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## A Great Loneliness of Spirit

By Charles F. Wilkinson

And what is there to life if a man cannot hear the lovely cry of a whippoorwill or the arguments of the frogs around a pond at night? ... For all things share the same breath—the beasts, the trees, the man.... The white man must treat the beasts of this land as his brothers.... What is man without the beasts? If all the beasts were gone, man would die from great loneliness of spirit, for whatever happens to the beast also happens to man. All things are connected. Whatever befalls the earth befalls the sons of the earth.

*Chief Seattle, 1855*

On August 13, 1805, after several weeks of near starvation while seeking a route over the Continental Divide, Captain Meriwether Lewis was the guest of a small band of Shoshoni Indians on the Lemhi River in what is now Idaho. He had been seeking evidence that his expedition had indeed crossed the Great Divide. His supper convinced him: a piece of fresh roasted salmon.

On their journey down the Snake and Columbia rivers, Lewis and Clark everywhere saw evidence of the salmon economy on which the livelihood of Northwest Indian tribes was based. Reaching the Columbia River on October 17, Clark recorded that the water was "crouded with salmon." He added, "The number of dead Salmon on the shores & floating in the river is incredible to say." Chinook salmon were then at the height of their fall run, and the astounded explorers were witnessing a natural spectacle that drew much comment in the journals and memoirs of early explorers and settlers of the Pacific Northwest.

By any standard of measure, Pacific salmon and their relative, the steelhead trout, are ideal symbols of the bounty of nature: large, extravagantly numerous in their natural state, perpetually self-renewing, and easily caught. Virtually every river on the Pacific coast of North America, from Monterey Bay up to the Bering Sea, once teemed with salmon fighting their way upstream from the ocean to spawn. Late in the nineteenth century, old-timers would gather to swap tales of those Arcadian times when one could walk across a river on the backs of migrating fish. One crusty old liar named Hathaway Jones—a regional Munchausen of Oregon folklore who lived on a remote stretch of the Rogue River—outclassed them all by telling of the steelhead run of 1882, when the fish were so thick in the riverbed that there was no room for the water.

Throughout the nineteenth century and well into the twentieth, the Columbia Basin produced more salmon than any other river system in the world. No one alive today will ever see salmon runs so wondrous as those observed by William Clark or by Hathaway Jones (much less the ones he lied about). Today, the fabled salmon and steelhead runs

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are gone from more than half of their former Columbia Basin habitat and are severely depleted in the rest. Several runs are being considered for listing as threatened or endangered species. No fish anywhere has been so intensively exploited as Columbia Basin salmonids. Both nature and humans make extreme demands on them, and for that reason salmon have aptly been called the world's most harassed fish.

If the Pacific salmon is a symbol of natural bounty, it also stands as a testament to the eagerness with which humans have sacrificed stocks of wild animals on the altar of economic development. The plight of these fish illustrates an unfortunate irony of conservation policy: in former eras, society compounded the conflicts between economic development and resource conservation by providing too little regulation of common-pool resources; today, on the other hand, we overregulate them with a proliferation of uncoordinated laws in which too many government bodies have a hand.

A combination of circumstances makes Columbia Basin salmonids uniquely vulnerable to overexploitation, to habitat degradation, or simply to bad management. First, a strong consumer preference makes the salmon fishery one of the world's most valuable, with a yearly catch of some 400,000 metric tons. Second, all salmonid species are prized sport fish, and the yearly pursuit of a tackle-busting steelhead trout approaches the status of a cult religion in the fervor and dedication of its practitioners. Third, humans have used the fish's compelling migratory instinct to its detriment. Migrating salmonids are not easily deflected from their course; stretch a net or a trap in front of them and they will not seek a way around it. The fish will blunder right into it in their single-minded determination to make their way upstream. So eager are the fish to overleap obstacles in their upriver journey that, with a little skill, a fisher can practically induce them to leap into a bucket. Fourth, migrating salmonids just before spawning tend to congregate in concentrations that lend a degree of credibility to the tales of nineteenth-century yarn spinners. In former times, they could be scooped up almost a dozen at a time, an open invitation to excess. There are people alive today who, as farm boys, simply waded into spawning streams and flipped the big fish up on the banks with pitchforks.

