Hoh River Wild Steelhead on the Brink

By Dick Burge, Wild Steelhead Coalition



Upper Hoh River

photo by Jeff Bright

No one would have thought 20 years ago that the Hoh River wild steelhead runs would ever face depletion. Even as the Skagit and other Puget Sound runs fell in the 1990s, the Hoh population still looked like it could withstand its many environmental and fishery challenges. But in the early 2000s the picture began to change and it now looks like the run could fail within a decade or two.

Historical abundance estimates by researchers at the Wild Salmon Center placed the Hoh run at 35,000 to 59,000 steelhead in 1920 based on a watershed size and abundance comparison to the Queets River. These numbers should be considered ball-park estimates; however they serve as a stark reminder of a once highly productive stock that has been whittled down over the last 80 to 90 years to a run now struggling to maintain a viable existence.

For the period from 1948 to 1961 the run size was estimated from landing records to be between 8,000 and 13,000 wild fish. Between 1960 and 1977 wild steelhead catches were lumped with hatchery fish catches and therefore, impossible to estimate wild run size during that period. But increased fishing during that period targeting early and abundant hatchery steelhead took too many wild fish and depleted the early December through February wild runs. The first picture that we get from the next decade, the early 1980s, show the runs further reduced to highs of 5,700 wild fish with escapements averaging about 3,500 spawners.

Today's total runs and spawner escapements are but a small fraction of those in the past. Since 2000 the total abundance has dropped to fewer than 4,000 wild fish. Last year the total was 3,634 fish, and the 2004 run was only 2,539 fish. Clearly there are major management and environmental actions that must be taken quickly if the Hoh wild run is to be given a chance to survive and rebuild in the future.

A Wise Commission Decision and a Bad WDFW Deal

By the year 2000 sport fishers recognized that wild steelhead, statewide, were in serious decline. Four out of seven Distinct Population Segments in Washington were already listed under the Federal Endangered Species Act, and Puget Sound became the fifth in May 2007. Meetings with Washington Department of Fish and Wildlife (WDFW) policy leaders and Director indicated they had little interest in stock conservation and were only interested in maintaining maximum harvest wherever possible. This attitude brought several Wild Steelhead Coalition Board Members and individual Washington Fish &Wildlife Commissioners together in 2003 to discuss the status of Washington wild steelhead and changes in harvest. In 2004 the Commission established a moratorium for two years on the harvest of wild steelhead. Later that year, the commission responded to political and legal concerns and established a limit of one fish per angler year. The intent of the Commission was to save more wild steelhead for spawning, and the regulatory decision was written in Commission records as "to act in a very conservative manner."

A few months after this landmark decision, the Hoh Tribe demanded far more than their share of the harvest, saying that the state should give them all the wild steelhead saved for spawning. The parties agreed to take this allocation issue to Federal Court for resolution. However, in a surprising turn of events the WDFW policy team neglected the Commission's recent decision, dropped the pending court case, and signed a three year agreement with the Hoh tribe which gave them up to 68% of the total wild fish deemed available for harvest and allowed fisheries on annual runs predicted as low as 65% of the escapement goal. It was a bad agreement that has been harmful to wild fish runs for the last four years.

Recent Management Issues

One of the premises in using Maximum Sustained Harvest (MSH) management is that the returning population can be accurately determined without error. However, due to management forecast error and a very aggressive commercial harvest attitude, the Hoh wild steelhead run has been under escaped in nine of the last 20 years, including three of the last six years. As recent as the 2003/04 and 2005/06 seasons, the spawner escapement has fallen below the escapement goal by 784 and 920 fish, respectively. During this same 20 year time frame, the Hoh Tribe has taken an average of 62% of the wild harvest. Since 2004, the year of the Commission's conservation decision for wild steelhead, the tribe has taken 82.4% of the harvest and the sport fishery has been forced to close early in two seasons to assure the run made escapement.

Last year's (the 2007-08 season) preseason negotiations and outcomes were typical of recent co-manager disputes in reaching annual harvest plans. The run was predicted to be one of the lowest in recent history (3,634 wild steelhead), yet the Hoh Tribe demanded more than 69% of the fish deemed available for harvest. This left too few fish to allow a complete sport fishery and none to buffer management error. The tribe refused to come to a fair agreement and commenced fishing. This action alone would appear to place the tribe in violation of the post Boldt Federal court orders which require management plans before fishing. The tribe took 904 (77% of the harvest) wild fish, and would not close their fishery unless the state closed sportfishing at the same time. The sport fishery took 275 fish (23%), including an estimated catch and release mortality, and was closed two weeks early by WDFW managers, assuring the necessary spawner escapement was made.

At this time the state and the tribe are preparing for a Federal court case to resolve several allocation issues. The issues include sharing of the catch and aggregation, a legal concept that the Hoh Tribe has used to take more wild fish if they have not taken their perceived 50% share of hatchery fish. The state has laid out goals for the case, including 50-50 sharing of the harvestable fish, the ability of the state to use its fish as

they desire, maintaining the 2,400 wild steelhead escapement goal, and disallowing aggregation of hatchery and wild fish to determine harvest shares. The State and Hoh have signed a plan for the 2008-09 season giving the Tribe 55% of the harvest for this season. The agreement provides for enough fish for a sport fishery through mid-April and a predicted escapement of 2562 spawners. But it does not allow the state to save enough sport fish and help rebuild the run or provide for a sufficient run forecast buffer.

