Fall 2011

Strong Runs

Quarterly Newsletter of the Native Fish Society

IN THIS ISSUE

STRONG RUNS NEW FORMAT & FOLLOWING UP ON THE FALL

Members and friends I hope you enjoy the Fall edition of *Strong Runs*. As I'm sure you noticed, we changed the format of our newsletter again in our search for a medium that best balances the economical and eco-conscious with readablility (for lack of a better term). I hope that in providing *Strong Runs* as a PDF you will be able to spend more time with the newsletter as you download it to your computer or reader device. Additionally, the Fall newsletter will be available online at our *Strong Runs* archive. I do hope that you find this version more conducive to perusal. As always, I welcome your suggestions and comments on how we might improve your experience.

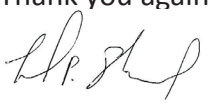
Onto more pertinent matters for wild fish: three of the five articles in this quarter's newsletter focus on past Action Alerts: the Sandy River Campaign, the Snider Creek Hatchery on the Sol Duc River and the expasion of hatchery programs on the Klickitat River. I chose to circle back and cover what has happened because often I sign a petition and that is the last I hear of an issue.

In each of these three instances, you will find that your words for wild fish were heard. In fact, it's my hope that above all else you come away knowing how much your voice matters! Read it for yourself; your actions are helping make things better for wild fish.

I also had the good fortune of sitting down with Jeff Mishler to discuss his work on a new regulation limiting the amount of sodium sulfite used in egg cures. His efforts for wild fish are as admirable as is his ability to discern the root of a problem and its solution.

Lastly, Bill Bakke and Molalla River Steward Mark Schmidt compare and contrast the use of analog and salmon carcasses for enhancing the nutrient contents of a stream. Placing hundreds of salmon carcasses in the Molalla River has been a critical part of the recovery of wild steelhead. What happens when carcasses are no longer made available?

Thank you again for your support of wild salmon and steelhead!



Mark Sherwood, River Steward Coordinator & Editor of *Strong Runs*

CALENDAR

DECEMBER 13: Mykiss Caucus Gathering in Portland

JANUARY 19: Senate Enviromental + Natural Resources Committee hearing Native Fish Society testimony on Oregon's Hatchery Program

MARCH 9 & 10: Tabling at Northwest Fly Tying and Fly Fishing Expo

APRIL 14: NFS 2012 Benefit + Auction

STRONG RUNS

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STRONG RUNS WELCOMES SUBMISSIONS AND LETTERS TO THE EDITOR. SUBMISSIONS MAY BE MADE ELECTRONICALLY OR BY MAIL.

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THANK YOU FOR YOUR SUPPORT!

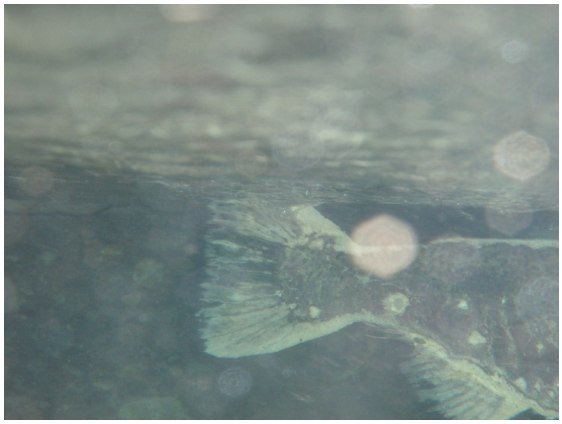
Of all the times of year...the fall is the most exciting spring the most beautiful, summer perhaps the most delightful, winter the most testing...but fall is the time of movement --- Roderick Haig-Brown, *Fisherman's Fall* 1955. Cover photographs of the Grande Ronde River and Moving Water by NFS member and photographer Ken Anderson.

SANDY RIVER CAMPAIGN UPDATE

MARK SHERWOOD, NFS River Steward Coordinator

The 60-Day Intent to Sue notice that Native Fish Society and Pacific Rivers Council sent to the Oregon Department of Fish and Wildlife and the National Marine Fisheries Service on April 13th has generated positive action on the Sandy River this summer and fall. ODFW has stopped collecting wild broodstock for its winter steelhead and spring chinook programs. The agencies also moved the hatchery from federal funding to state funding to try to avoid environmental review of the federal funding decisions, and reduced the number of hatchery fish they plan to release.

