

**RELEASES AND RECOVERIES OF U.S. AND NPRB SALMONID  
DATA STORAGE TAGS, AND RECOVERIES OF HIGH SEAS TAGS  
IN NORTH AMERICA, 2004**

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# **RELEASES AND RECOVERIES OF U.S. AND NPRB SALMONID DATA STORAGE TAGS, AND RECOVERIES OF HIGH SEAS TAGS IN NORTH AMERICA, 2004**

## **ABSTRACT**

Information is reported on all high-seas salmon tags recovered in North America from 1 October 2003 through 30 September 2004, and all releases and recoveries of U.S. and North Pacific Research Board (NPRB)-funded data storage tags (DSTs). Three hundred seven DSTs, which record salinity, temperature, and depth, temperature and depth, or temperature-only data, were placed on 306 Pacific salmon (one salmon was double-tagged) in the central North Pacific Ocean and Bering Sea during research cruises aboard two Japanese vessels in June and July 2004. During the two cruises 43 sockeye, 180 chum, 36 pink, 11 coho, and 36 chinook salmon were tagged with the three types of DSTs.

Sixteen recoveries of DSTs are reported, seven from North America, two from Japan, six from Russian waters, and one from the Bering Sea. Notable distribution data include the first recovery of a maturing central Alaskan sockeye salmon from the Bering Sea and the 27th recovery of a tagged Yukon River chinook (9 previous recoveries of high seas tagged fish; 17 coded-wire tag recoveries).

Notable DST recoveries include the first recovery for the Yukon River and for a salmon tagged as an immature, the first recovery for a Russian chum salmon and hatchery fish, the first recoveries for Russian pink salmon, and the second recovery for Russian sockeye. The data from the Yukon River tag show a complete record of the temperatures and depths experienced by the fish over two years with markedly different behavior between the two winters and dives to over 350 m. Sockeye salmon mostly traveled at depths less than 30 m. Sakhalin Island and Hokkaido chum salmon tagged at approximately the same time and location experienced similar temperature and depth patterns, but the Russian fish returned much more quickly.

Graphs of ambient temperature and pressure data from the DSTs are presented.

## **INTRODUCTION**

Information is reported on all high-seas salmon (*Oncorhynchus* spp.) tags recovered in North America from 1 October 2003 through 30 September 2004, and all releases and recoveries of U.S. data storage tags (DSTs) and DSTs funded by the North Pacific Research Board (NPRB). The School of Aquatic and Fishery Sciences (SAFS), 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. and NPRB high-seas salmon tags and DSTs by all nations.

Releases and recoveries of all U.S. and NPRB 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 Nagasawa et al. 2004.) Graphs of ambient temperature and pressure data from recovered DSTs are presented where data are available.

## 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 2004. U.S. high-seas tags are 20 mm diameter plastic red-and-white Petersen disk tags. Three types of DSTs were used. One type is a small circuit board potted in a clear urethane, manufactured by Lotek Marine Technologies. Model LTD\_1100-500 is 27 x 16 x 8 mm and weighs 5 g. These tags record temperature and depth data. iButton-type tags are ThermoChron 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.; they record temperature data only. Model iBKrill tags are hexagonal, 25 x 13 x 8 mm and weigh 3.2 g. Model DST CTD tags are housed in a 27 x 16 x 8 mm ceramic shell and weigh 8 g. These tags, manufactured by Star-Oddi, record salinity, temperature, and depth data. LTD and iButton tags 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. DST CTD tags were attached in the same location, but were affixed with stainless steel wire, with a small oval plastic plate on the opposite side of the fish. U.S. and Japanese disk tags were placed on the wires either under the tag or over the plate.

In addition to the tags used in 2004, we also report recoveries of three models of tags used in previous years, tags which are similar in size and data type to those used in 2004. Lotek LTD\_1100-300 is the same size and shape as LTD\_1100-500. AlphaMach 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.

SAFS'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

Three hundred seven DSTs were placed on 306 Pacific salmon (one salmon was double-tagged) in the central North Pacific Ocean and Bering Sea during research cruises aboard two Japanese vessels in June and July 2004 (Table 1). Twenty DST CTDs (recording salinity, temperature, and depth data), 115 LTD\_1100-500 (temperature and depth), and 172 iBKrill (temperature-only) tags were used. Twenty-two sockeye, 85 chum, 19 pink, and 32 chinook salmon were tagged with DSTs aboard one vessel. Twenty-one sockeye, 95 chum, 17 pink, and 11 coho, and four chinook salmon were tagged aboard the other vessel.

From 1 October 2003 through 30 September 2004, seven high-seas salmon tags from recoveries in North America have been reported (Table 2). All were from chinook (2) and sockeye (5) salmon and all carried DSTs. Three were from fish tagged in previous years as immature fish (2 chinook and 1 sockeye). One chinook salmon, tagged with a temperature-depth tag in the Bering Sea in 2002, was recovered almost two years later in the Yukon River. The remarkable data on this tag

show a complete record of the temperatures and depths experienced by the fish over two years (Fig. 1). The behavior of the fish differed markedly between the two winters. During the first winter, as an immature fish, the chinook remained below 100 m at temperatures of about 4°C. During the second winter before returning to spawn, the fish was at depths above 50 m at temperatures of 1° to 5°C. The maximum depth this tag model could record was 350 m, which the fish often exceeded. This recovery is also notable as a rare recovery of a Yukon River Chinook (9 previous recoveries of high seas tagged fish; 17 coded-wire tag recoveries; Myers et al. 2004), and the data may provide insight on the wintering areas of different maturity stages of this stock. Two temperature-only (iB4) data tags on the other two immature fish (1 sockeye, 1 chinook) unfortunately failed. However, the chinook recovery, tagged at 50°58'N, 160°01'W, provides useful information on the offshore distribution of immature Columbia River chinook salmon. A coded-wire tagged Columbia River chinook was also caught near this location in 2003 (52°51'N, 160°10'W; Myers et al. 2004).

Two sockeye salmon tagged with CTD tags were caught in south central Alaska (Figs. 2 and 3). One fish was tagged in the Bering Sea west of the Pribilof Islands and caught on the south side of the Alaska Peninsula. This was the first recovery of a maturing sockeye from south central Alaska which had been tagged in the Bering Sea. An immature fish tagged just north of False Pass is the only other Bering Sea location for these stocks. All other recoveries of central Alaska sockeye have come primarily from fish tagged in the Gulf of Alaska, with a few fish tagged south of the eastern and central Aleutian Islands. The other sockeye recovery was on Kodiak Island in a stream draining to Olga Bay. This fish was tagged south of the central Aleutians. Both tags showed travel at depths generally less than 30 m. The salinity sensors on both tags gave values which were unrealistically high for this area. A third sockeye tagged with a temperature-depth tag in the central Bering Sea was caught in the Kanektok River, draining to Kuskokwim Bay. The data on this tag also indicate travel at less than 30 m (Fig. 4). A fourth sockeye, carrying a temperature-depth tag, was caught on the south side of the Alaska Peninsula, but the LTD tag on this fish failed.

Eight salmon carrying DSTs were recovered in waters of Japan (2 chum) and Russia (1 sockeye, 2 chum, and 3 pink) from tagging operations in 2003 and 2004 in the Bering Sea (Table 2). Notable data tag recoveries from Asia include the first recovery for a Russian chum and hatchery fish, the first recoveries for Russian pink salmon, and the second recovery for Russian sockeye. The Sakhalin hatchery chum (LTD 1396) and Hokkaido chum salmon tagged at approximately the same time and location (LTDs 1603 and 1709) experienced similar temperature and depth patterns, but the Russian fish returned much more quickly (Figs. 5 and 6). The tag from another chum salmon, caught off the eastern coast of Kamchatka, provides temperature data for the short duration the fish was at large after tagging in the Bering Sea (Fig. 7). Temperature data tags from two pink salmon caught in eastern Kamchatka are the first DSTs from Asian pink salmon (Fig. 8). A DST on a third pink salmon failed. A Russian sockeye salmon carrying a DST was likely returning to the western coast of Kamchatka when it was caught at the southern tip of the Kamchatka Peninsula. The data indicate that this sockeye salmon also traveled at depths less than 30 m (Fig. 9).

One pink salmon carrying a temperature tag was recovered by the vessel that tagged it seven hours after it was released in the Bering Sea (Table 2).

Release data from 2002 and 2003 tagging operations and other recoveries in those years were reported by Fukuwaka et al. (2002, 2003) and Walker et al. (2002, 2003). Recoveries of coded-wire tags by high seas research vessels and groundfish fisheries are reported by Myers et al. (2004).

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tags and providing recovery information. Special acknowledgments are given to Captain Doi and the officers, crew, and students aboard the *Kaiyo maru*, and Captain Y. Murata and the officers, crew, and students aboard the *Wakatake maru* who cooperated in high-seas salmonid tagging experiments in 2002-2004. Funding for SAFS's high-seas tagging operations and tag processing center is from the Ocean Carrying Capacity program of the Auke Bay Laboratory of the Alaska Fisheries Science Center, NMFS (NOAA contract 50ABNF-1-00002). The NPRB tags were provided by a scientific research grant to the North Pacific Anadromous Fish Commission (Project # R0204, NPAFC Salmon Tagging) from the North Pacific Research Board, Anchorage, Alaska, U.S.A

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Table 1. U.S. and NPRB archival data storage tags placed on salmonids in the North Pacific Ocean and Bering Sea in 2004. LTD tags record temperature and depth data; iButton tags record temperature only; CTD tags record salinity, temperature, and depth. LL = longline; HL = hook and line; T = trawl. JFRA = Fisheries Research Agency of Japan. LTD = Lotek LTD\_1100-500; iBK = AlphaMach iButtonKrill; CTD = StarOddi DST CTD.

