



Striking a Balance Between Energy and the Environment in the Columbia River Basin

Fifth Northwest Power Plan Recommends Conservation, Wind Power to Reduce Risk of Future Electricity Shortages and High Prices



he Northwest Power and Conservation Council approved the latest version of its Fifth Northwest Power Plan in December, the fifth plan since the Council was created in

1980. The new plan, developed in the wake of the West Coast energy crisis of 2000/2001, is designed to help the region's utilities and electricity consumers take steps in the future to avoid the shortages and high prices that characterized the energy crisis.

"The primary message of the power plan is a familiar one from the Council: energy conservation is the lowest-cost, lowest-impact resource to meet our future demand for electricity," Power Division Director Dick Watson said. "In fact, our plan shows that the Northwest can meet almost half of the predicted growth in

demand for power over the next 20 years by using electricity more efficiently."

The plan calls for securing 700 average megawatts of conservation over the next five years. "This amount of conservation is optimistic, but achievable," Watson said. "It is less than the annual conservation achievements in the Northwest between 1991 and 2002, and about two-thirds of it is in new measures or applications."

A megawatt is a million watts, and an average megawatt is one million watts delivered continuously for one year. One average megawatt is enough power for about 625 homes for a year.

The plan primarily affects the Bonneville Power Administration, which is required by law to take the plan into account in deci-

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Three New Members Join Council

Three new members joined the Council in January 2005, two from Montana and one from Oregon.

Bruce Measure of Kalispell, Montana, and Rhonda Whiting of St. Ignatius, Montana, were appointed to the Council by Governor Brian Schweitzer. A graduate of the University of Montana Law School, Measure has practiced law in Kalispell since 1988. Prior to his appointment to the Council he was president of the Board of Trustees of the Flathead Electric Cooperative. Measure, trained as a forester, served as vice president of the East Side Forest Practices Committee

in 1984 and 1985. In 1991, he was elected to a two-year term in the Montana House of Representatives where he served on the Natural Resources; Fish, Wildlife and Parks; and Judiciary committees.

Whiting, a member of the Confederated Salish and Kootenai Tribes, was vice president of communications and intergovernmental affairs for Salish and Kootenai Technologies, the largest information technology company in Montana, before being

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Council Decisions

Hatcheries

November 2004

The Council approved the initial planning and organization of a process to integrate the Artificial Production Review and Evaluation with subbasin plans. Many of the subbasin plans submitted to the Council did not adequately account for artificial production activities, and the integration process is designed to do that. The integration work will be undertaken in 2005; the initial phase is to be completed by the end of January, at which time a final budget for the entire integration project will be presented to the Council.

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Fifth Northwest Power Plan Recommendations

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sionmaking. The plan is based on state-of-the-art risk analysis and also provides guidance to the region's electric utilities, state regulatory agencies and even to electricity consumers. "If we fail to achieve the conservation in the plan, the cost of electricity, and the risk of shortages and high prices would increase in the future. That's because providing an equivalent amount of power from new generating plants would be more expensive and our demand for power would increase," Watson said.

The Fifth Northwest Power Plan calls for the development of over 2,500 average megawatts of conservation over the next 20 years, which is the statutory length of the Council's energy-planning horizon. Converted to electricity, that is enough to power the city of Seattle for two years. The Council's analysis shows that getting this conservation in place reduces risk to the region and costs less than the least expensive new power plants.

The conservation potential exists in a variety of places, but it is primarily in lights, motors, and heating and cooling systems. Of the 2,500 average megawatts of cost-effective conservation, 46 percent of its potential is in residences, 39 percent is in commercial buildings and equipment, 12 percent is in industrial processes, equipment and buildings, and 3 percent is in irrigation equipment. Many of these sources have been identified just in the last five to eight years, including power supplies for cordless telephones, computers, answering machines (155 average megawatts of savings), packaged refrigeration appliances such as soft drink vending machines (70 average megawatts of savings), and municipal water and sewage treatment equipment (80 average megawatts of savings).

The plan analyzes the current and anticipated demand for power and recommends when to acquire conservation and build generating plants. In addition to the 700 average megawatts of conservation over the next five years, the plan recommends completing wind power plants that are under construction or planned for construction. The plan also recommends that utilities and their largest customers investigate demand-response agreements, through which customers agree to reduce their electricity usage during power-supply emergencies

— extreme cold or hot weather, for example — in return for some form of compensation. The plan estimates that 500 megawatts of demand response could be contracted over the next five years and be ready if needed in the future.

