SSCP Review -2012

Provincial conclusions regarding the past five years of SSCP implementation in terms of meeting its objectives and considering what changes may have occurred in the interim:

- The Province believes that the objectives are still relevant and a priority for the management of steelhead in BC.
- The Fisheries Program has successfully implemented non-retention fisheries for all wild stocks, while maintaining limited harvest opportunities using hatchery production where risk to wild stocks is thought to be low.
- The Province has not been as successful in classifying all streams as wild or hatchery-augmented with supporting management prescriptions, or establishing specific criteria to evaluate risk of ongoing or proposed hatchery initiatives.
- The Living Gene Bank program, the only experimental rebuilding initiative, has been terminated since the inception of the SSCP; the failure of this initiative should be considered along with more recent findings from US studies in better clarifying a Ministry position on hatchery use.
- Finally, the abundance-based framework identified in the policy has not been implemented broadly because of the challenge in establishing reference points as described in the original methodology.
- Regardless, we also believe that the policy provides a strong foundation upon which to develop a more comprehensive Provincial Steelhead Management Plan.
- Therefore, at this time we do not intend to alter the current version of the SSCP. Instead, we intend to incorporate its basic tenets into the management plan.
- The plan will expand upon the objectives outlined in the SSCP and provide a more thorough rationale for management decisions. The number and diversity of steelhead stocks and potential management combinations associated with each is very large – to undertake individual stock assessment and monitoring initiatives and develop individual prescriptions for every steelhead stock is impossible. Rather, the plan will be supported by a set of strategies and framework to provide clarity and consistency with regards to management decisions for steelhead stocks across the province. At the same time, this plan will provide the flexibility to tailor specific suites of management tools to suit the particular characteristics of each stock. In addition, the plan can be broader in scope than the SSCP and consider additional priority factors influencing abundance and availability of angling opportunities (e.g. interception of various commercial and FN fisheries).

Summary of feedback from SSCP review process in June-July 2012:

(1) Numbers of responses

	Region of interest								Comments (Sue's)
Correspondence format	**2**	**3**	**5**	**6**	**1, 6**	**BC**	**Not specific**	**Grand Total**	
email				2	1	1	1	5	
letter	2	3	1	10		2	2	20	Letter writing campaign originating in R6 – mostly identical letters with identical positions on hatcheries and retention
sthd staff						3	1	3	Biologists' responses
Website		1		2			7	10	Engagement Website
Grand Total	**2**	**4**	**1**	**14**	**1**	**6**	**11**	**38**	

(2) Support of policy?

	Support current policy?
?	3
mixed	3
no	22
yes	9
yes/no	1
Grand Total	**38**

(3) Hatchery support?

	Support hatcheries?
?	8
as stated in policy	4
assume as stated in policy	2
n/a	1
no - deleterious, point to Kitimat SHA and US as negative impacts	2
not clear - want better assessment to evaulate hatchery augmentationi	1
want hatchery augmentation on Thompson	1
yes	9
yes - especially where wild populations have suffered habitat damage to provide angling opportunities	1
yes - for community benefits especially for systems impacted by urbanization etc.	1
yes - for community involvement and to recruit/retain new anglers	1
yes - for rebuilding Thompson specifically	1
yes - for small community based projects to provide angling opportunities	1
yes - point to Vedder and Kitimat as success stories	1
yes - recognize social and economic benefits, e.g. Kloyia River	2
yes - to promote angling and economic benefits and where wild production decimated, huge public support	2
Grand Total	**38**

(4) Retention support?

	Count of support retention?
?	6
as stated in policy	3
assume as stated in policy	2
no	2
no - need to be precautionary in light of present/future threats	1
no - not productive enough in Skeena	1
no - not productive enough, difficult to argue for further restrictions with FN and commercial	2
yes	3
yes - in RMZ	9
yes - in RMZ for resident angler priority	2
yes - in RMZ for RESIDENTS ONLY	1
yes - in RMZ, family/resident interests	1
yes - when abundance permits	1
yes - where abundance data permits	1
yes - where abundance permits	2
yes in RMZ for resident angler priority	1
Grand Total	**38**

(5) Is policy meeting objectives?

	policy achieving objectives
n/a	30
no	1
no - failing in recovery planning, interception issues, reporting out to public, implementation of policy e.g. Classification	1
no - not in south but recognize beyond SSCP, recovery not implemented, no audit on progress	1
yes	1
yes - in general but room for improvement esp implementation of classification, esp switching back from augmented to wild	1
Grand Total	**35**

(6) Alternatives to consider?

	alternatives
?	1
habitat capacity consideration needed esp. wrt historic, opportunity for angling public input not identified, gear effectiveness as tool for minimizing steelhead encounters and managing demand missing	1
n/a	29
recovery planning should become part of SSCP not external (e.g. SARA) with auditing; acknowledgement of historic habitat capacity compared to present essential - where have we been; diminished expectations concern of society - prime objective of policy should be a return to historic wild abundance, and where possible we should acknowledge historic wild abundance/capacity/production; need to acknowledge angler effectiveness associated with different gear types and vary according to historic abundance to minimize encounters	1
YES - small community fisheries are important, hatcheries are key	1
yes - tackle restrictions implemented more for reducing catchability, more fly fishing, wording changes necessary	1
yes - total bait ban, total C&R in wild systems, better habitat protection in spawning areas (Brohm, Spius, Bonaparte, etc.), open more waters currently closed with more stringent gear types, to spread out effort	1
Grand Total	**35**

(7) Anything changed over past 5 years?

	anything changed over past 5 years
?	1
consideration of IPPs, response to climate variability	1
information stream with social media-word spreads fast regarding fisheries - closed till open not good, as word spreads, bait increase with more anglers...more mortality	1
Interior Fraser stocks have been re-evaluated in terms of capacity; Zone definitions do not accurately portray the seriousness of current status based on capacity; need to standardize habitat capacity across BC	1
n/a	29
reflect negative results of LGB experience, a need to review and standardize how capacity is estimated, wild steelhead habitat loss, changes to Fisheries Act	1
YES, Thompson management approach with 2011 opening is just one example, takes issue with us stating nothing has changed significantly, Nicola low water levels, hi temps	1
Grand Total	**35**

Stakeholder feedback summary for Steelhead Stream Classification Policy

Key messages and points of clarity needed:

Hatchery related:

- Support for hatchery use in steelhead management varied greatly across and within regions, among stakeholders and public. It was clear, however, that we currently lack clarity on a number of issues that an updated management policy piece should incorporate
- Clearly some stakeholders confuse the terms 'recovery' with 'fish available for harvest' – e.g. recognition that habitat in Thompson may never allow stocks to return to historic levels, thus only option to 'recover' stocks is hatchery support – this is not recovery
- We should explain why small local hatcheries are not the answer, especially for recovery – esp. on Thompson, or for providing harvest benefits in the Skeena; even if they are mostly supported by community volunteerism
- Also we need to determine our position where 'non-viable' or much reduced populations due to habitat impacts could be augmented to provide angling opportunities
- While hatcheries may be supported by public where they're operated, this is no justification for maintaining them.
- Make sure it's clear why Chilliwack supports so much fishing. Not just because it is augmented
- Policy should be updated to reflect results of LGB program
- There seems to be a consistent misunderstanding that the current policy does not allow for augmentation; that is not what the policy says

Retention:

- Support for non-retention fisheries varied greatly within and among regions respondents.
- Repeated emphasis on resident priority/only for retention, and how we are moving away from the North American Model of Wildlife Conservation by BCWF folks. We might want to refer to this model with some sort of statement about its shortfalls - should be clear that while this model is supported by 7 fine principles regarding sustainable resource use, is in itself inadequate basis for conservation – it is very narrowly focussed on the resource value to humans excludes a more holistic concept of ecological function and value for their own sake. Residency issue might be worth getting some legal advice on – different definitions – not clear if they mean 'local residents' or 'BC residents', etc.
- Resident priority is a thorny issue – but resident-only harvest is a no-go – might be worth pursuing legally? We have provided for resident priority in AMPs.
- Local angler versus local business – those in support of resident priority appear to forget that there are also significant local community benefits to bringing non-resident anglers in.
- We need to 'advertise' more that we do provide harvest opportunities for hatchery fish in the 3 key steelhead regions in BC. Some letters suggested that there are currently no retention options in BC.
- Some factions claim they don't believe in catch and release only fisheries.

- It is not clear how broad the desire to harvest wild fish really is – most requests have come from Region 6 as part of a BCWF member letter writing campaign. Alternative views suggest this desire is far less representative than they claim.
- Issue of harvestable surplus on Skeena – compared to US – productivity – again, we should be very clear that abundance is not equal to productive. Historic estimates of US >>> than entire Skeena
- Two indicated that it is imprudent to sanction a kill fishery when trying to work with FN and commercial fishermen. Agreed!
- We should consider responding to the fact that the drop in SHA angler days in Skeena is NOT because of C&R (See Smith, also), consider Kitimat drop where there is a retention fishery.
- BCWF claims inadequate resourcing for monitoring and assessment is the reason retention is prohibited; maybe we need to emphasize that even with all the $ in the world, many of the systems of interest (not the aggregate Skeena but individual systems) can simply not be assessed with adequate accuracy – it's what we say to DFO, we'd better be saying the same thing for our own fisheries!

<u>Abundance-based approach:</u>

- In different ways, folks have referred to historic times, abundance levels, and allowable retention – we need to be clear that not only are we no longer experiencing conditions of those days for various reasons (climate change, industry, urbanization, over-harvest, etc.), we cannot expect to see abundance return to those levels. It's simply not realistic – thus we shouldn't be using these as our targets. But this also doesn't mean we should simply roll over and accept the situation. We should acknowledge historic abundance/habitat capacity but then explain why these are not realistic targets and therefore harvest level s of historic times are also not realistic.
- Recommendation from a few to report on historic versus current carrying capacity – put it into context especially when talking about fully seeding habitat
- Misunderstanding about the 'health' of Skeena steelhead – relative abundance at Tyee is seen to be the measure, not an inaccurate index at best. The concept of productivity is lost.
- We need to explain better the shifting conditions for the Thompson, how that enabled a fishery to be opened.
- Need to rationalize why we believe management zones are even valid anymore given what we did on Thompson (went from ECC to CC/RMZ???)
- Should mention challenges of habitat loss (IPPs, new FA)
- Implementation of recovery should be part of 'policy'
- Repeated concern about releasing 'strong bleeders' – waste of resource
- Repeated emphasis that there is no support in SSCP to provide harvest for resident anglers

<u>Regulation proposals:</u>

- Preference is to have tightly restricted fisheries on rivers, instead of closures.
- Desire to see more tackle restrictions to provide conservation

