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U.S. DEPARTMENT OF COMMERCE
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R. R. Lauth

Alaska Fisheries Science Center
7600 Sand Point Way N.E., BIN C-15700
Seattle, WA 98115-0070

U.S. DEPARTMENT OF COMMERCE
William M. Daley, Secretary
National Oceanic and Atmospheric Administration
D. James Baker, Under Secretary and Administrator
National Marine Fisheries Service
Rolland A. Schmitten, Assistant Administrator for Fisheries

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ABSTRACT

The Alaska Fisheries Science Center (AFSC) conducted a groundfish bottom trawl survey of the West Coast upper continental slope (WCUCS) off southern Oregon and northern California in 1995. The survey area was between lat. 43°OO' N (near Cape Blanco) and lat. 40°30' N (near Cape Mendocino) in waters from 183 to 1,280 m deep. This was the eighth survey in an ongoing series to monitor long-term trends in the distribution and abundance of WCUCS groundfish populations. Concerns about the performance of the fishing gear that surfaced during the 1993 WCUCS survey resulted in gear experiments in 1994, which in turn led to changes in trawl gear and trawling methodology during this year's survey. Sampling was conducted aboard the NOAA ship *Miller Freeman.* We successfully sampled 106 of 108 established stations. Catches included 121 different species of fishes and 68 different species of invertebrates.

The survey design and the methods used are described, the data collected are summarized, and the results of analyses of distribution, abundance, and biological parameters are presented. Data on water temperature, catch composition, relative abundance, and geographic distribution are reported. Estimates of biomass, population abundance, and length composition are also presented. Appendices include position and catch listings for each haul, catch rates of fish and invertebrates, and population size compositions.

CONTENTS

INTRODUCTION

Fishery-independent data obtained from the Alaska Fisheries Science Center's (AFSC) West Coast upper continental slope (WCUCS) groundfish trawl surveys are used by fishery managers to assess stock condition and to establish annual harvest guidelines for several commercially valuable WCUCS fish species including sablefish (Anoplopoma fimbria), shortspine thornyhead *(Sebastolobus alascanus),* longspine thornyhead (S. *altivelis),* and Dover sole *(Microstomus pacificus).* The WCUCS covers habitat 183-1,280 m deep from the U.S.-Canada border to lat. 32°30'N and is divided into five International North Pacific Fisheries Commission (INPFC) statistical areas including the U.S. Vancouver, Columbia, Eureka, Monterey, and Conception areas (Fig. 1). The Resource Assessment and Conservation Engineering (RACE) Division of the AFSC conducted groundfish assessment surveys of the WCUCS starting in 1984 and has done so annually from 1988 to 1993. Due to limited vessel time each year, these trawl surveys covered different but contiguous sections of the WCUCS. The U.S. Vancouver area was surveyed in 1993 and various sections of the Columbia area were surveyed in 1984, 1988, 1989, 1992, and 1993 (Raymore et al. 1990, Parks and Shaw 1993, Lauth et al. 1997). The Eureka area was last surveyed in 1990, and the northern part of the Monterey area was surveyed down to lat. 38°20'N in 1991. Two other groundfish bottom trawl surveys covering parts of the Conception area between lat 34°30' N and

lat. 36°30' N were conducted by the Southwest Fisheries Science Center (SWFSC) in 1987 and 1988 (Butler et al. 1989).

During the 1993 AFSC survey, concerns were also raised about the poor performance of the slope survey trawl, and consequently, the validity of slope survey data. As a result, vessel time allotted for the 1994 slope survey was instead spent experimenting with ways to stabilize the sampling trawl, learning more about evaluating trawl performance and its effects on the validity of survey data, and investigating alternative methods of surveying groundfish resources using a video camera sled. When regular survey work resumed for this year's survey, we tested and implemented the needed improvements to the trawl gear and trawling methodology (see Survey Methods section).

The objectives of this report are to document the survey design and field procedures, summarize the survey data, and present the results of the standard RACE analyses for the 1995 WCUCS survey of the Eureka area. Included are summaries of catches, distribution, abundance, and size composition for major components of the community, as well as analyses of age-length and length-weight relationships of selected species.

SURVEY METHODS

Survey Period and Sampling Area

The INPFC Eureka area (43°00'N lat. to 40°30'N lat.) was surveyed between 23 October and 22 November. Sampling for the survey began near Cape Blanco (43°00'N lat.) and progressed southward during the first leg and from Cape Mendocino (40°30'N lat.) northward during the second leg (Fig. 2). Water depth at survey stations ranged between 183 and 1,280 m (100-700 fm).

Vessels and Sampling Gear

The NOAA ship *Miller* Freeman is a 65.5 m (215 ft) stern trawler powered by a 2,300 continuous horsepower engine. The ship is equipped with dual net reels, a Rapp-Hydema warp tensioning system, Wesmar Fish Eye net sonar system, Furuno netsonde, EQ-50 depth sounder, and Global Positioning System (GPS) navigational aids. A high-opening Nor'eastern trawl (Fig. 3) constructed of polyethylene mesh and equipped with mudsweep roller gear (Fig. 4) was used to collect all samples. This trawl, built and rigged to RACE Division gear standards, has a 27.2 m headrope and a 37.4 m footrope. The body is constructed of 127 mm stretched-mesh polyethylene netting, 89 mm stretched-mesh web in the codend, and a 32 mm stretched-mesh codend liner. Three 55 m dandylines made of 16 mm galvanized steel cable

connect each wing to a pair of 1.8 x 2.7 m steel V-doors weighing 1,000 kg each. Each door has a 4-point bridle on its backside made with 13 mm long link chain having 33 links forward and 22 links aft in both the top and bottom. Instruments attached to the trawl gear to monitor gear performance included SCANMAR equipment for measuring net dimensions, a Furuno wireless netsonde for real-time monitoring of the headrope height, a tilt sensor on the starboard V-door, and a bottom contact sensor on the footrope. A Wesmar net sonar was attached to the net headrope and used to assure that the trawl gear was performing to engineering specifications during the wire marking procedure and during the initial gear calibration. A Richard Brancker XL-200 submersible data logger was attached to the trawl and used in conjunction with a Trimble Global Positioning System (GPS) unit to record data on the time, depth, water temperature, and geodetic position during each trawl. These data were combined with fishing dimensions of the net, producing a comprehensive set of haul data describing gear performance in space and time.

Trawl Station Allocation

The stations targeted for this survey were the same as those selected for the WCUCS bottom trawl survey of the Eureka area in

1990 (Lauth et al. 1997). There were 108 stations along 17 tracklines between 43°00'N lat. near Cape Blanco and 40°30'N lat. near Cape Mendocino. A cross between a systematic and random design was used for selecting the stations for the 1990 WCUCS bottom trawl survey. Stations were located on transect lines 16.7 km apart and transect lines were positioned roughly perpendicular to the coastline. Sampling was conducted between 183 and 1,280 m in six strata of 183 m (100 fm) depth intervals (183-365 m, 366-547 m, 548-730 m, 731-913 m, 914-l,095 m, and 1,096-1,280 m). The number of sampling stations within each depth stratum were allocated proportional to the trackline length across each depth interval at the rate of one station per 13.0 km of linear trackline length (e.g., three stations would be allocated to a stratum with a trackline length of 30 km). To assure even depth coverage within a stratum, the depth range of each stratum was divided into a number of bins equal to the number of stations scheduled to be surveyed that year. Nominally, a bin was identified by its midpoint target depth. Stations were then randomly assigned to tracklines by picking target depths without replacement.

Trawling Procedures

Sampling was done on a 24-hour basis. Stations were located by GPS and echosounder and then surveyed prior to towing. If the terrain was determined to be too rough or steep to successfully complete a tow, an alternate site was searched for and chosen within an approximate 10 km radius of the original station. If no favorable ground was located the station was declared untrawlable and abandoned. If the gear was damaged during the tow severely enough to affect catch composition, the haul was considered unsatisfactory and the station was either repeated or abandoned. Unsuccessful tows were not used in later analyses.

Revised Survey Gear and Towing Protocol

There were two changes made to the trawl gear and numerous changes made in towing protocol for the 1995 WCUCS survey. These changes were intended to stabilize trawl performance and to better standardize trawling effort. Modifications to the trawl gear included a change from a 2-point to a 4-point door bridle configuration and a reduction in the number of links from 5 links to 2 links of 9 mm chain at attachment points between the groundgear and footrope.

More significant changes were made to various towing protocols including target towing speed, scope ratio, tow duration, trawl warp metering, and trawling mode of the Rapp-

Hydema winch system. Target towing speed was increased from 3.7 km/hr to 4.3 km/h with an acceptable range of plus or minus 0.6 km/h. Slightly higher speed improved vessel steerage and increased power to the doors helping to improve the consistency of net performance. Previous slope surveys used a standard scope table but the scope ratios were excessive and the table was not strictly followed, hence scope ratios were variable between depths and survey years. A new standard scope table based on empirical data from the 1994 gear experiment was used for this survey (Table 1). Tow duration for depths greater than 732 m was reduced from 60 to 30 minutes. Trawl metering also changed from previous surveys. Prior to commencing survey trawling, trawl wires were marked at 50-m intervals. Wire marks were used exclusively for determining the amount of wire payed out during trawl operations. Earlier surveys aboard the NOAA ship Miller *Freeman* used what we later learned were inaccurate readouts from the Rapp-Hydema counter. The Rapp-Hydema autotrawl function is no longer used because it is uncertain how it performs under the diverse and extreme conditions encountered on the WCUCS. As an alternative, equal amounts of wire were payed out on both sides and the brakes were set for the entire tow.

Several new pieces of electronic equipment were used for the 1995 slope survey to better measure and assess gear performance and to pinpoint when the trawl gear was on the bottom. Among

these were an underwater video camera, a bottom contact sensor, a door tilt sensor, and a Wesmar scanning sonar.

Catch Sampling Procedures and Biological Data Collection

Standard RACE catch sampling procedures were followed as described by Smith and Bakkala (1982). Briefly, catches which fit on the sampling table (about 1 t) were processed entirely, while larger catches were weighed using an electronic load cell. In very few 'cases, catches greater than 1 t were subsampled using the method described by Hughes (1976). Fishes and invertebrates were identified to species as time and expertise permitted. After the catches were sorted by species, weighed, and enumerated, biological and specimen data were collected. Samples of all fish species were measured to characterize how their size composition varied with depth. Length measurements for up to 200 specimens of each of the primary target species were collected by sex per haul. Otoliths, used for age determination, were collected from sablefish, Dover sole, arrowtooth flounder *(Atheresthes stomias),* shortspine thornyhead, longspine thornyhead, and giant grenadier *(Albatrossia pectoralis).* Three biological sampling strata, 183-549 m, 550-914 m, and 915-1,280 m, were established to assure that samples were taken from a full range of depths. Sampling effort was also spread evenly over the geographic range of the survey. Otoliths were collected from

stratified samples of five fish per sex/centimeter interval per biological sampling stratum.

Additional biological collections were made in cooperation with colleagues from National Marine Fisheries Service (NMFS) and other outside agencies. These collections were taken for studies involving reproductive biology, age and growth, genetics, food habits, morphometrics, pathology, and other fish life history parameters.

Oceanographic Data Collection

Sea surface temperatures were taken at all stations using a bucket thermometer. Bottom temperatures were measured using a Richard Brancker XL-200 data logger mounted on the trawl headrope. Additional information on temperature profiles from this cruise is available on request from the authors.

Data Analysis

Several analyses are performed routinely on RACE survey data. These include:

1) estimation of relative abundance,

2) estimation of population biomass,

3) estimation of population numbers, and

4) estimation of the population's size composition.

We used the area-swept method as described by Gunderson and Sample (1980) to estimate population biomass and numbers. Briefly, this method entails standardizing samples from each station into catch per unit of effort (CPUE) in terms of either kilograms or numbers per hectare (kg/ha, no./ha) and calculating the arithmetic mean for each sampling stratum. Length-frequency data were weighted by CPUE (no./ha) and expanded to the total estimated population abundance to estimate the population size composition for each species. Selected size composition estimates were applied to age-length keys to obtain estimated age compositions. All analyses were computed for the INPFC Eureka statistical area by depth stratum, and by all depth strata combined.

RESULTS

Haul, Catch, and Biological Data

One-hundred and forty-seven tows were attempted during the survey. All 17 of the east-west tracklines within the survey area were completed. Out of 108 scheduled stations, 106 were sampled successfully (Fig. 2). Two stations were abandoned because the bottom was too rough or too steep. The remainder of the attempted tows were unsuccessful due to hang-ups, rips, bad bottom, or gear problems. SCANMAR net mensuration data were obtained from 109 tows, submersible bathythermograph and bottom contact sensor data from 103 tows, door tilt sensor data from 125 tows, videotape of the Wesmar net sonar video output from 65 tows, and GPS course and position data from 128 tows. Eleven test tows were conducted with an underwater video camera attached to the trawl in addition to the other net metering instrumentation, to observe and assess the performance of the modified trawl.

The trawl's horizontal opening (wingtip to wingtip) was measured for 109 tows and mean net width was calculated for each trawl haul. An overall mean path width of 17.15 m was calculated for the entire survey using 87 of the 109 tows with good performance. The range of average net widths for these 87 tows

was 14.66 m to 19.01 m. The relationship between mean net width and depth, and mean net width and wire length was constant. The overall mean path width was used in area-swept calculations for hauls where actual net width measurements were unavailable.

Table 2 summarizes the biological data collected from fish species. Specimen ages from collected otoliths will be determined by researchers from the Pacific States Marine Fisheries Commission (Dover sole and sablefish) and by a graduate student from the Moss Landing Marine Laboratory (giant, grenadier). We also collected data and specimens for several special studies requested by colleagues in other agencies or institutions, who will report the results of their studies elswhere.

A total of 121 fish species representing 50 fish families were identified over the course of the survey. Table 3 lists the frequencies of occurrence, depth ranges, and the range of distribution by latitude for all fishes identified in trawl samples. Table 4 lists the invertebrates captured representing 9 phyla and 17 classes. Of the 140 invertebrates listed, 68 were identified to species. Appendix A presents detailed station information for each haul and catch weights of the major fish and invertebrate species caught in each haul. The number of individual fish length observations of each fish species is reported in Table 5 by depth stratum.

Temperature Data

Sea surface temperatures ranged from 9.8" to 13.9°C, and bottom temperatures ranged from 2.3° to 8.O°C. Mean sea surface temperature was 13.O°C, and mean bottom temperature was 4.6°C. Sea surface temperature generally increased with increasing latitude south of lat. 41°36'N and north of lat. 42°06'N. The area between lat. 41°36'N and 42°06'N appeared to be some sort of transition zone where surface temperatures dropped by approximately 3°C. This may, to some extent, be an artifact of the sampling pattern. Bottom temperatures decreased with increasing depth in the Eureka area (Fig. 5).

Relative Density and Distribution of species

The 20 most abundant groundfish and selected crab species in each depth stratum are presented in Table 6. Pacific hake *(Merluccius productus),* spiny dogfish *(Squalus acanthias),* and Dover sole had the highest mean catch rates in Strata 1 and 2, and longspine thornyhead, shortspine thornyhead, Dover sole, true Tanner crab *(Chionoecetes tanneri),* sablefish, Pacific grenadier *(Coryphaenoides acrolepis),* and giant grenadier had the highest mean catch rates in Strata 3 to 6. The complete listings of relative abundance of all fish and invertebrate species ranked by mean CPUE by depth stratum and by all strata combined are presented in Appendix B.

Maps of the geographical distribution of arrowtooth flounder, darkblotched rockfish (Sebastes crameri), Dover sole, giant grenadier, longspine thornyhead, Pacific grenadier, Pacific hake, Pacific ocean perch *(Sebastes alutus),* sablefish,' shortspine thornyhead, spiny dogfish, splitnose rockfish *(Sebastes diploproa),* and true Tanner crab are presented in Figures 6-18 in alphabetical order. These maps show the locations of hauls with positive catches of the species. Catch rates were categorized as: 1) greater than zero and less than or equal to the mean; 2) greater than the mean and less than or equal to one standard deviation from the mean; 3) between one and two standard deviations greater than the mean; and 4) over two standard deviations greater than the mean.

Biomass and Population Estimates

Abundance estimates (t) of biomass and associated coefficient of variation (%) are presented for various taxa by stratum in Table 7. Similarly, estimates of population numbers are presented for important species groups in Table 8. The total number of hauls and hauls with weight, number, and length data by stratum for the various taxa are represented in Table 9. Biomass estimates for the four commercially important species varied by species and by stratum. The total biomass estimates for sablefish, Dover sole, longspine thornyhead, and

shortspine thornyhead were 11,202 t, 17,340 t, 21,104 t, and 5,470 t, respectively. The total population estimates were 6,448,871 sablefish, 32,572,431 Dover sole, 220,124,793 longspine thornyhead, and 11,804,231 shortspine thornyhead.

Readers should be aware that the biomass and population estimates presented here are not absolute estimates since herding by doors and bridles and escapement underneath the trawl's roller gear, around the net's opening, and through the net's meshes can affect the bottom trawl catches (Gunderson 1993). For lack of data on species-by-species catchability, abundance calculations are based on the assumption that all fish in front of the trawl and between the wingtips are captured. The degree of bias introduced by this assumption will vary among species. For instance, the ability of a fish to avoid the net will depend on the fish's shape, size, speed, and its reaction to the part of the net encountered. Furthermore, the survey covers limited portions of the depth and geographic range of some of these species. As mentioned previously, this survey targets many. species and provides general information where it lacks in specific information. These surveys are the only fishery-independent source of information on the abundance, distribution, and length and age-composition for many of these species. Stock assessment scientists utilize our survey results, along with commercial catch data, in order to set the most -appropriate catch levels.

Size and Age Composition

Estimated population length compositions for several groundfish species are presented in Figures 19-25 by species and by depth stratum. For more detail, Appendix C contains listings of estimated length compositions for major species by sex and for all depth strata combined. Printed or electronic files of size composition are available by species, INPFC area, and depth stratum upon request from the authors.

At the time this report was prepared, the only age data available for analyses were for sablefish. Population estimates by age group and mean length at age for the Eureka area are presented in Table 10 using an age-length key for all depths, sexes, and areas combined. Lengths at age were different between the sexes and were more variable at greater depths for sablefish, so further analyses were done using three depth and sex-specific age-length keys. The depth strata used were the same as the biological sampling strata. Results from these analyses are presented in graphical format in Figure 26.

The age data from other years and species, and the results generated by these data, including growth rates, population at age, and biomass at age, can be obtained upon request from the authors in either printed or electronic form.

Length-Weight Relationships

From the individual fish weight samples, we determined length-weight relationships for arrowtooth flounder, Dover sole, sablefish, shortspine thornyhead, longspine thornyhead, and giant grenadier using a non-linear least squares regression model. Table 11 summarizes the length-weight relationships by sex and for all sexes combined (including unsexed fish).

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TABLES

Table 1.-- The relationship between bottom depth and the length of trawl wire used for bottom trawling during the West Coast upper continental slope bottom trawl survey using mudsweep roller gear, 1 inch die-formed trawl warps, and a towing speed of 2.3 knots.

Depth Range (Meters)			Wire Out (Meters)	Ratio
183	-	190	400	2.11
191	-	225	450	2.00
226	-	260	500	1.92
261	-	295	550	1.86
296	-	329	600	1.82
330	-	364	650	1.79
365	-	399	700	1.75
400	-	434	750	1.73
435	-	469	800	1.71
470	-	503	850	1.69
504	-	538	900	1.67
539	-	572	950	1.66
573	-	607	1,000	1.65
608	-	642	1,050	1.64
643	-	677	1,100	1.62
678	-	711	1,150	1.62
712	-	746	1,200	1.61
747	-	781	1,250	1.60
782	-	815	1,300	1.60
816	-	850	1,350	1.59
851	-	885	1,400	1.58
886	-	920	1,450	1.58
921	-	954	1,500	1.57
955	-	989	1,550	1.57
990	-	1,024	1,600	1.56
1,025	-	1,059	1,650	1.56
1,060	-	1,093	1,700	1.56
1,094	-	1,128	1,750	1.55
1,129	-	1,163	1,800	1.55
1,164	-	1,197	1,850	1.55
1,198	-	1,232	1,900	1.54
1,233	-	1,267	1,950	1.54
1,268	-	1,302	2,000	1.54

Table P.--Biological data collected during the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission Eureka area.

Common Name of Fish Species	Length-Frequency Data	Age Structures	Maturities	Ovaries	Weights
Brown cat shark	1,434	--	--	--	5
Spiny dogfish	1,504	--	--	--	166
Deepsea skate	12	--	--	--	--
Bering skate	607	--	--	--	--
Longnose skate	650	--	--	--	21
Black skate	322	--	--	--	49
Spotted ratfish	198	--	--	--	--
Arrowtooth flounder	290	88	88	--	88
Pacific halibut	4	--	--	--	--
Slender sole	1,599	--	--	--	--
Petrale sole	66	--	--	--	--
English sole	51	--	--	--	--
Dover sole	8,941	727	720	--	721
Deepsea sole	1,425	--	--	--	56
Rex sole	4,056	--	--	--	--
Blackfin poacher	30	--	--	--	--
California slickhead	1,510	--	--	--	30
Threadfin slickhead	84	--	--	--	--
Sablefish	2,538	989	1,394	647	1,013
Pacific grenadier	5,130	--	--	--	--
Giant grenadier	2,830	167	104	--	163
Popeye grenadier	17	--	--	--	--
Pacific flatnose	1,521	--	--	--	51
Lingcod	31	--	--	--	--
Blacktail snailfish	481	--	--	--	25
Pacific hake	6,214	--	--	--	--
Chinook salmon	35	--	--	--	--
Twoline eelpout	264	--	--	--	74
Bigfin eelpout	1,219	--	--	--	9
Kamchatka eelpout	1,498	--	--	--	81
Blackmouth eelpout	3	--	--	--	--
Black eelpout	2,561	--	--	--	112
Shortspine thornyhead	5,181	948	947	--	948
Longspine thornyhead	17,038	588	588	--	588
Rougheye rockfish	3	--	--	--	--
Pacific ocean perch	25	--	--	--	--
Aurora rockfish	508	--	--	--	--
Darkblotched rockfish	186	--	--	--	--
Splitnose rockfish	1,977	--	--	--	--
Greenstriped rockfish	348	--	--	--	--
Widow rockfish	9	--	--	--	--
Chilipepper	132	--	--	--	--
Rosethorn rockfish	9	--	--	--	--
Shortbelly rockfish	93	--	--	--	--
Bocaccio	5	--	--	--	--
Redstripe rockfish	7	--	--	--	--
Redbanded rockfish	48	--	--	--	--
Stripetail rockfish	1,280	--	--	--	--
Sharpchin rockfish	290	--	--	--	--

Table 3.--Frequency of occurrence, depth, and latitude ranges for fish species caught during the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission Eureka area.

Family and Species[a]	Common Name	Frequency of Occurrence	Min Depth (m)	Max. Depth (m)	Mean Depth (m)	Latitude Range (ddmm)[a] South	North
Myxinidae							
Eptatretus deani	Black hagfish	94	240	1,223	790	4032	4258
Petromyzontidae							
Lampetra tridentata	Pacific lamprey	3	430	453	439	4086	4209
Chimeridae							
Hydrolagus colliei	Spotted ratfish	12	214	306	244	4034	4253
Scyliorhinidae							
Apristurus brunneus	Brown cat shark	97	214	1,223	660	4032	4258
Squalidae							
Squalus acanthias	Spiny dogfish	48	214	1,170	467	4032	4254
Torpedinidae							
Torpedo californica	Pacific electric ray	1	242	242	242	4071	4071
Rajidae							
Bathyraja abyssicola[b]	Deepsea skate	10	706	1,210	1,083	4033	4256
Bathyraja interrupta	Bering skate	32	214	512	339	4034	4253
Raja rhina	Longnose skate	47	214	650	404	4033	4253
Bathyraja trachura	Black skate	54	228	1,223	980	4032	4256
Nemichthyidae							
Nemichthyidae unident.	Snipe eel unident.	1	1,184	1,184	1,184	4077	4077
Nemichthys scolopaceus	Slender snipe eel	2	628	1,180	904	4206	4216
Avocettina infans[b]	Blackline snipe eel	1	862	862	862	4096	4096
Serrivomeridae[b]							
Serrivomer sector[b]	Sawtooth eel	3	958	1,184	1,054	4032	4086
Euryphayngidae[b]							
Eurypharynx pelecanoides[b]	Umbrellamouth gulper	1	1,211	1,211	1,211	4097	4097
Clupeidae							
Clupea pallasi	Pacific herring	1	221	221	221	4076	4076
Bathylagidae							
Bathylagus pacificus	Pacific blacksmelt	1	537	537	537	4034	4034
Bathylagus sp.	Blacksmelt unident.	87	221	1,223	887	4032	4258
Leuroglossus stilbius	California smoothtongue	3	591	776	661	4060	4096
Opisthoproctidae							
Dolichopteryx longipes[b]	Brownsnout spookfish	1	1,020	1,020	1,020	4032	4032
Macropinna microstoma	Barreleye	3	837	1,140	978	4041	4086
Alepocephalidae[b]							
Alepocephalus tenebrosus	California slickhead	81	240	1,211	892	4032	4258
Talismania bifurcata	Threadfin slickhead	18	695	1,210	858	4033	4258
Searsiidae[b]							
Sagamichthys abei	Shining tubeshoulder	9	409	1,210	818	4041	4236
Mirorictus taningi	Striped tubeshoulder	1	1,184	1,184	1,184	4077	4077
Argentinidae							
Argentina sialis	Pacific argentine	2	240	695	468	4033	4095
Salmonidae							
Oncorhynchus tshawytscha	Chinook salmon	6	214	287	242	4034	4203
Sternoptychidae[b]							
Sternoptychidae unident.	Hatchetfish unident.	4	870	1,016	961	4032	4212
Stomiidae							
Aristostomias scintillans[b]	Shining loosejaw	7	510	1,173	872	4033	4256
Bathophilus flemingi[b]	Highfin dragonfish	1	650	650	650	4042	4042
Chauliodus macouni	Pacific viperfish	73	221	1,211	849	4032	4258
Idiacanthus antrostomus[b]	Pacific blackdragon	3	510	1,140	890	4032	4076
Tactostoma macropus	Longfin dragonfish	39	580	1,184	911	4042	4240
Stomiidae	Dragonfish unident.	2	695	1,180	938	4033	4206
Scopelarchidae							
Benthalbella sp.		2	641	1,100	871	4203	4239
Benthalbella dentata	Northern pearleye	5	830	1,173	1,012	4065	4112
Notosudidae[b]							
Scopelosaurus harryi	Scaly paperbone	1	832	832	832	4120	4120
Paralepididae							
Paralepididae unident.	Barracudina unident.	1	1,170	1,170	1,170	4042	4042
Paralepis atlantica	Duckbill barracudina	1	447	447	447	4114	4114
Lestidiops ringens	Slender barracudina	5	271	1,223	777	4061	4232
Anotopteridae							
Anotopterus pharao	Daggertooth	1	1,223	1,223	1,223	4068	4068

Table 3.--Continued.

