

February 7, 2001

F/V *Alaskan Leader*
Cruise Report AL-00-01
Longline Survey of the Gulf of Alaska and Eastern Aleutian Islands
June 3-September 5, 2000

Prepared by

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On September 5, 2000, 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 2000.

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. 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 1988-99 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 becketts 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 except in the eastern Bering Sea where 180 skates with 8,100 hooks are set. 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 seven legs of 16, 16, 16, 2, 12, 10 and 14 days with one-day port calls after the first, third, and sixth and seventh legs. A two-day port call in Seward occurred after leg 5 and a three-day port call in Ketchikan after leg 2. 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. Leg 3 began near Dixon Entrance and continued north and westward to Yakutat. During leg 4 the hook-spacing experiment was conducted in the Yakutat vicinity. During leg 5, the area between Yakutat and Seward was sampled, and during leg 6 the area from Seward to Kodiak was sampled. During leg 7, 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. Sampling was 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 2000. 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 and 1999, 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 2000 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 were 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-sixty longline hauls (sets) were completed (Table 1). Sablefish was the most frequently caught species, followed by giant grenadiers, rockfish, arrowtooth flounder, and Pacific halibut (Table 2). A total of 72,087 sablefish, with an estimated total round weight of 256,340.8 kg (565.232 lb), was taken during the survey (Table 3).

The highest total sablefish catch was observed at station 64 in the western Gulf of Alaska (Table 2). Station 99 in northern southeast Alaska had the largest average length sablefish (Table 3).

A total of 3,098 sablefish, 492 shortspine thornyhead, and 37 Greenland turbot were tagged and released during the survey. Length-weight data and otoliths were collected from 2,079 sablefish. Twenty-eight gillnet sets were completed. A total of 28 young-of-the-year sablefish were caught during the survey.

Killer whales preying on sablefish coming up on the gear were observed at station 63 in the western Gulf of Alaska. Sperm whales preying on sablefish coming up on the gear were observed at stations 97 and 102 in the eastern Gulf of Alaska.

More detailed results and comparisons to previous surveys will be reported in a subsequent technical document.

SCIENTIFIC PERSONNEL

- Leg I (June 3 - June 18)
 Larry Haaga, Field Party Chief, RACE
 Zhouzhou Li, Graduate Student, UAF
 Jim Salzman, Contract Biologist
 Ken Orwig, Contract Biologist
- Leg II (June 20- July 5)
 Nancy Maloney, Field Party Chief, ABL
 Jim Salzman, Contract Biologist
 Ken Orwig, Contract Biologist
- Leg III (July 8 - July 23)
 Kyle Hogrefe, Field Party Chief, ABL
 Jim Salzman, Contract Biologist
 Ken Orwig, Contract Biologist
- Leg IV (July 25 - July 27)
 Chris Lunsford, Field Party Chief, ABL
 Jim Salzman, Contract Biologist
 Ken Orwig, Contract Biologist

Leg V (July 28 - August 8)
Chris Lunsford, Field Party Chief, ABL
Dana Hanselman, Graduate Student, UAF
Jim Salzman, Contract Biologist
Ken Orwig, Contract Biologist

Leg VI (August 10- August 20)
John Karinen, Field Party Chief, ABL
Dean Courtney, Fisheries Biologist, ABL
Jim Salzman, Contract Biologist
Ken Orwig, Contract Biologist

Leg VII (August 21 - September 5)
Larry Haaga, Field Party Chief, RACE
Dave Clausen Fisheries Biologist, ABL
Jim Salzman, Contract Biologist
Ken Orwig, Contract Biologist