Finally, the extraordinary migratory habits of salmon and steelhead have worked against them. Some species of Columbia Basin salmonids range for thousands of miles during their four- or five-year lifetimes, and all stubbornly persist in crossing with impunity whatever boundaries humans devise. Migratory fish cannot be successfully confined like many other wildlife species (landlocked salmon become dwarfs), and effective protection is for that reason all the more troublesome.

The salmon fishery may be the most difficult of all fisheries to regulate effectively. A complex legal milieu has developed since the 1970s as a result both of the federaliza-

tion of fisheries law and a series of federal court decisions protecting Indian fishing rights. Stir in the staggering effects of habitat degradation caused by dams and logging practices, and you can begin to see why the Columbia Basin is probably the world's most complicated fishery management situation.

On September 14, 1805, not long after their first taste of Pacific salmon, Lewis and Clark camped on the banks of the Lochsa River, a small but visually spectacular river that rises just west of the Continental Divide in the Idaho panhandle.

A nineteenth-century Lochsa River hatchling would have smoothly migrated downstream into the Clearwater, Snake, and Columbia before reaching the ocean. A four-year journey would have carried the juvenile fish thousands of miles northward into the Gulf of Alaska, perhaps as far as the Aleutian Islands, before it turned to begin its homeward journey back to the mouth of the Columbia.

A returning salmon migrating up the Columbia to spawn in the Lochsa in 1805, when Lewis and Clark were rafting down the river, would have encountered a vigorous Indian fishery. The explorers passed more than a hundred stations where they observed Indians fishing and, on October 22, reached Celilo Falls, two hundred miles upstream from the mouth of the Columbia, a place where Indians had been fishing for at least eleven thousand years. At Celilo Falls, Indian fishermen dipped their nets into the churning waters, where fish struggled to leap the height of the cataract with prodigious bursts of energy. The aboriginal fishery of the Columbia Basin was no mere cottage industry: 25-pound fish were routine, some 100-pound chinook were taken, and the annual salmon harvest exceeded 18 million pounds. (In comparison, the total commercial catch of Columbia River salmon during recent years has ranged from 5 to 8 million pounds.) The Columbia River tribes were a mercantile people; bales of dried and pounded salmon jerky were a medium of exchange among inland tribes.

The late-twentieth-century Lochsa River salmon faces obstacles far more lethal than Indians with spears and dip-nets. A fingerling that hatches in this river must travel through a representative sample of the structural obstacles and management jurisdictions that today characterize the Columbia Basin. Poor logging practices have ruined prime watersheds and clogged spawning streams, excessive withdrawals of water have drawn down and warmed streams, overgrazing has devastated riparian zones, and bad land development practices have destroyed habitat. The worst offenders, however, are dams.

As recently as the mid-1950s, a salmon bound for its gravel bar of birth, far up the Lochsa River, had only two dams to cross, both equipped with fish ladders on which the fish could ascend the height of the dams by steps. In 1956, the most difficult upstream obstacle to a Lochsa River salmon was Celilo Falls. At that time, Indians still fished there by traditional methods. But a vital part of the heritage of the Pacific Northwest was about to disappear under sev-

enty-five feet of water, as the gates of the newly constructed The Dalles Dam were closed. On a Sunday afternoon in April 1956, representatives of the fishing tribes gathered for the last time to hold their ceremonies on the bluffs overlooking the falls where years before Lewis and Clark had smoked a pipe of peace with their ancestors. Within the year Celilo Falls, one of the last natural monuments of the river as Lewis and Clark knew it, was gone.

Today the landscape of Washington, Oregon, and Idaho has been thoroughly reworked as a result of hydropower development. Hardly any major stream of the 260,000-square-mile Columbia River watershed has been left unaffected. The unobstructed Columbia that Lewis and Clark drifted down in 1805 with only a single portage at Celilo Falls is today a stairstep series of slackwater reservoirs. Only 50 miles of the 1,214-mile-long river between the first dam and the Canadian border now remain free flowing. A once wild river that drains a land area larger than France and whose annual discharge into the ocean is more than twice that of the Nile has become a back-to-back string of placid computer-regulated lakes.

Fifty years ago, there were no dams on the Columbia. As they had done for thousands of years, migrating salmonids deftly leaped over the few natural obstacles that nature had placed in their way. Today, the main stem of the Columbia River has eleven dams, and its principal tributary, the Snake River, has ten. In the entire Columbia Basin, there are now seventy-nine hydroelectric projects with a capacity of fifteen megawatts or more. The Columbia-Snake has become the most highly developed river system in the world, supplying more than 80 percent of the region's electrical energy.

