

May 21, 2007

F/V *Alaskan Leader*
Cruise Report AL-06-01
Longline Survey of the Gulf of Alaska and Eastern Aleutian Islands
June 3-September 1, 2006

Prepared by

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On September 1, 2006, the, Alaska Fisheries Science Center (AFSC), completed the twenty-fourth 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 2006.

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 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. Implant Greenland Turbot and shortspine thornyhead with electronic tags that record water temperature, depth, and time.
6. Conduct a rougheye rockfish genetics experiment .

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 VHF radios, satellite communications, radars, GPS receivers, electronic chart 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, a whale observer and one or two NMFS biologists .

Gear configuration was unchanged from that of the 1988-2005 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 gully stations spaced 3.5-7 km (2-4 nmi) apart usually were 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

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

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. One hundred sixty skates are fished at Amatuli to maintain continuity with the Japan-U.S. survey time series.

OPERATIONS

The charter began on June 3 at Unalaska, Alaska, and ended on September 1 in Unalaska. The charter period was divided into seven legs of 17, 16, 17, 3, 11, 13 and 12 days. 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 of Sand Point was sampled. Leg 3 began near Dixon Entrance and continued north and westward to Yakutat. During leg 4 a rougheye rockfish genetics experiment was conducted in the Yakutat vicinity. During leg 5, the area between Yakutat and Seward was sampled, and during leg 6 the upper slope from Seward to Kodiak was sampled. During leg 7, the area from Kodiak Island to the Shumagin 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.

Rougheye Rockfish genetics Experiment

A rougheye rockfish genetics experiment was conducted near Yakutat 25-26 July 2006. Recent genetic work by ABL and the University of Alaska Fairbanks (UAF) indicates there may be two genetically distinct species of rougheye rockfish (*Sebastes aleutianus*). One of the hypotheses of this previous work is that these two species are separated by depth. Many of the specimens used for the previous analysis were collected during the sablefish longline survey. But only a general depth stratum with an accuracy of approximately 100m was available for specimens collected from the longline survey. More accurate depth information was necessary to determine if there is a depth specific influence on these two species.

The purpose of the 2006 study was to collect genetic tissue of rougheye rockfish along with detailed depth information to investigate depth specific distribution of rougheye rockfish. Sixteen time depth recorders were placed along the groundline to record accurate depth

measurements. One hundred forty-nine rougheye rockfish were caught and sampled for genetic identification. Results should help to determine if depth differences exist between the two species.

Survey Operations

A total of 86 stations were sampled during the 2006 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.

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, other species, shortspine thornyhead, rockfish, and Pacific cod (Table 2). A total of 86,347 sablefish, with an estimated total round weight of 285,325 kg (629,034 lb), was taken during the survey (Table 3).

The highest total sablefish catch was observed at station 92 in the central Gulf of Alaska (Table 2). Station 96 in northern southeast Alaska had the largest average length sablefish (Table 3).

A total of 3,624 sablefish, 463 shortspine thornyhead, and 8 Greenland turbot were tagged and released during the survey. Length-weight data and otoliths were collected from 2,274 sablefish. Electronic tags were implanted in 31 Greenland turbot and 81 in shortspine thornyhead.

Killer whales (*Orcinus orca*) preying on sablefish coming up on the gear were observed at stations 61, 62, 64, and 65 in the western Gulf of Alaska and at station 74 in the central Gulf of Alaska. The depredation recorded at station 74 was geographically the farthest east killer whale depredation has ever been recorded on the survey. Sperm whales (*Physeter macrocephalus*) were observed from the survey vessel across the entire survey area including stations 39, 40, and 54 in the Aleutian Islands. Sperm whale depredation on sablefish coming up on the gear was recorded at two stations in the central Gulf of Alaska, four stations in west Yakutat, and two stations in the rest of the eastern Gulf of Alaska.