ABL - Auke Bay Laboratory

RACE - Resource Assessment and Conservation Engineering Division

UAF- University of Alaska Fairbanks, Juneau Center Fisheries and Ocean Sciences

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 2000 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.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
Eastern Aleutian Islands							
1	35	5301.70	17005.99	5303.40	17011.35	174	178
2	35	5305.50	17017.46	5304.20	17011.63	212	598
3	37	5216.80	17331.36	5221.10	17331.16	141	625
4	37	5221.60	17329.49	5225.20	17330.69	635	777
5	38	5215.00	17450.60	5218.50	17446.80	175	430
6	38	5218.90	17446.32	5220.70	17440.02	286	747
7	39	5208.80	17536.14	5209.40	17541.77	148	624
8	39	5209.90	17543.32	5210.30	17549.29	598	755
9	40	5158.40	17627.07	5202.10	17625.63	106	706
10	40	5202.00	17624.18	5204.00	17619.00	596	890
11	54	5145.80	17809.79	5148.30	17815.47	91	498
12	54	5144.90	17816.55	5144.50	17822.27	572	822
13	42	5146.40	17858.00	5143.30	17854.19	172	484
14	42	5139.80	17850.08	5143.10	17853.51	491	717
15	53	5124.20	17837.33	5120.90	17833.98	193	596
16	53	5121.10	17833.69	5121.50	17828.67	520	531
17	55	5135.50	17736.80	5132.80	17742.52	191	365
18	55	5132.50	17743.17	5131.50	17749.39	437	908
19	57	5144.00	17559.93	5139.60	17600.03	184	382
20	57	5138.70	17600.41	5135.30	17600.59	448	819
21	58	5150.90	17507.91	5146.60	17508.08	180	358
22	58	5146.30	17506.20	5142.20	17606.76	383	783
23	59	5152.90	17420.15	5149.60	17424.13	122	409
24	59	5149.10	17424.64	5146.80	17430.29	432	860
25	60	5155.10	17329.66	5152.90	17335.47	118	163
26	60	5152.60	17336.05	5152.00	17342.99	240	650
27	61	5226.10	17019.07	5223.20	17025.00	245	544
28	61	5222.80	17024.82	5219.10	17028.95	546	938
Gulf of Alaska							
29	64	5311.20	16651.48	5307.20	16653.83	219	319
30	64	5306.70	16654.48	5302.90	16657.75	325	1122
31	62	5239.80	16859.28	5236.90	16904.69	132	639
32	62	5237.10	16906.00	5233.70	16910.73	324	742
33	63	5258.00	16808.25	5254.40	16812.73	108	403
34	63	5254.00	16813.55	5250.50	16815.67	140	770
35	65	5335.00	16541.15	5330.60	16542.95	121	332
36	65	5326.30	16547.49	5330.10	16543.61	355	480
37	66	5340.60	16433.62	5343.90	16428.48	136	317
38	66	5337.50	16440.71	5340.00	16434.78	394	672
39	67	5358.10	16315.98	5354.10	16320.45	82	432
40	67	5353.90	16321.33	5351.60	16328.37	336	644
41	68	5707.90	16138.34	5405.20	16143.82	125	413
42	68	5405.40	16145.07	5403.60	16151.40	240	919
43	69	5419.30	16103.06	5415.90	16108.56	142	371
44	69	5415.60	16109.90	5412.40	16113.82	413	867

