

March 14, 2003

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 roughey and shorttraker 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 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.

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

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	710	745
2	35	5303.5	17011.40	5305.6	17016.37	755	830
3	37	5216.7	17329.61	5220.8	17329.83	635	712
4	37	5221.6	17329.51	5225.2	17330.25	728	810
5	38	5215.2	17450.80	5218.7	17447.11	630	710
6	38	5219.2	17446.16	5220.9	17440.50	720	800
7	39	5208.6	17536.26	5209.4	17542.22	630	710
8	39	5209.6	17542.53	5210.3	17548.92	720	800
9	40	5158.2	17627.12	5201.8	17626.04	630	710
10	40	5202.2	17624.45	5204.0	17619.38	720	800
11	42	5146.4	17857.88	5143.0	17854.01	630	710
12	42	5142.6	17853.00.	5139.6	17848.89	715	755
13	54	5145.8	17810.00	5144.3	17816.16	635	715
14	54	5144.0	17817.11	5143.6	17823.11	725	805
15	53	5124.2	17837.08	5121.0.	17834.38	630	715
16	53	5121.9	17827.67	5121.2	17834.33	1510	1555
17	55	5135.5	17736.98	5133.0	17742.44	630	710
18	55	5132.6	17743.2.0	5131.6	17749.05	720	800
19	57	5144.0	17559.96	5139.8	17600.67	630	710
20	57	5139.4	17601.19	5135.6	17604.29	720	800
21	58	5150.8	17508.38	5146.7	17508.67	635	715
22	58	5146.1	17507.32	5142.2	17508.03	725	805
23	59	5152.9	17420.14	5149.7	17423.97	630	710
24	59	5149.2	17425.14	5147.1	17431.34	720	805
25	60	5155.1	17329.94	5152.7	17335.96	630	710
26	60	5152.6	17336.88	5151.3	17343.41	720	800
27	61	5226.3	17018.93	5223.4	17024.62	630	710
28	61	5223.0	17025.20	5219.4	17029.18	735	815
Gulf of Alaska							
29	62	5239.9	16858.8	5237.1	16903.93	630	715
30	62	5237.0	16904.71	5234.7	16907.93	725	805
31	63	5257.6	16808.28	5254.5	16812.46	635	715
32	63	5254.2	16813.2.0	5250.5	16815.17	725	800
33	65	5334.9	16541.28	5330.6	16543.7.0	630	715
34	65	5326.2	16547.54	5329.5	16544.94	725	805
35	64	5311.6	16651.52	5307.4	16653.76	630	710
36	64	5307.0	16654.13	5303.3	16657.7	715	800
37	66	5344.1	16428.46	5340.8	16433.73	635	715
38	66	5340.2	16434.88	5337.2	16440.92	725	805
39	67	5358.0	16315.86	5354.1	16319.68	635	715
40	67	5353.9	16320.72	5351.6	16327.41	725	810

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)
41	68	5408.0	16138.41	5405.2	16143.44	630	715
42	68	5405.4	16144.42	5403.7	16150.07	725	805
43	69	5418.7	16103.73	5415.5	16109.08	630	715
44	69	5415.3	16110.38	5412.4	16115.17	725	805
45	70	5421.8	16014.4	5417.7	16018.28	630	710
46	70	5417.3	16018.95	5413.2	16020.86	725	805
47	71	5430.6	15915.74	5426.6	15919.47	515	600
48	71	5426.2	15920.31	5422.8	15924.53	610	650
49	148	5438.8	13250.29	5435.8	13255.55	630	710
50	149	5436.0	13301.17	5436.0	13308.00	725	810
51	108	5427.9	13355.03	5429.4	13400.93	640	725
52	108	5430.1	13401.26	5433.7	13404.41	730	820
53	107	5454.2	13427.07	5457.5	13420.77	630	710
54	107	5458.1	13421.90	5500.7	13427.00	720	800
55	106	5520.8	13444.41	5523.4	13449.94	630	715
56	106	5523.9	13450.06	5523.4	13457.17	720	805
57	105	5533.4	13457.95	5533.8	13502.90	630	715
58	105	5534.6	13502.79	5536.6	13507.92	720	805
59	144	5555.7	13454.54	5559.8	13455.42	630	710
60	145	5602.2	13456.11	5605.3	13501.70	725	810
61	104	5558.8	13526.71	5601.0	13531.81	635	720
62	104	5601.7	13532.25	5604.6	13536.85	725	810
63	103	5623.0	13521.04	5622.9	13528.74	530	610
64	103	5623.0	13529.31	5622.1	13536.75	615	655
65	102	5651.3	13600.00	5653.3	13605.22	630	715
66	102	5654.6	13605.74	5658.2	13607.05	720	805
67	101	5712.5	13614.31	5712.5	13620.45	630	715
68	101	5713.4	13621.58	5717.3	13623.44	725	810
69	100	5737.1	13632.18	5736.7	13638.81	630	710
70	100	5737.2	13640.30	5739.6	13646.19	715	805
71	142	5755.1	13700.51	5755.2	13708.52	630	715
72	143	5758.1	13704.64	5758.0	13712.78	740	815
73	99	5752.2	13723.17	5753.2	13730.45	630	715
74	99	5753.5	13731.32	5753.6	13738.57	720	810
75	98	5808.6	13844.03	5809.3	13851.79	630	715
76	98	5809.8	13852.58	5810.8	13858.48	720	810
77	97	5828.3	13928.19	5827.7	13935.86	635	720
78	97	5827.8	13937.00	5825.1	13942.22	725	810
79	138	5924.9	14056.68	5925.5	14104.80	630	707
80	139	5924.8	14110.25	5921.1	14115.26	725	805
81	96	5841.1	14039.13	5841.5	14047.21	630	715
82	96	5841.5	14047.63	5843.9	14054.36	722	800
83	95	5902.8	14121.00	5902.66	14129.75	630	715

