CITIZEN UPDATE

2014 ANNUAL PROGRESS REPORT FCRPS BIOLOGICAL OPINION

Protecting Salmon and Steelhead in the Columbia River Basin

Columbia River Basin salmon returns continued strong in 2014

In 2014, record-breaking returns of hatchery and wild Chinook, coho and sockeye contributed to the biggest salmon returns to Bonneville Dam since counting began in 1938. Returns of adult steelhead, chum and pink salmon were somewhat below 10-year averages.

While favorable ocean conditions continued to make a big difference, the positive trends also highlight the huge efforts of the Action Agencies—the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the Bonneville Power Administration—to protect Columbia Basin salmon and steelhead listed under the Endangered Species Act.

Throughout the Columbia Basin, tribes, states, non-governmental organizations and many others partnered with the Action Agencies to improve habitat and hatcheries for the ESA-listed fish and manage predators. The Corps continued upgrades to federal dams on the lower Snake and Columbia rivers to improve fish passage and survival.

The program to protect ESA-listed fish affected by the dams in the Federal Columbia River Power System is one of the largest ecosystem programs in the nation, involving hundreds of partners and hundreds of millions annually in funding from Northwest electric ratepayers and federal tax payers. The effort is enormous, and it's working.

Wild fish abundance is improving

An important measure of progress is that wild, or natural origin, salmon and steelhead are returning to spawn. This is referred to as abundance.

SNAKE RIVER SOCKEYE:
In 2014, one third (452) of the 1,408 adult Snake River sockeye returning to Redfish Lake were natural-origin fish—the largest number since the species was listed.

Research showing how fish adapt to improve survival

In 2014, research on fish status and trends identified important information that Action Agencies will continue to apply to improve programs.

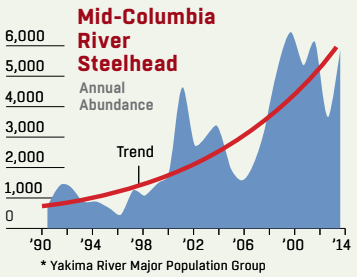
SNAKE RIVER FALL CHINOOK:
Researchers are finding that later-migrating Snake River fall Chinook are overwintering in the pool behind Lower Granite Dam. They continue to feed and grow there, migrating to the ocean the following year as larger, stronger juvenile fish. This may contribute to the strong adult returns for this species.

SNAKE RIVER STEELHEAD:
Up to one third of all returning adult Snake River steelhead are overwintering in the mainstem Snake and Columbia rivers. Results indicate that survival for these fish is considerably higher—near 93 percent—than for steelhead that move immediately into the tributaries.

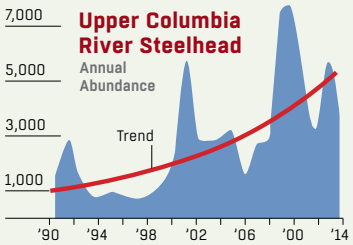
In 2014, manufacturing began on a new generation of advanced hydroelectric turbines to provide safer passage for fish. The first will be installed at Ice Harbor Dam.

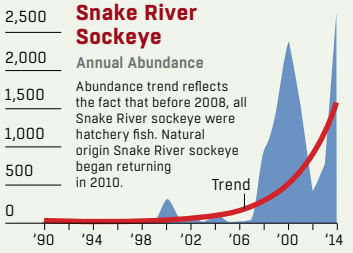
Read more about hydro accomplishments on back page.