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)
45	70	5421.90	16014.21	5417.60	16017.66	141	336
46	70	5417.40	16018.46	5413.00	16019.61	334	679
47	71	5430.50	15915.71	5426.40	15919.31	139	272
48	71	5426.20	15919.72	5422.60	15923.69	280	784
55	148	5439.00	13250.30	5436.20	13255.63	144	382
56	149	5436.10	13301.78	5435.70	13308.38	399	417
57	108	5427.90	13354.93	5429.40	13401.11	255	654
58	108	5430.20	13401.55	5433.70	13403.98	356	756
59	107	5454.10	13417.13	5457.30	13420.92	223	633
60	107	5457.90	13421.76	5500.60	13426.86	426	929
61	105	5533.50	13457.90	5533.90	13502.77	245	603
62	105	5535.00	13503.07	5536.80	13508.07	487	891
63	144	5556.00	13458.64	5600.40	13459.00	210	380
64	145	5602.00	13455.45	5605.20	13501.09	356	378
65	104	5559.00	13526.43	5601.10	13531.85	345	665
66	104	5601.80	13532.45	5604.80	13538.75	613	962
67	106	5520.80	13444.24	5523.40	13449.85	374	603
68	106	5523.70	13450.36	5523.50	13457.06	558	800
69	103	5623.00	13521.11	5622.90	13529.17	154	189
70	103	5622.90	13529.98	5622.20	13537.15	191	251
71	102	5651.30	13600.06	5653.80	13605.37	198	708
72	102	5654.60	13606.34	5658.40	13607.28	644	966
73	101	5711.30	13614.43	5712.50	13620.65	240	653
74	101	5713.00	13620.97	5716.30	13623.43	669	1008
75	100	5737.20	13632.54	5736.60	13639.35	244	808
76	100	5736.70	13641.00	5739.30	13646.28	734	988
77	142	5754.90	13700.14	5755.00	13708.34	400	444
78	143	5758.00	13704.87	5757.90	13713.16	225	417
79	99	5752.70	13723.20	5753.10	13730.36	193	613
80	99	5754.70	13744.66	5755.90	13751.66	606	861
81	98	5808.60	13844.23	5809.00	13850.93	219	803
82	98	5809.90	13852.09	5810.80	13859.30	590	832
83	97	5828.40	13928.06	5827.50	13935.45	193	483
84	97	5827.80	13937.17	5825.40	13943.21	458	871
91	138	5925.00	14056.41	5925.60	14105.17	205	295
92	139	5924.70	14110.36	5921.10	14115.51	322	325
93	96	5841.20	14038.90	5841.50	14047.47	232	596
94	96	5844.50	14055.03	5842.30	14050.06	509	751
95	95	5903.00	14120.83	5902.80	14129.01	296	525
96	95	5902.90	14130.27	5902.80	14138.10	587	877
97	94	5923.30	14210.10	5925.30	14217.74	232	500
98	94	5926.20	14218.54	5929.10	14224.29	440	874
99	93	5933.20	14234.39	5935.30	14240.91	129	620
100	93	5935.90	14242.35	5934.50	14248.78	572	638
101	137	5940.10	14323.34	5942.60	14329.27	289	312
102	136	5946.20	14343.41	5944.80	14336.05	155	294

Table 1. -- continued

Haul no.	Station no.	Start latitude (ddmm.m)	End latitude (ddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
103	92	5933.70	14347.12	5933.20	14339.49	171	632
104	92	5934.90	14355.46	5934.00	14348.64	519	890
105	91	5930.90	14442.55	5929.10	14450.45	187	490
106	91	5929.00	14451.71	5927.10	14459.71	474	822
107	90	5930.00	14532.66	5930.90	14540.60	163	824
108	90	5931.30	14541.53	5931.00	14549.77	413	800
109	89	5916.00	14651.29	5913.00	14656.69	190	620
110	89	5913.30	14649.19	5910.00	14703.57	527	947
111	134	5937.20	14658.21	5933.70	14702.70	209	215
112	135	5930.80	14709.19	5926.70	14708.66	208	216
113	88	5909.20	14736.28	5905.20	14736.58	254	509
114	88	5904.50	14737.10	5901.00	14737.93	525	830
115	87	5907.25	14838.41	5902.65	14838.37	161	225
116	87	5902.20	14838.69	5857.77	14839.02	231	253
117	132	5904.93	14924.03	5902.25	14930.91	184	227
118	133	5857.03	14930.41	5854.94	14938.12	237	243
119	130	5943.79	14912.00	5946.53	14904.94	173	222
120	131	5848.12	14902.89	5850.74	14855.93	236	253
121	86	5841.29	14820.18	5837.07	14819.56	280	480
122	86	5836.72	14820.20	5832.27	14819.32	474	1022
123	85	5817.25	14837.00	5812.86	14838.93	250	540
124	85	5808.68	14842.25	5812.33	14840.07	577	838
125	84	5747.92	14915.89	5758.27	14910.43	167	483
126	84	5754.40	14917.06	5750.72	14921.50	513	929
127	128	5759.80	14950.02	5758.63	14957.59	219	266
128	129	5804.90	14955.12	5803.73	15002.45	294	308
129	83	5737.65	14955.00	5733.36	14957.64	409	565
130	83	5732.70	14958.70	5728.54	14959.94	590	946
131	82	5723.82	15034.14	5719.32	15035.80	222	516
132	82	5714.32	15036.29	5718.40	15037.24	562	740
133	81	5707.04	15113.48	5702.94	15116.29	245	537
134	81	5702.36	15117.51	5658.07	15117.45	590	858
135	80	5629.00	15212.94	5625.50	15217.68	138	436
136	80	5625.00	15218.80	5620.70	15221.35	375	835
137	79	5618.10	15304.88	5615.70	15311.33	251	619
138	79	5615.60	15312.80	5612.50	15318.25	550	753
139	78	5558.50	15401.83	5554.60	15402.21	280	551
140	78	5554.00	15402.84	5550.10	15405.95	596	818
141	77	5602.40	15434.26	5558.20	15434.15	238	548
142	77	5557.60	15434.77	5554.40	15434.68	593	880
143	76	5545.90	15508.82	5541.70	15510.83	156	329
144	76	5541.10	15511.90	5537.60	15516.40	353	596
145	75	5538.50	15551.18	5534.00	15551.76	146	213
146	75	5533.60	15552.11	5529.20	15549.71	215	218
147	122	5611.10	15558.68	5611.20	15606.19	217	241
148	123	5614.30	15608.58	5614.90	15616.06	251	267

