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RELEASES AND RECOVERIES OF U.S. SALMONID DATA STORAGE TAGS, AND RECOVERIES OF HIGH SEAS TAGS IN NORTH AMERICA, 2002

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ABSTRACT

Information is reported on all high-seas salmon tags recovered in North America from 1 October 2001 through 10 September 2002, and all releases and recoveries of U.S. data storage tags (DSTs). Sixty-two DSTs, which record temperature and depth or temperature-only data, were placed on 56 Pacific salmonids in the North Pacific Ocean and Bering Sea during research cruises aboard two Japanese vessels in 2002. Seventeen sockeye, eighteen chum, and seventeen chinook salmon, and two steelhead trout were tagged with DSTs in June and July in the central North Pacific and Bering Sea. Two salmon (1 chum and 1 pink) were tagged with DSTs in the central Gulf of Alaska in July.

One DST, from a sockeye salmon tagged during 2001 operations in the Bering Sea, was recovered in 2001 in Kamchatka. This was the first recovery of a Russian salmon carrying a DST. A pink salmon carrying a DST was caught in Kodiak, Alaska, in 2002. Graphs of ambient temperature and pressure data from the DSTs are presented. One tag from 1962 tagging operations was found in the Iliamna River of the Nushagak system, Bristol Bay, Alaska. It had been placed on a sockeye salmon in the central North Pacific.

INTRODUCTION

Information is reported on all high-seas salmon (*Oncorhynchus* spp.) tags recovered in North America from 1 October 2001 through 10 September 2002, 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. 2002.) 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 on another Japanese vessel in 2002. U.S. high-seas tags are 20 mm diameter plastic red-and-white Petersen disk tags. Two DSTs were used. One is a small circuit board potted in a clear urethane, manufactured by Lotek Marine Technologies. Model LTD_1100-300 is 27 x 16 x 8 mm and weighs 5 g. The tags record temperature and depth data. iButton tags are Thermonchron iButton data storage devices (DS-1921-F51) manufactured by Dallas Semiconductor, Inc., and repackaged for fish tagging (model iB4) by AlphaMach, Inc. These tags are oval, 24 x 16 x 8 mm, weigh 3.8 gm, are

packaged in urethane, and record temperature data only. 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. When two DSTs (one LTD and one iB4) were attached to one fish, one was placed on each side, with disk tags added on the LTD side, under the tag.

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 know 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

Sixty-two DSTs, which record temperature and depth or temperature-only data, were placed on 56 Pacific salmonids in the North Pacific Ocean and Bering Sea during two research cruises aboard Japanese vessels in 2002 (Table 1). Seventeen sockeye, eighteen chum, and seventeen chinook salmon, and two steelhead trout were tagged with DSTs in June and July in the central North Pacific and Bering Sea (two DSTs of different types were placed on six of the chum). Two salmon (1 chum and 1 pink) were tagged with DSTs in the central Gulf of Alaska in July.

From 1 October 2001 through 10 September 2002, two high-seas salmon tags from recoveries in North America have been reported (Table 2). A tag from 1962 tagging operations was found in the Iliamna River of the Nushagak system, Bristol Bay, Alaska. It had been placed on a sockeye salmon in the central North Pacific. A pink salmon carrying a DST was caught in Kodiak, Alaska. A graph of ambient temperature and pressure data from the DST is presented (Fig. 1). The fish usually occupied depths from the surface to 40 m (maximum depth of 73 m), with most diving activity occurring during the day. Ambient temperatures ranged from 5?C to 14?C. Surface waters in the Gulf of Alaska were warmer than normal in 2002, and for most of its migration, the fish was in waters of 12?-14?C.

One DST, from a sockeye salmon tagged during 2001 operations in the Bering Sea, was recovered in 2001 in Kamchatka (Table 2). This was the first recovery of a Russian salmon carrying a DST. A graph of ambient temperature and pressure data from the DST is presented (Fig. 2). 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 3?C to 17?C, but until the final stages of migration, the temperature range was 4?-12?C.

Release data from 2001 tagging operations and other recoveries in 2001 were reported in Walker et al. 2001.

Information on a study of chinook salmon in inshore waters of southeast Alaska using DSTs is reported in Murphy and Heard 2002. Recoveries of coded-wire tag recoveries by high seas research vessels and groundfish fisheries are reported in Myers et al. 2002.

