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Releases of Otolith Marked Salmon from Alaska in 2012

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Abstract

In Alaska, mass-marking of salmon using otolith thermal marking is an effective research and management tool for a variety of situations. This document reports the otolith mark patterns applied to hatchery-raised salmon stocks released in Alaska during 2012. It includes five species of salmon from brood years 2010 and 2011. Release numbers, mark patterns, and release locations are summarized.

Summary of Alaska Thermal Marking Programs

In Alaska, thermal marking of otoliths is primarily used to provide information about the contribution of hatchery fish, primarily pink, chum and sockeye salmon, to commercial and cost-recovery fisheries during the summer fishing season. In addition, several on-going programs use this information to aid in the in-season management of mixed stock fisheries. Hatcheries use mark recovery data to evaluate the success of various release strategies. In research applications, thermal marks have been used to answer questions regarding lake survival and straying rates of returning adults. The presence of otolith thermal marks is also being used to determine the origin of juvenile and immature salmon collected during biotic surveys in the Gulf of Alaska and the Bering Sea. In many instances, thermal marks are being applied by hatcheries in the absence of a directed sampling program. This applies primarily to coho and Chinook salmon, but it includes some sockeye releases as well. The reasons for this vary, but it primarily occurs in situations where the marks cost little to apply, and there is anticipation that a thermal mark recovery program will be implemented by the time the fish return.

Thermal mark patterns are assigned annually by the Alaska Department of Fish and Game with consideration based on the constraints of the hatchery, the need to identify specific stocks, and the existence of a program to recover and identify the thermal patterns. It has become increasingly difficult to create and apply unique patterns as the hatchery marking programs have expanded. Consequently, alternative marking strategies, such as the use of strontium chloride and calcein, are currently being explored.

In 2012, hatcheries in Alaska released the following numbers of otolith marked salmon: 6.5 million Chinook, 604 million chum, 8.9 million coho, 775 million pink, and 57 million sockeye. A list of otolith marks applied to hatchery-reared salmon released in 2012 is provided in Table 1. Thermal mark patterns are presented in the Uniform Hatch Code notation (Johnson et al. 2006).

The information presented in this report is based on release year, which is defined as when the fish is removed from artificial culture and released into the natural environment. The data includes fish from brood years 20010 and 2011. In some instances, fish from the same thermal mark group will be released over several years, so this list may not be comprehensive for each NPAFC number (e.g. a single NPAFC number may appear during multiple release years). Further information regarding thermal mark patterns and numbers of released fish in Alaska is available from the Alaska Department of Fish and

Game, Mark, Tag and Age Laboratory database (<http://taglab.org>) and from the NPAFC Working Group on Salmon Marking's Website (<http://npafc.taglab.org>).

References

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

Table 1. Releases of otolith marked salmon from Alaska in 2012.

