UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

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F/V OCEAN PROWLER

Cruise Report OP-89-01

Longline Survey of the Gulf of Alaska

June 26-September 12, 1989

Prepared by

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On September 12, 1989, the National Marine Fisheries Service, Alaska Fisheries Science Center (AFSC), completed the third annual longline survey of sablefish (*Anoplopoma fimbria*) resources of the Gulf of Alaska. The survey area extended from the Islands of Four Mountains eastward to Dixon Entrance (Figure 1). As in the previous surveys, the charter vessel was allowed to retain most of the catch once the scientific data were recorded. This survey was designed to continue the time series (1979-89) of the Gulf of Alaska portion of the Japan-U.S. cooperative longline survey.

OBJECTIVES

1. Determine the relative abundance and size composition of the commercially important species: sablefish, the principal species; 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, including Pacific cod (*Gadus macrocephalus*), arrowtooth flounder (*Atheresthes stomias*), grenadiers (Macrouridae), and Pacific halibut (*Hippoglossus stenolepis*). (Size composition of Pacific halibut was not studied.)

VESSEL AND GEAR

Survey operations were conducted using the F/V Ocean Prowler, a chartered U.S. longline vessel. The 47.24 m (155 ft) vessel carried standard longline hauling gear and was equipped with radios, radars, LORAN receivers, track plotter, a processing line, three sets of plate freezers, and refrigerated holds. Vessel personnel consisted of a captain, an engineer, a cook, five to six fishermen, four processors, and a quality control technician.

Gear configuration was unchanged from that of the 1988 survey. Units of gear (skates) were 100 m (55 fm) long and contained 45 size 13/0 Mustad[1] circle hooks. Hooks were attached to 38 cm (15 in) gangions that were secured to beckets 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.

Each end of a set started with a flag and buoy array followed sequentially by a 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, a 27 kg (60 lb) halibut anchor, and 366 m (200 fm) of 9.5 mm nylon. 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 spp.*) 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. Usually a single groundline of eighty skates was set at each station in the gullies.

The AFSC supplied the longline gear except for the flags, buoys, buoylines, and anchors, which were furnished by the charter vessel owners. The owners also supplied the bait and paid for transportation of the gear from Seattle to the survey area and return.

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

OPERATIONS

The 75-day charter period began in Unalaska, Alaska, and ended in Petersburg, Alaska. It was divided into three legs of 25 working or traveling days. During Leg 1, the survey sampled from the Islands of Four Mountains eastward to Shelikof Strait. Leg 2 began near Chirikof Island and continued eastward to Yakutat. Leg 3 completed the survey from Yakutat to Dixon Entrance.

Seventy-nine days were used to complete the survey, including 2 days for loading and unloading gear, 3 days for equipment problems and gear repair, 5 travel days, 2 days lost to bad weather, 4 days for port calls, and 63 days of survey sampling.

Survey Operations

Forty-five stations were sampled along the upper continental slope of the Gulf of Alaska at a rate of one station per day (Figure 1). These stations correspond to station numbers 62-86, 88-102, and 104-108 of the Japan-U.S. cooperative longline survey. Surveyed depths ranged from approximately 200-1,000 m, although at some stations depths to 150 m or less were sampled (Table 1).

Twenty-seven stations were sampled in gullies, usually at the rate of two stations per day. Twenty-six of these stations are additional to the stations established by the cooperative longline survey. The exception is station 26 in Amatuli Gully, which corresponds to station 87 of the cooperative longline survey. The sampled gullies are Shumagin Gully, Shelikof Trough, Amatuli Gully, W-grounds, Yakutat Valley, Alsek Strath, Spencer Gully, Ommaney Trench, Iphigenia Gully, and Dixon Entrance.

One station (42) was sampled on the shelf off Baranof Island and corresponds to station 103 of the cooperative longline survey. Four replicate hauls were completed to study catch variability.