Several special projects were conducted during the 2006 longline survey. Corals caught on the line were collected for identification and sample preservation. A seabird occurrence study was conducted for the fifth year, which helps to address where and when certain seabird species occur in Alaska waters. Spiny dogfish were sampled during the west Yakutat and central Gulf legs for biological studies conducted by graduate students from the University of Alaska-Fairbanks and University of Washington. A giant grenadier reproductive biology study was conducted during the Southeast leg, and maturity samples of these fish were taken for histological analysis. A marine mammal observer was on board during the first two survey legs in the Aleutians and western Gulf of Alaska to collect photo identification of resident killer whales observed depredating on the gear. A second marine mammal observer studied sperm whale depredation in the eastern and central Gulf of Alaska. Photo identification, dive behavior observations, and biopsy samples were collected.

SCIENTIFIC PERSONNELLeg I

(June 1 - June 17)

Larry Haaga, Field Party Chief, RACE
 Suzanne Yin, Killer Whale Observer, NMML
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist

Leg II

(June 19- June July 8)

Nancy Maloney, Field Party Chief, ABL
 Suzanne Yin, Killer Whale Observer, NMML
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist

Leg III

(July 9 - July 23)

John Karinen, Field Party Chief, ABL
 Dave Csepp , Biologist ABL
 Nellie Warner, Sperm Whale Observer, SEASWAP
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist

Leg IV (July 25 - July 27)

Chris Lunsford, Field Party Chief, ABL
 Kalei Shotwell, Biologist ABL
 Nellie Warner, Sperm Whale Observer, SEASWAP
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist

Leg V

(July 28 - August 6)

Dana Hanselman, Field Party Chief, ABL
 Katie Howard, Student, UAF
 Carri Waco, Observer, REFM
 Nellie Warner, Sperm Whale Observer, SEASWAP
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist

Leg VI

August 9 -August 19)

Larry Haaga, Field Party Chief, RACE
 Jason Wright, Contract Biologist
 Ken Orwig, Contract Biologist

ABL - Auke Bay Laboratory

RACE - Resource Assessment and Conservation Engineering Division

REFM- Resource Ecology and Fisheries Management Division

NMML – National Marine Mammal Laboratory

UAF- University of Alaska Fairbanks

SEASWAP- Southeast Alaska Sperm Whale Avoidance Program

For further information contact either

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WA 98115-0070 -- Telephone (206) 526-4170.

Table 1.--Haul number (set), pre-assigned station number, starting and ending positions and associated depths for the 2006 NMFS longline survey of the Eastern Aleutian Islands and Gulf of Alaska, June 3-September 1, 2006.

Haul Number	Station Number	Start Latitude (dmm.m)	Start Longitude (dddmm.m)	End Latitude (dmm.m)	End Longitude (dddmm.m)	Start Depth (m)	End Depth (m)
Eastern Aleutian Islands							
1	35	5305.6	17016.85	5303.3	17011.05	148	525
2	35	5303.0	17011.17	5301.6	17004.62	169	172
3	37	5216.8	17329.82	5220.2	17329.84	158	600
4	37	5220.7	17330.41	5223.6	17329.85	613	732
5	38	5215.3	17450.60	5218.4	17447.19	153	629
6	38	5218.9	17446.56	5220.3	17441.34	400	744
7	39	5210.5	17545.76	5209.2	17540.13	475	854
8	39	5209.1	17540.22	5207.9	17534.38	109	596
9	40	5158.2	17627.11	5201.5	17626.75	109	546
10	40	5202.2	17625.02	5203.9	17619.75	693	783
11	54	5145.6	17809.94	5143.9	17815.64	91	253
12	54	5144.1	17817.06	5143.8	17822.89	467	622
13	42	5146.6	17857.40	5143.1	17854.92	167	455
14	42	5139.8	17850.48	5142.9	17854.45	508	702
15	53	5121.7	17834.21	5120.7	17834.21	524	644
16	53	5121.1	17837.35	5124.7	17837.35	193	658
17	55	5135.4	17736.99	5132.9	17742.22	229	354
18	55	5132.7	17743.37	5131.5	17750.01	447	829
19	57	5143.9	17600.23	5139.5	17601.60	188	365
20	57	5135.2	17605.80	5138.6	17601.85	435	738
21	58	5150.9	17508.26	5146.8	17508.49	180	351
22	58	5146.1	17507.05	5142.8	17510.11	393	990
23	59	5152.9	17420.37	5149.6	17424.47	122	396
24	59	5149.4	17425.40	5146.7	17431.68	287	681
25	60	5155.0	17330.12	5152.6	17336.24	119	288
26	60	5152.6	17336.97	5152.0	17343.88	267	532
27	61	5226.2	17018.56	5223.9	17023.86	238	541
28	61	5224.0	17024.95	5220.3	17027.78	525	889
Gulf Of Alaska							
29	64	5307.2	16653.09	5311.0	16651.30	225	329
30	64	5303.0	16655.87	5306.7	16653.76	332	758
31	62	5239.4	16859.63	5236.9	16905.58	180	516
32	62	5236.9	16906.69	5233.9	16911.89	361	714
33	63	5257.9	16808.12	5254.6	16812.58	108	355
34	63	5254.8	16813.44	5250.9	16815.04	129	584
35	65	5334.8	16541.01	5330.7	16543.52	124	298
36	65	5330.4	16544.14	5326.7	16547.05	293	467