NPAFC ID	BROOD YEAR	SPECIES	STATE	REGION	FACILITY	RELEASE SITE	DATE RELEASED	MARK TYPE	MARK ID	HATCH CODE	STAGE	NUMBER RELEASED
AK10-56	2010	CHINOOK	ALASKA	SOUTHEAST	HIDDEN FALLS	KASNYKU BAY	5/10/2012	Thermal	HIDDENFALLS10CHIN	4,2H	SMOLT	480,642
AK10-63	2010	CHINOOK	ALASKA	SOUTHEAST	MACAULAY	PULLEN CR	6/20/2012	Thermal	TAHINI10CHIN	2,2H	SMOLT	194,603
AK10-57	2010	CHINOOK	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE	5/25/2012	Thermal	GREENLAKE10CHINA	3,3nH	SMOLT	2,281,630
AK10-60	2010	CHINOOK	ALASKA	SOUTHEAST	MEDVEJIE	BEAR CV, HALIBUT PT	5/25/2012	Thermal	MEDVEJIE10CHIN	4,4H	SMOLT	624,509
AK10-76	2010	CHINOOK	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	CHENEGA BAY	6/6/2012	Thermal	PWS10CHIN	2,4H	SMOLT	49,700
AK10-58	2010	CHINOOK	ALASKA	SOUTHEAST	WHITMAN LAKE	HERRING COVE, NEETS BAY	5/29/2012	Thermal	WHITMAN10CHIN	1,3H	SMOLT	1,197,400
AK10-05	2010	COHO	ALASKA	SOUTHCENTRAL	FORT RICHARDSON	SEWARD LAGOON	7/19/2012	Thermal	RESURRECTION10COHO	2,4H	SMOLT	249,309
AK10-06	2010	COHO	ALASKA	SOUTHCENTRAL	FORT RICHARDSON	COOK INLET	7/18/2012	Thermal	COOKINLET10COHO	1,5H	SMOLT	463,864
AK10-53	2010	COHO	ALASKA	SOUTHEAST	KLAWOCK RIVER	KLAWOCK AREA	6/4/2012	Thermal	KLAWOCK10COHO	4,2H	SMOLT	4,537,106
AK10-49	2010	COHO	ALASKA	SOUTHEAST	MACAULAY	GASTINEAU CH	6/13/2012	Thermal	DIPAC10COHO	3,2H	SMOLT	306,663
AK10-52	2010	COHO	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE, DEEP INLET	5/27/2012	Thermal	DEEPINLET10COHO	4H	SMOLT	166,551
AK10-50	2010	COHO	ALASKA	SOUTHCENTRAL	SOLOMON GULCH	BOULDER BAY, SOLOMON GULCH	6/11/2012	Thermal	SGH10COHO	6H	SMOLT	1,879,768
AK10-47	2010	COHO	ALASKA	SOUTHCENTRAL	TRAIL LAKES	BEAR CR, BEAR LK	5/18/2012	Thermal	TRAILLAKES10SMCOHO	2,2H	SMOLT	93,000
AK10-46	2010	COHO	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	CHENEGA BAY, FLEMING SPIT, LAKE BAY, WHITTIER HBR	6/7/2012	Thermal	WNH10COHO	3H	SMOLT	1,018,000
AK10-66	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	MAIN BAY	MAIN BAY	5/23/2012	Thermal	MAINBAY10A	3H5	SMOLT	2,250,000
AK10-67	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	MAIN BAY	MAIN BAY	5/23/2012	Thermal	MAINBAY10B	3H2,2	SMOLT	2,220,000
AK10-68	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	MAIN BAY	MAIN BAY	5/25/2012	Thermal	MAINBAY10C	3H5	SMOLT	2,120,000
AK10-69	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	MAIN BAY	MAIN BAY	5/23/2012	Thermal	MAINBAY10D	3H3,3	SMOLT	2,160,000
AK10-77	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	MAIN BAY	MAIN BAY	5/23/2012	Thermal	MAINBAY10E	3H3,3	SMOLT	2,290,000
AK10-08	2010	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SPEEL ARM	6/8/2012	Thermal	SPEELARM10A	3,3nH	SMOLT	2,570,000
AK10-12	2010	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SPEEL ARM	6/13/2012	Thermal	SPEELARM10B	4n,3H	SMOLT	1,285,000
AK10-17	2010	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SPEEL ARM	6/8/2012	Thermal	SPEELARM10C	4,4nH	SMOLT	3,858,000
AK10-64	2010	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SPEEL ARM	6/7/2012	Thermal	SPEELARM10D	3,4nH	SMOLT	642,000
AK10-65	2010	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SPEEL ARM	6/7/2012	Thermal	SPEELARM10E	4,3nH	SMOLT	642,000
AK10-09	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	RESURRECTION BAY	5/23/2012	Thermal	TRAILLAKES10B	2,4H	SMOLT	1,305,000
AK10-11	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	TUTKA BAY	6/6/2012	Thermal	ENGLSHBAY10SMOLT	1,5H	SMOLT	152,200
AK10-14	2010	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	KIRSCHNER LK, TUTKA BAY	6/6/2012	Thermal	TUTKA10	1,5,1H	SMOLT	219,000
AK11-04	2011	CHINOOK	ALASKA	SOUTHCENTRAL	W.J. HERNANDEZ	COOK INLET	7/13/2012	Thermal	COOKINLET11CHIN	2,3H	SMOLT	1,221,934
AK11-05	2011	CHINOOK	ALASKA	SOUTHCENTRAL	W.J. HERNANDEZ	PRINCE WILLIAM SOUND	8/14/2012	Thermal	PWS11CHIN	2,4H	SMOLT	302,166
AK11-06	2011	CHINOOK	ALASKA	SOUTHCENTRAL	W.J. HERNANDEZ	SEWARD LAGOON	7/10/2012	Thermal	RESURRECTION11CHIN	2,5H	SMOLT	173,597
AK11-43	2011	CHUM	ALASKA	SOUTHCENTRAL	A F KOERNIG	SAWMILL BAY	6/3/2012	Thermal	WNH-AFK11	1,2,2H	FED FRY	29,400,000
AK11-50	2011	CHUM	ALASKA	SOUTHEAST	ANITA BAY	ANITA BAY	4/29/2012	Thermal	ANITABAY11	3,4,2H	FINGERLING	8,712,000
AK11-81	2011	CHUM	ALASKA	SOUTHEAST	ANITA BAY	ANITA BAY	4/29/2012	Thermal	ANITABAY11A	5H	FINGERLING	13,489,000
AK11-34	2011	CHUM	ALASKA	SOUTHEAST	GUNNUK CREEK	KAKE SHA, SE COVE	5/18/2012	Thermal	KAKE11	4n,2H	FED FRY	25,736,020
AK11-39	2011	CHUM	ALASKA	SOUTHEAST	HIDDEN FALLS	KASNYKU BAY	5/23/2012	Thermal	HIDDENFALLS11	3,2n,2nH	FED FRY	31,283,930
AK11-40	2011	CHUM	ALASKA	SOUTHEAST	HIDDEN FALLS	KASNYKU BAY	6/2/2012	Thermal	HIDDENFALLS11LL	3,2n,4nH	FED FRY	7,048,558

