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**RELEASES AND RECOVERIES OF U.S. SALMONID DATA STORAGE
TAGS, AND RECOVERIES OF HIGH SEAS TAGS IN NORTH
AMERICA, 2003**

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RELEASES AND RECOVERIES OF U.S. SALMONID DATA STORAGE TAGS, AND RECOVERIES OF HIGH SEAS TAGS IN NORTH AMERICA, 2003

ABSTRACT

Information is reported on all high-seas salmon tags recovered in North America from 11 September 2002 through 1 October 2003, and all releases and recoveries of U.S. data storage tags (DSTs). One hundred sixty-seven DSTs, which record temperature and depth or temperature-only data, were placed on Pacific salmon in the North Pacific Ocean and Bering Sea during research cruises aboard two Japanese vessels in 2003. Twenty-one sockeye, 40 chum, 60 pink, and 19 chinook salmon were tagged with DSTs in June and July in the central North Pacific and Bering Sea. Twenty-seven salmon (11 sockeye, 13 chum, 1 coho, and 2 chinook) were tagged with DSTs in the Gulf of Alaska in August.

Six DSTs, from three chum salmon tagged during 2002 operations in the Bering Sea, were recovered in September 2002 in Hokkaido. They had each been tagged with two types of DSTs for comparisons of the data from the different tags. Graphs of ambient temperature and pressure data from the DSTs are presented. The overall pattern of temperatures from the two types of tags generally conformed. However, individual temperatures from temperature-only tags tended to be about 1°C higher than temperatures from the tags that recorded temperature and depth data.

Three high-seas salmon tags from recoveries in North America have been reported by fishermen. All were from sockeye salmon tagged in the Bering Sea in 2003, and all were recovered in the Bristol Bay-north Alaska Peninsula area. One fish carrying a DST recording temperature and depth data was caught in Nelson Lagoon, Alaska Peninsula. Another DST, recording temperature data, was returned from a fish caught in Naknek, Bristol Bay. A third sockeye, carrying disk tags only, was caught just north of False Pass at the eastern end of the Alaska Peninsula.

INTRODUCTION

Information is reported on all high-seas salmon (*Oncorhynchus* spp.) tags recovered in North America from 11 September 2002 through 1 October 2003, and all releases and recoveries of U.S. data storage tags (DSTs). The Fisheries Research Institute (FRI), School of Aquatic and Fishery Sciences, University of Washington, serves as a processing center for all North American recoveries of Canadian, Japanese, Russian, and U.S. high-seas salmon tags, and recoveries of U.S. high-seas salmon tags and DSTs by all nations.

Releases and recoveries of all U.S. DSTs are reported, in order to have a complete record in one document. (Releases of U.S. DSTs from Japanese vessels and recoveries in Asia are also reported in Fukuwaka et al. 2003.) Graphs of ambient temperature and pressure data from recovered DSTs are presented.

MATERIALS AND METHODS

Fish were captured for tagging by research longline on one Japanese vessel and by hook-and-line and trawl on another Japanese vessel in 2002. U.S. high-seas tags are 20 mm diameter plastic red-and-white Petersen disk tags. Five models of two types of DSTs were used. One type is a small

circuit board potted in a clear urethane, manufactured by Lotek Marine Technologies. Models LTD_1100-300 and LTD_1100-500 are 27 x 16 x 8 mm and weigh 5 g. These tags record temperature and depth data. iButton-type tags are Thermonchron iButton data storage devices (DS-1921H-F5 and DS-1921Z-F5) manufactured by Dallas Semiconductor, Inc., and repackaged in urethane for fish tagging by AlphaMach, Inc.; all models record temperature data only. Model iB4 tags are oval, 24 x 16 x 8 mm and weigh 3.8 g in air. Model iBLite tags are hexagonal, 26 x 17 x 7 mm and weigh 3 g. Model iBKrill tags are hexagonal, 25 x 13 x 8 mm and weigh 3.2 g. DSTs were attached to fish just anterior to the dorsal fin using two 76 or 64 mm nickel pins, with labeled U.S. and Japanese disk tags placed on the pins on the other side of the fish.

FRI's high-seas tag processing center activities include: (1) advertising for tag recoveries, (2) returning tags and original recovery information to the appropriate release agencies, (3) mailing information on tag recoveries and a tag reward to fishermen and processors, (4) maintaining a file of original correspondence, data, and tags of all recoveries of U.S., U.S.-Russia, and Japan-U.S. tags (1956-present), (5) maintaining and updating an all-agency tag release and computer database, and (6) reporting all recoveries of U.S., U.S.-Russia, and Japan-U.S. high-seas tags to the North Pacific Anadromous Fish Commission (NPAFC). In addition, FRI scientists periodically prepare reports and maps based on historical recoveries of high-seas tags that describe the known ocean ranges of major regional stocks of Asian and North American salmonids (for example, Myers et al. 1996). The complete all-agency (Canada, Japan, Russia, and United States) high-seas tag release and recovery computer database (1954-present) is available from FRI upon request from the parties of NPAFC so that all member nations can have access to a common database.

RESULTS AND DISCUSSION

One hundred sixty-seven DSTs, which record temperature and depth or temperature-only data, were placed on Pacific salmon in the North Pacific Ocean and Bering Sea during research cruises aboard two Japanese vessels in 2003 (Table 1). Twenty-one sockeye, 40 chum, 60 pink, and 19 chinook salmon were tagged with DSTs in June and July in the central North Pacific and Bering Sea. Twenty-seven salmon (11 sockeye, 13 chum, 1 coho, and 2 chinook) were tagged with DSTs in the Gulf of Alaska in August.

From 11 September 2002 through 1 October 2003, three high-seas salmon tags from recoveries in North America have been reported (Table 2). All were from sockeye salmon tagged in the Bering Sea in 2003, and all were recovered in the Bristol Bay-north Alaska Peninsula area. One fish carrying a DST recording temperature and depth data was caught in Nelson Lagoon. A graph of ambient temperature and pressure data from the DST (Fig. 1) shows the fish usually occupied depths from the surface to 25 m (maximum depth of 43 m), with a weak diurnal pattern of more diving activity during the day. Ambient temperatures were mostly from 6°C to 10°C. Another DST, recording temperature data, was returned from a fish caught in Naknek (Fig. 2). Ambient temperatures were mostly from 8°C to 16°C. Temperatures did not indicate any diving pattern, but neither did the temperatures from LTD tag 1685. The surface waters occupied by these sockeye may have been relatively well-mixed in 2003. A third sockeye, carrying disk tags only, was caught just north of False Pass at the eastern end of the Alaska Peninsula.

Six DSTs, from three chum salmon tagged during 2002 operations in the Bering Sea, were recovered in September 2002 in Hokkaido (Table 2). They had each been tagged with two types of DSTs for comparisons of the data from the different tags. Graphs of ambient temperature and pressure data from the DSTs are presented (Figs. 3-5). The fish usually occupied depths from the surface to 30 m (maximum depth of 44 m), with most diving activity occurring during the day. Ambient temperatures ranged from 2°C to 17°C, but until the final stages of migration, the temperature range was 2°-11°C. The overall pattern of temperatures from the two types of tags

generally conformed. However, individual temperatures from the iButton tags tended to be about 1°C higher than temperatures from the LTDs. Laboratory tests of the tags indicated that the iButton temperatures were more accurate in one case, the LTD was more accurate in another, and both types were about equally accurate in the third.