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. Retrieval began about 0930 h and was completed by about 1930 h.

Data Collection

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 and depth were recorded when the first and last skates came aboard, at the beginning of each fifth skate, and when crossing into a different 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 was measured for sablefish, Pacific cod, grenadiers, arrowtooth flounder, rockfish, and thornyheads. Only lengths of sablefish and Pacific cod were recorded by depth interval. Pacific halibut were counted and released at the rail without measuring.

RESULTS

One hundred and twenty-six longline hauls (sets) were completed (Table 1). Haul 2, set near the Islands of Four Mountains, was lost to strong currents. Thirty-eight skates of gear were lost due to a hang-up at station 37.

Sablefish was the most frequently caught species, followed by grenadiers and Pacific cod (Table 2). A total of 108,272 sablefish, with an estimated total round weight of 367,354 kg (809,650 lb), was recorded at the rail (Table 3).

Sablefish catches along the upper continental slope west of Kodiak Island generally were lower in 1989 compared to 1988. Grenadier catches increased sharply at almost all stations where sablefish catches decreased. Pacific cod catches were lower in the western Gulf of Alaska and mostly unchanged elsewhere. Mean lengths of sablefish along the upper continental slope were slightly less in the western region, more in the central region, and mostly unchanged in the eastern region in 1989 compared to 1988 (Table 3). Sablefish catches also decreased at stations 31-33 near Cape St. Elias. The changes in catch may be influenced by distribution of gear by depth, in addition to actual changes in abundance. A more meaningful index of abundance (catch-per-unit-effort by depth) will be presented in a subsequent technical document.

SCIENTIFIC PERSONNEL

Leg I (June 26-July 20)

Eric Brown, Field Party Chief, RACE
Michael Martin, RACE
Dan Kamikawa, ABL

Leg II (July 23-August 16)

Harold Zenger, Field Party Chief, RACE
Michael Martin, RACE
Chris Derrah, ABL

Leg III (August 19-September 12)

Michael Sigler, Field Party Chief, ABL
Jim Stark, RACE
Larry Haaga, RACE

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 1989 NMFS longline survey of the Gulf of Alaska, June 26 - September 12.

Haul no.	Station no.	Start lat. (ddmm.m)	Start long. (dddmm.m)	End lat. (ddmm.m)	End long. (dddmm.m)	Start depth (m)	End depth (m)
1	1	5234.7	16931.0	5229.7	16933.9	141	327
2	1	Entire set lost to strong currents					
3	2	5257.9	16808.1	5255.0	16811.9	110	402
4	2	5254.9	16812.6	5251.3	16812.6	353	713
5	3	5311.5	16651.3	5307.3	16653.5	208	315
6	3	5307.0	16653.7	5303.0	16656.0	324	766
7	4	5335.0	16541.1	5330.9	16543.2	121	293
8	4	5330.6	16543.5	5326.7	16546.8	313	479
9	5	5344.2	16428.1	5340.9	16432.9	137	305
10	5	5340.6	16433.6	5337.6	16439.3	316	733
11	6	5358.2	16315.8	5354.5	16319.1	128	488
12	6	5354.4	16319.9	5351.8	16324.1	375	785
13	7	5808.0	16138.2	5405.5	16144.2	137	313
14	7	5405.4	16144.8	5403.5	16151.5	421	898
15	8	5418.9	16103.6	5415.9	16108.8	201	413
16	8	5415.8	16109.6	5412.6	16113.2	424	872
17	9	5421.9	16014.1	5418.1	16017.6	143	390
18	9	5417.9	16017.6	5413.9	16018.8	316	651
19	10	5430.6	15915.3	5426.5	15918.4	139	278
20	10	5422.5	15921.9	5425.9	15919.4	828	315
21	11	5438.0	15834.8	5434.2	15836.6	134	358
22	11	5434.0	15839.2	5429.5	15842.2	369	794
23	254[a]	5506.9	15830.4	5503.6	15834.9	103	114
24	154	5502.9	15831.1	5500.0	15836.0	114	94
25	12	5451.1	15744.2	5447.5	15748.7	185	362
26	12	5447.2	15749.1	5443.3	15751.6	373	653
27	13	5514.4	15640.4	5510.7	15644.0	166	340
28	13	5510.6	15644.2	5506.6	15644.6	326	852
29	14	5538.5	15550.9	5534.5	15551.6	152	210
30	14	5534.3	15551.7	5530.0	15550.0	210	212
31	15	5546.0	15508.3	5541.7	15510.8	152	324
32	15	5541.3	15511.1	5537.9	15515.7	349	578
33	149	5547.3	15604.6	5545.8	15611.9	203	240
34	249	5545.0	15612.1	5543.8	15620.0	241	249
35	150	5611.2	15557.8	5611.0	15604.6	188	238
36	250	5613.9	15607.8	5615.2	15614.6	249	263
37	148	5659.3	15503.8	5700.0	15511.8	165	234
38	248	5700.1	15518.2	5702.6	15524.2	254	263
39	151	5720.8	15502.4	5721.0	15510.2	243	240
40	251	5720.9	15514.7	5719.6	15522.9	245	258
41	16	5602.5	15434.0	5558.2	15434.3	229	530
42	16	5557.8	15434.4	5553.6	15434.5	558	881
43	17	5558.4	15401.3	5554.1	15401.0	225	501
44	17	5553.4	15401.1	5549.9	15401.9	556	995

