

Fisheries and Oceans Canada: 2021 Tagging and Marking Plan incl. Covid Impacts

May 4, 2021 – Kathy Fraser

Species	TAGGED		Total UNTAGGED		Total releases
	AD-CWT	CWT-Only	AD-Only	No Mark	
Chinook	5,735,000	0	3,285,000	35,398,205	44,418,205
Coho	1,010,000	0	4,498,000	4,591,480	10,099,480
Sockeye	50,000	0	979,000	7,280,500	8,309,500
Chum	0	0	100,000	47,391,770	47,491,770
Pink	0	0	0	12,809,000	12,809,000

The marked releases planned for 2021 includes 2019 and 2020 brood years. Due to Covid, the total number of Ad-CWT, and Ad clips will be substantially reduced from the planned numbers. An updated "actual releases" will be available in the fall of 2021.

Summary of Impacts of COVID-19 on Chinook and Coho Indicator Coded-wire Tag (CWT) Application at DFO's Salmonid Enhancement Program Facilities.

Summary

- 2020 Covid-related impacts to hatchery operations resulted in the just under 20% of the total target CWTs to be applied for Chinook hatchery indicator stocks. Of the 14 Chinook hatchery indicators, six (42%) received a least a portion of their CWT target (Table 1).
- In 2021, DFO expects to apply the majority of CWTs (86%) to the 13 active PST Chinook hatchery indicator stocks. Eight indicators will achieve their full tagging target and all (100%) will receive a significant portion of their CWT target (Table 2).
- The impacts of marking and tagging operations that were reduced or eliminated in 2020 will begin to manifest in 2022, when fish from brood years 2018 (yearling stocks) and 2019 (fingerling stocks) start recruiting to fisheries and extend to 2025.

Background

2020 Coded-wire Tag Application

- Annually, the majority of Chinook CWTs are applied in the spring (March through May) with some limited CWT tagging occurring in late summer/fall on Chinook destined for release as yearlings (e.g. Nicola Chinook).
- 2020 Covid-related hatchery operational constraints limited the ability to apply CWTs in the spring tag application period (Table 1), largely affecting tagging of sub-yearling stocks.
- Subyearling (smolt 0+) Chinook hatchery indicators that received CWTs were: Phillips, Cowichan, Lower Shuswap, and Quinsam (Table 1). Of these stocks, tagging totals were well below targets with the exception of Phillips.
- Yearling (smolt 1+ stocks) CWT targets for Chinook and Coho, due fish being on-site for a longer period, were met with the exception of Kitsumkalum Chinook (Table 1).

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- The Kitsumkalum Chinook CWT indicator stock has both a fed fry and smolt 1+ release strategy. In consultation with Science Branch all 2019 brood were released as unmarked fry, leaving no yearling-destined fish on hand to be tagged once hatchery operations stabilized in summer 2020.

2020 Fall Broodstock Collection

- All brood stock collection activities (2020 brood year) for Chinook and Coho CWT indicators were undertaken with COVID-19 operational protocols, resulting in reduced staff capacity to conduct brood collection activities.
- 2020 brood stock collection was largely successful; however, two programs failed to achieve brood target, Puntledge and Cowichan Chinook.
 - The Puntledge brood shortfall resulted from poor escapement (which is not uncommon, given poor stock status and limited spawners),
 - The Cowichan brood shortfall resulted from a flood event during brood stock collection.

Table 1. 2020 marking summary of Chinook indicator stocks (2019 brood year). Note: all 2020 *yearling* releases (2018 brood year) were unaffected by the COVID-19 pandemic as they were marked in 2019.

