

NPAFC

Doc. 1130

Rev.

**Otolith Thermal Mark for Brood Year 2007 and Proposed Thermal Marks
for Brood Year 2008 Chum Salmon in Korea**

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submitted to the

North Pacific Anadromous Fish Commission

by

Republic of Korea

October, 2008

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:

Yeongdong Inland Fisheries Research Institute. 2008. Otolith Thermal Mark for Brood Year 2007 and Proposed Thermal Marks for Brood Year 2008 Chum Salmon in Korea. NPAFC Doc. 1130. 3 pp. Yeongdong Inland Fisheries Research Institute, NFRDI, Yangyang-gun, Gangwon-do 215-821, Republic of Korea. (Available at <http://www.npafc.org>).

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Abstract

Korea released 5.0 million thermal marked chum salmon in March 2007 and 2008, respectively. The marks were 3,1,2H for 2007 and 3,2,1H for 2008 released salmon. We will mark approximately 2.5 million chum salmon in 2009, which covers about 50% of release of BY 2008 chum salmon at Namdae-cheon (river). Chum salmon will be marked at Yeongdong Inland Fisheries Research Institute using only 1 thermal mark (3,3nH).

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 2006, 5.0 million in 2007 and 5.0 million in 2008. The marks were 3,3nH for 2005 Brood Year (BY), 3,1,2H for 2006 BY, and 3,2,1H for 2007BY.

Thermal mark for BY 2007 stock

Korea released 5.0 million thermal marked chum salmon in March 2008. The mark was a 3,2,1H (1:1.3,2.2,3,1).

Plan for BY 2008 stock

Based on success of thermal mark experiment for BY 2005, BY 2006, and BY 2007 stocks, we will continue this experiment for the BY 2008 salmon. We will mark approximately 2.5 million chum salmon at Yeongdong Inland Fisheries Research Institute with 1 pattern, which covers about 50% of release of BY 2008 chum salmon at Namdae-cheon (river) (Table 1). Proposed thermal mark schedule for BY 2008 stock of Korean chum salmon is shown in Table 2. Thermal mark pattern is presented in both the RBr notation (Munk and Geiger 1998), with the modification by Hagen (1999).

References

- Hagen, P. 1999. A modeling approach to address the underlying structure and constraints of thermal mark codes and code notation. (NPAFC Doc. 395). 12 p. Alaska Dept. Fish and Game, Juneau Alaska.
- Munk, K.M. and Geiger, H.J. 1998. Thermal marking of otoliths: the “RBr” coding structure of thermal marks. (NPAFC Doc. 367). 19 p. Alaska Dept. of Fish and Game, Juneau Alaska.

Table 1. Proposed thermal mark releases from Korea for 2008 brood year stocks of chum salmon.

No	YEAR OF		SPECIES	STATE/		AGENCY	FACILITY	RELEASE	
	BY	RELEASE		PROVINCE	REGION			STOCK	SITE
K08-1	2008	2009	CHUM	GANGWON	EAST of Korea	YDI	Yangyang Hatchery	Namdae- river	Namdae- river

No	REARING		ESTIMATED		HATCH	G RAPHIC IMAGE				MARKING	
	TREATMENT	STAGE	RELEASE	RBr CODE		CODE	PREHATCH	POSTHATCH	SYSTEM		
K08-1	fed	fry	2,500,000	1:1.3,2.3n	3,3n H						CHILLER

Table 2. Proposed thermal mark schedule for 2008 brood year stocks of Korean chum salmon.

No	OTOLITH MARK SCHEDULE	TEMP SHIFT DIRECTION	COMMENTS
K08-1	(3x)8C:24H,(3x)8C:12H	Down (12 to 8)	Spawning date: mid Oct.-late Nov.