Table 1.--continued

Haul no.	Station no.	Start lat. (ddmm.m)	Start long. (dddmm.m)	End lat. (ddmm.m)	End long. (dddmm.m)	Start depth (m)	End depth (m)
45	18	5616.8	15302.6	5614.9	15309.5	263	525
46	18	5614.2	15310.1	5611.7	15315.9	521	794
47	19	5628.5	15205.2	5624.4	15208.8	130	315
48	19	5624.1	15209.3	5621.4	15214.6	322	706
49	20	5707.1	15113.3	5703.1	15116.6	225	523
50	20	5702.5	15117.4	5658.2	15117.6	569	858
51	21	5724.1	15034.4	5719.6	15035.6	196	475
52	21	5719.2	15036.2	5715.0	15035.9	510	710
53	22	5737.9	14955.0	5733.4	14957.3	380	558
54	22	5732.7	14957.3	5728.0	14959.0	585	969
55	23	5758.3	14910.0	5755.1	14914.8	155	470
56	23	5754.9	14915.2	5750.9	14920.0	483	865
57	24	5817.6	14837.0	5813.5	14839.8	207	492
58	24	5812.9	14840.0	5808.2	14842.1	530	836
59	25	5841.3	14820.4	5837.3	14819.9	278	417
60	25	5836.9	14819.8	5832.5	14819.0	457	993
61	159	5843.6	14911.8	5846.1	14904.9	170	216
62	259	5848.1	14902.9	5850.6	14855.3	234	252
63	26	5907.6	14839.0	5903.3	14834.0	150	188
64	26	5903.0	14838.7	5958.5	14839.0	203	241
65	27	5909.3	14736.2	5905.0	14737.0	232	490
66	27	5904.4	14737.3	5859.6	14737.8	501	1024
67	28	5915.9	14650.9	5913.2	14656.3	188	578
68	28	5913.5	14656.9	5910.2	14601.3	560	849
69	29	5930.0	14531.5	5930.3	14540.0	157	852
70	29	5930.6	14541.9	5930.2	14549.7	839	477
71	30	5931.3	14442.7	5929.2	14450.0	187	483
72	30	5929.1	14450.7	5926.8	14457.5	446	838
73	31	5933.3	14339.1	5933.4	14347.4	170	726
74	31	5933.6	14349.0	5935.1	14357.1	631	647
75	262	5940.4	14332.9	5943.1	14329.8	296	311
76	162	5944.8	14335.2	5945.7	14342.3	300	159
77	32	5933.0	14233.8	5934.8	14240.0	130	593
78	32	5935.2	14240.3	5934.8	14247.4	576	629
79	33	5923.3	14209.8	5925.7	14217.1	232	351
80	33	5925.9	14217.6	5928.1	14224.3	399	977
81	34	5903.0	14120.6	5902.8	14128.9	291	532
82	34	5903.0	14129.9	5902.9	14138.1	585	909
83	163	5925.0	14056.2	5925.6	14104.6	229	298
84	263	5924.8	14110.1	5921.5	14114.9	324	326
85	35	5841.1	14038.4	5841.0	14145.7	245	560
86	35	5841.2	14046.4	5843.4	14052.4	567	565
87	264	5838.8	13919.9	5836.5	13927.1	254	258
88	164	5839.9	13905.0	5839.9	13913.0	163	249
89	36	5828.1	13928.0	5827.5	13935.4	194	494
90	36	5827.5	13935.4	5824.9	13942.5	470	944