Continued

Table 1 (continued). Releases of otolith marked salmon from Alaska in 2012.

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AK11-46	2011	CHUM	ALASKA	SOUTHEAST	HIDDEN FALLS	TAKATZ BAY	6/2/2012	Thermal	TAKATZ11	3,3,1H	FED FRY	29,204,857
AK11-47	2011	CHUM	ALASKA	SOUTHEAST	HIDDEN FALLS	TAKATZ BAY	6/10/2012	Thermal	TAKATZ11LL	3,5nH	FED FRY	13,453,301
AK11-51	2011	CHUM	ALASKA	SOUTHEAST	KENDRICK BAY	KENDRICK BAY	4/28/2012	Thermal	KENDRICK11	6,2H	FINGERLING	26,808,000
AK11-55	2011	CHUM	ALASKA	SOUTHEAST	KENDRICK BAY	KENDRICK BAY	5/11/2012	Thermal	KENDRICKLL11	4,1,2,1H	FINGERLING	2,337,000
AK11-44	2011	CHUM	ALASKA	SOUTHEAST	MACAULAY	JUNEAU AREA	6/8/2012	Thermal	DIPAC11	4H	FED FRY	113,773,000
AK11-36	2011	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	DEEP INLET	5/9/2012	Thermal	DEEPINLETMV11	3,3,3H	FED FRY	24,201,942
AK11-38	2011	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	DEEP INLET	5/7/2012	Thermal	DEEPINLETHF11	4n,3,2nH	FED FRY	17,476,809
AK11-41	2011	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE	5/8/2012	Thermal	BEARCOVE11	4,2,2H	FED FRY	14,420,675
AK11-42	2011	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE	6/1/2012	Thermal	BEARCOVE11LL	5n,4H	FED FRY	4,614,805
AK11-48	2011	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	DEEP INLET	5/7/2012	Thermal	DEEPINLET11A	3,3,1H4	FED FRY	1,430,270
AK11-49	2011	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	DEEP INLET	5/7/2012	Thermal	DEEPINLET11B	3,5nH4	FED FRY	878,144
AK11-54	2011	CHUM	ALASKA	SOUTHEAST	NAKAT INLET	NAKAT INLET	4/29/2012	Thermal	NAKATINLET11SUM	3,2,3H	FINGERLING	8,045,000
AK11-56	2011	CHUM	ALASKA	SOUTHEAST	NAKAT INLET	NAKAT INLET	5/10/2012	Thermal	NAKATINLET11FALL	3,4,1H4	FINGERLING	5,655,000
AK11-52	2011	CHUM	ALASKA	SOUTHEAST	NEETS BAY	NEETS BAY	4/27/2012	Thermal	NEETS BAY11SUM	4,4H4	FINGERLING	46,108,000
AK11-53	2011	CHUM	ALASKA	SOUTHEAST	NEETS BAY	NAKAT INLET, NEETS BAY	5/11/2012	Thermal	NEETS BAY11FALL	4,2,2H4n	FINGERLING	21,581,000
AK11-83	2011	CHUM	ALASKA	SOUTHEAST	NEETS BAY	NEETS BAY	4/27/2012	Thermal	NEETS BAY11SUMB	4,4H4n,2	PRESMOLT	13,157,000
AK11-35	2011	CHUM	ALASKA	SOUTHEAST	PORT ARMSTRONG	PORT ARMSTRONG	5/4/2012	Thermal	PORTARMSTRONG11CHUM	3H3	FED FRY	26,459,338
AK11-36	2011	CHUM	ALASKA	SOUTHEAST	SHELDON JACKSON	DEEP INLET	5/9/2012	Thermal	DEEPINLETMV11	3,3,3H	FED FRY	7,630,000
AK11-33	2011	CHUM	ALASKA	SOUTHEAST	SHELDON JACKSON	CRESCENT BAY	5/25/2012	Thermal	SJ11CHUM	6,1H	FED FRY	430,436
AK11-37	2011	CHUM	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	LAKE BAY	5/26/2012	Thermal	WNH11	5n,2H	FED FRY	74,100,000
