

**Regional Information Report No. 1J09-13**

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**2007 SSEI (Clarence) Sablefish Longline Survey Field  
Report**

by

**Michael Vaughn**

and

**Allison Sayer**

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December 2009

Alaska Department of Fish and Game

Divisions of Commercial Fisheries





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**2007 SSEI (CLARENCE) SABLEFISH LONGLINE SURVEY FIELD  
REPORT**

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## ABSTRACT

This report presents methods and data from the 2007 sablefish longline survey conducted in the Southern Southeast Inside (SSEI) Subdistrict of Southeast Alaska. Catch rates, bycatch data and biological data including sablefish lengths, sex ratios, and ages are presented. Data from previous annual surveys are also presented. The overall catch per unit of effort (CPUE) for the 2007 survey was 0.20 fish per hook and 0.98 round pounds per hook.

Key words: Sablefish, longline survey, SSEI, Clarence Strait, CPUE

## INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) conducts annual longline surveys in the Southern Southeast Inside Subdistrict of Southeast Alaska to assess the condition of sablefish (*Anoplopoma fimbria*) in this area (Figure 1). Annual surveys have been conducted since 1988, with a major standardization of methods occurring in 1997. No survey was performed in 2005 due to spending constraints. In 2007 the annual SSEI sablefish survey was conducted from May 7 through May 14 and was the 19<sup>th</sup> ADF&G sablefish survey in Clarence Strait.

The specific objectives of the 2007 survey were:

1. Calculate the catch per unit effort (CPUE) for sablefish at the 37 stations surveyed annually in the Clarence Strait and Dixon Entrance portions of the SSEI Subdistrict.
2. Enumerate, to the lowest possible taxonomic group, all fish captured.
3. Collect a representative sample of biological data (n=550) including otoliths (aging structures), length, weight, sex, and stage of gonad maturity from a subsample of sablefish and an additional representative sample (n=550) of sablefish length measurements.
4. Collect biological data including length, weight, and sex, from all *Sebastes* rockfishes caught.
5. Collect length data from all shortspine thornyheads (*Sebastolobus alascanus*) caught.
6. Enumerate seabirds present after gear retrieval at each station for North Pacific Fisheries Management Council research.

## METHODS

### SURVEY AREA

The survey area included the waters of Clarence Strait and Dixon Entrance from 55° 39.21' N. latitude and 132° 19.13' W. longitude to 54° 28.00' N. latitude and 132° 32.77' W. longitude. Some stations have been eliminated since the inception of the survey. There are currently 37 stations within the survey area (Figure 2). There have been no changes to the survey stations since the most recent publication of the SSEI longline survey report (Holum 2005).

### SET INFORMATION

Sets were made in the same direction as the tidal current. Haulback direction was dependent on the tide, wind direction, and currents. Sets were allowed to soak for a minimum of three and a maximum of 11 hours, which is consistent with National Marine Fisheries Service (NMFS) survey protocol (*personal communication*, C.R. Lunsford). If it was necessary to set differently from the standard set coordinates due to circumstances such as tidal currents or weather, the set

was to pass through the start latitude and longitude and be made as close to the original location points as possible.

Set information collected at each station included the date and time of set and haul, start and end coordinates, the depth of each anchor and skate as they went overboard, haulback order, wind direction and estimated speed, and bottom substrate. Substrate was evaluated based on the skipper's interpretation of sounder information and any substrate that came up on fishing gear. Comments on any problems with the gear or other factors impacting CPUE were noted along with observations regarding the presence of sharks, whales, or any other information of biological interest.

## **VESSELS**

ADF&G awards annual 14-day charter agreements to two commercial longline vessels to fish 18 or 19 stations each. The survey area is split into two distinct sections, allowing all stations to be fished within a single seven day period. The contract length is longer than the anticipated survey length to allow for delays associated with weather, gear, or other problems.

The 2007 Request for Bids specified a maximum bid of \$30,000 for each portion of the survey and that a vessel could not fish more than one section. Annual contracts were awarded to the two vessels with the lowest bids. Vessels were assigned a section at the department's discretion.

The *F/V Masonic* was awarded an annual contract (\$27,000) and conducted the longline survey in the northern portion (Trip #1), fishing 19 stations. The *F/V Providence* was awarded an annual contract (\$27,400) and conducted the longline survey in the southern portion (Trip #2), fishing 18 stations.

Each vessel was required to provide at least three experienced crew members in addition to the skipper (Appendix B). The crew operated the vessel and baited, set, retrieved, and repaired all longline gear. Two ADF&G scientific personnel were assigned to each vessel to collect the set, hook accounting, and biological data.

## **GEAR**

In 2000, ADF&G contracted Lummi Fishery Supplies in Seattle to build skates of conventional longline gear. These skates were built to replicate the gear used in NMFS longline surveys in order to make the ADF&G sablefish catch and effort data from internal state waters comparable with NMFS data from the outside waters of the Gulf of Alaska. To eliminate bias introduced by new gear, all gear was fished prior to its use as survey gear. New gear may not fish as effectively as gear that has previously been baited and deployed at sea.

A string of gear consisted of a flag pole, an array of buoys, buoy line of length dependent upon the set depth, a 60 pound (27 kg) longline anchor, 150 fm (274 m) of running line, 25 skates of 45 #13/0 Mustad circle hooks, a second 150 fm of running line, a second 60 pound longline anchor, a second buoy line, a second array of buoys and a second flagpole. Beginning in 2000, a 7 pound (3 kg) lead ball was snapped to the end of each skate. Hooks were front threaded to gangions secured to beackets tied into the groundline at 6.5 foot (2 m) intervals. All hooks were secured at 15 inches (38 cm) from the groundline, which was the length of the gangion and the becket when tied together and attached to groundline. Sixteen feet (5 m) of groundline were left bare at each skate end. Gangions were medium lay #60 nylon round braided twine, beackets were medium lay #72 nylon becket twine, and the groundline was medium lay 3/8 inch (1 cm) nylon American Line SSR 100. Each vessel crew attached new hooks on all skates prior to the start of

the survey. Bent, straightened, and missing hooks were replaced after each set, as the gear was baited.

All ADF&G survey vessels used Pacific States Marine Fishery Commission issued seabird avoidance devices (BADs).

## **BAIT**

Argentine illex (*Illex argentinus*), 100–200 gm squid was used as bait and the rate of use averaged 10.7 pounds (4.9 kg) per 100 hooks. Only the squid body was used as bait; the head and tentacles were discarded. Bait pieces were 1.5–2 inches (3.8–5.0 cm) long. Bait was thawed within 24 hours of use. This bait protocol replicates NMFS bait protocol and is consistent with previous ADF&G surveys from 2000 through the present.

International Marine Industries, Inc., of Newport, Rhode Island won the bait bid to provide 6,500 pounds of Argentine illex for the SSEI survey. The winning bid was \$.83 per pound (\$1.83/kg), including freight costs.

## **SCHEDULE**

The survey began on May 7 and concluded on May 14. The survey was scheduled to correspond with the timing of previous surveys, occurring during the favorable tide series (Appendix C) just prior to the start of the commercial fishing season. Each vessel made two deliveries to Trident Seafoods during the survey.

## **HOOK ACCOUNTING, CATCH, AND CPUE**

ADF&G staff classified each hook as it broke the surface of the water. A hook without a fish on it was recorded as “bare,” “bait,” or “invalid” (bent, broken, missing, snarled). A whole skate was considered invalid if greater than 25% of the hooks were missing, in a snarl, or stripped.

Sablefish that broke the surface on a hook but were not landed were recorded as “lost.” Sablefish less than approximately 45 cm (18 inches) long were recorded as “small” and immediately returned to the water unless the fish was determined to be a biological sample. Sablefish that were not marketable were discarded with the discard reason reported if known. All other fish that broke the surface attached to a hook were identified to the lowest possible taxonomic group and tallied. All species other than sablefish, rockfish, and Pacific cod were immediately released.