Table 1.—continued

Haul no.	Station no.	Start lat. (ddmm.m)	Start long. (dddmm.m)	End lat. (ddmm.m)	End long. (dddmm.m)	Start depth (m)	End depth (m)
91	37	5808.5	13843.0	5808.5	13849.2	196	695
92	37	5809.1	13849.4	5809.9	13851.9	658	695
93	38	5752.7	13722.7	5753.0	13730.0	205	658
94	38	5753.3	13730.8	5753.4	13737.4	651	878
95	160	5754.9	13700.6	5755.2	13708.4	444	393
96	260	5758.0	13704.6	5758.2	13712.6	225	417
97	39	5737.1	13632.2	5736.5	13638.0	208	845
98	39	5736.7	13639.1	5738.5	13644.1	766	823
99	40	5711.3	13614.1	5713.4	13619.5	210	715
100	40	5714.0	13619.4	5714.9	13624.7	649	984
101	41	5651.1	13559.8	5653.7	13605.4	241	704
102	41	5654.2	13605.8	5657.4	13606.2	733	759
103	42	5623.0	13520.9	5622.9	13528.8	155	190
104	42	5623.0	13729.2	5622.1	13736.8	190	243
105	43	5559.0	13526.2	5601.2	13531.6	351	669
106	43	5601.8	13532.3	5604.8	13538.0	640	916
107	153	5555.8	13454.1	5600.0	13454.8	187	364
108	253	5602.0	13455.6	5605.6	13501.7	371	326
109	165	5532.6	13427.0	5534.9	13433.5	185	269
110	265	5531.6	13439.8	5534.3	13445.2	289	267
111	44	5533.5	13458.0	5534.6	13503.0	243	571
112	44	5535.0	13503.1	5537.5	13507.8	521	713
113	45	5520.0	13444.2	5522.4	13447.8	309	629
114	45	5522.9	13447.6	5523.4	13454.0	549	805
115	46	5454.0	13417.2	5457.7	13421.2	225	518
116	46	5457.9	13422.0	5500.8	13427.1	512	880
117	161	5438.9	13250.3	5436.0	13256.0	150	380
118	261	5435.9	13301.4	5435.8	13309.4	411	360
119	47	5427.1	13355.4	5429.3	13400.5	283	713
120	47	5429.7	13401.0	5432.2	13404.1	672	1008
121[b]	45	5520.4	13443.4	5523.2	13449.0	302	607
122	45	5523.4	13449.0	5523.4	13455.6	569	843
123	153	5555.9	13454.2	5600.3	13455.0	201	369
124	253	5602.1	13455.7	5605.5	13500.9	371	324
125	43	5558.9	13526.2	5601.1	13532.0	366	668
126	43	5601.6	13532.3	5604.7	13536.8	658	838

[a] Three digit station numbers refer to gully stations. The first digit represents the set number and the next two refer to the station number that appears in Figure 1. Each set contained 80 skates.

