



THE OSPREY

A Newsletter Published by the Steelhead Committee
Federation of Fly Fishers



Dedicated to the Preservation of Wild Steelhead • Issue No. 51 • MAY 2005

Skeena River Steelhead at the Start of the 21st Century

by Rob Brown
— Terrace, British Columbia —

The Skeena River system is among the Pacific Northwest's best wild steelhead streams. Unfortunately, it has suffered the ill side effects of the commercial salmon fishing industry. In this issue's cover story, writer Rob Brown provides an update on the Skeena and its wild fish.

Rob Brown makes his home in Terrace B.C., the epicenter of steelhead and salmon fishing on the Canadian north coast. He has spent the last 30 years teaching school, campaigning on the behalf of salmon and angling for anadromous fish. These days, he divides his time between teaching classical guitar, collecting a paltry pension, writing his weekly column, "The Skeena Angler" for the Terrace Standard, and - you guessed it - angling for anadromous fish. He may be reached at rob-brown@monarch.net.

man pries at a lath over the doorway. It's dark in the stairwell. At the top there's the acrid smell of cigarette smoke. Natural light mixes with unnatural light and lights up walls covered

If they'd kept doing business as usual, there would be a lot fewer steelhead and coho there today.

with posters of wild places and wild creatures in wild places. A back door opens into vacant gray office space where an electrician pulls at some wires.

Another door leads to the main office of the Terrace office of the Canadian Parks and Wilderness Society. It's a small purposeful room, cluttered

with boxes and paper piles. The walls are covered with maps and satellite imagery. It seems more like a war room than an office. "Hey," shouts Bruce Hill, pushes away from his desk and rocks back in his amply cushioned swivel chair.

The latest news of the latest battle in the war to prevent the Stikine from being turned into an industrial park is good, he tells me. The Tahltan elders have repudiated their leader; a man named Asp, for betraying their trust and entering into agreements with multinationals, and have ordered the multinational's minions off their tribal territory.

This bit of good news from the front is welcome, a little relief from what seems an endless struggle to save the Northern wilderness from corporate plans: an incursion into Spatsizi Park; a planned haul road that would cross dozens of salmon streams and expose vast tracts of pristine forests to plunder; plans for dam construction in the far north, plans to suck coal bed

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Workers are tearing the face off the disheveled two-story building across from the Terrace Co-op. A lanky young

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FROM THE PERCH — EDITOR'S MESSAGE

The Columbia River Salmon Saga Continues

by Jim Yuskavitch

As this issue of *The Osprey* went to press, the big news was federal court Judge James Redden's decision that the federal government's latest recovery plan for wild Columbia River basin salmon and steelhead wasn't going to cut the legal mustard. While the policy analysts and attorneys representing the wild fish advocates had many problems with the plan, two fundamental issues were its designation of the existing dams on the Columbia and Snake rivers as the 'natural condition,' rather than one of the primary sources of the fishes' troubles. The other was that the plan only promised to maintain the basin's anadromous fish populations, not recover them, as clearly required by the Endangered Species Act. Read more about this issue beginning on page 12.

We have been through this before. The latest, now rejected, recovery plan was intended to replace a previously rejected plan that relied too much on speculative habitat restoration projects, just as this one relies too much on technological fixes.

One has to wonder why the federal government continues to come up with recovery plans that include everything but what is widely believed to be the most effective strategy — more spill and a serious look at removing the four lower Snake River dams.

As the federal government goes back to the drawing board to develop a plan that satisfies the ESA's legal requirements, let's hope that the third time is the charm.

Letters to the Editor

Keep it Up

Dear Editor:

I've been receiving *The Osprey* for a number of years now and I have to compliment you guys for keeping me up to date on the love of my life (steelhead). No wife anymore, thank God.

Keep up the good work.

Mike Ogle
via e-mail

Best Issue Ever

Dear Editor:

I just wanted to tell you that the January 2005 issue of *The Osprey* is the best edition I have read, and I think I've read them all (and edited a few). Each piece is well written, informative, easy to read and most of all, eye opening.

Bravo.

Jack de Yonge
via e-mail

Editor's Note: Jack de Yonge is a former editor of The Osprey.

Dear Editor:

Suffice it to say that the Washington Fly Fishing Club places a high value on the contributions of *The Osprey* to the education of our fly fishing and general population. In that regard, the January 2005 issue was truly superlative.

Douglas Schaad
Co-Chair Conservation Committee
Washington Fly Fishing Club

Pardon Us!

In each January issue of *The Osprey*, we publish the names of all who generously donated funds to keep us afloat and working for the benefit of wild steelhead and salmon. This year, we inadvertently left out two 2004 donors from that list. They are:

Bill Redman	\$100.00
Alice Elliott	\$50.00
Gary Byrnes	\$25.00

Our apologies for misplacing your names, and a big thanks to you and our many other supporters.

THE OSPREY



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All submissions can be made either electronically or by mail.

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The Federation of Fly Fishers (FFF) supports conservation of all fish in all waters. FFF has a long standing commitment to solving fisheries problems at the grass roots. By charter and inclination, FFF is organized from the bottom up; each of its 360+ clubs, all over North America and the world, is a unique and self-directed group. The grass roots focus reflects the reality that most fisheries solutions must come at that local level.





Pitfall of Using Hatchery Fish for Wild Fish Recovery

by Bill Redman

— Steelhead Committee —

Now and then, an important event slips by without much public or media notice. This happened to the report made by the Salmon Recovery Science Review Panel on its meeting with staff of NOAA Fisheries and other agencies at the Northwest Fisheries Science Center August 30th to September 2nd, 2004. When I read the report several months after the meeting, my immediate response was that readers of *The Osprey* would want to know about it.

The panel was convened by NOAA Fisheries and "consists of seven highly qualified and independent scientists" who provide scientific counsel to NOAA. All are associated with major universities and hold doctorates in various fisheries related disciplines. They meet two or three times per year on pertinent salmon science issues and receive and comment on presentations from federal and state agency, tribal and other scientists.

The introduction to this report by the Panel begins: "One of the major factors affecting the status of listed Pacific salmon is the potential negative effect that hatchery fish exert on populations of wild fish. Ironically, while many hatchery programs were designed to accelerate population recovery of wild fish and stabilize their numbers, there is evidence that many supplementation programs have the opposite effect. ... the bulk of the evidence indicates that, on the whole, hatchery fish are not equivalent to wild fish, genetically or phenotypically."

It continues on by identifying the focus of the meeting: "The RSRP is concerned that including hatchery fish in listing decisions could greatly jeopardize the mandate of long-term recovery of natural, self-sustaining populations. This concern led us to focus our meeting ... on an examination of the interactions between hatchery and wild fish, how hatchery fish may be affecting the populations of wild fish, the scientific issues surrounding efforts at habitat compensation and restoration that

involve hatchery fish, and the scientific inconsistencies created by the proposed hatchery policy. ... we address the overarching issues raised by hatchery fish and the burgeoning conflict between the scientific evidence about hatchery fish and the proposed method of addressing hatchery fish in listing policies."

Part One of the report reviews the presentations made at the meeting, provides critical assessments of hatchery supplementation experiments, and suggests programs for the analysis of supplementation efforts. The report makes a number of illuminating comments

We remain extremely concerned about the scientific implications of NMFS's 2004 hatchery policy.

about supplementation experiments, including the following brief sampling.

"It will be very difficult to make fish emerge from hatchery environments with the same potential for future life histories as those expressed in wild fish. ... We believe that loss of fitness in the wild is an inevitable consequence of adaptation to hatcheries and evidence suggests that this loss can occur in the initial generations of breeding stock."

"Rigorous experimental evaluations of the effects of hatchery augmentation are critical because they offer the strongest evidence for testing the long held assumption that hatchery augmentation is effective and beneficial for wild populations. This assumption remains untested because, despite widespread hatchery augmentation, there have been few attempts to exploit hatchery releases in an experimental fashion – meaning treatment and control – to evaluate the effects of augmentation."

"We emphasize the critical importance of the planned termination of ...

juvenile releases for the proper testing of impacts of hatchery augmentation."

But it is PART TWO of the report, THE ESU CONCEPT, HATCHERIES, LISTING, AND RECOVERY, which offers the sharpest condemnation of hatchery supplementation and the new NOAA Hatchery Policy.