Finally, the plan recommends that work begin in the next few years to prepare for the construction of new power plants. In addition to the wind generation already committed for the region, the plan foresees the possibility of up to 5,000 megawatts of wind turbine capacity with construction

Fifth Northwest Power Plan Recommended Action Items: Next Five Years

The Council's power plan will be reviewed and revised at least every five years. The actions that the region takes now and over the next few years will determine the success of this plan. The key actions are:

- 1) Develop resources now that can reduce cost and risk to the region
 - 700 average megawatts of conservation, 2005 - 2009
 - 500 megawatts of demand response, 2005 - 2009
 - Secure cost-effective cogeneration and renewable energy projects
 - Develop cost-effective generating resources when needed
- 2) Prepare to construct additional resources
 - Develop and maintain an inventory of ready-to-construct projects
 - Resolve uncertainties associated with large-scale wind development
 - Encourage use of state-of-the-art generating technology when siting and permitting projects
 - Plan for needed transmission and work toward better integration of resource and transmission planning
 - Improve utilization of available transmission capacity
- 3) Confirm the availability and cost of additional resources that promise cost and risk mitigation benefits
 - Coal gasification with carbon sequestration
 - Oil sands cogeneration
 - Energy storage technologies
 - Demonstration of renewable and high efficiency generation with Northwest potential
- 4) Establish the policy framework to ensure the ability to develop needed resources
 - Carry out a process to establish adequacy standards for the Northwest and the rest of the Western system
 - Work through the Grid West, Regional Representatives Group process to address emerging transmission issues by the end of 2005. If necessary, pursue alternatives to resolve issues
 - Revise the role of the Bonneville Power Administration in power supply, consistent with the Council's May 2004 recommendations
- 5) Monitor key indicators that could signal changes in plans
 - Periodically report on the regional load-resource situation and indicate whether there is a need to accelerate or slow resource development activities
 - Monitor conservation development and be prepared to intensify efforts or develop alternative resources, if necessary
 - Monitor efforts to resolve uncertainties regarding the cost and availability of wind generation, and prepare to develop alternatives, if necessary
 - Monitor climate change science and policy for developments that would affect resource choices
 - Prepare a biennial monitoring report and revise elements of the power plan as necessary
 - Monitor progress in implementing the changes recommended for Bonneville's future role in power supply

Fifth Northwest Power Plan Recommendations

beginning as early as 2010. The plan also puts the region on the track toward clean coal technology — efficient, low polluting, gasified coal power plants, with construction beginning as early as 2012. Because a number of new power plants fueled by natural gas were constructed in the Northwest in the wake of the 2000/2001 energy crisis, and because the price of natural gas is volatile and difficult to predict, the Council does not anticipate that new gas-fired plants will be built until late in the 20-year planning period.

Public comments on the draft plan generally were supportive. Environmental groups praised the conservation in the plan; some even suggested the conservation targets should be higher. Some utilities, on the other hand, commented that the conservation targets were too high. Several advocacy groups commented that the plan should be more aggressive regarding weatherization of housing for low-income people, perhaps including establishing annual targets.

There was strong support for the renewable energy goals in the plan, although environmental groups suggested that the

“If we fail to achieve the conservation in the plan, the cost of electricity, and the risk of shortages and high prices, would increase in the future.”

Dick Watson
Power Division Director

near-term targets in the plan were not high enough. On the other hand, some utilities commented that the Council underestimated the cost of integrating new renewable energy facilities into the region’s mix of generation and conservation resources. Concerns about siting renewable energy facilities also were expressed.

There were conflicting or contradictory comments regarding some aspects of the

draft plan. For example, the Council was told that its estimates of future natural gas prices were both too high and too low. The recommendation in the plan for new coal-fired generation in the future was roundly criticized by some commentators and supported by others. Some even encouraged the Council to rely more heavily on coal.

Commentors generally agreed with the Council’s treatment of the future availability of power from independent power producers and the forecast of future demand for power. Concerns were expressed about the future role of Bonneville, such as whether and how conservation acquisition might be allocated among customers and whether allocating the output of the federal system would divide and complicate the services Bonneville currently provides its customers.

Commentors agreed that a regional adequacy standard should be established for the power supply and that the Council should take the lead in promoting a standard.

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Melinda Eden Will Chair Council in 2005, Jim Kempton Will Be Vice Chair



Melinda Eden, Council Chair

Region member Melinda Eden will chair the Council in 2005. Idaho member Jim Kempton will serve as vice chair. The Council elected officers at its January meeting.



Jim Kempton, Council Vice Chair

Eden was the Council’s vice chair in 2004. She was appointed to the Council by Governor John Kitzhaber in 2003 to finish an unexpired term and was reappointed by Governor Ted Kulongoski in 2004. Before her Council appointment, Eden served as a

member of the Oregon Environmental Quality Commission. She chaired the commission from 1999 to 2003. Eden was a practicing attorney concentrating on hazardous substances law, and she has previous experience as an Associated Press and newspaper reporter. Eden raises sheep, wheat, and wine grapes near Milton-Freewater. She can be reached at 541-938-5333.

Kempton, of Albion, Idaho, was appointed to the Council in January 2001 by Governor Dirk Kempthorne. As chair of the Council’s four-member Power Committee in 2003 - 2004, Kempton directed the preparation of the Fifth Northwest Power Plan, which the Council adopted in December. At the time of his appointment to the Council, Kempton was a re-elected five-term member of the Idaho House of Representatives. Kempton holds bachelor’s and master’s degrees in physics and is a retired U.S. Air Force fighter pilot. He can be reached at the Council’s Boise office, 208-334-6970. [CQ](#)

Of Birds and Fish: The Impact of Avian Predation on Juvenile Salmon and Steelhead

When you think about major threats to salmon survival, does bird predation come to mind? It should. In recent years, growing numbers of Caspian terns in the Columbia River estuary have led to concerns by fish and wildlife officials about their effect on the recovery of threatened and endangered salmon in the Columbia River.

