



Strategy
for
Salmon
Volume II



Northwest
Power Planning
Council



It falls to our generation to be more than river users.
We must be caretakers.

Columbia River Basin Fish and Wildlife Program

The Northwest Power Planning Council was established by an Act of Congress to develop a program to protect and enhance the Columbia Basin's fish and wildlife and a regional power plan that provides a reliable electricity supply at the lowest cost. For further information, see Pacific Northwest Electric Power Planning and Conservation Act—Public Law 96-501.

About our cover

The petroglyphs on our cover are reproductions of rock carvings on the ancient basalt cliffs overlooking Celilo Falls and the Long Narrows, an area near The Dalles, Oregon, that once was the site of the greatest fishery in the Columbia River Basin. The renderings of deer, birds, turtles and other figures are ancient evidence of human occupation along the river. That's why we chose them for our cover. For generations, people drank from the river, pulled fish from its waters and, in more recent times, irrigated crops, generated electricity and shipped products using the Columbia. Today, the cumulative effects of those uses are clear, and the river and its fish are more threatened by human activities than ever before.

The photograph is of the Columbia River Gorge near Hood River, Oregon.

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EXECUTIVE SUMMARY

These amendments comprise a comprehensive strategy for improving survival of Columbia River Basin salmon at every stage of their complex life cycle. This strategy is designed to improve salmon runs, while avoiding undue disruption of river uses and adverse economic impacts to the region.

It is our strategy, but we didn't develop it alone. We relied on the best ideas of state and federal fish and wildlife agencies, Indian tribes, utilities, environmental groups, business organizations, fishers, farmers and other interested citizens.

The Council is uniquely situated to develop a regional salmon strategy. Our authority comes from the Pacific Northwest Electric Power Planning and Conservation Act. The Act authorized the states of Idaho, Montana, Oregon and Washington to form the Northwest Power Planning Council. The Act gave the Council three main directives: 1) develop a conservation and electric power plan to assure the Pacific Northwest of an adequate, efficient, economical and reliable power supply; 2) prepare a program to protect, mitigate and enhance fish and wildlife, including related spawning grounds and habitat, affected by the development and operation of any hydroelectric project on the Columbia River and its tributaries; and 3) involve the public in these activities.

We prepared this salmon strategy in the form of amendments to the Columbia River Basin Fish and Wildlife Program. We adopted the original program in 1982 and have amended it several times since to reflect changing conditions and incorporate new ideas. In 1991, we began the latest revision, which culminated on September 9, 1992. The revision was carried out in three phases. The first phase, completed in August 1991, included high priority production and habitat measures. Phase two, completed in December 1991, dealt with salmon survival in the rivers and harvest. Phase three, completed September 9, 1992, dealt with salmon habitat and production. The next step is phase four, in which we will address protection of resident fish—those that do not swim to the ocean—and wildlife.

Our fish and wildlife program is not quite 10 years old. That's about two generations of salmon. Unfortunately, problems for Columbia Basin fish and wildlife have been more than a century in the making and will not be corrected in a short time. The Northwest Power Act requires us to treat the Columbia and Snake rivers as an integrated system for planning purposes. During the last 10 years, the region looked for the first time at a coordinated approach to protecting and enhancing fish and wildlife of the Columbia River Basin. This included fish passage at dams, harvest of fish in the rivers and oceans, habitat protection and improved production of fish (both natural and artificially aided).

In revising the salmon sections of our fish and wildlife program, we responded to a request from the Northwest governors, the region's Congressional delegation and the National Marine Fisheries Service to come up with a comprehensive, regional salmon enhancement strategy. Our focus is on depleted runs, including those that have been declared endangered or threatened under the federal Endangered Species Act. We considered all measures that could benefit salmon, regardless of who should implement those measures. We believe this effort cannot succeed unless all users of the Columbia Basin's waterways cooperate and contribute to saving salmon runs.

What follows are the highlights of our salmon strategy. The first section contains the overall goals for the strategy. Subsequent sections outline actions at all stages of the salmon life cycle, including survival in the rivers, harvest, habitat and production.

GOAL

- The goal of our fish and wildlife program is to double salmon production in the Columbia River Basin from approximately 2.5 million fish returning to the mouth of the Columbia River each year to 5 million fish.

