

February 21, 2002

**Cruise Report OP-01-01  
Longline Survey of the Gulf of Alaska and Eastern Bering Sea  
May 28-September 5, 2001**

**Prepared by**

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On September 5, 2001, the Alaska Fisheries Science Center (AFSC), completed the twenty-third annual longline survey of Alaska sablefish (*Anoplopoma fimbria*) resources of the upper continental slope (Figure 1). This survey was designed to continue the time series (1979-94) of the Gulf of Alaska portion of the Japan-U.S. cooperative longline survey that was discontinued after 1994. 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 Bering sea were sampled in 2001.

**OBJECTIVES**

1. Determine the relative abundance and size composition of the commercially important species: sablefish, shortspine thornyhead (*Sebastolobus alascanus*), 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), Greenland turbot (*Reinhardtius hippoglossoides*).
3. Tag and release sablefish, shortspine thornyhead, and Greenland turbot throughout the cruise to determine migration patterns.
4. Implant sablefish with electronic tags that record water temperature, depth, and time.
5. Collect sablefish otoliths to study the age composition of the population.

6. Conduct surface-gillnet sampling to examine distribution and abundance of young-of-the-year sablefish.
7. Test the effect of hook spacing on sablefish catch rates.

## VESSEL AND GEAR

Survey operations were conducted using the F/V *Ocean Prowler*, a chartered U.S. longline vessel. The 47 m (155 ft) long 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 cook, a quality-control technician, two contract biologists, six fishermen and five processors.

Gear configuration was unchanged from that of the 1988-2000 surveys. Units of gear (skates) were 100 m (55 fm) long and contained 45 size 13/0 Mustad<sup>1</sup> 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 followed sequentially by varying lengths by depth of 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 except Amatuli Gully station 87 that consists of 160 skates.

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<sup>1</sup> Citation of the above brand name does not constitute U.S. government endorsement.

## OPERATIONS

The charter began on May 28 at Unalaska, Alaska, and ended on September 5 at Unalaska. The charter period was divided into seven legs of 19, 24, 17, 4, 14, 12 and 16 days with a one-day port call after the first, third, fourth, and sixth legs. Two-day port calls occurred after legs 2 and 5. During leg 1, most of the stations along the upper continental slope of the eastern Bering Sea were sampled. During leg 2 the remaining stations in the eastern Bering Sea were sampled as well as the area in the Gulf of Alaska near the western end of Umnak Island and extending eastward to Sand Point. 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 to Sandpoint was sampled.

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 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 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 transited to Dixon Entrance during early July and resumed sampling in a westerly direction going from Dixon Entrance to Sand Point.

One hundred five days were used to complete the survey, including 75 days of survey sampling, three days for loading and unloading gear, 22 days for travel and port calls, three days for seamount sampling, and two sampling days for the hook-spacing experiment.

### Hook-Spacing Experiment

A longline hook-spacing experiment was conducted near Yakutat 25-26 July 2001. 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 1999-2001 catch rate per hook increased as hook spacing increased to an asymptote at the 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

Sixteen stations along the upper continental slope of the eastern Bering Sea and 45 stations along the upper continental slope of the Gulf of Alaska were sampled 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 hours Alaska Daylight Time. Retrieval began about 0930 hours and was completed by about 1930 hours.

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 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 electronic backup media twice a day. As in the previous surveys, the charter vessel was allowed to retain most of the catch once the scientific data were recorded.

## RESULTS

One hundred fifty-two longline hauls were completed (Table 1). Sablefish was the most frequently caught species, followed by giant grenadiers, Pacific cod, shortspine thornyhead, other species, arrowtooth flounder and Pacific halibut and (Table 2). A total of 94,033 sablefish, with an estimated total round weight of 311,190 kg (686,057 lb), was taken during the survey (Table 3).

The highest total sablefish catch was observed at station 66 in the western Gulf of Alaska (Table 2). Station 98 in northern southeast Alaska had the largest average length sablefish (Table 3).