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Table 1. U.S. archival data storage tags placed on salmonids in the North Pacific Ocean and Bering Sea in 2002. LTD tags record temperature and depth data; iButton tags record temperature only. LL = longline; HL = hook and line. FRI = Fisheries Research Institute; FRA = Fisheries Research Agency of Japan. LTD = Lotek LTD_11100-300; IB = iButton.

Vessel and Data Tag #	Tag Model	Species	Release Date	Location Latitude	Location Longitude	Gear	Fork Length	Age	Other tags FRI	Other tags FRA
R/V *Wakatake maru*										
1	IB	Steelhead	06/19/02	45°00'N	180°00'	LL	568	X.1	LL5065	Y9065
2	IB	Steelhead	06/19/02	45°00'N	180°00'	LL	700	2.1	LL5064	Y9064
3	IB	Chum	06/24/02	48°30'N	180°00'	LL	469	0.3	LL5072	Y9072
4	IB	Chum	06/24/02	48°30'N	180°00'	LL	471	0.3	LL5073	Y9073
1318	LTD	Sockeye	06/25/02	49°30'N	180°00'	LL	565	1.3	LL5077	Y9077
1320	LTD	Sockeye	06/25/02	49°30'N	180°00'	LL	611	2.3	LL5078	Y9078
5	IB	Chum	06/26/02	50°30'N	180°00'	LL	545	0.3	LL5089	Y9089
1322	LTD	Sockeye	06/27/02	51°30'N	180°00'	LL	530	2.2	LL5090	Y9090
6	IB	Sockeye	06/27/02	51°30'N	180°00'	LL	440	1.2	LL5092	Y9092
16	IB	Chum	06/28/02	52°30'N	180°00'	LL	640	0.4	LL5093	Y9093
17	IB	Chum	06/28/02	52°30'N	180°00'	LL	666	0.4	LL5094	Y9094
18	IB	Chum	06/28/02	52°30'N	180°00'	LL	616	0.3	LL5095	Y9095
1327	LTD	Sockeye	06/28/02	52°30'N	180°00'	LL	548	1.2	LL5096	Y9096
1331	LTD	Sockeye	06/30/02	54°30'N	180°00'	LL	525	2.2	LL5239	Y9239
1332	LTD	Sockeye	06/30/02	54°30'N	180°00'	LL	615	2.3	LL5240	Y9240
19	IB	Chum	07/02/02	56°30'N	180°00'	LL	619	0.3	LL5423	Y9423
1334, 20	LTD, IB	Chum	07/03/02	57°30'N	180°00'	LL	691	0.4	LL5447	Y9447
7	IB	Sockeye	07/05/02	57°30'N	179°00'W	LL	482	2.2	LL5505	Y9505
8	IB	Chum	07/05/02	57°30'N	179°00'W	LL	526	0.2	LL5506	Y9506
9	IB	Chum	07/05/02	57°30'N	179°00'W	LL	484	0.2	LL5507	Y9507
10	IB	Chum	07/05/02	57°30'N	179°00'W	LL	594	0.3	LL5508	Y9508
11	IB	Sockeye	07/05/02	57°30'N	179°00'W	LL	478	2.2	LL5509	Y9509
1364	LTD	Chinook	07/05/02	57°30'N	179°00'W	LL	740	1.3	LL5510	Y9510
1365	LTD	Sockeye	07/05/02	57°30'N	179°00'W	LL	588	2.2	LL5559	Y9559
1373, 26	LTD, IB	Chum	07/05/02	57°30'N	179°00'W	LL	615	0.4	LL5562	Y9562
12	IB	Sockeye	07/06/02	57°30'N	178°00'W	LL	462	2.2	LL5592	Y9592
13	IB	Chum	07/06/02	57°30'N	178°00'W	LL	493	0.3	LL5593	Y9593
14	IB	Chum	07/06/02	57°30'N	178°00'W	LL	475	0.3	LL5594	Y9594
15	IB	Sockeye	07/06/02	57°30'N	178°00'W	LL	507	2.3	LL5595	Y9595
21	IB	Sockeye	07/06/02	57°30'N	178°00'W	LL	487	2.2	LL5596	Y9596
22	IB	Chinook	07/06/02	57°30'N	178°00'W	LL	547	X.2	LL5700	Y9700
23	IB	Chinook	07/06/02	57°30'N	178°00'W	LL	595	1.2	LL5701	Y9701
24	IB	Chinook	07/06/02	57°30'N	178°00'W	LL	575	1.2	LL5702	Y9702
25	IB	Chinook	07/06/02	57°30'N	178°00'W	LL	610	X.2	LL5703	Y9703
1392	LTD	Chinook	07/07/02	56°30'N	178°00'W	LL	570	1.2	LL5718	Y9718
1433	LTD	Chinook	07/07/02	56°30'N	178°00'W	LL	650	1.3	LL5729	Y9729
1434	LTD	Chinook	07/07/02	56°30'N	178°00'W	LL	622	1.2	LL5730	Y9730
1454	LTD	Chinook	07/07/02	56°30'N	178°00'W	LL	789	1.3	LL5731	Y9731
1432	LTD	Chinook	07/07/02	56°30'N	178°00'W	LL	600	1.2	LL5732	Y9732
1398	LTD	Chinook	07/08/02	56°30'N	179°00'W	LL	579	1.2	LL5783	Y9783
1401	LTD	Chinook	07/08/02	56°30'N	179°00'W	LL	562	1.2	LL5798	Y9798

