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Releases of Otolith Marked Salmon from Alaska in 2010

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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 2010. It includes five species of salmon from brood years 2008 through 2010. 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 2010, hatcheries in Alaska released the following numbers of otolith marked salmon: 6.6 million Chinook, 553.8 million chum, 7.2 million coho, 710.8 million pink, and 51.9 million sockeye. A list of otolith marks applied to hatchery-reared salmon released in 2010 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 2008, 2009, and, 2010. 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 2010.

NPAFC ID	BROOD YEAR	SPECIES	STATE/ PROVINCE	REGION	FACILITY	RELEASE SITE	DATE RELEASED	MARK TYPE	MARK ID	HATCH CODE	STAGE	NUMBER RELEASED
AK08-62	2008	CHINOOK	ALASKA	SOUTHCENTRAL	FORT RICHARDSON	CROOKED CR, DECEPTION CR, EKLUTNA TAILRACE, FISH CR, HALIBUT CV LAG, HOMER SPIT, NINILCHIK R, SHIP CR	6/23/2010	THERMAL	COOKINLET08CHIN	2,3H	SMOLT	1,243,236
AK08-63	2008	CHINOOK	ALASKA	SOUTHCENTRAL	FORT RICHARDSON	FLEMING SPIT, PASSAGE CANAL, VALDEZ OLD TOWN SITE	8/13/2010	THERMAL	PWS08CHIN	2,4H	SMOLT	334,065
AK08-64	2008	CHINOOK	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE	6/1/2010	THERMAL	GREENLAKE08CHIN	2,4nH	SMOLT	939,905
AK08-65	2008	CHINOOK	ALASKA	SOUTHCENTRAL	FORT RICHARDSON	LOWELL CR, SEWARD LAGOON	6/4/2010	THERMAL	RESURRECTION08CHIN	2,5H	SMOLT	220,450
AK08-68	2008	CHINOOK	ALASKA	SOUTHEAST	HIDDEN FALLS	KASNYKU BAY	6/1/2010	THERMAL	HIDDENFALLS08CHIN	4,2H	SMOLT	939,962
AK08-69	2008	CHINOOK	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE	5/28/2010	THERMAL	MEDVEJIE08CHIN	4,4H	SMOLT	897,996
AK08-72	2008	CHINOOK	ALASKA	SOUTHEAST	WHITMAN LAKE	HERRING COVE	5/21/2010	THERMAL	WHITMAN08CHIN	1,5H	SMOLT	768,000
AK08-52	2008	COHO	ALASKA	SOUTHCENTRAL	FORT RICHARDSON	BIRD CR, CAMPBELL CR, EKLUTNA TAILRACE, HOMER SPIT, SHIP CR	7/16/2010	THERMAL	COOKINLET08COHO	1,5H	SMOLT	721,396
AK08-54	2008	COHO	ALASKA	SOUTHCENTRAL	FORT RICHARDSON	LOWELL CR, SEWARD LAGOON	6/28/2010	THERMAL	RESURRECTION08COHO	2,4H	SMOLT	267,955
AK08-55	2008	COHO	ALASKA	SOUTHEAST	MACAULAY	GASTINEAU CH	6/3/2010	THERMAL	DIPAC08COHO	3,3H	SMOLT	328,000
AK08-56	2008	COHO	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	CHENEGA BAY, FLEMING SPIT, LAKE BAY, WHITTIER HBR	6/2/2010	THERMAL	WNH08COHO	3H	SMOLT	3,490,000
AK08-57	2008	COHO	ALASKA	SOUTHCENTRAL	SOLOMON GULCH	SOLOMON GULCH, TATITLEK	6/17/2010	THERMAL	SGH08COHO	6H	SMOLT	1,915,058
AK08-06	2008	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	RESURRECTION BAY	5/28/2010	THERMAL	TRAILLAKES08B	2,1H	SMOLT	1,650,000
AK08-11	2008	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SPEEL ARM	5/28/2010	THERMAL	SPEELARM08B	3n,4H	SMOLT	1,200,000
AK08-12	2008	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	TUTKA BAY	6/16/2010	THERMAL	TUTKA08	4,2H	SMOLT	278,000
AK08-15	2008	SOCKEYE	ALASKA	SOUTHEAST	BURNETT INLET	BURNETT INLET	5/20/2010	THERMAL	BURNETT08	4n,2H	SMOLT	56,180
AK08-17	2008	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SPEEL ARM	5/24/2010	THERMAL	SPEELARM08A	5H	SMOLT	7,730,000
AK08-18	2008	SOCKEYE	ALASKA	SOUTHEAST	BURNETT INLET	MCDONALD LK	4/27/2010	THERMAL	MCDONALD08	5n,3H	PRESMOLT	160,350
AK08-20	2008	SOCKEYE	ALASKA	SOUTHEAST	MAIN BAY	MAIN BAY	5/23/2010	THERMAL	MAINBAY08	3,2H5	SMOLT	8,160,000
AK09-60	2009	CHINOOK	ALASKA	SOUTHEAST	HIDDEN FALLS	KASNYKU BAY	7/16/2010	THERMAL	HIDDENFALLS09CHIN	4,2H	SMOLT	367,460

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Table 1 (continued). Releases of otolith marked salmon from Alaska in 2010.

