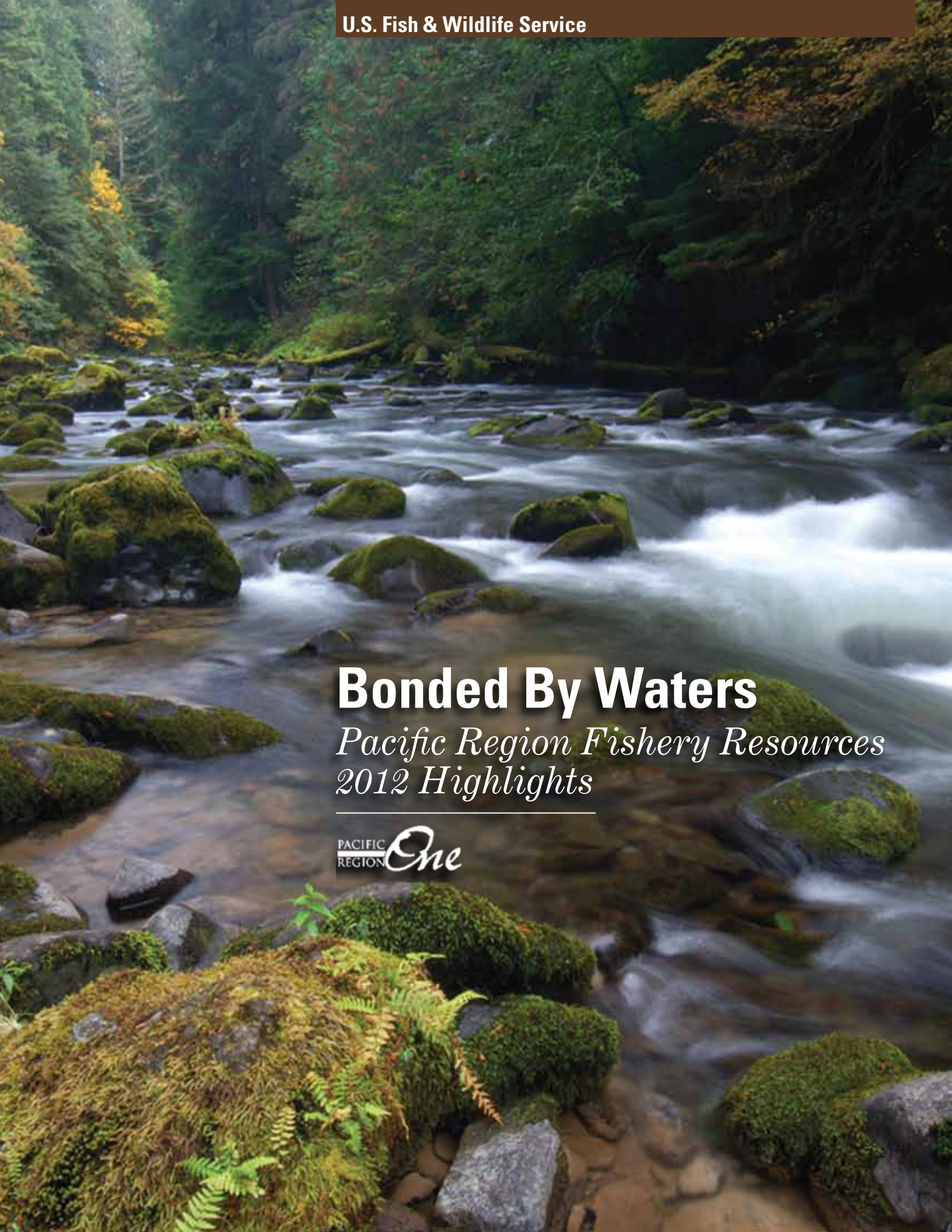
U.S. Fish & Wildlife Service



Bonded By Waters

Pacific Region Fishery Resources
2012 Highlights

PACIFIC REGION One

"Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our waters is the principal measure of how we live on the land."

Luna Leopold

Michael Carrier - Assistant Regional Director, Fishery Resources

United by a Common Purpose

As this edition of the Pacific Region Fishery Resources Highlights is readied for publication, many issues important to our nation are in gridlock.

Yet, the cooperation, problem-solving and success of our many partners in conservation remain strong. This issue of Highlights celebrates our partners and profiles the amazing work that a representative group of them has achieved in the past year. From state agencies to sovereign tribes to local governments and non-governmental organizations, the partners profiled here are united by a single principle - restoring habitat and aquatic species requires cooperation, pooling of resources and selflessness.

United by a common purpose - that of doing all we can to conserve fish and wildlife and their habitats - the Fish and Wildlife Service and its many partners continue to deliver conservation for the benefit of Pacific salmon, Bull trout, Pacific lamprey and countless other species.

As you read this report, we hope you also celebrate the many successes it describes. In addition, we hope you agree that collaboration, cooperation and compromise are essential to those successes.

A Service employee on Washington's Entiat River. USFWS

A Basin-by-Basin Review of Accomplishments with Partners

This report is organized into 13 4th-level Hydrologic Unit Codes covering Oregon, Washington, Idaho and Hawaii. Maps by Stephen Pilson.

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitat for the continuing benefit of the American people.

Water is the most cohesive non-metallic liquid on the planet. Just as chemistry and electricity bind water molecules together, our conservation and restoration successes depend on the bonds we form with partners.

On the following pages see cohesion in action across more than a dozen Pacific Northwest river basins and the Pacific Islands.

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Regionwide Highlights

One of five engineered log jams being placed by helicopter into Washington's Entiat River to create habitat for bull trout, steelhead, and Chinook salmon. USFWS

In 2012, the Fishery Resources Program helped remove or bypass 23 fish passage barriers, re-open 252 river and stream miles, and restore 12 miles of in-stream habitat for native fish across four states. We use agency programs like the National Fish Passage Program and National Fish Habitat Partnership to leverage funding and staff expertise in coalition with our partners.

Mussels: Friends or Foe?