Table continue

Haul no.	Station no.	Start latitude (ddmm.m)	End latitude (ddmm.m)	End latitude (ddmm.m)	End longtude (dddmm.m)	Start depth (m)	End depth (m)
149	126	5720.80	15502.44	5721.00	15510.08	236	241
150	127	5720.90	15515.26	5719.40	15522.86	246	258
151	124	5659.40	15504.11	5700.00	15512.18	173	234
152	125	5700.20	15518.52	5702.70	15524.37	253	266
153	120	5547.00	15604.74	5545.10	15611.70	203	238
154	121	5544.70	15613.69	5543.20	15621.34	242	251
155	74	5514.10	15640.44	5510.30	15644.36	200	338
156	74	5510.10	15645.01	5505.70	15646.37	307	716
157	73	5450.90	15744.66	5447.40	15748.88	189	375
158	73	5447.20	15750.11	5442.80	15752.81	362	581
159	72	5437.80	15835.00	5434.00	15838.79	129	358
160	72	5433.30	15840.03	5429.80	15843.29	361	835

Table 2. --Catch in number by species for the 2000 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	<u>SF</u>	<u>PC</u>	<u>GR</u>	<u>PH</u>	<u>ATF</u>	<u>GT</u>	<u>RF</u>	<u>ST</u>	<u>SK</u>	<u>OS</u>
Eastern Aleutian Islands										
35	45	1,075	298	701	139	80	225	2	630	150
37	64	160	1,539	76	65	40	7	8	171	165
38	159	472	72	81	409	237	116	259	16	49
39	772	220	1,744	121	141	160	31	138	11	56
40	452	578	1,169	128	128	150	94	248	97	64
42	126	1,034	2,593	99	23	7	99	7	160	174
53	720	322	1,340	57	60	46	118	145	49	173
54	192	787	2,096	416	101	48	426	51	84	523
55	177	591	2,139	152	160	14	132	97	52	146
57	543	410	2,379	204	84	7	81	17	104	108
58	231	537	2,058	172	123	16	413	152	87	24
59	340	681	1,630	256	114	6	227	99	37	301
60	248	1,694	516	307	66	0	882	34	24	166
61	195	0	957	135	33	22	22	150	237	128
Gulf of Alaska										
62	528	193	3,081	104	50	2	622	135	9	30
63	411	795	1,402	188	297	0	385	87	121	150
64	2,341	21	1,350	208	207	0	452	93	26	54
65	1,358	505	1,281	345	392	3	62	93	99	45
66	1,868	91	1,788	75	89	6	61	133	17	45
67	528	617	1,538	331	280	1	309	63	26	111
68	1,295	658	765	410	602	0	690	149	43	39
69	1,936	278	884	293	442	0	32	189	45	40
70	1,651	1,144	1,355	210	266	0	56	86	44	38
71	1,529	1,069	746	318	856	1	22	132	75	52
72	1,377	242	975	248	281	0	41	199	24	68
73	408	1	1,791	172	136	0	129	115	2	31
74	1,427	1	1,804	80	200	0	54	299	7	96
75	630	263	0	2,033	555	0	4	0	78	37
76	1,424	39	572	176	632	0	137	259	67	420
77	1,275	0	2,005	46	247	0	123	275	15	121
78	1,203	0	1,676	138	199	0	113	208	8	800
79	1,963	0	523	54	192	0	32	197	0	21
80	297	15	1,022	542	446	0	167	244	4	109
81	1,083	0	1,222	52	288	0	22	113	1	693
82	1,242	7	1,144	82	336	0	91	176	3	133
83	1,262	0	1,643	23	177	0	13	163	3	274
84	1,108	141	729	315	270	0	85	132	27	270
85	1,192	3	628	29	264	0	226	313	12	293
86	1,150	3	736	102	141	0	325	152	15	328
87	1,226	141	0	224	393	0	10	47	70	65
88	979	3	863	29	161	1	408	188	10	198
89	1,086	53	570	67	99	0	32	277	38	329
90	481	10	910	59	75	0	324	192	36	99
91	853	21	959	45	67	0	519	193	27	108
92	1,339	14	619	51	88	0	63	212	23	263
93	2,084	0	262	76	87	0	80	418	10	33
94	1,434	0	246	35	253	0	380	283	18	96

