



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

Getting Fish Past the Dams: Technology and Better Understanding of Fish Survival Help Improve Their Odds



ince the early 20th century, the Northwest has relied on the power generated at dams built along the Columbia River and its tributaries. Today, about three-quarters of the region's electricity capacity is hydropower.

The Federal Columbia River Power System consists of 31 dams that produce, on average, 6,900 average megawatts of energy. There are 20 major dams built on the Columbia and Snake rivers, some owned and operated by the federal government, and some by public utility districts. Besides electricity generation, many of the dams provide navigation for barges; irrigation for farms; launching areas for boating and other recreational activities; and flood control.

For the salmon and steelhead that travel through the river system as part of their life cycle, the dams present two challenges: Getting through the reservoirs; and getting past the physical structures themselves. Juvenile fish migrate at a slower rate through the reservoirs because of the reduction in the river's velocity.

When fish go through the turbines of a dam, it is not, as widely imagined, like fish being chopped up in a giant blender. As much as four to six feet can separate the turbine blades from each other, and the turbines spin at a relatively slow speed of about 90 revolutions per minute. Consequently, as many as 90 - 95 percent of fish, and even higher in some cases, survive their passage

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Notes from the CHAIR

Judi Danielson



The arrival of 59 draft subbasin plans from throughout the Columbia River Basin to the Council's Portland office at the end of May was cause for celebration of a major milestone.

People who live in a particular geographic area collaborated to create these plans to protect and help the fish and wildlife in their watersheds. It was a tremendous achievement and affirmed the commitment of local residents, fish and wildlife agencies, states, and tribes to preserve and enhance the natural resources in their communities.

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Council Decisions

Recommendations on BPA's Regional Role

May 2004

The Council approved its final recommendations on the future role of the Bonneville Power Administration in power supply. See the article in the Spring 2004 edition of the Council Quarterly for details.

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Getting Fish Past the Dams

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through the turbines. Still, the collective loss can be significant when you consider the number of dams fish encounter on their migration route. More harmful to fish going through the turbines may be the drastic water pressure changes they are subjected to. And, once past the dam, the fish are often stunned and disoriented leaving them vulnerable to predators.

What can be done to reduce the mortality rate and increase fish survival? Current methods for helping fish past dams include fish ladders, which are like water-filled staircases adult fish can use to travel upriver of a dam. For young fish migrating to the ocean, many juvenile bypass systems use screens suspended in front of the turbine intake to block them from entering the powerhouse, and then guide the fish to passages through the dam. Seven of the eight dams on the lower Snake and Columbia rivers have such systems.

"This method, for the most part, works pretty well," according to Bruce Suzumoto, manager of special projects for the Council.

Innovations such as removable spillway weirs create a flow pattern that more effectively move fish past the dams.

Still, fish may encounter the screens and get injured. Survival rates vary depending on the design of the dam.

When fish are guided through the bypass system, they are carried through pipes to a location below the dam to re-enter the river, or they are collected and put on barges for transportation downriver. Most of the fish passing through dams in the Snake River are barged. Four dams, three lower Snake River dams and McNary Dam, have transportation facilities. The other four mainstem dams don't have facilities to collect fish for transport, but three

of them have bypass systems: Ice Harbor, John Day, and Bonneville. The Dalles Dam does not have a bypass system.

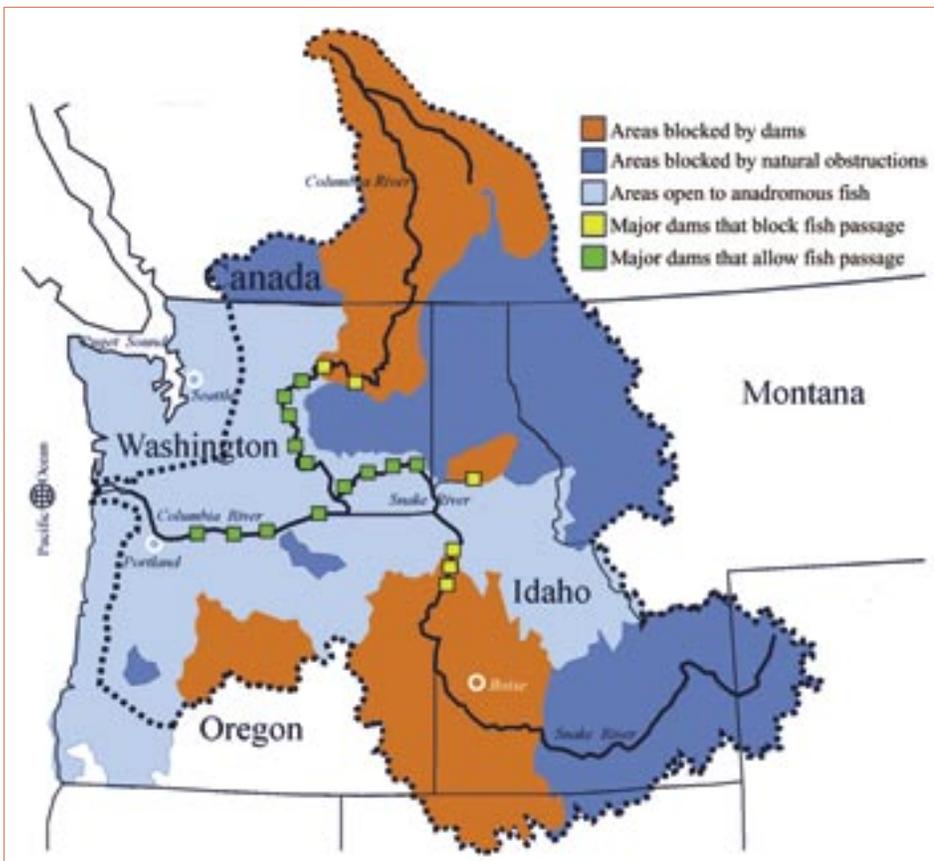
Besides bypass systems, the other method for getting fish past dams is by spilling a percentage of the river through the spillways. It is costly, however, and not without risks to fish. The annual average cost of the current bypass spill program is \$162 million, over half the total annual cost to implement the requirements of the federal government's biological opinion regarding hydrosystem operations.

