

October 14, 2004

F/V *Alaskan Leader*
Cruise Report AL-02-01
Longline Survey of the Gulf of Alaska and Eastern Aleutian Islands
June 3-September 5, 2002

Prepared by

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On September 5, 2002, the, Alaska Fisheries Science Center (AFSC), completed the twenty-second annual longline survey of Alaska sablefish (*Anoplopoma fimbria*) resources of the upper continental slope (Figure 1). The present NMFS survey was designed to continue the time series (1979-94) of the discontinued Japan-U.S. cooperative longline survey of the Gulf of Alaska. NMFS has surveyed the Gulf of Alaska annually since 1987, the eastern Aleutian Islands biennially since 1996, and the eastern Bering Sea biennially since 1997. The Gulf of Alaska and eastern Aleutian Islands were sampled in 2002.

OBJECTIVES

1. Determine the relative abundance and size composition of the commercially important species: sablefish, shortspine thornyhead (*Sebastolobus alascanus*), Greenland turbot (*Reinhardtius hippoglossoides*) and rougheye and shortraker rockfishes (*Sebastes aleutianus* and *S. borealis*)
2. Determine the relative abundance and size composition of other groundfish species caught during the survey: Pacific cod (*Gadus macrocephalus*), arrowtooth flounder (*Atheresthes stomias*), grenadiers (Macrouridae), and the relative abundance of Pacific halibut (*Hippoglossus stenolepis*).
3. Tag and release sablefish, shortspine thornyhead, and Greenland turbot throughout the cruise to determine migration patterns.

4. Collect sablefish otoliths to study the age composition of the population.
5. Conduct surface-gillnet sampling to examine distribution and abundance of young-of-the-year sablefish.
6. Implant sablefish with electronic tags that record water temperature, depth, and time.
7. Test the effect of hook spacing on sablefish catch rates.

VESSEL AND GEAR

Survey operations were conducted using the F/V *Alaskan Leader*, a chartered U.S. longline vessel. The 46 m (150 ft) vessel carried standard longline hauling gear and was equipped with radios, radars, GPS receivers, LORAN receivers, video and paper track plotters, a processing line, three sets of plate freezers, and refrigerated holds. Vessel personnel consisted of a captain, an engineer, a first mate, a cook, a quality-control technician, three fishermen, four baiters and three processors, two contract biologists, and one or two NMFS biologists .

Gear configuration was unchanged from that of the 1988-2001 surveys. Units of gear (skates) were 100 m (55 fm) long and contained 45 size 13/0 Mustad¹ circle hooks. Hooks were attached to 38 cm (15 in) gangions that were secured to beackets tied into the groundline at 2 m (6.5 ft) intervals. Five meters (16 ft) of groundline were left bare at each end. Gangions were constructed of medium lay #60 thread nylon, becket material was medium lay #72 thread nylon, and groundline was medium lay 9.5 mm (3/8 in) diameter nylon.

A set of gear consisted of a flag and buoy array at each end. Each flag was followed sequentially by a 183-1,281 m (100-700 fm) long 9.5 mm diameter nylon buoyline, a 92 m (50 fm) section of 9.5 mm polypropylene floating line, a 16 kg (35 lb) piece of chain (to dampen the effect of wave surge on the buoyline), 92 m of 9.5 mm nylon line, a 27 kg (60 lb) halibut anchor, and 366 m (200 fm) of 9.5 mm nylon line. The groundline was weighted with 3.2 kg (7 lb) lead balls at the end of each skate. Hooks were hand baited with chopped squid (*Illex*) at a rate of about 5.7 kg (12.5 lb) per 100 hooks. Squid heads and tentacles were not used for bait.

Total groundline set each day was 16 km (8.6 nmi) long and contained 160 skates and 7,200 hooks. Two eighty-skate groundlines laid end to end were set at each station along the upper continental slope. A single groundline of eighty skates was set at each station in the gullies. Two stations spaced 3.5-7 km (2-4 nmi) apart usually will be sampled each day in the gullies. Fewer skates are needed to sample a

¹ Citation of the above brand name does not constitute U.S. government endorsement.

gully compared to a slope station, 80 vs. 160, because of the narrower range of depths covered in gullies. Only Amatuli Gully station 87 consists of 160 skates because it was created during the Japan-U.S. cooperative longline survey, whereas all other gully stations were created during the domestic longline survey.

