September 5, 2018

INFORMATION NOTICE

Re: Changes to the South Coast Region's Hatchery Steelhead and Anadromous Cutthroat Trout Stocking Programs

Introduction

The purpose of this notice is to inform the angling community and other interested parties about changes to the South Coast Region's hatchery steelhead and anadromous cutthroat trout stocking programs. The changes are based on the outcomes of a 2018 review of all regional programs. The review generally concluded that some of the hatchery operations pose risks to wild trout stocks due to potentially negative ecological and/or genetic interactions between wild and hatchery-raised stocks. Also, for some programs there is a lack of evidence of genuine benefits to local recreational trout fisheries. Due to these concerns, regional biologists have decided to discontinue the following stocking programs as soon as possible:

- Chehalis River Summer Steelhead
- Chapman Creek Winter Steelhead
- Fraser River Anadromous Cutthroat Trout
- Little Campbell River Anadromous Cutthroat Trout

Further information regarding the review and outcomes are presented in the next sections. This change will cease all anadromous cutthroat trout stocking programs in the Region for the foreseeable future. No changes are being considered at this time for remaining regional steelhead stocking programs.

Moving forward, the goal is to refine management objectives for each program and develop and implement monitoring plans to enable effective annual evaluation as directed by the *Steelhead Stream Classification Policy and Procedures* (Dec 13, 2005).

To provide comments or request further information, please contact Mike Willcox, Fish Biologist, by e-mail at Michael.Willcox@gov.bc.ca.

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Background

1. Relevant Provincial Guidelines, Policy and Legislation

The *Provincial Framework for Steelhead Management in British Columbia* (2016) (hereafter, "the *Framework*") provides direction for steelhead management and guides the implementation of regional management actions in British Columbia.

The fisheries management objectives for steelhead, as stated in the *Framework*:

1. Maintain a diversity of sustainable recreational angling opportunities for steelhead in British Columbia.

2. Maintain, protect and restore the productive capacity of the freshwater environment to produce steelhead.

The *Framework* presents several broad strategies for meeting the objectives, one of which is to "Employ hatchery programs to increase angler opportunities where the risks to wild steelhead are low and the expected societal benefits are high".

The *Steelhead Stream Classification Policy and Procedures* (Dec 13, 2005) provides the following specific management directives for "hatchery-augmented" streams (comments on implementation status of these directives in italics):

- "All hatchery-augmented fish must be marked with at least an adipose fin clip and regulations enacted that will limit catch and release impacts on wild steelhead as much as possible, and only permit retention by angling on marked hatchery-augmented fish."

  Marking of all hatchery-augmented fish has been routinely implemented. Current regulations require release of all wild steelhead and the general daily retention quota is 2 hatchery-augmented fish; 1 for Chehalis, Chilliwack and Sumas rivers. Anglers must stop fishing for the day once they've retained their quota.

- Hatchery programs must be evaluated annually to confirm predicted program objectives and outcomes are being achieved for the augmented and neighbouring streams. Hatchery programs that are not meeting predicted objectives and outcomes will be adjusted or discontinued.

  For at least the last 5 years, there have only been cursory, annual reviews of hatchery stocking programs. These reviews have focused mainly on success of meeting hatchery production targets and have generally involved very limited consideration of wild stock status, recreational fisheries values and neighbouring streams.

- Hatchery-augmentation must follow current best practices for steelhead culture as established by the Freshwater Fisheries Society of BC and the Ministry of Water,

> Land and Air Protection [now Ministry of Forests, Lands and Natural Resource Operations and Rural Development]."
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> *Since the 1980s, the Province has recognized the potential negative impacts that hatchery fish can have on wild fish populations. Although there has been no formal establishment of best practices, there has been general acceptance of some best practices consistent with recommendations from various hatchery reform reviews to minimize risks to wild indigenous stocks:*
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> - *using wild-only, randomly-selected brood from local stock;*
> - *releasing smolts in lower river sections to minimize interactions between wild and hatchery fish, and*
> - *ensuring ratios of returning adult hatchery fish to wild fish do not increase over time - maximum 1:1 hatchery:wild ratio in catches.*

Aside from hatchery enhancement, the only other tool with which provincial fisheries managers can influence direct control over recreational steelhead fisheries are the fishing regulations.

There are no management guidelines or policy directives specific to hatchery-augmentation of anadromous cutthroat trout. Given the high biological similarity between steelhead and anadromous cutthroat trout, the steelhead hatchery-augmentation guidelines and policies are considered applicable to regional anadromous cutthroat trout programs.

2. Regional hatchery steelhead and anadromous cutthroat stocking program summary

Although fish stocking initiatives in BC date back to the early 1900s, current regional hatchery steelhead and anadromous cutthroat trout stocking programs began in the early days of the federal Salmonid Enhancement Program (SEP) which started in 1977. The SEP hatchery steelhead initiatives were developed as compensation for incidental catch of wild steelhead in enhanced salmon fisheries.

Throughout the 1980s and 1990s, up to 70 or more steelhead streams were stocked province-wide. In the early 2000s there were substantial reductions in programs and stocking numbers due largely to the inability to meet broodstock targets, concerns for impacts on wild populations, or the lack of observable benefits to the fishery or natural production (Pollard, 2013).

