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**Salmon Tagging Experiments and
Recovery of Salmon Lacking Adipose Fin
Collected by Japanese Salmon Research Vessels
in the North Pacific Ocean, 1997**

by

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Salmon Tagging Experiments and Recovery of Salmon Lacking Adipose Fin Collected by Japanese Salmon Research Vessels in the North Pacific Ocean, 1997

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ABSTRACT

Two Japanese salmon research vessels conducted 41 longline operations in the North Pacific Ocean in 1997. A total of 696 salmonids (48 sockeye, 399 chum, 247 pink, one coho, and one chinook salmon) in the Bering Sea, 28 salmonids (6 sockeye, 12 chum, 2 pink, and 8 coho salmon) in the Gulf of Alaska, and 94 salmonids (37 sockeye, 10 chum, 19 pink, 10 coho, 4 chinook salmon, and 14 steelhead trout) in the central North Pacific Ocean, were tagged and released, respectively. Double tagging using Japanese and U.S. disc tags was conducted for some of these fish in order to increase recovery rates.

Four Japanese salmon research vessels conducted a survey for salmonids lacking fins, and 92 steelhead trout and two sockeye salmon lacking the adipose fin and/or other fins were recovered. The percentage of steelhead trout lacking adipose fin in 1997 ($44.0\% = 92/209 = \text{steelhead trout lacking adipose fin} / \text{the total steelhead trout catch}$) was as high as in 1996 (21.9% in 1992; 26.1% in 1993; 30.5% in 1994; 37.1% in 1995; 46.1% in 1996).

INTRODUCTION

This report describes the tagging experiments conducted in 1997 and summarizes information on salmon lacking adipose fin recovered by Japanese salmon research vessels in the North Pacific Ocean in 1997.

MATERIALS AND METHODS

Two Japanese salmon research vessels, *Wakatake maru* and *Oshoro maru*, conducted 41 longline operations in the central North Pacific Ocean, the Bering Sea, and the Gulf of Alaska in June and July, 1997. Double tagging using Japanese and U.S. disc tags was conducted for some of these fish in order to increase recovery rates.

Four salmon research vessels, *Wakatake maru*, *Oshoro maru*, *Hokusei maru*, and *Hokko maru*, caught 23,654 salmonids in the western and central North Pacific, the Bering Sea, and the Gulf of Alaska from June to August in 1997. Salmon lacking adipose fin were recovered during biological measurements. Snout samples were collected from these fish for later examination of coded wire tag (CWT).

RESULTS AND DISCUSSION

In the Bering Sea, 696 salmonids (48 sockeye, 399 chum, 247 pink, one coho, and one chinook salmon) were tagged and released, 28 salmonids (6 sockeye, 12 chum, 2 pink, and 8 coho salmon) in the Gulf of Alaska, and 94 salmonids (37 sockeye, 10 chum, 19 pink, 10 coho, 4 chinook salmon, and 14 steelhead trout) in the central North Pacific Ocean were tagged and released. Double tagging using Japanese and U.S. disc tags was conducted for some of these fish in order to increase recovery rates (Tables 1 and 2).

A total of 92 steelhead trout and two sockeye salmon lacking the adipose fin and/or other fins were recovered. The percentage of steelhead trout lacking adipose fin in 1997 ($44.0\% = 92/209 = \text{steelhead trout lacking adipose fin} / \text{the total steelhead trout catch}$) was as high as in 1996 (21.9% in 1992; 26.1% in 1993; 30.5% in 1994; 37.1% in 1995; 46.1% in 1996) (Ito and

Ishida 1992, 1993; Ito 1994, 1995; Ito and Ishida 1996). Snout samples were collected from these fish and provided to the U.S. for CWT examination (Table 3).

ACKNOWLEDGMENTS

We thank captains, officers and crew of the *Wakatake maru*, *Oshoro maru*, *Hokusei maru*, and *Hokko maru*, for their careful collection of data and samples.

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Table 1. Tagging experiments conducted aboard the *Wakatake maru* in summer, 1997.