The CPUE in terms of sablefish per hook for an individual station was calculated using only valid skates. The number of sablefish, including lost and discarded sablefish, was divided by the number of hooks on valid skates retrieved at that station.

The CPUE in terms of round pounds per hook for an individual station was calculated by multiplying the fish per hook CPUE for the station by the average weight of the fish sampled at that station. The overall fish per hook CPUE for the survey was calculated by dividing the total number of sablefish by the total number of hooks retrieved, on valid skates only. The overall round pounds per hook CPUE was calculated by multiplying the overall fish per hook CPUE for the survey by the overall average weight of sablefish sampled during the survey.

## **BIOLOGICAL SAMPLING**

The first sablefish of each set, and every 10<sup>th</sup> sablefish thereafter from the first 16 skates of each set, were set aside for biological sampling. Length and weight were measured, sex and maturity

were assessed, and otoliths were removed from each biological sample. Additional length measurements were collected from every 11<sup>th</sup> sablefish from the first 16 skates of each set.

Lengths were measured to the nearest cm from the tip of the snout to the fork of the tail using a measuring board. Due to a misunderstanding on the part of one staff person, half of the lengths collected on trip 1 were measured to the nearest 0.5 cm. In the data analysis, these lengths were rounded up to the nearest cm. Weights were measured to the nearest 0.1 kg using a Salter Heavy-Duty Hanging (#235-10S) metric (44 lb/20 kg) scale. If seas were too rough to obtain repeatable weights during a haul, fish were not weighed. Sablefish sex and maturity were assessed from visual observation of the gonads. Fish were classified into six maturity categories: immature, maturing juvenile, mature/developing, spawning, spent/post spawning, and resting (Appendix D). After sampling, fish were cleaned and dressed to industry standards by ADF&G staff.

Otoliths were cleaned on board the vessels using warm water with highly diluted detergent, hand-dried, and stored dry in plastic multi-cell trays. They were aged at the ADF&G Division of Commercial Fisheries Mark, Tag, and Age Laboratory in Juneau using the break-and-burn technique.

*Sebastes* rockfish lengths and weights were taken using the same methods and equipment used for sablefish. Sex was determined by examination of the urogenital papillae. All *Sebastes* rockfish were retained on the vessel. The length of every shortspine thornyhead (*Sebastolobus alascanus*) caught was measured. The same measurement methods were used as those for sablefish. Shortspine thornyheads were released immediately after measurement.

### **Tagged Sablefish**

All tagged sablefish encountered during the survey were retained. Tags were collected and the associated recovery information was recorded for each fish. Fish tagged by agencies other than ADF&G were handled according to the protocols specified by the release agency.

### **SEABIRD OCCURRENCE SURVEY**

Seabird occurrence data were collected to aid the North Pacific Fisheries Management Council (NPFMC) in revisions to seabird avoidance measures in groundfish and halibut hook-and-line fisheries of Alaska. ADF&G staff enumerated seabirds to the lowest possible taxonomic level in two zones: the area within 50 m of the vessel stern and the visible area greater than 50 m away. Staff also recorded supplemental information including wind direction, Beaufort sea state, bird avoidance device (BAD) performance, and maximum visibility.

### **BID TO PURCHASE ADF&G FISH**

The department solicited bids from area processors to purchase the fish caught during the survey. The 2007 bids were based upon the catch delivered during the 2006 survey. Trident Seafoods in Ketchikan submitted the winning bid (Appendix E).

## **RESULTS**

### **SET INFORMATION**

All 37 stations were surveyed (Appendix A). A total of 25 skates with approximately 1,125 hooks were set at each station and a total of 925 skates were deployed during the survey. Seventeen skates were classified as invalid and not included in the calculation of CPUE. Gear snarls accounted for at least 9 of the invalid skates and a substrate hang up was responsible for 4

invalid skates on station 54. The gear was also hung up on the bottom at station 52 however the entire set appeared to be fishing properly. The gear parted at station 48 due to entanglement with a Pacific sleeper shark (*Somniosus pacificus*) and was retrieved by hauling the opposite end of the set.

## **CATCH AND CPUE**

The CPUE in terms of fish per hook (Table 1) ranged from 0.03 at station 33, Grant Cove, to 0.40 at station 11, West Rock. The overall CPUE was 0.20. The CPUE in terms of round pounds per hook ranged from 0.18 (0.08 kg/hook) at station 33 to 2.18 lbs/hook (0.99 kg/hook) at station 54, Cape Muzon. The survey average was 0.98 lbs/hook (0.44 kg/hook).

The overall 2007 survey CPUE was similar to the 2006 survey CPUE of 0.20 fish and 1.1 lbs/hook (0.5 kg/hook) (Table 2), the 2004 CPUE of 0.23 fish and 1.1 lbs/hook (0.5 kg/hook), and the 2003 CPUE of 0.24 fish and 1.1 lbs/hook (0.5 kg/hook).

A total of 8,001 sablefish were caught during the survey and 7,575 were retained. Valid skates accounted for 7,934 sablefish and 7,512 were retained (Table 3). Of the remaining sablefish on valid skates, 267 were lost at the roller, 91 were discarded due to hagfish damage, 41 were released due to small size, 12 were discarded due to shark damage, and 11 were discarded due to sand flea damage.

## **BYCATCH**

A total of 4,283 fish and 16 other animals were caught as bycatch (Table 4). Valid skates accounted for 4,265 fish and all the other bycatch species. Spiny dogfish sharks (*Squalus acanthias*) were the most abundant bycatch species, comprising 30% of the bycatch. Skates (*Raja* spp. and *Bathyraja* spp.) were the next most abundant, comprising 16%. Pacific halibut (*Hippoglossus stenolepis*) and Pacific hagfish (*Eptatretus stoutii*) each comprised 14%, and shortspine thornyhead (*Sebastolobus alascanus*) comprised 11%. The remaining bycatch was made up of, in descending order of abundance: spotted ratfish (*Hydrolagus colliei*), arrowtooth flounder (*Atheresthes stomias*), shortraker rockfish (*Sebastes borealis*), Pacific cod (*Gadus macrocephalus*), roughey rockfish (*Sebastes aleutianus*), Dover sole (*Microstomus pacificus*), redbanded rockfish (*Sebastes babcocki*), coral (various species), Pacific sleeper shark, golden king crab (*Lithodes aequispinus*), sculpin (family Cottidae), walleye pollock (*Theragra chalcogramma*), miscellaneous flatfish, common octopus (*Octopus vulgaris*), Pacific hake (*Merluccius productus*), and unspecified slope rockfish.

## **BIOLOGICAL DATA**

### **Sablefish**

Length was measured, sex and maturity were assessed, and otoliths were taken from 505 sablefish. Valid weights were obtained for 488 sablefish and valid age estimates were produced for 502 sablefish. An additional 500 sablefish were measured for length only, for a total of 1009 length measurements. Lengths ranged from 44 cm (17 in) to 85 cm (33 in) (Figure 3). The mean length of fish sampled in 2007 was 60 cm (24 in). The 2006 mean length was 61 cm (24 in), the 2004 mean was 59 cm (23 in), and the 2003 mean was 58 cm (23 in) (Figure 4).

The sex ratio of the sampled sablefish was 50% female. Females were larger than males with a mean fork length of 62 cm (24 in) compared to the male mean fork length of 59 cm (23 in)

(Figure 5). The average weight of all the sablefish sampled was 2.3 kg (5.1 lbs) (Table 1). Females averaged 2.5 kg (5.5 lbs) and males averaged 2.1 kg (4.6 lbs).