continued

Table 1. continued.

Vessel and Data Tag #	Tag Model	Species	Release Date	Location Latitude	Location Longitude	Gear	Fork Length	Age	Other tags FRI	Other tags FAJ
R/V *Wakatake maru (continued)*										
1403	LTD	Chinook	07/08/02	56°30'N	179°00'W	LL	509	X.2	LL5799	Y9799
1417	LTD	Chinook	07/08/02	56°30'N	179°00'W	LL	546	1.2	LL5802	Y9802
1437	LTD	Chinook	07/08/02	56°30'N	179°00'W	LL	630	1.2	LL5803	Y9803
1444	LTD	Sockeye	07/08/02	56°30'N	179°00'W	LL	503	2.2	LL5814	Y9814
1465	LTD	Chinook	07/08/02	56°30'N	179°00'W	LL	527	1.2	LL5832	Y9832
1475	LTD	Chinook	07/08/02	56°30'N	179°00'W	LL	664	1.3	LL5835	Y9835
1477, 27	LTD, IB	Chum	07/08/02	56°30'N	179°00'W	LL	680	0.4	LL5876	Y9876
1478, 28	LTD, IB	Chum	07/08/02	56°30'N	179°00'W	LL	650	0.4	LL5877	Y9877
1583, 30	LTD, IB	Chum	07/09/02	56°30'N	179°00'E	LL	622	0.4	LL5001	Y1801
1562	LTD	Sockeye	07/09/02	56°30'N	179°00'E	LL	500	2.2	LL5998	Y9998
1565, 29	LTD, IB	Chum	07/09/02	56°30'N	179°00'E	LL	618	0.3	LL5999	Y9999
1585	LTD	Sockeye	07/10/02	56°30'N	178°00'E	LL	499	1.2	LL5023	Y1823
1586	LTD	Sockeye	07/10/02	56°30'N	178°00'E	LL	508	2.2	LL5024	Y1824
R/V *Oshoro maru*										
G13	IB	Chum	07/21/02	54°00'N	145° 00'W	HL	515	0.2	LL4871	AA1571
1587	LTD	Pink	07/22/02	55°00'N	145° 00'W	HL	484	0.1	LL4872	AA1572

Table 2. Preliminary release and recovery information for U.S. tags and cooperative Japan-U.S. tags returned from 1 October 2001 to 10 September 2002. A blank indicates the information is not available. LL=longline, 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: RL-31 and LTD_1100 are model numbers; both record temperature and depth.