NPAFC ID	BROOD YEAR	SPECIES	STATE/ PROVINCE	REGION	FACILITY	RELEASE SITE	DATE RELEASED	MARK TYPE	MARK ID	HATCH CODE	STAGE	NUMBER RELEASED
AK09-61	2009	CHINOOK	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE	7/18/2010	THERMAL	DEEPINLET09CHINZ	4,3nH	SMOLT	802,790
AK09-62	2009	CHINOOK	ALASKA	SOUTHEAST	HIDDEN FALLS	LUTAK INLET	7/15/2010	THERMAL	LUTAK09CHIN	3,3H	SMOLT	80,672
AK09-26	2009	CHUM	ALASKA	SOUTHEAST	HIDDEN FALLS	TAKATZ BAY	5/30/2010	THERMAL	TAKATZ09	5n,2H	FED FRY	39,039,177
AK09-27	2009	CHUM	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	PORT CHALMERS	5/18/2010	THERMAL	PORTCHALMERS09	1,2n,3H	FED FRY	40,800,000
AK09-28	2009	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	BEAR COVE	5/14/2010	THERMAL	BEARCOVE09	1,5,1H	FED FRY	9,851,926
AK09-29	2009	CHUM	ALASKA	SOUTHEAST	NAKAT INLET	NAKAT INLET	4/21/2010	THERMAL	NAKATINLET09FALL	3,4,1H	FINGERLING	8,731,000
AK09-30	2009	CHUM	ALASKA	SOUTHEAST	NAKAT INLET	NAKAT INLET	4/26/2010	THERMAL	NAKATINLET09SUM	3,1,4H	FINGERLING	8,304,000
AK09-31	2009	CHUM	ALASKA	SOUTHEAST	ANITA BAY	ANITA BAY	4/30/2010	THERMAL	ANITABAY09	1,6,1H	FINGERLING	23,726,500
AK09-32	2009	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	DEEP INLET	4/29/2010	THERMAL	DEEPINLETMV09	1,3,3H	FED FRY	2,707,056
AK09-33	2009	CHUM	ALASKA	SOUTHEAST	MEDVEJIE	DEEP INLET	5/6/2010	THERMAL	DEEPINLETHF09	3,4nH	FED FRY	22,719,243
AK09-34	2009	CHUM	ALASKA	SOUTHEAST	GUNNUK CREEK	KAKE SHA, SE COVE	5/18/2010	THERMAL	KAKE09	4,1H	FED FRY	54,033,736
AK09-35	2009	CHUM	ALASKA	SOUTHEAST	NEETS BAY	NEETS BAY	5/11/2010	THERMAL	NEETS BAY09FALL	4,2,2H	FINGERLING	16,514,000
AK09-36	2009	CHUM	ALASKA	SOUTHCENTRAL	A F KOERNIG	SAWMILL BAY	6/8/2010	THERMAL	WNH-AFK09	1,2,1,2H	FED FRY	12,900,000
AK09-37	2009	CHUM	ALASKA	SOUTHEAST	SHELDON JACKSON	CRESCENT BAY	5/8/2010	THERMAL	SJ09CHUM	4H	FED FRY	1,080,000
AK09-38	2009	CHUM	ALASKA	SOUTHEAST	NEETS BAY	NEETS BAY	4/21/2010	THERMAL	NEETS BAY09SUM	4,4H	FINGERLING	52,970,000
AK09-40	2009	CHUM	ALASKA	SOUTHEAST	KENDRICK BAY	KENDRICK BAY	5/16/2010	THERMAL	KENDRICK09	4n,4H	FINGERLING	19,253,000
AK09-41	2009	CHUM	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	LAKE BAY	5/25/2010	THERMAL	WNH09	1,5H	FED FRY	76,500,000
AK09-42	2009	CHUM	ALASKA	SOUTHEAST	MACAULAY	AMALGA HARBOR, BOAT HARBOR, GASTINEAU CH, LIMESTONE IN	6/2/2010	THERMAL	DIPAC09	1,3H	FED FRY	94,940,000
AK09-43	2009	CHUM	ALASKA	SOUTHEAST	HIDDEN FALLS	KASNYKU BAY	5/22/2010	THERMAL	HIDDENFALLS09	1,2,3H	FED FRY	40,268,478
AK09-44	2009	CHUM	ALASKA	SOUTHEAST	PORT ARMSTRONG	PORT ARMSTRONG	4/27/2010	THERMAL	PORTARMSTRONG09CHUM	1,4H	EMERGENT FRY	18,185,719
AK09-45	2009	CHUM	ALASKA	SOUTHEAST	KENDRICK BAY	KENDRICK BAY	5/16/2010	THERMAL	KENDRICKLL09	5,3H	FINGERLING	2,076,000
AK09-65	2009	CHUM	ALASKA	SOUTHEAST	PORT ARMSTRONG	PORT ARMSTRONG	4/27/2010	THERMAL	PORTARMSTRONG09CHUMA	1,4H3	FED FRY	9,110,757
AK09-50	2009	COHO	ALASKA	SOUTHCENTRAL	TRAIL LAKES	BEAR LK	6/29/2010	THERMAL	TRAILLAKES09SMCOHO	4H3	FINGERLING	435,000
AK09-19	2009	PINK	ALASKA	SOUTHEAST	GUNNUK CREEK	KAKE SHA	5/16/2010	THERMAL	KAKE09PINK	1,2,1H	FED FRY	9,000,000

