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Southern Southeast Inside (Clarence Strait and Dixon Entrance) Relative Abundance Sablefish Long Line Survey Report For 2004

by

Deidra Holum

May 2005

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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ABSTRACT

This report presents data from the 2004 sablefish longline survey conducted in the Southern Southeast Inside (SSEI) subdistrict. Catch rates, lengths, ages, and relative abundance of sablefish at each of the 37 stations sampled are compared with historical data obtained from similar surveys since 1997. Average weights obtained from similar surveys since 1988 are also compared. This report also records bycatch by species and numbers captured during the survey.

Key Words: Sablefish, Relative Abundance, Southern Southeast Inside Subdistrict, SSEI, Clarence Strait, Dixon Entrance, Longline, Survey.

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) conducts an annual longline survey in the Southern Southeast Inside (SSEI) subdistrict of Southeast Alaska to assess the condition of the sablefish *anoplopoma fimbria* stocks targeted in the limited-entry state fishery. The 2004 survey, which occurred between May 20 and May 26, was the seventeenth year of these operations.

PRIMARY OBJECTIVES

- To estimate the relative abundance of sablefish in the SSEI subdistrict (Clarence Strait and Dixon Entrance).
- To collect 403-415 biological samples including otoliths, length, weight, sex and stage of gonad maturity from a subsample of sablefish caught.
- To collect 400 biological samples including otoliths, length, weight, sex and stage of gonad maturity from each rockfish species (*Sebastes*) caught.
- To collect length data from 400 thornyhead rockfish (*Sebastolobus*) caught and released at sea.

SECONDARY OBJECTIVES

- To collect seabird abundance data at each survey station for the International Pacific Halibut Commission (IPHC).

OPERATIONS

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° 27.98′ N. latitude and 132° 35.16′ W. longitude (Figure 1). These coordinates describe the area of Clarence Strait and Dixon Entrance from the northernmost station (Station 50) near Tolstoi Point to the southernmost station (Station 53) near the Canadian border. The most westerly station (Station 52) sampled lies just east of Cape Muzon at 54° 31.50′ N. latitude and 132° 40.59′ W. longitude.

The F/V *Jennifer Lee* (Trip #1) and the F/V *Providence* (Trip #2), accepted the fifth year of a five year renewable contract to conduct the annual SSEI sablefish longline survey. The two contractors fished the survey grounds simultaneously. The F/V *Jennifer Lee* fished 19 stations in northern Clarence Strait and the F/V *Providence* fished 18 stations in southern Clarence Strait and Dixon Entrance (Figure 1).

A “set” was defined as the deployment and retrieval of 25 skates of baited longline gear. Each skate was made up of 55 fathoms (fms) of groundline with 45 hooks. Skates were laid out in a

single string connected to end anchors with buoy lines and flags attached at each end. Standard gear included #13/0 Mustad™ circle hooks on medium lay #60 gangions spaced 2 m apart and baited with (100–200g) *Illex* spp. squid (Table 1). A single tori line (seabird avoidance device) was deployed at the beginning of each set and hauled back after the gear was set at a station.

Both survey vessels set the required amount of gear at all stations except Station 31 where, due to a miscount, only 22 skates of gear were set rather than the requisite 25. The amount of gear set at the 37 survey stations has been consistent since 2002. Prior to that time some changes were made involving Stations 10 and 11. For an explanation of these changes see Regional Informational Report No.IJ04-09, 2003.

The survey was conducted during a time period when the tidal differentials were minimal. All sets were accomplished within the specified time frame of 3–11 hours as used by the National Marine Fishery Service (NMFS) in their federal sablefish surveys (Sigler, 1993).

Both survey vessels were instructed to use only squid bodies for bait and discard the head and tentacles. This is consistent with NMFS sablefish surveys in federal waters and has been the technique used in the SSEI longline surveys since 2001. Squid bodies were cut into 3–4 pieces and baited to hooks, resulting in approximately 12.5 lbs. of bait per 100 hooks.

A total of 37 stations were surveyed. One set was made at each station. Sets were made in the same direction as the tidal current using the Start and End coordinates from a Master List of Survey Stations (Tables 2 and 3). A typical pattern was to deploy two sets, wait three hours, pick the first set, deploy the third set (and sometimes a fourth set) and then retrieve the second. This alternating pattern of setting and hauling typically allowed soak times to remain within the established 3–11 hour parameter. Haul-back direction depended upon the tide, wind direction and current. When setting gear, the skipper recorded latitude, longitude, start and end depths, start time, compass bearing, bottom type, and wind direction and speed at each station on the Sablefish Survey Set Form (Appendix A). Depths were usually recorded at the deployment of every two skates, as well as when the first and last anchors were thrown overboard. These depths were averaged to obtain a mean depth per station (Table 4). During the gear set, an Alaska Department of Fish and Game (ADF&G) staff person recorded tori line performance, sea conditions and weather information according to protocol described by, and on forms provided by, the IPHC for seabird occurrence observations.

Beginning in 2003 and continuing in 2004, the skipper also recorded retrieval information for the gear on the set form, marking down the coordinates at the first buoy on board and second anchor on board at each station to observe any unusual drift during the set (Appendix A).

As the gear was hauled at each station, catch and effort (number of hooks) data were tallied by an ADF&G staff person on a Hook Accounting Form (Appendix B). During retrieval, the species of each fish brought to the surface was recorded, as was the condition of each fishless hook (i.e., baited, unbaited, or invalid. A hook is considered invalid if it is bent, broken, missing or snarled in the gear). Each skate was treated as a subsection of a set to allow exclusion of invalid subsections (an invalid subsection is recorded when 25% or more of the hooks are invalid) for estimating catch per unit effort (CPUE).

Sablefish had special designations on the accounting form during haul-back. If a sablefish broke the water but was not landed it was recorded as “lost”. Sablefish less than 15 inches (38 cm) were tallied as “smalls” and carefully released at the roller (unless they were retained as a

biological sample). Beginning with the 2004 survey, there were specific discard codes used for "flea bit" and "shark bit". Otherwise a generic code covered all other sablefish discards.

Bycatch was identified by species when possible. This included all rockfish landed, as well as spiny dogfish, Pacific Sleeper sharks, arrowtooth flounder, Pacific cod, walleye pollock, ratfish and Dover sole. Other flatfish, thornyheads, sharks and hagfish were not keyed to species. Beginning in 2004, skates released at the roller were identified as "big", "longnose" or "other".

Immediately after the second anchor was brought on board at the end of a haul, seabird abundance was estimated within a 50-meter radius off the stern of each vessel by an ADF&G staff person. Sea state was recorded and seabirds were identified by species using forms and protocol provided by IPHC.

BIOLOGICAL SAMPLING

Prior to the start of the survey a decision was made to sample all stations at the rate of the first 14 skates of each set hauled. This rate was chosen to insure a sufficient number of biological samples were obtained to meet the survey requirements. The first sablefish and thereafter every 10^{th} sablefish brought on board at each station was sampled for length (nearest cm), weight (nearest 0.1 kg), sex, and stage of gonad maturity. This information was recorded on the Biological Data Collection Form (Appendix C). Stage of sexual maturity was coded according to six descriptions of gonad conditions for each sex (Appendix D). Otoliths were extracted, paired with the biological data and eventually forwarded to ADF&G's Coded Wire Tag and Otolith Processing Laboratory in Juneau for age analysis.

Length (nearest 0.5 cm), weight (nearest 0.1 kg), sex, stage of maturity, and otoliths were collected from all rockfish landed except thornyheads. Thornyheads were measured for length (nearest 0.5 cm) and then released live. Other bycatch species were identified and released at the rail.

RESULTS

Set information and CPUE were collected from all 37 stations. Of the 922 skates set for the survey, 912 skates were considered valid during haul-back as defined by standard operating procedures. These 912 skates were used to calculate CPUE (fish/hk).

The average mean depth fished during the survey was 239 fm, [range: 188 fm (Station 56) to 360 fm (Station 50)]. Soak time ranged from 3.0 hours (Station 27) to 7.6 hours (Station 52) with an average time of 4.1 hours (Table 4).

In 2004, a total of 9,417 sablefish were caught on 40,640 valid hooks (Table 4). Of the sablefish caught 12 were discarded as flea damaged, 12 were discarded as shark bitten, 90 were not marketable due to hagfish or rigor mortis, 3 were released as too small, 273 were lost at the roller and 9,027 were retained. All of these sablefish were included in the survey CPUE calculations if they were landed on valid subsets.

The overall CPUE (fish/hook) was 0.23 sablefish per hook [range: 0.05 fish/hook (Station 33) to 0.58 fish/hook (Station 14)]. The average mean CPUE by weight was 0.48 kg/hook, for all stations [range: 0.08 kg/hook (Station 33) to 0.87 kg/hook (Station 11)] (Table 4). Since 1997 there has been a general upward trend in the survey CPUE assessed by both fish per hook and kg per hook (Table 5 and Figure 2).

The decision to sample the first 14 skates of gear at each station was changed to 15 skates of gear after it was noted that CPUE's at the first two stations surveyed had declined from last year. The increased biological sampling rate was adopted by both vessels to meet survey sampling goals.

A total of 519 sablefish biological samples were collected from 37 stations during the 2004 survey. Biological samples were collected from both valid and invalid subsets. Sampled sablefish from the 2004 survey had an overall mean length of 58.7 cm (range of individual lengths for all stations: 47.0 cm to 86.0 cm). Weight samples from 519 sablefish were also collected from 37 stations. The overall mean weight was 2.13 kg (range of individual weights for all stations: 0.8 kg to 7.2 kg).

Due to a backlog of otoliths at the ADF&G Age Lab, ages for 2004 SSEI sablefish are unavailable for this report. Age frequency distribution charts for sablefish for survey years 1988–2002 only are presented in this report (Figure 3). Length frequency distribution charts are presented in this report for sablefish sampled during survey years 1988–2004 (Figure 4). A weight chart for sablefish is also shown for survey years 1988–2004 (Figure 5).

Bycatch species on the 912 valid subsets included 313 halibut, 437 thornyhead rockfish, 58 shortraker rockfish, 33 rougheye rockfish, 13 redbanded rockfish, 1,038 spiny dogfish, 15 big skates, 201 longnose skates, 175 other skates, and 87 arrowtooth flounder (Table 6). There were 3 Pacific Sleeper shark, 17 Dover sole, 38 Pacific cod, 10 coral and 395 "other" species also caught on valid subsets. "Other" species included ratfish, hagfish, and other rockfish not listed in the table.