Family and Species[a]	Common Name	Frequency of Occurrence	Min Depth (m)	Max. Depth (m)	Mean Depth (m)	Latitude Range (ddmm)[a] South	North
Alepisauridae							
Alepisaurus ferox	Longnose lancetfish	3	803	1,018	875	4056	4240
Neoscopelidae							
Scopelengys tristis	Blackchin	1	1,180	1,180	1,180	4206	4206
Myctophidae							
Myctophidae unident.	Lanternfish unident.	72	240	1,223	831	4032	4258
Stenobrachius leucopsarus	Northern lampfish	2	695	830	763	4033	4065
Lampanyctus sp.		24	580	1,210	937	4032	4227
Lampanyctus ritteri	Broadfin lanternfish	37	478	1,223	895	4032	4258
Tarletonbeania crenularis	Blue lanternfish	16	240	1,210	762	4032	4258
Symbolophorus californiensis	California lanternfish	2	237	1,020	629	4032	4088
Moridae							
Antimora microlepis	Pacific flatnose	71	240	1,223	950	4032	4258
Moridae unident.	Codling unident.	1	306	306	306	4041	4041
Gadidae							
Merluccius productus	Pacific hake	96	214	1,211	642	4032	4257
Ceratiidae							
Ceratiidae unident.	Seadevils unident.	1	1,170	1,170	1,170	4042	4042
Macrouridae							
Nezumia stelgidolepis	California grenadier	3	480	591	525	4095	4103
Nezumia liolepis	Smooth grenadier	1	247	247	247	4207	4207
Coryphaenoides acrolepis	Pacific grenadier	83	447	1,223	912	4032	4258
Albatrossia pectoralis	Giant grenadier	84	240	1,223	904	4032	4258
Coryphaenoides cinereus	Popeye grenadier	4	645	995	849	4070	4251
Bythitidae							
Cataetyx rubrirostris[b]	Rubynose brotula	1	618	618	618	4077	4077
Scomberesocidae							
Cololabis saira	Pacific saury	5	247	618	472	4050	4207
Trachipteridae							
Trachipterus altivelis	King-of-the-salmon	8	246	1,223	896	4034	4239
Anoplogastridae[b]							
Anoplogaster cornuta	Fangtooth	14	777	1,210	1,016	4032	4201
Melamphaidae[b]							
Poromitra crassiceps	Crested bigscale	6	1,020	1,223	1,116	4032	4256
Melamphaidae unident.	Bigscale unident.	6	913	1,180	1,104	4084	4206
Cetomimidae[b]							
Rondeletia loricata	Armored redmouth whalefish	1	1,018	1,018	1,018	4102	4102
Oreosomatidae[b]							
Allocyttus folletti	Oxeye oreo	1	480	480	480	4095	4095
Scorpaenidae							
Sebastolobus alascanus	Shortspine thornyhead	122	214	1,223	728	4032	4256
Sebastolobus altivelis	Longspine thornyhead	99	237	1,223	851	4032	4258
Sebastes aleutianus	Rougheye rockfish	4	424	439	430	4086	4220
Sebastes alutus	Pacific ocean perch	8	221	430	318	4034	4253
Sebastes aurora	Aurora rockfish	25	217	1,170	473	4033	4252
Sebastes cramori	Darkblotched rockfish	14	214	424	283	4034	4248
Sebastes diploproa	Splitnose rockfish	21	214	465	266	4034	4253
Sebastes elongatus	Greenstriped rockfish	11	214	306	245	4034	4253
Sebastes entomelas	Widow rockfish	4	217	246	231	4034	4116
Sebastes goodei	Chilipepper	15	214	306	247	4034	4253
Sebastes helvomaculatus	Rosethorn rockfish	5	217	246	230	4034	4225
Sebastes jordani	Shortbelly rockfish	2	214	221	218	4049	4076
Sebastes levis	Cowcod	1	221	221	221	4076	4076
Sebastes melanostomus	Blackgill rockfish	1	430	430	430	4086	4086
Sebastes paucispinis	Bocaccio	4	214	246	225	4034	4116
Sebastes proriger	Redstripe rockfish	3	247	261	256	4095	4253
Sebastes babcocki	Redbanded rockfish	15	214	409	256	4034	4250
Sebastes saxicola	Stripetail rockfish	17	214	306	247	4034	4253
Sebastes zacentrus	Sharpchin rockfish	17	214	306	247	4034	4253
Sebastes rufus	Bank rockfish	1	223	223	223	4034	4034
Sebastes borealis	Shortraker rockfish	1	418	418	418	4248	4248
Anoplopomatidae							
Anoplopoma fimbria	Sablefish	125	214	1,223	733	4032	4258
Hexagrammidae							
Ophiodon elongatus	Lingcod	10	214	418	253	4034	4253
Icosteus aenigmaticus	Ragfish	2	870	1,120	995	4212	4232

Table 3.--Continued.

Family and Species[a]	Common Name	of Occurrence	Depth (m)	Depth (m)	Depth (m)	(ddmm)* South	(ddmm)* North
Cottidae							
Icelinus filamentosus	Threadfin sculpin	3	221	223	222	4034	4225
Radulinus asprellus	Slim sculpin	1	214	214	214	4049	4049
Psychrolutes phrictus	Blob sculpin	4	1,106	1,223	1,165	4068	4232
Agonidae							
Xeneretmus latifrons	Blacktip poacher	2	214	428	321	4049	4227
Xeneretmus leiops	Smootheye poacher	1	223	223	223	4034	4034
Bathyagonus pentacanthus	Bigeye poacher	1	237	237	237	4088	4088
Bathyagonus nigripinnis	Blackfin poacher	15	240	1,020	607	4032	4250
Cyclopteridae							
Cyclopteridae (Liparidinae)	Snailfish unident.	4	430	835	705	4086	4252
Careproctus sp.		13	223	1,211	724	4033	4239
Careproctus melanurus	Blacktail snailfish	82	214	1,180	656	4032	4258
Careproctus oregonensis	Oregon snailfish	1	862	862	862	4096	4096
Careproctus microstomus	Smallmouth snailfish	1	1,223	1,223	1,223	4068	4068
Liparis sp.		2	799	1,016	908	4032	4076
Paraliparis cephalus	Swellhead snailfish	3	776	1,106	967	4032	4088
Paraliparis dactylosus	Red snailfish	1	1,211	1,211	1,211	4097	4097
Paraliparis pectoralis	Broadfin snailfish	4	960	1,170	1,075	4032	4050
Paraliparis sp.		9	424	1,200	893	4034	4232
Elassodiscus caudatus	Humpback snailfish	1	537	537	537	4034	4034
Rhinoliparis attenuatus	Slim snailfish	1	1,150	1,150	1,150	4049	4049
Carangidae							
Trachurus symmetricus	Jack mackerel	4	228	705	358	4203	4250
Bathymasteridae							
Bathymasteridae unident.	Ronquil unident.	1	214	214	214	4049	4049
Zoarcidae							
Bothrocara brunneum	Twoline eelpout	77	240	1,223	866	4032	4258
Embryx crotalinus	Snakehead eelpout	2	837	873	855	4033	4041
Lycodes cortezianus	Bigfin eelpout	42	214	580	368	4033	4253
Lycenchelys spp.	Deepwater eelpouts	58	240	1,223	913	4032	4258
Lycenchelys camchatica	Kamchatka eelpout	1	1,123	1,123	1,123	4070	4070
Lycodapus endemoscotus	Deepwater eelpout	2	484	1,020	752	4032	4078
Lycodapus fierasfer	Blackmouth eelpout	7	625	1,010	785	4061	4258
Lycodapus dermatinus	Looseskin eelpout	4	585	777	689	4077	4095
Lycodes sp.		1	958	958	958	4086	4086
Lycodes diapterus	Black eelpout	49	240	1,020	543	4032	4254
Lycodes pacificus	Blackbelly eelpout	3	221	260	241	4071	4253
Lycodema barbatum	Bearded eelpout	1	214	214	214	4049	4049
Chiasmodontidae[b]							
Kali indica[b]		3	958	1,180	1,057	4086	4239
Trichiuridae							
Aphanopus carbo[b]	Black scabbardfish	2	758	830	794	4052	4065
Lepidopus xantusi[b]	Scabbardfish	1	844	844	844	4114	4114
Centrolophidae							
Icichthys lockingtoni	Medusafish	8	633	1,210	951	4041	4232
Pleuronectidae							
Atheresthes stomias	Arrowtooth flounder	26	214	1,180	433	4049	4253
Hippoglossus stenolepis	Pacific halibut	3	247	409	305	4069	4253
Lyopsetta exilis[b]	Slender sole	33	214	512	342	4034	4253
Eopsetta jordani	Petrale sole	17	214	465	314	4034	4253
Parophyrs vetulus[b]	English sole	6	214	268	247	4049	4253
Microstomus pacificus	Dover sole	125	214	1,211	722	4032	4258
Embassichthys bathybius	Deepsea sole	83	439	1,223	914	4032	4258
Glyptocephalus zachirus[b]	Rex sole	56	214	758	437	4033	4254

[a] Nomenclature from Robins (1990) unless otherwise noted.

[b] Nomenclature from Eschmeyer and Herald (1983).

[c] Nomenclature from Nelson (1984).

* Degrees and minutes of latitude.

Table 4: --Frequency of occurrence, depth, and latitude ranges for invertebrate species caught during the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission Eureka area.

Phylum and Class	Species or Common Name	Frequency of Occurrence	Min. Depth (m)	Max. Depth (m)	Mean Depth (m)	Latitude Range (ddmm)* South	North
Porifera							
Hexactunellida							
	Sponge unident.	5	242	1,184	836	4117	4232
	Aphrocallistes vastus	15	237	1,180	807	4040	4230
	Glass sponge unident.	1	489	489	489	4040	4040
Cnideria							
Hydrozoa							
	Hydroid unident.	3	958	1,173	1,060	4126	4146
Scyphozoa							
	Jellyfish unident.	91	214	1,223	758	4032	4258
Anthozoa							
	Soft coral unident.	4	645	1,211	867	4042	4250
	Coral unident.	20	268	1,211	904	4033	4240
	Paragorgia sp.	1	857	857	857	4145	4145
	Sea pen unident.	25	439	1,223	1,008	4033	4256
	Slender seawhip unident.	3	261	1,170	640	4040	4135
	Virgularia sp.	1	1,086	1,086	1,086	4252	4252
	Sea anemone unident.	123	214	1,223	732	4032	4258
	Liponemis brevicornis	26	240	1,223	715	4033	4252
	Stony coral unident.	3	514	668	580	4426	4733
	Anthomastus sp.	1	960	960	960	4050	4050
Annelida							
Polychaeta							
	Polychaete worm unident.	3	237	261	247	4128	4203
	Sea mouse unident.	18	217	1,223	479	4033	4252
Sipuncula							
	Sipunculid worm unident.	4	237	537	419	4034	4217
Arthropoda							
Malacostraca							
	Shrimp unident.	8	447	1,223	999	4032	4251
	Sergestid shrimp unident.	1	645	645	645	4250	4250
	Pandalid shrimp unident.	2	1,120	1,135	1,128	4232	4232
	Pandalus jordani	3	214	1,173	677	4049	4250
	Pandalus platyceros	7	214	1,180	490	4034	4225
	Pandalopsis dispar	11	217	478	269	4111	4253
	Eualus sp.	5	214	1,065	631	4049	4239
	Eualus macrophthalmus	10	430	1,223	825	4049	4247
	Crangonid shrimp unident.	2	242	1,100	671	4111	4239
	Argis sp.	1	237	237	237	4128	4128
	Crangon communis	1	214	214	214	4049	4049
	Pasiphaeid shrimp unident.	2	478	860	669	4237	4257
	Pasiphaea pacifica	21	240	1,170	687	4032	4230
	Pasiphaea tarda	66	240	1,223	953	4032	4258
	Cancer magister	14	214	447	275	4049	4253
	Cancer productus	1	268	268	268	4218	4218
	Spider crabs unident.	12	280	1,198	721	4249	4503
	Chorilia longipes	9	618	1,018	815	4101	4222
	Oregonia bifurca	8	409	1,050	692	4050	4154

Table 4. --Continued.

Phylum and Class	Species or Common Name	Frequency of Occurrence	Min. Depth (m)	Max. Depth (m)	Mean Depth (m)	Latitude Range (ddmm)* South	North
	Hermit crab unident.	68	217	1,223	680	4033	4253
	Lopholithodes foraminatus	2	221	228	225	4225	4225
	Lithodes couesi	12	835	1,211	1,081	4126	4252
	Paralomis multispina	21	913	1,223	1,125	4034	4256
	Hyas sp.	1	214	214	214	4049	4049
	Galatheid crab unident.	1	221	221	221	4116	4116
	Munida quadrispina	2	214	242	228	4049	4111
	amphipod unident.	1	1,106	1,106	1,106	4124	4124
	isopod unident.	2	221	758	490	4052	4116
Mollusca							
Polyplacophora							
	Placiphorella sp.	1	1,018	1,018	1,018	4142	4142
Gastropoda							
	Gastropod eggs unident.	13	217	1,200	787	4034	4239
	Nudibranch unident.	11	221	1,211	909	4033	4253
	Tochuina tetraquetra	1	489	489	489	4040	4040
	Tritonia sp.	42	214	1,211	901	4032	4254
	Snail unident.	10	217	1,223	754	4056	4156
	Polinices lewisi	1	287	287	287	4058	4058
	Polinices sp.	2	221	246	234	4034	4225
	Colus sp.	15	409	1,184	872	4032	4232
	Neptunea sp.	4	409	1,140	681	4033	4135
	Neptunea amianta	98	240	1,223	826	4032	4258
	Plicifusus griseus	4	832	978	879	4160	4216
	Antiplanes piona	1	257	257	257	4250	4250
	Fusitriton oregonensis	3	430	641	512	4050	4203
	Bathybembix bairdii	39	306	1,223	921	4041	4254
	Buccinum sp.	53	430	1,223	977	4032	4257
	Opisthobranchia unident.	1	1,184	1,184	1,184	4117	4117
	Heteropod unident.	41	214	1,223	763	4032	4225
Bivalvia							
	Bivalve unident.	7	430	1,223	931	4033	4250
	Delectopecten randolphi	1	663	663	663	4210	4210
	Yoldia sp.	3	457	1,020	824	4032	4202
	Yoldia myalis	1	1,123	1,123	1,123	4110	4110
Cephlapoda							
	Octopus unident.	47	221	1,223	618	4033	4256
	Opisthoteuthis californiana	38	240	1,150	725	4033	4258
	Vampyroteuthis infernalis	30	260	1,223	1,001	4032	4258
	Squid unident.	82	217	1,223	754	4032	4258
	Rossia pacifica	2	246	428	337	4034	4227
	Loligo opalescens	5	221	958	644	4056	4154
	Berryteuthis magister	10	223	1,211	675	4034	4152
	Gonatopsis borealis	1	1,086	1,086	1,086	4252	4252
	Onychoteuthidae unident.	2	424	428	426	4201	4227
Echinodermata							
Crinoidea							
	crinoid unident.	4	489	1,150	956	4040	4232
	Florometra serratissima	1	1,018	1,018	1,018	4142	4142
Asteroidea							
	Starfish unident.	2	602	1,034	818	4145	4239
	Rathbunaster californicus	22	214	777	364	4033	4253
	Pycnopodia helianthodes	1	237	237	237	4128	4128
	Stylasterias forreri	5	223	489	333	4034	4240
	Ampheraster sp.	2	628	836	732	4216	4216

Table 4.--Continued.

Phylum and Class	Species or Common Name	Frequency of Occurrence	Min. Depth (m)	Max. Depth (m)	Mean Depth (m)	Latitude Range (ddmm)* South	North
	Henricia sp.	1	844	844	844	4154	4154
	Leptasterias sp.	1	1,184	1,184	1,184	4117	4117
	Pseudarchaster sp.	2	484	1,223	854	4108	4118
	Pseudarchaster parelii	6	217	510	422	4033	4227
	Hippasteria sp.	1	628	628	628	4216	4216
	Hippasteria californica	54	237	1,223	921	4033	4252
	Hippasteria spinosa	9	246	1,135	529	4034	4256
	Pseudarchaster parelii	17	228	1,170	514	4034	4253
	Ceramaster sp.	1	830	830	830	4105	4105
	Ceramaster japonicus	3	641	844	774	4154	4216
	Luidia foliata	31	214	799	376	4033	4253
	Solaster sp.	3	1,018	1,211	1,112	4124	4142
	Solaster paxillatus	8	776	1,184	1,105	4042	4232
	Crossaster sp.	4	512	1,100	815	4239	4252
	Crossaster borealis	38	615	1,223	1,006	4041	4232
	Crossaster papposus	2	260	439	350	4228	4253
	Heterozonias alternatus	99	221	1,223	839	4032	4258
	Lophaster sp.	1	1,211	1,211	1,211	4137	4137
	Lophaster furcilliger	4	1,110	1,210	1,152	4057	4256
	Pteraster sp.	2	836	1,135	986	4216	4232
	Pteraster tesselatus	5	228	1,173	827	4146	4252
	Diplopteraster multipes	8	641	1,211	904	4042	4239
	Thrissacanthias penicillatus	80	221	1,223	856	4032	4256
	Ctenodiscus crispatus	2	628	641	635	4203	4216
	Leptychaster sp.	3	439	1,135	741	4042	4248
	Dipsacaster sp.	3	836	1,180	976	4126	4216
	Psilaster pectinatus	3	840	995	898	4110	4258
	Benthopectinidae	2	1,078	1,086	1,082	4251	4252
	Luidiaster dawsoni	7	641	1,223	1,042	4108	4230
	Nearchaster aciculosus	17	615	1,223	1,004	4042	4216
	Zoroasteridae unident.	50	484	1,223	935	4033	4257
	Zoraster ophiurus	10	802	1,160	992	4208	4258
	Myoxoderma platyacanthum	38	214	1,018	583	4034	4252
Echinoidea							
	Allocentrotus fragilis	32	221	663	451	4033	4250
	Allocentrotus sp.	4	242	453	390	4201	4248
	Brisaster sp.	49	214	1,010	543	4033	4258
Ophiuroidea							
	Gorgonocephalus caryi	4	221	1,184	695	4034	4225
	Brittlestarfish unident.	8	217	1,170	645	4040	4232
	Amphiophiura ponderosa	3	628	1,184	943	4117	4216
	Asteronyx sp.	2	1,140	1,180	1,160	4116	4206
	Ophiopholis longispina	1	223	223	223	4034	4034
	Ophiopholis aculeata	1	428	428	428	4227	4227
	Ophiura sarsi	20	223	628	439	4033	4252
Holothuroidea							
	Sea cucumber unident.	36	217	1,210	534	4032	4253
	Parastichopus californicus	1	268	268	268	4218	4218
	Paracaudina chilensis	2	287	428	358	4058	4227
	Molpadia sp.	9	217	1,210	739	4034	4201
	Molpadia intermedia	2	428	504	466	4143	4227
	Psolus sp.	6	439	1,211	939	4042	4232
	Psolus squamatus	1	1,018	1,018	1,018	4142	4142
	Pannychia moseleyi	18	480	1,223	996	4032	4256
	Scotoplanes theeli	21	240	1,223	1,012	4042	4252

Table 4.--Continued.

Phylum and Class	Species or Common Name	Frequency of Occurrence	Min. Depth (m)	Max. Depth (m)	Mean Depth (m)	Latitude Range (ddmm)* South	Latitude Range (ddmm)* North
Brachiopoda							
	Brachiopod unident.	3	614	1,135	956	4232	4247
Urochordata							
Ascidiacea							
	Tunicate unident.	1	776	776	776	4128	4128
	Prysoma sp.	1	1,106	1,106	1,106	4124	4124
Thaliacea							
	Salps unident.	4	223	844	393	4034	4253

* Degrees and minutes of latitude.

Table 5.--Number of length frequency measurements collected by stratum for the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission Eureka area.

Species	Stratum 1 183-366 m	Stratum 2 367-549 m	Stratum 3 550-732 m	Stratum 4 733-914 m	Stratum 5 915-1,097 m	Stratum 6 1,098-1,280 m
Brown cat shark	115	545	491	200	48	9
Spiny dogfish	589	762	6	2	-	2
Deepsea skate	-	-	-	-	2	10
Bering skate	550	57	-	-	-	-
Longnose skate	404	223	15	-	-	-
Black skate	6	-	14	11	93	197
Spotted ratfish	198	-	-	-	-	-
Arrowtooth flounder	36	241	5	-	-	1
Pacific halibut	3	1	-	-	-	-
Slender sole	1,357	240	-	-	-	-
Petrale sole	58	8	-	-	-	-
English sole	51	-	-	-	-	-
Dover sole	2,612	1,816	1,469	1,316	887	431
Deepsea sole	-	22	53	332	498	478
Rex sole	1,521	1,836	595	1	-	-
Blackfin poacher	3	1	23	3	-	-
California slickhead	15	1	159	757	418	94
Threadfin slickhead	-	-	6	70	7	1
Sablefish	394	201	479	373	412	597
Pacific grenadier	-	7	231	316	2,209	2,216
Giant grenadier	1	23	699	469	583	919
Popeye grenadier	-	-	-	12	-	-
Pacific flatnose	2	22	78	54	606	737
Lingcod	31	-	-	-	-	-
Blacktail snailfish	72	195	116	51	35	11
Pacific hake	2,936	2,596	401	17	11	28
Chinook salmon	35	-	-	-	-	-
Twoline eelpout	6	21	38	61	98	35
Snakehead eelpout	-	-	-	65	-	-
Bigfin eelpout	744	420	10	-	-	-
Lycenchelys sp.	8	-	81	438	768	88
Blackmouth eelpout	-	-	1	2	-	-
Black eelpout	196	1,329	898	21	-	-
Shortspine thornyhead	2,064	1,804	323	147	357	188
Longspine thornyhead	219	652	4,084	4,392	4,129	3,038
Rougheye rockfish	-	2	-	-	-	-
Pacific ocean perch	23	1	-	-	-	-
Aurora rockfish	3	463	-	-	-	2
Darkblotched rockfish	184	2	-	-	-	-
Splitnose rockfish	1,974	3	-	-	-	-
Greenstriped rockfish	348	-	-	-	-	-
Widow rockfish	9	-	-	-	-	-
Chilipepper	132	-	-	-	-	-
Rosethorn rockfish	9	-	-	-	-	-
Shortbelly rockfish	93	-	-	-	-	-
Bocaccio	5	-	-	-	-	-
Redstripe rockfish	7	-	-	-	-	-
Redbanded rockfish	45	3	-	-	-	-
Stripetail rockfish	1,280	-	-	-	-	-
Sharpchin rockfish	290	-	-	-	-	-

Table 6.--Mean CPUE (kg/ha) of the 20 most abundant groundfish and selected crab species caught during the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission Eureka area.