Haul number	Station number	Start latitude (dmm.m)	Start longitude (dddmm.m)	End latitude (dmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
37	66	5343.9	16427.97	5340.6	16432.97	139	322
38	66	5340.4	16436.80	5337.4	16442.16	328	679
39	67	5358.0	16318.20	5354.3	16320.03	119	336
40	67	5354.0	16321.41	5351.6	16327.17	345	791
41	68	5407.9	16138.77	5405.1	16143.78	119	452
42	68	5405.5	16145.15	5403.9	16152.09	312	838
43	69	5418.7	16104.11	5415.6	16109.00	164	396
44	69	5415.2	16109.94	5412.5	16114.69	422	813
45	70	5421.8	16014.62	5417.9	16018.38	138	303
46	70	5417.4	16019.03	5413.1	16021.08	322	632
47	71	5430.5	15915.61	5426.6	15918.90	138	274
48	71	5426.5	15920.19	5423.0	15924.29	261	600
49	72	5437.7	15834.92	5436.2	15836.21	132	390
50	72	5434.0	15839.27	5430.2	15842.36	332	767
51	73	5451.0	15744.60	5447.3	15748.78	182	387
52	73	5447.2	15749.56	5443.2	15751.90	361	593
53	74	5514.1	15640.88	5510.3	15644.32	180	345
54	74	5510.2	15645.16	5506.1	15645.74	290	761
55	75	5538.5	15550.72	5534.6	15551.40	136	211
56	75	5534.3	15551.65	5530.5	15550.56	210	225
57	148	5438.3	13250.23	5435.9	13255.06	146	379
58	149	5435.7	13301.15	5435.8	13306.92	396	415
59	108	5427.8	13355.36	5429.7	13401.22	250	624
60	108	5429.7	13400.74	5433.4	13404.17	436	798
61	107	5454.1	13417.34	5457.3	13420.92	220	519
62	107	5457.9	13421.36	5500.4	13426.14	400	874
63	106	5520.9	13444.23	5523.7	13448.72	350	579
64	106	5524.1	13449.68	5523.8	13456.25	479	806
65	105	5533.5	13458.18	5534.3	13503.18	213	564
66	105	5535.1	13503.41	5537.0	13508.00	487	877
67	144	5555.8	13454.54	5559.8	13455.10	194	360
68	145	5602.0	13455.70	5605.1	13501.23	324	377
69	104	5558.9	13526.59	5600.9	13531.23	341	644
70	104	5601.7	13532.05	5604.4	13536.81	630	870
71	103	5622.9	13520.81	5622.8	13528.61	151	188
72	103	5622.9	13529.38	5622.1	13536.57	191	248
73	102	5651.1	13559.97	5653.6	13605.50	224	591
74	102	5654.2	13606.12	5657.6	13606.53	722	987
75	101	5711.1	13614.26	5712.1	13619.68	219	620
76	101	5712.7	13620.75	5716.3	13623.40	680	929
77	100	5737.0	13632.23	5736.7	13638.18	225	751
78	100	5737.7	13639.75	5739.1	13644.87	700	932