On the loss of fitness in hatchery fish: "We examined all of the studies of salmonids in which hatchery fish came from the same or nearby rivers to the wild fish and did not examine any study in which hatchery fish came from other regions of the species' range. It is well known that the fitness of hatchery fish derived from other regions is almost always well below the fitness of wild fish. ... Relative fitness of hatchery fish (in the studies examined) declines regularly with the number of generations in culture. An exponential curve fit to the data indicates that fitness is lost in excess of 20 percent per generation. ... Despite recent improvements in the practices of some hatcheries ... hatcheries will never produce salmonids with the same evolutionary potential as those reared in the wild."

On scientific inconsistencies created by the proposed Hatchery Policy, the report states the following: "Although most attention focused on the ESA has been on its goal of preventing extinction, the Act has a second mandate: to achieve sufficient self-sustaining wild populations of listed species to ensure their survival in nature. ... The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species may be conserved ... Congress clearly intended recovery in nature to be the goal of the ESA ... We remain extremely concerned about scientific implications of the proposed hatchery policy (NMFS 2004), which dictates that when hatchery fish are sufficiently similar to wild fish they should be included in the same ESU as wild fish."

"Even when substantial data exist to support similarity with respect to quasi-

Skeena River, Continued from page 1

methane from land in the headwaters of the Skeena.

The multinationals have staunch allies in a Liberal government of British Columbia that is about as far removed from the principles of liberalism as a political party can be. A coalition of pro-development right-wing zealots that adheres to the neo-conservative ethic that was first inflicted on the British in the reign of Maggy Thatcher, then was tried in the United States in the Reagan Era, and has now reached its most extreme expression under the current Bush administration, the B.C. Liberals under Premier Gordon Campbell are so wedded to the arcane economic theories of Hyek and Friedman that they trip over themselves in their haste to privatize the province. B.C., they declare, is open for business. Most of province's unexploited raw resources are in the northern part of the province, which is why Bruce Hill works long hours, seven days a week these days and explains why he's often exhausted.

Bruce is in his late fifties. He's a big man who looks out of place leaning over desk tapping at a keyboard with hands that look more suited to packing a chainsaw or pulling on a wrench. He's done both, working as a millwright in an Alaskan pulp mill before moving to the Lakes District in central B.C., where he worked as logger and ran a small sawmill. Tired of the grunt labour and insecurity and stress of eking a living out of an unstable forest industry increasingly dominated by forest mining multinationals, Hill took up salmon guiding.

Guiding put Bruce in touch with fish, pulled him closer to their problems at a time when it was common to have as many as 750 boats fishing sockeye in the approach waters to the Skeena River every summer. The sockeye run over-

lapped the returning summer steelhead, as well as early part of the coho run. Where the sockeye were enhanced as a result of the construction of spawning channels in Fulton River and Pinkut Creek, steelhead and coho were not and had also to deal with additional pressures associated with habitat loss.

The problems accompanying mixed stock interception were understood and accepted by fisheries scientists and fish-

Over time the principled mandates of management agencies were attenuated as their staff came to realize that the size of their institution, the size of its budgets, the difficulty of their jobs and the security of those jobs is related to the service they provide to what they perceive to be their client group.

Nowhere in Canada is there a more egregious example of this phenomenon than the Department of Fisheries and



Wild Skeena River steelhead have suffered mightily from the impacts of the commercial salmon fishing industry. Photograph by Fred Seilert.

eries managers, but they persisted for social and political reasons, exacerbated by structural problems in the managing agencies. Though the Federal Department of Fisheries and Oceans is entrusted with the stewardship of all Canada's fish, it delegates much of the management of freshwater fish to the provincial governments. In B.C. the management of steelhead comes under the aegis of fish and wildlife branch of the Ministry of the Environment, renamed the Ministry of Water, Land and Air Protection by the Liberals.

Oceans (DFO), whose allegiance to the fishing industry, fishermen and their communities on the east coast precipitated the collapse of the cod stocks and what was once the greatest pelagic fishery on the planet.

On the west coast DFO management was also driven by the needs of the commercial fishing industry. As former federal fisheries Minister Siddon once said, "My staff and commercial fishermen are friends, and you don't like to hurt your friends."

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The Provincial Fish and Wildlife Branch of the Ministry of the Environment, the body responsible for the welfare of steelhead, saw sportsmen as its client group, but because of the progressive attitude of its senior staff and its small size, the organization didn't lose sight of the fact that the health of the fish under its care was central to its mandate. In the case of steelhead this attitude translated into reduced bag limits, the promotion of catch and release regulations and an emphasis on wild fish.

Where the welfare of steelhead was compromised by mixed stock salmon fisheries, the Fish and Wildlife Branch had to go cap in hand with their concerns to the Department of Fisheries and Oceans. Some small concessions were made over the years but, for the most part, these concerns were never translated into meaningful actions.

The problem was particularly acute on the Skeena River where the size of the commercial fleet at the mouth of the river had grown so large that its nets were an all but impenetrable wall for migratory fish. The net result of this indiscriminate netting was that summer steelhead were being gilled and killed at the same rate as the much more abundant sockeye. By the late eighties the number of summer steelhead returning to their natal streams was so low the historic and world-renowned sports fishery for them was in throes of extinction, and there was justifiable concern that the fish would soon be too.

"It was Hooton who started it all," says Bruce Hill in answer to my question. "It was after a meeting in Terrace – in the Skeena Hotel – some fisheries thing, maybe the SFAB. We were in the bar after the meeting, crying in our beer about the low steelhead runs. Bob was frustrated – we all were. He was doing his part, for sure. He challenged us to do ours."

Bob Hooton, the regional biologist for Skeena at that time, was pugnacious and outspoken. The right man for that job at that time, but he and his staff couldn't break through the wall of DFO intransigence by themselves.

"Myron [Myron Kozak, a B.C. environmentalist who was tragically killed in an airplane crash while photographing damaging logging activities on Vancouver Island] and I talked about

what we could do and we came up with the idea of the Wild Steelhead Campaign. Dave Watts and Jim Miller from Smithers joined us, along with Bob Clay from Kispiox, after we met with the Smithers Branch of the Steelhead Society. There was a branch of the Steelhead Society in Houston in those days. John Lyotier was its chairman, as well as president of the parent body. John had a lot to do with setting up the Wild Steelhead Campaign and all the things that happened as result of it. When John persuaded the Steelhead Society to back the campaign, things started to roll."

Hill and Kozak's idea was timely and compelling. Its execution was often

The commercial fleet at the Skeena's mouth had grown so large its nets formed a nearly impenetrable barrier to the fish.

audacious; ultimately its reach was global. The internal pressure exerted by the Fish and Wildlife Branch and sympathetic staffers within DFO and the external pressure from letters and media coverage led finally to a symposium in 1991 in Smithers.

The purpose of the symposium was to have Neil Sterrit, representing the First Nations, DFO District Manager Al Lill, representing the federal government, and Dr. David Narver, director of fisheries for the province, join Ray Travers, a forest specialist, and Jim Walker, the assistant deputy minister of the environment, to discuss the issues surrounding steelhead.

During his presentation, DFO rep Al Lill took everyone by surprise when he announced that the Department of Fisheries would reduce the incidental harvest of steelhead by 50 percent to an audience that included commercial fishers, First Nations, tourist operators and fishing guides, as well as sportsmen.

In Hill's estimation this signaled a

dramatic shift in attitude by DFO. "If they'd kept doing business as usual," he argues, "there would be a lot less steelhead and coho than there are today. Some races would be extinct."

Just how Fed Fish was going to achieve this reduction was unclear. What was clear was that the mechanics of the operation and its implementation, since it demanded the cooperation of First Nations, the fishing industry, and sports fishers, was sure to be surrounded by rancor and acrimony.

The government set up a representative committee, hired Glenn Sigurdsson, a highly-respected facilitator and mediator to chair it, assigned scientists and managerial representatives to it, invited representation from its provincial counterpart and the user groups, then charged them with the daunting task of coming up with a way to reduce the steelhead by-catch by half within the framework of a workable fishing plan acceptable to all the parties.

The key variables in the construction of such a plan involved the manipulation of fishing times, controlling the number of boats, determining the places the boats fish and, to a lesser degree, the type of fishing gear the fishers would use.

Ultimately, a plan was conceived that involved moving gillnetters out of areas where steelhead interceptions were most likely at the peak migration times for those fish. It was agreed, for example, that the most critical area in this regard was the area known to the commercial fishery and DFO as the "River/Gap/Slough section of Area Four," a spot where fish passage is the narrowest and the concentration of salmon (including steelhead) the greatest.