OPERATIONS

The charter began on June 3 at Unalaska, Alaska, and ended on September 5 in Unalaska. The charter period was divided into eight legs of 15, 11, 8, 15, 2, 12, 10 and 15 days with one-day port calls after the fourth, fifth, and seventh legs. A two-day port call in Seward occurred after leg 6 and a three-day port call in Ketchikan after leg 3. During leg 1, the stations along the upper continental slope of the eastern Aleutian Islands were sampled. During leg 2 the area in the Gulf of Alaska extending from the western end of Umnak Island and eastward to Sand Point was sampled. During leg 3 sea mount sampling was conducted while transiting to Ketchikan. Leg 4 began near Dixon Entrance and continued north and westward to Yakutat. During leg 5 the hook-spacing experiment was conducted in the Yakutat vicinity. During leg 6, the area between Yakutat and Seward was sampled, and during leg 7 the area from Seward to Kodiak was sampled. During leg 8, the area from Kodiak Island to the Sumagin Islands was sampled.

Annual survey periods have varied over time. From 1988 to 1990 the survey period was from June 26 to September 12. The survey periods in 1991 through 1994 were 2-1/2 weeks later than in 1988 through 1990. The 1991-1994 surveys were delayed to avoid the commercial sablefish fishery that started 45 days later than in 1988 through 1990. Starting in 1995, the survey period was moved back to near the 1988-1990 time periods because of the extensive increase in length of the fishing season resulting from the implementation of the Individual Fishing Quota (IFQ) system in the sablefish and Pacific halibut longline fisheries. Beginning in 1998 the order in which the stations were sampled was changed to avoid conflicting with an early July rockfish trawl fishery in the central Gulf of Alaska. Instead of continuing to sample in an easterly direction from Sand Point to Dixon Entrance, the survey vessel completed the second leg and transited to Dixon Entrance during early July. Survey operations were resumed sampling in a westerly direction going from Dixon Entrance to Sand Point.

Hook-Spacing Experiment

A longline hook-spacing experiment was conducted near Yakutat during 25-26 July 2002. The purpose of the experiment was to test an assumption on how to interpret longline fishery catch rates. The fishery catch per skate is assumed to be an index of relative abundance, for example, a 10% difference in catch rate reflects a 10% difference in relative abundance. This assumption would be wrong if increasing the hook spacing increased the fishing power of each hook. Most (about 70%) sablefish longline fishermen currently use 1 meter hook spacing, but this spacing differs among vessels

and may change with time. In the hook-spacing experiment, circle hooks (size 13/0) baited with squid were used. Four hook spacings were tested, 0.5, 1, 2, and 4 m. Six sets were completed. Each set contained all hook spacings. For both this experiment and earlier hook spacing experiments conducted in 1986, 1999 and 2001, catch rate per hook increased as hook spacing increased to an asymptote at four meter spacing. Catch per hook for one-meter spacing, the most common spacing currently in the fishery, was about half that for the four-meter spacing. These results imply that analysis of fishery catch rates should be standardized by longline set to account for differences in hook spacing.

Survey Operations

A total of 87 stations was sampled during the 2002 survey. Fourteen stations were sampled along the upper continental slope of the eastern Aleutian Islands and 45 stations along the upper continental slope of the Gulf of Alaska at a rate of one station per day (Figure 1). Surveyed depths ranged from approximately 200 to 1,000 m, although at some stations, depths less than 150 m or more than 1,000 m were sampled (Table 1). In addition, twenty-seven stations were sampled in gullies at the rate of one to two stations per day. The sampled gullies were Shelikof Trough, Amatuli Gully, W-grounds, Yakutat Valley, Spencer Gully, Ommaney Trench, and Dixon Entrance. One station (42) was sampled on the continental shelf off Baranof Island.

The gear was set from shallow to deep and was retrieved in the same order, except on occasions when groundlines parted or sea conditions dictated that it be pulled from the opposite direction. Setting began about 0630 h Alaska Daylight Time. Retrieval began about 0930 h and was completed by about 1930 h.

A floating gillnet was fished at night to examine the distribution and abundance of young-of-the-year sablefish. The net was set at each station, weather permitting. The gillnet is 200 m long and 3 m deep with variable mesh sizes from 0.75" (1.91 mm) to 1.5" (3.81 mm). The gillnet was set about midnight and retrieved before the longline gear was set at 0630. All fish caught in the gillnet were counted and measured for length. Juvenile sablefish and salmon are frozen for additional studies back at the laboratory.

Data Collection

Catch data were recorded on a hand-held electronic data logger. During gear retrieval a scientist recorded the species of each hooked fish, the condition of each unoccupied hook (absent, broken, or tangled), and whether bait remained on the hook. Time of day was recorded constantly from an internal clock and depth was entered when the first and last skates came aboard, at the beginning of each fifth skate, and when crossing into a new depth interval (0-100 m, 101-200 m, 201-300 m, 301-400 m, 401-600 m, 601-800 m, 801-1,000 m and 1,001-1,200 m).