Species	Stratum 1 183-366 m	Species	Stratum 2 367-549 m	Species	Stratum 3 550-732 m
Pacific hake	65.25	Pacific hake	101.18	Dover sole	23.52
Spiny dogfish	63.61	Dover sole	32.70	Longspine thornyhead	19.02
Dover sole	25.54	Spiny dogfish	30.84	True tanner crab	18.22
Splitnose rockfish	9.65	Rex sole	17.88	Sablefish	12.10
Sablefish	8.82	Longnose skate	8.25	Giant grenadier	10.31
Stripetail rockfish	8.54	Sablefish	6.04	Shortspine thornyhead	4.19
Dungeness crab	6.75	Black eelpout	4.77	Pacific hake	3.31
Longnose skate	6.61	Shortspine thornyhead	4.13	Rex sole	2.28
Rex sole	5.29	Aurora rockfish	3.75	Brown cat shark	1.05
Shortspine thornyhead	4.84	Arrowtooth flounder	3.20	Longnose skate	0.87
Bering skate	3.49	Brown cat shark	2.93	Black eelpout	0.86
Bigfin eelpout	2.80	Bigfin eelpout	1.61	Black hagfish	0.47
Slender sole	2.42	Longspine thornyhead	1.58	California slickhead	0.39
Spotted ratfish	1.78	Bering skate	0.86	Deepsea sole	0.37
Greenstriped rockfish	1.56	Black hagfish	0.67	Twoline eelpout	0.33
Lingcod	1.31	Blacktail snailfish	0.38	Spiny dogfish	0.27
Brown cat shark	1.15	Giant grenadier	0.32	Pacific grenadier	0.21
Sharpchin rockfish	1.13	Twoline eelpout	0.24	Black skate	0.17
Chinook salmon	0.88	True tanner crab	0.20	Blacktail snailfish	0.16
Longspine thornyhead	0.78	Deepsea sole	0.18	*Lycenchelys* sp.	0.14
Number of hauls	18	Number of hauls	16	Number of hauls	17

Species	Stratum 4 733-914 m	Species	Stratum 5 915-1,097 m	Species	Stratum 6 1,098-1,280 m
Longspine thornyhead	35.33	Longspine thornyhead	40.92	Pacific grenadier	31.24
True tanner crab	17.48	Pacific grenadier	24.71	Longspine thornyhead	25.85
Dover sole	16.79	Dover sole	15.60	Sablefish	22.44
Sablefish	9.09	True tanner crab	14.69	Giant grenadier	16.46
Giant grenadier	6.53	Sablefish	14.69	True tanner crab	8.90
Shortspine thornyhead	3.44	Shortspine thornyhead	11.49	Dover sole	8.05
Deepsea sole	1.81	Giant grenadier	7.47	Shortspine thornyhead	6.88
California slickhead	1.57	Deepsea sole	3.81	Pacific flatnose	4.89
Pacific grenadier	1.03	Black skate	2.31	Black skate	4.83
Lycenchelys sp.	0.71	California slickhead	1.96	Deepsea sole	4.65
Ragfish	0.44	*Lycenchelys* sp.	1.55	Deepsea skate	1.47
Black hagfish	0.39	Pacific flatnose	0.81	California slickhead	0.66
Brown cat shark	0.39	Twoline eelpout	0.74	Blob sculpin	0.52
Twoline eelpout	0.33	Deepsea skate	0.41	Twoline eelpout	0.45
Blacksmelt unident.	0.18	Black hagfish	0.38	Blacksmelt unident.	0.28
Black skate	0.16	Blacksmelt unident.	0.25	Pacific hake	0.25
Threadfin slickhead	0.11	Brown cat shark	0.22	King-of-the-salmon	0.24
Pacific hake	0.10	Blacktail snailfish	0.12	*Lycenchelys* sp.	0.18
Longnose lancetfish	0.06	Pacific hake	0.09	Brown cat shark	0.10
Blacktail snailfish	0.05	Longnose lancetfish	0.06	Black hagfish	0.09
Number of hauls	18	Number of hauls	19	Number of hauls	18

Table 7.--Estimates *of* fish biomass (metric tons) and coefficient of variation (CV) stratum for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey. Differences in totals result from rounding.

Species	Stratum 1 183-366 m		Stratum 2 367-549 m		Stratum 3 550-732 m		Stratum 4 733-914 m	
	Biomass (t)	CV	Biomass (t)	CV	Biomass (t)	CV	Biomass (t)	CV
Brown cat shark	124	32%	323	39%	175	23%	67	25%
Spiny dogfish	6,845	56%	3,402	29%	46	56%	5	91%
Bering skate	374	19%	95	41%	-	-	-	-
Longnose skate	711	24%	911	41%	145	39%	-	-
Black skate	14	100%	-	-	28	54%	28	45%
Pacific hake	7,021	23%	11,163	20%	553	62%	17	17%
Pacific grenadier	-	-	2	37%	34	45%	178	47%
Giant grenadier	2	100%	35	71%	1,722	33%	1,122	35%
Shortspine thornyhead	520	20%	456	18%	700	25%	591	48%
Longspine thornyhead	84	99%	174	75%	3,177	16%	6,073	6%
Pacific ocean perch	12	64%	1	100%	-	-	-	-
Aurora rockfish	3	69%	414	28%	-	-	-	-
Darkblotched rockfish	64	39%	3	69%	-	-	-	-
Splitnose rockfish	1,038	36%	1	73%	-	-	-	-
Redbanded rockfish	37	48%	6	100%	-	-	-	-
Sablefish	949	57%	667	12%	2,021	29%	1,563	30%
Twoline eelpout	3	100%	27	41%	55	23%	57	32%
Bigfin eelpout	302	31%	177	21%	5	100%	-	-
Black eelpout	58	84%	526	16%	144	24%	4	66%
Lycenchelys spp.	1	100%	-	-	23	44%	123	17%
Arrowtooth flounder	30	42%	353	54%	5	100%	-	-
Slender sole	261	44%	17	41%	-	-	-	-
Dover sole	2,748	21%	3,607	22%	3,929	19%	2,886	12%
Deepsea sole	-	-	20	80%	62	23%	310	11%
Rex sole	569	36%	1,973	16%	380	40%	1	100%

Species	Stratum 5 915-1,097 m		Stratum 6 1,098-1,280 m		All Strata 183-1,280 m	
	Biomass (t)	CV	Biomass (t)	CV	Biomass (t)	CV
Brown cat shark	43	36%	14	47%	746	19%
Spiny dogfish	1	100%	6	100%	10,304	38%
Bering skate	-	-	-	-	469	17%
Longnose skate	-	-	-	-	1,767	23%
Black skate	451	30%	675	17%	1,197	15%
Pacific hake	17	29%	34	40%	18,806	15%
Pacific grenadier	4,820	26%	4,370	24%	9,404	18%
Giant grenadier	1,457	30%	2,302	17%	6,640	14%
Shortspine thornyhead	2,241	43%	963	16%	5,470	19%
Longspine thornyhead	7,981	11%	3,616	14%	21,104	6%
Pacific ocean perch	-	-	-	-	13	59%
Aurora rockfish	-	-	3	100%	420	27%
Darkblotched rockfish	-	-	-	-	67	38%
Splitnose rockfish	-	-	-	-	1,040	36%
Redbanded rockfish	-	-	-	-	43	44%
Sablefish	2,865	32%	3,138	18%	11,202	13%
Twoline eelpout	144	22%	62	18%	349	12%
Bigfin eelpout	-	-	-	-	484	21%
Black eelpout	0	100%	-	-	733	14%
Lycenchelys spp.	303	16%	23	56%	473	11%
Arrowtooth flounder	-	-	1	100%	390	49%
Slender sole	-	-	-	-	277	41%
Dover sole	3,043	22%	1,126	31%	17,340	9%
Deepsea sole	743	15%	651	12%	1,786	8%
Rex sole	-	-	-	-	2,923	14%

Table 9.--Estimates of fish population and coefficient of variation (CV) by stratum for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey. Differences in totals result from rounding.

Species	Stratum 1 183-366 m		Stratum 2 367-549 m		Stratum 3 550-732 m		Stratum 4 733-914 m	
	Population (number)	CV	Population (number)	CV	Population (number)	CV	Population (number)	CV
Brown cat shark	241,027	25%	1,067,863	24%	1,227,839	33%	472,371	27%
Spiny dogfish	3,792,682	57%	1,852,281	29%	21,694	64%	4,939	69%
Bering skate	890,147	19%	105,468	41%	-	-	-	-
Longnose skate	697,851	24%	440,111	50%	37,349	36%	-	-
Black skate	14,005	100%	-	-	39,531	48%	26,646	55%
Pacific hake	23,817,669	24%	33,404,603	21%	1,552,804	64%	46,243	19%
Pacific grenadier	-	-	13,996	38%	586,571	41%	793,729	24%
Giant grenadier	1,548	100%	37,114	75%	1,860,361	32%	1,178,218	38%
Shortspine thornyhead	4,772,254	27%	4,385,520	20%	793,468	24%	361,086	34%
Longspine thornyhead	1,424,013	99%	3,464,054	79%	42,158,472	12%	76,561,322	8%
Pacific ocean perch	34,899	71%	1,729	100%	-	-	-	-
Aurora rockfish	4,536	72%	913,621	27%	-	-	-	-
Darkblotched rockfish	289,279	48%	3,677	68%	-	-	-	-
Splitnose rockfish	36,830,299	68%	6,255	71%	-	-	-	-
Redbanded rockfish	76,207	44%	5,845	100%	-	-	-	-
Sablefish	1,589,594	74%	391,445	12%	1,160,763	29%	900,842	29%
Twoline eelpout	9,287	100%	37,242	42%	93,227	26%	145,786	31%
Bigfin eelpout	1,905,338	34%	822,154	24%	25,432	100%	-	-
Black eelpout	1,037,615	86%	8,293,634	20%	2,495,259	24%	49,630	61%
Lycenchelys spp.	12,383	100%	-	-	199,347	44%	1,227,176	17%
Arrowtooth flounder	57,380	39%	661,330	63%	12,734	100%	-	-
Slender sole	6,922,815	49%	494,229	42%	-	-	-	-
Dover sole	9,010,639	18%	9,120,074	25%	6,020,529	22%	3,629,726	13%
Deepsea sole	-	-	42,378	72%	137,557	29%	802,239	10%
Rex sole	5,738,693	35%	13,236,945	18%	1,984,409	38%	2,360	100%

Species	Stratum 5 915-1,097 m		Stratum 6 1,098-1,280 m		All Strata 183-1,280 m	
	Population (number)	CV	Population (number)	CV	Population (number)	CV
Brown cat shark	134,143	40%	28,167	37%	3,171,411	16%
Spiny dogfish	2,644	100%	5,056	100%	5,679,296	39%
Bering skate	-	-	-	-	995,615	18%
Longnose skate	-	-	-	-	1,175,312	24%
Black skate	346,349	28%	460,933	18%	887,464	15%
Pacific hake	34,520	27%	61,786	42%	58,917,625	15%
Pacific grenadier	10,142,747	18%	7,728,552	20%	19,265,595	13%
Giant grenadier	1,733,732	30%	2,013,543	13%	6,824,515	14%
Shortspine thornyhead	1,073,314	37%	418,589	15%	11,804,231	14%
Longspine thornyhead	61,824,761	9%	34,692,171	14%	220,124,793	5%
Pacific ocean perch	-	-	-	-	36,628	68%
Aurora rockfish	-	-	5,056	100%	923,213	26%
Darkblotched rockfish	-	-	-	-	292,956	47%
Splitnose rockfish	-	-	-	-	36,836,554	68%
Redbanded rockfish	-	-	-	-	82,052	41%
Sablefish	1,215,590	28%	1,190,638	18%	6,448,871	20%
Twoline eelpout	270,459	18%	74,478	21%	630,479	12%
Bigfin eelpout	-	-	-	-	2,752,924	24%
Black eelpout	2,644	100%	-	-	11,878,782	17%
Lycenchelys spp.	2,398,668	17%	158,164	57%	3,995,739	12%
Arrowtooth flounder	-	-	2,050	100%	733,494	57%
Slender sole	-	-	-	-	7,417,043	46%
Dover sole	3,693,258	25%	1,098,206	31%	32,572,431	10%
Deepsea sole	1,363,990	12%	1,120,920	11%	3,467,084	7%
Rex sole	-	-	-	-	20,962,407	15%

Table 9.--Total number of hauls and hauls with weight, number and length data by stratum for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

Species	Stratum 1 183-366 m Total Hauls = 18			Stratum 2 367-549 m Total Hauls = 16			Stratum 3 550-732 m Total Hauls = 17		
	Hauls With:			Hauls With:			Hauls With:		
	Wgt.	No.	Lgth.	Wgt.	No.	Lgth.	Wgt.	No.	Lgth.
Brown cat shark	16	16	15	16	16	16	16	16	16
Spiny dogfish	17	17	17	14	14	13	4	4	2
Bering skate	16	16	16	12	12	12	0	0	0
Longnose skate	17	17	17	12	12	12	7	7	7
Black skate	1	1	1	12	12	11	5	5	4
Pacific hake	18	18	18	16	16	13	14	14	14
Pacific grenadier	0	0	0	6	6	5	11	11	10
Giant grenadier	1	1	1	3	3	3	13	13	13
Shortspine thornyhead	18	18	18	16	16	16	16	16	16
Longspine thornyhead	2	2	2	8	8	8	17	17	17
Pacific ocean perch	5	5	5	1	1	1	0	0	0
Aurora rockfish	2	2	2	16	16	16	0	0	0
Darkblotched rockfish	10	10	10	2	2	2	0	0	0
Splitnose rockfish	17	17	17	2	2	2	0	0	0
Redbanded rockfish	12	12	12	1	1	1	0	0	0
Sablefish	17	17	17	16	16	15	17	17	16
Twoline eelpout	1	1	1	6	6	6	12	12	12
Bigfin eelpout	17	17	17	16	16	16	1	1	1
Black eelpout	6	6	6	16	15	15	14	14	14
Lycenchelys spp.	1	1	1	0	0	0	6	6	6
Arrowtooth flounder	7	7	7	12	12	12	1	1	1
Slender sole	16	16	16	12	12	11	0	0	0
Dover sole	18	18	18	16	16	15	17	17	17
Deepsea sole	0	0	0	3	3	3	12	12	12
Rex sole	17	17	17	16	16	15	12	12	12

Species	Stratum 4 733-914 m Total Hauls = 18			Stratum 5 915-1,097 m Total Hauls = 19			Stratum 6 1,098-1,280 m Total Hauls = 18		
	Hauls With:			Hauls With:			Hauls With:		
	Wgt.	No.	Lgth.	Wgt.	No.	Lgth.	Wgt.	No.	Lgth.
Brown cat shark	16	16	16	12	12	12	7	7	5
Spiny dogfish	2	2	2	0	0	0	1	1	1
Bering skate	0	0	0	0	0	0	0	0	0
Longnose skate	0	0	0	0	0	0	0	0	0
Black skate	6	6	6	16	16	13	18	18	17
Pacific hake	13	13	12	9	9	8	10	10	10
Pacific grenadier	17	16	15	19	19	19	18	18	17
Giant grenadier	15	14	14	19	19	18	18	18	17
Shortspine thornyhead	14	14	14	19	19	18	18	18	16
Longspine thornyhead	18	18	18	19	19	19	18	18	17
Pacific ocean perch	0	0	0	0	0	0	0	0	0
Aurora rockfish	0	0	0	0	0	0	1	1	1
Darkblotched rockfish	0	0	0	0	0	0	0	0	0
Splitnose rockfish	0	0	0	0	0	0	0	0	0
Redbanded rockfish	0	0	0	0	0	0	0	0	0
Sablefish	17	17	17	18	18	17	18	18	17
Twoline eelpout	13	13	13	16	16	16	14	14	13
Bigfin eelpout	0	0	0	0	0	0	0	0	0
Black eelpout	4	4	3	0	0	0	0	0	0
Lycenchelys spp.	15	15	15	17	17	17	8	8	6
Arrowtooth flounder	0	0	0	0	0	0	1	1	1
Slender sole	0	0	0	0	0	0	0	0	0
Dover sole	18	18	18	18	18	17	16	16	15
Deepsea sole	18	18	18	19	19	19	18	18	17
Rex sole	1	1	1	0	0	0	0	0	0

Table 10.--Population estimates for sablefish by age group and mean length at age for the International North Pacific Fisheries Commission Eureka area for all depth strata (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

Age	Year Class	Population Number	Mean Length (cm)	Standard Deviation
1	1994	851,630	32.53	7.06
2	1993	579,896	42.87	4.99
3	1992	359,471	49.60	8.44
4	1991	385,285	52.60	5.37
5	1990	325,529	54.56	4.56
6	1989	268,584	55.81	5.71
7	1988	217,422	56.29	5.96
8	1987	176,205	56.73	6.27
9	1986	274,012	55.78	5.68
10	1985	284,808	55.64	4.65
11	1984	133,666	57.22	5.05
12	1983	184,373	55.44	5.54
13	1982	229,602	58.76	7.11
14	1981	138,763	57.70	5.87
15	1980	136,924	59.85	5.83
16	1979	203,400	59.00	6.95
17	1978	121,581	57.75	6.36
18	1977	88,260	60.96	5.39
19	1976	65,184	61.84	6.55
20	1975	73,813	58.76	3.77
21	1974	157,291	58.20	4.41
22	1973	124,656	57.31	4.66
23	1972	59,417	59.48	3.92
24	1971	92,602	60.57	4.80
25	1970	65,374	60.58	3.54
26	1969	74,238	59.88	5.94
27	1968	73,378	60.02	4.48
28	1967	50,353	61.20	4.75
29	1966	46,727	62.34	6.58
30	1965	126,246	58.16	4.50
31	1964	41,341	61.97	5.64
32	1963	53,863	62.84	4.00
33	1962	35,023	58.11	5.43
34	1961	44,723	60.93	4.63
35	1960	33,581	61.22	3.81
36	1959	55,797	57.92	6.82
37	1958	36,358	61.37	5.83
38	1957	9,847	62.56	3.58
39	1956	7,656	67.55	0.50
40	1955	7,867	61.56	0.50
41	1954	28,446	65.05	2.51
42	1953	3,958	66.00	0.00
43	1952	15,185	62.41	4.42
44	1951	30,595	60.11	0.32
45	1950	10,139	60.56	0.50
46	1949	2,494	72.39	1.90
47	1948	3,477	61.00	0.00
49	1946	19,985	58.91	1.00
51	1944	3,958	66.00	0.00
52	1943	20,969	52.00	0.00
54	1941	1,630	71.00	0.00
55	1940	1,630	71.00	0.00
73	1922	2,846	70.00	0.00
Above, below, or between key lengths		8,816	48.67	23.29
Total		6,448,874	52.39	-

Table Il.--The length-weight relationships for selected fishes from the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission Eureka area using nonlinear regression fit for the equation:

Fish weight (g) = a * fork length (cm)^b

Species	Sex	Number Sampled	Length-Weight Coefficients a	b	Predicted Weight at Length (g)		
					40 cm	60 cm	80 cm
Arrowtooth flounder	M	34	0.006350	3.097623	583	2,046	4,987
	F	54	0.005687	3.170403	682	2,468	6,144
	T	88	0.003703	3.276866	658	2,485	6,378
					20 cm	40 cm	60 cm
Dover sole	M	313	0.003461	3.284515	65	633	2,397
	F	408	0.006125	3.140195	75	657	2,349
	T	721	0.004697	3.207393	70	646	2,371
					40 cm	60 cm	80 cm
Sablefish	M	328	0.008505	3.043031	638	2,191	5,258
	F	675	0.018317	2.870095	726	2,324	5,308
	T	1003	0.013008	2.948561	689	2,276	5,316
					20 cm	40 cm	60 cm
Shortspine thornyhead	M	439	0.003734	3.330293	80	808	3,118
	F	458	0.003345	3.356853	78	798	3,114
	U	45	0.009339	3.036801	83	-	-
	T	942	0.003516	3.344885	79	803	3,117
					10 cm	20 cm	30 cm
Longspine thornyhead	M	217	0.009507	3.070705	11	94	326
	F	239	0.011282	3.018807	12	95	325
	U	132	0.014574	2.858843	11	76	-
	T	588	0.009838	3.060068	11	94	326
					10 cm	20 cm	30 cm
Giant grenadier	M	67	0.280134	2.769834	165	1,125	3,457
	F	96	0.140624	3.004310	142	1,140	3,853
	T	163	0.128419	3.028950	137	1,120	3,826

FIGURES

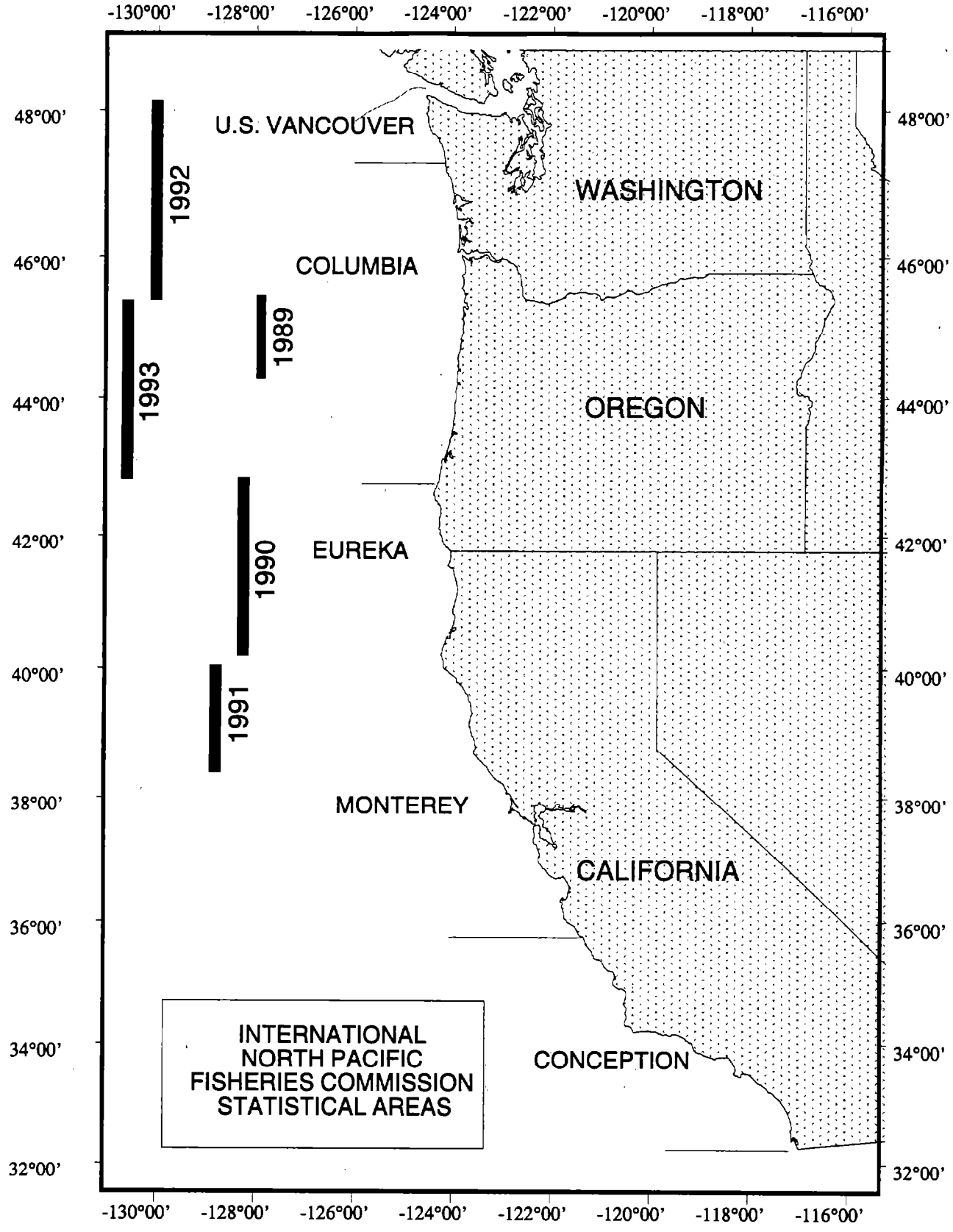


Figure 1.--Map showing the boundaries for the West Coast International North Pacific Fisheries Commission (INPFC) statistical areas and the latitudinal ranges of West Coast upper continental slope groundfish bottom trawl surveys from 1989 to 1993.