Vessel and Data Tag #	Tag Model	Species	Release Date	Release Latitude	Release Longitude	Gear	Fork Length	Age	US Disk	JFRA Disk
<b><u>R/V Wakatake maru</u></b>										
W129	iBK	chinook	06/21/04	46°00'N	180°00'	LL	653	1.3	NN0051	MM2051
5917	LTD	chinook	06/22/04	47°00'N	180°00'	LL	720	X.3	NN0074	MM2074
1361	CTD	sockeye	06/26/04	50°30'N	180°00'	LL	608	1.3	NN0096	MM2096
W125	iBK	sockeye	06/26/04	50°30'N	180°00'	LL	476	2.2	NN0097	MM2097
1363	CTD	sockeye	06/26/04	50°30'N	180°00'	LL	640	2.3	NN0101	MM2101
W126	iBK	sockeye	06/27/04	51°30'N	180°00'	LL	479	2.2	NN0105	MM2105
W127	iBK	sockeye	06/27/04	51°30'N	180°00'	LL	463	1.2	NN0106	MM2106
5927	LTD	sockeye	06/27/04	51°30'N	180°00'	LL	473	1.2	NN0122	MM2122
W118	iBK	pink	06/27/04	51°30'N	180°00'	LL	480	0.1	NN0133	MM2133
W119	iBK	pink	06/27/04	51°30'N	180°00'	LL	453	0.1	NN0136	MM2136
W128	iBK	sockeye	06/28/04	52°30'N	180°00'	LL	465	0.2	NN0137	MM2137
5936	LTD	sockeye	06/28/04	52°30'N	180°00'	LL	449	1.2	NN0138	MM2138
1364	CTD	chum	06/28/04	52°30'N	180°00'	LL	640	0.5	NN0139	MM2139
W130	iBK	sockeye	06/28/04	52°30'N	180°00'	LL	459	1.2	NN0151	MM2151
W120	iBK	pink	06/28/04	52°30'N	180°00'	LL	446	0.1	NN0152	MM2152
W121	iBK	pink	06/29/04	53°30'N	180°00'	LL	453	0.1	NN0158	MM2158
W122	iBK	pink	06/29/04	53°30'N	180°00'	LL	427	0.1	NN0159	MM2159
5941	LTD	sockeye	06/29/04	53°30'N	180°00'	LL	491	1.2	NN0170	MM2170
5942	LTD	chum	06/29/04	53°30'N	180°00'	LL	611	0.4	NN0189	MM2189
5952	LTD	chum	06/30/04	54°30'N	180°00'	LL	504	0.3	NN0192	MM2192
5956	LTD	chum	06/30/04	54°30'N	180°00'	LL	620	0.4	NN0195	MM2195
6358	LTD	chinook	06/30/04	54°30'N	180°00'	LL	689	1.3	NN0197	MM2197
5963	LTD	chum	06/30/04	54°30'N	180°00'	LL	588	0.3	NN0198	MM2198
5970	LTD	chum	06/30/04	54°30'N	180°00'	LL	600	0.4	NN0199	MM2199
5979	LTD	chum	06/30/04	54°30'N	180°00'	LL	631	0.3	NN0200	MM2200
W123	iBK	pink	06/30/04	54°30'N	180°00'	LL	488	0.1	NN0206	MM2206
5980	LTD	chum	06/30/04	54°30'N	180°00'	LL	521	0.3	NN0209	MM2209
1365	CTD	chum	06/30/04	54°30'N	180°00'	LL	623	0.4	NN0210	MM2210
W124	iBK	pink	07/01/04	55°30'N	180°00'	LL	445	0.1	NN0221	MM2221
5981	LTD	chum	07/01/04	55°30'N	180°00'	LL	614	0.4	NN0224	MM2224
1366	CTD	chum	07/01/04	55°30'N	180°00'	LL	595	0.4	NN0225	MM2225
W137	iBK	pink	07/01/04	55°30'N	180°00'	LL	454	0.1	NN0230	MM2230
1360	CTD	chinook	07/02/04	56°30'N	180°00'	LL	730	X.X	NN0232	MM2232
5985	LTD	chum	07/02/04	56°30'N	180°00'	LL	589	0.4	NN0233	MM2233
W138	iBK	pink	07/02/04	56°30'N	180°00'	LL	453	0.1	NN0234	MM2234
W131	iBK	chinook	07/02/04	56°30'N	180°00'	LL	598	2.2	NN0235	MM2235
5987	LTD	chinook	07/02/04	56°30'N	180°00'	LL	686	1.2	NN0236	MM2236
5991	LTD	chum	07/02/04	56°30'N	180°00'	LL	635	0.4	NN0237	MM2237
W132	iBK	chinook	07/02/04	56°30'N	180°00'	LL	600	1.2	NN0238	MM2238
W139	iBK	chum	07/02/04	56°30'N	180°00'	LL	646	0.4	NN0239	MM2239
5996	LTD	sockeye	07/02/04	56°30'N	180°00'	LL	617	1.3	NN0240	MM2240
W140	iBK	pink	07/02/04	56°30'N	180°00'	LL	468	0.1	NN0241	MM2241
5998	LTD	chinook	07/02/04	56°30'N	180°00'	LL	598	1.2	NN0242	MM2242

Table 1. continued

Vessel and Data Tag #	Tag Model	Species	Release Date	Release Latitude	Release Longitude	Gear	Fork Length	Age	US Disk	JFRA Disk
7429	LTD	chinook	07/02/04	56°30'N	180°00'	LL	582	X.2	NN0243	MM2243
7430	LTD	chum	07/02/04	56°30'N	180°00'	LL	605	0.3	NN0245	MM2245
7431	LTD	sockeye	07/03/04	57°30'N	180°00'	LL	577	2.2	NN0249	MM2249
W141	iBK	pink	07/03/04	57°30'N	180°00'	LL	454	0.1	NN0250	MM2250
W142	iBK	chum	07/03/04	57°30'N	180°00'	LL	603	0.4	NN0251	MM2251
1367	CTD	chum	07/03/04	57°30'N	180°00'	LL	649	0.4	NN0263	MM2263
1369	CTD	chum	07/03/04	57°30'N	180°00'	LL	652	0.5	NN0264	MM2264
W144	iBK	pink	07/03/04	57°30'N	180°00'	LL	467	0.1	NN0265	MM2265
W143	iBK	pink	07/03/04	57°30'N	180°00'	LL	432	0.1	NN0266	MM2266
7432	LTD	sockeye	07/03/04	57°30'N	180°00'	LL	556	X.X	NN0277	MM2277
7433	LTD	sockeye	07/03/04	57°30'N	180°00'	LL	520	2.2	NN0278	MM2278
7434	LTD	chum	07/03/04	57°30'N	180°00'	LL	572	0.3	NN0286	MM2286
7435	LTD	chum	07/03/04	57°30'N	180°00'	LL	588	0.4	NN0299	MM2299
7436	LTD	chinook	07/04/04	58°30'N	180°00'	LL	591	X.2	NN0302	MM2302
W133	iBK	chinook	07/04/04	58°30'N	180°00'	LL	398	1.1	NN0303	MM2303
W145	iBK	pink	07/04/04	58°30'N	180°00'	LL	435	0.1	NN0304	MM2304
W134	iBK	chinook	07/04/04	58°30'N	180°00'	LL	325	1.1	NN0305	MM2305
W135	iBK	chum	07/04/04	58°30'N	180°00'	LL	549	X.X	NN0306	MM2306
7437	LTD	chinook	07/04/04	58°30'N	180°00'	LL	576	1.2	NN0307	MM2307
W136	iBK	chinook	07/04/04	58°30'N	180°00'	LL	522	1.2	NN0308	MM2308
W156	iBK	chinook	07/04/04	58°30'N	180°00'	LL	584	1.2	NN0309	MM2309
W157	iBK	chinook	07/04/04	58°30'N	180°00'	LL	382	1.1	NN0310	MM2310
W146	iBK	pink	07/04/04	58°30'N	180°00'	LL	450	0.1	NN0311	MM2311
7438	LTD	chum	07/04/04	58°30'N	180°00'	LL	574	0.4	NN0313	MM2313
W158	iBK	chinook	07/04/04	58°30'N	180°00'	LL	546	1.3	NN0314	MM2314
7439	LTD	chinook	07/04/04	58°30'N	180°00'	LL	630	1.2	NN0315	MM2315
7440	LTD	chum	07/04/04	58°30'N	180°00'	LL	622	0.4	NN0317	MM2317
1373	CTD	chum	07/05/04	57°30'N	179°00'W	LL	630	0.4	NN0320	MM2320
7441	LTD	chinook	07/05/04	57°30'N	179°00'W	LL	561	X.2	NN0321	MM2321
7442	LTD	chinook	07/05/04	57°30'N	179°00'W	LL	633	1.3	NN0322	MM2322
7444	LTD	chinook	07/05/04	57°30'N	179°00'W	LL	545	1.2	NN0323	MM2323
7445	LTD	chum	07/05/04	57°30'N	179°00'W	LL	566	0.4	NN0324	MM2324
1375	CTD	chum	07/05/04	57°30'N	179°00'W	LL	599	0.4	NN0326	MM2326
7446	LTD	chum	07/05/04	57°30'N	179°00'W	LL	611	0.3	NN0327	MM2327
7447	LTD	chinook	07/05/04	57°30'N	179°00'W	LL	613	1.3	NN0328	MM2328
7448	LTD	chum	07/05/04	57°30'N	179°00'W	LL	634	0.4	NN0329	MM2329
7449	LTD	chum	07/05/04	57°30'N	179°00'W	LL	562	0.3	NN0330	MM2330
7450	LTD	chinook	07/05/04	57°30'N	179°00'W	LL	605	X.2	NN0341	MM2341
7451	LTD	chinook	07/05/04	57°30'N	179°00'W	LL	529	1.2	NN0342	MM2342
W155	iBK	chinook	07/05/04	57°30'N	179°00'W	LL	558	1.2	NN0343	MM2343
W147	iBK	pink	07/05/04	57°30'N	179°00'W	LL	452	0.1	NN0355	MM2355
W149	iBK	chum	07/05/04	57°30'N	179°00'W	LL	637	0.4	NN0358	MM2358
W159	iBK	chinook	07/05/04	57°30'N	179°00'W	LL	578	1.2	NN0359	MM2359
7453	LTD	chinook	07/06/04	57°30'N	178°00'W	LL	626	1.2	NN0360	MM2360
1376	CTD	chum	07/06/04	57°30'N	178°00'W	LL	575	0.3	NN0363	MM2363
W148	iBK	pink	07/06/04	57°30'N	178°00'W	LL	459	0.1	NN0373	MM2373
7454	LTD	chum	07/06/04	57°30'N	178°00'W	LL	543	0.3	NN0376	MM2376
W150	iBK	sockeye	07/06/04	57°30'N	178°00'W	LL	576	2.2	NN0377	MM2377
1378	CTD	chum	07/06/04	57°30'N	178°00'W	LL	660	0.4	NN0380	MM2380