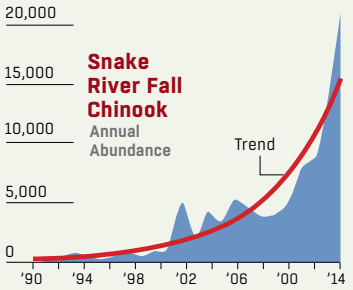
Fish Abundance

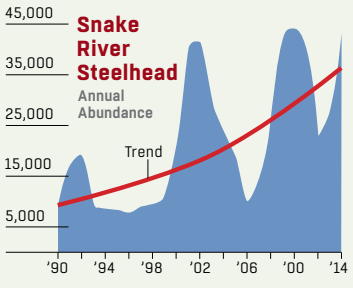


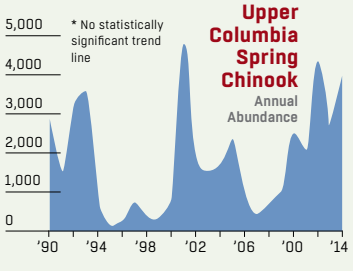
* Yakima River Major Population Group

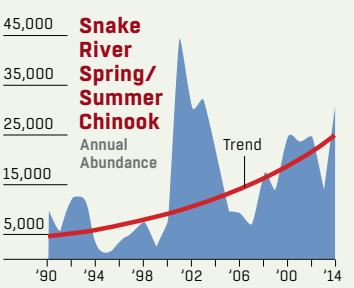












US Army Corps of Engineers

U.S. Department of the Interior
Bureau of Reclamation

Bonneville Power Administration

Restoration opens up more habitat for salmon

In 2014, Action Agencies and their partners continued to make improvements to tributary and estuary habitat. In watersheds throughout the basin, they collaborated to identify and implement specific actions for the 56 salmon and steelhead populations addressed in the BiOp.

Recent analysis by the Independent Scientific Advisory Board indicates that salmon numbers in the basin may be exceeding the amount of habitat in certain locations needed to support them. Work to expand habitat capacity can help address this concern.

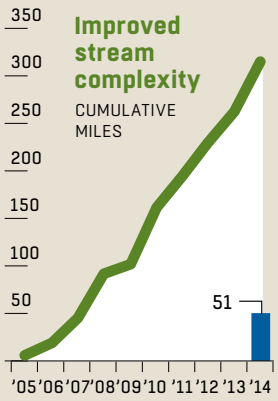
Monitoring is indicating that these habitat improvements are contributing to improved growth and survival for numerous populations of salmon and steelhead.

For example, in the Lemhi River, a 15-year effort to install fish screens in irrigation diversions reduced stranding of juvenile fish from an estimated 71 percent to less than 2 percent, preserving tens of thousands of naturally spawned juvenile salmon.

PHOTO COURTESY OF SNAKE RIVER SALMON RECOVERY BOARD

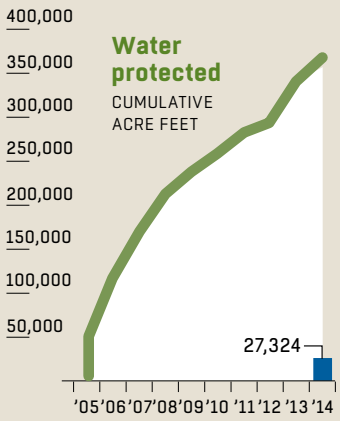
Stream complexity creates more natural conditions for fish

Stream habitat projects can create a more complex habitat that fish prefer. Projects to add wood to streams, improve side channels, and create deep, cool pools for refuge help to improve fish health. In 2014, project sponsors improved 2,831 acres of riparian habitat and 51 miles of stream.



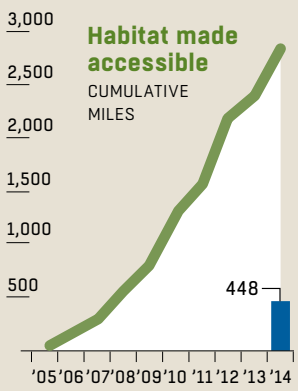
Water restored to streams increases salmon and steelhead habitat

Instream flows are critical for fish spawning, growth and survival. Throughout the basin, water transactions and irrigation efficiencies have increased flow to tributaries —many that would otherwise run dry in the summer. In 2014, the Action Agencies restored 27,324 acre feet of water to basin tributaries.



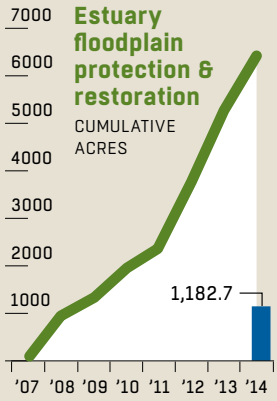
Miles of new spawning and rearing habitat added