Haul number	Station number	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
79	142	5755.3	13708.33	5755.1	13700.46	394	444
80	143	5758.2	13704.37	5758.1	13712.29	237	422
81	99	5752.7	13722.72	5753.1	13729.51	215	746
82	99	5753.2	13730.62	5753.5	13736.90	619	900
83	98	5808.5	13844.13	5809.2	13851.63	222	820
84	98	5809.8	13852.62	5811.0	13858.74	450	816
85	97	5828.2	13928.37	5827.9	13935.32	193	488
86	97	5827.8	13937.18	5825.4	13942.47	438	1020
87	138	5925.1	14056.31	5925.6	14104.30	205	296
88	139	5924.8	14109.97	5921.3	14114.96	317	325
89	96	5840.8	14038.39	5840.9	14046.19	243	716
90	96	5841.1	14046.72	5843.9	14053.00	471	870
91	95	5902.8	14120.45	5902.7	14128.27	319	535
92	95	5902.8	14129.27	5902.7	14136.37	554	877
93	94	5923.3	14209.00	5925.1	14216.67	232	416
94	94	5925.6	14217.13	5928.3	14222.50	390	913
95	93	5933.0	14233.97	5934.8	14240.53	132	580
96	93	5935.3	14241.30	5934.7	14247.27	571	651
97	137	5940.2	14324.29	5942.7	14329.78	295	313
98	136	5944.6	14334.93	5945.8	14343.27	156	300
99	92	5933.3	14340.26	5934.0	14348.00	180	800
100	92	5934.2	14348.98	5934.9	14355.37	513	900
101	91	5931.1	14442.82	5929.4	14449.12	180	453
102	91	5929.2	14449.87	5927.9	14456.17	482	800
103	90	5930.1	14532.86	5930.5	14540.91	158	893
104	90	5930.7	14542.67	5930.7	14550.11	325	877
105	89	5915.9	14650.95	5913.5	14657.40	191	560
106	89	5913.1	14659.16	5910.4	14704.50	581	848
107	134	5936.6	14659.28	5932.8	14703.79	211	213
108	135	5931.4	14709.08	5926.0	14709.09	211	216
109	88	5909.1	14737.14	5904.8	14737.98	225	538
110	88	5904.3	14737.75	5900.0	14738.00	503	977
111	87	5907.7	14839.96	5903.3	14838.65	150	207
112	87	5902.4	14838.68	5858.1	14839.00	224	256
113	132	5904.7	14924.15	5902.2	14930.94	171	225
114	133	5856.8	14931.10	5855.2	14938.14	236	241
115	130	5843.9	14911.14	5846.7	14904.00	182	218
116	131	5848.2	14902.09	5850.8	14855.00	231	254
117	86	5841.5	14819.54	5837.8	14819.50	272	420
118	86	5837.1	14819.92	5833.0	14820.67	450	850
119	85	5817.5	14836.87	5813.8	14839.24	231	484
120	85	5813.2	14839.93	5809.9	14841.83	508	780