A total of 3,587 sablefish, 530 shortspine thornyhead, and 128 Greenland turbot were tagged and released during the survey. Electronic tags were implanted in 133 sablefish. Length-weight data and otoliths were collected from 2,458 sablefish. Forty-two gillnet sets were completed. A total of 128 young-of-the-year sablefish were caught during gillnet the survey.

Killer whales preying on sablefish and Greenland turbot during retrieval were observed at eastern Bering Sea stations 4, 6, 10, 12, and 13.

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

## SCIENTIFIC PERSONNEL

- Leg I (May 28 - June 15)  
 Larry Haaga, Field Party Chief, RACE  
 Suzanne Romain, Contract Biologist  
 Ken Orwig, Contract Biologist
- Leg II (June 15- July 8)  
 Nancy Maloney, Field Party Chief, ABL  
 Suzanne Romain, Contract Biologist  
 Ken Orwig, Contract Biologist
- Leg III (July 8 - July 24)  
 Kyle Hogrefe, Field Party Chief, Contractor  
 Suzanne Romain, Contract Biologist  
 Ken Orwig, Contract Biologist
- Leg IV (July 24 - July 27)  
 Chris Lunsford, Field Party Chief, ABL  
 Suzanne Romain, Contract Biologist  
 Ken Orwig, Contract Biologist

Leg V (July 27 - August 9)  
Dean Courtney, Field Party Chief, ABL  
Suzanne Romain, Contract Biologist  
Ken Orwig, Contract Biologist

Leg VI (August 10- August 21)  
John Karinen, Field Party Chief, ABL  
Suzanne Romain, Contract Biologist  
Ken Orwig, Contract Biologist

Leg VII (August 21 - 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

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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 2001 NMFS longline survey of the Eastern Aleutian Bering Sea and Gulf of Alaska, May 28- 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 Bering Sea							
1	1	5846.9	17733.3	5848.6	17740.9	160	164
2	1	5848.8	17741.4	5850.4	17747.1	164	519
3	2	5837.1	17638.5	5836.1	17647.3	148	245
4	2	5836.0	17648.0	5834.1	17655.9	272	693
5	4	5830.2	17539.9	5829.5	17548.0	200	352
6	4	5829.1	17548.5	5829.8	17556.2	415	812
7	6	5819.8	17419.1	5824.1	17421.9	170	480
8	6	5824.2	17422.7	5825.3	17430.8	530	250
9	8	5741.7	17413.9	5741.7	17413.9	150	313
10	8	5742.0	17414.1	5746.0	17417.9	363	606
11	10	5649.7	17322.7	5654.3	17324.8	201	518
12	10	5654.6	17325.3	5658.9	17328.9	462	593
13	12	5637.5	17221.2	5634.3	17225.7	191	581
14	12	5633.9	17230.8	5629.6	17230.8	656	662
15	13	5628.0	17135.3	5627.7	17135.3	196	485
16	13	5627.3	17136.2	5627.3	17144.4	421	628
17	15	5609.5	17039.6	5608.1	17046.2	136	268
18	15	5608.1	17046.7	5609.5	17054.0	295	481
19	17	5602.3	16936.9	5559.2	16942.9	190	540
20	17	5559.2	16943.9	5559.1	16953.0	518	443
21	18	5614.6	16910.2	5611.1	16916.4	171	635
22	18	5610.6	16917.5	5607.2	16923.9	671	578
23	20	5654.8	16849.4	5558.7	16846.1	218	587
24	20	5559.0	16845.3	5603.1	16841.6	681	700
25	22	5527.5	16759.6	5525.6	16807.6	150	250
26	22	5525.5	16808.0	5523.6	16815.9	268	562
27	32	5347.0	16718.5	5343.5	16720.9	137	425
28	32	5343.1	16721.1	5346.8	16727.0	437	606
29	33	5336.6	16817.6	5336.6	16810.8	114	775
30	33	5336.6	16810.2	5337.1	16803.6	322	637
31	34	5321.0	16859.1	5318.2	16853.8	621	842
32	34	5318.3	16853.0	5317.8	16847.1	521	642
Gulf of Alaska							
33	62	5239.4	16859.6	5236.8	16905.7	150	556
34	62	5236.9	16906.3	5233.3	16910.4	431	512
35	63	5257.8	16808.0	5254.6	16812.3	106	425