Breeding Caspian tern numbers increased from 1,000 pairs in 1984 to nearly 10,000 pairs in 2002, accounting for 70 percent of the Western population. In 2003, Caspian terns consumed 4.2 million juvenile salmon and steelhead.

Why such an increase? The birds are native to the Pacific Northwest; their historic breeding range includes Washington,



Photo courtesy of the USDFW

Caspian tern



Photo by John Harrison

Caspian terns nesting on East Sand Island

“Predation has an extremely significant impact on juvenile salmonids. Part of the reason you have the problem is the hydrosystem.”

Peter Paquet

Wildlife & Resident Fish Manager

Oregon, California, Nevada, and Idaho. Their population began increasing in the early 1980s, due in large part to the creation of the perfect nesting habitat from dredge spoils located near an abundant supply of federally protected juvenile salmon and steelhead migrating to the ocean. Caspian terns usually nest in relatively small numbers on islands along the coast and interior lakes. The loss of their historic nesting sites elsewhere in the Pacific Coast/Western region, along with the human-created dredge spoil islands in the estuary so close to a rich food supply, has meant both a geographic shift in their habitation and ever increasing numbers of them.

“Predation has an extremely significant impact on juvenile salmonids,” says Peter Paquet, Council wildlife and resident fish manager. “Part of the reason you have the problem,” continues Paquet, “is the hydro-system.” Dredging the river helped to create the ideal habitat for terns: open and sparse industrial sites. Coupled with these artificial islands is a river system altered because of the dams. Where once high flows in the estuary helped to carry young fish out to the ocean, reduced flows can mean shallow water in which they become easy prey for the birds.

In 1999, NOAA Fisheries required the U.S. Army Corps of Engineers to relocate the tern colony from Rice Island to East Sand Island, about 15 miles down the Columbia River. While initially the move resulted in a 66 percent drop in tern predation on juvenile fish, the number of terns is expected to continue growing, as will their consumption of protected fish. The East Sand Island colony near the mouth of the Columbia River is considered the largest in the world.

It’s a good example, notes Paquet, of the unforeseen consequences of manipulating parts of the environment. Sometimes the cure creates another problem. It’s a reminder, too, he says, that we live in a multi-species system, and that we need to have an ecosystem approach to fish and wildlife management. “The question is: What is the balance?” asks Paquet. How do we maintain a sustainable balance between human needs and the needs of the natural world?

The recent release of the federal government’s plan to aid endangered salmon puts a greater emphasis on predator control. It also raises questions. While the proposal opens the door for the Northwest to craft a regional strategy to deal with the problem, it also brings up potential budget issues. A shift in federal budget priorities appears likely. If there are requests for more funding for predator control, how will this affect spending in other areas? Another important question is who funds what. Since many of the activities that caused the increase in avian predation on juvenile salmon and steelhead are not directly associated with the hydroelectric system, should the costs to control this problem be part of the Bonneville Power Administration’s fish and wildlife budget? In the past, Bonneville has con-

The Impact of Avian Predation on Juvenile Salmon and Steelhead



Double-crested cormorant



tributed funding for predator control, along with the U.S. Army Corps of Engineers and other federal agencies. It may be, observes Paquet, that Bonneville will conclude that in order to protect the region's investment in salmon protection, the agency should continue to fund a portion of these activities.

In January, the federal government announced plans to shrink the size of the Caspian tern habitat and disperse the East Sand Island colony to other locations along the West Coast. However, the states where the birds would be relocated—Oregon,

Washington, and California—are reluctant to agree to this.

But the need for a regional approach to the problem is apparent. Following closely behind the issues with Caspian terns is the growing problem of increasing numbers of Double-crested cormorants in the estuary. In 2003, the birds consumed 4.8 million juvenile salmonids. Both bird groups combined consumed 9 million fish that year. Further complicating the picture, recent studies in the Mid-Columbia indicate that other birds like gulls and mergansers may be affecting endangered salmon, too.

“Having a fuller understanding how everything fits together and how the watershed works as a whole is key,” says Paquet. The Council’s subbasin planning effort, which has focused on local planning to address fish and wildlife needs, will provide critical information to the development of a cohesive, regional management strategy. “One of the best things to come out of the subbasin plans are the subbasin assessments—uniform biological assessments of all the subbasins,” says Paquet. “They provide the best sets of data we have on the conditions in the river system.” [CC](#)

Fifth Northwest Power Plan Recommendations

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Transmission issues attracted a number of comments. Generally, commentors said the Council should be more aggressive in pushing for development of new transmission lines and facilities. The Grid West proposal, which responds to the Federal Energy Regulatory Commission’s call for development of regional transmission organizations, is not moving forward fast enough and needs stronger support from the Council, some commentors said.

Despite certain focused criticisms, the plan generally received strong support. The analytical work that supports the plan was perceived as highly credible, although some people commented that there was too much analysis and not enough advocacy in the plan. The portfolio of future resources received strong support, with the exception of some very strong opposition to coal-fired generation and concerns expressed by some commentors that it may be difficult for developers or utilities to build new resources

if the Council’s prediction is correct that they will not be needed before 2010.

