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The Otolith Marks Used for Marking of Salmons Released in 2005 from Russia

by

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Introduction

Evaluation of hatcheries efficiency on the basis of returns of mature salmon to the places of reproduction is the main purpose of marking of hatchery salmon on the Far East of Russia.

Besides we are going to determine hatchery origins of fry salmon caught in coastal waters with help of marks on their otoliths. Also otolith marks will be used for researching of juveniles' migration, growth, survival rate and feeding habits in the northern Okhotsk Sea, waters off Kamchatka and Sakhalin, and in the Bering Sea.

Results of spent researches allow estimating a degree of influence of hatcheries reproduction on a condition of a wild part of salmon population. To investigate of dynamics of this ratio is important, since will allow operatively reacting in case of an adverse situation in the genetic aspect.

Otolith marked salmon released at the hatcheries of Russia in 2005.

The Magadan, Kamchatka and Khabarovsk hatcheries have let out marked juveniles of Pacific salmon in 2005y. The total number of salmon with marks on the otolith has made about 59, 5 million. From them the marked chum has made about 38,7 million, sockeye has made about 9,6 million, coho about 6,1 million, chinook about 0,8 million and pink about 0,7 million individuals.

Marking carried out on ten hatcheries with use of thirteen different variants of marks: five variants for salmon of the Magadan hatcheries, one variant for salmon of Khabarovsk and seven - for salmon of Kamchatka.

At the Kamchatka hatcheries marks have 3 rings in the first band. The majority of salmon of Magadan hatcheries have a one band of marks with 5, 6, 7 or 8 rings, except for a small number of the chum, about 0, 4 million, issued from Kulkuta River. This chum marked at the Ola hatchery, differs the presence of the second band from two rings in a mark.

It is necessary to note, that, on some reasons, marks of salmon of some hatcheries have poor quality. About fifty percent of sockeye generations of 2004 of birth, issued at Ozerkovskiy hatchery in 2005, have nonstandard marks - 3 rings of the front band of a mark precise while 5 rings of the second band are located very closely and look as four.

At the Magadan hatcheries in single parts of juveniles are marked some deviations from planned marks. So, about twenty percent of juveniles of chum at the Olskiy hatchery have smaller number of rings in a mark. At the Arman hatchery more than fifty percent of juveniles of chum have a nonstandard mark, probably in connection with the early beginning of marking.

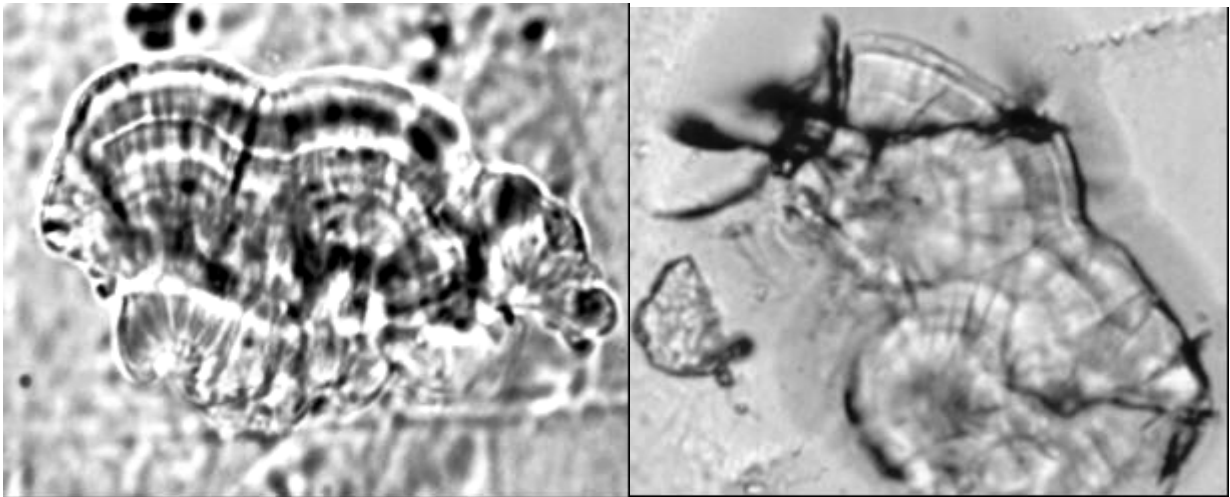


Fig. 1. The marks at the otolith Arman hatcheries' chum.

