



Toward a New Salmon Economy

By Seth Zuckerman

For all the troubles they face, salmon still inhabit the soul of the Pacific Northwest. Even though humans play awkward midwives to many salmon — barging them around dams to reach the ocean, or slicing them open to incubate their eggs in plastic cages — the fish leave their imprint on the place where we live. From their birthplaces in tiny creeks, they migrate thousands of miles to feed in the northern Pacific, returning years later to the same streams to mate and die. After they do, they offer themselves up to raven, raccoon, and others; diminished though their numbers may be, they connect ocean denizens and land dwellers in a bond that has been recognized since the days of the first peoples.

Salmon formed the foundation of Northwest coastal existence from the earliest times. Although those underpinnings have been shaken by industrial development and twisted by short-term economics, salmon nonetheless offer a pathway for us to resynchronize our steps with the rhythms of the region. Just as salmon once brought food for bear, human, and fir tree to the furthest reaches of our watersheds, they still tantalize with the dream of a place in which people can harvest what we need and stand back while the rest of the wild fulfills its own destiny.

That dream of living with the salmon and healing the relations between our species has motivated hundreds of initiatives by citizen groups and entrepreneurs throughout the fish's range. It has spawned watershed councils, fish-rearing projects, and bronze sculptures, and led otherwise sedentary individuals to spend Saturdays pulling brush and planting trees. It has moved some fishermen to handle their fish like gifts instead of cargo, and fish-buyers to value the difference between a factory fish and a wild fish. These broad-based efforts offer the most hope that humans can again show respect for the salmon in the fabric of our way of life, and work out mutually beneficial terms for sharing the North Pacific basin with them. By doing so, we can begin to develop the principles for cooperation with one another and the rest of creation that will allow not only salmon but salamanders and spruce trees to make their way in the world on a fair footing with *Homo sapiens*.

Inhabitants' commitment

I first became aware of this promising approach to salmon in 1984, when I visited the remote Mattole valley in northwestern California. The chinook and coho salmon runs in this 300-square-mile watershed were in steep decline, and state agencies had not made the Mattole a priority because it is a small river, sparsely inhabited and far from population centers.

Nonetheless, a small band of local residents determined to do what they could in hopes of bringing back the fish. The first problem they identified was the lack of clean spawning gravel: salmon lay their eggs in streambed nests (called “redds”), where they are kept alive by oxygen in the water that flows through the spaces between the stones. But in the Mattole (as in many other watersheds), mud eroding into the streams because of clearcut logging and careless roadbuilding was smothering the eggs before they could hatch. Resident salmon-keepers launched a small hatchery project to boost the eggs' chances of survival by incubating them in troughs supplied with clean water. They set hand-built traps in the river and tended them through winter storms, hoping to catch fertile adult salmon before the river rose too high for them to continue fishing. Unlike an industrial hatchery, they took only wild fish, and just a fraction of those. They didn't rebreed the offspring of their project if they caught them as adults, because they sought to provide an insurance policy against extinction, not to create a population forever dependent on human intervention.

I was captivated by the élan these inhabitants brought to their work and by their vision of renewed plenty in which salmon nourish the bellies of the people as well as the spirit of the land. They weren't waiting for anyone to solve the problem for them, they were doing what they could to address it head-on. I visited as often as I could, making the six-hour drive from San Francisco over tortuous roads to a place where, I felt, the people and their enterprises were in the right proportion to the terrain.

For the Mattole's fish runs to become self-sustaining again, the spawning habitat would have to improve. That meant preventing new insults from being inflicted on the landscape, and helping the older ones to heal. So the Mattolians' work branched out to include mapping the old-growth forest that still sheltered the best spawning grounds and seeking to protect it; finding out where erosion was coming from and working to stanch it; locating barren old clearcuts and reforesting them. It was four years after my first visit that I moved to the Mattole and became a participant in this work, shouldering a planting hoe and hoisting bags full of Douglas-fir seedlings onto my hips to establish trees where none had grown back in twenty years.

Since then I have planted fir, redwood, and willow trees, taken part in early winter counts of spawning salmon, and surveyed the young fish migrating to the ocean in late spring. I have sat in council with fifty of my neighbors — ranchers and restorationists, fishing outfitters and foresters — as we determined that the coho and chinook runs in

our river had dropped so low that we oughtn't be fishing for the time being. Concern for the fish brought us all together as nothing before or since. We unanimously asked the state Fish and Game Commission to close our river to anglers during salmon season, a request which the surprised commission granted. And I have watched in frustration when we landowners couldn't agree on measures to keep the watershed's recovery on track.

