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*Proposed Thermal Marks for Salmon from British
Columbia for Brood Year 2001*

Jeff Till

Fisheries and Oceans Canada
Science Branch, Pacific Region
Pacific Biological Station
Nanaimo, BC V9R 5K6
CANADA

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CANADA

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Summary of British Columbia thermal marking programs

This is the second in a series of papers outlining the proposed thermal marking to be conducted in British Columbia.

The primary use of thermal marking in British Columbia is to distinguish hatchery-origin chum and chinook salmon from wild salmon in terminal fisheries and in spawning populations. 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. Hatchery sockeye salmon released into lakes in the Canada-Alaska transboundary area have been thermally marked in cooperation with the Alaska Department of Fish and Game. These studies are designed to evaluate the survival of fry released in different lake systems. Sockeye salmon from Rivers Inlet and Smith Inlet in the central coast region are being thermally marked to enable monitoring of migration, timing and contribution to fisheries, during the rebuilding of these stocks. In addition, thermal marking has been used to compare the success of different hatchery release strategies including size of fish at release, timing of release and location of release, to identify hatchery fish in studies on early marine distribution and survival, and the interactions between hatchery and wild salmon.

The proposed thermal marking program for salmon in British Columbia for the 2001 brood year is shown in Table 1. The proposed program for 2000 (Till, J. and T. Perry 2000) saw some last minute modifications due to operational constraints. The 2001 proposed program is similar to the marking that was ultimately conducted in the 2000 brood year program and it is expected that most facilities will apply similar marks to those in 2000. The only notable change is that Owikeno early sockeye will have a new mark to distinguish it from Thuya lake releases from the Canadian/Alaskan transboundary program. In addition, Smiths Inlet sockeye may have to be assigned a post hatch mark depending on weather/temperature conditions.

The notation used in Table 1 is the RBr system (Munk and Geiger 1998). However, note that the delimiter '+' is used only to separate the thermal bands and is not an indicator of the magnitude of spacing between the bands.

A summary of thermal mark releases for chum, chinook and sockeye salmon in British Columbia for brood years 1992 to 2000 is provided (Table 2). Information regarding the thermal marking program in British Columbia is available from Fisheries and Oceans Canada, Pacific Biological Station, Nanaimo.

Reference

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. and T. Perry. 2000. Proposed thermal marks for salmon from British Columbia for brood year 2000. (NPAFC Doc. 509) 4 p. Fisheries and Oceans Canada, Nanaimo, British Columbia, Canada V9R 5K6.