One of the potential harmful side effects of spill is that fish can get air bubbles in their gills — an effect similar to the bends in humans — from the gas supersaturation that occurs from the violent onrush of plunging water. Yet spill remains one of the safest ways for juvenile salmon to pass dams. At some dams using spill, the survival rate for fish can be as high as 98 - 100 percent. At other dams, such as Wanapum Dam, discussed later, the survival through the spillway is quite low.

Technological advances, along with a better understanding of fish survival, have spurred engineers and hydrosystem operators to explore new ways, and improve on old ways, for getting fish past the dams. Innovations such as removable spillway weirs create a flow pattern that more effectively move fish past the dams. A typical spillway draws water, and fish, from deep in the forebay above the dam. Removable spillway weirs (RSW) raise the spillway crest so the water flows closer to the surface where fish are swimming. Less water is spilled, and it does a better job of helping fish past the dam. The RSWs are one example of surface bypass technology where fish are collected at the surface rather than forced to dive down as current systems require them to do.

"It's working with the way fish normally swim, and tests have shown that we get the same survival rates as spill, but we use less water," says Suzumoto. "It's a way to keep fish in the river, as opposed to barging them, but we're doing it in a more efficient way."

The U.S. Army Corps of Engineers, one of the agencies responsible for operating the federal hydrosystem, is exploring the instal-



The Columbia River Basin

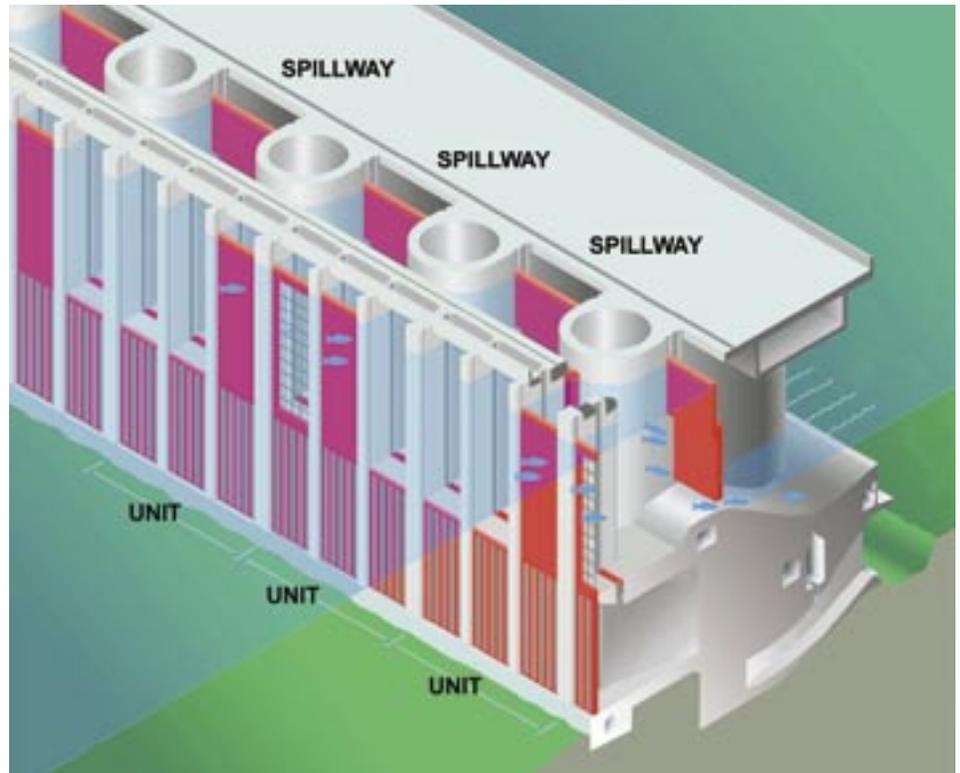
lation of RSWs at the Lower Monumental, Little Goose, John Day, and Ice Harbor dams according to Mike Langeslay, fisheries biologist with the Corps.

Because dams vary in their structural design, the results of spill are not uniform. Lower Granite, Bonneville, and John Day dams experience a high survival rate with spill; but for Ice Harbor and The Dalles dams, survival rates are low. One suspected reason for the low survival rate at the Dalles Dam is the design of its stilling basin — the zone where water falls as a way to take energy out of the water. “It’s very shallow, and combined with the way we spill, some fish stay in the basin and die,” explains Langeslay. At Ice Harbor, the problem is a high rate of injury. “We think it has to do with smaller gate openings and the flow deflectors. With smaller gate openings, fish travel down the spill chute closer to the concrete where they’re more vulnerable to turbulence and can strike the deflector.”

