Mainstem Amendments

to the Columbia River Basin

Fish and Wildlife Program

Northwest Power and Conservation Council

Northwest Power and Conservation Council

Council Document 2003-11

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Introduction

The Columbia River Basin Fish and Wildlife Program

The states of the Columbia River Basin, Idaho, Montana, Oregon and Washington, formed the Northwest Power and Conservation Council, an interstate compact agency, under the authority of the Pacific Northwest Electric Power Planning and Conservation Act of 1980. The Power Act directs the Council to develop a program to protect, mitigate and enhance fish and wildlife of the Columbia River Basin affected by the development and operation of the basin's hydroelectric facilities, while also assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply. The Act also directs the Council to inform the public about fish, wildlife and energy issues and to involve the public in its decision-making.

The Council's *Columbia River Basin Fish and Wildlife Program*, first adopted in 1982 and periodically revised, is the nation's largest regional effort to recover, rebuild, and mitigate impacts on fish and wildlife. As a planning, policy-making and reviewing body, the Council develops and then monitors implementation of the fish and wildlife program, which is implemented by the federal agencies that manage, operate and regulate the basin's hydroelectric facilities. These include the Bonneville Power Administration, the U.S. Army Corps of Engineers, the Bureau of Reclamation and the Federal Energy Regulatory Commission and its licensees.

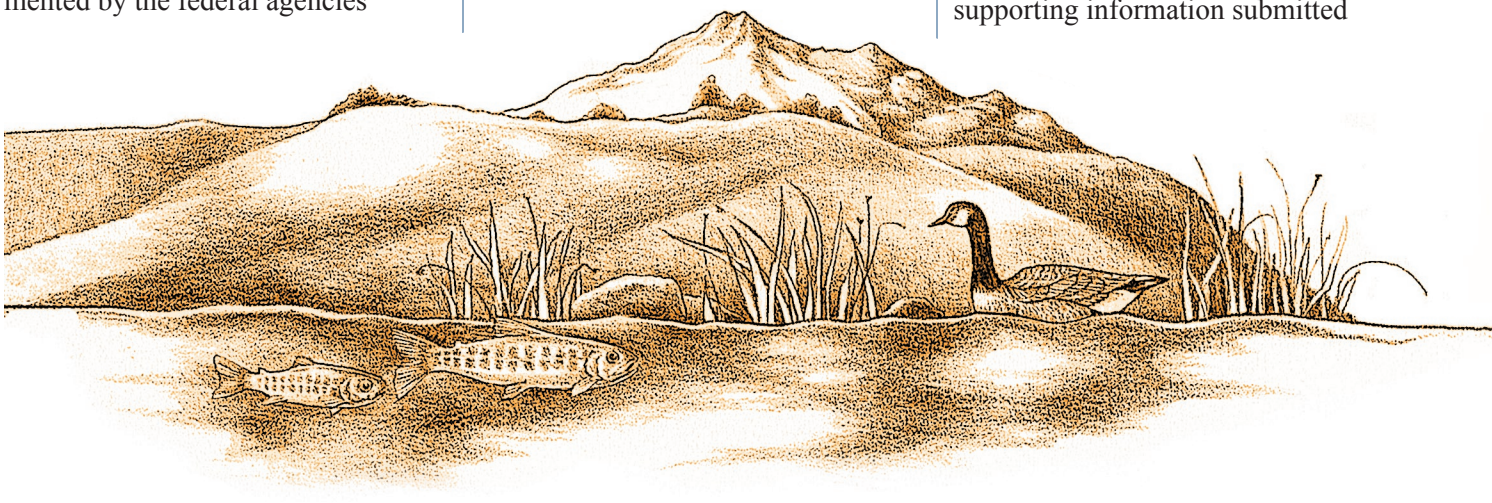
The 2000 Fish and Wildlife Program and the Mainstem Plan

In 2000, the Council adopted a set of amendments to the fish and wildlife program to begin a complete revision of the program. In the first phase of the amendment process, the Council reorganized the program around a comprehensive framework of scientific and policy principles. The fundamental elements of the revised program are the *vision*, which describes what the program is trying to accomplish with regard to fish and wildlife and other desired benefits from the river; basinwide *biological performance objectives*, which describe in general the fish and wildlife population characteristics needed to achieve the vision; implementation *strategies*, which will guide or describe the actions needed to achieve the desired ecological conditions; and a *scientific foundation*, which links these elements and explains why the Council believes certain kinds of actions should result in desired habitat conditions and why these conditions should improve fish and wildlife populations in the desired way.

The program amendments in 2000 set the stage for subsequent phases of the program revision process, in which the Council is to adopt specific objectives and action measures for the river's mainstem and tributary subbasins, consistent with the basinwide vision, objectives and strategies in the program and its underlying scientific foundation. The Council intends to incorporate the specific objectives and measures for tributaries into the program in locally developed subbasin plans for the more than sixty subbasins of the Columbia River.

This document comprises a coordinated plan of operations for the mainstem Columbia and Snake rivers. The Council adopted the *mainstem plan* in April 2003.

In preparing the mainstem plan, the Council solicited recommendations from the region's state and federal fish and wildlife agencies, Indian tribes and others, as required by the Northwest Power Act. Various agencies and tribes responded, and the Council also received recommendations from other interested parties. The Council prepared a draft after reviewing the recommendations, supporting information submitted



with the recommendations, and comments received on the recommendations. The Council conducted an extensive public comment period on the draft mainstem plan before finalizing these program amendments.

Expectations for the Elements of the Mainstem Plan

The role of the mainstem plan and the Council's expectations for it were described in the 2000 Fish and Wildlife Program in the section on Basinwide Hydrosystem Strategies and in the section entitled Schedule for Further Rulemakings. The mainstem plan is to contain specific objectives and action measures for the federal operating agencies and others to implement in the mainstem Columbia and Snake rivers to protect, mitigate and enhance fish and wildlife affected by the development and operation of hydroelectric facilities while assuring the region an adequate, efficient, economical and reliable power supply. The mainstem plan includes objectives and measures relating to, among other matters:

- the protection and enhancement of mainstem habitat, including spawning, rearing, resting and migration areas for salmon and steelhead and resident salmonids and other fish;
- system water management;
- passage spill at mainstem dams;
- adult and juvenile passage modifications at mainstem dams;
- juvenile fish transportation;
- adult survival during upstream migration through the mainstem;
- reservoir elevations and operational requirements to protect resident fish and wildlife;
- water quality conditions; and
- research, monitoring and evaluation.

The Council evaluated the mainstem plan recommendations and these program amendments for consistency with the program framework elements adopted in 2000, including the vision, biological objectives, habitat and hydrosystem strategies, and underlying scientific principles.

A Different Mainstem Plan for a Different Context

In the past, the Council's fish and wildlife program included detailed hydrosystem operations for fish and wildlife. In December 2000, NOAA Fisheries (formerly the National Marine Fisheries Service) and the U.S. Fish and Wildlife Service issued biological opinions for the operation of the Federal Columbia River Power System to benefit populations of salmon, steelhead, bull trout and white sturgeon listed as threatened or endangered under the federal Endangered Species Act (ESA). The hydrosystem measures in these opinions run to hundreds of pages of detail and hundreds of measures on system configuration, river flows, reservoir management, passage improvements, spill, juvenile transportation, predator management and more. These measures are built on foundations developed in the Council's program over the last 20 years.

In developing this mainstem plan, the Council asked for recommendations addressing, in part, how the plan should relate to the biological opinions on hydrosystem operations. The relevant recommendations received can be loosely grouped into four categories:

- recommendations that the Council adopt a mainstem plan consistent with the objectives and measures in the biological opinions;
- recommendations that concluded the biological opinions do not prescribe sufficient flow, spill and passage operations to benefit listed fish, and so the Council should adopt additional measures to that end;
- recommendations that concluded the biological opinions exceeded what was necessary to benefit listed fish, to the detriment of the power supply and other uses of the river, and so the Council should adopt a mainstem plan with scaled back flow and spill operations that are, in the view of those making the recommendations, more biologically and economically efficient in how the limited resources of the region are applied; and
- recommendations that concluded the operations specified in the biological opinions are not sufficient to protect, enhance or mitigate for the adverse effects of the hydrosystem on fish and wildlife not listed for protection under the Endangered Species Act, and may be especially adverse to resident fish (listed and non-listed), and so the Council should adopt objectives and measures for that purpose that would be either supplemental to, or in some cases in conflict with, current implementation approaches to biological opinion operations.

The Council considered and drew from recommendations in all four categories in developing this mainstem plan. In general, however, two overriding concerns motivated the Council in deciding what objectives and measures to include in the plan:

- The mainstem plan includes a set of habitat considerations, objectives, principles and measures intended to protect, mitigate and enhance all the fish and wildlife of the Columbia River Basin affected by the development, operation and management of the hydrosystem, whether listed or not, as required of the Council by the Power Act. Objectives, actions and operations intended to protect, enhance and mitigate for the effects of the hydrosystem on species other than those listed as threatened or endangered may require federal agency flexibility or changes in the implementa-

tion of the biological opinions, as described below.

- Scientific and policy uncertainty continues to plague a number of mainstem actions intended to benefit anadromous fish, leading to an inability to measure the extent of the benefits gained, and to great differences of opinion as to the value of continuing these actions. Moreover, some of these actions have adverse impacts on resident fish and high costs to the power system. The mainstem plan includes provisions for how to improve the way the region engages in fish and wildlife research, power system operations, monitoring and evaluation for the mainstem, and how and what decisions are made on the basis of that information. This includes: 1) describing an approach and a set of factors for prioritizing research; 2) recommending specific priorities for mainstem research; and 3) suggesting how to better integrate research, monitoring and evaluation results into decisions about mainstem actions and power system operations in the context of the Columbia basin as a whole. The Council's goal is to provide recommendations to the federal hydrosystem operating agencies and fish and wildlife agencies for more biologically effective spill, flow and other mainstem operations and actions at the minimum economic cost. The Council understands the biological opinions have sufficient flexibility in implementation to accommodate recommendations of this type; that is, the biological opinions were adopted with the recognition that as new scientific information is developed, actions called for in the opinions could and, where found appropriate, would be changed.

The Council reviewed comments on the proposed vision, objectives, and strategies in the draft mainstem plan and then decided, consistent with the review procedures and standards in the Power Act, on the most appropriate mainstem vision, objectives, and strategies for both listed and non-listed species.

> "The Council's goal is...more biologicially effective spill, flow and other mainstem operations and actions at the minimum economic cost."

Another difference between this and past Council mainstem programs concerns the region's power supply requirements. The Power Act requires the Council to adopt a fish and wildlife program that not only protects, mitigates and enhances fish and wildlife but also assures that the region will continue to enjoy an adequate, efficient, economical and reliable power supply. The Council evaluated: 1) current hydrosystem operations; 2) the recommendations for mainstem amendments; and 3) the October 2002 draft mainstem amendments to ensure that the adopted objectives and measures for mainstem hydrosystem operations meet the fish and wildlife requirements of the Power Act and are consistent with its power supply obligations. The Council also reviewed the latest scientific information and comments on the effectiveness of fish and wildlife strategies to increase survival of specific populations.