Table 1 Proposed Thermal Mark Releases from British Columbia for 2001 Brood Year

Brood		Proposed Thermal Mark :		
Year	Species	Facility	Release Site	RBr Code
2001	Chinook	Chilliwack River Hatchery	Chilliwack River	2: 1.7
2001	Chinook	Conuma River Hatchery	Conuma River	2: 1.5
2001	Chinook	Conuma River Hatchery	Sucwoa River	2: 1.3
2001	Chinook	Conuma River Hatchery	Tlupana River	2: 1.3
2001	Chinook	Conuma River Hatchery	Zeballos River	2: 1.3
2001	Chinook	Nitinat River Hatchery	Nitinat River	2: 1.2 + 2.3 + 3.2
2001	Chinook	Nitinat River Hatchery	Sarita River	2: 1.3 + 2.2 + 3.3
2001	Chinook	Nitinat River Hatchery	Cheanna seapens (Pedder Bay)	1: 1.4
2001	Chinook	Nitinat River Hatchery	Esquimault Harbour	1: 1.4
2001	Chinook	Nitinat River Hatchery	Sooke	1: 1.4
2001	Chinook	Nitinat River Hatchery	Toquart River	1: 1.4
2001	Chinook	Robertson Creek Hatchery	Stamp River	1: 1.3
2001	Chinook	Robertson Creek Hatchery	Henderson Lake	1: 1.5
2001	Chinook	Robertson Creek Hatchery	Nahmint River	1: 1.3 + 2.2
2001	Chinook	Quinsam River Hatchery	Quinsam/Campbell River	2: 1.2 + 2.2 + 3.2
2001	Chinook	Quinsam River Hatchery	Seapen off Campbell Estuary	2: 1.2 + 2.2
2001	Chinook	Quinsam River Hatchery	Egg Outplants to incubation boxes in Elk	1: 1.3 + 2.4
2001	Chinook	San Juan Enhancement Soc.	San Juan River	2: 1.4 + 2.2
2001	Chum	Conuma River Hatchery	Conuma River	2: 1.4
2001	Chum	Conuma River Hatchery	Conuma Estuary (seapen)	2: 1.5
2001	Chum	Conuma River Hatchery	Canton River	2: 1.2 + 2.2
2001	Chum	Conuma River Hatchery	Deserted River	2: 1.2 + 2.2
2001	Chum	Conuma River Hatchery	Sucwoa River	2: 1.2 + 2.3
2001	Chum	Conuma River Hatchery	Tlupana River	2: 1.2 + 2.3
2001	Chum	Nitinat River Hatchery	Nitinat River (early release)	3: 1.5 + 2.3
2001	Chum	Nitinat River Hatchery	Nitinat River (late release)	1: 1.5
2001	Sockeye	Nimpkish River Hatchery	Woss Lake	2: 1.3 + 2.2
2001	Sockeye	Snootli River Hatchery	Rivers Inlet (Owikeno Lake stocks)	1: 1.3 + 2.5
2001	Sockeye	Snootli River Hatchery	Rivers Inlet (Owikeno Lake early stocks)	2: 1.4 + 2.2
2001	Sockeye	Snootli River Hatchery	Smiths Inlet (Long Lake stocks)	1: 1.3 + 2.6 or 2: 1.4 + 2.4
2001	Sockeye	Ouilet Creek Hatchery	Sakinaw Lake	1: 1.3
2001	Sockeye	Shuswap River Hatchery	Upper Adams River	2: 1.3

Table 2 Release Numbers for Thermally Marked Chinook, Chum and Sockeye in British Columbia

Chinook

Hatchery Facility:	Robertson	Robertson	Nitinat	Nitinat	Conuma	Conuma	Conuma	Chilliwack	Quinsam
Release Site(s):	Stamp River	Nahmint River & Seapens	Nitinat River & Lake	Sarita River	Conuma River & Seapens	Tlupana River	Sucwoa River	Chilliwack River	Quinsam River, Campbell River & Seapens
Broodyear:									
1992	8,400,429		500,000	156,632					
1993	6,939,205	134,594	6,195,122	210,776					
1994	7,272,539		6,353,525	237,979	663,691				
1995	8,273,553		4,073,259	7,086	390,040			813,089	
1996	8,451,699	21,807	7,474,233	58,469	507,047	22,635	13,959	2,055,821	3,628,008
1997	8,927,415	5,539	6,341,195	307,914	176,496			1,921,522	2,712,900
1998	7,575,588		4,908,227	462,165	2,439,247	55,945		1,807,651	3,559,730
1999	7,676,568	412,614	3,513,460	447,777	2,832,300			1,226,873	4,662,299
2000	4,971,646		3,321,199	175,196	2,398,963			1,004,683	4,267,332

Chum

Hatchery Facility:	Nitinat	Conuma	Conuma	Conuma	Conuma	Conuma	Conuma
Release Site(s):	Nitinat River & Lake	Conuma River	Conuma Estuary	Tlupana River	Sucwoa River	Canton River	Deserted River
Broodyear:							
1993	28,363,894						
1994	30,831,080						
1995	24,649,925						
1996	31,941,437						
1997	34,830,668						
1998	35,455,056	1,105,067	3,686,051	1,234,402	1,998,626	1,340,117	2,058,209
1999	23,721,507	525,964	1,369,785	1,103,714	1,883,722	1,071,147	1,822,476
2000	5,153,902	543,511	1,296,654	998,400	139,090	1,009,746	269,284

Sockeye

Hatchery Facility:	Shuswap	Shuswap
Release Site(s):	Upper Adams River	Adams Lake
Broodyear:		
2000	970,000	972,100