Table 1. – Continued

Haul number	Station number	Start latitude (ddmm.m)	Start longitude (dddmm.m)	End latitude (ddmm.m)	End longitude (dddmm.m)	Start depth (m)	End depth (m)
121	84	5758.1	14910.27	5754.8	14914.81	172	508
122	84	5754.6	14916.20	5751.4	14920.11	494	948
123	128	5900.1	14950.44	5758.9	14958.26	220	267
124	129	5805.2	14954.67	5804.0	15002.57	293	306
125	83	5738.0	14955.23	5734.0	14956.94	382	558
126	83	5733.6	14957.98	5729.5	14959.12	558	887
127	82	5724.1	15034.69	5720.1	15035.53	208	508
128	82	5719.4	15036.44	5715.2	15036.00	491	736
129	81	5707.1	15113.42	5703.3	15116.82	250	563
130	81	5702.2	15118.02	5657.7	15118.53	575	858
131	80	5629.0	15212.93	5625.5	15217.38	132	535
132	80	5625.1	15218.44	5620.8	15220.61	488	840
133	79	5618.2	15304.92	5615.9	15311.21	245	580
134	79	5614.1	15316.48	5610.7	15320.21	517	730
135	78	5558.9	15401.50	5555.1	15401.28	265	544
136	78	5554.8	15402.11	5550.9	15404.72	550	850
137	77	5602.5	15434.00	5558.4	15433.83	235	571
138	77	5558.2	15434.54	5554.4	15434.33	532	880
139	76	5545.9	15508.11	5542.1	15510.19	156	315
140	76	5538.0	15514.73	5541.3	15511.14	340	584
141	124	5659.4	15504.24	5659.5	15511.84	179	234
142	125	5702.9	15524.61	5700.6	15518.40	253	263
143	126	5720.8	15502.43	5720.7	15510.48	236	242
144	127	5720.8	15515.10	5719.4	15522.97	245	263
145	122	5611.1	15557.78	5610.9	15605.02	195	239
146	123	5613.9	15607.59	5615.1	15614.38	247	265
147	120	5547.3	15604.72	5545.8	15611.53	202	240
148	121	5545.1	15612.39	5543.8	15619.95	241	250

Table 2.-Catch in number by species for the 2006 NMFS longline survey of the Eastern Aleutian Islands and the Gulf of Alaska June 3 - September 1. SF = sablefish, PC = Pacific cod, GR = giant grenadiers, PH = Pacific halibut, ATF = arrowtooth flounder, GT = Greenland Turbot, RF = roughey and shortraker rockfish, ST = thornyheads, SK = skate, OS = other species.

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
Eastern Aleutian Islands										
37	2,045	147	844	76	209	143	8	16	182	43
38	770	212	2,255	17	186	91	120	326	47	49
39	276	90	2,864	221	162	8	105	70	9	115
40	356	200	2,172	97	91	20	68	119	67	60
42	165	320	1,830	83	66	4	65	11	349	264
53	1,038	55	2,019	26	66	26	225	177	121	91
54	250	1,338	980	146	457	60	537	48	147	612
55	87	400	1,846	174	103	4	316	131	144	184
57	275	116	1,184	64	50	9	60	74	166	92
58	227	258	1,009	231	80	4	307	122	149	64
59	177	791	1,500	205	149	1	628	25	130	374
60	420	1,154	622	157	35	0	1,556	11	26	309
Gulf of Alaska										
63	684	1,192	279	641	359	0	392	310	186	172
65	1,495	201	1,243	200	142	0	48	70	37	25
66	1,971	126	1,465	134	165	0	45	181	34	75
67	758	425	1,705	112	291	0	190	128	118	73
68	718	181	1,301	299	277	0	440	181	37	56
69	1,298	34	1,966	77	126	0	29	178	12	32
70	1,204	93	1,826	174	66	0	35	105	12	135
71	1,443	348	408	245	284	0	97	101	60	99
72	2,047	150	1,195	135	85	0	26	90	27	53
73	1,912	20	1,812	23	155	0	36	86	6	38
74	2,179	0	874	31	110	0	44	140	2	85
75	660	454	0	1,006	270	0	14	1	61	133
76	1,337	52	783	144	138	0	53	101	217	510
77	1,670	5	1,202	10	158	0	52	294	14	284
78	1,137	0	893	25	87	0	254	265	22	652
79	2,272	0	639	28	80	0	93	237	3	46
80	1,761	7	875	334	83	0	123	253	11	142
81	1,771	0	1,063	14	69	0	90	117	6	707
82	1,679	3	611	29	117	0	79	163	1	61
83	1,464	0	1,317	1	7	0	6	327	0	219
84	2,039	86	386	39	234	0	62	262	20	280
85	1,786	4	589	30	160	0	59	275	32	107
86	736	0	354	52	64	0	51	301	31	119
87	951	13	0	113	101	0	2	71	122	68
88	1,377	73	274	37	39	0	260	150	24	563
89	1,843	24	376	94	36	0	49	229	60	196
90	304	8	609	89	11	0	122	144	23	265
91	1,386	35	233	63	34	0	69	261	59	104
92	2,363	0	397	0	12	0	31	213	2	84
93	1,903	0	413	114	9	0	19	434	19	101