Energy systems, markets and policy have changed radically since the last revision of the fish and wildlife program in the mid-1990s. Federal hydrosystem operations in 2001 brought a concrete example of a problem that the Council had seen developing over the last half-decade — the electricity demands placed on the federal hydrosystem were increasingly greater than what the federal system could produce in a year of historically low runoff and river levels. Yet the dynamics of regional and west coast energy developments prevented the Bonneville Power Administration from acquiring new, long-term resources that could have closed the gap. Problems with West Coast power markets in 2000 and 2001 prevented Bonneville from being able to make up the energy deficit in those markets, leading to a situation in 2001 in which the federal agencies were forced to curtail regional load and reduce system operations intended to benefit fish and wildlife in order to maintain the reliability of the region's power system. Even with significant changes to the hydropower operations specified for fish, the system still produced inadequate energy to meet the demands of the region. This forced many of the region's utilities to curtail loads while also spending large sums to purchase power.

For these reasons, the analysis of the adequacy, efficiency, economics and reliability of the region's power supply that accompanies this mainstem plan includes consideration of the current status of the region's power system. The Council's conclusion is that the region's power system should be adequate and reliable for the next few years, due to the development of new power

Fast Fact

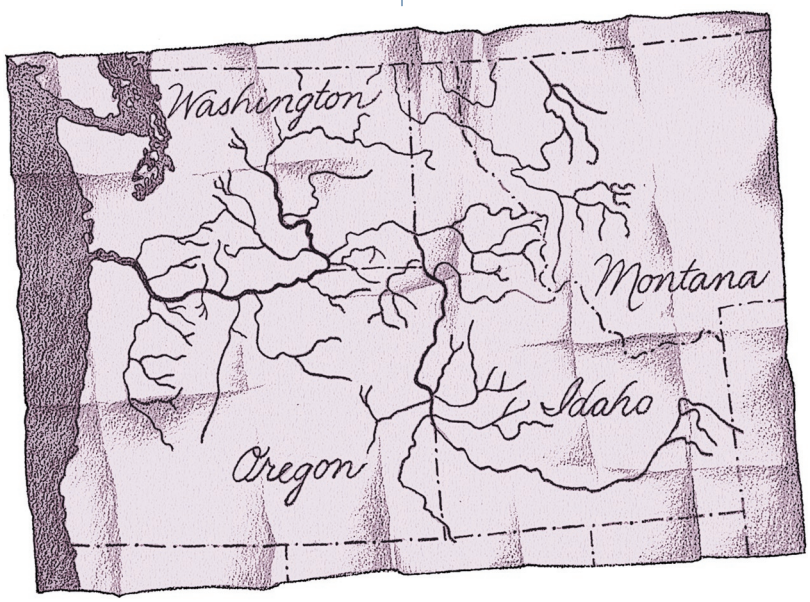
The Federal Columbia River Power System includes 31 dams. The total capacity is 22,512 megawatts, or 44.8 percent of the region's total generating capacity.

supplies, reductions in demand, and loss of loads that have occurred since early 2001. The objectives and measures to protect, mitigate and enhance fish and wildlife included in this mainstem plan do not affect that conclusion. The analysis also concludes, however, that the region faces the possibility in later years of spiraling back into the power supply problems seen in 2001 unless measures are taken to ensure that new resources are added to the regional power supply in a more certain fashion. The analysis suggests possible actions by the federal agencies and others in the region to ensure that the federal system provides the specified operations for fish and wildlife and meets the electricity demands in most, if not all, low-water years. The Council is reviewing and revising its 20-year power plan as called for by the Northwest Power Act. The power plan will address the region's power supply and reliability issues in more detail.

Vision of the Mainstem Plan

The long-term vision of the Council's 2000 Fish and Wildlife Program is of a Columbia River Basin ecosystem that sustains abundant, productive and diverse communities of fish and wildlife, mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem and providing the benefits from fish and wildlife valued by the people of the region. This ecosystem provides abundant opportunities for tribal and treaty-right harvest and for non-tribal harvest of fish and wildlife, and for the recovery of fish and wildlife affected by the operation of the hydrosystem. This program is to be "habitat-based." Wherever feasible, the program vision is to be accomplished by protecting and restoring the natural ecological functions, habitats and biological diversity of the Columbia River Basin.[1] Where this is not feasible, other methods that are compatible with naturally reproducing fish and wildlife populations will be used. Where impacts have irrevocably changed the ecosystem, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem. Actions taken under the program will also provide conditions that meet water quality standards under the Clean Water Act. They must also be cost-effective and not put at risk the region's adequate, efficient, economical and reliable power supply.

The vision for the mainstem plan is consistent with the broader program vision set out above. Hydrosystem operations, fish passage efforts, habitat improvement investments and other actions in the mainstem should be directed toward protecting, enhancing, restoring and connecting[2] natural river processes and habitats, especially spawning, rearing, resting and migration habitats for salmon, steelhead, sturgeon and important resident fish populations. This will allow for abundant, productive and diverse fish and wildlife populations. The vision includes providing conditions within the hydrosystem for adult and juvenile fish that: 1) most closely approximate natural physical and biological conditions; 2) support the expression of life history diversity; 3) allow for adequate levels of mainstem survival to support fish population recovery in the subbasins; and 4) ensure that water management operations are optimized to meet the needs of anadromous and resident fish species, including those in upstream storage reservoirs, with the least cost so that actions taken maximize benefits to all species while ensuring an adequate, efficient, economical and reliable power supply. Any system changes needed to achieve these goals must be implemented in such a way and over a sufficient time period to allow the region to make whatever power system adaptations are needed, if any, to maintain an adequate, efficient, economical and reliable power supply.



[1] Throughout the provisions of these mainstem amendments, the Council's position is consistent with the position of NOAA Fisheries' 2000 Biological Opinion with reference to breaching lower Snake River dams.

[2] "Restore" as used in the mainstem plan means to take an action in a particular area that currently has no habitat value for spawning or rearing or other desired population condition (because, for example, the area has been blocked inundated or dewatered at an inopportune time), so that the area will have value for that purpose. It does not mean to re-establish the conditions that existed at any particular point in time, including the time before non-Indian settlement and development of the Columbia basin.

"Enhance," by contrast, when referring to habitat conditions, means to take an action in an area that currently has some value for spawning or rearing or other desired condition so as to increase that value.

"Connecting" habitat becomes important when a migrating population has areas of productive habitat that it cannot use to full advantage (or use at all) because the habitat is inaccessible to the population or because the areas in between productive habitat are not productive without improvements. It also does not mean or imply a Council position in support of the breaching of dams in the mainstem.

Biological Objectives

Overarching Objectives and Priorities for the Mainstem

The biological objectives stated here for the mainstem plan are intended to be based on, and consistent with, the biological objectives stated in the 2000 Fish and Wildlife Program.

These biological objectives and accompanying operational strategies are designed to improve the life-cycle survival of important populations of listed and unlisted salmon, steelhead, resident fish, and wildlife. The Council's goal is to apply the available resources in the most effective way possible to achieve protection, mitigation, recovery and delisting of threatened and endangered species in the shortest possible time. This demands that the Council set clear priorities for resource expenditures to protect, mitigate, and enhance fish and wildlife populations to assure that fish and wildlife benefits are achieved at the least cost to the region's financial and water resources.

One of the overarching biological objectives for the program is the recovery of ESA-listed anadromous and resident fish affected by development and operation of the hydrosystem. Federal hydrosystem operations to benefit fish now are focused on listed populations through the 2000 Biological Opinions on the Operation of the Federal Columbia River Power System from NOAA Fisheries for salmon and steelhead and the U.S. Fish and Wildlife Service for Kootenai white sturgeon and bull trout. Achieving these biological performance standards for listed species as stated in the biological opinions is a key biological objective of the Council's program and this mainstem plan.

Under the Northwest Power Act, however, the Council has an obligation to protect, mitigate and enhance all the fish and wildlife of the Columbia Basin affected by the development, operation and management of the hydrosystem. Concern over the listed populations is only one part of the Council's broader mandate. And so a goal of the program, as also stated in the overarching objectives of the program framework, is to provide habitat conditions that sustain abundant, productive, and diverse fish and wildlife populations that support the recovery of listed species and abundant opportunities for tribal trust and treaty-right harvest and non-tribal harvest.

In addition, the science relating to the rebuilding of Pacific salmon, as incorporated into the objectives and habitat strategies in the 2000 Fish and Wildlife Program, indicates that success in protecting and enhancing abundant and diverse naturally spawning populations of salmon and steelhead and other native fish requires an emphasis on protecting, enhancing, connecting, and restoring habitats and populations that are relatively productive. This is a priority for actions that should be equal to protecting migration and spawning conditions for ESA-listed populations. This priority includes, for example, protecting and improving mainstem migration conditions for important non-listed tributary populations in the middle part of the river. These include, for example, spring chinook in the John Day and Deschutes rivers. Also, historically the most productive populations in the Columbia system were those that spawned in the mainstem or the lower parts of the tributaries, as described in the habitat strategies in the 2000 Fish and Wildlife Program, and that have been either extirpated (e.g., those that spawned in the mainstem above Chief Joseph Dam or in the area now inundated by John Day Dam) or remain relatively productive (e.g., Hanford Reach fall chinook). Accordingly, this plan emphasizes protecting and restoring mainstem spawning and rearing habitats and populations. These general objectives for the mainstem are consistent with, and incorporate, the basinwide vision, biological objectives, and the habitat and hydrosystem strategies in the 2000 Fish and Wildlife Program.

Specific Objectives and Performance Standards for Habitat Characteristics and for Population Performance

Mainstem habitat conditions

- Identify and protect habitat areas and ecological functions that are relatively productive for spawning, resting, rearing, and migrating salmon and steelhead in the mainstem. This includes, among other things, protecting the Hanford Reach fall chinook habitat by determining and providing appropriate spawning and rearing flows. In addition, where feasible, restore and enhance habitats and ecological functions that connect to the protected productive areas to support the expansion of productive populations and to connect weaker and stronger populations, so as to restore more natural population structures.

Fast Fact

Five species of Pacific salmon—pink, chum, sockeye, coho and chinook; and two anadromous trout—steelhead and sea-run cutthroat—are found in the Columbia River Basin.

- Protect, enhance, restore and connect freshwater habitat in the mainstem for the life history stages of naturally spawning anadromous and resident salmonids. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains and uplands in the mainstem.
  - Enhance the connections between the mainstem sections of the Columbia and Snake rivers and their floodplains, side channels and riparian zones.
  - Manage mainstem riparian areas to protect aquatic conditions and form a transition to floodplain terrestrial areas and side channels.
  - Identify, protect, enhance and restore the functions of alluvial river reaches in the mainstem.
  - Where feasible, reconnect protected and enhanced tributary habitats to protected and enhanced mainstem habitats, especially in the area of productive mainstem populations.
- Allow for biological diversity to increase among and within populations and species to increase ecological resilience to environmental variability.
  - Expand the complexity and range of mainstem habitats to allow for greater life history and species diversity.
  - Manage human activities in the mainstem, such as fish passage at mainstem dams, fish transportation and harvest, to minimize artificial selection or limitation of life history traits.
- Increase the amount of spawning habitat for fall chinook core populations in the lower and mid-Columbia area and in the lower Snake area. The Council acknowledges the recommendation from the four tribes of the Columbia River Inter-Tribal Fish Commission that the federal agencies act to provide 9,000 additional acres of spawning habitat for Snake River fall chinook and 40 additional miles of fluvial spawning habitat for mid-Columbia fall chinook core populations, derived at least in part from the Independent Scientific Group's Return to the River report (1996 and 2000). However, the Council does not adopt at this time these or any other numerical targets for increased fall chinook spawning habitat. Instead, the Council will consult with the state and federal fish and wildlife agencies, tribes, federal operating agencies, the Independent Scientific Advisory Board and the Independent Economic Advisory Board to evaluate the scientific soundness, achievability, and implications of the tribes' recommended targets, as well as other reasonable alternatives, and then in a public review process will consider adoption of a set of numerical objectives for additional mainstem spawning habitat.

