Hoh River Wild Steelhead
Is an Endangered Species Act Listing in their Future?

by Richard Burge
— Wild Steelhead Coalition —

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, it was 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
Afters months of discussion with officials from the Federation of Fly Fishers and The Osprey’s editorial board, we have decided to add an electronic component to our ongoing efforts to fight on behalf of wild steelhead and salmon. This includes the option to receive your copy of The Osprey electronically as a PDF file beginning with the May 2009 issue, enhanced pages on the FFF website, with information about our mission, status reports on wild steelhead and salmon populations, and the ability to download past issues. We’ve even started a blog so that readers can jump in and discuss a range of wild steelhead and salmon topics.

But we also recognize the value of the traditional hard copy edition and will continue to publish it as well. One reason for that is because distributing hard-copies of The Osprey to politicians, natural resource managers and other decision-makers is an important and effective component of our outreach on behalf of wild fish. For more details and Web addresses, see page 7 in this issue.

Letters to the Editor

Dear Editor:

As a participant in the Klamath Basin Settlement talks, I was greatly dismayed by Craig Tucker’s mischaracterization of WaterWatch’s role in the Klamath Settlement talks (The Osprey, September 2008). First, WaterWatch never took any steps to keep negotiations from proceeding as contended by Mr. Tucker. Second, it was the entire conservation caucus that initially took the position that commercial farming on two of the nation’s most important national wildlife refuges should be phased out, if the farmers were going to get power subsidies that allow continuing this harmful practice. Third, the conservation caucus, including WaterWatch, took this issue off the table because we could not get enough support for the position outside the caucus. What happened next, however, was the Klamath Project irrigators then demanded that parties agree to support continuing this harmful practice for the next 50 years. WaterWatch and Oregon Wild would not support this unreasonable demand, or water guarantees for farmers that put salmon at risk. However, WaterWatch made very clear that, despite our concerns with these provisions, we were willing to work towards a final agreement to see if we could negotiate a workable final package. Rather than negotiate these important issues, the Bush administration and Klamath Project irrigators orchestrated the involuntary removal of WaterWatch and Oregon Wild from the talks. The Bush administration tried to lock in a bad water and refuge deal before it left office, by attaching it to a dam removal agreement in principal, which has plenty of off ramps and may actually delay and hinder dam removal.

Bob Hunter
WaterWatch

S. Craig Tucker replies:

Disputes over how we got here aside, in early February lawmakers in Oregon will introduce legislation to create a $200 million dam removal fund. Although the money comes from PacifiCorp customers, the company and rate payer advocates support the bill since paying $200 million to remove dams is far cheaper than paying the costs of relicensing the dams. To get a new license, PacifiCorp’s customers would have to pay as much as $480 million for fish ladders and other improvements, and the cost of water quality mitigation measures has not been determined.

The pending dam removal agreement and the Klamath Basin Restoration Agreement do not give anyone all of what they want, but together the agreements represent a blueprint for restoring one of America’s greatest river basins in a manner that provides economic security for the Basin’s rural communities.

The old way of doing things — litigate, castigate, and thereby eliminate certain communities — didn’t work. Instead we have sought solutions that allow us all to survive culturally and economically.
An Open Letter to the Washington F&W Commission on Selecting a New Director

by Bill Redman

― Steelhead Committee ―

On December 1, 2008 Dr. Jeff Koenings resigned his position as Director of the Washington Department of Fish and Wildlife (WDFW). Except for a few isolated brief upswings, steelhead and salmon populations in Washington generally continued their slide toward extinction during his ten year tenure, and several populations were listed under the Endangered Species Act. It is clear now more than ever that we need a director who can lead the Department in the management reforms necessary to give our remaining fish a fighting chance.

The most difficult and important challenge the new director will face is reversing this decline and starting these magnificent fish on the road to recovery.

Therefore, the Fish and Wildlife Commission is faced with an unusual opportunity and critically important decision in selecting the new director. Pick the wrong candidate and the steelhead and salmon will continue their perilous slide. Pick the candidate with the right set of qualifications, and WDFW can stem the decline and begin a long term, science based recovery.

Respectfully, the following are offered as key qualifications the new director will need. He or she must be a strong leader with the intellect and tough-mindedness to challenge and change the long standing departmental culture, with its harvest to the hilt mentality and heavy dependence on hatchery stocking. This will require a sustained long term effort to overcome built up internal inertia.

In addition to keeping the WDFW administrative and financial house in order, the new director must possess political skills to deal effectively with the governor, related state department heads, the legislature, and local interests. Their support will be necessary to reverse the declining trends.

Possibly most important, wild fish recovery must be the primary goal in principle and in practice, with harvest subservient to recovery. The new director must have unshakeable confidence in the scientific consensus of the last dozen years and the will and strength to lead WDFW to follow the science. He or she must believe that the key to steelhead and salmon recovery rests with wild fish and their genetic and life history diversity. If wild fish rebound on a sustained basis, he or she will succeed. If not, he will have failed.

If wild fish rebound on a sustained basis, the new director will have succeeded. If not, he or she will have failed.

A. Habitat: Wild fish recovery goes through habitat recovery. Therefore, the Department must do everything within its power to protect and recover habitat, both by direct action in areas where it has control and by exerting a strong consultative role where other state and federal departments have direct control. Specifically in direct action, the new director must be much more pro-active in using the Department’s power in the hydrology permitting process to prevent actions harmful to migratory fish in the construction or modification of culverts, roads, dikes, diversions, riprap and other structures.

One of the most important steps WDFW can take is to set aside a series of high potential watersheds around the state that have reasonably intact habitat and stocks of wild fish as Wild Fish Management Areas. These areas will need to be carefully monitored and adaptively managed to maximize wild fish spawning escapement, with no hatchery stocking and very limited and tightly controlled catch and release, selective gear angling regulations, the latter only if run size permits. The regulations also should require retention of any hatchery strays caught. These types of areas have been successful in other states and provinces. Without them, there will be no baselines for the carrying capacity of the rivers.

