

# SURVIVAL STRATEGY

## CHOOSING SALMON AND LOSING DAMS ON THE SNAKE RIVER

by Diane Valantine

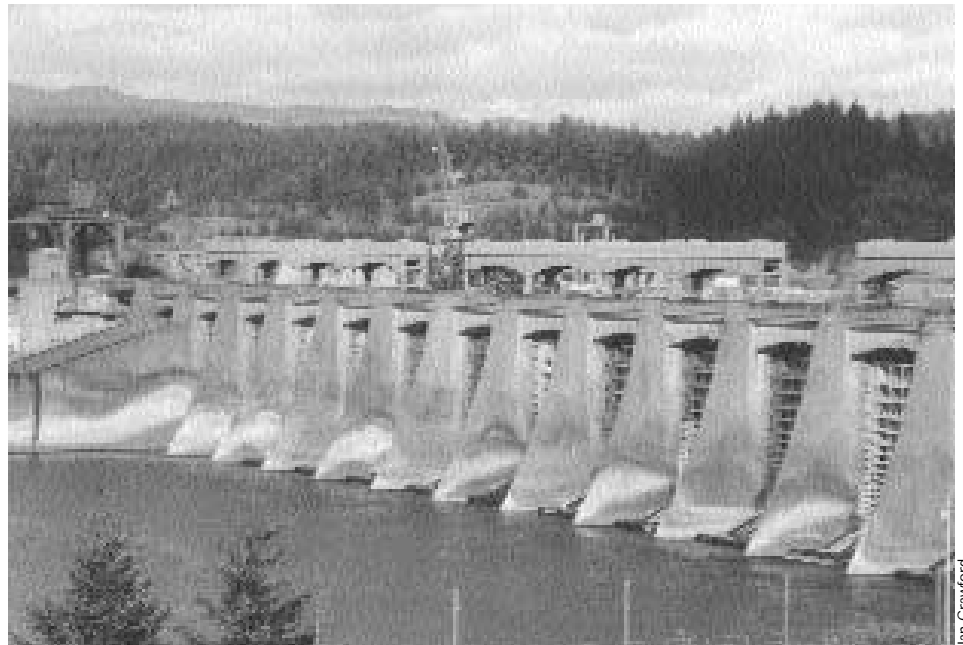
The first European explorers and settlers in the Pacific Northwest reported seeing rivers so thick with salmon that it seemed possible

to walk across on their backs, and creeks which were unapproachable because of the volume of spawned-out salmon carcasses. Ten to sixteen million wild salmon and steelhead once entered the mouth of the Columbia River each year to spawn, spreading out through an enormous watershed that includes parts of seven states and British Columbia and covers 260,000 square miles. Nearly half of those fish were headed for streams connected to the Columbia's main tributary, the Snake River.

At present, fewer than one million fish return to spawn each year, and most of them started out in hatcheries. Every species of salmon and steelhead in the Snake River is either extinct or on the Endangered Species list. Tribes in the area, whose culture and spiritual beliefs are connected to the river and the salmon, still hold traditional first salmon ceremonies, often with the irony that barely enough fish are caught to serve the ceremonial meal.

### Dams Threaten Young Fish

Eight large federal dams, four on the lower Columbia and four on the lower Snake, create a hazardous migration route for Snake River salmon. When thinking about the obstacles dams present to salmon, most people picture strong and stubborn fish throwing themselves repeatedly against concrete walls in a vain attempt to return to their spawning grounds. However, fish ladders on the Columbia and Snake River dams allow most adult salmon to travel upstream. The majority of losses occur when juvenile salmon, raised in the rivers and tributaries, make their initial journey to the Pacific Ocean.



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Federal dams such as Bonneville have reduced salmon returns from over 10 million before their construction to less than one million today.

Before dams were built, young salmon were washed to sea with the high waters of the spring snowmelt. The trip from Idaho to Astoria took a few weeks and the fish didn't so much swim as just ride along with the current. Today, it can take them up to two months to cover the same distance. The dams have turned rivers that once ran fast and cold into a string of warm, slackwater impoundments with flow rates as slow as eight miles per hour.

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Young fish use up valuable energy searching for a current and swimming in that direction. The rise in water temperature causes problems for these cold water fish. In the reservoirs above the

dams, the overheated and exhausted salmon succumb more easily to disease, while warm water species such as the northern pike minnow (formerly known as squawfish) thrive and gobble up juvenile salmon in large numbers.