"Where feasible, manage the hydrosystem so that patterns of flow more closely approximate natural hydrolgraphic patterns."

- Where feasible, manage the hydrosystem so that patterns of flow more closely approximate natural hydrographic patterns. Ensure that any changes in water management are premised upon, and proportionate to, scientifically demonstrated fish and wildlife benefits. Examples of management actions or limitations consistent with this objective include:
  - Attempt to provide natural spring freshets below the storage projects, within flood control constraints.
  - Minimize fluctuations in flows out of the storage reservoirs over an extended period of the summer and fall. To the extent this conflicts with use of the hydrosystem for load following, system operators should balance equitably the biological requirements of fish with power supply requirements of the region.
  - Apply rules of operation for all the storage projects, such as the Integrated Rule Curves developed by the Montana Department of Fish, Wildlife and Parks for Libby and Hungry Horse dams, so that drawdown and refill are based substantially on local inflows, and so that the reservoirs, in concert, can shape water releases to benefit fish in and immediately below reservoirs and then, as the water travels downstream, benefit anadromous fish.
  - Operations based solely on efforts to achieve biological opinion flow targets in the lower Columbia river will adversely affect resident fish and may fail to benefit anadromous fish if they do not take into account reasonable storage project operations.
  - Operations should attempt to meet the requirements of both resident and anadromous fish.
  - The amount of flow augmentation and the release schedule from storage reservoirs should be based on the best available science for each target species (resident or anadromous) and weighted for the greatest benefit to all species.
- Identify, protect, enhance, restore, and connect ecosystem functions in the Columbia River estuary and nearshore ocean discharge plume as affected by actions within the

Columbia River mainstem. Evaluate flow regulation and changes to estuary-area habitat and biological diversity to better understand the relationship between estuary ecology and near-shore plume characteristics and the productivity, abundance, and diversity of salmon and steelhead populations.

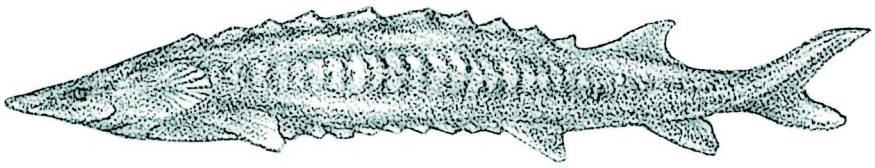
- Where feasible, pursue restoration of anadromous fish in mainstem areas blocked by dams. Where this is not feasible, other measures will be used to protect, mitigate, and enhance related habitat and species assemblages. Under Section 4(h)(11)(A)(ii) of the Northwest Power Act, the Federal Energy Regulatory Commission has an obligation to take the Council's program, including this provision, into account at each relevant stage of decision-making to the fullest extent practicable as it exercises its responsibilities. This includes decisions on whether to license or re-license a non-federal hydroproject on the Columbia and Snake mainstem. If, after fulfilling this legal obligation, FERC decides not to require reintroduction of anadromous fish into an area blocked by a particular hydroproject, actions to enhance habitat and species assemblages that exist above the blockages should be used in mitigation.

Migration/passage conditions for anadromous fish

- The NOAA Fisheries 2000 Biological Opinion includes hydrosystem survival performance rates for inriver passage of affected life stages of ESA-listed salmon and steelhead through the eight federal dams in the lower Columbia and lower Snake rivers (Table 9.2-3). The program adopts these objectives. Achieve these objectives at the minimum economic cost.
- The Council will consult with state and federal fish and wildlife agencies and tribes, the Independent Scientific Advisory Board, and federal operating agencies to determine the possibility of adopting hydrosystem survival performance standards for non-listed populations of anadromous fish.
- Maximize spillway survival by selecting the most biologically effective level of spillway discharge at each project while not exceeding interim gas supersaturation standards.[3] Balance spillway survival probabilities against spillway passage efficiency and the efficiency and probabilities of other passage routes in order to determine the passage methods, including spill volumes, that maximize survival of fish passing the dam and minimize fall-back and other effects on adult salmon.
- Improve adult fish migration survival through the system.
- Meet state and federal water quality standards under the Clean Water Act.
- As an interim objective, contribute to achieving smolt-to-adult survival rates (SARs) in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. The Council will consult with state and federal fish and wildlife agencies and tribes, the Independent Scientific Advisory Board, and federal operating agencies to evaluate the scientific soundness and achievability of, and impact of ocean conditions on, these smolt-to-adult survival rate objectives. Then, in a public review process, the Council either will confirm these smolt-to-adult survival rates as program objectives or revise to different objectives. At the same time, the Council will investigate the possibility of developing smolt-to-adult survival rate objectives for other populations.

Resident fish/wildlife

- Provide conditions that support the needs of resident fish species in upstream reservoirs and river reaches, as well as the needs of anadromous and resident species in the lower parts of the mainstem.
- In accordance with Section 4(h)(11)(A) of the 1980 Power Act, and the Council's primary strategy for hydrosystem fish passage and operations under the 2000 Fish and Wildlife Program, the Administrator of the Bonneville Power Administration, and other federal agencies responsible for managing, operating or regulating any federal or non-federal hydroelectric facility for purpose of flow or spill advantages to ESA-listed species shall assure, in consultation with the Secretary of the Interior and the Administrator of NOAA Fisheries, together with state fish and



[3] Under current system operations for migrating anadromous fish, including under 2000 Biological Opinion operations, the federal operating agencies must secure waivers to the existing water quality standards to allow for spill operations that will result in total dissolved gas supersaturation levels of up to 120 percent. The Council considers current operations as well as any other specific spill operations included in these amendments to be "interim" while the Council works with the region to determine the most biologically effective level of spillway discharge at each project and for the system as a whole.

wildlife agencies and appropriate Indian tribes, that flow and spill operations are optimized to produce the greatest biological benefits with the least adverse effects on resident fish.

- Enhance the abundance and productivity of white sturgeon in the mainstem in order to rebuild and sustain naturally produced populations of sturgeon and sustain an annual harvest of sturgeon. Operate the hydropower system to maximize spawning and rearing success of white sturgeon in reservoirs, while operating in concert with the needs of salmonids. The U.S. Fish and Wildlife Service's 2000 Biological Opinion concerning hydrosystem operations that affect listed Kootenai River white sturgeon includes specific objectives for that species, incorporated here. The water management strategies in this mainstem plan (below) include a sturgeon operation strategy that is a refinement of the flow strategy in the Fish and Wildlife Service's Biological Opinion. The Council's strategy is intended to be a more effective operation for achieving the objectives in the opinion and in this program.
- Provide mainstem conditions that help to protect and enhance bull trout habitat and thus help to enhance the abundance and productivity of bull trout populations. The U.S. Fish and Wildlife Service's 2000 Biological Opinion concerning hydrosystem operations that affect listed bull trout populations includes objectives for that species, which are adopted here.
- Contribute to providing the conditions necessary to restore populations of native fish and wildlife in the areas above and below Hungry Horse and Libby dams to self-sustaining levels capable of supporting harvest. This includes protecting, restoring, and enhancing reservoir, riparian, and wetland habitats above and below Hungry Horse and Libby dams to meet the goals set forth in the management and mitigation plans and the recommendations of the Montana Department of Fish, Wildlife and Parks and the Confederated Salish and Kootenai Tribes.[4] As part of this objective, 1) improve the seasonal pattern and stability of river discharges and reservoir conditions; 2) restore in-channel habitat structure, function and complexity; 3); restore riparian and wetland habitats and floodplain function; and 4) maintain water temperatures within the tolerance range of native fish species.
- Contribute to providing the conditions necessary to protect spawning and rearing habitat for fish in, and adjacent to, Lake Roosevelt to build fish populations to levels capable of supporting harvest consistent with the goals set forth in the management and mitigation plans and the recommendations of the Spokane and Colville Tribes.[5]
- As part of implementing the wildlife strategies and achieving the wildlife objectives of the 2000 Program, improve survival and production of wildlife species in the mainstem affected by the development, operation, and management of the hydrosystem by reducing limiting factors to wildlife in the mainstem and improving riverine and riparian mainstem habitat conditions for these species.

[4] When the Council adopts subbasin plans into the program, which will supersede existing management and mitigation plans, the objective will be to implement the strategies and achieve the objectives in the relevant subbasin plans.

[5] When the Council adopts subbasin plans into the program, which will supersede existing management and mitigation plans, the objective will be to implement the strategies and achieve the objectives in the relevant subbasin plans.