NMFS has begun reviewing ODFW's draft Hatchery Genetic Management Plans (HGMPs) to evaluate how hatchery fish impede the recovery of wild ESA-listed Sandy River salmon and steelhead and whether it is even possible to operate the hatchery and still comply with the Endangered Species Act. This evaluation will soon be out for public comment. NFS will generate an Action Alert to make sure that ODFW and NMFS hear from all of us who support a Sandy River managed for wild fish.



Where is the adipose? Hatchery chinook spawning in Zig Zag River. Photograph by Mia Sheppard

In the fall of 2011, ODFW also operated two temporary weirs, testing them at Cedar Creek, Still Creek, the Zig Zag and Salmon Rivers to sort hatchery and wild ESA-listed spring chinook. This was the first time ODFW used these measures to try to prevent wild and hatchery fish from straying on spawning grounds since the 2007 and 2008 removal of Marmot and Little Sandy Dams. Despite these efforts, redd counts conducted by the Forest Service revealed very high stray rates of hatchery-bred fish above the weirs. Preliminary ODFW and USFS data indicate a basin-wide stray rate of 62%. ODFW policy provides that the stray rate must be below 10% to protect wild fish. In the first year of trying to actively comply with its own protective criteria, ODFW failed once again to protect ESA-listed chinook.

According to River Steward Mia Sheppard, who walked the upper tributaries of the Sandy River in September, large numbers of wild and hatchery chinook were spawning below the weirs and competing for spawning gravel. Also a matter of concern, wild and hatchery fish were reportedly poached as they waited helpless and unguarded overnight in ODFW's fish traps. She wrote a post about her experience on her blog, Metal Heads.

While the efforts of ODFW to separate wild and hatchery fish via weirs demonstrate a commitment of time and resources by the agency, many (including NFS) know these misguided measures are too little and too late to prevent continued damage to wild runs. For over a decade, stakeholders (including NFS) have exhausted administrative means in efforts to encourage ODFW to avoid the current situation. For instance, if ODFW had listened to the recommendations of Native Fish Society and Trout Unlimited in 1997, or the Sandy Watershed Council and the USFS as early as in 2000, hatchery plantings would have ceased prior to the removal of Marmot Dam and the current straying would have been averted.

Like a comedy of errors, stakeholders banded together to remove Marmot and Little Sandy Dams—only for ODFW to construct new seasonal weirs. Through the best of intentions and a huge public investment, stakeholders have only traded fish passage issues for straying, poaching, and new forms of barriers that make wild fish spawn prematurely. On the Sandy, wild fish remain as imperiled as ever. The Native Fish Society will not watch ODFW and NMFS jeopardize wild fish in their homewaters. We await NMFS's evaluation of the HGMPs and will respond to ensure that wild fish are able to make good use of reclaimed and restored habitat—without the impediment of hatchery fish causing genetic and ecological damage to chinook, coho and steelhead threatened with extinction.

In the midst of dam removal on the Elwha, the White Salmon, the Hood, the Rogue and many others, nothing is more pertinent than making sure we get wild fish recovery right on the Sandy River. The Sandy River can either be an indicator of how incomplete recovery efforts result in wasted investment and continued declines, or it can be the model for recovery wherever dams are removed for the benefit of wild salmonids.

Q & A WITH JEFF MISHLER

SODIUM SULFITE EGG CURE, THE LAW & THE PROCESS OF CHANGE

JEFF MISHLER + MARK SHERWOOD, River Steward Coordinator

Jeff could you tell our readers about yourself?

I'm a steelheader trying to find a balance between my obsessions and responsibilities. Aren't we all? For twelve years I worked as a commercial film director. Then I got married and decided to get out of commercials. A few years back I started producing a five part DVD series called Skagit Master. I work on this project out of my home office in Portland, Oregon. This home space gives me the time to work on other issues when they come up. When I'm not working on Skagit Master I often get distracted by urgent conservation issues.

How did you come across the idea that sodium sulfite egg cures were harmful to juvenile fish?

Basically, I developed the idea while bait fishing on the Nestucca River with my dad. We would pitch out these bait offerings all day and as they would pause on the retrieve they would get absolutely marauded by fifty or a hundred little juvenile salmon. I knew that I was using serious chemicals to cure the eggs and I wondered if this feeding frenzy was having an effect on juvenile salmon.

Shortly after, I wrote the parameters for a study that ODFW eventually used and modified to test the effect of sodium sulfite egg cures on juvenile salmon. Essentially, this initial study looked at five different brands of sodium sulfite egg cures while also administering a non-sodium sulfite egg cure as a control. The result being that we would know if sodium sulfite affected the survival of these fish. At this point I had an idea that sodium sulfite might harm juveniles but I wasn't sure. I just knew that sodium sulfite was a pretty toxic chemical.