Table 2.-continued.

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
95	1,226	0	555	49	41	0	450	307	48	177
96	748	0	658	26	132	0	631	198	13	70
97	272	0	335	15	76	0	604	107	22	255
98	761	0	605	4	28	0	363	73	6	57
99	1,451	0	334	6	13	0	128	127	10	154
100	1,620	0	533	1	16	0	121	221	4	74
101	1,295	3	483	4	79	0	235	230	4	113
102	1,362	1	388	2	47	0	73	126	8	131
103	249	291	0	370	143	0	0	5	38	675
104	1,665	0	445	7	22	0	451	380	19	308
105	2,171	36	331	74	29	0	282	231	27	264
106	1,648	0	194	4	51	0	743	219	12	116
107	1,200	4	321	17	27	0	890	171	26	166
108	1,210	0	272	24	20	0	1,512	118	34	177
120	605	235	0	221	187	0	0	0	105	20
121	672	14	0	214	199	0	2	1	135	16
122	1,007	170	0	96	216	0	0	1	60	16
123	546	43	0	182	206	0	1	0	156	29
124	307	151	0	81	407	0	2	0	223	24
125	232	23	1	188	266	0	0	1	171	56
126	355	64	0	111	233	0	0	0	186	46
127	431	98	0	251	162	0	1	0	154	50
128	394	113	0	181	328	0	0	7	14	12
129	1,013	0	0	159	283	0	0	21	36	3
130	130	0	0	1	0	0	0	7	24	4
131	1,582	1	0	16	40	0	2	24	32	15
132	336	2	0	38	14	0	2	3	45	40
133	700	0	0	3	21	0	19	17	47	25
134	69	0	0	2	12	0	0	22	51	51
135	159	0	0	10	29	0	72	27	59	63
136	299	3	0	125	35	0	7	44	91	70
137	313	0	0	6	8	0	3	26	15	40
138	510	0	0	90	79	0	63	85	32	111
139	714	0	0	51	166	0	154	79	96	15
142	832	0	144	6	51	0	55	225	29	8
143	1,304	1	62	12	104	0	53	83	27	65
144	468	30	1	35	247	0	142	208	56	64
145	808	0	2	25	110	0	389	233	32	174
148	483	146	0	69	74	0	26	166	184	496
149	986	0	0	56	85	0	27	289	135	116
Total	72,087	7,757	40,753	9,992	13,354	14	13,572	9,897	3,469	9,855