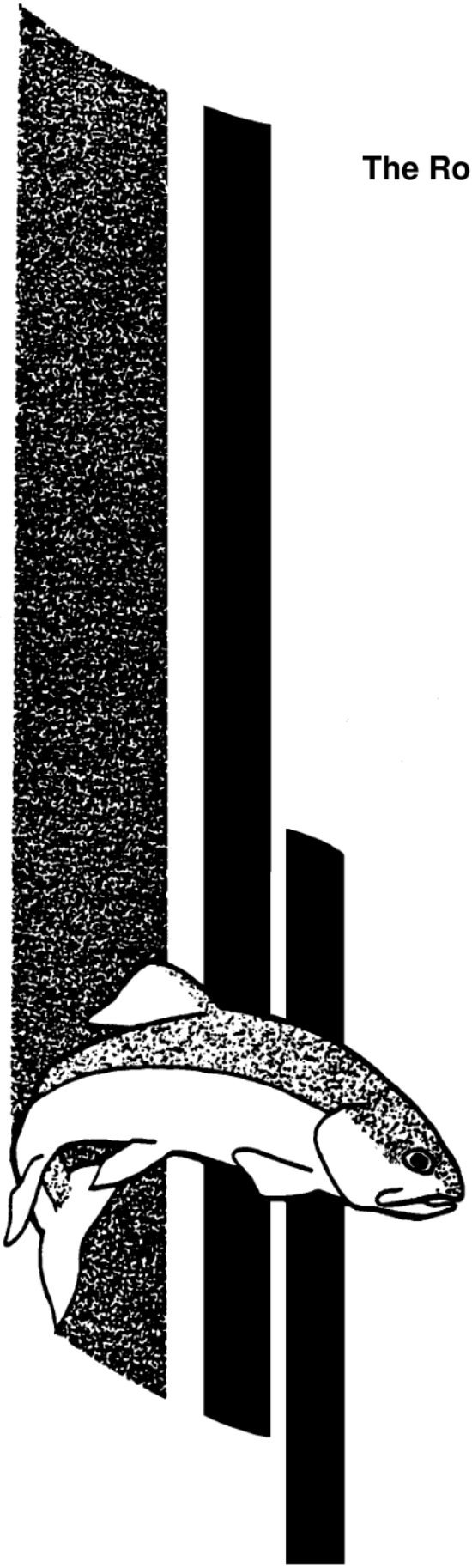
- Need better consistency across BC with respect to gear type effectiveness and minimizing encounters/managing angler demand – recognize the increasing effectiveness of anglers dues to increased mobility, angling technology, social media in the face of mostly static/declining stocks
- More fly-only, but even more restrictive than this
- Desire for open till closed fisheries to avoid 'snap openings' like Thompson
- How can we support bait in C&R fisheries? Total bait ban on C&R for wild desirable.
- Open closed sections with tighter gear regs
- Inconsistency between Thompson and Coquihalla (fly only) – need to get consistent

Interception:

- Want a policy that builds a stronger case for selective fisheries
- Economic value (esp tourist industry) remains unrecognized especially for northern BC – killing steelhead does not contribute to this value; will only diminish through reputation and opportunity

Other:

- Opportunity for angling public input needed to be stated
- We may want to reconsider 'simplify management' statements – maybe to 'clarify management'
- Much criticism regarding lack of 'implementation' of classification – we could go a long way by simply formalizing a schedule of 'augmented' systems with allowable harvest, with clearly stated metrics/criteria for designation. And how does a designation back to wild occur?
- Desire to increase opportunities has been voiced – we should include this in a ministry response
- Repeated claim that the lack of retention opportunities has led to a substantial decline in local participation
- BCWF claim harvesting from natural environment is the very foundation of hunting and angling culture and opportunities – ID'd in legislation (BILL M 204 0 2002 Hunting and Fishing Heritage Act) but not steelhead regulations --- I don't agree that our regs are inconsistent with the Act – nowhere does it speak to harvest associated with fishing; unless fishing has been explicitly defined to have harvest included (there isn't one here or in Wildlife Act), U don't see how we contravene this



The Roll of Hatcheries in Steelhead Management for British Columbia - A Summary and Recommendations

by

Sue Pollard

Fisheries Management Report No. FMR 125

2013

BRITISH COLUMBIA

Province of British Columbia

Ministry of Environment

Ecosystems Branch, Conservation Science Section

Victoria, British Columbia

The role of hatcheries in steelhead management for B.C. – Summary and Recommendations - S. Pollard (revised April 2013)

Introduction

The concept of steelhead enhancement using hatcheries in B.C. is not new. The earliest hatchery initiatives go back to the early 1900s when fish were raised at Fraser Valley Hatchery for release into the Cowichan River in 1902. The federal Salmon Enhancement Program, initiated in 1977 as a way to provide more harvestable salmon, also represented the dawning of major steelhead hatchery initiatives as compensation for incidental catch of wild fish in salmon fisheries. Throughout the 1980s and 1990s, up to 70 or more steelhead streams were stocked (Figure 1). Since this time, stocking has been significantly curtailed, and currently only 16 stocks are augmented annually, all for the purposes of providing retention fisheries, and none for conservation purposes. Termination of programs has been due largely to the inability to obtain enough broodstock to meet production targets, concerns for impacts on wild populations, or the lack of observable benefits to the fishery or natural production. Nonetheless, the Fisheries Program continues to receive requests to increase steelhead hatchery programs. Therefore, a review of the current state of the science may be helpful.

What is the role of hatcheries in steelhead management in B.C.? Objectives for hatchery use in B.C. may have been poorly articulated in the past; even more poorly defined have been performance measures to determine success in meeting these objectives. Artificial fish culture has been proposed in the past as a way to simultaneously address conservation concerns and the lack or decline of sport fisheries. What may not be clear is the fact that a conservation-based objective (i.e. referred to as "hatchery supplementation") is very different from one aimed at sport fisheries enhancement (i.e. referred to as "hatchery augmentation"). So too is the likelihood of success associated with each, at least based on the history of hatchery use to date, based on recent science. In supplementation initiatives, the intent is to increase natural production using the hatchery component to temporarily 'boost' the spawning population. In augmentation initiatives, the sole intent is to provide additional fish to the fishery; there is no intent for the hatchery component to contribution to natural production.

A review of recent science developments on this matter (Ward 2006, 2011) provided an overview of potential genetic and ecological risks associated with the use of hatcheries in salmonid management,

and a summary of the Pacific Northwest hatchery experiences, including B.C.'s Living Gene Bank Program (which was part of the Georgia Basin Steelhead Recovery initiative (Lil 2002)). A number of scenarios were considered, and several recommendations were provided. Thus, the purpose of this document is to focus on the role of hatcheries in the two main areas of steelhead management for B.C., provision of a diversity of recreational opportunities and conservation of wild stocks. It is intended to provide guidance to decision makers based on consideration of benefits and risks.

(1) Augmentation of fishing opportunities – When should we use hatcheries to support retention fisheries?

There is no doubt that hatchery augmentation can and does provide substantial numbers of returning adults for harvest opportunities under certain circumstances. If the only management objective was to provide hatchery adults for harvest (i.e., with no consideration of wild stock management and conservation), then the key consideration would be the cost of the program versus return on investment (e.g., number of additional angler days produced). However, current steelhead management policy in BC places the highest priority on conservation of wild stocks. Therefore, hatchery augmentation must consider not only return on investment but also impacts to wild steelhead stocks. The evidence from studies in the nearby U.S. states clearly indicates that allowing significant numbers of hatchery fish to spawn in the wild reduces natural productivity (e.g. Chilcote et al. 2011). Furthermore, work by Chilcote et al. (2011) suggested that for programs in place primarily to provide fisheries, integrated programs fared no better than segregated programs if hatchery fish spawn in the wild. Finally, augmented systems will often attract more anglers; this can result in a mixed stock fishery situation where additional fishing pressure occurs not only on hatchery fish but also on the wild component. Thus, any augmentation program should ensure that the donor stock to be augmented is productive enough to withstand the impacts from naturally spawning hatchery fish and the removal of wild spawners, as well as additional angling related impacts (i.e. handling and related mortality). A slight variation on the augmentation of existing stocks is the situation where hatchery fish are stocked into a system that no longer or never did support a wild stock. Clearly, the receiving stock is not a concern but broader straying concerns with neighbouring stocks still exist.

B.C. steelhead hatchery practices – B.C. steelhead hatchery programs have mainly been in place to provide retention fisheries. Although direct efforts to prevent hatchery fish from spawning have not

been made, these programs implement practices consistent with some recommendations from various hatchery reform reviews to minimize risks to wild stocks (summarized in Ward 2011). These practices include:

- marking of all hatchery fish with an adipose fin clip and are harvestable;
- use of only wild broodstock;
- random selection of wild brood;
- maximum 1:1 hatchery:wild ratio in catches; and,
- release of smolts low in the river system.

Recent molecular genetic analyses evaluating changes in genetic diversity in several long-term hatchery augmentation programs (Kitimat, Chilliwack, Chehalis, Alouette, Capilano, and Seymour rivers) suggest that hatchery practices have not altered the genetic structure of the wild population component in any case. These results, however, could also be interpreted to say that the wild populations were sufficiently large and productive enough to absorb any hatchery impacts and/or that numbers of hatchery adult returns spawning in the wild and contributing to the next generation were too insignificant to result in any measurable change (Gow et al. 2011, Heggenes et al. 2006). The results say nothing about impacts to adaptive variation[1] or the ecology of the wild population. These results and associated uncertainty emphasize the need to ensure that all augmentation programs be operated only for wild stocks in the routine management zone (i.e. with no immediate conservation concerns, from Johnston et al. 2002) where recruitment (marine and freshwater) is sufficient to ensure (a) that there is actually a sufficient supply of broodstock fish, and, more importantly, (b) that any negative impacts associated with hatchery-origin spawners do not jeopardize wild stock status.

Experience with creating opportunities where no wild population exists – There are numerous examples in the U.S. where hatchery programs have been established as compensation for the loss of wild stocks associated with elimination of habitat access (e.g., Columbia River and associated dams). These programs have been successful in establishing large numbers of returning adults. However, these programs come at a significant cost. Monetarily, the maintenance of these programs requires significant infrastructure and ongoing resources—the fishery is largely dependent on ongoing hatchery releases and ongoing initiatives to get fish past dams. From an ecological perspective, these programs are

[1] *Adaptive variation* is characterized by genetic based differences in response to selective factors in the environment.

compensation rather than 'augmentation'. Such compensation-type programs have not occurred on a similar scale in B.C. for steelhead, but the Stave River is one example where the steelhead population has been similarly eliminated by hydro operations and a hatchery-release schedule put in place to provide angling opportunities. This program is considered moderately successful in achieving its goal. However, this is not necessarily representative of other systems with (near-) extirpated wild stocks that have been augmented with hatchery fish. For example, efforts to provide a fishery via augmentation on both the Puntledge and the Campbell rivers failed to generate an increase in returning adults, as a result, the hatchery programs were terminated (M. McCulloch, pers. comm.).