Table 1. continued

Vessel and Data Tag #	Tag Model	Species	Release Date	Release Latitude	Release Longitude	Fork Gear	Length	Age	US Disk	JFRA Disk
7455	LTD	chum	07/06/04	57°30'N	178°00'W	LL	644	0.4	NN0391	MM2391
W160	iBK	sockeye	07/06/04	57°30'N	178°00'W	LL	450	2.2	NN0392	MM2392
7456	LTD	chum	07/07/04	56°30'N	178°00'W	LL	573	0.3	NN0396	MM2396
7457	LTD	chinook	07/07/04	56°30'N	178°00'W	LL	593	1.2	NN0400	MM2400
7458	LTD	chum	07/07/04	56°30'N	178°00'W	LL	554	0.3	NN0401	MM2401
7459	LTD	chum	07/07/04	56°30'N	178°00'W	LL	642	0.4	NN0404	MM2404
7460	LTD	chum	07/07/04	56°30'N	178°00'W	LL	666	0.3	NN0405	MM2405
1379	CTD	chum	07/07/04	56°30'N	178°00'W	LL	591	0.4	NN0421	MM2421
W161	iBK	sockeye	07/07/04	56°30'N	178°00'W	LL	477	2.2	NN0435	MM2435
7461	LTD	chum	07/08/04	56°30'N	179°00'W	LL	535	0.4	NN0486	MM2486
W162	iBK	sockeye	07/08/04	56°30'N	179°00'W	LL	489	2.2	NN0490	MM2490
W151	iBK	pink	07/08/04	56°30'N	179°00'W	LL	516	0.1	NN0504	MM2504
1380	CTD	chum	07/08/04	56°30'N	179°00'W	LL	578	0.4	NN0508	MM2508
1381	CTD	chum	07/08/04	56°30'N	179°00'W	LL	650	0.4	NN0509	MM2509
7464	LTD	chinook	07/08/04	56°30'N	179°00'W	LL	610	1.2	NN0510	MM2510
7465	LTD	chinook	07/08/04	56°30'N	179°00'W	LL	552	X.2	NN0521	MM2521
7466	LTD	sockeye	07/08/04	56°30'N	179°00'W	LL	520	1.2	NN0522	MM2522
W152	iBK	pink	07/08/04	56°30'N	179°00'W	LL	526	0.1	NN0523	MM2523
7467	LTD	chum	07/08/04	56°30'N	179°00'W	LL	583	0.3	NN0541	MM2541
W163	iBK	chum	07/09/04	56°30'N	179°00'E	LL	432	0.2	NN0556	MM2556
7468	LTD	chum	07/09/04	56°30'N	179°00'E	LL	624	0.4	NN0557	MM2557
7469	LTD	chum	07/09/04	56°30'N	179°00'E	LL	641	0.4	NN0562	MM2562
7470	LTD	chum	07/09/04	56°30'N	179°00'E	LL	621	0.4	NN0577	MM2577
7471	LTD	chum	07/09/04	56°30'N	179°00'E	LL	620	0.4	NN0578	MM2578
7473	LTD	chum	07/09/04	56°30'N	179°00'E	LL	640	0.4	NN0581	MM2581
W164	iBK	chum	07/09/04	56°30'N	179°00'E	LL	432	0.2	NN0625	MM2625
7474	LTD	chum	07/09/04	56°30'N	179°00'E	LL	590	0.4	NN0629	MM2629
W165	iBK	chum	07/09/04	56°30'N	179°00'E	LL	435	0.2	NN0630	MM2630
7475	LTD	chum	07/09/04	56°30'N	179°00'E	LL	606	0.4	NN0633	MM2633
7476	LTD	chum	07/09/04	56°30'N	179°00'E	LL	636	0.4	NN0638	MM2638
7477	LTD	chum	07/09/04	56°30'N	179°00'E	LL	655	0.4	NN0644	MM2644
W166	iBK	chum	07/09/04	56°30'N	179°00'E	LL	399	0.2	NN0645	MM2645
7478	LTD	chum	07/10/04	56°30'N	178°00'E	LL	490	0.3	NN0660	MM2660
W167	iBK	chum	07/10/04	56°30'N	178°00'E	LL	541	X.3	NN0663	MM2663
W168	iBK	sockeye	07/10/04	56°30'N	178°00'E	LL	481	1.2	NN0666	MM2666
7479	LTD	chum	07/10/04	56°30'N	178°00'E	LL	637	X.X	NN0667	MM2667
W169	iBK	chum	07/10/04	56°30'N	178°00'E	LL	437	0.2	NN0668	MM2668
7480	LTD	chum	07/10/04	56°30'N	178°00'E	LL	615	0.3	NN0670	MM2670
W170	iBK	chum	07/10/04	56°30'N	178°00'E	LL	468	0.3	NN0671	MM2671
7481	LTD	chinook	07/10/04	56°30'N	178°00'E	LL	646	X.X	NN0672	MM2672
W171	iBK	sockeye	07/10/04	56°30'N	178°00'E	LL	489	1.2	NN0676	MM2676
W172	iBK	chum	07/10/04	56°30'N	178°00'E	LL	462	0.2	NN0681	MM2681
W173	iBK	chum	07/11/04	56°30'N	177°00'E	LL	428	0.2	NN0683	MM2683
W174	iBK	chum	07/11/04	56°30'N	177°00'E	LL	420	0.2	NN0684	MM2684
7482	LTD	chum	07/11/04	56°30'N	177°00'E	LL	511	0.3	NN0685	MM2685
7484	LTD	chinook	07/11/04	56°30'N	177°00'E	LL	710	X.3	NN0686	MM2686
W153	iBK	chum	07/11/04	56°30'N	177°00'E	LL	719	0.5	NN0687	MM2687
W154	iBK	chum	07/11/04	56°30'N	177°00'E	LL	564	0.3	NN0688	MM2688
W175	iBK	chum	07/11/04	56°30'N	177°00'E	LL	511	0.3	NN0690	MM2690



Table 1. continued

Vessel and Data Tag #	Tag Model	Species	Release Date	Release Latitude	Release Longitude	Gear	Fork Length	Age	US Disk	JFRA Disk
W176	iBK	chum	07/11/04	56°30'N	177°00'E	LL	425	0.2	NN0693	MM2693
W177	iBK	chum	07/12/04	57°30'N	177°00'E	LL	516	0.3	NN0694	MM2694
W178	iBK	chum	07/12/04	57°30'N	177°00'E	LL	431	0.2	NN0695	MM2695
W179	iBK	chum	07/12/04	57°30'N	177°00'E	LL	608	0.4	NN0696	MM2696
W180	iBK	chum	07/12/04	57°30'N	177°00'E	LL	552	0.3	NN0697	MM2697
W181	iBK	chum	07/12/04	57°30'N	177°00'E	LL	534	0.3	NN0698	MM2698
W182	iBK	chum	07/12/04	57°30'N	177°00'E	LL	454	0.2	NN0699	MM2699
W183	iBK	sockeye	07/12/04	57°30'N	177°00'E	LL	498	1.2	NN0700	MM2700
W184	iBK	chum	07/13/04	57°30'N	176°00'E	LL	500	0.3	NN0701	MM2701
W185	iBK	chum	07/13/04	57°30'N	176°00'E	LL	588	0.3	NN0702	MM2702
W186	iBK	chum	07/13/04	57°30'N	176°00'E	LL	545	0.3	NN0703	MM2703
W187	iBK	chum	07/13/04	57°30'N	176°00'E	LL	557	0.3	NN0704	MM2704
W188	iBK	chum	07/13/04	57°30'N	176°00'E	LL	741	0.4	NN0705	MM2705
W189	iBK	chum	07/13/04	57°30'N	176°00'E	LL	624	0.3	NN0706	MM2706
W190	iBK	chum	07/13/04	57°30'N	176°00'E	LL	556	0.4	NN0707	MM2707
W191	iBK	chum	07/13/04	57°30'N	176°00'E	LL	510	0.3	NN0708	MM2708
W192	iBK	chum	07/13/04	57°30'N	176°00'E	LL	586	0.4	NN0709	MM2709

**R/V Kaiyo maru**

7485	LTD	pink	06/26/04	51°00'N	169°59'W	T	505		LL7537	BB1771
8095	LTD	pink	06/26/04	51°00'N	169°59'W	T	520		LL7538	BB1772
7487	LTD	sockeye	06/26/04	51°00'N	169°59'W	T	525		LL7539	BB1773
7489	LTD	pink	06/26/04	51°00'N	169°59'W	T	520		LL7540	BB1774
K026	iBK	pink	06/26/04	51°00'N	169°59'W	T	525		LL7541	BB1775
K027	iBK	pink	06/26/04	51°00'N	169°59'W	T	490		LL7542	BB1776
7490	LTD	chum	06/26/04	51°59'N	169°54'W	T	730		LL7543	BB1777
K012	iBK	chum	06/26/04	51°59'N	169°54'W	T	480		LL7544	BB1778
K014	iBK	chum	06/26/04	51°59'N	169°54'W	T	480		LL7545	BB1779
1382	CTD	sockeye	06/26/04	52°00'N	169°52'W	HL	670		LL7552	BB1786
7491	LTD	sockeye	06/26/04	52°00'N	169°52'W	HL	555		LL7553	BB1787
K021	iBK	sockeye	06/26/04	52°00'N	169°52'W	HL	490		LL7554	BB1788
K022	iBK	sockeye	06/26/04	52°00'N	169°52'W	HL	475		LL7555	BB1789
7492	LTD	pink	06/27/04	53°16'N	170° 22'W	T	570		LL7556	BB1790
7496	LTD	sockeye	06/27/04	53°16'N	170° 22'W	T	495		LL7557	BB1791
K015	iBK	sockeye	06/27/04	53°16'N	170° 22'W	T	485		LL7558	BB1792
7503	LTD	sockeye	06/27/04	53°16'N	170° 22'W	T	455		LL7559	BB1793
K017	iBK	chum	06/27/04	53°16'N	170° 22'W	T	405		LL7560	BB1794
K018	iBK	chum	06/27/04	53°16'N	170° 22'W	T	400		LL7580	BB1798
7501	LTD	sockeye	06/27/04	53°16'N	170° 22'W	T	450		LL7581	BB1795
7500	LTD	chum	06/27/04	53°16'N	170° 22'W	T	435		LL7582	BB1796
K019	iBK	chum	06/27/04	53°16'N	170° 22'W	T	470		LL7583	BB1799
7495	LTD	chum	06/27/04	53°59'N	170° 16'W	T	565		LL7566	BB1805
7497	LTD	chum	06/27/04	53°59'N	170° 16'W	T	525		LL7567	BB1804
K020	iBK	chum	06/27/04	53°59'N	170° 16'W	T	450		LL7568	BB1806
K036	iBK	chum	06/27/04	53°59'N	170° 16'W	T	445		LL7570	BB1810
7498	LTD	chum	06/27/04	53°59'N	170° 16'W	HL	480		LL7574	BB1812
7499	LTD	chum	06/27/04	53°59'N	170° 16'W	HL	520		LL7575	BB1813
K037	iBK	chum	06/27/04	53°59'N	170° 16'W	HL	425		LL7576	BB1814
K038	iBK	chum	06/27/04	53°59'N	170° 16'W	HL	510		LL7577	BB1815