Biological samples collected from other species during the 2004 survey included 11 redbanded rockfish, 32 rougheye rockfish, and 43 shortraker rockfish and 1 yellowtail rockfish. Length data were collected from 284 thornyhead rockfish for an overall mean length of 39.6 cm (range of individual lengths for all stations: 23.0 cm to 62.0 cm).

Seabird identification and count: each survey vessel deployed a single tori line (bird avoidance device) at the beginning of every set. Seabird counts were performed at the stations immediately upon completion of haul-back of the survey longline gear. 25 stations had birds present within the 50-meter observation hemisphere. Preliminary data shows the total count during the survey included 33 birds: 1 Bald Eagle, 5 Glaucous-winged gulls, 21 Herring gulls, 5 Unidentified gulls, and 1 Northern fulmar. For a full report on the 2004 SSEI seabird abundance counts, or more information regarding seabird avoidance devices, contact Ed Melvin, Marine Fisheries Specialist, Washington Sea Grant Program, 206-543-9968.

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REFERENCES CITED

Sigler, M. F. 1993. Stock assessment and management of sablefish *Anoplopoma fimbria* in the Gulf of Alaska. Doctoral dissertation. University of Washington.

TABLES AND FIGURES

Table 1.–Longline Survey Specifications, SSEI longline surveys 1988–2004.

Year	Start	End	Vessel Name	Gear Type	Skate Length	Groundline	Hook Size/Type	Hook Spacing	Gangion Length	Skate Wts.	Bait	Hooks per Skate	Skates per Set	# Sets Made	Soak Time (Hours)	Fish Tagged[a]
1988	5/3	5/15	Isis	Snap	300 m	5/16"	13/0 C	3 m	25 cm	None	Herring	100	10	33	1	1173
1989	5/22	6/5	Isis	Snap	300 m	5/16"	13/0 C	3 m	25 cm	NA	Herring	100	5	52	1	442
1990	5/9	5/21	Isis	Snap	300 m	5/16"	13/0 C	3 m	25 cm	NA	Herring	100	5	45	1	None
1991	5/12	5/25	Isis	Snap	300 m	5/16"	13/0 C	3 m	25 cm	NA	Herring	100	5	43	1	None
1992	5/12	5/23	Isis	Snap	300 m	5/16"	13/0 C	3 m	25 cm	NA	Herring	100	5	38	1	None
1993	5/13	5/21	Isis	Snap	300 m	5/16"	13/0 C	3 m	25 cm	NA	Herring	100	5	38	1	None
1994	5/10	5/25	Medeia	Snap	300 m	5/16"	13/0 C	3 m	25 cm	5 lbs	Herring	100	5	38	1	None
1995	4/30	5/13	Medeia	Snap	300 m	5/16"	13/0 C	3 m	25 cm	5 lbs	Herring	100	5	38	1	None
1996	5/1	5/17	Medeia	Snap	300 m	5/16" hard lay	13/0 C	3 m	25 cm	2.26 kg	Herring	100	5	36	1	None
1997	5/11	5/18	Cherokee	Conv.	100 fm	NA	13/0 C	72"	14"	4 - 7 lbs[b]	Squid	100	15	19	3 to 11	None
	5/11	5/15	Providence	Conv.	75 & 100 fm	3/8" Gold	13/0 C	64"	9"	8" rocks	Squid	100	15	18	3 to 11	None
1998	5/16	5/22	Jennifer Lee	Conv.	90 fm	3/8" Gold	13/0 C	64"	11"	2.26 kg	Squid	100	11	19	3 to 11	None
			Providence	Conv.	100 fm	3/8" Gold	13/0 C	64"	21" untied	2.26 kg	Squid	100	11	18	3 to 11	None
1999	5/7	5/12	Jennifer Lee	Conv.	90 fm	3/8" Gold	13/0 C	64"	11"	2.26 kg	Squid	100	11	19	3 to 11	None
			Providence	Conv.	92 fm	3/8" Gold	13/0 C	64"	20 cm	2.26 kg	Squid	100	11	18	3 to 11	None
2000[c]	5/21	5/28	Jennifer Lee	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	15" tied	2.26 kg	Squid	45	25	19	3 to 11	None
			Providence	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	15" tied	2.26 kg	Squid	45	25	18	3 to 11	None
2001	5/15	5/23	Jennifer Lee	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	19	3 to 11	None
			Providence	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	18	3 to 11	None
2002	5/20	5/26	Jennifer Lee	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	19	3 to 11	None
			Providence	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	18	3 to 11	None
2003	5/19	5/26	Jennifer Lee	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	19	3 to 11	None
			Providence	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	18	3 to 11	None
2004	5/20	5/26	Jennifer Lee	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	19	3 to 11	None
			Providence	Conv.	55 fm	3/8" soft med lay	13/0 C	78"	38 cm	2.26 kg	Squid	45	25	18	3 to 11	None

[a] Used T-Bar tags. 1988: A total of 33 stations of which 11 were tagging stations. 1989: A total of 52 stations of which 12 were tagging stations.

[b] Initially 4–7 lbs weights were attached between skates. Use of weights by this vessel was discontinued after a few sets for the remainder of the survey.

[c] First year state gear was used. Soaked new gear 3 hours outside of survey stations prior to the start of the survey.

Table 2.–Master list of SSEI survey stations for Trip 1. Information from ALEX 1997 Survey Set Information with corrections. 1997 data is used as the standard for survey station coordinates.

Trip	Station	Area	South Latitude		South Longitude		Depth	North Latitude		North Longitude		Depth	Statarea
1	20	Pt Davidson	54	59.29	131	42.73	222	55	0.83	131	43.32	220	315502
1	21	Rip Point	55	2.84	131	49.05	224	55	4.09	131	49.42	225	315502
1	26	Wedge Island	55	9.55	131	54.60	228	55	11.03	131	54.05	198	315502
1	27	Wedge Island	55	13.92	131	56.20	199	55	15.31	131	55.75	194	315502
1	30	Chasina Pt	55	17.57	131	56.09	218	55	19.10	131	55.75	237	315502
1	31	Skin Island	55	18.43	131	58.61	235	55	19.87	132	0.08	237	315502
1	33	Grant Cove	55	20.68	131	58.91	222	55	22.10	131	58.96	221	315502
1	35	Vallenar Pt	55	24.31	131	58.91	231	55	25.92	131	59.23	263	315502
1	36	Vallenar Pt	55	24.04	131	56.01	254	55	25.36	131	57.16	240	315502
1	37	Caamano Is	55	28.42	131	58.99	231	55	29.19	132	1.50	234	315502
1	39	Street Is	55	30.06	132	8.06	241	55	31.51	132	8.60	270	325531
1	41	Niblack Pt	55	32.09	132	6.78	235	55	32.91	132	9.25	207	325531
1	43	Niblack Pt	55	31.08	132	9.61	223	55	32.63	132	10.49	216	325531
1	44	Ship Is	55	34.10	132	13.52	264	55	35.40	132	15.03	316	325531
1	46	Ship Island	55	34.98	132	15.15	265	55	36.46	132	16.56	335	325531
1	47	Windfall Harbor	55	34.72	132	16.62	267	55	36.15	132	17.78	260	325531
1	48	Ship Is	55	37.41	132	15.65	370	55	36.08	132	14.36	347	325531
1	49	Windfall Harbor	55	37.55	132	16.46	361	55	38.91	132	17.05	370	325531
1	50	Tolstoi Pt	55	37.88	132	18.72	405	55	39.21	132	19.13	359	325531

Table 3.–Master list of SSEI survey stations for Trip 2. Information from ALEX 1997 and 2003 Survey Set Information with corrections. 1997 data is used as the standard for survey station coordinates. From 1997–2002, "Station 10" was a double set combining stations 10 & 11. In 2003, "Station 10" was changed to the standard 25 skate set and was renamed "Station 11" to more accurately reflect station location according to survey design. The coordinates and criteria established in 2003 are henceforth the standard for Station 11.

Trip	Station	AREA	South Latitude		South Longitude		Depth	North Latitude		North Latitude		Depth	Statarea
2	2	Cape Chacon	54	39.75	131	54.28	196	54	41.32	131	54.06	202	315432
2	3	W Devil Rock	54	43.64	131	43.90	211	54	44.80	131	43.80	211	315432
2	4	W. Devil Rock	54	41.93	131	44.10	210	54	43.16	131	44.00	210	315432
2	5	West Rock	54	46.37	131	42.75	226	54	47.76	131	42.79	226	315432
2	6	Mclean Pt	54	46.54	131	50.69	214	54	47.96	131	50.63	217	315432
2	11	West Rock	54	48.39	131	41.77	249	54	49.93	131	41.78	265	315432
2	12	Island Pt	54	48.75	131	53.00	215	54	50.30	131	52.81	221	315432
2	14	Hassler Reef	54	50.36	131	42.70	225	54	51.88	131	42.59	233	315432
2	15	Kendrick Is	54	51.00	131	56.45	231	54	52.50	131	56.50	232	315432
2	16	Kendrick Is	54	53.34	131	55.86	230	54	54.44	131	55.69	232	315432
2	17	Kendrick Is	54	54.05	131	51.50	226	54	55.20	131	51.63	225	315432
2	18	Hidden Bay	54	54.37	131	48.20	226	54	55.52	131	48.17	225	315432
2	52	Cape Muzon	54	31.52	132	37.89	198	54	31.50	132	40.59	197	325431
2	53	Cape Muzon	54	27.98	132	35.16	206	54	28.00	132	32.47	203	325401
2	54	Cape Muzon	54	28.40	132	24.25	199	54	28.45	132	21.63	195	325401
2	55	Celestial Reef	54	28.94	131	48.98	193	54	30.52	131	48.96	193	315401
2	56	Celestial Reef	54	30.53	131	48.01	187	54	31.98	131	47.89	186	315431
2	57	West Devil Rock	54	37.70	131	41.56	227	54	39.07	131	41.35	232	315431

Table 4.–Set and Catch information for the 37 stations fished in 2004 SSEI sablefish longline survey.