Table 3.- Mean length, round weight, mean dressed weight, number and estimated total round weight of sablefish by station, for the 2000 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	61.27	2.53	3.52	45	113.90
37	57.67	2.01	2.80	64	128.90
38	60.25	2.40	3.33	159	380.98
39	60.85	2.48	3.44	772	1,913.89
40	65.27	3.07	4.26	452	1,385.83
42	67.24	3.45	4.79	126	434.24
53	59.99	2.30	3.19	720	1,654.45
54	69.28	3.80	5.28	192	729.81
55	61.25	2.49	3.46	177	441.03
57	57.71	1.99	2.76	543	1,080.57
58	62.98	2.75	3.82	231	634.81
59	63.13	2.79	3.87	340	946.96
60	71.70	4.26	5.92	248	1,056.49
61	65.25	3.11	4.31	195	605.72
Gulf of Alaska					
62	66.23	3.29	4.57	528	1,736.42
63	59.17	2.21	3.08	411	910.07
64	57.69	1.99	2.77	2,341	4,664.16
65	60.18	2.30	3.20	1,358	3,128.08
66	60.55	2.37	3.29	1,868	4,424.14
67	61.02	2.54	3.52	528	1,338.86
68	63.68	2.89	4.01	1,295	3,737.44
69	64.14	2.99	4.15	1,936	5,780.26
70	62.71	2.74	3.80	1,651	4,522.01
71	65.85	3.21	4.46	1,529	4,913.69
72	68.76	3.65	5.07	1,377	5,030.11
73	66.80	3.29	4.57	408	1,342.47
74	72.83	4.34	6.03	1,427	6,197.37

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)
75	65.17	3.01	4.19	630	1,898.35
76	66.02	3.18	4.41	1,424	4,523.85
77	71.28	4.05	5.62	1,275	5,157.69
78	71.79	4.12	5.73	1,203	4,959.68
79	71.26	4.02	5.58	1,963	7,893.13
80	68.23	3.51	4.88	297	1,043.58
81	69.69	3.77	5.23	1,083	4,078.69
82	66.76	3.26	4.53	1,242	4,054.06
83	70.17	3.88	5.39	1,262	4,896.72
84	72.04	4.20	5.83	1,108	4,650.22
85	70.16	3.85	5.35	1,192	4,593.11
86	72.44	4.30	5.97	1,150	4,941.31
87	64.67	3.11	4.32	1,226	3,816.74
88	70.87	4.06	5.64	979	3,972.38
89	73.71	4.62	6.42	1,086	5,020.95
90	66.79	3.30	4.59	481	1,588.80
91	73.09	4.50	6.26	853	3,841.83
92	68.51	3.69	5.13	1,339	4,940.98
93	74.07	4.64	6.45	2,084	9,678.20
94	70.57	4.07	5.65	1,434	5,833.50
95	70.99	4.03	5.59	1,212	4,879.83
96	71.69	4.19	5.81	748	3,131.12
97	66.20	3.22	4.47	272	874.75
98	73.36	4.60	6.39	761	3,500.39
99	76.42	5.18	7.20	1,451	7,523.28
100	73.43	4.51	6.27	1,620	7,312.16
101	72.17	4.29	5.96	1,295	5,558.05
102	71.99	4.25	5.90	1,362	5,782.47
103	50.17	1.33	1.84	249	329.99
104	67.76	3.52	4.89	1,665	5,860.81
105	69.62	3.80	5.28	2,171	8,256.47
106	68.99	3.72	5.16	1,648	6,125.32
107	67.98	3.48	4.83	1,200	4,177.24
108	70.41	3.97	5.51	1,210	4,797.76
120	64.53	2.98	4.14	605	1,804.39
121	64.92	3.02	4.20	672	2,032.65
122	60.60	2.39	3.33	1,007	2,411.11
123	63.48	2.81	3.90	546	1,534.88
124	58.72	2.11	2.93	307	648.45
125	60.76	2.41	3.34	232	558.24
126	59.52	2.21	3.06	355	783.02

Table 3-continued

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
127	63.20	2.71	3.76	431	1,168.13
128	66.97	3.34	4.63	394	1,314.48
129	70.73	3.97	5.52	1,013	4,024.95
130	69.63	3.84	5.33	130	499.29
131	74.58	4.73	6.57	1,582	7,479.98
132	60.92	2.63	3.65	336	882.51
133	67.01	3.42	4.75	700	2,393.32
134	54.25	1.82	2.53	69	125.76
135	63.72	3.00	4.17	159	477.20
136	63.74	3.05	4.24	299	911.97
137	60.69	2.42	3.36	313	756.99
138	55.75	1.91	2.65	510	973.07
139	61.62	2.54	3.53	714	1,813.41
142	68.13	3.55	4.93	832	2,953.35
143	68.00	3.60	5.00	1,304	4,696.88
144	67.24	3.52	4.89	468	1,646.51
145	70.65	4.13	5.74	808	3,339.49
148	64.04	2.99	4.16	483	1,446.20
149	61.27	2.48	3.45	986	2,446.09
Total				72,087	256,340.80