The mark used for marking of salmon released in 2005 from Russian hatcheries is represented in Table 1. Description of mark samples is represented in RBr (Munk and Geiger 1998; Hagen 1999) and Hatch Code (Hagen et al. 2000) formats.

References

- Akinicheva E., A. Rogatnykh, and B. Safronkov. 1998. Mass marking of salmon and identification of hatchery fish in mixed stocks. (NPAFC Doc. 379). Pacific Research Institute of Fishery and Oceanography, Magadan Branch, Magadan, Russia. 8p.
- Safronkov B. P., E.G. Akinicheva, and A.Y. Rogatnykh. The Dry Method of Salmon Otolith Mass Marking. 1999. International Symposium "Recent Changes in Ocean Production of Pacific Salmon". Juneau, Alaska, USA, November 1-2, 1999. p.81-82.

Munk, K. M., and H. J. Geiger. 1998. Thermal marking of otoliths: the "RBr" coding structure of thermal marks. (NPAFC Doc. 367) 19 p. CWT & Otolith Processing Lab., Alaska Department of Fish and Game, Juneau, Alaska, USA.

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 Department of Fish and Game, Juneau, Alaska 99801-5526, USA.

Table1. The Otolith Marks Used for Marking of Salmons Released in 2005 from Russia

ID	Mark Type	BROOD YEAR	YEAR OF RELEASE	SPECIES	COUNTRY	STATE/ PROVINCE	AGENCY	FACILITY	FINAL RELEASE SITE	REARING TREATMENT	STAGE
1	2	3	4	5	6	7	8	9	10	10	11
R04-1	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Armanskiy	Glukhoye Lake	fed	fry
R04-2	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Armanskiy	Tauy Bay	fed	fry
R04-3	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Armanskiy	Oyra River	fed	fry
R04-4	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Armanskiy	Arman River	fed	fry
R04-5	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Olskiy	Ola River	fed	fry
R04-6	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Olskiy	Tauy Bay	fed	fry
R04-7	DM	2004	2005	Chum	Russia	Magadan	MagadanNIRO	Olskiy	Gulf Odyan	fed	fry
R04-8	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Tauyskiy	Tauy River	fed	fry
R04-9	DM	2004	2005	Chum	Russia	Magadan	OhotskRV	Yanskiy	Yana River	fed	fry
R04-10	DM	2004	2005	Chum	Russia	Khabarovsk	AmurRV	Aniyskiy	Tikhoye Lake	fed	fry
R04-11	DM	2004	2005	Pink	Russia	Magadan	OhotskRV	Armanskiy	Arman River	fed	fry
R04-12	DM	2004	2005	Pink	Russia	Magadan	OhotskRV	Yanskiy	Yana River	fed	fry
R04-13	DM	2004	2005	Coho	Russia	Magadan	OhotskRV	Armanskiy	Glukhoye Lake	fed	fry
R04-14	DM	2004	2005	Coho	Russia	Magadan	OhotskRV	Armanskiy	Arman River	fed	fry
R03-30	DM	2003	2005	Coho	Russia	Magadan	OhotskRV	Armanskiy	Glukhoye Lake	fed	1+
R02-40	DM	2002	2005	Coho	Russia	Magadan	OhotskRV	Armanskiy	Glukhoye Lake	fed	2+
R04-15	DM	2004	2005	Coho	Russia	Magadan	OhotskRV	Olskiy	Ola River	fed	fry
R03-31	DM	2003	2005	Coho	Russia	Magadan	OhotskRV	Tauyskiy	Tauy River	fed	1+
R03-32	DM	2003	2005	Coho	Russia	Magadan	OhotskRV	Yanskiy	Yana River	fed	fry
R03-33	DM	2003	2005	Coho	Russia	Magadan	OhotskRV	Yanskiy	Tauy Bay	fed	fry
R03-34	DM	2003	2005	Sockeye	Russia	Magadan	OhotskRV	Olskiy	Tauy Bay	fed	1+
R04-16	DM	2004	2005	Chum	Russia	Kamchatka	KamchatRV	Ozerki	Bolshaya River	fed	fry
R04-17	DM	2004	2005	Chum	Russia	Kamchatka	KamchatRV	Ketkinskiy	Avacha River	fed	fry
R04-18	DM	2004	2005	Chum	Russia	Kamchatka	KamchatRV	Paratunskiy	Paratunka River	fed	fry
R04-19	DM	2004	2005	Chum	Russia	Kamchatka	KamchatRV	Viluyskiy	Bolshoy Viluy Lake	fed	fry
R04-20	DM	2004	2005	Coho	Russia	Kamchatka	KamchatRV	Paratunskiy	Paratunka River	fed	fry
R04-21	DM	2004	2005	Coho	Russia	Kamchatka	KamchatRV	Viluyskiy	Bolshoy Viluy Lake	fed	fry
R03-35	DM	2003	2005	Coho	Russia	Kamchatka	KamchatRV	Viluyskiy	Bolshoy Viluy Lake	fed	1+
R04-22	TM	2004	2005	Sockeye	Russia	Kamchatka	KamchatRV	Malkinskiy	'Bolshaya River	fed	fry
R04-23	DM	2004	2005	Sockeye	Russia	Kamchatka	KamchatRV	Ozerki	Bolshaya River	fed	fry
R04-24	TM	2004	2005	Chinook	Russia	Kamchatka	KamchatRV	Malkinskiy	Bolshaya River	fed	fry