Release data from 2002 tagging operations and other recoveries in 2002 were reported in Walker et al. 2002.

Recoveries of coded-wire tags by high seas research vessels and groundfish fisheries are reported in Myers et al. 2003.

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Table 1. U.S. archival data storage tags placed on salmonids in the North Pacific Ocean and Bering Sea in 2003. LTD tags record temperature and depth data; iButton tags record temperature only. LL = longline; HL = hook and line. FRA = Fisheries Research Agency of Japan. LTD = Lotek LTD_1100-300; LTD5 = Lotek LTD_1100-500; iB4 = AlphaMach iButton iB4; iBL = AlphaMach iButtonLite; iBK = AlphaMach iButtonKrill.

Vessel and Data Tag #	Tag Model	Species	<u>Release</u>	<u>Location</u>		Gear	<u>Fork</u>		<u>Other tags</u>	
			Date	Latitude	Longitude		Length	Age	US	FRA
<u>R/V Wakatake maru</u>										
1607	LTD	Chinook	06/20/03	47°00'N	180°00'	LL	801	1.3	LL6054	Z5454
1635	LTD	Sockeye	06/22/03	48°30'N	180°00'	LL	612	1.3	LL6073	Z5473
1651	LTD	Sockeye	06/23/03	49°30'N	180°00'	LL	574	2.3	LL6089	Z5489
1658	LTD	Sockeye	06/23/03	49°30'N	180°00'	LL	672	1.3	LL6094	Z5494
1666	LTD	Sockeye	06/23/03	49°30'N	180°00'	LL	626	X.3	LL6095	Z5495
1668	LTD	Sockeye	06/25/03	51°30'N	180°00'	LL	588	1.3	LL6135	Z5535
1672	LTD	Sockeye	06/26/03	52°30'N	180°00'	LL	690	2.3	LL6205	Z7105
1674	LTD	Chum	06/26/03	52°30'N	180°00'	LL	534	0.3	LL6231	Z7131
W001	iBL	Pink	06/26/03	52°30'N	180°00'	LL	594	0.1	LL6187	Z5587
W002	iBL	Pink	06/26/03	52°30'N	180°00'	LL	474	0.1	LL6188	Z5588
W004	iBL	Pink	06/26/03	52°30'N	180°00'	LL	456	0.1	LL6186	Z5586
W007	iBL	Pink	06/26/03	52°30'N	180°00'	LL	521	0.1	LL6176	Z5576
1680	LTD	Sockeye	06/27/03	53°30'N	180°00'	LL	557	2.2	LL6268	Z7168
W008	iBL	Chum	06/27/03	53°30'N	180°00'	LL	460	0.2	LL6298	Z7198
W012	iBL	Chum	06/27/03	53°30'N	180°00'	LL	505	0.3	LL6299	Z7199
W020	iBL	Sockeye	06/27/03	53°30'N	180°00'	LL	486	1.2	LL6269	Z7169
W022	iBL	Chum	06/27/03	53°30'N	180°00'	LL	454	0.2	LL6297	Z7197
W060	iBL	Pink	06/27/03	53°30'N	180°00'	LL	462	0.1	LL6280	Z7180
W061	iBL	Pink	06/27/03	53°30'N	180°00'	LL	460	0.1	LL6281	Z7181
W062	iBL	Pink	06/27/03	53°30'N	180°00'	LL	464	0.1	LL6267	Z7167
W063	iBL	Pink	06/27/03	53°30'N	180°00'	LL	486	0.1	LL6266	Z7166
1685	LTD	Sockeye	06/28/03	54°30'N	180°00'	LL	519	1.2	LL6360	Z7260
W013	iBL	Chum	06/28/03	54°30'N	180°00'	LL	538	0.3	LL6376	Z7276
W023	iBL	Chum	06/28/03	54°30'N	180°00'	LL	465	0.2	LL6375	Z7275
W064	iBL	Pink	06/28/03	54°30'N	180°00'	LL	471	0.1	LL6308	Z7208
W065	iBL	Pink	06/28/03	54°30'N	180°00'	LL	495	0.1	LL6306	Z7206
W066	iBL	Pink	06/28/03	54°30'N	180°00'	LL	468	0.1	LL6301	Z7201
W067	iBL	Pink	06/28/03	54°30'N	180°00'	LL	462	0.1	LL6305	Z7205
1688	LTD	Sockeye	06/29/03	55°30'N	180°00'	LL	619	2.3	LL6409	Z7309
1689	LTD	Sockeye	06/29/03	55°30'N	180°00'	LL	648	2.3	LL6410	Z7310
W009	iBL	Chum	06/29/03	55°30'N	180°00'	LL	510	0.3	LL6437	Z7337
W017	iBL	Sockeye	06/29/03	55°30'N	180°00'	LL	544	2.3	LL6420	Z7320
W068	iBL	Pink	06/29/03	55°30'N	180°00'	LL	484	0.1	LL6390	Z7290
W069	iBL	Pink	06/29/03	55°30'N	180°00'	LL	452	0.1	LL6391	Z7291
W072	iBL	Pink	06/29/03	55°30'N	180°00'	LL	484	0.1	LL6381	Z7281
W076	iBL	Pink	06/29/03	55°30'N	180°00'	LL	482	0.1	LL6380	Z7280

continued

Table 1. continued.