The power plan will be posted on the Council’s website, www.nwcouncil.org. [CC](#)

Conservation Program Benefits Idaho Sockeye and Chinook

The Idaho Department of Fish and Game is leading a conservation effort to preserve the genetic diversity of Snake River spring Chinook and sockeye salmon and save both species from localized extinctions. Both are listed for protection under the federal Endangered Species Act. Snake River spring Chinook are threatened and sockeye are endangered.

In November, Paul Kline of the Idaho Department of Fish and Game reported to the Council that biologists have developed methods to rear Chinook salmon to maturation in the hatchery and also documented that fish released to spawn naturally in the tributaries of the Salmon River behave like wild adults, construct redds, and deposit fertilized eggs. He said the program has returned nearly 700 fish to the habitat for natural spawning.

The biologists also are having success with sockeye salmon, Kline said. Between 1999 and 2004, 527 hatchery-produced adult sockeye passed Lower Granite Dam on their journey back to the Stanley Basin.

While Snake River salmon have returned to Idaho in record and near-record numbers in recent years, the theme of the Chinook and sockeye effort is conservation and preservation of the unique life history traits for those fish populations that are closest to extinction. The impressive returns — 70,742 spring Chinook and 113 sockeye over Lower Granite Dam in 2004, for example — mask the fact that most of the fish are returning

to conventional hatcheries. The number of naturally spawning fish is a small percentage of the total and includes individuals from dozens, and perhaps hundreds, of uniquely adapted populations. Genetic diversity is important to the long-term success of conventional hatchery programs, as the naturally spawning fish provide a reservoir of life history traits that hatchery operators may need to tap in the future.

Propagating the weakest runs in captivity conserves these unique populations in the short-term by reducing the various risks that could lead to extinction if the fish continued to spawn in the wild. Through captive propagation, biologists also can manage genetic risks by developing spawning designs that minimize inbreeding, encourage genetic variability, and maximize the effective population size, Kline said.

The conservation/preservation efforts utilize two primary techniques. Some populations — those at highest risk of extinction — are reared to maturation and spawned in the protective hatchery environment in a technique known as captive broodstocking. The technique has the primary advantage of rapidly expanding the population and is preferable for those populations most at risk of extinction. Other populations are reared to maturation in the hatchery and then released into streams to spawn naturally. That technique is known as captive rearing.

Snake River spring/summer Chinook salmon were listed as threatened under the

Endangered Species Act in 1992. A captive rearing project began in 1995; adult fish first were outplanted in 1998. The research is aided by the University of Idaho and the Shoshone Bannock Tribes. NOAA Fisheries shares fish culture responsibilities at its Manchester, Washington facility. The projects are funded by the Bonneville Power Administration as part of its obligation to mitigate the impacts of hydropower dams on fish and wildlife of the Columbia River Basin. Annually, researchers gather fertilized eggs from redds (egg nests) in the East Fork Salmon River and the West Fork Yankee Fork of the Salmon River and then rear the fish in freshwater at the Idaho Department of Fish and Game hatchery at Eagle, near Boise. Once the fish reach the smolt size they are transferred to a NOAA Fisheries saltwater facility at Manchester, Washington. When the fish mature, they are transferred back to the facility at Eagle, where they remain until being transferred to streams. Following their release, biologists monitor adult behavior daily through the spawning season.

Research has shown that survival from incubation to smolt size has averaged 95 percent, and that survival in the saltwater to maturation has averaged 60 percent. While these are impressive accomplishments compared to fish that spawn in the wild, and while it is known that adult fish are being produced, the program has not met its expectation about producing adult fish with similar characteristics to wild fish. Kline said biologists continue to address matters related to producing Chinook of comparable size as wild fish, producing females that reproduce as successfully as wild fish, and producing fish that will spawn at the same time as wild fish.

The conservation/preservation effort is similar for sockeye, which once inhabited five lakes in the Sawtooth Valley at the headwaters of the Salmon River but now are found in only three: Redfish, Alturas and Petit. The fish were listed as an endangered species in 1991, and the conservation/preservation effort began the same year.

Snake River sockeye are unique in that they migrate farther (900 miles) than any other sockeye population in North America and also are the southernmost population. Snake River sockeye have been declining since the 1960s, but the decline accelerated in the late 1970s. In 1964, about 1,200



A mature Chinook salmon reared at the Eagle, Idaho hatchery.

Conservation Program Benefits Idaho Sockeye and Chinook

adult sockeye returned to spawn in the Stanley Basin; in 1990, no sockeye were counted crossing Lower Granite Dam, the last of eight federal dams the fish must cross on their way home from the ocean. Since 1990, adult counts at Lower Granite have varied from a few fish to more than 250 in 2000.

Idaho Fish and Game, the Shoshone Bannock Tribes, the University of Idaho, NOAA Fisheries and the Bonneville Power Administration are collaborating on the effort, which includes freshwater rearing in Idaho and saltwater rearing at the Manchester facility. The first hatchery-produced fish — 20 adults — were released into Redfish Lake in 1993. The first juvenile fish were released the following year, and the first hatchery-produced adult fish returned to spawn in 1999.

