

**NATIVE FISH SOCIETY
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By Bill Bakke, Director

WASHINGTON STEELHEAD ARE WEAKER THAN THOSE IN OREGON. The Washington Department of Fish and Wildlife proved the point when they issued a news release on February 13th. The fish officials announced that anglers would be “required to use unscented, artificial flies and lures with a single point barbless hook and knotless nets.” These regulations apply to the Skagit and Sauk rivers.

In Oregon we also have steelhead runs listed under the Endangered Species Act just like Washington, with the added declaration that none of these listed fish are viable. That is pretty shocking. It sounds like they could go extinct. But Oregon’s steelhead are stronger than those in Washington because the Oregon Department of Fish and Wildlife doesn’t require that anglers use single barbless hooks, knotless nets, and bait bans to protect its non-viable steelhead. So obviously Oregon steelhead are not wimps. The ODFW even has a policy opposing the use of barbless hooks as a required conservation measure, because they know Oregon steelhead can take a lot more abuse.

WHERE FISH DIE SHAPES RECOVERY STRATEGY INVESTMENTS. Snake River fall chinook are listed as a threatened species under the ESA. There has been a long-running debate about just where the mortality impact is for this population. At issue is delayed mortality and what causes it. In addition, would delayed mortality affect the resilience of fall chinook or could they increase from low numbers when ocean survival conditions improved.

Fall chinook, or stream-type chinook, declined following the completion of the four lower Snake River dams. Management options that could lead to recovery of these fish became stuck on the source of delayed mortality below Bonneville Dam and the ocean. The expected benefits from management options depended on the source of the mortality. Is delayed mortality taking place in the estuary and early ocean rearing related to passage conditions through the Columbia River federal hydro system? What is the best recovery strategy – invest in tributary habitat as an offset for the hydrosystem impacts or remove the four lower Snake River dams?

The authors compared Snake River stream-type chinook with those from lower Columbia River tributaries. They found that during improved ocean conditions that chinook from both areas had similar survival patterns. They also found that when Snake River chinook were compared to lower Columbia River chinook survival during favorable oceanic survival conditions that the Snake River fish survived only on-fourth to one-third the rate of the lower river fish.

At stake here is whether salmon can be recovered without breaching the four lower Snake River Dams. The policy adopted by NMFS places emphasis on tributary habitat restoration to improve smolt-to-adult survival as an offset to the impact of the hydrosystem on migrants and variable ocean survival.

In a 2005 study by Williams et al., NMFS said that delayed mortality related to passage through the hydrosystem would not be enough during favorable ocean conditions to prevent the salmon returning to pre-dam abundance levels. Based on this conclusion NMFS adopted a policy to offset hydro impacts on fish by doing habitat work to increase smolt production through the hydrosystem. This would be enough, especially under favorable ocean survival conditions, to pave the way for salmon recovery without breaching the Snake River Dams.

In an earlier study (2001) by Petrosky et al. "...most of the Snake River populations' survival rate declines were in the smolt to adult life stage (consistent with high levels of delayed hydrosystem mortality) rather than in the earlier life stage from spawner to smolt." Investing millions of dollars into tributary restoration as an offset for hydrosystem direct and delayed mortality is not addressing the problem. Even though there have been important operational and structural changes to the dams to benefit salmon, the Snake River populations' average survival relative to lower river populations continues to be up to one-third less. "

The authors say, "The delayed mortality of Snake River stream-type chinook salmon remained high, even as oceanic and climatic conditions improved in the late 1990s." In addition, recent tagging studies show "substantial delayed mortality of transported fish" compared to in-river migrants.

The authors conclude that risk to Snake River stream-type chinook salmon remains high. Recovery strategies and policy must reduce both the direct and delayed mortality impacts of the dams on smolts, regardless of the actions taken in tributaries to improve survival from spawner to smolt.

Source: Schaller, Howard A. and Charles E. Petrosky. 2007. Assessing Hydrosystem Influence on Delayed Mortality of Snake River Stream-Type Chinook Salmon. *American Fisheries Society*. N. Am. J of Fish. Mgt. 27: 810-824.

POLITICIANS NOTICE THAT COLUMBIA RIVER SALMON RECOVERY ISN'T WORKING. Oregon Representative Earl Blumenauer and 100 other members of Congress wrote a letter demanding that the federal agencies do a better job recovering imperiled salmon. They concluded that measures to offset dam related mortality in the most recent government plan is no better than in previous plans already rejected by the federal court. They also pleaded with the federal agencies to consider, at last, the removal of the four lower Snake River dams. They noted that salmon are a Northwest icon and a cherished resource. They were also aware that \$7 billion in tax and ratepayer money had been spent on salmon recovery with little to show for it in terms of salmon resurgence. To their credit they called for a science based plan, but didn't say how they intended to get the federal and state agencies to actually implement it.