Length frequency data were collected electronically with a bar code-based measuring board and a bar code reader/data storage device. Length was measured by depth interval for sablefish, Pacific cod, grenadiers, arrowtooth flounder, rockfish, and thornyheads. Lengths of sablefish and Pacific cod also were recorded by sex. Pacific halibut were counted and released at the rail without measuring. Catch and length frequency data were transferred to a computer and electronically backed up twice a day. As in the previous surveys, the charter vessel was allowed to retain sablefish and rockfish not tagged or retained for biological samples and after the scientific data were recorded.

RESULTS

One hundred-forty-eight longline hauls (sets) were completed (Table 1). Sablefish was the most frequently caught species, followed by giant grenadiers, Pacific cod, shortspine thornyhead, and other species (Table 2). A total of 87,141 sablefish, with an estimated total round weight of 292,139 kg (644,166 lb), was taken during the survey (Table 3).

The highest total sablefish catch was observed at station 74 in the eastern Gulf of Alaska (Table 2). Station 99 in northern southeast Alaska had the largest average length sablefish (Table 3).

A total of 4,423 sablefish, 588 shortspine thornyhead, and 26 Greenland turbot were tagged and released during the survey. Length-weight data and otoliths were collected from 2,409 sablefish. Twenty-one gillnet sets were completed. Electronic tags were implanted in 136 sablefish. No young-of-the-year sablefish were caught during the survey.

Killer whales preying on sablefish coming up on the gear were observed at stations 62, 63, 64, and 65 in the western Gulf of Alaska. Sperm whales preying on sablefish coming up on the gear were observed at stations 88 and 90 in the eastern Gulf of Alaska.

SCIENTIFIC PERSONNEL

Leg I (June 3 - June 17)
Larry Haaga, Field Party Chief, RACE
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

Leg II (June 18- June 28)
Chris Lunsford, Field Party Chief, ABL
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

Leg III (June 29 - July 6)
Nancy Maloney, Field Party Chief, ABL
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

Leg IV (July 9 - July 23)
John Karinen, Field Party Chief, ABL
Doris Alcorn, Contract Biologist
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

Leg V (July 25 - July 26)
Chris Lunsford, Field Party Chief, ABL
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

Leg VI (July 28- August 8)
Dave Clausen, Field Party Chief, ABL
Lee Hulbert, Fisheries Biologist, ABL
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

Leg VII (August 11 - August 20)
Dean Courtney, Field Party Chief, RACE
Dave Clausen, Fisheries Biologist, ABL
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

Leg VIII (August 22 - September 5)
Larry Haaga, Field Party Chief, RACE
Suzanne Romain, Contract Biologist
Ken Orwig, Contract Biologist

ABL - Auke Bay Laboratory
RACE - Resource Assessment and Conservation Engineering Division

For further information contact either

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Table 1.--Haul number (set), preassigned station number, and starting and ending positions and depths for the 2002 NMFS longline survey of the Eastern Aleutian Islands and Gulf of Alaska, June 3- September 5.

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.mm)	End latitude (ddmm.m)	End longitude (dddmm.mm)	Start depth (m)	End depth (m)
Eastern Aleutian Islands							
1	35	5301.8	17005.71	5303.6	17011.35	170	182
2	35	5303.5	17011.40	5305.6	17016.37	175	639
3	37	5216.7	17329.61	5220.8	17329.83	154	619
4	37	5221.6	17329.51	5225.2	17330.25	635	777
5	38	5215.2	17450.80	5218.7	17447.11	174	487
6	38	5219.2	17446.16	5220.9	17440.50	480	825
7	39	5208.6	17536.26	5209.4	17542.22	138	538
8	39	5209.6	17542.53	5210.3	17548.92	529	740
9	40	5158.2	17627.12	5201.8	17626.04	109	587
10	40	5202.2	17624.45	5204.0	17619.38	645	864
11	42	5146.4	17857.88	5143.0	17854.01	172	496
12	42	5142.6	17853.00	5139.6	17848.89	520	731
13	54	5145.8	17810.00	5144.3	17816.16	91	368
14	54	5144.0	17817.11	5143.6	17823.11	450	520
15	53	5124.2	17837.08	5121.0	17834.38	177	608
16	53	5121.9	17827.67	5121.2	17834.33	558	564
17	55	5135.5	17736.98	5133.0	17742.44	171	309
18	55	5132.6	17743.2.0	5131.6	17749.05	567	945
19	57	5144.0	17559.96	5139.8	17600.67	187	354
20	57	5139.4	17601.19	5135.6	17604.29	380	722
21	58	5150.8	17508.38	5146.7	17508.67	180	358
22	58	5146.1	17507.32	5142.2	17508.03	393	867
23	59	5152.9	17420.14	5149.7	17423.97	122	383
24	59	5149.2	17425.14	5147.1	17431.34	332	805
25	60	5155.1	17329.94	5152.7	17335.96	108	263
26	60	5152.6	17336.88	5151.3	17343.41	301	720
27	61	5226.3	17018.93	5223.4	17024.62	248	540
28	61	5223.0	17025.20	5219.4	17029.18	551	713
Gulf of Alaska							
29	62	5239.9	16858.8	5237.1	16903.93	135	545
30	62	5237.0	16904.71	5234.7	16907.93	549	945
31	63	5257.6	16808.28	5254.5	16812.46	110	365
32	63	5254.2	16813.2.0	5250.5	16815.17	317	662
33	65	5334.9	16541.28	5330.6	16543.7.0	120	293
34	65	5326.2	16547.54	5329.5	16544.94	336	484
35	64	5311.6	16651.52	5307.4	16653.76	208	312
36	64	5307.0	16654.13	5303.3	16657.7	324	805
37	66	5344.1	16428.46	5340.8	16433.73	136	305
38	66	5340.2	16434.88	5337.2	16440.92	352	751