Hoh Basin Habitat Condition

Approximately 56% of the Hoh River basin is in the Olympic National Park. Lands adjoining the South Fork are under consideration for either Wild and Scenic River or Wilderness Area designation. In addition, the Western Rivers Conservancy and the Wild Salmon Center formed the Hoh River Trust, a non-profit that has worked to purchase 4,592 acres of habitat along the river main stem and tributaries and has 13 new acquisitions planned. There are several other organizations working to preserve additional Hoh River habitat for the future. Habitat use activities have changed little since the 1950's when the runs were much larger: there are no dams, no significant changes in agriculture or logging, no mines, etc. The scenario suggests that preservation of the Hoh Rivers habitat and ecosystem is a high priority and will provide long lasting protections for wild fish of all species.

Future runs will face severe environmental challenges including the impacts of global warming. For example, eleven of the last 12 years rank among the 12 warmest years of global surface temperature recordings due to a warming trend that has accelerated compared to previous recent time periods. Future regional impacts of warming are projected to include a shift toward more rain and decreased snow fall and snow pack, the shrinking of the Cascade and Olympic Peninsula glaciers, increased and earlier winter runoff peaks, and declines in spring and summer snowmelt and glacial runoff.

Hydrologic changes from warming are expected to cause profound impacts on northwest river systems due to flooding. The projected increase in precipitation intensity will also increase landslides and hillside erosion and the deposition of silts and sands in salmon spawning gravels, reduce summer flows and collectively reduce the carrying capacity for wild salmon in western Washington Rivers. Many of these impacts have already been seen in the Hoh River basin due to recent flooding and logging. Wild fish will have to adapt to these impacts much more quickly than the slower process of adapting to changes from the last glacial period.

Present and future MSH Fisheries Management

MSH estimates a maximum perpetual harvest level based on long term stability in habitat capacity and stock productivity. However, MSH models were not designed to address other conservation or recovery needs of wild stocks. These models do not provide the necessary tools to manage for: (1) the long term highs and lows in productivity due to weather and ocean cycles; (2) maintaining life history and genetic diversity and species distribution; (3) mixed stock fisheries, especially those with seasonal peaks; (4) hatchery impacts on genetics and productivity; and (5) habitat changes. Model error (such as the intervals around predicted run sizes) and management error (the inability to accurately estimate annual parameters such as the impending run size and the total harvest) are high in wild steelhead. Due to this annual potential for high forecast error, large management buffers are necessary to assure the run always makes its necessary escapement.

Hoh River stocks have been managed at a low escapement level relative to both the historical and recent run sizes. The escapement goal calculated by WDFW biologists in 1985 was 2,900 fish; however, that number was challenged by the Hoh Tribe and reduced to 2,400 by the Federal Court appointed Fisheries Advisory Board in 1988. Recently the Hoh Tribe has pressed to reduce the escapement goal to as low as 1600 fish. A recent stock recruitment model analysis by the Wild Salmon Center found the maximum recruitment would occur at an escapement level of 3,780 wild steelhead. Managing at this level would encourage the stocks to recover lost diversity, productivity and capacity.

The historical base of spawner and total run information for steelhead runs on the Hoh River is far from complete. As example, on the Hoh River the sport catch and release fishery returns up to 1800 wild fish to the water every season and there is an estimated 10% mortality from hooking and handling wounds. There is no information on steelhead gill net drop out mortality, but studies on sockeye salmon on Lake

Washington found overnight soaks had over 50% drop out of entangled fish, and those fish suffered about 60% higher mortality than controls. In rivers, predation by mammals and riverine conditions such as currents may increase the mortality rate of the dropouts. The predator take from nets is also recognized as a significant impact but has not been documented. I am not aware of any discussions by the co-managers of the unrecorded catch (incidental catch during other fisheries and fish illegally retained) but many people familiar with Washington coastal river fisheries believe this can amount to large numbers. Enforcement is thin at best to cover all the hunting and fishing in this area, making it difficult to catch anglers who keep fish illegally.

Biologists work hard surveying rivers and tributaries to get spawner counts, but they are not able to survey all areas or see all spawning fish. A recent study on the Hoh River indicated that when more intensive effort and time is expended to improve these counts, the numbers have increased.

Considering the many types and magnitude of fishing mortalities missing from the run base information, it is conceivable that the annual runs may be as much as 50% to 100% larger than the records show. Without complete run information, all MSH parameters will be underestimated including escapement goals.