Area Description	Station	Statistical Area	Start	Latitude	Start	Longitude	End	Latitude	End	Longitude	Soak Time (hours)	Haul back	Mean Depth (fm)	Sablefish total [a]	Valid hooks [a]	Cpue (fish/hk) [a]	Mean Weight (kg)	Cpue (kg/hk) [a]
Cape Chacon	2	315432		39.73	131	54.27	54	41.15	131	54.12	4.5	Opposite	199	372	1,118	0.33	2.44	0.81
W.Devil Rock	3	315432	54	43.69	131	43.89	54	45.22	131	43.73	4.0	Same	209	297	1,119	0.27	1.64	0.43
W.Devil Rock	4	315432	54	43.17	131	44.00	54	41.63	131	44.10	3.2	Same	210	366	1,119	0.33	1.66	0.54
West Rock	5	315432	54	46.32	131	42.75	54	47.84	131	42.79	3.1	Same	225	359	1,127	0.32	1.91	0.61
McLean Point	6	315432	54	48.01	131	50.64	54	46.51	131	50.68	4.6	Same	217	221	1,114	0.20	1.58	0.31
West Rock	11	315432	54	49.96	131	41.78	54	48.33	131	41.78	4.3	Opposite	260	415	1,114	0.37	2.33	0.87
Island Point	12	315432	54	48.76	131	53.00	54	50.21	131	52.80	3.1	Opposite	219	185	1,125	0.16	1.57	0.26
Hassler Reef	14	315432	54	51.85	131	42.60	54	50.32	131	42.73	3.4	Opposite	227	653	1,119	0.58	1.46	0.85
Kendrick	15	315432	54	52.52	131	56.50	54	51.11	131	56.46	4.6	Same	236	204	1,121	0.18	1.87	0.34
Kendrick	16	315432	54	53.10	131	55.86	54	54.83	131	55.64	3.2	Same	230	204	1,120	0.18	1.84	0.34
Hidden Bay	17	315432	54	55.19	131	51.62	54	53.65	131	51.48	3.4	Opposite	225	159	1,112	0.14	1.76	0.25
Hidden Bay	18	315432	54	54.34	131	48.18	54	55.89	131	48.18	3.3	Opposite	229	294	1,118	0.26	1.69	0.45
Point	20	315502	54	59.31	131	42.74	55	0.82	131	43.35	3.5	Opposite	218	250	1,096	0.23	1.95	0.44
Rip Point	21	315502	55	2.72	131	49.04	55	4.10	131	49.41	4.7	Same	226	132	1,066	0.12	1.68	0.21
Wedge Island	26	315502	55	10.99	131	54.08	55	9.40	131	54.63	5.7	Opposite	215	227	1,103	0.21	2.43	0.50
Wedge Island	27	315502	55	15.31	131	55.79	55	13.81	131	56.23	3.0	Same	197	316	1,136	0.28	2.43	0.68
Chasina Point	30	315502	55	19.10	131	55.79	55	17.60	131	56.09	4.5	Same	230	130	1,119	0.12	1.86	0.22
Skin Island	31	315502	55	18.44	131	58.63	55	19.61	131	59.82	3.2	Opposite	239	85	967	0.09	1.92	0.17
Grant Cove	33	315502	55	22.11	131	58.98	55	20.53	131	58.91	4.3	Same	217	52	1,121	0.05	1.77	0.08
Vallenar Point	35	315502	55	25.89	131	59.23	55	24.40	131	58.94	3.2	Same	248	227	1,126	0.20	2.41	0.49
Vallenar Point	36	315502	55	25.32	131	57.10	55	23.87	131	55.85	6.2	Opposite	250	293	1,115	0.26	2.07	0.54
Caamano	37	315502	55	29.17	132	1.47	55	28.43	131	59.05	4.6	Opposite	232	190	1,108	0.17	2.56	0.44
Street Island	39	325531	55	31.44	132	8.59	55	29.87	132	8.00	3.4	Opposite	273	185	1,071	0.17	2.40	0.41
Niblack Point	41	325531	55	32.89	132	9.19	55	32.14	132	6.95	3.3	Same	257	285	1,103	0.26	2.95	0.76
Niblack Point	43	325531	55	32.59	132	10.40	55	31.06	132	9.57	5.8	Same	205	227	1,062	0.21	2.36	0.50
Ship Island	44	325531	55	35.31	132	14.90	55	34.01	132	13.38	3.7	Same	275	277	1,019	0.27	2.45	0.67
Ship Island	46	325531	55	36.55	132	16.66	55	35.21	132	15.36	3.7	Opposite	313	133	1,028	0.13	2.24	0.29
Windfall	47	325531	55	36.09	132	17.71	55	34.62	132	16.51	3.3	Same	260	166	1,115	0.15	2.01	0.30
Ship Island	48	325531	55	37.41	132	15.63	55	36.08	132	14.36	6.2	Opposite	340	352	1,120	0.31	2.68	0.84
Windfall	49	325531	55	38.88	132	17.05	55	37.31	132	16.35	3.4	Opposite	335	115	1,116	0.10	1.90	0.20
Tolstoi Point	50	325531	55	39.10	132	19.10	55	37.56	132	18.60	3.3	Opposite	360	97	1,010	0.10	2.84	0.27
Cape Muzon	52	325431	54	31.52	132	37.84	54	31.50	132	40.60	7.6	Same	198	281	1,110	0.25	3.03	0.77
Cape Muzon	53	325401	54	28.00	132	35.04	54	28.01	132	32.05	5.3	Opposite	205	405	1,122	0.36	2.33	0.84
Cape Muzon	54	325401	54	28.43	132	21.74	54	28.39	132	24.63	4.1	Opposite	197	197	1,063	0.19	2.68	0.50
Celestial Reef	55	315401	54	30.47	131	48.96	54	28.80	131	48.97	3.3	Same	195	338	1,100	0.31	1.95	0.60
Celestial Reef	56	315431	54	31.93	131	47.90	54	30.32	131	48.10	3.8	Opposite	188	269	1,111	0.24	1.73	0.42
W.Devil Rock	57	315431	54	37.71	131	41.55	54	39.27	131	41.31	3.2	Opposite	229	459	1,107	0.41	1.74	0.72
Average											4.1		239	255	1,098	0.23	2.11	0.48
Maximum											7.6		360	653	1,136	0.58	3.03	0.87
Minimum											3.0		188	52	967	0.05	1.46	0.08
Total														9,417	40,640			

[a] Invalid subsets were excluded in calculating Station information for number Sablefish, number Valid Hooks, and CPUE's.

Table 5.–SSEI Sablefish CPUE's for survey stations fished 2002–2004.

Sablefish Mean Weight (KG) by station				CPUE's for SSEI Longline Survey Stations[a]											
	2004	2003	2002	2004				2003				2002			
Station	Mean Wt.KG	Mean Wt.KG	Mean Wt.KG	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)
2	2.44	2.45	1.70	372	1118	0.33	0.81	287	1002	0.29	0.70	500	1138	0.44	0.75
3	1.64	[b]	1.64	297	1119	0.27	0.43	394	1139	0.35	[b]	229	1079	0.21	0.35
4	1.66	1.65	1.62	366	1119	0.33	0.54	392	1124	0.35	0.57	216	944	0.23	0.37
5	1.91	[b]	1.61	359	1127	0.32	0.61	347	1059	0.33	[b]	238	1128	0.21	0.34
6	1.58	1.51	1.85	221	1114	0.20	0.31	350	1040	0.34	0.51	241	1036	0.23	0.43
11[c]	2.33	1.75	2.00	415	1114	0.37	0.87	359	1116	0.32	0.56	434	1400	0.31	0.62
12	1.57	1.84	2.21	185	1125	0.16	0.26	219	1129	0.19	0.36	146	1123	0.13	0.29
14	1.46	1.44	1.96	653	1119	0.58	0.85	523	1128	0.46	0.67	387	1130	0.34	0.67
15	1.87	2.10	1.99	204	1121	0.18	0.34	136	1071	0.13	0.27	118	1127	0.10	0.21
16	1.84	2.08	1.30	204	1120	0.18	0.34	158	1120	0.14	0.29	54	1121	0.05	0.06
17	1.76	2.08	1.33	159	1112	0.14	0.25	94	1101	0.09	0.18	124	1130	0.11	0.15
18	1.69	1.93	1.56	294	1118	0.26	0.45	183	1040	0.18	0.34	223	1122	0.20	0.31
20	1.95	1.53	1.62	250	1096	0.23	0.44	518	1117	0.46	0.71	213	1126	0.19	0.31
21	1.68	2.40	1.76	132	1066	0.12	0.21	176	1111	0.16	0.38	142	1117	0.13	0.22
26	2.43	2.49	2.28	227	1103	0.21	0.50	174	1114	0.16	0.39	47	1124	0.04	0.10
27	2.43	1.78	2.36	316	1136	0.28	0.68	188	999	0.19	0.33	101	1123	0.09	0.21
30	1.86	2.67	2.19	130	1119	0.12	0.22	107	1061	0.10	0.27	142	1115	0.13	0.28
31	1.92	2.14	1.55	85	967	0.09	0.17	120	1076	0.11	0.24	41	1109	0.04	0.06
33	1.77	1.42	1.85	52	1121	0.05	0.08	132	1126	0.12	0.17	213	1113	0.19	0.35
35	2.41	2.36	1.88	227	1126	0.20	0.49	202	1026	0.20	0.46	158	1115	0.14	0.27
36	2.07	2.40	2.24	293	1115	0.26	0.54	319	1102	0.29	0.69	211	1088	0.19	0.43
37	2.56	2.72	1.95	190	1108	0.17	0.44	262	1101	0.24	0.65	267	1117	0.24	0.47
39	2.40	2.74	2.56	185	1071	0.17	0.41	260	1112	0.23	0.64	187	1112	0.17	0.43
41	2.95	2.27	2.32	285	1103	0.26	0.76	231	1053	0.22	0.50	263	1054	0.25	0.58
43	2.36	2.22	2.14	227	1062	0.21	0.50	200	1086	0.18	0.41	221	1009	0.22	0.47
44	2.45	2.05	1.71	277	1019	0.27	0.67	301	968	0.31	0.64	347	1111	0.31	0.53
46	2.24	2.14	1.94	133	1028	0.13	0.29	163	1082	0.15	0.32	258	1104	0.23	0.45
47	2.01	2.18	1.65	166	1115	0.15	0.30	205	1054	0.19	0.42	187	1016	0.18	0.30
48	2.68	2.43	2.49	352	1120	0.31	0.84	404	975	0.41	1.00	363	1025	0.35	0.88
49	1.90	2.42	2.06	115	1116	0.10	0.20	142	1127	0.13	0.31	203	1108	0.18	0.38
50	2.84	2.73	2.18	97	1010	0.10	0.27	143	1104	0.13	0.35	178	1043	0.17	0.37
52	3.03	2.55	2.11	281	1110	0.25	0.77	251	1057	0.24	0.60	254	1066	0.24	0.50
53	2.33	2.42	1.91	405	1122	0.36	0.84	338	1143	0.30	0.72	399	1128	0.35	0.68
54	2.68	2.40	2.17	197	1063	0.19	0.50	434	1136	0.38	0.92	472	1085	0.44	0.94
55	1.95	1.58	1.44	338	1100	0.31	0.60	341	985	0.35	0.55	552	1122	0.49	0.71
56	1.73	1.52	1.17	269	1111	0.24	0.42	277	1051	0.26	0.40	389	1120	0.35	0.40
57	1.74	1.57	1.80	459	1107	0.41	0.72	351	1132	0.31	0.49	221	1125	0.20	0.35
Average	2.13	2.07	1.87			0.23	0.48			0.24	0.49			0.22	0.41
Overall Average = Total Individual Weights (kg)/Total Individual Samples collected at Sea.															