There are currently 11 hatchery-augmented steelhead and 2 hatchery-augmented anadromous cutthroat stocking programs in the South Coast Region. All programs are carried out for the purpose of providing harvestable fish for anglers and not for rebuilding or sustaining wild stocks. Carrying through with the current proposal will reduce this to 9 hatchery-augmented steelhead stocking programs.

Delivery of hatchery steelhead and anadromous cutthroat stocking programs in the South Coast Region is supported by the Fraser Valley Trout Hatchery, federal SEP hatcheries and small, community-operated hatcheries.

3. Summary of recent steelhead and anadromous cutthroat stocking program review

Regional fisheries managers recently became concerned about the passage of time since a significant review of hatchery-augmentation programs. The *Steelhead Stream Classification Policy and Procedures* (Dec 13, 2005) specifies that "Hatchery programs must be evaluated annually to confirm predicted program objectives and outcomes are being achieved for the augmented and neighbouring streams. Hatchery programs that are not meeting predicted objectives and outcomes will be adjusted or discontinued". For at least the last 5 years, there have only been cursory annual reviews of hatchery stocking programs. These reviews have focused mainly on success of meeting hatchery production targets with limited consideration of wild stock status and recreational fisheries information. This has been especially concerning given recent decreases in wild steelhead and coastal cutthroat trout populations coast-wide and increasing information regarding adverse impacts of hatchery fish on natural production of anadromous trout and salmon.

Recently, biologists from the Province and the Freshwater Fisheries Society of BC conducted a more in-depth review of regional hatchery steelhead and anadromous cutthroat trout stocking programs. As there has been no formal provincial criteria for the evaluation of steelhead and anadromous cutthroat trout hatchery-augmentation performance, this review was conducted using criteria from past US and provincial hatchery performance reviews. Specifically, to identify where specific changes in stocking programs should be considered, fisheries managers reviewed available information on the status of wild stocks, recreational fisheries values, and program performance in meeting brood stock capture, smolt release targets, and best hatchery practices.

Review Outcomes, Rationales for Changes and Future Objectives

Below is a summary for each program to be discontinued which lists identified concerns, discusses the rationale for discontinuing and presents the future management objectives.

1. Chehalis River Summer Steelhead

- Was not derived from a local stock because no native summer steelhead population existed in the Chehalis River. Original brood stock was from the Coquihalla River.
- No characteristic geographic isolation (e.g., selective velocity barrier) of coastal summer-run fish from the native winter-run stock leading to concerns including misidentification of collected brood stock and high risk of ecological/genetic interactions (e.g. hybridization, residualism, competition) between non-native summer and native winter-run stocks;
- Unclear recreational angling benefits; and
- Unclear rationale for brood stock targets.

This stocking program would not be implemented under current policy directives (i.e. Steelhead Stream Classification Policy) and understanding of impacts of hatchery fish on wild stocks. The risks to the local winter-run and neighbouring wild steelhead populations far exceed the likely limited recreational benefits of the summer-run program. The focus moving forward for this river will shift to improving our understanding of the wild winter-run stock status and maximizing the recreational benefits of the hatchery winter-run component.

2. Chapman Creek Winter Steelhead

- Production of smolts has been limited and inconsistent due to the inability to obtain the minimum brood stock number; indicative of a small, at-risk population;
- Recreational benefits of this program are unclear, yet likely limited; and
- Small wild population size warrants emphasis on conservation rather than recreational values.

This program has been unable to consistently collect sufficient numbers of brood stock and/or produce smolts for several years and the wild population is very small. As such, the objective for this program moving forward will be conservation and restoration of the wild population.

3. Fraser River Anadromous Cutthroat Trout

- The size and status of the wild population is unknown and there is no understanding of population structure and diversity in this complex river system;
- The program is inconsistent with the best practice of using wild-only, local brood stock; brood stock are captured from various streams and Fraser River backwaters and spawning of fish is conducted irrespective of specific stream of origin; there is limited information regarding hatchery fish to wild fish ratios; hatchery fish are sometimes used for brood stock; offspring are released in areas that are not necessarily related to origin of brood stock creating high ecological/genetic risk to population structure and diversity;
- Unclear rationale for brood stock and smolt targets with neither targets met regularly; and
- Unclear recreational benefits associated with hatchery component versus wild-only.

While a quality anadromous cutthroat trout fishery remains supported, restoration of this fishery to wild-only is the management objective. Once wild stock status is established, it can be determined if a hatchery program would provide sufficient angling benefits without putting wild populations at risk.

4. Little Campbell River Anadromous Cutthroat Trout

- Wild population size is unknown but likely small and in decline (possibly <100), thus focus should be on protection of the wild population, not augmentation;
- Unclear recreational benefits from the hatchery component; and
- Wild brood stock has been increasingly difficult to obtain and targets are generally not met; hatchery fish are occasionally used for brood stock.

It is acknowledged that this system contributes to the Boundary Bay cutthroat trout fishery which is popular with some anglers. However, we are very concerned with the low numbers of brood stock obtained from the Little Campbell River in recent years which indicates that this population is quite small. As such, focus of this program will shift to conservation and restoration objectives for the wild population, while attempting to gain an understanding of the value of the fishery.

References:

Pollard, S. 2013. The role of hatcheries in steelhead management for B.C. – a summary and recommendations. Fisheries Management Report 125, BC Government