- Accomplish the doubling goal with no appreciable risk to the biological diversity of fish populations.

FRAMEWORK

- The strategy establishes interim rebuilding targets for naturally spawning Snake River salmon. These numbers are: 1) 50,000 spring chinook; 2) 20,000 summer chinook; 3) 1,000 fall chinook. The Council agreed to review the rebuilding targets in late 1993.
- To help focus efforts toward the rebuilding goal, the salmon strategy establishes six principles to use in evaluating actions: 1) give priority to weak, upriver runs; 2) cause no appreciable risk to biological diversity among or within fish populations, including resident fish; 3) take a watershedwide approach to habitat and production improvements; 4) respect obligations to Indian tribes and other harvesters; 5) focus research on key uncertainties; and 6) use existing hatcheries unless the need for fish cannot be met with existing facilities.
- We call for independent, unbiased scientific review of the amended fish and wildlife program, including its cost-effectiveness and biological benefits.
- We provide for coordinated implementation under a structure to be devised by the Bonneville Power Administration, working with fishery managers and others.

ENHANCE SALMON SURVIVAL IN THE RIVERS

Increase River Velocities to Reduce Fish Travel Time

Immediate Actions

- We call for increased flows in the Snake River during the spring migration aimed at providing a flow equivalent of at least 85,000 cubic-feet per second by lowering Snake River reservoirs to near minimum operating levels and providing additional water from Dworshak Dam and the Upper Snake River.
- Brownlee Reservoir on the Snake River would be operated in a manner that assists spring-migrating salmon downstream. In addition, Idaho Power, which owns and operates Brownlee, will make water available to ensure that fall chinook redds (nests of eggs) downstream remain wet.
- Flows in the Columbia would be aimed at providing at least 200,000 cubic-feet per second in the lowest water years. This will mean increased water storage in years when low runoff is forecast. John Day Reservoir on the Columbia would be operated at mini-

imum irrigation pool during critical migration periods. The reservoir would be lowered to minimum operating pool as soon as irrigation systems are modified or relocated so they can operate at this lower level.

Intermediate-term Actions

- Because the immediate measures in this strategy do not appear to be enough, in themselves, to rebuild salmon runs, we call for deeper Snake River drawdowns to begin in April 1995, unless drawdowns are shown to be economically or structurally infeasible, biologically imprudent or inconsistent with the Northwest Power Act.
- Water efficiency improvements, water leases, additional storage, use of uncontracted storage space and other measures would be utilized to provide additional water from the upper Snake River Basin.
- Various alternatives would be evaluated for providing additional water in the Columbia to aid summer-migrating salmon.
- The Bonneville Power Administration should begin to secure options on power-generating resources that could reduce the load on hydroelectric dams, thereby ensuring greater flows for fish.
- Other water-saving measures should be studied as means to make more water available for fish, such as seasonal power exchanges, accelerated acquisition of energy conservation measures that could help ease the demand for electricity in the winter, and additional water from Brownlee.
- The Fish Operations Executive Committee, created by the Council during phase two, will coordinate these river flow and temperature measures and reconcile them with other salmon recovery measures. The Fish Operations Executive Committee includes policy-level representatives of the affected state and federal agencies and Indian tribes.
- We also call for expeditious research on the relationship between increased flows, increased water velocity and salmon survival, and will conduct a further amendment proceeding on this issue in 1993.

Screen Dams and Spill Water to Protect Juvenile Fish

Immediate Actions

- Improve and/or install screens to divert juvenile fish away from turbines at the big dams on the Snake and Columbia rivers. Screens should be completed at Lower Monumental Dam by March 1992, Ice Harbor Dam by March 1996, and The Dalles Dam by March 1998.

- Spill water over the tops of dams to aid juvenile salmon migration until adequate turbine screens are in place.

Intermediate-term Actions

- In addition, the Corps of Engineers should evaluate, design and test prototype extended-length screens on this schedule: McNary Dam, March 1995; Lower Granite Dam, March 1996; Little Goose Dam, March 1996; John Day Dam, March 1998; and The Dalles Dam, March 1998.
- Improvements at Bonneville Dam should get high priority. The second powerhouse kills too many juvenile fish swimming to the ocean, and the first powerhouse needs improvements to its guidance system for adult fish swimming up the river to spawn.