Age estimates ranged from 2 to 33 years with an average age of 8 years (Figure 6). The mode age was 7 years, and the median was 8 years. Female ages ranged from 3 to 32 years with an average age of 8 years. Male ages ranged from 2 to 33 years with an average age of 9 years.

Visual inspection of the gonads indicated that approximately Fifty-three percent of the females and 61% of the males sampled had not previously spawned (Table 5). The majority of the fish, 28% of the males and 42% of the females, were classified as “maturing juvenile,” meaning they had not previously spawned but would have spawned during the following winter (Appendix D).

### ***Sebastes* Rockfishes**

A total of 23 redbanded rockfish (*Sebastes babcocki*), 68 rougheye rockfish (*S. aleutianus*), and 117 shorttraker rockfish (*S. borealis*) were sampled for length, weight and sex. The average fork lengths were 46 cm, 47 cm, and 67 cm (18, 19, and 26 in), respectively. Redbanded rockfish and rougheye both averaged 1.7 kg (3.7 lbs) and shorttraker rockfish averaged 4.9 kg (10.8 lbs).

### **Shortspine Thornyheads**

Lengths were taken from 414 shortspine thornyheads. Fork lengths ranged from 28 cm to 68 cm (11 in to 27 in) and the mean length was 41 cm (16 in).

### **SEABIRD OCCURRENCE SURVEY**

The presence or absence of seabirds, seabird enumeration to the lowest possible taxonomic level, and all requisite secondary information were recorded successfully at each survey station. The data were sent to the International Pacific Halibut Commission (IPHC) for compilation and analysis. Data collected by ADF&G staff on longline surveys was used, together with data from other agencies, in publications accessible at:

<http://wsg.washington.edu/communications/onlinepubs.html>.

### **FISH TICKET AND LANDING DATA**

A total of 37,238 round pounds of sablefish, 1,706 round pounds of rockfish, and 513 round pounds of Pacific cod were landed for a total value of \$85,117. An estimated 27% of the sablefish catch by weight came from statistical area 325531, 25% from 315432, 20% from 315502, 10% from 315431, 9% from 325401, 6% from 325431, and 3% from 315401. Thirty-one percent of the fish were graded as 3/4 pounds dressed weight, 23% were 4/5 grade, 21% were 2/3 grade, 16% were 5/7 grade, 6% were -2, and 3% were +7. Three percent of the sablefish catch was graded as #2.

### **ACKNOWLEDGEMENTS**

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## **REFERENCES CITED**

Holum, D. 2005. Southern Southeast Inside (Clarence Strait and Dixon Entrance) relative abundance sablefish longline survey report for 2004. Alaska Department of Fish and Game, Fishery Data Series No. 05-17, Anchorage.

Table 1.–Hook condition, sablefish average weight and CPUE (valid skates only), 2007

Station	Total Hooks	Bare hooks	Baited hooks	Invalid hooks	Sablefish	Fish /total hooks	Avg. weight (kg)	Kg/ total hooks	Avg. weight (lbs)	Lbs/ total hooks
2	1,103	472	90	33	321	0.29	2.5	0.73	5.5	1.60
3	902	629	1	15	150	0.17	1.6	0.26	3.5	0.58
4	1,122	666	1	22	342	0.30	1.9	0.57	4.1	1.25
5	1,086	784	1	49	191	0.18	1.7	0.30	3.8	0.66
6	1,129	833	1	27	174	0.15	1.8	0.28	4.0	0.62
11	1,100	497	10	22	436	0.40	2.3	0.91	5.1	2.01
12	1,114	917	1	12	121	0.11	1.8	0.19	3.9	0.43
14	1,075	458	6	27	377	0.35	2.1	0.72	4.5	1.59
15	1,117	905	5	19	115	0.10	1.8	0.19	4.1	0.42
16	1,120	924	1	33	89	0.08	2.1	0.17	4.6	0.37
17	1,128	878	1	32	98	0.09	2.4	0.21	5.4	0.47
18	1,120	740	6	23	231	0.21	1.9	0.39	4.2	0.87
20	1,119	681	16	10	249	0.22	1.9	0.42	4.2	0.93
21	1,124	854	1	17	185	0.16	1.9	0.32	4.3	0.70
26	1,128	526	90	13	112	0.10	2.7	0.27	6.0	0.59
27	1,079	567	42	27	324	0.30	2.7	0.80	5.9	1.77
30	1,125	941	0	8	101	0.09	1.9	0.17	4.1	0.37
31	1,125	981	0	30	61	0.05	2.3	0.12	5.0	0.27
33	1,125	1055	0	13	39	0.03	2.3	0.08	5.1	0.18
35	1,125	969	3	5	102	0.09	2.6	0.24	5.7	0.52
36	1,117	784	5	55	161	0.14	2.7	0.39	6.0	0.87
37	1,124	810	57	14	145	0.13	3.1	0.39	6.8	0.87
39	1,080	810	2	19	152	0.14	2.7	0.37	5.8	0.82
41	1,029	557	123	25	161	0.16	2.8	0.43	6.1	0.96
43	1,119	543	128	17	260	0.23	2.6	0.59	5.6	1.31
44	1,125	661	5	40	352	0.31	2.7	0.83	5.9	1.83
46	1,141	824	4	23	245	0.21	2.5	0.53	5.5	1.18
47	1,122	816	2	12	224	0.20	1.8	0.36	4.0	0.80
48	1,069	694	5	44	292	0.27	3.0	0.81	6.6	1.80
49	1,122	900	1	25	142	0.13	3.5	0.45	7.8	0.99
50	1,117	923	2	22	101	0.09	3.1	0.28	6.7	0.61
52	1,105	341	85	22	339	0.31	**weights discarded**			
53	1,047	530	60	16	290	0.28	2.5	0.70	5.6	1.55
54	925	251	149	15	319	0.34	2.9	0.99	6.3	2.18
55	1,117	524	28	40	397	0.36	1.6	0.56	3.5	1.24
56	1,120	703	2	22	270	0.24	1.6	0.39	3.6	0.86
57	1,122	708	0	14	266	0.24	1.6	0.37	3.5	0.82
Overall	40667	26656	934	862	7934	0.20	2.3	0.44	5.0	0.98

Table 2.–Sablefish per hook CPUE and average weight, 2003–2007. There was no survey in 2005