The centrepiece of the commercial fishing industry's argument was that the sport fish interception issue was one of allocation, not conservation. In retrospect, we can now see that it was an issue of conservation and allocation. The lion's share of the salmon resource had always gone to the industry, and its needs had driven the management of the resource.

A new management regime sensitive to the biological requirements of the stocks, the legitimate demands of growing sport fishing industry and demands of First Nations, whose consti-

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tutional right of harvest had at that time recently been reaffirmed by the Supreme Court of Canada, and who were actively engaged in the negotiation of treaties that included fisheries agreements at the same time, meant a huge shift in reallocation under a new regime in which the commercial fishermen would have to accept less.

"The fishermen's union thought they could enhance their way out of the problem," Hill points out. "But, there was no way that the rest of the committee was buying that, especially considering that the Babine enhancement project got us into trouble in the first place."

The other sector representatives to the Watershed Committee were not intractable when it came to the subject of coho and steelhead enhancement. Hill recalls flying to Alaska with other committee members to witness the Americans' ocean ranching projects, in the hope that similar endeavour in Kitimat or somewhere off the mouth of the Skeena might alleviate fishing pressure on Skeena coho and steelhead.

Said Hill, "The Alaskans pump billions of smolts into the sea. I'm not sure what effect that has on oceanic pastures, but from what we saw it was a successful enterprise that was worth exploring. But, the union wasn't having any of it. They saw ocean ranching as privatizing the resource."

Ultimately, the difference of opinion surrounding the enhancement issue, in Hill's words, "blew up the committee," but not before precipitating a significant change in DFO's management paradigm, as well as a widespread recognition of the problems attending mixed stock fisheries and a heightened awareness of the importance of Skeena River sport fish.

As best as the scientists could determine, August was the peak month for steelhead migration. In recognition of that fact, DFO closed the critical approaches to the Skeena to the gillnet fleet, a practice they held to until the latter part of the 1990s.

After the millennium, however, DFO began to grant August opportunities to the gill net fleet once again. In 2001, just over 100 gillnetters fished one day. In 2002 the fishery was opened for about 210 boats. On August fourth and fifth 2003 about 200 boats set their nets. And last year DFO provided two more

openings to a fleet of 200 gillnet boats.

These openings have been driven by an urgent need to protect Skeena coho stocks. The Department of Fisheries believes that the impact on coho is greater outside of the river/gap/slough area, so by moving the fleet into the steelhead sensitive areas they will reduce coho exploitation. But in so doing they are increasing steelhead interception and ignoring the prohibition on August fishing agreed to by the Skeena Watershed Committee.

As Bruce Hill is quick to point out, these incursions into August would not have occurred had the Watershed Committee morphed into a nonprofit society and continued to sit. The disbanding of the Northwest Branch of the Steelhead Society, a small resolute polit-

*At the end of the day,
and the end of the
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hope for a new era of
fisheries management.*

ical arm of angling activism in the Northwest, also removed considerable political pressure from DFO.

The transfer of Bob Hooton to Vancouver Island and years of cutbacks in staff and resources to what had always been an under funded and inadequately resourced provincial fisheries staff has also removed pressure from the managers at federal fisheries. Even more importantly, the current minister of fisheries appears to have little knowledge or appreciation of the complexities of the Skeena fishery and its importance to the people of the province and its status as an international treasure.

Years ago the Pacific Stock Assessment and Review Committee, a federal body consisting of scientists and researchers who examine everything from the life style of geoducks to the girth of whales to fulfill their mandate and provide scientifically defensible estimates of fish stock abundance in the hope that those stocks can be preserved

and managed in a sustainable way, determined that a minimum escapement of 23,000 steelhead was necessary to ensure the survival of Skeena steelhead.

When they advanced this estimate, the committee conceded that since it required a sex ratio of one to one, a perfect distribution of a stock within a drainage and a perfect escapement to every tributary, the figure was unrealistic. To offset this the PSARC scientists factored in an additional 9,000 fish, for something they called "the distribution effect," bringing the target figure to a more defensible 32,000 steelhead.

The number was arrived at with figures generated from the data obtained from the study of Keogh River steelhead, the only study site of steelhead smolt to adult survival. The fact that the Keogh steelhead are winter run fish, while the largest component of the Skeena runs is made up of summer steelhead, and the fact that the Keogh is located on Vancouver Island, needs to be taken into account when judging the precision of this determination as well as the PSARC estimation of the carrying capacity of Skeena, which, extrapolating from an estimate of 40 fish per kilometre squared, the committee determined to be somewhere in the area of 80,000 fish.

Historic data, like that which shows that some 27,000 Skeena summer steelhead were canned during the fishing season of 1927, suggest that the figures put forward by PSARC are preposterously low. As critics of these estimates have pointed out, the immense size of the Skeena watershed and amount of productive, underutilized habitat and the productivity of individual streams unaffected by net fisheries strongly suggest that Skeena's steelhead returns numbered in the hundreds of thousands.

"How many years in the last two decades have the minimum escapement targets been met?" Bruce Hill asks rhetorically.

Not many, it turns out. Of those years, 1998 is notable. In that year, David Anderson, the first Federal Fisheries minister in decades who actually knew and appreciated the problems attending the west coast fishery, examined the evidence, concluded there was a coho crisis and shut down the Skeena River fishery. Predictably, the steelhead

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escapement was estimated to be approximately 80,000 fish, the returns to all the major tributaries in the drainage were good and even some streams that were thought to have no fish left had some return.

All of this points to the fact that there is a real data problem when it comes to the Skeena fishery that continues to cripple attempts at an effective management regime. To start with, there is no credible baseline data on steelhead, since the collection of data didn't begin in earnest until 75 years after the advent of the fishery. Commercial fishers are required by law to report steelhead catches. These data are called "hail figures" and are collected by fisheries officers who boat amongst the fleet and call out to fishermen to report their catches. Since it obviously is not in a commercial fisher's best interest to report high rates of steelhead interception, critics contend there is a high likelihood of underreporting. This contention is given some weight by comparisons made between catch ratios of different species reported by the fleet and those obtained with the same methodology in the test fishery a short distance upstream.

The processing plants also have a legal obligation to report steelhead landings that are supposed to show up on sales slips. The sales slips from these plants show little or no steelhead, yet contractors hired by provincial fisheries have observed and reported tote loads of summer steelhead inside the processing facilities.

The North Coast salmon fishery is an old-fashioned industrial "derby" fishery. It requires giant subsidies to keep fishing. It's overcapitalized to the extent that a commercial fisherman must strive for larger and larger catches to stay afloat. It's a dwindling fleet fishing mixed stocks of dwindling, and in some cases endangered, fish.

"We have some idea and can exert some control over the Areas 3, 4 and 5 fisheries," says Hill, referring to the approach water fisheries, "but what about further out, in Areas 6 and 7. And, what about the Alaskans? I remember when we wrote a letter to Fran Ulmer about Alaskan interceptions, and she sent back a letter pointing out that we had 1500 or so gillnets, all of them 1200 feet long, in the mouth of the Skeena,



An angler and guide pursue wild steelhead on British Columbia's famed Skeena River. Photograph by Fred Seilert.

and we were the problem. Still, we know they catch lots of steelhead."

Alaska it is at the top of the funnel when it comes to salmon stocks. Why should Alaskan reduce their harvest of pink and sockeye salmon (many of which are bound for Canadian rivers) to reduce steelhead interceptions when many of those fish will ultimately become tangled in Canadian nets anyway?

At the end of the day, at the end of the century, we need to hope for a new era in fisheries management: one that embraces selective harvesting methods in addition to the holding boxes required of gillnetters presently; one that encourages selective in-river harvest technology, like the beach seine initiatives and fish wheels that have been employed periodically by First Nations inland; one that puts fish first and is sensitive to the salvation of chum, coho and lesser sockeye stocks as well as to the demands of steelhead conservation.

Against this complex, and in so many ways unsatisfactory backdrop, Skeena steelhead have been holding

their own, thanks to a number of factors including ocean survival, less commercial fishing pressure, and less angling pressure and no kill angling regulations. Though they give the appearance of abundance compared to the depleted and extinct steelhead stocks elsewhere, the Skeena summer runs are a shadow of what they once were and could be again.

