

Marked Salmon Production by the Hatcheries of Russia in 2018

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 have 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 2018, the percentage of marked salmon juveniles in Sakhalin region was 73.49 % 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 2018

In 2018, Russian hatcheries released 217.02 million marked salmon juveniles. The major part of the marked juvenile salmon was formed by chum salmon—153.19 million (70.59%) and pink salmon—56.29 million (25.94%) of the total number of marked salmon. The proportion of the other species (sockeye, Chinook, coho) did not exceed 3.5 %. Of them, 5.38 million marked sockeye, 1.20 million coho and 0.95 million Chinook salmon were released (Table 1).

Table 1. Release of marked Pacific salmon at the Hatcheries of the Far East of Russia in 2018.

Species/ province	Number of released, mln					Share,%
	Sakhalin	Kamchatka	Magadan	Khabarovsk	Иторо	
Chum	113.54	29.86	8.27	1.52	153.19	70.59
Pink	45.93	0.00	10.36	0.00	56.29	25.94
Coho	0.00	0.59	0.61	0.00	1.20	0.55
Sockeye	0.00	5.38	0.00	0.00	5.38	2.48
Chinook	0.00	0.95	0.00	0.00	0.95	0.44
Total	159.48	36.78	19.24	1.52	217.02	100.00
Share,%	73.49	16.95	8.87	0.70	100.00	

The majority of marked juveniles were released from the Sakhalin hatcheries (159.48 million). In Magadan region a total of 19.24 million juveniles were released, in Kamchatka region—36.78 million, and in Khabarovsk region—1.52 million. In Magadan region the juveniles were marked at three hatcheries, in Kamchatka at five hatcheries, in Khabarovsk region at one hatchery, and in Sakhalin region at twelve hatcheries.

In total, 26 different mark patterns were used for marking. Of them, 18 marks were used for chum salmon: 4—in Magadan region, 3—in Kamchatka region, 1—in Khabarovsk region,

and 10—in Sakhalin region. A total of 7 marks were used for pink salmon marking: 3—in Magadan region and 4—in Sakhalin region. Coho juveniles were marked in Magadan and Kamchatka region, and four 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. As in the preceding years, most juveniles (81.7 %) were marked using a “dry” method before embryos hatching. The data on marked salmon release are presented in Table 2. 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).

References

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Table 2. Marked salmon production by the hatcheries of Russia in 2018.

ID#	MARK TYPE	BROOD YEAR	YEAR OF RELEASE	SPECIES	STATE/ PROVINCE	FACILITY	FINAL RELEASE SITE	NUMBER OF RELEASED	HATCH CODE	DATE LAST RELEASED
1	2	3	4	5	6	7	8	9	10	11
RU17-01	TM	2017	2018	CHUM	SAKHALIN	ADO-TYMOVSKY HATCHERY	TYM' RIVER	4401200	H3,2,2	28.06.2018
RU17-02	TM	2017	2018	CHUM	SAKHALIN	POBEDINSKY HATCHERY	PORONAY RIVER	8436000	3nH4	02.07.2018
RU17-03	DM	2017	2018	CHUM	SAKHALIN	BUYUKLOVSKY HATCHERY	BUYUKLINKA RIVER	12882800	1,5H	27.06.2018
RU17-04	TM	2017	2018	CHUM	SAKHALIN	BEREZNYAKOVSKY HATCHERY	BOL`SHOY TAKOY RIVER	8461000	H1,3,2	16.07.2018
RU17-05	TM	2017	2018	CHUM	SAKHALIN	TARANAYSKY HATCHERY	TARANAY RIVER	2154700	H6	04.06.2018
RU17-06	TM	2017	2018	CHUM	SAKHALIN	TARANAYSKY HATCHERY	TARANAY RIVER	4316000	H6	15.06.2018
RU17-07	DM	2017	2018	CHUM	SAKHALIN	YASNOMORSKY HATCHERY	YASNOMORKA RIVER	7456500	5H	20.06.2017
RU17-08	DM	2017	2018	CHUM	SAKHALIN	YASNOMORSKY HATCHERY	YASNOMORKA RIVER	447200	5H	15.06.2018
RU17-09	DM	2017	2018	CHUM	SAKHALIN	SOKOL`NIKOVSKY HATCHERY	ZAVETINKA RIVER	15320000	3n,3H	16.06.2018
RU17-10	DM	2017	2018	CHUM	SAKHALIN	KALININSKY HATCHERY	KALINKA RIVER	33798000	3n,3nH	20.06.2018
RU17-11	DM	2017	2018	CHUM	SAKHALIN	KALININSKY HATCHERY	PIONERKA RIVER	1996000	3n,3nH	09.06.2018
RU17-12	DM	2017	2018	CHUM	SAKHALIN	UROZHAYNYY HATCHERY	CHERNAYA RIVER	9408500	4n,2nH	26.06.2018
RU17-13	DM	2017	2018	CHUM	ITURUP	LEBEDINYY HATCHERY	LEBEDINYY LAKE	4466000	3,2H	15.07.2018
RU17-14	DM	2017	2018	CHUM	KAMCHATKA	KETKINSKY HATCHERY	AVACHA RIVER	8487499	1,3,1H	08.06.2018
RU17-15	DM	2017	2018	CHUM	KAMCHATKA	OZERKOVSKY HATCHERY	BOL`SHAYA RIVER	2468142	3,4H	15.05.2018
RU17-16	TM	2017	2018	CHUM	KAMCHATKA	PARATUNSKY HATCHERY	PARATUNKA RIVER	18904100	H3,1	30.05.2018
RU17-17	DM	2017	2018	CHUM	MAGADAN	ARMANSKY HATCHERY	ARMAN RIVER	1000000	3n,4H	13.06.2018
RU17-18	DM	2017	2018	CHUM	MAGADAN	OL`SKY HATCHERY	UGLIKANKA RIVER	1620000	4,2H	13.06.2018
RU17-19	DM	2017	2018	CHUM	MAGADAN	OL`SKY HATCHERY	UGLIKANKA RIVER	3590000	7H	20.06.2018
RU17-20	DM	2017	2018	CHUM	MAGADAN	YANSKY HATCHERY	YANA RIVER	2060000	4,2nH	06.06.2018
RU17-21	DM	2017	2018	CHUM	KHABAROVSK	ANYUYSKY HATCHERY	ANYUY RIVER	1520170	5,2H	24.04.2018