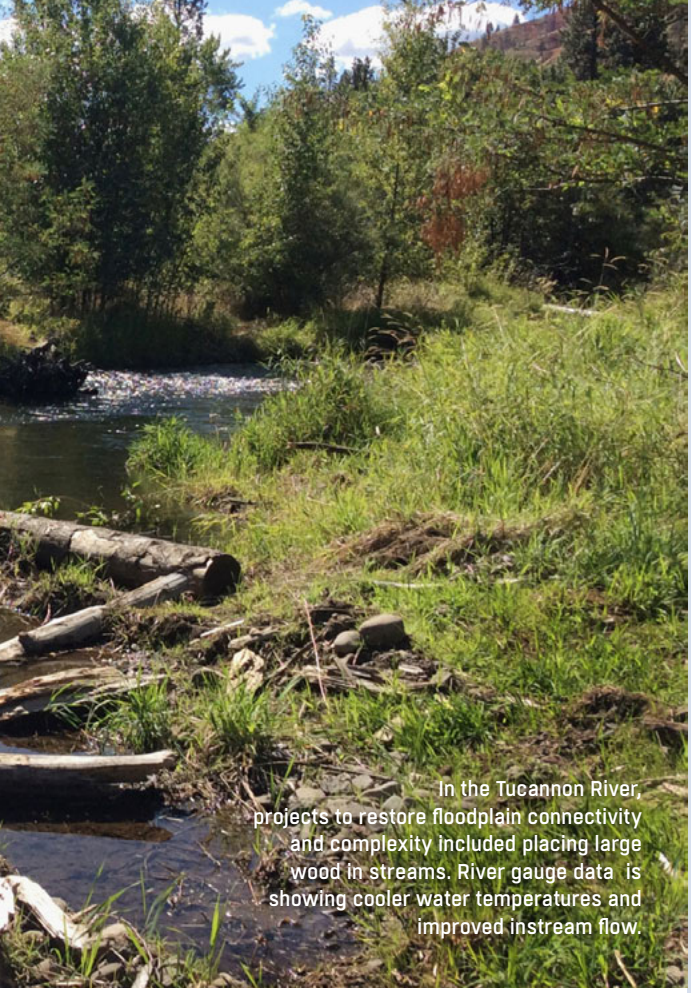
For many populations of salmon and steelhead, survival is limited by their ability to access good habitat for spawning and rearing. In 2014, project sponsors opened 448 miles of habitat by eliminating culverts and barriers. Sponsors also installed or improved 63 water intake screens to prevent stranding.



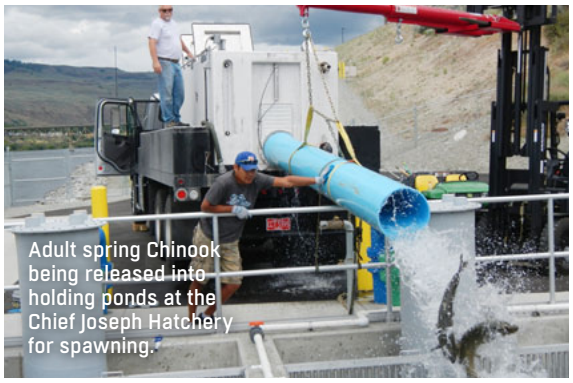
Growing benefits in the estuary for migrating salmon

The acres protected and restored in 2014 bring the total estuary accomplishments to over 6,400 acres. Most projects restored full hydrologic reconnection, creating more wetland habitat and high biological benefits for fish.





In the Tucannon River, projects to restore floodplain connectivity and complexity included placing large wood in streams. River gauge data is showing cooler water temperatures and improved instream flow.



Adult spring Chinook being released into holding ponds at the Chief Joseph Hatchery for spawning.

PHOTO COURTESY OF PAT PHILLIPS, CHIEF JOSEPH HATCHERY

Hatcheries help support ESA goals

The Colville Tribes' award-winning[1] Chief Joseph Hatchery, completed in 2013, released its first spring and summer Chinook in 2014. The hatchery began to raise juvenile spring Chinook, taking the first step toward the Tribes' goal to reintroduce Upper Columbia spring Chinook in the Okanogan basin.

The Snake River sockeye hatchery program has been successful in achieving adult return goals and reducing extinction risk for this species. With the new Springfield Hatchery producing up to one million smolts, the program is now being expanded to support recovery.

[1] American Council of Engineering Companies of Washington (ACEC) 2014 Gold Award—Environmental Category; Washington Aggregates and Concrete Association 2014 Grand Award.

Progress to manage avian predation and sea lions

Action Agency programs to redistribute Caspian terns currently nesting in the Columbia Basin, deter and block sea lions from Bonneville Dam fish ladders and reduce the northern pikeminnow population are decreasing the loss of adult and juvenile salmon to predation.