More than 1.3 million fertilized sockeye eggs have been produced at the hatchery in Eagle, and a comparable number have been produced at NOAA facilities. Egg survival to the eyed-stage of development has averaged 70 percent. Hatchery broodstock survival, from ponding through maturation, has been high — averaging 80 percent — since the inception of the program.

Between 50,000 and 100,000 fertilized eggs are planted in Petit or Alturas lakes, or both, annually. Egg planting takes place after eggs have reached the eyed-stage of development, in November and early December. The estimated hatching success for these eggs is higher than 80 percent. The resulting juvenile fish typically spend one to two winters in the lakes and then migrate to the ocean. Approximately 120,000 pre-smolts are released into the three lakes annually, and up to 300 adult fish are released annually to spawn naturally in Redfish Lake. In addition, sockeye smolts are released directly into the Salmon River from the Sawtooth Hatchery annually, in early May. Those fish head directly for the ocean.

Through 2003, the program has raised and released or planted 526,868 fertilized eggs, 159,407 smolts, 940,954 pre-smolts, and 1,203 adult fish. Biologists monitor the fish at the outlets of the lakes and at the dams. The Idaho Department estimates that the sockeye survival rate from the Stanley Basin to the lower Snake River dams varies between 25 and 55 percent.

“Substantial progress has been made toward producing adult Chinook salmon in the hatchery that spawn successfully in the habitat,”

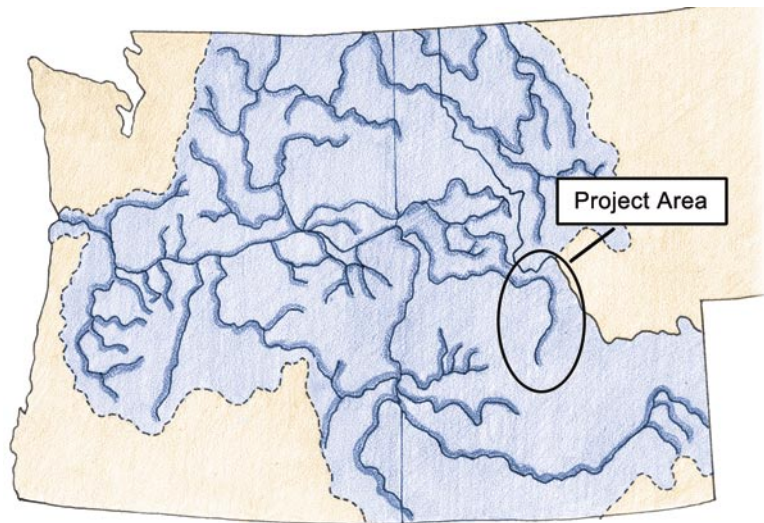
*Paul Kline
Idaho Department of Fish & Game*

Little historical information exists about adult returns and juvenile fish migration for Snake River sockeye, Kline said. Between 1954 and 1964, Idaho researchers trapped all sockeye entering Redfish Lake as well as

way home continues to decline, compared to returns in the 1980s. Between 1980 and 1998, 856 wild, adult sockeye passed Lower Granite Dam. Between 1999 and 2004, 527 hatchery-produced sockeye passed the dam. Of the latter, 65 percent, or 341 fish, were trapped or observed in the Stanley Basin.

These discouraging numbers are one of the reasons project reviewers remain unconvinced of its success. Although the Council’s panel of independent scientists acknowledges the project’s ability to rear salmon to adulthood in captivity, it questions its long-term viability. The panel also criticizes the project’s emphasis on the numbers of eggs, juveniles, and adults released as a measure of accountability and success.

Kline told the Council the effort has slowed, but not reversed, the loss of critical genetic diversity among sockeye. Nonetheless, he is optimistic.



smolts leaving the lake. During this 11-year period, 8,463 adult sockeye were counted entering Redfish Lake. Associating juvenile migration estimates with adult returns, researchers determined that smolt-to-adult survival rates ranged from 0.14 percent to 1.8 percent. An average of 769 adult fish returned each year, and the smolt migration averaged 24,370 fish. Green egg to smolt survival for wild fish averaged 2 percent. For the current program, smolt-to-adult return rates have ranged from 0.04 percent to 0.35 percent.

Despite the effort, the number of adult sockeye crossing Lower Granite Dam on their

“Substantial progress has been made toward producing adult Chinook salmon in the hatchery that spawn successfully in the habitat,” he said. “What remains to be accomplished is research geared at identifying successful juvenile production, and adult returns, from captive-adult spawning events.”

As for sockeye, Kline said the conservation program has successfully addressed its near-term objective of preventing extinction. “Techniques have been developed to raise sockeye salmon in fresh and saltwater envi-

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Council Adopts 23 Subbasin Plans to Guide Fish and Wildlife Mitigation in the Columbia River Basin

Twenty-three locally developed plans that will guide efforts to mitigate the impacts of hydropower dams on fish and wildlife in Columbia River tributaries and parts of the mainstem river were adopted in December by the Northwest Power and Conservation Council. The plans are now part of the Council's Columbia River Basin Fish and Wildlife Program, which directs the expenditure of about \$140 million annually. The money is provided by the Bonneville Power Administration from its income from the sale of electricity.

