

## **Proposed Otolith Marks for Brood Year 2019 Salmon in Russia**

by

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**Keywords:** otolith marking, method of marking, juvenile salmon, hatcheries, marks.

## **Abstract**

Mass marking of juvenile salmon is an important instrument that allows evaluating a rate of survivability of hatchery-raised salmon after their seaward run from the rivers into the seashore area, and studying 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 fish.

Otolith marking of salmon of 2019 brood year will be conducted in five regions of the Far East: Kamchatka, Magadan, Sakhalin, Khabarovsk, Kuril and Primorsky regions.

This document reports the otolith mark patterns applied to hatchery-raised salmon stocks released in Russia during 2019.

## **The plan of otolith marking of salmon of 2019 generation**

Salmon of 2019 generation will be marked at 33 hatcheries of the Far East: 15 in Sakhalin, 5 in Kamchatka, 3 in Magadan, 1 in Khabarovsk, 8 in the Kuril Islands and 1 in Primorsky regions.

In 2019, there will be 32 marks used for marking chum salmon, 11 marks for pink, 5 marks for coho, 2 marks for sockeye, and 1 mark for chinook. In some cases, the same mark will be used for different species of salmon. Thirty-nine unique marks will be used altogether.

Like in previous years, marking of juvenile salmon in the Far East will be carried out by using two methods: thermal at 9 hatcheries and "dry" at 24 hatcheries. Thermal marking will be conducted mainly by decreasing the temperature rate.

Russian plan of marking is shown in Table 1. Samples of thermal and "dry" marking are given in the system of Hatch code (Hagen et al., 2000; Johnson et al., 2006).

## **References**

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- Johnson, W.F., R.P. Josephson, T.R. Frawley, and D.S. Oxman 2006. Revised web-based North Pacific salmon otolith mark directory. (NPAFC Doc. 971). 39p. Alaska Dept. Fish and Game, Juneau Alaska

Table1. The plan of salmon marking for brood 2020 at Russian hatcheries

MARK TYPE	BROOD YEAR	YEAR OF RELEASE	SPECIES	COUNTRY	STATE/ PROVINCE	FACILITY	HATCH CODE	GRAPHIC IMAGE	
								PREHATCH	POSTHATCH
1	2	3	4	5	6	7	8	9	10
TM	2019	2020	CHUM	RUSSIA	SAKHALIN	ADO-TYMOVSKY HATCHERY	H1,4,1		I I I I I
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	BUYUKLOVSKY HATCHERY	4,2H	I I I I I	
TM	2019	2020	CHUM	RUSSIA	SAKHALIN	POBEDINSKY HATCHERY	H3,3		I I I I I
TM	2019	2020	CHUM	RUSSIA	SAKHALIN	BEREZNYAKOVSKY HATCHERY	H4,3		I I I I I
TM	2019	2020	CHUM	RUSSIA	SAKHALIN	SOKOLOVSKY HATCHERY	H4,2		I I I I I
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	UROZHAYNYY HATCHERY	4n,2H	III I I	
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	SOKOL'NIKOVSKY HATCHERY	5nH	IIII	
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	KALININSKY HATCHERY	1,5nH	I IIII	
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	YASNOMORSKY HATCHERY	6nH	IIII	
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	YASNOMORSKY HATCHERY	6n-2nH	IIII I I	
TM	2019	2020	CHUM	RUSSIA	SAKHALIN	TARANAYSKY HATCHERY	H4		I I I I
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	LESNOY HATCHERY	7H	I I I I I I	
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	OKHOTSKY HATCHERY	3,4H	I I I I I I	
DM	2019	2020	CHUM	RUSSIA	SAKHALIN	MANUY HATCHERY	5,1H	I I I I I I	
DM	2019	2020	CHUM	RUSSIA	ITURUP	LEBEDINYI HATCHERY	3,3H	I I I I I I	
DM	2019	2020	CHUM	RUSSIA	ITURUP	MINERAL'NYY HATCHERY	4,2nH	I I I I I I	
DM	2019	2020	CHUM	RUSSIA	ITURUP	KURIL'SKY HATCHERY	5n,2H	IIII I I	
DM	2019	2020	CHUM	RUSSIA	ITURUP	KITOVYY	1,6H	I I I I I I	
TM	2019	2020	CHUM	RUSSIA	ITURUP	REYDOVYY HATCHERY	1,2,3H	I I I I I I	
TM	2019	2020	CHUM	RUSSIA	ITURUP	REYDOVYY HATCHERY	H1,2,3		I I I I I I
DM	2019	2020	CHUM	RUSSIA	ITURUP	OZERO HATCHERY	3n,2H	III I I	
DM	2019	2020	CHUM	RUSSIA	ITURUP	SARATOVSKY HATCHERY	1,4H	I I I I I	
DM	2019	2020	CHUM	RUSSIA	ITURUP	KUIBYSHEVSKY HATCHERY	4,1H	I I I I I	
DM	2019	2020	CHUM	RUSSIA	MAGADAN	ARMANSKY HATCHERY	4,3H	I I I I I I	
DM	2019	2020	CHUM	RUSSIA	MAGADAN	OL'SKY HATCHERY	3,2nH	I I I I I	
DM	2019	2020	CHUM	RUSSIA	MAGADAN	OL'SKY HATCHERY	4,3nH	I I I I I I	
DM	2019	2020	CHUM	RUSSIA	MAGADAN	YANSKY HATCHERY	5,3nH	I I I I I I	
TM	2019	2020	CHUM	RUSSIA	KAMCHATKA	PARATUNSKY HATCHERY	H6		I I I I I I
DM	2019	2020	CHUM	RUSSIA	KAMCHATKA	OZERKOVSKY HATCHERY	1,5H	I I I I I I	