[a] Invalid subsets were excluded in CPUE calculations.

[b] Weights not collected at these stations due to weather.

[c] Formerly called Station 10 and set as a DOUBLE station (10 & 11), it was changed in 2002 to a standard station using the 1996 Starting Coordinates of the original Station 11. Name change to Station 11 occurred in 2003.

Table 5.–Page 2 of 3.

Sablefish Mean Weight (KG) by station				CPUE's for SSEI Longline Survey Stations[a]											
	2001	2000	1999	2001				2000				1999			
Station	Mean Wt.KG	Mean Wt.KG	Mean Wt.KG	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)
2	2.03	2.57	3.17	162	1043	0.16	0.32	296	1146	0.26	0.66	430	1066	0.40	1.28
3	1.15	1.33	1.16	222	1075	0.21	0.24	255	1133	0.23	0.30	293	782	0.37	0.43
4	1.58	1.38	1.21	196	1110	0.18	0.28	172	1123	0.15	0.21	163	807	0.20	0.24
5	[b]	1.49	1.46	166	1075	0.15	[b]	220	1074	0.20	0.31	172	1055	0.16	0.24
6	1.55	2.29	1.69	177	1117	0.16	0.25	296	1138	0.26	0.59	247	793	0.31	0.53
10[c]	1.89	2.22	1.84	493	2127	0.23	0.44	291	2032	0.14	0.32	590	2160	0.27	0.50
12	1.98	1.78	1.89	116	1085	0.11	0.21	291	1132	0.26	0.46	185	751	0.25	0.47
14	1.38	1.39	1.64	247	1141	0.22	0.30	304	1133	0.27	0.37	368	1064	0.35	0.57
15	[b]	1.85	1.50	26	1107	0.02	[b]	113	1114	0.10	0.19	73	1077	0.07	0.10
16	2.07	2.22	2.39	43	1115	0.04	0.08	109	1121	0.10	0.22	118	1029	0.11	0.27
17	[b]	1.73	1.31	62	1077	0.06	[b]	150	1116	0.13	0.23	120	1065	0.11	0.15
18	[b]	1.75	1.64	80	1097	0.07	[b]	222	1094	0.20	0.36	138	1054	0.13	0.22
20	1.83	1.43	1.54	182	1120	0.16	0.30	129	1117	0.12	0.16	234	1070	0.22	0.34
21	1.55	1.36	1.37	116	1119	0.10	0.16	125	1119	0.11	0.15	123	1047	0.12	0.16
26	3.09	1.98	1.82	125	1048	0.12	0.37	175	1111	0.16	0.31	147	1084	0.14	0.25
27	2.01	2.65	1.39	227	967	0.23	0.47	264	1103	0.24	0.64	162	1050	0.15	0.21
30	2.26	2.28	1.97	107	1030	0.10	0.24	106	1110	0.10	0.22	111	1076	0.10	0.20
31	2.08	1.44	1.61	64	1120	0.06	0.12	106	1115	0.10	0.14	106	1059	0.10	0.16
33	1.50	1.34	1.18	50	1117	0.04	0.07	182	1116	0.16	0.22	72	1093	0.07	0.08
35	[b]	2.03	2.24	120	1114	0.11	[b]	122	1098	0.11	0.23	123	1079	0.11	0.26
36	2.76	1.80	2.26	191	1105	0.17	0.48	292	1053	0.28	0.50	305	1087	0.28	0.63
37	[b]	2.15	2.39	97	923	0.11	[b]	227	892	0.25	0.55	201	979	0.21	0.49
39	2.44	2.36	1.90	139	1109	0.13	0.31	216	1108	0.19	0.46	274	1042	0.26	0.50
41	2.65	2.31	2.30	249	1098	0.23	0.60	253	1098	0.23	0.53	96	298	0.32	0.74
43	2.24	[b]	2.15	198	1105	0.18	0.40	311	966	0.32	[b]	182	784	0.23	0.50
44	1.75	1.71	2.06	316	1102	0.29	0.50	429	975	0.44	0.75	435	1070	0.41	0.84
46	2.30	1.85	1.74	207	1096	0.19	0.43	275	1103	0.25	0.46	119	692	0.17	0.30
47	1.82	1.88	1.70	184	1029	0.18	0.32	326	1101	0.30	0.56	313	891	0.35	0.60
48	3.00	2.37	2.40	330	997	0.33	0.99	380	1108	0.34	0.81	200	1079	0.19	0.44
49	2.21	2.86	1.98	213	1090	0.20	0.43	159	896	0.18	0.51	176	1076	0.16	0.32
50	2.39	1.93	2.04	162	1113	0.15	0.35	266	1016	0.26	0.50	171	1088	0.16	0.32
52	3.13	3.03	2.75	291	1116	0.26	0.82	317	1124	0.28	0.85	254	1080	0.24	0.65
53	1.98	2.44	2.65	233	1127	0.21	0.41	329	1037	0.32	0.78	222	1029	0.22	0.57
54	2.60	2.54	2.90	346	1126	0.31	0.80	397	1116	0.36	0.90	268	1077	0.25	0.72
55	[b]	1.97	1.21	107	1094	0.10	[b]	278	1137	0.24	0.48	532	1058	0.50	0.61
56	[b]	1.34	1.09	110	1143	0.10	[b]	266	1128	0.24	0.32	387	1032	0.38	0.41
57	[b]	1.83	1.58	316	1114	0.28	[b]	141	1073	0.13	0.24	217	1089	0.20	0.32
Averages	2.17	2.02	1.88			0.16	0.38			0.22	0.43			0.22	0.42

Overall Average = Total Individual Weights (kg)/Total Individual Samples collected at Sea.

[a] Invalid subsets were excluded in CPUE calculations.

[b] Weights not collected at these stations due to weather.

[c] Station 10 was set as a double station (Stations 10 and 11 combined) from 1997–2001.

Table 5.–Page 3 of 3.

Sablefish Mean Weight (KG) by station			CPUE's for SSEI Longline Survey Stations[a]							
	1998	1997	1998				1997			
Station	Mean Wt.KG	Mean Wt.KG	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)
2	2.58	2.24	193	1,003	0.19	0.50	372	1,395	0.27	0.60
3	[b]	1.11	133	1,076	0.12	[b]	238	1,375	0.17	0.19
4	1.58	0.53	98	1,001	0.10	0.16	286	1,401	0.20	0.11
5	2.23	1.43	205	1,039	0.20	0.44	300	1,488	0.20	0.29
6	1.26	2.85	153	1,079	0.14	0.18	57	1,429	0.04	0.11
10[c]	1.60	2.38	157	876	0.18	0.29	193	1,230	0.16	0.37
12	1.84	1.55	172	1,077	0.16	0.29	202	1,410	0.14	0.22
14	1.32	1.17	262	1,063	0.25	0.32	443	1,461	0.30	0.35
15	1.90	1.27	74	1,088	0.07	0.13	148	1,353	0.11	0.14
16	1.43	1.86	51	1,093	0.05	0.07	134	993	0.13	0.25
17	1.61	1.47	145	1,084	0.13	0.22	80	1,105	0.07	0.11
18	1.78	1.66	122	1,029	0.12	0.21	161	1,145	0.14	0.23
20	2.24	2.35	188	1,087	0.17	0.39	142	1,326	0.11	0.25
21	2.03	1.44	44	1,088	0.04	0.08	141	1,397	0.10	0.15
26	2.72	2.58	75	1,084	0.07	0.19	277	1,512	0.18	0.47
27	2.74	1.94	149	,1056	0.14	0.39	333	1,351	0.25	0.48
30	1.68	2.85	88	1,079	0.08	0.14	93	1,497	0.06	0.18
31	2.10	1.05	110	1,243	0.09	0.19	88	1,526	0.06	0.06
33	1.45	0.73	159	986	0.16	0.23	75	1,452	0.05	0.04
35	2.53	1.33	68	1,080	0.06	0.16	129	1,428	0.09	0.12
36	4.26	2.53	160	1,098	0.15	0.62	279	1,370	0.20	0.51
37	2.10	2.70	151	1,070	0.14	0.30	119	1,205	0.10	0.27
39	2.30	2.38	153	1,091	0.14	0.32	293	1,448	0.20	0.48
41	2.30	2.79	141	1,085	0.13	0.30	220	1,391	0.16	0.44
43	2.13	2.41	152	1,080	0.14	0.30	361	1,305	0.28	0.67
44	2.15	2.22	241	1,072	0.22	0.48	444	1,229	0.36	0.80
46	2.23	1.84	142	1,094	0.13	0.29	292	1,493	0.20	0.36
47	1.88	1.96	173	1,091	0.16	0.30	407	1,330	0.31	0.60
48	2.46	2.62	168	1,086	0.15	0.38	382	1,055	0.36	0.95
49	2.14	2.41	139	1,082	0.13	0.27	271	1,212	0.22	0.54
50	2.03	2.28	105	1,099	0.10	0.19	292	1,440	0.20	0.46
52	3.14	2.94	127	972	0.13	0.41	169	1,390	0.12	0.36
53	2.04	2.33	99	882	0.11	0.23	159	1,459	0.11	0.25
54	3.21	3.25	153	593	0.26	0.83	214	1,293	0.17	0.54
55	1.41	1.49	278	1,087	0.26	0.36	272	1,301	0.21	0.31
56	1.31	0.48	267	968	0.28	0.36	210	1,369	0.15	0.07
57	1.43	1.01	230	1,075	0.21	0.31	111	1,235	0.09	0.09
Averages	2.09	2.03			0.14	0.30			0.17	0.34

Overall Average = Total Individual Weights (kg)/Total Individual Samples collected at Sea.

