A LAWMAKER'S VISION:  
AND SOME THOUGHTS ON THE PAST

Sen. Bob Oke

Washington's Bob Oke is the state senate's chairman of its Natural Resources Committee. The senator's 26th district, and the state, are represented by a man whose experience with fish and wildlife has come about in the best possible way: He grew up as a "participant." It is encouraging to see the succinct expression of sound and important principles in this brief article. The senator will need steady and consistent help from both colleagues and constituents to bring his vision to fruition.

In today's hectic world and because of the uncertainties regarding the future of steelhead and salmon in our beautiful state, I find little opportunity for reflection on what fishing meant to me as a boy. But here are some thoughts that come to mind.

My early impressions of trout, and later salmon, were of beautiful places, pleasant times, and secrets discovered. Fish were the reason that I ventured into the world of moss lined creeks, lily pad covered ponds, and the pungent salt chuck. The search for fish, while clumsy at first, gave way to knowledge of the water world bit by bit. Each secret was worth more as I discovered myself. Hand tied flies, snelled hooks, metal split shot containers, and wicker creels all had the smell of adventure. It was a boy's world that seems far in the past, but still provides crisp memories.

As I grew older, greater responsibility came with Hoppe's #9, paper shotshells, and muzzles, both canine and blued. Fall became a time of cackling ringneck flushes, firing in the air in self-defense and eventually a sweet pheasant dinner. Thoughts of sea runs were put on hold while the leaves yellowed and fell. Pheasant feathers were cached for Carey specials that would later seduce trout and even steelhead.

As a young person I learned the possibilities of life through outdoor successes and its realities through failures. Anxious wading brought frightened quarry, sharp hooks held secure, and that one additional cast often brought the only fish of the day. I experienced lessons that have served me well throughout life: Take time to do a job right, thorough preparation, and persistence. I am sure that many other youngsters have become better citizens through outdoor experiences.

What then of the future? Videos and electronic games have replaced sea worms and bullheads, while society questions its commitment to saving fish. If we adults turn our backs on fish, have we done the same to today's kids? What a wonderful legacy will be lost.

We must conserve, preserve, and keep all biological options open. We must change our expectations by eating pen-raised salmon; by permanently retiring the com-
HOOD CANAL (AND OTHER) SALMON: A USEFUL HISTORY LESSON

Earl Sande

Earl Sande is a long-time resident of Hood Canal country and a venerable wild salmon activist. For years he has been keeping records, while also keeping the canal’s fishing boats in good repair, from his local marine repair facility. Earle’s recounting of 100 years of salmon exploitation should help us to reflect about why the commercial pursuit of salmon is so deeply imbedded in the culture of the Pacific Northwest.

How important is history?

President Roosevelt thought it was important in 1908 when he warned that “the natural resources of our country are in danger of exhaustion if we permit the old wasteful methods of exploiting them.” Even then, history was telling us that “old” methods, if not understood, will be repeated and will be harmful.

New European domination over nature started in the Pacific Northwest in the 1850’s. By the 1880’s, timber, fish and wildlife were being exploited as most Americans thought they should be. Everyone agreed that nature was there to be exploited with little regard for the resources; certainly nobody thought that “all” the fish in the Pacific Northwest could ever be caught.

Before 1853, Hood Canal was still in its natural pristine state, virtually untouched by the white man. Salmon runs at that time were huge. By 1877, the salmon harvest really took off and canneries began to spring up all over Puget Sound. Salmon traps were the most effective way to harvest large quantities of salmon. There were at least three (probably more) traps in Hood Canal. My dad saw the remains of them in 1938, just north of the Duckabush, Dosewallips and Quilcene rivers.

By 1896 salmon stocks in Hood Canal already were in poor shape. I read a newspaper clipping from that same year saying that Hood Canal fishermen wanted the government to build a salmon hatchery on the Skokomish River because fishing was so bad they could hardly make a living. By 1913, total Puget Sound salmon catch was 40 million. Over 2.5 million cases of canned salmon were sold that same year, with 48 one-pound cans to a case. All around the world the canned King salmon from the Duckabush River was famous for its fine flavor.

In 1918, 453,000 Chinook were caught in nets in Puget Sound. By 1920, the total Puget Sound salmon catch was down to 2.1 million—a drop of nearly 38 million salmon in just seven years. By 1938, only 58,000 were caught. The following year, salmon traps were banned in Hood Canal and by 1924 all fish nets were banned. People knew then that the large runs of salmon in Hood Canal would not survive if commercial harvesting was allowed to continue. It’s been proved that the type of commercial gear used to harvest salmon does not matter. What does matter is the amount of the gear used (quantity) and the amount of time (length of season) fished.

In just one day in 1913,
Fish Wheel #5 alone caught 70,000 pounds of spring Chinook.

Not just Hood Canal was hurting. Banning fish traps and fish wheels on the Columbia River did not save the salmon because Gill nets and seinc nets just took their place. In 1883, Lower Columbia River traps and nets harvested 44 million pounds of spring Chinook. By 1892 there were 378 fish traps and 57 fish wheels on the Columbia River. In just one day, May 10, 1913, Fish Wheel #5 alone caught 70,000 pounds of spring Chinook.

In 1875 the Yakima River at Ellensburg was full of salmon. And on the Kettle River, near its junction with the Columbia and only 10 miles from Canada, huge runs of salmon were seen jumping over Kettle Falls. Ten years later only a handful of salmon could be found in either river. Why? Within 15 years, in 1889, there were 40 canneries operating on the Lower Columbia. These canneries produced 634,000 cases of spring Chinook salmon. A skilled Chinese laborer could clean 1,700 salmon in an 11-hour day and make $40 a month.

After World War II, new technology changed fishing forever. New marine diesel engines were much more powerful than the pre-WWII models, but weighed only as much as the flywheels on the older models. In 1950 nylon nets were available and they caught twice the salmon as the old linen nets did. In 1954 the hydraulic power block made fishing even more efficient. By 1957 there were 637 Gill nets and lots of purse seiners fishing the Straits of Juan de Fuca. The average profit per fisherman was only $1,000 per season between 1959 and 1961. Too many fishermen were after too few fish. In the 1950’s and 60’s, Japanese and Russian factory trollers were fishing right off our coast for bottom fish, but also were catching millions of pounds of salmon.

Even though the lessons of the late 1800’s and early 1900’s had been forgotten, by the 1920’s fishermen knew that Hood Canal could not be commercially harvested without damaging the salmon runs. That was why all salmon traps and nets were outlawed in 1921 and 1924. Hood Canal became a salmon sanctuary for the next 50 years.

But then in 1973 Governor Evans overturned Initiative 77 — which had banned salmon traps — to reopen Hood Canal to commercial fishing. With Indian and non-Indian seiners again fishing Hood Canal, the wild salmon were headed for trouble. Then came the Bolt Decision in 1974, and the starting gun went off. The race was on to catch the last wild salmon in Hood Canal. From 1975 to 1980, 80 percent of the wild chinook and coho were caught in nets and on fishing poles fishing Hood Canal. According to the Department of Fisheries, in 1975 tribal nets caught 7,600 chinook salmon. Other nets caught 100 more. Also in 1975, sportsmen caught 14,327 chinook and 16,650 coho in Hood Canal. Tribal nets caught 25,700 coho. Other nets caught 19,900 coho. Fishing was great, but that was about to change. Hood Canal could not take this much fishing pressure, even if the fresh water rearing habitat was perfect, which it wasn’t.

From 1975 to 1980 there were few rules and little enforcement. All rivers and streams had nets across them — both Indian and non-Indian, legal and illegal. In just five years, it was pretty much over. Hood Canal had not had a net salmon season since 1924 and for good reason. With so many nets in the water, the salmon didn’t stand a chance. In 1976 and 1977, there were two huge Indian Gill net boats fishing north of the Hood Canal Bridge with nets one-half mile long and 250 feet deep. They could block off most of the Canal and could catch most of an entire school of salmon.

After 1980 the co-managers of the resource knew it couldn’t last and started managing Hood Canal salmon for a massive hatchery chum harvest. Millions of hatch-
“We need to realize the importance of the marine biodiversity that was here as recently as 1970.”

In the 1930’s and 40’s salmon managers and even college fishery professors decided that wild salmon should have no special protection. Our brightest fishery minds thought that hatcheries could take care of all our salmon needs forever. Of course, we now know that these salmon experts were wrong. Over time, artificially spawning the same run of salmon, repeatedly, produces a much weaker stock. Salmon know how to do it in the wild much better, how to select a proper mate and then allow nature to select the strongest progeny to survive. Survival of the fittest is for sure the best way to keep our salmon coming back forever.

The solution to bring back our salmon in Hood Canal goes like this: improve all stream habitats. Make sure there is lots of large woody debris with large root balls in our rivers and streams so small fish can hide and survive. This large woody debris also creates pools and riffles that fish need.

Fix all bad culverts and other fish blockages. Make sure we have at least 200 adult spawning salmon per mile to add nutrients from the ocean for a healthy ecosystem in our watersheds. Stop using gill nets and purse seines; harvest salmon with fish traps and other means to keep salmon alive and healthy until they can be selectively harvested. Large wild salmon can then be released to spawn naturally. We need to make an agreement with Canada to do the same thing. All hatchery fish need to be marked for a sport and commercial selective harvest.

Mergansers, seals, otters and others are major predators of salmon. A Washington Department of Fisheries study in 1958 on the lower Skagit River concluded that the 500 mergansers that were on the river that spring were each eating 2,000 pink salmon fry a day.

We should stop the commercial harvest of all bait fish — herring, anchovies, pilchards or California sardines, smelt and candle fish. At one time when there were lots of cod and rockfish, they made so many millions of babies they were a major source of food for salmon and other fish. Unfortunately, this is no longer the case. Our whole marine ecosystem is out of whack because of overfishing and habitat destruction. There should be at least twenty 40-acre areas in Hood Canal and Puget Sound that are off limits to any fishing, forever, so that some bottom fish can mature and spawn. All of us need to realize the importance of the marine biodiversity of all species that were here as recently as 1970 and before. The loss of that marine biodiversity will have a tragic effect on many species of the great Pacific Northwest.

Enhancement projects are vital to bringing the salmon back to Hood Canal. Without huge runs of salmon going up the streams to lay eggs and die, salmon populations cannot increase. Because of our heavy rainfall, the streams and lakes are mineral-deficient. The minerals are always flushed out to the saltwater. Massive amounts of dead salmon are needed to fertilize the watersheds to keep the food chain going strong in order to feed millions of baby salmon so they are big and strong before they head to saltwater.

Think of a river system like a human body. If all you did was drink water, eventually you would become mineral deficient and sick. It is the same thing with a stream system. If minerals are not added to the system, it also becomes sick. Salmon carcasses are the key to a healthy river system.

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OUR SALMON PROBLEM: SOME REASONS FOR THE FISHY SMELL

Adele Ferguson writes a column which appears in 37 newspapers throughout Washington state. This piece appeared in March, as the "chinook crisis" heated up in the Pacific Northwest's media. In addition to her column, which is "all she does now," Adele was a political writer for 33 years. She knows how to call 'em as she sees 'em. Our thanks to Ms Ferguson for permitting the re-print.

S o, at last, the feds, the governor, the Legislature, the megalopolis counties have noticed that the salmon are gone.

Well, almost gone. The chinook that is, the kings.

Where the hell have they been all these years that people like me — and I was no lone voice in the wilderness — were crying out that the draggers had decimated the kelp on which the herring spawn to provide food for the kings? That the state fisheries department had transformed its hatchery program into producing a non-biting salmon to enhance the commercial catch at the expense of the wild stock? That the commercials, tribal and non-tribal, were killing the silvers and kings they caught incidental to the chums, silvers and sockeye they were authorized to catch? And nobody did a damn thing about it.
Now they worry, now that the feds have designated the chinook as "threatened." Gee, that could stop homebuilding if the environment is affected, sobbed the state. "Salmon," intoned Gov Gary Locke, "are one of the icons of the Pacific Northwest and a symbol of our quality of life."

Thanks a lot, Gary. How come you are just now getting around to filling the 9th seat on the state Fish and Wildlife Commission that has been vacant since Jan. 1, 1997? Didn't interest you that much?

Once, the average Joe who rented or owned a boat and liked to go fishing for salmon meant something. In 1934 Initiative 77 was passed — 275,507 for, 153,811 against — banning commercial fishing from east of Port Angeles through Puget Sound until Oct. 5 except for hook and line. The commercials could come in from Oct. 5 through Nov. 20, except on weekends.

The ban was temporarily lifted during World War II and permanently discarded by the 1970 legislature at the request of fisheries director Thor Tollefson and Gov. Dan Evans. Tollefson, a defeated congressman who needed a job, was in bed with the commercials who wanted to go into the sound and Lake Washington early and catch a predicted abundance of sockeye. Sockeye, proclaimed Tollefson, won't take a lure, and these will be wasted if we don't let them be commercially taken.

Irate sports fishermen wrote the newspapers naming the lures that sockeye could be caught on, but the deed was done. Purse seine-legislators chaired the House and Senate committees that dealt with fish. It was the beginning of the end for sports fishers, kings and silvers to follow. It was under Tollefson's regime that the state offered to give the Indians 50 percent of the salmon harvest and Judge Boldt upped the ante to 50 percent.

The 1951 sports catch of 400,000 fish dropped to 100,000 in 1971. The commercials were being allocated 85 percent of the catch while contributing 15 percent of the fisheries budget. Sports fishers got 15 percent of the catch, while contributing 85 percent of the total budget. When fisheries wanted money for fish enhancement, $10 was added to the sports license cost, not to commercials, who also pay no sales tax on any purchases made for their vessels.

An initiative effort in 1973 to close the waters to the commercials fell short by 20,000 names when the fisheries department led an attack against it.

By 1975, the sports catch was 31,341. By 1981, it was 18,003. The tribal harvest that year was 113,973 including 28,450 silvers and kings that died in their nets as "incidental catch." Non-Indian commercials took 54,000 chums, plus incidentally caught silvers an kings. There's where the salmon went, over the side as incidental catch, and taken in bank-to-bank nets by the tribes after a handful of spawners were allowed to go upstream.

The state has carte blanche from the courts to do whatever it takes for the conservation of the resource and it did zilch, preferring to let the Indians and commercials call the shots, until director Bern Shanks came along last year. Two years ago, the tribes caught 600,000 more fish than their 50 percent called for. Where did the salmon go? They were sacrificed to the greed of the commercial fishers, tribal and non-tribal, and the God-awful, miserable, damn near criminal performance of our own Fisheries Department.

ENDANGERED UPPER COLUMBIA STEELHEAD: THE ROLE OF HATCHERY FISH

Bruce Sanford Is Steelhead Resource Manager for the Washington Department of Fish and Wildlife, the state's senior steelhead "boss." A WDFW veteran, Bruce has worked extensively on salmon and steelhead resource issues, including several years' focus on Puget Sound salmon. In the 1980s he was Fisheries Manager for the Nooksak tribe. Bruce is an addicted fly fisher who used to tie his own flies and build his own (rods). Regrettably, as with many senior and overworked managers, he has had to shelve these pursuits in favor of just going fishing. When that happens, he is likely to slip away to a high mountain lake. Bruce tells us here about the possibilities for a limited angling presence on Upper Columbia endangered fish.

