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Marked Salmon Production by the Hatcheries of Russia in 2017

by

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Abstract

As in the preceding years, the main aim of the hatcheries salmon marking in Russia is to evaluate numbers of hatchery-reared salmon returns. In recent years the basic part of juvenile salmon has been reared and marked at Sakhalin. Two methods were used for hatcheries marking: thermal (Munk et al., 1993) and “dry” (Safronenkov et al., 1999). In 2017, the percentage of marked salmon juveniles in Sakhalin region was 80.3% of the total Russian release of marked juveniles. This is caused by the location of hatcheries, a large number of which (38) are located at Sakhalin and only 19 hatcheries in other regions of the Russian Far East.

Keywords: otolith marks, Russia, juvenile salmon, hatcheries.

Marked salmon production at the hatcheries of Russia in 2017

In 2017, Russian hatcheries released 230.2 million marked salmon juveniles. The major part of the marked juvenile salmon was formed by chum salmon—171.3 million (74.4 %) and pink salmon—55.6 million (24.1 %) of the total number of marked salmon. The proportion of the other species (sockeye, Chinook, coho, and masu) did not exceed 1.5 %. Of them, 1.96 million marked sockeye, 0.44 million coho, 0.9 million Chinook, and 0.02 million masu salmon were released (Table 1).

Table 1

Release of marked Pacific salmon at the Hatcheries of the Far East of Russia in 2017

Species/ province	Number of released, mln					
	Magadan	Kamchatka	Sakhalin	Khabarovsk	Total	Share,%
Chum	8.29	21.52	137.87	3.61	171.29	74.41
Pink	8.60	0	46.98	0	55.58	24.14
Coho	0.44	0	0	0	0.44	0.19
Sockeye	0	1.96	0	0	1.96	0.85
Chinook	0	0.91	0	0	0.91	0.40
Masu	0	0	0	0.02	0.02	0.01
Total	17.33	24.39	184.85	3.63	230.20	100.00

The majority of marked juveniles were released from the Sakhalin hatcheries (184.85 million). In Magadan region a total of 17.33 million juveniles were released, in Kamchatka region—24.39 million, and in Khabarovsk region—3.63 million. In Magadan region the juveniles were marked at three hatcheries, in Kamchatka at five hatcheries, in Khabarovsk region at two hatcheries, and in Sakhalin region at fourteen hatcheries.

In total, 28 different mark patterns were used for marking. Of them, 20 marks were used for chum salmon: 4—in Magadan region, 3—in Kamchatka region, 2—in Khabarovsk region, and 11—in Sakhalin region.

A total of 8 marks were used for pink salmon marking: 3—in Magadan region and 5—in Sakhalin region.

Coho juveniles were marked only in Magadan region, and 3 marks were used. Coho juveniles were released at the age of fingerlings.

Sockeye and Chinook were marked at Kamchatka hatcheries. Two marks were used for sockeye and one – for Chinook salmon.

Masu were marked in Khabarovsk region, and 1 mark was used. Masu juveniles were released at the age 2+.

As in the preceding years, most juveniles (63.3 %) were marked using a “dry” method before embryos hatching.

Data on release of the marked salmon are represented in the Table 2. The hatch code notations were used to describe thermal patterns (Hagen et al., 2000; Johnson et al., 2006).

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Table 2. Marked salmon production by the hatcheries of Russia in 2017