Table 1-Continued

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
39	67	5358.0	16315.86	5354.1	16319.68	119	410
40	67	5353.9	16320.72	5351.6	16327.41	546	793
41	68	5408.0	16138.41	5405.2	16143.44	122	377
42	68	5405.4	16144.42	5403.7	16150.07	271	858
43	69	5418.7	16103.73	5415.5	16109.08	183	413
44	69	5415.3	16110.38	5412.4	16115.17	435	819
45	70	5421.8	16014.4	5417.7	16018.28	143	710
46	70	5417.3	16018.95	5413.2	16020.86	725	319
47	71	5430.6	15915.74	5426.6	15919.47	338	642
48	71	5426.2	15920.31	5422.8	15924.53	139	271
49	148	5438.8	13250.29	5435.8	13255.55	280	683
50	149	5436.0	13301.17	5436.0	13308.00	146	379
51	108	5427.9	13355.03	5429.4	13400.93	306	648
52	108	5430.1	13401.26	5433.7	13404.41	522	929
53	107	5454.2	13427.07	5457.5	13420.77	219	549
54	107	5458.1	13421.90	5500.7	13427.00	412	919
55	106	5520.8	13444.41	5523.4	13449.94	406	619
56	106	5523.9	13450.06	5523.4	13457.17	458	819
57	105	5533.4	13457.95	5533.8	13502.90	245	658
58	105	5534.6	13502.79	5536.6	13507.92	496	919
59	144	5555.7	13454.54	5559.8	13455.42	175	362
60	145	5602.2	13456.11	5605.3	13501.7.0	344	382
61	104	5558.8	13526.71	5601.0	13531.81	374	622
62	104	5601.7	13532.25	5604.6	13536.85	606	838
63	103	5623.0	13521.04	5622.9	13528.74	156	187
64	103	5623.0	13529.31	5622.1	13536.75	188	245
65	102	5651.3	13600.00	5653.3	13605.22	216	690
66	102	5654.6	13605.74	5658.2	13607.05	583	938
67	101	5712.5	13614.31	5712.5	13620.45	219	654
68	101	5713.4	13621.58	5717.3	13623.44	793	1,035
69	100	5737.1	13632.18	5736.7	13638.81	218	815
70	100	5737.2	13640.30	5739.6	13646.19	664	945
71	142	5755.1	13700.51	5755.2	13708.52	395	444
72	143	5758.1	13704.64	5758.0	13712.78	236	419
73	99	5752.2	13723.17	5753.2	13730.45	200	720
74	99	5753.5	13731.32	5753.6	13738.57	548	845
75	98	5808.6	13844.03	5809.3	13851.79	205	851
76	98	5809.8	13852.58	5810.8	13858.48	512	830
77	97	5828.3	13928.19	5827.7	13935.86	193	506
78	97	5827.8	13937.00	5825.1	13942.22	419	948
79	138	5924.9	14056.68	5925.5	14104.80	229	293
80	139	5924.8	14110.25	5921.1	14115.26	320	325
81	96	5841.1	14039.13	5841.5	14047.21	275	522
82	96	5841.5	14047.63	5843.9	14054.36	643	753