Strategies

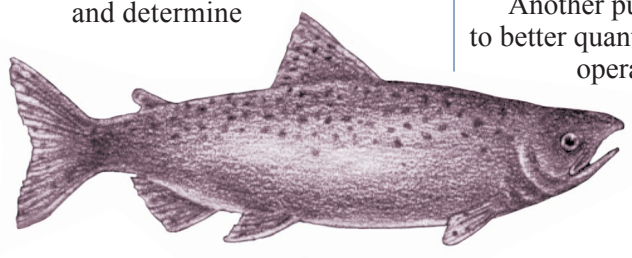
Overarching Strategies

- The strategies stated here for the mainstem plan are based on, and consistent with, the general basinwide objectives and habitat and hydrosystem strategies stated in the 2000 Fish and Wildlife Program.
- All of the strategies in this mainstem plan will cease to have effect seven years after the effective date of these program amendments.
- All decisions on actions that affect, or are intended to benefit, fish and wildlife in the mainstem Columbia and Snake Rivers — whether embedded in long-range plans, annual plans, or in-season management, and whether concerning water management or passage or reservoir operations — should reflect, or be based on, the following general strategies:
  - Protect the habitat areas and ecological functions that are at present relatively productive for the life stages of the species important to the biological objectives of this program, including for spawning, resting, rearing, and migration of salmon and steelhead and resident fish. Enhance and restore habitats and ecological functions that connect to the protected areas.
  - Protect biological diversity by benefiting the range of species, stocks, and life-history types in the river.
  - Provide conditions that best fit those natural behavior patterns and river processes that most closely approximate the physical and biological conditions needed by the relevant species.
  - With regard to hatchery populations of salmon and steelhead, prioritize mainstem protection and support to those hatchery populations that provide the most significant contribution to the rebuilding of naturally spawning populations in areas of program habitat investments, or that provide the most significant contributions to harvest while ensuring the least detrimental impacts on the survival of native fish species.
  - Optimize actions to produce the greatest biological benefits for targeted species with the least cost, and the least adverse effects on other species, while ensuring an adequate, efficient, economical and reliable power supply.
- In December 2000, NOAA Fisheries and the U.S. Fish and Wildlife Service adopted biological opinions for the operation of the Federal Columbia River Power System for the benefit of populations of salmon, steelhead, bull trout and Kootenai white sturgeon listed as threatened or endangered under the Endangered Species Act. The measures in these opinions represent the recommendations of the federal fish and wildlife agencies with jurisdiction over the operational needs of these listed species. The Council accepts these measures as part of the fish and wildlife program for the near term. However, many of the biological opinion measures must be subject to systematic and rigorous monitoring and evaluation, as described below and in the more specific strategies, to determine if the measures have the biological benefits expected and represent the most cost-effective actions to achieve these benefits. Based on these evaluations, the Council may recommend to the federal operating and fish and wildlife agencies operations that differ from those in the biological opinions if the Council concludes the different operations provide the same or greater benefits to listed fish and wildlife than current operations at a lower cost. The Council is confident that changes in operations of this nature can be made consistent with the flexibility built into the biological opinions.
- The 2000 NMFS and USFWS biological opinion operations may not be optimal when the needs of fish and wildlife other than listed species are taken into account. Based on the vision, the biological objectives, and the overarching strategies stated earlier, the Council is adopting water management and other specific strategies to benefit all fish and wildlife affected by the hydrosystem, not just listed species. Where the strategies intended to benefit non-listed species appear to conflict with the biological opinions, the Council does not mean that the federal operating agencies should act contrary to the biological opinions in order to implement strategies in this program. The Council intends instead that the federal operating agencies make every effort practicable to use the operational flexibility in the biological opinions to meet the biological opinion requirements and implement the other strategies in the Council's program. The exception is where the Council calls for explicit scientific testing of a particular operation in the biological opinions. The Council is confident these changes also can be made consistent with the flexibility built into the biological opinions without adverse effects on listed species and will lead to a more broad-based, sustainable, and cost-effective protection and recovery of fish and wildlife in the Columbia Basin. The Council calls on the federal operating agencies and fish and wildlife agencies

to consult with the Council, states, and tribes on the implementation of these strategies.

- The Council recognizes the need to test certain assumptions and uncertainties in the biological opinions as they relate to spill, flow augmentation, reservoir drafting, predator control, and harvest. The Council supports the development of tests and experiments for the hydrosystem even where some may require temporary departures from current biological opinion operations. These experiments will focus on areas where the quantitative benefits from biological opinion operations require additional understanding or verification, or where benefits to non-listed species from varied operations may be significant without adverse impacts on listed species, or both. This approach is consistent with the biological opinions, which allow considerable flexibility to conduct necessary tests. In the strategies, the Council specifies what tests need to occur and why. In particular, the Council emphasizes the need for the following types of testing:

  1) Determine more precisely the relationship between fish survival and various levels of spill at the individual dams and for the system.
  2) Implement and test new spill technologies such as removable spillway weirs.
  3) Evaluate turbine operations at the different dams to determine optimum fish survival through the turbines.
  4) Evaluate the benefits of incremental flow augmentation and determine the mechanisms for flow/survival relationships on the Columbia and Snake rivers.
  5) Measure the effects of steady June through September outflows from Libby and Hungry Horse dams in Montana.
  6) Identify the effects of shifting summer flows later in the summer.
  7) Evaluate and document the impact of predation in the mainstem in terms of numbers of listed fish taken, and estimated impact on smolt-to-adult return ratios.
  8) Evaluate and document the impact of harvest operations in terms of numbers of ESA-listed fish taken and estimated impact on smolt-to-adult return ratios.
  9) Test other uncertainties proposed by independent science panels and fish and wildlife managers summarized in this program and in the basinwide research plan.



There are several purposes for these tests. First and foremost is to determine the type of operation that provides the best benefits for enhancing listed and non-listed fish populations over the long term. In many cases, if it were better understood why certain operations were beneficial to fish it would be possible to adjust the operations to provide better survival. For example, the benefits of flow augmentation in the Snake River may be related to travel time, turbidity, temperature or reservoir fluctuations. Whatever the reason, operations could be made more effective if these mechanisms were better understood.

Another purpose of these tests is to better quantify the benefits of the operations so that choices can be made to assure that the same survival benefits are achieved through the lowest-cost operation. This is largely the purpose behind many of the spill tests and tests involving removable spillway weirs. Early results appear to show that removable spillway weirs can provide the same benefits as baseline spill but use one-tenth of the water. This constitutes a considerable savings in terms of hydropower generation.

Finally, there are some operations where the benefits need to be more clearly demonstrated. Only through controlled experiments can we reach a conclusion as to the merits of continuing these operations. Recent scientific reports call into question several of these operations, especially active management of the storage projects to provide flow augmentation.

It should be emphasized that this approach represents more than passive observation. It includes the option of implementing large-scale field tests of hypotheses that will sometimes require changes in hydrosystem operations. In some cases, there may be risks associated with conducting the experiment, but these risks must be weighed against the risks of continuing operations without accurate information and against the potential risks to other fish species. In implementing large-scale field tests, or any other hydrosystem tests, the Council recognizes that water used from Columbia River and Snake River storage reservoirs, or from tributary streams within the Columbia River Basin, will be obtained through federal water rights where they exist, or through the individual states where such water may be made available in accordance with state water law.

The Council is prepared to take steps necessary to properly design experiments and ensure that they are implemented. In some cases this may require the Council to work with fish and wildlife agencies and tribes to establish project teams that can develop and oversee appropriate tests while assuring opportunities for public input.

The Council calls on NOAA Fisheries and the United States Fish

and Wildlife Service to exercise the flexibility within the biological opinions to implement these tests. We also encourage NOAA Fisheries and USFWS to make changes in the biological opinions when these scientific reviews and tests are completed and the results provide compelling reasons for change.

Strategies in Specific Areas

Mainstem habitat

- Through system operations and investments in mainstem habitat improvements, increase the extent, diversity, complexity, and productivity of mainstem habitat by protecting, enhancing, and connecting mainstem spawning, rearing, and resting areas. Actions to consider include, but are not limited to:
  - providing appropriate spawning, rearing, and resting flows in the mainstem
  - excavating backwater sloughs, alcoves, and side channels
  - reconnecting alcoves, sloughs and side channels to the main channel
  - dredging/excavation of lateral channels that have silted in
  - enhancement of wetlands
  - creating islands and shallow-water areas
  - adding large woody debris to these systems
  - stabilizing the water levels of the rivers and reservoirs to the extent practicable
  - planting riparian and aquatic plants at appropriate locations
  - acquiring and protecting lands adjacent to the mainstem
- Federal and state fish and wildlife agencies should analyze each proposed action to increase mainstem spawning and rearing habitat to ensure that the proposal may be implemented without adversely affecting the migration of listed populations through the mainstem.
- In instances where proposed operations to protect or enhance mainstem spawning and rearing habitat may conflict with operations intended to benefit juvenile or adult salmon migration, the system operators and the fish and wildlife agencies and tribes should identify potential conflicts, priorities, trade-offs, and opportunities and consult with the Council, affected entities, and the public on how best to resolve conflicting needs.
- NOAA Fisheries' 2000 Biological Opinion calls on the federal operating agencies, in conjunction with the Environmental Protection Agency and the U.S. Geological Survey, to develop a program to 1) identify mainstem habitat sampling reaches, survey conditions, describe cause-and-effect relationships and identify research needs; 2) develop improvement plans for all mainstem reaches; and 3) initiate improvements in three mainstem reaches. The Council adopts a similar measure as well, provided that this mainstem habitat initiative does not focus wholly, or even predominantly, on the mainstem habitat needs of the populations currently listed. Salmon mitigation, enhancement, and rebuilding opportunities in the mainstem may have greater relation to non-listed populations than to listed populations.
- Evaluate the feasibility of reintroducing anadromous fish into blocked areas, including above Chief Joseph and Grand Coulee dams.
- Identify the importance of protecting or improving mainstem habitat for recovering bull trout populations. The Council calls on the relevant state and federal fish and wildlife agencies to conduct the necessary research and report the analysis to the Council at the earliest possible date.
- Develop and implement actions that create littoral habitat and fish structures along the shores of Lake Roosevelt to diversify food available to fish and provide additional rearing habitat.
- Implement actions to stabilize and improve Columbia River white sturgeon and to recover listed Kootenai River white sturgeon.
- Implement actions to stabilize and improve burbot populations in the upper Columbia.[6]
- In the long-term, implement actions to reduce toxic contaminants in the water to meet state and federal standards.

"All actions to provide or improve juvenile and adult fish passage through mainstem dams should emphasize adult survivals as a high priority."

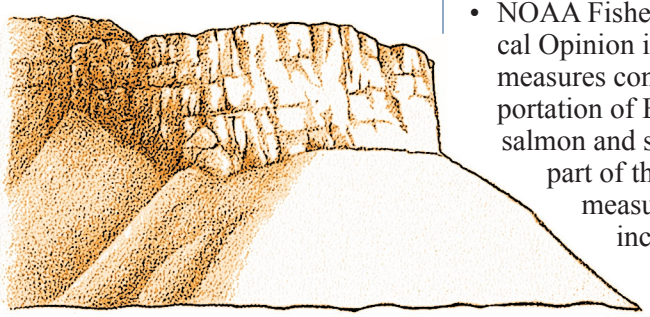
Juvenile and adult passage, in general

- Consistent with the biological objectives and overarching strategies, all actions to provide or improve juvenile and adult fish passage through mainstem dams should emphasize adult survivals as a high priority. In addition, strategies should protect biological diversity by benefiting the broad range of species, stocks,

[6] When the Council adopts subbasin plans into the program, which will supersede existing management and mitigation plans, the objective will be to implement the strategies and achieve the objectives relating to white sturgeon, burbot and Lake Roosevelt fisheries stated in the relevant subbasin plans.

and life-history types in the river, not just listed species, and should favor solutions that best fit natural behavior patterns and river processes. To meet the diverse needs of multiple species and allow for uncertainty, multiple juvenile passage methods may be necessary at individual projects.

- The U.S. Army Corps of Engineers, working within the regional fish and wildlife project selection process, should report to the Council annually on how decisions on passage improvements take into account the strategies in the Council's program. In addition, the Council: 1) expects that the Independent Scientific Review Panel will apply these strategies during the panel's review of the reimbursable portion of the Bonneville fish and wildlife budget, which includes the Corps' passage program; 2) will itself apply these standards in its review of any Independent Scientific Review Panel report and resulting recommendations to Congress on these passage budget items; and 3) will recommend to Congress, in its reimbursable budget recommendations, that budget requests from the Corps of Engineers be evaluated for consistency with these principles.
- The Corps of Engineers should apply Value Engineering to all projects that exceed $10 million, using firms independent of the Corps of Engineers.
- For the purpose of planning for this fish and wildlife program, and particularly the hydrosystem portion of the program, the Council assumes that, in the near term, the breaching of any dams in the mainstem will not occur. The Council revises its fish and wildlife program every five years, at a minimum. If, within that five-year period, the status of the lower Snake River dams or any other major component of the Columbia River hydrosystem has changed, the Council can take that into account as part of the review process.