For each of our missed opportunities, I am inspired by groups elsewhere along the coast that have notched successes where we have failed. On the southern Oregon coast, lawyer-turned-organizer Anne Donnelly leads the Coos Watershed Association with great subtlety, working with large industrial landowners, public foresters and ranchers who between them control almost all of the basin's 600 square miles. She concluded early on that little was to be gained by forcing people to protect the streams and fish runs if they didn't want to. "A lot of [the practices that harm the fish are] a matter of local custom," she says. "We're trying to effect cultural change, and you don't do that with a stick." Instead, Donnelly has organized field trips so landowners can hear from outside experts what makes a culvert impassable to fish, for example, and find out what can be done about it. She also brought in crews to help timber companies spot places where their roads were bleeding sediment into the creeks during winter storms. A few years into the effort, she is starting to see the effects, both through projects to improve habitat with private and public funds, and through changes in how companies like Weyerhaeuser maintain their roads. "The most cost-effective way to do things is to create a social climate in which people do it themselves," says Donnelly. "I'm trying to get these guys to want to do the right thing."

Peppered up and down the coast are groups like the Mattole's and the Coos's that have arisen to aid the region's faltering fish populations, coalitions rather different than those formed around endangered creatures that people don't typically catch and eat, such as the marbled murrelet, the northern spotted owl, or the Olympic salamander. From Porcher Island off Prince Rupert, B.C., to Port Townsend, Wash., and Freshwater, Calif., residents are raising fish in streamside hatchboxes. They are cabling logs into creekbeds to provide shelter to fish, buying irrigation rights to put water back into streams in dry summer months, and fencing livestock away from streambanks which then revegetate and offer shade and protection to juvenile fish. Each river — each pool and riffle — is unique, and teaches us that there is no one way to save salmon. This work challenges us to discover the particulars of our home-place and our fish, and adjust our actions to their needs.

The support of salmon is not merely a rural pursuit. In cities from San Francisco to Vancouver, neighborhood associations are trying to keep remnant fish runs alive, or to resuscitate populations pushed over the brink by the destruction of their habitat. Under pressure from urban activists, creeks formerly encased in storm sewers have been

“daylighted” — exposed to the sun and air again, meandering between replanted banks. Steep culverts have been equipped with baffles to allow adult fish to migrate upriver in the face of torrential flows that would otherwise flush them downstream. And spawning populations, once taken for granted and largely ignored, have begun to be celebrated.

Culture and community

The effects are beginning to be felt, not only in the modest impact on the numbers of fish, but in the attachment to place that the fish awaken in people. Whether you live in the tiniest village or the largest metropolis, you live in a watershed, an area whose run-off flows via a network of streams through one outlet into a larger body of water such as a river, bay, or ocean. If that watershed drains more than a couple of garden hoses’ worth into the North Pacific, at least one of the six species of Pacific salmon is probably native to it. A concern with salmon transforms residents of Fremont, Calif., into inhabitants of the Alameda Creek watershed, alert to the activities and phenomena there which affect the fish with whom they share the neighborhood. It helps when, as at Willamette Falls outside of Portland, or beside Ballard Locks in Seattle, city-dwellers can watch as the fish struggle to make their way upstream.

Concern for the fish isn’t just about muddy work and political organizing. The annual return of the fish is occasion for celebration, as nourishing for the soul as their flesh is for the body and as their carcasses are for the streams and forests. One group that understands this more than most is Wild Olympic Salmon in Chimacum, near Port Townsend, Washington. Since 1989, these salmon aficionados have held a Wild Olympic Salmon festival every other autumn to mark the fish’s return. Complete with pageantry, theater, and fish barbecue, the festival is a way for local residents to fête the salmon as they return to spawn.

Two of the founders of the festival, Tom Jay and his wife Mall Johani, are visual artists and carry the same fishy focus into their art as well. Jay’s cast bronze sculptures are found all over the Northwest. In the Chimacum area, one of the most striking is Heroic Chum, a chum head bursting forth out of the earth in the parking lot of a strip mall and symbolizing the return of the fish. Johani’s work tends more toward folk art — salmon-shaped throw pillows, glass beads in the form of a salmon egg, and even a curved Australian-style throwing stick with the legend “Salmon Come Back,” which she calls a “salmorang”. The couple’s most ambitious project is yet to be realized: a 500-foot-long outline of a salmon drawn in oyster shell on a treeless hill across from the airport. “It would mark this forever as a place of salmon,” Johani says.

