

NPAFC
Doc. 1460
Rev. _____

Proposed Otolith Marks for Brood Year 2013 Salmon in Russia

by

Elena Akinicheva, Vladimir Volobuev, Evgeny Fomin

Sakhalin Scientific and Research Institute of Fisheries & Oceanography Yuzhno-Sakhalinsk,
Magadan Scientific and Research Institute of Fisheries & Oceanography Magadan,
Russia

Submitted to the

NORTH PACIFIC ANADROMOUS FISH COMMISSION

by

Russia

March 2013

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:

E. Akinicheva, V. Volobuev, E. Fomin. 2013. Proposed Otolith Marks for Brood Year 2013 Salmon in Russia. NPAFC Doc. 1460. 3 pp. Sakhalin Scientific and Research Institute of Fisheries & Oceanography Yuzhno-Sakhalinsk, Russia; Magadan Scientific and Research Institute of Fisheries & Oceanography Magadan, Russia. (Available at <http://www.npafc.org>).

Abstract

Otolith marking of salmon of 2013 brood year will be conducted in five regions of the Far East: Kamchatka, Magadan, Khabarovsk, Sakhalin, and Kuril regions. Marking will be carried out using two methods: thermal and “dry”. Their application will be determined by the possibilities and specificity of water supply of incubated embryos at hatcheries of the Far East. The dominating method of marking will be a “dry” one – it will be used on the 83% of salmon at hatcheries. Salmon will be marked at 29 hatcheries. Totally 40 otolith marks will be used.

The plan of otolith marking of salmon of 2013 generation

Mass marking of juvenile salmon is an important instrument allowing to evaluate the rate of survivability of hatchery raised juvenile salmon after its seaward run from the rivers into the seashore area, and to study the ways of migration and fry salmon distribution in the Sea of Okhotsk and areas of fattening in the ocean. Moreover, otolith marking allows determining the effectiveness of hatcheries’ work by looking at the amount of returned hatchery raised fish.

Salmon of 2013 generation will be marked at 29 hatcheries of the Far East: 15 in Sakhalin, 5 in Kamchatka, 4 in Magadan, 1 in Khabarovsk and 4 in Kuril Islands. Totally 40 marks will be used. 36 marks will be used for chum, 13 – for pink, 7 marks for coho, 4 – for sockeye, 1 – for Chinook, 1 – for Masu. Like in previous years marking of the juvenile salmon in the Far East will be carried out by using two methods: thermal at 6 hatcheries and “dry” at 23 hatcheries. Thermal marking will be conducted by decreasing temperature rate.

It is necessary to mention that otolith marking will dominate at the “prehatch” stage (83%). Seven marks will be used at the “post hatch” stage. One and the same marks will be used for marking broods of different kinds of salmon for the convenience of controlling the returned fish.

Russian plan of marking is shown in the Table 1. Samples of thermal and “dry” marking are given in the system of Hatch code (Hagen et al., 2000; 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 Department of Fish and Game, Juneau, Alaska 99801-5526, USA.

Hagen, P., H. J. Geiger, E. C. Volk, and J. J. Grimm. 2000. Thermal mark patterns applied to salmon from Alaska, Washington and Oregon for brood year 1999 and some proposed marks for brood year 2000. (NPAFC Doc. 463 rev. 1) 8 p. Alaska Department of Fish and Game, Juneau, Alaska 99801-5526, USA.