Juvenile fish transportation

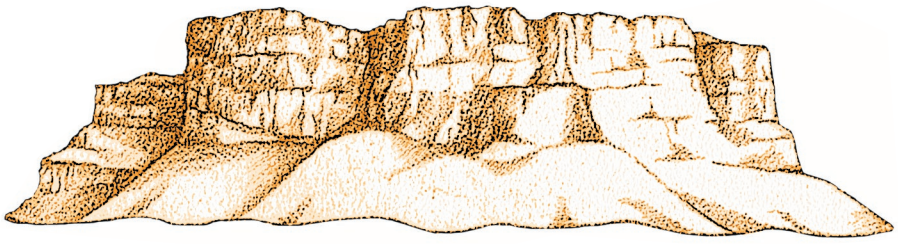
- Because the existence of the dams and reservoirs creates conditions that are not natural, the Council, while seeking to improve inriver conditions, recognizes that there are survival benefits from transportation of migrating juvenile salmon. Therefore, the Council 1) continues to accept juvenile fish transportation as a transitional strategy; 2) will give priority to the funding of research that more accurately measures the effect of improved inriver migration compared to transportation and the comparative rate of adult returns to the spawning grounds of transported and inriver migrants; 3) will recommend increasing inriver migration when research demonstrates that salmon survival would be improved as a result of such migration, and vice versa; and 4) endorses the strategy of "spread the risk" until it is determined whether migration inriver or transportation provides the best levels of survival.
- NOAA Fisheries' 2000 Biological Opinion includes a series of measures concerning the transportation of ESA-listed juvenile salmon and steelhead. These are part of the biological opinion measures that the Council incorporates into its mainstem plan.
- In analyzing in any year the potential benefits of maximizing or minimizing transportation, the federal operating agencies must recognize that significant populations of salmon and steelhead important to the biological objectives of this program enter the mainstem hydrosystem either below the transport projects altogether or above McNary Dam but are not effectively transported at McNary. Inriver passage of these fish is either the only passage alternative available or the most significant passage alternative.
- The three highest priorities for juvenile transportation studies should be to:
  1) evaluate whether the survival benefits of transport from McNary Dam are sufficiently greater, at least under certain circumstances, than inriver passage to justify continuing (or increasing) the transport effort from that dam;
  2) conduct a transportation study that targets Snake River fall chinook; and
  3) more clearly determine what delayed survival effects, if any, occur due to transport, such as adverse effects on homing behavior.
- NOAA Fisheries should conduct annual evaluations of the effectiveness of transportation and report the results to the Council and the Independent Scientific Advisory Board.

Spill

- When making long-term, annual, and in-season decisions for when, and to what extent, to spill water for passage, priority should be given to 1) minimizing impacts on returning adults and 2) optimizing passage survival benefits for populations that are important to the biological objectives of this program, and that cannot be transported, or are ineffectively transported.

This includes spring chinook from the John Day River; wild, naturally spawning, and key hatchery populations of spring chinook from other tributaries above Bonneville Dam but below the transport projects (or where only a small proportion are collected at McNary), such as from the Deschutes, Hood, Umatilla, Wind, Klickitat, Umatilla and Yakima rivers; the listed Middle Columbia steelhead; Hanford Reach fall chinook; and Snake River chinook, to the extent transportation should be determined to be ineffective. These spill objectives will require a better understanding of the spill levels that optimize passage survival at each dam and how these change at various flow levels and for the range of fish populations that pass the project. The federal action agencies and NOAA Fisheries, in consultation with the other federal and state fish and wildlife agencies and tribes, should determine an optimal passage strategy at each dam and for each passage route. The Council seeks to maximize improvements in life-cycle survival. This requires determining the cumulative effects on fish survival of passing multiple dams and taking that information into account.

- Spill should be managed according to the most biologically effective level at each project. Spillways continue to be an effective inriver passage route, more benign in general than juvenile bypass systems or turbine passage. On the other hand, 1) spilling to the maximum gas supersaturation levels of 120 percent may be increasing mortality at some dams when compared to what would occur at lesser volumes of spill; 2) spillway passage can also be the passage method most costly to the regional power system, especially in years of low water or high market prices for energy; 3) the difference in survival between spillway passage and other passage methods may in some, but not all, instances be minimal; 4) the maximum level of fish survival at each project may be different from, and not necessarily correlated with, the most spill; and 5) spill may have negative effects on returning adults. For these reasons, the Council will work with the federal operating and fish and wildlife agencies, in consultation with the state fish and wildlife agencies and tribes and the Independent Scientific Advisory Board in a rigorous evaluation of the biological effectiveness and costs of spillway passage at each project and bring that information to bear in a systematic way in decisions on when, and how much, to spill. The goal of this evaluation should be to determine if it is possible to achieve the same, or greater, levels of survival and biological benefit to migrating fish as currently achieved while reducing the amount of water spilled, thus decreasing the adverse impact on the region's power supply. At the conclusion of this evaluation, the Council will conduct a public review process with the goal of providing recommendations to the federal agencies for the most biologically effective spill actions at the lowest cost possible.



- This evaluation should include, or set in motion, at least the following:
  1) Dam-specific estimates of smolt passage survival by species through spillways. Spill efficiency information should be updated and applied in future spill decisions and passage modeling analyses. The Council recognizes the difficulty in obtaining reliable empirical survival estimates linked specifically to spill conditions, but the power system impacts of spill require an improvement in the quality of this information.
  2) Additional research on the biological consequences of various spill strategies is needed to determine the long-term effects of extended exposure to high levels of gas supersaturation on life-cycle survivals.
  3) The interaction between spill, dissolved gas levels, adult passage, and survival needs additional research to better determine if, and how, spill strategies affect adult migration and survival, and what can be done to minimize those effects.
- As a particular focus, the Council calls for NOAA Fisheries, the federal operating agencies, and salmon managers to immediately implement tests to examine the benefits of the current summer spill program for outmigrating juvenile fall chinook, and to determine whether the biological benefits can be achieved in a more effective and less costly manner. Summer spill costs are high. Using a 50-year historical water record, the Council staff estimated that the cost of bypass spill for fish during the months of July and August averages one-third of the total cost impact of all mainstem operations designed for fish and wildlife protection.

While the summer spill program provides survival advantages to in-river outmigrants, the Council recommends an evaluation of the efficacy and cost of all actions available to improve juvenile and adult survival. These tests should be designed to encompass the full life cycle of fall chinook and evaluate all sources of mortality. This provision is not intended to dispute that spill is generally considered to be the safest passage route for in—river juvenile migrants, but rather to pursue more rigorous analysis and assessment of alternatives that may provide similar, or more effective, biological benefits at reduced cost.

- The U.S. Army Corps of Engineers, in consultation with these other entities, should place a priority on designing, testing, and evaluating methods and devices that could produce the same or greater benefit to fish while spilling less water, especially what are known as removable spillway weirs. If these methods and devices produce positive results, they should be implemented as soon as it is practical to do so.
- If efficient and effective use of spill, including the substantive spill experiments called for earlier, results in increased volumes of water passing through active turbines for power generation, apply an equitable part of the additional financial resources that result to implement additional prioritized measures in the Council's fish and wildlife program.
- The Council intends to recommend specific spill strategies at specific projects after comprehensive spill survival studies have concluded. The Council intends these studies to begin immediately. The federal agencies' 2003 plans for system operations to accelerate spill testing at John Day and Ice Harbor dams are examples of the types of tests that should be conducted.

"The Council recommends that more strenuous efforts be undertaken to avoid exceeding total dissolved gas saturation limits of 120 percent."

- Until the cumulative effects of high levels of spill are better understood, the Council recommends that the region continue to monitor and evaluate spill strategies. The Council recommends that more strenuous efforts be undertaken to avoid exceeding total dissolved gas saturation limits of 120 percent, over a time period of the twelve highest hourly measurements at all Federal Columbia River Power System projects engaged in spill operations. State authority to grant a variance from the Federal Clean Water Act standard of 110 percent total dissolved gas supersaturation requires a determination by the state that the variance creates no long-term impact to the beneficial use for which the deviation was authorized.

Juvenile bypass systems

- To provide passage for juvenile fish that most closely approximates natural physical and biological conditions, and to increase the energy produced by the hydrosystem, the U.S. Army Corps of Engineers should:
  1) continue testing and developing surface bypass systems, taking into account the widest range of biological diversity as described in the biological objectives and overarching strategies, utilizing an expedited approach to prototype development, and ensuring full evaluation for the developmental phase;
  2) relocate bypass outfalls in those circumstances where there are problems with predation and juvenile fish injury and mortality;
  3) modify turbines to improve juvenile survival; and
  4) conduct research on fish diseases at fish passage facilities.

Adult passage

- The U.S. Army Corps of Engineers should improve the overall effectiveness of the adult fish passage program. This includes expediting schedules to design and install improvements to fish passage facilities. The ultimate survival and successful spawning of adult fish are a high Council priority because returning adults determine the size and health of future fish populations. Where it is beneficial, cool water releases from reservoirs should continue to be used to facilitate adult migration. More emphasis should be placed on research; monitoring and evaluation; increased accuracy of fish counts; expansion of fish counting to all species of interest; installation of PIT-tag and radio-tag detectors; evaluation of escapement numbers to spawning grounds and hatcheries; research into water temperature and spill effects on fish passage; and the connection between fish passage design and fish behavior. In particular:
  1) as a priority for the Corps of Engineers' capital construction program, correct adult fish passage problems and report annually to the Council on progress;
  2) install adult PIT-tag detectors at projects that do not have them;
  3) improve fish counting accuracy; and

4) conduct research on fish diseases at fish passage facilities.

Water management

- Manage water through the hydrosystem so that patterns of flow more closely approximate the natural hydrographic patterns and are directed at re-establishing natural river processes where feasible, and produce the highest possible survival rates for a broad range of affected fish within the physical limitations of the multiple purposes of the region's storage reservoirs and hydrosystem. Assure that any changes in water management are premised upon, and proportionate to, fish and wildlife benefits, while assuring the region an adequate, efficient, economical, and reliable power supply. Elements of this general strategy for water management include:
  1) Frame habitat restoration in the context of measured trends in water quantity and quality.
  2) Allow for seasonal fluctuations in flow, including floods. Reduce large and rapid short-term fluctuations. Reduce or eliminate stranding and other problems associated with fluctuation of the hydroelectric system.
  3) Increase the correspondence between water temperatures and the naturally occurring regimes of temperatures throughout the basin. To the extent possible, use stored water to manage water temperatures below the storage reservoirs where temperature benefits from releases can be shown to provide improved fish survival.
  4) Identify, protect, and restore ecosystem functions in the Columbia River estuary and nearshore ocean discharge plume as affected by actions within the Columbia River hydrosystem. This includes evaluating flow effects, river operations, and estuary-area habitat changes, as well as local effects from activities such as dredging and pollution from urban areas, to better understand and improve the relationship between estuary and near-shore plume characteristics and the productivity, abundance, and diversity of salmon and steelhead populations.
- Systemwide water management, including flow augmentation from storage reservoirs, should attempt to meet the needs of anadromous and resident fish species in the river and upstream storage reservoirs, so that actions taken to benefit one species do not unnecessarily come at the expense of other species. Flow augmentation is defined as the intentional release or drafting of water from storage reservoirs for the purpose of increasing flows to enhance migratory conditions for juvenile and adult lifestages of salmon and steelhead through the reach of the lower river hydroelectric dams. The federal system operators, NOAA Fisheries and the U.S. Fish and Wildlife Service should identify potential conflicts and seek recommendations from the Council, fish and wildlife agencies, tribes, and other affected entities on how best to balance the different needs prior to the implementation of flow actions.
- The Council recognizes the continuing controversies over: a) the nature, extent of, and reasons for the flow-survival relationship for migrating salmon and steelhead; b) the consistency between the flow targets and the flow measures; and c) flow augmentation in general, with these implications:
  1) The Council continues to call on Bonneville, in consultation with NOAA Fisheries and the U.S. Fish and Wildlife Service, to prepare an annual report based on scientific research for review by the Independent Scientific Advisory Board that documents the flow augmentation actions taken, the benefits of flow augmentation for fish survival and the precise attributes of flow that may make it beneficial.
  2) The Council will consult with these and other entities to determine whether and how to conduct a comprehensive evaluation of survival, flow targets, and flow augmentation to determine the relationship between specific management actions and changes in life-cycle and lifetime survival. This evaluation will, among other things:
  – evaluate the scientific validity of the flow targets and flow augmentation actions in the 2000 Biological Opinion;
  – evaluate how often, and for what duration, river flows, whether augmented or not from storage releases, meet the spring and summer flow targets in the 2000 Biological Opinion, and what additional amounts of water from what sources would be required to meet the targets on a sustained basis;

FAST FACT

Of the original salmon and steelhead habitat available in the Columbia River Basin, 55 percent of the area, and 31 percent of the stream miles, have been blocked by dam construction.

