



SFAB perspective on Chinook mass marking and mark selective fishery management around southern BC.

- The issue underlying the current crisis in the southern BC recreational fishery is climate change driven, resulting in negative impacts to both the freshwater and offshore marine environments of Fraser River stream-type Chinook. As well, COSEWIC has identified other Chinook stocks of concern (Harrison, Nanaimo summer-run) that spend much of their life history in the Salish Sea. Because there is no quick prospect of change to this situation and because of the important and irreplaceable role Chinook fishing has in the SBC recreational fishery, in the event that DFO continues with broad-scale Chinook non-retention in future years the recreational fishery infrastructure around the Salish Sea will collapse, with large negative socio-economic consequences to coastal communities.
- In order to sustain both wild Chinook stocks of concern and the recreational (and potentially other) fisheries it is critically important that DFO make the policy decision as soon as possible to implement mass marking (MM) of hatchery origin Chinook in BC to enable widespread mark-selective fishery (MSF) management when non-selective management poses too high a risk to stocks of concern. Ideally this would begin with the production from the 2020 broodyear, with resulting fish to be adipose fin-clipped beginning spring 2021. Even with this quickest possible decision and follow through these fish will not be legal for retention until 2023 at the earliest.
- The SFAB has been advocating for several years that DFO implement Chinook mass marking at Canadian production hatcheries to allow for MSF management. However, there appears to be some reluctance to take the policy decision to proceed with this in Canada even though doing so would harmonize the Chinook management regime in a key area where the US has utilized MSF for approximately 20 years. Canada has been mass marking hatchery origin Coho to allow MSF management since 1999, and this has enabled an important recreational opportunity to retain some Coho even during a time of sustained low productivity for these salmon.

- The main production hatcheries in Southern BC produce somewhere in excess of 30 million Chinook eggs. Not all of these are reared to smolts and considered to be fish intended to support harvest. Other enhancement strategies and purposes include eyed-egg transplants to other systems, stock rebuilding, and assessment. A conservative assumption is that at least two-thirds or a minimum of 20 million Chinook juveniles would qualify for mass-marking.

- One argument that is used against Chinook mass-marking in Canada is that it could compromise the existing coded wire tag recovery program, because a missing adipose fin will no longer mean the fish automatically has a CWT. To overcome this issue additional resources will be required for catch monitoring to ensure that CWT recovery rates are consistent with obligations under the Pacific Salmon Treaty. Because numerous wild Chinook and Coho stocks are listed in the US under the Endangered Species Act, Washington and Oregon states implemented mass marking of all hatchery origin Chinook and Coho and moved to MSF management of the recreational and commercial troll fisheries for both species 15+ years ago. Both states have invested additional resources in catch monitoring to sustain the quality of the CWT program, which is acknowledged to be a highly important stock assessment tool for both salmon species. Canada can surely do likewise.

- Since 2013 all Chinook (and Coho) broodstock used at production hatcheries in Canada have been tissue sampled to enable a program called Parental Based Tagging (PBT). The case has been made by a number of salmon researchers and managers that properly utilized and with adequately resourced methods of catch sampling PBT can complement the use of CWT's, allowing the adipose fin-clip to indicate simply that the fish so marked is a hatchery origin fish and, by taking a tissue sample from the harvested fish, to be able to identify which hatchery it originated from.

- The implementation (commencing with the 2019 broodyear) of a pilot Chinook MM program at the Conuma River hatchery to assess the use of PBT is an encouraging development. Once these fish return as adults there will undoubtedly be some benefits to terminal fishery management in Nootka Sound, however given the northwest Vancouver Island location of the hatchery and the fact that these fish have a far-north migrating ocean life-history these marked fish will do nothing to alleviate the extensive Chinook non-retention issue in the Salish Sea recreational fishery. It should be noted that the Nuu-chah-nulth Tribal Council supports chinook MM, both as a fishery management strategy and to better manage wild/hatchery salmon inter-actions. Although not relevant to implementation of MSF management in mixed-stock fisheries, the ability to be more selective in choosing which fish (hatchery or wild) for both terminal harvest and broodstock utilization will potentially offer important benefits in maintaining genetic fitness for enhanced chinook stocks.
- The SFAB cannot overstate the urgency of the situation and the critical need to implement Chinook mass-marking as soon as possible. The recreational fishery infrastructure simply cannot survive widespread Chinook non-retention from April into July, and perhaps longer, around much of the inner south coast on an annual basis. We know from bio-sampling programs (Avid Anglers and other catch sampling opportunities) that significant numbers of hatchery origin Chinook are present in the Salish Sea during this time, we simply need a way for anglers to identify them in order to sustain both the fishery and unenhanced Chinook stocks of concern.
- It should be noted that because of sufficiently high mark rates the opportunity exists now to implement MSF management for Chinook at certain times. As a generalization these potential opportunities occur around the south end of Vancouver Island and into the lower Strait of Georgia in the winter to late May period, enabled by the presence of significant numbers of US (and therefore adipose fin-clipped) hatchery origin Chinook. The SFAB has proposed several time and area specific MSF chinook retention proposals during April/May 2020 and 2021.