Hydroelectric projects have permanently blocked fish access to vast regions of spawning habitat or inflicted high mortality on downstream migrating juveniles by obstructing passage. They have flooded spawning beds, altered flow patterns, and warmed water temperatures. Because of them, less than half of the spawning habitat available in the time of Lewis and Clark is now accessible to migratory fish, and much of what remains has been transformed into an environment hostile to fish propagation. Recent salmon harvests in the river have hovered around 10 percent of the historic highs of the 1880s—a decimation in the most literal sense of the term.

A wild fish hatching in the Lochsa River must now accomplish the passage of eight dams, both in the downstream direction as a juvenile and in the upstream direction as an adult seeking its spawning stream. Fish mortality may exceed 10 percent at each dam in the series of eight. In addition, a beleaguered hatchling must compete with hosts of its better-fed, and therefore larger, hatchery-bred cousins. The dams have exacted a far higher toll of Columbia River salmon than has any other cause, but competition from hatchery-bred fish is further reducing the number of wild survivors. If the river has been tamed, so too have the fish.

In the early 1960s, Columbia Basin states and the feder-

al government joined to mount a massive campaign to rebuild salmon runs by increasing the output of artificially reared fish from hatcheries. As a result, today only about 30 percent of the Basin's salmonids are wild fish, and the ratio is rapidly declining. In 1981, the vast network of public and private hatcheries from California to Alaska released more than one billion salmon hatchlings, with ecological effects that are largely unknown.

This sudden expansion of hatchery output, rather than passively supplementing natural stocks, has itself been an important cause of further depletion of the wild salmon runs. Leaving wild stocks to fend for themselves while tending to the needs of hatchery fish only makes wild fish more vulnerable to increased competition. Hatchery fish, moreover, tend to become inbred, displacing natural gene pools that have been responsible for thousands of years of successful adaptation. This increased reliance on hatchery fish worries wildlife biologists, who now see habitat restoration as the preferred method of natural enhancement. With carefully planned stream improvement projects and adequate protection from over fishing, depleted fish runs will rebuild themselves.

One example of natural enhancement would be to restore spillage of water over the dams at critical times of the year when juvenile fish need a steady flow of cold water to get them to the ocean. The "water budget" program developed under the provisions of the Northwest Power Act of 1980 provides a mechanism to do just that. An attempt to deal with a critical problem appreciated only recently—the difficulty of balancing the water flow needs of juvenile fish with competing societal needs of power, irrigation, and flood control—a water budget allocates increased flows to those times of year when downstream migration is highest. This gives fishery agencies partial control over the quantity and timing of river flow over the dams: by agreement, state and tribal officials "spend" their water budget at key times to carry the young fish downstream.

Human-made hazards to the fish remain, and they are not only physical. Fishery managers must untangle legal snarls and complex networks of responsibility that were undreamed of when Celilo Falls disappeared under the reservoir behind The Dalles Dam just over thirty years ago. Today's scientific, legal, and jurisdictional problems are nothing short of labyrinthine.

The wide-ranging migration of a Lochsa River chinook that now travels to the Gulf of Alaska and back will carry it through no fewer than seventeen separate management jurisdictions, each with some degree of independent authority to allocate the harvest of that fish. These include three international treaties that include provisions on the harvest of Pacific salmon of North American origin, the authorities of one foreign nation (Canada), four state fish and wildlife agencies (Idaho, Washington, Oregon, and Alaska), one interstate compact, two regional fishing councils estab-

lished by the 1976 Magnuson Act (which extended United States dominion over its fishery resources out to two hundred miles from shore), two federal agencies, and four Indian tribes. A migrating Lochsa River salmon must today survive not only hooks, nets, predators, and dams, but also a host of bureaucrats, interest groups, lawyers, and federal court judges.

Recent laws, however, give hope that most of the actors can be coordinated. Two deserve special mention: the Northwest Power Act of 1980, which for the first time mandates that the health of the Columbia River salmon fishery be given equal status with power generation, and the Pacific Salmon Treaty between the United States and Canada, ratified in 1985.