Upper Columbia anglers certainly have first-hand experience in dealing with the ramifications of the Endangered Species Act. With the recent listing of both hatchery and wild steelhead as endangered, fishing opportunity has been eliminated for this species within the region. While the upper Columbia waters and tributaries were the hardest hit with closures, other fisheries, which incidentally take listed steelhead, must also face the issue of protection.

Conservation and CRFMP

Just as important as the development of a recovery program is the sharing of the conservation burden. As we attempt to catch up with the situation, there are two potential changes on the horizon that will aid in the recovery process and perhaps bring some relief to upper Columbia fishers. The first of these is the renegotiation of the Columbia River Fish Management Plan (CRFMP). This plan was an agreement that culminated from the U.S. v Oregon lawsuit, which was originally filed in 1968. Implemented in 1988, the CRFMP called for the rebuilding of weak runs and a fair sharing of the harvest between treaty and non-treaty fisheries. As the plan was agreed to for a ten year period, CRFMP is presently up for renegotiation. This process has already begun, with a core part of the discussions focused on listed steelhead and salmon and developing conservation strategies that will address recovery processes.

Another change is a review by the National Marine Fisheries Service (NMFS) to delist a component of the upper Columbia steelhead. This is a result of the agency's concern over the disproportional number of hatchery steelhead on natural spawning grounds in upper tributary waters. Although upper Columbia hatchery steelhead were listed along with the wild fish because they have similar genetic qualities, NMFS is nevertheless concerned that hatchery-bred fish are not as productive in terms of producing offspring. This concern is especially relevant in upper Columbia waters, since, in recent years, the ratio of wild-to-hatchery fish is about 1:9.

Why List Hatchery Steelhead?

An obvious question at this point is: Why did NMFS list upper Columbia hatchery fish in the first place? Part of the problem stems from the inflexibility of
ESA and the fact that the act was written for creatures like eagles andizzly bears and does not take into account complex life cycles of salmon and steelhead, their genetic variability and hatchery and wild interactions. Another part is that hatchery steelhead returning to the upper Columbia are indeed essential for recovery, and without them the steelhead would likely be extinct, or close to it. However, NMFS recognizes that we have more than enough for brood stock purposes, and it is the surplus that they are considering to delist. The question now becomes: How many hatchery fish do we need?

As NMFS passes this issue through its agency, WDFW is currently attempting to define “surplus hatchery steelhead.” Most likely this will involve two criteria. The first is simply to determine a minimum number of fish needed for natural and hatchery production. Counts at Priest Rapids Dam will be used to ascertain in-season abundance. A second criterion, which is more of a long-term approach, is to focus on recovery rather than mitigation processes, which means providing better protection for those hatchery fish that will be most successful at spawning in the wild. This may result in protection of wild crosses, both WxH and WxW hatchery reared fish by not adipose-clipping these fish.

Here I should digress briefly to point out the differences between WDFW’s experience with WxH and WxW crosses in our Kalama River studies (The Osprey, Issue 17, June 1996) and what may happen in the upper Columbia. The Kalama study dealt with hatchery fish not native to the watershed. Both Skamania and Chambers Creek hatchery steelhead were crossed with wild fish, resulting in a much lower production rate. With upper Columbia steelhead, hatchery fish at least have originated from the same watershed region and they are genetically similar to natural spawning fish. Nevertheless, we still must be cautious about the use of HxW crosses, and attempts at crossing steelhead must include a good evaluation study as part of the strategy. Even with the use of wild fish, placing them in hatchery situations seems to reduce their spawning success, and this production decrease also seems to be cumulative. One thing we are doing is to use only first generation wild fish, hoping that it will minimize this “hatchery curse.” Obviously this is also NMFS concern, and therefore their reasoning behind controlling the number of hatchery fish in natural spawning situations.

**Modify the ESA**

There are many qualifiers in securing these changes, and the biggest is our attempt to modify the application of ESA, which requires an act of Congress to change the law. However, NMFS supports this change, and they are currently proceeding with these proposals. In terms of implementation, we are hoping that NMFS obtains approval to delist hatchery steelhead in 1998. If, and when, this occurs WDFW can then apply the “surplus” criteria. In the event that we obtain harvest options, WDFW most likely would implement incremental approaches to fisheries, starting with the most conservative options, such as catch and release fisheries. At higher abundance levels, we would consider consumptive fisheries in areas where hatchery fish are in highest concentrations.

Discussions with NMFS are ongoing, and as we move toward approval of these concepts, we will begin to provide more details and opportunity for public discussion. Since we will be dealing with in-season information as the steelhead return, we will not have the ability to develop permanent regulations, as we do for the pamphlet. Rather, we plan to manage this with emergency openings when the situation warrants. This may not provide anglers with a good opportunity for advanced planning, but it will help relax the complete closure that is now in effect.

Again, there are no guarantees, but logic dictates that something must change to secure a credible recovery process, one that provides equity and gains the support of local constituents. I hope we will have some additional news by this summer, at which time WDFW plans to hold public meetings to further describe the process and to lay out options for everyone to consider.

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**UPPER COLUMBIA ESA CLOSURES: NMFS’ RX FOR HEALING**

*Herb Pollard is a fishery biologist with the National Marine Fisheries Service’s Hatchery and Inland Fisheries Branch in Portland, OR. He has been intimately involved in the federal process for listing threatened and endangered steelhead up and down the Pacific coast. In this article Herb explains why and how we got where we are, what needs to happen to comply with the ESA in the Upper Columbia, and how the future might look.*

**Background**

In February, 1994, the National Marine Fisheries Service (NMFS) received a petition seeking protection under the Endangered Species Act (ESA) for 178 populations of steelhead in Washington, Oregon and California. The ESA allows listing of “distinct population segments” of a species. NMFS’ policy states that a population will be considered unique if it represents an evolutionarily significant unit (ESU) of the species as a whole. To be considered an ESU, a population or group of populations must 1) be substantially reproductively isolated from other populations, and 2) contribute substantially to the ecological and genetic diversity of the biological species. The 178 populations of steelhead were grouped into 12 ESUs of coastal steelhead and 3 ESUs of interior steelhead. In August, 1996 NMFS published a proposal to list 5 of the ESUs as “Threatened” and 5 others, including the Upper Columbia River (UCR) steelhead ESU, as “Endangered.”

Some of the reasons for proposing to list the UCR steelhead as endangered:

- The failure of naturally reproducing stocks to replace themselves,
- The high proportion of hatchery-produced fish on the spawning grounds,
- The reported high harvest rates on juvenile steelhead in resident trout fisheries, and
- The degraded habitat within the ESU especially due to the effects of grazing, irrigation diversions and hydroelectric dams.

Although one of the factors of decline in this ESU is past hatchery practices, it was determined that the Wells Hatchery Stock was derived from indigenous fish and was essential for use in recovery of natural
spawners. Therefore, the Wells Hatchery steelhead are also listed as endangered.

The Meaning of "Take"

Section 9. (a) (B) of the ESA prohibits "take" of any endangered species which includes by definition "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or to attempt to engage in any such conduct." So, in ESUs that are listed as endangered, there is no allowable take.

On the other hand, in ESUs that are listed as threatened, there is a greater degree of flexibility in management. It is possible to allow some indirect take of threatened fish incidental to fisheries which target hatchery fish. Section 4(d) of the ESA allows the Secretary of Commerce to adopt such regulations he deems to be "...necessary and advisable..." for the conservation of threatened species. The document which lists the necessary and advisable regulations is called a 4(d) rule. By selectively applying the take prohibitions of Section 9 through a 4(d) rule, there can be flexibility to develop selective fisheries which target surplus hatchery fish while protecting the listed fish.

Selective Fisheries

For selective fisheries to be successful, i.e., to allow selective harvest of abundant stocks and avoid capture or allow unharmed release of protected stocks, it is necessary to coordinate a wide spectrum of circumstances such as run timing, homing fidelity, water conditions and fishery techniques.

Successful selective fisheries also include some essential human and administrative factors. These require that the appropriate management agency be willing to manage at a finer level of detail and with greater intensity. And that agency also must have the authority to adopt protective regulations, to apply and enforce the regulations to local conditions, and to monitor and report on the effects of the fishery on protected species. Selective fisheries require the fishers to identify and release listed fish, to use fishing gear and techniques that do not pose risk to survival of released fish and to comply with much more restrictive and often complicated fishing rules. All this will fail to protect the listed stocks if participants in the fishery do not accept, support and comply with the rules.

"Four-D and RFMEP"

NMFS expects to issue a 4(d) rule for listed steelhead this summer. The rule declares certain actions of the states and tribes to be exempt from the take prohibitions of Section 9. The state will develop a Recreational Fishery Management and Evaluation Plan (RFMEP) and this plan, per the exemption, will allow for recreational fisheries.

NMFS will evaluate steelhead RFMEPs on the basis of criteria that are designed to minimize incidental take and promote the conservation of the listed species. The proposed criteria by which draft RFMEPs will be evaluated include the following:

1. The level of potential incidental take. Incidental take of listed steelhead in recreational fisheries could be substantial, absent protective measures. Therefore, it is essential that RFMEPs contain measures to minimize incidental take of listed steelhead.

Research conducted in the Northwest United States and British Columbia indicates that adult steelhead can be hooked, landed, and released using recreational fishing equipment with an average mortality rate of less than 5 percent. For example, in the Snake River, about 50 percent of the adult steelhead that return are caught in recreational fisheries. Since 50 percent of the listed population is subjected to a 5 percent mortality, the entire listed steelhead population is estimated to suffer about a 2.5 percent mortality due to the recreational fishery. It is important to note that acceptable mortality rates for individual RFMEPs may vary for different ESUs, given differences in species status or differences in the overall RFMEP.

2. The provision for differential marking of hatchery-produced steelhead and retention of marked-only fish. All unlisted hatchery-produced steelhead should be clearly marked so anglers may identify the origin of steelhead. Differential marking of hatchery-reared steelhead will enable anglers to release naturally-spawned fish while retaining non-listed hatchery fish.

Only marked fish of hatchery origin should be retained in fisheries and all unmarked steelhead must be released unharmed. This measure allows recreational anglers to fish for, and harvest, non-listed, hatchery-produced steelhead, while providing protection for listed fish.

3. The time period and location of fishing seasons. Steelhead fishing seasons should be open only in areas, and during time periods, where and when non-listed, hatchery-produced fish are expected to occur. Hatchery-produced steelhead smolts are typically released from hatcheries and acclimation ponds or directly trucked to release points. Adults typically return to areas near the point at which they were released. In many cases, hatchery programs have been adjusted to return non-listed hatchery fish to river sections where they are accessible to anglers and where they do not interfere with listed fish. Further refinement of hatchery releases will occur through hatchery plans and consultations under the ESA.

4. The availability of sanctuary areas. Sanctuaries should be provided for listed steelhead where fishing is not allowed, and hatchery-produced, non-listed steelhead are not present. Hatchery-produced steelhead smolts typically are released in main stems of rivers and fishing is typically permitted in these same areas where non-listed hatchery fish return. Important tributaries and headwater areas should be reserved as sanctuaries to provide adequate spawning and rearing areas for listed species.

5. The availability of effective monitoring efforts. Adequate monitoring efforts are necessary to ensure that regulations and programs have their intended effect. Angling effort and harvest rates may be monitored with check stations, creel censuses, random surveys, and catch-card returns. Surveying ground surveys can track trends in spawning success of listed fish and proportion of hatchery-produced fish spawning naturally. Adult fish counts at dams and weirs can estimate total numbers of returns, the proportion of listed to nonlisted fish, and abundance trends. Surveys of rearing areas and downstream migrant traps can provide estimates of production and abundance trends. Estimates of the number of hatchery-produced steelhead and incidental mortality of listed fish should be monitored during the season and summarized at the end of the season.
6. The availability of effective enforcement mechanisms and public education programs. An adequate law enforcement presence must be provided to ensure that protective regulations are effective. Public information, public involvement in regulation preparation, and public understanding of the regulations and recovery program are essential for success and must be included in state and tribal fishery management programs.

7. The availability of effective implementation agreements. To ensure proper implementation of the RFMEPs, an MOA or some other formal agreement should be in place between the state or tribe and NMFS. Such an agreement will also help clarify how NMFS and the states or tribes will work together to make necessary future adjustments to the RFMEPs.

In addition to the protective measures for adult steelhead, RFMEPs include protection for juvenile steelhead, including reduced bag limits, increased minimum length limits, removing put-and-take trout programs from steelhead waters, and, in some cases, catch-and-release or complete closure.

Selective Fishery Mortality

Prior to the application of the selective fishery regulations, juvenile steelhead may have experienced in excess of 50 percent annual angling mortality in general-regulation trout fisheries. The protective regulations required by the 4(d) rule are designed to reduce angling impacts to less than 5 percent. Likewise, recreational fisheries in many waters harvested over half of the returning adult steelhead. As noted above, we can project the recreational fishing impacts on listed wild adult steelhead to be in the range of 2.5 percent. If the appropriate selective regulations are in place and anglers comply, we believe that recreational fisheries and recovery of threatened species are compatible.

The UCR Problem

This strategy will allow recreational fishing to go on in the Snake River, Lower Columbia and other ESUs if they become listed as threatened. It cannot, however, apply to the Upper Columbia because of its endangered status. A number of fishers, and the WDFW managers who are concerned with fishing on the Upper Columbia, have asked NMFS if, how and when fishing might resume in the Upper Columbia ESU. The answer is that we are not sure; but we are working on it.

NMFS' Unusual Role

NMFS is in an unusual position in relation to laws and policies. Unlike other agencies whose Federal mandate is solely the ESA, NMFS is a branch of the Department of Commerce and has a dual mission. The ESA is very clear with a mandate to protect and restore listed species. At the same time there are several laws and policies which provide a strong mandate to provide and enhance sustainable fisheries. These include the Treaty Trust Doctrine which guarantees treaty Indian tribes both the right to fish and the availability of fish. Magnuson and Mitchell acts spell out sustainable fisheries and enhancement missions. Several congressionally approved mitigation agreements require programs to provide anomalous fish to compensate for lost habitat and lost production.

The President of the United States issued Executive Order 12962 of June 7, 1995 titled “Recreational Fisheries” (FR No. 111: pp 30769-30770) which directed federal agencies to "...improve the quality, function, sustainable productivity and distribution of U.S. aquatic resources for increased recreational fishing opportunities..." Section 4 of the Executive Order directs all federal agencies to "...aggressively work to identify and minimize conflicts between recreational fisheries and...the Endangered Species Act of 1973...."