So, ODFW did a preliminary test, feeding 10-20 one year old rainbow trout one particular brand of sodium sulfite egg cure. Half the fish died within 10 days and most of those fish actually died within 3 days. The results of this preliminary study prompted the full study with ODFW and OSU. This study ran over a 21 week period looking at long term impacts and used salmon juveniles. In the end the study found that sodium sulfite egg cures greatly increased the mortality of young salmon. Still, I knew that without a peer review the OSU and ODFW conclusions would be largely dismissed.

When the peer review did coalesce with the conclusions of the OSU study it legitimized everything that we were doing.

What has ODFW decided to do about this?

Ultimately, ODFW and the OFW Commission has asked the bait cure industry to voluntarily regulate the concentration of sodium sulfite their bait cures to make sure it is below levels proven damaging to salmon. This requirement on all commercially sold sodium sulfite egg cures went into effect on October 1st 2011.

> If your claims are not legally supported it is much more difficult to create change. At that point you basically have a social issue and it's hard to change policy, especially for fish, on a social issue alone.

How did ODFW and the Commission arrive at this regulation?

Essentially, we had to pose the results of the scientific study as an "either-or situation", either regulate the sodium sulfite in egg cures or regulate the use of eggs as bait. I still wonder if anything would have happened if we hadn't petitioned the ODFW Commission to make a change to the regulations. I commend the Commission and the ODFW for their approach on this issue. They were proactive and change happened a lot faster than I thought it would. I'm really happy with the way the Commission worked with DEQ to find a solution to this problem.

Another thing I had working for me is that sodium sulfite is listed under the EPA's toxic registry. So, if you're a manufacturer using this product you are required by law to voluntarily report the amount that you are using in the products you sell. No one was reporting this in their sodium sulfite egg cures. No one was monitoring or enforcing the law regulating this toxin.

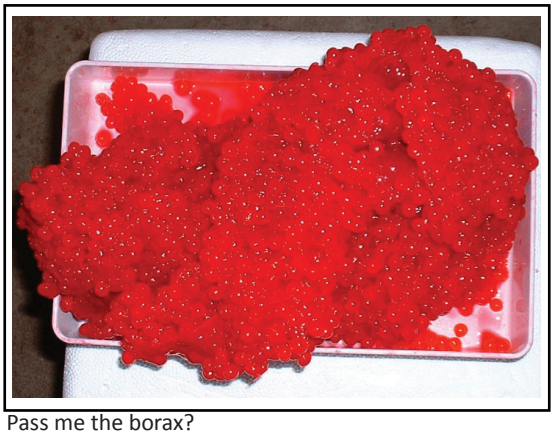
Continued on the next page...

A DEQ legal analyst considered this situation and came back with a clear statement acknowledging that the use of sodium sulfite egg cures and intentionally placing a known toxin in our rivers was technically illegal.

As a result of DEQ's position it was a lot easier to approach and engage ODFW on this issue. DEQ and ODFW began working together on a solution. If these agencies failed to find a solution, they would be allowing anglers to "technically" defy the Clean Water Act and Oregon's Clean Water Rules.

Establishing and working within this legal framework was an essential part in achieving this policy change. If your claims are not legally supported it is much more difficult to create change. At that point you basically have a social issue and it's hard to change policy, especially for fish, on a social issue alone.

Using the results of the OSU study, ODFW and DEQ created a regulation establishing a maximum concentration for sodium sulfite (10%) in commercially sold egg cures and cured eggs. The manufacturers must voluntarily comply with this limit and indicate this on their labeling or face increased regulations on the entire egg cure industry.



Pass me the borax?

Were you happy with the outcome of this process?

Yes, in the end I was happy with the regulation developed by ODFW and commend the agency and its Commission for their hard work. After all, my goal wasn't to limit the ways people can angle, but to limit the negative impacts from these practices.

Regulating, not banning, sodium sulfite in egg cures is what we needed. After all, sodium sulfites are in a lot of products, including many that humans consume, like wine. Taking the example of wine, the FDA regulates the concentration of sodium sulfites to ensure that the public health is protected. Together ODFW and DEQ developed a similar regulation for sodium sulfite egg cures to protect juvenile salmon. The one concern that I have is how ODFW will enforce this regulation. Will ODFW check up on these companies to make sure they are in compliance? The cost associated with analyzing the formulation of these cures is somewhat prohibitive and there are additional complications as each company's formulation is proprietary. Either way I think the regulation sends the right message: sodium sulfites need to be regulated in egg cures and if the industry can't voluntarily comply there will be increased regulations.