"Do we have a chance to bring them back?" I ask Bruce Hill.

"I think so," says Bruce, "But it's going to be a lot harder. Before, we just had to worry about returning adults. If they put those damn fish farms at the mouth, we're gonna have to worry about the migrant juveniles too."

The carpenters, electricians, painters and the plumbers are through for the day. The decaying building that houses Bruce's office looks a bit better as I leave it than it did when I arrived. The facade is new and white; the wall facing the parking lot sports a new coat of deep green paint. There may be hope for the place.





Steelhead Kelts, the Columbia River System's Forgotten Fish

by Bill Bakke

— *Native Fish Society* —

On the Columbia River, steelhead kelts are the "forgotten life history" says researcher Allen Evans. He and Bob Wertheimer of the U.S. Army Corps of Engineers presented information to members and guests of the Native Fish Society at their March 2005 School of Fish lecture series.

In the following article, Bill Bakke, executive director of the Native Fish Society, gives an account of the researchers findings. Kelt is a term for spawned-out steelhead with the capacity to spawn multiple times over their lives.

Says Bakke, "It's an interesting issue that is largely being ignored by fish management agencies, but I hope to add a little heat."

Bill Bakke may be reached at nfsociety@quest.net.

In 1994, NFS asked the NOAA Fisheries to improve protection for steelhead kelts at the dams on the mainstem Columbia and Snake rivers. The 2000 Biological Opinion directed the COE to study kelt survival. The limited work that has been done was prompted by a request by the Native Fish Society.

The fish agencies have concentrated on smolt passage at the dams, not kelts. The juvenile by-pass structures were not built to pass these big fish, and kelts get damaged and killed as they try to go through them. Like smolts, the best path for kelts is over the spillway at each of the dams.

Both Evans and Wertheimer became interested in doing research on steelhead kelts because they saw so many of them. Thousands of kelts appeared in the spring at Lower Granite Dam on the Snake. Not much was known about them, about how they migrated past the dams, the timing of the migration, survival rates, and just what did a kelt look like. It was

assumed that kelts were the dark, beat-up fish seen at the dams. Evans had worked out an ultra-sound technique to determine if the fish had eggs or sperm in the body cavity. What they discovered is that the bright, fine looking fish were the kelts and the dark ones were the maiden fish on their way upstream to spawn.

Kelts are moving downstream in March to June, which is the same time that smolts are moving downriver, but the kelt migration lasts longer. The

***Two-time spawners
pass over the dams 32
times in their life
history. A fish that
can do that is very
lucky and very strong.***

maiden fish are the ones that have overwintered in the river and begin to move upstream once the water temperatures begin to warm in March. Because of this, the hold-over maiden fish are dark, while the kelts brighten up as they move downstream, looking like very large smolts. The ultra-sound investigations cleared up that confusion.

Evans and Wertheimer's research has determined the survival rate for kelts to repeat spawner from Lower Granite Dam on the Snake to below Bonneville Dam. That rate is then compared to survival from lower Columbia tributaries. The more dams steelhead kelts have to pass, the lower their survival. The survival from kelt to repeat spawner from the Kalama River, which is 118 miles from the ocean — with no dams — in the way is 17 percent. Hood

River is 273 miles from the ocean and the kelts have to pass Bonneville Dam, with a survival of 10 percent. The Yakama River is 539 miles from the ocean and above four dams; it has a survival rate of 2 percent. Kelts from the Salmon and Clearwater rivers in Idaho and the Grande Ronde and Imnaha rivers in Oregon are as far as 1,500 miles from the ocean, with eight dams for the fish to pass. They have a survival rate of less than 1 percent.

Snake River two-time spawners have to pass dams 32 times in their life history. They pass eight dams as juveniles, when they first go to the ocean, then as returning adults for their maiden spawning migration. Then they must pass the same eight dams again as kelts then again as repeat spawners. A fish that makes it is both very lucky and very strong. Along the way, of course, it must avoid nets and anglers. Since kelts are hungry they are easy to catch, so one that makes it back to spawn again is indeed lucky.

The paths available for kelts to pass dams downstream are through navigation locks, down fishways, ice and trash sluice ways, or over the spillway. In drought years, the safest path, over the spillways, is not always available.

Wertheimer evaluated the survival rate using barge transport around the dams. Comparing it to in-river passage, the barged fish survived at 2.5 percent compared to less than one percent for in-river passage. At some dams, such as Lower Granite Dam, the removable spillway weir is being tested, but Wertheimer believes kelt passage will probably not increase for Snake River steelhead. So are there other options by which to increase the contribution of the steelhead return spawner?

Reconditioning is one alternative that is being tested. The Yakama Indian Nation is exploring kelt reconditioning, an experiment that NFS supported for

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BPA funding. It works this way: Spawned-out steelhead are captured at dams in the Yakima River and taken to a hatchery, then fed for a year until they re-mature, then released to the river to spawn again.

When the Yakima biologists tried this in 2000 they got an 18 percent survival rate but only 12 percent of the kelts re-matured. The problem they faced initially was simply to get the kelts to start eating again. At first they fed them fish pellets, but the kelts ignored them. Being wild steelhead kelts they had never seen a food pellet and did not associate them with food. The biologists then tried krill, a natural food from the ocean that is orange in color. When krill were added to the kelt ponds, the fish responded enthusiastically. But since krill are expensive, the next step was to find a less expensive food the kelts would eat, so they dyed the fish pellets orange and it worked, the kelts ate them. Once they began to eat again, it was easy for them to continue as long as the food was the right color.

Kelt survival increased with the new food trickery, and in 2003 the kelt survival increased to 62 percent and re-maturation increased to 57 percent.

Increasing the number of repeat spawners above the dams is an important goal for Evans and Wertheimer because it is aimed at the life history diversity of steelhead. Most of the repeat spawners are females (80 percent) and when they return they are larger and carry more eggs. As important, these repeat spawners increase the resilience of steelhead populations by increasing the number of generations in the spawning population. Wertheimer says, "These are the steelhead that have survived; they are the most fit for survival." Compared to smolts with an aver-



Columbia River steelhead kelts were mistakenly taken for maiden fish until researchers, using a new ultra sound technique, discovered their true identity. Top photo by Allen Evans, bottom photo by Robert Wertheimer.

age smolt to adult survival rate of 2-4 percent, the kelt survival of 10 percent is an important trait to maintain. Their research also shows individual steelhead returning to spawn as many as four times.

"Kelts are like giant smolts" says Evans, and at Lower Granite Dam, they

estimate the number of kelts to be 15,000, but due to poor survival, these fish are removed through mortality from the annual pool of available spawners in the Snake Basin.

The only way the kelts can be passed over the dams is by spill. If there

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Multiple trips through the gauntlet of the Columbia River hydro system makes for a serious survival challenge to wild steelhead kelts. Photograph by Jim Yuskavitch.

is no spill, they are stuck above the dams. Passage through the turbines is lethal, and attempted passage through the fish by-pass facilities causes damage and death. These by-pass facilities are designed to pass smolts, not adults. Also, the slack water in the reservoirs does not promote kelt survival and it is believed they die due to extended exposure to warm water and disease. Consequently, the repeat spawner success is less than 1 percent for Snake River steelhead, whereas survival below Bonneville Dam is from 10 to 17 percent.

"These fish have the right stuff," Evans told the audience, "and we should not give up on them."

Jim Muck, District Fish Biologist for the Umpqua River in Oregon, (personal communication) said the kelt survival rate to repeat spawner was 30 percent of the winter steelhead run on the Smith River in 2001, 18.6 percent in 2002, and 11.4 percent in 2003. Ocean survival is a critical factor, because

repeat spawner abundance is influenced by ocean conditions that support kelt survival. Evans and Wertheimer also noted this relationship in their work on the Columbia and Snake Rivers.

Researcher Hendry (2002) looked at repeat spawner abundance on the Dean River in British Columbia. He found that 13.8 percent of the steelhead run on the Dean were repeat spawners between 1973 and 1976. But they declined between 1977 and 1982 to 8.3 percent of the run and in 1996 they made up only 6 percent of the run. He noted that this was the lowest in eleven years and lower than other B.C. populations. There is as yet no explanation.

Researcher Leider (1985) determined from work on the Kalama River in Washington that winter and summer steelhead repeat spawners generally returned at the same time that they were tagged, showing that repeat spawners return at the same time of their initial migrations. He suggested that the need for steelhead to migrate to

natal spawning areas upon reaching sexual maturity may impose relatively rigid migration schedules.