No.	Release		Longline		Number of fish caught							Number of fish released							Type of Tag & Tag No. (Missing Tag No.)	Other Remarks			
	Date	Location	Hachi	Sock	Chum	Pink	Coho	Chin	Stee	Masu	Total	Sock	Chum	Pink	Coho	Chin	Stee	Masu			Total		
1	97.6.19	3857N 17959E	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
2	97.6.20	4004N 17959W	28	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0		
3	97.6.21	4058N 17959E	30	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		
4	97.6.22	4203N 17959E	30	0	0	1	11	0	0	0	12	0	0	0	0	0	0	0	0	0	0		
5	97.6.23	4304N 17959W	30	0	10	3	13	0	4	0	30	0	0	0	0	0	0	0	0	0	0		
6	97.6.24	4403N 17959W	30	0	8	0	10	0	0	0	18	0	0	0	0	0	0	0	0	0	0		
7	97.6.25	4502N 17959W	30	0	6	1	10	0	4	0	21	0	0	0	0	0	0	0	0	0	0		
8	97.6.26	4603N 17958W	30	1	3	1	7	0	2	0	14	0	0	0	0	0	0	0	0	0	0		
9	97.6.27	4702N 17959E	30	2	6	1	5	0	2	0	16	0	0	0	0	0	0	0	0	0	0		
10	97.6.28	4729N 17956E	30	10	12	10	25	9	6	0	72	0	0	0	0	0	0	0	0	0	0		
11	97.6.29	4830N 17930W	30	6	10	7	3	3	3	0	32	3	0	0	1	2	1	0	7	Disc.	LL4001-LL4007	Disc.	LL0001-LL0007
12	97.6.30	4930N 17930W	30	6	19	4	9	3	5	0	46	6	0	2	7	2	5	0	22	Disc.	LL4008-LL4029	Disc.	LL0008-LL0029
13	97.7.01	5030N 17930W	30	21	16	16	2	0	9	0	64	14	0	9	1	0	8	0	32	Disc.	LL4030-LL4061	Disc.	LL0030-LL0061
14	97.7.02	5130N 17930W	30	17	7	34	2	0	0	0	60	14	5	2	1	0	0	0	22	Disc.	LL4062-LL4083	Disc.	LL0062-LL0083
15	97.7.03	5230N 17930W	12	5	3	4	1	0	0	0	13	5	2	2	0	0	0	0	9	Disc.	LL4084-LL4092	Disc.	LL0084-LL0092
16	97.7.04	5331N 17930W	30	13	125	68	1	1	0	0	208	8	62	10	0	0	0	0	80	Disc.	LL4093-LL4172	Disc.	LL0093-LL0172
17	97.7.05	5430N 17930W	30	5	74	52	1	5	0	0	137	3	43	22	1	1	0	0	70	Disc.	LL4173-LL4243(-19)	Disc.	LL0173-LL0243(-19)
18	97.7.06	5532N 17937W	30	5	44	21	0	1	0	0	71	0	27	7	0	0	0	0	34	Disc.	LL4244-LL4277	Disc.	LL0244-LL0277
19	97.7.07	5632N 17932W	30	3	47	38	0	1	0	0	89	0	33	12	0	0	0	0	45	Disc.	LL4278-LL4322	Disc.	LL0278-LL0322
20	97.7.08	5728N 17929W	30	7	30	76	0	4	0	0	117	0	15	30	0	0	0	0	45	Disc.	LL4323-LL4367	Disc.	LL0323-LL0367
21	97.7.09	5830N 17928W	30	7	27	152	0	3	0	0	189	0	13	39	0	0	0	0	52	Disc.	LL4368-LL4419	Disc.	LL0368-LL0419
22	97.7.10	5730N 17830W	30	13	50	50	0	2	0	0	115	0	22	12	0	0	0	0	34	Disc.	LL4420-LL4453	Disc.	LL0420-LL0453
23	97.7.12	5729N 17728W	30	33	41	30	0	0	0	0	104	8	25	11	0	0	0	0	44	Disc.	LL4454-LL4497	Disc.	LL0454-LL0497
24	97.7.13	5629N 17728W	30	11	122	75	1	0	0	0	209	5	49	15	0	0	0	0	69	Disc.	LL4498-LL4566	Disc.	LL0498-LL0566
25	97.7.14	5633N 17822W	30	20	77	103	0	2	0	0	202	8	38	36	0	0	0	0	82	Disc.	LL4567-LL4648	Disc.	LL0567-LL0648
26	97.7.15	5630N 17927E	30	5	42	54	0	2	0	0	103	2	22	27	0	0	0	0	51	Disc.	LL4649-LL4699	Disc.	LL0649-LL0699
27	97.7.16	5627N 17825E	30	1	44	36	0	2	0	0	83	1	23	17	0	0	0	0	41	Disc.	LL4700-LL4740	Disc.	LL0700-LL0740
28	97.7.17	5631N 17740E	20	9	44	31	0	1	0	0	85	8	25	7	0	0	0	0	40	Disc.	LL4741-LL4780	Disc.	LL0741-LL0780
Total			810	200	868	869	102	39	35	0	2113	85	404	260	11	5	14	0	779				