- quantify the volume and shape of water that has been, and is being, provided as flow augmentation;
- translate to the extent possible the incremental increase in flows from flow augmentation to changes in water velocity and temperature;
- evaluate and predict to the extent possible how changes in adult survival relate to changes in flow; and
- evaluate hydrosystem operations and establish the relative benefits and costs of those operations to native fish throughout the Columbia watershed.

At the conclusion of such an evaluation, the Council will conduct a public review process with the goal of determining whether to provide revised recommendations to the federal agencies for continuing or modifying the current water management program for migrating salmon and steelhead. The Council may also decide at that time, if necessary, to initiate a process to further amend the mainstem portion of the Council's program to address system management matters.

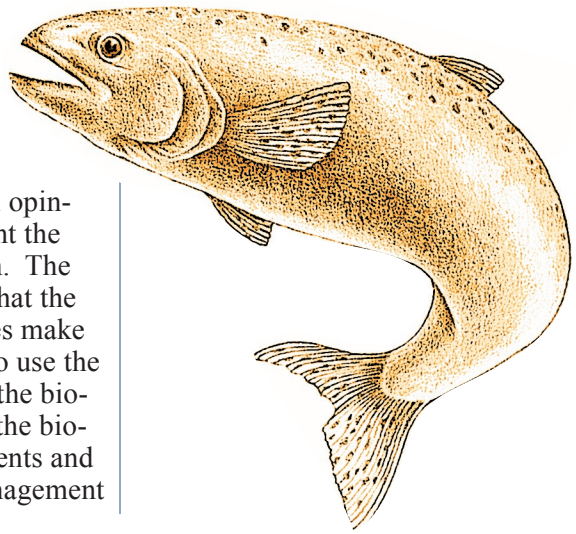
3) The spring and summer flow objectives in NOAA Fisheries 2000 Biological Opinion are guidelines for understanding and evaluating water management actions in the Columbia Basin intended to establish and support habitat conditions for many life stages of multiple species of fish throughout the mainstem Columbia and Snake rivers. The Council understands these objectives to be flexible guidelines that do not determine or override the multiple set of objectives and strategies in the two biological opinions and in this program.

Operations of the Federal Columbia River Power System established in the 2000 Biological Opinions as a baseline for the water management strategies of this Program

- NOAA Fisheries' 2000 Biological Opinion includes a series of measures concerning water management for the benefit of listed juvenile salmon and steelhead, while the U.S. Fish and Wildlife Service's 2000 Biological Opinion includes a set of measures concerning water management for the benefit of listed bull trout and Kootenai River white sturgeon. The water management measures in these biological opinions are part of this program, and the Council concurs that these are appropriate operations to protect, mitigate, and enhance those anadromous and resident fish listed under the Endangered Species Act and affected by the Columbia hydrosystem. The measures and objectives in these two biological opinions need to be reconciled if there are inconsistencies, and some of the water management strategies in the Council's program are intended, at least in part, for that purpose.
- The Council is adopting additional water management strategies to protect, mitigate, and enhance all fish and wildlife affected by the hydrosystem and meet the biological objectives and vision of its program. To the extent these water management strategies appear to conflict with the biological opinions, the Council does not mean that the federal operating agencies should act contrary to the biological opinions in order to implement the strategies in this program. The Council intends instead that the federal operating agencies make every effort practicable to use the operational flexibility in the biological opinions to meet the biological opinion requirements and implement the water management strategies in this program. The exception is where the Council calls for explicit scientific testing of a particular operation in the biological opinion. The Council calls on the federal operating agencies and fish and wildlife agencies to implement the Council's recommendations in consultation with the Council, the states, and the tribes.

Hanford Reach/mainstem and estuary spawning, rearing, and resting habitat

- Manage flows, while maintaining consistency with this mainstem plan's flow and reservoir operations, to protect, improve, and expand spawning, rearing, and resting habitat in the mainstem and estuary. In particular, the federal and non-federal project operators should provide suitable and stable flows to establish and protect the habitat conditions necessary for spawning and rearing in the Hanford Reach on an equal basis as managing water to support the migration of listed species. This includes providing the flows required by the Vernita Bar agreement and by subsequent agreements to extend stable flows to reduce or prevent stranding problems in the Reach. It also includes the need for the Bureau of Reclamation, as the operator of Grand Coulee Dam, and the oper-



ators of the mid-Columbia projects to take the steps necessary, separately and together, to further reduce flow fluctuations through the Reach that affect spawning and rearing.

Spring reservoir/flow operations in general

- Refill should be a high priority for spring operations at Hungry Horse, Libby, Grand Coulee, and Dworshak dams so that the reservoirs have the maximum amount of water available during the summer. While on average the target date for refill should be late July for Libby and the end of June for the other projects, the system operators should work to adjust the actual refill date based on reservoir conditions and inflow forecasts.
- Incorporating the 2000 Biological Opinions of NOAA Fisheries and the U.S. Fish and Wildlife Service into this program includes the opinions' approach to spring water management in general, which the Council understands as operating the storage reservoirs to ensure a high probability of water surface elevations within one-half foot of the upper flood control rule curve by April 10 and to refill by June 30 (late July for Libby), otherwise passing the spring runoff through the storage reservoirs. The NOAA Fisheries biological opinion retains the flexibility to allow active flow augmentation to occur in the spring under certain circumstances at the call of the Technical Management Team. The Council calls on the federal agencies not to exercise this flexibility to allow for flow augmentation or additional reservoir drafting in the spring except under extraordinary circumstances and only after consultation with the Council.

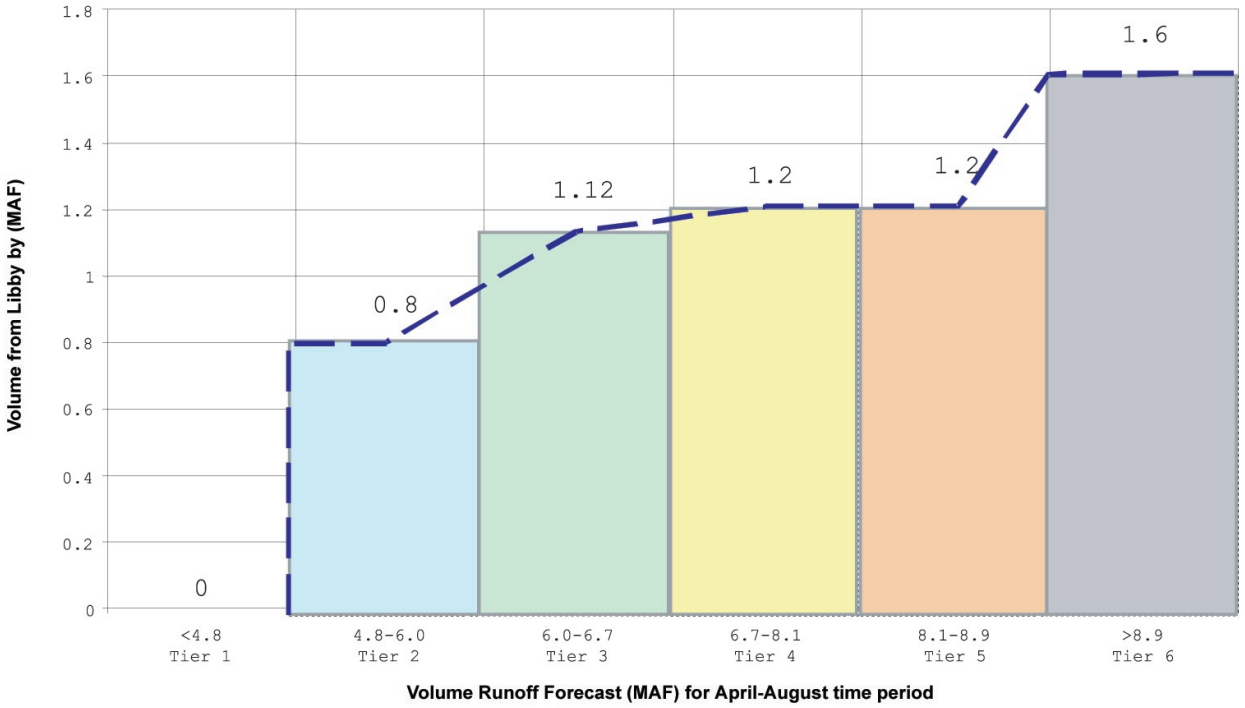
Spring operations at Hungry Horse and Libby dams

- **VARQ flood control operations and Integrated Rule Curve operations**. At Hungry Horse and Libby dams, continue to implement the VARQ flood control operation called for in the biological opinions and implement the Integrated Rule Curve operations as recommended by the Montana Department of Fish, Wildlife and Parks for the benefit of native resident fish in those reservoirs. Operations should reduce the frequency of refill failure (to within five feet of full pool) at Hungry Horse and Libby reservoirs as compared to historic operation. Implement seasonal flow windows and flow ramping rates in the Flathead and Kootenai rivers downstream of the storage reservoirs, and maintain minimum flows in the Flathead and Kootenai rivers as described by the U.S. Fish and Wildlife Service 2000 Biological Opinion and the Montana Department of Fish, Wildlife and Parks, including the sliding-scale flow strategy for bull trout specified by the biological opinion. Implement VARQ operations in an attempt to avoid the more extreme adverse effects at Grand Coulee that occur in a small percentage of years. The Corps of Engineers should consult with the Council to identify those occurrences and effects and to determine what might be done to minimize or avoid them, and report annually to the Council on VARQ implementation to show that these extreme adverse effects are not occurring. The Corps of Engineers should also place a priority on conducting the further comprehensive review of flood control operations called for in the NOAA Fisheries 2000 Biological Opinion.
- **Operations at Libby Dam to benefit Kootenai River white sturgeon**. The U.S. Fish and Wildlife Service's 2000 Biological Opinion concerning hydrosystem operations that affect ESA-listed Kootenai River white sturgeon specifies a "tiered" strategy for flow augmentation from Libby Dam to simulate a natural spring freshet, controlled within flood constraints. Volumes are determined by forecasted water availability so that higher flows are released when ample water is available and minimal flow augmentation occurs during drought. The Council recommends that the average flow augmentation volumes outlined in Figure 1 be used as a guide for sturgeon operations at Libby Dam. These augmentation volumes are not specified volumes and should represent targets for planning purposes. Actual augmentation volumes in any given year will depend on flood control constraints, reservoir refill targets, water availability, and benefits to the Kootenai white sturgeon population. This strategy represents a refinement to volumes specified in the 2000 Biological Opinion.[7]

  The Council also recognizes that additional work is required to further refine appropriate sturgeon operations at Libby Dam, and recommends that regional entities continue to work to increase the biological benefits provided by the flow augmentation volumes.