By making improvements for wild steelhead kelt downstream passage at Columbia River dams, steelhead life history can be fully expressed, and the runs will be more resilient and healthier. These wild steelhead are also protected under the ESA, and the massive kill of kelts as they migrate down river through the reservoirs and past dams is a "take" under the ESA. Funding for this research and developing of methods to improve kelt survival are critical; however, in the last few years this funding has dried up, and information that could help solve the problem is being lost.





More Steelhead Anglers Are Saying Goodbye to the Catch-and-Kill Ethic

By Mark Freeman

— Medford (Ore.) Mail Tribune —

This story on catch-and-release steelhead fishing on Oregon's Umpqua River, where new harvest rules allow anglers to kill one wild steelhead per day and up to five per year, first appeared in the February 17, 2005 issue of the Medford Mail Tribune. It is reprinted with permission.

Mark Freeman may be contacted at mfreeman@mailtribune.com.

Standing on the banks of the Umpqua River on Feb. 8, Rob Ginno stared with disbelief at what he saw in the net. This steelhead seemed as round as a soccer ball and as long as a 2-by-4, and it had Ginno's hook imbedded in its mouth.

Guide Jim Dunlevy hoisted the wild winter steelhead still wrapped in the mesh net. The digital scale barked a number not seen from an Oregon coastal steelhead in many years.

"When I talk big, I'm talking 20-pounders," says Ginno, 48, a Chico, Calif., resident. "I never imagined ever seeing something that large, let alone catching it."

The men met eyes, then worked quickly to preserve history. Ginno took out the measuring tape — 43 inches long, 22 inches around in front of the dorsal fin and 19 inches behind it. Then the flash of a digital camera.

If mounted, this male steelhead would glisten in Ginno's general contracting office for years.

"I just said, 'Let him go,'" Ginno says. "So we let him go."

The big one didn't get away that day, but he swam away nonetheless.

Ginno could have kept that massive steelhead under the Umpqua's new harvest rules that allow anglers to keep one wild steelhead a day and up to five a year. "But I don't kill wild fish," he says. "I just don't."

Instead, Ginno's caught-and-released story is one that wild-fish advo-

cates say is an extreme version of a growing trend among all forms of anglers who believe the region's best steelhead are better spawned than stuffed.

Throughout the Northwest, salmon and steelhead anglers are eschewing the old mantra of "Kill them all, large and small, eat the best and smoke the rest."

More anglers now prefer that the wild steelhead they catch have a chance to pass on their genes.

He could have kept that massive wild steelhead under the Umpqua's new harvest rules. But he doesn't kill wild fish.

"I think it's become a big part of the ethic for fishermen, no matter what type of gear they use," says Bill Bakke, founder of the Native Fish Society and a catch-and-release preacher for decades.

"A story like that travels around, and I'm sure it'll raise some eyebrows," says Bakke, of Portland. "But more and more anglers are making a statement with catch and release. 'They're seeing the value in these fish, and they're taking care of their fisheries.'"

It's easy for anglers to claim to be catch-and-release fishermen when looking at an 8-pound, cookie-cutter steelhead. But Ginno's fish is the largest since Medford resident Don Hawk caught and killed a 28-pound Chetco River winter steelhead in 1973.

The state record is a 35-pound steelhead caught in the Columbia River in 1970.

In both cases, the big fish became that way because of a variety of factors, ranging from ocean conditions to numbers of spawning runs to predator escapement and genetics.

Anglers realize more than ever now that size does matter. Big steelhead beget big steelhead.

"I encourage all my customers to release wild steelhead," says Dunlevy, who guides out of Medford. "These are beautiful fish. If everyone who caught them killed them, we won't have fish like this to catch in the future."

This beautiful fish came to Dunlevy and Ginno on the last cast of a good day on the main-stem Umpqua.

Ginno and fishing partner John Maddrill of Chico already had hooked six wild fish and one hatchery fish out of Dunlevy's driftboat downstream from the Umpqua ramp.

"It was a really light bite," Ginno says. "I set the hook and the fireworks went off." After a few minutes of thrashing, the steelhead screamed more than 100 yards upstream.

Dunlevy and Maddrill started teasing Ginno, imploring him to tighten his drag and stop pampering the fish. Ginno convinced Dunlevy to start his motor, and they chased upstream after the steelhead. When they got close, the fish swirled in view.

"Everyone was joking around," Dunlevy says. "Then we saw the thing and everyone got real tense. It was, OK everybody, be careful."

Within 15 minutes, Dunlevy cautiously slipped the net under the steelhead, which barely flopped in.

Dunlevy kept the fish in the water, holding it up only for a few pictures, the measurements. They weighed the fish in the net with a digital scale.

"Later, we weighed the net and it was less than a half a pound," Dunlevy says. "So we're saying it was 28 pounds."

Dunlevy hoisted the fish so

Judge Rules that Government's Salmon Plan is Illegal ... Again

On May 26 of this year, a federal judge ruled that the federal government's most recent salmon plan for the Columbia River basin was illegal. It was opposed by fish advocates, because, among other things, it considered the dams on the Columbia and Snake rivers to be part of the natural condition of the river, and because the plan only offered to maintain populations of ESA-listed salmon and steelhead, not recover them.

The following report on the decision was provided by the coalition of conservation groups involved in the lawsuit brought against the federal government on behalf of the fish.

On May 26, 2005, Federal Court Judge James Redden ruled that the federal salmon plan for the Columbia and Snake rivers is legally flawed in four different respects. First, Judge Redden took issue with the federal agencies' assertions that the dams were part of the immutable landscape. Second, he states that NOAA's approach in this biological opinion "stands in sharp contrast to...prior biological opinions" and is "insufficiently comprehensive to insure" the protection of salmon. Third, NOAA did not properly analyze critical habitat for salmon. And fourth, "NOAA's jeopardy analysis is contrary to the law because it does not address the prospects for recovery of the listed species."

"Today's decision is a victory for everyone living in Oregon, Washington and Idaho," said Todd True, Earthjustice's lead attorney on the case. "Both sides had their day in court and the Judge ruled that the federal government has shirked its responsibilities to this region and cannot legally manipulate the Columbia and Snake rivers in ways that will drive our salmon to extinction."

This year's low return of spring chinook has been devastating for Northwest people and communities.

Tribal, sport and commercial fisheries have been shut down or drastically curtailed. In many places, fishing was closed almost as soon as it opened. Boats are in dock, guides are idle and millions of dollars destined for river communities now and in coming months won't be realized this year. While federal officials have repeatedly stated that their plan is "on track," this year's returns indicate just the opposite.

"The judge affirmed today what the low returns of spring chinook have been telling us all for weeks - this plan does not work and it is hurting the tens of

tions for salmon migrating through the Columbia and Snake rivers this summer.

"What's at stake here is nothing less than the Northwest way of life: abundant salmon, stable jobs and reliable energy," said Jan Hasselman, National Wildlife Federation. "Our vision is for an economically and ecologically recovered Columbia basin. However, this administration's vision for the Pacific Northwest is to spend \$6 billion managing the path of salmon towards extinction."

Recent studies have shown that restoring healthy runs of wild salmon would greatly benefit the regional economy. With a restored salmon fishery, Idaho alone would see almost half a billion in economic benefit from sportfishing. Similarly restored fisheries in Washington and Oregon would raise the total to almost six billion dollars in economic benefit to the region. In addition, the Pacific Coast Federation of Fishermen's Associations estimates that restoration of Columbia and Snake river salmon, would net the region an additional \$500 million per year in commercial fishing revenue and as many as 25,000 new family wage jobs.

"The federal government has allowed the four lower Snake River dams to threaten our jobs and way of life for far too long," said Glen Spain, Pacific Coast Federation of Fishermen's Associations. "Our Northwest leaders have the power to put this region on the right path, a path that leads to stable jobs, good fishing, abundant salmon and places in the outdoors for our families to enjoy. Anything short of that only leads to extinction for salmon and the people that depend upon them for jobs."

Scientists have told us that the Columbia and Snake river hydroelectric dams are by far the leading killers of salmon and steelhead. NOAA Fisheries' own documents state that the dams are allowed to kill as many as 86 percent of out-migrating juvenile salmon. Yet the federal government

What's at stake is nothing less than the Northwest way of life: Abundant salmon, stable jobs and reliable energy.

thousands of people we employ in the Northwest," said Liz Hamilton, Northwest Sportfishing Industry Association. "Our businesses and region have suffered long enough. It is time for real salmon recovery - recovery that increases the number of jobs, the strength of our communities and meets our responsibilities to restore a balance to the Northwest."