[a] Invalid subsets were excluded in CPUE calculations.

[b] Weights not collected at these stations due to weather.

[c] Station 10 was set as a double station(Stations 10 and 11 combined) from 1997–2001.

Table 6.–2004 SSEI Sablefish Survey Catch by Species and Station.

Station	Sablefish	Halibut	Shortspine thornyhead	Shortraker	Rougheye	Redbanded	Spiny dogfish	Big skate	Longnose skate	Other skate	Arrowtooth flounder	Other[a]	Sleeper shark	Coral	Dover sole	Pacific cod
2	372	34	18	0	0	2	71	0	7	4	2	9	0	3	0	1
3	297	6	9	0	0	0	8	0	3	5	0	3	0	0	0	0
4	366	2	10	0	0	0	19	0	6	1	4	1	0	0	0	1
5	359	1	3	0	0	0	34	0	8	6	2	6	0	0	0	0
6	221	3	10	0	0	0	17	0	2	3	2	7	0	0	0	0
11	415	17	3	4	0	0	26	3	7	5	3	3	0	0	0	0
12	185	2	9	0	0	0	14	0	3	6	3	7	0	0	0	0
14	653	8	3	0	0	0	11	0	2	2	3	0	0	0	0	0
15	204	2	13	0	0	0	21	0	7	3	0	12	0	0	0	0
16	204	1	11	0	0	0	5	1	9	0	0	12	0	0	0	0
17	159	0	13	2	0	0	8	0	10	7	0	2	0	0	0	0
18	294	2	13	1	0	0	6	0	13	1	0	4	0	0	0	0
20	250	1	9	0	0	0	30	0	7	8	0	7	0	0	1	0
21	132	1	12	0	0	0	11	0	0	0	0	24	0	0	0	0
26	227	18	9	1	6	5	57	0	9	11	3	20	1	0	0	16
27	316	15	17	0	1	0	80	0	4	0	0	19	0	0	0	1
30	130	4	10	0	0	0	11	0	1	2	0	19	0	0	0	0
31	85	3	4	0	0	0	2	1	5	0	0	7	0	0	0	0
33	52	1	5	0	0	0	2	0	0	0	0	18	0	0	0	0
35	227	1	1	0	0	0	17	0	6	2	0	11	0	0	0	0
36	293	11	3	1	0	0	106	0	2	5	2	4	0	0	0	0
37	190	13	11	3	0	1	16	2	4	2	1	10	1	0	0	0
39	185	2	12	1	0	0	6	0	1	3	0	4	0	0	0	0
41	285	14	10	29	3	1	12	1	0	9	4	21	1	2	0	2
43	227	12	4	2	3	1	24	3	5	2	2	24	0	0	0	1
44	277	10	11	0	0	0	9	0	5	1	0	13	0	0	1	0
46	133	1	3	0	0	0	4	0	2	0	0	32	0	0	0	0
47	166	4	6	1	1	0	9	0	0	0	1	7	0	1	0	0
48	352	9	0	0	0	0	5	2	3	6	0	2	0	1	0	0
49	115	1	3	0	0	0	5	0	5	0	1	57	0	0	0	0
50	97	0	4	0	0	0	2	0	0	0	0	9	0	0	0	0
52	281	29	59	3	12	3	74	1	18	14	8	6	0	2	5	12
53	405	19	37	1	6	0	9	0	22	32	9	1	0	0	5	2
54	197	29	48	7	1	0	106	0	14	11	24	7	0	0	3	2
55	338	25	23	1	0	0	136	1	4	16	6	2	0	0	2	0
56	269	10	19	0	0	0	45	0	3	3	6	4	0	1	0	0
57	459	2	2	1	0	0	20	0	4	5	1	1	0	0	0	0
Grand Total	9,417	313	437	58	33	13	1,038	15	201	175	87	395	3	10	17	38

[a] Includes Ratfish, Hagfish, and Other Rockfish not listed in table. Invalid subsets were excluded in calculations at all stations.

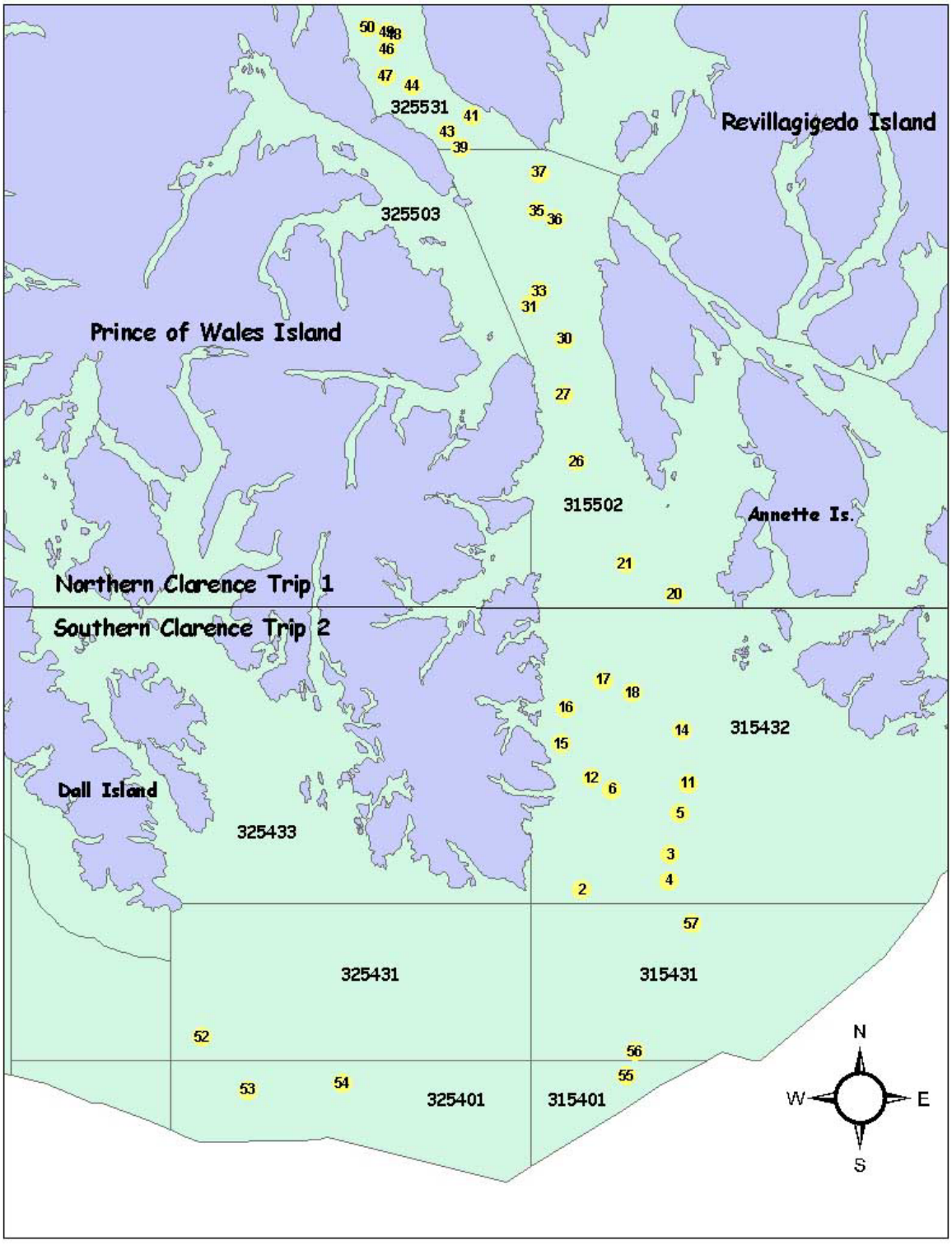


Figure 1.–Survey station locations (circles numbered 2-57) and groundfish statistical areas (six digits).

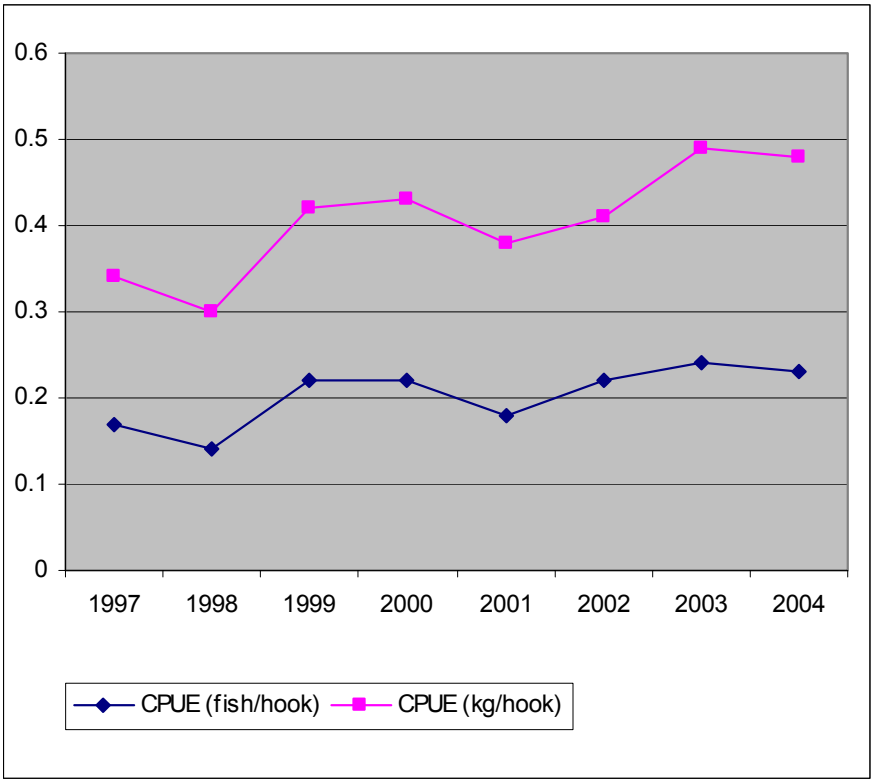


Figure 2.–Catch per Unit Effort SSEI Sablefish Longline Surveys 1997–2004.