Table 2. Tagging experiments conducted aboard the *Oshoro maru* in summer, 1997.

Release		Longline		Number of fish caught							Number of fish released							Type of Tag & Tag No.	Other		
No.	Date	Location	Hachi	Sock	Chum	Pink	Coho	Chin	Stee	Masu	Total	Sock	Chum	Pink	Coho	Chin	Stee	Masu	Total	(Missing Tag No.)	Remarks
1	97.06.15	4359N 18000	10	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0		
2	97.06.18	4600N 17958W	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3	97.06.19	4559N 17952W	10	0	4	2	0	0	0	0	6	0	2	1	0	0	0	0	3	Disc. AA2063-AA2066(-64)	Disc. KK709-KK712(-08)
4	97.06.20	4701N 17958W	10	0	3	2	0	0	0	0	5	0	3	2	0	0	0	0	5	Disc. AA2067-AA2072(-71)	Disc. KK713-KK718(-17)
5	97.06.22	5018N 17951W	10	0	0	3	0	0	0	0	3	0	0	3	0	0	0	0	3	Disc. AA2073-AA2075	Disc. KK719-KK721
6	97.07.03	5325N 15030W	10	0	10	0	5	0	0	0	15	0	6	0	3	0	0	0	9	Disc. CC6501-CC6509	Disc. LL1001-LL1009
7	97.07.07	4958N 14502W	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8	97.07.08	5058N 14501W	10	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	Disc. CC6510-CC6510	Disc. LL1010-LL1010
9	97.07.09	5157N 14458W	12	3	2	0	0	0	0	0	5	2	0	0	0	0	0	0	2	Disc. CC6511-CC6512	Disc. LL1011-LL1012
10	97.07.10	5259N 14456W	13	2	4	0	3	0	0	0	9	2	3	0	3	0	0	0	8	Disc. CC6513-CC6520	Disc. LL1013-LL1020
11	97.07.11	5401N 14459W	10	1	2	0	0	0	0	0	3	1	2	0	0	0	0	0	3	Disc. CC6521-CC6523	Disc. LL1021-LL1023
12	97.07.12	5502N 14456W	10	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	Disc. CC6524-CC6524	Disc. LL1024-LL1024
13	97.07.13	5601N 14458W	10	1	0	2	3	0	0	0	6	0	0	2	2	0	0	0	4	Disc. CC6525-CC6528	Disc. LL1025-LL1028
Total			140	9	27	9	11	0	0	0	56	6	17	8	8	0	0	0	39		

Table 3. Catch location and biological data for salmon with missing adipose and/or other fin caught by Japanese salmon research vessels in 1997.

