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Something's Fishy

Hatcheries provide food, sport, and the chance to save vanishing species. But when politicians use them as substitutes for protecting habitat, it can be disastrous.

By Ted Williams

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Americans adore fish hatcheries. At their home waters, anglers greet stocking trucks the way kids greet ice cream trucks. At the hatchery itself there's the zoo experience, but beyond that there's the warm feeling of encountering all that rippling energy soon to recharge fresh and salt water, the perception of humankind making nature right again with artificial milk and honey. The Bonneville Hatchery, part of the Bonneville Dam complex in Cascade Locks, Oregon, is even on the National Register of Historic Places. Its 58 concrete raceways (consisting of descending rectangular pools) annually produce about 10 million fall chinook salmon, 400,000 coho salmon, and 250,000 steelhead trout.

On the damp, cold morning of October 30, 2004, the facility is crowded with people as well as fish. Mothers tow snack-munching kids; lovers stroll hand in hand; foreign students photograph one another in front of display tanks. Everywhere there's a low murmur of appreciation. There's a line at the pellet dispenser. Insert a quarter and you get a handful of processed fish chow to throw at adult rainbow trout, kept here for display. They surge upward, making the raceway boil, and when their dark backs cleave the surface, I can see their deformed fins—pectorals and caudals, scarred and rounded by cement, each dorsal nipped to a fleshy stump by the ravenous horde. When I walk along the raceways, the fish follow me like city pigeons. The salmon and steelhead are smaller because they'll be dumped into the Columbia River system as smolts—the juvenile stage that acclimates to salt water, sweeping tail first to the sea. When they go through generating turbines like the ones at Bonneville Dam, they get disoriented and become easy targets for predator fish. In the impoundments there is little current to guide survivors downstream, so they mill around, feeding more predator fish. Trucking and barging them around dams has proven a dismal failure.

Despite its enormous popularity, there's a problem with the Bonneville Hatchery: It doesn't work. Hatcheries, like drugs, can be healing, or hurtful and addictive. They can and do serve as genetic reservoirs, saving species from extinction until habitat is repaired, and they can and do provide fishing in waters where there was never a chance of natural reproduction. But when their mission is to replace habitat degraded by industrial and municipal pollution; siltation from watershed disturbances; loss of streamside shade; and, especially, the construction of dams, they fail.

The Bonneville Hatchery and hundreds of others built to "mitigate" the loss of salmon and steelhead caused by habitat destruction are of the latter sort. Despite their prodigious output—and, to some extent, because of it (although dams are the major culprit)—runs have been declining for more than a century. In the late 1800s Washington State hatcheries produced roughly 4.5 million juvenile chinooks a year; by 1950 they were producing 30 million; by 1968, 93 million. By the 1980s and early 1990s the Columbia alone was being doused with 100 million to 120 million hatchery smolts a year. At that point, wild and hatchery runs in the system had dwindled from perhaps as many as 16 million returning adults to about 2 million. Throughout the Northwest, 159 wild stocks (races adapted to specific rivers) faced extinction. Despite fluctuations caused by varying ocean conditions, runs continue to decline. Even today some hatcheries still measure success not by numbers of adult fish that come back from the sea but by numbers of smolts they stock. As Yogi Berra might say, the bottomless pit just keeps getting deeper.

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"A colossal failure of adaptive management" is how Kurt Beardslee, director of the native-fish advocacy group Washington Trout, describes the saturation bombing of Northwest rivers with hatchery fish. "The [state, federal, and tribal] hatchery bureaucracy continues to make the same mistakes over and over and over again, each time expecting a different result," he says. "That's one definition of insanity."

Trout and salmon are not turnips, and if they are to survive in the wild, they cannot be produced like turnips. They are sentient beings with learned survival skills and physical adaptations molded by their environment. For example, to migrate from their natal streams to the Gulf of Alaska or, on the Atlantic side, to Greenland, salmon depend on the sharp, full fins they lose in hatcheries. Wild juvenile salmonids are largely subsurface feeders. Reared on pellets, they become surface feeders, vulnerable to predatory fish and birds. When salmonids detect a moving shadow, they need to flee, not rush forward in hope of getting fed.

In order to fill space and maximize growth, traditional hatcheries take eggs and milt from the first fish that show up in the river, thereby selecting for early returning fish, so that runs naturally staggered throughout most of the year are compressed into weeks. When eggs and milt are taken from hatchery brood stock, progeny can be warped by inbreeding. Wild fish compete for mates and spawning sites, so the fittest are favored. Traditional hatcheries mix eggs and milt randomly. Wild fish have evolved to fit conditions in their rivers of origin; if, for example, a river is fast and steep, the native stock may be lean, with noticeably large fins. But traditional hatcheries play musical chairs with stocks, taking them from one watershed and dumping them in another.

