entity Group and Technical Review Group.

The Lower Elwha Klallam Tribe is developing an On-Reservation Programmatic Plan to address implementation of the ESA on Tribal lands. The Tribe also participated in developing a limiting factors analysis for several watersheds and in designing habitat restoration projects addressing issues identified in those reports.

The Lummi Nation used PCSRF funds to conduct salmon recovery planning and

coordination in the Nooksack River Basin. This includes research and assessment of salmon recovery activities in the Nooksack River Basin in cooperation with salmon co-managers, land-use managers, volunteer groups and citizen interest groups.

The Makah Tribe continued the Lake Ozette sockeye recovery planning effort, which focuses on integrating various monitoring and research projects with the Lake Ozette limiting factors report, baseline habitat inventory, sockeye hatchery and genetic management plan, and overall Lake Ozette Sockeye Recovery Plan.

The Nisqually Tribe is implementing the Nisqually Salmon Recovery Plan for the Nisqually Salmon Habitat Restoration Program. Work has focused on developing and implementing salmon habitat restoration projects in high priority areas, conducting research to assess the quality of salmon habitat and understand how salmon are currently utilizing the habitat, and developing partnerships with other organizations and the community to involve them in recovering Nisqually salmon.

The Port Gamble S'Klallam Tribe participated in forums for addressing salmon harvest management issues, including Hood Canal summer chum harvest management, Puget Sound comprehensive chinook management, and Puget Sound comprehensive coho management. The Tribe is an active participant in the Hood Canal Coordinating Council, an inter-governmental watershed-based organization active in salmon recovery planning, composed of Kitsap, Mason, and Jefferson counties as well as the Port Gamble S'Klallam and Skokomish Tribes.

The Shoshone-Bannock Tribes augmented staff capacity to coordinate with NMFS' Interior Columbia Technical Recovery Team and to collaborate with NMFS and co-managers to develop Tribal Resource Management Plans (TRMPs) for approval under the ESA section 4(d) rule for salmon and steelhead. TRMPs incorporate elements of both a hatchery and genetics management plan and a fisheries management and evaluation plan for the implementation, monitoring, and evaluation of production and harvest agreements under *U.S. v Oregon*.

The Skagit System Cooperative (Upper Skagit, Sauk-Suiattle, and Swinomish Tribes) entered into a cooperative feasibility study for a restoration project on Brown Hall Slough near the Skagit River delta. Project cooperators include the Skagit Watershed Council and Seattle City Light.

The Skokomish Tribe is assessing habitat damage to the Skokomish River watershed in preparation for long-term habitat repair project. The Tribe has also placed smolt traps at various places in the watershed to track outmigrants.

The Squaxin Island Tribe is developing a salmon recovery strategy for southern Puget Sound. A comprehensive collection of data for the area was assembled to develop a working trophic level model for assessing productivity of the South Puget Sound ecoregion.

The Stillaguamish Tribe is conducting an integrated chinook salmon recovery project for the Stillaguamish River watershed. A landslide hazard zonation map has been developed in concert with work being done on the Skagit River, and a model of peak flow impacts within the Stillaguamish watershed has also been developed.

The Suquamish Tribe's involvement with Kitsap County's Salmon Habitat Protection and

Restoration Plan resulted in many technical recommendations and modifications to current management regimes, including land use regulations, riparian corridor protections, storm water source control, road maintenance, and groundwater management.

The Tulalip Tribes developed chinook and coho recovery strategies for the Stillaguamish and Snohomish Basins. A chinook harvest management plan was completed and submitted to NMFS as a Tribal Resource Management Plan for consideration under the ESA 4(d) rule limits on take prohibitions.

The Yurok Tribe used PCSRF funds for staff to participate on NMFS' Technical Recovery Team for the Southern Oregon/Northern California Coast Recovery Domain.

## **SALMON ENHANCEMENT PROGRAMS**

Over \$15.5 million in PCSRF and state funds were committed to 69 salmon enhancement projects. This represents about 5 percent of the funding for all salmon conservation and recovery projects reported herein. Salmon enhancement projects were for acclimation site development, supplementation, artificial propagation, and salmon fishery enhancements.

### **Washington**

A number of organizations in the State of Washington are engaged in salmon enhancement and supplementation projects, such as Regional Fisheries Enhancement Groups. The SRFB is primarily focusing PCSRF on on-the-ground projects and relying on other organizations for salmon enhancement and supplementation. However, in accordance with the Congressional Appropriation Committee's Conference Report for the FY 2002 PCSRF, the SRFB provided \$1M to the Washington Department of Fish and Wildlife for mass marking of hatchery stocks.

### **Alaska**

The vision for the PCSRF program in Alaska includes a viable salmon industry that is an integral part of ensuring long-term survival of salmon and their habitat. The Alaska program includes a project area for increasing economic opportunities for salmon fishermen in Southeast Alaska. Sub-areas of this project area in Alaska are enhancement, infrastructure, marketing, and education. ADFG has allocated PCSRF funds in each of those sub-areas (education projects are described under "Outreach and Education Programs," below). A detailed listing of these projects with descriptions, locations, and funding amounts is available at:

<http://www.nwr.noaa.gov/pcsr/index.htm>.

- 1) *Enhancement and supplementation*. ADFG funded 16 projects totaling \$9.1 million in PCSRF funds. Projects in this subcategory include increasing salmon available for common-property fisheries, studies of natural barriers to fish passage, and supplementation evaluations in the Columbia River watershed.
- 2) *Infrastructure*. ADFG funded four projects totaling \$700,000 in PCSRF funds. These projects include improving cold-storage facilities, identifying ways to move fresh salmon to market in a timely fashion, utilization of fish waste products, and

an assessment of the infrastructure of the Southeast Alaska salmon fishing industry.

- 3) *Marketing*. ADFG funded one project for \$1 million in PCSRF funds. This project is focused on developing and implementing a marketing plan for troll-caught salmon.

## **California**

CDFG used \$400,000 of PCSRF funds and \$300,000 in state funds for fourteen cooperative rearing projects. These are stream-side artificial propagation projects designed to restore depleted stocks of salmonids. A detailed listing of these projects with descriptions, locations, and funding amounts is available at:

<http://www.nwr.noaa.gov/pcsrp/index.htm>.

## **Oregon**

OWEB is not currently using PCSRF funds for enhancement or supplementation projects. Such projects are addressed in Oregon with alternative funding programs by the Oregon Department of Fish and Wildlife.

## **Tribes**

Nine Indian Tribes used \$4.7 million of PCSRF funds for 34 salmon enhancement projects. A detailed listing of these tribal projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>. A short description of each Tribe's work is provided below.

The Confederated Tribes of the Colville Reservation used PCSRF funds for three enhancement projects. A study was conducted to determine the feasibility of reconditioning steelhead kelts as a means of enhancing populations of endangered Upper Columbia steelhead. Funds were also used for an acclimation facility on Omak Creek, which will be used to reestablish anadromous fish runs in accordance with a habitat conservation plan. PCSRF funds were also used to initiate preliminary steps toward development of Okanogan River Basin steelhead broodstock. This population has been greatly homogenized by the widespread planting of the Wells hatchery broodstock, and survival of natural-origin fish is poor. Development of local broodstock will help create greater genetic and life-history diversity and improve the survival of naturally produced fish.