[b] Hauls 121-126 repeated stations sampled earlier.

Table 2.--Catch in number by species and station for the 1989 NMFS longline survey of the Gulf of Alaska, June 26 - September 12. SF = sablefish, PC = Pacific cod, GR = grenadiers, PH = Pacific halibut, ATF = arrowtooth flounder, RF = rockfish, ST = shortspine thornyheads, SK = skates, OS = other species[a].

Station	SF	PC	GR	PH	ATF	RF	ST	SK	OS
1[b]	191	341	17	198	59	163	1	143	15
2	312	476	1,319	278	101	276	283	44	18
3	795	349	491	250	291	378	160	27	5
4	819	838	1,085	222	188	44	88	20	32
5	785	258	1,256	56	192	51	148	24	23
6	1,036	580	1,367	106	165	227	190	11	34
7	507	483	1,128	85	199	169	133	4	8
8	451	161	2,416	57	156	11	134	1	33
9	700	909	1,724	55	150	50	91	1	5
10	1,286	1,165	1,131	47	97	62	101	10	13
11	1,623	532	1,401	54	108	102	62	4	7
12	1,538	201	2,120	121	130	68	58	4	20
13	1,592	28	1,351	99	160	133	117	2	17
14	1,052	1,498	0	394	432	71	2	6	51
15	2,130	130	734	118	169	68	130	17	7
16	1,862	2	1,843	72	172	111	189	12	8
17	1,223	31	1,046	125	181	96	115	20	701
18	1,508	0	1,259	38	129	165	204	7	266
19	1,480	666	329	121	208	248	46	10	14
20	2,173	35	1,110	15	139	19	102	1	194
21	2,053	116	508	61	100	48	88	5	28
22	1,329	0	1,578	0	1	0	158	2	227
23	1,580	75	1,200	229	82	52	106	13	124
24	1,431	144	872	74	287	54	205	10	23
25	1,536	10	526	84	90	143	106	5	383
26	2,536	453	0	171	161	6	22	25	31
27	2,014	106	427	28	129	77	94	1	218
28	2,594	84	571	9	26	23	111	8	277
29	1,879	71	768	43	12	147	94	11	337

Table 2.--continued

Station	SF	PC	GR	PH	ATF	RF	ST	SK	OS
30	2,298	110	182	87	136	156	105	17	67
31	571	71	19	29	11	3	166	0	10
32	1,407	8	126	78	7	18	245	0	31
33	798	8	18	70	104	74	218	24	32
34	2,086	0	231	23	8	409	211	14	54
35	1,597	0	683	23	61	131	65	17	33
36	2,318	9	399	15	32	130	66	5	30
37[c]	1,375	0	260	6	22	285	79	2	30
38	2,559	0	235	6	32	80	66	7	47
39	2,695	0	396	3	18	54	105	2	55
40	3,080	0	155	29	39	148	131	6	58
41	2,692	0	357	24	54	118	100	10	21
42	1,205	231	1	368	102	6	9	32	833
43	2,691	1	342	3	5	335	160	7	61
44	1,979	44	47	58	43	215	101	24	133
45	2,051	0	61	2	2	13	73	0	27
46	2,315	9	189	21	13	350	85	3	42
47	1,951	4	157	3	11	504	97	10	86
148[d]	811	374	0	151	618	8	0	13	9
248	1,157	419	0	146	178	0	0	52	15
149	544	728	0	65	193	5	0	43	19
249	989	275	0	99	164	60	0	63	20
150	595	513	0	92	198	9	0	63	24
250	704	646	0	68	198	0	0	124	7
151	961	338	0	129	474	1	0	67	33
251	971	692	0	221	140	1	0	17	16
153	549	88	0	118	165	107	157	42	82
253	2,047	0	0	24	40	28	51	29	29
154	1,456	14	0	73	63	0	0	12	10
254	1,242	63	1	41	77	6	0	12	14
159	656	20	0	34	129	5	39	45	11
259	1,522	9	0	64	144	5	36	42	11

