

**Proposed Thermal Marks for Salmon from Canada,
Brood Year 2018**

by

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Abstract

Thermal marking continues to play an important role for both stock, hatchery, and fisheries management and research in Canada. Canada plans to thermally mark approximately 73 million Pacific salmon for release in 2019/20. Thermal marking will include 63 thermal marks applied at 17 hatcheries with marked salmon released at 54 locations. The plan is similar to the 2017 brood year marking plan, fish planned for release in 2018/19 (DiNovo and Luedke 2017).

Introduction

Thermal marking in Canada continues to focus primarily on Chinook and chum stocks with increasing numbers of sockeye and limited marking of coho and pink. Thermal marks are used to distinguish hatchery from naturally spawned (wild) salmon in terminal fisheries and in spawning populations. Thermal marks on sockeye, Chinook, coho and pink are also being used to assess different hatchery release strategies. For chum salmon the use of thermal marks has replaced finclips as a means for marking fish at some hatcheries. Thermal marks are also being used to validate information on the harvest, survival and straying rates of Chinook salmon estimated by coded-wire tag studies (Hankin et al. 2005).

Plan for 2018 Brood Year Stocks

The proposed thermal marking program for salmon in Canada for the 2018 brood year is shown in Table 1; using the Uniform Hatch Code notation (Johnson et al. 2006). However, due to practical application considerations the delimiters being used remain those described in Thermal Marking Of Otoliths. The "RBr" Coding Structure Of Thermal Marks (Munk and Geiger, 1998).

The bulk of the proposal is similar to that submitted for the marking of salmon in Canadian hatcheries for brood year 2017 (DiNovo and Luedke 2017). Proposed marks remain the same except where prevented by operational constraints and some slight notation changes to comply with the Uniform Hatch Code notation (Johnson et al. 2006). Important components of the plan include continuation of Chinook marking at both Cowichan and Nanaimo River Hatcheries on the East Coast of Vancouver Island (ECVI) to permit assessment of hatchery contribution to these depressed ECVI stocks. Additionally, the use of multiple thermal marks at Nitinat River Hatchery for both Chinook and coho will allow continued assessment of fast and slow growth hatchery rearing strategies as well as release locations for these species. Naturalization of rearing channels and ponds are also being studied for release advantage. Anticipated improved returns to the Okanagan will result in larger releases of four different marks being applied to sockeye into Skaha Lake, and enable assessment of different release strategies.

References

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Table 1. Proposed Canadian releases of thermal marked salmon in 2018/19.

Brood Year	Species	Facility	Hatch Code	Proposed Release (Thousand's)
2018	Chinook	Chilliwack River Hatchery	H7	1,800
2018	Chinook	Chilliwack River Hatchery	H7	20
2018	Chinook	Chilliwack River Hatchery	H7	20
2018	Chinook	Conuma River Hatchery	H5-2	1,350
2018	Chinook	Conuma River Hatchery	H5-3	1,350
2018	Chinook	Conuma River Hatchery	H5-4	500
2018	Chinook	Conuma River Hatchery	H2,4	350
2018	Chinook	Conuma River Hatchery	H2,5	150
2018	Chinook	Conuma River Hatchery	H3	0
2018	Chinook	Conuma River Hatchery	H3	0
2018	Chinook	Conuma River Hatchery	H4,2	350
2018	Chinook	Conuma River Hatchery	H9	160
2018	Chinook	Cowichan River Hatchery	4-1H	1,000
2018	Chinook	Gwa'ni Hatchery	3,3nH	300
2018	Chinook	Marble River Hatchery	3,2,2H	900
2018	Chinook	Marble River Hatchery	3,2,3H	90
2018	Chinook	Nanaimo River Hatchery	H2-3	400
2018	Chinook	Nanaimo River Hatchery	H5	220
2018	Chinook	Nitinat River Hatchery	1,4H	500
2018	Chinook	Nitinat River Hatchery	1,4H	100
2018	Chinook	Nitinat River Hatchery. Transferred to Jack Brooks Hatchery	4H	250
2018	Chinook	Nitinat River Hatchery	H2,3,2	1,000
2018	Chinook	Nitinat River Hatchery	H2,3,2,2	1,000
2018	Chinook	Nitinat River Hatchery	H2,3,2,3	1,000
2018	Chinook	Nitinat River Hatchery	H3,1,3	125
2018	Chinook	Nitinat River Hatchery	H3,1,4	125
2018	Chinook	Nitinat River Hatchery	H3,2,3	125
2018	Chinook	Nitinat River Hatchery	H3,2,3,2	1,000
2018	Chinook	Nitinat River Hatchery	H3,2,4	125
2018	Chinook	Puntledge River Hatchery	H6	1,450
2018	Chinook	Quinsam River Hatchery	2-4H	150
2018	Chinook	Quinsam River Hatchery	3-4H	960
2018	Chinook	Quinsam River Hatchery	H2/2	650
2018	Chinook	Quinsam River Hatchery	H2/2/2	1,900
2018	Chinook	Quinsam River Hatchery	H2/2/2/2	120
2018	Chinook	Quinsam River Hatchery	H2/2/4	250
2018	Chinook	Robertson Creek Hatchery	3H	5,800
2018	Chinook	Robertson Creek Hatchery	3H3/2	100
2018	Chinook	Robertson Creek Hatchery	3H4	200
2018	Chinook	Robertson Creek Hatchery	H3/2	30
2018	Chinook	San Juan Enhancement Soc.	H3	720
2018	Chinook	Spius Creek Hatchery	H3/3	55
2018	Chinook	Spius Creek Hatchery	H3/3,2	85
2018	Chinook	Spius Creek Hatchery	H4/4	80
2018	Chinook	Spius Creek Hatchery	H4/4,2	70
2018	Chinook	Tahsis River Hatchery	H7,3	160

Table 1. Proposed Canadian releases of thermal marked salmon in 2018/19. (cont'd)

2018	Chum	Conuma River Hatchery	H2,2	500
2018	Chum	Conuma River Hatchery	H2,3	500
2018	Chum	Conuma River Hatchery	H2,3	1,000
2018	Chum	Conuma River Hatchery	H5	1,500
2018	Chum	Conuma River Hatchery	H7	500
2018	Chum	Gwa'ni Hatchery	H3,2	150
2018	Chum	Gwa'ni Hatchery	H3-2	25
2018	Chum	Kitimat River Hatchery	H1,4	567
2018	Chum	Kitimat River Hatchery	H1-4	567
2018	Chum	Kitimat River Hatchery	3-2H	567
2018	Chum	McIntyre Creek	6,3H	20
2018	Chum	McIntyre Creek	6-3H	20
2018	Chum	Nitinat River Hatchery	3,1H	30,000
2018	Coho	Nitinat River Hatchery	H2,3	50
2018	Coho	Nitinat River Hatchery	H2,4	50
2018	Coho	Nitinat River Hatchery	H3	50
2018	Coho	Nitinat River Hatchery	H4	50
2018	Sockeye	Inch Creek Hatchery	H4,2	1,000
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,3	0 (2 year rotation)
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,3,1	0 (2 year rotation)
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,3,2	0 (2 year rotation)
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,3,3	0 (2 year rotation)
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,4	2,000
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,4,1	2,000
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,4,2	2,000
2018	Sockeye	Kl cp'elk'stim Hatchery	H3,4,3	2,000
2018	Pink	Nanaimo River Hatchery	H4	900
Totals by Species				
	Chinook			27,090,000
	Chum			35,915,000
	Coho			200,000
	Sockeye			9,000,000
	Pink			900,000
Grand Total				73,105,000