Pursuant to the directives in Section 4 of the Executive Order, on June 3, 1996 the USFWS and NMFS issued a joint “Policy for conserving species listed or proposed for listing under the Endangered Species Act while providing and enhancing recreational fishing opportunities” (61 FR 27972). The recreational fishing policy recognizes the primary responsibility of states and tribes for the protection and management of resources within their jurisdictions, and expresses intent to assist states and tribes in meeting their recreational fishing goals.

A Look Ahead

NMFS recognizes the social and economic impacts of the Upper Columbia closures. We also recognize the value of fishermen who have always provided the strongest support for conservation of fish and aquatic habitat. We understand the danger of allowing the interest and support of fishermen to fade if there are no fisheries.

As more information is provided on the status of the Upper Columbia ESU and we gain more experience with managing fisheries and recovery of listed populations, we will discuss possible solutions. It is not possible at this time to tell the readers of The Osprey that a solution has been found, but there have been some options identified that we hope can lead to legally and biologically sound compromises that serve both to recover the valuable steelhead resource of the Upper Columbia River and allow fishermen a chance to enjoy the results.

Support The Osprey

Wild steelhead need help from you... and from your friends. Give a gift subscription for The Osprey to a friend. Support the work of The Osprey and the FFF Steelhead Committee. Contributions are always appreciated and needed. The Osprey, FFF P.O. Box 84211 Seattle, WA 98134
Bill McMillan is vice-president, Washington Trout. Bill at one time served on the FFF Steelhead Committee and was guest editor for a very early issue of The Osprey. In this article he takes exception to our letter to the Washington Fish and Wildlife Commission, published in our March 1998 issue (No. 31), in which we question the closures of upper Columbia tributaries in response to ESA endangered listings. In that letter, the Steelhead Committee’s editorial board identified a number of factors contributing to the endangered status of UCR steelhead, while suggesting that the risks posed by catch and release fishing may be worth the cost, if a “friendly presence” is thereby assured which will discourage poaching and harassment. We urged an open discussion of the various parts of the problem. Bill’s response is a useful contribution to that discussion and we thank him for taking the time to submit it.

In March 1998 The Osprey (Issue 31) published a letter to the Washington Fish and Wildlife Commission disagreeing with the closure of upper Columbia steelhead rivers to all fishing in response to the National Marine Fisheries Service listings. To its credit, it invited a response.

The first question concerns a contradiction: The Osprey, in May 1994 and January 1996, expounds the Russian approach of total angling closures to protect endangered Kamchatkan steelhead that appear to have escapements in the thousands. The newsletter then criticizes Washington fish and wildlife managers for taking a similar approach on an estimated population of 600 wild steelhead which provide an escapement of just 150 wild fish for each of the four major Columbia tributaries.

Secondly, rivers need friends, but are anglers so fickle they will no longer be a friend to a river or its fish unless they can fish for stocks that are in peril? We hope not. Washington Trout is not an angling organization, and we have been a reasonably successful organization as friends of fish and to rivers — without the necessity of angling. We are on rivers and streams in differing ways. Sometimes that includes angling; sometimes snorkel counts; spawning counts; photographing fish leaping waterfalls or spawning; sometimes through habitat monitoring and projects (culverts, replanting, fencing, etc.); sometimes boating; sometimes just sitting, watching, listening in hopes the river or the fish can tell us what they need ... or what we as human beings need. Rivers provide many complex pleasures other than angling. Thoreau’s A Week on the Concord and Merrimack Rivers is a good starter reference.

Why C & R May Not Work

How is it that catch and release of steelhead might not work at restoring steelhead numbers? I know at least four considerations:

1. some steelhead stocks and/or races may be prone to higher rates of catch and release mortality than others;
2. the longer a steelhead is exposed to angling the more times it is caught and released with a cumulative potential for mortality each time (much like the cumulative mortality of each dam on anadromous fish);
3. water temperatures at some point above 60 degrees F. may increasingly jeopardize steelhead survival after catch and release;
4. juvenile steelhead are also being caught and released with related incidental mortality that may increase on rivers with heavy trout fishing pressure, like the Yakima and Deschutes; or on rivers where summer steelhead angling is intensive and the likelihood of juvenile steelhead being hooked and released is increased, such as the Washougal.

Statistics Differ for Winter and Summer Fish

Regarding outright mortalities on adult steelhead through catch and release, Dan Rawding, Washington Department of Fish and Wildlife biologist, provided data at a recent steelhead management conference. Winter steelhead caught on the Keogh River and other Vancouver Island rivers, and the Tule River had mortalities of 3.4, 5.1 and 1.8 percent respectively, when caught by hook and line for broodstock. However, summer steelhead brood collection mortalities from the Sumass and Campbell rivers on Vancouver Island (the only examples he could find in a literature search for summer steelhead) had mortalities of 8.0 and 8.7 percent respectively — significantly higher than for winter steelhead.

Dan is charged with restoring lower Columbia wild summer steelhead populations. Because the ESA listings process requires a buffer for error, he is using a 10 percent catch and release mortality figure. But is that high enough?

The Campbell River flows from the bottom of Campbell Lake and is largely controlled by a dam. In its short two-mile run to the sea on Vancouver Island its water temperatures seldom go above 60 degrees F. Would the Campbell River catch and release mortality of 8.7 percent on summer steelhead be higher if its water temperatures were commonly in the 60s?

We presently don’t have figures to show one way or the other, but common sense suggests that high water temperatures likely increase mortality. Fishery scientists are certainly leery of high water temperatures as evidenced in a recent presentation by Ted Bjorn of the University of Idaho. He indicated that scientists stop taking steelhead for radio tagging when Columbia River temperatures reach 70 degrees. Radio transmitters aren’t cheap. But although biologists won’t capture steelhead for radio tagging at 70 degrees, they do allow anglers to play wild steelhead to complete exhaustion for up to 30 minutes on hook and line! Doesn’t make much sense to me.

In the 1995 book, Great Lakes Steelhead, A Guided Tour for Fly-Anglers by Bob Linsenman and Steve Nevala, chapter one describes the varied steelhead stocks that have been introduced to the Great Lakes. In discussing the only summer run steelhead stock known to be introduced, the Skamania strain (from Skamania hatchery on the Washougal River), there is a warning on pages 21-22: “Catch and release fishermen should be aware that released Skamania show a high mortality rate when caught in waters with temperatures in the high 60s F (high teens C).” And this is a book written by fly fishermen typically advocating catch and release. Where they got their figures I don’t know, but it is in keeping with the practice of Idaho fish biologists when implanting steelhead with radio tags on the Columbia.

“Dip-Ins” and Repeat Hookings

Bjorn also provided information relevant to the exposure of upper Columbia and Snake River steelhead to the “dip in...
fisheries where they seek colder water than that of the constant 70 degrees or more of the Columbia River during some summers. Of more than 500 steelhead radio tagged and released below Bonneville in the summer/fall of 1996, 18 percent dipped into Wind River, 43 percent into the Little White Salmon, 43 percent into the Big White Salmon, 2 percent into the Hood River, 5 percent into the Klackatit, 32 percent into the Deschutes, 8 percent into the John Day, 1 percent into the Umatilla, and 1 percent even dipped into the Yakima. This adds up to 153%. So some fish apparently moved into the dip-in areas more than once in 1996.

In 1997, 269 steelhead were similarly tagged and released below Bonneville. This time they were also tracked for the number of times they dipped in and the length of the dip-in stays. Of these, 118 (44 percent) dipped in once; 115 (43 percent) dipped in twice; 33 (12 percent) dipped in three times; and 3 (1 percent) dipped in four times. Thirty-five percent of the tagged steelhead went into the Little White Salmon staying up to 50 days (averaging 12 days); 15 percent went into the Big White Salmon for up to 57 days (averaging 8 days); and 20 percent went into the Deschutes staying up to 107 days (averaging 11.5 days).

Each of the major dip-in sites — Drano Lake (mouth of Little White Salmon), Big White Salmon, and the Deschutes — are areas where intensive sport fisheries legally catch and release wild summer steelhead. As Idaho obviously wonders, what is the effect of this on wild summer steelhead escapement to the Snake River where wild steelhead are listed under the ESA?

Washington and Oregon should be asking the same questions, and appear to be doing so. Steelhead are using these cold water sanctuaries for up to 107 days. How many times are they being caught and released? What is the cumulative effect on upper Columbia and Snake River wild steelhead escapement if catch and release mortality is minimally 8-10 percent each time the fish is caught and released? Remember, the lower Deschutes not uncommonly reaches 70 degrees F. during July, August, and early September, and at 70 degrees F., scientists will no longer capture steelhead for radio tag insertion.

Dan Rawding also pointed out that summer steelhead are typically present when rivers are in good fishing condition on a daily basis. He presented figures showing that Kalama River summer steelhead had nearly double the angler interception rate of Kalama River winter steelhead. He feels that is because rivers are commonly out of shape during the winter making angling more difficult. Therefore summer steelhead have a greater likelihood of being caught with an increased potential for catch and release mortality.

What About Juveniles?

What is the catch and release mortality on juvenile steelhead, from the time they are catchable in their rearing tributaries until they reach saltwater? Dan Shell of Idaho Fish and Game gave some answers relative to catch and release fisheries during a presentation at a steelhead conference. He showed figures that ranged from 3 to 16 percent, depending on the study, and on whether bait or live/fly caught. But overall, his conclusion was that even bait hookings have generally demonstrated high success in catch and release trout fisheries. High water temperatures, he conceded, increase mortality, but he didn’t have figures on how much. That would seem to be a factor on streams where water temperatures are chronically high.

It is also known that some juvenile steelhead (possibly outmigrating “resident” rainbow that retain anadromous characteristics) in the Wenatchee and Methow rivers remain up to six-seven years before migrating to the ocean. These are among the oldest juvenile steelhead ever documented, owing to the slow growth of high elevation and low-productivity streams. But at the same time such fish exemplify the values of diversity. It also means that there is a lengthy opportunity for such juveniles to be caught in “trout” fisheries. Whether in outright kill fisheries or limited to catch and release, the longer the juvenile remains in freshwater, the greater the possibility of harvest or catch and release mortality.

Tribal Allocations

And finally, one must consider harvest allocation among the Treaty Tribes who are co-managers on many Washington steelhead rivers. Whatever mortality figures are associated with catch and release of wild steelhead through sport fishing, those incidental mortality numbers will likely be interpreted as a justification for an equal allocation of steelhead through gill net harvest by the tribes. And that would be a logical legal interpretation, because catch and release is not no-kill. Eventually the tribes will pursue this, and then accurate figures on the mortality of catch and release of steelhead will undoubtedly be determined through broader studies in varied water temperatures and across differing rivers and stocks of steelhead. If catch and release mortality is determined to be 10 percent, then the tribes will likely be allocated an equal 10 percent.

Harvest and Survival

However, even on rivers where there are no tribal fisheries, catch and release by itself — of whatever mortality percentage — may be the final nail in the coffin for endangered stocks of steelhead. Mark Chikte of Oregon Department of Fish and Wildlife presented modeling graphs of steelhead populations representing varied levels of stock-health:

1. North Umpqua winter runs (very good);
2. Middle Rogue summer runs (moderately poor);
3. North Santiam winter runs (very bad).

The application of different levels of reasonable harvest rates did not appear to jeopardize the continued persistence of steelhead in the North Umpqua or the Middle Rogue. But on the North Santiam, wild winter steelhead only have a 60 percent chance of continued persistence even with NO angling mortality! It was remarkable how quickly the models changed. We are dealing with a very fine line, that once crossed over presents a very real possibility for steelhead extinction. And that line is so thin we had better have some very accurate data from which to determine escapement levels and whether a stock is depressed, threatened or endangered.

Putting this information all together, a relatively clear picture evolves: Winter run steelhead return in cold water. They have short in-river stays. They return when fishing conditions are frequently compromised by high and dirty water. They travel relatively short distances from salt water to spawning destinations. Angler interception rates are low with a related low likelihood of being caught and released more than once. And the documented catch and release mortality is half or less of that for summer steelhead. It follows that wild winter steelhead restoration attempts would be more likely to succeed using catch and release as the primary management tool.
But how much less effective is catch and release regarding survival of summer steelhead? We don’t know. But so far there appear to be few, if any, long-term successes at restoring wild summer steelhead, once depleted, to escapement goals through catch and release in Washington, Oregon, Idaho, or even Vancouver Island. (Northern B.C. summer steelhead seem to have held their own with catch and release, but water temperatures and frequently blown-out river conditions are more reflective of winter steelhead conditions in U.S. rivers.)

**Conclusions**

In southwest Washington there are minimal variables: no dams, no tribal catch, and good, relatively isolated summer steelhead habitat. Given the present steelhead populations that may be below replacement levels, my experience there strongly suggests that catch and release is part of the problem rather than part of the solution. Catch and release is not no-kill; at best it is *low-kill*. And when the resource is down to a few dozen steelhead trying to find one another in the expanse of riverine watersheds, low-kill can only further jeopardize summer steelhead survival — and even winter steelhead in the worst cases.

I was a catch and release steelhead advocate for many years, and part of the problem is that catch and release was implemented only after wild stocks reached critically low levels. Even *healthy* summer steelhead populations may require catch and release fisheries with strict limitations in angler numbers and duration of angling seasons. But at this point, total angling closures are the surest, quickest way to preserve, and perhaps to restore, the many steelhead stocks that are near that fragile line determining persistence or extinction. Only angling closures expose the bad guys on the rivers as the poachers they are. And those of us who truly do love the resource will find alternative ways for appreciating rivers and steelhead, other than through angling.

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**A DIFFERENCE AMONG FRIENDS — Pete Soverel**

Pete Soverel is past chair, FFF Steelhead Committee, and a member of the newsletter’s editorial committee.

The Steelhead Committee and Washington Trout have a long, cooperative relationship. We have been co-petitioners for ESA protections for various steelhead and salmon stocks, co-plaintiffs and leaders in the fight to stop the Grandy Creek hatchery and so on. Indeed, Bill McMillan and Kurt Beardslee are former members of the Steelhead Committee and I have been a member of Washington Trout since its inception. As past chair of the Steelhead Committee and co-director of the Kamchatka Steelhead Project, I welcome Bill McMillan’s provocative article warning that catch and release may not be a panacea for threatened/endangered stocks. Personally, I could not agree more.

I would like to offer a couple of observations. In Russia, there is no tradition of a recreational fishery for steelhead. The government closed steelhead fishing because illegal poaching, most normally done with a gillnet, threatened steelhead populations. Throughout vast regions of Kamchatka, the habitat is pristine, the rivers are productive and steelhead are poached in industrial grade operations—multiple gillnets brought aboard off-shore fishing vessels. What the Committee praised about the Russian decision was the determination to take effective steps to protect steelhead before it was too late.