Conclusion and recommendations:

Benefits in terms of providing a retention fishery can be derived from hatchery augmentation under certain conditions. Given that (1) there is limited potential to prevent hatchery adults from reaching the spawning grounds in B.C. and (2) the majority of angled hatchery fish are released (based on 2011 Steelhead Harvest Survey results) and 2010 Survey of Recreational Fishing in Canada, at most 32% are kept regardless of residency status of the angler (Fisheries and Oceans Canada 2012)), we must assume that a significant number have the potential to spawn. It is therefore recommended that:

1) Any consideration of further hatchery development should weigh the ecological, genetic, and economic benefits and costs carefully. Structured decision models that enable consideration of objectives in light of significant uncertainties should be adopted to assist in the decision process ((Irwin et al. 2011).
2) Only moderately to highly productive wild stocks functioning in their Routine Management Zone (Johnston et al. 2002) should be considered for augmentation to provide a retention fishery.
3) Stocks that are naturally unproductive, particularly northern stocks with long juvenile freshwater residencies (e.g. Skeena tributaries) should not be considered for augmentation. Surplus production for such stocks may be fairly minimal even in years when the run is considered relatively strong. For a number of bi ological and logistical reasons, developing an augmentation program for such systems is unlikely to be cost-effective and could put the wild stock at risk.
4) Stocks where marine survival is estimated to be extremely low for wild smolts (regardless of conservation zone) should not be considered for augmentation because hatchery survival at sea will be significantly worse (by 2 or 3 fold).
5) Where hatchery programs can be justified (i.e. moderate to high marine survival and productivity, minimal risk to wild stocks), additional criteria must be met to ensure site-specific net societal benefits are achieved.

6) Finally, establishing hatchery programs in systems that no longer support wild populations of steelhead should only occur after very careful consideration of the full breadth of costs and benefits. Such an undertaking requires significant committed resources to ensure the program can be properly maintained and monitored. Selection of an appropriate source broodstock and the confirmation that the habitat is unable to support a self-sustaining wild population are key factors. In light of these and other significant factors (risks to nearby stocks, marine conditions), the ability to develop such programs seems unlikely.

(2) Supplementation of natural production – When should we use hatcheries to rebuild depressed wild populations?

Direct and circumstantial evidence from recent research and modeling indicates that the use of hatcheries in Pacific salmon management (including steelhead) has provided little to no net benefit to natural production, and in fact is thought to have hindered recovery of wild stocks by depressing reproductive fitness and natural productivity of stocks. The most compelling evidence is from Chilcote et al. (2011) who considered 89 stocks of steelhead, coho and chinook across three states. Regardless of program design (segregated versus integrated[2]), they found that the intrinsic productivity of the stock decreased significantly as the fraction of hatchery spawners increased, thus hampering rebuilding potential. This study reflects the findings of numerous other studies that concluded that hatchery fish had a reduced ability to produce viable offspring even though they may return as spawners in significant numbers (Christie et al. 2012, Leider 1990, Kostow 2004, McClean et al. 2003, Berejikian and Ford 2004, Araki et al. 2007, 2009). These studies also observed that hatchery steelhead performing best in hatchery conditions, performed worst in wild conditions due to rapid domestication effects of the artificial environment, resulting in rapid reduction in reproductive success even within a single generation. Furthermore, Araki et al. (2009) noted that this effect was carried over to the next generation, suggesting that impacts will be cumulative over time. Chilcote (2003) found that in a naturally spawning population of equal numbers of hatchery and wild steelhead, the population would produce up to 63% fewer recruits per spawner than one comprised entirely of wild fish. A newly published account of adult hatchery steelhead out-planting to boost juvenile production similarly found no net benefit to 14 years of out-planting in an Idaho stream. Specifically, no demographic response in

[2] *Segregated* hatchery programs are designed to minimize ecological and genetic interactions through the isolation of hatchery fish from natural production. *Integrated* hatchery programs are designed to manage hatchery fish as an integral contributing component of total production of a stock (i.e. interbreeding between hatchery and wild fish is intended).

terms of increased wild spawner abundance was noted when hatchery adults were placed upstream to spawn naturally even though these fish initially boosted parr numbers (Byrne and Copeland 2012).

In stark contrast to almost all other publications, the Nez Perce Tribe recently published results of a 12- year chinook salmon supplementation initiative in the Columbia basin. This study found that with the use of only local wild-origin broodstock, a boost to the population size was successful with minimal impacts to wild salmon fitness (Hess et al. 2012). One significant difference between this study and steelhead-related study results is the longer freshwater residency time and greater density dependence[3] observed in steelhead. Concerns regarding study design have also been identified, and caution is recommended regarding conclusions given that the study only considered three years of return data and did not demonstrate a sustained increase in wild abundance or effects on productivity (Oregon Fish and Wildlife Scientific Summary Review, unpublished).

While no B.C. studies provide direct cause and effect evidence either way on the question of hatchery supplementation, results from a number of analyses and program reviews support the general findings described above, as follows:

The Living Gene Bank (LGB) program – This experimental rebuilding initiative for three east coast Vancouver Island steelhead stocks (Keogh, L. Qualicum, and Quinsam rivers) was initiated in 1998 (see Ward, 2006, 2011 for summary). Genetic analyses indicated that the broodstock used were representative of the wild population and broodstock and smolt release targets were met, in general. However, subsequent recruitment in the wild (i.e., the rebuilding) from LGB returns appeared to be little or none, given the large number of LGB adults versus low numbers of wild adults that returned to the Keogh River fence (the only system where rigorous monitoring was conducted) and the subsequent wild smolt output in the years that followed (McCubbing 2010). Furthermore, there were significant ecological (e.g. competition) concerns regarding the large number of LGB smolts that residualized. A parentage analysis was ultimately required to determine if the LGB program made any positive contribution to smolt yield. However, this analysis was not supported and later it was concluded to be unjustified based on the lack of a response in smolt recruits. Wild smolt recruitment (smolts/spawner) has improved post-LGB.

[3] *Density dependence* refers to factors that affect the population according to the density of the population. In this case, density dependence affects juvenile survival and growth while in freshwater; as the population becomes denser, resources become increasingly limiting, affecting growth and survival.

Cheakamus River post-spill steelhead recovery initiative – A two-year hatchery program was initiated for steelhead in response to the caustic soda spill into the Cheakamus River in 2005 by CN rail. Smolts were released in 2007 and 2008. Recent studies have indicated that post-release survival for hatchery smolts was considerably lower (23 to 36%) than wild smolts (69 to 72%) during migration to the Squamish River mouth. This difference was maintained for the first few 100 km of ocean travel (Melnychuk et al. 2009). More recently, it has been concluded that re-seeding of the habitat could have been achieved without any hatchery contribution. The benefits to aiding recovery were illusive and undetermined, and the attempt to offset angling impacts due to potential low returns were modest at best – there was no indication of an increase in catch due to the presence of hatchery fish other than a few returns.

Trends in south coast wild steelhead abundance (Smith and Ward 2000) – This comprehensive analysis of the steelhead harvest survey data that has been collected annually found a number of relationships and trends. Particularly for the rainfall-driven systems of the north and south coasts, abundance of adult steelhead as estimated from catch-per-angler-day was strongly influenced by marine survival. However, after 1990, north coast and west coast Vancouver Island trends diverged from lower mainland and east coast Vancouver Island trends with the former continuing to track upwelling conditions (which improved survival) while the latter continued to decline. A number of hypotheses were proposed, including association with environmental patterns, high hatchery augmentation, urbanization, and high angler use. However, of particular concern was that fact that stronger declines in catch were observed for wild steelhead in hatchery-augmented systems than for wild steelhead in wild-only systems. The underlying reason was unknown, but augmented systems attract angler effort (Smith 1997). Impacts might thus have been either due to by-catch mortality or negative genetic/ecological interactions. Either way, these results suggest an indirect impact on overall production in augmented steelhead rivers.

Conclusion and Recommendations:

There is no substantiated evidence to suggest that hatcheries can provide a sustained positive contribution to natural steelhead production. In fact, the available direct evidence is to the contrary. Furthermore, indirect evidence suggests that where marine survival is depressed, there appears to be a stronger negative relationship for hatchery-supported systems. In comparison, the Cheakamus

experience suggested that, when ocean survival is supportive, and there are no freshwater limiting factors (i.e. factors that reduce the capability of freshwater habitat to produce fish), steelhead stocks are capable of rebuilding rapidly without hatchery support. Chilcote et al. (2011) recommended that wild fish should only be brought into a hatchery environment to prevent extinction of a genetic lineage as a last resort. Long-term conservation of wild stocks is best served by minimizing hatchery/wild interactions (e.g. Nickelson 2003). In no case are we currently in a last-resort situation for steelhead populations in B.C., and developing supplemental programs would be a poor investment that could further damage natural production. We therefore recommend that until such time as the risks and uncertainties associated with supplementation have been reduced, and benefits to natural production are evident, supplementation programs should not be considered in recovery initiatives for depressed wild steelhead stocks. Activities instead should focus on directly addressing the source of the problem for these fish.

(3)

References:

Araki, H., B.A. Berejikian, J.J. Ford, and M.S. Blouin. 2009. Fitness of hatchery-reared salmonids in the wild. Evolutionary Applications 1:342-355.

Araki, H., B. Cooper, and M. Blouin. 2007. Genetic effects of captive breeding cause a rapid, cumulative fitness decline in the wild. Science 318: 100-103.

Berejikian, B. And M.J. Ford. 2004. Review of the relative fitness of hatchery and natural salmon. U.S. Department of Commerce, NOAA Technical Memo. No. NMFS-NFS-61. 43 p.

Byrne, A. and T. Copeland. 2012. Parr production from adult hatchery steelhead outplanted in two tributaries to the headwaters of the Salmon River, Idaho. Northwest Science 86:179-189.

Chilcote, M.W. 2003. Relationship between natural productivity and the frequency of wild fish in mixed spawning populations of wild and hatchery steelhead (*Oncorhynchus mykiss*). Canadian Journal of Fisheries and Aquatic Sciences 60(9): 1057–1067.

Chilcote, M.W., K.W. Goodson, and M.R. Falcy. 2011. Reduced recruitment performance in natural populations of anadromous salmonids associated with hatchery-reared fish. Canadian Journal of Fisheries and Aquatic Sciences 68:511-522.

Christie, M.R., M.L. Marine, R.A. French, and M.S. Blouin. 2012. Genetic adaptation to captivity can occur in a single generation. Proceedings of the National Academy of Science. 109:239-242.

Gow, J.L., P. Tamkee, J. Heggenes, G.A. Wilson, and E.B. Taylor. 2011. Little impact of hatchery supplementation that uses native broodstock on the genetic structure and diversity of steelhead trout revealed by a large scale spatio-temporal microsatellite survey. Evolutionary Applications 6: 763-782.

Heggenes, J., M. Beere, P. Tamkee and E.B. Taylor. 2006. Genetic diversity in steelhead before and after conservation hatchery operation in a coastal boreal river. Transactions of the American Fisheries Society 135:251-267.

Hess, M.A., C.D. Rabe, J.L. Vogel, J.J. Stephenson, D.D. Nelson and S.R. Narum. 2012. Supportive breeding boosts natural production abundance with minimal negative impacts on fitness of a wild population of Chinook salmon. Molecular Ecology 21:5236-5250.

Irwin, B.J., M.J. Wilbert, M.L. Jones and J.R. Bence. 2011. Applying structured decision making to recreational fisheries management. Fisheries 36:113-122.