The world's greatest diversity of freshwater mussels is here in North America, but scientists know comparatively little about these fast-declining aquatic organisms. That's why the Service hosted a regional workshop to share scientific data for Pacific Northwest species like the Western pearlshell (right) and the Winged floater. Employees at the Washington Fish and Wildlife Office's Fisheries Division, meanwhile, are using blogs and outreach events to raise public awareness for a species whose presence — or absence — are indicators of watershed health.

©M. Fernandez

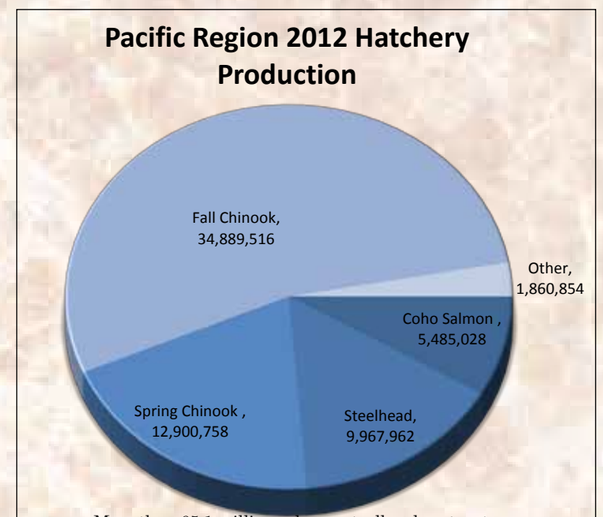
Not all mussels in U.S. waterways are beneficial, however. Service and U.S. Geological Survey biologists used The 100th Meridian Initiative collaboration to share newly-developed protocols for early underwater detection of zebra and quagga mussels. In July 2012, 30 scuba divers were trained in Hood River, Oregon. These skilled divers can now be called upon to implement rapid response management actions to minimize the impact of invasive mussels detected in the Columbia River Basin.

Strategic Watershed Priortization

Which watersheds provide the most benefits when investing limited resources into fish passage improvements, habitat restoration, or enhancing in-stream flows? Ecotrust and the Service have developed a one-of-a-kind online mapping application to help conservation professionals answer that question for prospective projects in Oregon, Washington, and Idaho. The free, open-source tool was developed with the U.S. Forest Service, Trout Unlimited, and others that have regional-scale aquatic restoration expertise. That approach encouraged cross-agency collaboration, avoided duplication of effort, and allowed project partners to synthesize and share data.

Users can now create landscape-scale analyses that include widely-distributed species like salmon along with locally endemic species, and even factor in potential constraints to project effectiveness caused by watershed conditions, climate change, or aquatic invasive species. To become a registered user, email Ecotrust's Mike Mertens [mikem@ecotrust.org.]

Volunteers help the Service net fish in Abernathy Creek. USFWS



More than 65.1 million salmon, steelhead, or trout raised in Service-owned or managed facilities

Fish Health Center Manager Hired

Dr. Andrew E. Goodwin, a national expert in fish disease diagnosis and viruses and former Associate Director of the University of Arkansas at Pine Bluff's Aquaculture/Fisheries Center, is the Region's first ever Fish Health Program Manager. Goodwin manages a program that includes three Fish Health Centers in Olympia, Washington, Ahsahka, Idaho, and Willard, Washington. The Program's primary mission is protecting the health of salmon produced at the Region's network of 15 National Fish Hatcheries and tribal partner programs, though the Centers' veterinarians and biologists also assist partners with fish health issues and conduct the National Wild Fish Health Survey.

We Couldn't Have Done It Without Them

The Fishery Resources program engaged over 1,250 volunteers across 20 Pacific Northwest stations, conserving and restoring habitat, delivering environmental education, and maintaining our hatchery infrastructure. Volunteers donated 19,710 hours of personal time, an estimated value of nearly $408,000 in labor costs. More than 35 percent of our volunteers were youth aged 16 or under.

"Getting the word out about Pacific lamprey and their role in the Columbia Basin ecosystem is essential to rebuilding this species. It will take all of us, working together, to successfully rebuild their populations."

Paul Lumley, Executive Director, Columbia River Inter-Tribal Fish Commission

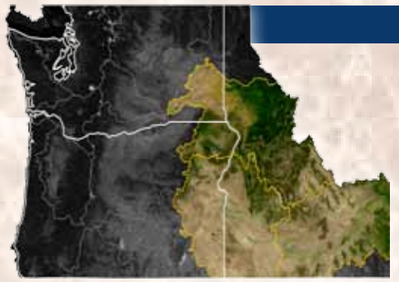
Calls To Action Yields Lamprey Conservation Agreement

The Service and Columbia River Inter-Tribal Fish Commission co-sponsored a Pacific lamprey summit in Portland, Oregon. Summit partners exchanged scientific findings, developed strategies to enhance and coordinate Pacific lamprey conservation efforts, and reinforced the fish's long-standing cultural importance. A number of tribes, federal and state agencies, non-governmental organizations and other stakeholders signed a monumental Pacific Lamprey Conservation Agreement outlining cooperative funding objectives and measurable conservation goals aimed at restoring Pacific lamprey populations throughout Alaska, Washington, Oregon, California and Idaho.

Virtual Lamprey Stuck on Social Media

Social networking has changed the way people communicate and the Service is using the voice of a 450 million year old fish to reach out and educate.

Luna, a fictional Pacific lamprey began using Facebook and Twitter in early 2012. With a unique voice and offbeat sense of humor, Luna talks about the importance of her species in West Coast waterways, the health of salmon and steelhead, and lamprey's cultural importance to Native American tribes. Posts often blend science and ecology themes with art, music, and culture. Though Luna attempts to de-mystify stereotypes about lamprey in the Pacific Northwest, her followers can be found all over the world from Japan to Ireland.