What the Committee has decried here in the US has been the systematic determination to avoid taking effective action. The Steelhead Committee’s letter to the Commission should be understood in this vein. The Committee did not “disagree” with the Washington Fish & Wildlife Commission decision to close upper Columbia tributaries to protect endangered steelhead. Rather, the Committee urged the Commission to effective action by addressing the root causes of steelhead declines—fish passage and habitat degradation as opposed to taking only the easiest route—closing fishing. The Committee, in its letter, stated categorically that it was prepared to accept catch and release angling closures if the Commission found that step necessary, but that such a closure could not be the only action taken by the Department and Commission.

The fishing closure was and is the only concrete step taken. Neither state nor federal authorities have done anything effective to help upper Columbia steelhead. They continue to provide ESA section 7 taking permits to allow downstream tribal gillnetting. They have done nothing to address the lethal or near-lethal temperatures in the Columbia. They have not taken any steps to remove or even discuss removal of the several dams on the Wenatchee system that serve no useful purposes whatsoever (no power generation, irrigation etc.). The Steelhead Committee has urged for more than ten years a range of integrated, comprehensive steps to save Columbia/Snake steelhead—breaching dams, constraining harvest, drastic changes in hatchery practices, habitat protection measures, culvert and road maintenance to name a few. So far nothing much has been done except close the catch and release fishery.

The Committee was and remains especially aggrieved that the Commission, the Department and U.S. National Marine Fisheries Service have shamefully refused to even consider removing the federal dam on Jcicle Creek which serves no purpose other than blocking passage above the Jcicle Creek Hatchery to prevent wild fish from infecting domesticated fish!

I agree with Bill—some stocks of steelhead may not be able to sustain even a catch and release fishery. This may even apply to some or all of the upper Columbia tributaries, although personally I support the sort of reasonable approaches outlined in the NMFS and WDF&W articles elsewhere in this issue. But, let’s not kid ourselves. Unless state and federal authorities do more than restrict catch and release angling in the upper Columbia or any of the other places steelhead have been listed, they will soon be extinct with or without catch and release angling.
WHAT MEANS “PRICELESS”?  
AN OPEN LETTER TO BOB OKE AND JIM BUCK

John Sager

Front-to-back readers already know that Bob Oke is chairman, Senate Natural Resources Committee, Washington state legislature. Jim Buck chairs the counterpart committee in the state’s house of representatives. Each is up for re-election in November and, if successful, will have great responsibilities in the 1999 legislative session, beginning in January. That session will provide opportunity to make landmark improvements in the stewardship of Washington’s fish and wildlife resources. This letter addresses but one element on the list of choices before Washington’s citizens and lawmakers.

Monday, July 13, 1998

Dear Senator Oke, Representative Buck:

Bob Hooton, British Columbia’s top steelhead biologist, put some ideas in my head as I heard him speak not so long ago. What he said applies directly to the endangered steelhead in our state’s upper Columbia River basin. Bob is recognized among his fish biologist/manager peers as one of the best in the business, all up and down the Pacific coast. He focuses on steelhead management in British Columbia but he knows a lot about the other salmon species as well.

Bob probably has studied and contemplated the subject of poaching as much as any biologist working today and his peers recognize him as an authority on the subject. At an international gathering of steelhead scientists and managers in March, held at Ft. Warden state park, Bob’s remarks before the 50-plus assembled experts led me to a pretty grim conclusion: that a few determined poachers, undeterred, can literally wipe out a discrete steelhead population if its numbers are low enough.

After thinking over what Bob talked about, I want to pose to you a question that is both rhetorical and quite serious: Just what do we mean by “priceless” when we toss off that word as we describe the value of our salmonid resources in 1998?

The state of Washington now faces this question squarely, via the several listings by NMFS of steelhead and salmon stocks which call our waters home. It may help to visualize the problem if I provide a couple of scenarios.

Let’s say a non-English speaking migrant worker, we’ll call him Miguel, has some time off from harvesting the apple orchards around the town of Carlisle on the Methow River. He goes fishing on a pleasant late-September evening. He fishes by the only method he knows, using a large barbed hook and a wriggling night crawler, and he catches the last spawning male of a particular steelhead stock, unique to that river. Without even knowing it he has committed the ultimate injustice, and is responsible for the final snuffing out of that particular resource.

There are some variations to this scenario:

A. Miguel didn’t know the river was closed under the ESA. He doesn’t read or understand English. He’s an honest guy and had he known, he wouldn’t have done it. But he takes the fish home where his family enjoys eating it.

B. Miguel figured the river probably was closed, unlike in previous years, because he hasn’t seen any fishermen around. But he also knew, because he’s been working these orchards for years (with the river flowing right through them), that he’s never ever seen a game warden. As in example (A), he takes the fish home and eats it.

C. Miguel suspected that what he was doing was wrong, so he released the fish, after tearing the deeply-imbedded hook out of its gullet. The fish bled to death an hour later.

D. In either (A) or (B) a state patrolman happens to see Miguel carrying home a dead steelhead. He issues a citation, confiscates the fish and Miguel’s fishing tackle. Miguel (A) pays $152 in forfeited bail, wiping out two weeks’ savings. Miguel (B) chooses to show up before a local judge, with an English-speaking friend as an interpreter, and pleads that he didn’t know the river was closed. The judge reduces the fine to $95.

The dollar amounts in (D) are based on my personal perusal of steelhead angling violations on file in the enforcement division of WDF&W in the Natural Resources building in Olympia.

Lest anyone concerned with political correctness consider these scenarios as racist gibberish, we can just as easily think of “Miguel” as “Mike,” a fifth generation Caucasian-American. He is in his twenties, helping his father with the family orchard. He has some time after work, his young and feisty wife loves barbecued steelhead on the patio during those late-October cook-outs, and besides, he has been fishing steelhead in this river since he was five years old, as did his dad and grandfather. He knows how to do it. And winking at the fishing regulations, when necessary, has never been a problem.

Getting back to Bob Hooton. He assures those who will listen that effective poaching nowadays carries with it the real potential for driving the last nail into the coffin for some at-risk stocks of wild salmonids. But when you think about it, we really don’t need a professional biologist to tell us this. It makes sense that, sooner or later, someone will catch the last breeding male or female if things don’t change.

Is that the point at which these fish become “priceless”? Or can we be firm and wise enough to say that they are priceless right now? Are we firm and wise enough to change the laws so that small-town judges no longer can fix such things? Are we firm and wise enough to tell every would-be poacher that if he’s caught it will cost him a thousand bucks? Or that his pickup truck will be confiscated?

No joke, senator and representative, we all know intuitively that this kind of poaching, if it goes on long enough, really will kill the last fish. In the upper Columbia basin the experts estimate that there are somewhere between 600 and 1,000 adult wild fish for the entire system, several hundred river miles of useable habitat. When you spread those few fish over that much water, and they usually head for the places that the experienced poachers know all about, how unrealistic are these scenarios? Can you risk considering them foolish? Overblown?

So, how to police these rivers? The department’s enforcement division prefers a closed river to a regulated river. Anybody found fishing is prima facie guilty. But most of its enforcement officers have been lost to recent budget cuts and so it is highly improbable that these hundreds of miles of water will see effective enforcement.
ANOTHER STEELHEAD HERO: BRITISH COLUMBIA’S BOB HOOTON — Osprey Staff

In February, British Columbia’s Totem Flyfishers, the province’s oldest conservation fly fishing club, awarded its prestigious Roderick Haig-Brown Conservation Award to Bob Hooton.

Now Fisheries Head for the provincial Ministry of Environment’s Skeena Region, based in Smithers, B.C., Hooton was recognized for “extraordinary efforts to save the Skeena River watershed’s wild steelhead trout, much of which effort was aimed at alerting the public to damage done to the resource by the intercepting salmon market fishery.”

Hooton, a veteran fisheries biologist and angler, was praised for his tenacity and courage in the unrelenting battle to save Skeena River steelhead. “Hooton is one who refuses to make his own life easier by remaining silent while an enormously important resource is accidentally or deliberately ignored,” said Lee Straight, a former award winner who made the presentation. Totem President Brian Bird praised Hooton for setting an example for other resource managers. “Every British Columbian should applaud this man, and be just as outraged when such efforts are undervalued — and worse — sabotaged, by people right within government agencies. Hooton is an Olympic gold medallist among fisheries biologists,” Bird said.

The Haig-Brown award recognizes outstanding personal contributions in fisheries. It was first awarded in 1978, two years after Haig-Brown’s death, when Totem Cub members voted to retire annually awarded fishing prizes, to shift emphasis from angling prowess to resource conservation.

The Osprey can only second what the Totems have recognized. Bob Hooton’s name has popped up in these pages for most of a decade, always as part of something sound and good being done for wild steelhead. Many of our readers have followed closely the Skeena Saga, and many of us consider fishing these waters part of our very life cycle. Were it not for Bob Hooton, these ties and opportunities would be much diminished. Thanks, Bob, from a whole lot of us.▲

WASHINGTON’S WILD SALMONID POLICY: THE HABITAT DILEMMA — Don Haring

Don Haring is a 21-year veteran biologist with the Washington State Department of Fish and Wildlife. His c.v. includes experience in salmon management, landscape planning, forestry management, and habitat protection. Presently he is working with implementation of the Wild Salmonid Policy and development of salmonid recovery strategies, particularly in response to proposed salmonid listings under the Endangered Species Act. Don enjoys fishing for a variety of fish species throughout the state, both in fresh and salt water, and camping and other activities with his family.

This is the third in a series of WDF&W-authored articles about the Department’s role in, and response to, the Wild Salmonid Policy. “Habitat” is a concept with which we should all be familiar. In this piece, Don provides some revealing specifics and warns us why the Habitat part of wild salmonid recovery may be the most difficult.

The decline in abundance of Washington’s native wild salmonids (the various species of native salmon and trout) is attributable to a combination of factors. Four of these, commonly called the “Four H’s,” explain why many of Washington’s salmon, steelhead, and other salmonid stocks are in steep decline: Harvest, Habitat, Hatcheries and Hydropower.

Each factor makes its own important contribution to the decline of these stocks and each must be addressed if the state is going to restore these stocks to healthy, harvestable levels. Fortunately, Governor Gary Locke and legislative leaders, the Washington Fish and Wildlife Commission, treaty-Indian tribes, and citizens across the state are mobilizing to make the hard decisions needed to save these fish.

The Department of Fish and Wildlife (WDFW), working in conjunction with the treaty-Indian tribes, has the expertise and necessary authority to effectively address two of the H’s — Harvest and Hatcheries. Hydropower will in large part be deferred to the Northwest Power Planning Council and the Bonneville Power Administration. The hydro dams on the Columbia and Snake Rivers, as well as those on other state waterways, have played a significant role in the
decline of wild salmonids runs.

Although each is difficult, the remaining "H". Habitat, is the thorniest of the group. This is because it encompasses such critical issues as water quality plus water and land use. In other words, our ability to save fish will depend on the amount and quality of water in streams and the manner in which we develop or use the resources adjacent to streams.

The Joint State-Tribal Wild Salmonid Policy, adopted by the Fish and Wildlife Commission in December 1997, sets out in great detail the habitat needs of salmon and other salmonids. The habitat elements include habitat policies/goals, habitat performance measures that provide a description of productive habitat condition, and recommended action strategies to achieve the policies and performance measures. These habitat elements are based on the best available science and on "what fish need." The Wild Salmonid Policy is a guide to how to protect and restore salmonids.

Habitat Needs

Obviously, salmon need cold, clean water. They need refuges from flood and drought. They need deep pools. They need spawning gravel and a healthy ecosystem that provides food. While these life needs are easy to understand, it is more difficult to make the land use decisions which are needed to ensure that healthy habitat is maintained.

Biologists have long expressed concern regarding the reduction in salmonid productivity due to loss or degradation of habitat. For some stocks the evidence is irrefutable, for example where access to spawning habitat has been blocked by the construction of dams for hydropower, water storage, or flood control, or where culverts have become barriers to fish migration. In other cases, specific effects of habitat modification have been linked to reduced reproductive or rearing success, for example reduced survival of eggs due to accumulations of fine sediments in the gravel, or the loss of pieces of large wood in the channel which reduce the number of pools and otherwise eliminate the diversity of habitat conditions in the channel.

How salmonids use specific freshwater and marine habitat varies between species and between their various life history stages from egg to adult. For example, whereas coho salmon are very susceptible to alteration of small tributary habitat such as culverts which block upstream fish migrations, chinook salmon do not actively utilize the small tributaries and are often limited by peak flows in mainstem river reaches. Loss or degradation of any one of the necessary habitat types limits overall production potential of the salmonid stock.

Habitat degradation contributes to decline for most salmonid stocks, and is the key limiting factor for many stocks. Most habitat impacts are the result of land use decisions. These impacts have not occurred overnight, but rather are the result of cumulative impacts over 100 years of settlement and land use policy in the Northwest. However, recent large increases in human population and the demands they impose have accelerated the rate of habitat decline.

What Kind of Water, How Much?

As we said, some of the habitat requirements are very evident, such as the need for water in the stream for fish to live in. Not as evident, however, is the need for enough water of the appropriate temperature to provide the spawning and rearing area and conditions utilized by salmonids. Fish, like humans, also can be adversely affected by too much water in the stream. Flood flows affect the stability of the gravel in the stream, scouring eggs from the gravel or burying them under excess gravel. Flood flows can also wash juvenile salmonids from the stream if suitable refuge area is not available (such as in-river reaches constrained by dikes or levees).

High flow impacts to stream habitat are particularly evident in urban and suburban areas. Here stormwater runoff from impervious surfaces (e.g., parking lots, roads, roofs) is routed directly to streams, increasing the frequency and magnitude of flood flows and reducing water quality. There are numerous examples of streams that have suffered wholesale alteration due to stormwater runoff. It is usually extremely difficult or even impossible to "rebuild" these streams to support salmonids until the natural flow regime of the stream can be restored.

Riparian Habitat

Salmonid habitat is not limited to just the stream channel. Another key habitat element is the presence of a healthy, dense streamside stand of large trees. These ripar-
tinue to have wild salmon or not. Everyone in Washington’s fast-growing population has contributed in some way to the decline of the salmonid stocks. Everyone must become part of the solution. We are to the point that it is now important to take extraordinary actions to protect the integrity of the remaining good salmonid habitat, and work to restore, where possible, the habitat that has been degraded over time.

Conservation, then Restoration

To accomplish this we must modify our land use activities to more resource-friendly actions throughout our watersheds, including urban, agricultural, and forested areas. Much of the recent focus and interest has been directed towards restoration projects and activities, which are indeed important if we are to restore productivity to degraded habitats. But protecting the remaining good habitat remains the most cost effective option, with the greatest level of certainty.

One thing is certain, no one in Washington wants his or her grandchildren to have to go to a museum to see a magnificent wild chinook, coho, or steelhead. I know I enjoy seeing them in all their majesty in their natural habitat, and I would like everyone else to have that opportunity.