How do you think wild salmon and steelhead will benefit from this regulation change?

There is no way to quantify exactly how this regulation change will benefit wild fish. ODFW said that this was not a bottleneck issue; not a conservation issue where ESA listed fish were being significantly impacted. However, they don't have the science to back up that conclusion, nor do they have the resources to conduct the monitoring to see what happens after the regulation on sodium sulfite egg cures is in place. So quantitatively speaking we may never know how wild fish benefit.

But if you multiply the number of casts made by an angler in a day by the total number of anglers by their number of angling days, you can imagine the huge number of juveniles that were being impacted by sodium sulfite cured eggs. Even if these impacts are not quantified we know from the study that if sodium sulfite egg cures were being used there was a negative impact on juvenile salmon.

That's a good point. Have other states adopted a similar policy? And if not, are they considering Oregon's regulation?

No. No other states have a similar policy.

Fish conservation groups in Washington and WDFW have heard about this idea and looked into the study. I have presented this information to them. I know the issue is on the table but how seriously Washington is considering it I'm not sure.

Idaho is very hesitant to work on this issue. There is some real irony in this hesitancy as Idaho has many populations listed under the ESA that are regularly fished over with bait as they over summer in cold water refugia. In many instances you will have concentrated mixed stocks, ESA wild salmon and steelhead, hatchery salmon and steelhead, and juvenile wild salmon and steelhead getting fished over day after day with sodium sulfite cured eggs.

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KLICKITAT HATCHERY COMPLEX PROGRAM

SPENCER MILES, River Steward of Necannicum & Tillamook Bay Rivers

Fall on the Klickitat River, photograph by Bill McMillan

In July 2011, the Bonneville Power Administration in conjunction with the Yakima-Klickitat Fisheries Project (YKFP) and the Washington Department of Fish and Wildlife unveiled a proposal to drastically reshape hatchery practices on the Klickitat River. The proposal, which was written as a Draft Environmental Impact Statement (DEIS), was presented at a public open house on August 10th, and numerous wild fish advocates were present to learn more about the plan.

As written, the DEIS is very alarming, and would do little to reverse the decline of native fish in the Klickitat basin, but would instead introduce new threats to these already fragile populations. The Klickitat is home to native runs of spring Chinook, summer steelhead, and winter steelhead (one of only two winter steelhead populations east of the Cascades), and both runs of steelhead are listed as threatened under the Endangered Species Act. The river also receives non-native, hatchery reared fall Chinook and coho salmon, which were historically unable to ascend the river due to a natural passage barrier at Lyle Falls.

The Klickitat is currently planted with an astonishing number of hatchery fish - 600,000 spring Chinook, 120,000 summer steelhead, 3,500,000 coho and 4,000,000 fall Chinook - for a grand total of 8,220,000 million hatchery fish. Swinging small flies in the early summer, it's not uncommon to hook a hatchery salmon smolt on virtually every hang-down, and on a recent float on the upper river, I counted hundreds of non-native hatchery coho digging redds on the spawning gravel.

The new Klickitat proposal is being presented as a way to increase the abundance of native fish, and more specifically states:

- To comply with the Federal Columbia River Power System (FCRPS) Biological Opinion, which calls on the FCRPS Action Agencies to ensure that hatchery programs funded by them as mitigation for the FCRPS are not impeding recovery of listed anadromous fish.
- To aid in the conservation of mid-Columbia steelhead listed as threatened under the Endangered Species Act.

While these are laudable goals, the proposal fails to fulfill these objectives, and is primarily geared towards increasing harvest goals:

- Supports the Yakama Nation's exercise of its treaty fishing rights by rebuilding native steelhead and spring Chinook anadromous fish stocks in the Klickitat River Subbasin using artificial production methods that have been tested by the tribe and that are supported by hatchery reform recommendations.
- Is consistent with production and harvest objectives as specified in the 2008-2017 United States v. OregonFish Management Agreement.

The proposal seeks to construct a new coho and fall Chinook hatchery at Wahkiacus, upgrade the existing Klickitat hatchery, and establish a spring Chinook acclimation facility at McCreedy Creek in the upper basin. The Klickitat hatchery upgrades would allow for the existing steelhead and spring Chinook programs to be converted to native broodstock programs, a very concerning prospect. Summer steelhead production would increase from 120,000 to 200,000 smolts and spring Chinook from 600,000 to 800,000. Non-native fall Chinook would be kept at 4,000,000 smolts, and non-native coho would be reduced from 3,500,000 to 1,000,000, unless harvest goals cannot be met, in which case it would be ramped back up to 3,500,000.