Station	2007		2006		2004		2003	
	CPUE	Avg wt (kg)						
2	0.29	2.5	0.36	2.6	0.33	2.4	0.29	2.5
3	0.17	1.6	0.25	1.8	0.27	1.6	0.35	**
4	0.30	1.9	0.28	1.7	0.33	1.7	0.35	1.6
5	0.18	1.7	0.28	2.3	0.32	1.9	0.33	**
6	0.15	1.8	0.22	1.9	0.20	1.6	0.34	1.5
11	0.40	2.3	0.24	2.3	0.37	2.3	0.32	**
12	0.11	1.8	0.15	2.2	0.16	1.6	0.19	1.8
14	0.35	2.1	0.40	2.2	0.58	1.5	0.46	1.4
15	0.10	1.8	0.15	2.7	0.18	1.9	0.13	2.1
16	0.08	2.1	0.19	2.3	0.18	1.8	0.14	2.1
17	0.09	2.4	0.15	2.3	0.14	1.8	0.09	2.1
18	0.21	1.9	0.19	2.2	0.26	1.7	0.18	1.9
20	0.22	1.9	0.26	2.6	0.23	1.9	0.46	1.5
21	0.16	1.9	0.12	2.3	0.12	1.7	0.16	2.4
26	0.10	2.7	0.15	3.2	0.21	2.4	0.16	2.5
27	0.30	2.7	0.20	3.4	0.28	2.4	0.19	1.8
30	0.09	1.9	0.11	2.8	0.12	1.9	0.10	2.7
31	0.05	2.3	0.06	2.4	0.09	1.9	0.11	2.1
33	0.03	2.3	0.06	1.9	0.05	1.8	0.12	1.4
35	0.09	2.6	0.12	2.8	0.20	2.4	0.20	2.4
36	0.14	2.7	0.18	2.5	0.26	2.1	0.29	2.4
37	0.13	3.1	0.16	2.3	0.17	2.6	0.24	2.7
39	0.14	2.7	0.14	2.9	0.17	2.4	0.23	2.7
41	0.16	2.8	0.20	3.1	0.26	2.9	0.22	2.3
43	0.23	2.6	0.17	2.7	0.21	2.4	0.18	2.2
44	0.31	2.7	0.17	2.5	0.27	2.5	0.31	2.1
46	0.21	2.5	0.08	2.2	0.13	2.2	0.15	2.1
47	0.20	1.8	0.14	2.8	0.15	2.0	0.19	2.2
48	0.27	3.0	0.22	2.9	0.31	2.7	0.41	2.4
49	0.13	3.5	0.08	3.3	0.10	1.9	0.13	2.4
50	0.09	3.1	0.08	3.6	0.10	2.8	0.13	2.7
52	0.31	**	0.30	3.2	0.25	3.0	0.24	2.5
53	0.28	2.5	0.28	3.2	0.36	2.3	0.30	2.4
54	0.34	2.9	0.37	3.1	0.19	2.7	0.38	2.4
55	0.36	1.6	0.44	2.0	0.31	1.9	0.35	1.6
56	0.24	1.6	0.32	1.8	0.24	1.7	0.26	1.5
57	0.24	1.6	0.28	1.7	0.41	1.7	0.31	1.6
Overall	0.20	2.3	0.20	2.5	0.23	2.1	0.24	2.1

\*\* indicates that weights were not taken due to rough seas or problems with the scale

Table 3.—Sablefish retention and discard status (valid skates only), 2007

Station	Discarded due to predation			Released Alive			Total
	Sand fleas	Sharks	Hagfish	Small Size	Lost at Roller	Retained	
2	1	—	1	—	7	312	321
3	—	—	5	—	5	140	150
4	—	—	4	12	7	319	342
5	—	—	1	—	3	187	191
6	1	—	3	1	5	164	174
11	1	—	1	1	13	420	436
12	—	—	1	—	3	117	121
14	—	—	1	—	11	365	377
15	1	—	1	—	2	111	115
16	—	—	2	—	—	87	89
17	—	—	2	—	3	93	98
18	—	—	—	—	4	227	231
20	—	—	1	—	5	243	249
21	—	—	—	2	13	170	185
26	—	—	2	—	11	99	112
27	—	—	—	—	16	308	324
30	1	—	3	—	2	95	101
31	2	—	7	—	7	45	61
33	—	—	5	—	2	32	39
35	—	—	5	—	9	88	102
36	—	2	6	—	9	144	161
37	—	—	2	1	4	138	145
39	—	—	—	—	6	146	152
41	—	1	—	—	4	156	161
43	—	1	2	3	14	240	260
44	—	5	2	—	10	335	352
46	—	—	2	—	9	234	245
47	3	—	7	2	4	208	224
48	—	1	—	—	19	272	292
49	1	1	9	—	5	126	142
50	—	—	8	1	2	90	101
52	—	—	1	—	12	326	339
53	—	1	—	3	2	284	290
54	—	—	—	—	5	314	319
55	—	—	4	9	24	360	397
56	—	—	2	6	2	260	270
57	—	—	1	—	8	257	266
<b>Total</b>	<b>11</b>	<b>12</b>	<b>91</b>	<b>41</b>	<b>267</b>	<b>7512</b>	<b>7934</b>

Table 4.—Overall catch by species (valid and invalid skates), 2007

Station	SB	AF	CR	DS	PH	PC	HF	RF	SS	RB	RE	SR	SK	LN	SD	TH	OT
2	321	8	6	—	34	—	4	22	—	—	—	1	4	24	61	22	1
3	162	3	—	1	5	—	47	3	—	—	—	1	3	15	20	12	—
4	342	1	—	1	8	1	38	1	—	—	—	—	2	4	20	14	1
5	195	3	—	—	1	—	28	1	—	—	—	—	3	2	13	11	—
6	174	2	—	—	1	—	37	1	—	—	—	—	8	6	26	13	—
11	436	1	—	—	10	—	9	1	—	—	—	—	15	8	75	16	—
12	121	—	—	—	—	—	15	2	—	—	1	2	3	4	20	16	—
14	393	9	—	—	22	—	1	3	—	—	—	—	4	6	155	11	—
15	115	1	—	—	1	—	16	3	—	—	—	2	6	17	9	18	—
16	89	—	—	—	2	—	21	4	—	—	—	—	9	11	22	4	—
17	98	1	—	—	3	—	66	3	—	—	—	—	7	5	15	19	—
18	231	2	—	—	4	—	56	1	—	—	—	—	13	16	19	9	—
20	249	5	—	—	5	—	13	1	—	—	—	1	9	15	106	8	—
21	185	2	—	—	2	—	5	1	—	—	—	—	6	3	41	7	—
26	112	2	1	—	33	69	—	19	—	17	14	6	10	9	196	10	1
27	327	5	—	—	15	6	—	8	—	—	—	—	1	5	73	7	—
30	101	—	—	—	4	—	1	—	—	—	—	—	—	—	63	7	—
31	61	1	—	—	1	—	20	2	—	—	—	—	2	2	12	13	—
33	39	—	—	—	—	—	1	—	—	—	—	—	1	6	8	2	—

-continued-

SB = sablefish, AF= arrowtooth flounder, CR = coral, DS = Dover sole, PH = Pacific halibut, PC = Pacific cod, HF = hagfish, RF = ratfish, SS = Pacific sleeper shark, RB = redbanded rockfish, RE = roughey rockfish, SR = shortraker rockfish, SK = skate, unidentified species, LN = longnose skate, SD = spiny dogfish, TH = thornyhead rockfish, OT = other

Table 4.—continued (page 2 of 2)

Station	SB	AF	CR	DS	PH	PC	HF	RF	SS	RB	RE	SR	SK	LN	SD	TH	OT
35	102	2	—	—	4	—	—	1	—	—	—	—	2	2	32	3	—
36	161	10	—	—	37	—	4	3	2	—	—	9	4	8	21	13	1
37	145	5	—	—	29	1	2	6	—	—	2	9	2	6	21	14	—
39	153	3	—	—	24	—	4	6	—	—	—	22	7	11	7	11	2
41	175	8	—	1	35	9	1	14	2	—	7	51	6	17	7	9	1
43	260	1	—	—	46	7	1	22	1	2	5	15	14	13	31	12	1
44	352	2	—	1	9	—	7	2	5	—	—	—	18	9	8	6	—
46	245	—	—	—	5	—	20	1	—	—	—	2	2	7	6	2	—
47	224	—	—	1	12	—	4	3	—	—	—	2	13	15	13	5	—
48	303	—	—	—	4	—	6	—	1	—	—	—	7	10	4	2	—
49	142	—	—	—	1	—	30	—	1	—	—	4	3	6	6	3	—
50	101	—	—	—	—	—	47	—	—	—	—	1	1	9	10	1	—
52	339	22	4	6	85	21	—	11	—	1	15	1	31	48	36	37	—
53	293	10	—	8	40	1	—	6	—	—	18	—	22	22	5	21	1
54	322	7	1	4	81	—	—	4	—	1	9	1	16	22	17	29	—
55	397	10	—	1	9	—	16	7	—	—	—	—	14	6	35	30	—
56	270	6	—	4	10	—	5	6	—	1	—	—	8	12	42	28	1
57	266	2	—	1	4	—	63	3	—	—	—	—	11	11	18	20	1
Total	8001	134	12	29	586	115	588	171	12	23	71	130	287	392	1273	465	11