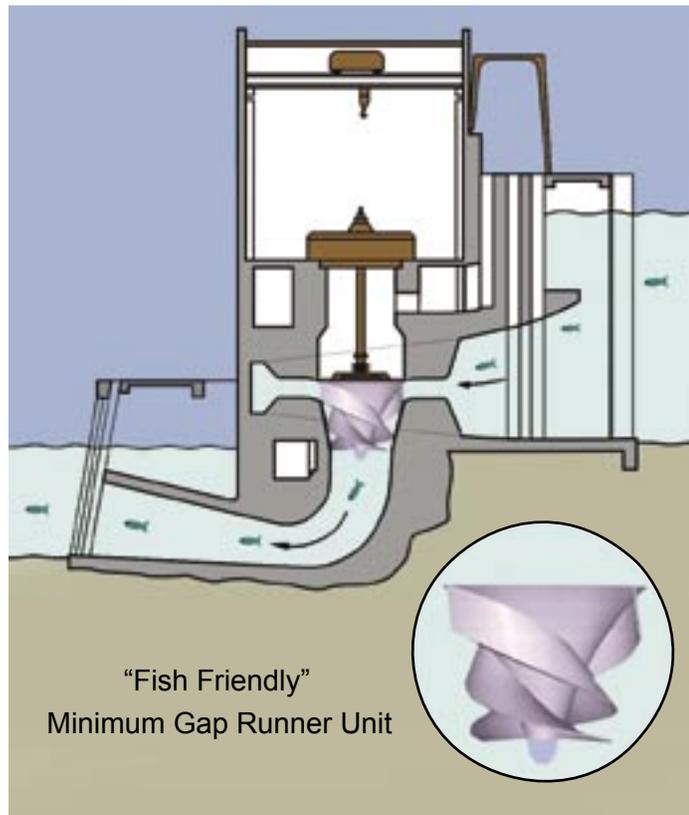
The Corps is studying a structural modification called a forebay guidance curtain at The Dalles Dam that would intercept fish that normally go through the powerhouse, and guide them to the spillway using less spill. If fish survival improvements are realized at the spillway, the forebay guidance curtain could be ready to test as soon as 2007.

The Corps has also been testing a new design of “fish friendly” turbines that appear to cause less harm to fish since they reduce the gaps near the edges of the blades that fish can get caught between. At Bonneville Dam, minimum gap runner (MGR) units have been installed as part of the facility’s rehabilitation. The MGRs have very small gaps between their structural or mechanical components, which virtually eliminates all “pinching” type injuries common with standard runners. Besides their benefits to fish, the turbines are also more energy efficient.

“We’ve upgraded different parts of the system in the past, but this is the first full rehabilitation since the turbines were installed in 1938,” says Langeslay. “There are five MGR units currently installed at Bonneville Dam, and one that was tested in



The design at Wells Dam enables the spillway, on top of the turbine intakes, to function as an efficient bypass system.



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Getting Fish Past the Dams

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2002 for fish survival resulted in a nearly 100 percent survival rate.”

Public utilities are also exploring how to improve fish passage at their dams. Shaun Seaman, Chelan County PUD’s director of fish and wildlife, says they have finished the rehabilitation of all the turbines at Rocky Reach Dam. The project included a review of all the facility’s components, with the goal of increasing efficiency and incorporating fish-friendly designs where possible. Rock Island Dam is currently in the design phase of a rehabilitation of Powerhouse One, the first powerhouse constructed on the Columbia River. The rehabilitation will consider new turbine designs as well.

Seaman notes that not every technological advance is transferable to every dam. For example, he explains, at Rocky Reach, after 10 years of monitoring a prototype and analyzing fish passage rates, they determined that a surface collector system made the most sense. On the other hand, in the case of Rock Island Dam, because its spill bays are spread out, it is simply not conducive to collecting fish and guiding them through a bypass system. As a result, one of the options now in use is what Seaman calls a “notched gate.” A standard gate is 30 feet wide; but the notched gate is modified to narrow the gate opening to a 10-foot wide section that creates a good fish attraction with reduced spill levels. Another alternative being explored at Rock Island is an “over/under gate” that reduces plunge and total dissolved gas. “If that proves successful, and fish pass these gates safely” says Seaman, “we’ll want to find out how we can guide fish to these preferred spill gates.”

At other PUD dams, similar fish protection efforts have proven quite successful. Bob Clubb of Douglas County PUD, No. 1, describes the unique hydrocombine design at Wells Dam that enables the spillway to function as an extremely efficient bypass system. The design of a hydrocombine dam places the spillway on top of the turbine intakes. Five of the eleven spillways at Wells Dam have been modified to block two of the three spillway bays, and a center third bay was modified to a vertical slot. “Juvenile outmigrants, rather than diving down to the turbine intakes, some 75 feet