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)
36	63	5254.5	16812.6	5250.9	16814.0	231	687
37	64	5311.4	16551.3	5307.2	16653.5	212	306
38	64	5307.0	16654.0	5303.1	16656.8	318	1052
39	65	5334.9	16541.1	5331.0	16543.0	118	275
40	65	5330.6	16543.5	5326.9	16546.5	331	575
41	66	5344.1	16428.0	5341.0	16432.9	137	281
42	66	5340.8	16433.3	5337.9	16438.7	312	606
43	67	5358.2	16315.8	5354.4	16319.1	112	411
44	67	5354.3	16319.8	5351.8	16325.6	381	556
45	68	5408.0	16138.2	5405.3	16143.3	118	406
46	68	5405.4	16144.6	5403.5	16151.2	331	842
47	69	5418.8	16103.5	5415.9	16109.1	175	362
48	69	5415.6	16109.6	5412.6	16114.3	406	796
49	70	5421.8	16014.1	5418.1	16017.5	140	290
50	70	5417.8	16017.8	5413.7	16018.7	313	590
51	71	5430.7	15915.4	5426.6	15918.4	137	262
52	71	5426.3	15918.9	5422.6	15922.5	281	687
53	148	5438.9	13250.4	5435.9	13255.9	140	377
54	149	5435.8	13301.2	5435.7	13309.2	390	413
55	108	5427.5	13355.0	5428.9	13400.7	506	568
56	108	5429.5	13401.0	5433.0	13403.3	500	537
57	107	5454.0	13417.2	5457.7	13421.2	235	585
58	107	5457.8	13421.9	5501.1	13427.3	600	800
59	106	5520.8	13444.3	5523.7	13450.2	378	578
60	106	5524.0	13450.6	5523.5	13457.5	550	800
61	105	5533.4	13458.0	5534.8	13503.4	228	607
62	105	5535.1	13503.8	5537.8	13508.0	578	657
63	144	5555.8	13454.0	5600.0	13454.7	195	357
64	145	5602.0	13455.6	5605.0	13500.7	365	372
65	104	5558.9	13526.1	5601.5	13532.0	368	650
66	104	5601.3	13532.3	5604.7	13537.5	625	818
67	103	5622.9	13520.8	5622.9	13528.4	154	185
68	103	5622.9	13529.1	5622.1	13536.5	188	234
69	102	5651.1	13559.7	5653.9	13605.5	225	731
70	102	5654.2	13605.8	5658.0	13607.0	731	771
71	101	5711.3	13614.5	5712.6	13620.3	250	635
72	101	5713.2	13620.5	5716.7	13622.9	746	807
73	100	5737.0	13632.1	5736.6	13639.4	250	746
74	100	5736.6	13640.2	5739.4	13645.5	746	807
75	142	5755.0	13700.8	5755.2	13709.5	440	386
76	143	5758.0	13704.6	5758.1	13713.3	413	231