The Muckleshoot Tribe continued its effort to restore White River spring chinook by increasing juvenile survival during hatchery rearing at the Tribe's White River Hatchery. The hatchery production is intended to protect the stock from demographic extinction and to sustain it until conditions that led to declines in abundance of naturally produced fish can be addressed.

The Nez Perce Tribe is restoring coho salmon in the Snake River Basin. Restoration of coho stocks upriver of Bonneville Dam, a tribal restoration priority, is occurring with production at hatcheries located in the Clearwater River (Dworshak/Kooskia National Fish Hatchery and Clearwater Fish Hatchery), and in the lower Columbia River (Willard National Fish Hatchery). In 2001, 1,400 returning adult coho were counted at Lower Granite Dam. The Tribe also is enhancing natural production of fall chinook in the

Grande Ronde River by modifying the Cottonwood Creek Acclimation Facility.

The Puyallup Tribe conducted enhancement work on White River spring chinook and other salmon in the upper Puyallup River watershed. The Tribe also continued the operation and maintenance of the Puyallup River screw trap to monitor mainstem smolt emigration.

The Quinault Nation used PCSRF funds for a Queets River wild coho supplementation program. The supplementation program uses innovative enhancement techniques, including capturing wild broodstock at various sites; raising the progeny of each site separately to the pre-smolt stage; acclimating the pre-smolts in natural or semi-natural pond sites near the location of the parents' origin; and allowing for volitional release of the smolts. The Tribe also undertook an array of enhancement and supplementation strategies to boost production of Quinault River sockeye.

The Round Valley Indian Tribes used PCSRF funds to support the Tribes' comprehensive watershed monitoring program, which has collected baseline information from class I streams since the inception of the Tribes' fisheries program in 2000. Data collected includes water flow rates, temperature regimes (via remote thermal sensors), gravel sample collection, species diversity sampling, macroinvertebrate assessments, and analysis and report preparation to more accurately describe and determine trends in stream health and status. This information is also combined with stream habitat typing data that is collected and updated every five years.

The Shoshone-Bannock Tribe is implementing artificial production actions in the Salmon River and its tributaries upstream from the Middle Fork Salmon River to restore naturally producing populations in a more natural way than under traditional hatchery practices. One million steelhead eggs and 300,000 salmon eggs were outplanted for side-stream and in-gravel incubation, and 480,000 steelhead smolts were released for natural production supplementation. The Tribe also is monitoring and evaluating the production initiatives it conducts under *U.S. v Oregon* agreements to quantify production output and adult returns and to monitor environmental parameters used to determine output timing, location, and life stage. An anadromous fisheries biologist/technician has also been hired to manage the fish planting and production program and to conduct monitoring and evaluation.

The Confederated Tribes of the Umatilla Indian Reservation purchased salmonid transportation vehicles, which otherwise are at such a premium in the Columbia Basin that in many cases, adults and/or juveniles are transported based on vehicle availability rather than on biological needs.

The Confederated Tribes of the Warm Springs Reservation of Oregon is addressing salmon production issues on the Warm Springs Reservation and throughout the Deschutes River Basin. The Tribe conducted a fish production assessment on the Warm Springs Reservation that included: 1) monitoring production of anadromous salmonids from Reservation streams; 2) conducting Shitike Creek spring chinook outplant and evaluation; and 3) developing and implementing a terminal fisheries project. The Tribe shaded raceways at the Warm Springs National Fish Hatchery to reduce impacts of direct sunlight exposure on juvenile salmon. The Tribe also will outplant spring chinook salmon into the lower 15 miles of Shitike Creek and examine the feasibility of re-introducing salmon upstream of the hydropower projects on the Deschutes River.

The Confederated Tribes and Bands of the Yakama Nation purchased 5.45 acres with an in-kind contribution of an additional 3.5 adjoining acres by the Washington Department of Fish and Wildlife to develop a coho acclimation site at Swale Creek to increase returns to the Klickitat Basin. The Tribe also installed three rearing troughs at the Klickitat Hatchery, allowing for rearing of 300,000 steelhead fry and resulting in reduced flow demand and densities for outside rearing of fall chinook.

## **SALMON RESEARCH, MONITORING, AND EVALUATION PROGRAMS**

Over \$33 million in PCSRF and state funds were committed to 278 salmon research, monitoring, and evaluation projects. This represents about 11 percent of the funding for all salmon conservation and recovery projects reported herein. Salmon research and monitoring projects ranged from stream surveys and redd counts to flow monitoring in various systems as well as specific investigations such as habitat factors limiting natural production.

### **Washington**

The SRFB has found that measuring success in recovering salmon and maintaining watershed health is vital. Policy makers and salmon advocates must have tools to know what is working for fish and watersheds, so they can determine the success of public, private, and volunteer investments. The SRFB undertook a major strategic initiative during 2001 and 2002, known as the Comprehensive Monitoring Strategy. The strategy identified current monitoring efforts and recommended approaches to regional, watershed, and project-scale monitoring. The strategy also addressed the State's Independent Science Panel recommendation that the State develop a coordinated monitoring strategy and action plan to meet salmon recovery goals and objectives. The final report included the monitoring strategy and an action plan for implementation. The report can be found at <http://www.iac.wa.gov/SalmonMonitoring.htm>.

### **Alaska**

ADFG used \$14.5 million of PCSRF and state funds for 61 research and monitoring projects that collect baseline and/or trend data. A detailed listing of these projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

These projects include:

- 1) Mark-recapture programs;
- 2) Estimating escapement to avoid over-harvest;
- 3) Stream production of salmon studies;
- 4) Genetic work;
- 5) Development of salmon aging techniques;
- 6) Development of better models to improve accuracy of information and forecasts;
- 7) Coded-wire tag studies;
- 8) Lake productivity studies;
- 9) Identification of habitats utilized by juvenile salmon;
- 10) Studies of ecological interactions of hatchery and wild salmon;
- 11) Salmon tissue sampling for heavy metals and other toxins; and
- 12) Subsistence use of salmon in Southeast Alaska.

## California

CDFG used \$900,000 of PCSRF funds and \$1.2 million of state funds for 23 salmon research and monitoring projects. A detailed listing of these projects with descriptions, locations, and funding amounts is available at:

<http://www.nwr.noaa.gov/pcsrp/index.htm>.

The two research/monitoring program areas in California are:

- 1) *Research Projects that Advance the Science of Anadromous Fish Recovery*. CDFG funded 6 projects totaling \$600,000 that advance the science of anadromous fish recovery, resulting in recommendations for restoration and management activities.
- 2) *Monitoring Projects to Collect Baseline and/or Trend Data*. CDFG funded 15 projects totaling \$1.6 million that provide baseline and/or trend data for anadromous fish populations or on physical factors known to be limiting their recovery.

## Oregon

OWEB provided a total of \$9.7 million for 92 salmon monitoring, data development, and research projects. Funding provided for the three project areas described below is shown in Table 13.