Table 1. Plan marks from Russia for 2013 brood year stocks of salmon

Mark TYPE	BROOD YEAR	SPECIES	COUNTRY	STATE/ PROVINCE	FACILITY	HATCH CODE	GRAPHIC IMAGE		MARK SCHEDULE
							PREHATCH	POSTHATCH	
1	2	3	4	5	6	7	8	9	10
DM	2013	Chum	Russia	Magadan	Armansky Hatchery	4,3H	I I I I I I I		(3X)24D:24W,(1X)24D:48W, (3X)24D:24W
DM	2013	Chum	Russia	Magadan	Olsky Hatchery	7H	I I I I I I I		(7X)24D:24W
DM	2013	Chum	Russia	Magadan	Olsky Hatchery	6nH	IIIIII		(6X)12D:12W
DM	2013	Chum	Russia	Magadan	Olsky Hatchery	4,2nH	I I I I I I		(3X)24D:24W,(1X)24D:48W, (2X)12D:12W
DM	2013	Chum	Russia	Magadan	Tauysky Hatchery	3n-3nH	III III		(2X)12D:12W,(1X)12D:84W, (3X)12D:12W
DM	2013	Chum	Russia	Magadan	Yansky Hatchery	3n,3nH	III III		(2X)12D:12W,(1X)12D:60W, (3X)12D:12W
DM	2013	Chum	Russia	Kamchatka	Ozerkovsky Hatchery	3,1H	I I I I		(2X)24D:24W,(1X)24D:48W, (1X)24D:24W
DM	2013	Chum	Russia	Kamchatka	Ketkinsky Hatchery	3,3H	I I I I I I		(2X)24D:24W,(1X)24D:48W, (3X)24D:24W
TM	2013	Chum	Russia	Kamchatka	Paratunsky Hatchery	H4		I I I I	(4X)24C:24H
DM	2013	Chum	Russia	Sakhalin	Ado-Tymovsky Hatchery	5,1H	I I I I I I		(4X)24D:24W,(1X)24D:48W, (1X)24D
DM	2013	Chum	Russia	Sakhalin	Pobedinsky Hatchery	1,5n,1H	I IIIII I		(1X)24D:48W,(4X)12D:12W, (1X)12D:60W,(1X)24D:24W
DM	2013	Chum	Russia	Sakhalin	Buyuklovsky Hatchery	1,3,1H	I III I		(1X)24D:48W,(2X)24D:24W, (1X)24D:48W,(1X)24D:24W
TM	2013	Chum	Russia	Sakhalin	Sokolovsky Hatchery	3n,1,2H	III I II		(2X)12C:12H,(1X)12C:60H, (1X)24C:48H,(2X)24C:24H
TM	2013	Chum	Russia	Sakhalin	Sokolovsky Hatchery	H3n,1,2		III I II	(2X)12C:12H,(1X)12C:60H, (1X)24C:48H,(2X)24C:24H
TM	2013	Chum	Russia	Sakhalin	Berezhnyakovsky Hatchery	3,1,2nH	I I I I II		(2X)24C:24H,(2X)24C:48H, (2X)12C:12H
TM	2013	Chum	Russia	Sakhalin	Berezhnyakovsky Hatchery	H3,1,2n		I I I I II	(2X)24C:24H,(2X)24C:48H, (2X)12C:12H
TM	2013	Chum	Russia	Sakhalin	Taranaysky Hatchery	1,5H	I I I I I I		(1X)24D:48W,(5X)24D:24W
DM	2013	Chum	Russia	Sakhalin	Sokolnikovsky Hatchery	5nH	IIIIII		(5X)12D:12W
DM	2013	Chum	Russia	Sakhalin	Yasnomorsky Hatchery	1,2H	I II		(1X)24D:48W,(2X)24D:24W
DM	2013	Chum	Russia	Sakhalin	Kalininsky Hatchery	4n,2nH	IIII II		(3X)12D:12W,(1X)12D:60W, (2X)12D:12W
DM	2013	Chum	Russia	Sakhalin	Urozhayny Hatchery	7nH	IIIIIIII		(7X)12D:12W
DM	2013	Chum	Russia	Sakhalin	Ohotsky Hatchery	8nH	IIIIIIIIII		(8X)12D:12W
DM	2013	Chum	Russia	Sakhalin	Monetka Hatchery	4,2H	I I I I I I		(3X)24D:24W,(1X)24D:48W, (2X)24D:24W
DM	2013	Chum	Russia	Sakhalin	Monetka Hatchery	3,4H	I I I I I I I		(2X)24D:24W,(1X)24D:48W, (4X)24D:24W
DM	2013	Chum	Russia	Sakhalin	Monetka Hatchery	1,4H	I I I I I		(1X)24D:48W,(4X)24D:24W
DM	2013	Chum	Russia	Sakhalin	Lesnoy Hatchery	3,2n,2H	I I I II II		(2X)24D:24W,(1X)24D:48W, (1X)12D:12W,(1X)12D:60W,(2X)24D:24W
DM	2013	Chum	Russia	Iturup	Kuril'sky Hatchery	4,1H	I I I I I		(3X)24D:24W,(1X)24D:48W, (1X)24D:24W
TM	2013	Chum	Russia	Iturup	Reydovyy Hatchery	5,2H	I I I I I I I		(4X)24C:24H,(1X)24C:48H, (2X)24C:24H
TM	2013	Chum	Russia	Iturup	Reydovyy Hatchery	H5,2		I I I I I II	(4X)24C:24H,(1X)24C:48H, (2X)24C:24H
DM	2013	Chum	Russia	Iturup	Hatchery on bay Olya	5H	I I I I I		(5X)24D:24W
DM	2013	Chum	Russia	Iturup	Hatchery on bay Olya	1,4,1H	I I I I I I		(1X)24D:48W,(3X)24D:24W, (1X)24D:48W,(1X)24D:24W

Continuation Table 1. Plan marks from Russia for 2013 brood year stocks of salmon