Fish Passage at Non-federal Dams

- In the Willamette River Basin, the amendments call on the Oregon-based Eugene Water and Electric Board to improve screening and bypass for both juvenile and adult fish at the Leaburg Canal Hydroelectric Project. The Eugene Water and Electric Board also should design and construct permanent screening and bypass systems for juvenile salmon at the Wlalterville Canal Hydroelectric Project.
- Mid-Columbia public utility districts should take the following actions to improve salmon survival: Douglas County Public Utility District should ensure Wells Dam bypass system continues to operate effectively. Chelan County Public Utility District should test and evaluate juvenile screening and bypass at Rocky Reach Dam and report to the Council by August 31, 1993, and install juvenile screens and a bypass system at Rock Island Dam as required in the Rock Island Dam Settlement Agreement. Grant County Public Utility District should test and evaluate screens and a bypass system at Wanapum and Priest Rapids dams and report to the Council.
- Grant County Public Utility District also should provide increased spill at Wanapum and Priest Rapids to improve fish survival until screens and bypass are in place. The Mid-Columbia Coordinating Committee will govern timing and distribution of the spill.

Reduce Losses to Predators

Immediate Actions

- We call for actions to reduce predation of juvenile salmon, including a Squawfish Management Program. The goal is a 20-percent reduction of squaw-

fish populations in the Columbia and Snake rivers within five years. Experts believe this will lead to a 25-percent reduction in predation.

- We also are concerned about predation of adult salmon by marine mammals in the lower Columbia River. We asked the National Marine Fisheries Service to evaluate this problem and report to us.

Barge Juvenile Fish Past Dams

Immediate Actions

- Our strategy calls for accelerated improvements in the downstream barge transportation of juvenile salmon past Snake and Columbia dams. We recognize that, in the near term, especially in low-water conditions, smolt barging is one of the few tools the region has to improve survival. We call on the Corps of Engineers, which collects and transports the fish, to evaluate techniques to improve transportation, such as the use of cooler water in the barges, reduced densities of fish in the barges and broader dispersion of the fish when they are released below Bonneville Dam.

Intermediate-term Actions

- In the longer term, depending on the results of continuing evaluation, barging may be useful in the mix of techniques the region will employ to decrease the mortality associated with migration through the reservoirs. We call on the Corps of Engineers to evaluate further improvements, including improved fish holding and loading facilities, alternative fish collection sites and alternative transportation technologies.

State Water Supply Actions

- States should conduct water availability studies, establish minimum instream flow levels, deny new water appropriations that would harm anadromous fish and acquire existing water rights on a voluntary basis to improve fish flows.
- Our strategy calls for enforcement of water rights and withdrawal limits at diversions, including measuring devices.

IMPROVE HARVEST MANAGEMENT

- In general, harvest must be limited further in order to allow a sufficient number adult fish to return to spawn.
- To protect endangered Snake River sockeye, our strategy calls for no commercial harvest of sockeye below the confluence of the Snake and Columbia rivers.
- Overall harvest rates on Snake River fall chinook should be reduced to 55 percent of the run from levels greater than 70 percent in recent years.
- Non-treaty river harvest of spring chinook should be limited to about 4 percent of the upriver run, just under the 1987–1991 average.
- There should be no commercial fishery for summer chinook until rebuilding allows it, continuing the ban that has been in place since the mid-1960s.
- Our strategy recommends substantial reductions in Canadian harvest of U.S. salmon, and an end to the high seas drift-net fishery.
- Our strategy calls for voluntary lease-back and buy-back programs for commercial fishing licenses and development of a compensation plan for fishers.
- Harvest alternatives, such as live-catch, known-stock and terminal harvest fisheries, should be demonstrated and evaluated.
- We also call for a review of sport fishing regulations and adoption of catch-and-release rules where appropriate, an accounting of and report on incidental harvest of salmon in other fisheries, and increased law enforcement and public education to deter illegal fishing.
- We call on the National Marine Fisheries Service to prepare and circulate a unified, annual report by June 1 each year on harvest and escapement of various Columbia Basin salmon stocks.

