



April 2020

The Pacific Marine Conservation Caucus salmon committee submits the following to the 2020/21 North and South Coast salmon IFMPs.

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1. Chinook

The Salmon Committee of the Pacific Marine Conservation Caucus (MCC) submitted comments April 9 on fisheries affecting threatened and endangered early-timed Fraser stream types. The recommendations herein address other aspects of managing these threatened and endangered Fraser CUs, other at-risk Chinook Conservation Units in BC, the failure to meet the Wild Salmon Policy principles 1, 2, 4 and 6 which aim to protect unique attributes of Chinook diversity, abundance and distribution, and the failure to consider fishery impacts limiting the abundance of Chinook within SRKW critical habitat.

Changes to CUs and their components include declines in abundance, distribution, run timing, genetic diversity, productivity, fecundity, and changes to maturation rates, size at age, age at return and population structure. These declines and changes are perpetuated by management that focuses primarily on hatchery indicator stocks, hatchery and sea pen production for (largely) recreational fisheries, and early marine and off-shore competition with other salmon populations (hatchery and wild) in an increasingly food limited marine environment. This focus on hatchery production and management has undermined the monitoring and conservation of wild Chinook populations in British Columbia and perpetuates a failure to recover the prey base (including crucial components of run timing, size and age) for Southern Resident killer whales.

Given concerns for abundance and productivity, DFO aimed to reduce exploitation rates and total mortalities on Fraser early, Fraser late and other Southern BC Chinook via a coast wide 25-35% ER reduction and 5% mortality targets for the early timed Fraser stream type aggregates. Under the 2019 PST negotiation, Canada also agreed to reduce exploitation rates on threatened Harrison Chinook to 11% over a three-year average.

Exploitation and mortality objectives were not met in 2018 or 2019. While DFO made an important effort to reduce mortality on early Fraser stream types, its embroiled and conflicting strategies to keep marine fisheries open and supplied with US and Canadian hatchery produced Chinook compromised objectives to recover wild Chinook populations. The following recommendations are designed to begin rebuilding wild Chinook populations throughout their historic range and spawning sites, and restore run timing, diversity, population structure and other attributes unique to their Conservation Units.

1.1 Spawner Escapement Goals for threatened and endangered CUs

Incorporating CU level MSY spawner escapement goals (as established via habitat capacity) into recovery targets for SMUs is necessary in order to capture the distribution of abundance, genetic composition, life histories, and age/size diversity within and between populations. This approach would be far better than simple abundance metrics or fishing objectives that routinely fail to meet MSY. Note: Escapement goals presented in 2020 DFO planning documents need to be clarified and/or corrected to describe either component CUs or the larger aggregate. Target Reference Points based on Spawner MSY escapement goals have been identified in Table 1.

The MCC recommends that recovery targets (Target Reference Points) be implemented for spring 4-2 and spring and summer 5-2 Fraser Chinook Stock Management Units that have a high probability of achieving CU specific spawner MSY escapement goals presented in Table 1.

Table 1. Target Reference points be established at MSY spawner escapement goals based on habitat capacity as identified in Parken et al. 2006 or presented in 2015 South Coast IFMP

Fraser Chinook Stock Management Unit	Aggregate sub components	Spawner MSY Escapement goal/ TRP	Management approach
Spring 4 ₂	Nicola Spius Coldwater Deadman Louis Bessette Bonaparte	10,000 2,000 1,100 2,400 1,600 1,300 <u>6,100</u>	The goal is to maximize escapement and recruitment to recover abundance, distribution, diversity and life history characteristics. Meeting S MSY escapement goals for 2-3 generations should occur before directed marine fisheries are considered.
Spring 4 ₂ SMU ¹		24,600 ²	
Spring 5 ₂ SMU		80,000 ³	As above
Summer 5 ₂ SMU		57,000 ⁴	As above
Total spring and summer aggregates		161,000	

1.2 Protecting early timed Fraser stream types

As conveyed in the April 9th letter, the MCC recommends Chinook non-retention to protect Fraser Fraser 4-2 and 5-2 continue in Areas 17, 18, 19, 20, and 29 from mid-April to the end of the first week in August, except for Areas 19 and 20E which need to be closed for the month of June.