OWEB provided \$3.5 million for 20 state agency projects principally relating to data collection and research supporting restoration and recovery efforts. Coordination among state agencies to implement programs and provide assistance to local groups is a necessary part of achieving improvements in salmon and watershed health. OWEB grants have enabled other state agencies to support watershed councils, local governments, landowners, and others with technical assistance for watershed enhancement projects, monitoring, assessment, and education.

OWEB provided \$6.2 million for 72 projects monitoring watershed conditions. Watershed councils, federal and state agencies, and other groups monitor local watershed conditions to better understand trends in salmon populations and watershed health, and to determine whether completed restoration projects have achieved their intended goals. A variety of monitoring efforts were funded including salmon and aquatic insect monitoring; water quality and stream flow monitoring; wetland, estuarine, stream, riparian and upland condition monitoring; and restoration project effectiveness monitoring. Data collected through monitoring are used to develop projects and plans to restore watershed health. Local groups and federal and state agencies use the *Water Quality Monitoring Guidebook* developed for the Oregon Plan to ensure sound monitoring techniques and to produce widely accessible information. OWEB has adopted a monitoring strategy to guide future investments in monitoring of salmon populations, environmental conditions, and project effectiveness. Locally sponsored monitoring proposals funded by OWEB are reviewed and evaluated by an interdisciplinary team in the context of the State's overall monitoring effort. A detailed listing of Oregon's monitoring, research, and data development projects with descriptions, locations, and funding amounts is available at:

<http://www.nwr.noaa.gov/pcsrp/index.htm>.

Table 13. Salmon research and monitoring projects in Oregon (funds in thousands)

	Projects	PCSRF	State Funds
Monitoring	72	\$5,919	\$290
Research	12	\$1,043	\$1,306
Data Development	8	\$641	\$530
TOTAL	92	\$7,600	\$2,100

### Tribes

Sixteen Indian Tribes and Tribal Commissions used \$8.1 million of PCSRF funds for 34 salmon research and monitoring projects. A short description of each Tribe's work is provided below. A detailed listing of tribal research and monitoring projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsrp/index.htm>.

The Hoh Tribe conducted research on desired future conditions, a measurement of vegetation near streams that provide shade, woody debris and other functions important to salmon and their habitat. Phase I of the project was successfully concluded and Phase II is ready to be implemented. Phase I included identification of field sites, gathering and cataloging historic stand information, stratifying the sites according to the metrics identified above, and beginning fieldwork and data-gathering.

The Hoopa Valley Tribe used PCSRF funds for comprehensive assessment of anadromous fish-bearing tributaries on the Hoopa Valley Reservation, sampling outmigrants and macroinvertebrates to assess production in lower Trinity River tributaries, and for continuous water quality monitoring stations in the lower reaches of Hostler and Sotish Creeks to provide quantitative water quality data.

The Makah Tribe conducted research on factors limiting natural production of Lake Ozette sockeye. Spawning ground surveys were conducted for sockeye in the tributaries and along the shore of Lake Ozette.

The Nez Perce Tribe used PCSRF funds for a project to restore coho salmon in the Clearwater River. The Tribe monitored and evaluated coho salmon releases to obtain information necessary to determine the best implementation strategies for broodstock development, fisheries, and natural production.

The Nisqually Tribe conducted an assessment of habitat factors along the Lower Mashel River, a high priority habitat area for a number of Nisqually salmonids, including a scouring monitoring study to evaluate the potential impact of scouring on chinook and steelhead redds. In addition, comprehensive survey work is being conducted throughout the Nisqually watershed to evaluate the timing and distribution of spawning salmon.

The Nooksack Tribe conducted quantitative data collection on Nooksack River Basin spring chinook. The spawning ground surveys for adult chinook were increased in frequency in all of the previous study areas, and new areas were added that had been neglected due to insufficient staff.

The Port Gamble S'Klallam Tribe initiated more effective catch and population



monitoring procedures. Together with other Point No Point Treaty Council Tribes, the Port Gamble S'Klallam Tribe is developing a comprehensive treaty-area-wide (Hood Canal and Strait of Juan de Fuca) monitoring program to record the results of management actions and evaluate assumptions about salmon populations and fisheries. The Tribe also is locating and compiling habitat and water quality data for its usual and accustomed area for use in the Washington Conservation Commission's habitat limiting factors report for Hood Canal.

The Puyallup Tribe marked coho and chinook smolts released in the upper Puyallup River. The Tribe is monitoring a fish trap at the Electron hydroelectric project to assess run rebuilding upstream of Electron Dam.

The Quileute Tribe conducted spawner surveys and habitat assessments to determine fish passage in Lake Creek, a tributary of the Sol Duc River. Data collected indicate that Lake Creek is dominated by spawning habitat.

The Round Valley Indian Tribes used PCSRF funds to support its salmonid harvest and population assessment program, which monitors catch and effort data that will be used to determine fishing pressure on the anadromous resources, in conjunction with salmonid carcass and spawning surveys that have been conducted annually since 2000. These data help determine spawning success and recruitment potential from streams under Tribal stewardship and will be used to help better prioritize restoration efforts, protection needs, and additional monitoring.

The Shoshone-Bannock Tribes used PCSRF funds to test the use of artificial propagation to restore wild runs upstream of the Middle Fork Salmon River (treatment streams), while keeping the Middle Fork as a wild fish refuge (control streams). This involved outplanting and monitoring of fish in the treatment areas and continued monitoring in the control streams.

The Skagit System Cooperative (Upper Skagit, Sauk-Suiattle, and Swinomish Tribes) is studying how wild salmon respond to habitat destruction and restoration. This information is necessary to develop an accurate measurement of the link between habitat and numbers of fish produced and to analyze composition of chinook, coho, and chum runs on the Skagit River system. The Tribe is also working on data inputs for a limiting factors model for Skagit wild chinook.

The Stillaguamish Tribe gathered preliminary data on peak flow history and egg-to-fry survival. In cooperation with Snohomish County Surface Water Management, the Tribe has developed a geographic information system layer depicting restoration efforts in the Stillaguamish Basin over the last three to four years. The Tribe also installed a screw trap in the lower mainstem Stillaguamish River to collect salmonid smolt outmigration data.

The Suquamish Tribe constructed and monitored a smolt trap on Grovers Creek to evaluate survival of last year's planted hatchery-fed coho fry for comparison to survival of naturally spawning coho fry next year. The Tribe will assess the survival of the natural Grovers Creek coho production relative to the Agate Pass net pen strays using the presence/absence of mass marks and coded-wire tags.

The Tulalip Tribes established a new on-reservation water quality monitoring program directed by the Tribe's salmon hatchery manager. The monitoring program collects

water samples from 15 locations in Tulalip, Battle, and Quilceda Creeks. The Tribe is also conducting a juvenile fish trapping program.

The Confederated Tribes of the Warm Springs Reservation of Oregon conducted a mark-recapture experiment for estimating adult fall chinook salmon escapement to the Deschutes River. The Tribe is conducting aerial thermal infrared and color videography of anadromous streams on the Warm Springs Reservation. Traditional methods for monitoring stream temperatures have relied on instream temperature monitors, but with the use of remote sensing, it is possible to quickly map stream temperatures across entire stream networks (both mainstem and tributaries).

