

Otolith Thermal Mark for Brood Year 2009 and Proposed Thermal Marks for
Brood Year 2010 Chum Salmon in Korea

by

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Abstract

Korea released 1.2 million and 6.5 million thermal marked chum salmon in March 2009 and 2010, respectively. The marks were 3,3nH for 2009(2008BY) and 3,1,2H for 2010(2009BY) . We will mark approximately 5.0 million chum salmon in BY 2010, which covers about 50% of release of BY 2010 chum salmon at Namdae-cheon (river). Chum salmon will be marked at Cold -water Fish Research Center using only 1 thermal mark (3,2,1H).

Introduction

Tagging is an old tool in biology, and is economically valuable for aquaculture, stock assessment and fisheries management. Traditionally, tagging experiments consisting of clipping, punching of fins, attaching plastic cards, inserting coded wire tags and micro data loggers have been used to distinguish fish stocks, to determine the optimum period of release of juveniles, and to check growth condition of fishes. However, labor-intensive tagging experiment requires high costs. Furthermore, in many cases, researchers experienced difficulties in getting enough specimens of recovery, so scientists sought for alternative methods.

Otolith thermal marking is one of the alternatives, which makes distinct and recognizable patterns in the otolith structures by exposing the fish to different temperature regimes. Due to advantages of mass-marking and good mark retention, all NPAFC countries have been released juvenile salmon with otolith marking. Korea released 2.2 million thermal marked chum salmon in March 2006 and 5.0 million in March 2007 and 5.0 million in March 2008. The marks were 3,3nH for 2005 Brood Year (BY), 3,1,2H for 2006 BY, and 3,2,1H for 2007 BY. We will continue the otolith thermal marking on 2010 BY chum salmon to get the growth conditions and survival during the early ocean life stage, and to distinguish hatchery origins.

Thermal mark for BY 2009 stock

Korea released 6.5 million thermal marked chum salmon in March 2010. The mark was a 3,1,2H (1:1.3, 2.1,3.2).

Plan for 2010 BY

Based on success of thermal mark experiment for since BY 2005, we will continue this experiment for the BY 2010 salmon. We will mark approximately 5.0 million chum salmon at Cold -water Fish Research Center with 1 pattern, which covers about 50% of release of BY 2010 chum salmon at Namdae-cheon (river) (Table 1). Proposed thermal mark schedule for BY 2010 stock of Korean chum salmon is shown in Table 2.

Table 1. Proposed thermal mark releases from Korea for 2010 brood year stocks of chum salmon.

No	BROOD YEAR	YEAR OF RELEASE	SPECIES	STATE/		AGENCY	FACILITY	STOCK	FINAL
				PROVINCE	REGION				RELEASE
K10-1	2010	2011	CHUM	GANGWON	EAST/JAPAN SEA COAST	CRC	Yangyang Hatchery	Namdae- river	Namdae- river

No	REARING		ESTIMATED		HATCH CODE	G RAPHIC IMAGE		MARKING SYSTEM
	TREATMENT	STAGE	RELEASE	RBr CODE		PREHATCH	POSTHATCH	
K10-1	Fed	fry	5,000,000	1:1.3,2.2,3.1	3,2,1H	III	II I	CHILLER

Table 2. Proposed thermal mark schedule for 2010 brood year stocks of Korean chum salmon.

No	OTOLITH MARK SCHEDULE	TEMP SHIFT DIRECTION	COMMENTS
K10-1	(2x)8C:12H,(1x)8C:24H,(1x)8C:12H,(1x)8C:24H:8H	Down (12 to 8)	Spawning date: mid Oct.-late Nov.