[7] The sturgeon tiered flow strategy is a fish recovery action that is separate and distinct but compatible with the VARQ flood control operation. The tiered flow strategy in the U.S. Fish and Wildlife Service's 2000 Biological Opinion differs from the original plan that was adopted by the international White Sturgeon Recovery Team. During a March 25-26, 2002, meeting with the U.S. Army Corps of Engineers, the Recovery Team determined that some problems could be corrected by establishing a new calculation for sturgeon flows. Release volumes are still based on water availability, but the volumes to be released are calculated over the entire range of possible inflows (dashed line) rather than grouped into the original six tiers.

Figure 1. Flow Augmentation Volumes for use with VARQ Flood Control at Libby Dam
(Volume would be taken off the dashed line connecting the midpoints of the tiers)



Spring operations at Grand Coulee Dam

- Operate Grand Coulee Dam in the winter and spring (from January through June) consistent with biological opinion operations and ordinary hydrosystem operations, with the following considerations:
  1) Attempt to meet the following minimum monthly elevation targets in Lake Roosevelt while trying to achieve the minimum monthly mean retention times as follows, until fisheries evaluation information indicates a change in Figure 2.
  2) March-to-May elevations are recommended minimums, with the understanding that flood control operations will determine the actual upper elevation.
  3) Two high priorities for Grand Coulee through the year should be to contribute to the establishment and protection of the necessary conditions in the Hanford Reach described earlier and to refill by the end of June.
  4) As much as possible, manage the reservoir and dam discharges to produce steady flows across each season and each day to minimize reservoir fluctuations and ramping rates.

Spring and summer water management in the Snake River

- Spring and summer water management in the Snake River should be consistent with NOAA Fisheries' 2000 Biological Opinion, with the following additional observations:

Figure 2: Grand Coulee

Period	Minimum Mean Minimum Elevation	Water Retention Time
January	1270 ft above sea level	45 days
February	1260	40 days
March-April 15	1250	30 days
April 16	1255	30 days
May	1265	35 days
June	fill to 1290 historically achievalbe for the month	40-60 days or maximum

1) Providing water from the Bureau of Reclamation's upper Snake River Basin projects and Idaho Power Company's Hells Canyon projects to assist in achieving Snake River flow objectives at Lower Granite Dam is not part of the 2000 Biological Opinion and will largely be addressed in separate, ongoing ESA Section 7 consultations. Flows or volumes of water will be made available from upper Snake River storage by the Bureau of Reclamation or any other entity only if consistent with applicable state and federal law, including but not limited to, Idaho Code §42-1763B.[8]

2) The Council encourages the Bonneville Power Administration, Idaho Power Company, and the Bureau of Reclamation to execute a shaping agreement to ensure that flows from Brownlee Reservoir will occur to assist juvenile and adult migration when most needed, at the call of the Technical Management Team (TMT).

3) Lower Granite flow targets do not account for differences in characteristics between flow augmentation sources, or the biologically significant components of those sources. Given that existing flow targets are often unattainable, simply striving to meet flow targets regardless of the degree of biological benefit obtained is an ineffective and uneconomical strategy for salmon recovery.

4) Cost-effective analysis for the "same biological objectives(s)" is an action commensurate with statutory provisions of the 1980 Power Act when reviewing issues surrounding flow objectives at Lower Granite Dam. Given the competing issues of flow augmentation and available water resources, the Council requests Bonneville, in coordination with NOAA Fisheries, U.S. Fish and Wildlife Service, state fish and wildlife managers and tribes to: a) define Endangered Species Act harvest and recovery objectives for anadromous fish in specific mainstem sections and in tributaries of the mainstem; and b) develop alternative strategies to flow augmentation that will achieve "the same biological objectives." Factors related to this analysis are expected to include hatchery objectives, ocean effects, dissolved gas trauma losses from spill and spill effects on migrating juveniles and returning adults.

Summer reservoir operations at Hungry Horse and Libby, Grand Coulee and Dworshak Dams

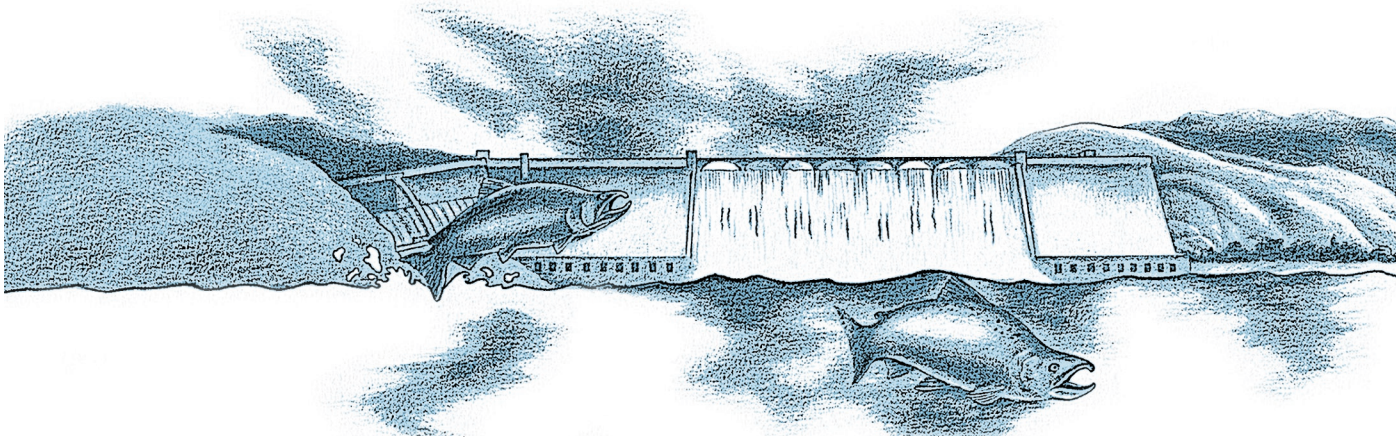
- **Hungry Horse and Libby Dams:**

1) Reduce the frequency of refill failure (to within five feet of full pool) as compared to historic operations; implement seasonal flow windows and flow ramping rates in the Flathead and Kootenai rivers downstream of the storage reservoirs and maintain minimum flows in the Flathead and Kootenai rivers as described by the U.S. Fish and Wildlife Service 2000 Biological Opinion and the Montana Department of Fish, Wildlife and Parks.

2) As an experiment, implement and evaluate an interim summer operation as follows:

– Summer reservoir drafting limits at Hungry Horse and

[8] No provision of this amendment may, by recommendation of the Council, propose to "(1) affect the rights or jurisdictions of the United States, the States, Indian tribes, or other entities over waters of any river or stream or over any groundwater resource, (2) alter, amend, repeal, interpret modify or be in conflict with any interstate compact made by the States, or (3) otherwise be construed to alter, or establish the respective rights of States, the United States, Indian tribes, or any person with respect to any water or water related right." Northwest



Libby should be 10 feet from full pool by the end of September (elevations 3550 and 2449, respectively) in all years except the lowest 20th percentile water supply (drought years) when the draft could be increased to 20 feet from full pool by the end of September. This would protect fisheries resources in the reservoirs and rivers downstream, while providing additional flow augmentation for fish immediately below the project(s) and in the lower Columbia River.

– Draft each storage reservoir according to elevation limitations that, when combined with projected inflows, result in stable and "flat" or very gradually declining weekly average outflows from July through September. The Council understands that the effect of these operations and summer drafting limits would be to reduce the drafting of these two reservoirs in summer compared to what they would be under ordinary biological opinion operations. The Council believes there is significant flexibility within the biological opinions to implement the summer reservoir operations as an experiment. If there is disagreement on this, the Council calls on the federal operating agencies and federal fish and wildlife agencies to consult on the operation of these two projects in an effort to reach agreement that will allow this operation as an experiment. The agencies should also continue to investigate creative water management actions for summer flows, including what are known as the "Libby-Arrow" and "Libby-Duncan" swaps, although implementation of the summer operations experiment at Hungry Horse and Libby is not to be dependent on these actions.

"The Council believes there is significant flexibility within the biological opinions to implement the summer reservoir operations as an experiment."

– Little information exists about the relationship, if any, between levels of flow, flow augmentation and juvenile and adult salmon survival through the lower Columbia hydrosystem reach. Therefore, the focus of the experiment and evaluation to accompany the implementation of these summer operations at Hungry Horse and Libby should be on: a) ascertaining the nature, extent of and reasons for a flow-survival relationship through the lower Columbia system, if any exists; b) determining whether flow augmentation from the upper Columbia storage projects has any effect on levels of survival; and c) determining the benefits to resident fish from this operation. The Corps of Engineers and the Bureau of Reclamation should consult with a team formed from the Council, the Independent Scientific Advisory Board, the Montana Department of Fish, Wildlife and Parks, the Confederated Salish-Kootenai Tribes, NOAA Fisheries and the U.S. Fish and Wildlife Service to design a proper experiment and evaluation of this nature to take place during the implementation of these operations. The Council's hypothesis is that the proposed operations will significantly benefit listed and non-listed resident fish in the reservoirs and in the portions of the rivers below the reservoirs without discernible effects on the survival of juvenile and adult anadromous fish when compared to ordinary operations under the biological opinions.

– As the federal operating agencies implement this operation, they should ensure there is no adverse biological impact on Lake Roosevelt fisheries due to changes in reservoir elevations or water retention times. The operating agencies should report annually to the Council on the nature and extent of impacts to Lake Roosevelt from this summer operation at Hungry Horse and Libby. The Council will analyze this information, and if the Council decides the impacts to Lake Roosevelt fisheries are unacceptably adverse, the Council will make additional recommendations on operations to the federal operating agencies.

- **Operate Grand Coulee Dam** from July through December consistent with the biological opinion operations and with ordinary hydrosystem operations, with the following considerations:

  1) Draft evenly from Lake Roosevelt to the target elevation by the end of August. As much as possible, manage the reservoir and dam discharges to minimize fluctuations and ramping rates and produce steady flows across each season and each day to minimize reservoir

fluctuations and ramping rates. Attempt to draft no lower than 1283 feet by the end of August.

2) From September through December, attempt to maintain a minimum elevation of 1283 feet to maximize water retention times and protect kokanee access and spawning. Federal operators, fish and wildlife managers, and others should consult with the Council to determine how to provide the biological benefits of a 1283 operation while meeting biological opinion requirements, including chum flows and operating to protect flows for the Hanford Reach.