Today's decision marks the federal government's second unsuccessful attempt at crafting a viable salmon plan. In May of 2003, Judge Redden ruled that an earlier plan also was illegal and ordered it replaced within the year. In response the federal government issued a new plan in late 2004. Now that the judge has ruled the 2004 plan illegal, he will be considering a request from plaintiffs to establish specific protec-



Barging smolts downriver and through the dams has been one of the federal government's long-time salmon restoration strategies. Photograph by Jim Yuskavitch.

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continues to disregard the value of these fish and the health of the rivers to people of the Northwest by not even considering the removal of the four obsolete dams on the lower Snake River - which scientists deem the best and surest way to salmon and steelhead recovery.

"We can have both clean, affordable energy and abundant, wild salmon," said Sara Patton, NW Energy Coalition. "All that stand in the way are four dams out

of the more than 400 dams in the Columbia-Snake system. These four out-dated dams produce relatively little electricity, and the power they do produce can be easily replaced with cheap energy efficiency and cost-competitive renewable energy facilities that, in turn, will create hundreds of permanent, local family-wage jobs and new farm income."

"This decision affirms the fact that all salmon recovery options need to be on the table, including removing the

four lower Snake River dams, which are draining our region's resources," said Michael Garrity, American Rivers. "We can replace the benefits provided by these four dams, and in doing so we can create jobs, revitalize local economies, create great fishing and recreational opportunities and preserve our Northwest way of life."

"The Bush administration and the federal agencies have failed the people, communities, salmon and salmon-dependent businesses of the Northwest for far too long," said Kathleen Casey, Sierra Club. "The Judge has stopped the charade of salmon recovery and now insisted that a real plan that accomplishes real recovery be put into place. The people and communities of the Northwest know that salmon and steelhead are part of our quality of life, support sustainable businesses and are important for our families and our future."

"It's a shame when we have to rely on the courts to affirm and uphold some of nature's basic truths, but thankfully today Judge Redden has done that," said Jeff Curtis, Trout Unlimited. "The take-home message here should be that if we want more fish in the river, we need to provide more of a river for fish."



Current Endangered Species Act Listings for Columbia River Basin Steelhead and Salmon

Steelhead		Chinook Salmon	
Upper Columbia River Evolutionarily Significant Unit (ESU)	Endangered	Upper Columbia River Spring Run ESU	Endangered
Snake River Basin ESU	Threatened	Snake River Spring/Summer Run ESU	Threatened
Lower Columbia River ESU	Threatened	Snake River Fall Run ESU	Threatened
Upper Willamette River ESU	Threatened	Lower Columbia River ESU	Threatened
Middle Columbia River ESU	Threatened	Upper Willamette River ESU	Threatened
Sockeye Salmon		Chum Salmon	
Snake River ESU	Endangered	Columbia River ESU	Threatened
Coho Salmon		Note: An Evolutionarily Significant Unit is a distinctive group of Pacific salmon or steelhead.	
Lower Columbia River ESU	Threatened	Source: NOAA Fisheries	

Four Pacific Northwest Dams Whose Days are Numbered

By Jim Yuskavitch

— Editor, *The Osprey* —

Although wild fish advocates have been consistently frustrated in their quest to breach the Snake River dams, a number of salmon and steelhead killing dams in the Pacific Northwest are slated for removal over the next several years.

In this article, Jim Yuskavitch, editor of The Osprey, examines several of those projects.

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The negative impact that dams have on salmon and steelhead populations is no secret to fish advocates, fishery managers and even the owners and operators of the dams. Unfortunately, it has taken us a very long time to learn that reality and move to do something about it — nearly 400 years, in fact.

When the first New England farmer built the first dam to harness the power of water to turn the grindstone that transformed his wheat into flour, the fate of dams and fish were intertwined. Those New England dams that powered the miller's mill and later the factories of the Industrial Revolution were the beginning of the end for the Northeast's famed Atlantic salmon runs.

Here in steelhead and Pacific salmon country, we fared a little better, but only because the dam builders got a late start. Dam construction in the Pacific Northwest began at the turn of the last century and continued for the next 100 years for the purposes of providing irrigation, flood control, transportation, flatwater recreation and hydroelectric power. The impacts on fish runs were the same as they were a century earlier in New England.

These dams were often built with little or no consideration given to the needs of anadromous fish. Many had no fish passage facilities. And if fish ladders were included, they often did not

work very well. Few, if any, accommodations were made for downstream migrants.

But a light at the end of the dark tunnel down which salmon and steelhead have been swimming appeared in recent years when the operating licenses for many dams were nearing their expiration date. These licenses were issued by the Federal Energy Regulatory Commission, typically for 30 to 70 years. Dam owners were required to apply for a new license if

A light at the end of the dark tunnel down which salmon had been swimming appeared in the form of FERC relicensing.

they wanted to continue operating their projects beyond the original license period.

This time around the dams' effects on fish and other natural resources had to be taken into consideration and mitigated, if those impacts were serious enough. This has given fish advocates an opportunity to make dams more "fish friendly" by requiring better passage facilities, more responsive water flow management and other dam operation improvements.

Some dams, however, are not economically viable operations if they require retrofitting to accommodate fish passage, and this opened the window for fish advocates to push for removing dams whose liabilities outweighed their benefits.

In other cases, such as dams intended to provide for irrigation needs, better alternatives for delivering water were developed.

While there are a number of dams slated for removal or potential removal, this article profiles four high profile Pacific Northwest dams that will be removed within the next several years. These four dams, the Elwha, Glines Canyon and Condit dams in Washington State and Oregon's Savage Rapids Dam, have blocked runs of salmon and steelhead to varying degrees and have been targeted for removal by conservationists for many years.

Elwha and Glines Canyon Dams, Washington

Between 1910 and 1927, two large dams were constructed on the Elwha River. The 108-foot-high Elwha Dam was completed in 1913 at river mile 4.9. Fourteen years later the 210-foot-high Glines Canyon Dam was completed 8.5 miles upstream of the Elwha Dam. Built by Northwestern Power & Light Company to supply electricity to mills at Port Angeles, ownership was transferred to the Washington Pulp & Paper Corporation in 1934. The Elwha Dam formed a 267-acre impoundment known as Lake Aldwell and the Glines Canyon Dam created 415-acre Lake Mills. Both dams were constructed without fish ladders.

The Elwha River rises in the Olympic Mountains on the peninsula of the same name, flowing about 75 miles to the Strait of Juan de Fuca, a few miles west of the city of Port Angeles. Historically it harbored runs of all the North American species of salmon — Chinook, coho, chum, pink and sockeye — as well as steelhead, cutthroat trout and bull trout. It is estimated that this river system produced about 380,000

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Completed in 1913, the Elwha Dam blocked access to 70 miles of spawning habitat. Photograph courtesy of the National Park Service.



The Elwha River heads in the pristine mountain country of Olympic National Park. Photograph courtesy of the National Park Service.

salmon and steelhead annually.

The construction of the Elwha Dam without fish passage facilities changed all that, cutting the runs off from the upper 70 miles of river, which constituted 93 percent of available habitat. With the dams in place, run numbers dropped to a few thousand fish, which are forced to spawn in the 4.9 miles of poor-quality habitat below the Elwha Dam. The loss of the salmon runs also affected upriver wildlife and ecosystems, denying them the benefit of nutrient exchange provided by the decaying carcasses of spawned-out salmon. The reservoirs formed by the dams also flooded wildlife habitat, along with the river's former pink salmon spawning grounds, now at the bottom of Lake Mills.

When Olympic National Park was

expanded two years after its creation in 1938, Glines Canyon Dam was included within its new boundaries.

In 1968, Crown-Zellerbach, which took over ownership of the dams in 1937, filed with the Federal Energy Regulatory Commission to renew its operating license for the Elwha Dam, then followed with a re-licensing application for the Glines Canyon project in 1973.

This was the opportunity that fish conservationists had been waiting for. A number of organizations fought the license renewal and pressed for removing both dams to restore the runs of anadromous fish.