DEER CREEK AND THE TOLT RIVER: SOME GOOD NEWS

Curt Kraemer

Table 1. Density (fish/meter$^2$) of Age 1+ Steelhead Parr

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(SASSI, 1993). Game Department biologist James DeShazo first raised concerns for Deer Creek summer steelhead in the early 1970s (DeShazo, 1974), but it took the now (infamous) Deforestation slide, a major erosion event in the winter of 1983/84, to bring to public attention the magnitude of Deer Creek’s problems.

Monitoring the age 1+ steelhead parr in Deer Creek showed that during the 1980s and early 1990s the numbers of steelhead being produced were declining at a rate of 30 to 50 percent per generation (see Table 1). By 1990 the total number of adults returning to Deer Creek may have fallen below 100 fish per year. With these population trends, a “critical” status determination was an easy call. By the late 1980s we all feared that this unique population might be driven to extinction before the end of the century. And we knew the main culprit: bad land-use practices, especially timber harvest, throughout the basin.

In this situation, the Deer Creek Basin needed public attention. And the Deer Creek Group responded; it was a coalition that brought together members from several state and federal agencies, the Stillaguamish and Tulalip tribes, local land owners, conservation organizations and private individuals. The Group focussed heavily on the fish and on land management activities within the basin.

The United States Forest Service owns about 50 percent of the basin’s land and nearly all of its headwaters. So, looking back, we must give major kudos to USFS for its 1985 decision to defer timber harvest on these lands. This one action signaled the beginning of securing the future of Deer Creek summer steelhead.

At the same time The Deer Creek Group began cooperative efforts to collect baseline information, to inventory road systems, and to begin rehabilitation work. And the Group also began reviewing proposed timber harvests in the field. With its own team of representatives they developed a harvest prescription for each specific site. These prescriptions were more conservative than those required by the then-existing Forest Practice Rules.

To those of us familiar with Deer Creek, it was clear that the major fish habitat problem in the basin was too much bed load material. The stream was being overwhelmed with silt, sand and gravel; more material was being fed into the system each year than could be flushed downstream. This resulted...
in an unstable channel with few deep pools or other critical overwintering habitats. Summer stream temperatures also became elevated, with temperatures as high as 76 degrees F. These conditions worked together to reduce steelhead survival at every freshwater life stage.

Then, during the late fall of 1990, the North Puget Sound region experienced a major hundred year flood event. While floods are generally bad news for fish, this event supplied the energy needed to move more bed load material out of the system than was being fed from the variety of sources in the basin. By the summer of 1991 it was clear that the stream channel had incised through the extensive gravel bars and formed deeper pools and other habitats that would supply needed refuges during the harsh winter flows.

The steady decline in parr abundance stabilized, beginning in 1993 (Table 1). About the same time the number of returning adults increased. Owing to the erosion problems in the basin, the stream is rarely clear enough to permit counting adults in October, when we would expect most of the fish to be in the upper basin. During the last two decades it has never been clear enough for spring spawning surveys. The last time conditions were favorable for an October adult count was in 1994. At that time I was able to count 460 adult summer steelhead in upper Deer Creek. The summer of 1996 provided perhaps the best fishing on returning adults in the North Fork Stillaguamish below Deer Creek since the late 1950s. (Ed’s note: Fishing in Deer Creek itself has been prohibited for many years.) While the conditions in October have precluded any more adults counts, index counts have been made in one of the areas surveyed by Harry Senn in the late 1950s and early 1960s. His surveys were conducted in late August and had a peak count of 54 adults. The recent counts have been in late August or early September in conjunction with the juvenile population work. The most recent counts have numbered 80 to 100 fish.

The habitat base for Deer Creek summer steelhead remains fragile; therefore the population remains vulnerable to future disasters. However, it is clear that the population has taken a step back from the brink of extinction. There is now hope that future generations will have the opportunity to enjoy this marvelous resource.

**South Fork Tolt**

The Tolt River’s South Fork produces most of the wild summer steelhead that provide the fishery for both the Snoqualmie River and the Tolt itself. The problems faced by the Tolt summer fish are different from those in the Deer Creek basin. While the mainstem Tolt and its North Fork have some of the same excessive bed load problems as Deer Creek, the South Fork of the Tolt is more stable. The reach of the South Fork that produces the summer steelhead lies above a cascade/falls at river mile 3.3 and ends at river mile 8.2 where there is an impassable falls. Just upstream of the falls the City of Seattle has constructed a dam (at river mile 8.4) to obtain domestic water. This dam accounts for the stability downstream.

For decades the Tolt summer fish supported a recreational fishery on the Snoqualmie downstream of the Tolt as well as in the Tolt itself. Historically, the South Fork probably had an annual return of several hundred adults. Fishing was limited to the area downstream of the Tolt Forks: the anadromous portions of both the South Fork and North Fork were closed. In 1976, for the first time in decades, these sanctuary areas were opened for recreational fishing.

In 1985 Bob Pfeifer (then the local area biologist) established a spawning index on the South Fork between river miles 3.3 and 6.8. Sampling (hook and line captures) in this section of the river, during the spring months of 1997 and 1998, has found nothing but summer steelhead. All but one of the fish sampled were wild (no adipose fin clip). Table 2 summarizes the spawning surveys since 1985. We have estimated the maximum sustainable yield (MSY) escapement goal for this reach of the river to be 18.5 reds per mile, a total of 65 reds.

By the late 1980s some local anglers and Washington Trout (a local conservation group) had become concerned that these steelhead were being overfished. Fall snorkel surveys, led by Washington Trout in the early 1990s, averaged only 25 wild adults and this stock was classified as depressed (SASSI, 1993). A depressed stock was one "whose production is below expected levels based on available habitat and natural variations in survival rates, but above the level where permanent damage to the stock is likely."

Responding to these concerns, the Wildlife Commission changed the fishing regulations on the Tolt and Snoqualmie beginning with the summer season in 1991. The changes reestablished the sanctuary areas in the Forks of the Tolt, and imposed wild steelhead release and selective regulations (no bait, single barbless hooks) for main stem Tolt and Snoqualmie below the falls. The following year the commission enacted wild steelhead release regulations, during the summer season, throughout the entire state.

Following these regulation changes, since 1993, the annual escapement has been above the MSY level; in spring this year the escapement took another leap upward (Table 2). The 1998 measured spawning escapement in the 4.9 miles of summer steelhead habitat in the South Fork Tolt was more than 360 adults. (Ed’s note: The number of adults is derived from a formula based on redds counts.) It is likely that the 1998 increase in abundance results from the production of adults protected by the regulation.
changes. It will be very interesting to see what the next few years bring in escapement numbers. With six years of escapement levels above MSY, especially if the levels of 1998 are maintained, it appears that this population is well on its way to recovery.

The Deer Creek and South Fork Tolt summer steelhead stories show what can be accomplished when resource agencies, concerned citizens and organizations work together for the good of the steelhead resource. The recovery of the Tolt summer steelhead is the result of the hard work of dedicated agency biologists like Bob Pfeifer and the efforts of groups like Washington Trout. The return of the Deer Creek steelhead, back from the edge of extinction, reflects the efforts of a large group of people: public agencies, local tribes, dedicated individuals (among others, Bob Arnold and Alec Jackson), and conservation groups (Federation of Fly Fishers and Fourth Corner Fly Fishers).

There is an important message here: the failing fortunes of anadromous fish can be reversed through the hard work of dedicated biologists, concerned individuals, and groups. It merely requires that people take the time and energy to get involved.

Your local fisheries biologist is an excellent place to start the educational process of learning about steelhead, their habitat needs, and how to become an effective player in recovery efforts.

LITERATURE CITED


IDAHO'S THREATENED SALMONIDS:
THE BIOLOGY IMPERATIVES

As readers will appreciate, first and foremost on the agenda of Idaho's Fish and Game Department is the status of Snake River wild steelhead and salmon. Above Lewiston, on Idaho's border with Washington, and where the Snake becomes an impoundment behind the first of eight downriver dams, the river is in good shape, with habitat and sanctuary waters mostly as nature provides them once. Yet the salmon and steelhead in those waters — every one of their species — are on the federal Endangered Species list. Some, such as coho, do not come back; they became extinct more than a decade ago, an event well recalled by many of the frustrated biologists and managers charged with saving them.

In the piece that follows we have severely condensed a necessarily thorough report prepared by the staff of Idaho F & G for its director, part of an orderly process by which the professional stewards of Idaho's anadromous fish have laid out the causes and the cures for this imperilled and priceless resource. The report, completed in May, is intended to "increase the (Fish and Game) Commission's comfort level that department data and conclusions are accurate." The commission, in turn, will use the report in its required communications with NMFS under the 1999 Decision Point process. The commission's response to the report is summarized at the end of this article.

The choices for Idaho will be exasperatingly difficult, probably without political precedent if the right ones are made. We hope this account will encourage readers to speak out. Those of you who can do so effectively know who you are: There should be enough ammunition here to help.

The National Marine Fisheries Service, the federal agency responsible for salmon and steelhead recovery within the Endangered Species Act, has committed to decide how to recover Idaho's salmon and steelhead by the end of 1999. This commitment is known as The 1999 Decision Point. It is a requirement of NMFS' 1995 and 1998 biological opinions on the operation of the Federal Columbia River Power System. Litigation by Idaho F&G and others was the primary catalyst for this commitment.

In the process of coming to the 1999 decision, a number of elements are at work.

One of these is the Plan for Analyzing and Testing Hypotheses (PATH), a scientific forum initiated by NMFS to help bring regional resolution to conflicting hypotheses about decline and recovery. The forum includes federal, state, tribal, university and private consultant representation, and incorporates independent peer review.

COMPETING HYPOTHESES

There are two primary aggregate hypotheses regarding the major factors which limit recovery, each of them being analyzed by PATH scientists:

The state and tribal hypothesis, advanced by state and tribal biologists, holds that cumulative direct and delayed mortality of juvenile and adult salmonids is associated with the mainstem hydropower system and that this mortality has not been compensated for by the smolt transportation program and recent dam improvements. Smolt transportation has failed to compensate for the dams because of delayed mortalitv owing to stress from reservoir and dam passage, collection, handling, barging and disruption of natural migration timing.

The alternative hypothesis, advanced by Bonneville Power Administration, Corps of Engineers and some NMFS scientists, holds that the smolt transportation program and recent dam improvements have compensated for direct and delayed mortality associated with the mainstem hydro system. Adult salmonids are not returning owing to a mid-1970s shift in ocean conditions, coupled with disease, genetics, predators, and other unspecified factors that cause selectively high ocean mortality for upriver stocks.

PATH currently is modeling predicted outcomes of recovery options based on these two hypotheses. They have completed preliminary results for spring/summer chinook (Marmorek and Peters 1998) and currently are working on model runs for fall chinook, followed by steelhead. PATH has not yet fully analyzed which aggregate hypothesis has the best ecological rationale and scientific support. PATH will attempt to resolve this important issue next fall and winter. At present, both hypotheses are being modeled equally.

Idaho F & G staff believe the level of ecological and scientific support for the state and tribal hypothesis, and the level of ecological and scientific uncertainty for the
alternative hypothesis, do not warrant delay in clarifying the primary factor limiting recovery. Without this clarification we believe the 1999 Decision Point likely will be deferred.

It is important to understand the merits, risks and uncertainties of these opposing hypotheses in order to implement effective recovery measures.

The Past 50 Years

The 1950s and 1960s provide a reasonable standard for recovery. The Commission, State of Idaho and NMFS have adopted a two-to-six percent smolt-to-adult survival standard for recovery based on this earlier period.

Many natural and artificial fluctuations and changes to the fishes’ ecosystem have occurred over time. The most dramatic changes resulted from human development of the region, and included overharvest of adults, hydropower development, flood control, water diversion and storage for irrigation, grazing, logging, mining, and commerce. There have also been natural disturbances, such as droughts, floods, fires and shifts in ocean productivity and predator cycles. These natural events are important regulators of population abundance and are part of the natural evolutionary legacy of Idaho’s wild salmon and steelhead and are not the primary cause of the current crisis facing these fishes (NMFS 1995; Harza Northwest 1996; Marmorek and Peters 1996; Williams et al. 1996; Harrison 1998; Stelle 1998).

It is unrealistic to assume society can restore the ecosystem to pristine pre-European development conditions and regain the estimated 1.5 million spring/summer chinook salmon adults that returned to the Snake River annually (Matthews and Waples 1991). But we do not have to go back in time very far to find ecosystem conditions that supported stable and viable runs of wild salmon and steelhead. During the 1960s wild salmon and steelhead runs into the Snake River averaged over 100,000 adults annually. These runs provided sustainable natural production and consistent tribal, sport and commercial fisheries.

Idaho’s wild salmon and steelhead declined dramatically in the mid and late 1970s and have not recovered. Currently all of Idaho’s native salmon and steelhead are either extinct or threatened with extinction. (Ed’s emphasis.) Snake River coho salmon were declared extinct in 1986. Sockeye and chinook were listed as endangered and threatened, respectively, under the federal Endangered Species Act (ESA) in 1991 and 1992. Steelhead were added to this list as threatened in 1997.

It is generally accepted that hydropower development on the lower Snake and Columbia rivers is the primary cause of decline and continued suppression of Snake River salmon and steelhead. The region is particularly unified with respect to mainstem hydropower development being the primary cause of decline; there is less unified agreement that the hydropower system is the primary factor currently limiting recovery.

Spawning and Rearing Habitat

The quality of Idaho’s salmon and steelhead habitat range from pristine to degraded to inaccessible, but no significant deterioration in the condition of accessible habitat has occurred since the 1960s that could account for the dramatic decline in fish numbers. Important spawning and rearing areas have been blocked by dam construction during this time period. But this cannot account for reduced escapements into accessible areas, escapements which have declined dramatically since the 1960s, regardless of the relative quality of the habitat. In contrast, the productivity or survival of juvenile salmon and steelhead in these freshwater habitats has declined only slightly since the 1960s.

The quantity and quality of habitat in Idaho does not preclude recovery of wild Snake River salmon and steelhead. Habitat protection remains important in helping ensure the persistence and resilience of the species.

Migration Habitat

Idaho’s spring migrating salmon and steelhead prepared for thousands of years by utilizing headwater tributaries for spawning and nursery areas and then sending their young to the ocean on the wave of snowmelt each spring. The most important change to the ecosystem that nurtured this process as recently as 30 years ago is the construction of additional dams on the lower Snake and Columbia rivers in Washington state. The dramatic decline of Idaho’s salmon and steelhead coincides directly with completion of these dams. The newly impounded reach lost many of the ecosystem components historically required by steelhead and salmon for smolt migration (e.g., relatively unimpeded passage without dams, substrate and riparian cover for resting and predator avoidance, high water velocity and velocity gradients, preferred temperatures, etc.).

The journey for in-river migrants now requires two to three times longer as a result of the slack water (Raymond 1979).

In their Return to the River document, independent scientists, hired by the Northwest Power Planning Council to assess its recovery plan, were very clear regarding the dams: "Key among the conditions we define as normative is the availability of a continuum of high-quality habitat throughout the salmon life cycle, from freshwater streams along the entire migratory path into and back out of the Pacific Ocean.... The dams severed the continuum of habitat, leaving very little riverine habitat left in the mainstream and isolating other types of habitat." (Williams et al. 1996).