Vessel and Data Tag #	Tag Model	Species	Release Date	Location		Gear	Fork		Other tags	
				Latitude	Longitude		Length	Age	FRI	FAJ
<i>R/V Wakatake maru (continued)</i>										
1692	LTD	Sockeye	06/30/03	56°30'N	180°00'	LL	592	2.3	LL6441	Z7341
W003	iBL	Chum	06/30/03	56°30'N	180°00'	LL	660	0.4	LL6449	Z7349
W005	iBL	Chum	06/30/03	56°30'N	180°00'	LL	574	0.3	LL6452	Z7352
W006	iBL	Chum	06/30/03	56°30'N	180°00'	LL	633	0.4	LL6458	Z7358
W024	iBL	Chum	06/30/03	56°30'N	180°00'	LL	560	0.3	LL6460	Z7360
W029	iBL	Chinook	06/30/03	56°30'N	180°00'	LL	740	1.3	LL6465	Z7365
W070	iBL	Pink	06/30/03	56°30'N	180°00'	LL	538	0.1	LL6450	Z7350
W073	iBL	Pink	06/30/03	56°30'N	180°00'	LL	499	0.1	LL6454	Z7354
W074	iBL	Pink	06/30/03	56°30'N	180°00'	LL	440	0.1	LL6448	Z7348
W077	iBL	Pink	06/30/03	56°30'N	180°00'	LL	528	0.1	LL6453	Z7353
1695	LTD	Sockeye	07/01/03	57°30'N	180°00'	LL	612	2.3	LL6480	Z7380
W010	iBL	Chinook	07/01/03	57°30'N	180°00'	LL	528	1.2	LL6479	Z7379
W011	iBL	Chinook	07/01/03	57°30'N	180°00'	LL	509	XX	LL6496	Z7396
W014	iBL	Chinook	07/01/03	57°30'N	180°00'	LL	511	X.2	LL6497	Z7397
W019	iBL	Chinook	07/01/03	57°30'N	180°00'	LL	561	1.2	LL6498	Z7398
W025	iBL	Chum	07/01/03	57°30'N	180°00'	LL	659	0.4	LL6500	Z7400
W071	iBL	Pink	07/01/03	57°30'N	180°00'	LL	490	0.1	LL6467	Z7367
W075	iBL	Pink	07/01/03	57°30'N	180°00'	LL	547	0.1	LL6468	Z7368
W078	iBL	Pink	07/01/03	57°30'N	180°00'	LL	518	0.1	LL6466	Z7366
W079	iBL	Pink	07/01/03	57°30'N	180°00'	LL	560	0.1	LL6469	Z7369
W080	iBL	Pink	07/01/03	57°30'N	180°00'	LL	548	XX	LL6477	Z7377
1697	LTD	Sockeye	07/02/03	58°30'N	180°00'	LL	602	2.3	LL6517	Z7417
W015	iBL	Chinook	07/02/03	58°30'N	180°00'	LL	353	1.1	LL6518	Z7418
W016	iBL	Chinook	07/02/03	58°30'N	180°00'	LL	560	1.2	LL6520	Z7420
W021	iBL	Chinook	07/02/03	58°30'N	180°00'	LL	344	X.1	LL6536	Z7436
W026	iBL	Chum	07/02/03	58°30'N	180°00'	LL	569	0.3	LL6556	Z7456
W028	iBL	Chum	07/02/03	58°30'N	180°00'	LL	610	0.4	LL6506	Z7406
W031	iBL	Sockeye	07/02/03	58°30'N	180°00'	LL	587	2.3	LL6554	Z7454
W033	iBL	Chinook	07/02/03	58°30'N	180°00'	LL	572	XX	LL6537	Z7437
W082	iBL	Pink	07/02/03	58°30'N	180°00'	LL	452	0.1	LL6503	Z7403
W083	iBL	Pink	07/02/03	58°30'N	180°00'	LL	490	0.1	LL6507	Z7407
W084	iBL	Pink	07/02/03	58°30'N	180°00'	LL	495	0.1	LL6508	Z7408
W085	iBL	Pink	07/02/03	58°30'N	180°00'	LL	472	0.1	LL6509	Z7409
W086	iBL	Pink	07/02/03	58°30'N	180°00'	LL	431	0.1	LL6519	Z7419
W034	iBL	Chinook	07/03/03	57°30'N	179°00'W	LL	516	X.2	LL6568	Z7468
W087	iBL	Pink	07/03/03	57°30'N	179°00'W	LL	495	0.1	LL6559	Z7459
W088	iBL	Pink	07/03/03	57°30'N	179°00'W	LL	500	0.1	LL6560	Z7460
W089	iBL	Pink	07/03/03	57°30'N	179°00'W	LL	467	0.1	LL6563	Z7463
W090	iBL	Pink	07/03/03	57°30'N	179°00'W	LL	460	0.1	LL6564	Z7464
W091	iBL	Pink	07/03/03	57°30'N	179°00'W	LL	501	0.1	LL6565	Z7465
1702	LTD	Sockeye	07/04/03	57°30'N	178°00'W	LL	566	1.3	LL6580	Z7480

continued

Table 1. continued.

Vessel and Data Tag #	Tag Model	Species	Release Date	Location		Gear	Fork		Other tags	
				Latitude	Longitude		Length	Age	US	FAJ
<i>R/V Wakatake maru (continued)</i>										
W035	iBL	Chinook	07/04/03	57°30'N	178°00'W	LL	528	X.2	LL6579	Z7479
W036	iBL	Chum	07/04/03	57°30'N	178°00'W	LL	411	0.2	LL6589	Z7489
W037	iBL	Chinook	07/04/03	57°30'N	178°00'W	LL	526	1.2	LL6590	Z7490
W038	iBL	Chinook	07/04/03	57°30'N	178°00'W	LL	563	X.2	LL6591	Z7491
W039	iBL	Chinook	07/04/03	57°30'N	178°00'W	LL	509	XX	LL6592	Z7492
W040	iBL	Chinook	07/04/03	57°30'N	178°00'W	LL	528	1.2	LL6593	Z7493
W092	iBL	Pink	07/04/03	57°30'N	178°00'W	LL	479	0.1	LL6573	Z7473
W093	iBL	Pink	07/04/03	57°30'N	178°00'W	LL	505	0.1	LL6574	Z7474
W094	iBL	Pink	07/04/03	57°30'N	178°00'W	LL	475	0.1	LL6583	Z7483
W095	iBL	Pink	07/04/03	57°30'N	178°00'W	LL	477	0.1	LL6584	Z7484
W096	iBL	Pink	07/04/03	57°30'N	178°00'W	LL	473	0.1	LL6587	Z7487
1707	LTD	Sockeye	07/05/03	56°30'N	178°00'W	LL	574	2.2	LL6619	Z7519
W041	iBL	Chum	07/05/03	56°30'N	178°00'W	LL	515	0.3	LL6598	Z7498
W042	iBL	Chum	07/05/03	56°30'N	178°00'W	LL	573	0.3	LL6605	Z7505
W043	iBL	Chum	07/05/03	56°30'N	178°00'W	LL	526	0.3	LL6607	Z7507
W044	iBL	Chum	07/05/03	56°30'N	178°00'W	LL	576	0.4	LL6616	Z7516
W045	iBL	Chum	07/05/03	56°30'N	178°00'W	LL	536	0.3	LL6635	Z7535
W097	iBL	Pink	07/05/03	56°30'N	178°00'W	LL	493	0.1	LL6597	Z7497
W098	iBL	Pink	07/05/03	56°30'N	178°00'W	LL	545	0.1	LL6599	Z7499
W099	iBL	Pink	07/05/03	56°30'N	178°00'W	LL	493	0.1	LL6608	Z7508
W100	iBL	Pink	07/05/03	56°30'N	178°00'W	LL	446	XX	LL6610	Z7510
W030	iBL	Chum	07/06/03	56°30'N	179°00'W	LL	542	0.3	LL6673	Z7573
W032	iBL	Chum	07/06/03	56°30'N	179°00'W	LL	590	0.3	LL6671	Z7571
W046	iBL	Chum	07/06/03	56°30'N	179°00'W	LL	480	0.2	LL6672	Z7572
W047	iBL	Chum	07/06/03	56°30'N	179°00'W	LL	505	0.3	LL6674	Z7574
W048	iBL	Chum	07/06/03	56°30'N	179°00'W	LL	498	0.3	LL6675	Z7575
W101	iBL	Pink	07/06/03	56°30'N	179°00'W	LL	500	0.1	LL6637	Z7537
W102	iBL	Pink	07/06/03	56°30'N	179°00'W	LL	504	0.1	LL6638	Z7538
W103	iBL	Pink	07/06/03	56°30'N	179°00'W	LL	490	0.1	LL6652	Z7552
W104	iBL	Pink	07/06/03	56°30'N	179°00'W	LL	512	0.1	LL6654	Z7554
1709	LTD	Chum	07/07/03	56°30'N	179°00'E	LL	595	XX	LL6706	Z7606
1714	LTD	Chum	07/07/03	56°30'N	179°00'E	LL	648	0.4	LL6710	Z7610
W106	iBL	Pink	07/07/03	56°30'N	179°00'E	LL	455	0.1	LL6676	Z7576
W107	iBL	Pink	07/07/03	56°30'N	179°00'E	LL	474	0.1	LL6677	Z7577
W108	iBL	Pink	07/07/03	56°30'N	179°00'E	LL	507	0.1	LL6678	Z7578
W109	iBL	Pink	07/07/03	56°30'N	179°00'E	LL	468	0.1	LL6686	Z7586
1923	LTD	Sockeye	07/08/03	56°30'N	178°00'E	LL	541	2.2	LL6723	Z7623
1958	LTD	Sockeye	07/08/03	56°30'N	178°00'E	LL	496	2.2	LL6730	Z7630
34	LTD	Chum	07/08/03	56°30'N	178°00'E	LL	710	0.5	LL6735	Z7635
54	LTD	Chum	07/08/03	56°30'N	178°00'E	LL	545	0.3	LL6738	Z7638
132	LTD	Chum	07/08/03	56°30'N	178°00'E	LL	652	0.4	LL6740	Z7640