SB = sablefish, AF= arrowtooth flounder, CR = coral, DS = Dover sole, PH = Pacific halibut, PC = Pacific cod, HF = hagfish, RF = ratfish, SS = Pacific sleeper shark, RB = redbanded rockfish, RE = roughey rockfish, SR = shortraker rockfish, SK = skate, unidentified species, LN = longnose skate, SD = spiny dogfish, TH = thornyhead rockfish, OT = other

Table 5.–Sablefish maturity stages from observation of gonad gross morphology, 2007

<b>Maturity Stage</b>	<b>Number of Males</b>	<b>Number of Females</b>	<b>Sex indiscernable</b>	<b>Total</b>
Immature	83	29	13	125
Maturing Juvenile	68	103	0	171
Mature/developing	4	0	0	4
Spawning	3	0	0	3
Spent/post spawning	26	94	0	120
Resting	62	22	0	84
Not observed	0	0	2	2
Total	246	248	15	509

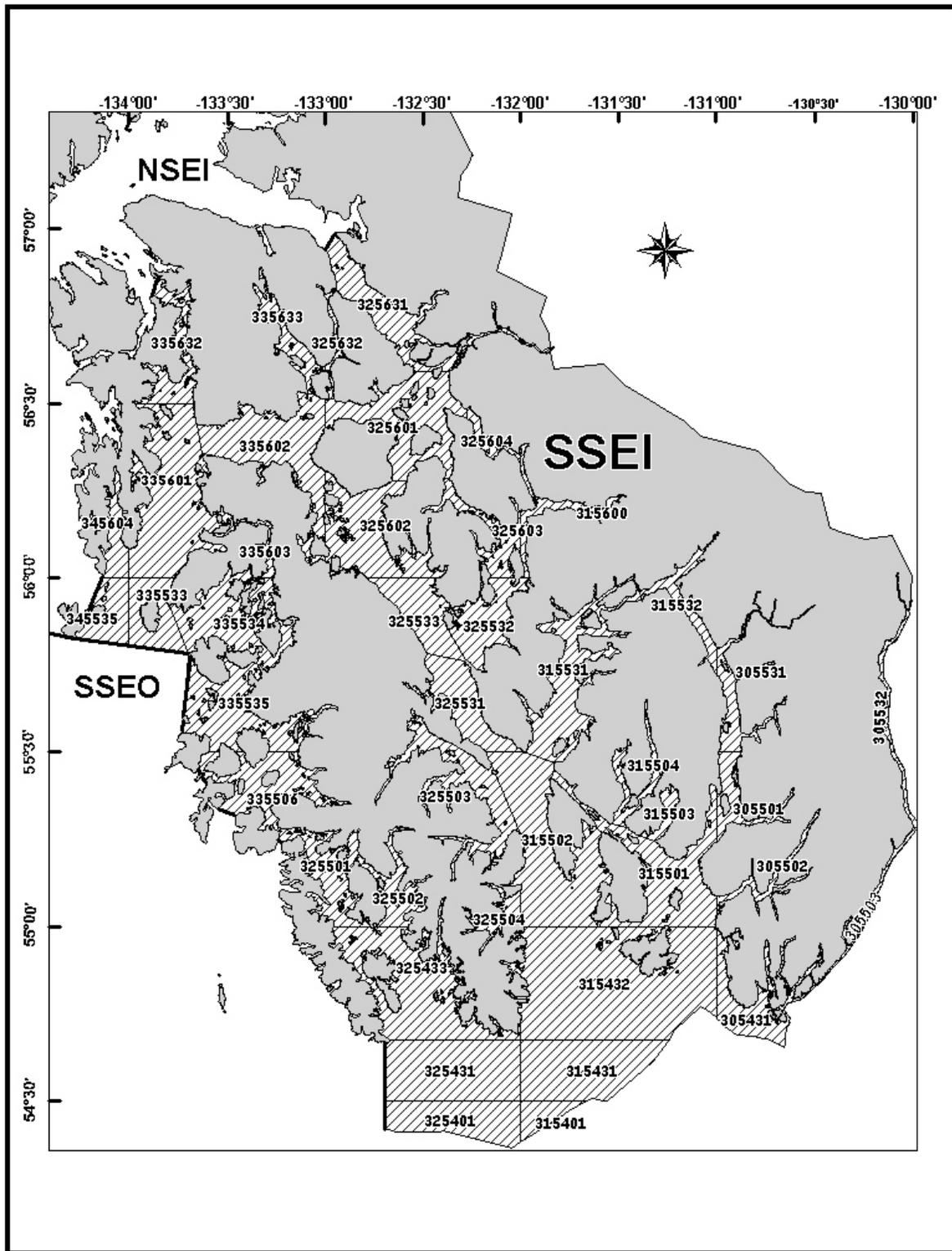


Figure 1.—Map of the SSEI Subdistrict

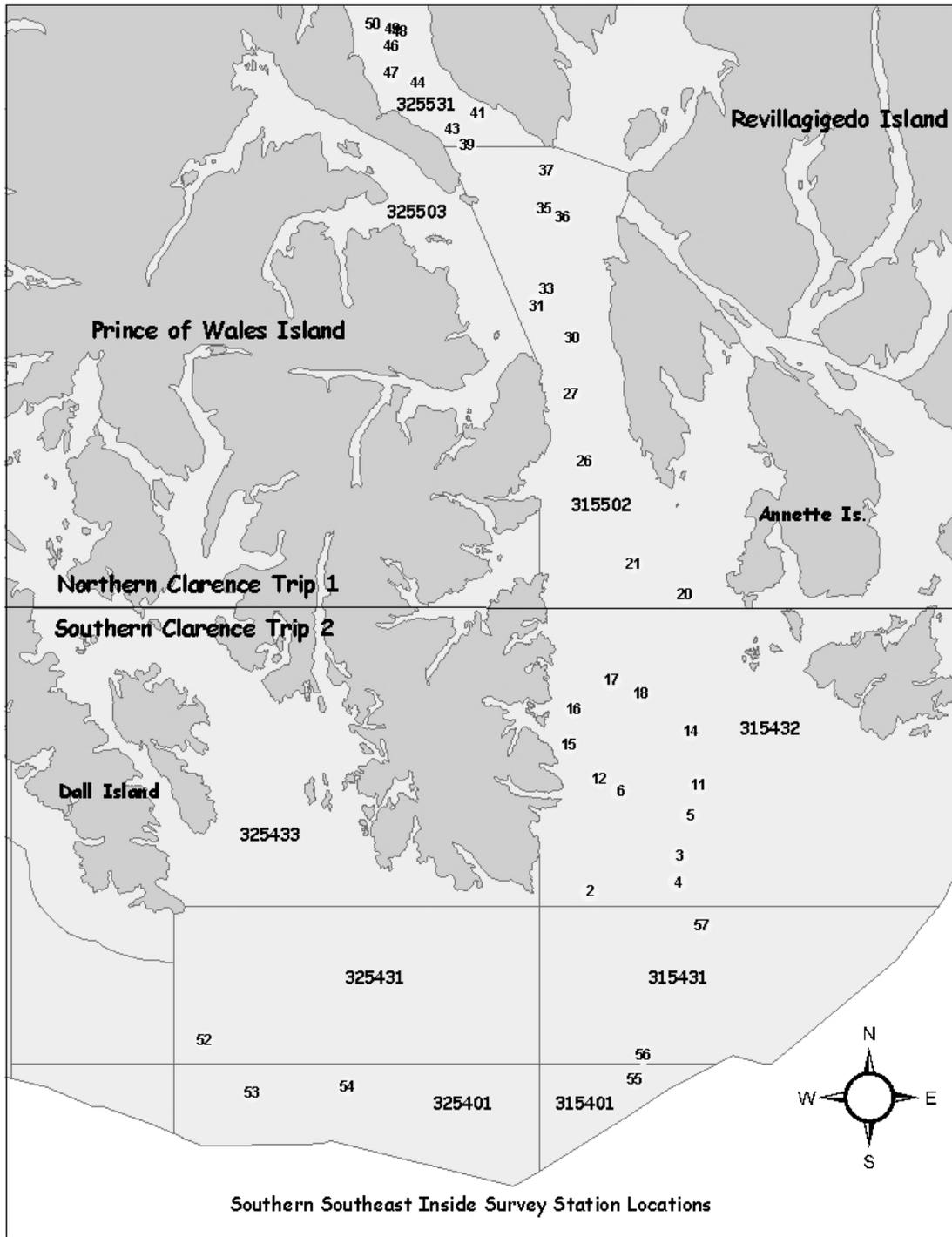


Figure 2.—Survey station locations, statistical areas, and trip station assignments

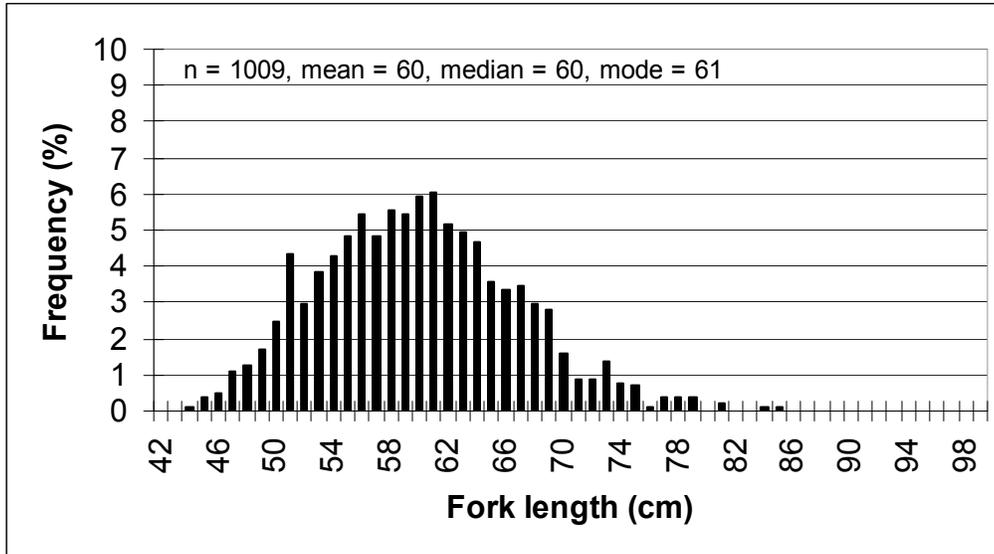


Figure 3.—Sablefish length frequency distribution, 2007

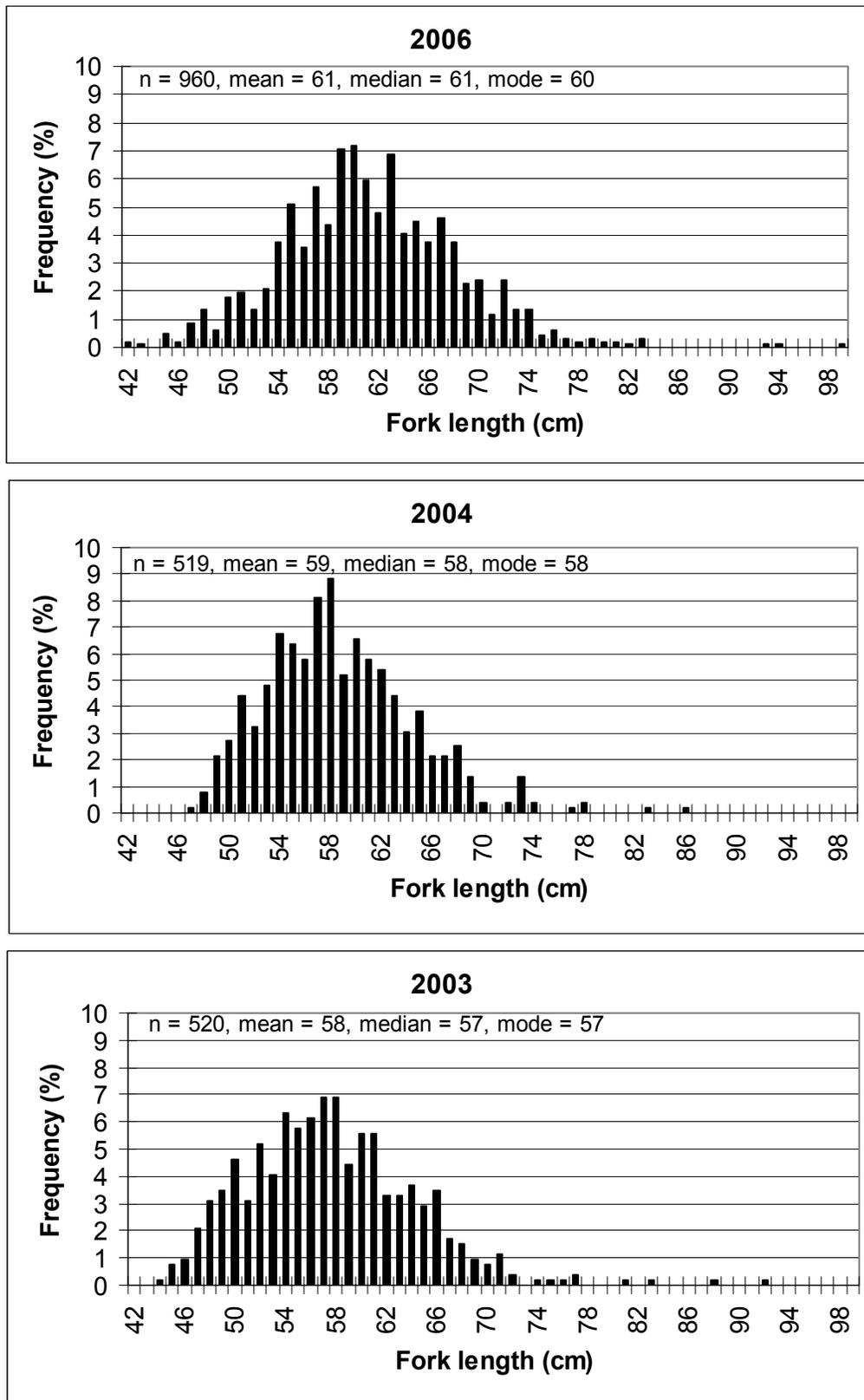


Figure 4.—Sablefish length frequency distributions, 2003–2006 SSEI sablefish longline surveys