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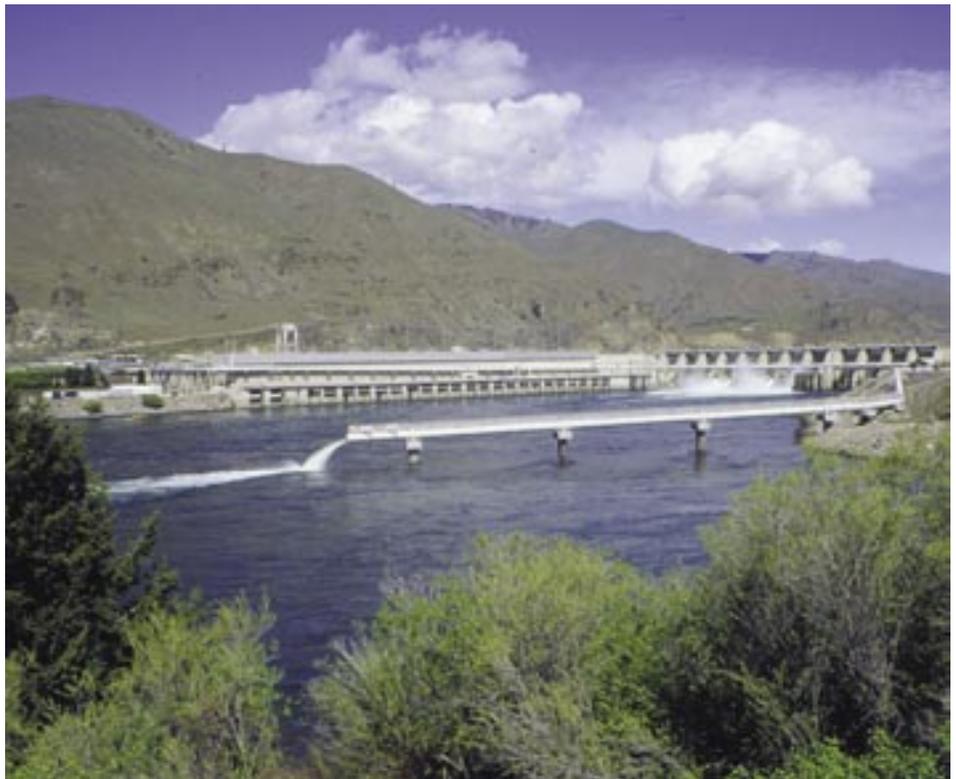
*Bob Clubb
Douglas County PUD, No. 1*

deep, voluntarily go through the vertical slot,” says Clubb. The modification was completed in 1989.

Clubb says the fish passage efficiency of their system is between 92 - 96 percent for spring and summer migrants, respectively. A recently concluded 3-year project survival study found that the average survival for yearling chinook salmon and steelhead was 96.2 percent. “The system has been up and running since 1990, and I believe it’s the best bypass system on the river,” says Clubb.

At Wanapum Dam, Grant County PUD has been in the process of developing and testing fish-friendly turbines. “We’ve designed new turbines that will be installed and up and running in February 2005,” says Steve Brown, director of natural resources. Brown explains that this is part of the Department of Energy’s initiative to develop environmentally friendly turbines, made possible through Congressional funding. The turbines are more energy efficient and can generate more power. The turbines at Wanapum will be the first installed in the nation. “Tests of the existing turbines resulted in a survival rate of between 89 - 100 percent,” says Brown. “In tests using radiotelemetry, we’ve seen close to a 95 percent overall survival rate.” Wanapum Dam also uses a top spill gate that creates an over-flow type of spill, similar to the designs that create flow at the surface where fish swim.

“For Priest Rapids Dam,” adds Brown, “a split pier design is planned at one of the spillbays to reduce the volume of spill while maintaining the same or higher survival.” Survival past Priest Rapids Dam currently exceeds 95 percent. New turbines at the



Outfall pipe of juvenile fish bypass system at Rocky Reach Dam.

dam have also been proposed as part of its relicensing. “The new turbines are expected to achieve even greater survival,” says Brown.

In an example of how conventional wisdom can be turned on its head, Linda Jones, director of communications and external affairs for Grant County PUD, explains that in some cases, spill is not the best option. “What we’ve found at Wanapum is that large amounts of spill are not necessarily the best way to get fish past the dams,” she says. “The way the dam is designed, we actually see greater survival when fish go through the turbines. We want to improve survival through the turbines because a greater number of fish use the turbine passage route.”

“What we've found at Wanapum is that large amounts of spill are not necessarily the best way to get fish past the dams.”

Linda Jones
Grant County PUD

Conversely, says Jones, at Priest Rapids Dam, “We currently see a high survival rate using spill.” For this dam, she says, “We

would like to move to a top spill orientation, like the Corp’s RSWs, but customized to the unique design of Priest Rapids, in combination with new advanced turbines.

“We want to maintain the same survival rates, or achieve a higher survival rate,” says Jones, “but we want to see if we can do it with reduced spill and greater cost savings.” 

Glossary of Dam Terminology

attraction: Water flows designed to draw fish toward ladders or other bypass systems.

biological opinion: The federal government’s recovery plan for salmon and steelhead in the Columbia River Basin.

bypass system: A structure in a dam that provides a route for fish to move through or around the dam without going through the turbine units.

fish ladder: A series of ascending pools, similar to a staircase, that enables fish to migrate up the river past dams.

forebay: The part of a dam’s reservoir that is immediately upstream of the powerhouse.

intake: The entrance to a turbine unit at a hydroelectric dam.

powerhouse: The part of a hydroelectric dam where the turbine-generators are housed and where power is produced by the action of the water on the turbine blades.

radiotelemetry: The use of radio transmitters to track various fish and wildlife species.

spillway, spillbay: Releasing water out the spillbays rather than through the turbine units. The spillbay is the dam’s safety valve. Without it, excess water can damage the dam’s structure or overflow the dam. Dams without bypass systems spill water laden with fish to carry them away from turbines.