At the top of the list of high potential rivers for wild fish only management should be the Elwha after the dams are removed. Most of the River is in Olympic National Park with its pristine habitat, and a wild, native fish only policy is completely consistent with the mission of National Parks. Especially, this should be true of steelhead, because the River above the dams has a robust population of rainbow trout, many of them waiting for an opportunity to go to sea, grow big, and return as adult steelhead. It would be a tragedy not to let the wild Elwha steelhead rebuild from this base. All
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 District 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 63% 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 recently 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) pre-season 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

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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 2,562 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 its 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 River's 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, 11 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 snowfall 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.

Hydrological 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 1,600 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. For 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
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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, minimizing interactions with hatchery fish, and recovering dam-aged 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 state’s 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 forecast 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 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 river’s 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 casts 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 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 lose 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 attempting to solve 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 current 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.

THE OSPREY TO OFFER ELECTRONIC MAILING

Beginning with the May 2009 issue, subscribers will be able, at their option, to receive The Osprey as a PDF file attached to an e-mail.

The Osprey staff wants to emphasize that this is subscribers’ choice based on how you prefer to receive mailings and what fits your lifestyle. Some prefer the speed and ease of forwarding, copying, and manipulating that electronic documents provide. For others, there is no substitute for a printed document that can be read anywhere. To open PDF files, e-mail subscribers will require the Adobe Acrobat Reader, which can be downloaded free of charge at: www.adobe.com/products/reader/

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Effective immediately you also have the option of making a secure credit card donation to support The Osprey and wild steelhead and salmon by going to the following link: http://www.fedflyfishers.org/Default.aspx?tabid=4329.

By either means, the steelhead and salmon will thank you for supporting The Osprey.

The Osprey on the Web

The Osprey now has its own new section on the Federation of Fly Fishers redesigned website. Learn about our mission, check on the status of wild steelhead populations, download past copies of The Osprey, subscribe and donate.

Go to: www.fedflyfishers.org and click on the Conservation tab, then the Native Fish tab to reach The Osprey pages.

To donate go to: www.fedflyfishers.org, then click on the “Support Us” tab. Be sure to specify your donation is for The Osprey.

Check out our new blog at: http://ospreysteelheadnews.blogspot.com/
Tom Weseloh resides in McKinleyville, California and is a lifelong steelhead fisher. Tom is the North Coast Program Manager for California Trout. He has served as a Board member of Friends of Trinity River since its inception. He has worked on Trinity River issues for nearly twenty years, including appointment by the Interior Secretary to the Trinity Adaptive Management Working Group (TAMWG). The web site is www.fotr.org.

California’s Trinity River is among our nation’s best opportunities to restore salmon and steelhead populations below a federally financed dam. Decades of study, monitoring and rehabilitation planning for the Trinity River watershed, combined with social and political support, federal legal mandates and secure federal funding, create optimism that salmonid populations can improve dramatically.

Mandated by law, the Trinity’s fisheries and wildlife have priority over diversion of water to the Central Valley Project, and are required to be protected and restored. Programs and mechanisms to accomplish restoration are in place and currently are being implemented. Will they work? Will the river be restored to its former glory? Can a river below a dam be “scaled down” and still meet mandated goals of historic fishery populations? This “experiment” currently is being conducted on the Trinity River.

The Setting

The Trinity River originates in the rugged Trinity Alps Wilderness, located in far northwestern California. It is a nationally renowned steelhead river very conducive to fly fishing. The Trinity is the largest tributary to the Klamath River, which some Trinity advocates facetiously refer to as the North Fork Trinity.

The Trinity River is over 130 miles in length and drains 2,853 square miles, primarily in Trinity County. Trinity County is remote, defined by the federal government as “Frontier,” and is mountainous with elevations ranging from 600 to over 9,000 feet. It is 3,200 square miles, greater than the combined states of Rhode Island and Delaware and roughly the size of Vermont. Its population is around 13,000 (4.1 people per square mile). Nearly half its residents (46.5%) live in two towns — the county seat of Weaverville and Hayfork. There are no stop lights in Trinity County. Problems associated with population growth and urbanization are unlikely to inhibit restoration of the Trinity River.

Historical impacts to the Trinity River include gold mining — dredging, hydraulic and placer — and commercial logging and associated road building, the detriments of which were exacerbated by the 1955 and 1964 floods. In spite of these historical atrocities, fish populations remained relatively abundant prior to construction of Trinity Dam.

Construction of the Trinity River Division (TRD) of the Central Valley Project, (including construction of Trinity Dam) was completed in 1963. Trinity and Lewiston Dam, which creates an afterbay below Trinity Dam (river mile 112), block 109 miles of high quality salmonid habitat. Water is diverted from the Trinity to out of basin interests via the Sacramento River and eventually is exported through pumps, canals and aqueducts, principally to the Western San Joaquin

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Valley.

The history of the TRD is replete with federal promises that the Trinity Basin would not be harmed by construction of Trinity Dam and related facilities. Prior to enactment of legislation authorizing the TRD during public hearings, then-Congressman Claire Engle declared “…the Trinity project does not contemplate diversion of one bucketful of water which is necessary in this watershed.” A Bureau of Reclamation (BOR) official asserted that the “fisheries would be improved.” Congressional legislation in 1955 authorized construction of the Trinity Project and specifically directed the Secretary of Interior to “…adopt appropriate measures to insure the preservation and propagation of fish and wildlife…”

During congressional hearings prior to enactment of the legislation, the BOR represented to Congress that no more than 53 percent of the river’s water would be diverted — a guarantee that never has been met. Immediately upon completion of the dam, 90 percent of the river’s water was diverted.