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
A. Sockeye Salmon																			
LL4140, RL-31 data tag no. 1112	LL3140	26-Jun-01	50°30	180°00	W8050	LL	663	1.3	16-Aug-01	56°10	162°30E	11-3	-	-	-	-	-	-	Kamchatka River, Kamchatka Peninsula, Russia
17353		13-Jun-62	53°09	167°03W	W7052	PS	535	-.2	-	59°55	153°29W	47-1	-	-	-	-	-	-	Iliamna River, Kvichak system, Bristol Bay, Alaska, USA
B. Pink Salmon																			
LL4872, LTD-1100 data tag no. 1587	AA1572	22-Jul-02	55°00	145°00W	W4554	HL	484	0.1	11-Aug-02	58°06	152°28W	56-3	PS	-	-	-	-	-	Duck Bay, Afognak Island, Kodiak, Alaska, USA

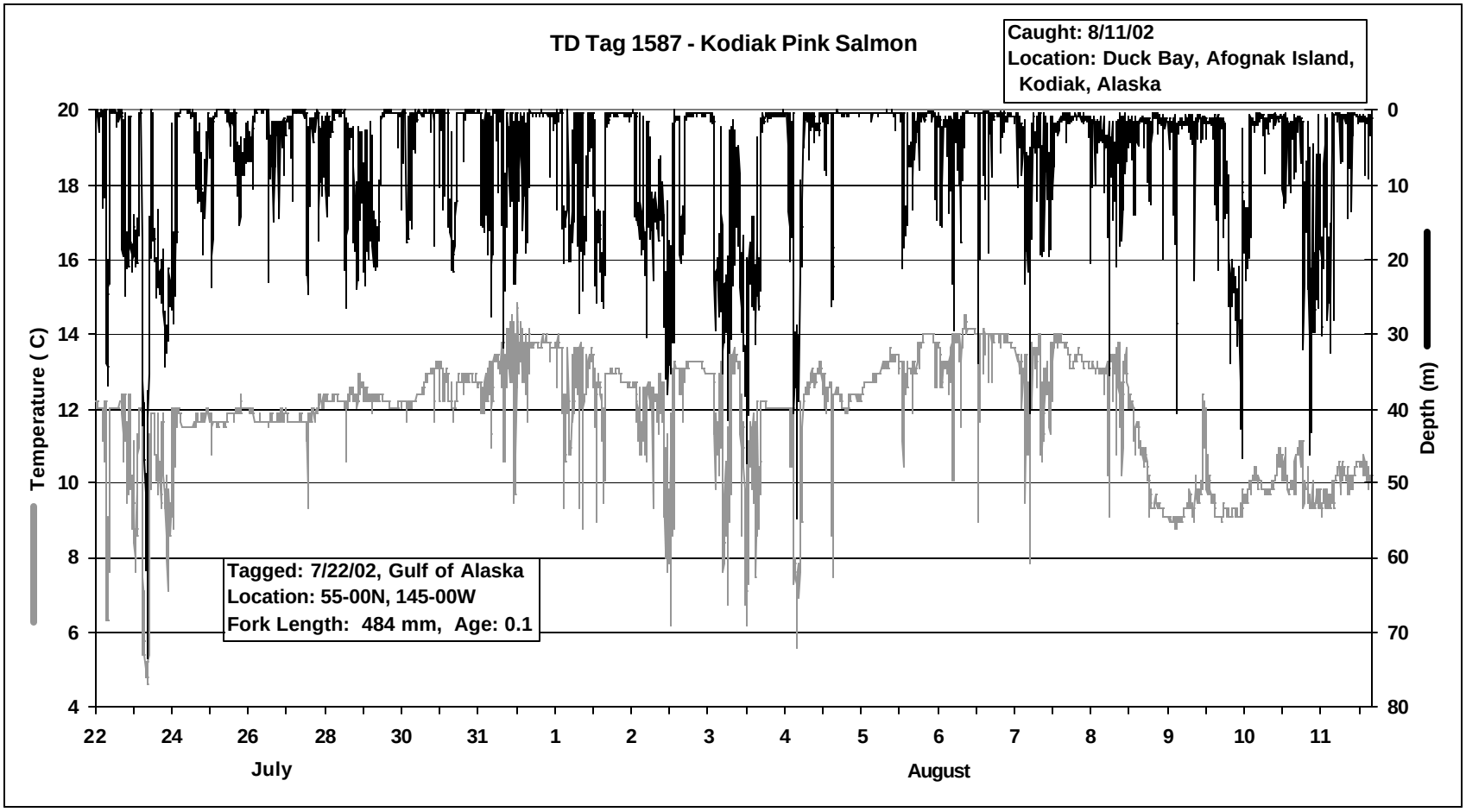

Figure 1. Temperature and depth data recorded on a data storage tag placed on a 484 mm pink salmon in the Gulf of Alaska on 22 July 2002 and recovered in Duck Bay, Afognak Island, Kodiak, Alaska, on 11 August 2002.