Subbasin Plans Submitted on Time; Public and Scientific Review Begins

A total of 59 draft subbasin plans that will guide future fish and wildlife mitigation efforts under the Council's Columbia River Basin Fish and Wildlife Program were submitted on time May 28. They are now available for public review.

The total was one more than the Council anticipated, as the planning team for the Middle Snake River Subbasin created a separate plan for the Oregon shore of Brownlee Reservoir. Completion of the draft plans was the culmination of more than a year and a half of work among landowners, state, federal and local governments, Indian tribes, and interest groups representing industries and environmental advocates throughout the basin in Idaho, Montana, Oregon and Washington.

The plans are posted on their own website, www.subbasins.org. Collectively, the plans represent the largest compilation of data on fish, wildlife and environmental conditions ever in the Columbia River Basin.

The plans will be reviewed by the Council's Independent Scientific Review Panel and also by state and federal fish and wildlife agencies and Indian tribes. The Council will

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Judi Danielson
Council Chair

adopt the plans into its Columbia River Basin Fish and Wildlife Program in November or December. Once they are part of the program, the plans will help guide the Council's annual recommendations to the Bonneville Power Administration on projects to implement the fish and wildlife program. In recent years these expenditures have averaged \$139 million per year.

"Subbasin plans will improve the project selection and review process by providing a more complete and specific base of information on the status of fish and wildlife populations in each tributary subbasin," said Council Chair Judi Danielson, an Idaho member of the four-state agency. "They also will provide linkages to other planning processes for improving fish and wildlife survival. The plans will help us to better target where we invest the public's resources and will improve the financial accountability of the program."

Bob Lohn, Northwest regional administrator of NOAA Fisheries, the federal agency that implements the Endangered Species Act for salmon and steelhead, said the plans will form an important part of the foundation of recovery plans for threatened and endangered species in the Columbia River Basin.

"Subbasin plans represent a new threshold of understanding about fish and wildlife and their habitat," Lohn said. "The plans will contribute significantly to recovery planning, and to monitoring the results of the actions that implement our own recovery plans."

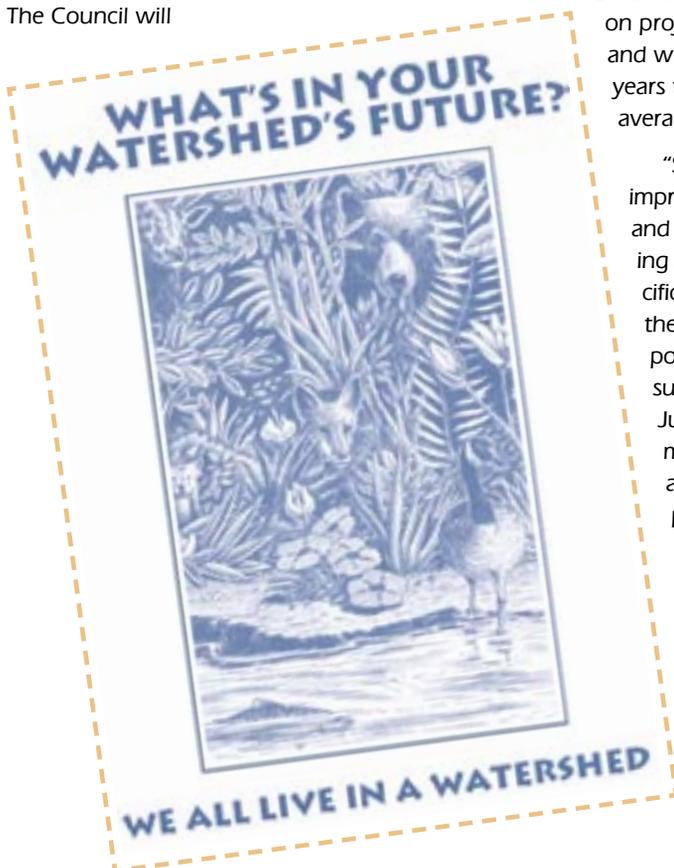
In Idaho, subbasin planning brought together people and interests literally throughout the state, as nearly all of the state is within the Columbia River Basin.

"We worked hard to design a collaborative process that not only would bring together all interested parties and governments for the purpose of subbasin planning but also provide a foundation for working together on natural resources issues in the future," Idaho Council member Jim Kempton said.

In Montana, two subbasin plans were developed, one for the Flathead River system and the other for the Kootenai. Both were complex and challenging. The Kootenai was a unique challenge as it begins in British Columbia, flows south into Montana, west into Idaho and north back into British Columbia before joining the Columbia. Plan development, then, involved coordination among local citizens, Indian tribes, fish and wildlife agencies, water management agencies, two states and Canadian officials.

"Montana Fish, Wildlife and Parks and the Confederated Salish and Kootenai Tribes coordinated the planning in the Kootenai and Flathead, respectively, and did a great job," said Montana member Ed Bartlett, chair of the Council's Fish and Wildlife Committee. "The successful completion of the plans is a tribute to all those who contributed to this unique collaboration."

In Oregon, subbasin planning teams were formed at the local level and membership varied. Planning groups included representatives of local landowners, soil and



water conservation districts, local governments, non-government organizations, state agencies, tribal governments, federal agencies and industry representatives.

“The key is local buy-in. Oregon favored an approach of local planning groups producing plans that have local support and local implementation,” said Oregon member and Council Vice-Chair Melinda Eden. “We hope to tap a variety of funding sources to implement these plans in a cost-effective manner — Bonneville ratepayer money, state and federal funds and private sources.”