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)
77	99	5752.4	13722.6	5753.1	13729.8	287	553
78	99	5753.0	13730.4	5752.8	13736.8	656	790
79	98	5808.3	13844.0	5809.4	13852.1	346	628
80	98	5809.6	13852.5	5810.6	13859.4	664	896
81	97	5828.1	13928.0	5827.4	13936.0	196	496
82	97	5827.4	13936.6	5824.9	13942.1	500	809
83	138	5925.0	14056.3	5925.6	14104.4	234	290
84	139	5924.7	14110.0	5921.2	14115.1	317	322
85	96	5841.0	14038.4	5841.0	14046.1	259	672
86	96	5841.1	14046.8	5843.0	14052.6	581	627
87	95	5903.0	14120.7	5902.9	14129.1	293	512
88	95	5903.0	14129.9	5902.9	14138.0	575	837
89	94	5923.2	14209.8	5925.3	14217.1	237	456
90	94	5925.7	14217.9	5928.6	14224.1	857	442
91	93	5933.1	14233.8	5935.5	14241.5	131	572
92	93	5935.8	14242.1	5933.7	14248.4	575	668
93	137	5940.4	14323.1	5942.9	14329.6	291	311
94	136	5944.7	14335.1	5946.0	14342.7	297	157
95	92	5933.2	14339.1	5933.5	14348.0	168	828
96	92	5933.6	14348.9	5935.2	14357.2	650	678
97	91	5931.3	14442.4	5928.9	14451.1	178	485
98	91	5928.9	14451.3	5926.6	14458.5	492	903
99	90	5930.0	14531.4	5930.9	14542.2	156	587
100	90	5931.1	14540.9	5930.7	14549.4	718	493
101	89	5915.7	14650.9	5913.2	14657.8	187	568
102	89	5913.0	14658.7	5910.1	14704.1	587	831
103	134	5935.8	14658.2	5933.3	14703.3	210	207
104	135	5930.8	14709.3	5925.3	14708.9	214	207
105	88	5909.2	14736.2	5904.5	14737.1	285	522
106	88	5904.2	14737.1	5859.8	14737.9	563	957
108	87	5907.5	14838.8	5903.4	14838.8	154	191
109	87	5903.2	14838.8	5859.1	14838.9	200	237
110	132	5905.0	14924.0	5902.2	14931.1	180	222
111	133	5856.9	14930.5	5855.0	14938.5	240	237
112	130	5843.7	14911.5	5845.9	14905.3	177	214
113	131	5848.1	14902.8	5850.6	14855.3	231	248
114	86	5841.3	14820.3	5836.8	14819.9	280	472
115	86	5836.4	14820.0	5832.0	14819.5	536	967
116	85	5817.5	14837.1	5813.1	14840.0	243	515
117	85	5812.6	14840.1	5808.3	14842.0	568	831
118	84	5758.3	14909.9	5754.8	14915.3	171	485

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)
119	84	5754.5	14915.7	5751.0	14920.0	507	900
120	128	5759.9	14950.0	5758.9	14958.4	228	262
121	129	5804.0	15002.0	5804.9	14955.2	295	307
122	83	5737.8	14954.9	5733.6	14956.9	407	550
123	83	5733.1	14957.3	5728.8	14958.9	578	921
124	82	5724.0	15034.4	5719.4	15035.7	214	492
125	82	5719.3	15036.0	5714.8	15035.9	532	732
126	81	5706.9	15113.5	5702.8	15117.0	534	271
127	81	5702.4	15117.4	5657.9	15116.4	801	618
127	80	5629.0	15212.8	5625.4	15217.8	150	431
128	80	5625.1	15218.4	5620.8	15221.2	337	531
129	79	5618.1	15304.6	5615.6	15310.9	256	493
130	79	5615.6	15311.4	5612.9	15317.4	587	750
131	78	5558.4	15401.2	5554.7	15401.0	296	578
132	78	5553.7	15401.0	5550.1	15403.5	628	925
133	77	5602.6	15434.0	5558.3	15434.2	235	521
134	77	5558.3	15432.3	5553.8	15432.6	871	585
135	76	5546.1	15508.3	5542.1	15510.5	150	290
136	76	5541.7	15510.8	5538.1	15514.1	327	595
137	75	5538.4	15550.9	5534.2	15551.6	151	208
138	75	5435.0	15551.7	5530.1	15550.0	211	217
139	124	5659.2	15503.5	5659.9	15511.2	168	231
140	125	5700.1	15518.2	5702.7	15524.5	251	262
141	126	5720.8	15502.5	5720.9	15510.4	237	240
142	127	5720.9	15514.8	5719.6	15522.6	245	245
143	122	5611.1	15557.9	5610.9	15606.0	205	240
144	123	5613.8	15607.9	5615.3	15615.3	248	264
145	120	5547.2	15604.6	5545.7	15611.7	202	237
146	121	5544.9	15612.2	5543.8	15619.6	242	248
147	74	5514.3	15640.4	5510.1	15644.6	206	303
148	74	5509.8	15644.9	5505.2	15645.1	278	721
149	73	5451.0	15744.3	5457.3	15748.9	181	356
150	73	5446.9	15749.2	5442.6	15752.2	381	500
151	72	5437.9	15834.7	5433.5	15836.9	125	456
152	72	5433.8	15839.3	5429.6	15842.2	331	859