Date	Location		Length	Weight	Sex	Gonad	Vessel	Gear	Sample	Species	Remarks
						Weight	Code		No.	Code	
970616	4359N	17959E	547	1640	M	2	R05	A121	11;6	7	
970616	4359N	17959E	725	3800	M	5	R05	C055	12;5	7	
970616	4359N	17959E	541	1500	F	10	R05	C082	15;7	7	
970618	4500N	17959W	562	1260	F	16	R05	C121	27;1	7	
970618	4500N	17959W	700	3500	F	17	R05	C121	27;2	7	
970703	5325N	15030W	532	1600	F	5	R05	A115	54;21	7	
970705	5110N	14652W	560	1800	M	26	R05	A115	73;16	7	
970705	5110N	14652W	558	1620	F	7	R05	A115	73;17	7	
970705	5110N	14652W	314	460	F	2	R05	C055	75;08	7	
970705	5110N	14652W	363	500	M	1	R05	C072	77;13	7	
970706	5000N	14500W	668	3350	M	3	R05	A115	83;03	7	
970706	5000N	14500W	585	2720	F	18	R05	A115	83;04	7	
970706	5000N	14500W	745	4000	M	48	R05	A121	84;16	7	
970706	5000N	14500W	597	2860	F	13	R05	A121	84;17	7	
970708	5200N	14500W	303	250	F	1	R05	C055	107;04	7	
970708	5200N	14500W	301	260	M	1	R05	C055	107;05	7	
970708	5200N	14500W	290	325	F	1	R05	C063	108;02	7	
970709	5300N	14500W	510	1760	F	30	R05	A115	117;13	1	
970709	5300N	14500W	717	4150	F	68	R05	A121	120;19	7	
970709	5300N	14500W	594	2520	M	31	R05	C121	127;01	1	
970711	5500N	14500W	579	1940	M	1	R05	C082	154;27	7	
970713	5600N	14500W	550	2060	F	15	R05	A121	164;27	7	
970713	5600N	14500W	278	210	F	1	R05	C055	166;04	7	
970713	5600N	14500W	277	210	F	1	R05	C063	167;07	7	
970717	4637N	16616E	592	1800	F	6	R06	A118	5;18	7	
970717	4637N	16616E	554	1640	F	5	R06	A118	5;19	7	
970717	4637N	16616E	586	2100	M	3	R06	A118	5;20	7	
970717	4637N	16616E	584	2000	F	5	R06	A118	5;21	7	
970717	4637N	16616E	688	3100	F	36	R06	A118	5;22	7	
970717	4637N	16616E	614	2200	F	8	R06	C121	17;1	7	
970717	4637N	16616E	530	1600	M	3	R06	C121	17;9	7	
970731	4730N	17530E	600	2100	M	7	R06	A112	57;8	7	
970731	4730N	17530E	520	1640	F	4	R06	C093	61;4	7	
970731	4730N	17530E	598	2300	M	3	R06	C106	62;9	7	
970731	4730N	17530E	585	2250	F	8	R06	C121	63;4	7	
970801	4800N	17323E	642	2500	M	2	R06	C121	71;6	7	
970802	4830N	17122E	544	1760	F	5	R06	C106	79;3	7	
970802	4830N	17122E	626	2350	F	7	R06	C106	79;4	7	
970802	4830N	17122E	550	1640	M	1	R06	A112	74;10	7	
970802	4830N	17122E	571	1920	M	2	R06	A118	75;9	7	
970805	5000N	16500E	720	3200	M	3	R06	A118	113;19	7	
970709	4800N	16500E	780	4540	M	2	R08	A115	67;26	7	A
970709	4800N	16500E	790	4900	M	10	R08	A115	67;27	7	A
970710	4700N	16500E	742	4050	M	12	R08	A115	82;24	7	A
970711	4600N	16500E	542	1500	F	3	R08	A115	91;20	7	A
970713	4400N	16500E	540	1620	M	1	R08	C106	108;07	7	A

Table 3. (continued)