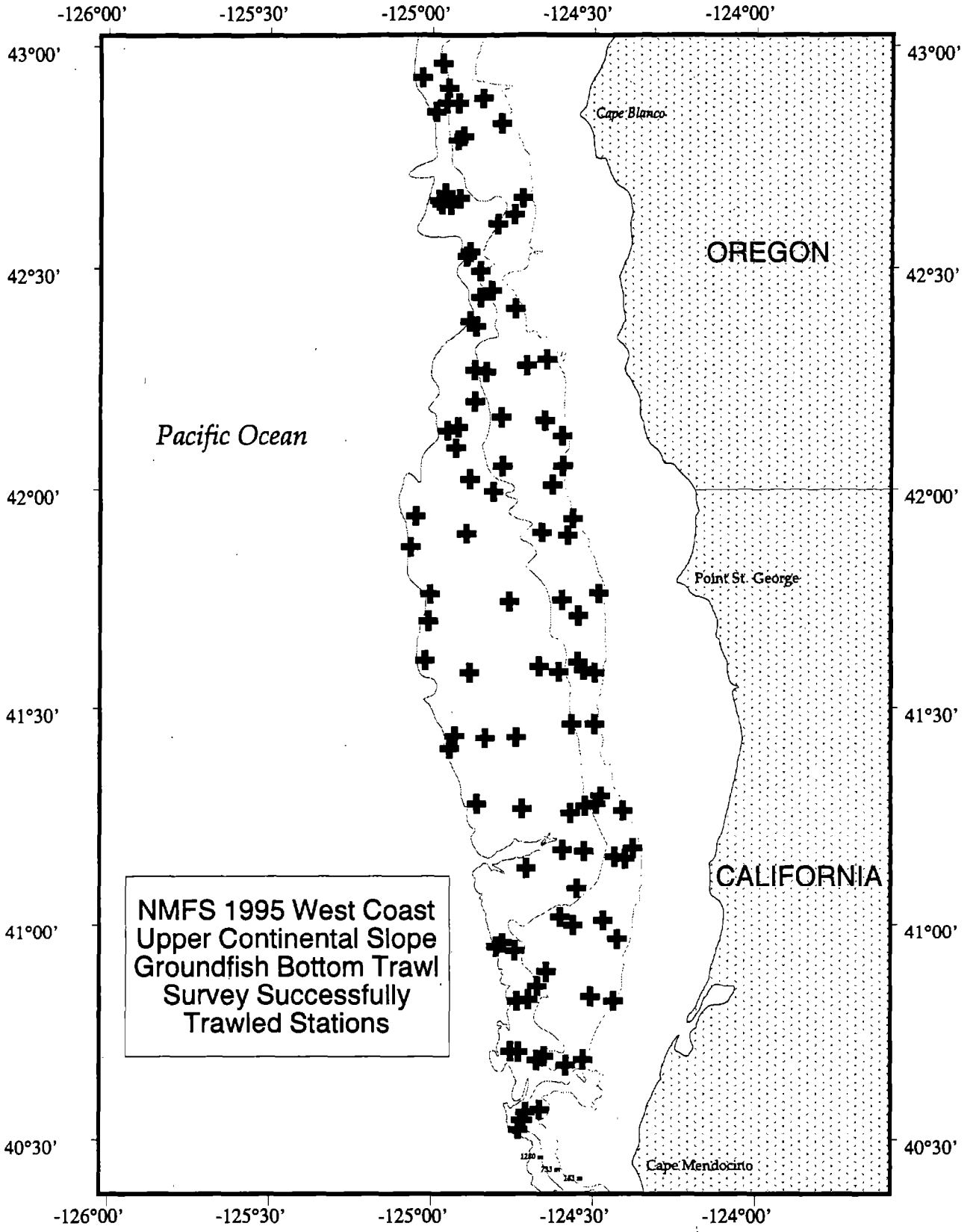
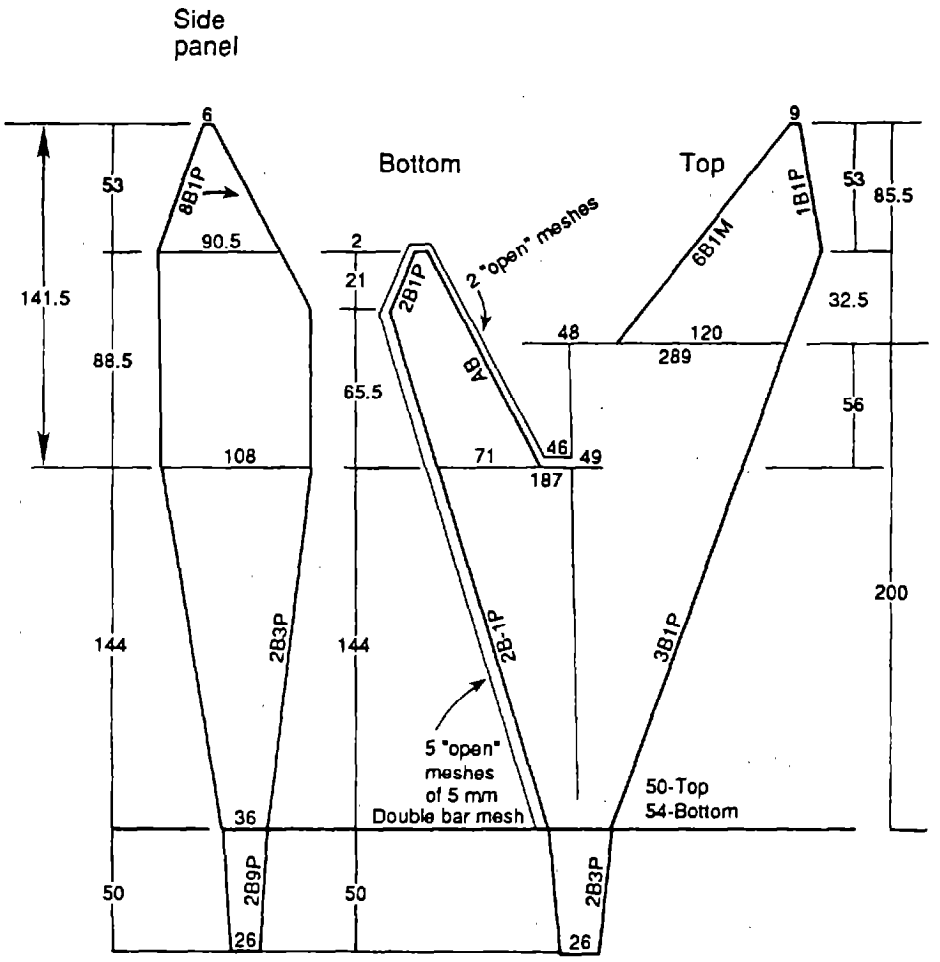


Figure 2.--Map showing the location of 106 successful bottom trawl tows sampled during the 1995 West Coast upper continental slope groundfish survey.

POLY-NOREASTERN (Race)

Total mesh counts
Twine sizes: top and sides 4mm
bottom and intermediate 5mm

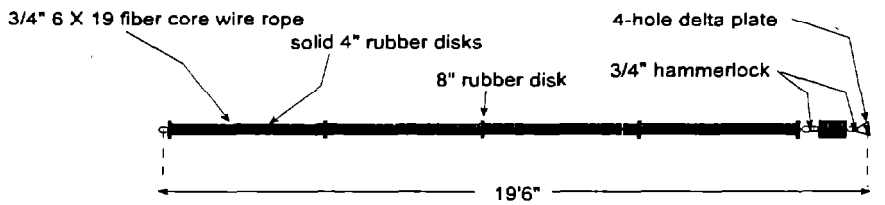


Web: Chaffing strip along inside of Bottom wings and Busom. Cut 8 meshes wide.
5 mm Double Bar mesh, goring 3 meshes on each side (leaving 2 open meshes)
Secure 3 mesh of gore on inside (Bar Cut) of Bottom wings, and securing
other gore to footrope (Bolsh).

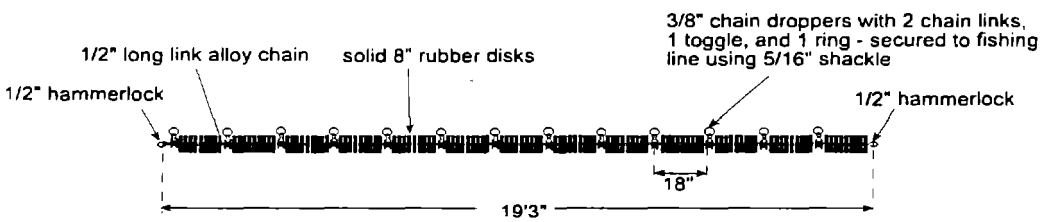
Figure 3.--The sampling trawl used during the 1995 West Coast upper continental slope bottom traw1 survey.

West Coast Upper Continental Slope Bottom Trawl Survey Ground Gear

Outboard section



Middle section



Inboard section

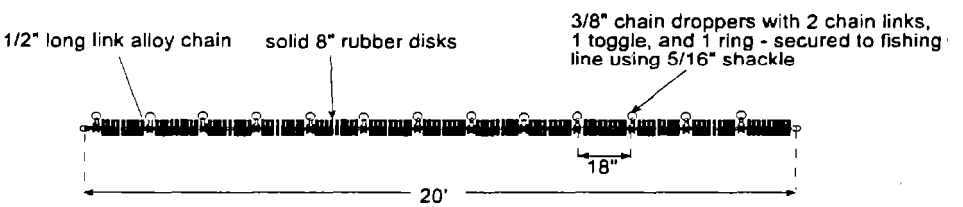


Figure 4. --The groundgear used during the 1995 West Coast upper continental slope bottom trawl survey.

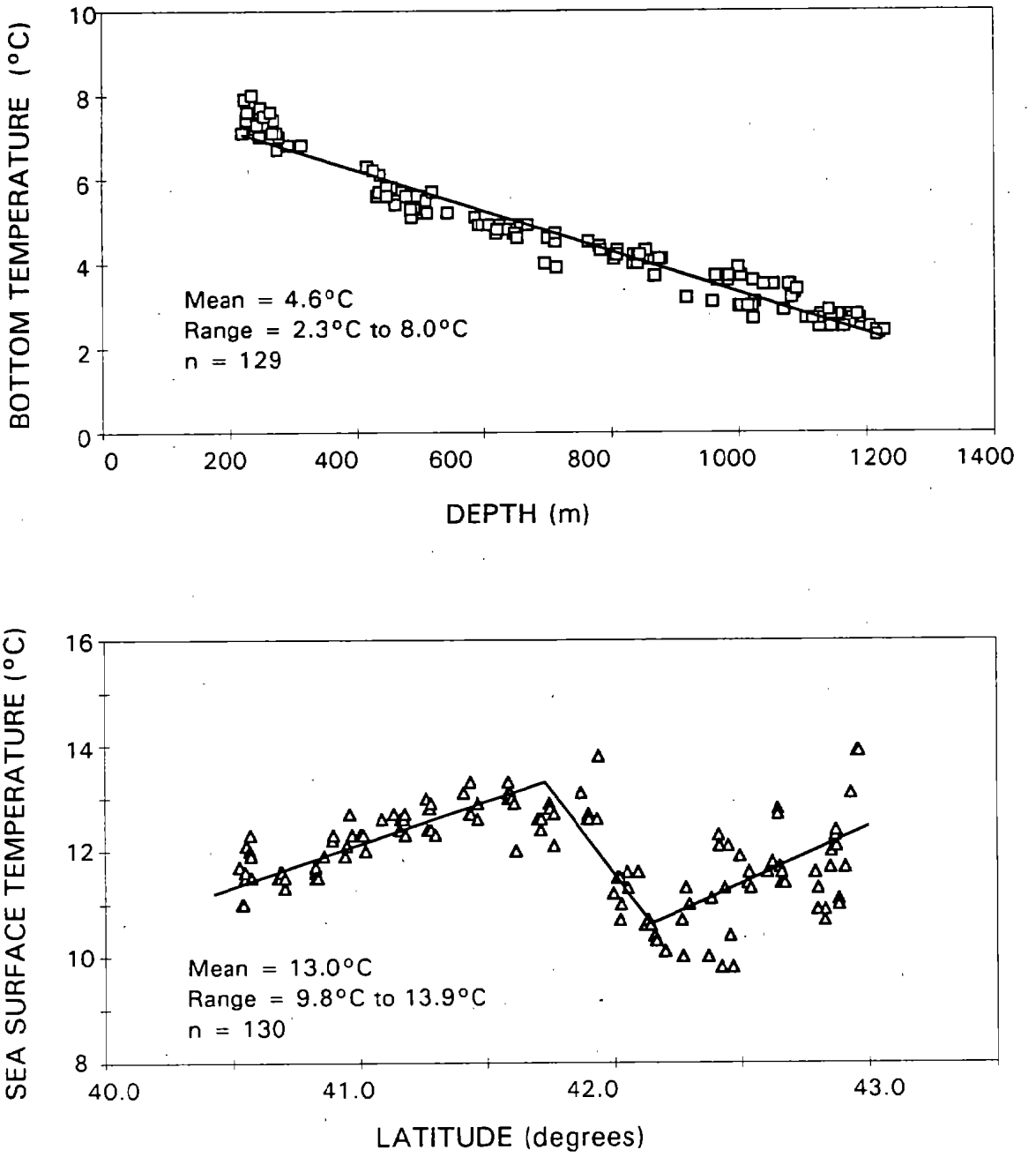


Figure 5.--Observed bottom and sea surface temperatures during the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission Eureka area.

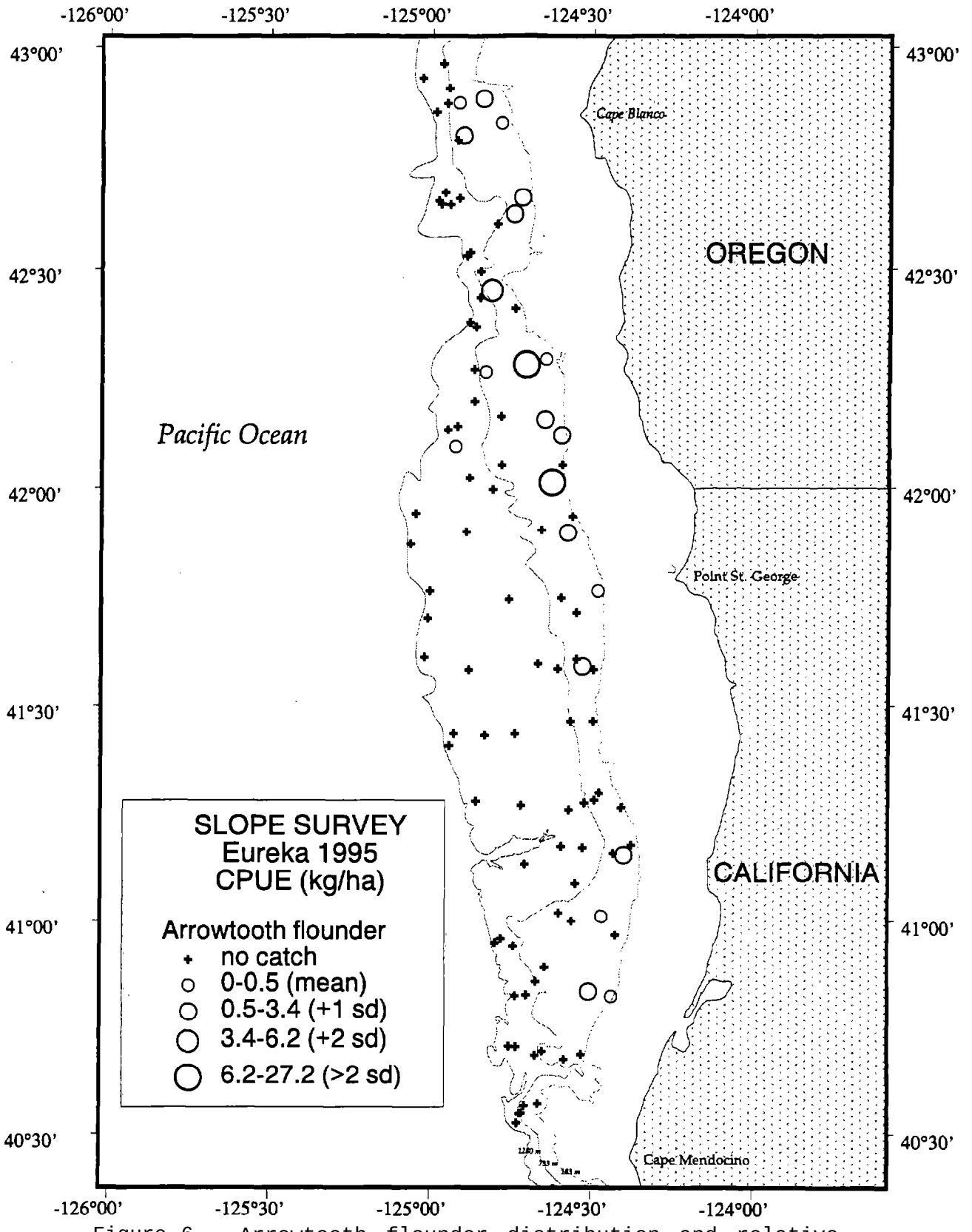


Figure 6. --Arrowtooth flounder distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

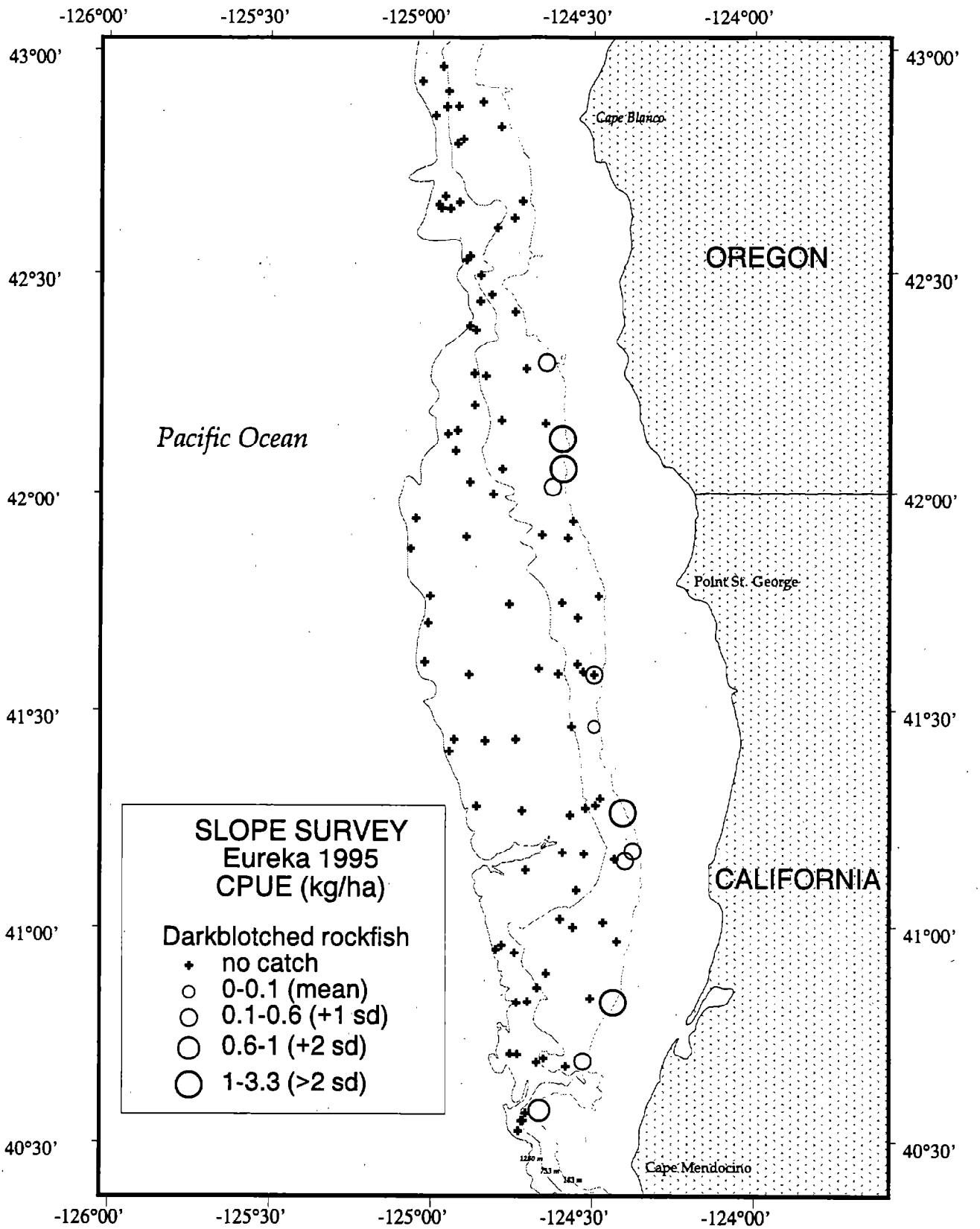


Figure 7.--Darkblotched rockfish distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

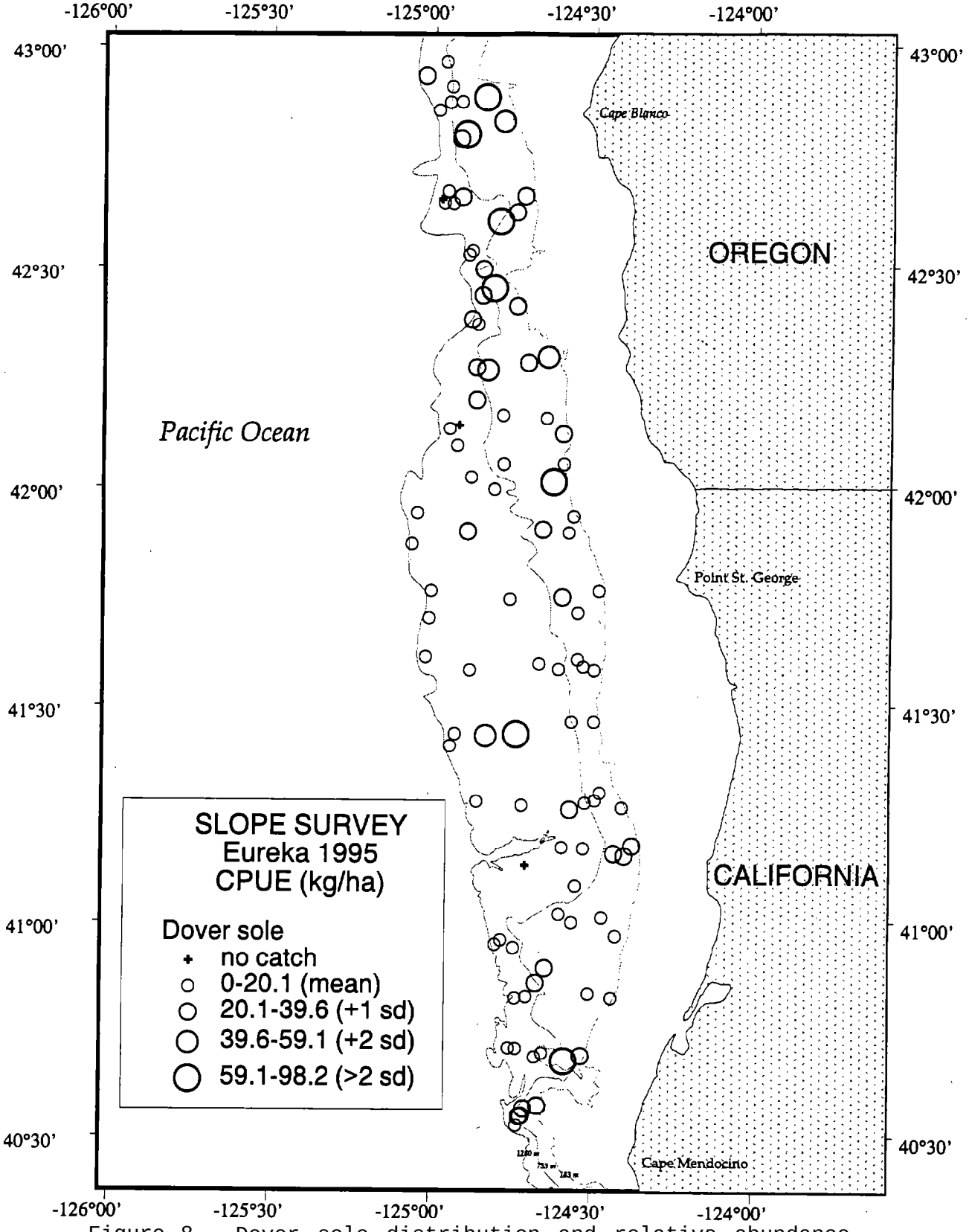


Figure 8.--Dover sole distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

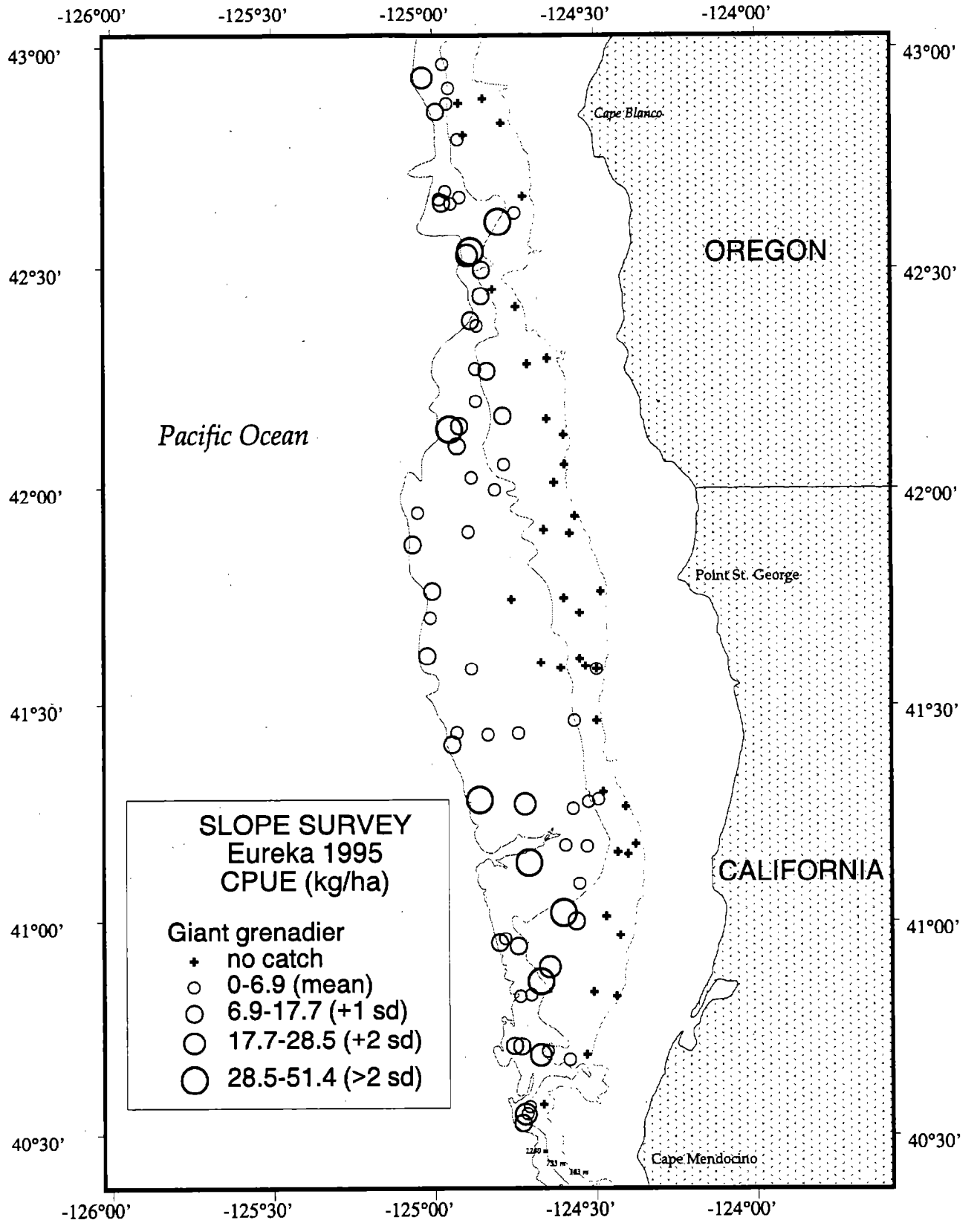


Figure 9. --Giant grenadier distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