Sea lions consumed an estimated 4,314 Chinook (about 2 percent of the spring run) in 2014.

A five-year program to manage Caspian terns on Goose Island is yielding encouraging results.

Below: In Central Washington's Potholes Reservoir, a five-year program to manage Caspian terns is yielding encouraging results. Predation on steelhead was initially reduced from 15.7 to 2.9 percent and predation on spring Chinook from 2.6 to 0.5 percent after the colony was dissuaded from nesting on Goose Island through use of rope, flagging and active hazing.

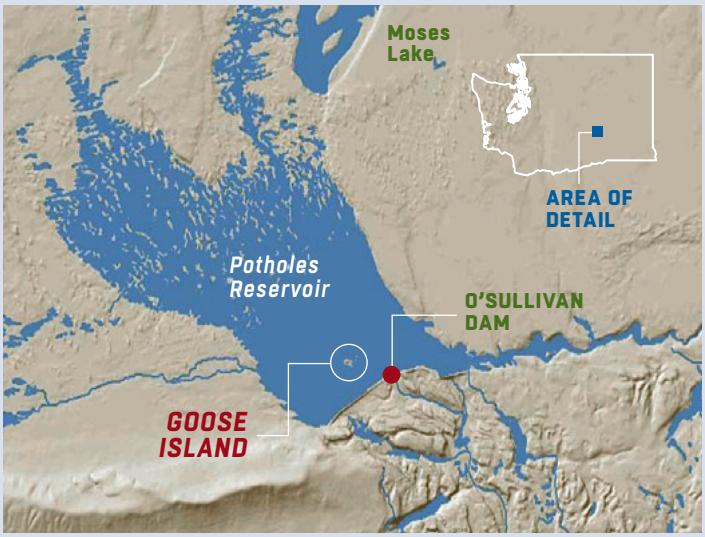
Sea lions

Cormorants at East Sand Island

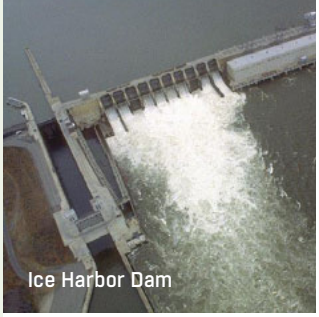
Rope and flagging on Goose Island discourages Caspian terns from nesting.

Caspian tern

INGRID TAYLAR

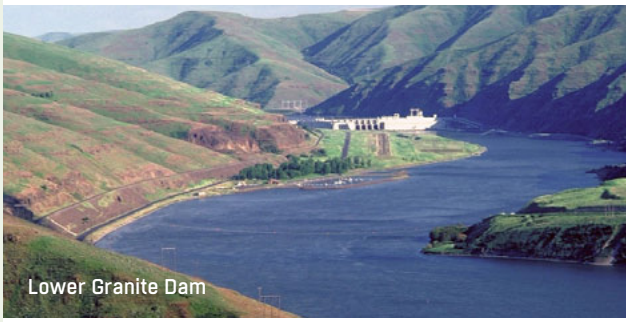


Passage improvements make progress at the dams


Ice Harbor Dam


Scale model of the new turbine at the Corps' research Center

U.S. ARMY CORPS OF ENGINEERS


Lower Granite Dam

Juvenile fish survival and travel time improved

Juvenile fish travel time through the hydropower system during 2014 continued to be shorter than the pre-BiOp period (2003-2007) before all eight lower Columbia and Snake River dams had surface passage routes installed. Surface passage allows juvenile fish to pass dams more quickly and safely at the surface, where they naturally migrate.

Combined with refined spill operations, surface passage has reduced the percentage of fish that go through powerhouses and bypass facilities, decreased fish travel time and increased overall survival for migrating juvenile fish.

For juvenile Snake River steelhead, average survival through all eight dams and reservoirs increased from 32.4 percent in 1998-2007 to 60.5 percent in 2008-2014. For juvenile Snake River spring Chinook average in-river survival went from 49.7 percent to 51.6 percent during those same time periods.