Johnston, N.T., E.A. Parkinson, A.F. Tautz and B.R. Ward. 2002. Biological reference points from deterministic stock-recruit relations. BC Fisheries Branch, Fisheries Project No. RD100.

Kostow, K.E. 2004. Differences in juvenile phenotypes and survival between hatchery stocks and a natural population provide evidence for modified selection due to captive breeding. Canadian Journal of Fisheries and Aquatic Sciences 61:577-589.

Leider, S.A., Hulett, P.L., Loch, J.J., and Chilcote, M.W. 1990. Electrophoretic comparison of the reproductive success of naturally spawning transplanted and wild steelhead trout through the returning adult stage. Aquaculture, 88(3-4): 239–252.

McLean, J.E., Bentzen, P., and Quinn, T.P. 2003. Differential reproductive success of sympatric, naturally spawning hatchery and wild steelhead trout (*Oncorhynchus mykiss*) through the adult stage. Canadian Journal of Fisheries and Aquatic Sciences 60: 433–440.

McCubbing, D.J. 2010. Adult Steelhead Trout and Salmonid Smolt Migration at the Keogh River, B.C., during Winter and Spring 2009. Contract Report to Ministry of Environment. Xx pages.

Melnychuk, M.C., Hausch, S., McCubbing, D., and Welch, D. 2009. Acoustic tracking of hatchery-reared and wild Cheakamus River steelhead smolts to address residualisation and early ocean survival. Report submitted to Canadian National Railway Company, Monitor 2, Project F. Available on-line atwww.certc.ca]. 113 pages.

Oregon Fish and Wildlife. 2013. Scientific summary review of Hess et al. 2012 “Supportive breeding boosts natural population abundance with minimal negative impacts on fitness of a wild population”. Compilation of reviews from Oregon Fish and Wildlife staff at Corvallis and La Grande Research units. Unpublished.

Nickelson, T. 2003. The influence of hatchery coho salmon (*Oncorhynchus kisutch*) on the productivity of wild coho salmon populations in Oregon coastal basins. Canadian Journal of Fisheries and Aquatic Sciences 60: 1050–1056.

Smith, B.D. 1997. Assessment of wild steelhead (*Oncorhynchus mykiss*) abundance trendsd in British Columbia using MELP's Steelhead Harvest Questionnaire. Fisheries Management Report for Ministry of Environment, Landfs and Parks Fisheries Branch. Province of British Columbia.

Smith, B.D and B.R. Ward. 2000. Trends in adult wild steelhead (*Oncorhynchus mykiss*) abundance for coastal regions of British Columbia support the variable marine survival hypothesis. Canadian Journal of Fisheries and Aquatic Sciences 57:271-284.

Ward, B.R. 2011. A science review on policy for augmentation and supplementation of wild steelhead trout with hatchery fish in British Columbia. Contract Report for B.C. Ministry of Natural Resources. 27 pages.

Ward, B.D. 2006. The case for wild steelhead recovery without artificial fish culture intervention. Unpublished report, BC Ministry of Environment.

Personal Communications:

McCulloch, Mike. Anadromous Fish Specialist. Ministry of Forests, Lands, and Natural Resource Operations, Regional Operations Division-West Coast Region, Nanaimo, BC. Email correspondence November 7, 2012.

Table 1. Current steelhead hatchery programs as of 2012 and 2013 (some programs only occurred in one or the other year).

Region	Receiving Watershed	Stock Ecotype	Wild Stock Status	Broodstock Source	Annual Smolt Release Target	Hatchery
1	Quatse	winter	~ECC	wild	20,000	Community
1	Cluxewe	winter	~ECC	wild	20,000	Community
1	Stamp/Somass	winter	RMZ	wild	70,000	Federal
1	Stamp/Somass	summer	RMZ	wild	30,000	Federal
2	S. Alouette	winter	RMZ	wild	25,000	Community/FFSBC
2	Capilano	winter	~ECC	hatchery	20,000	Federal
2	Capilano	summer	~ECC	hatchery	10,000	Federal
2	Chapman	winter	?	wild	10,000	Community
2	Chehalis	winter	RMZ	wild	40,000	Federal
2	Chehalis	summer	RMZ	hatchery	25,000	Federal
2	Chilliwack	winter	RMZ	wild	125,000	Federal
2	L. Campbell	winter	CC	wild	10,000	Community/FFSBC
2	Seymour	winter	~ECC	hatchery	10,000	Community
2	Seymour	summer	~ECC	hatchery	20,000	Community
2	Stave	winter	N/A	hatchery	2,000	Federal/FFSBC
6	Kitimat	winter	RMZ	wild	50,000	Federal

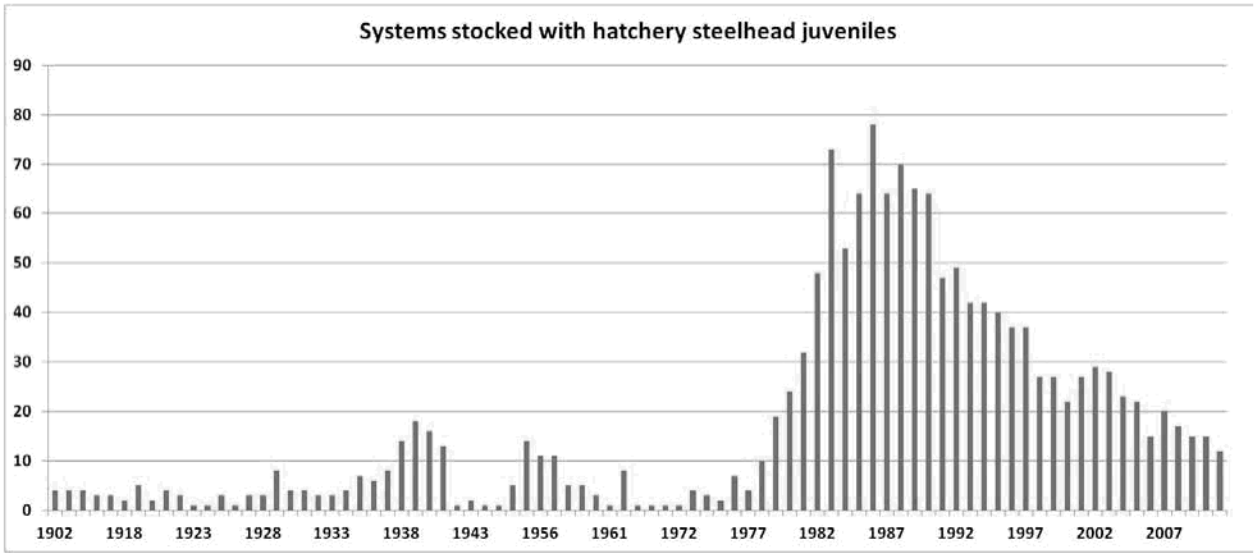


Figure 1. Numbers of waterbodies (almost all are streams) stocked with hatchery steelhead juveniles (including eggs, fry, fingerling, parr and smolts) in B.C.

Ramsay, Mike K FLNR:EX

From: Pollard, Sue M FLNR:EX
Sent: Friday, May 2, 2014 1:19 PM
To: McCulloch, Mike FLNR:EX; Bison, Robert FLNR:EX; Ptolemy, Ron ENV:EX; Miyazaki, Kenji FLNR:EX; Ramsay, Mike K FLNR:EX; Williston, Lee X FLNR:EX; Beere, Mark C FLNR:EX; Atagi, Dana Y FLNR:EX
Cc: Nussbaum, Albert F FLNR:EX; Morgan, Jason FLNR:EX; Smith, Jennifer FLNR:EX
Subject: Draft Provincial Framework for Steelhead Management in BC -shortened April 23.docx
Attachments: PAAT letter describing framework approach-revised.docx; Draft Provincial Framework for Steelhead Management in BC -shortened April 23.docx

Dear fellow provincial steelhead colleagues,

Attached is the steelhead framework draft I intend to present to the PAAT on Monday. I believe I've captured all your comments from our most recent phone call. Art has provided some additional refinements to clean up wording particularly around commercial versus rec objectives. With regards to the remaining unresolved strategy (4) regarding additional restrictive measures (bait in particular), Jason and I took the issue to Albert Nussbaum for a decision on moving forward. Albert has endorsed the attached version (retaining the bait restriction) as the working provincial draft for the purposes of stakeholder input on the proviso that we be very clear that this document has majority internal support (but not consensus) and that we maintain transparency about where unresolved issues exist if asked. This is not supposed to be a perfectly polished draft at this point but I do recognize that it'll probably go viral once released electronically to PAAT members.

Mike R laid it out very nicely - the Framework will be provincial policy – guidance to government, outlining general rules to provide a consistent management approach for steelhead across the province. It's not written in stone. Exceptions are still an option, but exceptions will require a rationale for why the exception is warranted contrary to the policy.

My proposed approach on Monday is to introduce this document and provide all participants with a hard-copy. I will send them all an electronic copy following the meeting. There is not enough time on the agenda to get into the details; the attached communications letter outlines how I hope to coordinate stakeholder input. I will propose that after the next iteration, we will post the latest draft on the engagement website for broader public comment.

Jen Smith has reviewed this document from a FN perspective. She's provided some additional/alternate wording for the relevant sections and supports my proposed roll out to stakeholders. She's recommended that we direct FNs to the website to view the draft after the first go-around with organized stakeholder groups. At this time, we will also work with MAR to ensure the document adequately addresses FN requirements. I've also spoken with Gerry Kuzyk about how he rolled out the Moose Framework and he feels my proposed approach is good.

Finally, I want to thank all of you for your continued support and patience in moving this document forward. You have all provided excellent feedback and comments; this is truly a collaborative effort representing the culmination of discussions and workshops we've had over the past 2 years. I don't believe we could get much closer to internal consensus than this at this point in time.

Cheers, Sue

May 5, 2014

Dear PAAT Members,

On behalf of the Fish and Wildlife Branch, I would like to provide a brief overview of the direction we are pursuing with respect to a provincial steelhead management planning approach. I recognize that the concept of a comprehensive provincial steelhead management plan has been around for a number of years, and strongly supported by many stakeholder groups. In particular, the most recent initiative was the Steelhead Summit Caucus (BCIT 2008) which generated significant interest and support from government and stakeholders alike, and identified several high-level priorities. While a comprehensive plan did not ultimately materialize from this initiative, it has been very instructive to me in revitalizing the concept of a provincial-level planning document.

The Branch has more recently developed a more streamlined 'management framework' approach to provincial-level planning for some priority wildlife species. These plans clearly lay out roles and responsibilities, and high-level objectives that can then be implemented at an operational level via regional plans. To this end, I am in the process of developing a similar approach for steelhead.

The purpose of the Provincial Steelhead Management Framework is to provide provincial direction to steelhead management and to guide the implementation of regional management actions. It will communicate key provincial management objectives and supporting strategies to manage steelhead. This information will be used to maintain consistency in regional management approaches and as guidance when engaging with stakeholders.