The Confederated Tribes and Bands of the Yakama Nation is monitoring and evaluating supplementation programs in the upper Columbia Basin by collecting wire tags and mark data from the landed catch in treaty Indian subsistence and commercial fisheries in Zone 6 of the Columbia River. This project will increase the recovery of tags and improve precision of evaluations regarding the effectiveness of supplementation and other hatchery-based production systems.

The Yurok Tribe conducted flow studies and purchased equipment necessary for the Tribe to be an active and responsible participant in ongoing Klamath River flow studies. The intent of these flow studies is to determine the quantity and quality of water needed in the Klamath River for anadromous fish. The Tribe also designed and installed permanent stream gauging and water quality monitoring stations for lower McGarvey and Blue Creeks, and operated a five-foot rotary screw trap in lower Blue Creek.

The Columbia River Inter-Tribal Fish Commission used PCSRF funds for population genetics and risk/benefit analyses to complement continued monitoring and evaluation. The project includes: 1) development of artificial propagation guidelines, 2) a paper on the potential for reduced effective population size in supplemented populations, and 3) development of a domestic research strategy. CRITFC also conducted literature reviews on population genetics and the ecology of artificially propagated/natural population interactions and developed a methodology to identify ecologically sound methods of using artificial propagation in tribal programs.

## **OUTREACH AND EDUCATION PROGRAMS**

Over \$7.5 million in PCSRF and state funds have been committed to 158 outreach and education projects. This represents about 3 percent of the funding for all salmon conservation and recovery projects reported herein. This funding likely underestimates the total funding and effort that the States and Tribes devote to outreach and education since many efforts are undertaken with base funds and not attributed to this program.

### **Washington**

The SRFB did not directly use PCSRF funds for outreach programs; however, some of the regional organization funding is used for outreach programs. The SRFB encourages active public participation through the lead entities. The SRFB's meetings are held in watershed locations around the State, and the Board also seeks on-the-ground tours of local areas with local salmon advocates. The SRFB's Technical Panel, composed of experts assembled to review all project proposals, visits each of the State's lead entity areas before reviewing project requests. The SRFB also works closely with the

Governor's Salmon Recovery Office, Natural Resource Cabinet, and federal agencies.

## **Alaska**

ADFG allocated \$2.4 million of its PCSRF funds for the following types of outreach and education projects. A detailed listing of these projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

- 1) *Technical Training*. ADFG funded one project totaling \$200,000 that assisted in development of a fisheries technician degree program at the University of Alaska. Ensuring a source of qualified fisheries technicians with practical and academic skills is critical to continued responsible and sustainable salmon management in Alaska.
- 2) *Public Education*. ADFG funded 12 projects totaling \$2.2 million. The funded projects include developing a salmon publication and teacher's manual for use in middle and high schools, hands-on education opportunities at hatcheries, ensuring Alaska stakeholders in the PCSRF process are informed and able to participate in making recommendations, and providing technical assistance to stakeholders and the public.

## **California**

CDFG used \$600,000 of its PCSRF funds and \$600,000 of state funds for 45 outreach and education projects. A detailed listing of these projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>. The two outreach and education program areas are:

- 1) *Private Sector Technical Training*. CDFG funded 18 projects with \$300,000 in PCSRF funds and \$300,000 in state funds. These projects teach private landowners practical means of improving land and water management practices, which, if implemented, will contribute to the protection, improvement, and restoration of salmon habitat.
- 2) *Public Education*. CDFG funded 27 projects with \$300,000 in PCSRF funds and \$300,000 in state funds. These public education projects provide school children with information on anadromous salmonid life cycles and habitat requirements.

## **Oregon**

OWEB provided \$3.4 million (\$100,000 in state funds and \$3.3 million in PCSRF funds) for 91 locally sponsored education and outreach efforts. Public education and outreach on watershed conditions and restoration opportunities are necessary to gain community support for and participation in watershed enhancement projects. Watershed councils and soil and water conservation districts are effective in citizen education and outreach because they operate at the local community level. Grants to these local groups support citizen learning with funding for education, coordination, materials, and training. Examples include 1) conducting watershed restoration workshops for landowners and educators; 2) providing students with opportunities for field study and watershed learning; 3) engaging youth and adults in programs of water quality monitoring; 4) developing community informational materials, such as brochures, interpretive signs, and newsletters; and 5) developing, providing training for, and implementing a

watershed-based science curriculum for K-12 teachers.

## **Tribes**

Six Indian Tribes identified outreach and education as uses of \$167,000 of their PCSRF funds; however, actual tribal investments in outreach and education are much higher because many Tribes have incorporated outreach into their PCSRF planning efforts (described in earlier sections of this report). A detailed listing of these tribal projects with descriptions, locations, and funding amounts is available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

The Colville Confederated Tribes used PCSRF funds to develop outreach and educational materials and activities, including a traveling educational display and related print materials and activities to provide tribal members, local governments, stakeholders, school children, and policy makers with a better understanding of the importance of salmon recovery efforts.

The Stillaguamish Tribe is developing a public education and outreach component specific to chinook salmon recovery for the Tribe's annual Festival of the River celebration. The festival focuses on educating local citizens about water quality and fish and wildlife habitat.

The Hoopa Valley Tribe used PCSRF funds for heavy equipment operator training to reduce heavy equipment impacts to water quality and fish habitat. Training focused on techniques that result in the fewest impacts to water quality and fish habitat. The training performed in 2001 was expanded to include correct placement and construction of water bars, rolling dips, grading of roads, culvert installation and removal, and road outsliping. The training was split into two sessions, one during winter and the other in early summer or late spring. The winter session included half-days in the office and the field observing the hydrologic implications of road construction and road reconstruction practices. The late spring/early summer session included on-site equipment and training on correct procedures to outslope roads, install water bars, install rolling dips, pull ditches, and blade berms off roads.

The Round Valley Indian Tribes used PCSRF funds to help send two individuals (one Tribal member and one non-member) to the CDFG Game Warden Academy. Successful completion by both individuals allows the Tribe to take a more active and progressive role in the protection of its resources from human activities with harmful impacts. Benefits to the resources will be varied but primarily should reduce poaching, thereby increasing adult survival, spawning success, and future numbers of salmonids.

The Umatilla Tribe used PCSRF funds for a public outreach event called "Salmon Walk" in June 2000. The public was educated about its shared natural resources and the unique cultural connection of the Umatilla, Walla Walla, and Cayuse Tribes. The catalyst for Salmon Walk is the successful recovery of salmon to the Umatilla River after 70 years of extinction. Another public outreach event is scheduled for June 2003.

The Yakama Nation is developing outreach materials relating to Yakama Nation Fisheries Management salmon recovery projects throughout the Yakima River Basin. The focus will be on how the recovery projects affect Yakama Nation fishery resources. The sharing of information will lead to future collaborations with diverse stakeholders and to development of broad-based support for the PCSRF salmon recovery efforts.

## **PCSRF WORKSHOPS**

NMFS hosted two PCSRF workshops in 2002. The agendas, presentations, discussions and outcomes from both PCSRF workshops are available at: <http://www.nwr.noaa.gov/pcsr/index.htm>.