A lesson to be learned from salmonid recovery efforts on the Columbia River is simply that it does not matter how much government spends as long as it is spent to avoid doing what is good for salmon recovery.

LIVESTOCK GRAZING ENCLOSURES DON'T HELP SALMONIDS. According to Bayley and Li (2008) live stock enclosures constructed on streams to prevent over-grazing riparian areas “are too small and infrequent to be effective at the population or basin-wide level” for salmon, steelhead and trout recovery.

Even though many fenced enclosures have been built by government agencies and often in cooperation with landowners over the past 40 years they have not been validated as an effective stream restoration method. In most cases restoration monitoring was done to check up on whether the money was spent according to contract agreements rather than to determine whether the fish were benefited. According to the authors only about 10% of restoration activities on aquatic systems have been monitored to see if they worked as planned.

Grazing by livestock on private and public lands has a long sordid history for its contribution to stream degradation and salmonid decline. The authors point out that Bill Platts in 1991 published evidence from rangelands in the west. Of 19 studies 15 showed reduced salmonid abundance due to grazing and 20 of the 21 studies showed salmonid decline was due to degraded riparian areas along streams.

Funding for fencing streams to protect them from cows increased under the Northwest Power Planning Act passed in 1980. The purpose of these fenced enclosures is to rebuild ESA-listed and at risk wild salmonids rather than see how fast the plants grew back once the cows were excluded.

The cattle enclosures I visited with OSU range professors, BLM biologists and ranchers certainly show how tall and fast grass can grow when cows are not eating it all day long. It takes a lot longer for the willows to grow back, and when they do, I have seen ranchers burn them out. In one project the grass came back after the cows were provided a source of upland water and fenced off the creek. Not only did the grass come back but the stream did too. It began flowing all summer long even in drought years. Following the return of the stream, trout returned. The rancher was happy because the cows were not losing weight on the creek bank waiting for the grass to grow back; the U.S. Forest Service was happy because the creek was no longer an eyesore on the National Grasslands, and I was happy because like a miracle the stream and fish came back.

The authors found that juvenile trout in their first year benefited from grazing enclosures, but larger older trout did not. They examine some potential reasons for this, but reach no conclusions. They did discuss the effects of elevated water temperature on larger fish compared to small fish as one possible reason for the lack of large fish in small, dispersed enclosures. As pointed out by other scientists, once water is warmed (thermal pollution) shade provided by vegetative expression in these small enclosures do not cool the water, they merely reduce further heating. Most of these experimental

exclosures reside in a denuded landscape where streams are exposed to long summer hours of sunlight.

The exclosures did provide benefits for 0-age trout. Physical improvements in habitat provided better protection from bird predation. The channel deepened and the width narrowed. And more insect are available for fish to eat.

The authors said that most exclosure projects were “ad hoc, driven by landowner participation...not selected as part of a long-term experimental design with controls that could be tested.” Consequently, they could not evaluate the cumulative effects of multiple exclosures on a stream or those that were much longer to determine their effects on summer stream temperatures.

It was always my impression that federal and state agency biologists were excited about their exclosures. The plants came back quickly, the streams were healthier, and in some cases the fish came back. But they thought of these as test sites to evaluate the effect of cows on streams and even fish. What did not happen is an administrative commitment by government to use the information from these test sites to expand stream protection on public land and to enroll more ranchers in the effort.

The authors say their study findings serve as a commentary on the “pervasive overgrazing of Columbia River basin riverscapes; such overgrazing controls the rate at which significant proportions of stream networks can be restored.”

Source: Bayley, Peter, and Hiram W. Li. 2008. Stream Fish Responses to Grazing Exclosures. N. Am. J. of Fish Mgt. American Fisheries Society. 28:135-147.

WDFW PROPOSES TO OPEN PUGET SOUND STREAMS UP TO KILL OF ESA-LISTED STEELHEAD JUVENILES. Sam Wright is now retired from the Washington Department of Fish and Wildlife, but he has not walked away from the work of protecting native, wild fish. He was successful in getting Puget Sound steelhead under federal protection as a threatened species and now he is after the agency to also protect juvenile steelhead that rear in rivers for from 2-3 years before they smolt and migrate to the sea. Protecting the adult steelhead and killing the juveniles they produce doesn't make sound management policy or sense to Sam or to anyone else that puts fish first over agency license sales. Sam Wright offers the following testimony to the WDFW Commission.