Upon completion of the TRD, flows in the Trinity River obviously decreased dramatically. In years until 2001, an annual average of 88 percent of watershed runoff (1,234,000 acre-feet) was diverted to the Sacramento River. The reduced and stabilized Trinity River flow (about 140,000 acre-feet annually) failed to allow geomorphic and fluvial processes to maintain the quality and quantity of available fish habitat. This resulted in river channel simplification, fine sediment accumulation, pool filling, riparian encroachment, and increased water temperatures. These detrimental results contributed to significant decreases in fish populations with consequent severe reductions to commercial, recreational and tribal fisheries and devastating impacts upon local and regional economies.

Estimates of pre-dam fish populations are “sporadic and imperfect” at best. The best available scientific information suggests post-dam declines in excess of 80 percent with current populations dominated by hatchery produced fish intended to mitigate for habitat blocked by Trinity Dam.

**Current Fish Population Status**

Trinity River run size averages above the Willow Creek weir (approximately river mile 23) for 1977-2006 are estimated below. Progeny of hatchery fish that spawn outside the hatchery are considered “naturally produced.”

- **Fall run Chinook salmon:** 42,000 (55 percent hatchery)
- **Spring run Chinook salmon:** 18,000 (59 percent hatchery)
- **Coho salmon:** 18,000 (90 percent hatchery)
- **Fall run steelhead:** 12,000 (56 percent hatchery)

**Best information suggests post-dam wild steelhead declines of 80 percent and the current population dominated by hatchery fish.**

The South Fork Trinity River, which is undammed and is the largest tributary to the Trinity, has the only wild run of spring Chinook that is free of hatchery influence. But they are perilously low and number only in the hundreds. Coho salmon are listed as a threatened species by both the state and federal governments in accordance with the California and federal Endangered Species Acts. Winter run steelhead population estimates are not generated. Wild summer run steelhead in Trinity River tributaries average several hundred fish annually with an occasional hatchery fish observed.

**Fishing Opportunities**

Fishing seasons for Chinook vary greatly with annual adjustments of seasons and bag limits based upon preseason population predictions by the Pacific Fisheries Management Council. While low Chinook returns to the Klamath-Trinity basin can impact commercial and recreational fishing in the ocean throughout California and southern Oregon, the recent complete closure to ocean salmon fishing in 2008 was based upon poor returns to the Sacramento River.

Commercial and recreational coho salmon seasons in the ocean and in-river have been closed since the 1990s.

Wild steelhead may not be harvested at any time, but due to large hatchery steelhead returns (46,000 in 2007), the bag limit on hatchery steelhead in the Trinity was increased from one to two per day in 2008.

Tribal fishers are entitled to half of the harvestable surplus in the Klamath-Trinity Basin and include a commercial fishery when available harvest quotas surpass ceremonial and subsistence needs.

**Flow and Restoration Mandates**

A series of four federal laws, Interior Solicitor’s Opinions, and four Secretarial decisions — the latest in 2000 — resulted in the establishment of restoration programs and increased returns of water to the river.

In 1981, Interior Secretary Cecil Andrus directed an increase in Trinity River flows and a twelve year flow study to assess permanent flows needed to rejuvenate the fisheries. However, increased returns of water to the river were not implemented for several years because of drought conditions. The resultant Trinity River Flow Evaluation Study (TRFES) “…sought to determine instream flows and other measures necessary to restore and maintain the Trinity River’s fishery.”

Trinity supporters also convinced Congress to enact the Trinity River Basin Fish and Wildlife Restoration Act in 1984, authorizing programs to “restore natural fish and wildlife populations to levels approximating those which existed immediately prior to the construction of the Trinity Division.”

Then, in 1991, Interior Secretary Manuel Lujan issued an Executive Order increasing interim flows to 340,000 acre-feet annually. This was followed by Congressional enactment of the Central Valley Project Improvement Act in October 1992, which codified the Secretary’s Order.

A 1996 amendment to the Trinity
The TRFES finally was completed in June 1999 and led to the federal and state Trinity River Mainstem Fishery Restoration Environmental Impact Statement/Report (EIS/EIR). The EIS/EIR became the basis for a Record of Decision (ROD) signed in December 2000 by Interior Secretary Bruce Babbitt. The ROD established the Trinity River Restoration Program (TRRP), including three primary restoration components: increased flows, physical rehabilitation and tributary restoration. Additionally, the ROD established an implementation plan including organizational structure, program participants, and fishery goals.

The New Trinity River — ROD Era

The ROD strategy is not to recreate pre-dam conditions but to “create a smaller dynamic alluvial channel exhibiting all of the characteristics of the pre-dam river but on a smaller scale.”...This strategy is intended to best achieve restoration goals and to maintain the purpose and use of the TRD." It is a political compromise of a complex biological requirement to meet pre-dam salmon and steelhead populations.

The ROD is designed to unshackle the now channelized section of the river as a result of extremely low flows using mechanical means (heavy equipment) and new, increased flow regimes to maintain a dynamic and alluvial but smaller river.

The ROD concept is to utilize a combination of actions to restore the river: 1) flow management for geomorphic and riparian processes; 2) flow management for temperature and habitat; 3) coarse sediment management; 4) channel and watershed restoration; and 5) adaptive management and monitoring program to improve restoration actions.

Fishery Goals for the TRRP from the EIS/EIR:

- Fall Chinook: 71,000 (9,000 hatchery)
- Spring Chinook: 9,000 (3,000 hatchery)
- Coho: 3,500 (2,100 hatchery)
- Winter steelhead: 50,000 (10,000 hatchery)
- Summer steelhead goals have not been established.

New Flow Regime

The flow regime advocated by many Trinity River supporters prior to adoption of the ROD was a return of 100 percent of Trinity watershed runoff. Suggestions included “Blow up the dam and use the rubble to fill the diversion tunnel.” However there were competing interests, since unfortunately, the water and electricity yield from the TRD is one of the most valuable in California.