The first PCSRF Workshop was held on January 29-31, 2002, in Portland, Oregon. The purpose of this three-day workshop was to provide a forum for the States, Tribes, and NMFS to discuss the current and future implementation of the PCSRF; to present and review programs and projects; to discuss program reporting; and, to discuss monitoring and evaluation efforts. Over 100 federal, state, and tribal representatives attended the PCSRF workshop to share their successes and challenges as "co-managers" of PCSRF. Participants reaffirmed that the PCSRF is an important Congressional initiative that strengthens the ability of the States and Tribes to conserve salmon populations and help in the recovery of ESA-listed salmonids. Workshop participants represented the states of Alaska, Washington, Oregon, California, and Idaho; NMFS; three Tribal Commissions; and, twenty-five Pacific Northwest and northern California Indian Tribes. Other participants included representatives of the Pacific Salmon Commission and the Northwest Power Planning Council. This Workshop gave States and Tribes the opportunity to share their processes and successes in using the fund for salmon conservation and recovery, to present and provide for independent review of a range of PCSRF-funded projects, and to discuss possibilities for better coordination and consistency in monitoring project outcomes.

The second PCSRF Workshop was held on December 12-13, 2002 in Seattle. Over 100 people attended this two-day workshop. Participants included representatives of State and local governments, tribal governments and commissions, federal agencies, Congressional offices, public utilities, watershed groups, and other organizations working on salmon conservation and recovery. The goal of the second workshop was establishment of an accountable performance management system with standards for effective use of PCSRF funds, and a structure for reporting accomplishments and successes of the program. The second workshop also provided an opportunity to seek agreement among States, Tribes, and NMFS on the level of coordination and consistency needed to effectively monitor and evaluate restoration and conservation efforts funded through PCSRF. Discussions were held and consensus was reached on core physical and biological indicators that can be measured to allow comparisons of monitoring data collected across the region by different entities. A three-tier structure for a comprehensive monitoring and evaluation program that had been proposed at the first workshop was further developed. Progress was made at the Workshop on initial development of performance measures and indices for demonstrating and determining success in progress towards program goals and objectives. Follow-up discussions were held to further refine performance metrics that focus on expected outcomes. The Workshop was followed with a facilitated meeting in March 2003 to further review and discuss performance metrics and the inclusion of performance measures in the MOUs between NMFS and the States and Tribal Commissions.

The second PCSRF Workshop also provided the opportunity to present updates on the progress and successes in PCSRF projects and an independent review of a range of PCSRF-funded projects. Presentations by Tribes, States, watershed councils, and local governments highlighted examples of how the PCSRF has been invested in habitat restoration and monitoring projects.

## **MEASURING PERFORMANCE**

NMFS is developing a comprehensive performance measurement system for the PCSRF in conjunction with the States and Tribes. Standard performance indices are being developed to measure program success across all four states in achieving the PCSRF overall goal of making significant contributions to the conservation, restoration and sustainability of Pacific salmonid populations and their habitats. As described earlier in this report, restoring and maintaining sustainable Pacific salmon populations will require substantial efforts over many salmon life cycles, and detecting improvements is complex due to the variety and scale of factors involved and the time lag between actions and results (e.g., actions such as restoring physical attributes of salmon habitat may not result in observable biological effects and benefits to the salmon utilizing that habitat for several years). Nonetheless, the States and Tribes are committed to collecting standardized performance metrics under a performance management system that will over time demonstrate the significant contributions that the PCSRF is making towards salmon conservation and recovery.

The lack of a PCSRF performance measurement system across the four states (Washington, Oregon, California, and Alaska) was noted in the "Performance and Management Assessments" section of the "Budget of the United States Government Fiscal Year 2004." A "Performance Assessment Rating Tool" (PART) was applied to the PCSRF by the Office of Management and Budget (OMB) resulting in a rating of "results not demonstrated." The basis for the rating was: 1) program-wide performance measures have not yet been developed, although each state is developing performance measures related to their individual needs; 2) the program has not been able to allocate funds based on recovery needs of specific salmon populations; and, 3) the long-term goal of the program is to contribute to recovery and conservation of Pacific salmon, and the program which started in 2000, has not finalized annual measures yet. Although MOUs between NMFS and the States and Tribes established criteria and goals for prioritizing PCSRF funds to projects designed to conserve and restore Pacific salmonids, they lacked program-wide performance metrics and thus did not meet the PART requirements when it was conducted in FY2002.

At the December 2002 PCSRF workshop, a collaborative effort by the States, Tribes and NMFS to develop program-wide performance metrics that would apply across all four states began. The States and Tribes had completed two PCSRF funding cycles at the time of the Workshop and thus were in a good position to assess the feasibility of the wide-ranging variety of performance metrics that might be considered for the PCSRF. Five program objectives have been developed for achieving the PCSRF overall goal to "make significant contributions to the conservation, restoration and sustainability of Pacific salmonid populations and their habitats." Establishing performance measures that acknowledge the multiple program objectives for PCSRF across all four states and that recognize that the primary outcome goal of the program is conservation and sustainability, as well as recovery, of salmon is expected to address the deficiencies identified in the PART exercise. Performance goals will be developed by June 2003, as requested by OMB, for each of the five program objectives to clarify the inclusion of differing project types and expected outcomes in achieving the overall PCSRF goal. The performance measures will be constructed to allow for revisions over time as the program matures.

Progress towards the PCSRF program goal and program achievements on performance goals will be reported annually to Congress commencing with the next annual report in April 2004.

## ***PCSRF PROGRAM HIGHLIGHTS***

This section highlights a few of the PCSRF-funded projects and activities by the States and Tribal Commissions, and describes how they are making significant contributions to the conservation and restoration of healthy and sustainable Pacific salmonid populations. Over 2,000 projects and activities have been funded with PCSRF and state funds, and it is not possible to list the efforts and results of each. Thus, this section provides just a glimpse of the PCSRF accomplishments that are beginning to accumulate.

### ***Oregon***

Following are two examples of the kind of projects funded in Oregon with PCSRF and state funds dedicated to habitat restoration projects that will contribute to salmon recovery. These are just two examples from over 1,000 active restoration project grants currently underway in Oregon. They exemplify collaboration, leverage, and outcomes that Oregon is accomplishing by making investments in voluntary restoration projects on private lands that are key to recovering native salmon in a way that sustains local economies.

*Mid-Coast Oregon Rapid Bio-Assessment.* A hallmark of Oregon's salmon recovery program is its emphasis on basing salmon protection and restoration efforts in science. For the Mid-Coast Watersheds Council, this meant implementing a carefully designed snorkel survey of juvenile salmonid abundance and distribution in the Yachats, Alsea, Yaquina, Siletz, and Salmon rivers. The survey focused on threatened coastal coho salmon that spend the first 18 months of their lives in freshwater. Systematic snorkel surveys of 400 miles of streams in the five watersheds identified the most viable populations of salmon and steelhead, assessed the quality and use of habitat, and located barriers to fish passage. Results from the Council's Mid-Coast Rapid Bio-Assessment are helping to focus recovery dollars where they will have the most benefit to salmon.