Table 1. continued

Vessel and Data Tag #	Tag Model	Species	Release Date	Release Latitude	Release Longitude	Gear	Fork Length	Age	US Disk	JFRA Disk
7504	LTD	chinook	06/28/04	55°00'N	170° 16'W	T	702		LL7578	BB1816
7505	LTD	sockeye	06/28/04	55°00'N	170° 16'W	T	490		LL7579	BB1817
K042	iBK	sockeye	06/28/04	55°00'N	170° 16'W	T	470		LL7584	BB1818
7506	LTD	chum	06/28/04	55°00'N	170° 16'W	T	500		LL7585	BB1819
K041	iBK	chum	06/28/04	55°00'N	170° 16'W	T	420		LL7586	BB1820
K043	iBK	chum	06/28/04	55°00'N	170° 16'W	T	520		LL7587	BB1821
K044	iBK	chum	06/28/04	55°50'N	170° 02'W	T	520		LL7591	BB1825
7507	LTD	chinook	06/29/04	58°02'N	175° 00'W	T	500		LL7594	BB1826
7508	LTD	chum	06/29/04	58°02'N	175° 00'W	T	610		LL7595	BB1829
7509	LTD	chum	06/29/04	58°02'N	175° 00'W	T	525		LL7596	BB1830
K023	iBK	chum	06/29/04	58°02'N	175° 00'W	T	480		LL7597	BB1831
K024	iBK	chum	06/29/04	58°02'N	175° 00'W	T	480		LL7598	BB1832
1386	CTD	chum	06/29/04	58°02'N	175° 00'W	T	615		LL7599	BB1833
7510	LTD	sockeye	06/29/04	57°01'N	175° 01'W	T	560		LL7600	BB1834
7511	LTD	chum	06/29/04	57°01'N	175° 01'W	T	510		LL7601	BB1835
K025	iBK	pink	06/29/04	57°01'N	175° 01'W	T	425		LL7602	BB1836
K045	iBK	chum	06/29/04	57°01'N	175° 01'W	T	450		LL7603	BB1837
K046	iBK	chum	06/29/04	57°01'N	175° 01'W	T	440		LL7604	BB1838
K047	iBK	chum	06/29/04	57°01'N	175° 01'W	T	495		LL7605	BB1839
7512	LTD	chum	06/29/04	57°01'N	175° 02'W	HL	510		LL7606	BB1840
1383	CTD	sockeye	06/29/04	57°01'N	175° 02'W	HL	640		LL7607	BB1841
K048	iBK	chum	06/29/04	57°01'N	175° 02'W	HL	545		LL7609	BB1843
K049	iBK	chum	06/29/04	57°01'N	175° 02'W	HL	490		LL7610	BB1844
7513	LTD	pink	06/29/04	57°01'N	175° 02'W	HL	445		LL7611	BB1845
K050	iBK	chum	06/29/04	57°01'N	175° 03'W	HL	585		LL7612	BB1846
K028	iBK	pink	06/29/04	57°01'N	175° 03'W	HL	440		LL7613	BB1847
7514	LTD	sockeye	06/30/04	56°00'N	174°59'W	T	540		LL7625	BB1859
K029	iBK	pink	06/30/04	56°00'N	174°59'W	T	420		LL7626	BB1860
7515	LTD	pink	06/30/04	56°00'N	174°59'W	T	465		LL7627	BB1861
7516	LTD	chum	06/30/04	56°00'N	174°59'W	T	585		LL7628	BB1862
K031	iBK	chum	06/30/04	56°00'N	174°59'W	T	535		LL7629	BB1863
K032	iBK	chum	06/30/04	56°00'N	174°59'W	T	550		LL7630	BB1864
K033	iBK	chum	06/30/04	56°00'N	174°59'W	T	540		LL7635	BB1869
K034	iBK	chum	06/30/04	56°00'N	174°59'W	T	485		LL7638	BB1872
7517	LTD	chum	06/30/04	55°00'N	175°03'W	T	590		LL7639	BB1873
K030	iBK	chum	06/30/04	55°00'N	175°03'W	T	555		LL7640	BB1874
K035	iBK	chum	06/30/04	55°00'N	175°03'W	T	532		LL7641	BB1875
K051	iBK	sockeye	06/30/04	55°00'N	175°03'W	T	483		LL7642	BB1876
K060	iBK	chum	06/30/04	55°00'N	175°03'W	T	590		LL7643	BB1877
K058	iBK	chum	06/30/04	54°59'N	175°04'W	HL	540		LL7653	BB1887
K059	iBK	chum	06/30/04	54°58'N	175°04'W	HL	540		LL7654	BB1888
8096	LTD	pink	06/30/04	54°58'N	175°04'W	HL	420		LL7655	BB1889
K052	iBK	chum	06/30/04	54°58'N	175°05'W	HL	555		LL7660	BB1894
8097	LTD	chinook	06/30/04	54°58'N	175°05'W	HL	620		LL7661	BB1895
K053	iBK	sockeye	07/01/04	54°00'N	175°03'W	T	460		LL7663	BB1897
K054	iBK	chum	07/01/04	54°00'N	175°03'W	T	415		LL7664	BB1898
8098	LTD	coho	07/01/04	53°02'N	174°59'W	T	630		LL7668	BB1902
K065	iBK	pink	07/01/04	53°02'N	174°59'W	T	530		LL7669	BB1903
K055	iBK	chum	07/01/04	53°02'N	174°59'W	T	490		LL7670	BB1904

Table 1. continued

Vessel and Data Tag #	Tag Model	Species	Release Date	Release Latitude	Release Longitude	Fork Gear	Length	Age	US Disk	JFRA Disk
K039	iBK	pink	07/01/04	53°01'N	175°00'W	HL	560		LL7671	BB1905
K056	iBK	chum	07/01/04	53°01'N	175°00'W	HL	435		LL7672	BB1906
8099	LTD	coho	07/02/04	51°30'N	175°01'W	T	575		LL7683	BB1917
K061	iBK	chum	07/02/04	51°30'N	175°01'W	T	500		LL7684	BB1918
K062	iBK	chum	07/02/04	51°30'N	175°01'W	T	415		LL7685	BB1919
K063	iBK	chum	07/02/04	51°30'N	175°01'W	T	445		LL7688	BB1922
8100	LTD	coho	07/02/04	51°26'N	175°02'W	HL	580		LL7689	BB1923
8101	LTD	coho	07/02/04	51°26'N	175°02'W	HL	650		LL7690	BB1924
K066	iBK	coho	07/02/04	51°26'N	175°02'W	HL	575		LL7691	BB1925
K071	iBK	coho	07/02/04	51°26'N	175°02'W	HL	590		LL7692	BB1926
1384	CTD	sockeye	07/02/04	51°26'N	175°02'W	HL	585		LL7693	BB1927
K064	iBK	chum	07/02/04	51°26'N	175°02'W	HL	575		LL7695	BB1929
K040	iBK	pink	07/02/04	51°26'N	175°02'W	HL	530		LL7696	BB1930
K072	iBK	coho	07/02/04	51°26'N	175°02'W	HL	600		LL7697	BB1931
K078	iBK	coho	07/02/04	51°25'N	175°03'W	HL	585		LL7699	BB1933
K067	iBK	chum	07/03/04	50°29'N	179°59'E	T	430		LL7700	BB1934
K068	iBK	chum	07/03/04	50°29'N	179°59'E	T	545		LL7701	BB1935
8102	LTD	coho	07/03/04	51°32'N	179°59'W	HL	490		LL7702	BB1936
8103	LTD	coho	07/03/04	51°32'N	179°59'W	HL	550		LL7703	BB1937
K057	iBK	chum	07/04/04	52°29'N	179°58'E	T	600		LL7704	BB1938
K079	iBK	chum	07/04/04	52°29'N	179°58'E	T	595		LL7705	BB1939
K069	iBK	chum	07/04/04	53°29'N	179°58'E	T	430		LL7711	BB1945
K073	iBK	pink	07/04/04	53°29'N	179°58'E	T	450		LL7712	BB1946
8104	LTD	chum	07/04/04	53°29'N	179°58'E	T	480		LL7715	BB1949
K070	iBK	chum	07/04/04	53°29'N	179°58'E	T	495		LL7727	BB1961
K080	iBK	coho	07/04/04	53°29'N	179°58'E	HL	610		LL7728	BB1962
K075	iBK	chum	07/04/04	53°29'N	179°58'E	HL	480		LL7729	BB1963
K076	iBK	chum	07/04/04	53°29'N	179°58'E	HL	510		LL7741	BB1975
K077	iBK	sockeye	07/04/04	53°29'N	179°58'E	HL	500		LL7742	BB1976
K081	iBK	chum	07/04/04	53°29'N	179°58'E	HL	480		LL7743	BB1977
K082	iBK	sockeye	07/04/04	53°29'N	179°58'E	HL	450		LL7744	BB1978
K074	iBK	pink	07/05/04	54°32'N	179°59'W	T	410		LL7800	BB2475
K083	iBK	chum	07/05/04	54°33'N	179°59'W	T	585		LL7801	BB2476
K084	iBK	chum	07/05/04	54°33'N	179°59'W	T	610		LL7801	BB2477
K092	iBK	sockeye	07/05/04	54°33'N	179°59'W	T	480		LL7803	BB2478
K093	iBK	chum	07/05/04	54°34'N	179°59'W	T	440		LL7804	BB2479
K086	iBK	chum	07/05/04	55°30'N	179°59'W	T	435		LL7807	BB2482
K085	iBK	chum	07/05/04	55°30'N	179°59'W	T	605		LL7808	BB2483
8105	LTD	chum	07/05/04	55°30'N	179°58'W	HL	580		LL7811	BB2486
K089	iBK	chum	07/05/04	55°30'N	179°58'W	HL	580		LL7812	BB2487
K094	iBK	chum	07/05/04	55°30'N	179°58'W	HL	505		LL7813	BB2488
K090	iBK	chum	07/05/04	55°30'N	179°58'W	HL	560		LL7816	BB2491
K095	iBK	chum	07/05/04	55°30'N	179°58'W	HL	540		LL7817	BB2492
K096	iBK	chum	07/05/04	55°30'N	179°58'W	HL	440		LL7818	BB2493
K097	iBK	chum	07/05/04	55°30'N	179°58'W	HL	480		LL7824	BB2499
K098	iBK	chum	07/05/04	55°30'N	179°58'W	HL	510		LL7835	N4809
8106	LTD	chum	07/05/04	55°30'N	179°58'W	HL	540		LL7836	N4810
K091	iBK	chum	07/05/04	55°30'N	179°58'W	HL	555		LL7837	N4811
1389	CTD	chinook	07/06/04	56°30'N	180°00'	T	820		LL7840	N4814

Table 1. continued

Vessel and Data Tag #	Tag Model	Species	Release Date	Release Latitude	Release Longitude	Fork Gear	Fork Length	Age	US Disk	JFRA Disk
8107	LTD	chinook	07/06/04	56°30'N	180°00'	T	820		LL7840	N4814
K099	iBK	chum	07/06/04	56°30'N	180°00'	T	470		LL7848	N4822
K108	iBK	chum	07/06/04	56°30'N	180°00'	T	585		LL7849	N4823
K109	iBK	chum	07/06/04	56°30'N	180°00'	T	630		LL7850	N4824
K100	iBK	chum	07/06/04	57°30'N	179°57'W	T	515		LL7852	N4826
K110	iBK	chum	07/06/04	57°30'N	179°57'W	T	620		LL7853	N4827
K101	iBK	chum	07/07/04	56°00'N	175°02'E	T	480		LL7856	N4830
K102	iBK	sockeye	07/07/04	56°00'N	175°02'E	T	490		LL7857	N4831
K087	iBK	chum	07/07/04	56°00'N	175°02'E	T	615		LL7858	N4832
8108	LTD	chum	07/07/04	55°03'N	174°57'E	T	630		LL7859	N4833
8109	LTD	chum	07/07/04	55°03'N	174°57'E	T	535		LL7860	N4834
K104	iBK	chum	07/07/04	55°03'N	174°57'E	T	475		LL7861	N4835
8110	LTD	chum	07/07/04	55°03'N	174°57'E	T	640		LL7862	N4836
K088	iBK	chum	07/07/04	55°03'N	174°57'E	T	615		LL7863	N4837
K105	iBK	chum	07/07/04	55°03'N	174°57'E	T	370		LL7864	N4838
K106	iBK	chum	07/07/04	55°03'N	174°57'E	HL	500		LL7867	N4841
8111	LTD	chum	07/07/04	55°03'N	174°57'E	HL	515		LL7868	N4842
8112	LTD	chum	07/07/04	55°04'N	174°57'E	HL	460		LL7873	N4847
K107	iBK	chum	07/07/04	55°04'N	174°57'E	HL	540		LL7874	N4848
K115	iBK	chum	07/08/04	53°02'N	174°57'E	T	460		LL7875	N4849
8113	LTD	chum	07/08/04	53°02'N	174°57'E	T	610		LL7877	N4851

Table 2. Preliminary release and recovery information for U.S. tags and cooperative Japan-U.S. tags returned from 1 October 2003 to 30 September 2004. A blank indicates the information is not available. LL=longline, GN= gillnet, 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 or LTD\_1100-500 (records temperature and depth); iBx=AlphaMach iB4, iBLite, or iBKrill (records temperature only); CTD=StarOddi DST CTD.