In terms of roles and responsibilities, the development of this framework will follow as inclusive an approach as possible. I will continue to work with key government steelhead biologists across BC to develop a draft internally before the document components receive broader distribution. Once there is internal support on drafts, I will share the updated drafts with PAAT members for comment and feedback. I ask that the PAAT members act as the points of contact to share information with their members and to coordinate and compile feedback to put forward as a single organization-level response.

This framework is not intended to be a comprehensive operational-level planning document but rather to provide a provincial consistency in overall regional delivery. It will identify high-level priorities and strategies but still enable regional flexibility in responding to the wide diversity of angler preferences and stock status challenges.

Please share this letter with your members. I look forward to future discussions.

Sincerely,

Sue Pollard, Rivers Specialist

Page 24 to/à Page 50

Withheld pursuant to/removed as

s.13

Ramsay, Mike K FLNR:EX

From: Pollard, Sue M FLNR:EX
Sent: Wednesday, April 23, 2014 2:38 PM
To: McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Morgan, Jason FLNR:EX; Bison, Robert FLNR:EX; Ramsay, Mike K FLNR:EX; Williston, Lee X FLNR:EX; Beere, Mark C FLNR:EX; Atagi, Dana Y FLNR:EX; Ptolemy, Ron ENV:EX
Subject: Updated steelhead framework for Friday conference call, etc.
Attachments: Draft Provincial Framework for Steelhead Management in BC -shortened April 23.docx

In the interests of getting this to you in time for Friday's conference call, I'm sending this un-editted (no grammar/spell check yet, etc.) but with the significant changes made after much discussion with Art who has been so kind as assist in streamlining this document further:

- Shortened, all referenced material and details moved to appendices
- Revisions for improved clarity (hopefully)
- Proposal for 'bait' subsection

Please focus on my commented sections so that we can pass through these quickly (as possible) on Friday.

Updated Agenda for Friday:

- Introduce Jason Morgan – New Fisheries Manager
- Review attached draft framework format and material; can I take this forward to the PAAT meeting in May 5 as working draft or not? If not, what can I take?-Sue
- Tom E.-Sue F. correspondence – update - Sue
- Andrew sunsetted 'Team Steelhead' in December 2013 – are we finished as a group? – Sue/Rob
- Thompson update – Rob
- Steelhead Hatchery update – Sue
- LBIS/Stock assessment – Sue

I don't need to remind you attached doc needs to stay internal.
Thanks.

Ramsay, Mike K FLNR:EX

From: Pollard, Sue M FLNR:EX
Sent: Wednesday, December 18, 2013 3:50 PM
To: McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Willcox, Michael FLNR:EX; Bison, Robert FLNR:EX; Ramsay, Mike K FLNR:EX; Williston, Lee X FLNR:EX; Beere, Mark C FLNR:EX; Atagi, Dana Y FLNR:EX; Ptolemy, Ron ENV:EX
Cc: Wilson, Andrew S FLNR:EX
Subject: Steelhead Framework revisions for Team comment
Attachments: Draft Provincial Framework for Steelhead Management in BC - next stop PAAT mtg.docx

Hi – Please see revised framework. The yellow highlighted sections are the additions based on our Team Sthd meeting. In particular:

1. Concept of opportunity and expectation – mentioned up front; I recall at least a couple of you emphasized the need to include as a real component of plan
2. Abundance-based management framework – you wanted 'softer wording' to be clear that we could only implement where we have data – I'm not sure I've adequately dealt with this
3. Concept of a precautionary small stock policy – I've added this as a strategy (#2)
4. Bait section – Andrew wants this as a DN with options but I'm going out on a limb here to try to get more information out of you; I don't know if I have the rationale correctly stated. Rob, I could really use help for Option 2. Also, I'm not clear on how broad option 1 should be with respect to large mainstems, etc. Please help. Then I can rework this piece into a note for Andrew. The grey shaded sections are for the note only, not this framework document.
5. Our new reality with DFO – I addressed it somewhat generally in the existing IFMP related strategy based on our comments in our post-DFO debrief.

Regarding the strategic stock assessment piece, I will develop a table to distribute to all sthd regions to fill out.

Please provide comments before January 15 if possible. Have I missed any critical pieces? I will also be developing a BN for the Minister regarding our position with DFO (as well as a draft letter to send DFO).

Thanks so much and have a great Christmas.

Sue.

Ramsay, Mike K FLNR:EX

From: Pollard, Sue M FLNR:EX
Sent: Wednesday, October 16, 2013 3:28 PM
To: McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Willcox, Michael FLNR:EX; Bison, Robert FLNR:EX; Ramsay, Mike K FLNR:EX; Ptolemy, Ron ENV:EX; Beere, Mark C FLNR:EX; De Gisi, Joe FLNR:EX
Cc: Wilson, Andrew S FLNR:EX; Down, Ted ENV:EX
Subject: Draft Provincial Framework for Steelhead Management in BC - DRAFT II
Attachments: Draft Provincial Framework for Steelhead Management in BC - Oct8V.docx

Hi There –

I have attempted to address the comments I received from those of you who emailed me with specific concerns, as well as based on our last conference call. I have highlighted in yellow the most significant additions/changes I made, particularly with respect to comments regarding First Nations Fisheries, Catch and Release and Bait. The Bait section is new (Strategy 3) and is pretty rough but a few of you wanted this piece explicitly identified. I could use some help on rationale for any exceptions associated with this strategy.

The next advisory meeting is Nov 20 --- Andrew would like to bring a draft of this framework forth for presentation at that time.

If you have any serious concerns with the policy type statements (objectives, guiding principles, strategies) now is the time to state them.

Please return comments to me by November 9, preferably earlier but I know some of you are dealing with HCTF deadlines.

Thanks very much. Sue

Ramsay, Mike K FLNR:EX

From:	Pollard, Sue M FLNR:EX
Sent:	Thursday, August 1, 2013 2:30 PM
To:	McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Bison, Robert FLNR:EX; Ptolemy, Ron ENV:EX; Ramsay, Mike K FLNR:EX; Beere, Mark C FLNR:EX; De Gisi, Joe FLNR:EX
Cc:	Wilson, Andrew S FLNR:EX
Subject:	Draft Provincial Framework for Steelhead Management in BC - Aug2013
Attachments:	Draft Provincial Framework for Steelhead Management in BC - Aug2013.docx

Hello (shrinking) Steelhead Team,

Andrew has asked me to take a first crack at developing a draft provincial framework for steelhead management, in response to our Executive Director's commitment to the Provincial Angling Advisory Team in April 2013 to develop a framework for their review in November. I had hoped to develop this framework in a face-to-face meeting with you that was not to be. As some of you might be aware, we are now releasing a Draft Provincial Framework for Moose Management in BC. Andrew has asked me to use this as a template for steelhead as much as possible. In particular, he wants to follow a similar consultation and roles and responsibilities approach with HQ F&W branch and regional staff roles explicitly laid out. Most of the headings are very similar as well.

I hope to follow up in early September with an initial conference call to you all to get a general sense of your response. After that, there might be the potential to get together for a face-to-face in the fall if there is a need/interest in doing so.

Meanwhile if you want to discuss further, please contact me.

Enjoy the rest of your summer.

Sue.

Ramsay, Mike K FLNR:EX

From: Bison, Robert FLNR:EX
Sent: Thursday, June 6, 2013 1:02 PM
To: Pollard, Sue M FLNR:EX; McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Marshall, Vicki FLNR:EX; Beere, Mark C FLNR:EX; De Gisi, Joe FLNR:EX; Atagi, Dana Y FLNR:EX; Ramsay, Mike K FLNR:EX; Ptolemy, Ron ENV:EX; Johnston, Tom FLNR:EX; Wilson, Andrew S FLNR:EX
Subject: RE: TEAM STHD MEETING SET for JULY 11-12

Yes I can attend.

Robert Bison
Fisheries Stock Assessment Biologist
Fish & Wildlife Branch
BC Ministry of Natural Resource Operations
1259 Dalhousie Drive
Kamloops, BC, Canada
Telephone 250-371-6244
Cell 250-851-1076

From: Pollard, Sue M FLNR:EX
Sent: Tuesday, June 4, 2013 11:41 AM
To: McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Marshall, Vicki FLNR:EX; Beere, Mark C FLNR:EX; De Gisi, Joe FLNR:EX; Atagi, Dana Y FLNR:EX; Ramsay, Mike K FLNR:EX; Ptolemy, Ron ENV:EX; Johnston, Tom FLNR:EX; Wilson, Andrew S FLNR:EX; Bison, Robert FLNR:EX
Subject: TEAM STHD MEETING SET for JULY 11-12

Hi – Just to confirm, we plan to hold the next face-to-face TEAM STHD meeting in Vancouver July 11-12. I've heard from most of you and can confirm we have representation from all regions except Region 3 --- Rob, can you attend? I've attached the rationale I used to get HQ approval for our staff to participate. Although discussions won't be limited to this, this is the intended focus. This will also provide an opportunity for update/discussion on Thompson. Other priority issues?

Details to follow.

Cheers,
Sue

Ramsay, Mike K FLNR:EX

From: Bison, Robert FLNR:EX
Sent: Monday, May 6, 2013 11:12 AM
To: Pollard, Sue M FLNR:EX; McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Ramsay, Mike K FLNR:EX; Beere, Mark C FLNR:EX
Cc: Ptolemy, Ron ENV:EX
Subject: RE: Steelhead Summaries - working copy 2013.xlsx

(1) The only thing I would suggest for sake of consistency is to perhaps include those other tributaries to the Nicola River other than Coldwater and Spius that we recognize as steelhead producing streams. These are Nuaitch Creek, Shakan Creek, Skuhun Creek and Guichon Creek.
(2) I suggest you consider breaking down "summer" into the early-summer (those runs associated with coastal regions) versus late summer/fall (those runs associated with interior regions). If you decide to do that, then all of the region 3 Fraser stocks would be classified as the latter while the region 2 fraser stocks would be the former if not classified as winter-run. If you decide to keep it simply summer vs winter, then the Sue-Ron correction for Thompson is fine.
(3) Sub area is correct for region 3 stocks.
(4) Region is correct for region 3 stocks.

Robert Bison
Fisheries Stock Assessment Biologist
Fish & Wildlife Branch
BC Ministry of Natural Resource Operations
1259 Dalhousie Drive
Kamloops, BC, Canada
Telephone 250-371-6244
Cell 250-851-1076

From: Pollard, Sue M FLNR:EX
Sent: Monday, May 6, 2013 10:56 AM
To: McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Bison, Robert FLNR:EX; Ramsay, Mike K FLNR:EX; Beere, Mark C FLNR:EX
Cc: Ptolemy, Ron ENV:EX
Subject: Steelhead Summaries - working copy 2013.xlsx

Hi – I am working on establishing a spatial database for steelhead stocks. I am attempting to clean up the old Ahrens datafile as it contained over 400 stocks and already has a lot of useful information attached. As a first step, I need to confirm:

(1) All 'significant' sthd streams/stocks (those that you are aware of) are captured in this list for your region
(2) That the run-timing is correctly described as summer, winter or both – there are 2 columns – the original assigned by Rob A., and the notes made by Ron P and me where we thought something was not correct. If there are additional corrections to be made, please add in the Ron-Sue column.
(3) That the 'sub-area' is correct. I think there may be a couple of Region 6 systems that are mis-classified.
(4) Region assigned – I'm not sure how accurate this column is as it originates from Ahrens too before the big shuffle.