Table 2. - Continued

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
94	1,036	0	332	25	87	0	163	253	34	124
95	1,216	0	513	22	12	0	325	425	36	121
96	1,353	0	384	11	18	0	221	155	31	114
97	1,029	0	193	20	54	0	456	273	34	132
98	762	0	644	11	7	0	583	91	11	60
99	1,123	3	390	11	11	0	48	184	13	190
100	1,337	3	369	8	14	0	57	196	9	91
101	1,038	9	330	15	29	0	89	331	12	198
102	1,332	0	449	3	42	0	80	238	4	161
103	178	249	0	225	20	0	0	9	47	1,678
104	1,641	0	318	1	10	0	245	385	9	207
105	1,986	52	377	48	59	0	63	210	30	202
106	2,137	0	199	9	29	0	462	178	16	124
107	1,745	2	210	27	14	0	349	284	23	170
108	1,216	0	279	17	16	0	791	88	6	118
120	236	137	0	56	112	0	1	4	139	47
121	324	0	0	25	189	0	0	6	265	9
122	420	292	0	50	368	0	0	1	63	16
123	473	3	0	56	305	0	0	0	129	28
124	123	199	0	75	537	0	2	0	301	17
125	208	3	0	51	299	0	0	1	228	23
126	468	12	0	120	498	0	0	0	166	59
127	723	27	0	202	246	0	1	0	217	16
128	1,087	61	0	230	408	0	1	17	20	20
129	1,437	0	0	68	75	0	0	37	31	11
130	1,239	1	0	17	28	0	1	57	36	14
131	1,133	0	0	31	18	0	3	49	53	32
132	545	3	0	28	39	0	1	39	194	95
133	1,422	0	0	30	77	0	12	55	129	55
134	193	0	0	2	4	0	2	6	32	1,972
135	167	2	0	17	20	0	49	8	43	1,751
136	270	0	0	32	5	0	11	105	58	115
137	164	0	1	0	2	0	8	116	22	13
138	227	0	0	39	28	0	85	49	32	81
139	1,003	0	0	41	28	0	39	29	79	10
142	823	0	79	6	16	0	8	241	8	10
143	1,080	0	34	27	23	0	68	96	28	134
144	253	73	0	77	147	0	143	225	68	167
145	1,633	0	0	12	64	0	35	186	36	144
148	549	122	0	124	33	0	13	125	89	577
149	784	1	0	128	10	0	15	180	105	142
Total	86,347	9,869	49,314	7,787	9,424	370	11,295	11,730	5,681	16,989

Table 3. – Mean length, round weight, mean dressed weight, number and estimated total round weight of sablefish by station, for the 2006 NMFS longline survey of the Eastern Aleutian Islands and Gulf of Alaska June 3 – September 1.

Station Number	Mean length (cm)	Mean round weight (kg) ¹	Mean dressed weight (lb) ²	Number of sablefish	Estimated total round weight (kg) ³
Eastern Aleutian Islands					
35	59.44	2.2	3.05	23	50.49
37	58.59	2.08	2.89	2,045	4,260.12
38	64.82	2.94	4.08	770	2,263.48
39	64.72	2.93	4.07	276	807.99
40	64.81	2.99	4.15	356	1,064.48
42	65.98	3.13	4.34	165	516.05
53	65.58	3.05	4.24	1,038	3,167.00
54	69.5	4.14	5.74	250	1,034.08
55	63.85	2.8	3.88	87	243.28
57	59.99	2.29	3.18	275	629.61
58	58.58	2.13	2.96	227	483.58
59	67.16	3.29	4.56	177	581.50
60	68.65	3.57	4.96	420	1,501.40
Gulf Of Alaska					
63	64.96	3	4.17	684	2,051.86
65	62.22	2.55	3.54	1,495	3,815.73
66	58.98	2.14	2.97	1,971	4,221.59
67	64.44	2.91	4.04	758	2,203.13
68	66.87	3.3	4.59	718	2,370.32
69	62.43	2.74	3.81	1,298	3,561.63
70	58.65	2.21	3.07	1,204	2,662.55
71	63.24	2.73	3.8	1,443	3,945.92
72	65.35	3.03	4.21	2,047	6,197.52
73	62.02	2.57	3.57	1,912	4,916.36
74	66.58	3.2	4.44	2,179	6,972.30
75	64.12	2.88	3.99	660	1,898.17
76	64	2.84	3.95	1,337	3,798.00
77	67.67	3.43	4.77	1,670	5,729.82
78	67.39	3.37	4.68	1,137	3,831.64
79	67.64	3.38	4.69	2,272	7,670.08
80	70.16	3.84	5.34	1,761	6,770.99
81	68.44	3.54	4.92	1,771	6,274.63
82	67.38	3.34	4.64	1,679	5,614.48
83	68.74	3.61	5.01	1,464	5,282.76
84	68	3.48	4.84	2,039	7,099.12
85	68.04	3.46	4.8	1,786	6,173.52
86	67.11	3.32	4.61	736	2,443.08