U.S.	Japan	Release							Recovery										
Tag.	Tag		Lat.		2°X5°		FL			Lat.		Area			FL	BW	Gonad		
Nos.	No.	Date	(°N)	Long.	Area	Gear	(mm)	Age	Date	(°N)	Long.	code	Gear	Sex	(mm)	(g)	(g)	Age	Location
<b>A. Sockeye Salmon</b>																			
LL6409, LTD data tag 1688	Z7309	29-Jun-03	55°30'	180°00'	W8054	LL	619	2.3	7-Aug-03	50°38'	157°11'E	03-2	GN	F	620	3100	-	-	southern tip of Kamchatka Peninsula, Russia
LL7503, iB4 tag G02	BB1731	2-Aug-03	50°58'	160°01'W	W6550	HL	570	1.2	2-Jul-04	54°48'	130°56'W	66	GN	-	612	2950	-	-	Tree Pt., Dixon Entrance, near Ketchikan, southeast Alaska, USA
NN0101, CTD tag 1363	MM210 1	26-Jun-04	50°30'	180°00'	W8050	LL	640	2.3	27-Aug-04	57°03'	154°31'W	56-0	HL	M	640	3450	-	2.3	Upper Station, Olga Bay, Kodiak, s. central Alaska, USA
LL7553, LTD tag 7491	BB1787	26-Jun-04	52°00' N	169°52' W	W7052	HL	555	2.2	12-Sep-04	55°44'	159°41'W	53-4	-	-	-	-	-	-	Stepovak Bay, s. Alaska Peninsula, Alaska, USA
LL7607, CTD tag 1383	BB1841	29-Jun-04	57°01'	175°02'W	W8056	HL	640	1.3	4-Aug-04	55°37'	159°40'W	53-4	GN	-	673	3600	-	-	Fox Bay, s. Alaska Peninsula, Alaska, USA
NN0240, LTD data tag 5996	MM224 0	2-Jul-04	56°30'	180°00'	W8056	LL	617	1.3	24-Jul-04	59°45'	161°56'W	44-0	HL	-	-	-	-	-	Kanektok R., Kuskokwim Bay, western Alaska, USA

Table 2. continued

U.S.	Japan	Release							Recovery											
Tag.	Tag		Lat.		2°X5°		FL			Lat.		Area			FL	BW	Gonad			
Nos.	No.	Date	(°N)	Long.	Area	Gear	(mm)	Age		Date	(°N)	Long.	code	Gear	Sex	(mm)	(g)	(g)	Age	Location
<b>B. Chum Salmon</b>																				
LL6671, iBL tag W32	Z7571	6-Jul-03	56°30	179°00W	W8056	LL	590	0.3		21-Jul-03	56°39	168°00E	22	GN	-	-	-	-	-	western Bering Sea, off E. Kamchatka, Russia
LL6706, LTD data tag 1709	Z7606	7-Jul-03	56°30	179°00E	E7556	LL	595	X.X		23-Sep-03	44°03	144°09E	02-2	HL	-	-	-	-	-	Notoro Lake, Ubaranai R., Okhotsk coast, Hokkaido, Japan
LL6747, LTD data tag 1603	Z7647	9-Jul-03	56°30	177°00E	E7556	LL	564	0.3		11-Oct-03	43°33	145°21E	02-0	-	-	-	-	-	-	Notsuke Peninsula, Nemuro coast, Hokkaido, Japan
LL6784, LTD data tag 1396	Z7684	10-Jul-03	57°30	177°00E	E7556	LL	631	0.5		13-Sep-03	47°00	142°05E	6-1	-	F	670	3400	-	-	Kalininsky Hatchery, Kalininka R., s. Sakhalin, Russia
<b>c. Pink Salmon</b>																				
LL6308, iBL tag W064	Z7208	28-Jun-03	54°30	180°00	W8054	LL	471	0.1		23-Jul-03	60°15	168°30E	12-4	-	M	-	-	-	0.1	Olyutorsky Bay, Kamchatka, Russia
LL6306, iBL tag W065	Z7206	28-Jun-03	54°30	180°00	W8054	LL	495	0.1		9-Aug-03	58°35	162°20E	12-1	-	F	500	1620	150	0.1	Karaginsky Bay near Ivashka R., Kamchatka, Russia
LL6468, iBL data tag W075	Z7368	1-Jul-03	57°30	180°00	W8056	LL	547	0.1		26-Jul-03	58°36	162°18E	12-1	-	-	-	-	-	0.1	Karaginsky Bay near Ivashka R., Kamchatka, Russia
NN0373, iBK data tag W148	MM237 3	6-Jul-04	57°30	178°00W	W8056	LL	459	0.1		7-Jul-04	57°30	178°00W	25	-	-	-	-	-	0.1	Bering Sea, recovered by tagging vessel

Table 2. continued

U.S.	Japan	Release							Recovery											
Tag.	Tag		Lat.		2°X5°		FL			Lat.		Area			FL	BW	Gonad			
Nos.	No.	Date	(°N)	Long.	Area	Gear	(mm)	Age	Date	(°N)	Long.	code	Gear	Sex	(mm)	(g)	(g)	Age	Location	
<b>D. Chinook Salmon</b>																				
LL5798, LTD data tag 1401	Y9798	8-Jul-02	56°30	179°00W	W8056	LL	562	1.2	21-Jun-04	62°39	163°57W	42-1	-	-	-	-	-	-	-	above Kotlik, Yukon R., western Alaska, USA
LL7505, iB4 tag G03	BB1733	2-Aug-02	50°58	160°01W	W6550	HL	620	3.1	13-May-04	45°41	121°17W	85-2	-	-	-	-	-	-	-	Lyle, Columbia R., Washington, USA

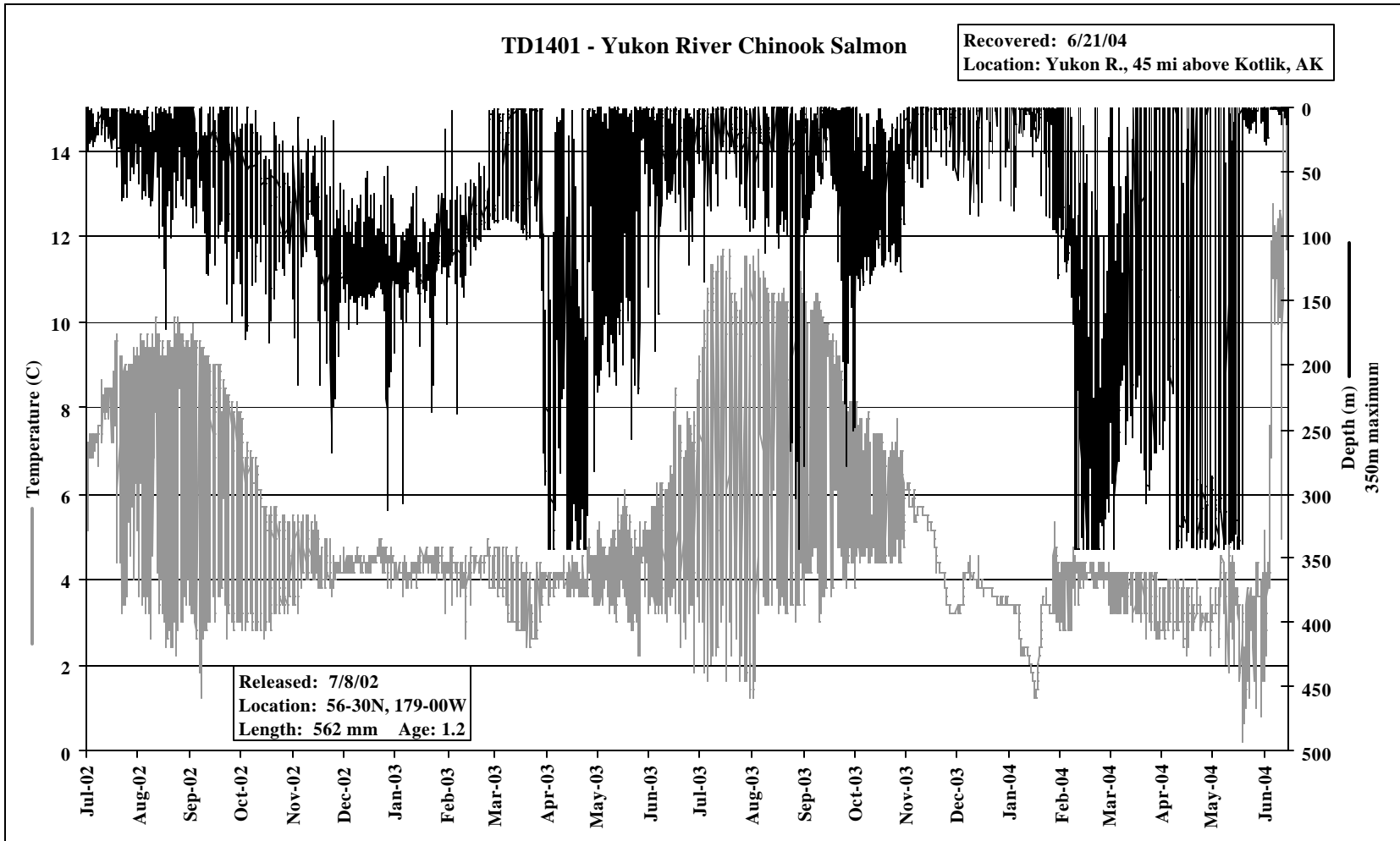


Figure 1. Temperature and depth data recorded on a data storage tag placed on a 562 mm chinook salmon in the Bering Sea on 8 July 2002 and recovered in the Yukon River, Alaska, on 21 June 2004.