I would very much appreciate if you could insert changes into the table and send them back --- if there are additional systems that are missed please let me know the name of the system and the ecotype (run-timing) associated. Hope this is clear.

Thank you.

Sue

Ramsay, Mike K FLNR:EX

From:	Pollard, Sue M FLNR:EX
Sent:	Friday, November 1, 2013 12:51 PM
To:	McCulloch, Mike FLNR:EX; Miyazaki, Kenji FLNR:EX; Willcox, Michael FLNR:EX; Bison, Robert FLNR:EX; Ramsay, Mike K FLNR:EX; Beere, Mark C FLNR:EX; Atagi, Dana Y FLNR:EX; De Gisi, Joe FLNR:EX; Ptolemy, Ron ENV:EX
Cc:	Wilson, Andrew S FLNR:EX
Subject:	Draft Provincial Framework for Steelhead Management in BC - next stop PAAT mtg
Attachments:	Draft Provincial Framework for Steelhead Management in BC - next stop PAAT mtg.docx

Hi,
I'm going to have to provide a draft of this to the Provincial Angling Advisory Team on Nov 20 – I'd like to make sure we can all live with the draft presented (at least the general flavour --- I'm sure there are many improvements to be made on specifics). I think I've addressed everyone's comments in this version except for Strategy 3. I've included Rob's comment because nobody else has provided any specific comments here. The original wording was meant as a placeholder in hopes that someone could provide some better wording. If you have some revised wording, please provide. If folks agree with Rob then I will remove this strategy. I just thought we should probably have an explicit statement about this issue as I understand from our last face-to-face that we had come to some agreement on the use of bait.

Thanks so much.

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS
DECISION NOTE

Date: July 30, 2013
File: 280-30
CLIFF/tracking #: 199469

PREPARED FOR: Tom Ethier, Assistant Deputy Minister

ISSUE: Review of the Steelhead Stream Classification Policy

BACKGROUND:

The Steelhead Stream Classification Policy (SSCP) was developed in 2007 in response to concerns about declining steelhead abundance. The two basic tenets of the document were to limit hatchery use to the enhancement of recreational opportunities where risks to wild steelhead were low and to implement province-wide catch and release for wild steelhead. It further included a commitment to review the policy after 5 years.

BC has numerous stocks of wild steelhead that support significant recreational fisheries, some of which have attained international stature by providing a rare opportunity to catch native, wild fish in a wilderness setting. Maintaining the characteristics of these fisheries is believed to contribute to their continued appeal and high value.

Steelhead fisheries in BC are primarily based on natural production of wild fish. This management approach has largely avoided the problems that have arisen with large-scale hatchery steelhead production in US jurisdictions, including: rapid genetic divergence of hatchery stocks from their native stocks, greatly reduced survival of hatchery fish, and reduced productivity of wild fish in rivers that have been supplemented with hatchery fish.

The marine survival of the smolts of many species and stocks of anadromous salmonids throughout south and central BC decreased abruptly during the early 1990s to about one-third to one-quarter of previous values. This regime of low ocean survival has persisted, greatly reducing the abundance of some steelhead stocks and prompting requests for hatchery supplementation to rebuild stocks. Because of their lowered abundance, the harvest of wild steelhead by sport fisheries was eliminated.

A recent steelhead hatchery review concluded that hatchery stocking can support fisheries by increasing the numbers of returning adults in limited circumstances, but that hatchery stocking is ineffective in rebuilding depressed wild populations. Some stakeholder groups nevertheless continue to advocate for hatchery programs to rebuild stocks.

The SSCP adopted a precautionary approach to steelhead management that placed the highest priority on maintaining self-sustaining populations of wild steelhead. It considers the risks and benefits that result from hatchery stocking programs and non-retention fisheries on wild stocks, and provides an explicit framework for the use of these management tools.

Under the SSCP, streams are classified as either "wild" or "hatchery-augmented", supported by regional management prescriptions. Wild systems may provide catch-and-release fisheries on wild stocks where adverse impacts from the fishery are low, but rely on natural production to maintain stocks. Hatchery-augmented systems limited to a few high-use streams where hatchery stocking can provide an opportunity for a harvest fishery because risk to the wild stock is low.

Fisheries staff worked with the Provincial Angling Advisory Team (PAAT) members at the April 2012 PAAT meeting to establish an appropriate review process. It was agreed that the Ministry would solicit stakeholder feedback via two processes: (1) PAAT members would coordinate a single response per organization representing their membership and (2) the Angling and Hunting Public Engagement Website would solicit individual angler feedback. In addition, the Ministry would undertake an internal review with key steelhead biologists.

The review process occurred in summer 2012 but did not identify a clear consensus among stakeholders for changes to the policy. Issues of contention included: the harvest of wild steelhead, more hatchery programs for stock rebuilding and for additional harvest opportunities, priority for residents in considering harvest opportunities and lack of policy implementation. See Appendix I for details of responses.

DISCUSSION:

In certain circumstances where the risk to wild stocks is low and public use is high, hatchery supplementation can increase angling opportunities and provide a harvest fishery. Such circumstances are exceptional rather than routine.

Hatchery stocking of steelhead is expensive, ineffective in rebuilding depressed wild stocks, and poses a high risk to the productivity of wild stocks in many cases. Despite some stakeholder responses, the Fisheries Program strongly opposes the expansion of steelhead hatchery production and does not intend to expand the scope of the SSCP.

Catch-and-release fisheries on wild steelhead stocks allow sustainable fishing opportunities under uncertain and shifting environmental conditions. Under current conditions of marine survival, the abundance of many steelhead stocks is too low to support harvest. Even in cases where harvest might be possible, there is no compelling reason to permit harvest because population viability, angling quality, angler use and angler satisfaction all increase with increasing abundance. Harvest would generally lower all these attributes.

Regulating harvest fisheries on numerous low-abundance steelhead stocks that are accessible and vulnerable to anglers and monitoring the status of these populations would be very difficult within existing resources and staffing.

Once a decision on the review is reached, it will be posted on the Angling, Hunting and Trapping Engagement website, forwarded to members of the PAAT and to Regional Fish and Wildlife Section Heads for dissemination to staff and regional stakeholders.

OPTIONS:

s.13

Option 2: Precautionary – Building on the policy and develop Provincial Management Framework

The original policy objectives are still highly relevant. The management strategies laid out in the policy maintain a precautionary approach with wild stock conservation as the top priority. Here, we propose maintaining the current policy as an interim measure. Policy review emphasised the fact that this narrowly focussed policy is the only guiding policy document for steelhead management in BC; not adequate for a high-profile sport species. A comprehensive management framework for steelhead would clearly identify management objectives and strategies for wild stock conservation and sustainable angling opportunities. The Executive Director committed staff to developing a provincial framework for steelhead at the most recent PAAT meeting in April 2013; this is now in progress. This framework can incorporate the tenets of the SSCP within the broader objectives and strategies. However, effective implementation of such a framework will require considerable additional resources.

All PAAT members identified the development of a provincial management plan for steelhead as the top fisheries priority for their organizations in April 2013. This option is supported by these groups in principle. However, the maintenance of the basic tenets of the SSCP with no change will not be viewed favourably by BCWF or resident anglers, but likely will be supported by fly-fishers, Steelhead Society and angling guides.

s.13

RECOMMENDED OPTION:

Option 2: Precautionary – Building on the policy and develop Provincial Management Framework

The precautionary aspects of SSCP are more relevant than ever given increasing uncertainty in ocean conditions and survival. Outcome of the policy review did not reveal any areas of agreement to support changes in policy approach. Given that a provincial framework document has already been committed to, it makes sense to incorporate the SSCP within this strategic planning document. This approach should be communicated via the engagement website and at the next PAAT meeting in November 2013.

Option 2 / TE

DECISION & SIGNATURE
Tom Ethier
Assistant Deputy Minister
Resource Stewardship Divison

Sept 9/13

DATE SIGNED

Attachments: Review Response Summary

Contact:
Andrew Wilson
Fish, Wildlife & Habitat Mgmt
250-387-5657

Prepared by:
Sue Pollard
Fish, Wildlife & Habitat Mgmt
250-387-3363

Reviewed by	Initials	Date
ADM	TE.	
Dir./Mgr.	AW	July 30, 2013
Author	SP?	July 30, 2013

Appendix I – Review Response Summary

1. Only 4 of 7 PAAT members responded. Three were generally supportive of the policy with concerns focusing on implementation (BC Fly Fishers' Federation, Freshwater Fish Society of BC, North Coast Steelhead Association) and one felt that the policy is 'achieving its conservation objectives' but wants resident opportunities to harvest wild fish where abundance permits (BC Wildlife Federation). Although the Steelhead Society of BC is not officially represented on the PAAT, a letter of strong support was provided by the northern branch.

2. Only 10 responses were received via the online website, with 5 generally supporting the current policy, 4 opposed, and one without a clearly-stated opinion.

3. 18 of 20 responses via letters to the Minister or Director or via e-mail opposed the policy, but 10 of these letters were from an organized letter-writing campaign from Skeena region. Two responses did not clearly indicate an opinion but were generally supportive in tone.

4. An internal review supported the maintenance of the province-wide non-retention regulation of wild steelhead and the current (or more stringent) position on hatchery use. Staff believe the policy objectives are still relevant and a priority.

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS
DECISION NOTE

Date:
Date of previous note:
File:
CLIFF/tracking #:

PREPARED FOR: Tom Ethier, ADM

ISSUE: SEEKING SUPPORT FOR RETAINING THE STEELHEAD STREAM CLASSIFICATION POLICY

BACKGROUND:

- The BC wild steelhead resource is unique in the world, and its management is recognized internationally for a strong conservation ethic and focus on the protection of wild stocks. This approach has contrasted strongly with US jurisdictions south of BC where large-scale hatchery initiatives over the past several decades were implemented to offset losses associated with habitat degradation and to boost steelhead numbers for recreational opportunities. These same agencies are now calling for full hatchery reform in an attempt to repair the damage hatchery initiatives have done to the natural production of wild stocks.

- Growing concerns regarding overharvest and use of hatcheries in steelhead management in BC combined with increasing unpredictability of ocean conditions and freshwater productivity led the Province to implement the Steelhead Stream Classification Policy in 2007. This policy embraces the precautionary approach in the delivery of steelhead management and places the highest management priority on the maintenance of self-sustaining wild steelhead stocks. It recognizes the risks and benefits associated with wild fish retention and hatchery use.

- The policy directs us to: (1) Adopt an abundance-based management framework to manage steelhead stocks; (2) Deliver sustainable recreational opportunities via non-retention fisheries for wild stocks; and, (3) Provide a diversity of opportunities including a limited number of retention fisheries using hatchery produced steelhead where risk to wild stocks is low. Further, the policy indicates that streams would all be classified as ‘wild’ or ‘hatchery-augmented’ with supporting management prescriptions established regionally.