In Washington, the state’s four regional salmon recovery boards played a major role in developing the plans, as did the Intermountain Province Oversight Committee, which included representatives of local governments and Indian tribes in the northeastern part of the state.

“Washington salmon recovery boards are an important part of the success of sub-basin planning in our state,” said Washington member Tom Karier of Spokane. “The boards were the essential link between a wide range of interest groups and the fish and wildlife experts.”

“Subbasin plans represent a new threshold of understanding about fish and wildlife and their habitat. The plans will contribute significantly to recovery planning, and to monitoring the results of the actions that implement our own recovery plans.”

Bob Lohn, Northwest Regional Administrator, NOAA Fisheries

Subbasin planning is unique for the size of the effort and its collaborative nature. For the first time in the Columbia River Basin,

which includes parts of seven states and British Columbia, government agencies and citizens with expertise in the local environment and economy collaborated to develop plans for all fish and wildlife, including threatened and endangered species. It was important to the Council that subbasin plans be developed from the local level and not be created solely by government. The public response to the Council’s approach was supportive. Local, state, federal and tribal governments collaborated in developing the plans, as did watershed councils, consumer and industry groups and others with interests in fish, wildlife and water. Literally hundreds of people were involved in the planning efforts throughout the Columbia River Basin.

Each subbasin plan includes an assessment of environmental conditions, an inventory of existing fish and wildlife populations, and a management plan for addressing problems and improving survival of species. The plans are designed to integrate state, federal and tribal goals for fish and wildlife recovery, including the Endangered Species Act. 

Council Decisions

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Fish and Wildlife Program Budget

July 2004

The Council recommended a start-of-year budget of \$145 million to the Bonneville Power Administration, which funds the fish and wildlife program. The Fiscal Year 2005 budget year begins on October 1. The recommended budget is \$5 million below the \$150 million annual funding level committed by Bonneville Administrator Steve Wright in December 2000 but above the \$139 million recommended by Bonneville’s fish and wildlife staff.

Hatcheries Issue Paper

July 2004

The Council released for public review and comment an issue paper that includes the Council’s recommendations for the future role of fish hatcheries in the Columbia River Basin (see story in this edition of the Quarterly). The recommendations are based on the findings of the Artificial Production Review and Evaluation report, which is an examination of 227 salmonid hatchery programs in the United States portion of the Columbia River Basin.

The recommendations respond to direction from Congress in 1997 that the Council, in conjunction with the Independent Scientific Advisory Board, conduct a thorough review of all hatcheries in the basin, determine their goals and purpose, and recommend future operations. The paper, with comment instructions, is posted on the Council’s website, www.nwcouncil.org.

Bonneville's Proposal on Its Future Role

In July, the Bonneville Power Administration released its draft policy on what role it will play as the region's power supplier beginning in 2007. The overarching goal of the policy is to preserve the value of the Federal Columbia River Power System by limiting its sales of low-cost power to the amount produced by the existing system. The draft is similar to a set of recommendations the Council formulated and sent to the Bonneville Administrator in May (see Council Quarterly, Spring 2004).

Bonneville is the Northwest's largest supplier and transmitter of electricity. It provides about 45 percent of the region's total electricity supply, selling wholesale power and providing rate benefits to all utilities.

"A key objective is to get early clarity about BPA's load obligation, and those of the region's utilities, to serve the region's power needs in 2007," said Steve Wright, Bonneville's administrator. "It can take substantial time to line up the cost-effective power supply and acquire additional infrastructure. We want to avoid repeating the situation in 2001 when BPA had to cover a large regional deficit in a matter of months resulting in higher rates for everyone."

Bonneville expects to have enough energy from the federal power system to meet projected demand until 2011 when current subscription contracts expire. The agency has set a goal of reducing rates from current levels in this period. A schedule for developing new contracts extending past 2011 is also included in the proposal.

Bonneville's proposal is primarily concerned with resolving the short-term issues likely to influence rates beginning in 2007, although it does propose a new long-term policy that would limit the agency to sell its firm power to Northwest customers at the cost of the existing Bonneville system. Customers requiring power beyond what the existing system can supply would need to purchase their power on the market themselves or request it from Bonneville at a rate reflecting the purchasing cost. Bonneville will not implement tiered rates in its FY 2007 initial rate proposal, but proposes to explore this rate structure, and long-term contracts, as a way to limit its sales at embedded cost for Pacific Northwest firm requirements loads. These long-term policy proposals agree with the Council's recommendations to Bonneville on the agency's future role as a power supplier to the region.

Regarding service to direct service industries, mostly aluminum companies, the agency proposes providing up to 500 average megawatts worth of service benefits to those companies that are credit-worthy and have met their contract obligations. Bonneville proposes providing these benefits only if such actions actually enable aluminum production and maintain Pacific Northwest jobs. This level of support is lower than historical levels, and is at a limited cost to other ratepayers.

For the residential and small-farm consumers of the region's investor-owned utilities, Bonneville will provide financial benefits rather than power. The agency also renewed its commitment to work with utilities at the local level to achieve cost-effective conservation using the targets in the Council's power plan, as well as to focus on helping other utilities acquire new renewable resources.

The deadline for comments on Bonneville's proposal is September 22, 2004. Six public meetings have been scheduled throughout the region. Details on the meeting schedule and public comment are posted at www.bpa.gov. 