Converting the existing steelhead and spring Chinook hatchery programs into native broodstock programs has no conservation merit. In order to seed the spring Chinook program with wild eggs, over 50% of the wild run would have to be harvested - a run which is already hanging on by a thread at approximately 200-300 fish.

Continued on the next page...

KLICKITAT HATCHERY COMPLEX PROGRAM CONTINUED...

Summer steelhead numbers are slightly better, at around 1,000 fish, yet these too would be harvested in order to support a broodstock hatchery program.

Reducing coho plants from 3,500,000 to 1,000,000 is certainly a step in the right direction, yet the YKFP reserves the right to return to the higher number if harvest objectives cannot be met.

Fortunately, the proposal has not been signed off upon, and during the recent public comment period, hundreds of wild fish advocates voiced their concern and opposition to the plan.

If the YKFP, WDFW and BPA are truly serious about stemming the decline of wild Chinook and steelhead, then a new plan is in order. Spring Chinook are simply unable to compete against 5.5 million hatchery salmon, and if this run of fish is to survive, hatchery salmon should not be allowed in the upper river. These coho and fall Chinook were historically unable to ascend Lyle Falls, and with the bulk of harvest already in the lower river, it makes sense to plant these fish below the falls and disallow passage.

Moreover, a steelhead broodstock program has no conservation merit, and may in fact violate the Endangered Species Act by forcing a "take" of wild fish in order to seed the hatchery.

It is my hope that the BPA takes the hundreds of pro-wild comments into account, and doesn't allow the proposal to move forward.

Q & A WITH JEFF MISHLER CONTINUED...

This is essentially a perfect storm for these threatened populations. I believe the impact on juvenile salmon in these instances could be very profound. Ultimately, I think the burden is on each state's fish and wildlife agency to look at the data from the OSU study and consider with new eyes if a regulation like Oregon's would aid ESA listed stocks.

Agreed. I hope our readers in Washington and Idaho engage their fish and wildlife agencies about the impact of sodium sulfite egg cures. To shift gears, I have to ask, these issues are complicated; if you're not a fish biologist what made you effective?

I try to stay emotionally detached. It's very difficult to be pragmatic if you're emotionally involved in the issue. Every citizen has a voice and if that voice is supported by the law and you express that voice to the person in power who can initiate change it won't be very long until other people who feel the same jump in to help with your cause. We have three tools as citizens: education and outreach broadens our base of support, lobbying at the legislative level can help agencies see the light, and litigation is the third way. This third way can ultimately get things done, when nothing else works. It forces agencies to stop their daily routine and take notice. If the threat of litigation is looming and you have the clear science and the law on your side it is much easier to make those contacts and connections and be successful.

What recommendations do you have for other angler advocates who want to help conserve wild salmon and steelhead?

Do not spend time spinning your wheels on social issues and make sure what you're going after is rooted in a legal reality. Make sure you have the law on your side. There are certain social realities that are too controversial and the amount of time and energy put into them just isn't worth the pay off. A citizen's petition presented to an agency noting intent to sue or supporting a regulation change supported by law will get a lot more bang for your buck.

SNIDER CREEK HATCHERY & SOL DUC STEEL

A WILD STEELHEAD GENE BANK ON THE OLYMPIC PENINSULA

MARK SHERWOOD, NFS River Steward Coordinator

In June 2011, WDFW sought a second round of comments on the future of the guide run Snider Creek hatchery on the Sol Duc River. Wild Steelhead Coalition partnered with Native Fish Society to create an action alert to compliment a formal commentary assembled by Dick Burge and John McMillan. This collaboration and your 300 petitions gave WDFW the support to not only end the Snider Creek Hatchery, but recommend that the Sol Duc become a Wild Steelhead Management Area or Gene Bank for wild, native steelhead by 2014.

This decision will make the Sol Duc the only large river on the Olympic Peninsula to be managed entirely for wild, native steelhead. This decision was one of many possible alternatives posed by the agency following their review of the Snider Creek facility. With the Sol Duc managed for wild, native steelhead WDFW is protecting one of Washington's largest and most productive runs of wild winter steelhead from the litany of negative effects resulting from interactions with hatchery fish.

