Basin-wide Salmon Recovery Strategy

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The federal government[1] is proposing a comprehensive, long-term strategy to restore threatened and endangered salmon and steelhead throughout the Columbia-Snake River Basin of the Pacific Northwest. This strategy outlines specific actions to be taken by the federal government, and proposes additional actions for tribal, state and local governments, which together will prevent extinction of these 12 species and lead to their ultimate recovery. Its biological goals are to halt the decline in salmon populations within five to ten years, and establish increasing trends in abundance within 25 years.

Details of the proposed strategy are in two documents:

- A draft biological opinion by the National Marine Fisheries Service required under the Endangered Species Act. It will guide operations of the 29 federally owned dams in the Columbia Basin for salmon and steelhead recovery.
- A draft Basin-Wide Salmon Recovery Strategy (formerly the "All-H Paper") that incorporates requirements of the biological opinion with other measures to improve hatcheries, limit salmon harvest, and, most importantly, restore salmon habitat.

The U.S. Fish and Wildlife Service is also releasing its draft biological opinion on the effects of power system operations on the endangered Kootenai white sturgeon and threatened bull trout.

Federal agencies expect to finalize the documents by the end of this year.

[1] This strategy is proposed by the Federal Caucus, composed of nine federal agencies working collaboratively on salmon recovery efforts in the Pacific Northwest. They are the Army Corps of Engineers, Bonneville Power Administration, Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Environmental Protection Agency, Fish and Wildlife Service, Forest Service, and National Marine Fisheries Service.

This strategy is based on the best available science, extensive public input, and broad consultation with tribal, state, and local authorities. It places the highest priority on actions with the best chance of providing solid, predictable benefits for the broadest range of species. It also establishes mechanisms to gauge success, factor in new science as it becomes available, and adjust the program at major midterm reviews as needed.

Summary of the Strategy

Following are highlights of the proposed strategy. More detailed information is on pages 3-6.

Recovery Actions. Federal agencies would undertake new efforts in the following areas:

Habitat: These strategies identify short-term actions to improve survivals rapidly. They also begin longer-term restoration needed to restore the health of rivers and estuarine habitats for the long haul. Short-term efforts will focus on four features of habitat: good in-stream flows; removal of barriers that block fish from healthy habitat; reducing risks of sedimentation; and rebuilding the health of buffers along streams and river systems.

Hatcheries: Federal agencies will institute a major overhaul of federally funded hatchery facilities to minimize harm to wild salmon and to improve survival rates of hatchery stocks. They will use "supplementation" strategies to prevent extinction of weak stocks, collecting eggs and sperm from wild fish and releasing the offspring into areas inhabited by those wild populations.

Harvest: The federal agencies, working with the states and tribes, will continue ceilings on harvest of protected species at current levels. They will further

reduce harvest levels, where practical, through conservation easements, license buyouts, or other approaches; and pursue options to expand harvest of non-protected species through more selective fishing techniques.

Hydropower: Federal agencies will continue with aggressive efforts to improve survivals of juveniles and adults throughout the hydropower system by improving flows, improving the ability of the young and adult fish to pass dams safely, and other operational enhancements. The agencies will seek to complete the necessary homework on removal of the Snake River dams should other program efforts fall short, and removal becomes necessary to avoid extinction of Snake River fish. This work will include detailed engineering studies to determine how best to implement draw-downs, and economic studies to develop strategies to reduce impacts on communities and industries.

Performance Measures. Federal agencies will establish scientifically-based performance measures and standards to gauge the status of stocks and assess the success of recovery activities in all four areas: habitat, hatcheries, harvest, and hydropower. Progress will be evaluated against performance standards in five, eight and ten years to determine if more aggressive recovery actions, such as dam breaching, must be pursued.

Non-Federal Efforts. The strategy recognizes that federal actions alone cannot ensure survival and recovery of protected salmon and steelhead in the Columbia Basin. It identifies a range of tribal, state, and local actions that complement federal efforts. They will be essential to a successful recovery strategy. Such actions are particularly critical in complying with water quality standards for the stream systems that now violate state standards; establishing and meeting in-stream flow objectives; fixing unscreened diversions and access barriers in salmon-supporting tributaries; and reforming land- and water-use rules to protect and restore productivity.

Status of Columbia-Snake Salmon & Steelhead

Many factors have contributed to the decline of salmon and steelhead throughout the Columbia Basin. Salmon are extremely hardy, traveling hundreds, even thousands of miles from river to ocean and back. However, they require specific habitat conditions to thrive, including sufficient flows of cool, clean water; gravel beds free of sediment where they can spawn; a healthy nutrient base; and passable migration corridors.