Table 1.-Continued

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
83	95	5902.8	14121.00	5902.66	14129.75	300	590
84	95	5903.6	14130.75	5902.89	14138.27	588	890
85	94	5923.3	14210.24	5925.5	14218.00	235	445
86	94	5926.0	14210.00	5928.4	14224.10	396	910
87	93	5933.0	14234.45	5935.1	14240.87	131	610
88	93	5936.0	14247.78	5934.1	14248.50	570	656
89	137	5940.2	14323.60	5942.6	14329.77	293	312
90	136	5944.5	14335.67	5946.3	14343.53	155	293
91	92	5933.2	14339.90	5933.8	14348.20	175	780
92	92	5933.9	14349.70	5935.1	14357.60	600	930
93	91	5931.0	14443.25	5928.6	14450.73	180	567
94	91	5928.6	14451.73	5921.8	14459.12	496	888
95	90	5930.1	14532.60	5931.1	14540.70	158	895
96	90	5931.4	14541.34	5931.2	14549.90	374	748
97	89	5916.0	14651.60	5913.5	14657.20	190	550
98	89	5913.4	14658.20	5910.7	14704.10	565	750
99	88	5909.1	14736.96	5904.9	14737.40	232	496
100	88	5904.4	14737.92	5900.2	14738.26	503	935
101	134	5936.9	14658.60	5933.1	14703.49	209	213
102	135	5930.8	14709.22	5926.5	14708.88	209	217
103	87	5907.1	14838.25	5902.8	14838.37	160	218
104	87	5902.4	14838.82	5858.1	14838.05	227	249
105	132	5904.6	14924.30	5902.2	14931.07	187	226
106	133	5857.0	14931.03	5855.0	14937.80	239	242
107	130	5846.6	14903.18	5844.1	14910.81	183	225
108	131	5851.0	14855.02	5848.2	14901.81	235	255
109	86	5836.9	14819.97	5841.2	14820.09	280	440
110	86	5837.0	14820.57	5832.6	14819.65	420	987
111	85	5817.5	14837.28	5813.5	14839.18	235	500
112	85	5812.9	14839.22	5809.0	14841.85	545	836
113	84	5758.4	14910.09	5754.9	14914.64	164	487
114	84	5754.6	14915.98	5751.5	14920.02	500	922
115	128	5800.1	14950.48	5758.6	14958.73	215	262
116	129	5805.0	14954.86	5803.6	15002.98	293	312
117	83	5738.2	14955.32	5734.0	14957.09	380	545
118	83	5733.8	14959.32	5729.4	14959.32	550	874
119	82	5723.9	15034.47	5719.6	15035.22	216	509
120	82	5719.4	15036.29	5714.9	15035.85	516	735
121	81	5703.2	15113.47	5703.2	15115.87	250	516
122	81	5702.3	15117.21	5657.9	15116.80	593	854
123	80	5629.0	1521300	5625.5	15217.47	138	475
124	80	5625.2	15218.27	5621.5	15220.56	477	800
125	79	5618.0	15305.20	5615.8	15311.01	251	509

Table 1.-Continued

Haul no.	Station no.	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
126	79	5615.9	15312.22	5612.8	15316.60	535	806
127	78	5558.8	15402.08	5554.8	15402.15	261	538
128	78	5554.1	15402.85	5550.0	15405.20	590	877
129	77	5602.5	15434.10	5557.3	15434.00	238	535
130	77	5557.1	15434.63	5553.8	15434.84	564	883
131	76	5541.2	15511.27	5545.9	15508.60	155	317
132	76	5537.9	15516.38	5516.38	15512.41	372	572
133	75	5538.3	15551.07	5534.0	15551.97	146	213
134	75	5533.6	15552.07	5529.3	15550.04	210	217
135	122	5611.0	15557.79	5610.9	15604.96	191	238
136	123	5614.0	15607.79	5615.3	15615.00	247	267
137	127	5919.5	15523.07	5720.8	15515.29	246	257
138	126	5721.1	15510.48	5721.2	15502.48	241	242
139	124	5659.6	15503.96	5659.8	15512.20	177	235
140	125	5659.9	15518.25	5702.7	15524.18	253	264
141	120	5546.5	15604.77	5545.1	15611.27	202	240
142	121	5549.9	15612.42	5543.7	15619.93	242	248
143	74	5514.4	15640.34	5510.5	15643.93	158	351
144	74	5510.0	15644.51	5505.8	15645.72	342	800
145	73	5451.1	15744.64	5447.2	15748.66	180	400
146	73	5446.1	15749.86	5442.7	15752.26	367	630
147	72	5437.1	15835.13	5433.1	15838.42	125	390
148	72	5433.4	15839.65	5429.7	15843.04	374	867

Table 2.—Catch in number by species for the 2002 NMFS longline survey of the Eastern Aleutian Islands and the Gulf of Alaska June 3 - September 5. SF = sablefish, PC = Pacific cod, GR = giant grenadiers, PH = Pacific halibut, ATF = arrowtooth flounder, GT = Greenland Turbot, RF = rougheye and shortraker rockfish, ST = thornyheads, SK = skate, OS = other species.