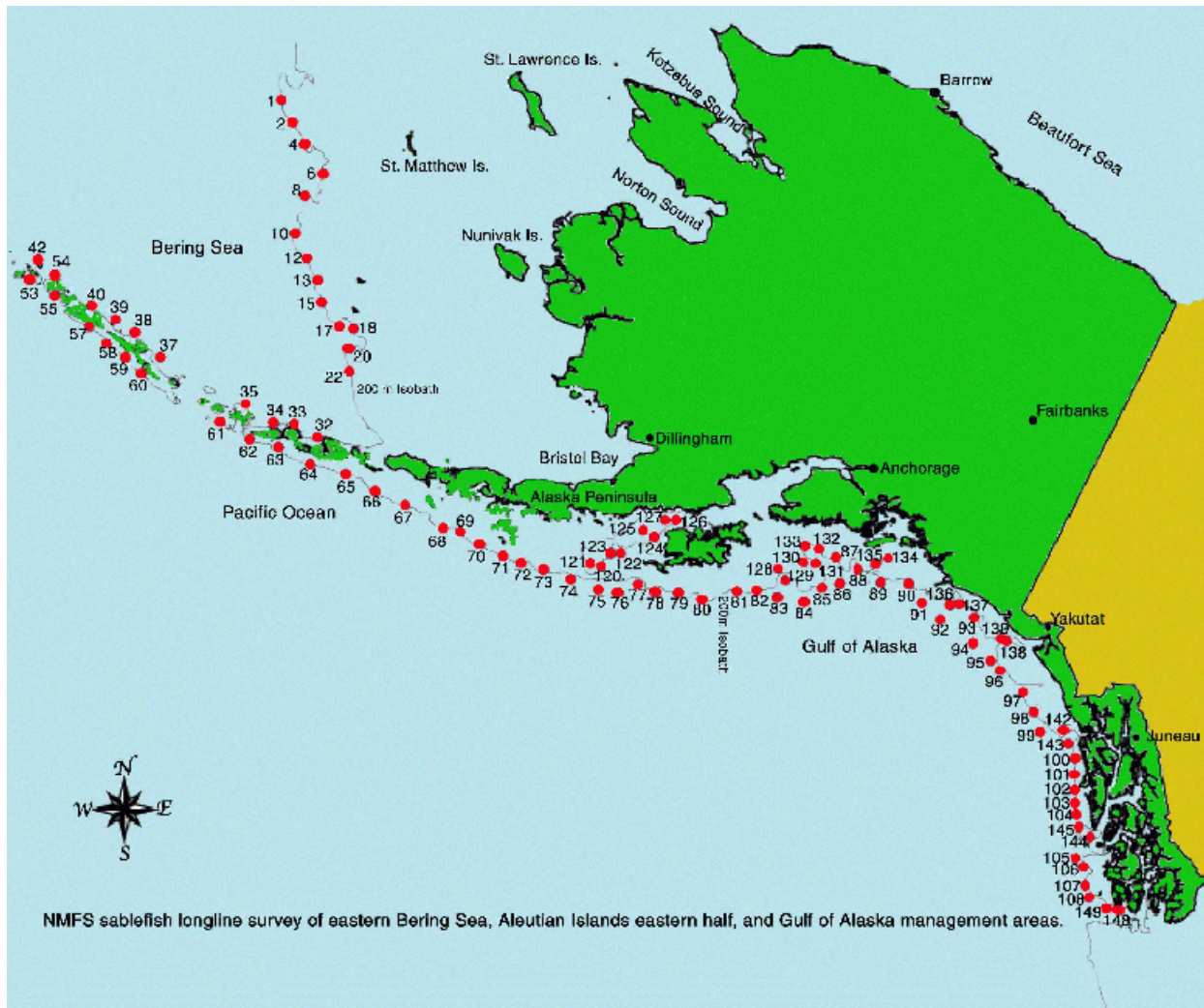


Figure 1.