Table 2. --Catch by station in number by species for the 2001 NMFS longline survey of the Eastern Aleutian Islands and the Gulf of Alaska, May 28 - 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 Bering Sea										
1	71	1,418	580	259	111	613	20	19	381	776
2	26	1,012	285	159	173	540	7	23	398	818
4	3	410	437	12	22	15	27	4	201	831
6	6	1,266	170	341	134	13	22	0	309	198
8	132	410	574	256	164	213	37	32	107	44
10	19	221	1,347	20	83	29	72	52	138	297
12	298	442	1,441	201	311	345	8	40	212	77
13	51	479	655	441	124	27	88	30	147	378
15	165	1,148	553	389	349	102	160	59	103	239
17	508	435	561	107	299	201	50	17	36	66
18	924	518	668	44	349	278	14	7	195	27
20	1,380	301	810	36	382	534	0	20	262	56
22	394	1,832	12	56	354	342	5	0	187	239
32	241	278	7	280	412	12	266	133	26	213
33	736	437	65	199	261	245	176	209	25	81
34	953	0	136	43	430	290	3	87	196	40
Gulf of Alaska										
62	921	48	2,085	152	88	9	682	133	4	14
63	1,247	260	1,315	257	418	1	543	330	45	50
64	2,291	30	735	138	259	1	342	168	18	23
65	1,697	162	1,718	86	213	0	24	108	26	30
66	3,313	179	1,359	52	68	3	18	53	32	11
67	1,903	295	771	168	369	1	342	163	46	68
68	718	195	761	267	223	0	501	123	35	17
69	2,430	34	2,086	47	164	0	10	145	3	17
70	1,123	391	2,265	174	160	0	23	63	20	57
71	1,732	1,214	1,204	172	300	0	24	125	23	29
72	1,225	293	2,544	159	58	1	69	268	14	19
73	396	66	1,234	105	413	0	88	579	18	86
74	1,051	3	2,243	159	169	0	33	408	14	57
75	1,978	582	0	1,033	946	0	8	0	67	39
76	1,611	74	960	224	361	0	117	274	129	291
77	1,495	0	2,513	37	187	0	154	438	27	69
78	1,181	0	1,029	32	66	0	205	246	19	893
79	2,044	0	1,056	32	172	0	45	417	2	264
80	543	8	1,515	527	269	0	275	136	5	90
81	1,246	0	1,548	42	244	1	32	164	2	371
82	1,281	4	293	89	415	0	24	367	7	110
83	1,000	0	1,124	6	20	0	0	372	9	427
84	1,102	18	1,565	109	86	0	70	415	18	283
85	840	1	858	12	127	0	70	453	18	92
86	1,867	0	571	49	69	0	314	290	20	405
87	1,858	22	0	155	33	0	6	14	50	50
88	1,367	0	545	14	64	0	123	287	1	480
89	930	10	994	65	20	0	40	505	32	146