- In terms of implementation, non-retention applies to all wild stocks while limited harvest opportunities are maintained using hatchery production where risk to wild stocks is thought to be low. Classification of streams as wild or hatchery-augmented with supporting management prescriptions has not been completed, nor has establishment of specific criteria to evaluate risk of hatchery initiatives.

- The policy explicitly committed to a 5-year review to modify where appropriate based on experience and changing conditions. Fisheries staff worked with the Provincial Angling Advisory Team members at the April 2012 PAAT meeting to establish an appropriate review process. It was agreed that the Ministry would solicit

stakeholder feedback via two processes: (1) PAAT members would coordinate a single response per organization representing their membership; and, (1) the Angling and Hunting Public Engagement Website would solicit individual angler feedback. In addition, the Ministry would undertake an internal review of relevant information with key steelhead biologists.

- Specific questions during this process considered: (1) appropriateness of policy objectives; (2) success to date in achieving these objectives; (3) conditions that have changed to necessitate policy changes; and, (4) alternative options to achieve objectives.

DISCUSSION:

The review took place in summer 2013. Response was fairly limited with no clear direction of support. Key contention points included: (1) retention of wild steelhead where abundance permits; (2) more hatchery programs for recovery and additional angling opportunities; (3) resident priority in considering retention opportunities; (3) policy implementation; and (4) out of scope issues.

- Responses from PAAT members varied --- only 4 of the 7 responded (directly as requested or via Minister's letters); 3 were generally supportive of the policy with concerns focussing on implementation (BCFFF, FFSBC, NCSA) and one felt that the policy is 'achieving its conservation objectives' but wants resident opportunities to harvest wild fish where abundance permits (BCWF). Although the SSBC is not officially represented on the PAAT, a letter of strong support was provided by the northern branch.

- Responses from website varied --- of the 10 responses provided, 5 supported the policy though in some cases felt that more needed to be done, 4 did not support the policy and one didn't clearly state either way but response suggested general support.

- Responses via Directors/Minister's letters and email were more polarized --- of the 20 responses received, 2 did not clearly state either way but responses suggested support, and 18 did not support the policy. Of these 18, at least 10 letters supported a letter-writing campaign originating from the Skeena region.

In summary, there is no overwhelming stakeholder support from key steelhead angling groups to modify the policy with respect to hatchery use or non-retention regulations.

An internal review supported the maintenance of the province-wide non-retention regulation of wild steelhead and the current (or more stringent) position on hatchery use. Staff believe the policy objectives are still relevant and a priority.

Given the recent research regarding hatchery use for steelhead management throughout the Pacific Northwest (see Attachment A), the Fisheries Program maintains its policy position regarding the use of this tool. There is no clear evidence that hatcheries contribute to rebuilding steelhead stocks; we will not implement it in recovery initiatives at this time. This is a costly endeavour that poses significant risk to wild stocks; its use to provide harvest opportunities will be limited to low-risk situations.

Universal catch and release was originally determined to be the best option for wild steelhead in BC to maintain sustainable angling opportunities under highly uncertain and shifting environmental conditions. This hasn't changed nor has the ability to demonstrate with any degree of certainty that a harvestable surplus exists or can be determined under most conditions. Angler pressure is already high for many wild populations, and increasing in the north. Steelhead have a propensity to aggregate in accessible river sections prior to spawning; this behaviour makes them highly vulnerable to anglers. Allowing harvest under such conditions would be at best unmanageable.

OPTIONS:

s.13

_____/_____ _____

DECISION & SIGNATURE **DATE SIGNED**

[Enter Name]
[Enter Title]

Attachments: [list them]

Contact:	**Alternate Contact:**	**Prepared by:**
ADM:	*Name:*	*Name:*
Div:	*Div/Region/Branch:*	*Branch/Region:*
Phone:	*Phone:*	*Phone:*

Reviewed by	Initials	Date
DM		
DMO		
ADM		
Dir./Mgr.		
Author		

Dear PAAT members,

This letter is to inform you of our intentions with respect to the review of the Steelhead Stream Classification Policy. The Steelhead Stream Classification Policy was implemented in 2007 with a commitment to review within five years and modify if appropriate, based on experience and changing conditions.

As you are well aware, the steelhead resource in British Columbia is spectacular and unique. Arguably, the province supports some of the best steelhead angling in the world; this is founded on a strong wild stock baseline. Regardless of current conservation status, steelhead stocks in BC are naturally limited in terms of abundance and productivity because most stocks occur in small coastal systems with low productivity or in systems where it takes five or more years to produce an adult. In addition, we are dealing with significant uncertainty associated with stock status and changing environmental conditions resulting in shifts in productivity that we simply cannot manage on a stock-specific basis in most cases.

The overall purpose of this policy is to place priority on the conservation of wild steelhead stocks and to manage risks associated with hatcheries to minimize risks to wild stocks. The policy recognizes that angling benefits can be derived from hatchery use, and outlines criteria necessary to meet the 'hatchery-augmented' classification. Default classification is 'wild', and procedures provide management approaches for the two classifications. Most notably, all wild streams are non-retention only, and management priorities will reflect the conservation status of both 'wild' and 'hatchery-augmented' streams. Streams classified as 'hatchery-augmented' will be enhanced for the purpose of creating angling opportunities, not to rebuild natural production.

MFLNRO is now reviewing the policy in terms of meeting its original objective. At this time, we don't intend to alter the scope of the policy; however, we want to ensure that the policy is still adequate to meet the priority objective of conserving wild steelhead stocks. The conditions around which the policy was developed have not changed. The most recent science has only increased concerns with respect to hatchery impacts on natural production. Therefore, aside from some minor changes to clarify definitions, we don't envision changing the policy substantially. However, we are seeking feedback on the policy from stakeholders. In addition to posting this request on the Engagement Website we are asking the Provincial Angling Advisory Team to provide specific feedback on the policy.

To this end, we are asking you to consider your response with respect to the following:

- What is it that we need the policy to do? Is the policy doing this?
- Are there any outstanding issues associated with the current policy?
- What has changed over the past five years that should be incorporated into the policy?

Thank you for taking the time to consider this request. I look forward to your response. Please note that in order to complete this review in a timely fashion, we are requesting responses from all members well in advance of our next PAAT meeting thus I ask that you respond by July 31, 2012.

Sincerely,

Andrew Wilson.

Jager, Brenda CSNR:EX

From: McCulloch, Mike FLNR:EX
Sent: Monday, November 3, 2014 9:44 AM
To: Stalberg, Mike X FLNR:EX
Subject: FW: Steelhead Framework...
Attachments: Steelhead Capability and Data Summary 1 (Autosaved).pdf

Recent FOI request

-----Original Message-----
From: McCulloch, Mike FLNR:EX
Sent: Wednesday, January 29, 2014 3:01 PM
To: Pollard, Sue M FLNR:EX
Subject: RE: Steelhead Framework...

Sue,

Generally I think that small stocks should be considered sensitive and potentially subject to conservation based closures, but there may be times and places where small stocks <100 may be pursued with spatial, temporal and gear restrictions that allow some access by anglers in a sustainable and rationalizable way. If I look at the distribution of productive capacities in identified steelhead streams I find that the large majority (>80%) have a capacity of less than 1500 smolts - see attached quick chart. Only around 40 streams break the 2000 smolt barrier with and handful exceeding the 5 000 smolt threshold where current assessments on streams like the Englishman, suggest that we are near the threshold to reasonably open fisheries. With notional marine survivals of 5 - 7% the large majority of identified stocks should be closed in most years.

For these small stock we typically use a simple approach of either:
- Allowing auto-regulation where remote small stocks that see very little effort, catch and subsequent harm - and are not specifically managed, or;
- Stocks that are subject to increase use (generally due to their proximity to population centers) or are particularly vulnerable due to extended residence access, receive more protection through specific time/area closures (Goldstream, Koksilah, Haslam, Little Q, Englishman, Trent, Tsable, Tsolum, Black Creek).

In either case specific stock size (and/or productive capacity) is not known for many of these stocks but they all have a limited and finite capacity based on water chemistry and available habitats.

Perhaps the best approach is to retain most of the drafted language but insert several clauses to allow enhanced management flexibility.

Replace this - Either way, persistence at very low absolute abundance (eg. 50-100 adults) makes these stocks more vulnerable to stochastic events. Johnston et al. (2002) recognized that in such cases, regardless of where these populations lie relative to a theoretical reference point, they are highly vulnerable to extirpation and should be managed as stocks in extreme conservation concern management zone. To this end, steelhead fisheries will generally be closed when a stock persists at a 100 fish/year (or less) for a generation or more.

With this - Either way, persistence at very low absolute abundance (eg. 50-100 adults) POTENTIALLY makes these stocks more vulnerable to BOTH stochastic events AND FISHERY RELATED PRESSURES. Johnston et al. (2002) recognized that in such cases, regardless of where these

populations lie relative to a theoretical reference point, they are highly vulnerable to extirpation and should be managed as stocks in extreme conservation concern management zone. To this end, steelhead fisheries will generally be closed when a stock persists at a 100 fish/year (or less) for a generation or more, PARTICULARLY WHERE POPUALTIONS ARE CONSIDERED SENSITIVE DUE TO POTENTIAL EFFORT, ACCESSIBILITY, OR STOCK VULNERABILITY.

I AM GENERALLY OK WITH THE ORIGINAL LANGUAGE BUT SPECIFICALLY IDENTIFYING CONDITIONS WHERE/WHERE ADDITIONAL CONSIDERATIONS WILL BE GIVEN MAY HELP SOME READERS RELATE TO THEIR LOCAL CASE. EVEN WORDS LIKE "GENERALLY" GIVE ME THE FLEXIBILITY I WILL NEED TO RATIONALIZE PAST AND FUTURE DESISIONS, PARTICULARLY IN CONJUCTION WITH THE EXPAMLES OF CONSIDERATIONS FOR DIFFERENTIAL MANAGEMENT.

Over to you!