IMPROVE HATCHERIES AND PRODUCTION PRACTICES

- Our strategy encourages improved and consistent basinwide hatchery practices and better coordinated management throughout the Columbia Basin so hatchery fish are better able to survive in the natural environment and do not harm wild fish.
- We suggest that hatchery practices throughout the Columbia Basin undergo an independent audit.
- We call on the National Marine Fisheries Service to quickly develop guidelines on when to use captive

brood stock technology and other emergency measures to save seriously depleted salmon runs.

- Our strategy calls for the collection of additional information on wild and naturally spawning salmon populations, such as population status, life history and other data.
- We call for evaluation of new supplementation projects. We also call for development of a policy for experimental conversion of existing hatcheries to undertake supplementation projects to conserve and rebuild naturally reproducing fish populations, and for an assessment of the cumulative effects of existing and new supplementation projects. We provide for experiments in natural production and supplementation to measure the relative success of each approach.
- We suggest a study of the juvenile fish carrying capacity of the Columbia River mainstem and estuary to ensure that hatchery releases are not exceeding that capacity.
- Our strategy supports the continued involvement of appropriate genetics experts in discussions of how to sustain the diversity of salmon runs.
- We call for evaluation of reintroducing anadromous fish into the upper Cowlitz River Basin above the new Cowlitz Falls Dam. We also call for development of appropriate recommendations for protecting and enhancing runs of sockeye, coho and chum salmon, sea-run cutthroat trout and lamprey in the Columbia River Basin.

PROTECT AND RESTORE HABITAT

- Our strategy gives highest priority to habitat protection and improvement in areas of the Columbia Basin where there is low productivity or low survival of adult fish. Priority goes to actions that yield the greatest value for a reasonable cost, and the focus should be on approaches that involve local landowners and governments.
- Habitat varies around the region, and so habitat standards must be designed to reflect these differences. Consequently, the strategy calls for developing habitat performance standards that acknowledge and incorporate local characteristics for each watershed in the basin.
- We urge that the cooperative approach to watershed-wide salmon habitat and production improvements be expanded and accelerated.
- Public and private-sector resources should be used to ensure timely construction and installation of high

- priority screens and water measuring devices at water diversions in salmon rearing areas.
- All underwater diversions in the mainstem Columbia and Snake rivers should be inspected to determine whether screens, which deflect fish from the intakes, are installed and operating.
 - Our strategy says that permanent riparian management areas should be identified and protected. Where water quality standards are being met, these riparian areas would be maintained. Where standards are not being met, revegetation would be promoted.
 - Property easements should be accorded high priority as a means to protect salmon habitat. Government acquisition of property should be a low priority.
 - We call on the states to review and, if necessary, improve state water standards and mining laws to promote salmon productivity.
 - We urge federal and state land managers to pay special attention to insect infestations that may lead to catastrophic fires and, in turn, promote increased erosion that damages salmon habitat.
 - We call for expansion of the Columbia River Estuary Bi-State Study on water quality to include all of the Columbia River Basin.
 - In the Willamette River Basin, we call on the Corps of Engineers to complete by March 31, 1995, its investigation into the feasibility of installing devices to control the temperature of water discharged from Cougar and Blue River dams on the McKenzie River, and by March 31, 1996, for water discharged from Detroit Dam on the Santiam River.

ECONOMIC MITIGATION

- The Council prepared cost estimates for each phase of the salmon amendments. Program expenses are calculated to cost the Bonneville Power Administration about \$30 million in 1992 and approximately \$36 million in 1993. This is in addition to an estimated \$50 million that Bonneville spends to implement previous measures in the Council's fish and wildlife program.
- Future costs will be identified as major projects are implemented.
- We estimate Bonneville will lose an average of \$40 million to \$70 million a year in revenue because of the increased river flows necessary for young salmon.
- The Council's salmon amendments will result in about a 4-percent increase on Bonneville's wholesale rates, or about one-tenth of a cent per kilowatt-hour. Retail rate increases will be less.
- U.S. taxpayers will contribute about \$100 million in 1993 for salmon recovery work in the Pacific Northwest through the budgets of the federal agencies that maintain the Columbia River power system, federal fish hatcheries and federal lands.
- The Council calls for evaluation of the adverse economic effects of salmon recovery and identification of sources of funds to mitigate the adverse effects.