Table 2.--continued

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
90	434	2	1,038	73	6	0	320	270	20	59
91	991	2	421	72	41	0	231	419	20	276
92	658	4	1,375	23	18	0	29	287	9	210
93	1,408	0	271	49	18	0	85	859	3	39
94	1,134	0	237	27	90	0	281	531	24	201
95	1,848	0	607	8	39	0	559	417	23	71
96	379	0	512	8	59	0	212	205	8	103
97	1,392	0	386	7	17	0	139	188	14	129
98	931	0	1,119	0	2	0	539	55	0	152
99	1,343	0	272	3	16	0	170	190	6	126
100	815	1	662	7	39	0	47	217	4	118
101	1,547	0	275	15	82	0	141	180	10	48
102	1,680	0	369	55	33	0	80	241	7	91
103	413	198	0	303	32	0	0	15	44	951
104	1,659	0	509	1	5	0	178	307	16	125
105	1,941	1	468	45	29	0	102	225	22	120
106	2,164	0	403	4	22	0	303	257	11	80
107	1,401	0	364	20	16	0	426	180	8	217
108	1,586	0	347	29	44	0	690	195	37	124
120	1,148	338	0	194	422	0	0	0	69	24
121	1,357	7	0	143	562	0	0	1	125	21
122	1,922	149	0	81	173	0	0	0	141	24
123	1,456	101	0	70	382	0	0	0	109	15
124	1,182	121	0	89	100	0	2	0	97	19
125	1,447	6	0	139	112	0	0	0	83	49
126	1,559	25	0	70	149	0	0	0	131	13
127	1,696	132	0	159	101	0	0	0	193	47
128	512	6	0	788	345	0	2	19	8	10
129	775	0	0	184	126	0	0	13	15	5
130	260	0	0	3	1	0	0	19	43	15
131	812	0	0	24	23	0	20	128	57	100
132	567	0	0	65	18	0	1	10	106	29
133	805	0	0	13	84	0	20	64	94	26
134	72	0	0	2	8	0	10	26	43	406
135	463	0	0	17	24	0	35	23	50	191
136	412	1	0	64	79	0	8	41	88	174
137	357	0	0	6	4	0	10	45	14	8
138	762	0	0	57	39	0	38	48	35	111
139	1,563	0	0	21	27	0	46	31	35	8
142	1,058	0	94	4	21	0	45	198	19	59
143	1,366	0	34	36	69	0	15	60	36	48
144	203	20	0	32	114	0	94	294	59	53
145	677	0	5	17	187	0	31	177	53	134
148	598	109	0	97	110	0	23	227	167	446
149	983	0	0	42	45	0	14	157	170	172
Total	94,033	15,179	52,960	10,371	13,872	3,816	10,083	14,595	5,953	14,315

Table 3.- Mean length, round weight, mean dressed weight, number and estimated total round weight of sablefish by station, for the 2001 NMFS longline survey of the Eastern Bering Sea and the Gulf of Alaska, May 28 - September 5.

Station Number	Mean length (cm)	Mean round weight (kg) <sup>2</sup>	Mean dressed weight (lb) <sup>3</sup>	Number of sablefish	Estimated total round weight (kg) <sup>4</sup>
Eastern Bering Sea					
1	64.95	3.04	4.22	71	215.83
2	61.56	2.46	3.41	26	63.86
4	41.33	1.65	2.3	3	4.96
6	35.33	1.93	2.68	6	11.57
8	67.09	3.26	4.53	132	430.65
10	60.95	2.39	3.32	19	45.35
12	60.7	2.35	3.27	298	701.33
13	64.47	3.12	4.34	51	159.34
15	66.97	3.32	4.61	165	547.55
17	63.2	2.7	3.74	508	1,369.24
18	64.2	2.87	3.98	924	2,648.40
20	62.64	2.6	3.61	1,380	3,585.50
22	61.76	2.45	3.41	394	966.61
32	62.64	2.64	3.67	241	637.23
33	66.74	3.24	4.51	736	2,387.97
34	67.99	3.48	4.83	953	3,314.09
Gulf of Alaska					
62	65.82	3.12	4.33	921	2,872.50
63	64.23	2.86	3.97	1,247	3,560.46
64	59.25	2.16	3	2,291	4,954.53
65	61.9	2.51	3.49	1,697	4,261.35
66	61.15	2.39	3.32	3,313	7,912.28
67	65.43	3.1	4.3	1,903	5,894.67
68	67.83	3.48	4.84	718	2,500.12
69	62.41	2.63	3.66	2,430	6,395.84
70	62.88	2.7	3.76	1,123	3,037.13
71	65.2	3.02	4.19	1,732	5,225.31
72	70.16	3.87	5.38	1,225	4,741.23
73	68.81	3.64	5.05	396	1,440.70
74	72.07	4.27	5.93	1,051	4,488.12