The average annual water return to the river set forth in the ROD was increased from 25 percent to 48 percent of average total runoff to Trinity Reservoir. Returns of water and maximum flows to the river vary by water type years. Flow volumes and peak flows by water type year are:

- Extremely Wet: 815,000 af and 11,000 cfs, Wet: 701,000 af and 8,500 cfs, Normal: 647,000 af and 6,000 cfs, Dry: 453,000 af and 4,500 cfs, Critically Dry: 369,000 af and 1,500 cfs

Federal funding for implementation is provided principally through the BOR ($7 million annually) and the U.S. Fish and Wildlife Service (USFWS) ($2.2 annually) with the latter recently withholding its appropriated funds from TRRP to use in a manner it sees fit to achieve river restoration objectives. Additional funds have been obtained through congressional appropriations and state and federal grants. The Trinity Management Council (TMC) and the Trinity Adaptive Management Working Group (TAMWG) both recognize the actual cost of fully implementing the ROD is about $16 million annually. There is continuing debate over possible sources of additional funds. Should the entire cost be borne by the federal government via BOR/USFWS, or should TRD beneficiaries share a greater load, and are there additional entities beyond state and federal agencies that should be required to contribute?

Adaptive Environmental Assessment Management and Science Framework

Adaptive Environmental Assessment Management (AEAM) is an approach utilized to provide decision-makers with the “ability to refine previous decisions” based on the latest scientific information gathered to improve management of the TRRP. It is a combination of assessment and management with constant feedback and change required. The process develops and tests hypotheses about causal

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factors necessitating possible changes in the TRRP’s previously implemented actions. An Integrated Assessment Plan (IAP) has been developed to identify key assessments that “evaluate long-term progress toward achieving Program goals and objectives; and provide short-term feedback to improve Program management actions by testing key hypotheses and reducing management uncertainties.”

The TRRP includes independent scientific peer review as a check and balance for program management. A five member Science Advisory Board is appointed for overarching program science reviews and rotating Expert Review Panels for project specific reviews. TRRP staff scientists (engineers, hydrologists, biologists, etc.) are supported by additional county, state, federal, tribal and consulting scientists with diverse backgrounds and experience. Coordination and cooperation is an occasional stumbling block but competency is not.

**Litigation and Clearing the Floodplain**

The 2000 ROD specified new flow regimes with releases of up to 11,000 cubic feet per second (cfs) in extremely wet years. Sadly, the ROD was litigated immediately by the recipients of the federally subsidized water and power generated by Trinity diversions. Based upon an injunction by Federal Judge Oliver Wanger, flows were capped at 369,000 acre-feet (a critically dry water year type under the ROD) until the case was decided. The litigation was decided in favor of the Interior Department and others (the ROD) by the Ninth Circuit Court of Appeals with a final ruling issued in 2004.

For years, Trinity County permitted construction of homes, bridges, wells, and other structures in the historic floodplain below the dams that would be inundated by ROD prescribed flows. From 2002 to 2005 four bridges were replaced, homes, wells and structures were removed, and thus the floodplain was reclaimed. This allowed for a 10,500 cfs release in 2005, an extremely wet water-type year — the largest release of flows for fishery purposes since completion of the dams.

**Mechanical and Other Physical Restoration Activities**

Studies completed in the 1990s identified flows in excess of 24,000 cfs would be required to remove the berms constricting the channel. Trinity Dam has a maximum controlled release capacity of 13,750 cfs. A one-time mechanical removal of berms in conjunction with increased flows as “maintenance” is designed to recreate an alluvial river. A total of 47 channel altering projects are planned in the upper 40 miles of river. The intent of these mechanical projects is to unshackle the channelized portion of the river, allowing for natural meander sequences and juvenile rearing habitat. The latter is thought to be the limiting factor in restoring wild fish populations.

By the end of 2008, sixteen channel altering projects were completed. It is believed that with current funding, all remaining projects will be completed by 2013. There are differences of opinion among some program participants about the size and scope of proposed channel projects and the approaches towards monitoring these projects. This, in part, has led the USFWS to withhold funds appropriated by Congress for the restoration program.

**Tributary and Watershed Restoration**

From a fisheries restoration point of view, tributaries are the principal spawning grounds for coho and steelhead, and therefore are critical to achieving the objective of a restored Trinity River fishery. To eliminate unacceptable fine sediment loading into the mainstem of the river, watershed rehabilitation is imperative. Fine sediment entering the river smothers spawning gravel and destroys rearing habitat. This is a problem that currently plagues the river.

The ROD recognized the need to restore tributary production and included it as a primary component, with a minimum of $2 million annually to be spent on restoration projects. To date, the TRRP has failed to implement this critical component adequately for two reasons: funding and political will. The TMC continually has shortchanged watershed (tributary)
hatchery returns have averaged eight times the stated goal and are estimated to be more than 90% of the total population. In 2007/8 46,000 hatchery fall run steelhead returned, swamping the 8,000 unmarked steelhead, many of which likely were hatchery offspring. The program numeric goals for hatchery and naturally produced steelhead are exactly reversed. The TMC has been hesitant to address hatchery issues. Some members view hatchery management as separate from the TRRP and a distraction from restoration. Stakeholder requests to define hatchery management authority, identify mechanisms for adjusting production, and costs of over-production.

Over the last thirty years, coho restoration budget. In fact, the combined budget for watershed work since 2000 barely equals its prescribed annual budget. Additionally, some entities believe the TRRP is not responsible for watershed restoration. They claim TRD did not disrupt tributary functions.

Without watershed restoration, steelhead and coho populations will not be restored, the ROD goals cannot be met, and greater flows would be required. Increasing watershed restoration budgets and effort is a basic requisite for program success.

Program Challenges and Conflicts

The TMC struggles with its central purpose — policy and final decision-making. It suffers from competing visions, a lack of understanding and commitment, confusion over roles and responsibilities, and financial conflict of interest. Debates over budget decisions are often driven by financial conflict of interest and not prioritized by scientific merit and need. The Trinity River Restoration Program Situation Assessment (2008), the TMC Subcommittee Report (2004) and numerous TAMWG letters and comments clearly identify challenges to the TRRP together with solutions. The TMC commissioned these reports but has been slow even to acknowledge them and slower to act upon the recommendations. This has resulted in decision-making effectively being transferred from the TMC to Department of Interior representatives. Without a dedicated effort to resolve these issues the program will fail.

