

NPAFC

Doc. 856

Rev. _____

**Proposed Thermal Marks for Salmon from
British Columbia for Brood Year 2005**

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Submitted to the

NORTH PACIFIC ANADROMOUS FISH COMMISSION

By

CANADA

July 2005

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:

Till, J. 2005. Proposed thermal marks for salmon from British Columbia for brood year 2005. (NPAFC Doc. 856) 4p. Fisheries and Oceans Canada, Nanaimo, British Columbia, Canada V9T 1K3.

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Abstract

In British Columbia thermal marking continues to play an important role for both research and for fisheries management. For 2005 it is proposed that a total of 43 thermal mark releases will take place from 14 hatcheries. The plan is similar to the marking proposal submitted for 2004 with a few changes. Additional marks will be applied to two chinook stock on the East Coast Vancouver Island from Nanaimo and Cowichan Rivers.

Introduction

Thermal marks are being used to look at a number of different issues in British Columbia. They are being used to distinguish hatchery origin salmonids (chinook, chum, sockeye and coho) from naturally spawned (wild) salmon in terminal fisheries and in spawning populations. Thermal marks on sockeye and chinook are also being used to assess the success of stock rebuilding. 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 and survival of chinook salmon based on coded-wire tag studies and to look at straying rates of chinook.

Plan for 2005 brood year stocks

The proposed thermal marking program for salmon in British Columbia for the 2005 brood year is shown in Table 1. The bulk of the proposal is similar to that submitted for 2004 (Till, J. 2004) and marks will remain the same except where prevented by operational constraints. Two new chinook stocks on East Coast Vancouver Island (ECVI) will be marked to look at hatchery contribution and at time and location of harvest of depressed ECVI chinook stocks. Other key components of the plan in addition to the regular 'production' marks are as follows.

Continued thermal marking of sockeye stocks during rebuilding of Rivers and Smith Inlets in the Central Coast will enable monitoring of migration, timing and contribution to fisheries and escapement. Continued application of marks to Woss and Vernon Lake sockeye will be used to assess the enhanced contribution to returns to the Nimpkish system. Gold and Burman River chinook in Nootka Sound will continue to be marked to assess straying rates, migration, timing and contribution to fisheries and for management of those fisheries. Marking of Quinsam River fed fry will be used to assess survival rates of chinook that more closely mimic their wild counterparts than the regular 'production' marks. Marks applied to both coho fry and smolts at Nitinat will allow comparative survival studies. Skaha Lake (Okanagan) sockeye marks will be used for long term assessment of both juvenile production and adult returns and will allow differentiation from other Columbia River adipose clipped stocks. Marks on both Coldwater and Marble River chinook will be used to assess hatchery contribution to escapements whilst marks on Stamp River (Somass) chinook will permit comparison of survival rates between estuary and river releases and between yearling and under yearling smolt releases.

The notation (including delimiters) used in Table 1 is consistent with the RBr system (Munk and Geiger 1998).

References

Munk K.M. and Geiger, H.J. 1998. Thermal Marking of Otoliths: the “RBr” Coding Structure of Thermal Marks (NPAFC Doc. 367). Alaska Department of Fish and Game, Juneau Alaska 99801-5526 19p.

Till, J. 2004. Proposed thermal marks for salmon from British Columbia for brood year 2004. (NPAFC Doc. 803) 4 p. Fisheries and Oceans Canada, Nanaimo, British Columbia, Canada V9T 1K3.