continued

Table 1. continued.

Vessel and Data Tag #	Tag Model	Species	Release Date	Location Latitude Longitude		Gear	Fork Length	Age	Other tags US FAJ	
<i>R/V Wakatake maru (continued)</i>										
W050	iBL	Chum	07/08/03	56°30'N	178°00'E	LL	492	0.2	LL6711	Z7611
W052	iBL	Chum	07/08/03	56°30'N	178°00'E	LL	475	0.2	LL6721	Z7621
W053	iBL	Chum	07/08/03	56°30'N	178°00'E	LL	580	0.3	LL6742	Z7642
W110	iBL	Pink	07/08/03	56°30'N	178°00'E	LL	493	0.1	LL6718	Z7618
W111	iBL	Pink	07/08/03	56°30'N	178°00'E	LL	465	0.1	LL6719	Z7619
W112	iBL	Pink	07/08/03	56°30'N	178°00'E	LL	514	0.1	LL6720	Z7620
W113	iBL	Pink	07/08/03	56°30'N	178°00'E	LL	531	0.1	LL6722	Z7622
188	LTD	Chum	07/09/03	56°30'N	177°00'E	LL	593	XX	LL6745	Z7645
1603	LTD	Chum	07/09/03	56°30'N	177°00'E	LL	564	0.3	LL6747	Z7647
941	LTD	Chum	07/09/03	56°30'N	177°00'E	LL	641	0.3	LL6748	Z7648
W114	iBL	Pink	07/09/03	56°30'N	177°00'E	LL	520	0.1	LL6746	Z7646
W115	iBL	Pink	07/09/03	56°30'N	177°00'E	LL	486	0.1	LL6749	Z7649
1348	LTD	Sockeye	07/10/03	57°30'N	177°00'E	LL	600	2.3	LL6775	Z7675
1396	LTD	Chum	07/10/03	57°30'N	177°00'E	LL	631	0.5	LL6784	Z7684
W054	iBL	Chinook	07/10/03	57°30'N	177°00'E	LL	568	XX	LL6761	Z7661
W055	iBL	Chum	07/10/03	57°30'N	177°00'E	LL	537	0.3	LL6774	Z7674
W056	iBL	Chum	07/10/03	57°30'N	177°00'E	LL	548	0.3	LL6770	Z7670
W057	iBL	Chum	07/10/03	57°30'N	177°00'E	LL	598	0.3	LL6786	Z7686
W058	iBL	Chinook	07/10/03	57°30'N	177°00'E	LL	588	1.2	LL6788	Z7688
W059	iBL	Chinook	07/10/03	57°30'N	177°00'E	LL	561	1.2	LL6789	Z7689
W116	iBL	Pink	07/10/03	57°30'N	177°00'E	LL	478	0.1	LL6751	Z7651
W117	iBL	Pink	07/10/03	57°30'N	177°00'E	LL	510	0.1	LL6752	Z7652
<i>R/V Kaiyo maru</i>										
G01	iB4	Sockeye	08/02/03	50°58'N	160° 01'W	HL	360	-	LL7500	BB1728
2015	LTD	Sockeye	08/02/03	55°00'N	145° 00'W	HL	540	-	LL7501	BB1729
5908	LTD5	Sockeye	08/02/03	50°58'N	160° 01'W	HL	550	-	LL7502	BB1730
G02	iB4	Sockeye	08/02/03	50°58'N	160° 01'W	HL	570	-	LL7503	BB1731
G07	iB4	Sockeye	08/02/03	50°58'N	160° 01'W	HL	490	-	LL7504	BB1732
G03	iB4	Chinook	08/02/03	50°58'N	160° 01'W	HL	620	-	LL7505	BB1733
5909	LTD5	Chinook	08/02/03	50°58'N	160° 01'W	HL	640	-	LL7506	BB1735
G05	iB4	Chum	08/02/03	50°58'N	160° 01'W	HL	400	-	LL7507	BB1736
K001	iBK	Sockeye	08/06/03	52°59'N	154° 57'W	HL	390	-	LL7512	BB1740
K002	iBK	Chum	08/07/03	51°01'N	155° 00'W	HL	465	-	LL7513	BB1741
K003	iBK	Sockeye	08/07/03	51°01'N	155° 00'W	HL	470	-	LL7514	BB1742
K004	iBK	Chum	08/08/03	50°04'N	155° 01'W	HL	400	-	LL7515	BB1743
K005	iBK	Chum	08/08/03	50°04'N	155° 01'W	HL	387	-	LL7516	BB1744
K006	iBK	Chum	08/08/03	50°04'N	155° 01'W	HL	375	-	LL7520	BB1748
K007	iBK	Sockeye	08/11/03	54°38'N	150° 24'W	HL	535	-	LL7521	BB1749
K009	iBK	Sockeye	08/11/03	54°38'N	150° 24'W	HL	565	-	LL7522	BB1750
K010	iBK	Chum	08/11/03	54°38'N	150° 24'W	HL	565	-	LL7523	BB1751

continued

Table 1. continued.