By the late 1980s, the dams had changed ownership a couple of more times. Now in the hands of Daishowa America, the company was becoming concerned — in the face of opposition to its re-license applications by the Seattle Audubon Society, Friends of the Earth, Sierra Club and others — that continued operations would become too expensive. The company began searching for a way out.

Over the next few years, legal intervention and lobbying by a growing list of conservation organizations and the Lower Elwha Klallam tribe, which has suffered from the loss of salmon runs and also wanted the dams removed, intensified. As a result, Congress passed the Elwha River Ecosystems and Fisheries Restoration Act in 1992.

The Act direct-

ed the Secretary of the Interior to study ways to restore the Elwha's fisheries and ecosystem. Finding that removing the dams was the best course of action, the federal government purchased both dams in February 2000 for \$29.5 million as the first step in their eventual demise.

"We provided most of the funding for the research that we used to pass the legislation and put in a lot of lobbying in Washington, D.C.," recalls Robert Ellofson, who is the Lower Elwha Klallam tribe's Elwha River restoration director. "It passed on the last day of the session."

The benefits of taking out the dams are many. It will open the upper 70 miles of river to anadromous fish runs for spawning and rearing habitat, as well as permit free upriver and down river movement of resident salmonids. Since most of the river is in Olympic National Park, the habitat is pristine.

"It will open up the river for more than habitat," says the National Park Service's Elwha Project manager Brian Winter. "It will also restore the river's natural sediment regime and nutrient cycle."

There are economic benefits as well. The 1996 Final Environmental Impact Statement reported that increased sport and commercial fishing and other recreational and tourism activities are worth \$164 million over the 100 years following the dams' removal.

The process of removing the dams

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The Glines Canyon Dam was completed in 1927. Photograph courtesy of the National Park Service.

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This view shows the Elwha River immediately above Elwha Dam. Photograph courtesy of the National Park Service.

is scheduled to begin in 2008, with completion probably in 2010 or 2011. Currently, engineers are finishing up the design for several water quality treatment facilities designed to deal with the temporary increased sediment load the river will carry once the dams are gone. This includes a water treatment plant for the city of Port Angeles, a second for the Daishowa America mill and two fish hatcheries, and a third to treat a surface water intake.

The Lower Elwha Klallam tribe is also preparing to deal with water-related issues including water quality on reservation lands, some potential flooding due to an estimated two-foot average increase in the river level, and septic considerations, since the groundwater level is expected to rise.

The removal plan calls for taking out the Elwha Dam in its entirety but leaving the Glines Canyon Dam's powerhouse and spillway as national park historical exhibits. The dam removal process would be completed over a two-year period.

The question of what will happen to all the sediment that has built up in the reservoirs behind the dams is another major issue. It is estimated that combined, the reservoirs contain 8.5 million cubic yards of coarse sediment and 9.2 million cubic yards of silt and clay.

Dam removal planners believe that less than half of the sediment and silt in the reservoirs will be eroded downstream. The rest will be deposited in the river's floodplain. The drained reservoirs will be restored by a combination of planting native species and natural re-vegetation.

Power lost by the removal of the dams will be replaced by purchasing electricity from the Bonneville Power Administration. The Daishowa America mill in Port Angeles is the only user of the power generated by the two dams.

There are two parts to the salmon and steelhead restoration plan. The first is a five-year moratorium on harvest by the state and tribe, with a decision on when and how much to harvest based on how well the runs rebound.

The second part is 'outplanting' of hatchery-raised fish with the goal of rebuilding a naturally reproducing population. The tribe is raising spring Chinook, coho and steelhead for outplanting. The Washington Department of Fish and Wildlife is raising fall Chinook. The river's sockeye run is expected to repopulate itself naturally.

"The tribes couldn't prevent the dams from being put in and we feel bad about them being there," says tribal-member Elofson. "But we will be very happy when they are removed."

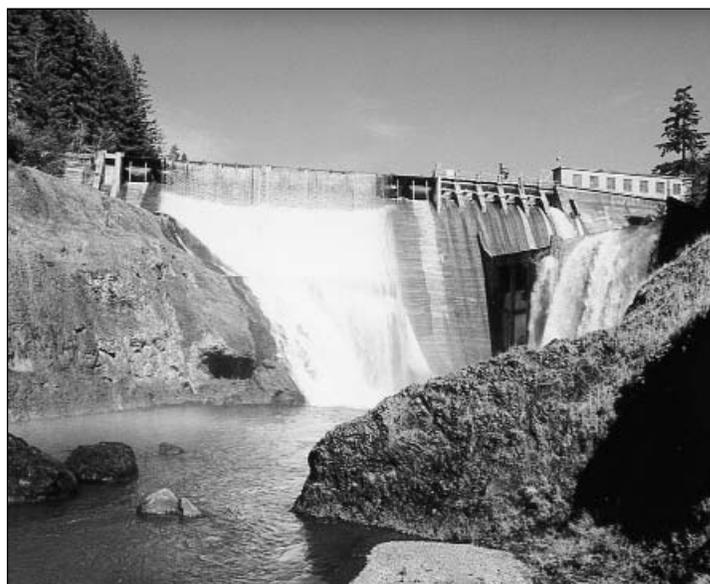
Condit Dam, Washington

Constructed in 1913, three miles up the White Salmon River from its mouth, the 125-foot-high Condit Dam is owned by the utility company PacifiCorp and generates 14 megawatts of power.

The White Salmon River flows into the Columbia River about 60 miles east of Portland. It was once an important salmon stream, but the dam, which was built without fish passage, ended that status.

In 1989, PacifiCorp began the process of obtaining a new FERC 30-year operating license. When FERC issued its final environmental impact statement in October 1996, it required \$30 million in project improvements as a condition for relicensing — mainly for

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Condit Dam, on Washington's White Salmon River, is owned by PacifiCorp. Photograph courtesy of PacifiCorp.



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fish passage and screening facilities. After two years of negotiations with state and federal agencies, the Yakama Indian Nation and a coalition of environmental organizations, the company agreed, in September 1999, to remove the dam.

"What happened was the FERC required conditions and terms for a new license that would render the project uneconomic," says PacifiCorp spokesman Dave Kvamme. "That would drive the cost of the project to a place that was not good for our customers."

Kvamme pointed out that when utilities determine the economic viability of relicensing projects, they are looking at a variety of factors including current and future operating costs, infrastructure costs and future energy costs. "It isn't just looking at fish ladders and screens," he says.

When PacifiCorp weighed all those variables, it came to the conclusion that the river was better suited for fish than hydropower generation.

The arrangement calls for PacifiCorp to continue to operate the project on a temporary license without the fish passage requirements while it builds a fund from the dam's revenues to finance its removal. The original cost estimate for removal was \$17.6 million, but is now about \$20 million. Included in those costs are \$1 million to the Yakama Nation for fish restoration projects on the White Salmon and \$500,000 to enhance a traditional tribal fishing site at its mouth.

Originally scheduled for removal in 2006, it is now planned for October 2008. The dam will be leveled with a combination of explosives and cutting out some structures in sections. Once the dam is breached, about 2.2 million cubic yards of sediment and 240 cubic yards of concrete will be flushed down the river, according to a study by the U.S. Army Corps of Engineers.

"The short-term impact of that sedimentation on the three-mile stretch will be tremendous," says Carl Dugger, WDFW regional habitat program manager and its lead negotiator for the Condit Dam removal project. "It will wipe out everything. But over the long term it will not be a problem. It will be nothing compared to what Mount St. Helens did [on the Toutle River]."

With the dam gone, 26 miles of habi-

tat will become available, although migrating fish will eventually be stopped by Big Brother Falls, a natural barrier.

Habitat on the mainstem and tributaries is, for the most part, pretty good. The White Salmon is a deep canyon with healthy riparian vegetation. Buck Creek, and Rattlesnake Creek, both major tributaries of the White Salmon, are in generally good shape, but may need a little habitat work as well as fixing some potential barriers to fish passage. Buck Creek, for example, has an irrigation dam on it that may require a fish ladder, and Mill Creek, another tributary, has a number of culverts that may need to be replaced.

*The Tribe couldn't
prevent the Elwha
and Glines Canyon
dams from being built.
But they will be very
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removed.*

WDFW has identified fall Chinook salmon as the White Salmon's primary native stock, as far as they can tell. The department plans to capture broodstock, incubate them at its Spring Creek hatchery, then acclimate and release the juvenile fish into the White Salmon. The goal is to restock the river to create a self-sustaining, naturally reproducing population. Over time, straying coho and steelhead from the mainstem Columbia River will likely colonize the White Salmon as well.