Also in December, the Council released for public comment 29 more subbasin plans. The comment period for those plans was in January, and the Council expects to make a decision on amending them into the program in February.

The plans are among 59 that were submitted to the Council last May following nearly two years of work by watershed councils, local governments, and state, federal, and tribal agencies. The plans respond to direction in the Council's fish and wildlife program that successful mitigation of the impacts of hydropower on fish and wildlife will be accomplished through the selection and implementation of subbasin-level goals,

The 23 plans in the first group address the following subbasins and portions of the mainstem Columbia:

Washington

Asotin
Lake Chelan
Lake Rufus Woods
San Poil
Spokane
Tucannon
Upper Mid-Columbia Mainstem
Upper Columbia Mainstem
White Salmon

Montana

Flathead

Idaho

Bruneau
Coeur d'Alene
Salmon

Oregon

Fifteenmile Creek
Hood
Malheur
Umatilla
Willamette

Idaho and Washington

Pend Oreille

Idaho and Oregon

Lower Snake
Owyhee

Montana and Idaho

Kootenai


Oregon and Washington

Columbia Gorge

objectives, and strategies. Each subbasin plan has an assessment that describes historical and existing conditions, an inventory of existing fish and wildlife projects and past accomplishments, and a management plan that looks 10-15 years into the future.

In addition to guiding implementation of the fish and wildlife program, subbasin plans may be used by NOAA Fisheries and the U.S. Fish and Wildlife Service as a component of Endangered Species Act recovery planning. State and federal agen-


cies may use the plans to reconcile hatchery and harvest goals, and to complete an integrated monitoring and evaluation framework for fish and wildlife projects and research. The Council's approval of the first group of 23 plans followed a 40-day public review and comment period that concluded on November 22, 2004.

Additional information regarding these and other subbasin plans is posted on the Council's subbasin planning website, www.subbasins.org. 

Conservation Benefits Idaho Salmon

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ronments," he said. "Survival to maturation has been high, better than 80 percent, and spawning results have been excellent — better than 70 percent to the eyed stage of development."

Looking to the future, Kline said geneticists from the University of Idaho and NOAA Fisheries have recommended that more adult fish be incorporated into the hatchery breeding program. This will require a commitment to develop additional adult holding, spawning, incubation, and rearing space. "Project managers are prepared to provide recommendations to the Council and Bonneville for improvements that could be made to existing facilities as well as concepts to develop additional facilities," he said. 

Council Decisions

(continued from front page)

Appointments to Advisory Panels

December 2004

The Council reappointed three members to independent scientific review panels. Dr. Susan Hanna, a professor of agriculture and resource economics at Oregon State University, and Dr. Robert Bilby, an ecologist at the Weyerhaeuser Company, were reappointed to the Independent Scientific Advisory Board (ISAB), which advises both the Council and NOAA Fisheries. Appointments to

the ISAB are made jointly by the Council, NOAA Fisheries and the Columbia River Inter-Tribal Fish Commission.

The Council also reappointed Dr. William Liss, a professor of fisheries at Oregon State University, to the Independent Scientific Review Panel, which reviews projects proposed for funding through the Council's Columbia River Basin Fish and Wildlife Program.

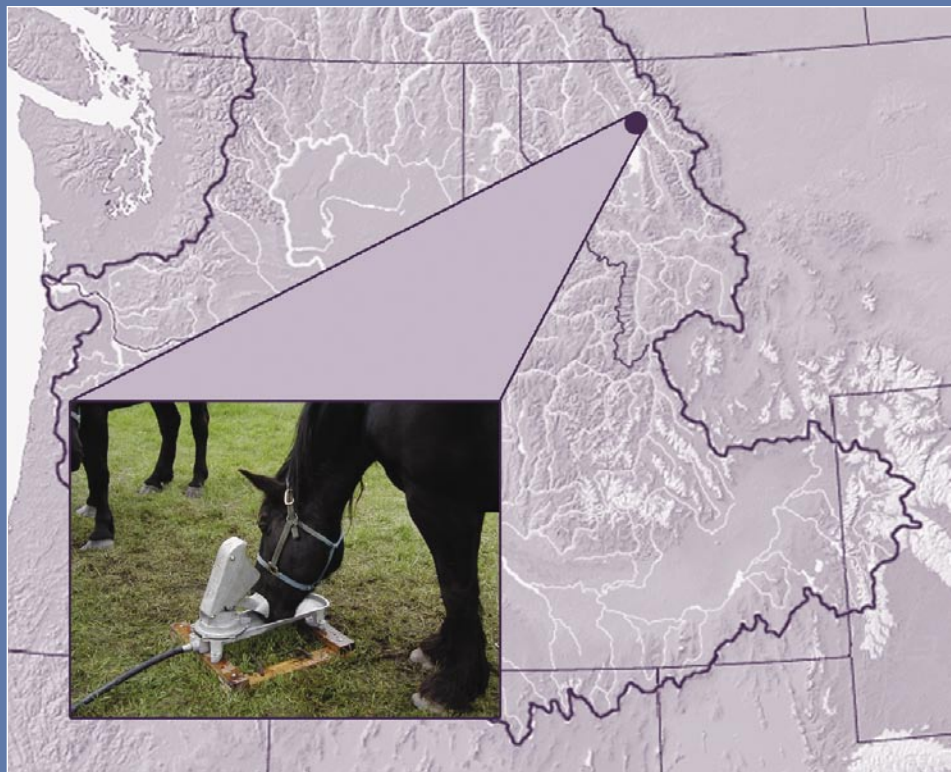
Each of the appointments expires on Sept. 30, 2007.