1.3 Increase escapement of Harrison, other weak and at-risk South Coast Conservation Units, and increase Chinook abundance within SRKW critical habitat.

To achieve this the MCC recommends that:

A. British Columbia's AABM and ISBM marine recreational Chinook fisheries on the South Coast and in Haida Gwaii (with the potential exception of terminal fisheries in places such as Area 23) need to move to a 1/day bag limit and 2 in possession. This should begin in April in areas outside of the early Fraser Chinook corridors, and begin in July/August in areas inside the early Fraser Chinook corridors when non-retention ends. Enhanced catch monitoring and compliance standards need to be in place as described in April 09 letter.

B. North coast troll should be closed until the Chinook non-retention period has ended in August.

¹ CTC Aggregate goal excludes Bonaparte and is 18,500

² Source: CSAS/ Parken et al. 2006

³ Source: 2015/2016 IFMP S. BC pg 57

⁴ Source: 2015/2016 IFMP S. BC pg 57

C. WCVI troll should be capped at less than 2% Harrison.

D. DFO needs to achieve the 25-35% reduction in Chinook harvest in Areas 3-10. This in will require reductions beyond 2018 and 2019 in recreational and commercial fisheries if FSC harvests are to be prioritized.

E. Terminal, known stock fishing opportunities can occur if, where, or when local abundance exists after FSC priorities are met.

F. Implement closed areas at the mouth of the Fraser, Pender Islands, Juan de Fuca and Swiftsure consistent with objectives to reduce competition, noise and disturbance in key feeding grounds for SRKW.

2. Sockeye

2.1 Fraser Sockeye 2020 escapement plan

Escapement of sockeye that spawn above Big Bar must be maximized. Late Summer sockeye have also shown dramatic decreases in survival and migration success and conservation must be a higher priority.

The MCC recommends option 2 for the 2020 Escapement Plan with lower TAMs and LAERs, as well as higher fishery reference points for some Management Units.

2.2 Fraser sockeye window closures for Early summer and Early Stuart

Everything possible must be done to protect Early Stuart and some Early Summer CUs which must pass through the Big Bar slide.

The MCC supports the additional protection for earlier timed stocks of the Early Summer run sockeye for a total 4-week window closure.

The MCC supports the additional protection for Early Stuart sockeye for a total 4-week window closure.

2.3 Skeena River Sockeye Management Reference Points

In the spring of 2017 DFO changed the Limit Reference Point (LRP) for Skeena sockeye. The new LRP was incorporated in the subsequent management plans.

The new LRP was based on reviews by Peacock (2016) and English (2017) that argued the Reference Points used in the original assessment did not account for the relative proportions of wild and enhanced sockeye in the SMU. They argued, and with the urging of Skeena First Nations, DFO accepted, that to potentially achieve the LRPs for wild sockeye (240,000), a total escapement of around 600,000 Skeena sockeye was required. This was based on about 40% of Skeena sockeye being of wild origin. Note the original assessment employed 70% enhanced and in 2017 the proportion of enhanced sockeye was 75%.

If this logic holds for the LRP, it must also hold for the TRP. The cumulative TRPs for the component wild populations is 560,000. Using the same logic, the TRP for the SMU should be a minimum of 1,400,000, not the current 900,000.

The MCC recommends that the Target Reference Point for Skeena River Sockeye be increased to 1.4 million.

2.4 Area A Skeena River Sockeye Fisheries

In 2016 and 2018 DFO delayed Area A sockeye fisheries until early to mid-August. The objective of Skeena River commercial fisheries is to focus on enhanced sockeye which peak around July 22-24th. DFO understands that a large proportion of the August return is comprised of wild stocks in the WSP 'red zone' (PSF 2017). Furthermore, these CUs have already experienced relatively high exploitation in Alaskan fisheries by the time they enter Canadian waters. Delaying these fisheries further compromises their recovery by delaying First Nations Demo fisheries for up to three weeks, forcing First Nations to also harvest their allocations after the majority of enhanced sockeye have passed. Finally, Skeena River pink returns have been abysmal in recent years. Delaying sockeye fisheries means that there is a high likelihood Skeena pink salmon will be overharvested.