Table 2.--continued

Station	SF	PC	GR	PH	ATF	RF	ST	SK	OS
160	2,040	0	66	0	0	7	43	0	5
260	1,954	0	18	15	8	5	8	10	0
161	953	80	1	224	87	4	77	51	224
261	1,421	2	0	48	22	13	87	51	18
162	1,185	29	0	117	53	1	19	28	38
262	955	0	0	23	4	0	18	5	3
163	786	9	0	45	102	4	65	10	41
263	538	0	0	44	34	28	39	10	4
164	335	28	0	117	255	25	6	39	106
264	325	0	0	97	160	16	6	29	26
165	236	115	0	356	48	1	2	29	203
265	539	133	0	166	69	2	34	33	119
43[e]	2,495	0	105	14	6	625	209	18	48
45	2,293	2	70	4	27	432	139	5	63
153	511	49	0	162	140	71	151	21	46
253	1,819	0	0	22	27	22	20	10	191
Total	108,272	14,863	33,696	6,837	8,837	7,582	6,626	1,601	6,204

[a] Other species: salmon shark, spiny dogfish, Pacific sleeper shark, blue shark, spotted ratfish, Greenland turbot, flathead sole, Dover sole, rex sole, rock sole, searcher, Pacific pomfret, unidentified sculpins, blackfin sculpin, yellow Irish lord, great sculpin, Pacific flatnose, lingcod, coho salmon, giant wrymouth, prowfish, unidentified eelpout, twoline eelpout, unidentified rockfish, aurora, silvergray, dusky, greenstriped, rosethorn, canary, yelloweye, redbanded, and harlequin rockfishes, sea anemones, unidentified crabs, unidentified tanner crab, true tanner crab, scarlet king crab, golden king crab, red king crab, snails, octopus, starfish, and tunicates.

[b] 80 effective skates (deep set lost).

[c] 122 effective skates.

[d] Three digit numbers refer to gully stations. The first digit represents the set number and the next two refer to the station number that appears in Figure 1. Each set contained 80 skates.

[e] Stations 43, 45, 153, and 253 were resampled to study catch variability.

Table 3.—Mean length, mean round weight, mean dressed weight, number, and estimated total round weight of sablefish, by station, for the 1989 NMFS longline survey of the Gulf of Alaska, June 26 - September 12.

Station number	Mean length (cm)	Mean round weight (kg)[a]	Mean dressed weight (lb)[b]	Number of sablefish	Estimated total round weight (kg)[c]
1	73.6	4.4	5.8	191	840
2	69.0	3.6	4.8	312	1,123
3	63.1	2.7	3.6	795	2,147
4	66.7	3.2	4.2	819	2,621
5	61.4	2.5	3.3	785	1,963
6	65.4	3.1	4.1	1,036	3,212
7	69.4	3.7	4.9	507	1,876
8	64.9	3.0	4.0	451	1,353
9	61.7	2.5	3.3	700	1,750
10	63.4	2.7	3.6	1,286	3,472
11	66.5	3.2	4.2	1,623	5,194
12	64.9	3.0	4.0	1,538	4,614
13	67.9	3.4	4.5	1,592	5,413
14	64.7	2.9	3.8	1,052	3,051
15	66.1	3.1	4.1	2,130	6,603
16	67.9	3.4	4.5	1,862	6,331
17	69.9	3.8	5.0	1,223	4,647
18	71.0	4.0	5.3	1,508	6,032
19	67.9	3.4	4.5	1,480	5,032
20	68.4	3.5	4.6	2,173	7,606
21	70.1	3.8	5.0	2,053	7,801
22	69.1	3.7	4.9	1,329	4,917
23	69.3	3.7	4.9	1,580	5,846
24	69.9	3.8	5.0	1,431	5,438
25	70.6	3.9	5.2	1,536	5,990
26	66.1	3.1	4.1	2,536	7,862
27	69.8	3.8	5.0	2,014	7,653
28	70.0	3.8	5.0	2,594	9,857
29	70.7	4.0	5.3	1,879	7,516