New Energy Efficiency Standards Sought for Refrigerators

In a June letter to Secretary of Energy Spencer Abraham, the Northwest Power and Conservation Council joined a group of energy organizations and utilities requesting the U.S. Department of

Energy to conduct a rulemaking to boost the existing minimum efficiency standards for residential refrigerators, refrigerator-freezers and freezers.

The petitioners — including energy efficiency organizations, environmental organizations, consumer organizations, states, and electric utilities — asked that the DOE begin the rulemaking in 2005.

Since the first standards were set in 1990 under the National Appliance Energy Conservation Act, the DOE has amended them twice: in 1993 they were strengthened by 25 percent; and in 2001 the standard increased an additional 30 percent. Today, nearly 700 products are produced and sold that exceed the 2001 standard by 15 percent, and a half dozen products exceed the standard by 30 percent.

Stating their strong interest in establishing strong, cost-effective appliance standards, the petitioners note that "appliance energy efficiency standards are the single most effective tool for reducing energy usage while still providing consumers with reliable and affordable energy services."

The ability of many existing products to meet higher standards, along with DOE analysis showing that a new refrigerator standard will result in significant energy savings, and that such a standard is both technically feasible and cost-effective, are compelling reasons for initiating a rulemaking, according to the group. Recent cost data they say, also indicates "that a new refrigerator standard could well be one of the most successful standards, with very large economic benefits and energy savings." 



Council Seeks Comments on Hatchery Reform Proposals

Fish hatcheries in the Columbia River Basin need to have clearly defined goals and should be managed carefully to reduce risks to the survival of weak naturally spawning runs, the Northwest Power and Conservation Council recommends.

Nearing the end of a process that was initiated by Congress in 1997, the Council in July released for public review and comment its recommendations for policies to guide fish hatcheries in the future. The recommendations seek to integrate hatchery production with natural production of fish to ensure that hatchery production is consistent with the ability of streams to support fish, and also to increase the geographic range and genetic diversity of fish production.

"It was a challenge to identify and analyze all of the hatcheries in the basin, and it will be a challenge to effect change," Council Chair Judi Danielson said. "One of the most difficult challenges is that most hatchery programs were created decades ago under legal requirements that stressed different priorities than we have today, such as producing fish for commercial and sport harvest. Those are still important goals, but today hatcheries also are being used — and will be used — to conserve weak stocks and assist the recovery of threatened and endangered species. Our recommendations will improve the effectiveness and efficiency of hatcheries."

With the assistance of the Independent Scientific Advisory Board, the Council responded to the Congressional directive by conducting a scientific review of the state of artificial production in the Columbia basin. The Artificial Production Review resulted in a set of recommended guidelines for hatchery practices, ecological interactions and genetics. The Council followed the review with a comprehensive evaluation of all 227 hatcheries and hatchery programs in the basin. This effort, the Artificial Production Review and Evaluation, concluded that 1) hatcheries are limited in what they can accomplish; 2) the purposes for hatchery programs have changed and will continue to change; 3) hatcheries will continue to play a part in recovery and management of fish in the Columbia River and elsewhere; and 4) hatcheries require reform to align their policies and practices with current social priorities and scientific knowledge, to determine

"Our recommendations will improve the effectiveness and efficiency of hatcheries."

Judi Danielson
Council Chair

hatchery performance and to operate in a businesslike fashion.

Based on these conclusions, the Council developed three broad, draft recommendations for public comment. These are presented in an issue paper now posted on the Council's website, www.nwcouncil.org. The draft recommendations are:

1. The Council, NOAA Fisheries, and the Bonneville Power Administration should facilitate a regional discussion that clearly identifies basinwide goals and priorities for salmon and steelhead. The Council's subbasin planning is an appropriate process to design and implement long-term

goals and priorities, and strategies to achieve them. This will reduce disparities among production policies of existing hatcheries.

2. Agencies that oversee hatcheries should adopt prioritized criteria to immediately reduce hatchery risk to weak naturally spawning stocks through techniques such as 1) improving broodstock management; 2) integrating naturally spawning fish into hatchery broodstocks or reducing excessive straying of hatchery-bred fish; 3) improving fish passage; 4) preventing disease; and 5) improving water quality. Each hatchery should have a plan for future activities based on its genetics management plan and recommendations for fish production developed in the subbasin planning process.
3. Each hatchery should be reviewed periodically to direct changes and assess progress toward goals.

After the public comment period, the Council will finalize its recommendations and submit them to Congress. 

September Symposium in Portland Will Address Innovative Energy Efficiency and Transmission

A September symposium in Portland will bring together experts and practitioners from around the Northwest and the nation to explore innovative ways energy efficiency and transmission adequacy can help maintain a reliable electric system and environmental quality.

The symposium, entitled "Energizing the Northwest, Today and Tomorrow," is scheduled Sept. 28-29 at the DoubleTree Jantzen Beach hotel and will be hosted by the Bonneville Power Administration.

Transmission topics include system adequacy, progress in non-wires solutions planning and implementation, idea-sharing for regional collaboration, and technological innovations. Energy

efficiency topics include current and future regional acquisition and infrastructure programs, the EnergyWeb and GridWise™ programs, technologies, education, implementation, and policies.

Registration was \$125 before July 30 and is \$150 after that date. For more information contact Jennifer Eskil, (509) 527-6232, or jleskil@bpa.gov. Information also is posted on the Bonneville website, www.bpa.gov.