The MCC recommends that all Skeena River marine commercial sockeye fisheries be concluded by August 4th.

3. Coho

3.1 North Coast coho

North coast coho have experienced consecutive years of poor marine survival. They are also experiencing moderate to high fishing exploitation. DFO projects continued low marine survival which may translate into poor 2020 returns. The poor 2018 escapements – consistent with what were seen in the mid 1990's- do not bode well for future brood years. The evidence indicates precautionary actions are required beginning in 2020 to protect coho.

The MCC recommends significant reductions in recreational and commercial harvests in 2020.

3.2 Interior Fraser Coho

There is no evidence that IFR Coho has departed from the low productivity regime that has persisted since the 1994 return year. Current productivity is still well below the relatively high productivity period of 1978-1993.

Given this, the MCC recommends that the domestic Exploitation Rate cap of 3% to 5% remain in place until a higher productivity period has been repeatedly demonstrated over two to three generations.

4. Central coast pink and chum

There are ongoing concerns for the abundance of chum and pink populations returning to the watersheds of Areas 5-8 and the failure to meet escapement targets. The importance of these areas for bears and other wildlife, and the economic importance of wildlife viewing for local communities, necessitate that wildlife considerations be the top management objective before fisheries are considered. Previous harvest rules have failed to meet rebuilding objectives.

The MCC recommends no commercial fisheries on pink or chum should be considered in these areas unless prior stream assessments indicate that escapement objectives have been fully achieved, and there is abundance above and beyond these objectives. This does not preclude fisheries. Managers need only to move fisheries where surpluses are identified as is done in Haida Gwaii. There is no justification for mixed-stock fisheries in Areas 7 or 8.

5. Interior Fraser Steelhead

DFO's proposed 'rolling window' is based on a data set that fails to incorporate the full range of information available on the diverse population structure of Interior Fraser steelhead, migration timing distribution in the absence of harvest, and several studies on migration speed. Nor does DFO probe how including information available from the Province might impact its conclusions. Correcting for this could lead to a conclusion that the proposed 'rolling window' is inadequate to protect and rebuild these steelhead populations.

BC and DFO have failed to come to an agreement on:

1. the data that should be employed,
2. critical assumptions on steelhead migration timing and speed,
3. the population structure of Interior Fraser steelhead.

A 2018 critique by Rob Bison from the Province of BC has not led to an incorporation of Mr. Bison's concerns into its decisions. They are as follows:

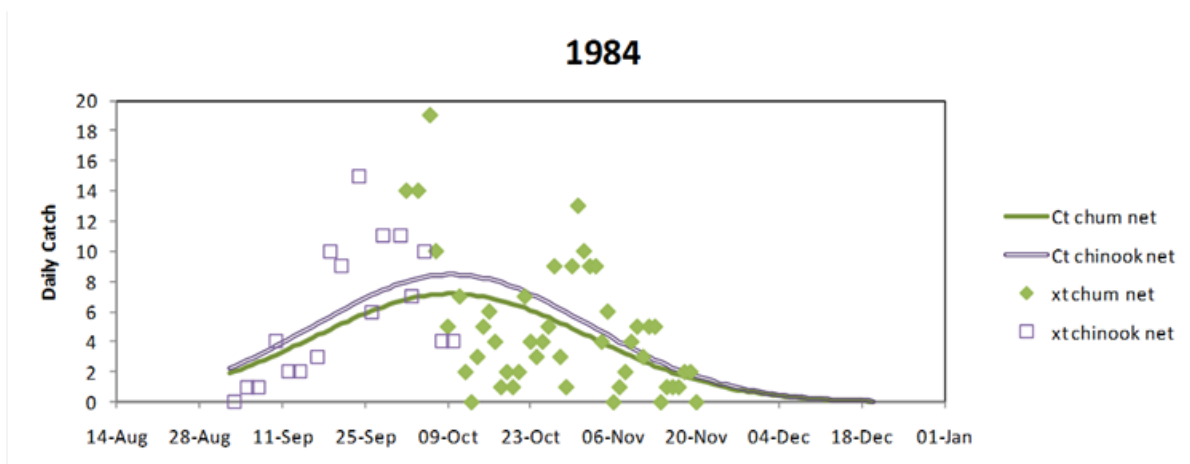
'A 3-4 week rolling closure window protects about 60% of the run at one point along the migration route. Over a broad fishing area, a 3-4 week rolling closure at correct migration rates protects less than about 60% because extra days of protection are required to account for the lag time for protected fish to complete their migration through the area. That lag time depends on length of area and the time it takes for protected steelhead to clear and exit the area.