The smolt transportation program was implemented in the mid-1970s in an attempt to compensate for adverse migration conditions caused by hydropower development. Available data and scientific reviews indicate smolt transportation has not compensated for the dams and is unlikely to provide recovery.

Estuary and Ocean Conditions

Estuary and ocean conditions are important regulators of population abundance but are not the primary factors limiting recovery of Idaho’s salmon and steelhead (Harrison 1998; Stelle 1998). Cyclic and stochastic fluctuations in ocean productivity, temperature and predators have occurred for thousands of years and are part of the evolutionary legacy of anadromous fish. These conditions can have a profound effect on survival and relative year-class strength of Idaho’s salmon and steelhead, but can these conditions account for the dramatic decline toward extinction since the 1960s?

The importance of ocean conditions and variability must be kept in proper context. Wide annual and periodic fluctuations in adult returns are common for salmon and steelhead. Prior to the 1970s, strong stock productivity and abundance helped absorb these fluctuations without risk of extinction. Since the 1960s, low stock...
productivity and abundance resulting from hydropower development leave little room to absorb these natural shifts in ocean conditions, further elevating the risk of extinction.

The PATH process has helped examine the plausibility of estuary and ocean conditions being responsible for the current imperiled status of Snake River salmon (Marmorek and Peters 1996). If estuary/ocean conditions (e.g., nutrients, temperature, forage) and predators (e.g., pinnipeds, avian) are the primary limiting factor, then downriver stocks that exhibit similar life history patterns should also be severely depressed. PATH scientists compared several spring chinook stocks from Snake River tributaries with similar spring chinook stocks from downriver tributaries. These upriver and downriver stocks migrate at similar ages, time and size, enter the estuary at similar times, have similar distributions in the ocean, and return as adults at similar age, time and size. The most significant difference in their life cycle is that the lower stocks originate above one to three dams, whereas the upriver stocks originate above eight dams. All of these fish should experience similar conditions and predators in the estuary and ocean.

Based on these conclusions, if smolt transportation has compensated for the dams, and the estuary and ocean are now the primary factors limiting Idaho salmon and steelhead, then ocean conditions and predators must be selective against Snake River fish, but still unrelated to the hydroelectric system. Available data does not support this line of reasoning. (Ed’s emphasis.)

Conclusion on Limiting Factors

This scientific reassessment points to the construction and operation of additional mainstem dams in the late 1960s and early 1970s as the primary factor limiting recovery of Idaho’s salmon and steelhead. This conclusion has been the official position of the Department, Commission and State of Idaho for the past two decades. This reassessment has not provided any scientific basis for changing this position; instead the data and recent scientific publications strengthen the conclusion that the dams are still the primary problem, and support the conclusion that smolt transportation has not fully compensated for the mainstem hydrosystem. (Ed’s emphasis.)

How to Recover the Fish

We believe that recovery actions must embrace the “normative river” in order to meet the biological requirements of the fish.

“The natural river option is the only option...that can provide recovery....”

We define the normative river as providing enough natural ecosystem functions in the river to allow sustainable two- to six-percent smolt-to-adult survival. There are three main approaches under consideration in the federal 1999 Decision Point Process:

1. Status quo smolt barge and flow augmentation (full smolt transportation, Dworshak and Brownlee drawdown plus 427 thousand-acre-feet flow augmentation from upper Snake River).
   This is the preferred federal approach. There is no scientific basis for assuming this approach will recover Idaho’s wild salmon and steelhead.

2. New and improved smolt barging and flow augmentation (surface collectors, reduced spill, more barges, greater proportion of fish barged, Dworshak and Brownlee drawdown plus existing or 1.3 million-acre-feet additional flow augmentation from upper Snake River). Surface collectors are a key element of this option, but the technology is unprecedented (department scientists tracking this process believe this technology is at least ten years out), and whether it can be developed and implemented is highly uncertain. Potential benefit of surface collectors is limited to reducing stress of smolt collection. It does not address the dilemma of transportation stress, stress associated with altered migration timing from barging, genetic selectivity of the transportation program, and imprinting concerns (Williams et al. 1998).

3. Natural River. The natural river option has a strong scientific basis for being the best biological choice for Snake River salmon and steelhead recovery. The scientific basis includes survival, adult escape, and fishery data collected prior to completion of the lower Snake River dams (Raymond 1988; Marmorek et al. 1996; Marmorek and Peters 1996), as well as studies on migration; predators; fish physiology and stress; hydromorphology; spawning, rearing and migration habitat preferences; and over 10,000 years of evolutionary legacy.

PATH modeling indicates the natural river option has a high likelihood of meet-

ing recovery standards if smolt barging has not successfully compensated for the dams, and a low probability of meeting recovery standards if smolt barging has already compensated for the dams. As described earlier, we find no scientific basis for concluding that the smolt transport program has compensated for the dams and that the high mortality has shifted to some factor in the ocean that is worse for upriver fish but unrelated to the dams.

An earlier analysis commissioned by the Corps of Engineers also concluded that the natural river option has the highest probability of biological success. (Harza Northwest 1996).

Spillway Crest Drawdown

Spillway crest drawdown is an option previously considered for recovery. As the name implies this option draws the mainstem reservoirs down to the crest of the spillway during the spring migration season. This reduction in the cross section of the pools causes the water to move faster than occurs with full pools or minimum operating pools, although still much slower than a natural river. But spillway crest drawdown is no longer one of the options being considered for the 1999 Decision Point. It was removed from consideration in 1996 following regional consensus that cost was too high and biological benefits too uncertain.

Risk Assessment

The biological risk to Idaho’s salmon and steelhead is high and recovery actions have not reduced this risk to acceptable levels. It is relatively certain that delay or deferral of implementing long term recovery actions will increase biological risk (Marmorek and Peters 1998).

PATH analyses indicate that if the dams are the problem (i.e., smolt transportation has not compensated for the dams) and the natural river option is implemented, then there is high certainty that the fish will recover. If the dams are not the problem (i.e., smolt transportation has compensated for the dams) and the natural river option is implemented, then the fish will likely be as well off as predicted for other options. Therefore the biological risk of the natural river option is extremely low. The natural river option provides high certainty of biological benefits under the hypothesis that the dams are still limiting recovery.

In contrast, if the dams are the problem and the natural river option is not implemented, then there is relatively high certainty that salmon and steelhead will not
recover, resulting in a lost opportunity for recovery. This results in a very high biological risk for smelt transportation and flow augmentation options. Based on our assessment of limiting factors and PATH modeling, these other options also have a very low certainty of biological benefits.

Conclusions

Department staff conclude that the natural river option is the best biological choice for recovering salmon and steelhead in Idaho. This assessment is logical, biologically sound, has the highest certainty of success and lowest risk of failure, and is consistent with the preponderance of scientific data. This conclusion is consistent with current State of Idaho and Commission positions. The normative river standard adopted by the Commission and State of Idaho requires improving in-river migration conditions enough to provide sustainable two-to-six percent smolt-to-adult survival. It also requires phasing out smolt transportation and allowing smolts to migrate naturally in the river as river conditions improve.

The natural river option is the only option considered in the 1999 Decision Point that can provide recovery and meet the policy positions stated above.

Eda Note. On May 8 the Idaho Fish and Game Commission adopted a formal policy statement endorsing the report’s recommendations. The statement acknowledges “outside disagreement” about the effectiveness of smolt transportation programs and directs Idaho F & G to “...make a preliminary assessment of 'next best' strategies both as to interim applicability and fall-back in the event the natural river option is not adopted. At this time, the Commission does not consider Snake River spillway crest drawdown or large-scale flow augmentation to be viable long term recovery options.”

THE LOWER SNAKE RIVER: BREATHE THE DAMS AND SAVE MONEY! Osprey Staff

In the preceding article we saw Idaho’s biological evidence to support the claim that the lower Snake River dams are the principal obstacle to wild salmonid recovery and that mitigation is not working. In this article, the Oregon Natural Resources Council (ORN) weighs in with an economic analysis which provides compelling evidence that breaching those four dams would eventually save us all a lot of money—in addition to saving the fish. No doubt this analysis will be denounced by the well-endowed interests who shudder at the thought of an effective movement, “out there,” to get serious about breaching the dams. But we note here, as an example, that the chairman of Montana State University’s department of economics has found “the methodology used to examine the costs and benefits of dam removal in this report to be economically sound.” (Prof. Thomas M. Power, April 24, 1998)

The FFF Steelhead Committee, one of two dozen organizations to sponsor the research, wants to thank economist Philip Lansing, who did the lion’s share of the work, and ORN’s Ken Raftor for shepherding the project to its conclusion and publication. What follows is a much-condensed version of the original 35-page report, which readers can obtain from ORN, 5825 North Greeley, Portland, OR 97217, (503) 283-6343. Their Web site: www.ornr.org.

Players in the salmon debate point to many reasons for the decline of fish stocks. Changing ocean conditions, degraded spawning and rearing habitat, over-fishing, predaceous marine mammals, and other culprits have been indicted as the main killers. While each of these factors may have contributed to the decline to some degree, in the case of Snake River salmonids there is strong evidence that the cumulative impacts of the eight mainstem dams have accounted for a great deal of mortality. Not until completion of the last four mainstem dams did Snake River salmon and steelhead begin their decline to today’s dangerously low levels.

A group of federal, state and tribal fisheries scientists participating in a process known as PATH (Plan for Analyzing and Testing Hypotheses) found in preliminary modeling that retaining the Lower Snake dams will result in an 80-95 percent probability of meeting recovery standards for Snake River salmon under the Endangered Species Act. Given the complexity of salmon life cycles, this is an extremely high probability. It is the only alternative that exceeded the 70 percent probability requirement. (PATH, 1998)

Relics of the Past

The four Lower Snake dams were built because inland wheat farmers campaigned for 100 years to build a navigable waterway from Lewiston, Idaho to the Pacific Ocean. They wanted to avoid the high monopoly prices of railroad shipping. Congress never would have funded the dams based on navigation benefits alone. Appropriations were justified based on hydropower, which now amounts to only five percent of the region’s energy supply. That five percent is readily replaceable with alternate power or conservation in today’s surplus energy market. Transportation has diversified to provide free market choices, long since ending railroads’ monopoly. Lower Snake irrigation, almost an afterthought at the time of the enabling legislation, produces a net loss to the economy.

Paying System Costs

Running structures like dams requires ongoing spending on operations and maintenance. There are side effects of maintaining dams and reservoirs that cause real costs as well. In the case of the Lower Snake dams, the damage these dams do to salmon results in enormous economic expenditures. These expenditures are costs that society pays to have these dams.

A natural river is a free gift of nature. In the case of the Lower Snake River, it will cost money to breach the dams and physically restore the river. However, once this cost has been paid, there will be no operations or maintenance costs.
For our calculations of the system cost of the Lower Snake dams and reservoirs, we include operations and maintenance costs of the dams and reservoirs, and the tremendous external costs required to reduce the damage these dams and reservoirs have done to the Snake River salmon. We add these numbers to find the total system cost (annual, in millions) of the dams and reservoirs:

<table>
<thead>
<tr>
<th>Operations and maintenance</th>
<th>33.6</th>
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</thead>
<tbody>
<tr>
<td>External (salmon restoration)</td>
<td>194.4</td>
</tr>
<tr>
<td>Sub-total, System Costs</td>
<td>228.0</td>
</tr>
</tbody>
</table>

**Other Costs:**

| Transportation | 6.4 |
| Irrigation | 1.8 |
| Total Annual Costs With Dams | $236.2 |

**Paying for a Restored River**

Retiring the dams and restoring free-flowing river conditions would save considerable amounts of money, but would also add the one-time new capital expense of breaching the earthen parts of the dams and modifying infrastructure like roads and bridges. Operations and maintenance would not be necessary for the restored self-sustaining natural system. Similarly, external costs associated with combating the deleterious effects to fish of the four Lower Snake dams would disappear. Recent Corps of Engineers estimates for breaching the dams range between $500 and $816 million. We use the midpoint, $659 million. It is annualized by spreading it over a number of years like a capital debt or mortgage, at 50 years and three percent interest, standard figures in dams analysis.

**Annual Cost (Capital Expense – millions):**

| Replacement Electric Power | 25.6 |
| Alternative Transportation | 115.6 |
| Irrigation Loss (lands purchase, lost crops) | 4.4 |

**Total Annual Costs, Restored River, millions:**

| Total Annual Costs, Restored River, millions: | 149.5 |
| Annual Savings; millions: | $86.7 |

**Net Economic Benefit**

Net economic benefit is a technical term meaning economic return to society after all costs are accounted. Net benefit is typically a positive amount, but it can be negative when hidden costs are included in the reckoning. For the Snake River dams, the benefit is negative.

Net economic benefit is very different from economic impact. An impact study might focus, for example, on the impact of a proposed course of action on a local community. There will be many different impacts in different areas if the Lower Snake River is restored, some positive and some negative. Our benefits analysis does not address local impacts. Instead, it takes a broader view and focuses on changes in overall economic wealth.

**Electric Power**

Electric power from the Lower Snake dams is not competitive. It costs 2.44 cents per kilowatt-hour. If we restore the Lower Snake River and purchase power elsewhere, we could provide energy for 1.87 cents per kilowatt-hour. (Ed's note: These calculations are explained in detail in the report. Interest on real capital is calculated at three percent with an inflation factor of an additional three percent.) The net economic benefit of an energy producing resource is not the cost of the energy subtracted from the sales price of the energy sold, but rather the difference between the full cost of producing that energy and the full cost of replacing it from the next least cost source. To show a positive power benefit, a project must produce power at less than the next least cost source. The least cost source method is an analytical tool, not an energy plan and it does not suggest that the energy will have to be replaced (which is not at all clear given the current power surplus).

**Total annual net power benefit with the dams; millions:**

| Total annual net power benefit; millions: | $60.8 |
| Total annual net power benefit, restored river; minus $19.8 |
| Total annual net power gain, restored river; $41.0 |

**River Transportation**

River transportation on the Lower Snake is expensive and heavily subsidized. Although river shippers pay only $1.23 per ton from Lewiston, Idaho to Kennewick, Washington, taxpayers and electric ratepayers pay an additional $12.66. The total cost to ship one ton of goods on the Lower Snake is $13.89. In comparison, rail costs only $1.26.

To estimate the net transportation benefit with a restored Lower Snake river, we first subtract from our present benefit the public costs of the dams and locks. Then we add the transportation portion of the restored river system cost. Finally, we add the increase in private costs that would result from a restored river. Private costs are estimated as the market price of comparative rail transport.

The difference between current benefit and benefit with the restored river shows the net gain that would result from transportation after restoring the Lower Snake River.