Salmonids reared in traditional hatcheries are selected for domesticity. They adapt to crowded conditions because there is no alternative; they learn not to seek cover because there isn't any. In short, they are molded to be everything wild fish are not.

In a 1970 experiment Montana fish managers stopped stocking a section of the Madison River with hatchery trout. Four years later large trout (three years and older) were up 942 percent. How could this be? After all, the more turnip seeds you stick in the ground, the more turnips you harvest. But again, salmonids aren't turnips. Those produced by hatcheries are relatively short-lived, but because they are reared in conditions that make them fight viciously for food, they survive long enough to eat wild juveniles, outcompete wild adults, and often spread diseases in the process. As a result of the Madison River experiment, Montana no longer stocks its rivers.

All this is not exactly breaking news. John Cobb of the old U.S. Bureau of Fisheries complained about "an almost idolatrous faith in the efficacy of artificial culture of fish for replenishing the ravages of man and animals," and noted that "nothing has done more harm than the prevalence of such an idea." That was in 1917. Have we learned anything since? Well, some of us have, and some of us haven't.

Squarely in the latter group are people making the major decisions. On June 3, 2004, the Bush administration appalled the scientific community—including its own fisheries biologists—by proclaiming that hatchery salmon and steelhead can count as wild fish when determining if a stock needs protection under the Endangered Species Act. To be so counted, said the administration, a domestic hatchery stock must be no more than "moderately divergent" from the wild stock. The domestic chicken is only "moderately divergent" from its progenitor—the endangered jungle fowl. Thanks to Frank Perdue and other factory chicken farmers, there are now millions of chickens on the planet; so by Bush logic, the jungle fowl is fully recovered. The salmon policy is intended to circumvent the Endangered Species Act—the law most loathed by the special interests that brought the Bush administration to power and, to a large extent, comprise it.

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The idea to pass off hatchery fish for wild ones was promoted by Mark Rutzick, Bush's former salmon czar at the fish branch of the National Oceanic and Atmospheric Administration (NOAA Fisheries). Rutzick had caught the administration's eye when, as a lawyer in Portland, Oregon, he led the timber industry's effort to avoid regulatory inconvenience with the same shell game. The Pacific Legal Foundation, which provides counsel to plaintiffs seeking delisting of salmonids, has also been pushing for this shell game. "Millions of fish from each of the five Pacific salmon species are flourishing from Alaska to California," the foundation proclaims. "The fact that you can buy salmon for \$3.99 a pound in your local supermarket should make that pretty clear."

Foundation attorney Russell Brooks, who met with Rutzick a month before the plan was announced, represented the timber industry in a 2001 case in which U.S. District Court Judge Michael Hogan ruled that the government's exclusion of hatchery cohos from the threatened Oregon coastal coho stock was arbitrary and capricious. The official line from the administration is that its new salmon policy was forced on it by Judge Hogan. But all Hogan said was that once NOAA decided "that hatchery spawned coho and naturally spawned coho were part of the same [evolutionary significant unit], the listing decision should have been made without further distinctions." He never said that NOAA had to make the decision to lump hatchery and wild cohos together.

A year earlier the agency had asked six of the nation's top fisheries scientists to review salmonid policy, including the use of hatcheries, and to advise it on how best to recover 27 listed stocks. But their report, released five weeks before the Bush plan was made public, contained facts the administration didn't want to know—basically, that hatcheries were counterproductive in salmonid recovery. The scientists were told their findings were inappropriate for a government publication; so, expressing outrage at the censorship, they published their report in the respected, peer-reviewed journal *Science*. One of the team members—Ransom Myers, of Dalhousie University in Halifax, Nova Scotia—offers this statement: "Unless [the policy is] changed, it's only a matter of time before salmon stocks that are presently listed will be delisted, and habitat that is critical for their long-term survival is eliminated.

Most of this critical habitat has already been lost to dams. Not only have hatcheries failed to mitigate for this loss, but some function as dams themselves. The idea was to block a river so returning fish could be easily captured and stripped of eggs and milt, and so the hatchery would be insulated from disease. This extinguished wild runs and deprived upstream ecosystems of vital nutrients provided by decaying carcasses of spawned-out salmon. Consider the U.S. Fish and Wildlife Service's Leavenworth Hatchery on Washington State's Icicle Creek. It blocks endangered Upper Columbia River steelhead from 21 miles of prime spawning and nursery habitat, while dewatering habitat of the threatened bull trout. "This is just outrageous," exclaims Washington Trout's Beardslee. "The agency charged with recovering bull trout is harming them more than any landowner in the entire Wenatchee Basin. Farmers are reprimanded and required to take restorative action if they dewater rivers to raise crops. It's the height of hypocrisy when the agency is doing things every day that the farmers are not allowed to do once." Washington Trout is preparing a lawsuit.