Table 1 Proposed Thermal Mark Releases from British Columbia for 2005 Brood Year

Brood Year	Species	Facility	Release Site	Thermal Mark : RBr Code
2005	Chinook	Big Qualicum	Englishman River	2:1.6n
2005	Chinook	Chilliwack River Hatchery	Chilliwack River	2:1.7
2005	Chinook	Conuma River Hatchery	Conuma River	2:1.5
2005	Chinook	Conuma River Hatchery	Sucwoa River	2:1.3
2005	Chinook	Conuma River Hatchery	Tlupana River	2:1.3
2005	Chinook	Cowichan River Hatchery	Cowichan River	1:1.5,2.3
2005	Chinook	Conuma River Hatchery	Gold River	2:1.2,2.4
2005	Chinook	Conuma River Hatchery	Burman River	2:1.4,2.2
2005	Chinook	Conuma River Hatchery. Transferred to Tahsis H.	Tahsis River	2:1.9
2005	Chinook	Marble River Hatchery	Marble River	1:1.3,2.2,3.2
2005	Chinook	Nanaimo River Hatchery	Nanaimo River	1:1.5,2.2
2005	Chinook	Nitinat River Hatchery	Nitinat River	2:1.2,2.3,3.2
2005	Chinook	Nitinat River Hatchery	Sarita River	2:1.3,2.2,3.3
2005	Chinook	Nitinat River Hatchery. Transferred to Goldstream H.	Esquimalt Harbour	1:1.4
2005	Chinook	Nitinat River Hatchery	Sooke River	1:1.4
2005	Chinook	Quinsam River Hatchery	Quinsam/Campbell River	2:1.2/2.2/3.2
2005	Chinook	Quinsam River Hatchery	Seapen off Campbell Estuary	2:1.2/2.2
2005	Chinook	Quinsam River Hatchery	Egg Outplants to incubation boxes in Elk Falls Spawning Channel (Campbell R.)	1:1.3-2.4
2005	Chinook	Quinsam River Hatchery	Fed fry outplants to Upper Quinsam R.	1:1.2-2.4
2005	Chinook	Robertson Creek Hatchery	Stamp River	1:1.3
2005	Chinook	Robertson Creek Hatchery	Port Alberni Harbour.	1:1.3,2.1,3.2
2005	Chinook	Robertson Creek Hatchery	Stamp River (Super smolts)	1:1.3,2.1,3.3
2005	Chinook	Robertson Creek Hatchery	Henderson Lake	1:1.5
2005	Chinook	Robertson Creek Hatchery	Nahmint River	1:1.3-2.2
2005	Chinook	San Juan Enhancement Soc.	San Juan River	2:1.3n
2005	Chinook	Spius Creek Hatchery	Coldwater River	2:1.3,2.4
2005	Chinook	Zeballos River Hatchery	Zeballos River	2:1.3
2005	Chum	Conuma River Hatchery	Conuma River	2:1.4
2005	Chum	Conuma River Hatchery	Conuma Estuary (seapen)	2:1.5
2005	Chum	Conuma River Hatchery	Canton River	2:1.2,2.2
2005	Chum	Conuma River Hatchery	Deserted River	2:1.2,2.2
2005	Chum	Conuma River Hatchery	Sucwoa River	2:1.2,2.3
2005	Chum	Conuma River Hatchery	Tlupana River	2:1.2,2.3
2005	Chum	Nitinat River Hatchery	Klanawa	3:1.3,2.1,3.3
2005	Chum	Nitinat River Hatchery	Nitinat River	1:1.3,2.1
2005	Coho	Nitinat River Hatchery	Nitinat River smolts	2:1.3
2005	Coho	Nitinat River Hatchery	Nitinat Lake fry	2:1.4
2005	Sockeye	Nimpkish River Hatchery	Woss Lake	1:1.3
2005	Sockeye	Nimpkish River Hatchery	Vernon Lake	1:1.3
2005	Sockeye	Snootli River Hatchery	Rivers Inlet (Owikenno Lake stocks) Wannock	1:1.3,2.5
2005	Sockeye	Snootli River Hatchery	Rivers Inlet (Owikenno Lake early stocks)	2:1.4,2.2
2005	Sockeye	Snootli River Hatchery	Smiths Inlet (Long Lake stocks)	2:1.4,2.4
2005	Sockeye	Shuswap River Hatchery	Skaha Lake (Okanagan stock)	2:1.3,2.3