Getting through the reservoirs is only part of the problem; the fish also have to get past the dams themselves. When most of the water is going through the turbines to produce power, the young salmon take that route as well, where they sustain a 5 to 15 percent mortality rate per dam. The turbines do not slice and dice salmon, as often imagined, but do create extreme pressure changes, which can stun fish or kill them. Stunned salmon below a dam make great pickings for gulls and other predators.

### The Killer Ocean and Other Unlikely Suspects

How much of the drop in Snake River salmon population is actually caused by dams? Defenders of dams often place the blame elsewhere. Pointing out that troubled coastal salmon stocks, such as Oregon's coastal coho, have managed to end up on the Endangered Species List

How can we say that dams are the problem? The answer is that every individual stock of salmon faces its own particular mix of problems. For some stocks, the drying up of streams is the largest threat. For others, livestock grazing causes the most damage. The coastal coho are primarily affected by past and current logging practices. For Snake River salmon, however, the dams account for the largest share of mortality. According to the Oregon and Idaho state fish and wildlife agencies, down-river migration through the hydrosystem accounts for 80 percent of human-caused mortality for Snake River salmon. Sport, commercial and tribal fishing, losses at the fish ladders, the negative impacts of hatchery production, logging, grazing, mining, pollution, and all the rest add up to less than 20 percent.

Of course, there are some natural threats, as well. Dam supporters like to talk about the killer ocean. Periodic changes in weather and ocean currents have always caused salmon populations to fluctuate rather wildly from year to year. Predators such as birds, seals and sea lions do eat some salmon and always have (though in some cases, predation patterns have been changed by human factors). The important thing to remember is that salmon populations can survive natural ups and downs as long as we are not causing additional environmental stress.

### Lower Snake River Dams: A Hundred-Year Lobbying Effort

The four dams on the lower Snake River were constructed relatively recently, between 1961 and 1975, mainly to facilitate barge transportation to Lewiston, Idaho. Thanks to these dams, Lewiston is now a seaport 465 miles from the ocean. In the late 1860s, steamboats began navigating the lower Snake River to supply the goldfields of Idaho's Clearwater River. The lower Snake was a wild river, with some 30 named rapids, which could only be run at certain times of the year and at considerable peril. The gold played out, but the farmers who had followed the miners inland soon discovered a different kind of gold. The steep hillsides near the Snake River turned out to be very fertile, and were soon yielding some of the nation's most abundant grain harvests. This increased the pressure for a safer, more reliable way to transport large quantities of wheat downstream to market, and marked the beginning of a sustained lobbying effort by inland wheat-growing

interests to dam the lower Snake. This effort continued even in the face of opposition by the US Army Corps of Engineers. In the 1930s, while it was recommending hundreds of dams across the country, the Corps of Engineers did not find dam construction on the lower Snake to be economically justified.

In 1934, Herbert West started the Inland Empire Waterways Association. It soon replaced all the other lobbying groups for an open river to Lewiston. West worked all the angles, doing grassroots organizing among farmers and get-

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ting himself appointed to all kinds of government committees. His organization was ruthlessly pragmatic and ultimately successful. Still, had it not been for World War II, the lower Snake dams might never have been built. The aluminum smelters that had cropped up on the Columbia to take advantage of the cheap electricity produced by Bonneville Dam played an important role in the war effort and added national defense to the list of reasons for dam building. Suddenly, it seemed that the Northwest not only could use all its hydropower, but needed more. Fisheries agencies and some fishing organizations put up a fight, but, in the end, all four lower Snake River dams were built: Ice Harbor in 1961, Lower Monumental in 1969, Little Goose in 1970, and Lower Granite in 1975.

### The Lower Snake Dams: Good Candidates for Removal

Snake River salmon have to negotiate a gauntlet of eight large federal dams, each of which adds to the cumulative mortality. Why focus on the lower Snake dams? For one thing, Bonneville dam and the others on the lower Columbia are big producers of electricity, while the dams on the lower Snake only provide between two and five percent of the region's power, depending on the season. Also, historical records show that before the lower Snake dams were built, most Snake River salmon were able to survive the four dams on the lower

Columbia. Currently, the healthiest salmon in the basin are the Upriver Brights that spawn in the Hanford Reach, the last free-flowing stretch of the Columbia River, near the Hanford Nuclear Reservation in Washington state. These chinook have a life history similar to Snake River chinook. They face the same predators and the same ocean, but they only have to pass one set of dams.

### Attempts to Move Fish Around Dams Have Not Worked

We have understood for a long time that downstream migration through the hydro-system is a problem for juvenile salmon. What has been done so far to try to correct it? Over the past 20 years, the main method has been barging. The young fish are collected above the dams, loaded into barges and trucks, then shipped downstream through the system of dams and locks as part of Operation Fish Run. In addition, some attempts have been made to tinker with the dams themselves: letting water over the spillways at certain times to provide a safer passage route, installing screens and other devices to deflect salmon from the turbines, and releasing extra water from upstream storage reservoirs to speed river flows.