The Northwest Power Act of 1980 was a measure of last resort, passed with broad regional support at the time when the runs had dwindled to their all-time low. The expansive fish and wildlife provisions are not only protective—such as requiring construction of bypass sluiceways at dams where feasible—but also remedial, designed among other things to ensure that river flows are adequate in quality and quantity to improve the health of the seasonal fish runs. The water budget is a leading manifestation of the determination to improve in-river habitat. In all, the 1980 act reflects a congressional resolve to redress the historic dominance of power generation over fish and wildlife conservation.

The act has opened up decision making to all affected interest groups. This federal statute created the key implementing agency, the Northwest Power Planning Council, a unique body composed of eight members, two each from Oregon, Washington, Montana, and Idaho. The council has looked to the expertise of wildlife biologists in the state agencies and in the Columbia River Intertribal Fish Commission, the highly respected consortium of four Columbia River tribes (the Nez Percé of Idaho, the Yakima of Washington, and the Warm Springs and Umatilla of Oregon), as well as to sport and commercial fishers. The council process has thus been marked by a degree of cooperation that one rarely sees on matters of such complexity.

Inevitably, of course, the harmony is not complete. Idaho, because of its inland location, gets fish only when they get past ocean and downriver fishers. Idaho has refused to sign off on several proposed agreements on the grounds that other jurisdictions have overharvested the fish and have failed to give adequate protection to the wild salmon and salmon runs, most of which originate in Idaho. Some sport fishing groups side with Idaho on the wild fish issue, believing that council programs overemphasize hatchery stocks, which compete with the native fish.

The biggest barriers to the council's programs, however, are the Bonneville Power Administration and the Army Corps of Engineers, which operate the dams. The BPA and the Corps favor energy production and irrigation over salmon and steelhead. The 1980 act ambiguously provides that the two agencies must consider council fish restoration

plans to the maximum extent feasible but are not absolutely bound by them. The council sets the water budget, but BPA and the Corps must actually release the water. The two old-line agencies will appreciate the wide support for fish restoration and have complied with council plans to date, but there is still plenty of jockeying for position.

The other major development is the United States-Canada Salmon Interception Treaty of 1985. For decades, United States and Canadian fishers caught fish raised in the waters of the other country. Tensions were especially high over the two largest producing rivers, the Columbia and the Fraser, which drains much of the western slope of the Canadian Rockies and is the major river of British Columbia. When a fishery collapsed, as did the Columbia's in the late 1970s, each nation was reluctant to expend the necessary funds for restoration because of fears that the increased runs would be caught by fishers from the other country. The biggest impact was felt by the chinook salmon—such as those from the Lochsa River—which have the greatest range.

The 1985 treaty requires both countries to rebuild chinook stocks to optimum levels by 1998. To make this goal achievable, the treaty puts limits on ocean fishing that would intercept the chinook runs.

Many hurdles remain before substantial restoration of the Pacific salmon runs can be achieved. At a minimum, a protective scheme over the fish's entire migratory range needs to be developed and applied with consistency over the entire network of responsible management bodies. Otherwise, these magnificent wild salmon runs will remain caught in a trap that the law itself has set—the creation of so many autonomous authorities that none by itself has sufficient incentive to conserve, for fear that the fish will be harvested elsewhere. It is the same "tragedy of the commons" that played itself out on the open public domain grazing lands.

Many questions regarding the future of the Columbia salmon runs remain to be asked. Is it possible to restore riparian habitats in the Columbia Basin to the point where wild fish runs regain the abundance of those legendary days when they perpetually renewed themselves without the encumbrances of management plans, seasons, gear restrictions, quotas, and the politics of allocation? Do we possess the will to care for the watershed lands that nurture the rivers? Are we willing to harness diversions that suck water from the streams? Do we have the resolve to curb our appetite for still more dams? Or will the wild salmon go the way of the buffalo, a curiosity protected in special preserves for sightseers, with the commercial market for salmon being met entirely by hatchery-raised fish—the equivalent, perhaps, of domestic cattle in feed lots?

We have come far in our societal commitment to bring the Columbia Basin salmon runs up to their historical levels of abundance. To lose them now by default would be a



Charles F. Wilkinson

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major defeat, not only to those who depend upon them for a livelihood, but also to those now privileged to dine upon the incomparable flesh of upriver wild chinook, to feel their pulse at the end of a line, or simply to marvel at them as they leap over mountain waterfalls in places like the headwaters of the Lochsa River. Without these splendid creatures to lend their grace and beauty to the streams and rivers of the Pacific Northwest, many of us will indeed suffer from the great loneliness of spirit that Chief Seattle foretold.