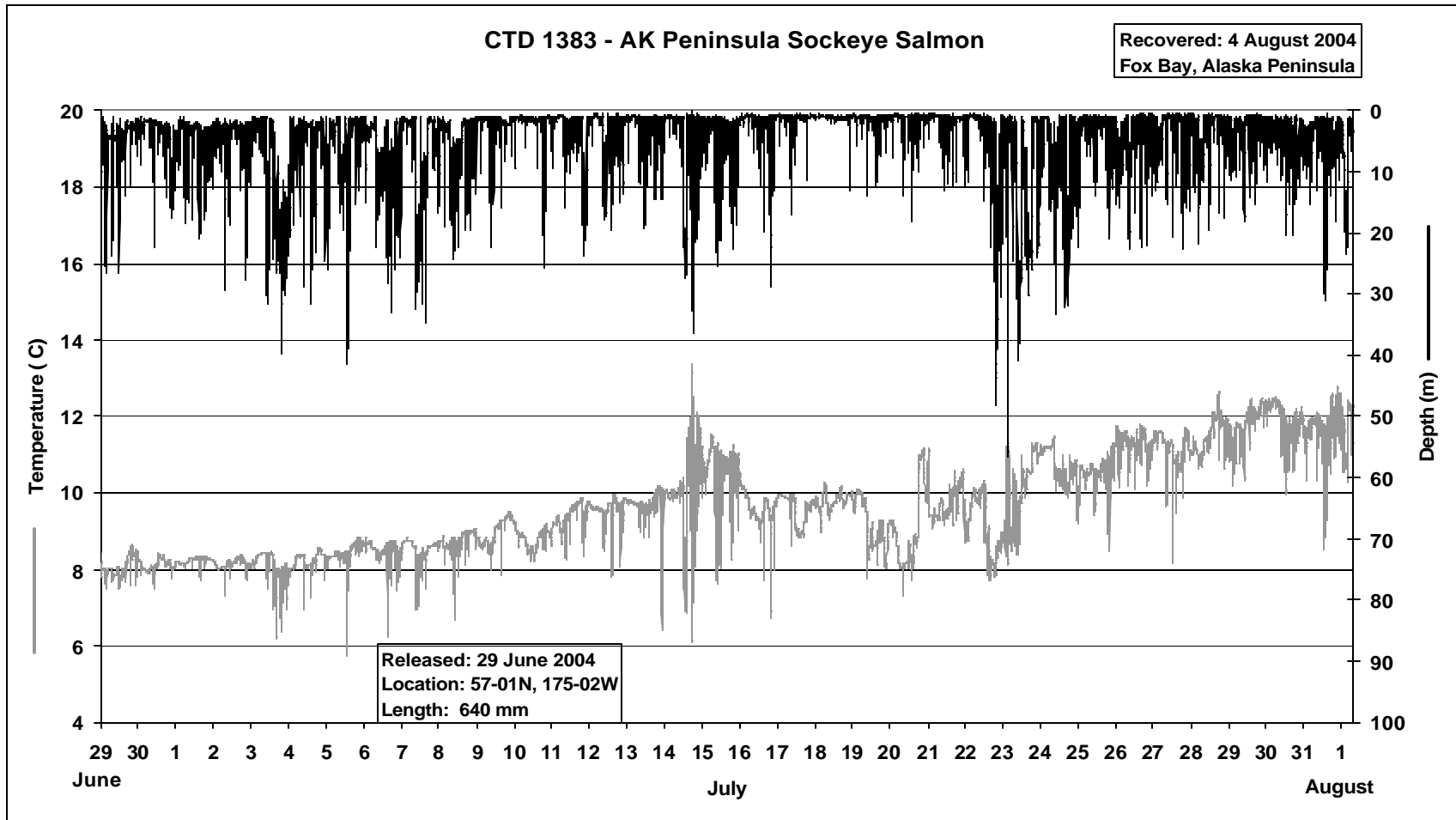


Figure 2. Temperature and depth data recorded on a data storage tag placed on a 640 mm sockeye salmon in the Bering Sea on 29 June 2004 and recovered on the south coast of the Alaska Peninsula on 4 August 2004.

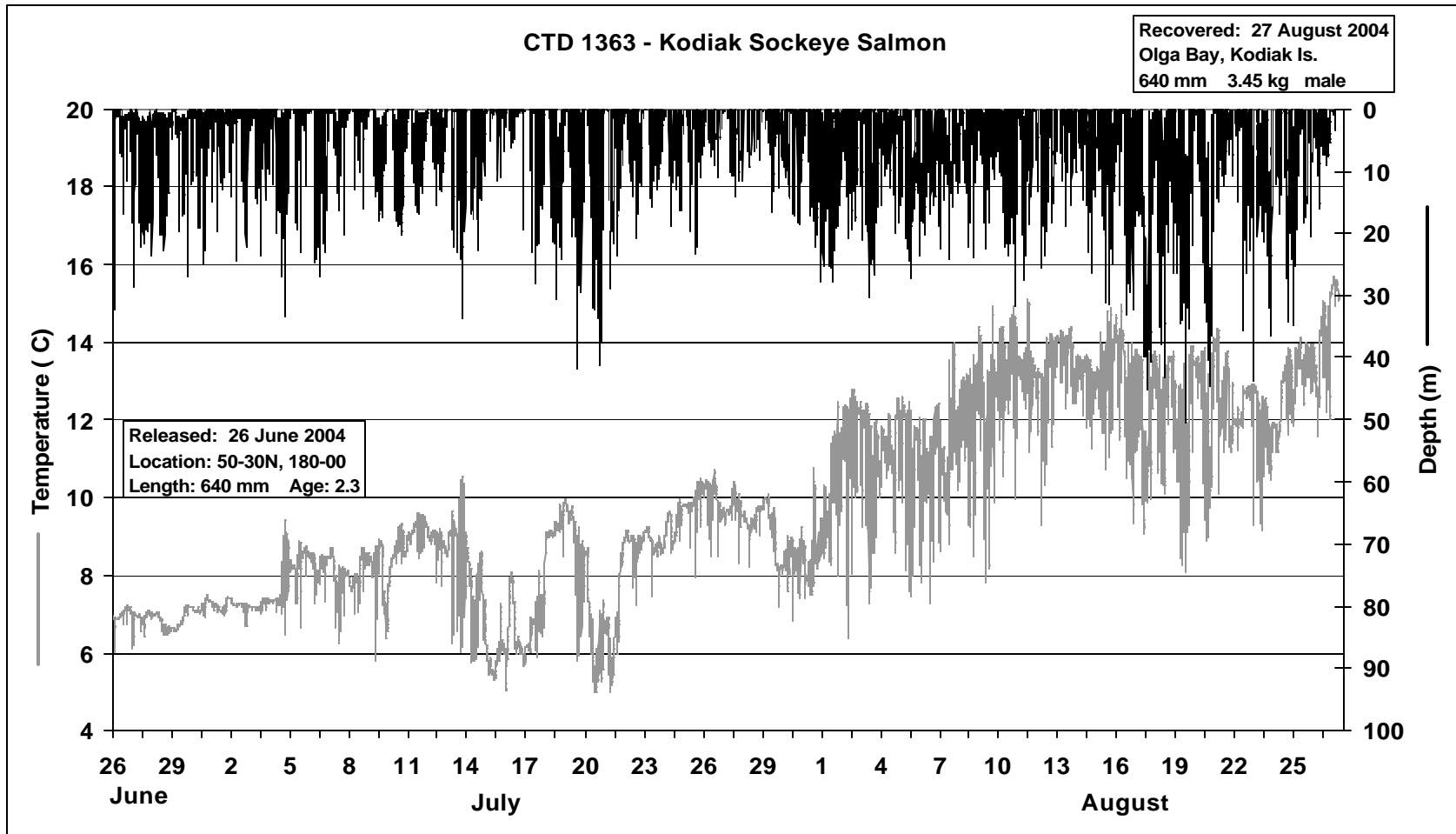


Figure 3. Temperature and depth data recorded on a data storage tag placed on a 640 mm sockeye salmon in the central North Pacific Ocean on 26 June 2004 and recovered on Kodiak Island on 27 August 2004.

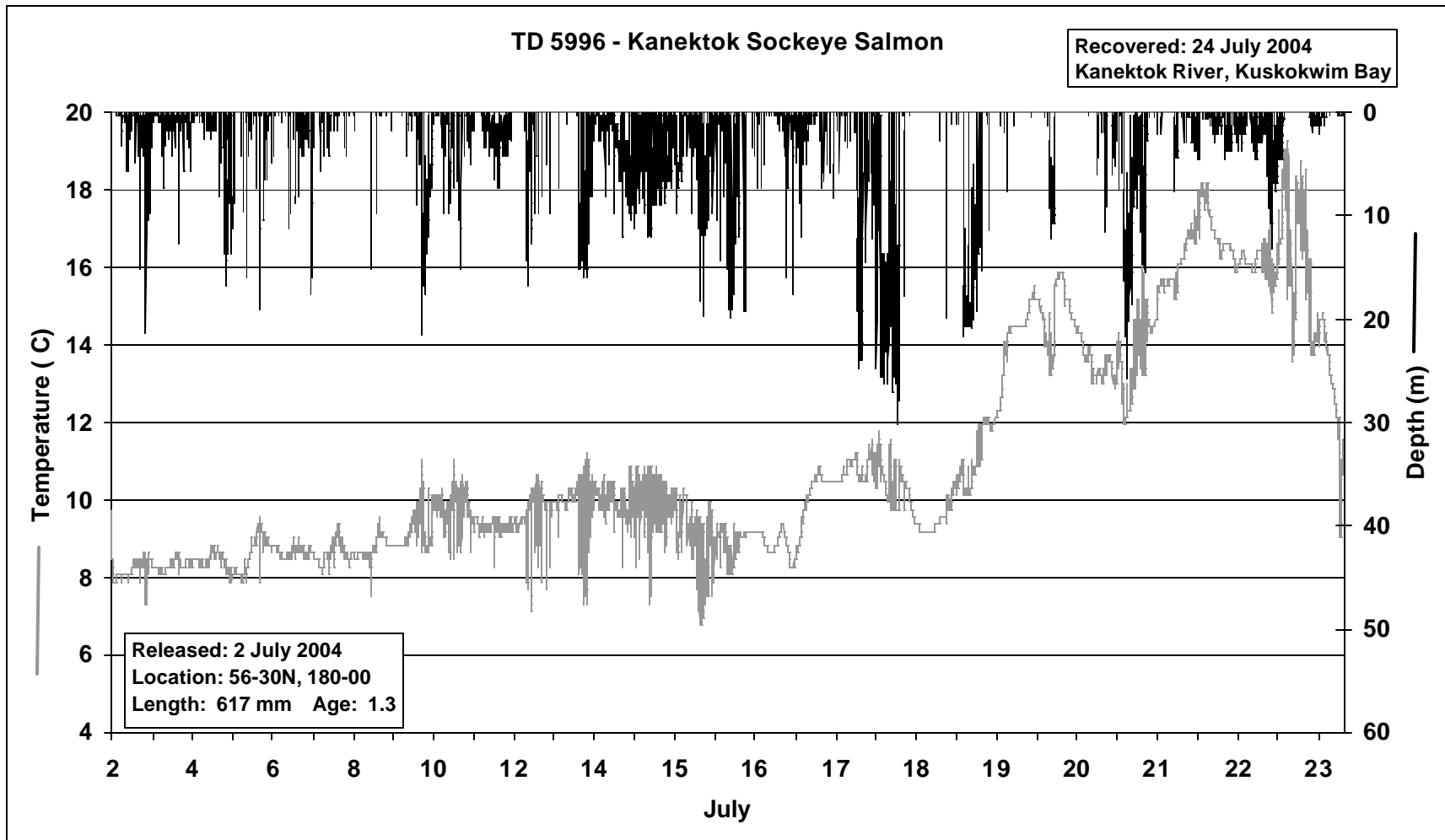


Figure 4. Temperature and depth data recorded on a data storage tag placed on a 617 mm sockeye salmon in the Bering Sea on 2 July 2004 and recovered in the Kanektok River, Kuskokwim Bay, on 23 July 2004.