Success Stories – Flathead River

Hungry Horse Mitigation Program

The Hungry Horse Mitigation Program, implemented in part by the Confederated Salish and Kootenai Tribes, began in 1991 to address fisheries losses associated with the construction and operation of Hungry Horse Dam. The dam isolated approximately 38 percent of the Flathead Lake drainage and changed the physical and biological characteristics of the lake and river. The Northwest Power and Conservation Council recommends funding from the Bonneville Power Administration to address this loss of habitat in the interconnected Flathead Lake and Flathead River Basin. The project implements mitigation measures, restores habitat, and monitors the biological responses to those measures, including those implemented by other agencies. The tribes also address the changes in Flathead Lake from Mysis shrimp and lake trout, whose dominance has suppressed the native cutthroat trout targeted by mitigation efforts.

The Dayton Creek project is a good example of the kind of watershed-level projects implemented by the tribes. It was initiated because of its importance as a direct tributary to Flathead Lake. Dayton Creek was severely degraded and provided outstanding potential to replace the spawning habitat lost after the construction of Hungry Horse Dam. Bonneville funds have been used to provide cost sharing for many restoration activities including: 1) riparian inventories on 20 miles of stream; 2) construction

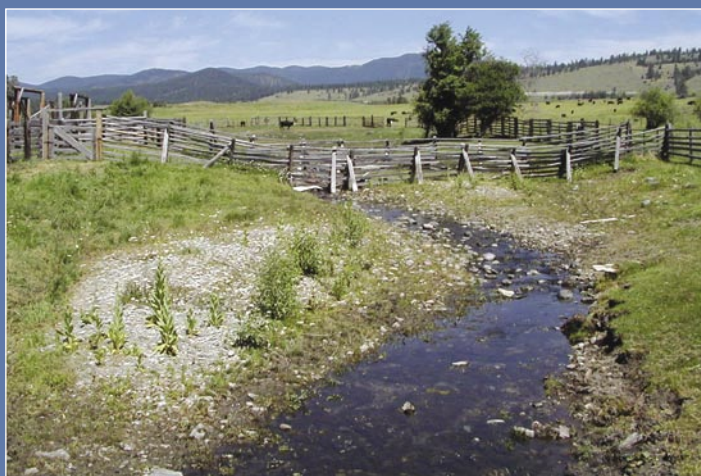


Off-stream livestock watering facility

of 9 miles of riparian fencing to reduce the effects from livestock grazing; 3) replacement or improvement of 11 stream crossings; 4) design and installation of multiple off-stream livestock watering facilities; 5) improvement of irrigation management; and 6) monitoring of stream flows and irrigation withdrawals. Partners include multiple private landowners, the tribes, the Flathead Lakers, Trout Unlimited, Bureau of Reclamation, Natural Resource Conservation Service, Montana Fish, Wildlife and Parks, Plum Creek Timber Company, U.S. Fish and Wildlife Service, and

the Lake County Road Department. Over 50 percent of project costs have come through these partnerships.

To ensure that predation of cutthroat trout by lake trout does not undermine the success of these watershed restoration projects, the tribes are intensively monitoring the lake trout population and conducting activities to enhance angler harvest of these predator fish.



Dayton Creek in 2001



Dayton Creek in 2004

Flow and Salmon Survival: More Questions than Answers

For years, increasing flow to help endangered salmon has been an important part of fish recovery efforts. But new information about the salmon population intended to benefit from the added release of water at dams has called into question the effectiveness of summer flow operations. At a November symposium on the effects of hydropower operations on fish, recent findings were presented that suggest we may not know enough to ascertain whether a particular action will help or harm these fish.

The Reservoir Operations/Flow Survival Symposium, sponsored by the Council and NOAA Fisheries, was intended to address questions about the Council's proposal to implement operational changes at the Libby and Hungry Horse hydroelectric projects and how those changes might affect anadromous populations in the lower Columbia River. The Council proposed in its mainstem amendments to use new drafting limits at both dams. The changes would alter summer operations at storage reservoirs in Montana from the federal strategy outlined in NOAA Fisheries' 2000 Biological Opinion, shifting elevated August flows and water releases into September.

The Independent Scientific Advisory Board concluded in its report, presented at the symposium, that the proposed changes would have little effect on salmonids in the lower Columbia. Following the ISAB's findings, the Council sent a letter to federal agencies in December requesting that the operational changes be implemented in the summer of 2005 and that studies be established to measure effects.

But the biggest news to come out of the symposium may be about how little we really know about outmigrating fall Chinook salmon. "There is a life history type that we've largely ignored, a reservoir-type," says Bruce Suzumoto, special projects manager for the Council. "In the past, people thought

"If the original justification for August flow augmentation from Hungry Horse and Libby is confounded by a change to a different migration strategy for fall Chinook...there is a new management reality to be faced."