I am here today to again urge you to adopt regulation changes that would address the conservation need of eliminating significant fishing mortality on juvenile Puget Sound steelhead during the upcoming June 1 through October 31 stream fishing season. The basic or general season regulation needs to be changed from OPEN to CLOSED for all streams that are accessible to Puget Sound steelhead. With the current OPEN regulation, any stream that is not specifically identified under Special Rules will open for fishing on June 1 with an 8 inch minimum size limit and provide a target harvest fishery on Puget Sound juvenile steelhead.

There are only a small number of independent tributaries to Puget Sound that are not at least partially restricted from providing a target harvest fishery on juvenile steelhead. The largest is the 149 square mile Chambers Creek watershed, where the main stem (open July 1) and four named tributaries (open June 1) are all scheduled to provide a target harvest fishery on juvenile steelhead.

However, there are 24 catch-and-release stream fisheries and 23 closed streams in Puget Sound where the definition in Special Rules is limited to the main stem only. This means that all of the named and unnamed tributaries to these same 47 stream systems are scheduled to open for a target harvest fishery on juvenile steelhead.

There are 56 stream fisheries where a 14 inch minimum size limit is scheduled but the definition under Special Rules is limited to the main stem only. All of the named and unnamed tributaries to these same 56 stream systems are scheduled to provide a target harvest fishery on juvenile steelhead (unless identified separately under Special Rules).

In 51 of the 56 stream systems with a 14 inch minimum size limit, the use of bait needs to be prohibited. This will change the anticipated fishing mortality rate from 30 to 50% down to between 2 and 3%. The infamous “bait bill”, which evolved from a back room deal between WDG officials and bait company lobbyists, prevents use of a bait ban as a basic or general regulation. It requires that any implementation of a bait ban be done and justified on a stream-by-stream basis. This is exactly what needs to be done under Special Rules for each individual stream that is accessible to Puget Sound steelhead. The justification has a sound conservation basis since any significant fishing mortality on juvenile Puget Sound steelhead will come at the expense of future adult spawning escapements.

If the Commission has been advised by the Department and/or your Assistant Attorney General that such an approach is illegal, then your only viable alternative is obvious. To meet your conservation mandate, the streams in question must be closed to fishing. Continuation of the status quo is not a viable option. To allow thousands of people, mainly kids, to fish for juvenile steelhead with bait in every developed area of Puget Sound would be irresponsible resource management.

Source: Sam Wright, March 8, 2008

HOW TO MAKE SURE SALMON ARE NOT SUSTAINABLE. Native, wild salmon and steelhead return to their home streams to reproduce and rear their young. They form local populations that are adapted to local environmental conditions. Local adaptation is a strategy that works because it maintains an optimum fitness to a constantly changing environment affecting their reproductive success.

It is through homing to their birth streams that salmon form genetically distinct populations that have evolved in this landscape for more than 30 million years.

The loss of genetic diversity is a major concern in agriculture. We maintain at great expense seed bank collections of food crop genetic diversity.

There is no equivalent seed bank for salmonid genetic diversity except in the thousands of populations that still inhabit rivers in the Northwest. The only way we have of maintaining the adaptive capacity and reproductive fitness of salmon is to protect these individual stocks and the habitats that support their life history requirements.

Since 1854 we have known that sea-run salmonids are locally adapted, yet there is still debate about it and we have constructed a management program that does its best to ignore it.

Consequently, most of our natural salmon and steelhead populations are either candidate species or listed for protection under the Endangered Species Act.

I was the lead petitioner for Snake River chinook and lower Columbia River coho in 1991. The chinook were listed in 1992, but there is still no recovery plan.

The lower Columbia coho were listed by the state of Oregon in 1999 as endangered and in 2005 by the NMFS as a threatened species. There is no recovery plan for them either.

I am going to go through a list of actions and policies constructed to defeat any prospect of sustainable wild salmonids in Oregon and on the West Coast.

These actions and policies are designed to defeat salmon rather than save them.

In fact, we could not construct a better program for the systematic depletion of wild salmon than the one we have in force today.

Habitat

Confine salmonids to mainstem rivers with impassible culverts and other barriers.

Smother salmon eggs with silt from agriculture, logging and urban development.

Scour eggs from gravel bars with floods brought on by watershed development, increasing rain-on-snow impacts in watersheds and changing hydrology of rivers.

Increase summer water temperatures making more of the rearing habitat unproductive.