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AK09-20	2009	PINK	ALASKA	SOUTHEAST	PORT ARMSTRONG	PORT ARMSTRONG	4/29/2010	THERMAL	PORTARMSTRONG09	2,2H	FED FRY	53,677,075
AK09-21	2009	PINK	ALASKA	SOUTHCENTRAL	CANNERY CREEK	CANNERY CR	5/29/2010	THERMAL	CCH09	3,3H	FED FRY	139,000,000
AK09-22	2009	PINK	ALASKA	SOUTHEAST	SHELDON JACKSON	CRESCENT BAY	5/8/2010	THERMAL	SJ09PINK	4,1H	FED FRY	1,000,550
AK09-23	2009	PINK	ALASKA	SOUTHCENTRAL	A F KOERNIG	SAWMILL BAY	5/10/2010	THERMAL	AFK09	4H	FED FRY	73,900,000
AK09-24	2009	PINK	ALASKA	SOUTHCENTRAL	SOLOMON GULCH	SOLOMON GULCH	5/19/2010	THERMAL	SGH09	6H	FED FRY	223,083,753
AK09-25	2009	PINK	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	LAKE BAY	5/7/2010	THERMAL	WNH09PINK	8H	FED FRY	67,800,000
AK09-66	2009	PINK	ALASKA	SOUTHCENTRAL	A F KOERNIG	SAWMILL BAY	5/20/2010	THERMAL	AFK09B	4H3	FED FRY	75,100,000
AK09-67	2009	PINK	ALASKA	SOUTHCENTRAL	WALLY NOERENBERG	LAKE BAY	5/20/2010	THERMAL	WNH09PINKB	8H3	FED FRY	68,200,000
AK09-01	2009	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TATSAMENIE LK	5/22/2010	THERMAL	TATSAMENIE09	6,2H	EMERGENT FRY	506,000
AK09-04	2009	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	ENGLISH BAY LK	11/10/2010	THERMAL	ENGLISHBAY09	2,4H	PRESMOLT	202,000
AK09-05	2009	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	SWEETHEART LK	6/3/2010	THERMAL	SWEETHEART09	2,5H	EMERGENT FRY	528,000
AK09-07	2009	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	HIDDEN LK	5/28/2010	THERMAL	HIDDENLAKE09	3,2,1H	EMERGENT FRY	880,000
AK09-10	2009	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TUYA LK	6/2/2010	THERMAL	TUYA09	3,4H	EMERGENT FRY	976,000
AK09-12	2009	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TAHLTAN LK	5/19/2010	THERMAL	TAHLTAN09	5,2H	EMERGENT FRY	1,830,000
AK09-14	2009	SOCKEYE	ALASKA	SOUTHEAST	SNETTISHAM	R-TATSAMENIE LK	8/12/2010	THERMAL	TATSAMENIE09ER	3n,2H	PRESMOLT	210,000
AK09-16	2009	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	HAZEL LK, KIRSCHNER LK, LEISURE LK	6/24/2010	THERMAL	PENINSULA09SOCKEYE	2,2H	FED FRY	3,406,000
AK09-17	2009	SOCKEYE	ALASKA	SOUTHCENTRAL	TRAIL LAKES	BEAR LK	6/10/2010	THERMAL	TRAILLAKES09A	5,2H	FED FRY	2,200,000
AK09-18	2009	SOCKEYE	ALASKA	SOUTHCENTRAL	GULKANA	CROSSWIND LK, PAXSON LK, SUMMIT LK	5/27/2010	STRONTIUM	GULKANA09	HS1	FED FRY	22,010,000
AK10-01	2010	CHUM	ALASKA	WESTERN	NORTON SOUND	SOLOMON R	12/4/2010	THERMAL	NORTON10CHUMA	4H	ZYGOTE	42,687
AK10-02	2010	CHINOOK	ALASKA	SOUTHCENTRAL	CHIKALOON VILLAGE CIF	MOOSE CR	10/11/2010	THERMAL	CHICKALOON10	3,2H	ZYGOTE	57,548
AK10-03	2010	COHO	ALASKA	WESTWARD	NORTON SOUND	SNAKE R	12/4/2010	THERMAL	NORTON10COHO	2,3H	ZYGOTE	63,932