ISAB Report

these fish acted similarly to yearling Chinook. What we're discovering is that these fish take their time moving out of the system."

According to the ISAB report, "Some juveniles are holding over their first winter in fresh water and emigrating as yearlings in the spring..." Most significantly, notes the report, "a disproportionately large percentage of returning adults are originating from these holdovers."

The latest research shatters the prevailing thinking about the life history of Snake River fall Chinook salmon and not only has implications about the use of flow augmentation, but also suggests that the survival rates of in-river migrants are off. An unknown number of smolts estimated to have died because they didn't pass a downstream tag detection facility may actually have survived.


Says Suzumoto, "These fish winter over in the reservoir and can contribute to half of the returns. This is a huge factor, because

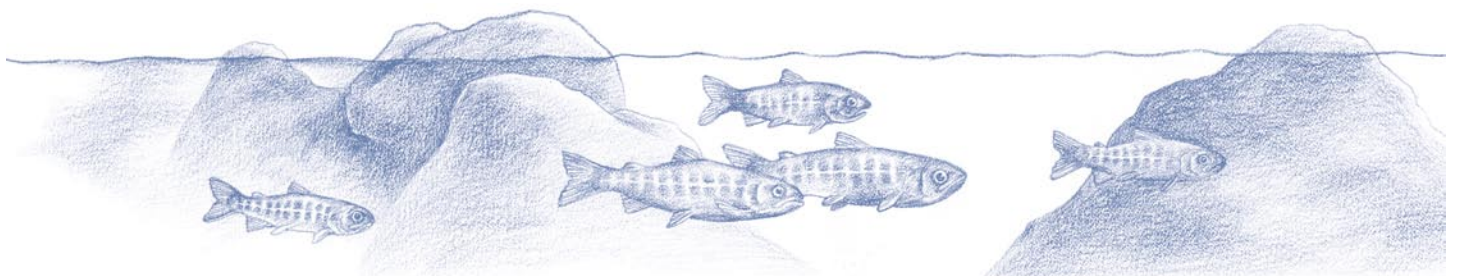
right now, everything we're doing is for the outmigrating subyearlings."

The new data also calls into question the current transportation of fall Chinook salmon smolts to below Bonneville Dam, and other summer hydro operations that attempt to protect fish. The ISAB report asks, "If the original justification for August flow augmentation from Hungry Horse and Libby is confounded by a change to a different migration strategy for fall Chinook...there is a new management reality to be faced." In other words, if these fish have adapted to the hydrosystem and behave in a way that improves their survival by delaying their entry into the ocean, are we inadvertently counteracting this strategy?

The effects of water velocity and temperature on fish survival are also mentioned in the report, noting that little attention has been given to these two measurements. According to advisory board member Dr. Richard Whitney at a recent Council meeting, "We don't know much about flow velocity; it's a big uncertainty."

As for temperature, adds Whitney, "It is not well understood, and it's often misperceived and misapplied." The water discharged from Hungry Horse and Libby dams is often confused with the summer discharges from Dworshak Reservoir, which remain cold because of the short travel distance in the Clearwater River to the Snake River and through the lower Snake River reservoirs. Unlike Dworshak, though, Hungry Horse and Libby flows travel long intervening distances through rivers and reservoirs, and the water temperature can change.

These, and other issues, were identified as needing further investigation, including a concern about the potential cumulative effects of small changes. The report is available on the Council's website, www.nwcouncil.org. 



Calendar

Calendar of Council Meetings and Other Events:

- February 7-12: Affiliated Tribes of Northwest Indians Winter Conference. Embassy Suites Hotel, Portland, OR. Information at www.atntribes.org.
- February 14-18: Pacific Salmon Commission 20th Annual Meeting. Portland, Oregon. Information at www.psc.org.
- February 15-17: Northwest Power and Conservation Council Meeting. Portland, Oregon. Information at www.nwcouncil.org.
- March 15-17: Northwest Power and Conservation Council Meeting. Portland, Oregon. Information at www.nwcouncil.org.
- April 12-14: Northwest Power and Conservation Council Meeting. Boise, Idaho. Information at www.nwcouncil.org.
- April 12-14: Idaho Department of Fish and Game Monitoring Design Workshop. IDFG Research Center, Nampa, ID. Contact Sam Sharr at ssharr@idfg.state.id.us or 208.465.8404

Three New Members Join Council

(continued from front page)



Bruce Measure, Montana



Rhonda Whiting, Montana



Joan Dukes, Oregon

appointed to the Council. In 1998 she was appointed by President Clinton to oversee 17 tribal business information centers across the nation, and she also has operated her own communications consulting firm. She holds bachelor's and master's degrees in education, and a law degree, all from the University of Montana.

Joan Dukes was appointed to the Council by Oregon Governor Ted Kulongoski. Dukes resigned her seat in the Oregon Senate, where she had served since 1987, to join the Council. She is a resident of Svensen, a community near Astoria. Dukes, who served a four-year term as a Clatsop County commissioner before being elected

to the Senate, has a broad base of experience in education, transportation and fisheries issues at the local, county and state levels, including having served as chair of the Pacific Fisheries Legislative Task Force, an association of Western legislators that works on regional fish issues. She is a graduate of the Evergreen State College. [CC](#)

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