Salmon biologists tell us that the unique characteristics of each place shape the life history of each population of fish. Chinook are known as spring salmon in much of their

northern range because that is when they return to spawn. But in the coastal streams of California, they don't enter the streams until the freshets of fall signal the beginning of the rainy season. On the Columbia, one race of chinook was known as "June hogs" because of their mammoth size — up to 100 pounds — which enabled them to endure a thousand-mile upriver migration to the headwaters of the Columbia in Canada. Even within my own tiny watershed, the fall-running chinook spawn some young that swim out to the ocean in the spring and others that exit to the ocean after spending their first summer in the estuary.

Wherever fish-centered culture occurs, it too has an equally distinct local flavor. Long nights on the salmon trap in the Mattole spawned a series of songs about the fish and the humans awkwardly trying to help them. "I'm the queen of the pool, queen of the river," proclaims a female chinook in a doo-wop tune. "This is my valley, here's where my heart's at home," sings a well-meaning logger. Spurred on by talent shows on rainy winter evenings, the songs became skits and eventually a full-blown musical comedy, *Queen Salmon*, which toured the Northwest three times in the early to mid-'90s.

Fish in the marketplace and on the table

For as long as people have made art about salmon and for much longer than they have been restoring fish habitat, people have been eating salmon. That visceral connection — all of us who have eaten that pink flesh are at some molecular level part-salmon — makes many of us care about these fish even more than other endangered species. We sense that if the fish are in trouble, so are we, that their disappearance threatens to evict us from an Eden in which wild protein made its way to us on a regular basis.

It came as a shock to many inhabitants of the North Pacific Rim to learn that some salmon stocks were seriously depleted. Several groups found the news of particular concern: commercial fishers, anglers and their guides, and native peoples who have depended on these fish for thousands of years. Their responses vary. Early reactions tend toward blame: fishers condemn their colleagues who use different kinds of gear, whose ships fly different flags, or whose skin is a different color. Shifting weather patterns and deep-sea trawl and drift-net fisheries are often cited, and no discussion of salmon decline is complete without pointing a finger or a 30-30 at sea lions. Their anger comes from an understandable sense of loss: As recently as the late 1970s, commercial ocean salmon fishing in Washington, Oregon and California brought in an average annual catch valued at \$180 million, and was responsible for 7,200 jobs in fishing, fish processing, and supporting industries. By 1997, estimates fisheries economist Hans Radtke, the income generated by the ocean catch had dropped to \$26 million, and about 6,000 jobs had been lost. But after tempers cool and reality settles in, people of a

constructive bent try to salvage what they can and adapt their fishing to the current situation in which farmed fish glut the market while wild stocks face an uncertain prospect.

The perversity of the global economy is that it treats those farmed McFish as if they were the equivalent of the wild fish — fungible commodities, in the tongue of economists, like so many aluminum ingots or hundredweight of hard winter wheat. But they are not the same. A pen-raised Atlantic salmon from Chile or Puget Sound is made of different stuff than a wild sockeye or chinook, as significantly different as orange soda and orange juice. As importantly, it is a tendril of an entirely different system of provision and exchange, one which ignores the distinct qualities of local varieties and cultures and instead seeks to produce More of whatever Product can be sold at a profit. In an economy rooted in conservation, those differences between local strains of salmon — and apples and timber — are noted, celebrated, sought after, and accounted for. We see beginnings of that appreciation in the media barrage surrounding the Copper River kings, an early-season run of Alaskan chinook that have captured the attention of gourmet chefs and upscale supermarkets, with attendant high prices to the fishers who net them.

Consideration for the particulars of individual runs can help not just the fishers, but also the fish. One couple whose work demonstrates that possibility is Fred and Linda Hawkshaw, who fish for salmon out of Prince Rupert, B.C. While some of their hot-headed neighbors were blockading the Alaska ferry in 1997, the Hawkshaws were developing a new technique for catching sockeye that relied on snagging the fish by a flap of cartilage on their jaws, rather than trapping them by the gills. Fishing out of Prince Rupert was restricted because coho salmon were scarce that year, and setting nets to catch the more plentiful sockeye would inevitably capture some coho as well. But with the Hawkshaws' method, those coho could be released unharmed. Since the fish were alive when they were removed from the net, another advantage was that the fish could be bled and gutted as soon as they were killed, yielding a higher-quality product than most gill-net boats produce. With marketing help from Ecotrust Canada (a Vancouver-based nonprofit), the Hawkshaws began to ship their fish to high-end Vancouver markets, realizing more than \$3 a pound for their fish (compared with under a dollar for their fellow fishers), compensating them for the extra care they put into the process.