MPM

2. Implement a precautionary small stock policy where a stock falls below a bottom threshold of 100 adults.

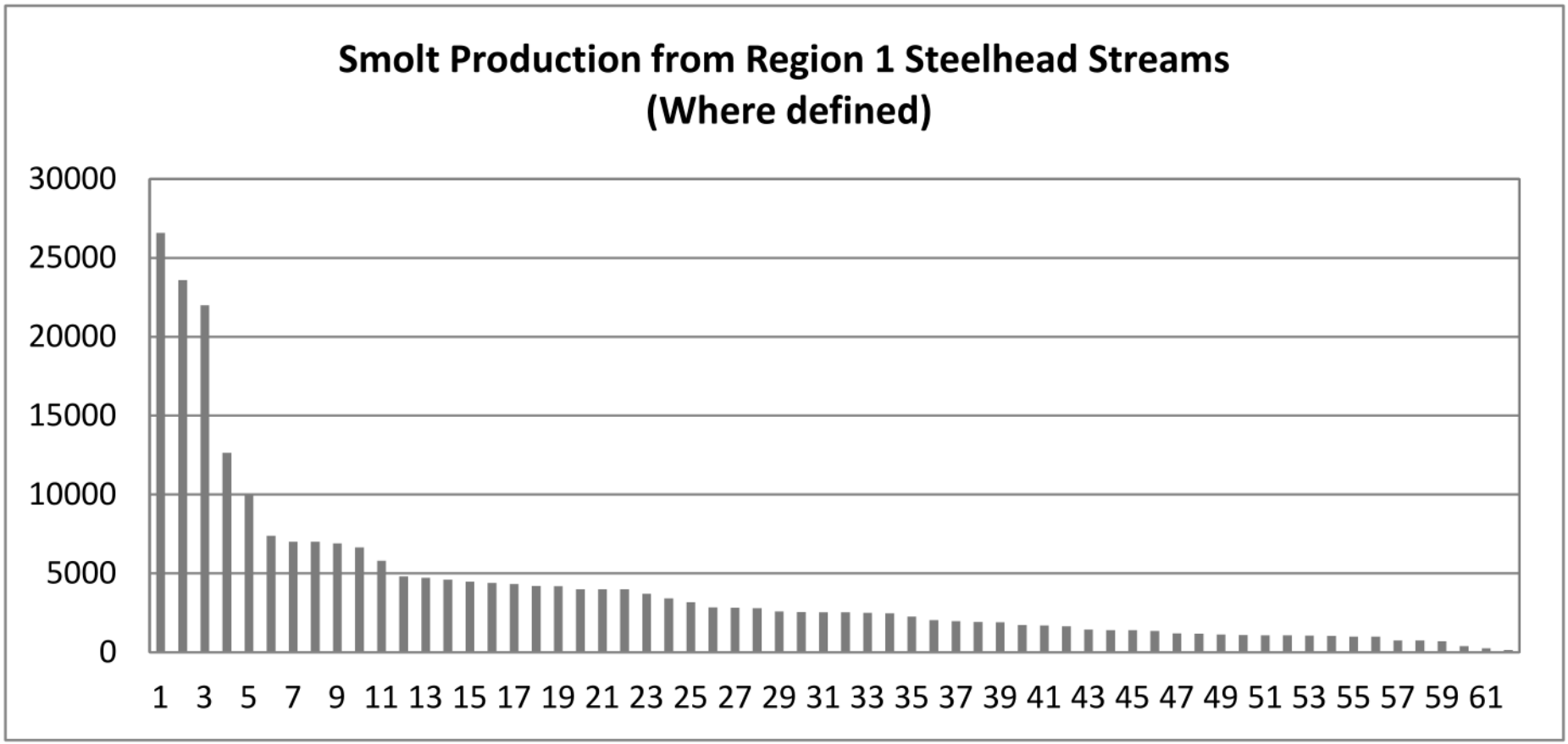
There are numerous, small coastal steelhead stocks (mostly winter-run) that currently persist at very low numbers of adults annually. These stocks generate little angler effort. In some cases, the small size is a naturally occurring situation which reflects limited habitat capacity in small unproductive systems. In other cases, the stock may be in a persistent, depressed state for various reasons.
-----Original Message-----
From: Pollard, Sue M FLNR:EX
Sent: Friday, January 24, 2014 9:56 AM
To: McCulloch, Mike FLNR:EX
Subject: Steelhead Framework...

Hi Mike -- I bet you're out in this fine weather, broodstock fishing. Unfortunately, given the turn of events at HQ, I need to try to wrap lots of pieces up before s.22 Thus, no fishing for me. I am trying to get through comments from various Team members on the Framework draft. I haven't heard from you but did want to follow up specifically with one strategy that Dana highlighted in his comments --- thinking that what I've laid out below is counter to what you actually desire - that is to fish these stocks if you so desire i.e. regional discretion. I hope you can shed some light here - I wouldn't want to have the wrong thing laid out.
Thanks very much. Sue

2. Implement a precautionary small stock policy where a stock falls below a bottom threshold of 100 adults.

There are numerous, small coastal steelhead stocks (mostly winter-run) that currently persist at very low numbers of adults annually. These stocks generate little angler effort. In some cases, the small size is a naturally occurring situation which reflects limited habitat capacity in small unproductive systems. In other cases, the stock may be in a persistent, depressed state for various reasons. Either way, persistence at very low absolute abundance (eg. 50-100 adults) makes these stocks more vulnerable to stochastic events. Johnston et al. (2002) recognized that in such cases, regardless of where these populations lie relative to a

theoretical reference point, they are highly vulnerable to extirpation and should be managed as stocks in extreme conservation concern management zone. To this end, steelhead fisheries will generally be closed when a stock persists at a 100 fish/year (or less) for a generation or more.


Smolt Production from Region 1 Steelhead Streams
(Where defined)
30000
25000
20000
15000
10000
5000
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61

Jager, Brenda CSNR:EX

From: McCulloch, Mike FLNR:EX
Sent: Monday, November 3, 2014 9:43 AM
To: Stalberg, Mike X FLNR:EX
Subject: FW: Steelhead Management - draft framework

Recent FOI request

From: McCulloch, Mike FLNR:EX
Sent: Wednesday, July 9, 2014 3:15 PM
To: Hadway, Sharon L FLNR:EX; Stalberg, Mike X FLNR:EX
Subject: RE: Steelhead Management - draft framework

Sharon,

I have had an opportunity to provide some input and regional context to the document and I feel that it is a reasonable reflection of the mosaic of steelhead management objectives and techniques.

After the Provincial Angling Advisory teams sign off this will become another official Species Management Plan.

Cheers,

MPM

Michael McCulloch
Anadromous Fisheries Specialist
Ministry of Forests, Lands and Natural Resource Operations
2080A Labieux Road, Nanaimo, BC
(O) 250.751.3156 (C) 250.713.5546

From: Hadway, Sharon L FLNR:EX
Sent: Friday, July 4, 2014 1:31 PM
To: FLNR West Coast RMT; Stalberg, Mike X FLNR:EX; McCulloch, Mike FLNR:EX
Subject: FW: Steelhead Management - draft framework

Hi
Please see attached draft management framework for Steelhead.

Mike(s) what is the next step with this document?
Thanks

From: Sutherland, Craig FLNR:EX
Sent: Friday, July 4, 2014 9:30 AM
To: Hadway, Sharon L FLNR:EX; MacKnight, Heather FLNR:EX; Annett, Rory K FLNR:EX
Subject: FW: Same copy of draft Framework

FYI

From: Ethier, Tom FLNR:EX
Sent: Thursday, June 26, 2014 8:55 AM
To: Sutherland, Craig FLNR:EX; Manwaring, Richard G FLNR:EX; Kriese, Kevin FLNR:EX
Subject: FW: Same copy of draft Framework

I am resending since there appears to be a problem with what I sent yesterday.

From: Morgan, Jason FLNR:EX
Sent: Thursday, June 26, 2014 8:43 AM
To: Ethier, Tom FLNR:EX
Subject: Same copy of draft Framework

Hi Tom –

Dana Atagi from Skeena notified me that the file sent on to Craig Sutherland, Kevin Kriese and Richard Manwaring may be corrupted, as it was forwarded to him.

This attached file here should be fine.

Thanks. Jason.

Jager, Brenda CSNR:EX

From: McCulloch, Mike FLNR:EX
Sent: Monday, November 3, 2014 9:42 AM
To: Stalberg, Mike X FLNR:EX
Subject: FW: Steelhead Management Framework Comment

Importance: High

FOI Request

From: McCulloch, Mike FLNR:EX
Sent: Thursday, September 4, 2014 9:02 AM
To: Pollard, Sue M FLNR:EX
Subject: FW: Steelhead Management Framework Comment
Importance: High

FYI

From: Pat s.22
Sent: Wednesday, September 3, 2014 7:59 PM
To: Fish and Wildlife FLNR:EX
Cc: McCulloch, Mike FLNR:EX; Michalski, Tracy A FLNR:EX
Subject: Steelhead Management Framework Comment
Importance: High

The Steelhead Management Framework site will not allow for response to be sent. I've heard from several people that they are having difficult responding. You need to extend the response time in order to allow people an opportunity to respond. **See page below.**

I'm including my response following this note and would request an email that you have received it.

Pat Micek
Past President BCFFF

Response to the Draft Steelhead Management Framework

To whom it may concern:

The following comments are directed at the Draft Provincial Steelhead Management Framework.

The document is a fine tool for managing Steelhead in BC. Provided that funding can be linked to the framework, the document can have an important effect on the future of Steelhead and provide for the survival of the species.

The framework offers an opportunity to gather information that will help in the development of specific plans by creating a baseline. There is little doubt that the future of Steelhead will be determined by how

the province handles the management of the species today. We can no longer sit on the sidelines if we are interested in seeing that Steelhead have a future in BC.

In particular the "precautionary approach" needs to be the rule of the day. We must manage the species to ensure that wild Steelhead are always part of the province. In no uncertain terms, wild Steelhead need protection from all the present conditions that effect them and protection from what might possibility harm them.

There should be few if any situations that allow for the harvest of wild steelhead, and when considered, only in situations where the abundance is strong enough over an extended period of time that any "taking" of the fish will not have a detrimental effect. Connected to this idea is not allowing for "hatchery fish" augmentation unless it can be shown that there is no other way to recapture a population, and then only under the strictest of use, with similar stocks of fish, and over a very short period of time.

It would be helpful to make the strongest point that this document is a management tool that takes a "precautionary approach" to ensure the future of the species given all the issues that have developed and will develop in the future.

Make the point that this document is supported strongly by all the regional staff and that the plan is in the best interest of recreational anglers in the province and around the world because it will work to ensure the species survival.

One of the challenges that the framework will face is from guides and anglers that see the documents as restrictive in some way. This key point needs to be addressed in a way the helps to support the future of guiding and the possible option of harvest, since without the framework it is fairly safe to suggest that wild Steelhead are in jeopardy and the future of guiding and fishing follows.

In addition the framework might be more expressive about the connection between ocean survival and commercial salmon fishing, and the need for an endangered designation for some wild Steelhead, particularly those in rivers on Vancouver Island.

Sincerely,
Pat Micek
s.22

Site Not Working

Provincial Steelhead Management Framework

Give input on the management of steelhead in British Columbia.

What is this about?

The Government of B.C. invites feedback on the Draft Provincial Framework for Steelhead Management during a six week review period from July 24, 2014 to September 5, 2014.

A valuable tool in ensuring sound management decisions, the Draft Framework will provide direction on the management of steelhead across the province. The Draft Framework will help guide management decisions in the regions, while maintaining the flexibility necessary to address the diversity of conditions, stock status, and angler preferences in each region of the province.
The goal for steelhead management is to ensure abundance of wild steelhead populations at levels that will produce ecological, social and economic benefits – including the needs of First Nations – now and for future generations.

How can my contribution make a difference?

Members of the public, First Nations, anglers and key provincial stakeholders have an opportunity to comment before the Draft Framework is finalized.
You are invited to review the Draft Framework and submit feedback by September 5, 2014.

Get Involved This doesn't work. It won't open!!!

Additional Information

Date: Closes on September 5, 2014.
Status: Active
Location: Province-wide
Category: Environment
Types: Online