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
Eastern Aleutian Islands										
35	42	2,212	85	696	213	11	77	1	365	195
37	647	113	1,105	37	161	189	12	15	129	45
38	507	131	547	14	159	264	81	241	23	59
39	586	189	2,268	161	96	42	133	150	17	94
40	340	588	1,607	64	62	55	87	142	39	121
42	89	110	2,313	106	35	7	81	17	219	330
53	297	158	2,626	20	34	33	59	44	60	284
54	86	807	2,025	173	34	20	333	38	83	547
55	93	301	1,759	76	63	7	92	107	57	146
57	244	206	1,261	129	52	18	48	49	109	129
58	209	154	1,489	103	46	13	147	161	102	83
59	289	242	1,287	170	113	0	371	121	39	185
60	191	715	1,185	84	34	3	638	31	21	271
61	147	0	205	145	18	18	52	149	278	105
Gulf of Alaska										
63	687	412	521	323	232	0	502	147	65	41
65	871	595	85	95	78	0	13	29	16	29
66	1,977	53	2,113	41	72	9	39	147	7	22
67	928	635	1,474	276	188	0	121	124	40	104
68	1,317	763	977	271	276	0	407	241	55	52
69	760	370	2,358	113	112	0	78	236	9	37
70	687	867	2,011	190	145	1	141	129	23	138
71	1,143	799	979	183	192	0	120	268	20	45
72	1,589	320	1,084	184	43	0	31	460	22	101
73	704	21	1,369	77	178	0	97	441	5	57
74	2,780	35	726	101	92	0	23	502	10	96
75	1,384	548	0	405	524	0	6	0	94	71
76	944	71	568	221	210	0	69	123	134	495
77	1,596	0	1,414	20	90	0	64	454	27	123
78	1,431	0	770	95	100	0	170	315	16	595
79	2,790	0	748	18	41	0	10	309	0	71
80	801	18	537	345	174	0	118	373	29	94
81	1,701	0	1,207	19	95	0	20	170	2	604
82	1,566	0	427	358	114	0	42	131	0	251
83	1,869	0	1,407	0	2	0	1	249	1	166
84	1,782	101	628	234	134	1	51	211	36	257
85	1,897	8	546	77	111	0	67	261	50	106
86	1,545	0	519	214	59	0	198	252	25	133
87	1,807	25	0	295	186	0	10	80	196	90
88	2,174	15	420	22	64	0	325	165	20	461
89	1,860	4	296	52	41	0	20	209	36	121
90	1,206	8	216	220	9	0	199	212	31	76
91	1,841	1	266	58	27	0	169	210	12	104
92	1,158	1	162	1	11	1	17	240	2	145
93	1,944	0	138	71	8	0	27	263	13	28
94	883	0	209	64	174	0	262	219	21	292

Table 2.-continued.

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
95	2,089	0	350	10	122	0	371	263	13	91
96	1,828	0	359	5	26	0	338	148	31	153
97	858	0	493	25	59	0	503	165	30	28
98	837	0	558	12	14	0	589	66	8	90
99	826	0	231	8	7	0	119	140	22	88
100	1,072	1	568	6	21	0	90	160	4	103
101	1,146	0	555	21	39	0	148	184	5	166
102	1,043	0	492	13	72	0	103	157	7	117
103	181	118	0	546	21	0	0	0	61	737
104	1,161	0	493	4	61	0	231	333	24	119
105	1,382	19	356	50	24	0	91	229	21	150
106	1,499	0	253	5	21	0	294	219	14	126
107	1,429	5	326	26	31	0	697	159	22	188
108	1,543	0	252	31	47	0	676	95	26	131
120	860	468	0	195	150	0	1	0	141	37
121	1,037	164	0	121	131	0	0	0	214	42
122	1,244	222	0	76	103	0	1	0	123	36
123	1,032	321	0	59	99	0	0	0	275	30
124	707	275	0	102	164	0	2	0	204	27
125	562	269	0	209	131	0	2	1	222	32
126	341	226	0	133	55	0	0	0	227	45
127	672	100	0	97	17	0	2	2	238	35
128	880	11	0	247	479	0	0	8	11	15
129	1,012	0	0	120	214	0	0	20	31	8
130	1,033	0	0	22	21	0	2	32	53	1
131	1,528	1	0	58	41	0	3	35	44	26
132	1,028	4	0	91	66	0	3	18	184	22
133	1,560	0	0	40	87	0	5	20	49	20
134	273	0	0	15	67	0	70	18	94	145
135	132	0	0	71	17	0	65	22	63	143
136	547	0	0	40	28	0	3	23	75	57
137	564	0	0	24	9	0	5	33	46	9
138	313	1	0	74	80	0	82	100	56	59
139	982	0	0	67	58	0	72	35	157	5
142	551	0	169	2	15	0	15	121	4	32
143	931	0	77	67	65	0	47	44	18	40
144	226	26	0	95	117	0	154	196	43	84
145	1,071	0	5	28	79	0	51	221	31	33
148	767	146	0	72	85	0	9	141	174	308
149	1,005	0	0	48	39	0	15	267	212	148
Total	87,141	13,973	49,474	9,556	7,884	692	10,487	12,111	5,835	11,535

Table 3.- Mean length, round weight, mean dressed weight, number and estimated total round weight of sablefish by station, for the 2002 NMFS longline survey of the Eastern Aleutian Islands and the Gulf of Alaska, June 3 - September 5.