Success Stories — Therriault Creek

Creek restoration will help bull trout, cutthroat in Montana

In Northwestern Montana, a small stream on a tributary of Lake Kootcanusa is being rebuilt to improve spawning and rearing habitat for cutthroat and rainbow trout and bull trout

Therriault Creek, a tributary of the Tobacco River, is about six miles south of Eureka, Montana. Over time, the creek had been extensively modified through land cover disturbance, clearing of streamside vegetation and straightening. The result was a deeply incised creek bed that caused significant bank erosion and produced large quantities of silt.

The Kootenai River Network, in conjunction with Montana Fish, Wildlife & Parks, is working to rebuild 9,100 feet of the creek — an entirely new stream channel — in order to create a proper width and depth. This doubles the length of the creek in the area where the work is being done by creating more turns — meanders — to slow the flow and reduce bank-cutting and erosion and increase the quantity and quality of fish habitat. In addition, 55 acres of wetlands



are being restored. Trees and rocks have been strategically placed to help reduce erosion and slow the flow and increase pool habitat for fish.

Most of the project's cost is being paid by the Bonneville Power Administration as

partial mitigation for the impacts of Libby Dam. The majority of the work was completed last spring, including rebuilding the stream bed and planting about 10,000 native shrubs.

Notes from the Chair

(continued from front page)

The Council will review the plans this fall and make its final approval decisions at the end of the year. Opportunities for public comment, as well as scientific review, are part of this process. Approved subbasin plans will be adopted in early 2005 into the Council's fish and wildlife program and will then guide our decisions about what projects to recommend for funding.

A journey that began with the Council's 2000 fish and wildlife program, in which the Council proposed a new policy framework and process for selecting projects will reach another important milestone with the amending of subbasin plans into the program.

There are critical challenges ahead. We must keep people engaged in this work, for future success is determined by this. Subbasin planning benefited enormously from the variety of new people who became involved in their community's watershed issues. Sustaining and developing that support is vital to reaching our goals. There are also important, and difficult, decisions to be made on prioritizing projects and allocating the budget, both within subbasins and throughout the basin.

In the end, the real test of these plans, crafted through painstaking effort by so many people, lies in how well we use them to achieve our vision of an abundant, produc-

tive, and diverse community of fish and wildlife. This is the outcome the Council intends.

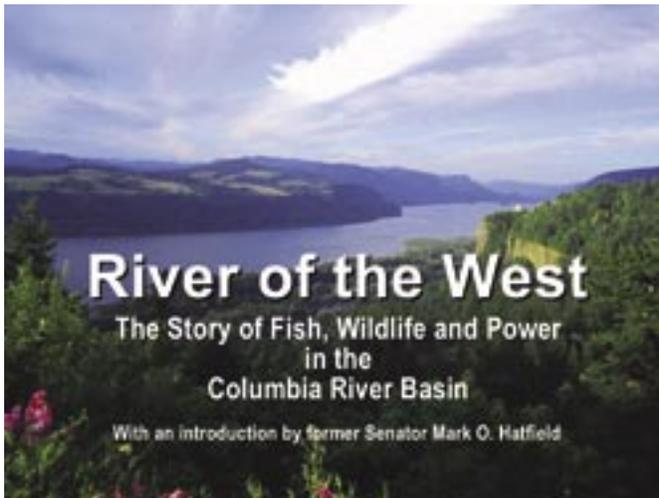
We've taken the first steps toward that goal and should continue the synergy. 

Calendar

Calendar of Council Meetings and Other Events:

- August 31: Bonneville Power Administration Regional Dialogue Public Process meeting on the future role of the agency in power supply. Boise. Boise Center on the Grove, 850 W. Front Street, 5:30 p.m. - 8 p.m. Information at www.bpa.gov/power/regionaldialogue.
- September 7-9: Northwest Power and Conservation Council meeting, Seattle. Red Lion Fifth Avenue. Information at www.nwcouncil.org.
- September 9: Bonneville Power Administration Regional Dialogue Public Process meeting on the future role of the agency in power supply. Portland. East Portland Community Center, 740 S.E. 106th Avenue, 5:30 p.m. - 8 p.m. Information at www.bpa.gov/power/regionaldialogue.
- September 12-15: Coastal and Estuarine Habitat Restoration Conference. Seattle. Information at www.estuaries.org.
- September 15: Bonneville Power Administration Regional Dialogue Public Process meeting on the future role of the agency in power supply. Kalispell, Montana. West Coast Kalispell Center Hotel, 20 North Main Street, 4:30 p.m. - 7 p.m. Information at www.bpa.gov/power/regionaldialogue.
- September 28-29: Energizing the Northwest Today and Tomorrow symposium. Portland, DoubleTree Hotel, Jantzen Beach. Information at www.bpa.gov.

New Council Video Now Available!



The Columbia River has been the foundation of human communities in the Northwest for thousands of years. It continues to sustain a rich variety of fish and wildlife, and supplies most of the region's electricity from dams built along the river and its tributaries.

River of the West tells the story of the Columbia River Basin, from its early settlement in the 19th century and growing salmon fishery to the development of the Northwest's hydrosystem. The video provides an introduction to the history of the basin, the natural resource issues we struggle with, and the role of the Northwest Power and Conservation Council to reach a sustainable balance between the needs of fish and wildlife and the production of electricity.

Available in VHS or DVD.
Please telephone 503.222.5161
or 800.452.5161 to request a copy.
See a preview at www.nwcouncil.org/video

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