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Proposed Thermal Marks for Salmon from British Columbia for Brood Year 2009

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Abstract

In British Columbia thermal marking continues to play an important role for both research and for fisheries management. For the 2009 brood year we expect to thermally mark approximately 63 million salmon. This will include 36 different thermal marks applied at 12 hatcheries and released from 45 locations. The plan is similar to that proposed in 2007 and to that carried out in 2008. British Columbia's main production releases remain unchanged while a few smaller programs have seen some changes to their marking.

Introduction

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

Plan for 2009 Brood Year Stocks

The proposed thermal marking program for salmon in British Columbia for the 2009 brood year is shown in Table 1. The bulk of the proposal is similar to that submitted for 2007 (Till, J. 2007) and marks largely remain the same except where prevented by operational constraints. Other important components of the plan in addition to the regular 'production' marks include:

A continuation of Chinook marking at both Cowichan and Nanaimo River hatcheries on the East Coast of Vancouver Island (ECVI) will permit assessment of hatchery contribution to depressed ECVI stocks. The marking of Quinsam River fed fry to assess survival rates of Chinook that more closely mimic their wild counterparts than regular 'production' marks. The use of multiple thermal marks at Nitinat River hatchery for both Chinook and coho will permit assessment of fast and slow growth rearing strategies for each species. A new thermal mark for Nanaimo River pinks first applied to the 2008 brood will be used to assess in-river spawning success of hatchery stock and their contribution to future escapement.

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. 2007. Proposed Thermal Marks for Salmon from British Columbia for Brood Year 2007. (NPAFC Doc. 1029) 3 p. Fisheries and Oceans Canada, Nanaimo, British Columbia, Canada V9T 1K3. (Available at <http://www.npafc.org>).

Table 1 Proposed Thermal Mark Releases from British Columbia for 2009 Brood Year

Brood Year	Species	Facility	Release Site	Proposed Thermal Mark : RBr Code	Proposed Release (000)
2009	Chinook	Chilliwack River Hatchery	Chilliwack River	2:1.7	1,000
2009	Chinook	Chilliwack River Hatchery	Alouette River	2:1.7	200
2009	Chinook	Chilliwack River Hatchery	Coquitlam River	2:1.7	200
2009	Chinook	Conuma River Hatchery	Early seapen release	2:1.5-2.2	850
2009	Chinook	Conuma River Hatchery	Late seapen release	2:1.5-2.3	850
2009	Chinook	Conuma River Hatchery	Sucwoa River	2:1.3	40
2009	Chinook	Conuma River Hatchery	Tlupana River	2:1.3	40
2009	Chinook	Conuma River Hatchery	Burman River	2:1.4,2.2	250
2009	Chinook	Conuma River Hatchery. Transferred to Tahsis H.	Tahsis River	2:1.9	110
2009	Chinook	Conuma River Hatchery. Transferred to Tahsis H.	Leiner River	2:1.7,2.3	110
2009	Chinook	Cowichan River Hatchery	Cowichan River	1:1.4-2.1	1,800
2009	Chinook	Marble River Hatchery	Marble River	1:1.3,2.2,3.2	900
2009	Chinook	Nanaimo River Hatchery	Nanaimo River (summer run)	2:1.5	180
2009	Chinook	Nanaimo River Hatchery	Nanaimo River (fall run)	2:1.2-2.3	350
2009	Chinook	Nitinat River Hatchery	Nitinat River (production)	2:1.2,2.3,3.2	2,000
2009	Chinook	Nitinat River Hatchery	Nitinat River (slow growth)	2:1.2,2.3,3.2,4.2	1,000
2009	Chinook	Nitinat River Hatchery	Nitinat River (slow growth followed by fast growth)	2:1.2,2.3,3.2,4.3	1,000
2009	Chinook	Nitinat River Hatchery	Sarita River (small)	2:1.3,2.2,3.4	50
2009	Chinook	Nitinat River Hatchery	Poetts Nook (small)	2:1.3,2.2,3.4	150
2009	Chinook	Nitinat River Hatchery	Sarita River (large)	2:1.3,2.2,3.3	50
2009	Chinook	Nitinat River Hatchery	Poetts Nook (large)	2:1.3,2.2,3.3	150
2009	Chinook	Nitinat River Hatchery. Transferred to Goldstream H.	Esquimalt Harbour	1:1.4	175
2009	Chinook	Nitinat River Hatchery. Transferred to Sooke H.	Sooke River	1:1.4	80
2009	Chinook	Nitinat River Hatchery	Sooke Harbour	2:1.2,2.3,3.2	85
2009	Chinook	Quinsam River Hatchery	Quinsam River	2:1.2/2.2/3.2	1,900
2009	Chinook	Quinsam River Hatchery	Seapens off Campbell Estuary	2:1.2/2.2	1,000
2009	Chinook	Quinsam River Hatchery	Campbell River	1:1.3-2.4	1,000
2009	Chinook	Quinsam River Hatchery	Fed Fry Outplants to Upper Quinsam R.	1:1.2-2.4	0
2009	Chinook	Quinsam River Hatchery	Salmon River	2:1.2/2.2/3.2/4.2	120
2009	Chinook	Robertson Creek Hatchery	Stamp River	1:1.3	6,000
2009	Chinook	Robertson Creek Hatchery	Nahmint River	1:1.3,2.2	225
2009	Chinook	San Juan Enhancement Soc.	San Juan River	2:1.3n/2.2	720
2009	Chum	Conuma River Hatchery	Conuma Estuary (seapen)	2:1.5	1,500
2009	Chum	Conuma River Hatchery	Canton River	2:1.2,2.2	1,000
2009	Chum	Conuma River Hatchery	Sucwoa River	2:1.2,2.3	1,000
2009	Chum	Conuma River Hatchery	Tlupana River	2:1.2,2.3	1,000
2009	Chum	Nitinat River Hatchery	Nitinat River (late)	1:1.3,2.1	25,000
2009	Chum	Nitinat River Hatchery	Nitinat River (early)	2:1.3,2.2	5,000
2009	Coho	Nitinat River Hatchery	Nitinat River (smolts)	2:1.3	50
2009	Coho	Nitinat River Hatchery	Nitinat Lake (fry)	2:1.4	100
2009	Sockeye	Inch Creek Hatchery	Pitt River	2:1.4,2.2	2,000
2009	Sockeye	Nimpkish River Hatchery	Woss Lake	1:1.3	800
2009	Sockeye	Nimpkish River Hatchery	Vernon Lake	1:1.3	400
2009	Sockeye	Shuswap River Hatchery	Skaha Lake (nearshore)	2:1.3,2.3	750
2009	Sockeye	Shuswap River Hatchery	Skaha Lake (offshore)	2:1.3,2.3,3.2	750
2009	Pink	Nanaimo River Hatchery	Nanaimo River, Nanaimo Harbour, Pacific Biological Station	2:1.4	900