Savage Rapids Dam, Oregon

An irrigation dam built in 1921 at river mile 107 on the Rogue River five miles east of Grants Pass, the Savage Rapids Dam is owned by the Grants Pass Irrigation District. The irrigation district was formed in 1917 with an 18,400 acre feet water right, although they typically use about half that.

The dam was initially constructed without any fish passage. In 1921 the

State of Oregon and private citizens built a fish ladder on the dam's north side. A south side fish ladder was constructed in 1934. The dam also has rotating fish screens intended to keep migrating fish out of the irrigation diversion.

Unfortunately, neither the screens nor the ladders worked very well, even with some improvements made in the late 1970s. While the dam did pass fish, it gained a reputation as a fish killer, especially for downstream-migrating smolts. In one well-known incident in September 1991, a seal on a diversion screen failed, killing 100,000 spring Chinook smolts that wandered off into the canal. Those kinds of system failures are a constant threat to the river's runs of spring and fall Chinook, summer and winter steelhead, and coho.

A study done by the federal government in the 1970s showed that 45 percent of the river's total spawning population of salmon and steelhead spawned above the dam. This included 100 percent of the spring Chinook run. The study also estimated that removing the dam would increase the upriver spawning population of anadromous fish by 22 percent.

"The Savage Rapids Dam has been a very contentious issue for years and has been through a number of litigations," explains Bob Hunter, staff attorney for WaterWatch of Oregon, a group that has been involved in the issue since 1988.

In 1995, an Environmental Impact Statement addressing fish passage improvements at the dam was published. But the Bureau of Reclamation, which oversees the project, refused to implement the course of action recommended in the EIS — removing the dam and installing pumps to deliver water to irrigators — because of a lack of public support.

The same year the BuRec announced it would not replace the dam with pumps, 1997, NOAA Fisheries listed Southern Oregon-Northern California coho salmon as threatened under the Endangered Species Act.

Even though the plan to replace the dam with pumps was clearly the best solution for fish and irrigators alike, it met with a great deal of opposition in this conservative, rural area. "The main problem is that there is ideological resistance to dam removal in the local

Continued on next page

Continued from previous page

community," says Hunter. One state senator even made 'saving' the Savage Rapids Dam his top priority for a time.

The situation was exacerbated by the fact that the irrigation district's board of directors flip-flopped on the issue over the years. As new board

remove the dam in 2007 and 2008."

As far as the salmon and steelhead go, little needs to be done in the way of recovery and restoration efforts. With the dam gone the fish will be able to move freely upstream and down and runs are expected to increase on their own.



The fish ladder at Savage Rapids Dam, Rogue River, Oregon. Photograph by Jim Yuskavitch.

members were elected, the issue would be revisited, and whether the board supported dam removal or opposed it depended on its makeup at any given time.

In August 2001, a lawsuit that was brought against the irrigation district under the Endangered Species Act and a water right cancellation case that was pending in the Oregon Supreme Court were settled. The settlement required the irrigation district to seek funding to implement the dam removal-pumping plan as identified in the 1995 EIS. The irrigation district was given until November 1, 2006 to complete that objective, when it would have to cease operating the dam.

As it stands now, \$6 million is needed to remove the dam and \$15 million to put in the pumps. They have secured \$3 million so far.

"The basic plan," says Hunter, "is to get the funds to have the pumps installed by the end of 2006, so we can

"It's been contested for a long time," continues Hunter. "What we have now is the sport and commercial fishing community working cooperatively with the irrigation district. It's a win-win situation for everyone."

Catch & Kill, Continued from page 11

Maddrill could snap the photos.

Cradling the fish in his right hand and holding the tail in his left, Dunlevy then held the fish in the Umpqua current. He needed no reviving "Three swipes of the tail, and he was gone," Dunlevy says.

A decade ago, most steelheaders would have said Ginno was crazy to release the fish of a lifetime that he could have kept legally.

But more and more anglers are realizing that taxidermists don't turn wild fish into trophies. Rivers do.

"I have four brothers and we all fish a lot," Ginno says. "Two of my brothers think I'm nuts. I don't think I'm nuts.

"I've got some pictures and he's in my heart," he says. "That's cool



Despite current regulations on Oregon's Umpqua River allowing limited kill of wild steelhead, more and more anglers are choosing catch-and-release. Photograph by Jim Yuskavitch

**Chair's Corner,
Continued from page 3**

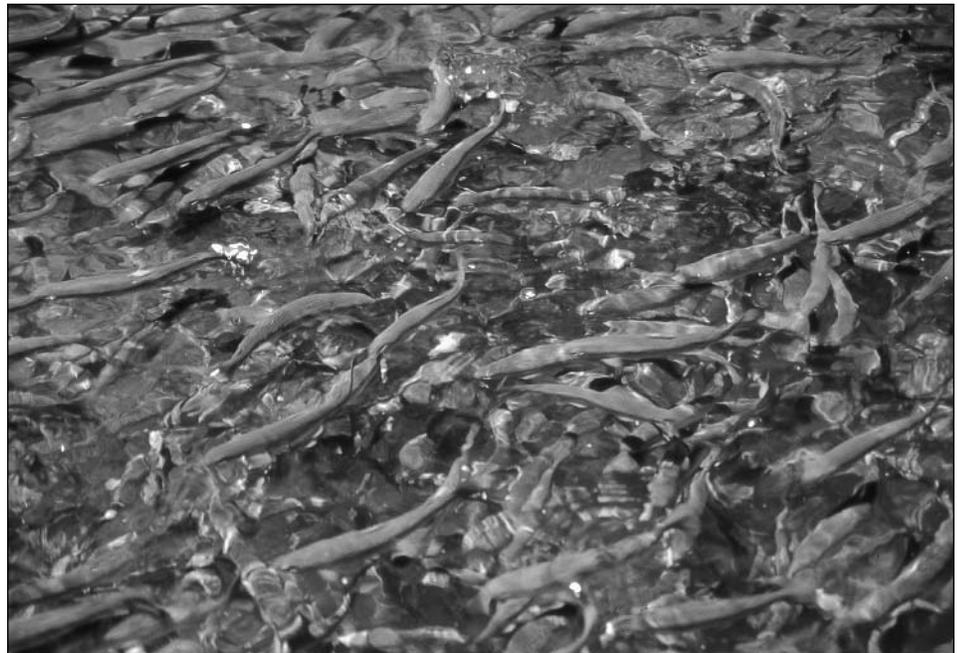
neutral molecular genetic markers, in the absence of information on morphology, behavior, and life history, it is not valid to conclude that there are no adaptive differences between hatchery and wild fish. ... The wisdom of a precautionary approach is suggested by well-known behavioral differences, e.g. in feeding and predator avoidance, the recent finding of greatly diminished brain size in hatchery fish, and by several reports of substantially reduced fitness in hatchery fish ... Yet in all cases with extant wild population(s), even those with no data on either quasi-neutral molecular markers or potentially adaptive traits or fitness, a determination of the degree of similarity was made. This does not appear to be justified to us; we believe that in the majority of cases there is insufficient evidence on which to make a reliable assessment of similarity ... The scientific justification for including hatchery fish in an ESU in such cases is extremely weak."

"In the context of restoring wild self-sustaining populations of salmon, placing increased emphasis on the future adaptation and continued persistence of an ESU in a changing environment would justify the categorical exclusion of hatchery fish from most ESUs."

"To the panel it appears that the proposed hatchery policy directly violates the thinking of leading NMFS scientists."

How could the scientific message be more clear, and how could the proposed Hatchery Policy diverge so far from the science to the great detriment of the fish?

Consider this. In February of this year, the results of a survey sent by the Union of Concerned Scientists and Public Employees for Environmental Responsibility to the 1,400 scientific employees of the U. S. Fish and Wildlife Service was released. It received a 30 percent response rate, unusually high for a survey. Over 20 percent of responders said they had been "directed to inappropriately exclude or alter technical information," and over half of responders said they had been ordered to alter findings to lessens species protection. Could NOAA Fisheries scientists be on the receiving end of the same type of political pressure as the Fish and



The scientific literature increasingly argues against using hatchery fish as part of efforts to recover wild fish. Photograph by Jim Yuskavitch.

Wildlife Service people? The answer seems obvious.



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