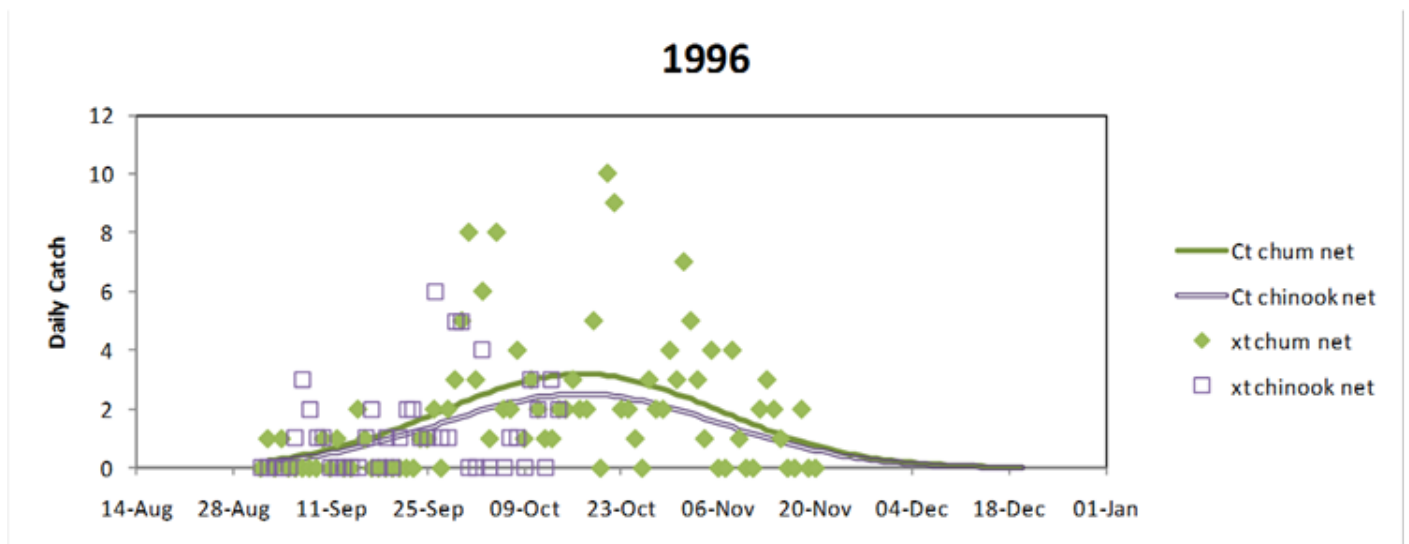
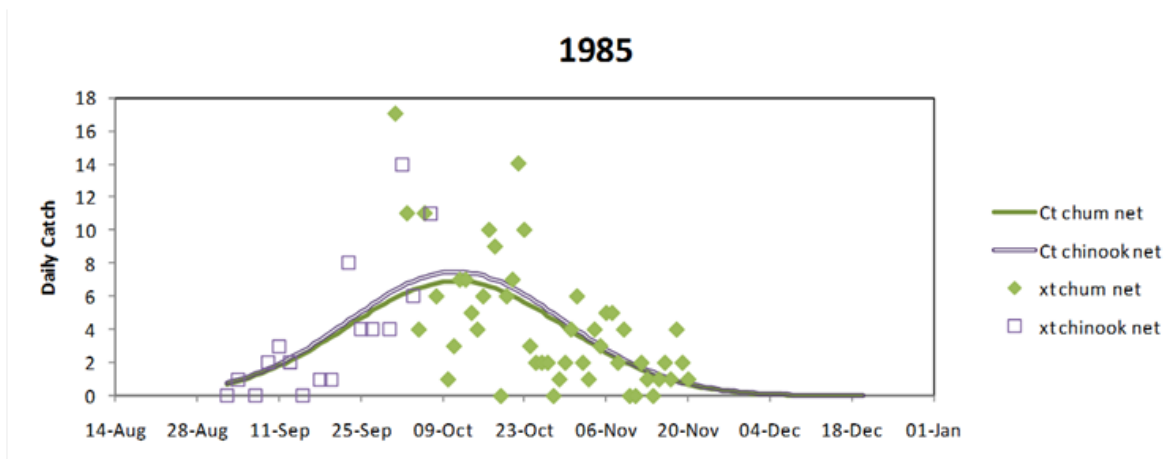
Without accounting for run timing, migration speed and compliance uncertainties, and if 90% protection is the prescribed level of protection, and using the published marine migration rates for steelhead of 17 km/day (Ruggerone et al. 1990, the window dates for the various areas listed in Table 1 should resemble the following:

