Ministry of
Forests, Lands, Natural
Resource Operations
and Rural Development

Angling Closure – Rationale

Potential Closure: Fraser River Mainstem Trout Angling Closure for Protection of Migrating Interior Fraser Steelhead (IFS)

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Purpose of Document

To outline the factors and information I considered when determining:

1.) if there is a significant conservation concern. And if so;
2.) if a regulated fishing closure is warranted. And if so;
3.) an optimal plan to address the conservation concern while not inadvertently or unnecessarily impacting other fisheries.

Statutory Role and Expectations.

Through the *Federal Fisheries Act*, the Province of British Columbia is the jurisdiction delegated with lead responsibility for ensuring wild Interior Fraser Steelhead (IFS) and their habitat are managed in a way that results in a self-sustaining wild population for current and future generations. The lead Ministry is the Ministry of Forests Lands and Natural Resource Operations and Rural Development. The authority for non-tidal angling for fin fish other than salmon is delegated to the Province under the Federal *Fishery (General) Regulations*, subsection 6(3) and applies to non-tidal areas (tidal areas remain under Federal responsibility). The Director is named in the Provincial *Wildlife Act* as the statutory decision maker for fish and fisheries related matters.

Current IFS Population: Extreme Conservation Concern. 336.

Excerpt from the Note provided to the Director by the Provincial Lead Scientist on July 10, 2019.

Estimates of Thompson River Steelhead, spawning in the spring of 2019, sum to a total of 216. This is the second lowest spawning population estimate of Thompson River Steelhead since monitoring began in 1978. The lowest estimate of 150 occurred last spring (2018). The Thompson River Steelhead population aggregate is classified as an Extreme Conservation Concern if the spawning population fails to exceed 430. The stock is classified as a Conservation Concern if the spawning population is between 430 and 1200. Estimates by tributary watersheds are as follows: Deadman 43, Bonaparte 37, Coldwater 74, Spius 50, and Lower Nicola (including tributary creeks) 12.

The population estimate for Steelhead spawning in the Chilcotin watershed in spring 2019 is 120. The majority is expected to have spawned in the Chilko River (~80%) and a minority in the Taseko watershed. This estimate of 120 spawners for Chilcotin River Steelhead is the also the second lowest observed since monitoring began in 1972. The Chilcotin River Steelhead population aggregate is classified as an Extreme Conservation Concern if the spawning population fails to exceed 300.

IFS Recovery Potential

Steelhead have a few advantages over other salmonids. Like all salmon, steelhead are a very fecund species meaning each female carries a significant number of eggs. While most salmon die after spawning, some IFS can spawn multiple times and return to the ocean 2-3 times. Steelhead also have more survival options than salmon as they can adjust the amount of time they spend in the freshwater habitat. Historically, Thompson Steelhead were unusually large, and females were highly fecund with small eggs. After accounting for body size, Thompson Steelhead are 15% more fecund than Chilcotin Steelhead and 40% more fecund than coastal winter run Steelhead in southern BC. Data indicates a large decline in maximum size and fecundities for returning adults to the Thompson between 1979 and 1994, and a second decline between 2004 and 2009.

Abundance Targets

The Province has identified targets for abundance recovery. Targets were developed by Provincial scientists and were re-evaluated during the 2018-2019 Federal-Provincial Species at Risk review process. These are Provincial targets set by the Director. There are no provisions for Federal Government to provide abundance targets for fresh-water species under Provincial jurisdiction.

Initial Abundance Target: 1,500.

Minimum of 938 spawners in the Thompson watershed and 562-744 spawners for the Chilcotin.

Longer-term Abundance Targets: 8,000

Thompson at approximately 5,000, Chilcotin at approximately 3,000.

Historical Levels combined were approximately 30,000.

IFS Run Time.

IFS enter the Fraser River from mid-August to November overlapping with the return of late run sockeye and chum salmon. Thompson and Chilcotin Steelhead exhibit different migration characteristics. Chilcotin Steelhead migrate earlier and migrate faster on average at a given water temperature compared to Thompson Steelhead. BC calculates the IFS run time to be approximately 84 days at each point along the route (creating a rolling window). The combination of the two runs creates a bell curve with a sharply rising increase at the front end and sharp decrease at the tail end.