Vessel and Data Tag #	Tag Model	Species	Release Date	Location Latitude Longitude		Gear	Fork Length	Age	Other tags US FAJ	
<i>R/V Kaiyo maru (continued)</i>										
K011	iBK	Chum	08/11/03	54°38'N	150° 24'W	HL	555	-	LL7524	BB1752
K013	iBK	Sockeye	08/11/03	54°38'N	150° 24'W	HL	550	-	LL7525	BB1753
G06	iB4	Chum	08/11/03	54°38'N	150° 24'W	HL	500	-	LL7526	BB1754
G08	iB4	Chum	08/11/03	54°38'N	150° 24'W	HL	550	-	LL7527	BB1755
G09	iB4	Chum	08/11/03	54°38'N	150° 24'W	HL	570	-	LL7528	BB1756
G10	iB4	Chum	08/11/03	54°38'N	150° 24'W	HL	505	-	LL7529	BB1757
G12	iB4	Chum	08/12/03	55°59'N	150° 00'W	HL	610	-	LL7532	BB1760
1337	LTD	Sockeye	08/12/03	55°59'N	150° 00'W	HL	580	-	LL7533	BB1761
1334	LTD	Coho	08/12/03	55°59'N	150° 00'W	HL	690	-	LL7534	BB1762
1373	LTD	Chum	08/13/03	56°59'N	145° 00'W	Trawl	710	-	LL7535	BB1763

Table 2. Preliminary release and recovery information for U.S. tags and cooperative Japan-U.S. tags returned from 11 September 2002 to 10 October 2003. A blank indicates the information is not available. LL=longline, GN=gillnet, PS=purse seine, HL=hook and line. Age designation is the European method, first number is the number of freshwater annuli, second number is the number of ocean annuli. FL=fork length, and BW=body weight. Data storage tags: LTD=Lotek LTD_1100-300 (records temperature and depth); iB=Alphamach iB4 (records temperature only).

U.S.		Release						Recovery											
Tag	Tag	Date	Lat. (°N)	Long.	2°X5° Area	Gear	FL (mm)	Age	Date	Lat. (°N)	Long.	Area Code	Gear	Sex	FL (mm)	BW (g)	Gonad (g)	Age	Location
A. Sockeye Salmon																			
LL6360, LTD data tag 01685	Z7260	28-Jun-03	54°30	180°00	W8054	LL	519	1.2	31-Jul-03	56°00	161°07W	50-5	GN	M	533	1600	-	-	Nelson Lagoon, Alaska Peninsula, Bristol Bay, Alaska, USA
LL6415	Z7315	29-Jun-03	55°30	180°00	W8054	LL	600	1.3	30-Jul-03	55°11	163°09W	50-7	-	M	616	-	-	-	False Pass, eastern Aleutian Islands, Alaska, USA
LL6554, iB tag W31	Z7454	2-Jul-03	58°30	180°00	W8058	LL	587	2.3	21-Jul-03	58°38	157°20W	47-0	GN	-	-	-	-	-	Naknek, Kvichak Bay, Bristol Bay, Alaska, USA
B. Chum Salmon																			
LL5447, LTD data tag 1334, iB tag 20	Y9447	3-Jul-02	57°30	180°00	W8056	LL	691	0.4	20-Sep-02	44°07	144°15E	02-2	-	F	700	3260	-	-	Notoro, Okhotsk Sea coast, Hokkaido, Japan
LL5562, LTD data tag 1373, iB tag 26	Y9562	5-Jul-02	57°30	179°00W	W8056	LL	615	0.4	27-Sep-02	44°04	145°00E	02-2	-	M	650	2900	-	-	Utoro, Okhotsk Sea coast, Hokkaido, Japan
LL5999, LTD data tag 1565, iB tag 29	Y9999	9-Jul-02	56°30	179°00E	E7556	LL	618	0.3	24-Sep-02	43°34	145°21E	02-0	-	-	655	3400	-	-	Nemuro coast, Hokkaido, Japan

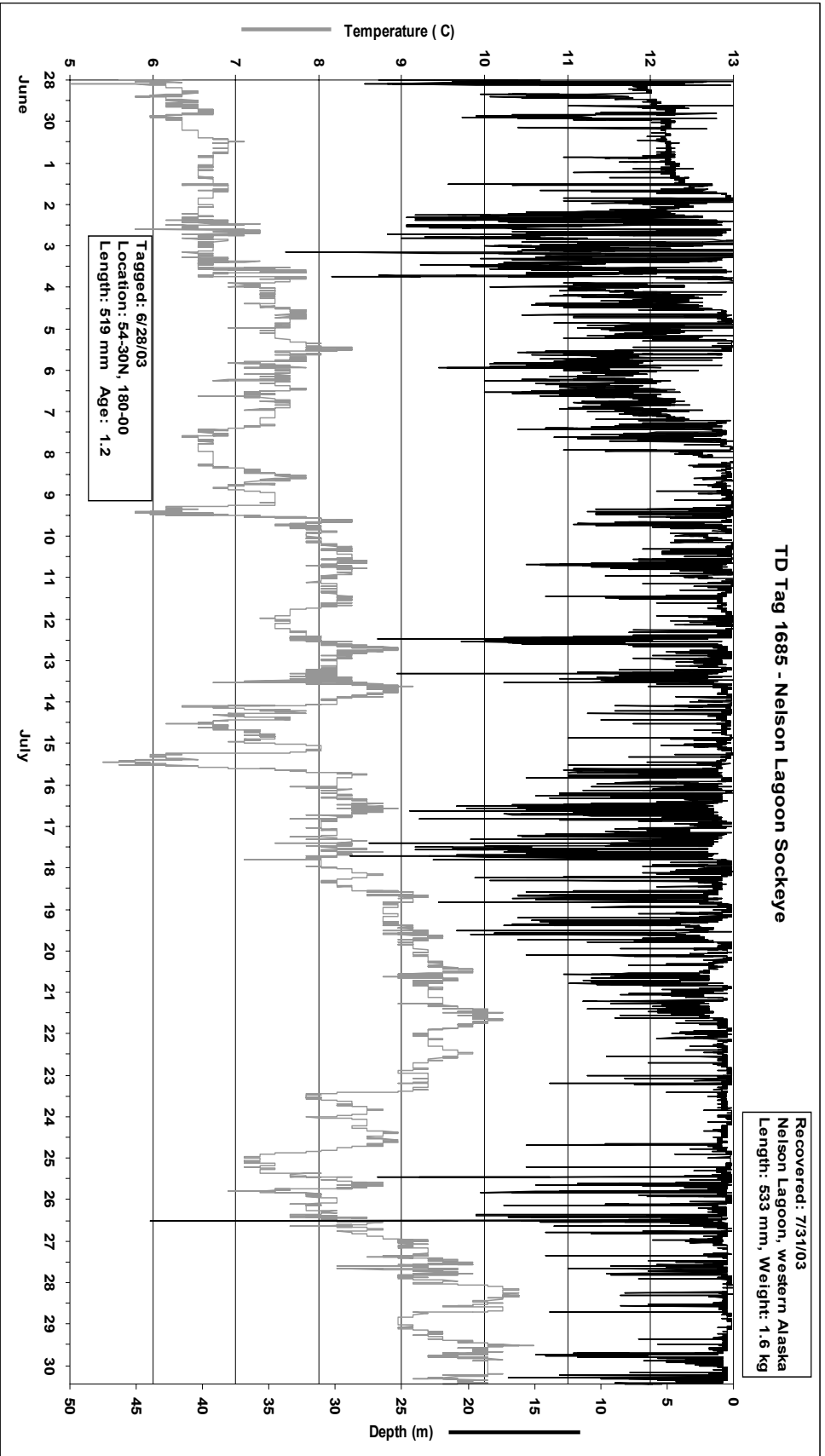


Figure 1. Temperature and depth data recorded on a data storage tag placed on a 519 mm sockeye salmon in the Bering Sea on 28 June 2003 and recovered in Nelson Lagoon, Alaska Peninsula, Alaska, on 31 July 2003.