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

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

<sup>4</sup> 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	62.49	2.59	3.59	1,978	5,119.26
76	62.75	2.7	3.74	1,611	4,342.41
77	68.75	3.61	5.01	1495	5,394.79
78	70.98	4	5.56	1181	4,729.80
79	72.88	4.36	6.06	2044	8,919.90
80	69.09	3.63	5.04	543	1,969.96
81	70.1	3.85	5.34	1246	4,791.65
82	68.35	3.55	4.93	1281	4,550.54
83	69.22	3.67	5.1	1000	3,670.23
84	65.85	3.2	4.45	1102	3,526.89
85	70.89	4.01	5.57	840	3,366.87
86	73.27	4.46	6.19	1867	8,322.10
87	63.95	2.97	4.13	1858	5,521.89
88	71.34	4.07	5.65	1367	5,558.01
89	71.35	4.19	5.83	930	3,901.19
90	65.52	3.19	4.42	434	1,382.59
91	71	4.15	5.76	991	4,108.80
92	65.84	3.18	4.41	658	2,091.12
93	71.97	4.26	5.91	1408	5,994.72
94	66.8	3.47	4.82	1134	3,934.49
95	71.44	4.15	5.76	1848	7,663.28
96	65.7	3.2	4.45	379	1,213.20
97	70.4	4	5.56	1392	5,572.63
98	76.39	5.18	7.19	931	4,820.91
99	73.39	4.55	6.32	1343	6,108.85
100	68.99	3.64	5.05	815	2,962.98
101	72.77	4.42	6.14	1547	6,836.08
102	73.56	4.57	6.34	1680	7,670.39
103	56.34	1.95	2.7	413	803.55
104	68.29	3.57	4.96	1659	5,925.02
105	71.79	4.23	5.88	1941	8,212.11
106	70.75	4	5.55	2164	8,654.03
107	70.41	3.93	5.46	1401	5,503.28
108	70.51	4	5.55	1586	6,340.77
120	63.62	2.74	3.81	1148	3,147.69
121	62.1	2.55	3.54	1357	3,457.59
122	60.56	2.3	3.2	1922	4,423.74
123	62.82	2.6	3.62	1456	3,790.01
124	62.22	2.52	3.49	1182	2,974.16
125	62.6	2.57	3.56	1447	3,712.39
126	62.97	2.62	3.64	1559	4,084.57
127	63.01	2.63	3.65	1696	4,460.31
128	64.77	2.95	4.1	512	1,509.66

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
129	71.92	4.17	5.79	775	3,229.83
130	68.34	3.59	4.99	260	934.06
131	74.96	4.85	6.74	812	3,940.13
132	65.93	3.16	4.39	567	1,791.98
133	65.56	3.1	4.3	805	2,492.71
134	60.03	2.38	3.3	72	171.26
135	57.07	2.04	2.84	463	946.19
136	61.86	2.82	3.92	412	1,163.04
137	62.36	2.65	3.69	357	947.24
138	59.43	2.33	3.23	762	1,771.92
139	62.18	2.6	3.61	1,563	4,057.24
142	67.45	3.43	4.76	1,058	3,624.44
143	63.64	2.86	3.97	1,366	3,902.43
144	64.81	3.31	4.6	203	672.28
145	66.77	3.51	4.88	677	2,378.49
148	61.62	2.56	3.55	598	1,528.40
149	59.67	2.26	3.14	983	2,220.39
Total				94,033	311,190.2