Eliminate sources of large wood structure to reduce habitat complexity of streams, reduce gravel and nutrient retention, and impact pool formation. Diffusion of velocity during high water is lost and bank erosion is increased.

Leave diversions unscreened so juvenile migrants are diverted out of streams to die in ditches and irrigated fields.

Construct dams to block migration into historic spawning areas and use dams to thin out juvenile migrants and steelhead repeat spawners.

Don't provide instream water rights for fish and allocate all water to out of stream uses.

Even though water runs down hill provide less protection for headwater streams during logging. Log steep slopes so landslides can block streams and fill them with sediment.

Graze livestock so that riparian vegetation is eliminated and streams can be warmed beyond the tolerance of salmonids and streams become heat sinks in summer and frozen in winter.

Fish Management

Stock hatchery fish so that they interbreed with wild salmonids, compete for food and space as juveniles, and increase harvest impacts on wild stocks.

Avoid setting spawner abundance goals by population and watershed so that the watershed is not fully seeded each year.

Adopt abundance based harvest management rather than escapement management.

Stock hatchery trout and develop intense kill fisheries in streams with rearing wild salmonids.

Ignore the impacts of predation as a by-product of hatchery stocking.

Use hatchery fish to restore wild populations while ignoring the scientific literature that proves it cannot be done.

Release exotic non-native species to increase fishing opportunity and create a major predation barrier for native fish.

Maximize non-selective fisheries so that by-catch of wild salmonids impedes recovery.

Make sure science does not inform and interfere with management and punish those who do not conform.

Make sure there is no biological bottom line even if it means ignoring state law, so that all decisions are relative and political.

Practice the art of shifting baselines so there is no context for management decisions.

Institutionalize the belief that hatcheries can replace wild fish and their habitats.

Policy

Use scientific uncertainty to advance a political agenda.

Discourage compliance monitoring.

Institutionalize voluntary compliance rather than implement existing regulations.

Use budget cuts to trim experience and expertise out of agencies.

Cripple regulatory capacity of agencies with budget cuts.

Bully agency leadership into political compliance and appoint agency executives that understand that political compliance is more important than the agency mission.

When appointing stakeholder groups make sure most are in agreement with the agency political agenda.

This list of negative factors operating in state and federal natural resource agencies is not exhaustive, but they serve to point out some of the factors that are preventing recovery and protection of wild salmonids.

Those who resist these negative factors and work to change them provide a hand-brake on what is a systematic and institutional commitment to undermining a rich and diverse natural heritage that does not have to be degraded and lost.

From my perspective there are two general attributes to the problem: 1) increasing the natural abundance of wild, native salmon and steelhead spawners, and 2) protection of existing habitats and recovery of substandard habitats that support the life history requirements of these species.

The purpose of management is not product production to support agency “customers” and utilization goals. The purpose is to protect the ecological conditions and provide policy framework so that biological diversity and abundance is the purpose of management and salmonids are sustainable.

The state and federal institutions charged with the conservation management of watersheds and native fish are failing in their mission.

An advocate for wild salmonid recovery and conservation means working to convert each of these negative factors into a positive.

MORTALITY IMPACT OF NATURALLY SPAWNING HATCHERY FISH. At a recent meeting of lower Columbia River Salmon Recovery Stakeholders, the document , *Recovery Strategies to Close the Conservation Gap Methods and Assumptions*, hatchery fish impacts are discussed. It says, "...relative population survival rates (recruits produced per spawner) were found to decrease at a rate equal to or greater than the proportion of hatchery fish in the natural spawning population. In other words, a spawning population with 20% hatchery strays (regardless of the type of hatchery program and whether they are integrated or segregated) had the net survival rate (recruits per spawner) that was 20% less than a population comprised entirely of wild fish (0% hatchery strays). Likewise, a population with 40% hatchery strays had a population survival rate that was 40% lower than a population comprised entirely of wild fish."

I asked Mark Chilcote (ODFW) about this at the meeting. He agreed that naturally spawning hatchery fish are a mortality factor for the wild population that operates the same as mortality from harvest. A former ODFW commissioner confirmed Chilcote's conclusion. So if the harvest impact rate is 25% and there are 10% naturally spawning hatchery fish the mortality rate on that wild population is 35%.

Assigning a mortality rate to the proportion of naturally spawning hatchery fish is new information. I have never heard the scientists state it so cleanly and simply before. It is important to have a metric for each wild ESA-listed population that shows the percent of hatchery strays in the natural spawning population since this is now a major mortality factor. This will mean actual measurement of adult spawners and the proportion of hatchery fish strays.