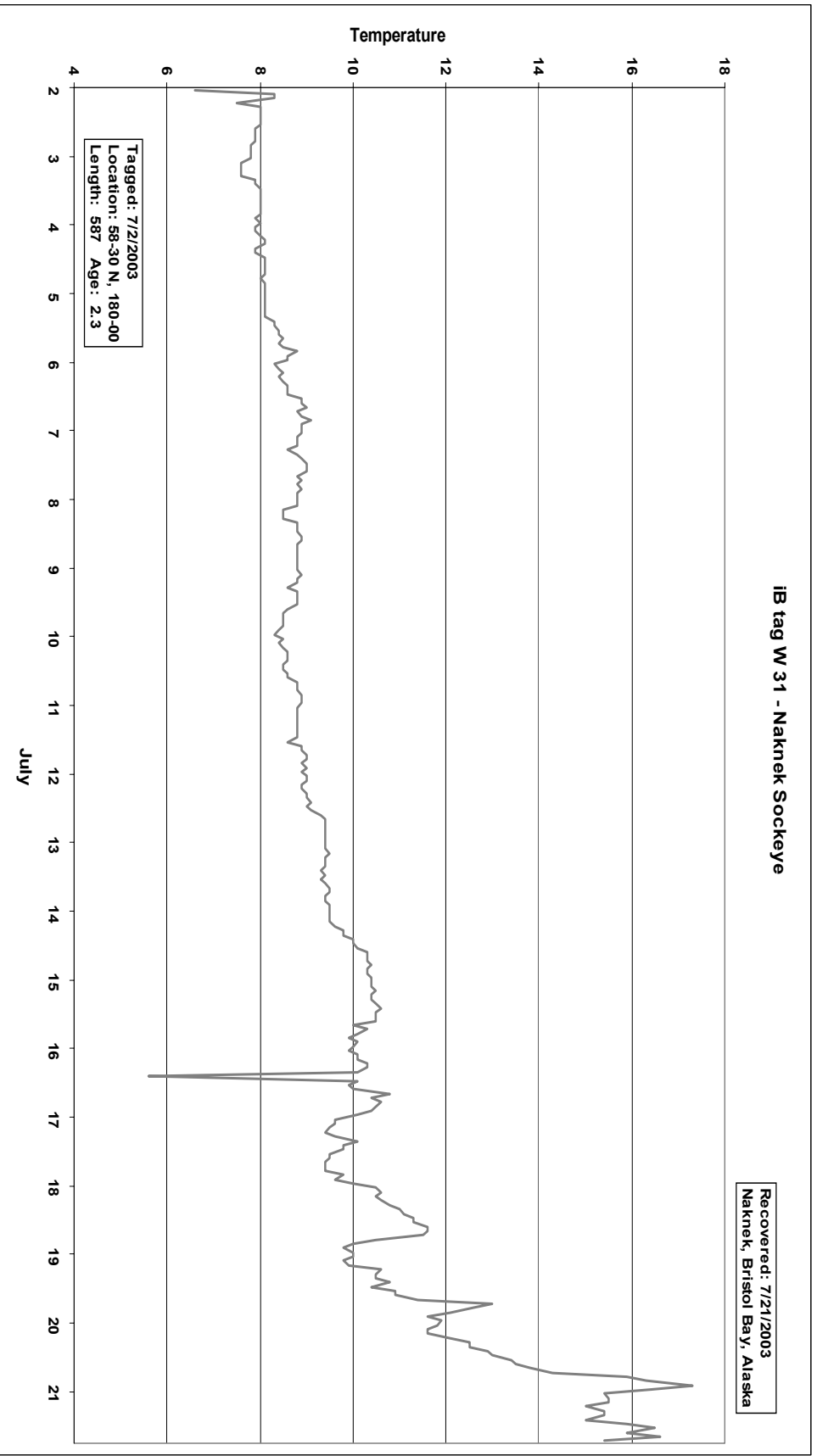


Figure 2. Temperature and depth data recorded on a data storage tag placed on a 587 mm sockeye salmon in the Bering Sea on 2 July 2003 and recovered in Naknek, Bristol Bay, Alaska, on 21 July 2003.