All these methods have one thing in common. Rather than substantially changing the hydrosystem to make the river safe for salmon, we have tried to help the salmon adapt to our industrial riverway. Unfortunately, it is not that

### Salmon Status

Snake River coho went extinct in the mid-1980s, despite the formation of the Northwest Power Planning Council in 1980. In 1991, Snake River sockeye were listed as endangered. Today, returning sockeye can be counted on two hands and are subject to a captive breeding program in a desperate attempt to prevent their extinction. Snake River spring/summer and fall chinook followed suit, listed as "threatened" in 1992 and downgraded to "endangered" in 1994. Most recently, Snake River steelhead joined the "threatened" list in 1997. A recent report by Dr. Phil Mundy, a widely respected expert on Columbia Basin salmon, predicts that if the status quo continues, Snake River spring/summer chinook are likely to go ex-

easy. Barged fish and fish left to migrate through the dams both return to spawn at rates of less than one percent. This is especially sobering when you consider that a two percent return is needed simply to prevent extinction, and three to six percent is necessary to achieve recovery. Many experts have concluded that the only way to save salmon is to return the rivers to a more natural state.

### Scientists & Salmon Strategy

The Clinton Administration issued an interim plan for protecting endangered Snake River salmon in 1995. In response to legal action by salmon advocates, the administration promised to choose a final plan by December 1999 and convened a team of scientists to resolve the uncertainties. The team, known as PATH (Plan for Analyzing and Testing Hypotheses), is made up of some 25 scientists from state, federal and tribal wildlife agencies and universities. PATH was asked to assess the main causes of Columbia Basin salmon decline and to forecast which measures are most likely to help salmon recover. It has concluded that spring chinook have an 80 percent chance of recovery in a 24-year period with dam removal or breaching and only a 38 percent chance with barging. The numbers for fall chi-

Salmon must navigate courses like these.



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nook are even more dramatic: 99 percent likelihood of recovery with dam removal/breaching compared to 27 percent with barging. Because fall chinook spawn in the main river channel rather than in tributaries, restoring a free-flowing lower Snake River would increase their available spawning habitat by 70-80 percent.

Last year more than 200 scientists signed a letter to President Clinton warning that extinctions are likely if the lower Snake Dams are not removed. They made it clear that society has to make a choice between the lower Snake dams and the Snake River salmon it is highly unlikely that we can have both.

In April 1999, the National Marine Fisheries Service released a report containing data which strongly suggests that removing the Snake River dams is the most effective strategy for salmon recovery across the broadest range of conditions, and that only dam removal is likely to save Snake River salmon. The Fisheries Service, which is heavily invested in the barging program, has downplayed this conclusion, focusing instead on uncertainties about delayed mortality for spring and summer chinook. However, these uncertainties do not call into question the main body of evidence, which points to dam removal as a necessary step toward preventing the extinction of Snake River fish. As Governor Kitzhaber has said, It's a scientific no-brainer.

### If the river runs free, will the regional economy stay afloat?

Many people assume that dam removal would cause tremendous economic harm and disruption. This is partly because supporters of the Snake River dams, such as wheat growers and aluminum producers, have the money and political influence to promote their position. In addition, the economic benefits of the dams are obvious, especially to those who receive those benefits directly, while the economic costs of having the dams in place are largely hidden. For instance, most people are not aware that their tax dollars and utility bills are subsidizing certain industries via the dams, or that a huge amount of taxpayer and ratepayer money has already been spent in failed attempts to protect salmon

### Partial removal: cheaper and just as effective

What is partial removal, also called "bypass" or "breaching"? The dams on the lower Snake River are made up of four sections: 1) the powerhouse, with the turbines that produce electricity; 2) the spillway, built to provide an "overflow" capability for the turbines; 3) the navigation lock, which raises and lowers barges and other watercraft traveling up and down the river; and 4) an earthen embankment, which blocks off the river channel and completes the barrier. In partial removal, only the earthen embankment is "breached," once again allowing the river to bypass the dam freely. This eliminates all uses of the dam, but dramatically reduces the costs of removal while still offering all the biological benefits of a free-flowing river. The powerhouse, spillway and lock would simply be mothballed. The US Army Corps of Engineers estimates that all four dams could be bypassed in a single season using simple earth-moving equipment.

while leaving the dams in place.