Snake River Basin

Lower, Middle and Upper Snake River Basins

Includes: the Snake River Basin to and including the Clover Creek Basin, below Clover Creek Basin to Hells Canyon Dam, and below Hells Canyon Dam to its confluence with the Columbia River

States: Oregon, Washington, Idaho, Nevada, Utah, Montana

Total Area: 107,500 square miles (35,200 square miles Lower Snake; 36700 square miles Middle Snake; 35,600 square miles Upper Snake)

A module on aquatic macroinvertebrates was taught to kids in grades 2-4 at a Water Adventure Camp held at the Sacajawea Center, Salmon, Idaho in July 2012. Kids spent an hour looking for aquatic bugs. Jody Brostrom/USFWS

1 Water Adventure Camps Provide Hands-On Learning

Sacajawea Center student interns hired with Service funding hosted Water Adventure Camps for two dozen youth in grades 2-7.

Area biologists — including Service staff — helped instruct during the hands-on science camps, held near Salmon, Idaho. The Water Adventure Camps not only provided interactive, aquatic-themed outdoor experiences for both the children and adult mentors — who job-shadowed with local conservation experts, but also led to construction of hands-on interpretive Center displays that will be enjoyed by future visitors and the local community.

"Through diligent cooperation, Service staff at Dworshak National Fish Hatchery partnered with Idaho Department of Fish and Game staff at Clearwater Fish Hatchery to successfully accomplish several important tasks in 2012."

Jerry McGehee
Clearwater Hatchery Complex Manager,
Idaho Department of Fish and Game

2 Kooskia's Cool New Chiller Wins Environmental Award

Kooskia National Fish Hatchery's construction of a new, more energy-efficient egg incubation system netted hatchery managers both cost savings and a 2012 Department of the Interior Environmental Achievement Award. Kooskia's electricity use is down 65%, saving nearly $33,000. The system emits 297 fewer megatons of CO2 each year, chilling on-site well water from July through September to incubate the hatchery's spring Chinook eggs. A rebuilt chiller is 90% smaller than the original, and the upgraded water recirculation system uses 80% less water than its predecessor. The hatchery, which the Nez Perce Tribe operates with Service assistance, raises approximately 600,000 spring Chinook salmon that are released into the Clearwater Basin to provide tribal and sport fish harvest opportunities.

Rainbow trout stocked by Hagerman National Fish Hatchery provide numerous sport fishing opportunities to the angling public in southern Idaho at areas like Little Camas Reservoir (above). Hagerman National Fish Hatchery/USFWS

In 2012 the Service's Idaho Fishery Resource Office re-initiated a 16-year old monitoring study for mountain whitefish in the Lochsa River drainage. Working with the Idaho Department of Fish and Game and the U.S. Forest Service, Service biologists began revisiting the study's original monitoring sites to determine what impacts climate change has had on whitefish distribution and migration. Kevin Rogers/Colorado Parks and Wildlife

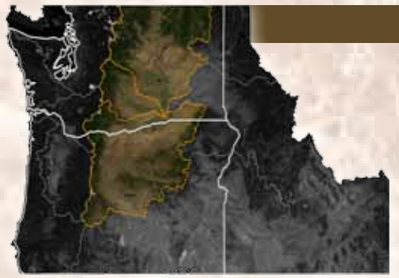
3 Collaborative Efforts a Hallmark of Clearwater Basin Hatchery Programs

The Service and Nez Perce Tribe continued to achieve Snake River Basin Adjudication Agreement objectives related to co-management of Dworshak National Fish Hatchery and transfer of operations and management of Kooskia National Fish Hatchery to the Tribe. Hatchery Manager Kent Hills, a Nez Perce employee, completed his first year at the hatchery; he was one several additional tribal staff were hired as part of Kooskia's management changes. Dworshak NFH, made several operational and infrastructure changes in consultation with hatchery co-managers that will improve steelhead propagation techniques. In August 2012, Dworshak NFH provided critical rearing space to support 2.2 million juvenile spring Chinook from Idaho Department of Fish and Game's Clearwater Hatchery following damage to the Clearwater's water line.

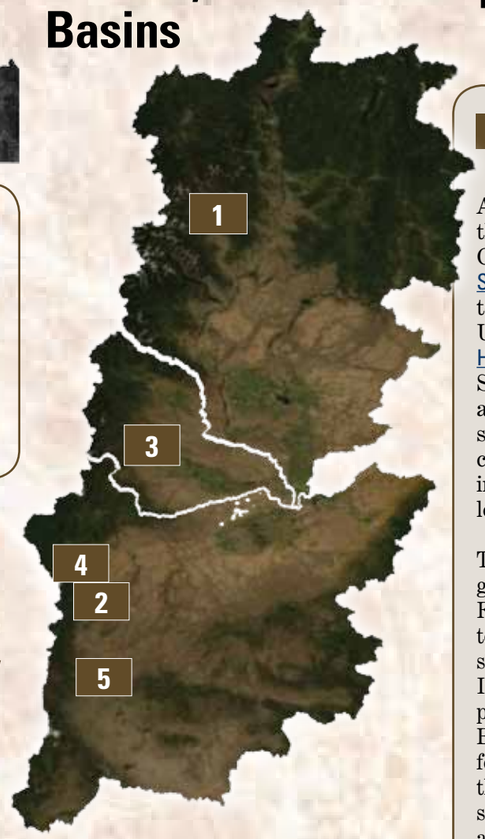
5 Duck Creek Fish Passage

Idaho's Henry's Lake is one of the few remaining lakes that still contains adfluvial Yellowstone cutthroat. The fish reside in the lake but migrate to streams entering the lake to spawn. Maintaining the fishery in Henry's Lake has historically required hatchery supplementation since important tributaries contain barriers to fish passage.

Through collaborative efforts by the Henry's Lake Foundation, Caribou-Targhee National Forest, The Nature Conservancy, Fremont County, Idaho Department of Fish and Game, the Service, and others, Henry's Lake Yellowstone cutthroat can now move more freely than ever. In fall 2011, four fish passage barriers were removed on Duck Creek, re-opening six miles of quality habitat in this important watershed.