Human activities have been taking a toll on salmon and their habitats for well over a century. Once-plentiful populations were dramatically reduced by over-fishing; the region's canning industry reached peak production in 1920. Water diversions for agricultural, municipal, and other purposes have reduced stream and river flows. Activities such as logging, farming and urban development have destroyed spawning and rearing grounds. Polluted runoff, in both cities and rural areas, has degraded water quality. Construction of hydroelectric and irrigation dams has created barriers to juvenile salmon migrating to sea and adult salmon returning to spawn. Even hatcheries, intended to compensate for the harm caused by dams, have contributed to the decline of wild fish by introducing diseases, creating competition for food, and diluting the gene pool.

Wild salmon and steelhead runs that once numbered in the millions have dwindled to just thousands or, in some cases, hundreds. Several populations are now extinct. Twelve are listed under the Endangered Species Act as threatened or endangered, while several others remain reasonably healthy.

History of Salmon Recovery Efforts

Efforts to rebuild salmon in the Columbia-Snake River Basin began as early as 1877 with construction of the first hatchery. As dams were built over the next century, attempts were made to minimize their harm by including structures such as fish ladders to help salmon migrate upriver. They have been supplemented in recent years by improved river flows, spill to pass fish over dams, and barges to move salmon around the dams.

In 1980, the Northwest Power Act created a requirement for a state-directed Columbia basin fish and wildlife program to protect and restore salmon and other fish and wildlife in the basin. In 1985, the United States and Canada signed the Pacific Salmon Treaty limiting ocean harvest of salmon. The federal government has established other harvest limits to address over-fishing. Around the same time, state, local, and tribal efforts began to address habitat restoration through watershed plans.

None of these efforts proved to be enough. Intensified restoration activities began in the 1990s after three Snake River runs were declared threat-

ened or endangered. However, in 1994, the National Marine Fisheries Service biological opinion requiring changes in hydropower operations to aid the protected species was challenged in court and deemed inadequate.

A new biological opinion issued in 1995 established stronger protections, including increased flows and measures to improve water quality and temperature. It set a goal of adopting a revised biological opinion by the end of 1999. It also committed the U.S. Army Corps of Engineers to prepare an environmental impact statement on breaching the Snake River dams. The corps issued a draft EIS in December 1999.

The 1995 biological opinion has been amended to incorporate additional protections as several other Columbia and Snake River runs have been declared threatened or endangered - now a total of 12 listed populations.

In developing this new comprehensive strategy, the federal agencies consulted with states and tribal leaders, conducted 15 public hearings throughout the region that drew 9,000 people, and received more than 60,000 comments.

A Strategy Grounded in Science

The proposed plan is based on extensive scientific analysis and computer modeling of the causes of salmon decline, likely trends in salmon survival, obstacles to recovery, and potential contribution of alternative recovery approaches. Given the number and complexity of factors affecting salmon survival, and the absence of complete data, there are significant gaps and uncertainty in the science. Nevertheless, it is possible to draw broad conclusions about the status of stocks and prospects for recovery.

In the absence of additional recovery efforts, most if not all of the protected runs face a high risk of extinction in the coming decades. The risk is greatest for runs in the upper Columbia and the Snake rivers. Efforts to enhance survival rates provide the greatest benefit at those life stages where the fish suffer the greatest mortality. This is principally in the first year of life, and in the transition from fresh to salt water. However, improvements in more than one life stage can significantly improve chances of recovery.

Breaching the four lower Snake River dams would provide benefits for the four protected runs that migrate up that river, but no benefit for the other protected runs, some of which are at greater risk of extinction. The science suggests that the combination of actions proposed in the Basin-Wide Salmon Recovery Strategy could provide the Snake River runs as much benefit as breaching would.

Recovery Strategy Specifics

Performance Standards, Monitoring & Evaluation

The strategy describes three types of scientifically-based performance measures and standards for the program as a whole, and other specific performance measures for activities in each sector. Those three standards are programmatic, biological and physical.

Programmatic: These standards will evaluate on a rolling basis whether the agencies are fully implementing their commitments, and identify if funding or implementation activities are lagging. This assessment will be based on one-year and five-year implementation plans.

Biological: The standards will evaluate the trends in the health of the populations as a whole. For stock trend information, the National Marine Fisheries Service will examine annual changes in population sizes to quantify the change and rate of change in populations, or *lambda* values. A *lambda* level of 1.1 or higher means a population will double in 8 years. A *lambda* value of 0.95 means a population will halve in 14 years. NMFS will also try to develop a more complete array of population characteristics (diversity traits and geographic distribution) by year 3 for listed fish. The agency will also examine other indicators of improvement, such as survival through the hydropower system and habitat productivity.