1	2	3	4	5	6	7	8	9	10
DM	2013	Chum	Russia	Iturup	Hatchery on bay Olya	3n,2H	III II		(2X)12D:12W,(1X)12D:60W, (2X)24D:24W
DM	2013	Chum	Russia	Iturup	Kitovyy Hatchery	6H	IIIIII		(6X)24D:24W
DM	2013	Chum	Russia	Iturup	Kitovyy Hatchery	3-3H	III III		(2X)24D:24W,(1X)24D:72W, (3X)24D:24W
DM	2013	Chum	Russia	Iturup	Kitovyy Hatchery	3H	III		(3X)24D:24W
DM	2013	Chum	Russia	Khabarovsk	Kometa Hatchery	3,2H	III II		(2X)24D:24W,(1X)24D:48W, (2X)24D:24W
DM	2013	Pink	Russia	Magadan	Armansky Hatchery	4,3H	IIII III		(3X)24D:24W,(1X)24D:48W, (3X)24D:24W
DM	2013	Pink	Russia	Magadan	Olsky Hatchery	6nH	IIIII		(6X)12D:12W
DM	2013	Pink	Russia	Magadan	Yansky Hatchery	3n,3nH	III III		(2X)12D:12W,(1X)12D:60W, (3X)12D:12W
DM	2013	Pink	Russia	Sakhalin	Anivsky Hatchery	3,4H	III IIII		(2X)24D:24W,(1X)24D:48W, (4X)24D:24W
DM	2013	Pink	Russia	Sakhalin	Taranaysky Hatchery	5H	IIIII		(5X)24D:24W
DM	2013	Pink	Russia	Sakhalin	Urozhayny Hatchery	4,2H	IIII II		(3X)24D:24W,(1X)24D:48W, (2X)24D:24W
DM	2013	Pink	Russia	Sakhalin	Monetka Hatchery	3,2H	III II		(2X)24D:24W,(1X)24D:48W, (2X)24D:24W
DM	2013	Pink	Russia	Sakhalin	Monetka Hatchery	3,1,2H	III I II		(2X)24D:24W,(2X)24D:48W,(2X)24D:24W
DM	2013	Pink	Russia	Sakhalin	Igrivaya Hatchery	7H	IIIIIII		(7X)24D:24W
DM	2013	Pink	Russia	Sakhalin	Lesnoy Hatchery	1,2,2H	I III II		(1X)24D:48W,(1X)24D:24W, (1X)24D:48W,(2X)24D:24W
DM	2013	Pink	Russia	Iturup	Kuril'sky Hatchery	1,4H	I IIII		(1X)24D:48W,(4X)24D:24W
TM	2013	Pink	Russia	Iturup	Reydovyy Hatchery	H4,2n		IIII II	(3X)24H:24C,(1X)24H:48C, (2X)12H:12C
DM	2013	Pink	Russia	Khabarovsk	Kometa Hatchery	3,1H	III I		(2X)24D:24W,(1X)24D:48W, (1X)24D:24W
DM	2013	Coho	Russia	Magadan	Armansky Hatchery	3,4H	III IIII		(2X)24D:24W,(1X)24D:48W, (4X)24D:24W
DM	2013	Coho	Russia	Magadan	Olsky Hatchery	6nH	IIIII		(6X)12D:12W
DM	2013	Coho	Russia	Magadan	Tauysky Hatchery	3n-3nH	III III		(2X)12D:12W,(1X)12D:84W, (3X)12D:12W
DM	2013	Coho	Russia	Magadan	Yansky Hatchery	3n,3nH	III III		(2X)12D:12W,(1X)12D:60W, (3X)12D:12W
TM	2013	Coho	Russia	Kamchatka	Paratunsky Hatchery	H5		IIIII	(5X)24C:24H
DM	2013	Coho	Russia	Kamchatka	Viluysky Hatchery	3,1H	III I		(2X)24D:24W,(1X)24D:48W, (1X)24D:24W
DM	2013	Coho	Russia	Khabarovsk	Kometa Hatchery	5H	IIIII		(5X)24D:24W
TM	2013	Chinook	Russia	Kamchatka	Malkinsky Hatchery	H3,1,2		IIII III	(2X)24C:24H,(2X)24C:48H,(2X)24C:24H
TM	2013	Sockeye	Russia	Kamchatka	Malkinsky Hatchery	3,1,2H	III I II		(2X)24C:24H,(2X)24C:48H,(2X)24C:24H
DM	2013	Sockeye	Russia	Kamchatka	Ozerkovsky Hatchery	3,1H	III I		(2X)24D:24W,(1X)24D:48W, (1X)24D:24W
DM	2013	Sockeye	Russia	Kamchatka	Ozerkovsky Hatchery	6H	IIIIII		(6X)24D:24W
DM	2013	Sockeye	Russia	Magadan	Olsky Hatchery	4,1H	IIII I		(3X)24D:24W,(1X)24D:48W, (1X)24D:24W
DM	2013	Masu	Russia	Khabarovsk	Kometa Hatchery	5H	IIIII		(5X)24D:24W