Yakima, Middle and Upper Columbia Basins



Yakima, Middle and Upper Columbia Basins

Includes the Columbia River Basin from Bonneville Dam to and below the US and Canada border, the Yakima River Basin and the Snake River Basin

States: Oregon, Washington

Total Area: 58,610 square miles (22,600 square miles Upper Columbia; 6,210 square miles Yakima; 29,800 square miles Middle Columbia)

"The Durham dam removal is a great stride in improving fish passage and is critical to ensuring that Middle Columbia River Steelhead are able to migrate to crucial spawning habitat. The Yakama Nation values our partnership with the FWS and the NFPP has provided resources needed to implement this important passage project that supports fish habitat restoration within the Yakama Reservation."*

Shannon Adams, Yakama Nation Member and Yakama Reservation Watershed Project Leader

*National Fish Partnership Program

1 How will climate change impact future hatchery operations?

A fish growth model adapted by the Abernathy Fish Technology Center's Modeling and Decision Support Program may be able to answer that question. Using Winthrop National Fish Hatchery as a pilot, a team of Service scientists developed a 'vulnerability analysis' to summarize anticipated climate change effects to the hatchery's infrastructure, operations, and local watershed conditions.

The National Science Board, which governs the National Science Foundation and policy advisors to the President and Congress, showed interest in the results. In August, Service biologists presented initial findings to the Board. A peer-reviewed paper is forthcoming. But work isn't over: the Winthrop pilot study is the first step in a larger effort to develop a decision-support tool that can be applied to hatchery operations across the Pacific Northwest, and perhaps elsewhere. The tool will provide managers and decision-makers with short- and long-term strategies to adapt hatchery programs to climate change, and just as importantly, time to prepare.

2 Drano Lake Fishing Access Expands

The Service, State, and Tribal partners celebrated the 22nd anniversary of the Americans with Disabilities Act by opening access for wheelchair-bound anglers, the elderly and other people with disabilities to one of the Pacific Northwest's most popular — and productive — salmon and steelhead fishing sites. The paved, ADA-compliant ramp and fishing platform enables people of all ages and levels of mobility to fish Washington's Drano Lake. The Columbia Gorge National Fish Hatchery Complex used the ramp in summer and early fall to host two fishing events for United Cerebral Palsy and the Paralyzed Veterans of America.

Durham Dam: Before Removal

During Removal

After Removal

3 Durham Dam Removal. Toppenish Creek

In September 2012 the Yakama Nation Fisheries Program, Bonneville Power Administration, the Service, and other partners completed the Durham Dam Removal and Fish Passage Project in the Yakima River Basin (left). The project enhances passage for threatened Mid-Columbia steelhead, and restores passage in 114 miles of stream habitat in Toppenish Creek and its tributaries. Local landowners supported the dam's removal, which builds upon several other completed and ongoing passage and habitat projects in the basin. The partners are working to increase fish passage and enhance spawning and rearing habitat that benefits not only steelhead, but reintroduced coho, Chinook salmon, and Pacific lamprey.

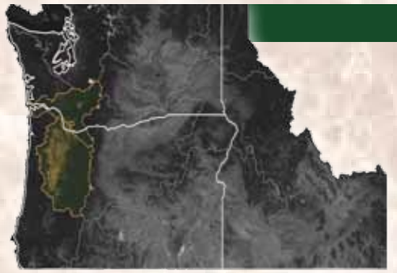
4 Winter Storm Damage No Match for Area Boy Scouts

Talk about being prepared! A winter ice storm littered Willard National Fish Hatchery with trees and wood debris, but thousands of dollars in cleanup costs were averted thanks to area Boy Scouts and Skamania County Forest Youth Success volunteers. Collectively the two groups donated over 1,200 hours in labor to the hatchery—removing downed timber in March, maintaining trails, and controlling noxious weeds. We thank all who were involved.

Above: Tribal technicians and the Service work together to sample fish on the Confederated Tribes of the Warm Springs Indian Reservation in central Oregon. In 2012, the Tribes and Service established a new agreement to investigate ecological interactions between hatchery and wild fish in the Warm Springs River. USFWS

Left: Winthrop National Fish Hatchery, study site for the Region's first climate change hatchery vulnerability analysis, raises steelhead, coho and Chinook salmon for commercial, tribal and sport fishing. USFWS

Opposite page: Jack Howell, an Oregon Paralyzed Veterans of America Board member, holds a tule fall Chinook salmon he landed at the Service's Drano Lake fishing platform. USFWS



Lower Columbia and Willamette Valley Basins

Coastal cutthroat trout are a species the Service is working to conserve and protect. U.S. Geological Survey

Lower Columbia and Willamette Basins

Includes the Columbia River Basin below Bonneville Dam; the Willamette River Basin

States: Oregon, Washington

Total Area: 17,650 square miles (6250 square miles Lower Columbia; 11,400 square miles Willamette)

1 A Slough of Restoration Opportunities

An array of partners including the Service and local landowners have concluded a four-year study whose findings will ultimately guide future habitat restoration strategies of tidally-influenced, lower Columbia River backwater sloughs and tributaries. The lower Columbia provides essential habitat for resident as well as outmigrating and returning fish. Stream channelization, dikes, and tidegates constructed during the early-to-mid 1900s have, over time, degraded sites and restricted access to many historic rearing and resting sites important to coastal cutthroat trout, coho salmon, and other native aquatic species.

Using Deer Island Slough and nearby Tide and Merrill Creeks as index sites, Service biologists conducted hydrologic surveys and used Passive Integrated Transponder (PIT) tags to monitor fish movement and determine ideal conditions to restore and reconnect aquatic habitats. The results, coupled with strong support from agencies, watershed councils, conservation districts and, of course, private landowners, will ensure that limited resources are leveraged and applied to the best sites using the best science.

2 Making A Mark in Conservation

The Columbia River Fisheries Program Office uses seven trailers to automatically or manualy mark between 30-35 million Columbia Basin fish at Service and partner hatcheries every year. Mass marking is mandated by Congress for fish produced in FWS facilities.