2020 Chinook PST Indicator CWT Application (2019 brood)				
Canadian Hatchery CWT Indicators	Stage	Tagging Target	Tags Applied	Tagging Shortfall
Quinsam R	Smolt 0+	550,000	237,414	312,586
Nicola R	Smolt 1+	200,000	214,507	0
Cowichan R	Smolt 0+	600,000	200,170	399,830
Phillips R	Smolt 0+	120,000	83,217	36,783
Shuswap R Low	Smolt 0+	550,000	60,223	489,777
Chilko R (<i>pilot</i>)	Smolt 1+	145,000	30,970	114,030
Puntledge R (summers)	Smolt 0+	150,000	0	150,000
Shuswap R Mid	Smolt 0+	150,000	0	150,000
Big Qualicum R	Smolt 0+	200,000	0	200,000
Chilliwack R	Smolt 0+	200,000	0	200,000
Kitsumkalum R	Fed Fry & Smolt 1+	260,000	0	260,000
Harrison R	Smolt 0+	300,000	0	300,000
Atnarko R	Smolt 0+	400,000	0	400,000
Robertson Cr	Smolt 0+	450,000	0	450,000

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2021 Coded-wire Tag Application

- Significant improvements in DFO's COVID-19 operational protocols and advanced planning have DFO on track to meet all 2021 tagging commitments, except for where a brood shortfall has occurred (Table 2).
- There are 13 Chinook hatchery indicator stocks, of which all (100%) will receive a significant portion of their CWT target (Table 2). Eight indicators will achieve their full number of tags, four will receive the majority of their CWT target, and one will receive roughly one-third (36%) of the tagging target due to environmental conditions during brood collection.
- Shortages in CWT application will result from Puntledge and Cowichan Chinook brood collection shortfalls described in the Brood Collection section above. Additional events impacting the ability to meet tagging commitments on the Kitsumkalum, Chilko, and Nicola projects are outlined below and in Table 2:
 - The presence of bacterial kidney disease (BKD) in some of the incubating brood evoking disease screening protocols
 - An unanticipated hatchery infrastructure malfunction at Spius Creek Hatchery

Table 2. Interim 2021 marking summary on Chinook CWT indicator stocks for 2020 brood year.

2021 Chinook CWT Indicator Tagging (2020 brood)					
Canadian Hatchery CWT Indicators	Tagging Target	Will target be achieved in 2021?	Expected Tag Application	Expected Tagging Shortfall	Notes
Atnarko R	400,000	Yes	400,000	0	
Big Qualicum R	200,000	Yes	200,000	0	
Chilliwack R	200,000	Yes	200,000	0	
Harrison R	300,000	Yes	300,000	0	
Shuswap R Mid	150,000	Yes	150,000	0	
Shuswap R Low	550,000	Yes	550,000	0	
Quinsam R	550,000	Yes	550,000	0	
Robertson Cr	450,000	Yes	450,000	0	
Kitsumkalum R	260,000	No	240,000	20,000	Brood shortfall: BKD screening
Chilko R (pilot)	145,000	No	120,000	25,000	Brood shortfall: Pilot Project / Hatchery Event
Puntledge R (summers)	150,000	No	75,000	75,000	Brood shortfall: Poor Return / BKD screening
Nicola R	200,000	No	120,000	80,000	Brood shortfall: Hatchery Event
Cowichan R	600,000	No	216,000	384,000	Brood shortfall: Environmental Event
Phillips R	120,000		-	-	Final year of enhancement was 2019 brood

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Table 3. Interim 2021 marking summary on Coho CWT indicator stocks for 2020 brood year.

2021 Coho CWT Indicator Tagging (2020 brood)					
StAD Coho Indicators	Tagging Target	Will target be achieved in 2021?	Expected Tag Application	Expected Tagging Shortfall	Notes
Inch Cr	150,000	Yes	150,000	0	
Norrish Cr (pilot)	100,000	Yes	100,000	0	
Big Qualicum R	200,000	Yes	200,000	0	
Quinsam R	200,000	Yes	200,000	0	
Robertson R	40,000	Yes	40,000	0	
Coldwater R	185,000	Yes	185,000	0	
Eagle R	65,000	Yes	65,000	0	
Zymacord R	20,000	Yes	20,000	0	
Toboggan Cr	35,000	No	30,000	5,000	Brood shortfall: BKD screening
Salmon R	25,000	No	17,500	7,500	Brood shortfall: BKD screening