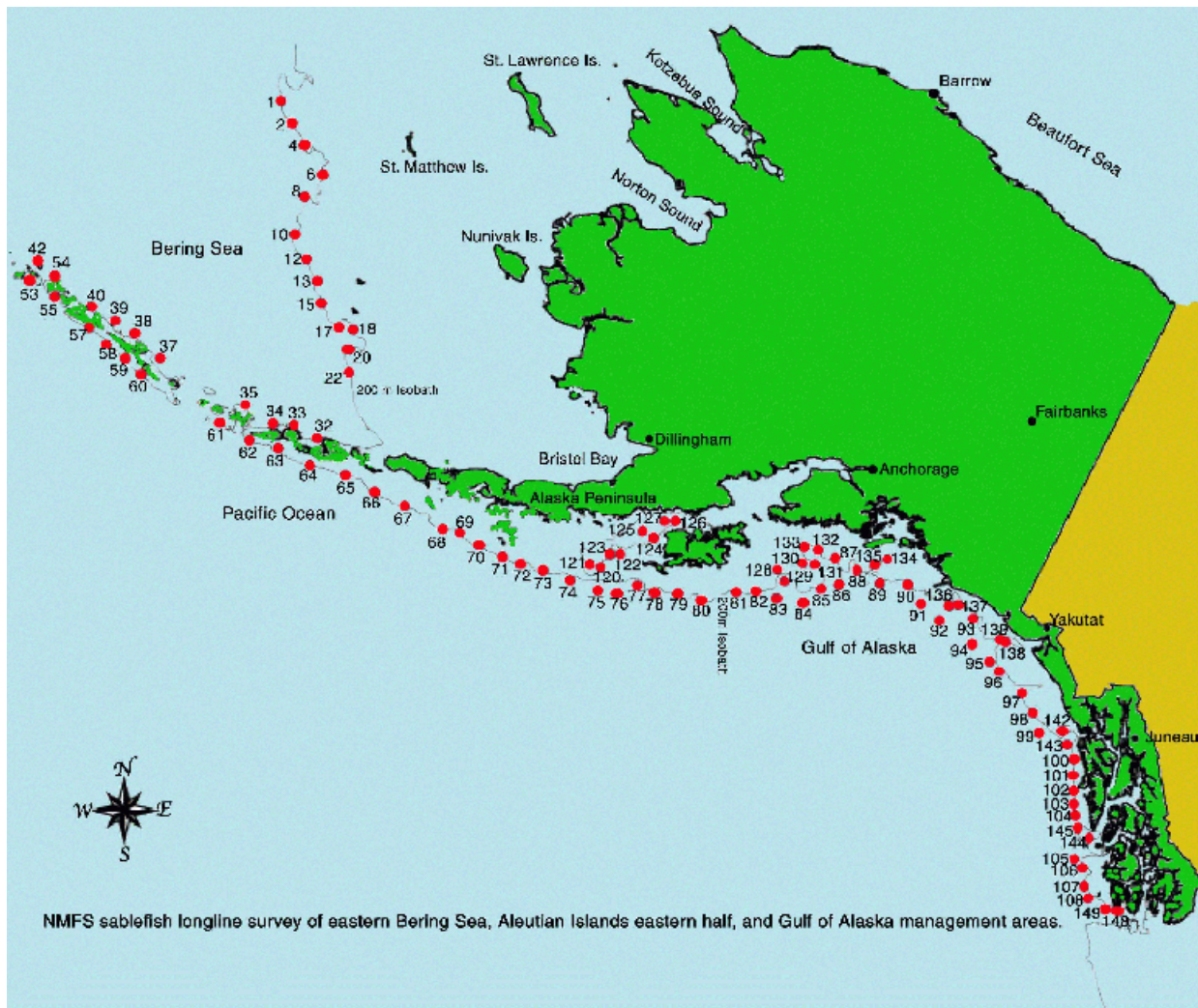


Figure 1.