Physical: Physical standards will serve as interim surrogates of performance. They will measure the effectiveness of actions in producing desired changes in ecological attributes important for salmon. For example, they will assess changes in water quality, riparian conditions, sediment loading, and so on. The agencies will complete work on these interim standards by January 31, 2001.

On an annual basis the agencies will assess past performance and prepare a workplan for the coming year. In addition, at years five, eight, and ten the agencies will undertake major mid-point evaluations to identify if the program remains on track or if there is need for major adjustments to it. These evaluations

will examine:(1) agency performance in implementation; (2) progress toward meeting interim and long-term objectives for the hydrosystem and for offsite mitigation; (3) updated information on stock status and trends; and (4) new scientific information derived from the monitoring and evaluation program.

At Year Five: If good progress is occurring in implementation and recent annual population changes are above 1.1, continue with the program unchanged. A population with a lambda greater than 1.1 has stopped its decline and is beginning to increase. If population trends are below 1.1 or there is significant failure to perform, reopen the program for needed adjustments in the appropriate area, including dam-breaching if necessary.

At Year Eight: Same as year five, except that if population performance is below 0.95 or there is significant failure to perform, the fisheries service will conclude that the program has failed to reverse trends in extinction. If Snake stocks are failing, the fisheries service is likely to recommend that the action agencies seek authority to breach dams if the current science supports that recommendation.

At Year Ten: Same as year eight, except that if at year ten the National Marine Fisheries Service issues a failure report and additional Congressional authorities are not forthcoming, the action agencies may be required to seek appropriate exemptions from the Endangered Species Committee.

Habitat

The habitat strategies identify short-term actions to improve survivals rapidly. They will also begin the longer-term restoration actions that will be needed to restore the health of river and estuarine habitats required for the long haul.

Fresh Water. Habitat plans will be organized around sub-basins. A sub-basin is a tributary river and its watersheds. The plans will be developed with states, local governments, tribes, private parties and federal agencies. This effort will require a solid commitment to action and coordination by all parties, and major new work through the Northwest Power Planning Council. (The council is a four-state compact formed by Idaho, Montana, Oregon and Washington to oversee electric power system planning and fish and wildlife recovery in the Columbia Basin. It was initiated by Congress through approval of the Northwest Power Act of 1980.)

On federal lands, the agencies will protect existing high-quality habitat and accelerate restoration in high priority sub-basins through existing and planned aquatic strategies under the Northwest Forest Plan and the Interior Columbia Basin Ecosystem Project (ICBEMP). Federal land managers will also begin immediate aquatic restoration strategies in several selected sub-basins, including:

- McKenzie River
- Hood River
- Wenatchee/Yakima Rivers
- Entiat River
- Wind River
- Middle Fork John Day
- South Fork John Day

On non-federal lands, the federal agencies will provide a broad array of technical and financial assistance to address problems immediately. They will:

- Undertake 15 sub-basin restoration strategies (three per year) in priority sub-basins identified in the strategy to address all major in-stream flow problems; barriers to physical access to the good spawning habitat and irrigation screening.
- Undertake a major riparian conservation program to protect high quality habitat.
- Create and capitalize a non-profit Water Brokerage to acquire water to augment in-stream flows in priority sub-basins.
- Work with the Conservation Reserve Program of the Department of Agriculture to acquire permanent easements on 100 stream miles per year of riparian areas.
- Work with the Northwest Power Planning Council to complete sub-basin assessments for 32 sub-basins by 2001.
- Undertake three pilot Endangered Species Act/ Clean Water Act TMDL integrated strategies per year based on state nominations.
- Revise National Resource Conservation Service Field Office Technical Guides for Idaho, Oregon and Washington by October 2001.
- Authorize and fund Federal Emergency Management Agency buybacks of floodplain structures in priority habitats in the lower tributaries.

Estuary. The Lower Columbia River Estuary Program will be the foundation of the recovery effort. This program is a partnership between the Environmental Protection Agency and state and local governments. In the estuary, the Bonneville Power Administration and Corps of Engineers will accelerate implementation of the estuary program through increased technical assistance, federal funding, and expanded authorization for a Lower Columbia River Greenway Program. They will:

- Complete mapping inventory by 2001.
- Seek additional Columbia and Snake River flows.
- Prioritize habitats for acquisition/restoration by 2001. Facilitate Lower Columbia River Estuary Program implementation.
- Seek authorization for Lower Columbia River Greenway Program to protect 10,000 acres of wetlands and 3,000 acres of uplands.
- Seek authorization and funding for Corps of Engineers initiative for 3,000-5000 acres of riparian and side channel restoration.
- Seek authorize and funding for Federal Emergency Management Agency buybacks.
- Revise flood control rule curves to increase flows by 2003.
- Continue to implement aggressive efforts to reduce predation in the lower estuary.