Gene Bank Background

Essentially, a Wild Steelhead Management Area (WSMA) or Gene bank is designed to benefit wild steelhead by minimizing the number of competing hatchery-produced fish on the spawning grounds. These substantial sub-basins will not be planted with hatchery fish and are chosen based on factors including current health of wild runs, intact habitat and angling pressure and access. Creating these WSMAs is part of recommended actions compiled by the federally appointed Hatchery Scientific Research Group during their 2004 review of Washington hatchery facilities. In 2008, WDFW incorporated the WSMA strategy into their Statewide Steelhead Management Plan. However, until recently little has changed in the state's steelhead hatchery practices.

Wild Brood not so Good

The Snider Creek hatchery originated 25 years ago as a partnership between WDFW and the Olympic Peninsula Guide Association. The goal was to create an additional supplement to the native run by annually harvesting 50 – 100 wild steelhead and utilizing their eggs and milt for a wild brood program. Wild steelhead broodstock programs operate under the assumption that hatchery raised steelhead from wild genes result in fish identical to those spawned in the gravel.

Scientific analysis of wild brood programs on the Hood, Deschutes, and Sheep Creek indicate that no benefit is generated for wild fish by running them through the hatchery system. Instead, these wild brood fish, in as early as in one generation, develop traits that favor survival in the artificial environment but impair future survival in the actual river and ocean conditions. As a result, even juvenile steelhead apparently identical to their wild counterparts are quantitatively less likely to return as adults than their wild counterparts.

The Snider Creek hatchery wild brood program was no exception. Sol Duc wild steelhead typically require two years or more to grow to smolt size in the rugged rivers of the Olympic Peninsula. The majority of these wild fish spend an additional two years in the marine environment before returning to spawn.

Sol Duc River: Future Fort Knox of Olympic Peninsula wild steelhead.

In the Snider Creek hatchery, however, only a small portion of the fish released after one year of rearing were ready to go to sea. As a result, many of the fry did not smolt and outmigrate but stayed in the river and competed with wild fry. In general, these residualized juveniles were poorly adapted for river survival and most probably succumbed to the rigors of river life before reaching an outmigrating size the following spring.

Taken collectively, the impacts of the Snider Creek hatchery facility resulted in a significant level of competition between hatchery residualized fry and natural wild juveniles.

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Like other wild broodstock programs before it, the Snider Creek facility did not achieve any benefits for wild fish by using a wild stock in the hatchery, and only modestly increased the success of their hatchery program at the expense of fewer wild steelhead.

Again, the conclusion born out of 150 years of hatchery propagation is that salmonids are most abundant and productive when we leave wild stocks in free flowing rivers, do not rely upon hatchery production, ensure adequate flows and prevent habitat degradation before it starts. While we have been successful in growing hatchery salmon and steelhead, we have not constructed a mechanism that prepares these fish for river survival as well as their natal streams.

The Result?

As a result of the closure of the Snider Creek Hatchery wild fish will have an entire watershed on the Olympic Peninsula in which to become abundant. The Quillayute system (including the Sol Duc, Bochewagel and Calwaha) has seen a decline in the average number of wild steelhead from 17,600 in the 1950s to 10,700 in recent years. This decline has been noted especially in the early component of the winter run. According to historical record this early component comprised at least half of the historic winter run. Hatcheries selected for early returning steelhead which combined with wild fish. During these sport fishery seasons harvest was allowed on both wild and hatchery fish, causing the further decline of the early run. Without question, setting aside the Sol Duc to recover historic numbers of wild winter steelhead is a great victory for one of the most treasured rivers on the Olympic Peninsula.

Thank you WDFW, NFS members

In the next year the WDFW commission will review the staff recommendation to close the Snider Creek Hatchery and designate the Sol Duc a WSMA for 2014. Native Fish Society thanks the WDFW staff for their strong support of wild fish and beginning the hard work to implement the hatchery recommendations of the Statewide Steelhead Management Plan on the Olympic Peninsula.

We also thank you, NFS members, for your strong support and 300 petitions to WDFW. Without the support of the public, our agencies face even greater difficulties in their future work to conserve wild salmon and steelhead and utilize the best available science. These landmark decisions will always be challenged by the staying power of the status quo. It is critical that you continue to use your voice for wild fish.

The Native Fish Society is committed to partnering with likeminded organizations across the Pacific Northwest to leverage your voice to make sure the future is full of wild fish. Thank you for your support and keep your eyes open for an Action Alert thanking WDFW staff and commission for making the Sol Duc the first wild steelhead management area on the Olympic Peninsula.

References

Snider Creek Hatchery Steelhead Comments by Dick Burge and John McMillan http://nativefishsociety.org/conservation/history_and_solutions/special_contributions/historical/NativeBroodstock.htm

Native Brood Stock Hatcheries are not a Solution for the Recovery and Protection of Wild Salmon and Steelhead http://nativefishsociety.org/conservation/history_and_solutions/special_contributions/historical/NativeBroodstock.htm

A wild Sol Duc buck: certianly worth banking on. Photograph by Will Atlas.