Yankee fisherman Fred March took another tack. The 60-year-old March fished as a young man in Puget Sound, and later off Alaska's Copper River Delta. He now makes his home near the headwaters of the North River, which flows into Washington's Willapa Bay, and gill-nets there as well as in Alaska. But fish runs in Willapa are faltering, in part because of damage to spawning and rearing grounds on the North. So March turned part of his 93-acre homestead into a salmon-rearing complex, with a

sinuous network of channels and ponds where young fish can hatch and grow. At first he stocked it with surplus eggs from a state hatchery which he layered in gravel and tended until the fry emerged. After a few years his supply of eggs was cut off, so he dug an extra thousand feet of channel, filled it with gravel and flowing water, opened a fish ladder between his waterways and the river, then watched as adult salmon swam up, mated and laid eggs in the space he'd prepared. In 1996, his best year, this prosthetic habitat was home to 300,000 eggs of chum, chinook, and coho salmon and steelhead trout. March still fishes at the mouth of the North River, but he lets the fish runs dictate his fishing. In 1995 and 1996, he took about a thousand fish a year, but in 1997 when it became apparent that the coho run was weak, he pulled his nets out of the water to let as many fish make it upriver as possible.

March's operation is much less invasive than a hatchery: fish that use his site do so because they have chosen it. They select their own mates, and the young feed on the aquatic insects that thrive in March's ponds and channels until they decide to swim down the fish ladder to the river below. His approach illustrates the mark of a properly humble salmon project: it minimizes human interference with what ought to be the fish's own business. In each location, that principle plays out differently. In Young's Bay near the mouth of the Columbia, technicians raise fingerlings in pens in a watershed where the native fish runs were extinguished long ago. The fry imprint on the bay as their home place, so when they return as adults, they mill around the estuary and provide easy targets for a small gill-net fishing fleet that can seek them without fear of incidentally entangling fish from endangered stocks. This project avoids some of the pitfalls of an upriver hatchery, because the fish it releases don't compete with wild stocks in the river en route to the ocean. They home in on a watershed that lacks wild spawners, so they separate themselves from their wild cousins when they return. It's not like a fish farm, because the fingerlings are raised only for a few months, then turned loose to roam the ocean for two or three years. They feed out there, sparing the bay the impacts it would suffer from the untreated excreta of large penned fish. At the same time, it limits demand for fish meal created by a deep-sea trawler fleet that scoops up fish indiscriminately, thereby putting ocean food webs at risk.

Because the Young's Bay fishery is selective, some of the fish from it — bled and iced to preserve freshness — have been marketed as environmentally benign: salmon that can be consumed without the fear of accidentally eating the last spawner of a run. This selectivity is a hallmark of fisheries that care as much for posterity as for profit — a quality appreciated by a small but growing number of fishmongers and their customers. “There are a lot of people really interested in being as low-impact as possible when they buy seafood,” says Seattle-based fish dealer John Foss. “We market our fish as harvested from intact, healthy runs.” Makers of products whose production affects fish — from

electricity to wine — cater to this concern, too, with labeling programs called “Salmon Safe” and “Fish Friendly.”

Perhaps the ultimate in the precise harvest of salmon is a tribal fishery on the Nass River in British Columbia. Members of the Nisga’a First Nation make use of fishwheels, an elegant and ancient technology. The river current spins the curved paddles on the wheel, which scoop up fish and deposit them alive in pens at either side of the trap. Rarer species, such as steelhead, can be released. And since the Nisga’a operate traps both high and low in the river, biologists can tag fish near the mouth and learn about the population size by the number of tagged fish caught upriver. This sort of precise information allowed Alaska to rebuild its fisheries after they were decimated in the 1950s by overexploitation, and now enables state biologists to manipulate the openings and closings of the fishing season to achieve their top priority: that enough salmon make it to the spawning grounds to perpetuate the runs.

These salmon stories are part of an emerging segment of the economy that is rooted in conservation rather than depletion. This part of the conservation economy draws our attention because as inhabitants of the North Pacific basin, we are acutely aware of these fish. Efforts are underway in primary industries such as forestry and agriculture to develop analogous new-old ways that yield a harvest while rebuilding the productive capacity of the land. In fields such as construction and food preparation, innovators are learning to make the highest use of the raw materials that come from the hinterland, and to value the natural abundance and human craft that converge to provide them.

Three qualities stand out in all of these endeavors:

- Treating the gifts of this good place with respect, and using them to create products of high quality and high value;
- Taking care of the natural capital that is the source of these gifts — the integrity of the watershed, the health of the forest, the conviviality of the city;
- Celebrating the unique qualities of this region we have made home.

People committed to the recovery of the salmon are practicing these principles, in part because the fish show us so plainly the benefits of adhering to them. As a culture, we may be slow learners, somewhat clumsy and unpolished in our studies. But with the salmon’s guidance, we can figure out how to reshape our relations with the landscape to which we, no less than the fish, belong.