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)
84	95	5903.6	14130.75	5902.89	14138.27	720	805
85	94	5923.3	14210.24	5925.5	14218.00	630	710
86	94	5926.0	14210.00	5928.4	14224.10	725	805
87	93	5933.0	14234.45	5935.1	14240.87	630	715
88	93	5936.0	14247.78	5934.1	14248.50	720	800
89	137	5940.2	14323.60	5942.6	14329.77	630	710
90	136	5944.5	14335.67	5946.3	14343.53	730	810
91	92	5933.2	14339.90	5933.8	14348.20	630	715
92	92	5933.9	14349.70	5935.1	14357.60	720	800
93	91	5931.0	14443.25	5928.6	14450.73	630	710
94	91	5928.6	14451.73	5921.8	14459.12	720	805
95	90	5930.1	14532.60	5931.1	14540.70	630	710
96	90	5931.4	14541.34	5931.2	14549.90	720	805
97	89	5916.0	14651.60	5913.5	14657.20	630	715
98	89	5913.4	14658.20	5910.7	14704.10	725	805
99	88	5909.1	14736.96	5904.9	14737.40	630	710
100	88	5904.4	14737.92	5900.2	14738.26	720	805
101	134	5936.9	14658.60	5933.1	14703.49	530	610
102	135	5930.8	14709.22	5926.5	14708.88	630	715
103	87	5907.1	14838.25	5902.8	14838.37	630	713
104	87	5902.4	14838.82	5858.1	14838.05	715	800
105	132	5904.6	14924.30	5902.2	14931.07	630	710
106	133	5857.0	14931.03	5855.0	14937.80	742	820
107	130	5846.6	14903.18	5844.1	14910.81	635	715
108	131	5851.0	14855.02	5848.2	14901.81	725	805
109	86	5836.9	14819.97	5841.2	14820.09	630	715
110	86	5837.0	14820.57	5832.6	14819.65	720	800
111	85	5817.5	14837.28	5813.5	14839.18	630	705
112	85	5812.9	14839.22	5809.0	14841.85	715	800
113	84	5758.4	14910.09	5754.9	14914.64	630	710
114	84	5754.6	14915.98	5751.5	14920.02	715	800
115	128	5800.1	14950.48	5758.6	14958.73	630	710
116	129	5805.0	14954.86	5803.6	15002.98	750	830
117	83	5738.2	14955.32	5734.0	14957.09	630	715
118	83	5733.8	14959.32	5729.4	14959.32	720	805
119	82	5723.9	15034.47	5719.6	15035.22	630	710
120	82	5719.4	15036.29	5714.9	15035.85	715	800
121	81	5703.2	15113.47	5703.2	15115.87	515	555
122	81	5702.3	15117.21	5657.9	15116.80	605	650
123	80	5629.0	1521300	5625.5	15217.47	630	715
124	80	5625.2	15218.27	5621.5	15220.56	725	800
125	79	5618.0	15305.20	5615.8	15311.01	630	710
126	79	5615.9	15312.22	5612.8	15316.60	715	800

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)
127	78	5558.8	15402.08	5554.8	15402.15	630	710
128	78	5554.1	15402.85	5550.0	15405.20	715	800
129	77	5602.5	15434.10	5557.3	15434.00	630	705
130	77	5557.1	15434.63	5553.8	15434.84	710	800
131	76	5541.2	15511.27	5545.9	15508.60	630	715
133	75	5538.3	15551.07	5534.0	15551.97	630	710
134	75	5533.6	15552.07	5529.3	15550.04	715	755
135	122	5611.0	15557.79	5610.9	15604.96	630	708
136	123	5614.0	15607.79	5615.3	15615.00	725	805
137	127	5919.5	15523.07	5720.8	15515.29	635	715
138	126	5721.1	15510.48	5721.2	15502.48	730	805
139	124	5659.6	15503.96	5659.8	15512.20	630	710
140	125	5659.9	15518.25	5702.7	15524.18	725	800
141	120	5546.5	15604.77	5545.1	15611.27	630	705
142	121	5549.9	15612.42	5543.7	15619.93	710	750
143	74	5514.4	15640.34	5510.5	15643.93	630	705
144	74	5510.0	15644.51	5505.8	15645.72	710	750
145	73	5451.1	15744.64	5447.2	15748.66	630	710
146	73	5446.1	15749.86	5442.7	15752.26	715	800
147	72	5437.1	15835.13	5433.1	15838.42	500	538
148	72	5433.4	15839.65	5429.7	15843.04	546	624

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
95	2,089	0	350	10	122	0	371	263	13	91

Table 2.-continued.

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
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
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