Date	Location	Length	Weight	Sex	Gonad	Vessel	Gear	Sample	Species	Remarks	
					Weight	Code		No.	Code		
970622	4100N	18000	572	2000	F	18	R32	C157	8:01	7	A, D
970623	4300N	18000	600	2060	M	1	R32	B	23:11	7	A, D
970623	4300N	18000	710	2320	F	20	R32	B	23:12	7	A, D
970623	4300N	18000	594	1940	M	3	R32	B	23:13	7	A, D
970623	4300N	18000	555	1720	F	7	R32	B	23:30	7	A, D
970624	4300N	18000	712	3650	M	5	R32	A115	25:11	7	A, D
970624	4300N	18000	562	1850	M	5	R32	A115	26:05	7	A, D
970624	4300N	18000	576	1680	M	10	R32	C121	31:11	7	A, D
970624	4300N	18000	700	3640	F	19	R32	C121	31:12	7	A, D
970624	4300N	18000	592	1930	F	30	R32	C106	33:15	7	A, D
970625	4400N	18000	694	3100	M	1	R32	C138	36:01	7	
970625	4400N	18000	676	2950	F	27	R32	C121	38:03	7	A, LV
970625	4400N	18000	554	1540	M	4	R32	C106	39:08	7	A, D
970625	4400N	18000	610	1940	M	6	R32	A115	43:05	7	A, LPct
970625	4400N	18000	534	1540	M	5	R32	A115	43:06	7	A, D
970625	4400N	18000	546	1500	M	4	R32	A115	43:07	7	A
970625	4400N	18000	562	1720	M	4	R32	A115	43:08	7	A, D
970625	4400N	18000	563	1810	M	10	R32	A115	43:09	7	A, D
970625	4400N	18000	601	1840	M	13	R32	A115	43:10	7	A area miss**
970625	4500N	18000	572	1730	F	16	R32	B	44:10	7	A
970625	4500N	18000	700	2990	F	29	R32	B	44:16	7	A, D
970625	4500N	18000	530	1420	M	2	R32	B	44:20	7	
970625	4500N	18000	546	1430	M	2	R32	B	44:21	7	A, D, LV, Lpct
970626	4500N	18000	425	780	F	4	R32	C072	46:03	7	
970626	4500N	18000	574	2000	M	3	R32	C121	48:02	7	A, D
970626	4500N	18000	624	2800	M	2	R32	C121	48:03	7	A
970626	4500N	18000	534	1400	M	5	R32	A115	49:08	7	A, D
970626	4500N	18000	600	1980	M	2	R32	A115	49:09	7	A, D
970626	4500N	18000	602	2100	M	5	R32	A115	49:11	7	A, LV
970626	4500N	18000	555	1600	M	3	R32	A115	49:12	7	A, D
970626	4500N	18000	518	1220	F	4	R32	C093	52:09	7	A, D
970626	4600N	18000	534	1580	F	7	R32	B	53:05	7	A, D, LPct
970626	4600N	18000	574	1820	M	1	R32	B	53:13	7	A, D, LV
970627	4600N	18000	546	1600	F	12	R32	A115	58:01	7	A
970627	4600N	18000	682	2960	F	27	R32	A115	58:02	7	A
970627	4600N	18000	561	1620	M	5	R32	A115	58:04	7	A
970627	4700N	18000	597	1780	F	13	R32	B	64:08	7	A
970628	4700N	18000	585	1930	F	10	R32	A115	71:17	7	A, D
970628	4700N	18000	722	3300	F	41	R32	A115	71:18	7	A, D
970628	4700N	18000	558	1600	F	5	R32	A115	71:19	7	A, D
970628	4700N	18000	520	1300	F	10	R32	A115	74:07	7	A, D
970628	4730N	18000	570	1800	F	10	R32	B	77:29	7	A, D
970628	4730N	18000	516	1320	M	4	R32	B	77:30	7	A, D
970629	4730N	18000	620	2620	F	15	R32	C121	87:02	7	A
970629	4730N	18000	730	3300	M	15	R32	C138	88:01	7	A
970629	4730N	18000	702	3200	F	20	R32	C138	88:02	7	A
970629	4830N	17930W	582	1860	M	3	R32	B	90:09	7	A, D
970629	4830N	17930W	700	3740	F	23	R32	B	90:10	7	A, D