Station Number	Mean length (cm)	Mean round weight (kg) ²	Mean dressed weight (lb) ³	Number of sablefish	Estimated total round weight (kg) ⁴
Eastern Aleutian Islands					
35	68.42	3.56	4.94	42	149
37	62.15	2.53	3.52	647	1,638
38	67.1	3.28	4.55	507	1,661
39	65.45	3.01	4.18	586	1,763
40	67.74	3.4	4.72	340	1,155
42	70.51	4.04	5.61	89	360
53	66.95	3.27	4.54	297	972
54	71.39	4.2	5.84	86	361
55	65.1	2.98	4.14	93	277
57	64.86	2.93	4.07	244	715
58	63.68	2.84	3.95	209	594
59	68.26	3.51	4.88	289	1,015
60	70.36	4.19	5.83	191	801
61	66.14	3.16	4.38	147	464
Gulf of Alaska					
63	65.74	3.07	4.26	687	2,109
65	64.11	2.8	3.89	871	2,439
66	61.2	2.44	3.38	1,977	4,815
67	65.04	3.02	4.2	928	2,804
68	68.03	3.48	4.84	1,317	4,589
69	64.82	3.13	4.35	760	2,382
70	62.74	2.71	3.77	687	1,863
71	64.68	2.93	4.07	1,143	3,347
72	67.74	3.4	4.72	1,589	5,401
73	62.45	2.68	3.72	704	1,886
74	67.94	3.44	4.78	2,780	9,562
75	63.28	2.68	3.72	1,384	3,709
76	64.36	2.9	4.03	944	2,738

² Mean weight was estimated by applying a length-weight relationship to the length frequency distribution from each station.

³ Mean dressed weight was estimated using a recovery rate of 0.6 of round weight in pounds.

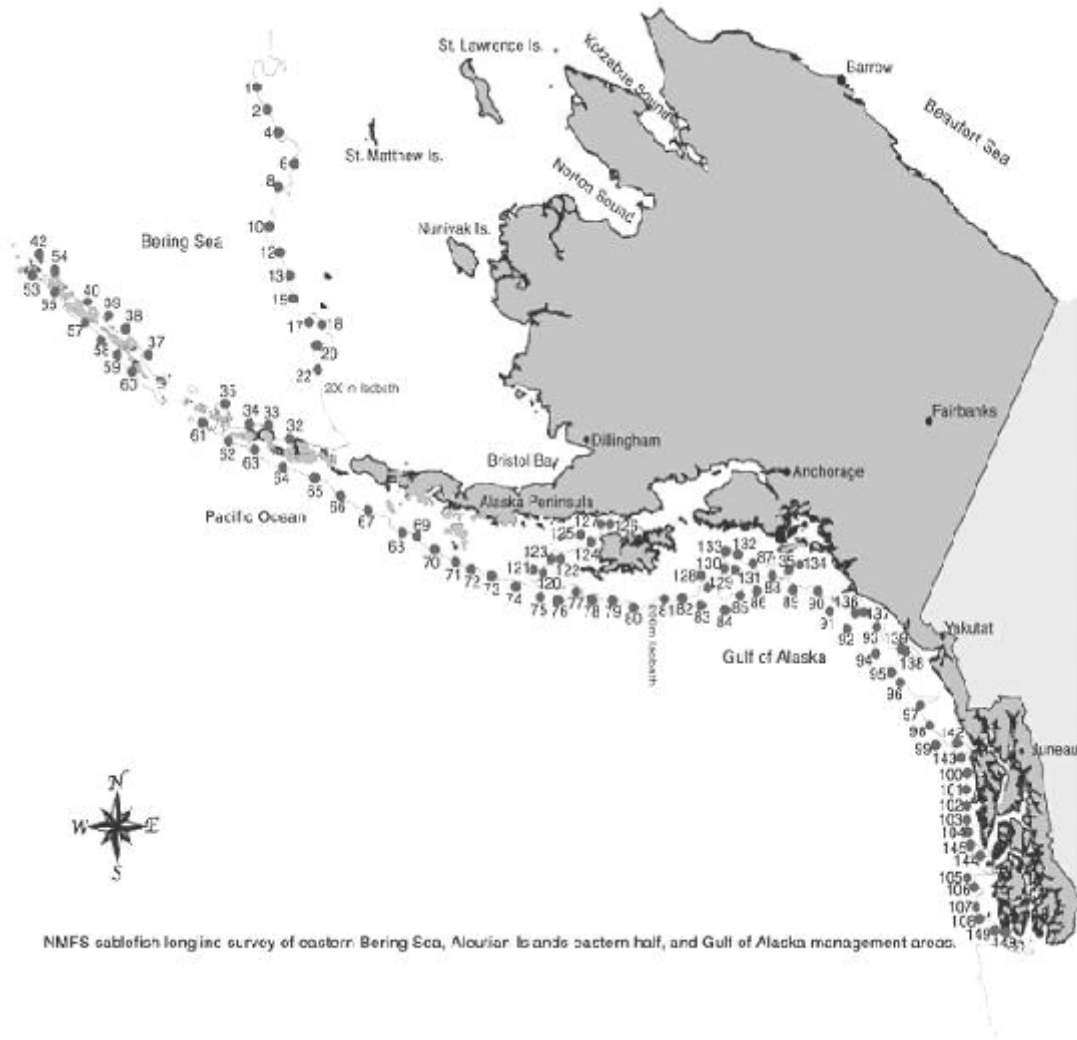
⁴ Estimated total round weight is the product of mean round weight and the number of hooked sablefish that came to the surface, including a small percentage that was lost during landing.