Fishery Location	Start Date	End Date
Area 11	11-Aug	15-Oct
Area 12	14-Aug	23-Oct
Area 13	22-Aug	28-Oct
Area 21/121	22-Aug	25-Oct
Area 20	24-Aug	26-Oct
Areas 4b/5/6c	25-Aug	01-Nov
Area 7	01-Sep	05-Nov
Area 7a	04-Sep	07-Nov
Fraser to Mission	06-Sep	11-Nov

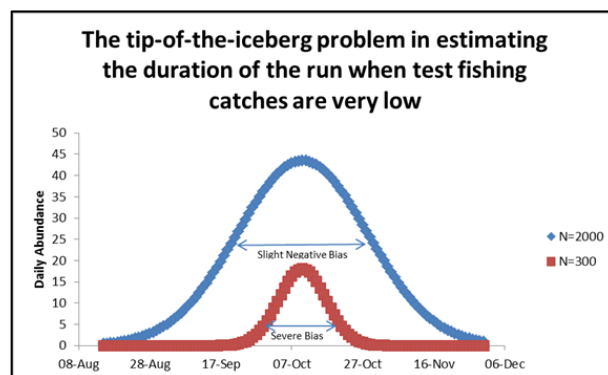
*I've included the areas in US waters (Area 4b,5,6c; Area 7; and Area 7a) for completeness. Note that these simple reasonability estimates do not account for uncertainty in peak timing, or spread, or migration speed which would broaden these window periods. It is noteworthy that the estimated average marine migration rate of *O. mykiss* is very consistent with freshwater migration rates at comparable water temperatures to that of the approach marine waters during the late summer and fall.*

There is a substantial amount of information on steelhead migration timing. The simplest way to get accurate information on timing is to choose years when abundance was high and years when cyclical late-run Fraser sockeye were not abundant, so as to avoid distortion and erosion of run timing information in the Albion test fishery due to "outside" fisheries. The peak and spread of run timing in these relatively clear images are consistent with estimates that include all years, but where the information is more difficult to interpret due to lower abundance and the more erratic nature of the catch observation when survival and abundance is low. An important way to see all of the steelhead run timing in the Albion test fishery, especially in the past when chum test fishing did not start until Oct 1, is to combine both the chinook and chum test fisheries and to check on their respective efficiencies. Luckily, for the years which I illustrate below, the steelhead catchabilities between the two nets are very similar (as you can see by the fitted curves), so one can simply combine the two data types into one overall pattern of run timing.





With respect to additional information on timing in various areas around and away from the Albion test fishery, there are numerous observer studies starting in the 1970's that report the onset and general timing of occurrence of the larger interior Fraser steelhead in the various approach fisheries. I can provide these if need be.



There are several studies that raise questions about DFO's migration speed estimates. DFO should incorporate such studies (for example see Ruggerone et al. 1990; Renn et al. 2001; Cook et al. 2016) and develop a sensitivity analysis on the model results if the migration timing is much slower than what DFO has employed.

Mr. Bison's evidence undermines key assumptions upon which the DFO model is built. There can, therefore, be little confidence in DFO's conclusion the proposed rolling window will provide the degree of protection it promises.