*Walla Walla River Water Conservation.* In 2001, for the first time in a century, water flowed year-round through the Walla Walla River. Before then, the river was dewatered at Milton-Freewater during the July to September summer irrigation season. In 1998 and 1999, listing of bull trout and steelhead as threatened under the ESA could have set up a scenario of competing lawsuits between farming and environmental interests. In the Walla Walla Basin, however, something different happened. Irrigators came forward to craft agreements and implement projects to keep more water in the river, where its headwaters support one of the strongest populations of endangered bull trout in the entire state. In 2000, OWEB provided funding to the Walla Walla Basin Watershed Council to implement irrigation efficiencies and dedicate water saved by the project to preserve adequate instream flows for fish habitat. The council partnered with several irrigation districts that withdraw water from the lower Walla Walla River, the Confederated Tribes of the Umatilla Indian Reservation, the Oregon Water Trust, and federal and state agencies. The goal was to pipe earthen ditches to prevent water loss through seepage and evaporation, convert flood irrigation to sprinkler irrigation, and install water-measuring devices. As a result, enough water for fish will be kept in the river in perpetuity. Together with other projects removing fish barriers and improving riparian and instream habitat, the people in the Walla Walla subbasin are making

progress toward a winning combination: revitalizing their watershed while protecting their livelihoods and way of life.

### ***California***

California funded a number of successful PCSRF projects that will contribute significantly to salmon recovery. Three of these projects are highlighted below.

*Ackerman Creek Culvert Barrier Replacement.* Good intentions of the past have become barriers to salmon migration today. This is the case for Ackerman Creek, where culverts at milepost 5.5 on the Masonite Road were installed sometime in the 1950s. Over time, sediment accumulated behind the culverts, eventually burying fish habitat for over 3,000 feet upstream. With the loss of gravel on the downstream side, the culvert became a migration barrier to steelhead trout. Cattle grazing so damaged the riparian zone that the braided stream became a virtual death trap for adult steelhead, and high temperatures in the summer eliminated over a mile of previously high quality rearing habitat. With PCSRF funds and Mendocino Redwood Company matching funds, the culverts were removed, a bridge was installed, the cattle were fenced out, and the riparian habitat is being restored. The project was implemented through the combined efforts of CDFG, the Mendocino Redwood Company, and the local California Conservation Corp, which provided labor for the project. Today, steelhead have unhampered migration upstream for the first time in over 50 years. Riparian seedlings are taking hold, and soon a thriving riparian forest will blossom. Immediate effects are that the once braided stream channel is maintaining a single thread, providing cool water and passage for juvenile and adult steelhead. Mendocino Redwood Company monitors fish populations, and according to their fish biologist, "Steelhead have been seen upstream of the road for the first time in many years, and population numbers are up!"

*Jordan Creek Culvert Replacement.* The Five-Counties Salmon Group has completed culvert replacement projects at nearly 20 locations throughout Humboldt, Del Norte, Siskiyou, Trinity, and Mendocino counties. Anecdotal information suggests that many of these projects have opened up previously inaccessible habitat and that fish populations have responded quickly to re-colonizing these reaches of stream. Del Norte County treated a high-priority location on Jordan Creek at Parkway Drive. Jordan Creek is the main spawning tributary to Lake Earl, a brackish lagoon that supports populations of steelhead and coastal cutthroat trout. The Parkway Drive culvert was not only a migration barrier, but a popular spot for local poachers who netted or speared fish that were congregated below the Parkway Drive culvert. The new crossing, an open-bottom arch with a natural channel, was installed during the summer of 2001. During the winter of 2001-02, the Lake Earl watershed coordinator received a frantic call from the landowner upstream of Parkway Drive to alert him of the hundreds of large fish in Jordan Creek on her property (stacked below her culvert!). She stated she had lived there for 35 years and had never seen this many fish in the creek and wanted to know what was happening. The coordinator told her of the culvert project and has since replaced her barrier culvert with a small bridge. There are more projects in the future to further open up salmon habitat on Jordan Creek. Del Norte County has received federal and state funding to replace the next upstream barrier, a concrete box culvert on Elk Valley Drive. When the Elk Valley Road crossing is treated, adult spawners will finally have unimpeded access to upper Jordan Creek where 1.2 miles of pristine spawning and rearing habitat is located in the old-growth redwood stands of Jedediah Smith State Park.



*Five-Counties Stream Crossing Replacement Projects.* Morrison Gulch is a small tributary of Jacoby Creek that flows into Humboldt Bay. Jacoby Creek supports populations of all four species of Pacific salmonids native to northern California: coho salmon, chinook salmon, steelhead, and coastal cutthroat trout. Near the mouth of Morrison Gulch, a county-maintained culvert on Quarry Road was surveyed in the fall of 1998 as part of a county-wide inventory to assess fish migration at stream crossings. The culvert was assessed as a complete barrier to the upstream migration of all adult salmon and steelhead, due primarily to the excessive leap required to enter the culvert. Because the culvert was located near the mouth of Morrison Gulch, it blocked access to the entire reach, approximately one mile, of spawning and rearing habitat above Quarry Road. Numerous adult and juvenile coho salmon, steelhead, and coastal cutthroat trout have been observed leaping unsuccessfully at the Quarry Road culvert. The peak of the run occurred in mid-January when nearly 600 failed leap attempts were documented by observers over a six-day period at the Morrison Gulch/Quarry Road culvert. Spawning surveys were conducted upstream of Quarry Road to determine if any adult coho successfully passed through the culvert and spawned upstream – none were found. Upstream migration of juveniles to seek refuge from high winter flows is an important over-wintering survival strategy for salmonids.

PCSRF funds were awarded to Humboldt County to replace the Quarry Road culvert (and seven other high-priority sites). Although the old culvert was in place during the winter of 1999-2000, a strategy to capture and relocate adult coho salmon at the Quarry Road culvert was approved by CDFG and NMFS. A total of 14 adult coho salmon (8 males and 6 females) were netted while leaping at the culvert outlet, transported over Quarry Road, and released in the upstream channel. Over the next two weeks, coho were observed spawning nearly 0.5 miles upstream of Quarry Road. Other surveys confirmed that numerous juvenile coho were rearing in Morrison Gulch above Quarry Road. Visibility was poor and the pool habitat was complex, yet 331 coho young-of-year were counted.

PCSRF and state funds were invested to replace the Quarry Road culvert with a fish-friendly culvert during the summer of 2001. The new crossing employs a series of rock weirs to provide grade-control to prevent the stream channel from excessive head-cutting. To determine the success of the culvert replacement project, surveys were conducted, and a total of 115 coho salmon were observed. During the surveys, numerous juvenile salmonids (5 to 8 inches in length) were observed in pools adjacent to the spawning coho salmon. Several large (15 to 18 inches in length) coastal cutthroat trout were also observed in Morrison Gulch, indicating that the new culvert was also allowing the passage of resident trout and over-wintering juveniles. Bank-side observations during the summer of 2002 indicated that Morrison Gulch was fully seeded with thousands of coho salmon fry. Spawning surveys and continued monitoring of juvenile salmonid habitat utilization in Morrison Gulch are planned for 2002-03 with PCSRF funding.