Table 3. - Continued

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (kg)	Number of sablefish	Estimated total round weight (kg)
87	65.34	3.06	4.25	951	2,911.15
88	67.89	3.42	4.75	1,377	4,709.36
89	70.29	3.89	5.4	1,843	7,164.60
90	66.5	3.23	4.48	304	981.64
91	69.62	3.81	5.29	1,386	5,281.78
92	69.65	3.83	5.31	2,363	9,042.42
93	72.09	4.29	5.96	1,903	8,163.46
94	68.38	3.58	4.97	1,036	3,705.06
95	73.39	4.47	6.21	1,216	5,437.12
96	74.12	4.65	6.46	1,353	6,290.71
97	69.38	3.8	5.28	1,029	3,912.35
98	74.06	4.75	6.59	762	3,617.61
99	72.98	4.47	6.21	1,123	5,021.12
100	71.63	4.16	5.78	1,337	5,561.91
101	70.01	3.86	5.36	1,038	4,003.04
102	70.74	4.03	5.59	1,332	5,364.14
103	60.42	2.49	3.46	178	443.25
104	67.97	3.53	4.9	1,641	5,787.21
105	70.43	3.96	5.5	1,986	7,857.95
106	67.49	3.42	4.75	2,137	7,311.94
107	67.16	3.35	4.66	1,745	5,853.03
108	68.12	3.52	4.89	1,216	4,277.75
120	64.19	2.85	3.96	236	672.65
121	66.5	3.17	4.4	324	1,027.50
122	62.27	2.58	3.58	420	1,082.01
123	62.9	2.68	3.72	473	1,266.16
124	64.22	2.81	3.9	123	345.68
125	61.72	2.51	3.48	208	521.41
126	58.42	2.07	2.88	468	968.94
127	60.13	2.29	3.17	723	1,652.20
128	64.9	2.92	4.05	1,087	3,171.12
129	67.41	3.31	4.6	1,437	4,761.78
130	64.37	2.88	4	1,239	3,564.56
131	67.74	3.41	4.73	1,133	3,859.08
132	64.83	2.97	4.12	545	1,616.94
133	64.65	2.91	4.05	1,422	4,143.58
134	55.11	1.82	2.53	193	351.03
135	55.03	1.82	2.52	167	303.58

Table 3. - Continued

Station Number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (kg)	Number of sablefish	Estimated total round weight (kg)
136	64.94	3.19	4.43	270	862.09
137	62.88	2.68	3.72	164	439.33
138	58.05	2.16	3	227	489.94
139	66.59	3.25	4.51	1,003	3,255.70
142	65.21	3.05	4.24	823	2,509.88
143	65.68	3.1	4.3	1,080	3,346.65
144	66.05	3.2	4.44	253	808.35
145	66.75	3.37	4.68	1,633	5,503.85
148	66.97	3.32	4.61	549	1,823.48
149	63.51	2.77	3.84	784	2,170.20
Total				86,347	285,324.55

¹ Mean weight was estimated by applying a length-weight relationship to the length frequency distribution from each station.

² Mean dressed weight was estimated using a recovery rate of 0.6 of round weight in pounds.

³ 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.