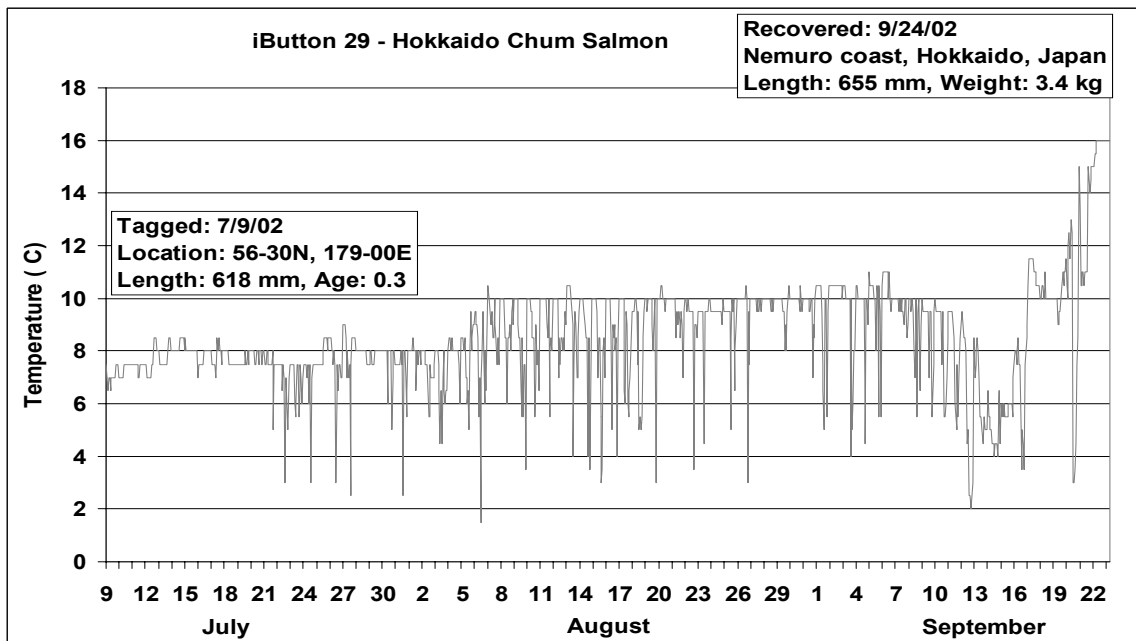
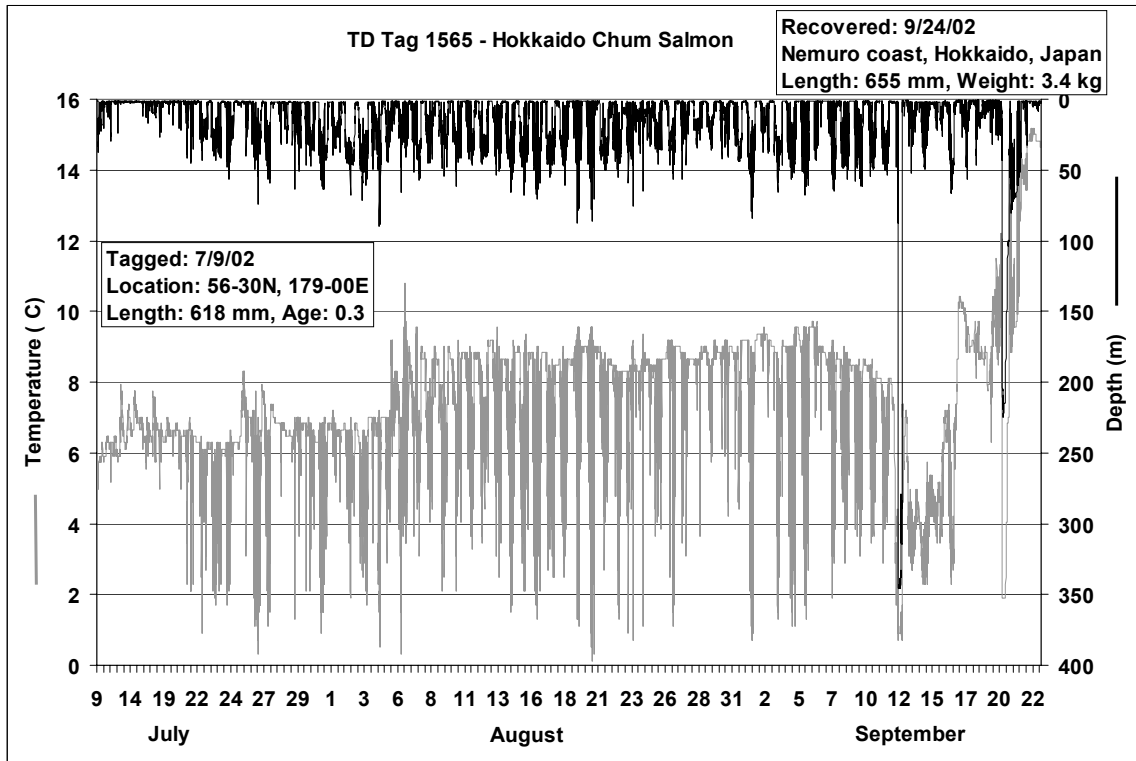


Figure 3. Temperature and depth data recorded on two data storage tags placed on a 618 mm chum salmon in the Bering Sea on 9 July 2002 and recovered on the Nemuro coast, Hokkaido, Japan, on 24 September 2002.

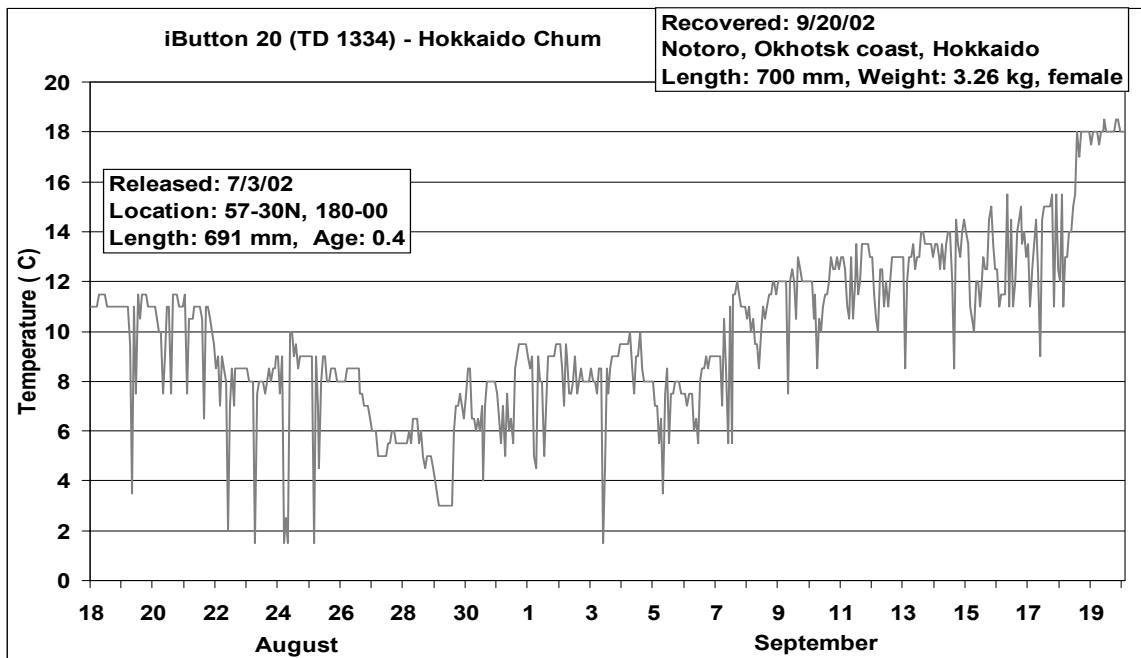
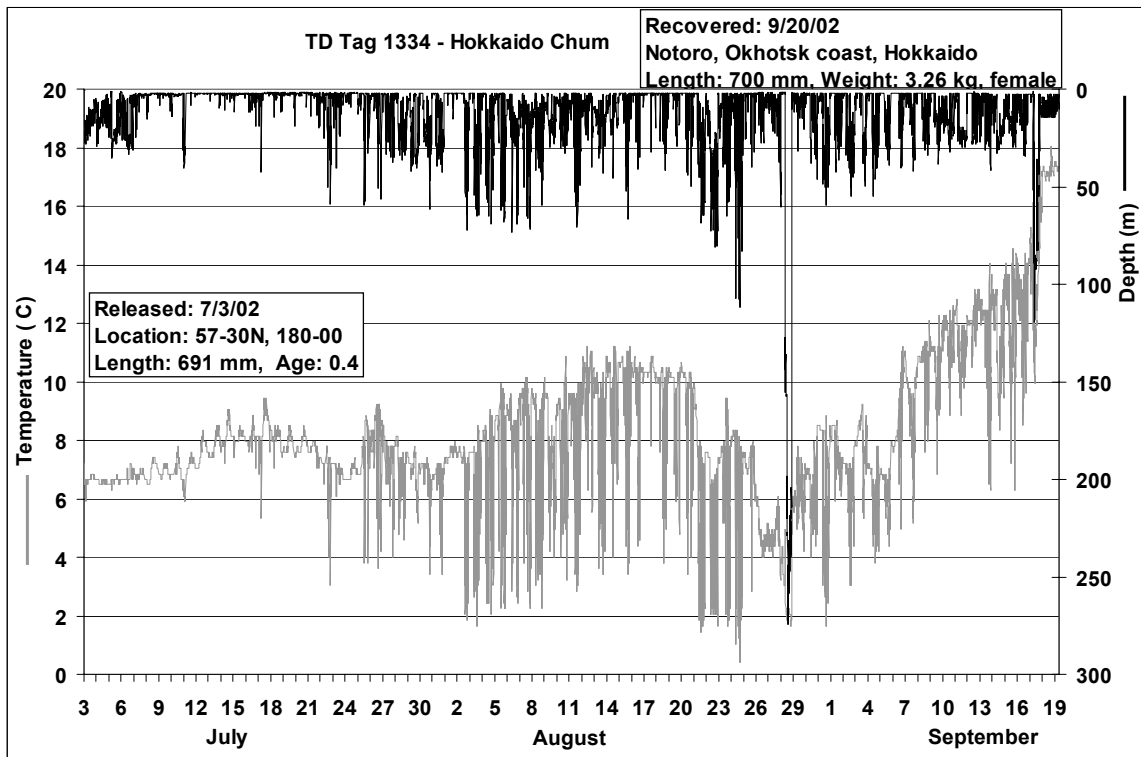