Juvenile passage improvements

- Structural improvements underway at the juvenile bypass system at Lower Granite Dam are expected to increase survival by providing more efficient control of flow, improving the removal and passage of debris, increasing attraction flow, and reducing risk of predation at the outfall release point.
- Final designs were completed and manufacturing began on the first turbine replacement at Ice Harbor Dam. This is the first of a new generation of turbines designed to advance improvements in juvenile fish passage. "Fish friendly" turbine designs will be used as turbines are replaced throughout the hydrosystem.

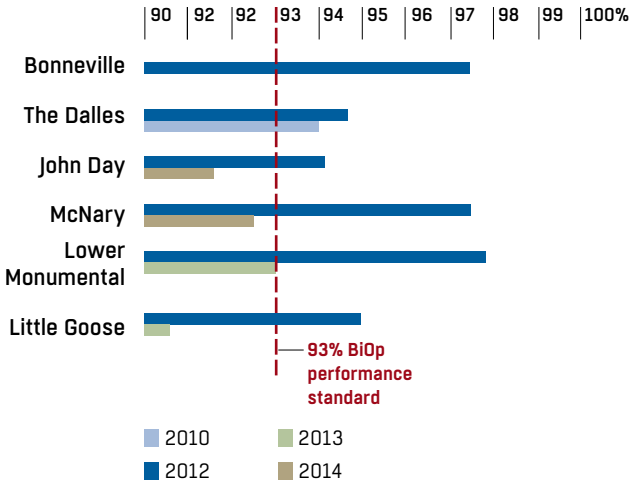
Juvenile passage survival

- In 2014, the Corps conducted performance standard tests at McNary and John Day dams. The BiOp calls for the eight lower Snake and Columbia dams to meet performance standards of 96 percent survival for spring Chinook and steelhead and 93 percent survival for summer migrants (subyearling Chinook).

Adult passage improvements

- In 2014, the Corps used temporary pumps to add cool water to the adult fish ladder at Lower Granite Dam, helping to minimize delays in adult fish passage.
- Several projects were monitored to ensure that improvements made to improve juvenile passage (such as the spillwall at The Dalles Dam) do not impair adult passage.

Subyearling Chinook dam passage survival



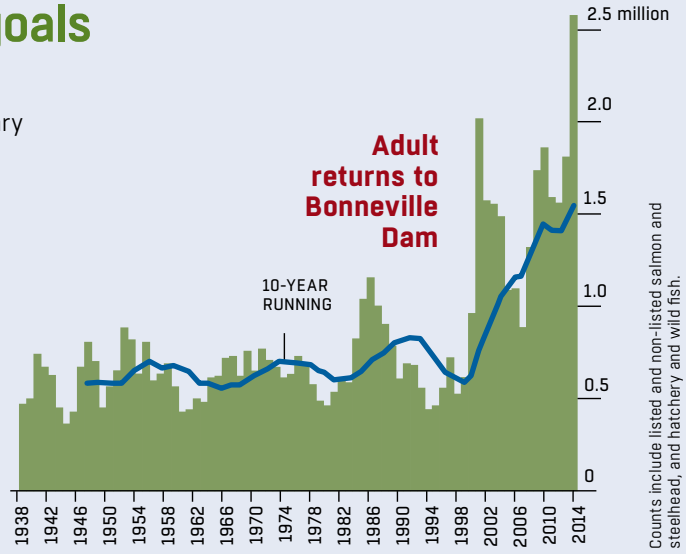
▲ Scientifically designed tests in 2010, 2012, 2013 and 2014 estimated progress toward meeting the BiOp performance standard.

Years of progress to meet ESA goals

The Action Agencies will continue those strategies that we know are working in rivers, streams, and the estuary to improve salmon health. We are purchasing cold water from irrigators to keep it in salmon streams and protecting wetlands and floodplains, providing deep pools and cool refuges for fish. Cold water releases from the reservoir behind Dworshak Dam from early July through mid-September help cool water temperatures in the lower Snake River.

These efforts and others will help Northwest salmon manage and adapt to increasing water temperatures and lower summer flows expected to come with climate change.

With the help of our partners, we continue on track to meet the targets in the FCRPS BiOp. There is still more to accomplish before 2018, but strong partnerships and sound science have put us on the path to get there.



PUBLICATION DESIGNED BY LUIS PRADO. OCTOBER 2015

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For an electronic copy of this report or to learn more about the federal agencies' work to protect fish and wildlife, go to: **Columbia Basin Federal Caucus http://www.salmonrecovery.gov**