### ***Washington***

The Washington SRFB has funded many successful PCSRF projects that will contribute significantly to salmon recovery; three of these projects are highlighted here. Washington's PCSRF funds have also contributed to four major locally based efforts to plan and implement salmon recovery through a collaborative state/federal/local approach (see description below). More information about Washington's SRFB and their grant program is available at: <http://www.iac.wa.gov/salmonboard.htm>.

*Patit Creek Barrier Removal.* Patit Creek, a tributary of the Touchet River in Columbia County (SE WA), is home to ESA listed steelhead. An old dam on agricultural property blocked fish passage to upstream spawning habitat, except in high stream flows. The dam was removed and rock and log weirs were installed as grade control structures and to create a series of step pools to facilitate both upstream and downstream migration. In addition, the riparian area was restored with plantings of cottonwood and willow. The sponsors were a private landowner – the Broughton Land Company – and a regional fisheries enhancement group.

*Nisqually Estuary Restoration.* The Nisqually Indian Tribe seeks to double the production of Chinook salmon in the Nisqually River delta (Pierce and Thurston Counties) by restoring nearly 150 acres of salt marsh. The delta is seen as a rare chance to restore an estuary in Puget Sound, where 70 to 80 percent of the estuarine environment has already been lost. Estuary restoration will make a significant contribution to Chinook salmon recovery as well as to recovery of chum, Coho, and cutthroat. The project began with the Tribe's acquisition of a 400-acre farm just west of Interstate 5 from a willing seller whose family had farmed the land for several generations. The land had been diked and drained to provide pasture. With a grant from the SRFB, the Tribe was able to remove the dikes adjacent to Red Slough in the summer of 2002 and to restore 31 acres of tideland, which will revert to salt marsh over time. Salt marsh will provide cover and nutrients for juvenile salmon as they make the transition to saltwater.

*Sherwood Creek Fish Passage.* The South Puget Sound Salmon Enhancement Group and Allyn Community Association proposed replacing two fish blocking culverts on Sherwood Creek in Mason County. Replacing these barriers was intended to provide access to 18.6 miles of high quality spawning and rearing habitat for several species of salmon, including ESA listed Chinook as well as chum, Coho, and cutthroat. Because the stream is about 30 feet wide, the project sponsors determined that the most cost- and biologically effective solution would be a new bridge, rather than larger culverts. After raising \$1.1 million and much hard work by project sponsors, the new railroad bridge was built in three months in the summer of 2002. The new bridge not only allows fish passage for adults and juveniles of all species but also helps restore watershed processes by allowing streambed material and woody debris to migrate downstream. The project partnership includes the Mason County Conservation District (the lead entity), the Navy (property owners), the Puget Sound and Pacific Railroad, WDFW, the Squaxin Island Tribe, and a private fisheries consultant. In the fall of 2002, volunteers reported seeing thousands of salmon upstream of the bridge, using the newly opened habitat.

The SRFB also used PCSRF funds to help the following locally-based recovery planning efforts: *Lower Columbia Fish Recovery Board*, which works in a five-county region including the Vancouver metropolitan area; *Snake River Fish Recovery Board*, operating on recovery issues in Washington's southeast quarter; *Upper Columbia Fish Recovery Board*, serving in the four counties of north central Washington; and, *Puget Sound Shared Strategy for Salmon Recovery (Shared Strategy)*. While the format of each effort varies with local issues, each recovery planning group works with coalitions of local citizens. Their work will result in the development and implementation of a salmon recovery plan for ESA listed salmon through a five-step planning process: 1) identify what should be in a recovery plan and assess how current efforts can support the plan, 2) set recovery targets and ranges for each watershed, 3) identify actions needed at the watershed level to meet targets, 4) determine if identified actions add up to recovery

(and if not, identify needed adjustments), and, 5) finalize the plan, actions and commitment necessary for successful implementation.

The *Shared Strategy* is a groundbreaking collaborative endeavor to protect and restore salmon runs across Puget Sound. Leadership is provided by a coalition of tribal, federal, state, and local governments and representatives of watershed planning groups, private businesses, and environmental organizations. The Shared Strategy engages local citizens, tribes, technical experts, and policy makers to build a practical, cost-effective recovery plan endorsed by the people living and working in the watersheds of Puget Sound. PCSRF funds have supported many of entities and activities involved in this endeavor. More information on the Shared Strategy and planning documents prepared to date are available at: [www.sharedsalmonstrategy.org](http://www.sharedsalmonstrategy.org).

To provide the scientific information necessary to guide effective salmon recovery planning, NMFS works with the regional groups. In Puget Sound, NMFS established a Puget Sound Technical Recovery Team (TRT) in April of 2000 that is working closely with the Shared Strategy leadership. The TRT members are charged with developing the biological criteria that will be used to make delisting determinations under the ESA. The TRT is an interdisciplinary team of scientists with expertise in salmon population dynamics, habitat, hatcheries, harvest management, and genetics. The TRT has completed a technical analysis of ESA listed chinook salmon population in Puget Sound and identified 22 independent historic spawning populations. This report is available at: <http://www.nwfsc.noaa.gov/cbd/trt/>. The TRT also recently completed a draft report entitled "Integrated Recovery Planning for Salmon: Technical Guidance for Watershed Groups in Puget Sound." This report describes the scientific resources and technical methods available to watershed groups and local planners for recovery planning in developing a scientifically robust salmon recovery plan. The draft report is available at: <http://www.nwfsc.noaa.gov/cbd/trt/trtwaterassessguide.pdf>.

## ***Alaska***

PCSRF funds have been utilized in Alaska for important projects to assess, protect, and enhance salmon stocks and salmon habitat, and to help ensure the sustainability of the salmon industry and salmon dependent communities in the Southeast Alaska area that is covered by the Pacific Salmon Treaty. The following are examples of projects receiving funds.

Projects are underway to compile existing information related to freshwater and near-shore marine salmon habitats, to prioritize information needs, and to collect field data from those areas identified as high priority for information collection. This work is allowing managers to identify and map previously unmapped habitat. The compiled information is also being used to assess quantitatively for the first time the effects of land use activities on salmon habitat in Southeast Alaska. All salmon habitat related information, both previously collected and that collected during the recent field surveys, is being integrated into an information system that will link together various types of maps, large tabular databases (such as salmon escapement and habitat-related field data), geographic data, and digital photographs collected during field surveys, as well as locations of and comments related to permits. Additionally, the system will provide a means for retrieving aerial photographs and satellite imagery for Southeast Alaska. This system is currently web accessible, with more components coming on-line in the future. The resulting information will be available to the public, including land managers; municipal, tribal, and native corporation planners; developers; and others

interested in salmon habitat management. The result will be improved and streamlined planning and permitting processes.