A crew at Spring Creek NFH. Some fish also receive Passive Integrated Transponders (Inset, top right), inserted during the marking process (Inset, bottom right) to track their movements after release. USFWS

The Service monitors interactions between hatchery and wild fish in Eagle Creek to determine if its hatchery management changes are reducing risks to ESA listed populations. USFWS

The Service is working with partners like the Oregon Watershed Enhancement Board and Western Native Trout Initiative to replant trees (above), reconnect floodplains, and restore fish passage on northwest Oregon's Mabel Creek. Photo: Trout Unlimited

4 Pacific Lamprey Tank Migrate to Girl Scout 100th Anniversary Celebration

In early August, 2012, the Service connected several hundred Girl Scouts with wildlife at the Girl Scout's 100th Anniversary Celebration in Albany, Oregon. Scouts learned the importance of migrating salmon and waterways. A tank of Pacific lamprey ammocoetes (larvae) mystified booth visitors until Service high school summer intern Marjay Taylor explained lamprey's importance to river health and other native fish. Service members tweeted at the event to encourage attendees to visit the booth, the FWS website, and connect with nature however they can.

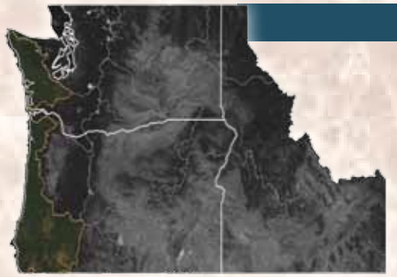
Meghan Kearney/USFWS

5 Monitoring Fish Passage in an Urban Watershed

Fish passage monitoring in one of Oregon's largest, relatively well-protected urban watersheds will continue and expand over five years through an agreement signed between the City of Portland and the Service.

The Oregon Department of Transportation's retrofit of a 400 foot-long culvert on Tryon Creek gives Service biologists and partners an opportunity to see how fish-friendly the new design is. Steelhead, coho salmon, cutthroat trout, rainbow trout, and Pacific lamprey historically used the creek for spawning and rearing habitat, but the original culvert — under Oregon Highway 43 — substantially impeded fish passage for nearly 50 years.

Service staff work with city, state, and federal scientists to deploy surveys and electronic tagging tools that track fish movements throughout the watershed. By the project's end, partners will have a decade's worth of data that can guide future habitat restoration and enhancement efforts. But key project data won't only come from the experts: Service staff also support the Tryon Creek Watershed Council's Citizen-based monitoring program, which trains community volunteers to survey salmon habitats and count fish redds.



Oregon and Washington Coast Basins

"The Pacific Marine and Estuarine Fish Habitat Partnership is working collaboratively with partners like the Service along the West Coast to identify science-based strategic investments that can truly make a difference in improving fish populations."

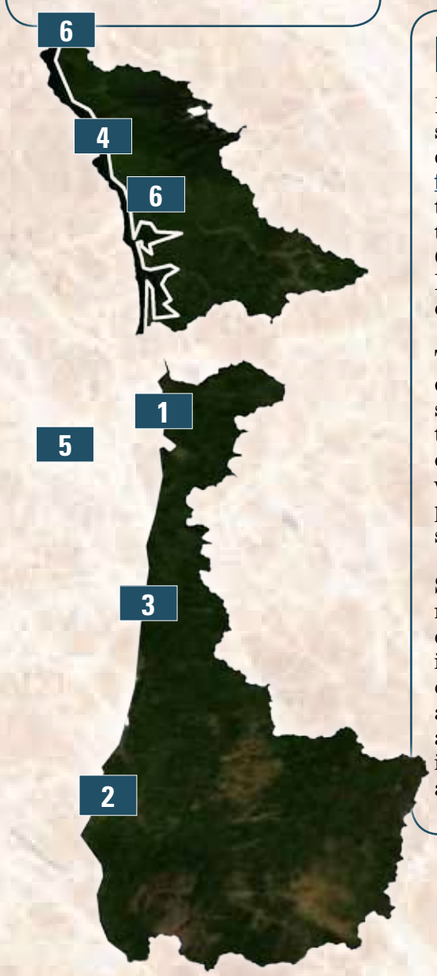
Lisa DeBruyckere,
Pacific and Marine Estuarine Partnership

Oregon-Washington Coastal Basin

Includes coastal drainages into the Pacific Ocean — excluding the Columbia River Basin — from the Strait of Juan De Fuca drainage boundary to the Columbia River Basin boundary (Washington), then south to the Smith River Basin boundary in California

States: Washington, Oregon

Area: 23,200 square miles



1 South Fork Necanicum Passage Provides Water for People, Fish

A South Fork Necanicum River diversion dam and pumping system that supplies Seaside's drinking water got an extreme, fish-friendly makeover in 2012 thanks to the Service, the City of Seaside, the Necanicum Watershed Council, Oregon Watershed Enhancement Board, and Oregon Department of Fish and Wildlife.

The diversion dam has been improved for fish passage...

USFWS

...and the mainstem Necanicum channel's habitat enhanced.

USFWS

The dam blocked fish passage for coho, fall Chinook, chum, winter steelhead and coastal cutthroat trout and at times led to a mile of dewatered habitat downstream, while the upriver Peterson point pumping station wasn't properly screened to protect juvenile fish.

Sustaining a steady supply of municipal drinking water was critical. The partner's solution was innovative and multi-faceted: part of the diversion dam was removed and will be paired with a regulatory-compliant fish screen (in 2013) that allows year-round river flow, the river's mainstem channel was enhanced to improve fish habitat, and energy efficient pumps installed at Peterson Point allowed for improved water and energy efficiency.

Last year the Service began monitoring a 430 acre tidal marsh restoration at Bandon National Wildlife Refuge in southwestern Oregon. Pre- and post-restoration monitoring provides scientists with an opportunity to see how quickly and to what extent tidal marshes and local fish communities respond to habitat enhancements. USFWS

3 Preparing for and Neutralizing Tsunami Debris Hitchhikers

A 188-ton Japanese commercial fishing dock that travelled 5,000 miles across the Pacific and washed ashore in Oregon in June brought more than curious onlookers to Agate Beach. Biologists found a remarkable living assemblage of attached marine organisms that included more than 90 species non-native to western U.S. coastlines.

Cleaning the dock was critical, but this could be just the beginning of more exotic — and potentially harmful — future arrivals. So local aquatic invasive species coordinators, including Service employees, worked quickly to organize a two-day tsunami debris preparedness workshop at Portland State University.