Table 1 (continued). The plan of salmon marking for brood 2020 at Russian hatcheries

MARK TYPE	BROOD YEAR	YEAR OF RELEASE	SPECIES	COUNTRY	STATE/ PROVINCE	FACILITY	HATCH CODE	GRAPHIC IMAGE	
								PREHATCH	POSTHATCH
1	2	3	4	5	6	7	8	9	10
DM	2019	2020	CHUM	RUSSIA	KAMCHATKA	KETKINSKY HATCHERY	1,3n,2H	I III II	
DM	2019	2020	CHUM	RUSSIA	KHABAROVSK	ANYUYSKY HATCHERY	5H	I I I I I	
TM	2019	2020	CHUM	RUSSIA	KHABAROVSK	ANYUYSKY HATCHERY	3n,3H	III I I I	
DM	2019	2020	CHUM	RUSSIA	PRIMORSKY KRAI	RYAZANOVSKY HATCHERY	3,2H	I I I II	
DM	2019	2020	PINK	RUSSIA	SAKHALIN	ANIVSKY HATCHERY	5,1H	I I I I I I	
TM	2019	2020	PINK	RUSSIA	SAKHALIN	TARANAYSKY HATCHERY	H5		I I I I I
DM	2019	2020	PINK	RUSSIA	SAKHALIN	LESNOY HATCHERY	5H	I I I I I	
DM	2019	2020	PINK	RUSSIA	SAKHALIN	MANUY HATCHERY	3n,4H	III I I I I	
DM	2019	2020	PINK	RUSSIA	SAKHALIN	PUGACHEVSKIY HATCHERY	1,4H	I I I I I	
DM	2019	2020	PINK	RUSSIA	ITURUP	KUIBYSHEVSKY HATCHERY	4,2H	I I I I II	
DM	2019	2020	PINK	RUSSIA	ITURUP	SARATOVSKY HATCHERY	4,2H	I I I I II	
DM	2019	2020	PINK	RUSSIA	ITURUP	KURIL'SKY HATCHERY	1,2,2H	I II II	
TM	2019	2020	PINK	RUSSIA	ITURUP	REYDOVYY HATCHERY	H1,2,3		I II I I I
TM	2019	2020	PINK	RUSSIA	ITURUP	REYDOVYY HATCHERY	1,2,3H	I II I I I	
DM	2019	2020	PINK	RUSSIA	MAGADAN	ARMANSKY HATCHERY	4,3nH	I I I I III	
DM	2019	2020	PINK	RUSSIA	MAGADAN	OL'SKY HATCHERY	3,2H	I I I II	
DM	2019	2020	PINK	RUSSIA	MAGADAN	YANSKY HATCHERY	3,4nH	I I I III	
TM	2019	2020	COHO	RUSSIA	KAMCHATKA	PARATUNSKY HATCHERY	H6		I I I I I I
DM	2019	2020	COHO	RUSSIA	KAMCHATKA	VILUYSKY HATCHERY	6H	I I I I I I	
DM	2019	2020	COHO	RUSSIA	MAGADAN	ARMANSKY HATCHERY	4,1H	I I I I I	
DM	2019	2020	COHO	RUSSIA	MAGADAN	OL'SKY HATCHERY	3n,4H	III I I I I	
DM	2019	2020	COHO	RUSSIA	MAGADAN	YANSKY HATCHERY	1,4H	I I I I I	
DM	2019	2020	SOCKEYE	RUSSIA	KAMCHATKA	OZERKOVSKY HATCHERY	7H	I I I I I I I	
TM	2019	2020	SOCKEYE	RUSSIA	KAMCHATKA	MALKINSKY HATCHERY	3,4H	I I I I I I I	
TM	2019	2020	CHINOOK	RUSSIA	KAMCHATKA	MALKINSKY HATCHERY	H3		I I I