The primary objective of the TRRP is to meet fishery goals with an emphasis on natural production. Hatchery overproduction of Chinook, steelhead and especially coho negatively impacts natural production. The well documented risks of hatchery overproduction include: competition with naturally produced fish; predation upon naturally produced fish; behavioral changes of naturally produced fish; alteration of fishing patterns; residualization; disease transmission; reduction in “fitness”; genetic inbreeding; and costs of over-production.

Over the last thirty years, coho
Greg Stahl, a former journalist and recipient of a Ted Scripps Fellowship in Environmental Journalism, is the new Assistant Policy Director for Idaho Rivers United. He can be reached at greg@idahorivers.org. The web site is www.idahorivers.org.

Scott Schnebly has been fishing for steelhead beneath the jagged backdrop of the Sawtooth Mountains of Central Idaho for more than 30 years. During that time he’s watched as once-potent runs continued to dwindle and as the species was given Endangered Species Act protection in 1997.

Last spring and summer, however, anadromous fish returned to Idaho in numbers as high or higher than in recent years. It was the combination of the hatchery programs that sustain them, fair ocean conditions and better out-migrating river flows that produced this improved 2008 fishery.

“It’s basically a hatchery fishery,” Schnebly said via telephone from the Outdoor Retailers Show in Salt Lake City in January. “I would say our up-river fishery generally averages about 10 percent wild fish, sometimes less.”

As owner of Lost River Outfitters in Ketchum, Schnebly guides on the Salmon River every March and April. He knows the river and it’s subtle currents. And he knows its fish.

“It’s really incredible when you hook a wild fish beneath the Sawtooth Mountains,” he said. “I hooked one near Stanley a few years back. He beat me up. He jumped 10 times, ran 300 yards and then pulled the hook out of his face. He was probably a 30-inch fish.”

But such experiences are increasingly rare. Wild fish are few and far between.

Analyzing Returns

Steelhead returns last year were solid, but an examination of the numbers reveals that not many were wild. Of the 2007-2008 crop of 154,400 that passed Lower Granite Dam on the Snake River, 10 percent were wild fish. That is pretty typical, and it is “unacceptable” in the words of Bert Bowler, a retired Idaho Department of Fish and Game fisheries biologist.

Last year’s Idaho steelhead returns were good, except that few were wild fish. Photo courtesy Idaho Rivers United

“That’s not recovery under the Endangered Species Act,” Bowler said. “Most of these are hatchery fish.”

Fish and Game Anadromous Fisheries Coordinator Sam Sharr said Idaho’s steelhead returns have improved since the 1990s because of court-ordered flow improvements in the operation of the dams and reservoirs on the Snake and Columbia rivers, but he said ocean conditions are not to be overlooked.

“It’s where they rear and what the ocean conditions are like,” he said.

Sharr said 168,000 steelhead have passed Lower Granite Dam in the 2008-2009 counts thus far, so a good fishing season should be on tap this spring. He added that Chinook salmon returns are looking at least as good as last year, and that means there could be a Chinook fishing season on the upper Salmon River near Stanley for the second year in a row. Last year’s Chinook season on the Upper Salmon was the first in 30 years.

But in addition to the hatchery programs that sustain the majority of the steelhead fishery, the returns of recent years have been bolstered by good migration conditions, river flows that were pumped up both by near-average winter snow-packs and following an order by federal Judge James Redden for more spill through the hydro system.

“We can’t always depend on Mother Nature to deliver a healthy snowpack, a productive ocean or a federal judge to help migration conditions,” said Tom Stuart, an avid angler who has homes in Boise and Stanley. “It’s exciting to see these improved returns, but we have to remember that most of these fish are raised in hatcheries. The goal is to get self-sustaining populations of wild fish back. The only way we’re going to do that is by removing the four dams on the lower Snake River in eastern Washington.”

Idaho’s Unique Steelhead

At 900 miles, the meandering rivers between the Pacific Ocean and the Sawtooth Valley of Idaho constitute the longest migration route for salmon and steelhead today in the Columbia Basin. In the world of the massive Columbia River drainage, the Snake River once produced more than half of all the

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Chinook and steelhead. And in that world of tributaries, the Salmon River alone produced 39 percent of all the spring and summer Chinook and 45 percent of all the steelhead in the entire Columbia basin. “So the take-home message from that is, for the folks who like to de-emphasize the importance of lower-Snake dam removal, we’re missing the biggest single opportunity in the entire Columbia system,” Stuart said. “The habitat is intact and protected. But we’ve got to deal with the bottleneck. There’s rearing habitat in the ocean, and there’s spawning habitat in the Snake and Salmon drainages. But you can’t restore salmon runs in the Columbia basin without dealing assertively with Idaho and the salmon and steelhead runs of the Snake. It’s the biggest step the region can take to open up the bottleneck — by dealing with the lower Snake River dams and reservoirs.”

Stuart cited a 2005 study by Boise-based Ben Johnson & Associates that concluded a restored salmon and steelhead sport fishery would bring several hundred million dollars every year to Idaho’s economy.

“A restored salmon and steelhead fishery would bring enormous economic benefits to the Northwest,” Stuart said. “According to that study, most of the millions would go to small communities in Idaho, and those are the places that need it the most.”

The Snake River drainage is important in salmon and steelhead country because it supports 70 percent of the remaining habitat left in the entire Columbia River basin for spring/summer Chinook salmon and summer steelhead. This is because of Idaho’s high-quality habitat in wilderness and roadless areas that simply doesn’t exist in other parts of the Northwest. “So 70 percent of the region’s salmon potential could be realized by removing [the four lower Snake River] dams,” Stuart said. “When Lewis and Clark passed through Idaho 200 years ago, 1.5 million spring/summer Chinook were using the Snake. Since the mid-1990s those numbers have ranged from 1,200 to 45,000 wild salmon.”