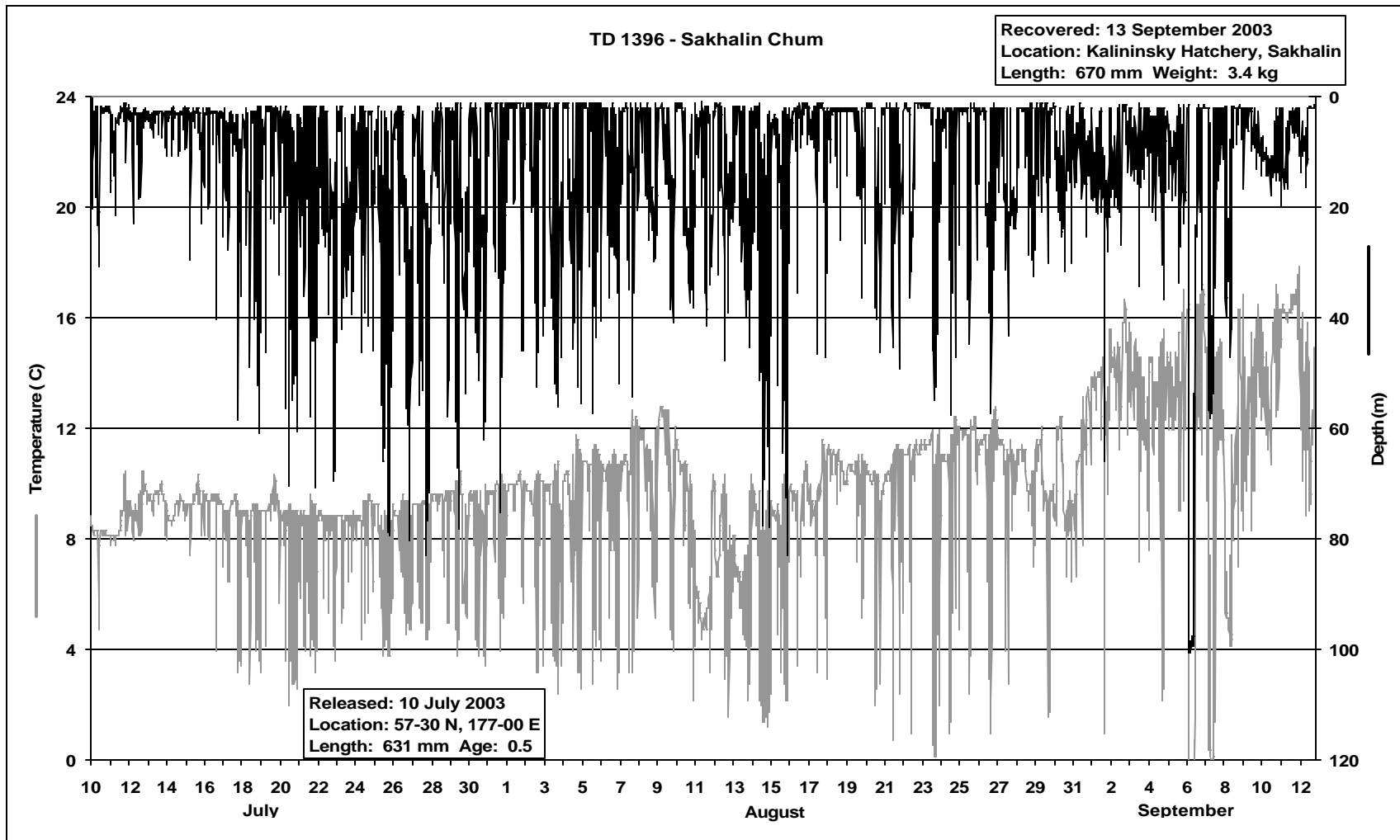


Figure 5. Temperature and depth data recorded on a data storage tag placed on a 631 mm chum salmon in the Bering Sea on 10 July 2003 and recovered Kalininsky Hatchery, Sakhalin Island, on 13 September 2003.

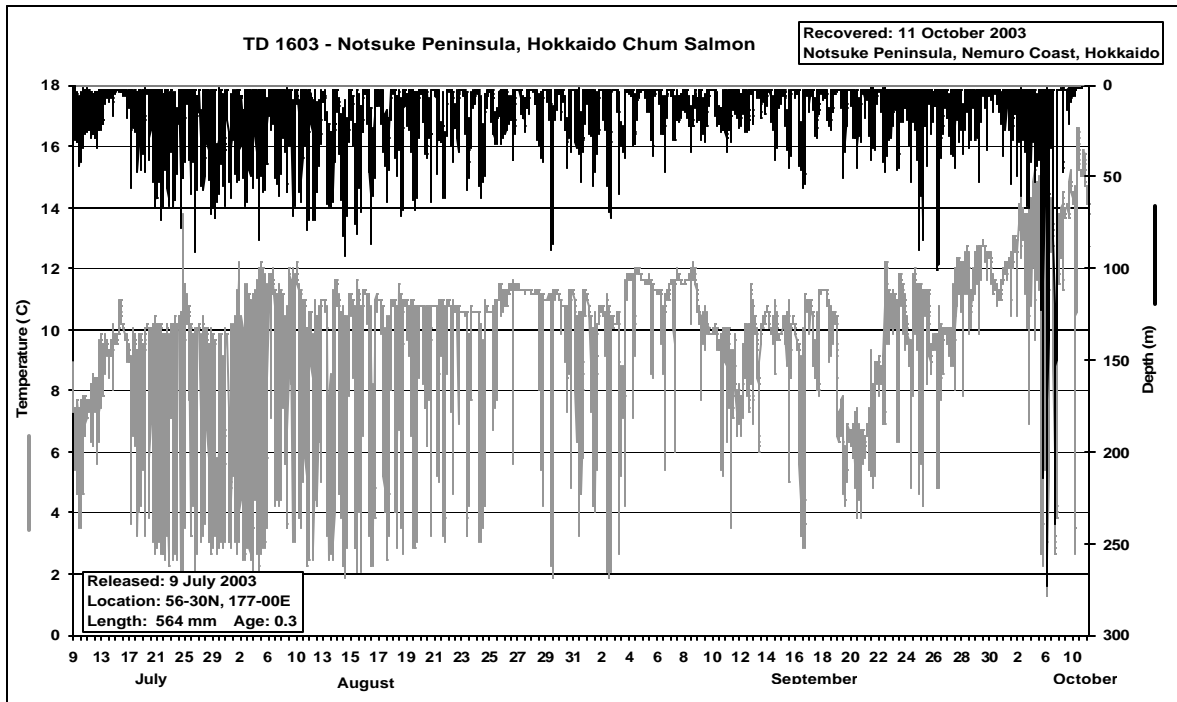
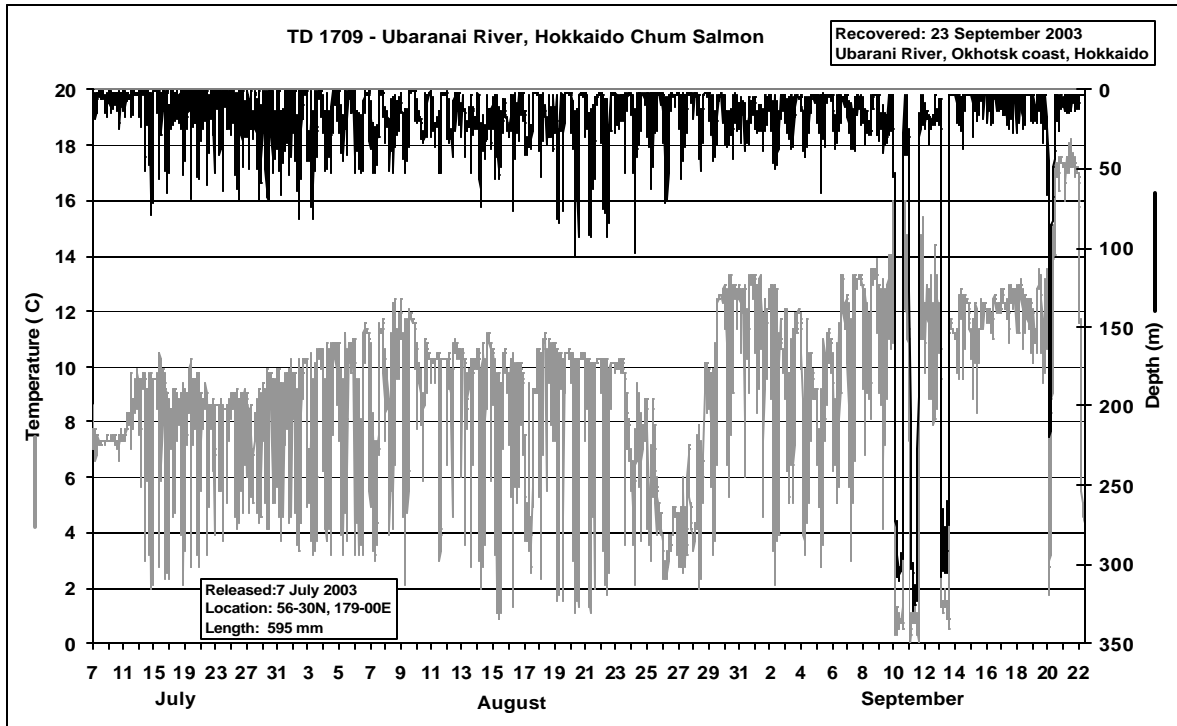


Figure 6. Temperature and depth data recorded on data storage tags placed on two chum salmon in the Bering Sea on 7 July 2003 (top) and 9 July 2003 (bottom) and recovered in Hokkaido, Japan, on the Okhotsk coast on 23 September 2003 (top) and the Nemuro coast on 11 October 2003 (bottom).

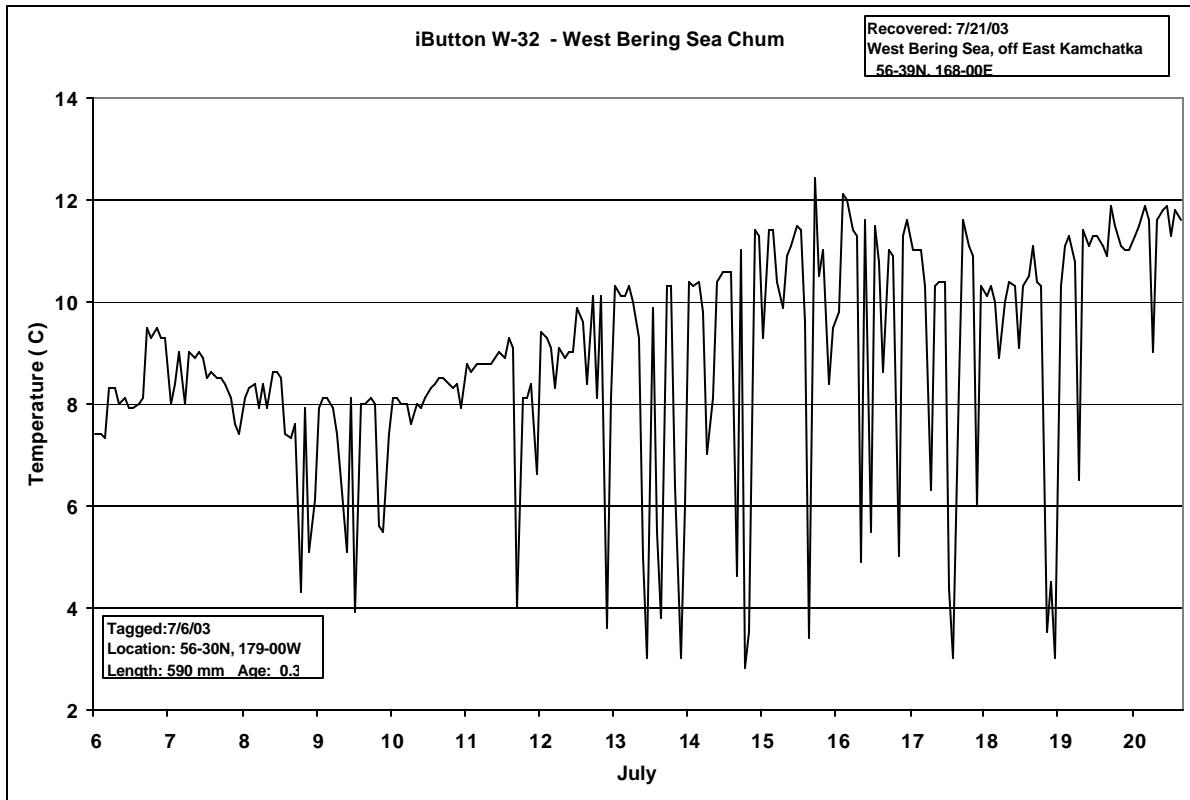


Figure 7. Temperature data recorded on a data storage tags placed on a 590 mm chum salmon in the Bering Sea on 6 July 2003 and recovered in the western Bering Sea off the eastern coast of Kamchatka on 21 July 2003.