Table1.(Continued). The Otolith Marks Used for Marking of Salmons Released in 2005 from Russia

NUMBER OF RELEASED	RBr	HATCH CODE	GRAPHIC IMAGE		MARK SCHEDULE
			PREHATCH	POSTHATCH	
12	13	14	15	16	17
1950000	1:1.6	6H	IIIIII		(6X)24D:24W
900000	1:1.6	6H	IIIIII		(6X)24D:24W
250000	1:1.6	6H	IIIIII		(6X)24D:24W
900000	1:1.6	6H	IIIIII		(6X)24D:24W
3115000	1:1.5	5H	IIIII		(5X)24D:24W
3861600	1:1.5	5H	IIIII		(5X)24D:24W
400000	1:1.6-2.2	6,2H	IIIIII II		(5X)24D:24W,(1X)24D:72W, (2X)24HD:24W
2520000	1:1.7	7H	IIIIIII		(7X)24D:24W
1550400	1:1.8	8H	IIIIIIII		(8X)24D:24W
500000	1:1.5-2.2	5-2H	IIIII II		(4X)24D:24W,(1X)24D:48W, (2X)24D:24W
321600	1:1.6	6H	IIIIII		(6X)24D:24W
364000	1:1.8	8H	IIIIIIII		(8X)24D:24W
1200000	1:1.6	6H	IIIIII		(6X)24D:24W
1840000	1:1.6	6H	IIIIII		(6X)24D:24W
910000	1:1.8	8H	IIIIIIII		(8X)24D:24W
27700	1:1.5	5H	IIIII		(5X)24D:24W
31000	1:1.5	5H	IIIII		(5X)24D:24W
202000	1:1.5	5H	IIIII		(5X)24D:24W
236700	1:1.7	7H	IIIIIII		(7X)24D:24W
179300	1:1.7	7H	IIIIIII		(7X)24D:24W
113700	1:1.6	6H	IIIIII		(6X)24D:24W
1783000	1:1.3-2.5	3,5H	III IIIII		(2X)24D:24W,(1X)24D:48W,(5X)24D:24W
5623000	1:1.3-2.3	3,3H	III III		(2X)24D:24W,(1X)24D:72W,(3X)24D:24W
11880000	1:1.3	3H	III		(3X)24D:24W
3485000	1:1.3-2.2-3.2	3,2,2H	III II II		(2X)24HD:24W,(1X)24D:72W,(1X)24D:24W,(1X)24D:72W,(2X)24D:24W
511000	1:1.3	3H	III		(3X)24D:24W
878000	1:1.3-2.2-3.2	3,2,2H	III II II		(2X)24HD:24W,(1X)24D:72W,(1X)24D:24W,(1X)24D:72W,(2X)24D:24W
166000	1:1.3,2.1,3.3	3,1,3H	III I III		(2X)24D:24W,(2X)24D:48W,(3X)24D:24W
710000	1:1.3-2.1	3,1H	III I		(2X)24D:24W,(2X)24D:48W
8830000	1:1.3-2.5	3,5H	III IIIII		(2X)24D:24W,(1X)24D:48W,(5X)24D:24W
839000	1:1.3-2.4	H3,4		III IIII	(2X)24H:24C,(1X)24H:72C,(4X)24H:24C