The MCC recommends that DFO expand the rolling window to better capture the questions asked of its assumptions and data. The level of uncertainty warrants a more precautionary approach.

The MCC recommends the rolling closure window be extended by two weeks on the front end and one week on the back end. The lack of steelhead encounter rates in most fisheries compounds the uncertainties. The MCC recommends the following:

1. *All chum fisheries have third-party validation of landings*
2. *All commercial fisheries have, at a minimum, 20% fishery independent at-sea monitoring*
3. *All lower Fraser recreational and First Nations fisheries from September through late November have fishery independent estimates of steelhead encounters*
4. *C&P should include a comprehensive compliance monitoring and enforcement plan for recreational and commercial fisheries that may impact IF steelhead in the 2018 IFMP.*
5. *DFO consider the potential impact of drop-outs from FSC and commercial gillnets*
6. *Any new selective fisheries within the rolling window closure have 100% fishery independent monitoring.*

6. Hatcheries

Until a full review of the genetic and ecological implications on the recovery of wild Chinook CUs is completed, no increase in hatchery production should be approved. The review also needs to examine the benefits from increased hatchery production to SRKWs relative to the life-history type/run timing of the enhanced stock and the likelihood of more releases translating to an increase in the terminal abundance of such stocks.

Until such reviews are complete, the MCC recommends no increases in hatchery and /or net pen production

7. Catch Monitoring, Assessment of Stock Composition and FRIM, and Compliance Monitoring

The reductions in abundance, productivity, and diversity of our wild salmon populations in the past decade have led to where DFO is designing commercial, recreational, and FSC fisheries to selectively harvest more abundant stocks and species while attempting to protect or recover depleted ones. This has gained additional urgency with the listing of several stocks and species by COSEWIC as endangered, the passing of the new Fisheries Act, and need by DFO to adhere to its Sustainable Fisheries Framework (SFF). Further, it has become apparent that guides/outfitters operating in the

marine recreational industry are not adhering to critical monitoring, compliance, assessment measures that most other fisheries have in place, and must abide by.

Unfortunately, the catch monitoring, compliance monitoring, and assessment of stock composition and Fisheries Related Incidental Mortality (FRIM) associated with most of these fisheries is left over from the days when our wild salmon were much more abundant and before many of today's policies were implemented.

In order to bring fisheries into line with policy and the new Fisheries Act the Department must for 2020:

1. Ensure any fishery that has an indirect impact on an endangered species or stock have fishery independent at-sea catch reporting and fishery independent reporting of landings. The minimum level for at-sea monitoring, as discussed in the literature, is 20%. This level increases with the number of endangered or threatened stock expected to be encountered in a fishery.
2. Ensure any fishery that has a direct or indirect impact on an endangered species or stock must have compliance monitoring in place that is - at a minimum - consistent with, and equivalent to, what the Area B fleet has in place when it harvests pink salmon in Area 29. This would require recreational guides to operate under the same requirements as do Area B fishers, including:
 - i. Guides and/or lodges must, prior to leaving for the fishing grounds, complete a start fishing report and announce their intention to fish.
 - ii. At the end of each fishing day and prior to 08:00 hours of the next day, the Guide or lodge must, as a condition of license, record their catch information in their Salmon Log Book and report their catch to their selected service provider
 - iii. Within 24 hours of the end of a fishing trip and prior to commencing a subsequent fishing trip, the guide shall either phone in or submit via e-log an End Fishing Report.
 - iv. Catch validation is mandatory and guides are required to make their own arrangements with a creel service provider authorized by the Department.
 - v. A designated creel sampler shall be present during all landing of catch to record the number and weight of each species of salmon landed and collect GSI samples.
 - vi. Prior to any landing of fish, the guide shall hail in to the designated creel service provider the following information:
 - a. Guide Name;
 - b. Guide registration number;
 - c. contact phone number;
 - d. date, time, port and location of landing of the fish;
 - e. estimated number of retained pieces by species;
 - f. estimated number of released fish by species
 - g. releases below legal size limit
 - h. the number of GSI samples from released Chinook
 - i. are and sub-area fished; and sub-area fished.