Figure 4. Temperature and depth data recorded on two data storage tags placed on a 691 mm chum salmon in the Bering Sea on 3 July 2002 and recovered at Notoro, Okhotsk Sea coast, Hokkaido, on 20 September 2002. Note different time scales for the two charts.

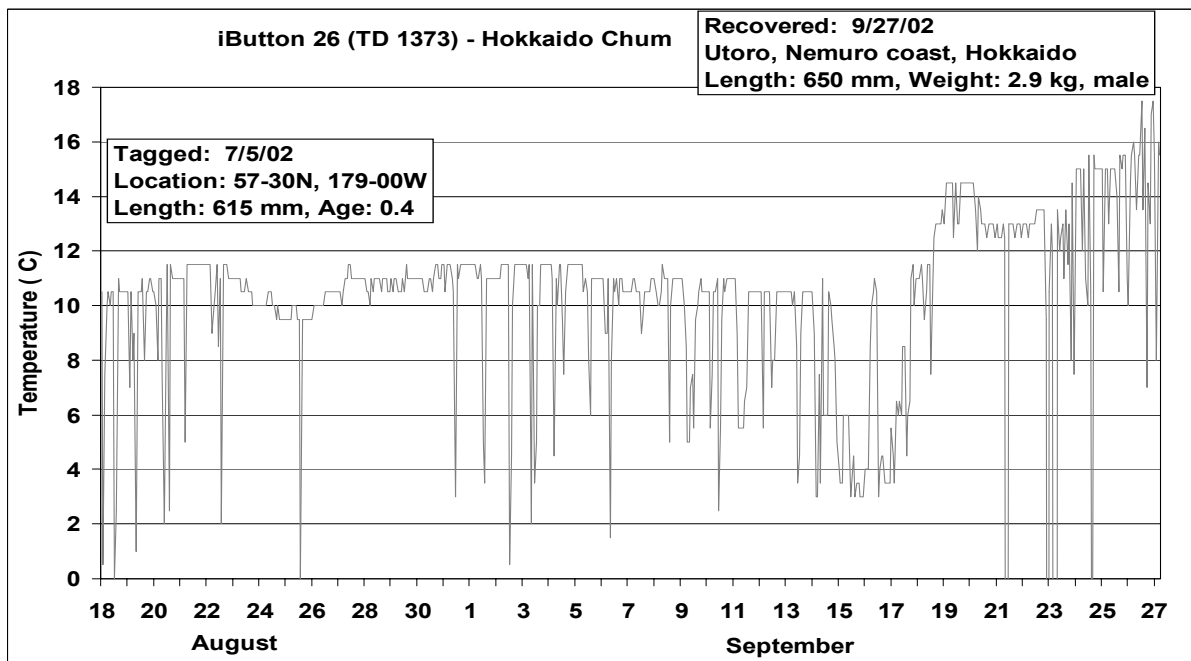
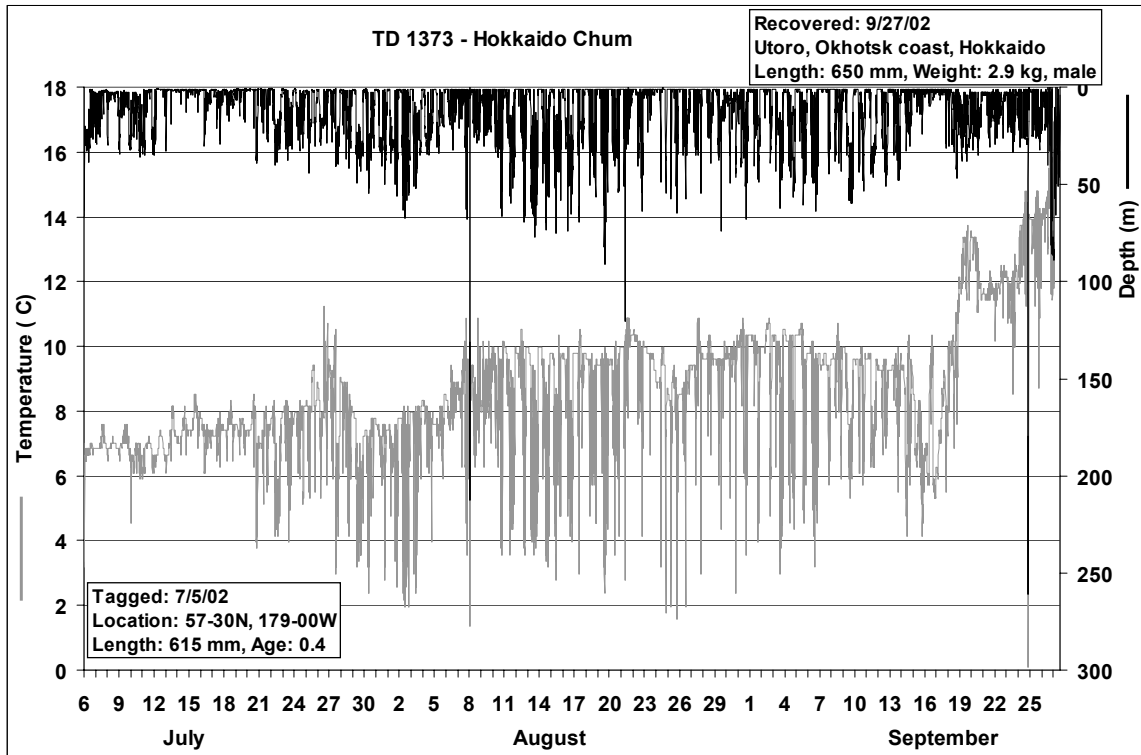


Figure 5. Temperature and depth data recorded on two data storage tags placed on a 615 mm chum salmon in the Bering Sea on 5 July 2002 and recovered at Utoro, Okhotsk Sea coast, Hokkaido, on 27 September 2002. Note different time scales for the two charts.