**Total annual net transportation benefit with the dams; millions:**

| Total annual net transportation benefit, restored river; minus $4.8 |
| Total annual net transportation gain, restored river; plus $39.4 |

**Irrigated Farming**

Thirteen agribusinesses pump water from the Ice Harbor reservoir. Together, these farms earn a net $1.9 million per year. But taxpayers and electric ratepayers subsidize these farms with $1.2 million. If the farms paid their full costs, they would lose $9.3 million every year. It would be cheaper to buy these farms outright and end their production altogether.

The four Lower Snake dams do not store water for irrigation and are not considered irrigation dams. However, thirteen large irrigators do take water from the system, all from the Ice Harbor pool, to irrigate about 35,000 acres. The key benefit the dams provide is raising the water level and thus reducing the height these irrigators must lift the water to get it to their fields and orchards.

Ratepayers pay for Ice Harbor pool irrigated farming by paying to run the Lower Snake dams and reservoirs, subsidizing electricity for irrigation pumping, and foregoing power revenue because of water lost to irrigation. Taxpayers pay for irrigated farming through crop subsidies and other supports. Subtracting costs from benefit gives the economic net benefit of irrigated farming.

**Total annual net irrigation benefit with the dams; millions:**

| Total annual net irrigation benefit, restored river; minus $9.3 |
| Total annual net irrigation gain, restored river; minus $6.2 |

**Conclusions**

The Lower Snake dams have not been a good investment. They may appear profitable, because they generate hydropower at costs that seem low and because hydropower benefits have tended to obscure the dams' lackluster performance in creating real irrigation and navigation benefits. However, when a proper accounting is performed on the four dams, including the costs of attempting to retain and restore salmon, even
their hydropower is no longer competitively priced. The dams actually operate at a substantial economic loss when all costs are reckoned.

It would be expensive to end the economic and ecological damage caused by the four Lower Snake dams and reservoirs. Current capital investment is irrevocably sunk and would be stranded. New capital would have to be invested. Power and transportation now produced by the dams and reservoirs might have to be replaced.

But retaining the dams is more expensive still. The external costs are so high that even with the cost of replacement power included, the economy benefits from river restoration.

Restoring the Lower Snake River would produce an economic benefit of approximately $87 million each year. This includes the costs of replacing Snake River hydropower, ending the barge transportation system, and buying out the 13 farms that use Lower Snake water for irrigation.

Ed's comments: 1. The sharp-eyed reader may notice that the sum of Restored River gains for power, transportation and irrigation, above, totals $86.6m., not the $86.7m. attributed to Annual Cost differences. The two values are essentially the same but the calculation routes to determine them apparently are different, thus resulting in the small discrepancy.

2. Some readers will find this article a bit frustrating because it does not account for the methods used to arrive at key figures, such as the external costs for salmon restoration, figures already disputed by BPA.

The Report's detailed appendices, beyond editing here, fully explain these things and readers are encouraged to get the original and judge for themselves.

3. The above-noted Professor Power, MSU's economics department chair, adds: "The ORNC paper probably underestimates the benefits of dam removal because it does not consider the benefits that are likely to accrue to the region once these fisheries are restored. Instead, it focuses upon the avoided salmon restoration costs. There will be benefits through recreational sport fishing, as well as income from commercial fishing operations, and related multipliers in local communities throughout the region. By restoring a major feature of the region's natural landscapes, the region's ability to attract and hold new residents and businesses, one of the major sources of our economic vitality over the last decade, will be protected and enhanced." 

\[ \text{The Osprey, No. 32, July 1998, page 21} \]
SAVING CALIFORNIA STEELHEAD

Herb Joseph, M.D.

Herb Joseph first wrote in these pages in January 1992 (Issue No. 14). At that time he had been “chasing” steelhead from California to Alaska for 40 years.” A retired dermatologist, Herb was a founding governor of Cal Trout and chairman of that organization’s steelhead committee. In this (his third) article Herb continues his vigorous crusade to contest his state’s prioritizing of money and manpower to steelhead habitat restoration at the expense of developing baseline data for existing wild populations and conserving what already is working. Readers can refer to California F & G biologist Dennis McEwan (The Osprey, Issue No. 28, November 1996) to see how these two authorities differ in their approaches to saving California steelhead.

There are hundreds of fishery and watershed restoration projects either completed or now underway in California. In fact, the State of California expended over $60 million for stream and fishery restoration from 1981 to 1996. Recent legislation, SB 271, allocates an additional $43 million over a six year period. Additionally, the Governor’s 98-99 budget proposes significant bond funds to support watershed efforts State-wide.” So states The California Department of Fish and Game in its February 4, 1998 Strategic Plan for Management of Northern California Steelhead Trout.

What have the $60 million done, over these 15 years, for steelhead and coho? After an extended search, not a single stream restoration project has been discovered from which it can be conclusively documented that a substantial, sustained wild (naturally spawned) steelhead run has been restored. No previous runs have been re-established or shown to return as a result of one of these projects. This observation has been verified by distinguished fishery biology professors from two universities.

Since 1981, California’s coho have become practically extinct.

In response to a letter of inquiry to the chief of DF&G’s Inland Fishery Division, he writes, on December 5, 1997: “It is not possible to state the overall effect, or even the specific individual restoration projects on steelhead populations given currently available information and staffing levels. Many factors affect steelhead populations, both in fresh water and in the ocean. There is no simple answer, much as we might wish it. We continue to believe that restoration of instream habitats and watersheds cannot but help to restore steelhead numbers.”

Coho salmon, since 1981 and under DF&G management, for all practical purposes have disappeared from California. Are the Golden State’s wild steelhead headed in the same direction? Without adequate data it is not possible to know. Many of us believe they are, but steelhead differ from coho in many ways. Coho were subjected to intense commercial harvesting in addition to severe habitat losses. Coho are more vulnerable and sensitive, die after spawning, and have a different life cycle. Steelhead are tough, resilient, tolerant harsher conditions, do not all die after spawning, and have not been subjected to widespread commercial fishing. Repeat spawning and straying helps preserve steelhead runs which otherwise would be lost. Straying averts inbreeding, which, if prolonged, weakens the stock.

“Every possible effort must be made to avoid further habitat loss.”

In his article on Kamchatka steelhead (Issue 31 of The Osprey, March 1999) Mark Cichocke emphasized the importance of repeat spawners. More than twenty years ago 38 percent of Gualala steelhead were found to be repeat spawners — a much higher percentage than usual. These numbers were obtained by scale readings from large fish, and it is noteworthy that the large, early run Gualala steelhead now appear to have been lost. Many other steelhead runs have been lost as their gene pools disappear.

Here, at the southern extreme of their range, as with their Kamchatka cousins, repeat spawners are important for preserving gene pools under difficult conditions. Some California steelhead still manage to survive extremely harsh, inhospitable environments. Magically, their existence hangs by a thread.

Ocean commercial harvesting was a factor in the coho’s demise. Steelhead also are commercially harvested at sea, but the numbers are not known. However, there are recent reports that El Nino depleted the food chain from plankton upward through anchovies and sardines, so a negative impact can be expected on anadromous salmonids, including steelhead.

Why are the coho gone? Destruction of gene pools of individual stocks and sub-stocks is the basic reason. After at least one completely non-productive life cycle (average 4 years for steelhead, 3 for coho) a stock or sub-stock is extinct. Each spawning pair must produce another pair in order for that run to remain viable. During the recent seven-year drought, in addition to habitat losses from logging, water diversions and development, many runs of steelhead were lost, and it is not surprising that coho are practically gone. Wild steelhead are an indicator species for the health of an ecosystem encompassing both sea and land. The prognosis is not good.

Restoring habitat has not been shown to restore wild steelhead that previously utilized the habitat. Once its gene pools are destroyed, that stock of fish is extinct and cannot be brought back. This principle applies to all species.

What are the solutions?

For starters:

1. Stream-by-stream, tributary-by-tributary, baseline inventories of fish populations and habitat. There must be identification of each stream’s several genetically diverse stock and sub-stocks with acknowledgment of the special, genetic basis of spawning behavior such as timing and the selection of each special spawning habitat. Modern technological methods for accurate determination of fish populations and genetic variations are readily available. Populations can be calculated from direct and underwater observations, tagging and recapture, creel census, punch cards, red counts, electrofishing, weirs and electronic devices. Genetic varieties can be separated by combinations of physical characteristics, behavior patterns (e.g. repeat spawning), and by laboratory procedures such as DNA testing, electromorphosis, and chromosome studies.

2. Focus on conservation of existing, established, viable runs of wild steelhead and of their identified habitat: Restoration projects have failed, and time is running out on remaining runs of wild steelhead. Known spawning and rearing habitat can be improved, but first pre- and post-project population counts will be needed. Every possible effort must be made to avoid further habitat
losses. Remaining stocks of wild steelhead are the end result of the culling process of natural selection. They are the survivors after thousands of years of weeding out the weaklings. Now it is imperative that the precious gene pools of these existing stocks and their native habitats be protected to the utmost.

3. Recognition that habitat destruction has been largely from logging and water diversions, not from sport fishing. Sport fishermen should not be punished for crimes they did not commit. Tighter restrictions on logging, water diversions and development are essential in order to preserve and protect specific critical habitat. Single barbless hooks on lures and flies, with catch and release angling regulations, are needed but are less important than habitat protection. Surprisingly, 70 percent of California’s captured steelhead are released.

Except for the Central Valley’s Yuba River, most of California’s wild steelhead return to coastal streams, and the larger runs occur in the North Coast. More and more people are moving into these scenic, attractive areas. As a result, development continues unabated. Demand for water, land and housing increases proportionately, and local governments welcome the broadened tax base. In Sacramento, the influence of developers alongside powerful timber and agricultural interests shoves fishery conservation efforts to the political back burner. Invariably, people are given priority over fish, and we, the people, indeed create a harsh environment for steelhead. As Albert Schweitzer said, “Man has lost the capacity to foresee and to forestall. He will end by destroying the earth.”

4. Systematic monitoring of fish populations and habitat, bearing in mind that conditions and fish populations vary widely from year to year. Spawning escapement must be closely monitored. Without dependable, hard, biologically sound data it is too easy to claim success when there is none.

5. Beginning in 1998, every hatchery-produced California steelhead must be marked by clipping the adipose fin. (Eds. comment: Finally, incredibly!) The impact of hatchery fish on wild stocks now can be measured and appropriate steps taken to protect wild stocks. Protection of the genetic variations of wild stocks is a key factor in every stream. Harvest of hatchery fish should be encouraged.

6. Management must be planned and funded over the long term and controlled by trained, qualified professional biologists free from political pressures. The Public Trust Doctrine needs reinforcement.

Habitat restoration has not been shown to restore California’s wild steelhead. Diligent conservation of established viable stocks of wild steelhead and their habitat now is of critical importance. Under the Endangered Species Act the resource has become primarily the responsibility of the National Marine Fisheries Service, but full cooperation of state agencies is vital. Forty-three million dollars are available from the state. How will it be spent? As we enter the new millennium, look for signs along your favorite steelhead stream, “UNDER NEW MANAGEMENT.” Wish them well.
Endangered runs, sure; but who's to blame?

In one of my earlier columns I called for an expedited recovery plan for endangered upper Columbia steelhead. Since that time, what have we seen? There has been continuous finger pointing between the user groups as to who is to blame. Or that it is El Nino’s fault.

Overall, everyone is to blame: the commercial fishery, the sports fishery, the timber industry, the polluters, the dams, the developers, the irrigators, the bargers, the commercial and domestic water users, our politicians, etc. Isn’t it time for all to recognize that “all of the above” are the problem? We have had study after study recommending specific actions, but no one wants to provide adequate funding or has the legal authority to require remedial action.

Now we have the proposed listing of Puget Sound chinook and the local politicians are frantically trying to find ways to avoid the endangered listing. What do you think the chances are that the local politicians can achieve consensus among all these groups to provide a realistic recovery plan based on scientific principles? My guess is about the same as somebody winning the Powerball lottery.

Since everyone is to blame, can anything be done? Our only hope is again to emphasize the need for NMFS to expedite and implement recovery plans. We need to force NMFS to demand recovery plans that address all aspects related to the above groups and the remedial actions each group must take. Also, the recovery plans must have time deadlines for the required actions. Only NMFS has the overall legal authority to accomplish such an effort. If we can get NMFS to act expeditiously, we have a chance to save our anadromous runs.

If not, hang on to your memories.

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 ATLANTIC SALMON INVADE VANCOUVER ISLAND

“Off The Net” (News — bad — from the Internet)

VANCOUVER, B.C. Mr. Roger Dunlop, a fisheries biologist with the Nu-Chal-Nuth Tribal Council, has reported observations of adult Atlantic Salmon in every creek and river in Nootka Sound which was swum last fall for salmon inventory purposes. Quoting preliminary DFO statistics Mr. Dunlop said; “There were 25 adults reported in the Zebellos river and 14 in the Thasis river. Because of difficulties in seeing in murky water, total numbers are probably higher.” Each mature 7 pound female can produce approximately 4,500 eggs. “It would seem the probability is very high that these fish are breeding,” said Mr. Dunlop.

Three Atlantic smolts were recently captured in Carnation Creek in Barclay Sound. These smolts are currently in the freezer in the Pacific Biological Station awaiting testing. Wilf Caron, a West Coast salmon troller, reported seeing an adult Atlantic from Carnation Creek delivered to the biologists at the station.

The Provincial cabinet are still mulling over their decision with respect to the lifting of the moratorium on expansion of net cage salmon farms. The longer the delay the more anecdotal evidence comes to light concerning the inaccuracy of the Salmon Aquaculture Review conclusion that open net cage salmon farming poses little risk. “BC is at a crossroads,” said Charles McKee, Executive Director of the Wild Fish First Society. “Wild salmon and net cages are incompatible. Lifting the moratorium spells extinction for wild salmon within 10 to 15 years just as is happening in Norway.”

Further Info from:
Wild Fish First Society
3426 West 34th Ave.
Vancouver B.C. 604-713-4019
Email: Wildfish@direct.ca
Fax 604-713-4015
LETTERS

We appreciate your viewpoints and comments. Write to us at: Editor, The Osprey, P.O. Box 84211, Seattle 98134.

Editor, The Osprey:

Contrary to what was stated in the introduction to Kenneth Currens article in Issue 31, "Navigating the Wild Salmonid Policy: A Tribal Perspective," the article was anything but revealing. It was pure gobbledygook. Please, no more articles by Dr. Currens until he learns how to write in a much more coherent and meaningful way.

Jack Smith, Seattle

Editor, The Osprey

I was disappointed with Dr. Kenneth Currens' description of the tribal perspective of the Wild Salmonid Policy. In my view, Currens piece does little to help anyone understand what the tribal perspective is and simply points to various unspecified "differences." In any event, tribal perspectives are not so important as tribal policy which Currens does nothing to illuminate. Rather, he points to management differences and perspectives. While it is certainly useful to understand tribal perspectives, I would have been much happier to learn what the tribes have in mind.

The state's WSP is specific:

• the fish come first. Where do they fit in the tribal perspective?