Table 3-continued

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
77	69	3.66	5.08	1,596	5,838
78	70.83	4.01	5.56	1,431	5,733
81	70.09	3.86	5.35	1,701	6,558
82	66.48	3.21	4.45	1,566	5,019
83	68.91	3.66	5.09	1,869	6,845
84	67.4	3.39	4.71	1,782	6,049
85	67.57	3.41	4.73	1,897	6,461
86	69.17	3.72	5.16	1,545	5,744
87	65.8	3.23	4.49	1,807	5,843
88	67.93	3.48	4.84	2,174	7,573
89	68.26	3.55	4.93	1,860	6,606
90	65.7	3.11	4.32	1,206	3,750
91	68.64	3.63	5.05	1,841	6,691
92	64.37	3	4.17	1,158	3,476
93	67.61	3.41	4.74	1,944	6,638
94	65.77	3.18	4.41	883	2,807
95	70.76	3.97	5.52	2,089	8,302
96	67.82	3.47	4.82	1,828	6,341
97	69.52	4.11	5.71	858	3,526
98	71.92	4.42	6.13	837	3,697
99	74.36	4.83	6.71	826	3,989
100	72.41	4.35	6.05	1,072	4,668
101	71.78	4.26	5.91	1,146	4,878
102	73.02	4.55	6.32	1,043	4,749
103	57.41	2.16	2.99	181	390
104	69.79	3.92	5.44	1,161	4,549
105	70.41	4.06	5.63	1,382	5,604
106	69.97	3.95	5.49	1,499	5,924
107	71.93	4.31	5.99	1,429	6,161
108	69.65	3.88	5.39	1,543	5,992
120	63.27	2.67	3.72	860	2,300
121	63.27	2.67	3.71	1,037	2,768
122	63.08	2.65	3.69	1,244	3,303
123	65.26	2.97	4.12	1,032	3,060
124	64.08	2.78	3.86	707	1,966
125	63.73	2.74	3.81	562	1,541
126	63.31	2.69	3.74	341	918
127	61.61	2.75	3.82	672	1,851
128	62.51	2.58	3.59	880	2,272
129	65.75	3.14	4.36	1,012	3,178
130	62.26	2.64	3.67	1,033	2,727
131	68.91	3.66	5.08	1,528	5,591

Table 3-continued

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
132	62.16	2.63	3.65	1,028	2,703
133	57.25	2.02	2.8	1,560	3,149
134	61.99	2.66	3.69	273	726
135	60.22	2.60	3.77	132	310
136	62.14	2.69	3.89	547	1,489
137	62.31	2.76	3.83	564	1,556
138	61.28	2.73	3.79	313	855
139	60.59	2.46	3.42	982	2,415
142	69.11	3.76	5.23	551	2,074
143	64.54	3.04	4.22	931	2,827
144	70.23	4.25	5.91	226	961
145	69.57	4.02	5.59	1,071	4,307
148	61.43	2.55	3.55	767	1,959
149	62.09	2.56	3.56	1,005	2,574
Total				87,141	292,139



NMFS sablefish longline survey of eastern Bering Sea, Norton Islands eastern half, and Gulf of Alaska management areas.