The summer gathering brought together a coalition of regional marine debris and invasive species experts, managers, and communicators, and culminated in a risk assessment framework to address the introduction of invasive species by Japanese Tsunami Marine Debris. A video of the workshop proceedings and the final document, Response Protocols for Biofouled Debris and Invasive Species Generated by the 2011 Japan Tsunami, are available at the Aquatic Nuisance Species Task Force website.

The Japanese dock that washed ashore on Oregon's Agate Beach contained more than 90 species not native to the western U.S. coast.

5 West Coast Fish Habitat Partnership Formed

Strategic conservation of the West Coast's estuarine and nearshore fish habitat — a 216,410 square mile area nearly as large Oregon, Washington, and Idaho combined — has taken a major step forward. The Pacific Marine and Estuarine Fish Habitat Partnership (PMEP), a consortium of 14 state, tribal, federal, and non-profit organizations, became the newest nationally-recognized Fish Habitat Partnership, filling what had been a major gap along the Pacific coastline. The PMEP joined a nationwide network of 18 official partnerships that leverage resources and protect, conserve, and enhance aquatic habitats and populations within their geographic scopes. The Service has strongly supported PMEP's evolution, and in 2012 provided start-up funding and helped the partnership build its website.

©Steve Morey

4 Hoh Nation, USFWS Spawn New Steelhead Facility

When the Hoh Indian Nation needed to set up a disease-resistant facility for the Hoh River Winter Steelhead Program, they knew who could help. For two decades the Tribe and the Service have collaboratively reared and released approximately 140,000 steelhead each year into Chalaat Creek, a Hoh tributary. The fish support tribal commercial harvest and non-Indian sport fisheries.

But when Infectious Hematopoietic Necrosis — a virus that can be lethal to juvenile salmon — was detected in the hatchery's returning adults in 2010-2011, the timetable to upgrade the Chalaat rearing site to handle fish spawning and incubation had to be accelerated. That's where Quinault National Fish Hatchery expertise pitched in: the Service supplied the Hoh Nation with eggs, fish food, aquaculture chemicals to aid and support fish production and fish culture expertise, and even some extra hands to get the program up and running. *Left: Steelhead are known for their leaping ability.* USFWS

Puget Sound Basin

Puget Sound Basin: *The drainage within the United States that discharges into: (a) Puget Sound and the Straits of Georgia and of Juan De Fuca; and (b) the Fraser River Basin*
State: Washington
Area: 16,800 square miles

Kokanee spawning in Washington's Ebright Creek. Roger Tabor/USFWS

"County, city, state, federal fish and wildlife and city officials have joined together to make this happen."

Tom O'Dell, Mayor,
City of Sammamish, Washington

1 Lake Sammamish Kokanee Return Fall Color to Ebright Creek

The Service and our partners were delighted with early results from the Lake Sammamish Kokanee Strategic Habitat Conservation effort. In the fall, hundreds of kokanee were spawning upstream of a replaced culvert on Ebright Creek within weeks of project completion.

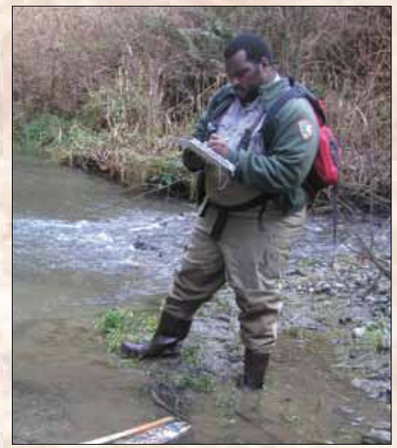
"The real success is that local communities have stepped forward, made kokanee recovery their own, and begun taking steps to protect, reconnect, and restore the habitat to increase kokanee survival and increase habitat availability," says Brad Thompson, Western Washington Fisheries Resource Office Project Leader.

The Lake Sammamish Kokanee Work Group partnership includes King County, the Washington Department of Fish and Wildlife, the Service, cities of Issaquah, Redmond, Bellevue, and Sammamish, Trout Unlimited, the Snoqualmie Tribe, local landowners, and local businesses like Darigold.

The project also employs an emergency hatchery supplementation program, run by Quilcene National Fish Hatchery and Issaquah State Hatchery, to prevent the possibility of near-term extinction. If future years see returns similar to this fall's, that is unlikely to happen.

"This year we're seeing hundreds of kokanee spawners in a given day, repeated in multiple creeks, some streams where we haven't seen fish in decades," said Thompson. "That's progress!"

Fish Health Center staff evaluate fish health during spawning. USFWS



Fish biologists from the Service and other agencies work together to monitor coho salmon returns in Puget Sound. National Park Service

Olympic mudminnow. Roger Tabor/USFWS

"Olympic Mudminnow Translucent bodies, flecks of gold, love to live in a quiet environment protected by tall red alder, hidden in grasses, swishing in mud, they survive the elements, deposited by a glacier only found in Washington; sensitive to changes in the wetlands."
~ Nic Cereghino

One of several poems written by Olympia High School students after a 2012 site visit and study of mudminnows led by Service biologists.

2 Safeguarding Fish, Under a Microscope

If network TV pilots a 'CSI: Fish Diseases,' the Olympia Fish Health Center could be their headquarters. The Center relocated to a state-of-the-art lab in Lacey, Washington in late summer 2012, enhancing its ability through new and improved lab space to protect the health of wild fish and salmon produced at national fish hatcheries and tribal hatchery programs. Last year, Health Center staff worked with scientists from British Columbia, the Northwest Indian Fish Commission, Washington Department of Fish and Wildlife, U.S. Geological Survey, and other partners to safeguard the survival of fish in the Puget Sound Basin and beyond. That included monitoring fish in the Elwha River before and after dam removal, investigating causes of fish mortality to coho salmon in Seattle area urban streams; and instituting risk-reducing measures to limit disease-causing infectious hematopoietic necrosis virus strains from spreading to wild and hatchery Pacific salmon and steelhead.