Table 2. (continued) Marked salmon production by the hatcheries of Russia in 2018.

ID#	MARK TYPE	BROOD YEAR	YEAR OF RELEASE	SPECIES	STATE/ PROVINCE	FACILITY	FINAL RELEASE SITE	NUMBER OF RELEASED	HATCH CODE	DATE LAST RELEASED
1	2	3	4	5	6	7	8	9	10	11
RU17-22	DM	2017	2018	PINK	SAKHALIN	PUGACHEVSKIY HATCHERY	SEN`KA RIVER	20208700	1,4H	23.06.2018
RU17-23	DM	2017	2018	PINK	SAKHALIN	ANIVSKY HATCHERY	BYSTRAYA RIVER	1804600	3,4H	13.06.2018
RU17-24	DM	2017	2018	PINK	SAKHALIN	ANIVSKY HATCHERY	BYSTRAYA RIVER	5750000	3,4H	15.06.2018
RU17-25	DM	2017	2018	PINK	SAKHALIN	ANIVSKY HATCHERY	BYSTRAYA RIVER	8286400	3,4H	08.06.2018
RU17-26	DM	2017	2018	PINK	SAKHALIN	ANIVSKY HATCHERY	BYSTRAYA RIVER	5179000	3,4H	15.06.2018
RU17-27	DM	2017	2018	PINK	SAKHALIN	TARANAYSKY HATCHERY	TARANAY RIVER	1183600	5H	05.06.2018
RU17-28	DM	2017	2018	PINK	SAKHALIN	TARANAYSKY HATCHERY	TARANAY RIVER	3522300	5nH	10.06.2018
RU17-29	DM	2017	2018	PINK	MAGADAN	ARMANSKY HATCHERY	ARMAN RIVER	3149000	1,3,1H	17.05.2018
RU17-30	DM	2017	2018	PINK	MAGADAN	ARMANSKY HATCHERY	ARMAN RIVER	1401000	6nH	17.05.2018
RU17-31	DM	2017	2018	PINK	MAGADAN	OL`SKY HATCHERY	UGLIKANKA RIVER	2390000	3,2nH	15.06.2018
RU17-32	DM	2017	2018	PINK	MAGADAN	YANSKY HATCHERY	YANA RIVER	3420000	6nH	19.05.2018
RU17-33	DM	2017	2018	COHO	MAGADAN	ARMANSKY HATCHERY	ARMAN RIVER	200000	1,2,1H	28.08.2018
RU17-34	DM	2017	2018	COHO	MAGADAN	OL`SKY HATCHERY	UGLIKANKA RIVER	280000	7H	02.08.2018
RU17-35	DM	2017	2018	COHO	MAGADAN	YANSKY HATCHERY	YANA RIVER	130000	5,1H	13.07.2017
RU17-36	TM	2017	2018	COHO	KAMCHATKA	PARATUNSKY HATCHERY	PARATUNKA RIVER	593800	H3,2	17.07.2018
RU17-37	DM	2017	2018	SOCKEYE	KAMCHATKA	OZERKOVSKY HATCHERY	BOL`SHAYA RIVER	4726479	3,4H	09.07.2018
RU17-38	TM	2017	2018	SOCKEYE	KAMCHATKA	MALKINSKY HATCHERY	BOL`SHAYA RIVER	651767	3,2H	07.05.2018
RU17-39	TM	2017	2018	CHINOOK	KAMCHATKA	MALKINSKY HATCHERY	BOL`SHAYA RIVER	949038	H3,1	07.05.2018