3) Attempt to maximize water retention times from June to December of 40 to 60 days, or the maximum historically achievable for each month.

4) Two high priorities for Grand Coulee through the year should be to contribute to the establishment and protection of the necessary conditions in the Hanford Reach described above and to refill by the end of June. Summer and fall operations should be consistent with these priorities.

- **Dworshak Dam**

1) Operate Dworshak Dam consistent with the provisions of the 2000 Biological Opinion as implemented through the Corps of Engineers acting as a member of, and in coordination with, the regional Technical Management Team, and do so in a manner that a) recognizes the concerns and interests of the Nez Perce Tribe, the Idaho Department of Fish and Game, the Idaho Department of Water Resources, and the Idaho Legislature, as expressed in the jointly approved Idaho Dworshak Operations Plan, adopted December 21, 2000; and b) that accommodates the salmonid and resident fish objectives of the Council's program and the 1980 Northwest Power Act.

2) The Independent Science Advisory Board and the Independent Economic Analysis Board shall review the operation of Dworshak Dam to assess the adverse impacts of those operations on resident fish and wildlife and the adverse impacts on the Clearwater County regional economy because of impacts to resident fish and wildlife. The Council will review the ISAB and IEAB reports, consult with the relevant fish and wildlife managers, and make recommendations to Bonneville on any additional fish and wildlife mitigation responsibilities deemed appropriate under the Power Act.

Monitoring and evaluation

- The 2000 Fish and Wildlife Program describes a general strategy for monitoring and evaluation. The emphasis is on developing and implementing standards and procedures for monitoring and evaluating management activities that are aimed at improving habitat conditions for fish and wildlife. The goals are to determine whether the biological objectives of the program are being achieved at the basinwide level and at lower levels, and to make sure that the evaluation information is used to adapt or change management strategies that are not achieving the biological objectives. The monitoring and evaluation elements stated earlier in the various mainstem strategies, and the general provisions in this section, are intended to be consistent with this general strategy.
- The Council may assist the federal agencies in reviewing the results of research, monitoring and evaluation efforts to identify whether actions taken are achieving the performance standards and objectives in the 2000 Biological Opinions, and also whether the research and evaluation results confirm or call into question the soundness of the standards themselves.
- **Fish Passage Center**. The mainstem plan calls for the continued operation of the Fish Passage Center (Center). The primary purpose of the Center is to provide technical assistance and information to fish and wildlife agencies and tribes in particular, and the public in general, on matters related to juvenile and adult salmon and steelhead passage through the mainstem hydrosystem. This information relates to the implementation of the water management measures in the Council's fish and wildlife program. In performing this function, the Center shall:

1) Plan and implement the annual smolt monitoring program;

2) Gather, organize, analyze, house, and make widely available monitoring and research information related

Fast Fact

Historic annual runs of salmon and steelhead were believed to have measured between 11 and 16 million fish, but declined to about one million by the 1990s.

to juvenile and adult passage, and to the implementation of the water management and passage measures that are part of the Council's program;

3) Provide technical information necessary to assist the agencies and tribes in formulating in-season flow and spill requests that implement the water management measures in the Council's program, while also assisting the agencies and tribes in making sure that operating criteria for storage reservoirs are satisfied; and

4) In general, provide the technical assistance necessary to coordinate recommendations for storage reservoir and river operations that, to the extent possible, avoid potential conflicts between anadromous and resident fish.

The Council has established an oversight board for the Center, with representation from NOAA Fisheries, state fish and wildlife agencies, tribes, the Council, and others to provide policy guidance for the Center and to ensure that the Center carries out its functions in a way that assures regional accountability and compatibility with the regional data management system. The oversight board's responsibilities will include conducting an annual review of the performance of the Center and developing a goal-oriented plan for next year's operation. The Center shall prepare an annual report to the oversight board and the Council, summarizing its activities and accomplishments. There will be no other oversight board or board of directors for the Center.

Operation of the Center shall include funds for a manager and for technical and clerical support in order to perform its stated functions. The fish passage manager will be selected based on his or her knowledge of the multiple purposes of the regional hydropower system, and of the water needs of fish and wildlife, as well as the ability to communicate and work with fish and wildlife agencies, tribes, the Council, project operators, regulators, and other interested parties, including members of the public. The fish passage manager will be selected by, and be subordinate to, the Executive Director of the Columbia Basin Fish and Wildlife Authority (Authority), in consultation with the oversight board. The Executive Director of the Authority and the Chair of the Council (or the Chair's designee) will conduct an annual review of the manager's performance.

The Center shall continue to provide an empirical database of fish passage information for use by the region, not just by fish and wildlife managers. No information collected by the Center, and no analyses by the Center, shall be considered proprietary. The oversight board and the fish and wildlife managers will ensure that the database conforms to appropriate standards for data management, including review of the database by an appropriate scientific or data review group. The fish and wildlife managers will provide a liaison position at the Authority between the public and the Center to ensure that all parties have timely and thorough access to the database. The Council may revise the functions of the Center as the region develops a comprehensive data management system.

To assist the oversight board, the Executive Director of the Columbia Basin Fish and Wildlife Authority, in consultation with the fish and wildlife mangers, will propose to the oversight board candidates for a technical advisory committee, whose purpose will be to establish technical protocols and scientific requirements for the Center and to review the scientific and technical aspects of the performance of the Center. The oversight board will select the technical advisory committee from the names submitted by the Executive Director of the Authority. The technical advisory committee will report to the oversight board.

Research

- **2000 Fish and Wildlife Program.** The 2000 Fish and Wildlife Program describes a general approach regarding research related to the Program, including the development by the Council of a basinwide research plan that identifies key uncertainties for the program and its biological objectives, and the steps needed to resolve these uncertainties, coordination of this overall plan with particular research elements, including ocean research, and a call to make research results and other information important to the program more readily available. The research elements stated earlier in the various mainstem strategies, and the general provisions in this section, are intended to be based on, and consistent with, this general strategy.

- **Research aimed at optimizing fish and wildlife benefits and energy production**. Actions taken to benefit fish and wildlife should also consider and minimize impacts to the Columbia basin hydropower system if at all possible. The goal should be to try to optimize both values to the greatest degree possible. Thus, a high priority for mainstem research in general should be to try to determine what actions can be taken to provide both high fish and wildlife and energy benefits, or at least to increase one set of benefits without degrading the other. As an example, spill is an operation for fish with a serious energy impact for the power system. As described above in the strategy on spill, this operation should be examined to determine whether spill can be more effectively utilized to help fish and lessen its impacts to energy production.
- **Approach to prioritizing research ideas and proposals**. In deciding what mainstem research to fund or implement, the assigning of priorities should take into account a wide array of factors, such as:
  1) potential biological benefits to fish and wildlife
  2) widespread scientific value — can what is learned be applied to other situations?
  3) management application
  4) degree of uncertainty of the question asked
  5) cost of the research
  6) cost of the proposal on power system.
  7) potential cost to implement the results of research
  8) level of completion/ duplication
  9) legal relevance — does the research activity respond to the biological opinion and/or to the fish and wildlife program, or to other legal requirements?
  10) "doability" in the technical sense — is the proposal a reasonable way to complete this activity?
  11) "doability" in the legal/ institutional sense

Research proposals should be evaluated against each of these important elements, with the results combined in a variety of ways to expose the weight of different variables. A broad representation of people and interests should be involved in prioritizing proposals, including the independent scientific panels. People at the policymaking level should be more involved in the final decisions on long-term and annual research plans.

Annual and In-season Decisionmaking

- Through the biological opinions, the federal agencies have established an implementation structure for deciding on annual operation plans for fish and wildlife, in-season management of hydrosystem operations for fish and wildlife and recommendations to Congress for funding for passage improvements. At present, this decision structure is insufficient to integrate fish and power considerations in a timely, objective and effective way, and it focuses on listed fish with little consideration for unlisted anadromous and resident fish species and wildlife. The Council continues to recommend to the federal agencies that this implementation structure, which includes the Technical Management Team and the Implementation Team, be jointly sponsored by the Council and the federal agencies. The implementation structure should allow for effective participation in these considerations by the relevant federal agencies, the Council and states, the tribes of the Columbia River Basin and other affected entities in a highly public forum. Discussions to this end began in 2001, but then were overcome by events. The Council will re-initiate the discussions to jointly sponsor these coordination teams.

  The Council recommends that the forum then broaden its focus to improve in-season hydrosystem operations decisionmaking, in the following ways:

  1) Include expertise in both biological and power system issues.
  2) Have the technical capability to analyze and present power supply forecasts, hydrosystem operational alternatives, and other power related issues. The Council should play a significant role in this.
  3) Have the technical capability to analyze differing hydrosystem operation proposals relative to impacts on salmon, steelhead, sturgeon and resident fish migration, survival, spawning, and rearing, and relative to impacts on wildlife.
  4) Regularly schedule meetings, as often as required, to deal with short-term, real-time decisions (e.g. weekly in-migration season), as well as middle and long-term issues (e.g. addressing longer term reliability issues in a way that removes risk to providing operations to meet requirements of salmon).
  5) Operate with a defined set of decisionmaking criteria and hold participants accountable for the decisions they make, according to the established criteria.

Mid-Columbia Hydroelectric Projects

- The Council will review and, as appropriate, include in the program settlement agreements for the mid-Columbia hydroelectric projects.

Revised Transition Provisions

In the 2000 Fish and Wildlife Program amendments, the Council provided that all measures in the program that were "not directly superseded" by the adoption of the basinwide provisions in the amendments would "continue to have force and effect until":

1) A subbasin plan has been adopted by the Council for the subbasin in which the project [or measure] is located (or, for research and mainstem measures, a research or mainstem plan);
2) The measure has been specifically repealed in a subsequent rulemaking; or
3) Three years have elapsed following the final approval of this program, whichever occurs first.

The Council is both applying and revising these transition provisions at this time, in this way:

- Final adoption of the mainstem plan amendments to the fish and wildlife program will supersede all provisions, objectives, and measures in the Council's 1994-95 Columbia River Basin Fish and Wildlife Program that relate to systemwide hydrosystem operations, systemwide water management, mainstem flows, mainstem and storage reservoir operations, spill, bypass systems, smolt monitoring, mainstem operations research and evaluation, and other matters related to juvenile and adult salmon migration through the mainstem, including all of Sections 5 and 6 of the 1994-95 program.
- *All* other specific measures in the 1994-95 program that have not been directly superseded by the adoption of the 2000 Fish and Wildlife Program amendments or by the adoption of the mainstem plan amendments remain in effect until 1) a subbasin plan has been adopted by the Council for the area in which the measures is located; or 2) the measure has been specifically repealed in a subsequent program amendment process. This includes any resident fish substitution or mitigation measures, such as the Lake Roosevelt monitoring or production programs, that occur in the mainstem but that are not directly related to systemwide operations or salmon migration.
- With adoption of the mainstem plan amendments, the Council deletes the three-year sunset clause from the Transition Provisions in the 2000 Fish and Wildlife Program amendments. No specific measure in the Fish and Wildlife Program prior to the adoption of the 2000 Program amendments will expire simply because three years have elapsed from the final approval of the amendments.