For years the feds refused to remove a series of three deteriorating, useless dam-weir complexes that blocked Icicle Creek, arguing they were "historically significant." Under fierce pressure from the public, they finally relented, appraising removal costs at \$4.8 million. Then they announced there was no money. So the Icicle Creek Watershed Council, a local citizens group funded largely by philanthropist Harriet Bullitt, decided to take on the job. In August 2003 the council retained a Spokane contractor, who did the work for \$249,000. All that remains is for the feds to open one upstream gate. "The Fish and Wildlife Service was okay with our removing the dams," Bullitt told me. "We followed all their specs and rules; they monitored the job. We finished in five weeks. We revegetated the banks, recycled the rebar and cement. Then we told the hatchery staff to open the

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gate. We waited and waited, and nothing happened. Now they're telling us that opening the gate is 'against policy.' "

Bullitt and her group are up against something more impregnable than any dam—the hatchery bureaucracy. It has its own political base and social structure; in states like Washington—which churns out salmon and steelhead from nearly 100 hatcheries—it dominates fisheries policy and squashes dissension. "If you cross a sacred cow with a military base in Washington State, you get a fish hatchery," says Bernard Shanks, former director of the Washington Department of Fish and Wildlife, who in 1998 was hounded out of office for merely suggesting that hatchery production be deemphasized.

Collectively, Northwest hatcheries are still a threat to wild salmonids; but they are undergoing major reform—all of it driven by the Endangered Species Act, which holds them accountable for damaging listed stocks. Eggs and milt are increasingly taken from wild fish, and juveniles are often stocked in rivers of origin. Some hatcheries now release smolts at only one location so they won't imprint to other parts of the river where, as returning adults, they'd have more opportunity to spread defective genes. Two years ago Oregon cut the flow of hatchery cohos to its coastal rivers by 90 percent. A few hatcheries, particularly tribal facilities on the Columbia, are experimenting with shade, cover, predator-avoidance conditioning, and curved raceways with sediment on the bottom that produces natural food in the form of macroinvertebrates.

Modern hatcheries, and even most traditional ones, now clip the fleshy, vestigial adipose fin from young salmon and steelhead so adults can be distinguished from wild fish. When commercial or recreational fishermen catch a fish with an adipose fin, they have to let it go. In fact, the adipose fin has become a status symbol, eagerly sought by anglers who didn't want to kill the fish anyway. Rob Masonis, an avid steelheader and northwest regional director for American Rivers, says this: "One of the most encouraging things I've seen in the last five years has been a much greater understanding among anglers of the importance of wild fish and the desire to catch wild fish. They get it; and it's those voices that need to rise up in the policy debate."

Does the hatchery-reform effort hold promise for restoring self-sustaining salmonid runs? Probably not. For one thing, even after one generation, hatchery stock starts losing its reproductive capacity. "My best expectation would be that hatcheries will be reformed to the point they're no longer harmful," declares Jim Lichatowich, former assistant chief of fisheries for the Oregon Department of Fish and Wildlife, and author of the acclaimed book *Salmon Without Rivers*.

So, with hard work and luck, hatcheries may one day cease providing substitutes for the wild salmonids they eliminate and only provide partial mitigation for people prevented by habitat loss from taking wild fish. In other words, they'll become efficient producers of meat and sport. Environmentalists need to understand there's nothing wrong with that. One of the most eloquent advocates of native-fish restoration is Jim Martin, Oregon's former fisheries chief and now director of the Berkley Conservation Institute. "Hatchery management has changed tremendously over the last 10 or 15 years," he told me. "But there's just as much hatchery bashing by environmental groups as ever. A lot of fisheries managers in this country are disgusted with the environmental community because no matter how much they do to improve hatcheries, it's not enough. We're not wiping out any cities or reclaiming any farms for wetlands, so we're stuck with a hell of a lot of habitat loss. Hatcheries currently support 70 percent of the anadromous salmonid fisheries in the West. Without them, there'd be very little fishing."