I made my determination based on the best available science, using the Provincial methodology provided to me by subject matter experts. Estimating IFS run time requires that sufficient numbers of steelhead return to the Fraser and are captured in the test fishery in order to meet the statistical needs. Simulations and stock assessment specialists concluded that at the efficiencies that the test fishery catches steelhead, we need a run of about 8000 steelhead before estimates of run duration become reasonably precise. In addition, we do not want to use years where a heavy fishery was in place because those fisheries will remove IFS from reaching the test fishery and will result in a biased-low run time. There are 3 years out of 38 when steelhead were relatively abundant and when late-run sockeye fisheries were absent: 1984, 1985, and 1996. By using these three years we end up with a calculation of an 84 day historic run time with quite high certainty (i.e. plus or minus a very few days).

Combining all years together results in a less accurate prediction. For example, including the years where the run-time was recorded as less than 5 days builds an obvious error into the average. By averaging all years, the predicted run time is shortened to approximately 60 days.

Threats to IFS

Evaluation of threats to Chilcotin and Thompson Steelhead is informed by past assessments, modelling of exploitation rates on IFS, studies on genetic interaction between resident (non-ocean-going fish) and anadromous (ocean-going fish) forms, and peer-reviewed work done fall 2018. Provincial scientists have provided the following update on threats as part of the IFS SARA review process.

1. Thompson River System
   - Physical habitat degradation (bank erosion, siltation, loss of riparian structure and function).
   - Decreasing water quantity (decreased summer/fall flows).
   - Increasing frequency of winter floods related to rain-on-snow events.
   - Increasing water temperature in summer due to higher air temperatures and decreased flow.
   - Risk of life history shift from anadromous to non-anadromous forms.

- Outbreeding depression of Steelhead Trout caused by increased levels of inter-breeding with resident Rainbow Trout owing to lower spawning populations of Steelhead Trout.
- Freshwater range contraction resulting from reduced spawning populations.

2. Chilcotin River system
   - Outbreeding depression of Steelhead Trout caused by increased levels of interbreeding with resident Rainbow Trout owing to reduced Steelhead Trout spawning populations.
   - Freshwater range contraction resulting from reduced Steelhead spawning populations.

3. Fraser River
   - Fishing mortality from the collective non-selective salmon fisheries (bycatch from commercial fishing, test fisheries, etc.).
   - The potential for fishing mortality from non-retention sport fishing targeting salmon and trout (handling stress).

4. Inshore Ocean Fishing Areas
   - Fishing mortality in salmon fisheries (bycatch from commercial fishing).
   - Ocean conditions (inclusive of all parameters, including human-caused effects).
   - Predation by fish and marine mammals.
   - Numbers of hatchery-produced fish sustaining higher numbers of predators.
   - Hatchery enhancement of early-timed Chum Salmon which increases run time overlaps with IFS.

5. Offshore
   - Ocean conditions inclusive of all parameters (including prey availability) as determined by anthropogenic and natural changes in global climate.
   - Ocean conditions inclusive of all parameters (including prey availability) as determined by anthropogenic and natural changes in total salmon biomass and as evidenced by body size trends (Ruggerone and Irvine 2018).
   - Fishing mortality.

IFS Economic Importance

The IFS historically provided a world-renowned sport fishery. This fishery provided excellent economic benefits to the rural communities, supporting both indigenous and non-indigenous businesses. The fishery was marketed internationally. Recovering an abundant population would not only recover ecological, social and cultural benefits, but re-establishing a fishery in these areas would provide an important economic stabilizer to communities facing downturns in other resource-based economies.

Importance of Fisheries to BC.

Decisions on fishery openings and closures must carefully consider the economic implications. Fishing is a $3B sector in BC. I am part of implementing the broader Provincial goal to support this important sector and working to ensure there are sustainable stocks to retain this sector for generations to come.