Mainstem.

- Develop and implement a program to restore mainstem shoreline habitats to rebuild rearing areas for migrating salmon.
- Establish a management plan to protect Hanford Reach, home to a healthy fall chinook core population.

Hydropower

This approach retains breaching as a future option, but challenges hydropower system operators now to meet rigorous survival goals over a specific period. System performance will be evaluated against science-based, peer-reviewed performance standards at intervals of five, eight, and 10 years. Dam removal will again be considered if progress is inadequate or Snake River populations decline.

Non-federal hydropower projects will be subject to similar flow and passage improvements as federal dams, through Endangered Species Act consultations and the re-licensing process.

In the hydropower system itself, the federal agencies will:

- Improve water management throughout the system (flows, spill and reservoir operations) to aid fish passage.
- Improve juvenile survivals through the reservoirs and at the dams with specific quantitative objectives.
- Improve adult survivals.
- Improve water quality in the reservoirs.
- Resolve critical scientific uncertainties.
- Reduce fish trucking.
- Implement measures to protect resident fish.
- Improve fish survivals at non-federal hydropower dams.

Harvest

Harvest rates are now so low for most fish that further reductions will not yield major benefits. Although further reductions in limited harvests might provide small additional benefits for listed fish, this strategy generally avoids that action because of the importance of treaty fishing rights and the federal trust obligation. These actions will include:

- Cap fishery harvest rates on listed species at already-reduced levels for most populations, and pursue opportunities to reduce them further.
- Manage fisheries based on annual abundance and status of natural stocks affected by the fisheries.
- Provide opportunities for increased harvest that does not affect listed fish, and further reduce take of listed fish. Pursue selective fisheries; support mass marking of hatchery fish and other tools.

Hatcheries

Species diversity is reflected in wild fish that are genetically adapted to the areas they inhabit. To protect this diversity, hatcheries must draw from the gene pool appropriate for the area. This strategy requires that any agency operating a hatchery develop a Hatchery and Genetic Management Plan to govern production, building on recommendations from the Northwest Power Planning Council's Artificial Production Review. Other actions include:

- Reform existing hatcheries to eliminate or minimize their harm to wild fish.
- Use conservation and supplementation programs on an interim basis to avoid extinction while

other recovery actions take effect. A supplementation program uses

- Use hatcheries to create fishing opportunities benign to listed populations, such as in terminal areas. Those are streams where fish end up to spawn, and can be identified as home to non-listed populations. In some cases, hatcheries could be transferred to or operated by tribes for these purposes.
- Implement an aggressive research, monitoring and evaluation program to quantify hatchery impacts over time.

This overview presents just a highlight of far more detailed information provided in the Biological Opinion and the Basin-wide Salmon Recovery Strategy.

Federal Funding. The measures called for by the final biological opinion will require funding at the level of the President's Fiscal Year 2001 budget request, at a minimum, and may entail a substantial increase in funding for salmon recovery efforts. Additional funds to meet the requirements of the final biological opinion may be needed. Given that the biological opinion may not be completed during the current appropriation cycle, but will likely need immediate funding early in Fiscal Year 2001, the funds necessary to implement the final biological opinion will be obtained through agency reprogramming or, if necessary, seeking supplemental appropriations. The agencies will assess the need for supplemental appropriations based on the final biological opinion and the extent to which Congress has met the President's budget request.

Working with the Region

Through a comprehensive effort that combines separate yet interrelated actions, a better future for the basin can be charted. It is time for citizens, governments and special interests in the Columbia River Basin to collectively take immediate and sustainable actions to rebuild the health of the basin. The Federal Caucus tenders this proposal to decision-makers, the Northwest Delegation, and state and tribal administrations as a launching point for an aggressive, feasible, scientifically-based, balanced path toward basin recovery and rebuilding. Through consultation and collaboration, we hope to refine this proposal so that in its final form, it can serve as a comprehensive, long-term strategic direction for impending actions in the basin.

Check the Federal Caucus Web site at http://www.bpa.gov/power/pl/federalcaucus/fcproducts.shtml to view the documents; or call 1-888-921-4886 to order copies of them.