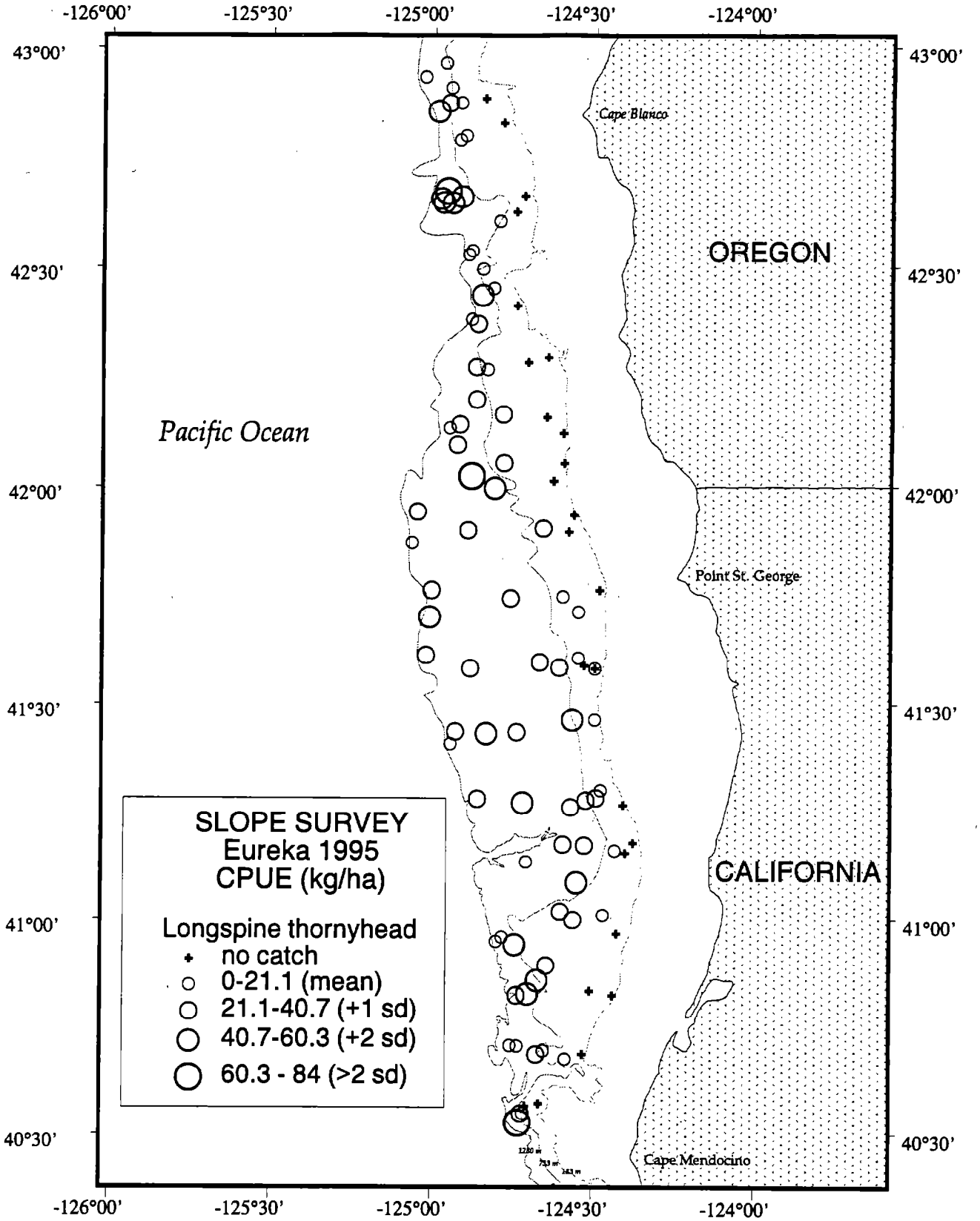


Figure 10. --Longspine thornyhead distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

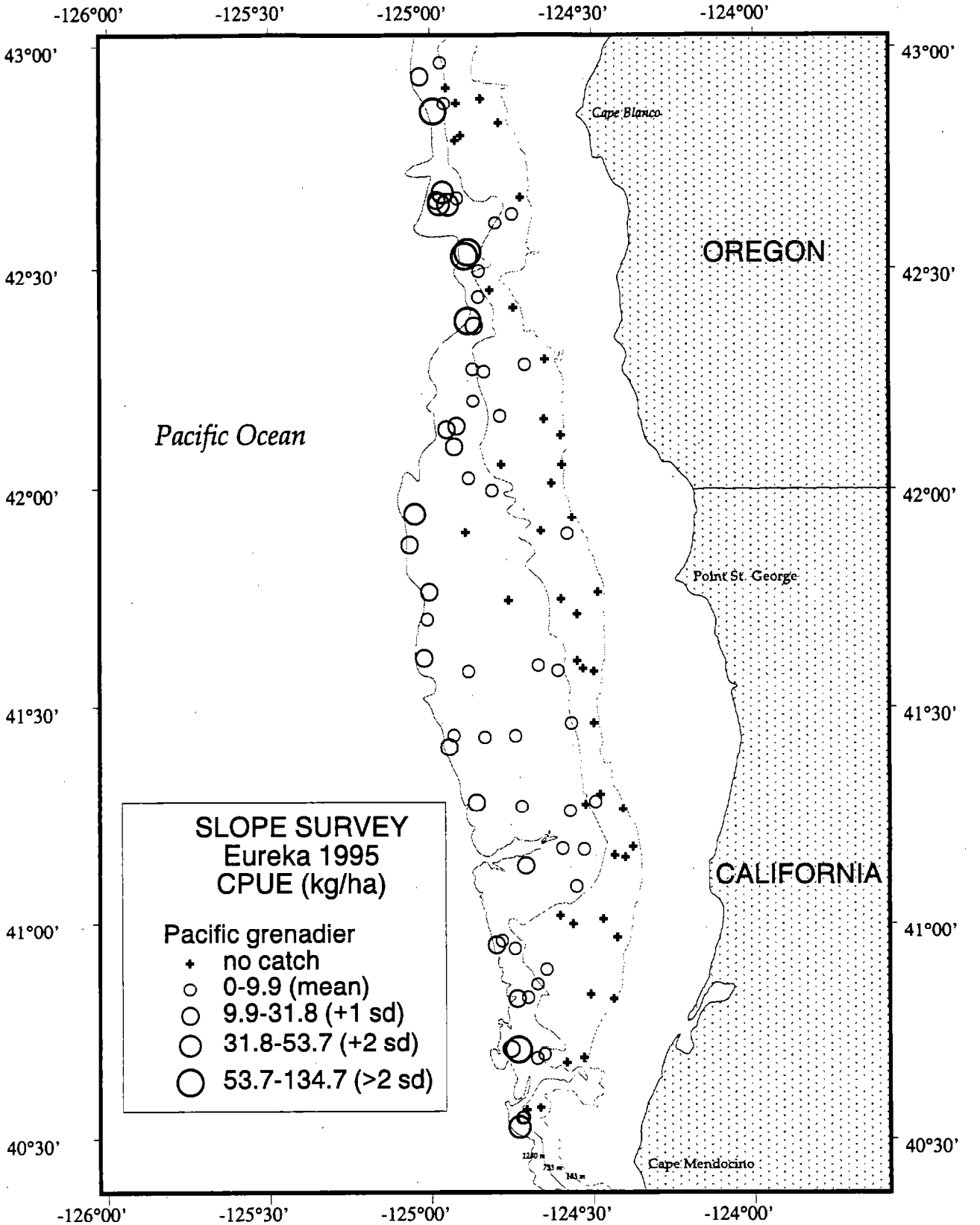


Figure 11. --Pacific grenadier distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

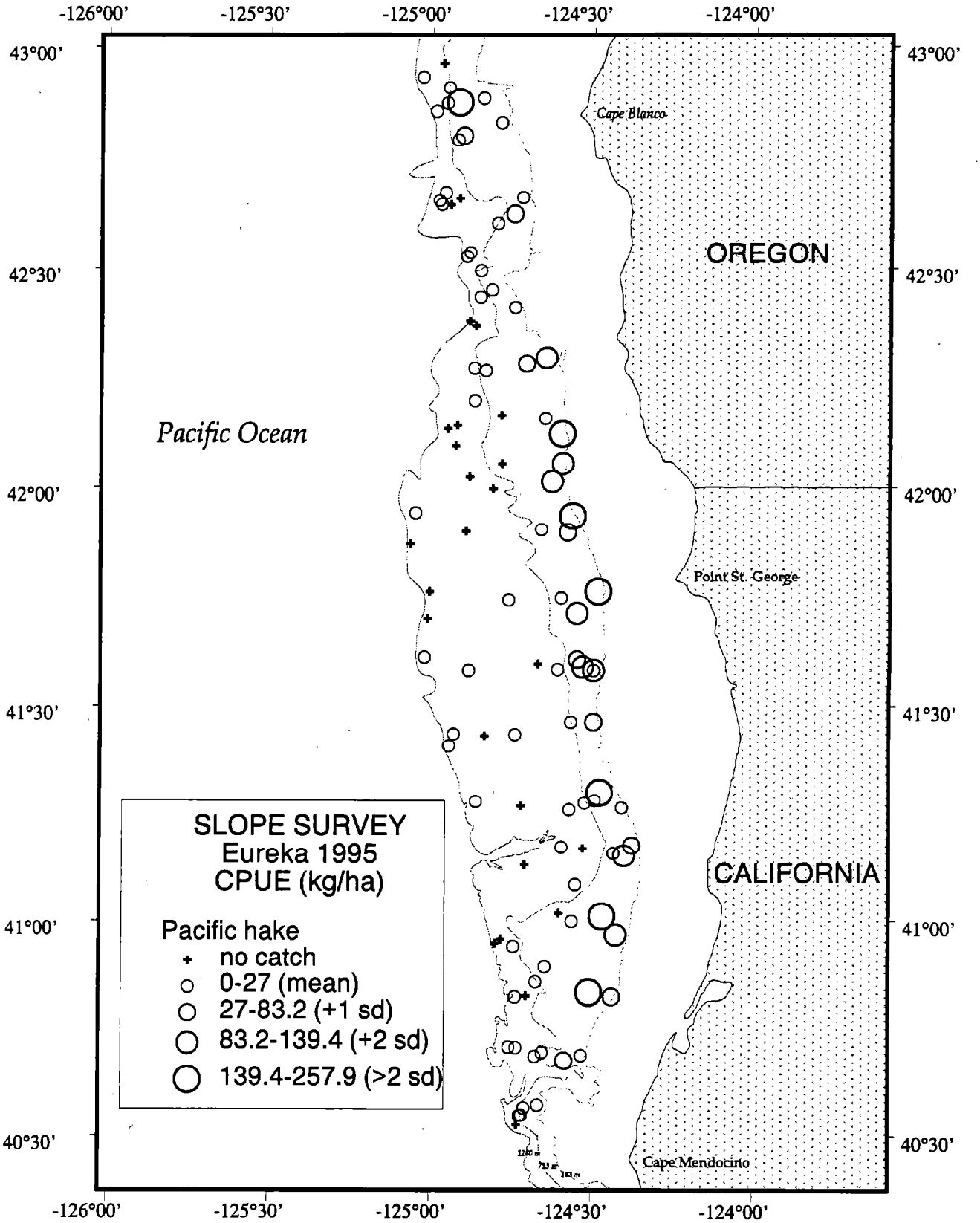


Figure 12.--Pacific hake distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

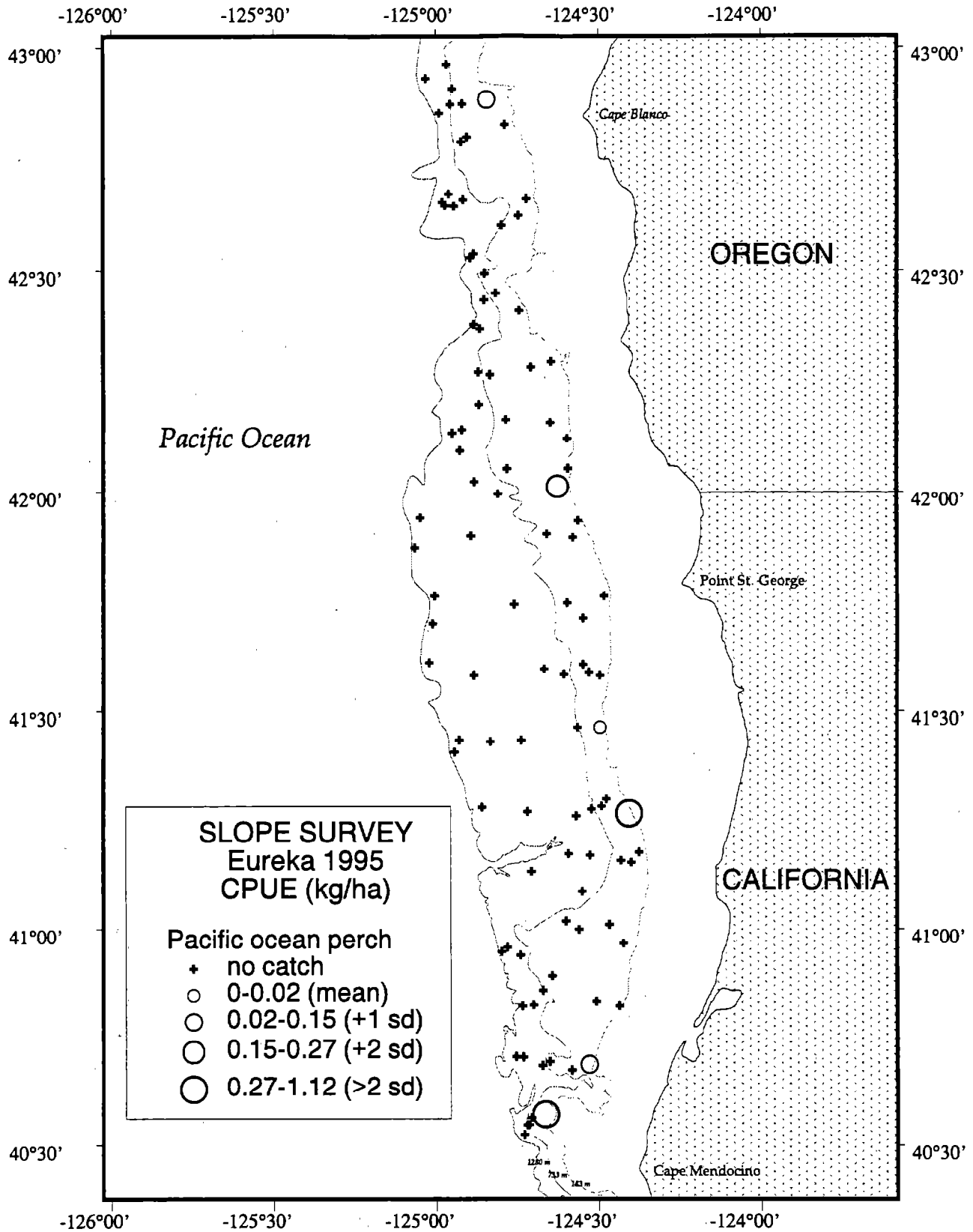


Figure 13. --Pacific ocean perch distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

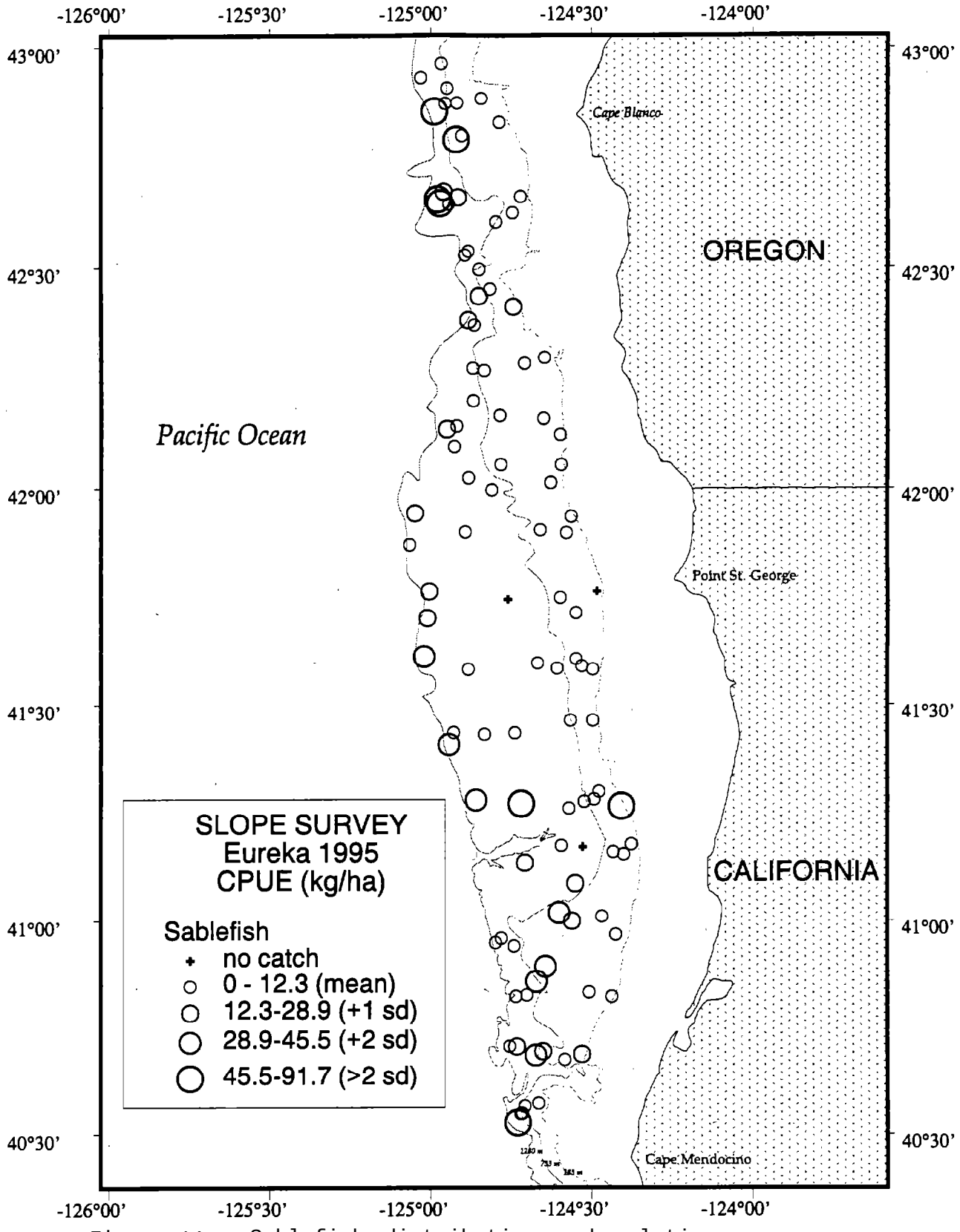


Figure 14. --Sablefish distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

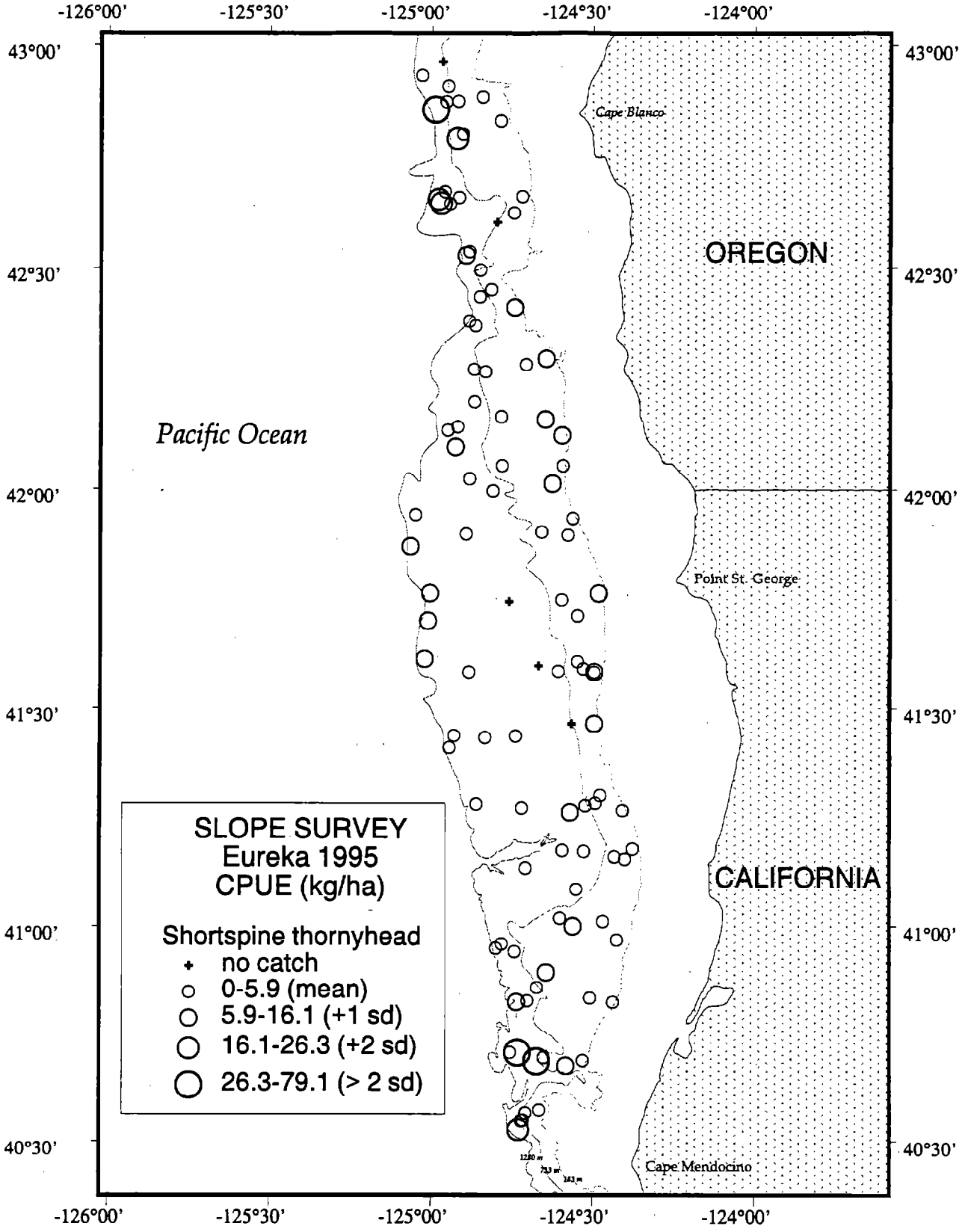


Figure 15. --Shortspine thornyhead distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

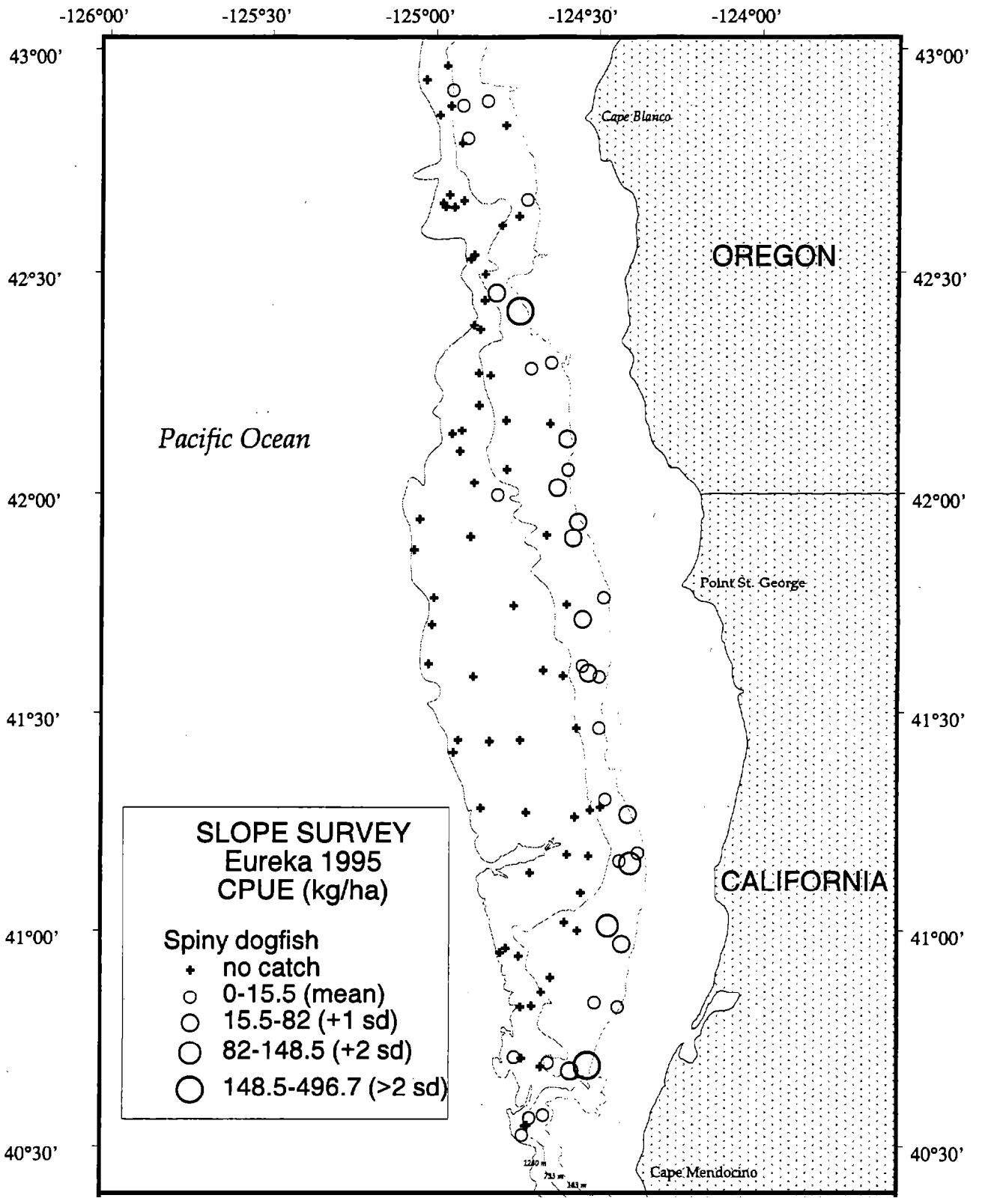


Figure 16. --Spiny dogfish distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