3. Ensure any fishery which requires endangered or threatened fish to be released have GSI monitoring of both retained catch and releases.
4. Ensure every fishery includes an interim estimate of FRIM in the IFMP that includes a best cumulative estimate of drop-out (off), short-term mortality, and long-term mortality, and that this estimate is employed in the reporting of total mortalities associated with the fishery.

8. New Fisheries

- All new (from 2019) south coast recreational fisheries (selective, MSF, or MM) designed to target abundant Chinook SMUs and avoid endangered or threatened SMUs must be developed through DFO's 'New Emerging Fisheries Policy'.
- Any proposed new fisheries should be summarized within a standardized template as was employed for CSAF proposals. As with CSAF proposals, consultations with FNs and stakeholders should proceed through regular processes. Approved pilot projects would be excepted.
- If DFO decides to ignore its own National Policy, and advance such fisheries, they must have in place:
 - Fishery independent estimates of effort, retained catch, and releases
 - A program where a minimum of 20% of the retained catch and releases (including sub-legal releases) are GSI sampled
 - A defensible C&P derived estimate of compliance with the regulations
 - Report the results of these fisheries to the SBC Chinook Committee
 - Written support of the First Nations in which they are implemented
- Without data, there should be no fishery. Hence, no proposed fishery without the above in place should proceed in 2020.

9. Estimates of 'Missing' Fraser Chinook

It is recognized there is a significant discrepancy between the number of 4₂ and 5₂ Chinook as estimated at Albion and the number that arrive on the spawning grounds. To date there has been little effort to quantify or identify what is contributing to this discrepancy. A research program should be put into place in 2020 to identify the fate of these 'missing' Chinook.

Year	Albion Abundance	Escapements	Difference	Proportion of Term Abund	Terminal Abun Low	Terminal Abun High
2012	37,281	25,306	11,975	32.1%	26,000	71,000
2013	41,565	35,972	5,593	13.5%	26,000	57,000
2014	85,747	68,329	17,418	20.3%	33,000	69,000
2015	74,441	68,809	5,632	7.6%	34,000	71,000
2016	35,287	29,902	5,385	15.3%	27,000	70,000
2017	22,245	19,663	2,582	11.6%	27,000	68,000
2018	23,631	18,965	4,666	19.7%	28,000	78,000
DFO memo		Staley	Average	17.2%		

10. Assessing Total Mortalities in 2020

DFO, First Nations and stakeholders recognize that the absence of estimates of FRIM in 2019 compromised assessments. While DFO management and science branches have said that the issue must be addressed, there appears to be little sense of urgency to deal with the issue. The MCC has developed a model to estimate FRIM in fisheries. Until there is an agreed upon FRIM rate per fishery, this model should be used in collaboration with stakeholders to produce a range of FRIM that can be used in the evaluation of total mortalities in 2020 fisheries.

11. Big Bar Slide

There are concerns that the Big Bar slide has not been fully remediated and that it will again have a significant impact on some 5₂ Chinook CUs. This, coupled with expectations of high water levels in 2020, could lead to mortality levels similar to, or greater than, what were experienced in 2019. This alone justifies the June closure of the Area 19 and 20E fishery. Consideration must be given to closing all fisheries if DFO cannot commit to limiting total mortalities to 5% in 2020. Further to this, it was recognized that later timed 5₂shaving to pass through the Big Bar slide in 2019 had a higher success rate than earlier timed ones. Therefore, it is important that additional fisheries protections be put into place for later timed Summer 5₂s.

12. COVID-19 Implications

Management and assessment of South Coast recreational fisheries is dependent, to a large extent, on an effective creel sampling program. If COVID-19 concerns curtail or eliminate an effective creel program an alternative must be found. For instance, for BC groundfish fisheries, when the use of at-sea observers ended due to COVID-19 concerns, industry and DFO immediately developed and began implementing an effective alternative. If an effective monitoring and assessment program is not put in place for the recreational fishery, that can provide a similar level of confidence as does the creel program, closures may be necessary in areas which see significant effort. The Department should consult with First Nations and stakeholders on how management actions and monitoring would be adjusted if the 2020 creel program is adjusted due to COVID-19 concerns. If the necessary adjustments can't be put into place DFO should consider limiting fishing opportunities.