Bowler is a walking encyclopedia of salmon and steelhead knowledge. He pointed out the importance of Idaho’s anadromous fisheries to its larger ecology. Many of the state’s streams are relatively sterile, and the decomposing carcasses of saltwater-fed fish pumped nitrogen and phosphorus compounds into the ecosystem. Those nutrients helped feed everything from stream-side vegetation to land-based animals.

“The fight to protect and save Columbia and Snake river salmon and steelhead has been going on since the first dams began going up in the 1930s,” Bowler said. “It’s more than their ecological or economic values. Their remarkable history of development, adaptation and survival over the ages is a story of perseverance against the odds. This has resulted in a species that has a tremendous impact on the world of nature and humans.”

A restored sport fishery would bring several hundred million dollars to Idaho annually.

Bowler said the fossil record indicates Pacific salmon and steelhead emerged 10 to 15 million years ago, and Schnebly agrees that such a statistic is staggering. “It just gives me goose bumps,” Schnebly said, “to think about the longest running anadromous fish in the world. And it’s not just our steelhead. It’s our sockeye and our Chinook.”

The Fish

Idaho’s steelhead are classified into two groups, A-run and B-run, based on their size and ocean life history. A-run steelhead are predominantly one-year ocean fish usually found in the Snake and Salmon Rivers, while B-run fish predominantly spend two or more years in the ocean and most often return to the Clearwater River.

The A-run steelhead of the Salmon and Snake return from the ocean earlier in the year, typically between June and August, and they most often return after spending one year in the ocean. Because they return early in the year and because they usually come back after only one year in the ocean, they weigh 4 to 6 pounds and are usually about 2 feet long.

The B-run steelhead of the Clearwater River basin typically spend two years in the ocean and begin migrating to the waters of their birth later in the summer or fall, August or September. Since they spend an extra year in the ocean, they return as much larger fish, weighing between 10 and 13 pounds and measuring more than 30 inches.

The state record steelhead, a 30-pounder caught in 1973, was a B-run fish caught in the Clearwater River.

“Ideal is the only state that claims B-run steelhead,” Bowler said. “They’re not found in Oregon or Washington, only Idaho. And it shouldn’t be overlooked that wild B-run steelhead aren’t doing as well. In terms of protection for enhancing wild steelhead, wild Bs are the ones for which we really need to look out.”

Legal Update

Idaho Rivers United and other conservation groups are continuing to press in federal court for the Bush administration’s 2008 salmon recovery plan, called a Biological Opinion, to be overturned. That ruling is imminent. U.S. District Judge James Redden in Oregon postponed oral arguments from January 2009 to March 6, 2009, and conservation groups are expecting a ruling sometime shortly thereafter.

The newest BiOp is the latest in a series of salmon plans written by federal agencies over the past decade and more. The previous three were found legally and scientifically deficient by federal courts, forcing rewrite after rewrite. Redden soundly rejected the government’s 2004 plan and raised concerns about the most recent BiOp when it was released in draft form in 2007. Redden indicated that “serious consequences” for federal hydro-system operations would follow if federal administrators didn’t follow the law in their 2008 attempt.

While the most recent plan includes provisions for habitat restoration on Columbia River tributaries, hatchery production and predator control, it

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Historical Columbia and Snake River Steelhead Runs

By Bill McMillan
— Wild Fish Conservancy —

Bill McMillan lives on the Skagit River in northern Washington and has been a field biologist with Wild Fish Conservancy for the past 12 years. He has been a freelance writer for more than 35 years and was long a hobby scientist who initiated snorkel surveys on southwest Washington rivers back in 1983 to document declining numbers of wild steelhead. His most recent work has been documenting the historical numbers and diversity of salmon and steelhead in Washington and the Columbia River. The web site is www.wildfishconservancy.org.

The written history of steelhead in the Columbia/Snake system begins with Lewis and Clark. Their observations and those of others who followed provide a baseline of 19th century steelhead diversity from which to measure present recovery efforts of ESA listed steelhead populations. Recovery of this diversity may largely determine whether Columbia Basin wild steelhead populations do, or do not, survive global warming — a warming compounded by the alterations in habitat that have occurred since the time of Lewis and Clark. The following are but a few of many available historical steelhead references:

The Lewis and Clark Expedition’s important earliest observations:

On August 27, 1805 Indians provided Lewis’ camp on the Lemhi River, 5 miles north of Tendoy, Idaho, with 8-10 “salmon trout” of 7-8 lbs whose paler flesh was considered inferior by Sgt. Ordway and Joseph Whitehouse to Atlantic salmon caught near the sea. They correctly determined there was deterioration of flesh color due to the deep inland migration. If these were steelhead, they were the first inland encounters by Euro-Americans. Their size and early arrival suggest what are now termed A-run steelhead.

Salmon trout are not mentioned again until reaching the area of Celilo Falls tribal fishery in latter October of 1805, where they were apparently being caught in abundance. One of their own men gigged what Sgt. Ordway described as a “large salmon trout” and which Clark declared was the best fish he had ever tasted. The late date and large size suggest what are now

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The average weight...is from 8 to 11 pounds...When they first arrive the flesh is most delicious — fat, pink, and firm withal, and to my palate finer than that of the mammoth quinmat. The Indians also prize these salmon, and pack them when dried in bales apart from the others.”