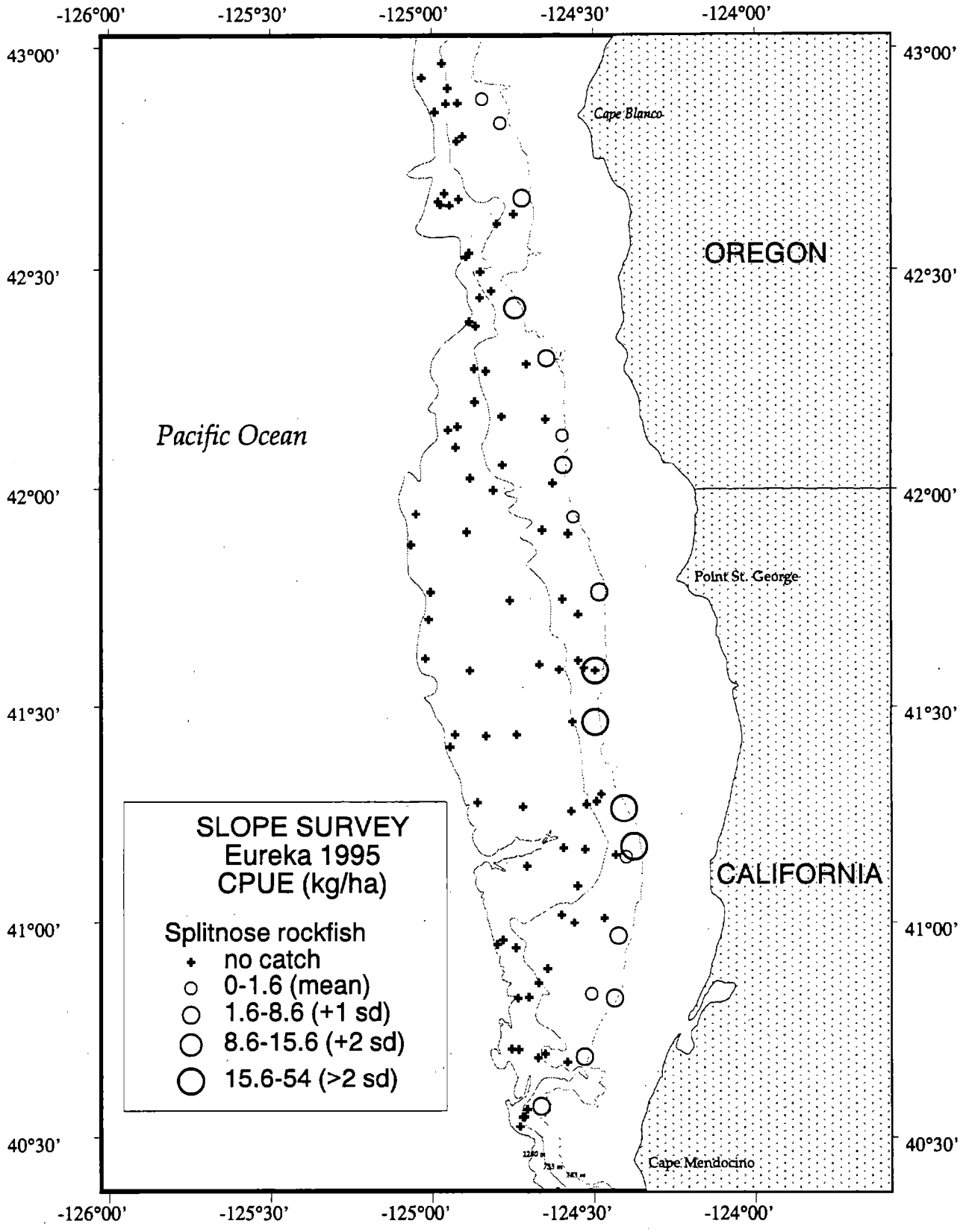


Figure 17. --Splitnose rockfish distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

Figure 18. --True Tanner crab distribution and relative abundance (kg/ha) from the 1995 West Coast upper continental slope bottom trawl survey.

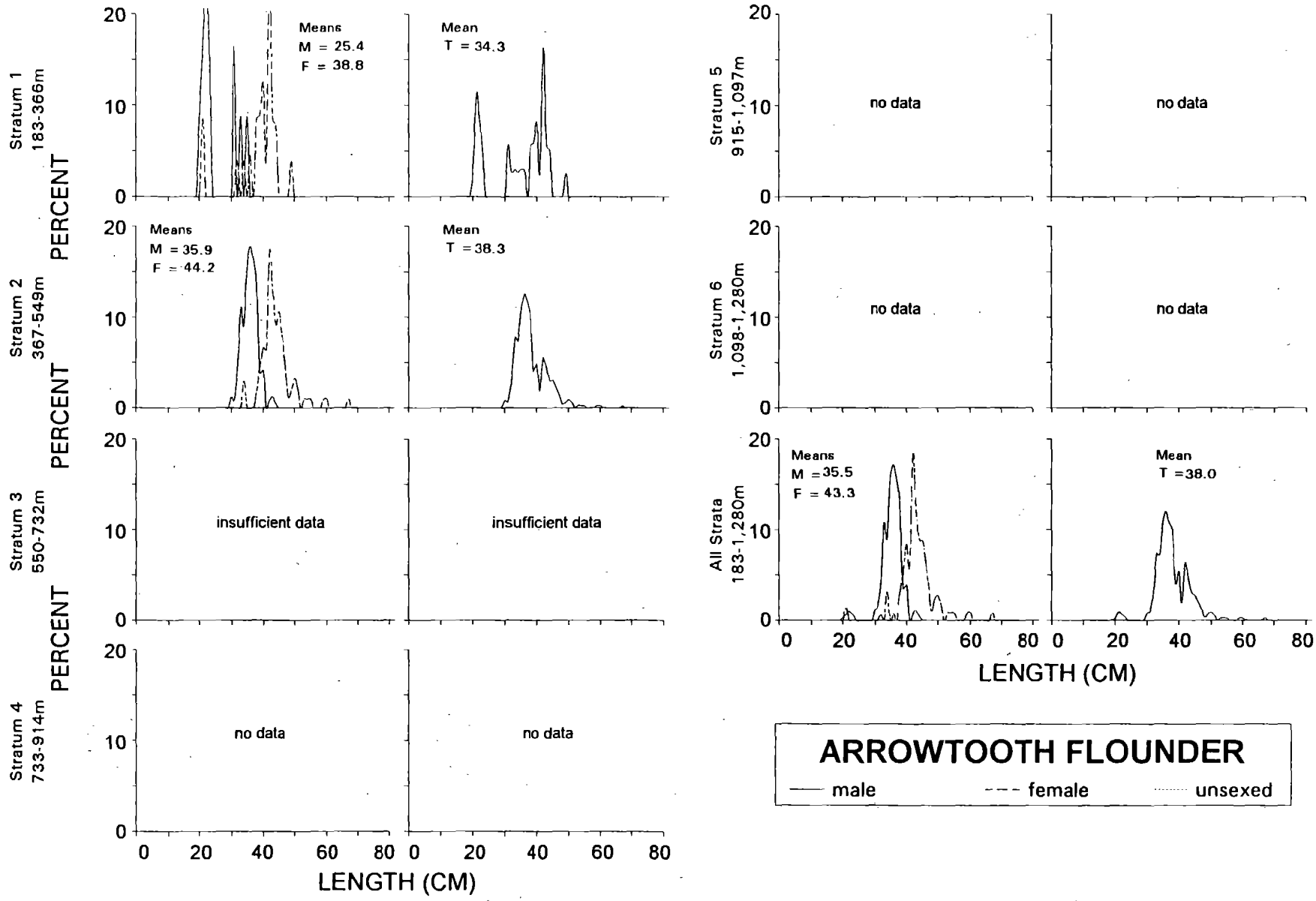


Figure 19.--Estimated population size composition and mean lengths (cm) of arrowtooth flounder by stratum and by sex for the International North Pacific Fisheries Commission Eureka area for all depths sampled (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

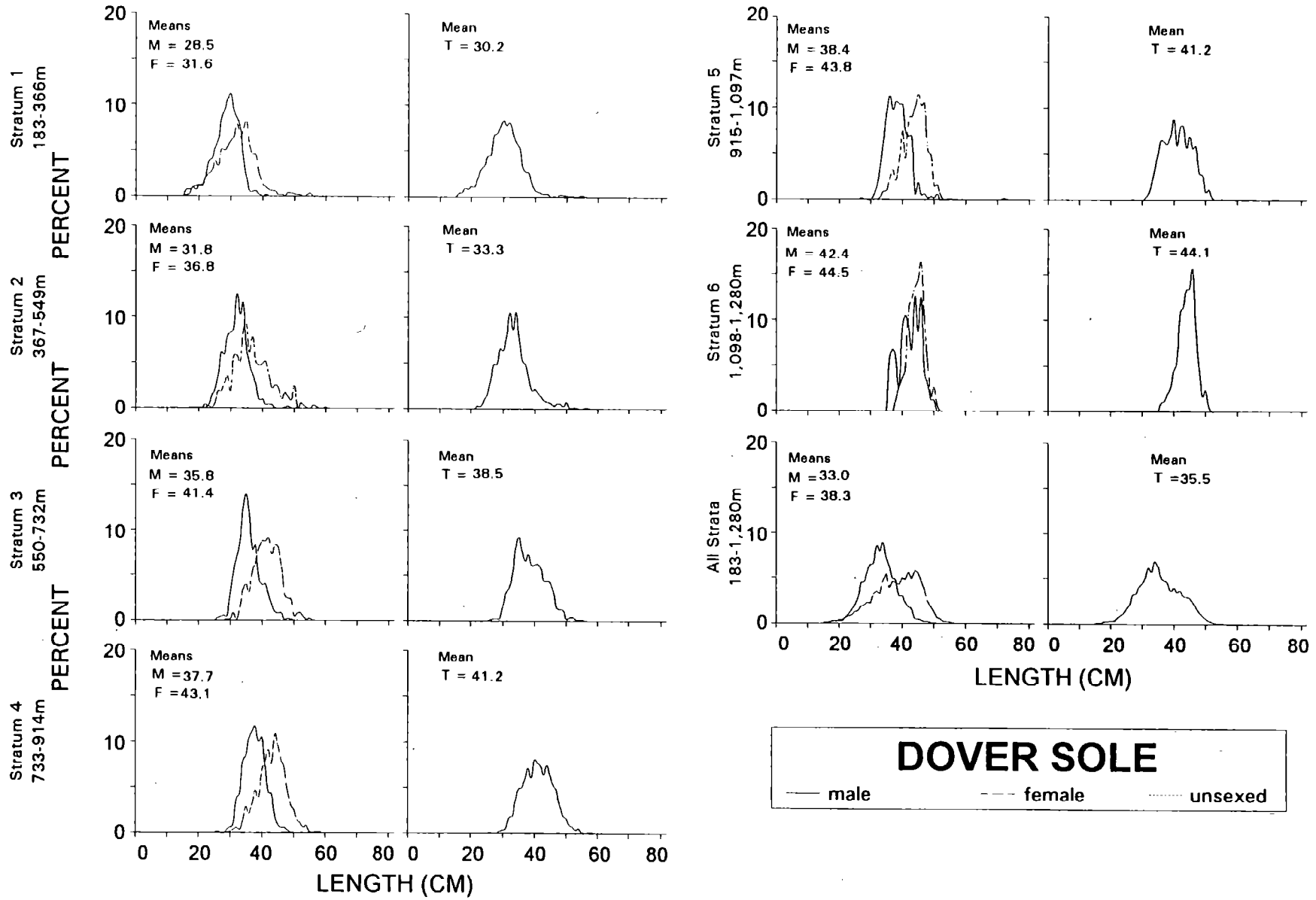


Figure 20.--Estimated population size composition and mean lengths (cm) of Dover sole by stratum and by sex for the International North Pacific Fisheries Commission Eureka area for all depths sampled (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

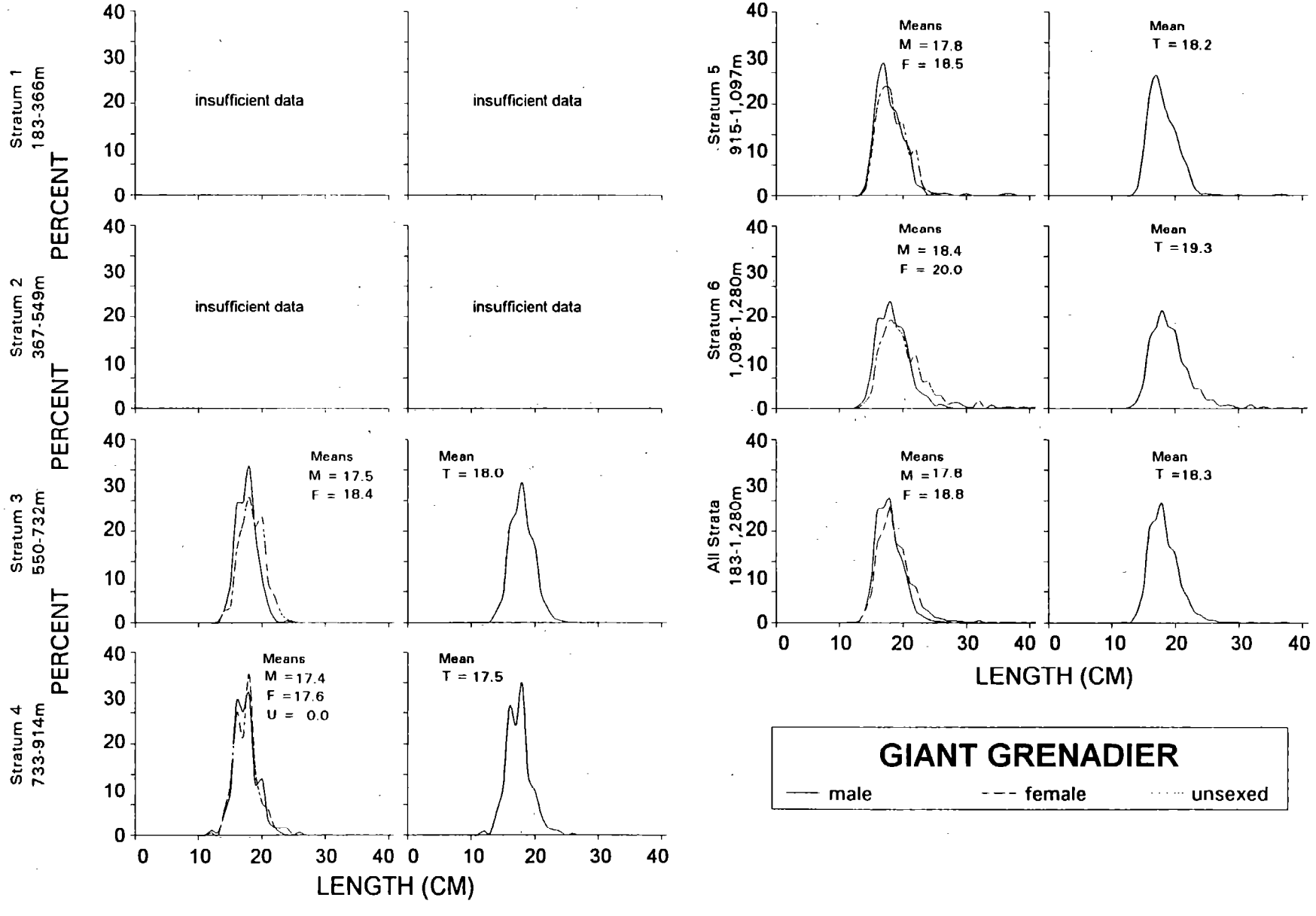


Figure 21. --Estimated population size composition (snout-to-anal fin) and mean lengths (cm) of giant grenadier by stratum and by sex for the International North Pacific Fisheries Commission Eureka area for all depths sampled (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

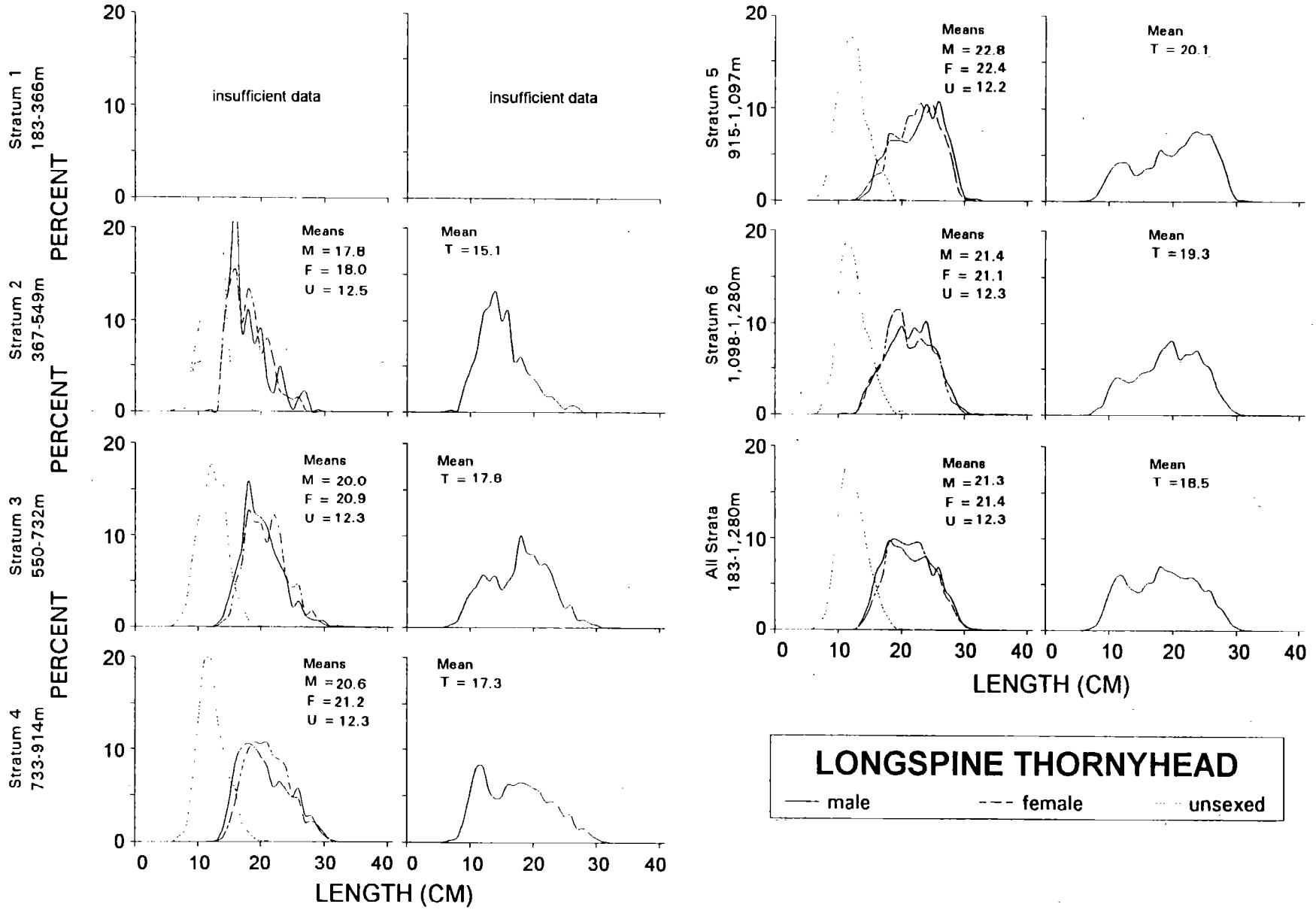


Figure 22.--Estimated population size composition and mean lengths (cm) of longspine thornyhead by stratum and by sex for the International North Pacific Fisheries Commission Eureka area for all depths sampled (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

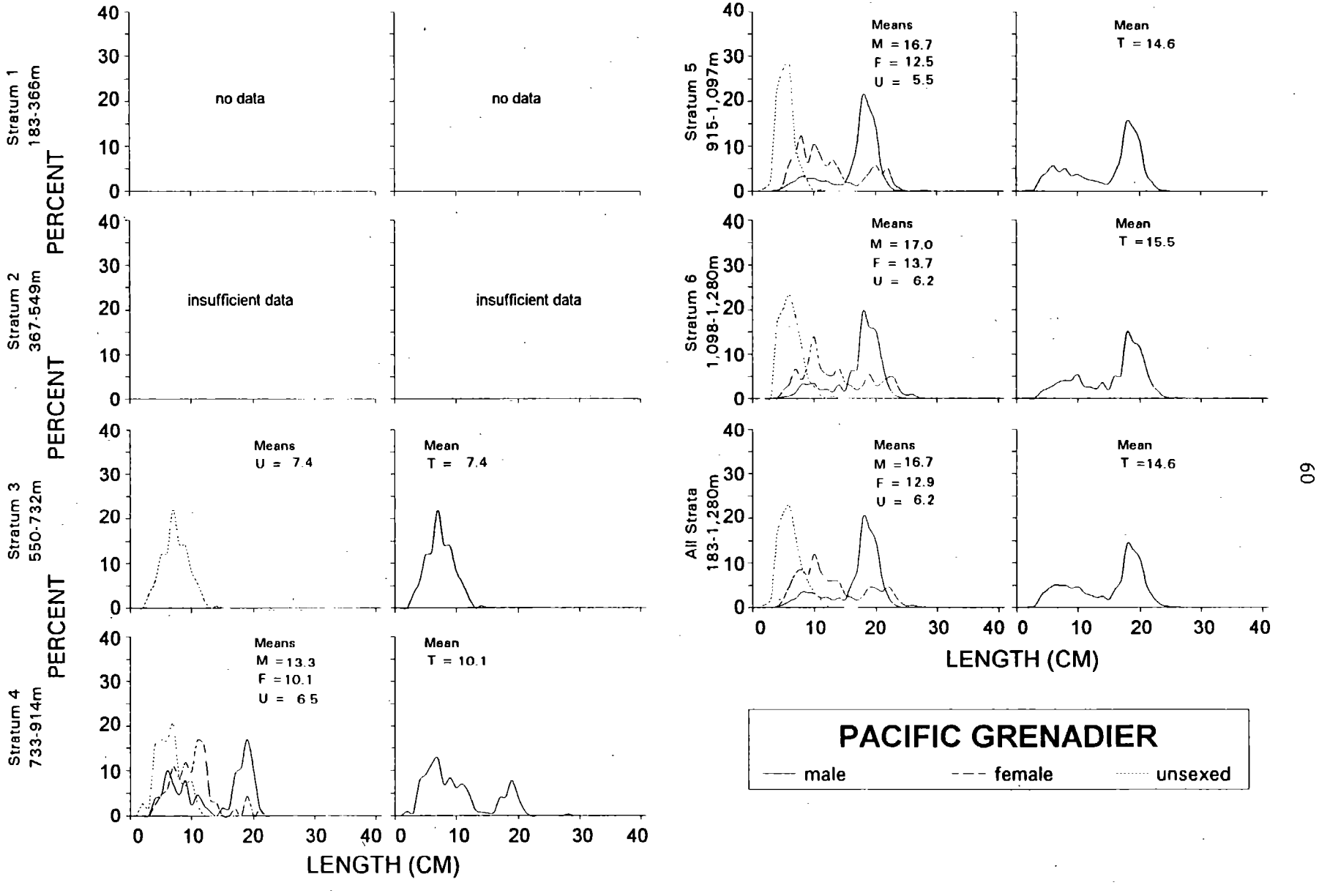


Figure 23. --Estimated population size composition (snout-to-anal fin) and mean lengths (cm) of Pacific grenadier by stratum and by sex for the International North Pacific Fisheries Commission Eureka area for all depths sampled (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