ANALOGS OR WILD SPAWNERS?

BILL BAKKE, NFS Executive Director + MARK SCHMIDT, Molalla River Steward

Mark Schmidt is the Native Fish Society River Steward on the Molalla River, a tributary of the upper Willamette River, Oregon. Since 2006 Mark has been performing an important service to the river and its salmon and steelhead. He has placed tons of hatchery fish carcasses into the upper watershed and tributaries to enrich the productivity of those streams for rearing of juvenile salmon, steelhead and trout. When a disease broke out at the hatchery his source of salmon carcasses dried up, and the Oregon Department of Fish and Wildlife made the critically important decision to not allow the transfer of those hatchery fish carcasses into the Molalla River. This caused Mark to look for another source of nutrients to help increase the productivity of the upper Molalla River. He made contact with two commercial producers of analogs which are a rendered nutrient pellet used for fertilizing streams that lack enough natural spawners to do the job. I asked Mark to determine the cost of distributing hatchery salmon carcasses and compare that cost to the purchase of manufactured nutrient pellets or analogs. We wanted to compare the cost between the two sources of nutrients and we wanted to determine the impact of both forms of nutrient enrichment to natural spawners.

Relative cost of nutrient sources

Using hatchery salmon carcasses for nutrient enrichment on the Molalla River cost $1.20 per carcass.

By replacing hatchery salmon carcasses with analogs the cost per carcass is $14.80.

The nutrient enrichment target is about 200 carcasses per mile of stream. It would cost $240 with hatchery spawner carcasses and $2,960 using analogs.

Relative benefits of naturally spawning salmonids

Natural spawners would have zero cost and provide ecological benefits such as gravel cleaning as they spawn. The carcasses from natural spawners would be placed in the area where juvenile salmon rear, provide seasonal food to wildlife, and fertilize riparian vegetation along streams. In addition, the salmon carcasses provide eggs which serve as a source of fat rich food to juveniles, improving their physical condition and survival as they enter the stress of winter rearing. These benefits cannot be supplied by analogs and hatchery carcasses.

When hatchery spawners have disease they cannot be moved among streams. For example, hatchery salmon carcasses come from the Clackamas River Hatchery are diseased and cannot be used for nutrient enrichment in the Molalla River. Consequently, the nutrient enrichment program is forced into using analogs.

Fishery Management and Spawner Abundance

Spawner abundance is what a stream gets after harvest. The state fishery managers use a mechanistic model called Maximum Sustained Yield to manage fisheries. Its purpose is to maximize harvest (kill) while justifying the benefits of low spawner abundance. It is hypothesized that with few spawners there is higher smolt production because there is less competition for available habitat and food. Of course this practice ignores nutrient enrichment of streams from spawners, biological diversity, the impact of environmental fluctuation on survival, and selection for genetic diversity among other benefits.

The National Research Council (1996) has this to say about spawner management by the states: "…a shift must be made from focusing on catch to focusing on escapement. Salmon managers should be required to provide evidence that a population is healthy enough to allow a fishery rather than having to prove the populations may be jeopardized by overfishing before curtailing fishing. Optimal escapements are numbers that not only perpetuate the population and ensure biodiversity, but also provide enough carcasses to maximize the carrying capacity potential of the system."

E. Eric Knudsen et al. (2000) said, "Both productivity and biodiversity depend on sufficient escapement of spawners to fully utilize the available freshwater habitat, fertilize the systems with carcasses, and optimize genetic diversity. Increasing escapements of depleted populations and maintaining adequate escapements of healthy populations are the quickest ways to realize conservation goals and should be the ultimate goal of fishery managers trying to achieve sustainability. It is preferable that escapement goals be established for individual populations. Managers must understand how many populations occur within a management unit, the natural productivity of each population, and how fisheries are influencing their productivity and viability."

Continued on the next page ...

He says, the management agencies ought to "Identify and achieve safe escapement levels – As recommended by NRC (1996), the concept of MSY should be replaced with minimum sustainable escapements (MSE) for as many populations as possible. Rather than selecting a specific escapement goal, about which target escapements fluctuate, as has been done in the past, the MSE is an escapement level which should always be met. Most importantly, escapements should range well above the MSE. This will enhance productivity and biodiversity by allowing for years in which so-called excess escapement builds resiliency into the system, supplies abundant carcasses (nutrients), and allows for sufficient escapements of any smaller, weaker populations within the management unit. Further work will be required to estimate how much escapements should range above MSE."