Table 3.--continued

Station number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
30	69.7	3.7	4.9	2,298	8,503
31	71.5	4.1	5.4	571	2,341
32	68.4	3.6	4.8	1,407	5,065
33	69.6	3.8	5.0	798	3,032
34	66.9	3.4	4.5	2,086	7,092
35	70.0	3.9	5.2	1,597	6,228
36	69.4	3.8	5.0	2,318	8,808
37	71.0	4.0	5.3	1,375	5,500
38	71.3	4.1	5.4	2,559	10,492
39	69.2	3.7	4.9	2,695	9,972
40	68.6	3.6	4.8	3,080	11,088
41	70.4	3.9	5.2	2,692	10,499
42	63.2	2.7	3.6	1,205	3,254
43	65.1	3.0	4.0	2,691	8,073
44	66.0	3.2	4.2	1,979	6,333
45	66.8	3.3	4.4	2,051	6,768
46	68.5	3.6	4.8	2,315	8,334
47	69.5	3.7	4.9	1,951	7,219
148[d]	64.5	2.8	3.7	811	2,271
149	65.7	3.0	4.0	544	1,648
150	63.2	2.7	3.6	595	1,607
151	65.0	2.9	3.8	961	2,787
153	62.8	2.7	3.6	549	1,482
154	62.2	2.5	3.3	1,456	3,640
159	67.3	3.3	4.4	656	2,165
160	66.1	3.2	4.2	2,040	6,528
161	63.1	2.8	3.7	953	2,668
162	68.2	3.5	4.6	1,185	4,148
163	66.9	3.3	4.4	786	2,594
164	62.0	2.8	3.7	335	938

Table 3.—continued

Station number	Mean length (cm)	Mean round weight (kg)	Mean dressed weight (lb)	Number of sablefish	Estimated total round weight (kg)
165	66.6	3.3	4.4	236	779
248	66.2	3.1	4.1	1,157	3,587
249	64.2	2.8	3.7	989	2,769
250	63.0	2.6	3.4	704	1,830
251	66.2	3.1	4.1	971	3,010
253	66.8	3.4	4.5	2,047	6,960
254	62.2	2.5	3.3	1,242	3,105
259	71.2	4.0	5.3	1,522	6,088
260	65.9	3.1	4.1	1,954	6,057
261	64.3	2.9	3.8	1,421	4,121
262	67.1	3.3	4.4	955	3,152
263	67.6	3.5	4.6	538	1,883
264	62.0	2.8	3.7	325	910
265	60.7	2.5	3.3	539	1,348
43	65.5	3.1	4.1	2,495	7,735
45	67.2	3.3	4.4	2,293	7,567
153	63.4	2.8	3.7	511	1,431
253	67.3	3.4	4.5	1,819	6,185
				108,272	367,354

[a] Mean weight was estimated by applying a length-weight relationship to the length frequency distributions from each station.

[b] Mean dressed weight was estimated using a recovery rate of 0.6 of round weight.

[c] Estimated total round weight is the product of mean round weight and the number of sablefish that came to the rail, including a small percentage that was lost during landing.

[d] Three digit numbers refer to gully stations. The first digit represents the set number and the next two refer to the station number that appears in Figure 1. Each set contained 80 skates.