Stopping the Decline: Making the Right Moves Now

As populations are reduced to low levels by any means they may face a phenomenon called depensation. Populations at low abundance levels do not always respond with higher productivity (the theory of compensation and MSH Models that juveniles and young adults have a higher survival due to less intraspecific competition); rather they may collapse to levels that are not recoverable. Disease, predator abundances, and adults that do not find a mate are some of the factors that can cause a low population collapse. This phenomenon has been documented in other fisheries and appears operational in many other steelhead populations in Western Washington, including those in Hood Canal and Puget Sound. Many of those populations are now considered functionally extinct.

To avoid depletion and depensation, recover lost abundance, remain resilient to ocean and riverine productivity cycles and adapt to global warming, many management

and environmental changes are needed now. Specific management recommendations that will accomplish these changes include the following:

1. Co-managers should engage in a long term process of challenging the Hoh River's capacity and productivity through increased escapements, recovery of lost diversity and distribution, minimize interactions with hatchery fish and recover damaged habitat. With co-manager participation in this challenge, sport fishers should consider releasing all of their share to provide the needed spawners.

2. The state must secure its court mandated 50% share of wild steelhead in Federal court. The unused portion of the states wild fish should be used initially to provide a buffer for years of run overestimation and to rebuild stock abundance. The tribe should also receive its 50% share, based on improved spawner escapements, given that fishing is the basis of their livelihood.

3. Co-managers should have an agreed to management plan in place, as required in the court orders of US v WA, prior to the beginning of the fishing season. Planning should be transparent and include sport fishers in a forum similar to North of Falcon.

4. Co-managers should establish a method to add a buffer (additional fish) to the required escapement to compensate for run forercast error. One method would add the previous five years average over forecast to the required escapement.

5. Continued intensive surveys of the complete spawner population and studies of the net drop and net predation loss and of the unrecorded harvest are needed to document the actual run sizes.

6. Increasing spawner and total population abundances for all Washington Rivers, including the Hoh, must be the new major goal of management and not harvest. It should be recognized that the science and modeling of harvest management parameters of wild steelhead are not well perfected and have a history of poor performance in runs stressed by large harvests, anthropogenic habitat changes and natural productivity cycles.

7. Co-managers should investigate adaptive ways to derive and apply new harvest management parameters. These parameters should be based on their ability to rebuild abundances to as close to historical numbers as is possible and maintain spawner abundances at levels that will assure maximum parr production; on new information on the rivers productivity and its long term cycles and on knowledge of the complete run size. New management parameters must assure the population remains abundant, diverse, well distributed and productive; and resilient and adaptive to environmental changes.

8. Complete watershed protection is of immediate concern, given the listings that have occurred in other regions where floodplain and shoreline development, dams, farming, logging, etc. have had major impacts. Securing wild fish habitat through Wild and

Scenic status, Wilderness Areas and Salmon Strongholds are the best actions available to save wild fish in the Olympic Peninsula coastal watersheds. The corridor in the Olympic National Park that serves the Queets River watershed is an example of the type of minimal protection needed for the Hoh and other Olympic Peninsula Rivers.

9. A Wild Salmonid Management Area (a significant portion of the watershed having no hatchery releases of any salmonids and no harvest of wild fish) should be established in the watershed to provide protection for the resident form (rainbow trout), parr and smolts; recover and maintain diversity; establish a genetic reserve for wild fish; and improve protections for spawning adults. Portions of this area may provide for fishing opportunity if it is regulated by selective fishing, retention of hatchery strays and release of all wild fish. This management area should protect all species, providing a full ecosystem approach to the recovery and management of wild fish.

Where do we go from here?

Time has become short; we all need to stand up and speak out now for changes in Washington wild steelhead management or place our last memories of fishing for those wild fish in our photo albums! The Hoh is one of four major rivers (along with the Quinault, Queets and Quillayute rivers) in the state's last region of fishable wild stocks, the Olympic Peninsula. These rivers are all mismanaged in the same manner for maximum harvest benefits at the expense of future runs and they all appear headed toward depletion and Endangered Species Act listing unless change is quickly made. If we do not set new standards for wild steelhead management now, we will loose the last area where large rivers still provide a full season for wild fish sport fishing and a real future for all steelheaders.

A recent example of where we are presently headed without real changes was the final Statewide Steelhead Management Plan. It was written by the WDFW policy team and is — simply put — a hollow statement from the WDFW administration containing no goals or objectives and no parameters necessary for rebuilding and recovering wild runs. It provides no clear directions to Regional and Watershed managers, allowing the WDFW to pursue any course of action on specific watersheds as is dictated by local and state politics, including continued large harvests and solving management and habitat problems with various types of harmful hatchery prescriptions.

The Hoh River presents our best and possibly last opportunity to stage a meaningful fight to save wild steelhead in Washington. The state and Hoh Tribe will either sign

another bad agreement, this time for 3 to 5 years, or finally obtain a Federal Court review for clarity; the actions needed to stop the depletion and recover the runs are known well enough to initiate active management changes; and the watershed has gained the interest for full protection. Without a strong conservation outcry to make these changes, it is highly probable that the agency management paradigms will prevail and we will watch the last of our fishable wild steelhead populations in Washington decline until another Federal ESA listing is made to prevent extinction.

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