Historic steelhead run-timing in 1892:

Although the records of the salmon canning industry on the Columbia River below Celilo Falls date to 1866, steelhead and sockeye were not recorded until 1890. Prior to that time the entire pack was considered spring and summer Chinook and likely represented incredible by-catch wastage of steelhead and sockeye whose run timing coincided with summer Chinook. As the catch of preferred early-entry Chinook began to decline in the mid-1880s, the extension in the fishing season beyond July to include the first 10 days in August in 1890 was a calculated decision to target other species for canning. This resulted in the first Columbia River commercial fishery data that included steelhead and sockeye. In 1892 the commercial fishery was from April 10th to August 10th and then included September and October to increasingly include steelhead and coho to the canneries. Therefore, 1892 provides the best available data from which to determine what the run-timing of steelhead historically was (remembering that it does not include the last 21 days in August) as shown in the figure below. It is also mindful to remember that a sudden and dramatic decline in salmon and steelhead returning to the Columbia at Kettle Falls, the Spokane...
River, and the Snake River began in 1883 (McDonald 1894; Gilbert and Evermann 1894). By 1892 the potentially advantageous early run-timing for steelhead populations returning above Kettle Falls and the Snake River may no longer have been proportionally represented.

From Barton W. Evermann's Idaho investigations in 1894:

In an interview, a local commercial fisherman, W.C. Jennings, described the steelhead of the Payette River in his time of fishing there beginning in the 1870s:

"The salmon trout come up Payette River about April when the water is high. Never saw any above the lake. They will bite a hook occasionally. They will weigh from 5 to 30 pounds; have heard of them weighing as much as 40 pounds, but they probably do not average more than 10 pounds. I think they come up from the sea and that they do not die, but return to the sea or at least go down stream when the water gets low."

These would most certainly be B-run type steelhead often considered today as having been historically limited to the North Fork Clearwater River. The Payette is a Snake River tributary entering northwest of Boise, Idaho and inaccessible to anadromous fish today.

Mr. F.C. Parks, Sawtooth, Idaho, describes more typical A-run type steelhead of upper Salmon River:

"The salmon trout come to the Alturas Lake region about May 5, and are seen up to about June 10. Some spawn in Salmon River and Alturas Lake outlet, while others go up into the inlets where they probably spawn on the same gravel bars used later by the redfish...Their noses get hooked and some sores appear later. Have seen some dead ones, but do not think many die. They are of various sizes, not in two sizes as the redfish are (he is referring to 10" kokanee compared to 4-5 lb sockeye). The largest I have seen would weigh about 14 pounds, the smallest about 2 pounds, while the average weight is probably nearly 8 pounds. They are becoming less abundant each year. The small ones are very scarce. We catch them with spears and grab hooks. They will sometimes take a hook baited with their own spawn tied up in mosquito bar. About one-third of those we get are females. Their eggs are about the size of those of redfish. Color: Along middle of side as red as the redfish; back, steel-color; the female has less red and is more silvery."

Mr. B.S. Brown of Bliss, Idaho in the headwaters of the Salmon River also describes A-run type steelhead in the Redfish and Stanley Lake region:

"The salmon trout arrive April 1 or earlier. They spawn in April, going up into the outlets of the lakes and sometimes using the same spawning-beds which the dog salmon (local name for spawning Chinook) use in the fall. They stay here at least until May 15. The largest I ever saw weighed perhaps 12 pounds, the smallest 4 or 5 pounds. I never saw many dead ones; they probably all go back to the sea."

As an indicator of the decline in Idaho's salmon and steelhead abundance between the 1870s and the 1890s there is the sockeye example. At Big Payette Lake in the 1870s there was a harvest by one commercial operation of 75,000 sockeye. Other Payette fishermen salted down 30,000-40,000 pounds each year in the same era (avg. cleaned sockeye weighed 2.5 lbs so 12,000-16,000 sockeye per fisherman) with no estimate of those gigged for sport or subsistence. One fisherman interviewed in 1894 indicated "millions" of sockeye once returned to the lake. By contrast, the 1894 sockeye run was the first significant return for several years at Payette Lake, but the greatest estimate by those interviewed was a return of two- to three-thousand.

The Evermann paper provides an insightful window to the past, when Snake River Chinook, sockeye, and steelhead returned to areas where they are now extinct. The phenomenal decline in all species from the 1870s to the 1890s was like nothing seen since — from fantastic abundance to dearth.

Clearwater River steelhead data from the latter 1950s:

In a 1970 report to the United States Department of Commerce by Leonard Fulton of the NMFS Biological Laboratory in Seattle, it was estimated that the 1957-58 sport catch from the North Fork Clearwater River was about 14,000 steelhead. In a 1964 paper from Idaho Fish and Game by Mel Reingold, it was indicated that during the 1958-59 steelhead return to the mainstem Clearwater River, a count of 33,216 steelhead was made in their passage over Lewiston Dam (since removed). These counts were prior to hatchery steelhead returns to the Clearwater.

As remarkable as these counts of the 1950s seem today, they represented but a fraction of the steelhead numbers destined there at the time of Lewis and Clark, keeping in mind that in 1878 salmon and steelhead numbers began to noticeably decline from previous levels at Kettle Falls, and then suddenly crashed after 1882 throughout the Columbia and Snake systems as documented by Gilbert and Evermann (1894) and Marshall McDonald (1894). What was the magnitude of that crash?

The Spokane River example of the Columbia/Snake crash from 1882 to 1883:

In the 1880s, the Spokane River watershed was as yet undeveloped (Livingston Stone 1885). On October 1, 1882 there was a count of an estimated 40,000-50,000 salmon on tribal drying racks on the lower Little Spokane River (Gilbert and Evermann 1894). The Little Spokane was but one of at least five major tribal fishing sites on the Spokane system (Scholz et al. 1985). Do the math: 5 x 50,000 = 250,000. Tribal fisheries were thought to be inefficient (Stone 1885), suggesting an escapement much greater than from white commercial fisheries. The Spokane tribal fisheries occurred after a commercial harvest rate in the lower Columbia in that era estimated to be as high as 85% by some (Chapman 1986), and after numerous other tribal fisheries along the Columbia, including that at Celilo Falls. Furthermore, the Spokane fishery the tribal people most depended on was for spring/summer Chinook that could begin as early as June (Wilkes 1841; Gilbert and

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Chair's Corner
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WDFW would have to do is prohibit hatchery stocking and get out of the way.