Additional Factors	
2019 Run Timing	The August 15 commencement date of the closures has been validated for 2019 when a steelhead was caught in a net in the Fraser River on or around August 22.
2019 population	336 Estimates of Thompson River Steelhead, spawning in the spring of 2019, sum to a total of 216. This is the second lowest spawning population estimate of Thompson River Steelhead since monitoring began in 1978. The population estimate for Steelhead spawning in the Chilcotin watershed in spring 2019 is 120. The majority is expected to have spawned in the Chilko River (~80%) and a minority in the Taseko watershed. This estimate of 120 spawners for Chilcotin River Steelhead is the also the second lowest observed since monitoring began in 1972.
DFO	Both jurisdictions have committed to action in the joint IFS Action Plan. https://www.canada.ca/en/fisheries-oceans/news/2019/07/backgrounder-government-of-canada-and-province-of-british-columbia-partner-to-take-bold-action-to-conserve-steelhead-trout.html My consideration was mindful of this cooperative action but is based on the Provincial understandings of run time and regulatory jurisdiction.
ECONOMIC	
Trout Fishery	I have been advised by staff that there is no significant effort or catch as a fishery, however, these trout fishing opportunities likely provide substantial social benefits. While the fishery is small overall, there are localized sites where people will go fishing for trout. Below Hells Gate, given the proximity to the largest urban center in BC there may also be increased fishing pressures closer to the tidal – non-tidal interface. This area also supports cut-throat trout fishing.
Trout Fishing Opportunities	The tributaries provide continue access to existing trout fishing. Alternate opportunities outside of the IFS run also exist. In 2019 approximately 70,000 trout were stocked in 43 different lakes and rivers in the Lower Mainland. There is very limited potential for IFS to be in the sloughs (backchannels), however these areas provide trout fishing opportunities.
Other Fishery Considerations	An economically significant fishery managed by the Province in this area is the sturgeon catch-and-release fishery (estimated at $30+ million annually). Due to differences in gear and habitat the sturgeon fishery poses negligible risk to IFS. The recreational salmon fishery is high value. This year the Pink run is expected to be strong. However, salmon co-migrate with IFS and this fishery would put IFS at higher risk. While my authority lies specifically with Provincially managed fisheries, I am mindful of federal fishing practices and their potential impacts. I anticipate the Federal Government to prioritize IFS recovery and clearly demonstrate how by-catch in any openings are managed or mitigated to a similar degree as the Provincial trout fishery.
Longer term IFS economic interests	The IFS provided a world-renowned sport fishery to areas upstream of the Fraser Mainstem. The priority goal of recovering this population would be expected to also enable a reintroduction of the highly lucrative IFS fishery. This would have significant positive implications to areas which are rural and remote.

INDIGENOUS	
First Nations Context	The migratory pathway of Interior Fraser Steelhead crosses through multiple First Nation's territories. IFS return from marine environments to run up the Fraser River to their spawning areas in the Thompson and Chilcotin rivers. Many upstream Nations have voluntarily forgone their traditional rights to fish during the IFS run, putting conservation and recovery objectives first. Several Nations have expressed deep concern with the Province for not taking all measures to recover IFS. Many Nations also access salmon fisheries that are legally authorized by DFO. These Federally approved fisheries must meet Federal conservation requirements and are based on Federal science regarding risks to other species such as IFS. Some upstream First Nations have informed the Province that they want IFS populations to reach a level that they can recover their former IFS fisheries, including the businesses, employment and revenues generated from the recreational IFS fishery in their territories.
STAKEHOLDERS	
Provincial Angling Advisory Team (PAAT)	PAAT provides advice to the Director. This group discussed the emerging IFS Action plan on March 15, 2019. PAAT members collectively supported BC for acting on PAAT's long-standing advice to tackle the suite of factors impacting IFS. PAAT discussed the potential for a Fraser mainstem closure, potential economic implications and ways to mitigate. Concern was raised regarding fisheries being closed without consideration of the economic interests. The discussion focused on the possibility of a rolling closure. Closing a large portion of the Fraser River for an extended period was not discussed by PAAT as an option. Sept 11 notification to PAAT from the Director: The current Fraser Mainstem Trout closure will be replaced. I intend to implement this change quickly to eliminate unnecessary fishing restrictions currently in place. I would welcome comments and feedback on the proposed management approach.
South Coast Stakeholders	Stakeholders were contacted by ministry staff on Sept 11 and 12, requesting comments back by Sept 17th. South Coast stakeholders have generally expressed concerns that low-risk recreational fisheries are being targeted while non-selective net fisheries remain open. Stakeholders noted their concerns that a trout closure would not address broader impacts outside of my jurisdictional authority. I have reviewed these concerns, and the updated closure will re-open some areas and times.
Stakeholder Feedback (overall)	Sept 17 Results General sentiment that the Province has not provided enough of a science rationale to support a closure. General sentiment that the trout fishery poses negligible risk to IFS and should not be targeted. Specific feedback to shorten the closure; specific feedback to lengthen the closure. Specific feedback to not implement a trout closure; specific feedback to exclude Char from the closure; specific feedback to include additional fish in the closure. Specific comments that the closures are politically motivated, implemented for policy reasons or are intended to appease DFO rather than meet conservation needs.