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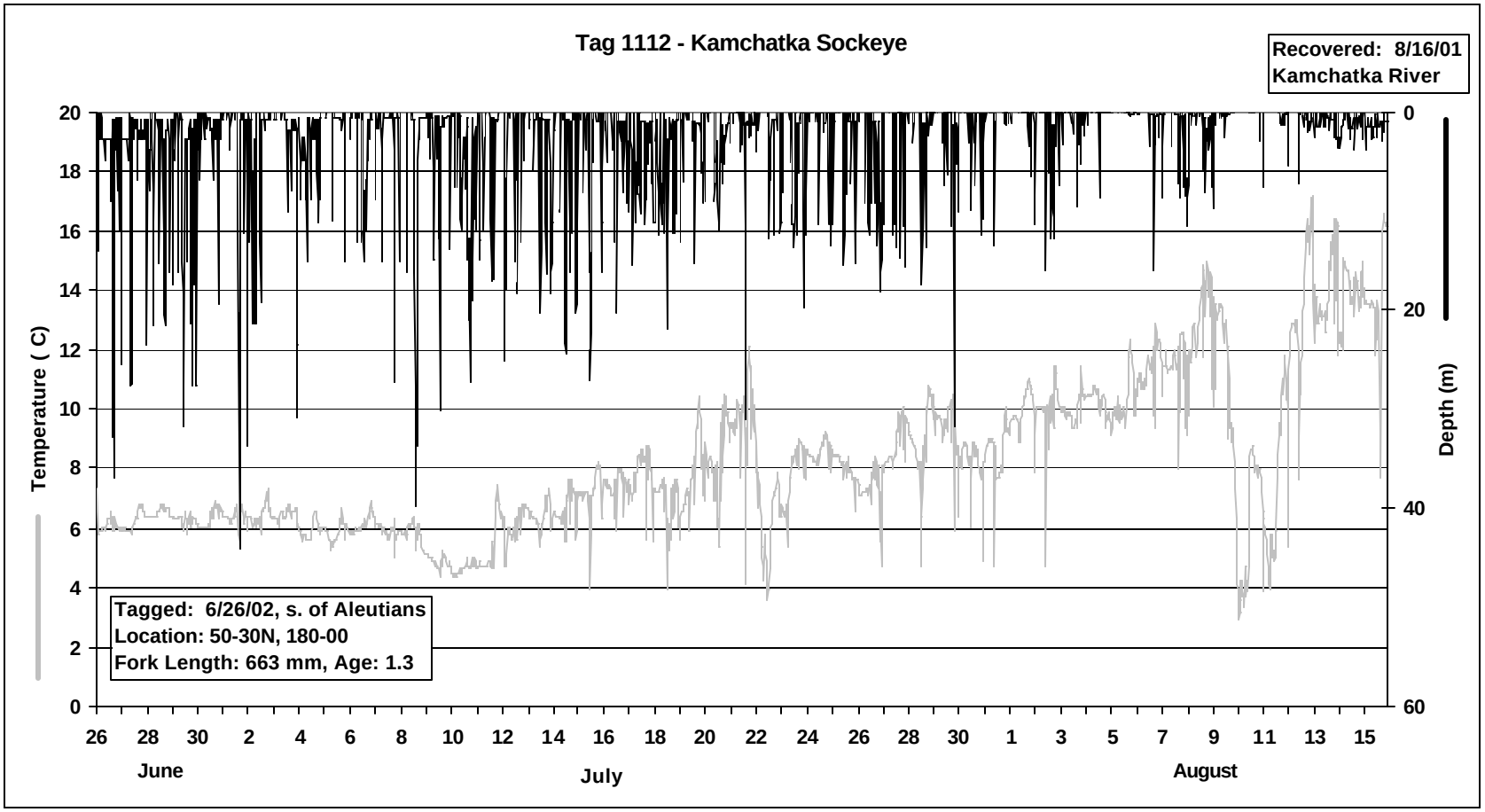

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Figure 2. Temperature and depth data recorded on a data storage tag placed on a 663 mm sockeye salmon in the central North Pacific on 26 June 2001 and recovered in the Kamchatka River, eastern Kamchatka, on 16 August 2001.