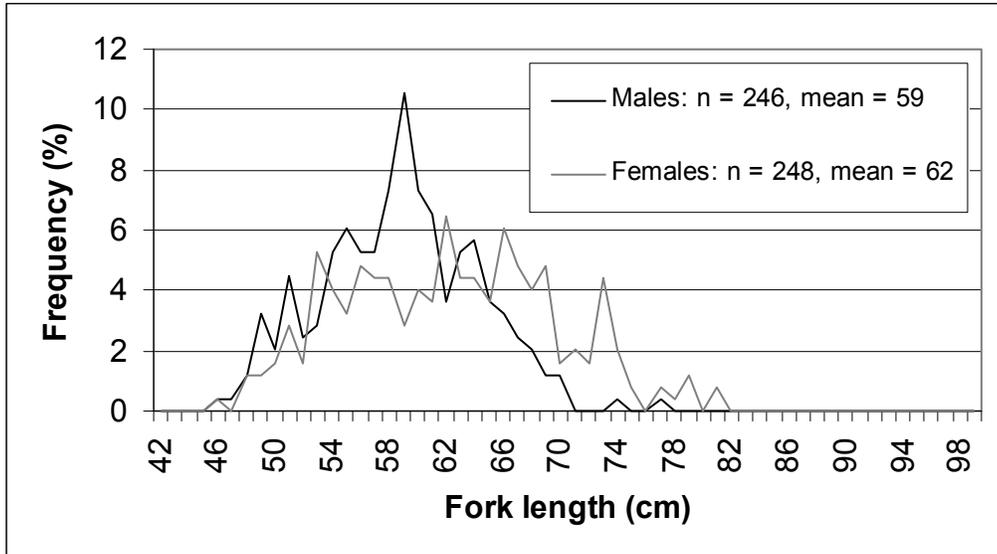


Figure 5.—Sablefish length frequency distribution by sex, 2007

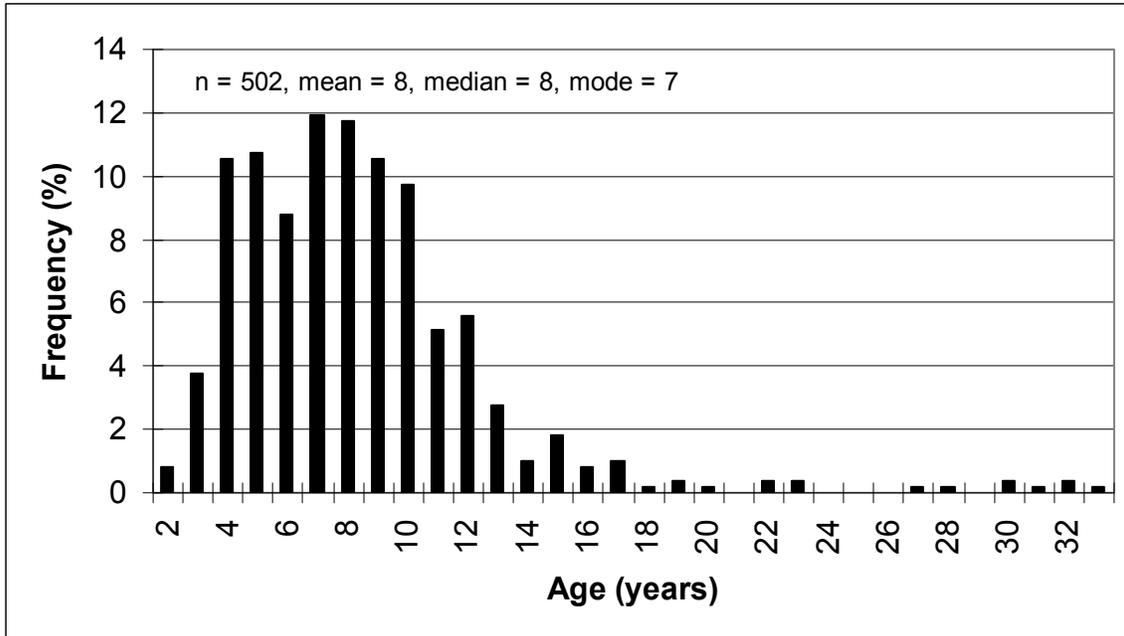


Figure 6.—Sablefish age frequency distribution, 2007

## **APPENDICES**

Appendix A.–Set location information, 2007

Station	Area description	Start Position				End Position			
		Lat. deg.	Lat. min.	Long. deg.	Long. min.	Lat. deg.	Lat. min.	Long. deg.	Long. min.
2	Cape Chacon	54	39.72	131	54.27	54	41.05	131	54.12
3	W.Devil Rock	54	44.78	131	43.83	54	43.39	131	43.97
4	W.Devil Rock	54	41.92	131	44.09	54	43.44	131	43.97
5	West Rock	54	46.43	131	42.75	54	47.79	131	42.78
6	McLean Point	54	46.54	131	50.69	54	48.04	131	50.64
11	West Rock	54	48.40	131	41.79	54	49.85	131	41.81
12	Island Point	54	50.26	131	52.81	54	48.84	131	53.04
14	Hassler Reef	54	50.37	131	42.78	54	51.70	131	42.61
15	Kendrick Island	54	50.07	131	56.43	54	52.59	131	56.53
16	Kendrick Island	54	53.37	131	55.86	54	54.81	131	55.67
17	Hidden Bay	54	54.08	131	51.50	54	55.64	131	51.69
18	Hidden Bay	54	54.37	131	48.20	54	55.91	131	48.16
20	Point Davidson	54	59.29	131	42.72	55	0.79	131	43.30
21	Rip Point	55	2.82	131	49.04	55	4.20	131	49.45
26	Wedge Island	55	9.57	131	54.60	55	11.08	131	54.04
27	Wedge Island	55	15.32	131	55.76	55	13.88	131	56.23
30	Chasina Point	55	17.54	131	56.09	55	19.06	131	55.75
31	Skin Island	55	18.42	131	58.60	55	19.72	131	59.93
33	Grant Cove	55	22.12	131	58.97	55	20.62	131	58.91
35	Vallenar Point	55	24.30	131	58.88	55	25.75	131	59.18
36	Vallenar Point	55	24.02	131	56.00	55	25.30	131	57.10
37	Caamano Point	55	28.42	131	58.98	55	29.13	132	1.30
39	Street Island	55	30.06	132	8.06	55	31.50	132	8.61
41	Niblack Point	55	32.10	132	6.81	55	32.89	132	9.19
43	Niblack Point	55	31.09	132	9.59	55	32.51	132	10.42
44	Ship Island	55	34.12	132	13.53	55	35.37	132	15.00
46	Ship Island	55	38.89	132	17.04	55	37.51	132	16.44
47	Windfall Harbor	55	34.71	132	16.59	55	36.02	132	17.68
48	Ship Island	55	37.40	132	15.64	55	36.11	132	14.40
49	Windfall Harbor	55	38.89	132	17.04	55	37.51	132	16.44
50	Tolstoi Point	55	39.21	132	19.13	55	37.78	132	18.69
52	Cape Muzon	54	31.52	132	37.81	54	31.51	132	40.51
53	Cape Muzon	54	28.00	132	32.77	54	28.01	132	35.18
54	Cape Muzon	54	28.45	132	21.77	54	28.40	132	24.24
55	Celestial Reef	54	28.93	131	48.96	54	30.42	131	48.98
56	Celestial Reef	54	31.94	131	47.93	54	30.42	131	48.09
57	W.Devil Rock	54	37.68	131	41.52	54	39.25	131	41.32

Appendix B.—Vessels, vessel crew, and scientific survey staff, 2007

<b>Trip No.</b>	<b>Vessel</b>	<b>Name</b>	<b>Affiliation</b>
Trip 1	Masonic	Bill Lewis	Skipper
		Kyle Underwood	Crew
		Dane Lewis	Crew
		Chris Christensen	Crew
		Kamala Carroll	ADF&G vessel lead
		Jodi Neil	ADF&G
Trip 2	Providence	Brian Kandoll	Skipper
		Scott Kandoll	Crew
		Matt Kandoll	Crew
		Jim Edgars	Crew
		Mike Vaughn	ADF&G survey leader
		Jennifer Stahl	ADF&G