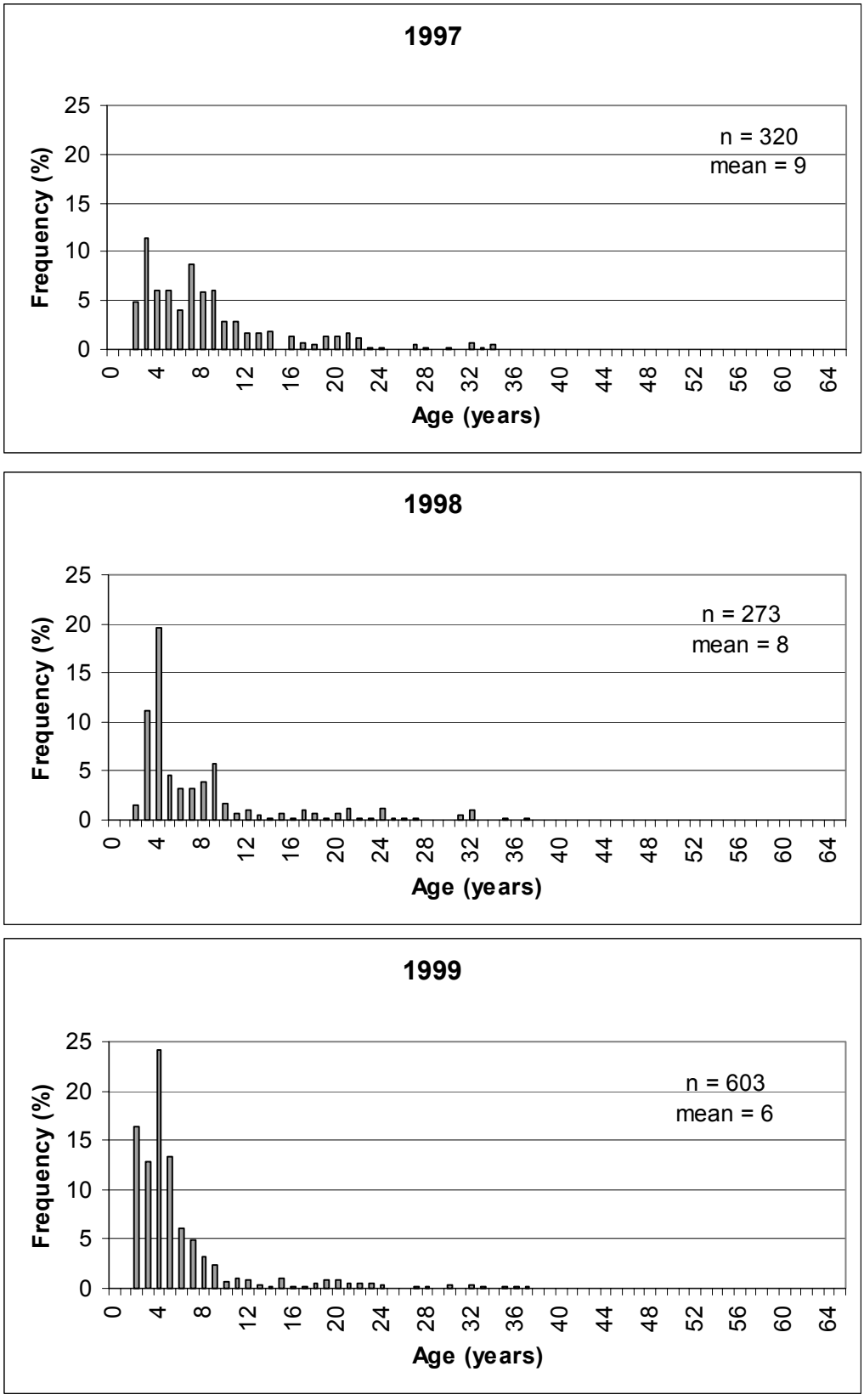
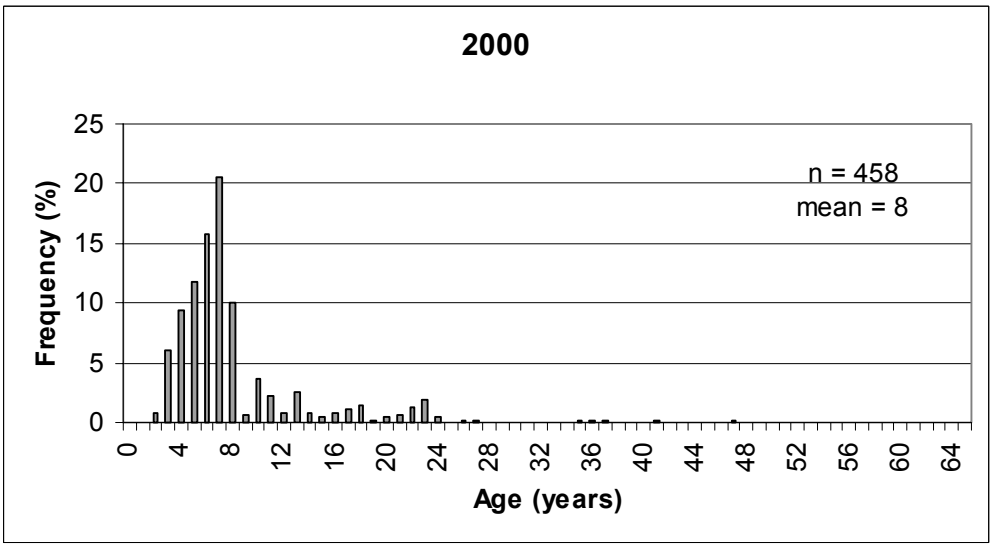
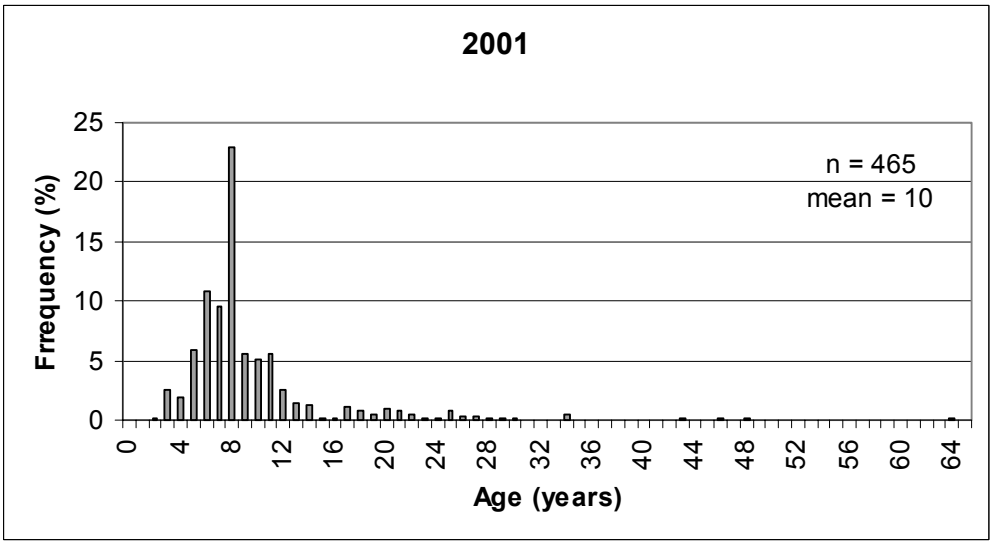


Figure 3.–Age frequency of sampled sablefish adjusted by the overall survey CPUE, SSEI longline surveys, 1997–2002.





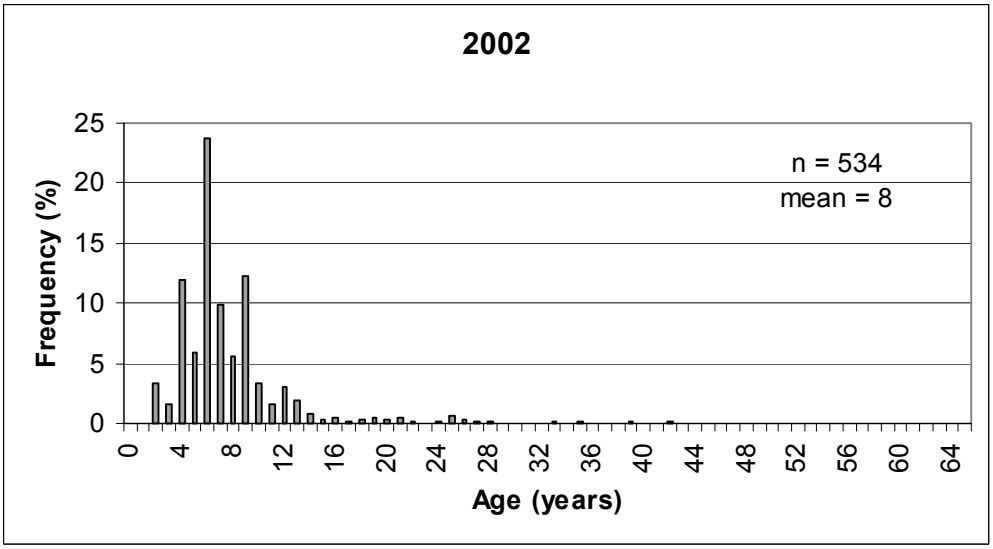


Figure 3.–Page 2 of 2.