The problem with hatchery bashing is not that there's too much of it but that it's too unfocused, and one reason hatcheries provide so much fishing is that they impede natural reproduction. However, the fact that

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some hatcheries are grossly abused doesn't mean that others aren't desperately needed. Without hatcheries to hold rare stock all but lost in the wild, there would be no self-sustaining lake trout in Lake Superior. Greenback cutthroat trout—once believed extinct—would not be almost fully recovered. Utah would not have its Bonneville cutthroats back. There'd be scant hope of saving Snake River sockeye salmon, coaster brook trout, westslope cutthroats, Rio Grande cutthroats, Apache trout, Atlantic salmon, Gila trout, Gila topminnows, and pallid sturgeon. In tailwaters and reservoirs all across the continent, hatcheries provide fishing where none would otherwise exist. In these waters, at least, game fish like trout, landlocked salmon, walleye, and striped bass are stocked as juveniles, growing fast, regaining muscle tone and color. It may not be natural fishing, but at least nature is involved. It gets the public outdoors, invested in clean air and water. Martin is right in everything he says.

But there's more to be said. I object to the hatchery bureaucracy not just for what it does to wild fish but for what it does to people. It creates the illusion—perpetuated by the Bush administration—that habitat is expendable. (Why protect clean, free-flowing rivers and watersheds from dams, pollution, and watershed abuses when you can mass-produce salmonids in concrete fish factories?) And it impedes development of what George Bird Grinnell, 19th-century sportsman and outdoor writer, and founder of the first Audubon Society, called “a refined taste in natural objects.” Anglers conditioned by hatcheries chase stocking trucks like herring gulls, then fish with pellet imitations. It would be cheaper and more efficient to replace the fish tanks in trucks with seats and haul the anglers to the hatcheries.

One bright June morning, amid a blizzard of mayflies called pale morning duns, I worked my way up Utah's Logan River, catching and releasing brown trout. I'd been hoping to add to my life list a Lahontan cutthroat—a descendant of the massive predators, bigger than most salmon, that prowled ancient Lake Lahontan and had been considered extinct until the late 1950s, when they were rediscovered in a tiny creek above a waterfall by Colorado State University fisheries professor Robert Behnke. But no Lahontan showed, and I was happy enough exercising the browns—strong, stream-bred fish with perfect fins, ocher spots, and buttercup-yellow bellies. I was reaching down to shake another brown from my barbless fly when I saw what looked like a large goldfish, but which, on closer examination, turned out to be an albino rainbow trout. Despite their extreme vulnerability to predators, the state breeds them and tosses them in with normal, less visible rainbows so the public spots them easily and doesn't complain that the stocking truck hasn't been around.

More recently I found myself in the mountains of West Virginia, inspecting acid-mine damage to brook trout habitat. I came away encouraged, not only by the remarkable progress being made in bringing dead water back to life with innovative lime treatments, but by the many pristine streams that still teem with these gaudy little natives. West Virginia's brook trout are a national treasure that should be promoted like California's redwoods or Minnesota's timber wolves. But the official patch of the state's Department of Natural Resources features a white-tailed deer, a cardinal, and a rainbow trout—native to the Pacific Northwest. This fish—called a West Virginia Centennial Golden Trout—is a pigment-impooverished mutant that turned up in a hatchery in 1954 and has been cultured ever since. It's so popular that Pennsylvania borrowed the warped genes to concoct what it calls its “palomino trout.”

All sorts of other Frankenstein fish are patched together in hatcheries; and because they're hybrids of species unlikely to meet in the wild and because they're frequently sterile, they help perpetuate the hatchery bureaucracy. These include “tiger muskie” (a cross between a muskellunge and a northern pike), “tiger trout” (brown trout X brook trout), “wiper” (white bass X striper), “saugeye” (sauger X walleye), “splake” (speckled trout X lake trout), and “cuttbow” (cutthroat X rainbow). The more Frankenstein fish that hatcheries pump out, the more demand they create. Conditioned by such values and policy, anglers rebel when enlightened managers attempt to restore imperiled native fish by poisoning out introduced aliens and mongrels.

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Just before I left the Bonneville Hatchery, I hiked along its water source, Tanner Creek, starting in the mist beside 350-foot-high Wahclella Falls and moving downstream. I'd almost reached Interstate 84 when I saw a flash of red. A pair of wild coho salmon were spawning. Having never witnessed this, I watched transfixed as the two fish shivered and turned on their sides over the depression the hen had cut in the gravel with her tail. The scene reminded me of what we'd lost but also of the tenacity of the life force, the ability of wild creatures to rebound when given half a chance.

What You Can Do

To support efforts to reform hatcheries and restore wild salmonid populations, go to Save Our Wild Salmon (www.wildsalmon.org).