AK11-45	2011	CHUM	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	PORT CHALMERS	5/22/2012	Thermal	PORTCHALMERS11	3,2n,1H	FED FRY	36,800,000
AK11-62	2011	COHO	ALASKA	SOUTHCENTRAL	TRAIL LAKES	BEAR LK	7/19/2012	Thermal	TRAILLAKES11SMCOHO	2,2H4	FINGERLING	222,000
AK11-24	2011	PINK	ALASKA	SOUTHCENTRAL	A F KOERNIG	SAWMILL BAY	5/20/2012	Thermal	AFK11A	4H3	FED FRY	75,600,000
AK11-25	2011	PINK	ALASKA	SOUTHCENTRAL	A F KOERNIG	SAWMILL BAY	5/7/2012	Thermal	AFK11B	4H	FED FRY	74,400,000
AK11-31	2011	PINK	ALASKA	SOUTHCENTRAL	CANNERY CREEK	CANNERY CR	5/31/2012	Thermal	CCH11	3,4H	FED FRY	172,000,000
AK11-27	2011	PINK	ALASKA	SOUTHEAST	GUNNUK CREEK	KAKE SHA		Thermal	KAKE11PINK	1,2,1H	FED FRY	15,836,693
AK11-29	2011	PINK	ALASKA	SOUTHEAST	PORT ARMSTRONG	PORT ARMSTRONG	5/2/2012	Thermal	PORTARMSTRONG11	2,2H	FED FRY	82,734,292
AK11-28	2011	PINK	ALASKA	SOUTHEAST	SHELDON JACKSON	CRESCENT BAY	5/17/2012	Thermal	SJ11PINK	4,1H	FED FRY	2,627,965
AK11-30	2011	PINK	ALASKA	SOUTHCENTRAL	SOLOMON GULCH	SOLOMON GULCH	5/15/2012	Thermal	SGH11	6H	FED FRY	214,526,737
AK11-26	2011	PINK	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	LAKE BAY	5/17/2012	Thermal	WNH11PINKB	8H	FED FRY	71,800,000
AK11-32	2011	PINK	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	LAKE BAY	5/1/2012	Thermal	WNH11PINKA	8H3	FED FRY	65,200,000
AK11-57	2011	SOCKEYE	ALASKA	SOUTHCENTRAL	GULKANA	CROSSWIND LK, PAXSON LK, SUMMIT LK	6/2/2012	Strontium	GULKANA11	HS1	FED FRY	22,860,000
AK11-10	2011	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	TATSAMENIE LK	5/29/2012	Thermal	TATSAMENIE11	3n,5H	EMERGENT FRY	1,649,000
AK11-11	2011	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	TUYA LK	6/21/2012	Thermal	TUYA11	6H	EMERGENT FRY	1,596,000
AK11-17	2011	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	TAHLTAN LK	5/30/2012	Thermal	TAHLTAN11	3,2n,2H	EMERGENT FRY	2,126,000
AK11-19	2011	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	TATSAMENIE LK	6/12/2012	Thermal	TATSAMENIE11ER	6,2H	FINGERLING	243,000
AK11-20	2011	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SWEETHEART LK	6/23/2012	Thermal	SWEETHEART11	5,2H	EMERGENT FRY	500,000
AK11-08	2011	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	HAZEL LK, KIRSCHNER LK, LEISURE LK	6/30/2012	Thermal	PENINSULA11SOCKEYE	2,2H	FED FRY	3,614,000
AK11-09	2011	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	ENGLISH BAY LK	10/12/2012	Thermal	ENGLISHBAY11	4H	PRESMOLT	213,000
AK11-14	2011	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	HIDDEN LK	5/16/2012	Thermal	HIDDENLAKE11	2,3nH	EMERGENT FRY	948,000
AK11-58	2011	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	BEAR LK	6/16/2012	Thermal	TRAILLAKES11A	3,2H	FED FRY	2,490,000