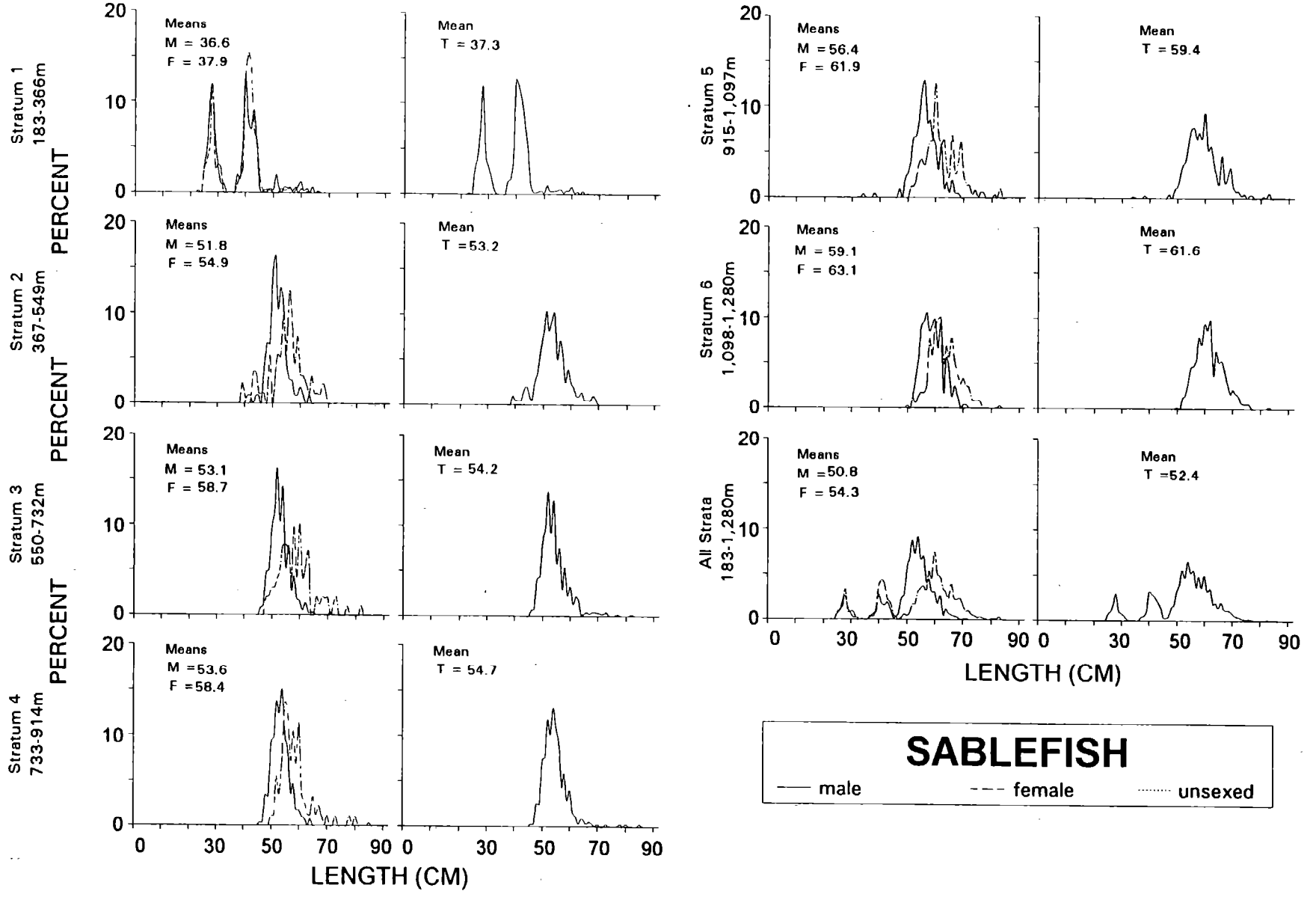


Figure 24.--Estimated population size composition and mean lengths (cm) of sablefish by stratum and by sex for the International North Pacific Fisheries Commission Eureka area for all depths sampled (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

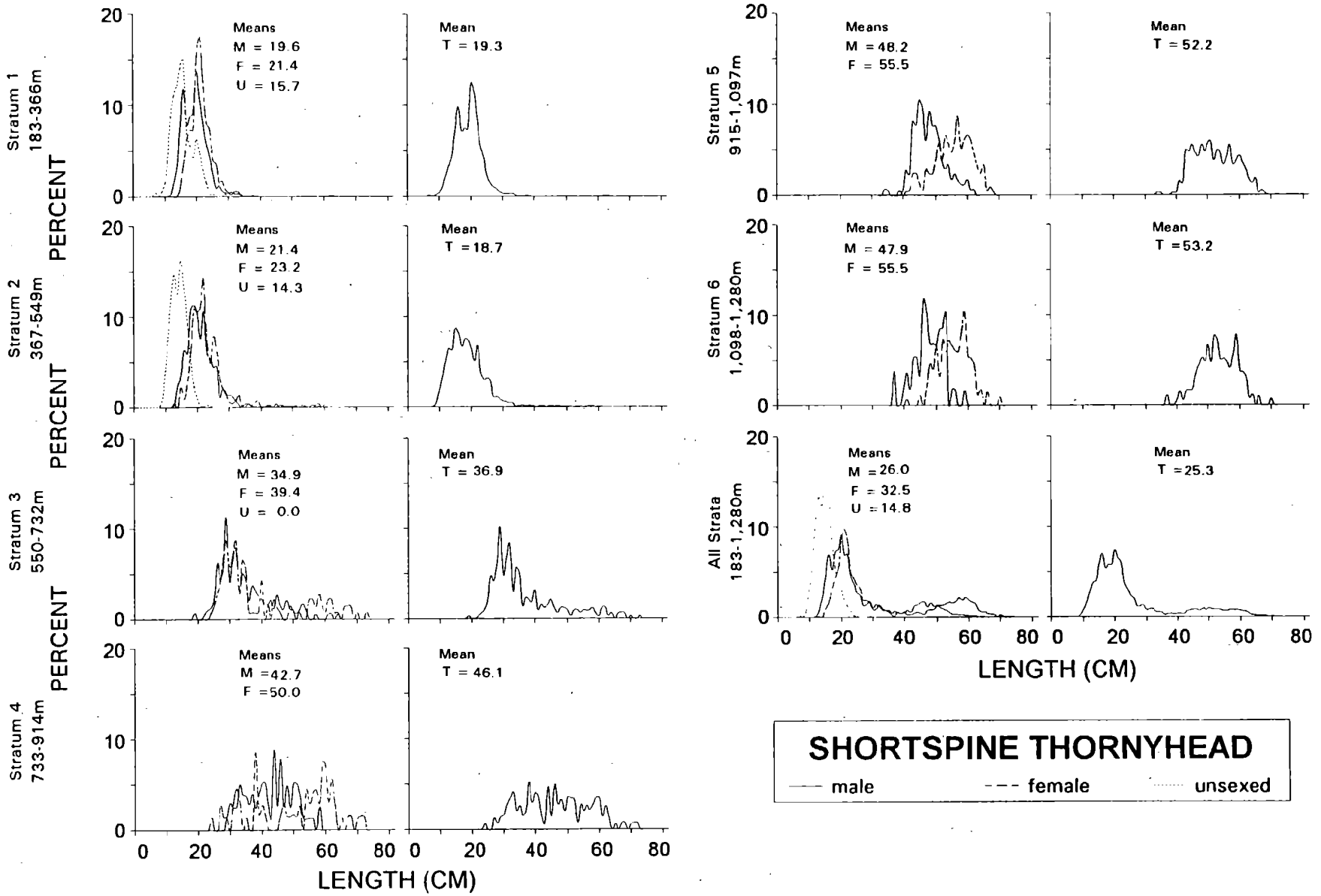


Figure 25.--Estimated population size composition and mean lengths (cm) of shortspine thornyhead by stratum and by sex for the International North Pacific Fisheries Commission Eureka area for all depths sampled (183-1,280 m) from the 1995 West Coast upper continental slope bottom trawl survey.

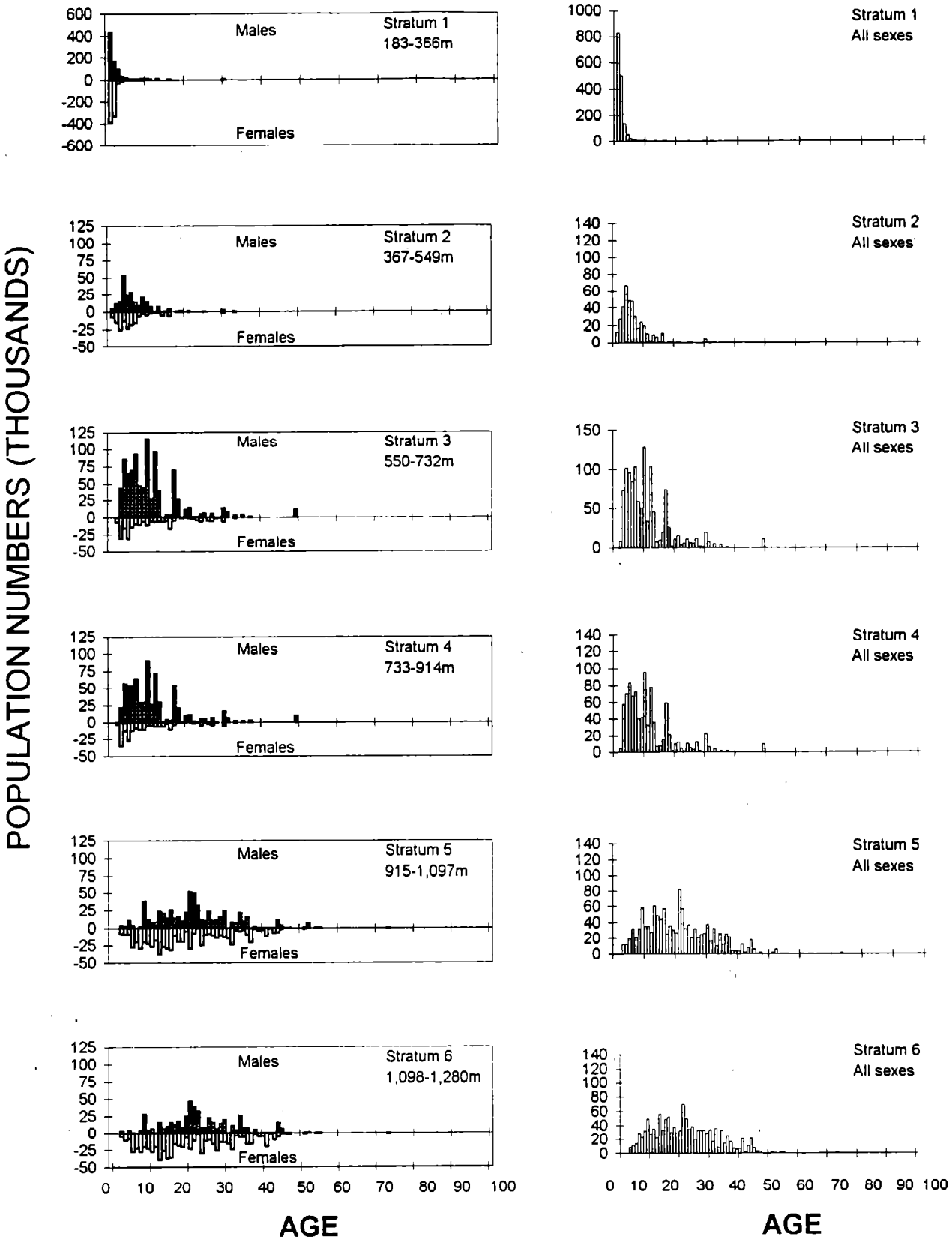


Figure 26. --Sablefish estimated population age composition by stratum and by sex for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

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APPENDIX A

Haul and Catch Information

Appendix A contains listings of station data and catch data for all hauls from the 1995 West Coast upper continental slope bottom trawl survey of the International North Pacific Fisheries Commission (INPFC) Eureka statistical area. The depths are reported in meters, the distances fished in kilometers, and catches are in kilograms. Only catches with a performance value of 0 or 1 were used for further data analysis.

Table A-l.--Station and catch data for the NOAA ship Miller Freeman during the 1995 West Coast upper continental slope bottom trawl survey.

Haul number	1	2	3	4	5	6	7	8
Start date & time	10/28/95 8:16	10/28/95 13:21	10/28/95 16:29	10/28/95 20:00	10/29/95 0:00	10/29/95 4:08	10/29/95 7:46	10/29/95 11:26
Start latitude	4253.00	4252.36	4254.44	4257.26	4257.74	4253.01	4250.88	4252.33
Start longitude	12450.67	12455.22	12457.04	12458.37	12458.13	12458.58	12459.46	12458.89
End latitude	4254.28	4253.49	4255.39	4258.33	4258.71	4254.29	4251.08	4252.85
End longitude	12450.62	12454.66	12456.56	12458.41	12457.46	12457.83	12500.67	12458.62
Bottom depth (m)	268	519	714	868	846	1016	959	1092
Duration (hr)	0.52	0.51	0.44	0.49	0.48	0.6	0.43	0.29
Distance fished (km)	2.414	2.25	1.901	2.023	2.052	2.64	2.01	1.038
Net width (m)	16.87	16.37	16.46	16.42	16.96	17.22	14.46	16.43
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	5	0	5	5	5
Gear	172	172	172	172	172	172	172	172
Hagfish		1.6		1.5	2.4		0.7	0.5
Brown catshark	2.4	3.6			0.4			
Spiny dogfish	0.6	23.5	3.6			2.2		3.1
Skates	59.6	10.9	0.0				6.7	6.5
Spotted ratfish	8.4							
Other elasmobranchs								
Arrowtooth flounder	7.1	0.5						
Petrale sole	1.0							
English sole	0.2							
Dover sole	399.9	66.8	29.5	81.7	55.1	117.8	91.0	33.0
Deepsea sole			2.2	2.9	5.8	7.2	10.1	3.8
Rex sole	86.0	82.9	0.4					
Other flatfish	14.7	0.2						
Sablefish	8.0	19.2	3.9	7.3	1.6	15.0	39.9	20.5
Grenadiers		0.1	13.5	15.9	7.0	73.8	111.8	53.6
Pacific cod								
Pacific flatnose			0.1	0.0	0.1	0.0	0.6	1.4
Lingcod								
Slickheads			2.0	7.6	0.3	4.6	9.3	6.3
Eelpouts	8.8	33.3	2.6	5.5	1.8	1.3	7.9	10.0
Pacific whiting	31.6	949.9	3.6	0.8			0.3	
Other roundfish	15.4	0.5	0.6	0.6	1.5	1.2	1.0	0.8
Shortspine thornyhead	13.8	8.9	3.1			8.0	26.4	20.6
Longspine thornyhead		0.3	25.6	53.7	71.2	79.0	117.1	110.5
Pacific ocean perch	0.3							
Darkblotched rockfish								
Splitnose rockfish	1.0							
Greenstriped rockfish	0.0							
Other rockfish	2.3	0.6						
True tanner crab		1.2	34.9	22.7	64.3	58.3	91.2	69.5
Sea urchins		0.1	0.0		0.1	0.0		
Sea stars	50.3	22.3	2.8	1.3	1.8	4.9	6.6	8.1
Other invertebrates	165.7	13.6	12.3	0.7	6.3	20.0	6.5	2.6

Table A-l--Continued.

Haul number	9	10	11	12	13	14	15	16
Start date & time	10/29/95 15:33	10/29/95 20:33	10/30/95 2:33	10/30/95 6:58	10/30/95 11:35	10/30/95 15:36	10/30/95 18:56	10/30/95 22:31
Start latitude	4251.16	4255.83	4239.15	4240.26	4252.18	4252.34	4247.89	4247.92
Start longitude	12459.43	12501.95	12458.88	12457.68	12457.67	12457.47	12454.11	12454.32
End latitude	4252.24	4256.95	4240.45	4241.49	4253.21	4253.44	4248.94	4249.02
End longitude	12458.74	12501.68	12458.88	12457.55	12458.11	12457.05	12454.85	12455.10
Bottom depth (m)	1084	1116	1125	1024	843	809	426	447
Duration (hr)	0.5	0.6	0.53	0.54	0.47	0.49	0.52	0.52
Distance fished (km)	2.237	2.2	2.41	2.349	2.03	2.168	2.219	2.334
Net width (m)	16.69	17.15	17.15	18.02	16.35	17.06	15.7	15.99
Net measured?	Y	N	N	Y	Y	Y	Y	Y
Performance	0	0	0	0	5	0	7	0
Gear	172	172	172	172	172	172	172	172
Hagfish	0.5	0.2		3.0	0.8	2.4		0.2
Brown catshark	0.7	1.7			0.8	0.8		7.7
Spiny dogfish							1.8	2.5
Skates	5.4	73.0	13.4				24.7	23.5
Spotted ratfish								
Other elasmobranchs								
Arrowtooth flounder							0.8	3.9
Petrale sole							0.5	
English sole								
Dover sole	60.9	148.2		58.0	57.9	59.5	100.4	354.4
Deepsea sole	11.6	5.7	22.5	25.6	2.8	6.0		1.6
Rex sole							17.1	57.1
Other flatfish							0.4	3.2
Sablefish	236.3	39.7	206.5	95.6	10.2	22.0	6.8	16.2
Grenadiers	306.1	204.7	144.6	207.0	6.6	6.7		
Pacific cod								
Pacific flatnose	2.7	23.7	18.0	3.5	0.2	0.0		
Lingcod								
Slickheads	4.8	1.5	8.1	17.4	2.3	11.6		
Eelpouts	5.0		5.5	17.8	3.7	1.0	4.1	18.0
Pacific whiting	0.7	2.1	0.6	0.6	2.9	0.6	188.5	188.8
Other roundfish	1.2	3.2	3.7	7.4	1.0	1.7	1.1	1.2
Shortspine thornyhead	295.4	11.3	68.4	17.5	13.5	5.9	5.8	10.8
Longspine thornyhead	222.8	31.8	184.7	294.9	114.9	124.1	2.4	7.9
Pacific ocean perch							3.6	
Darkblotched rockfish							2.5	
Splitnose rockfish								
Greenstriped rockfish								
Other rockfish							17.5	14.5
True tanner crab	135.4	48.4	28.7	77.7	25.7	50.8		0.4
Sea urchins						0.2	2.8	9.4
Sea stars	11.9	8.4	11.4	6.7	0.5	2.6	14.6	5.6
Other invertebrates	6.3	14.4	138.3	183.2	4.1	17.3	13.9	36.8

Table A-l--Continued.

Haul number	17	18	19	20	21	22	23	24	25
Start date & time	10/31/95 4:32	10/31/95 7:49	10/31/95 11:24	10/31/95 14:44	10/31/95 17:58	10/31/95 21:15	11/1/95 1:04	11/1/95 5:49	11/1/95 9:48
Start latitude	4249.57	4247.36	4249.67	4239.63	4237.39	4236.12	4239.48	4238.63	4238.68
Start longitude	12457.06	12455.36	12447.25	12443.29	12444.85	12447.96	12455.08	12456.70	12458.46
End latitude	4250.75	4248.48	4250.73	4240.63	4236.41	4237.14	4240.71	4239.84	4239.90
End longitude	12456.84	12456.04	12448.00	12443.93	12445.71	12447.13	12454.70	12456.81	12458.83
Bottom depth (m)	652	621	264	275	485	712	855	1040	1106
Duration (hr)	0.5	0.51	0.52	0.51	0.52	0.51	0.53	0.56	0.54
Distance fished (km)	2.17	2.305	2.263	2.135	2.204	2.225	2.331	2.355	2.35
Net width (m)	17.73	17.71	16.78	16.27	15.49	16.64	17.75	17.92	17.15
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	N
Performance	7	0	0	0	0	0	0	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish		1.0	0.3		0.9	0.3	2.5	2.4	0.6
Brown catshark	0.8	2.1	0.4		9.1	5.1	0.3		
Spiny dogfish				8.9					
Skates		9.3	38.6	63.8	7.9	0.3	1.7	1.0	45.0
Spotted ratfish			6.3						
Other elasmobranchs									
Arrowtooth flounder			1.2	4.3	2.1				
Petrale sole			1.0	3.7					
English sole			2.1	0.9					
Dover sole	31.9	149.0	189.8	82.3	90.7	268.6	103.7	51.9	2.1
Deepsea sole	0.5				0.5	0.7	5.3	23.1	20.1
Rex sole			34.4	8.7	25.0				
Other flatfish			6.6	1.5	0.2				
Sablefish	61.6	190.0	2.7	2.7	15.6	4.3	51.8	35.1	185.1
Grenadiers	24.9	6.1			1.1	172.3	21.9	183.1	183.8
Pacific cod									
Pacific flatnose					0.1		0.1	5.7	8.2
Lingcod									
Slickheads	5.0	1.5				1.3	8.8	6.5	11.1
Eelpouts	0.1	4.1	62.3	19.3	13.4	2.9	3.4	13.1	5.5
Pacific whiting	0.7	1.0	43.1	30.0	236.0	0.9			1.2
Other roundfish	1.2	0.7	2.3	1.5	0.6	2.5	0.8	2.5	2.0
Shortspine thornyhead	64.0	66.7	6.9	8.5	6.8		17.9	17.0	72.7
Longspine thornyhead	56.6	81.4				7.7	186.2	182.1	230.7
Pacific ocean perch									
Darkblotched rockfish									
Splitnose rockfish			1.7	6.1					
Greenstriped rockfish									
Other rockfish			0.9	1.1	3.5				
True tanner crab	5.0	38.7				64.0	50.5	112.7	93.0
Sea urchins	0.1			34.8	54.0				
Sea stars	0.2	6.2	21.5	15.8	63.2	4.6	6.8	8.2	8.9
Other invertebrates	8.0	10.2	52.1	81.0	634.2	17.4	16.1	201.7	148.0

Table A-l--Continued.

Haul number	26	27	28	29	30	31	32	33	34
Start date & time	11/1/95 15:04	11/1/95 19:12	11/1/95 22:53	11/2/95 2:29	11/2/95 6:37	11/2/95 12:19	11/2/95 18:05	11/2/95 23:03	11/3/95 1:55
Start latitude	4231.75	4231.61	4232.17	4225.20	4226.04	4227.41	4228.08	4217.69	4216.91
Start longitude	12453.79	12453.68	12453.09	12449.91	12451.12	12451.96	12450.41	12438.80	12442.54
End latitude	4232.63	4232.55	4233.37	4225.83	4226.94	4228.55	4229.13	4218.86	4218.06
End longitude	12453.93	12453.55	12452.94	12450.50	12452.13	12452.57	12450.24	12438.58	12442.37
Bottom depth (m)	1141	1126	1080	837	810	712	447	275	478
Duration (hr)	0.41	0.46	0.53	0.32	0.53	0.51	0.5	0.52	0.52
Distance fished (km)	1.681	1.803	2.257	1.452	2.215	2.295	2.033	2.248	2.154
Net width (m)	17.15	17.15	17.09	16.76	17.88	16.31	16.95	16.21	17.57
Net measured?	N	N	Y	Y	Y	Y	Y	Y	Y
Performance	5	0	0	5	0	5	7	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish	0.8	0.4	1.6		0.7	0.2	0.2		
Brown catshark	0.2		0.4		0.1		8.4	5.1	12.5
Spiny dogfish							12.3	3.3	4.9
Skates	12.9	24.2	8.1			4.3	5.8	8.0	23.2
Spotted ratfish								0.5	
Other elasmobranchs									
Arrowtooth flounder							0.8	1.9	103.1
Petrale sole							1.1	2.3	
English sole									
Dover sole	11.3	10.4	22.2		91.6	225.1	156.7	175.9	116.3
Deepsea sole	15.5	14.3	10.9		10.8		2.7		
Rex sole							76.7	33.5	34.7
Other flatfish							0.0	1.9	0.2
Sablefish	41.1	34.4	7.1		68.6	165.8	10.3	13.1	26.6
Grenadiers	294.4	478.3	396.3		38.4	67.0			0.3
Pacific cod									
Pacific flatnose	3.2	15.9	3.1		0.0				
Lingcod									
Slickheads	3.2	4.1	2.3		26.0	3.1			
Eelpouts	0.8	2.0	11.4		10.1	1.1	2.0	5.3	27.3
Pacific whiting		0.5	0.6		0.7	0.8	136.0	494.5	308.5
Other roundfish	1.3	21.8	4.6		2.1	0.4	0.1	8.3	0.9
Shortspine thornyhead	13.1	20.6	14.1		5.0	146.8	19.1	22.1	22.0
Longspine thornyhead	21.9	28.0	81.1		193.1	79.7	16.1		
Pacific ocean perch									
Darkblotched rockfish								1.0	
Splitnose rockfish								6.3	
Greenstriped rockfish									
Other rockfish							6.7	6.5	5.9
True tanner crab	42.0	45.9	133.9		85.6	101.0			
Sea urchins							1.4	0.4	51.0
Sea stars	2.1	2.3	2.8		17.7	0.5	5.0	21.4	1.1
Other invertebrates	6.6	6.1	5.2		20.9	6.0	13.2	26.8	24.3

Table A-l--Cohtinued.