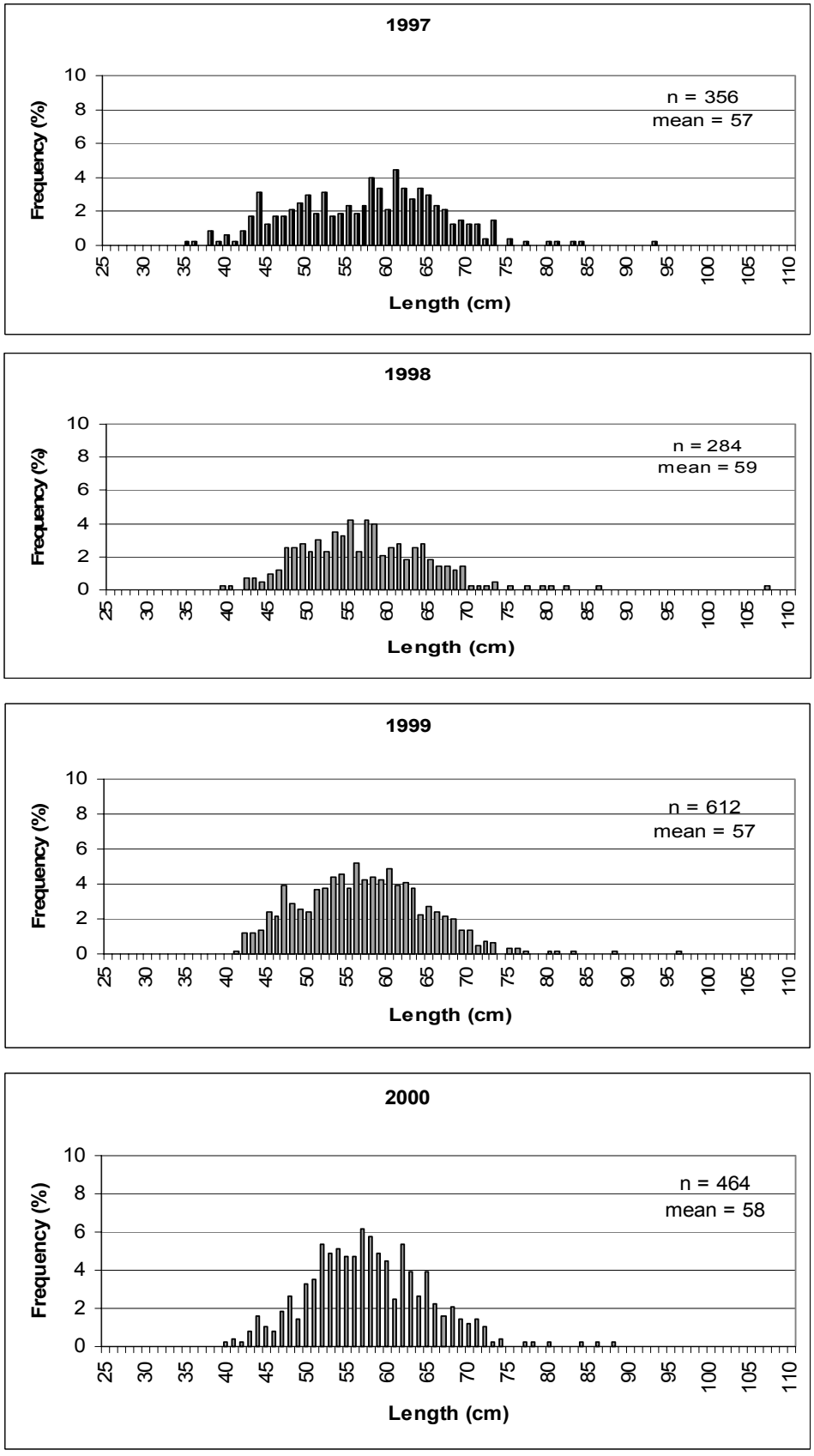


Figure 4.–Length frequency of sampled sablefish adjusted by the overall survey CPUE (round pound-per-hook), SSEI longline surveys, 1997–2004.

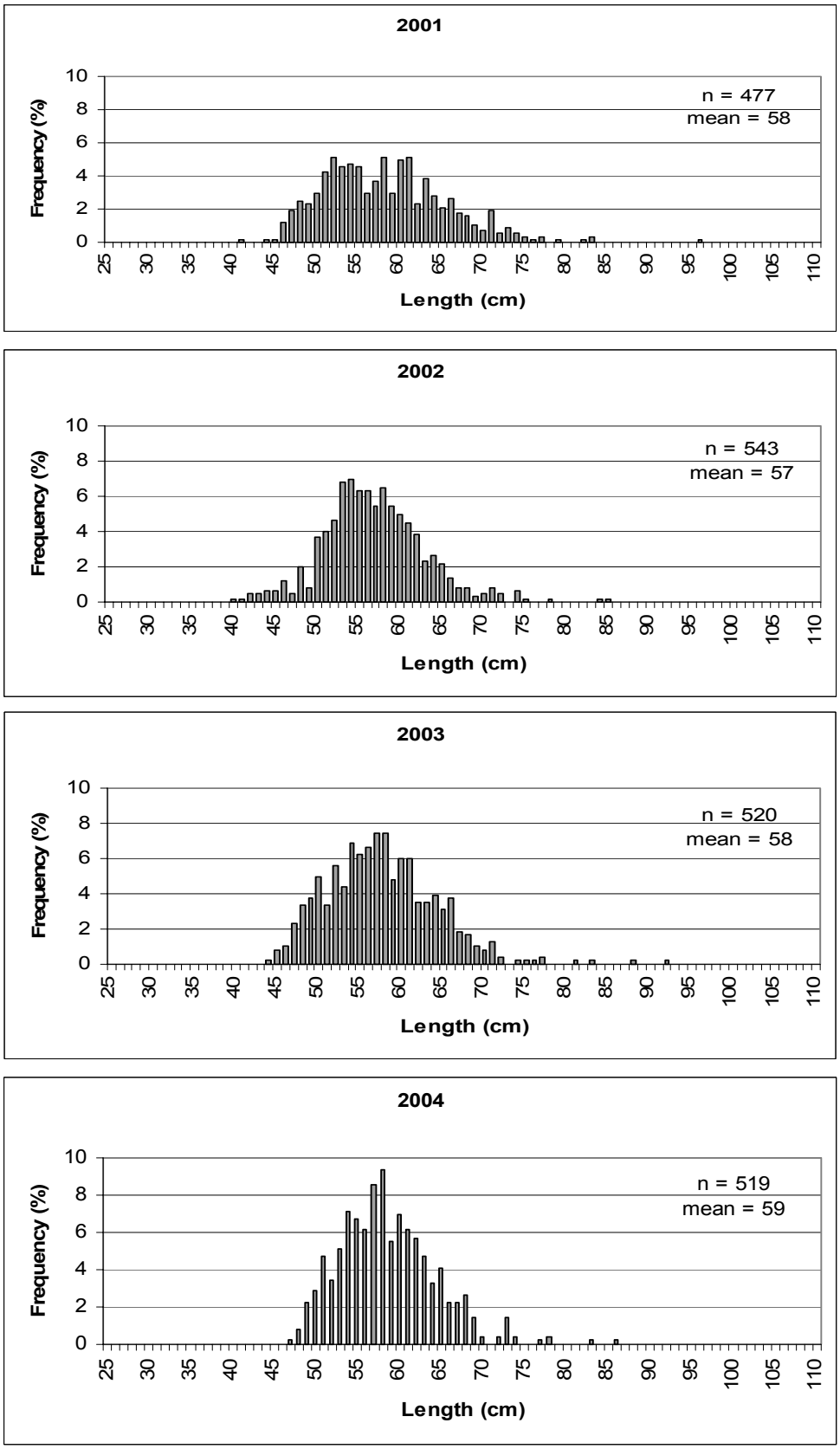


Figure 4.–Page 2 of 2.

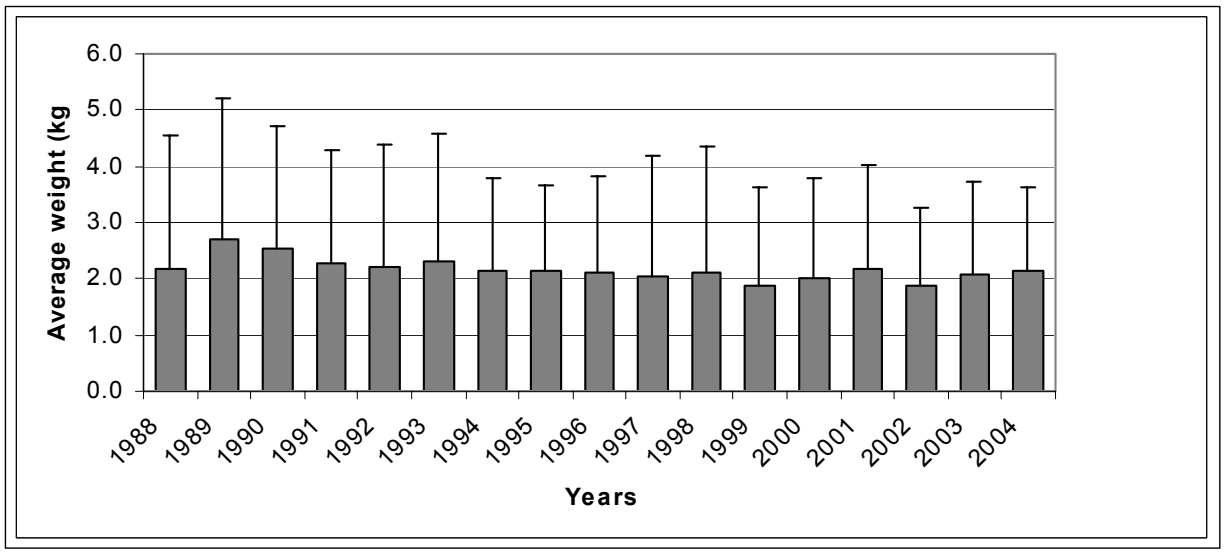


Figure 5.–Average Weight (kg) of sampled sablefish, SSEI longline surveys, 1988–2004. This plot summarizes the average weight across sablefish of all ages. Changes in average weight reflect both changes in weight-at-age and changes in age composition. Sample size varied year to year depending on weather conditions at sea. Sample sizes ranged from 161 to 612 individual sablefish per year. Error bars indicate 95% confidence limit assuming a normal distribution (1.96 * standard deviation).