ID#	MARK TYPE	BROOD YEAR	YEAR OF RELEASE	SPECIES	STATE/ PROVINCE	FACILITY	HATCH CODE	FINAL RELEASE SITE	NUMBER OF RELEASED	DATE LAST RELEASED
1	2	3	4	5	6	7	8	9	10	11
RU16-01	TM	2016	2017	CHUM	SAKHALIN	ADO-TYMOVSKY HATCHERY	H6	TYM' RIVER	2626400	28.06.2017
RU16-02	TM	2016	2017	CHUM	SAKHALIN	ADO-TYMOVSKY HATCHERY	H6	TYM' RIVER	3878771	15.07.2017
RU16-03	TM	2016	2017	CHUM	SAKHALIN	ADO-TYMOVSKY HATCHERY	H6	TYM' RIVER	12673850	15.07.2017
RU16-04	TM	2016	2017	CHUM	SAKHALIN	POBEDINSKY HATCHERY	8nH3	PORONAY RIVER	10978000	06.07.2017
RU16-05	DM	2016	2017	CHUM	SAKHALIN	BUYUKLOVSKY HATCHERY	4,3H	BUYUKLINKA RIVER	21841600	07.07.2017
RU16-06	TM	2016	2017	CHUM	SAKHALIN	SOKOLOVSKY HATCHERY	H4,3	NAYBA RIVER	5300200	29.06.2017
RU16-07	TM	2016	2017	CHUM	SAKHALIN	SOKOLOVSKY HATCHERY	H4,3	NAYBA RIVER	2374300	29.06.2017
RU16-08	TM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	H4,2	BOL`SHOY TAKOY RIVER	2621400	05.07.2017
RU16-09	TM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	H4,2	BOL`SHOY TAKOY RIVER	5322700	05.07.2017
RU16-10	TM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	H4,2	BAKLANOVKA RIVER	1102300	23.06.2017
RU16-11	TM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	H4,2	MALINKA RIVER	1930204	10.06.2017
RU16-12	DM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	3n,1,2nH4,2	BAKLANOVKA RIVER	1012700	23.06.2017
RU16-13	DM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	3n,1,2nH4,2	KRASNOYARKA RIVER	46000	21.06.2017
RU16-14	DM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	3n,1,2nH4,2	NOVO-AINSKAYA RIVER	100000	05.07.2017
RU16-15	TM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	H4	BOL`SHOY TAKOY RIVER	168500	29.06.2017
RU16-16	TM	2016	2017	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	H4,3	BOL`SHOY TAKOY RIVER	224500	05.07.2017
RU16-17	TM	2016	2017	CHUM	SAKHALIN	TARANAYSKY HATCHERY	H4	TARANAY RIVER	8563000	16.06.2017
RU16-18	DM	2016	2017	CHUM	SAKHALIN	YASNOMORSKY HATCHERY	7nH	YASNOMORKA RIVER	8134200	23.06.2017
RU16-19	DM	2016	2017	CHUM	SAKHALIN	SOKOL`NIKOVSKY HATCHERY	4,1H	ZAVETINKA RIVER	12898900	17.06.2017
RU16-20	DM	2016	2017	CHUM	SAKHALIN	KALININSKY HATCHERY	3n,1,2nH	KALINKA RIVER	28690000	12.06.2017
RU16-21	DM	2016	2017	CHUM	SAKHALIN	UROZHAYNYY HATCHERY	5nH	CHERNAYA RIVER	161300	02.07.2017
RU16-22	DM	2016	2017	CHUM	SAKHALIN	UROZHAYNYY HATCHERY	5nH	CHERNAYA RIVER	7224200	02.07.2017
RU16-23	DM	2016	2017	CHUM	MAGADAN	ARMANSKY HATCHERY	3,3H	ARMAN RIVER	1741500	28.06.2017
RU16-24	DM	2016	2017	CHUM	MAGADAN	OL`SKY HATCHERY	3,2H	UGLIKANKA RIVER	2532700	19.05.2017
RU16-25	DM	2016	2017	CHUM	MAGADAN	OL`SKY HATCHERY	4,2nH	KUL`KUTY RIVER	2612960	22.07.2017
RU16-26	DM	2016	2017	CHUM	MAGADAN	YANSKY HATCHERY	3n-3nH	YANA RIVER	1398241	06.06.2017
RU16-27	DM	2016	2017	CHUM	KAMCHATKA	KETKINSKY HATCHERY	3,4H	AVACHA RIVER	4537010	05.06.2017
RU16-28	DM	2016	2017	CHUM	KAMCHATKA	OZERKOVSKY HATCHERY	1,5H	BOL`SHAYA RIVER	965570	12.05.2017
RU16-29	TM	2016	2017	CHUM	KAMCHATKA	PARATUNSKY HATCHERY	H5,2	PARATUNKA RIVER	16012060	15.05.2017
RU16-30	TM	2016	2017	CHUM	KHABAROVSK	KOMETA HATCHERY	4,2H	GYDZHU RIVER	911000	23.06.2017
RU16-31	DM	2016	2017	CHUM	KHABAROVSK	ANYUYSKY HATCHERY	4nH	ANYUY RIVER	2697624	27.04.2017