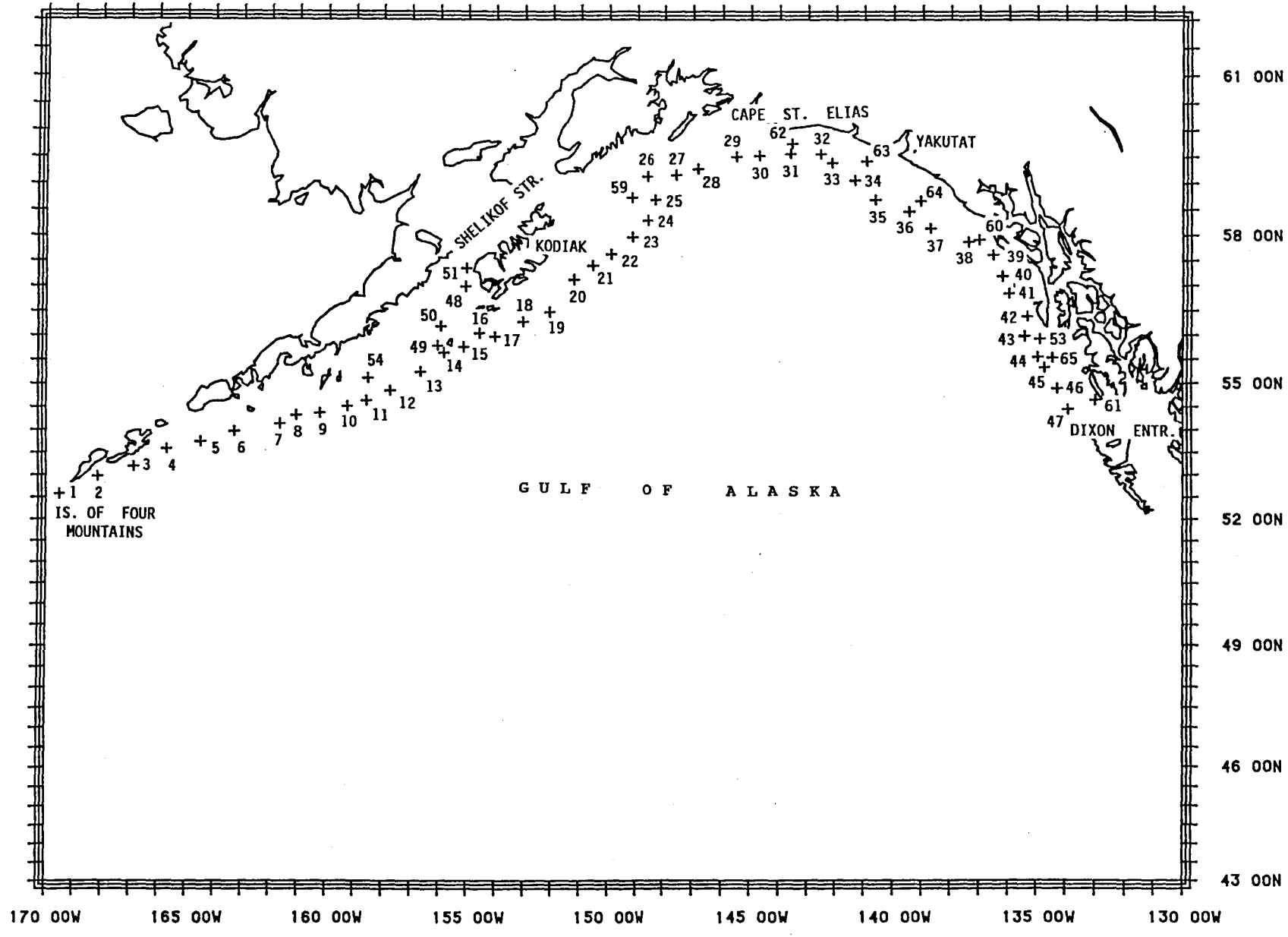

Figure 1.--Station locations for the 1989 NMFS Gulf of Alaska longline survey. Station numbers greater than 47 refer to gully stations and actually represent two adjacent stations (e.g. 53 locates stations 153 and 253).