• when faced with uncertainty, manage conservatively to insure a safety margin for the fish. What is the tribal position on this basic issue?

• True, the roles of various governmental bodies in implementing the WSP and salmon recovery in general are not specified. Currens identifies this as a "preference" issue. What does that mean? How do the tribes see this process working?

• As I recall, the original WSP adopted by the Fish & Wildlife Commission established fairly conservative standards for gene flow and permissible levels of inter-breeding (10 percent). The tribes objected to these standards. I would argue that the proposed state standards were too lax and involved too much risk for wild stocks. What is the tribal number?

• The state would count no hatchery fish towards wild escapement goals based upon the extensive scientific literature citing the erosion of fitness caused by wild-hatchery inter-breeding. What do the tribes propose and why is their proposed level safe?

From where I sit, the principal difference between the WSP and the tribal perspective is that the WSP is a peer-reviewed document with some specific scientific and management criteria and policy guidelines to implement the basic premise—the fish come first. What are the founding principles of the tribes' policies and where is the science and peer review to give the public confidence that the tribal policy will produce the desired results?

Instead, Currens writes about perspectives and differences from a social science perspective rather than providing policy prescriptions.

As an Editorial Board member I have seen the correspondence to NWIFC's Jim Anderson and Dr. Currens by which The Osprey invited NWIFC to tell our readers about its role in the Wild Salmonid Policy. Either of them had opportunity to address some or all of the points I raise here. Regrettably, then, Currens' article leaves me with the impression that NWIFC is not really ready to address, in public, the specifics which are central to making the WSP work.

Peter Soeder, Edmonds, WA; Past Chair, FFF Steelhead Committee and Editorial Board Member

Editor, The Osprey

You are doing a good job, the newsletter is grand in highlighting some of the problems. In my opinion habitat and sanctuaries are the main needs.

John Thompson, Aberdeen, WA

We GOOFED!! (Big Time)

In our last issue (No. 31, March 1998) we printed our annual "Honor Roll," recognizing those individuals and groups who donated in 1997 to keep The Osprey flying high. Blame it on volunteerism or bad luck or whatever you will, we omitted the biggest contributor of all, whose name should have been at the top of the list! So, here's our sincere regrets to THE UMPQUA FOUNDATION and its president James Ratslaff, for overlooking their very generous contribution of $1,000.

Editor, The Osprey

Issue No. 31 (March 1998) is another very good one, except once again there is no mention, by any contributor, of the single most important cure for the demise of the steelhead, chumsock and cohoes: the banning of mixed-stock market fishing in general and the use of nets in particular. Selective live capture is the only way left!

Lee Straight, Vancouver, B.C.

Editor, The Osprey

In my books, The Osprey is a "must read." Defend its quality.

Peter Broomhall, Vancouver, B.C.

Editor, The Osprey

We certainly appreciate all of your donated time and effort. The publication is just super as evidenced by the articles and coverage. I look forward to forthcoming issues. My personal thanks.

Merlin R. Gilbertson, Lake Stevens, WA

Editor, The Osprey

Enclosed is our club contribution to The Osprey for 1998. We support your efforts to keep us informed of the issues and problems in the areas of fish enhancement and preservation.

Jeff Sowders, Sec/Treas, Lower Columbia Flyfishers, Longview, WA

Editor, The Osprey

A great last issue (No. 31, March 1998)! A check is enclosed to keep the presses rolling. I'm forever grateful for a chance encounter with Stan Young on the North Umpqua several years ago that got me connected to The Osprey.

Jon Lund, Hillsboro, OR

Editor, The Osprey

One of the bright spots during my steelhead fishing years is the arrival of my copy of The Osprey. Although the status of our steelhead continues to deteriorate it is heartening to know there are intelligent dedicated persons such as yourselves able to see what is needed by wild steelhead and act on their behalf. Please accept my contribution for 1998 and keep up the good works.

R. H. (Bob) Taylor, Vancouver, B.C.
REMINISCENCE: TOLLEY AND THE MARBLE

Richard Stoll is a professional aquatic biologist and environmental scientist. He is also a professional writer with more than 250 angling and conservation columns, commentaries and editorials to his credit in newspapers in Washington and throughout the country.

In this gem he tells the true story about how the rape of a steelhead river affected those who loved it most.

I jammed on the brake mid-bridge at the sight of crystal clear water and the rise of a large trout in the tail-out of the pool immediately downstream. Easing my car off the road beyond the bridge I walked back for a better look.

As I leaned on the log raling intent on feeding fish in the tail-out, an unkempt old man joined me. He too focused on the tail-out. Two more trout rose.

"Few trout rising above the drop off," I commented.

"Ain't trout, ay't steelhead," was the curt Scottish response.

At the mention of steelhead my heart skipped a beat, "But," I thought, "those surface dimples are too delicate to be anything but trout."

A moment later as the old man left I caught a parting comment, "Some Americans would ne'er know a good fish if ever ay'er presented to 'em on a dinner platter."

Returning to my car I donned Red Ball hip waders, strung up my 7 foot, six weight bamboo trout rod with a floating line, nine foot 4x leader, and a size 12 Adams, and made my way down through the mature hemlock bordering the left side of the stream. Climbing down a steep river side bank I precariously waded out onto the lip of the falls. I would have to make difficult upstream casts but this was the only place it was possible to get a shot at those fish.

Their positions were easy to spot. They had taken up late afternoon feeding lanes, each rising in exactly the same place at several minute intervals. My first cast was a little shy of a nice dry-fly rise form. But the current caught hold and my fly drownded as the line was pulled over the falls. Two more casts and I landed a fly some several feet upstream, dead center in one of the feeding lines. A moment later my Adams disappeared in a dimple. I lifted my rod and my composure was shattered at what happened next.

All hell broke loose as seven pounds of silver fury erupted from the water. Twenty yards, two jumps and five seconds later the fish turned and took my fly over the falls leaving me with little to show but a parted leader.

My legs turned into a quivering mass of jelly and I was barely able to wade off the lip. I doubted that I could return with a new fly and so decided to continue on to my new job and home in Port Alice, ten miles down the road, vowing to return the next day.

The month was August; the year 1974. I had arrived from Seattle to take up a new position as Environmental Director for the Rayonier Port Alice Pulp Mill located at the northern-most end of Vancouver Island. It did not dawn on me then that the river, the Marble, was possibly the best dry fly steelhead river in the world.

The old man on the bridge would become my arch nemesis. Loren Butters, an old time Canadian logger, was a subsistence poacher who relied on illegal fish and game to feed his young indigenous Haida wife, their six children, and a pack of dogs. Butters always managed to avoid getting caught but ironically a half dozen years later he died of a heart attack carrying poached deer and steelhead out of woods adjacent to the Marble River.

Several years after my encounter with Butters an even heavier arch nemesis came to dominate my life. Despite my environmental efforts the very company I worked for would all but destroy the watershed that sustained those wonderful wild Marble River summer-run steelhead.

The next morning I checked into my new job at the mill personnel office. After formalities I made the excuse that I needed a day or two to get settled before actually starting work at where I was to be employed for the next three years. Within minutes I was charging down the road to the Marble River.

Upon arriving I found a dilapidated old Chevy II wagon parked in the very spot I had used the evening before. I pulled in behind and quietly made my way riverside expecting to see the old man. Instead my eyes were met by a beautiful sight. Framed above the sun-glinted falls on the lip where I had stood the evening before was an angler decked above his waders in a fine British tweed jacket and tie. A matching tweed deerstalker covered a shock of white hair. In his hand was a bamboo fly rod some 8 feet in length. Immediately behind and to his left was a much younger man, not as well dressed, hailed with deerstalker, but rodless. The older gentleman was covering rises with some of the most graceful and delicate casts I had ever seen.

"I would land about a foot or two upstream and to the right, above that rock," the younger man advised in a strong Canadian accent.

"Bloody 'ell. That leviathan's in the slot next to the bank if I could get a dead drift down on it for the current," the older gentleman replied in classic Queen's English, and then landed the tiny fly exactly where the younger man had advised. A swirl beneath the fly was followed by an abrupt jerk on his rod that sent the fly sailing back into the trees. The older man muttered in what was obviously Queen's profanity.

"Let's go down river to Holbrook's Pool," the older man suggested, after carefully extracting his fly from the branches. "Less trees in the way." The two made their way off the lip and up the bank toward their car.

As they approached I stepped forward and introduced myself. Little did I know these individuals would become my closest friends, mentors and daily confidants over the next three years. The white haired English gentleman was none other than Martin Tolley of British Columbia steelhead fly angling fame. John Vivian, his companion, was a forestry student at the University of British Columbia. Both lived in Port Alice and were employed as digester operators in the mill.

"Missed that last one, did you?" I tried to avoid embarrassing Martin for having put his fly in a tree.

"Bloody good thing too," Martin replied. Bloody fish damped near inhaled the fly. Had I not been so fast I may've hooked it. Heaven forbid!"
Later I would learn that Martin loved the rise, but loathed the fight. I remember many days spent together on the Marble, Dean and Morice. For every fish that promised to be in excess of 'too many' pounds Martin would curse, back up, point his Sharps 83 Tonkin at the fish, and clamp down on his Hardy St. George reel to break it off. Martin especially admired fighting large fish. Eccentricity comes in different forms.

Our relationship was formally cemented later that evening over Toby English Malt Liquor in Martin's Port Alice strata (Canadian for condo). I'll never forget its appearance at that first evening. Next to the kitchenette sat a 1950's chrome legged dining table and four chrome legged chairs. The table was covered with papers and an ancient typewriter Martin used to type his fishing articles. One side of the living room was stacked with full cases of Toby, the other side with empty cases. Toby was Martin's favorite beverage, 'just so long as it's served at room temperature.'

In the center of the living room was a pile of assorted fishing equipment, car parts and clothes. The only items Martin ever took care of were his fishing treads, 'me angling togs' and his matching pair of Sharp 83 Tonkin cane rods. He tended the angling togs as a groom treats a tuxedo before a wedding, the canes as if they were precious jewels.

That first evening John, Martin and I drank Toby and spun fish stories until we were shit faced. Martin also shared a very special possession with us. From a hiding place he retrieved an engraved sterling cigarette case given to his father by Winston Churchill. Not that his father and the then future Prime Minister were Madsen Lodge brothers, but they were bream fishing mates.

That day and evening were harbingers of many more to come.

Old time Canadian fly anglers may remember Martin from his days on the Squamish River, just north of Vancouver, or from times he spent fishing with them along the Morice in northern British Columbia. Pacific Northwest steelheaders may recall Martin's ability to show up along the Grande Ronde at precisely the peak of the fall steelhead run.

But Martin's premier river was the Marble. It was why he quit his architect job and moved to Port Alice to become a laborer in the local pulp mill. In return, he attributed the Marble with single handedly being responsible for his recovery from a near fatal heart attack that occurred in 1968 while fishing the Squamish.

The best years of Martin's life were 1973 to 1977 in Port Alice. I recall that he, John and I would tie up a batch of Roderick Haig-Brown Steelhead Bee patterns, just as Rod liked them tied. Then, during our frequent trips down island, drop them off at his home along the Campbell River. If Rod was home he was sure to invite us in for a brew and a good tale or two. Since Rod had some difficulty tying in his later years he always appreciated our efforts.

In spring 1975 Martin broke down and married a spirited Scottish lass named Janet Cramse. The marriage changed all three of our lives. John and I had to move out of Martin's strata. Then Janet remade it into a well furnished showplace.

"Ah, such bliss, this marriage business," Martin used to rave, "but why does she have to be so damned organized? I can't even leave my waders in the sitting room where they belong, Krakie!"

"Tolley," his lady Janet used to say, "is married to the Marble, not me." But she never got in the way of the Marble, or any other river for that matter, rather she joined in.

We lived in Port Alice 52 weeks solely for that six week 'window' when the Marble summer runs were in. The fish arrived at the Bridge Pool the 23rd of July every year, give or take a day. Starting July 18, Martin, John and I would drive to the Bridge Pool every evening and peer into its depths for the first arrival. From the time the fish showed until the first week of September they would literally chase Adams and bivistibles across the Marble River pools, dorsal fins cutting v-wakes in the surface.

Four miles of river was all there was. The log bridge was directly at the four mile point, near where the river left Alice Lake. From there we would fish down stream.

Marble River steelhead spawned in the Green and Link rivers, both small streams that flowed into the upper reaches of Alice Lake. In September, when the fish moved out of the Marble into these two streams, we considered them off limits. Not so with Loren Butters and a few others who would denude entire pools of spawning fish. If it were not for the deep canyons on these small streams the steelhead would never have survived the poaching.

During the six week window we would invite special visitors to join us. Ardent steelheader friends like Bob Strehel, Bob Aide, Harry Lemire and Mike Appel spent great days on the Marble and great evenings, Toby in hand.

Those were the days. Very much like Syd Glasso and the Soleduc, Harry Lemire and the Green, Walt Johnson and the Stillaguamish and Roderick Haig-Brown and the Campbell, the Marble had become Martin's life blood. But the idyll was fated to end.

Rayonier loggers had devastated the upper Marble watershed with clear cut and drag logging. In some places it was difficult to tell where streams had been. In 1976 the fish failed to show up on time. Both Martin and I had feared this was going to happen.

In 1977 spring floods washed out the log bridge and drastically changed the character of the river and its pools. Then the mill decided to increase its summer take of water destined for the Marble from Victoria Lake. The river dropped so low that August that fish were unable to get over Bear Falls, about a mile upstream from the estuary.

With heartbeat and disgust I left Port Alice in the fall of 1977 to relocate in Vancouver. That winter Janet showed up in Vancouver without Martin and told me, "I love Martin, but I just couldn't take it any more." She confessed, "He is so broken up about the river that it is impossible to live with him. He is really going down hill!"

I next saw Martin in 1981. He had left Port Alice in 1979 and was living in a small apartment in Vancouver's east end and almost destitute. His fishing gear was in atrocious condition, but not as bad as Martin. Still he planned a trip to the Grande Ronde and asked if I could build a new tip for his one remaining Sharp 83.

The ensuing years when he appeared along various steelhead rivers brought stories of Martin's deteriorating condition. In the late eighties he got a job in a Vancouver fly fishing shop. Not long after he passed away. I'm convinced it was not from some malady but rather from a broken heart.
Commercial fishing fleets; and we must practice less catch and keep and more catch and release.

In addition, we must make a sufficient financial commitment to saving fish. None of these changes is easy, but the alternative of a destroyed resource is unthinkable. No one holds the high moral ground—all of us must change, because we all kill fish in one way or the other. For example, every electron produced by Columbia River hydro power has had its part in killing fish, and all of us use electric power.

Interest in fish restoration is very high and very broad, but who should control the direction? Fisheries professionals or industrial interests? Both are equally interested, but for vastly different reasons. I support directing the funding and providing the control to fisheries professionals who are committed to the health of the resource.

In my opinion, anything less will not work. …

Issue No. 32, July 1998
John Sager, Editor
Linda Hanlon, Production