Table 2. (continued). Marked salmon production by the hatcheries of Russia in 2017

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1	2	3	4	5	6	7	8	9	10	11
RU16-32	DM	2016	2017	PINK	SAKHALIN	ANIVSKY HATCHERY	4,2H	BYSTRAYA RIVER	20627400	12.06.2017
RU16-33	DM	2016	2017	PINK	SAKHALIN	ANIVSKY HATCHERY	6nH	BYSTRAYA RIVER	14481	14.06.2017
RU16-34	DM	2016	2017	PINK	SAKHALIN	TARANAYSKY HATCHERY	5nH	TARANAY RIVER	1477500	05.06.2017
RU16-35	DM	2016	2017	PINK	SAKHALIN	BAKHURA HATCHERY	3,4nH	BAKHURA RIVER	11130300	08.06.2017
RU16-36	DM	2016	2017	PINK	MAGADAN	ARMANSKY HATCHERY	5,2H	ARMAN RIVER	565025	18.05.2017
RU16-37	DM	2016	2017	PINK	MAGADAN	ARMANSKY HATCHERY	5,2H	ARMAN RIVER	1469329	18.05.2017
RU16-38	DM	2016	2017	PINK	MAGADAN	ARMANSKY HATCHERY	5,2H	ARMAN RIVER	516620	18.05.2017
RU16-39	DM	2016	2017	PINK	MAGADAN	OL`SKY HATCHERY	4,3H	UGLIKANKA RIVER	4188429	19.05.2017
RU16-40	DM	2016	2017	PINK	MAGADAN	YANSKY HATCHERY	5H	YANA RIVER	1863339	19.05.2017
RU16-41	DM	2016	2017	PINK	SAKHALIN	UROZHAYNYY HATCHERY	6nH	CHERNAYA RIVER	6226167	07.07.2017
RU16-42	DM	2016	2017	PINK	SAKHALIN	PUGACHEVSKIY HATCHERY	3,2H	SEN`KA RIVER	7500000	06.06.2017
RU16-43	DM	2016	2017	COHO	MAGADAN	ARMANSKY HATCHERY	1,4H	ARMAN RIVER	268000	24.08.2017
RU16-44	DM	2016	2017	COHO	MAGADAN	OL`SKY HATCHERY	4,3H	UGLIKANKA RIVER	81900	26.07.2017
RU16-45	DM	2016	2017	COHO	MAGADAN	YANSKY HATCHERY	3n,3nH	YANA RIVER	90900	05.07.2017
RU16-46	DM	2016	2017	SOCKEYE	KAMCHATKA	OZERKOVSKY HATCHERY	3,2,2H	BOL`SHAYA RIVER	1405000	01.06.2017
RU16-47	TM	2016	2017	SOCKEYE	KAMCHATKA	MALKINSKY HATCHERY	3,4H	BOL`SHAYA RIVER	557560	11.05.2017
RU16-48	TM	2016	2017	CHINOOK	KAMCHATKA	MALKINSKY HATCHERY	H3,4	BOL`SHAYA RIVER	906987	04.05.2017
RU14-63	DM	2014	2017	MASU	KHABAROVSK	KOMETA HATCHERY	3,2H	GYDZHU RIVER	17000	15.07.2017