There are a number of projects that address information needs and issues related to the Pacific Salmon Treaty. These include cooperation with the Columbia River Inter-Tribal Fish Commission on several stock and habitat assessment projects in the Columbia River Basin, assessment of salmon stocks and habitat in several trans-boundary rivers (the Alsek, Taku, Stikine, and Unuk), improvement of the Pacific Salmon Commission coastwide chinook salmon model, genetic identification studies of Southeast Alaska chinook salmon, estimation of incidental mortality of chinook salmon in the Southeast Alaska net and troll fisheries, and assessment of migratory timing, routes, and mixing of Northern Boundary Area salmon.

PCSRF funds are assisting the Southeast Conference (an association of municipal governments in Southeast Alaska) and numerous cooperating agencies and organizations in the formation of community watershed councils. Other projects are assisting the two existing Southeast Alaska watershed councils in their efforts to assess and restore the watersheds in their areas. Work to date includes identifying and repairing blockages to fish passage, water quality and habitat assessments, and stream bank restoration.

### ***Northwest Indian Fisheries Commission***

Over the past three decades, in response to dwindling populations and a commitment to sustainable fisheries, Northwest treaty Indian Tribes and the State of Washington have worked together as co-managers of the resource, modifying and reducing harvests to protect individual populations of salmon. Harvest levels have been cut dramatically – by as much as 80 to 90 percent in some cases – at great cost to the spiritual, cultural, and economic well being of the Tribes. Harvest reductions alone, however, cannot make up for the loss of wild salmon production caused by lost and degraded spawning and rearing habitat.

At the forefront of the struggle for salmon recovery in western Washington is the Shared Strategy (described above). Availability of the PCSRF to Northwest treaty Indian Tribes has ensured that Puget Sound Tribes have the resources to effectively participate in the Shared Strategy. This three-year-old effort by tribal, federal, state, and local governments and private sector leaders is aimed at creating healthy ecosystems to produce and support wild salmon at a level that will once again sustain commercial, ceremonial, and subsistence harvest.

Consistent with Congressional intent, salmon recovery funding agreements allow the Tribes flexibility in identifying for themselves salmon recovery priorities for tribal watersheds, governments, and communities. At the same time, the Tribes' efforts are connected through the NWIFC by overall strategies and efforts to most efficiently and effectively advance western Washington salmon recovery efforts. The NWIFC has re-directed resources and is using its base capabilities in a manner that advances these initiatives.

Tribal proposals are reviewed and monitored by NWIFC technical and policy staff to ensure each provides sustainable and measurable benefits for salmon and their habitats. In addition, local and regional recovery efforts are analyzed and tracked to support the Tribes' participation in shaping the direction of salmon recovery. Because each Tribe

has slightly different staffing patterns, due in part to differential funding, historic fishing practices, and geography, each Tribe is utilizing the funding in ways unique to its needs. Some Tribes are using PCSRF to supplement ongoing salmon recovery efforts, while others are undertaking new projects to protect, preserve, and enhance the salmon resource.

### ***Columbia River Inter-Tribal Fish Commission***

The Columbia River Inter-Tribal Fish Commission (CRITFC) has funded many successful projects under the Pacific Coastal Salmon Recovery Fund that have shown direct benefits to anadromous fish. Four of these projects are highlighted here. More information about the projects administered through CRITFC is available at: <http://www.critfc.org/>.

Confederated Tribes and Bands of the Yakama Nation - *Castile Falls Fish Passage Improvement Project*. The focus of this project is to augment existing funds to reconstruct two tunnel fishways and a single above-ground fishway, install a new Alaskan steep pass fishway, and construct a walkway to adhere to new safety requirements. Monitoring of fish populations, including species compositions and densities, has begun as part of the baseline data collection for production estimates. Methodologies employed include fisheries census surveys (i.e., snorkeling, adult spawn surveys). The project will reestablish access to the upper Klickitat Basin for adult spring chinook and steelhead.

Confederated Tribes of the Warm Springs Indian Reservation of Oregon - *Fish Production Assessment on the Warm Springs Reservation*. An assessment of current and potential fish production levels is needed to achieve the goal of self-sustaining, harvestable wild anadromous fish populations. Warm Springs fisheries staff outplanted 159 adult chinook salmon into Shitike Creek in September 2000 and 199 adults in September 2001.

Confederated Tribes of the Umatilla Indian Reservation - *Whiskey Creek Passage Improvement Project*. An old irrigation dam was removed and the channel stabilized by a series of boulder step pools. Large wood additions also were completed and are functionally creating instream cover for fish and stabilizing eroding banks. Initial revegetation efforts were successful and plants will be monitored to ensure survival. The dam removal opened up 10 miles of potential rearing and spawning habitat.

Nez Perce Tribe - *Coho Production in the Clearwater River Subbasin*. The intended benefit of this project is to restore coho salmon to sufficient numbers in the Clearwater River subbasin to support natural production and tribal and non-tribal harvest. The long-term goal in the Clearwater River is 14,000 returning adult coho salmon, as identified in *Wy-Kan-Ush-Mi Wa-Kish-Wit*.

### ***Klamath River Inter-Tribal Fish and Water Commission***

The Klamath River Inter-Tribal Fish and Water Commission (KITFWC) only recently began coordinating the PCSRF efforts of Klamath River Basin tribes. Several of the PCSRF efforts by the four KITFWC Tribes are as follows.

The Hoopa Valley Tribe has supported salmon recovery in three general disciplines: forestry, environmental protection, and fisheries. Recovery efforts that have been successfully completed include installation of a structural steel bridge that will re-

establish the original gradient for Hostler Creek; installation of continuous water-quality monitoring stations on Pine Creek; dissolved oxygen monitoring in the Trinity River; habitat typing of the Hoopa Valley Reservation tributaries; and monitoring of juvenile out-migrant salmonids.

The Karuk Tribe improved Klamath River tributary fish passage and habitat connectivity within the Karuk Ancestral Territory. All tributaries within the project area with fish passage problems were identified, and priority tributaries (Aiken Creek to Walker Creek) with fish passage problems were selected. Development of site-specific fish-passage improvement alternatives that include prescriptions and cost estimates is in progress.

The Klamath Tribes worked toward the restoration of anadromous salmonids to their former distribution in the Upper Klamath Basin. The Tribe began work on a hydrologic and geomorphic assessment of the Sprague River, supplemented development of water quality and nutrient loading models for the Sprague River, and hired a consulting limnologist to further analyze data available on Upper Klamath Lake.

The Yurok Tribe conducted a combination of monitoring, restoration, and research related projects. A substantial portion of the funding was used to conduct research for a long-term flow study of the Klamath River to build upon the scientific information necessary for managing Klamath River flows for all species that the Tribe depends upon. Flow study activities included: 1) a cooperative study with the USFWS to quantify salmon fry densities and habitat utilization of critical edge-habitats along the Upper Klamath River; 2) a cooperative study with USFWS to operate juvenile salmonid emigration traps in the Upper Klamath River; 3) a cooperative study with several agencies to assess the magnitude of salmonid fry stranding in relationship to reduced Klamath River flows; and 4) an assessment of potential fish kills in the Klamath River. PCSRF funds were expended primarily for reconnaissance of juvenile salmonid fish kills, which have been somewhat typical in the Klamath River during recent years. These funds were not available, nor anticipated as necessary, for the unprecedented fish kill involving adult salmonids on the Yurok Reservation in September 2002.