OPTIONS	
No Closure	Does not provide additional protection to IFS in their migration route. Risk remains status quo to previous years.
Close full area for the full run-time	A single closure covering the full area will unnecessarily impact fishing for other species. The closure needs to be "rolling" to target the correct timing and targeted areas.
"Rolling closure" – 6+ Sections	Targets closure time to line up with IFS migration window. Does not close areas when IFS are likely not present. Needs an adequate closure window to protect the very-few fish returning, with consideration of the "tails" of the runs. Closure areas needs to butt up against the other existing closures for IFS in both the Thompson and Chilcotin watersheds (closures are already in place to protect the IFS holding and spawning areas) Staff advise that breaking the closure into several areas will be confusing to anglers, administratively difficult and hard for enforcement.
Rolling closure – 3-4 Sections	Staff provided an alternate option of 3-4 chunks. This balances the need to minimize impacts to fishing opportunities, and while it still provides administrative challenges it is deemed workable.
Closure Duration Considerations	The IFS historic run time is 84 days. It is estimated that approximately 90% of the run passes a geographic point within 60 days. Within 75 days it is estimated that approximately 98% of the run would have passed.

Director's Decisions

I have been asked to review the current trout fishery closure in effect from August 15 to Dec 31 on the Fraser River. I have been provided additional information. I have turned my mind to this and have determined that the following course of action provides appropriate levels of protection and minimizes impacts to fishing opportunities.

Decision 1. Is there a clear conservation concern?

Yes. A final decision was informed by the 2019 IFS predictions received July 10 which predict only 336 fish will return. At these levels the population aggregate is classified as Extreme Conservation Concern.

Decision 2. Is a regulated closure warranted?

Yes. While the small amount of recreational trout fishing poses limited risk to IFS, the population is at extreme conservation concern. At this time every fish counts, and even relatively low risks need to be addressed. With high fecundity, increasing the numbers of fish returning to the spawning grounds by even a few can have an important role in initiating population recovery.

This trout closure, in isolation, will not recover IFS but it may enable a few more IFS to reach their spawning grounds. Rebuilding this population requires actions on the suite of threats, with targeted action on the highest risk factors. I advise that these actions need to occur this season (2019) and in each of the next two years at least.

Decision 3. What is the optimal management approach?

The current Fraser River closure will be repealed and replaced.

A rolling closure will minimize unnecessary impacts to other fishing opportunities. I have selected a target of approximately 90% protection, therefore the rolling closure dates will be based on roughly 60 days of protection at each point along the corridor. I will be exempting areas outside of the primary migration channel to ensure continued access to recreational fishing opportunities. The non-tidal portion of the Fraser River, between the CPR Bridge at Mission and the confluence with the Chilcotin River, is divided into three reaches:

- Reach #1: From the CPR Bridge at Mission to Hells Gate. Closed to trout fishing from August 15 to October 31 (77 days to accommodate the larger stretch of river included in Reach #1). Protection to target the in-river IFS migration, therefore 1. Tributaries and sloughs are exempted as they are not part of the mainstem channel, and 2. the Herrling, Jesperson, and Ruby Creek side-channels are also exempted due to low flows during this time period.
- Reach #2: From Hells Gate to the confluence with the Thompson River. Closed to trout fishing from October 1 to November 30 (61 days). Tributaries are not included.
- Reach #3: From the confluence with the Thompson River to the confluence with the Chilcotin River. Closed to trout fishing from October 1 to October 31 (31 days). Tributaries are not included.

Timing: I have turned my mind to the feedback received by September 17 and determined that the closure will be implemented on Sept 19. This quick implementation will re-open fishing opportunities to appropriate areas prior to the upcoming weekend.

Jennifer Davis,
Director, September 19, 2019