Roderick Haig-Brown (1974) said, "Effective salmon management involves the precise relation of catch to spawning escapement in each part of every river system."

Even earlier Willis Rich (1948) concluded that salmon return to their rivers of birth and he initiated the Home Stream Theory of salmon management. He said, "The importance of the fact that the salmon and steelhead return as adults to their home streams and tributaries is obvious; it is essential that each independent, self-perpetuating population of fish be preserved if depletion is to be avoided."

Gresh and others (2000) published a study on the nutrients from natural spawners. "We have estimated the historic biomass of salmon returning to the Pacific Northwest (Washington, Oregon, Idaho, and California) to be 160–226 million kg. (353 million pounds to 498 million pounds or 176,500 tons to 249,000 tons) The number of fish now returning to these rivers has a biomass of 11.8–13.7 million kg. (26 million pounds to 30.2 million pounds or 13,000 tons to 15,100 tons) These numbers indicate that just 6–7% of the marine-derived nitrogen and phosphorous once delivered to the rivers of the Pacific Northwest is currently reaching those streams. This nutrient deficit may be one indication of ecosystem failure that has contributed to the downward spiral of salmonid abundance and diversity in general, further diminishing the possibility of salmon population recovery to self-sustaining levels."

To replace the historic nutrient contribution of naturally spawning salmon with analogs would cost over $737 million annually.

Over 63 years ago scientific research determined that the proper management of salmon and steelhead is to recognize that each stream has locally adapted populations, and in order to maintain them, their health and productivity must be the purpose of management. Yet fishery managers have decided to abandon spawner abundance and their ecological benefit to the river, a logical conclusion when the fishery is managed for hatchery fish. Streams are not managed to achieve a target number of spawners, and we now rely on hatchery technology and tmanufacturing of nutrient analogs to replace natural spawners.

References

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Comments

Jim Lichatowich
Here are my concerns:
It treats rivers as though they were just hatchery ponds. Once again we are interfering in a natural, ecological process without fully understanding what it is we are tinkering with. There are at least 137 animals that feed on salmon carcasses. Will they eat the pellets? Those animals will be cut out to the feast that natural salmon runs once supplied to the aquatic and terrestrial ecosystems. It is not consistent with an ecosystem approach to stream restoration or management.If the dose of pellets is not carefully controlled it can over fertilize the river creating suffocating algal mats. This has occurred in other places. The negative and positive effects of the program will probably not be monitored.
Another attempt to industrialize salmon production.

Bill McMillan
Excellent reminder regarding what pellets do not provide to other animals that were part of salmon driven ecosystems.

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WILD FISH ARE THE FUTURE!

Below: Sevenmile Creek in October

RIVER STEWARDS

Will Atlas, North Puget Sound
Bill Bakke, Columbia
Scott Baumer, Hood, 15 Mile
Rob Bowler, N. Umpqua
John Bracke, Nestucca
Dick Bushnell, Salmon
Tom Davis, Upper Deschutes
Tom Derry, Molalla
Peter Donahower, Columbia Gorge Streams
Pat Dunham, John Day
Paul Engelmeyer, Mid Oregon Coast
Ian Fergusson, Salmonberry
David Gee, Hood
Will Govin, Tryon & Johnson Creeks
Conrad Gowell, Drift Creek
Chris Johnson, Nooksack
Jeff Hickman, Clackamas
John Larison, Siletz
Jena Lemke, Tualatin
Matt Lund, Drift Creek
John McConnaughey, Washougal
Matt McQueen, Klickitat
Michael Mathis, Snake River Lower Hell's Canyon
Ed Megill, Skagit
Spencer Miles, Nestucca, Tillamook Bay Rivers
Ed Miranda, Wood, Williamson & 7 Mile Creek
David Moryc, Sandy
Jim Myron, Crooked
Scott Nelson, Calapooia
Chip O'Brien, Pudding
Stan Petrowski, S. Umpqua
Mark Schmidt, Molalla
Marty Sheppard, Sandy
Mia Sheppard, John Day
Joyce Sherman, Salmonberry
Rick Snyder, Grande Ronde
Rob Sims, Lower Deschutes
Matt Standsberry, McKenzie
Keith Stonebraker, Clearwater
James Thurber, S. Oregon Coast, Lower Umpqua
Peter Tronquet, Rogue, Umpqua & Illinois
Walt Weber, Lower Columbia Tributaries
Cullen Whisenhunt, N. Santiam

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