3 Sharing Our Expertise

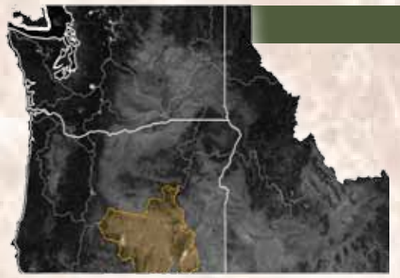
How do you count the value of volunteer labor? One measure might be: over 1,100 hours equaling nearly $25,000 in labor costs. That's the benefit the Washington Fish and Wildlife Office's Fisheries Division gained in 2012 when employee Dan Spencer recruited eight volunteers to assist with field studies, lab work, and youth conservation education programs. The volunteers — two high school students, four college undergraduates, and two retirees — gained college credit, reconnected with nature and gained the knowledge that they not only helped the Service conserve aquatic resources, but also taught over 3,200 K-12 students the value of fisheries conservation.

4 Finding Commonality Through Quilcene Coho

What's the best way to tackle complex hatchery management issues? The Service believes it's through strong stakeholder partnerships, particularly with area tribes. Quilcene National Fish Hatchery has been grappling with numerous hatchery challenges, ranging from hatchery reform, century-old infrastructure, and flat or declining budgets. In 2012, Service biologists and hatchery managers reached out to the Jamestown S'Klallam, Lower Elwha Klallam, Port Gamble S'Klallam, Skokomish, and Suquamish Tribes. Area tribes value Quilcene coho as critical to their economies and culture. In June, the Quilcene NFH Hatchery Evaluation Team met collectively with the tribes to begin a dialogue on how best to address the complicated issues facing the hatchery's future. The meeting was a first, so few long-term problems were solved. But that wasn't the point. One key milestone was reached: setting the stage for hatchery co-managers to move forward together and achieve shared goals.

5 Little Fish, Big Plans

The Service works with others conserve Olympic mudminnow, shown in the photo to the left, Washington's only endemic fish species. In 2012, agency biologists conducted field and genetic studies, sometimes using help from volunteers and student employees, led field trips, and began plans for a strategic mudminnow habitat conservation initiative and symposium.



Oregon Closed Lakes Basin

"With Service cooperation, the Redband Trout Working Group was able to complete a range-wide population assessment in only 14 months. It will prove to be invaluable in developing a conservation plan for the redband trout."

Robin Knox, Coordinator
Western Native Trout Initiative

Oregon Closed Lakes Basin

The drainage of the Great Basin that discharges into the state of Oregon

States: California, Nevada, Oregon

Area: 17,300 square miles

1 Rangewide Assessment for Redband Trout

Redband trout are renowned by anglers for their spectacular appearance, potential to reach large sizes, and fighting ability when hooked. But until recently, comprehensive status and trend information for a species found in six states and British Columbia has been hard to land.

That's changing thanks to efforts between the Oregon Department of Fish and Wildlife (ODFW), the Service, and other partners who, under the Western Native Trout Initiative, are working to complete a first-ever, redband rangewide status assessment in 2013.

In 2012, Service funding and staff provided redband population and habitat condition information as part of the assessment's data collection. For example, Abernathy Fish Technology Center geneticists worked with ODFW to collect and classify genetic data on 23 redband trout populations within six interior southeast Oregon basins.

The laboratory analysis complemented a six-year ODFW data-gathering effort in an area where the species' genetic structure was largely unknown. The data will form a cornerstone of the WNTI's long-anticipated species assessment, made possible by the partner's collation of data into a geo-referenceable database that will guide future conservation and management actions.

2 Honey Creek Habitat Restoration and Fish Passage

Oregon's Honey Creek has more than just a sweet name: it's key to restoring local redband trout populations and recovering the Warner Sucker, an ESA-listed species. That's why the Service has been teaming up with the Western Native Trout Initiative, Lakeview Soil and Water Conservation District, and others since 2008 to restore habitat, improve fish passage, and — just as critical — monitor restoration results. In 2012, the second of two fish screens placed on Taylor Ranch irrigation ditches two years ago was slightly adjusted to ensure maximum operation. The Honey Creek project is an example of not only how important effectiveness monitoring is to the long-term success of restoration efforts, but also how important collaboration with conservation-oriented private landowners is to the success of restoring fisheries.

3 Malheur NWR Fish Screens

A fish screen installed near Malheur National Wildlife Refuge's East Canal in September 2012 has improved movement across 20 miles of the refuge's waterways for the native redband trout while simultaneously restricting expansion of invasive common carp. The screen melded Service biological acumen with Oregon Department of Fish and Wildlife screen engineering expertise at the head gate of what had been the canal's last unscreened irrigation ditch.

The refuge wanted a solution to avoid entrainment of its native fish while advancing efforts to control carp. The continued spread of carp through the refuge's water conveyance system could impact the nearby Donner and Blitzen River's blue-ribbon redband trout fishery.

With screen installation, both problems were addressed at once, moving partners closer to a larger goal of restoring the Malheur Basin's aquatic health to benefit its fish, birds, and the people that both care for and depend on them.

Kootenai, Pend Oreille and Spokane River Basins

The Kootenai, Pend Oreille and Spokane River Basins within the United States

States: Idaho, Montana, and Washington

Area: 36,600 square miles

1 Granite Creek Restoration

In-stream restoration in more than 800 feet of a highly-degraded stream reach in Idaho's Granite Creek has given native bull trout and Westslope cutthroat trout access to key spawning and rearing habitats in one of Lake Pend Oreille's important tributaries. The Avista Corporation, the Service, and Idaho Department of Fish and Game teamed together in August 2012 to place large woody debris and create pools in a part of the Creek damaged during construction of a power line corridor. The project not only benefits native trout, but kokanee, a fish that has become an important food source for bull trout, The project is part of a larger collaborative effort to restore habitat for bull trout, a species listed under the Endangered Species Act, and westslope cutthroat trout in the Lake Pend Oreille Basin.