The economic benefits provided by the four dams include the production of 1,136 average megawatts of power (two to five percent of the region's total). Only one of the lower Snake reservoirs is used for irrigation, and that use is highly subsidized. Corporate farms irrigate about 37,000 acres with water from behind Ice Harbor. Then there is river transportation of grain and other commodities by barge through the system of reservoirs and locks, the cheapest way to get these goods to market. Flood control is not a benefit of these dams, since they are run-of-the-river dams that are always kept full, with no room for additional floodwaters.

The costs of replacing the power, upgrading the rail system and buying out corporate farms are manageable, especially when weighed against the economic benefits of dam removal. Replacement power is expected to cost Bonneville Power Administration about \$271 million per year, causing rates to rise, only slightly. BPA estimates that removing the Snake River dams would add one to five dollars per month to the average residential electric bill. Because the Northwest currently enjoys rates that are 40 percent lower than the national

average, it is possible to do what is needed to save salmon and still have the lowest rates in the country. Better yet, the region could save enough energy through conservation measures such as weatherizing homes and using energy-efficient appliances to make up for the loss of hydroelectricity from the Snake River dams without relying on replacement power at all.

A \$30 million federal tax subsidy for barge transportation has helped drive railroads out of the region. The latest analysis shows that if the rail system were revived, actual costs to farmers would average only one cent more per bushel after dam removal. The cost to upgrade rail facilities and make the highway improvements necessary to efficiently handle this traffic amounts to \$25 to \$35 million per year, which could largely be paid for by redirecting existing funding for subsidies, without the need to raise rates. The removal work itself would cost about \$900 million.

Removing the dams would mean saving the \$34 million per year that it costs to operate and maintain them, as well as \$420 million for major service (turbine rewind) that is soon due. Restoring the lower Snake River would eliminate the need of funding for expensive salmon recovery programs such as the barging of young salmon. In addition, it is worth noting that the United States has treaties with native tribes as well with Canada, and could face very costly finan-

cial reparations if salmon go extinct. Estimates are in the billions to tens of billions of dollars.

Dam removal also would provide substantial economic benefits to fishing industries, reversing the steep declines those industries have suffered as a result of the dams. The benefit to the commercial fishing industry is expected to be around \$150 million per year if salmon runs are doubled from mid-80s levels. A free-flowing river would significantly increase spending on recreational activities. Total new recreation benefits are estimated to be in the range of \$30-\$300 million per year. This includes both sport-fishing and non-angler river recreation, such as whitewater rafting.

There is no reason to believe that dam removal would be economically devastating for the region. In the first few years, thousands of construction jobs would be created, far outweighing losses in the farming and barging sector. In the long run the recreation and fishing industries which would emerge, along with new trucking and railroad business, would create plenty of new economic activity. It is feasible to develop an economy in the absence of dams that would be every bit as vibrant as our current one, but would not drive salmon to extinction.

### What is happening now?

The Clinton Administration was supposed to decide by the end of 1999 whether or not to recommend that the lower Snake River dams be removed, but the decision was postponed until the fall of this year.

Multiple federal and state agencies are involved in the decision process, and are preparing documents and weighing alternatives. The Corps of Engineers recently released an Environmental Impact Statement which evaluates three choices: dam removal, status quo, and tinkering with the status quo. The Northwest Power Planning Council, made up of representatives from Oregon, Washington, Idaho and Montana, is looking at seven different alternatives as part of its Multi-Species Framework Process. The latest report by the National Marine Fisheries Service considers 4 Hs: hydropower, habitat, harvest and hatcheries.

It is not clear how well all of these groups will work together. The federal agencies seem inclined to continue conducting studies indefinitely, in order to delay taking a stand. Salmon advocates have been pushing for better coordination and communication among the various agencies and interested parties, to



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increase the chances of arriving at a thoughtful decision based on facts and not susceptible to political pressure or fear of change.

Diane Valentine began her salmon advocacy with the Oregon Natural Resources Council in 1994 and joined the staff of the Save Our Wild Salmon Coalition a year ago to work on the campaign to remove the lower Snake River dams.

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#### Sources

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## Hydroelectric Politics

People in the Northwest increase the risk of losing an affordable energy source if a successful salmon recovery plan is not found. Northwesterners pay 40 percent less for electricity than the rest of the country because we have sole access to hydroelectric power marketed and distributed by the Bonneville Power Administration (BPA), a federal agency which is also charged with the protection of fish and wildlife. Members of Congress from other parts of the country have long sought access to BPA electricity for their own constituents and have made repeated attempts to privatize the agency. Unless BPA is able to fulfill its environmental responsibilities, it loses much of its justification for existence. If the endangered salmon can be saved, the region will have a much better chance of retaining access to low-cost hydropower.