B. Hatcheries: Habitat decline is not the only cause of the depressed stocks. There are watersheds around the state where habitat is as good as it was in the 1950's and 1960's before massive hatchery stocking ramped up, and yet wild stocks have continued to decline. The 1996 National Research Council report, "Upstream: Salmon and Society in the Pacific Northwest," stated strongly that hatcheries have hindered rather than helped wild fish populations. A large and growing body of studies since then has added emphasis to that conclusion.

Therefore, every hatchery, whether its goal is conservation or harvest, needs to be treated as a scientific experiment and monitored, measured, and adaptively managed as spelled out by the Hatchery Scientific Review Group. The key measures of conservation hatcheries must be their results in returning wild adult abundance, productivity, spatial distribution and diversity. The critical measure of harvest hatcheries should be their impact on wild stocks in the same watershed. Hatcheries of both types that don't meet their goals must be changed or closed.

Washington has the most extensive hatchery system of any state, and maybe any jurisdiction in the world. The budget cuts that are surely coming to WDFW in these difficult times should be taken largely out of the steelhead and salmon hatchery programs. For over a century, hatcheries have been assumed to be successful when in fact they have been hardly measured and have had declining success after the first few years of operation. For the last few years, there has been a lot of discussion and some early action toward hatchery reform, and that's good. But some people seem to assume success even before implementation, let alone careful monitoring over multiple generations with well-defined measures of success.

It is instructive that sea-run cutthroat trout and bull trout, the other anadromous salmonids in the Puget Sound basin, are managed with no hatchery stocking and negligible retention harvest, and are doing just fine.

C. Harvest: Harvest of salmon and steelhead in Washington under the moniker of Maximum Sustained Harvest (MSH) for the last quarter century has been disastrous for wild stocks. In a steady state model like MSH, variations in ocean conditions and watershed climate, incomplete information on juvenile and adult abundance, and run size forecasting errors all place the burden of error and associated risks on wild stocks.

Harvest practices need to be completely revamped to place top priority on wild fish escapement to spawn. This means using historic run sizes as the starting targets for escapement planning; setting escapement goals with very high conservation buffers; fin clipping every hatchery steelhead, chinook, and coho released; and making strict selective fishing regulations the norm for both sport and commercial, with live release of wild fish and harvest of hatchery fish. This means there will have to be a long term commitment to changing commercial fishing to low mortality methods of capture, including fish wheels, weirs, and dip nets.

D. Hydro: When we discuss the effects of dams and their associated reservoirs on steelhead and salmon in Washington, that means the Columbia system. For over 15 years, fishing and conservation organizations have been engaged as plaintiffs in a series of law suits under the Endangered Species Act opposing the federal government's Biological Opinions (BiOps) for operation of the Federal Columbia River Power System (FCRPS). The results have been invariably the same; the judge rules in favor of the plaintiffs and sends the feds back to the drawing board with instructions to do a better job of protecting steelhead and salmon migrating through the hydro system. Now the latest FCRPS BiOp, the 2008 version, is being litigated, with arguments scheduled for March 2009.

On December 7, 2008, the Seattle Post Intelligencer ran a guest column by Dr. Koenings, "Salmon recovery comes of age," which described the record of WDFW and the State during his ten year tenure in glowing terms. There are a number of statements in his article that can be debated, but the most outrageous is his comment on the 2008 Columbia BiOp. "That plan, now before U. S. District Judge James Redden in Portland, includes significant new provisions for fish passage, hatchery reform, monitoring, adaptive management and financial support for habitat restoration throughout the basin. That plan, developed after years of negotiations, is far superior to any proposed before, and I believe the time has come to put the fish friendly measures it proposes into action."

So Dr. Koenings came down firmly in support of the 2008 BiOp as his parting shot. On the Columbia, by far the biggest problem for steelhead and salmon is mainstem passage through the hydro system, especially downstream migration of juveniles. The 2008 BiOp does almost nothing to improve mainstem passage and, compared to previous BiOp's, even reduces the amounts of spill and flow that assist the smolts on their downstream migrations.

In addition to the fishing and conservation plaintiffs, the state of Oregon and the Nez Perce tribe have joined in opposition to the 2008 BiOp. Oregon gets it right, and Washington gets it wrong. The new director needs to understand the importance of mainstem passage and the deficiencies of the 2008 BiOp, and act on that understanding.

If the Commission appoints a new director who understands the science and has the leadership abilities to change WDFW into an organization that acts according to the science, these magnificent natural symbols of the Pacific Northwest will have a fighting chance.
Evermann 1894) with greatest fishing activity through the summer. Those fish had already been eaten fresh or dried and baled away into storage and for trade long before October 1st. Combining the mathematical additions to the base October 1, 1882 Little Spokane tribal catch results in salmon and steelhead numbers destined for the Spokane River in seven digits.

In 1883 Livingston Stone (1885) made a rough estimate that about 2,000 salmon were taken by the Indians at the Little Spokane site throughout the fishing season. Do the math: $2,000 \div 50,000 = 4\%$. From then, to now, to the future:

What was the Columbia/Snake wild steelhead decline from 1883 to the 1950s? And from the 1950s to today? At what level have numbers and diversity been depleted until adaptation to a rapidly altering future is unlikely? If they have not passed that brink (presumably the difference between “threatened” and “endangered”), what are the choices for recovering both habitat and wild steelhead adaptability? This is the historic background and the critical questions from which recovery efforts for ESA listed species should be working.
The Osprey wishes to thank the dedicated people and organizations who gave their financial support in 2008. Our readers are our primary source of funding. It’s pretty remarkable that our home-grown journal, which only comes out three times a year, has developed such a generous following. Don’t think we’re not grateful, and a bit humbled.

We have always skated on thin financial ice, and will continue to do so. But without your support we fold up. The usual donation envelope is provided. Whatever you can afford will be much appreciated (and used wisely).

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