Matt Bryner sets gear at survey station.

Standard bait used on the survey is Illex squid cut into 1.5-2 inch pieces.

Chris Ponts, Adam Swanson, Matt Bryner bait survey gear. The longline gear used at each station consists of twenty five skates with 45 hooks on each skate.

Adam Swanson, Matt Bryner, and Chris Ponts chop bait in the morning.

Figure 6.–Photos of the 2004 SSEI Sablefish Longline Survey aboard the F/V *Jennifer Lee*.

A tori line (bird avoidance device) is deployed at the beginning of each set.

Chris Ponts hauls gear at a survey station in Clarence Strait.

Matt Bryner coils longline gear into tub as its hauled.

Rob Swanson prepares to move tub of coiled gear to bait shed.

Figure 6.–Page 2 of 4.

Bev Richardson tallies each hook as it comes on board and records nuimbers of fish by species.

Chris Ponts places sablefish in the biological sampling tote.

The sampling area for ADF&G staff to collect lengths, weights, and otoliths from every 10th sablefish for the first 15 skates of gear hauled at each station.

Deidra Holum measures a sablefish from the tip of the nose to the fork of the tail and records the length on a waterproof form.

Figure 6.–Page 3 of 4.

Deidra Holum extracts a pair of otoliths from the head of a sablefish.

The otolith (ear bone) is used to determine the age of the sablefish.

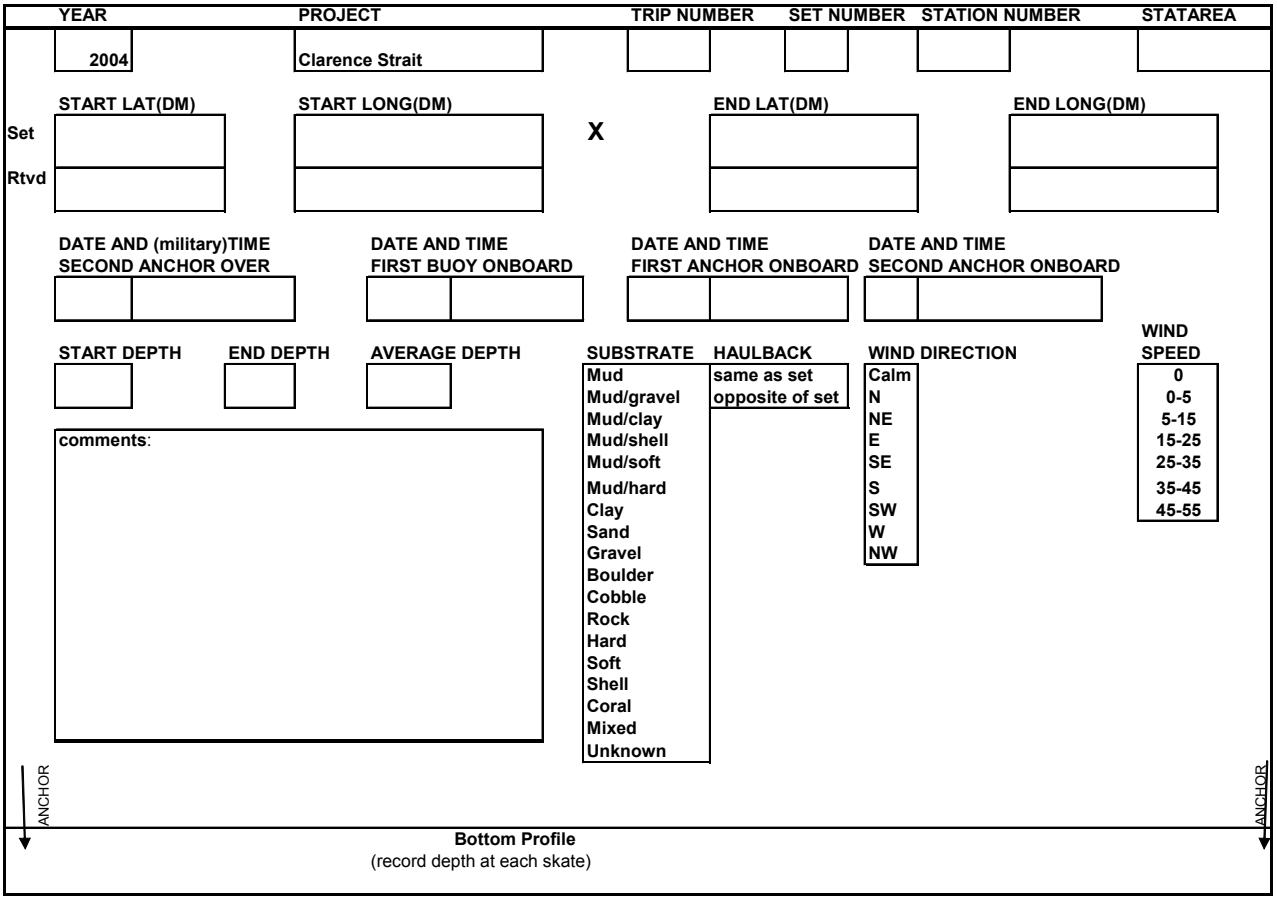
Bev Richardson enters hook accounting and biological data collected at each station in ADF&G's database.

The F/V *Jennifer Lee* and F/V *Providence* at the dock in Ketchikan at the end of the 2004 survey.

Figure 6.–Page 4 of 4.

APPENDIX

Appendix A.–Sablefish Survey Set Form, 2004.



Appendix B.–**Hook Accounting.**

Date: **May____2004__** **Observer___**

Year: **2004** Project: **CLARENCE STRAIT Sablefish LL Survey** **Trip:_____ Set _ _____Station_______**

1stBuoy:time:_______ 1st Anchor:time:_________substrate_______ 2nd Anchor:time________substrate_______

SUBSET		Bare(1):			Invalids(3):		
#		Bait(2):					
		(710) Sable(1):					
	( )	**Sable** Discard Gen(2):	Discard Sm(3):	Lost(4):	Discard Flea(10):	Discard Shark(11):	
		(143) Thorneyhead:		(200)Halibut:		Halibut Released Healthy(7):	
		Rockfish: (151) RE:	(152) SR:		(153) RB:		
		(691) Dogfish:			(692)Pacific Sleeper:		(212)HAG:
VALID?		(700) OSK:	(701)LNSK:	(702)BigSK:	(110)PCOD:	(121)ATF:	(124)Dover:
Y or N		**TOTAL**					

SUBSET		Bare(1):			Invalids(3):		
#		Bait(2):					
		(710) Sable(1):					
	( )	**Sable** Discard Gen(2):	Discard Sm(3):	Lost(4):	Discard Flea(10):	Discard Shark(11):	
		(143) Thorneyhead:		(200)Halibut:		Halibut Released Healthy(7):	
		Rockfish: (151) RE:	(152) SR:		(153) RB:		
		(691) Dogfish:			(692)Pacific Sleeper:		(212)HAG:
VALID?		(700) OSK:	(701)LNSK:	(702)BigSK:	(110)PCOD:	(121)ATF:	(124)Dover:
Y or N		**TOTAL**					

SUBSET		Bare(1):			Invalids(3):		
#		Bait(2):					
		(710) Sable(1):					
	( )	**Sable** Discard Gen(2):	Discard Sm(3):	Lost(4):	Discard Flea(10):	Discard Shark(11):	
		(143) Thorneyhead:		(200)Halibut:		Halibut Released Healthy(7):	
		Rockfish: (151) RE:	(152) SR:		(153) RB:		
		(691) Dogfish:			(692)Pacific Sleeper:		(212)HAG:
VALID?		(700) OSK:	(701)LNSK:	(702)BigSK:	(110)PCOD:	(121)ATF:	(124)Dover:
Y or N		**TOTAL**					

SUBSET		Bare(1):			Invalids(3):		
#		Bait(2):					
		(710) Sable(1):					
	( )	**Sable** Discard Gen(2):	Discard Sm(3):	Lost(4):	Discard Flea(10):	Discard Shark(11):	
		(143) Thorneyhead:		(200)Halibut:		Halibut Released Healthy(7):	
		Rockfish: (151) RE:	(152) SR:		(153) RB:		
		(691) Dogfish:			(692)Pacific Sleeper:		(212)HAG:
VALID?		(700) OSK:	(701)LNSK:	(702)BigSK:	(110)PCOD:	(121)ATF:	(124)Dover:
Y or N		**TOTAL**					

SUBSET		Bare(1):			Invalids(3):		
#		Bait(2):					
		(710) Sable(1):					
	( )	**Sable** Discard Gen(2):	Discard Sm(3):	Lost(4):	Discard Flea(10):	Discard Shark(11):	
		(143) Thorneyhead:		(200)Halibut:		Halibut Released Healthy(7):	
		Rockfish: (151) RE:	(152) SR:		(153) RB:		
		(691) Dogfish:			(692)Pacific Sleeper:		(212)HAG:
VALID?		(700) OSK:	(701)LNSK:	(702)BigSK:	(110)PCOD:	(121)ATF:	(124)Dover:
Y or N		**TOTAL**					

Appendix C.–Biological Data collection Form.

DATE:____ 2004 Set_____ Station______

YEAR: 2004 PROJECT: Clarence Strait Sablefish Survey TRIP NO.:_____

Sablefish are to be on 1 series of pages, all rockfish will be together on seperate series.
Sablefish Oto # begins with 1 for each trip. Rockfish Oto # begins with 1001 for each trip.
Each Trip (vessel) starts with Alex (specimen) # 1 and is numbered consectutively including all species

		nearest 10 mm	tenths								
Alex #	**Species**	**LENGTH-MM**	**WT-KGS**	**SEX**	**MAT**	**Oto #**	**AGE**	**RI**	**COMMENTS**	**Alex #**	**thorneys**
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Sampler________________ Recorder______________

Appendix D.–Sablefish Maturity Codes.

Maturity Code	Gonad Condition	
	Males (1) Description	Females (2) Description
1 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 2-1 from 2-2 while ovaries are intact in fish).
2 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 coming year. More veined. Cloudy, but not necessiarily throughout.
3 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.
4 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.
5 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.
6 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 folical structure.
(Revised 1982, 1987, 1994, 1997. Maturity code 6 (resting) added April 1994) c:document\maturity.crt		