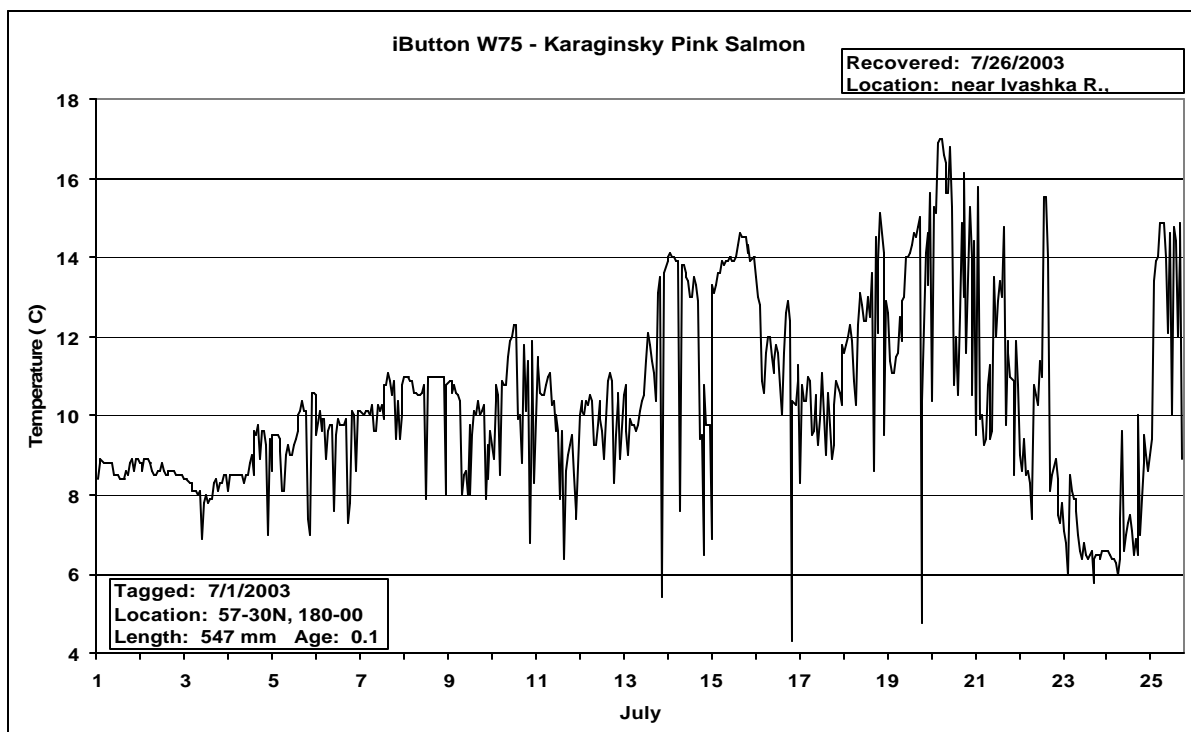
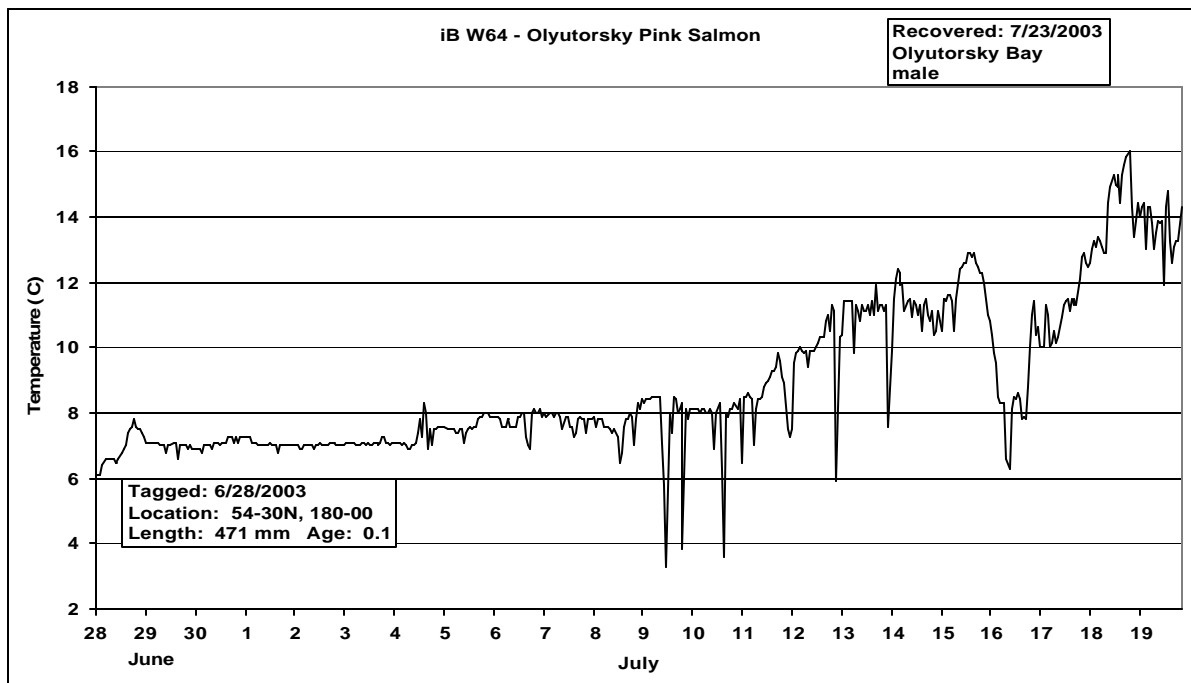


Figure 8. Temperature data recorded on two data storage tags placed on two pink salmon in the Bering Sea on 28 June 2003 (top) and 1 July 2003 (bottom) and recovered in Olyutorsky Bay on 23 July 2003 (top) and Karaginsky Bay on 26 July 2003 (bottom).

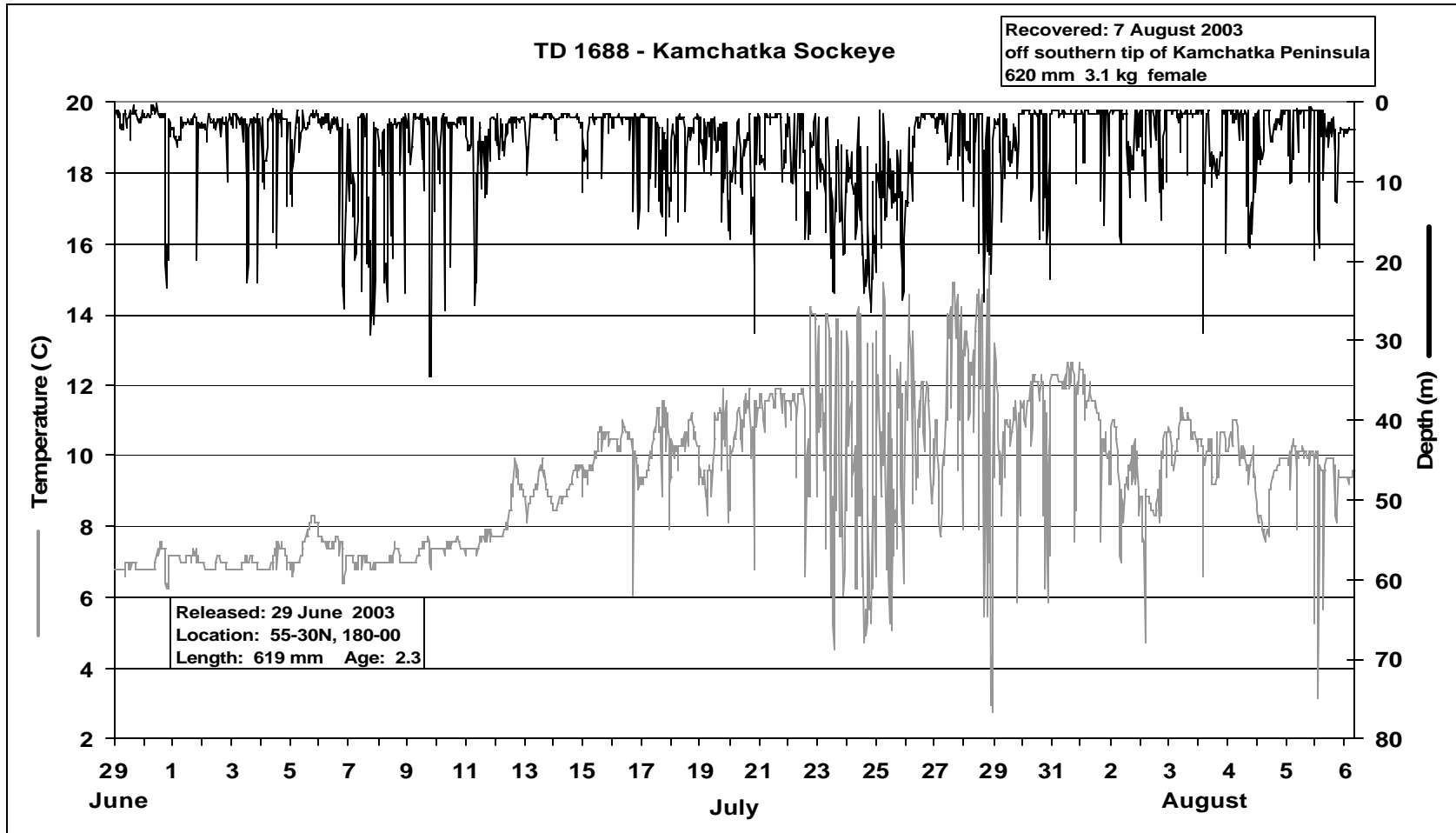


Figure 9. Temperature and depth data recorded on a data storage tag placed on a 619 mm sockeye salmon in the Bering Sea on 29 June 2003 and recovered off the southern tip of the Kamchatka Peninsula on 7 August 2003.