Appendix C.—Tide table for Morse Cove, Duke Island, May 6–15, 2007

<b>Date</b>	<b>AM</b>		<b>PM</b>		<b>AM</b>		<b>PM</b>	
	<b>High tide</b>	<b>Ft.</b>	<b>High tide</b>	<b>Ft.</b>	<b>Low tide</b>	<b>Ft.</b>	<b>Low tide</b>	<b>Ft.</b>
May 6	03:13	14.6	16:29	11.6	10:07	-0.2	22:01	5.0
May 7	03:52	14.0	17:19	11.1	10:52	0.4	22:49	5.5
May 8	04:40	13.2	18:19	10.8	11:45	1.0	23:53	5.8
May 9	05:41	12.4	19:27	11.0	--	--	12:47	1.4
May 10	06:58	11.8	20:31	11.7	01:14	5.6	13:55	1.6
May 11	08:21	11.7	21:27	12.9	02:38	4.6	15:00	1.5
May 12	09:37	12.2	22:16	14.3	03:48	2.9	15:58	1.4
May 13	10:42	13.0	23:01	15.7	04:47	0.8	16:51	1.2
May 14	11:40	13.8	23:45	16.9	05:39	-1.1	17:40	1.2
May 15	--	--	12:34	14.5	06:27	-2.8	18:27	1.3

Appendix D.–Sablefish maturity stages and criteria used by the Alaska Department of Fish and Game

<b>Maturity stage</b>	<b>Description of males at stage</b>	<b>Description of females at stage</b>
Immature	Testes very narrow, parallel, flat and ribbon-like, almost clear in color. Longitudinal creases are easily discernable.	Ovaries appear as two narrow (slender) ovoids. May be veined.  It may be easiest to determine immature from maturing juvenile ovaries while ovaries are intact in fish.
Maturing juvenile	Testes enlarging, not ribbon-like, with four discernable creases running full length. Light pink in color. Has not spawned before.	Ovaries enlarging, translucent and pinkish to clear: eggs not yet discernable. Has not spawned before. Will spawn in the coming year. More veined. Cloudy, but not necessarily throughout.
Mature/developing	Testes large and white, each with four distinct lobes. No milt present.	Ovaries large and becoming white to yellowish white with developing eggs discernable and firmly attached.
Spawning	Testes very large and white, extruding milt freely under slight pressure or when cut.	Ovaries very large with large translucent eggs loose within ovary or extruding from the oviduct.
Spent/post spawning	Testes large, shriveled, often with wrinkles, and bloodshot. No milt present.	Ovaries shriveled and opaque, soft and flaccid, often reddish in color.
Resting	Testes large and firm, light brown to off-white in color. No milt present. Has spawned previously. May have wrinkles.	Ovaries large, firm and opaque, not shriveled. No eggs discernable. Has spawned previously. Noticeable follicle structure.

Appendix E.—Winning fish buyer bid for SSEI survey fish, Trident Seafoods—Ketchikan, 2007

<b>Species</b>	<b>Cut</b>	<b>Size</b>	<b>Dressed lbs.</b>	<b>Price per lb (\$)</b>	<b>Extended price (\$)</b>
Sablefish	Eastern cut	under 2	684	2.60	1,778.40
Sablefish	Eastern cut	2–3	4451	3.05	13,575.55
Sablefish	Eastern cut	3–4	8018	3.40	27,261.20
Sablefish	Eastern cut	4–5	6272	3.70	23,206.40
Sablefish	Eastern cut	5–7	5770	4.05	23,368.50
Sablefish	Eastern cut	over 7	1187	4.25	5,044.75
Sablefish-#2	Eastern cut	under 2	55	2.08	114.40
Sablefish-#2	Eastern cut	2–3	291	2.44	710.04
Sablefish-#2	Eastern cut	3–4	419	2.72	1,139.68
Sablefish-#2	Eastern cut	4–5	273	2.96	808.08
Sablefish-#2	Eastern cut	5–7	203	3.24	657.72
Sablefish-#2	Eastern cut	over 7	29	3.40	98.60
Shortraker rockfish	Head-on, split belly	n/a	557	0.30	167.10
Redbanded rockfish	Head-on, split belly	n/a	46	0.30	13.80
Rougheye rockfish	Head-on, split belly	n/a	145	0.30	43.50
Misc. rockfish	Eastern cut	n/a	5	0.15	0.75
Thornyhead	Eastern cut	n/a	5	2.00	10.00
Thornyhead	Round	n/a	5	1.00	5.00
Pacific Cod	Round	n/a	215	0.15	32.25
<b>Total</b>					<b>98,035.72</b>

Appendix F.–Set dates, times, soak and haul durations, haul order, and depths, 2007.

Trip	Effort	Station	Date	Set Time	Time (hr:min)		Haul order	Depth (fm)		
					Soak duration	Haul duration		Start	End	Avg.
1	1	50	05/08	5:53	3:20	1:32	Same	342	380	371
1	2	49	05/08	6:45	5:24	1:45	Opposite	344	341	341
1	3	48	05/08	11:29	4:16	1:58	Opposite	341	327	339
1	4	46	05/08	6:45	5:24	1:45	Opposite	344	341	308
1	5	47	05/09	5:25	3:32	1:46	Same	272	267	261
1	6	44	05/09	6:27	4:54	2:03	Opposite	266	313	273
1	7	43	05/09	7:38	7:45	1:49	Same	220	212	213
1	8	41	05/09	14:42	3:32	2:03	Opposite	260	205	232
1	9	39	05/10	5:28	3:45	1:38	Opposite	275	270	273
1	10	37	05/10	6:43	5:01	1:37	Opposite	232	242	240
1	11	36	05/10	7:56	7:04	1:28	Opposite	255	252	255
1	12	35	05/10	14:25	3:15	1:33	Same	237	250	246
1	13	20	05/12	7:15	3:26	1:46	Opposite	223	217	218
1	14	21	05/12	7:57	5:22	1:34	Same	225	232	228
1	15	26	05/12	8:57	7:03	1:53	Same	222	235	217
1	16	27	05/13	5:29	3:16	1:46	Opposite	195	198	196
1	17	30	05/13	6:29	5:50	1:43	Opposite	215	237	221
1	18	31	05/13	7:11	7:41	1:39	Opposite	235	235	240
1	19	33	05/13	11:48	5:18	1:37	Opposite	220	222	220
2	1	54	05/08	5:08	3:22	2:18	Same	195	20	198
2	2	52	05/08	6:39	6:22	2:09	Opposite	199	198	201
2	3	53	05/08	11:53	4:32	1:47	Opposite	202	206	204
2	4	55	05/09	4:17	3:02	1:39	Opposite	194	197	195
2	5	56	05/09	6:50	3:03	1:34	Same	189	190	189
2	6	57	05/09	12:59	2:52	1:31	Same	225	234	219
2	7	2	05/09	14:23	4:27	1:42	Opposite	195	200	198
2	8	4	05/10	4:45	3:01	1:38	Opposite	210	210	210
2	9	11	05/10	6:33	5:02	1:39	Opposite	249	263	260
2	10	3	05/10	9:59	4:56	1:30	Opposite	210	209	210
2	11	5	05/10	13:59	3:10	1:20	Same	224	225	224
2	12	18	05/12	4:25	3:00	1:28	Same	223	226	226
2	13	15	05/12	6:00	4:42	1:30	Opposite	230	232	235
2	14	17	05/12	9:40	3:46	1:24	Opposite	227	227	227
2	15	16	05/12	12:53	3:12	1:29	Same	229	233	232
2	16	12	05/13	4:24	3:21	1:19	Opposite	225	214	219
2	17	6	05/13	7:01	4:12	1:27	Opposite	213	217	215
2	18	14	05/13	10:18	3:37	1:43	Opposite	224	232	228

Set time is when the second anchor went overboard. Soak duration is between the set time and when the first anchor came aboard. Haul duration is between when the first and second anchors came aboard.