Restored habitat on Granite Creek. USFWS

100th Meridian Initiative Exercise Simulates Mussel Invasion

What's one way to stop an aquatic species invader? Through preparation and planning. The Service is actively involved with the 100th Meridian Initiative's Columbia River Basin Team, which in October 2011, conducted a fifth readiness exercise in Lake Koocanusa, MT to address a hypothetical invasive mussel infestation. The team's rapid response plan calls for such readiness simulations, using real-life scenarios developed by Pacific States Marine Fisheries Commission, the Service, British Columbia Ministry of Environment and Montana Dept. of Fish, Wildlife & Parks. As part of the two day exercise, a "confirmed" finding of dreissenid larvae in Lake Koocanusa was followed by field-based and table-top exercises. Taking these steps well in advance of a real invasive mussel infestation helps team members isolate problems in the plan and increase preparedness.

Chelsea Weeks during the 2012 Wild Fish Health Survey in Idaho. USFWS

3 Idaho Fish Health Center Youth Intern

Chelsea Weeks' Service employment has, at times, been shocking. Literally. The Lewis and Clark State College Biology major and former AmeriCorps volunteer returned to the Idaho Fish Health Center for a third season last summer to work on fish-health oriented field studies. A native of Lewiston, ID, Weeks worked as a Biological Aid across Northern Idaho and other parts of the state, sampling wild carp, spawning steelhead and Chinook salmon, and helping with the nationwide Wild Fish Health Survey, where sampling fish requires operating an electroshocker. "I've gained extensive knowledge about some of the different diseases and pathogens that affect Pacific Northwest fish," Weeks says.

Hawaii and the Pacific Islands

"Volunteer participants came from local communities, schools, and other service organizations and learned first-hand the importance of restoring environmental features and caring for the land."

Loyal Mehrhoff,
USFWS Pacific Islands Fish and Wildlife Office
...from the 2012 America's Great Outdoors Close-Out report for the Lower He'eia Watershed Restoration Project

Hawaii Region: *Includes drainages on the islands of Hawaii, Maui, Kahoolawe, Lanai, Molokai, Oahu, Kauai, Niihau, and the Northwestern Hawaiian Islands.*
Total area: 6,477 square miles

The retrofitted stream gauge (top) provides native fish with access to upstream Waihe'e Stream habitat while excluding non-native species. Gordon Smith/USFWS

Guam: *Includes drainages on the largest island in Micronesia.*
Total area: 212 square miles

1 Waihe'e Stream Restoration

Migratory native gobies now have new access to over a mile of high-quality stream habitat in Waihe'e Stream on Oahu's windward side. A 78-year old abandoned water control structure (left) that had blocked upstream passage to the stream's upper reaches was modified under the Waihe'e Ahupuaa Initiative, a watershed-based environmental and educational organization composed of community members, local educators, large landowners, resource agency participants, and Service staff. Waihe'e Ahupuaa Initiative leadership ensured that community members were integral to conceiving, planning and implementing the project.

2 Defending the Pacific Islands from Aquatic Invasive Species

The Department of Defense's mission is to protect the security of our country, so it's no accident they partnered with the Service and Guam Invasive Species Council to prevent the spread of invasive species to the island. After habitat loss, invasive species are the second biggest threat to declines in Pacific Islands biodiversity. Humans unintentionally aid the dispersal of invasive species like the Brown tree snake (left) through transportation or trade. The partners held a series of Hazard Analyses Critical Control Point Planning (HACCP) trainings aimed at military contractors on Guam. HACCP is a step by step process that reduces the risk of spreading invasive species via human-based pathways. The trainings, supported by Service personnel, will help those helping U.S. military personnel relocate from Okinawa, Japan, to Guam recognize that they're also on the front lines of defense.

Brown tree snake

Anchialine pools (above) are estuarine-like waterbodies that have subsurface connections to the sea, and are important for local Hawaiian species, including seven native shrimp species and other invertebrates. The Hawaii Fish Habitat Partnership considers them high priority areas for restoration and protection. USFWS

The Hawaii Fish Habitat Partnership cooperatively develops and implements aquatic conservation projects in Hawaiian streams and estuaries through the support and participation of government agencies, non-governmental organizations, and the private sector. USFWS

3 Removing a Digital Barrier

The first-ever, comprehensive data set detailing the location, extent, and type of fish passage barriers in Hawaii is one step closer to completion. The Service and other collaborators began review of draft maps, illustrations and the geographic data that will ultimately comprise the Hawaii Statewide Fish Passage Barriers Inventory. Designed to be integrated into data systems such as the Statewide Stream Diversion Verification Project and the Hawaii Stream Atlas, the Inventory will help scientists, organizations, and policy makers set restoration and monitoring priorities to guide conservation, management, and recovery programs in Hawaii's waterways.

4 Lower He'eia Watershed Restoration Project

Hundreds of Mahuahua 'ai o Ho'i volunteers and a coalition of partners that included Hawaii Fish Habitat Partnership worked to restore nearly 1.5 acres of stream and wetland habitat on Oahu. The Lower He'eia Watershed Restoration Project, featured as part of the President's America's Great Outdoors Initiative, blends culturally-based agricultural enterprise with environmental restoration of the He'eia stream and wetland and estuary complex.

Service biologists helped develop the Conservation Action Plan, monitoring protocols, and vegetation control trials now used to gauge project effectiveness and guide future Project restoration. The effort also motivated two Ho'i partners, the NOAA Restoration Center and Hawaii Community Foundation, to undertake restoration on five acres of riparian habitat immediately adjacent to the Ho'i wetland restoration site. Endangered native Hawaiian waterbirds almost immediately began to re-occupy the site, including two Hawaiian stilts (see below) that successfully fledged in 2012.

O`opu nakea. USFWS

O`opu nopili. USFWS

Native gobies such as the O'opu nakea (above) and O'opu nopili (above center), which can scale 500 foot waterfalls, benefit from fish passage improvements in Hawaii.

Ae`o or Hawaiian stilt. USFWS

U.S. Department of the Interior
U.S. Fish & Wildlife Service

http://www.fws.gov/pacific/fisheries/reportpub/

Fishery Resources, Pacific Region
503/872-2763

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Fall tule Chinook salmon at Spring Creek National Fish Hatchery. Lance Koudele

Front cover: Streamside, Mt. Hood National Forest, Oregon.
Alan Dyck/U.S. Forest Service