Haul number	35	36	37	38	39	40	41	42	43
Start date & time	11/3/95 5:27	11/3/95 8:41	11/3/95 12:12	11/3/95 17:17	11/3/95 22:29	11/4/95 4:59	11/4/95 8:22	11/4/95 12:22	11/4/95 15:22
Start latitude	4215.96	4216.25	4222.14	4222.77	4207.98	4208.48	4211.91	4209.84	4209.41
Start longitude	12450.03	12452.19	12451.97	12453.06	12457.14	12455.25	12452.13	12447.11	12439.00
End latitude	4217.12	4217.41	4223.27	4223.40	4209.16	4209.68	4213.20	4210.99	4210.58
End longitude	12449.93	12452.06	12451.70	12452.36	12456.98	12455.50	12452.37	12447.70	12438.90
Bottom depth (m)	635	842	1016	1146	1166	1072	876	669	442
Duration (hr)	0.51	0.5	0.51	0.37	0.52	0.54	0.55	0.52	0.52
Distance fished (km)	2.206	2.266	2.19	1.556	2.239	2.257	2.455	2.297	2.196
Net width (m)	17.49	17.4	18.18	17.15	17.15	18.41	18.35	18.36	16.42
Net measured?	Y	Y	Y	N	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish	0.2	0.2	0.7			1.3	2.3	0.2	1.7
Brown catshark	3.3	0.7				0.9	0.5	2.8	4.2
Spiny dogfish									
Skates	4.0		6.4	34.9	14.8	2.4			16.5
Spotted ratfish									
Other elasmobranchs									
Arrowtooth flounder	2.1								9.5
Petrale sole									0.8
English sole									
Dover sole	161.2	102.0	8.9	81.6	29.0		141.8	11.6	39.2
Deepsea sole	4.6	6.4	6.6	19.0	5.8	4.7	18.8	1.8	
Rex sole	1.8								1.5
Other flatfish									0.3
Sablefish	11.6	8.0	23.6	34.0	54.2	17.2	12.8	46.2	29.8
Grenadiers	49.1	17.1	78.8	284.7	208.2	148.3	4.4	62.1	
Pacific cod									
Pacific flatnose	0.1	0.2	3.9	10.7	28.8	5.4	0.2		
Lingcod									
Slickheads	0.6	2.0	2.2	0.6	1.6	6.0	1.8	1.4	0.2
Eelpouts	6.3	2.1	9.8	2.0	1.5		3.8	3.9	32.9
Pacific whiting	0.9	0.7					0.7		70.4
Other roundfish	0.7	0.4	0.6	0.8	0.5	2.2	36.7	1.2	2.4
Shortspine thornyhead	11.5	5.3	11.1	12.7	16.2	10.1	13.5	7.0	24.0
Longspine thornyhead	45.1	98.0	97.1	23.6	37.4	120.2	157.5	132.5	
Pacific ocean perch									
Darkblotched rockfish									
Splitnose rockfish									
Greenstriped rockfish									
Other rockfish									9.1
True tanner crab	10.2	56.1	59.4	36.8	33.3	49.1	49.0	34.8	
Sea urchins	7.4						0.2	0.5	215.8
Sea stars	3.7	4.0	3.8	3.0	11.5	7.7	7.1	4.5	30.3
Other invertebrates	18.2	14.0	7.2	42.6	23.1	40.1	8.6	8.1	10.3

Table A-l--Continued.

Haul number	44	45	46	47	48	49	50	51	52
Start date & time	11/4/95 17:47	11/4/95 21:58	11/5/95 3:52	11/5/95 5:50	11/5/95 9:32	11/5/95 13:04	11/5/95 15:33	11/5/95 19:34	11/6/95 0:36
Start latitude	4207.26	4203.20	4201.59	4203.17	4159.76	4201.21	4200.69	4201.38	4205.62
Start longitude	12435.84	12435.72	12438.25	12446.96	12448.68	12438.20	12437.59	12452.99	12455.70
End latitude	4208.47	4202.01	4200.57	4202.41	4200.79	4202.30	4201.88	4202.30	4205.02
End longitude	12436.02	12435.66	12438.44	12445.72	12449.84	12438.71	12438.29	12453.93	12457.06
Bottom depth (m)	254	249	461	647	839	460	431	985	1186
Duration (hr)	0.53	0.53	0.53	0.52	0.57	0.5	0.56	0.51	0.54
Distance fished (km)	2.299	2.239	1.957	2.282	2.589	2.164	2.42	2.196	2.21
Net width (m)	17.19	16.05	16.41	17.2	17.61	15.41	16.48	17.6	17.15
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	N
Performance	0	0	5	0	0	7	0	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish	0.2		0.3		0.3	3.3	0.7	1.5	0.6
Brown catshark	19.6	12.1	2.9	3.1	0.9	16.2	6.3	2.3	0.3
Spiny dogfish	79.1	8.4	4.8		2.1		254.8		
Skates	117.4	18.5	10.0	4.9		14.1	19.2	9.1	5.0
Spotted ratfish	18.3								
Other elasmobranchs									
Arrowtooth flounder	3.2		7.9			6.6	41.9		0.7
Petrale sole	1.5						4.8		
English sole	0.4								
Dover sole	148.0	42.2	66.3	56.9	61.5	94.9	237.0	66.2	15.0
Deepsea sole				4.2	6.6			13.5	11.4
Rex sole	1.2	1.4	9.7	0.3		18.4	53.0		
Other flatfish	23.8	0.7							
Sablefish	44.1	1.4	27.8	27.8	12.4	43.7	40.9	20.6	38.5
Grenadiers	0.5			4.8	1.5			17.1	133.4
Pacific cod									
Pacific flatnose					0.2			0.8	5.3
Lingcod									
Slickheads				0.1	5.7			4.2	3.2
Eelpouts	11.3	10.8	4.1	3.2	1.5	11.9	34.9	5.9	2.2
Pacific whiting	780.6	374.9	17.9			451.8	425.5		
Other roundfish	1.7	3.8		1.2	3.5	7.5	2.9	1.1	1.7
Shortspine thornyhead	45.9	10.0	7.1	5.8	9.6	21.7	29.9	6.7	26.4
Longspine thornyhead				131.4	191.1			324.8	144.4
Pacific ocean perch							0.7		
Darkblotched rockfish	6.9	4.1					0.7		
Splitnose rockfish	1.3	12.5							
Greenstriped rockfish									
Other rockfish	122.7	10.6	4.2			28.4	30.0		
True tanner crab				166.1	25.0			87.0	48.3
Sea urchins	87.5	85.2	26.8	8.6	8.5	70.0	338.8		
Sea stars	18.8	0.5	58.9	9.8	3.1	340.5	98.2	2.7	14.9
Other invertebrates	4.3	14.7	683.6	22.4	9.1	262.3	107.5	6.7	59.7

Table A-l--Continued.

Haul number	53	54	55	56	57	58	59	60	61
Start date & time	11/7/95 18:27	11/7/95 20:06	11/7/95 23:37	11/8/95 2:13	11/8/95 9:22	11/8/95 14:31	11/8/95 18:16	11/8/95 21:30	11/9/95 2:22
Start latitude	4034.06	4034.26	4033.11	4033.88	4032.85	4032.51	4032.19	4032.20	4032.84
Start longitude	12440.01	12439.96	12442.48	12442.52	12442.95	12443.92	12444.07	12444.06	12443.29
End latitude	4034.53	4035.27	4032.33	4032.55	4034.17	4031.31	4031.29	4031.13	4033.92
End longitude	12439.79	12439.26	12442.45	12442.51	12443.28	12444.16	12444.41	12444.25	12443.90
Bottom depth (m)	241	254	518	543	700	1005	1002	1022	879
Duration (hr)	0.21	0.51	0.34	0.54	0.52	0.55	0.44	0.5	0.5
Distance fished (km)	0.919	2.163	1.457	2.561	2.494	2.312	1.762	2.036	2.192
Net width (m)	14.7	15.3	15.2	17.76	15.72	18.31	19.92	16.95	15.31
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	6	0	5	0	0	5	5	5	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish				1.0	4.9	0.6	0.4		0.3
Brown catshark	7.4	4.7	5.5	3.1	0.4			1.3	
Spiny dogfish		39.9	6.5	0.4					0.2
Skates	4.0	20.6	8.8	1.2		14.5	3.2		0.1
Spotted ratfish	3.2	41.3							
Other elasmobranchs									
Arrowtooth flounder									
Petrale sole		2.0							
English sole									
Dover sole	5.9	96.0	57.7	96.6	133.6	49.5	12.3	0.9	114.6
Deepsea sole						24.1	9.6	2.7	10.6
Rex sole	0.2	3.5	26.3	48.7	2.1				
Other flatfish	0.4	5.9							
Sablefish	12.0	1.3	8.2	15.2	9.2	113.3	33.9	21.5	11.4
Grenadiers			7.9	16.1	19.4	156.7	87.2	50.7	88.4
Pacific cod									
Pacific flatnose				0.6	0.4	0.2	0.6	0.5	0.3
Lingcod									
Slickheads					1.1	2.9	1.1	6.8	2.3
Eelpouts	3.3	15.5	4.2	10.6	8.2	9.5	6.2	1.5	6.8
Pacific whiting	47.3	13.3	54.5	16.4	0.9			1.7	0.3
Other roundfish	0.4	9.5	1.0	2.4	1.7	0.1	1.1	2.9	1.2
Shortspine thornyhead	1.2	13.1	0.9	14.8	16.0	52.1	97.9	15.2	19.2
Longspine thornyhead				0.0	23.3	64.1	58.4	26.8	82.4
Pacific ocean perch		2.2							
Darkblotched rockfish	6.9	2.3							
Splitnose rockfish	3.2	26.0							
Greenstriped rockfish		0.5							
Other rockfish	25.1	27.7	5.4	1.8					
True tanner crab				2.7	60.8	271.6	45.7	3.4	229.2
Sea urchins	34.8	101.6	1.2	4.6					
Sea stars	0.1	11.4	25.5	5.3	1.1	3.4	1.8	0.6	0.9
Other invertebrates	4.6	90.4	9.5	25.3	16.6	22.3	50.3	0.4	5.0

Table A-l--Continued.

Haul number	62	63	64	65	66	67	68	69	70
Start date & time	11/9/95 6:49	11/9/95 12:25	11/9/95 17:25	11/9/95 22:57	11/10/95 3:23	11/10/95 11:45	11/10/95 15:08	11/10/95 18:35	11/11/95 2:41
Start latitude	4031.52	4034.37	4042.35	4042.30	4041.10	4041.21	4040.49	4041.66	4049.39
Start longitude	12443.83	12445.83	12445.38	12443.96	12440.47	12431.85	12435.02	12439.13	12444.20
End latitude	4032.65	4035.19	4043.29	4043.38	4042.24	4042.41	4040.82	4042.68	4049.98
End longitude	12444.16	12446.62	12445.51	12443.89	12440.29	12431.53	12436.43	12438.48	12445.36
Bottom depth (m)	1026	1206	1176	1071	844	313	495	657	1156
Duration (hr)	0.5	0.51	0.5	0.51	0.5	0.5	0.51	0.52	0.5
Distance fished (km)	2.194	1.967	1.792	2.05	2.159	2.344	2.117	2.137	1.983
Net width (m)	17.7	17.15	17.15	17.94	17.88	15.51	16.69	16.87	17.15
Net measured?	Y	N	N	Y	Y	Y	Y	Y	N
Performance	0	7	0	0	0	0	0	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish	1.1		0.2	0.7	1.0	0.2		3.1	2.2
Brown catshark	0.6	0.6	2.3	1.6		0.3	5.6	3.1	0.4
Spiny dogfish	0.3		2.4			1,805.9	82.7	8.7	
Skates	35.5	39.4	18.4	55.8	2.2	100.3	4.3	12.5	29.3
Spotted ratfish						2.2			
Other elasmobranchs									
Arrowtooth flounder									
Petrale sole						2.0			
English sole									
Dover sole	36.2	24.0	1.3	30.6	38.0	112.9	292.7	72.0	31.1
Deepsea sole	39.0	22.7	11.7	30.6	6.2		8.1	1.4	36.0
Rex sole						100.6	55.5	0.0	
Other flatfish						1.0			
Sablefish	291.6	194.7	31.2	94.2	173.3	50.6	14.2	65.8	2.5
Grenadiers	166.4	345.0	120.1	431.8	132.6		4.8	2.8	60.6
Pacific cod									
Pacific flatnose	11.8	31.9	33.5	6.1	0.2		0.3	3.0	6.9
Lingcod									
Slickheads	6.9	0.5		1.4	2.9			0.7	3.6
Eelpouts	14.7	1.0		7.6	1.5	14.3	5.4	3.2	3.1
Pacific whiting			5.0	0.6	0.5	53.6	105.7	22.0	0.6
Other roundfish	3.1	0.3	6.3	3.4	2.2	0.0	0.1	0.4	2.1
Shortspine thornyhead	73.6	210.3	14.6	229.0	119.3	19.4	43.2	18.6	34.9
Longspine thornyhead	264.7	23.2	14.2	68.3	127.8		66.5	34.1	128.0
Pacific ocean perch						0.4			
Darkblotched rockfish						1.2			
Splitnose rockfish						10.5			
Greenstriped rockfish						0.4			
Other rockfish			1.1			9.1	41.0		
True tanner crab	43.5	9.4	4.1	84.9	75.7	0.3		17.3	91.1
Sea urchins						50.0	0.1	83.3	
Sea stars	6.7	1.5	0.9	1.7	1.9	20.3	0.3	3.8	11.7
Other invertebrates	90.4	10.2	9.3	73.5	7.9	26.8	315.4	186.8	386.1

Table A-l--Continued.

Haul number	71	72	73	74	75	76	77	78
Start date & time	11/11/95 7:49	11/11/95 10:36	11/11/95 13:20	11/11/95 15:54	11/11/95 18:36	11/11/95 21:14	11/11/95 23:51	11/12/95 4:41
Start latitude	4049.57	4051.51	4053.73	4053.50	4049.98	4049.38	4058.02	4100.59
Start longitude	12442.11	12440.36	12438.75	12438.70	12430.53	12426.24	12425.57	12428.11
End latitude	4050.17	4052.10	4052.62	4052.41	4048.95	4048.29	4056.84	4100.17
End longitude	12443.16	12441.79	12439.24	12439.20	12430.49	12427.04	12425.87	12429.76
Bottom depth (m)	967	765	641	639	470	220	293	495
Duration (hr)	0.51	0.5	0.52	0.51	0.45	0.53	0.52	0.54
Distance fished (km)	1.943	2.294	2.177	2.171	1.909	2.3	2.249	2.467
Net width (m)	17.7	17.64	17.36	18.06	15.32	16.09	15.09	16.71
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	5	0	0	0	0	0
Gear	172	172	172	172	172	172	172	172
Hagfish	0.8	1.0	0.2	0.5	0.6			1.2
Brown catshark	5.1	5.5	2.2	1.4	5.8	8.2	1.5	10.8
Spiny dogfish					8.8	29.5	94.2	392.8
Skates	1.1	0.6	3.2	17.5	55.9	59.6	25.6	7.7
Spotted ratfish						0.9		
Other elasmobranchs								
Arrowtooth flounder					4.8	0.7		1.7
Petrale sole					0.8	8.2		
English sole						16.7		
Dover sole	40.6	83.9	93.1	96.9	57.5	43.7	25.2	54.6
Deepsea sole	4.9	7.6		2.2				
Rex sole		0.4	20.2	30.1	110.1	50.4	3.3	118.0
Other flatfish					0.2	25.3	8.7	0.9
Sablefish	19.5	118.0	131.8	151.3	7.4	1.4	1.7	21.1
Grenadiers	27.3	127.7	17.2	91.3				
Pacific cod								
Pacific flatnose	2.6	0.2						
Lingcod								
Slickheads	16.5	8.2	2.7	2.2				
Eelpouts	9.6	6.8	0.4	3.4	25.0	9.4	3.1	29.0
Pacific whiting		0.3	2.1	8.1	646.4	257.0	364.0	879.0
Other roundfish	1.7	2.1	0.2	1.0	0.8	8.5	40.0	0.6
Shortspine thornyhead	11.8	13.8	24.1	49.1	4.3	0.5	4.4	9.2
Longspine thornyhead	174.7	169.5	119.3	124.2				1.3
Pacific ocean perch								
Darkblotched rockfish						12.1		
Splitnose rockfish					0.2	15.7	6.8	
Greenstriped rockfish						3.9		
Other rockfish					41.1	186.4	4.9	1.6
True tanner crab	41.1	198.4	44.0	53.3				0.6
Sea urchins				0.2	60.4	0.1	421.2	22.4
Sea stars	3.0	0.7	3.8	3.2	77.0	8.5	4.9	271.2
Other invertebrates	7.2	14.5	7.2	21.9	374.0	156.8	6.1	1,870.9

Table A-l--Continued.

Haul number	79	80	81	82	83	84	85	86	87
Start date & time	11/12/95 8:30	11/12/95 11:17	11/12/95 14:43	11/12/95 17:26	11/12/95 20:24	11/13/95 0:00	11/13/95 4:24	11/13/95 9:05	11/13/95 12:41
Start latitude	4101.10	4059.95	4056.38	4057.46	4056.90	4107.91	4110.39	4110.22	4105.08
Start longitude	12436.10	12433.71	12444.56	12446.89	12448.00	12442.47	12435.70	12431.66	12433.03
End latitude	4101.85	4100.83	4057.37	4058.53	4057.97	4108.26	4111.16	4110.90	4105.91
End longitude	12437.43	12434.86	12445.27	12447.32	12448.43	12443.83	12437.25	12432.94	12431.98
Bottom depth (m)	696	620	809	1005	1216	1229	1129	1000	836
Duration (hr)	0.54	0.52	0.51	0.53	0.53	0.51	0.68	0.56	0.54
Distance fished (km)	2.355	2.342	2.104	2.123	2.108	1.987	2.674	2.246	2.216
Net width (m)	18.21	18.51	17.73	17.73	17.15	17.15	17.15	17.23	18.3
Net measured?	Y	Y	Y	Y	N	N	N	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish	0.6	3.9	0.5	1.7	0.7	0.4	0.4	1.6	2.6
Brown catshark	0.4	1.6	0.9	1.1		0.9	0.4		4.2
Spiny dogfish									
Skates		6.4	2.8		9.8	8.8	10.7		0.2
Spotted ratfish									
Other elasmobranchs									
Arrowtooth flounder									
Petrale sole									
English sole									
Dover sole	18.9	62.7	55.1	18.0	1.4		9.5	35.1	65.5
Deepsea sole		2.3	5.7	12.6	11.2	10.8	40.9	8.1	5.6
Rex sole		13.7							
Other flatfish									
Sablefish	128.7	104.2	14.6	39.9	9.6	90.9	40.5		55.2
Grenadiers	169.6	70.1	44.6	57.2	97.7	265.9	64.4	5.8	9.8
Pacific cod									
Pacific flatnose			0.0	2.5	29.9	4.0	4.6	0.8	
Lingcod									
Slickheads	3.1	0.4	7.3	3.3	0.0			2.8	19.0
Eelpouts	3.8	5.1	2.7	8.0	0.9	1.1	10.8	6.5	11.2
Pacific whiting		1.5	0.6				0.8		0.6
Other roundfish	5.1	0.7	4.1	1.3	2.2	13.8	2.0	0.3	1.2
Shortspine thornyhead	22.1	26.7	4.6	18.2	15.1	12.5	9.2	2.1	11.6
Longspine thornyhead	173.9	93.6	170.4	70.9	71.5	57.7	155.1	122.0	213.8
Pacific ocean perch									
Darkblotched rockfish									
Splitnose rockfish									
Greenstriped rockfish									
Other rockfish									
True tanner crab	136.8	164.5	58.3	67.7	2.9	2.7	30.8	21.5	19.6
Sea urchins	0.4	0.1						0.2	33.6
Sea stars	6.5	8.8	2.6	1.8	8.6	17.5	14.6	5.5	5.2
Other invertebrates	9.4	32.3	19.8	13.1	45.5	46.1	12.5	2.9	13.4

Table A-l--Continued.

Haul number	88	89	90	91	92	93	94	95
Start date & time	11/13/95 16:39	11/13/95 18:58	11/13/95 21:09	11/14/95 0:58	11/14/95 3:49	11/14/95 10:29	11/14/95 13:00	11/14/95 16:20
Start latitude	4109.46	4109.17	4110.56	4117.85	4116.83	4115.84	4116.48	4115.57
Start longitude	12425.98	12424.04	12422.61	12428.66	12429.49	12424.46	12431.47	12434.25
End latitude	4110.74	4110.38	4111.74	4118.86	4117.97	4114.51	4117.45	4116.42
End longitude	12426.22	12424.08	12422.73	12429.37	12430.14	12424.17	12432.40	12435.22
Bottom depth (m)	586	416	248	490	624	227	805	1081
Duration (hr)	0.53	0.51	0.51	0.5	0.53	0.55	0.5	0.47
Distance fished (km)	2.427	2.267	2.205	2.179	2.346	2.481	2.14	1.927
Net width (m)	15.92	15.61	16.91	16.56	17.28	16.48	17.91	18.71
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0
Gear	172	172	172	172	172	172	172	172
Hagfish	7.8	2.2		12.7	0.9		3.1	1.4
Brown catshark	11.2	1.4	0.7	8.1	12.2	0.6	2.2	1.4
Spiny dogfish	2.6	358.6	14.6	44.0		203.0		
Skates	2.4	202.2	17.7	0.9	3.8	43.4	0.0	0.8
Spotted ratfish								
Other elasmobranchs			5.3					
Arrowtooth flounder		4.4						
Petrale sole		0.7				3.0		
English sole								
Dover sole	135.5	76.8	94.1	28.7	27.6	51.7	23.1	94.4
Deepsea sole					1.5		4.1	23.3
Rex sole	23.9	96.5	12.3	13.3	1.2	4.0		
Other flatfish		9.6	70.2			21.2		
Sablefish	2.0	19.6	7.7	31.5	41.2	374.8	27.3	0.7
Grenadiers					1.1		6.8	19.2
Pacific cod								
Pacific flatnose					0.3		0.0	1.3
Lingcod								
Slickheads	0.1				0.5		3.4	3.2
Eelpouts	12.7	19.5	6.7	20.4	5.5	3.1	5.3	15.0
Pacific whiting	8.1	328.0	192.6	786.5	9.7	45.1	0.6	0.3
Other roundfish	2.3	0.5	2.3	1.0	1.5	11.4	1.7	1.3
Shortspine thornyhead	2.2	16.5	14.7	13.2	6.8	7.7	4.1	34.5
Longspine thornyhead	28.6			0.8	92.7		125.0	122.1
Pacific ocean perch						4.6		
Darkblotched rockfish		0.8	0.8			11.1		
Splitnose rockfish		0.5	201.3			87.2		
Greenstriped rockfish			1.2			13.3		
Other rockfish		6.6	36.6	13.7		110.7		
True tanner crab	7.2				7.5		15.8	23.5
Sea urchins	252.0	345.3	300.2	50.4	153.1	88.4	24.4	
Sea stars	8.3	9.5	3.3	8.0	3.9	4.0	2.6	3.9
Other invertebrates	27.7	18.4	59.2	336.2	20.9	75.6	40.1	7.1

Table A-l--Continued.

Haul number	96	97	98	99	100	101	102	103	104
Start date & time	11/14/95 19:57	11/15/95 1:04	11/15/95 4:55	11/15/95 7:56	11/15/95 11:11	11/15/95 14:38	11/15/95 21:57	11/16/95 1:07	11/16/95 4:25
Start latitude	4116.12	4116.77	4124.41	4126.13	4125.87	4126.02	4127.79	4127.79	4126.07
Start longitude	12443.22	12451.64	12456.70	12455.83	12450.12	12444.35	12434.04	12429.82	12430.85
End latitude	4117.14	4116.75	4123.33	4125.14	4125.15	4125.00	4129.05	4128.84	4127.14
End longitude	12444.40	12453.26	12456.24	12454.89	12448.67	12444.30	12434.43	12429.98	12431.01
Bottom depth (m)	1146	1190	1112	919	964	1056	782	243	436
Duration (hr)	0.6	0.62	0.6	0.52	0.58	0.53	0.52	0.4	0.49
Distance fished (km)	2.572	2.298	2.179	2.262	2.473	1.985	2.383	1.971	2.011
Net width (m)	17.15	17.15	17.15	17.78	17.15	19	16.99	16.36	15.96
Net measured?	N	N	N	Y	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	7
Gear	172	172	172	172	172	172	172	172	172
Hagfish		0.1		0.3	3.0	4.7	2.0		2.4
Brown catshark	0.2				0.8	0.7	3.7	13.6	9.6
Spiny dogfish								37.2	644.5
Skates	9.9	33.5	24.0	0.8	3.3	30.0		28.8	16.3
Spotted ratfish								0.4	
Other elasmobranchs								0.1	
Arrowtooth flounder									2.5
Petrale sole								0.7	
English sole								0.3	
Dover sole	47.6	18.8	14.1	71.9	180.0	246.6	26.2	58.1	142.8
Deepsea sole	15.0	25.9	13.2	12.6	12.6	13.6	5.4		
Rex sole								1.1	9.8
Other flatfish								0.3	0.1
Sablefish	240.3	119.2	151.4	22.3	23.2	5.8	32.9	4.1	30.3
Grenadiers	148.2	189.7	106.0	46.2	6.3	33.3	12.0		
Pacific cod									
Pacific flatnose	8.8	20.2	9.0	0.4	0.2	1.6	0.0		
Lingcod									
Slickheads	1.7			16.7	5.0	4.9	10.8		
Eelpouts		2.5	1.9	5.6	11.4	9.9	6.9	4.5	17.6
Pacific whiting		1.2	3.1	0.9		0.6	0.7	93.8	218.5
Other roundfish	2.2	3.5	5.1	0.8	1.3	0.4	2.3	1.6	0.0
Shortspine thornyhead	10.4	18.0	21.8	3.6	11.5	21.7		48.3	20.4
Longspine thornyhead	183.7	130.2	73.5	88.5	244.0	151.0	170.2	0.5	0.5
Pacific ocean perch								0.0	0.5
Darkblotched rockfish								0.4	
Splitnose rockfish								93.1	
Greenstriped rockfish								3.1	
Other rockfish								41.1	17.7
True tanner crab	15.2	14.6	16.1	30.3	24.7	25.7	149.1		
Sea urchins							8.2	14.3	193.3
Sea stars	25.6	14.7	9.2	7.5	14.3	5.2	5.1	19.6	4.1
Other invertebrates	116.7	101.3	34.2	19.0	59.3	18.3	17.5	90.7	36.1

Table A-l--Continued.

Haul number	105	106	107	108	109	110	111	112	113
Start date & time	11/16/95 10:25	11/16/95 14:38	11/16/95 16:55	11/16/95 19:27	11/17/95 2:34	11/17/95 5:30	11/17/95 8:26	11/17/95 12:08	11/18/95 2:46
Start latitude	4134.93	4134.93	4135.33	4135.37	4136.35	4135.03	4135.75	4134.90	4136.66
Start longitude	12429.83	12429.83	12431.83	12433.30	12432.88	12436.47	12440.15	12453.10	12501.38
End latitude	4133.87	4133.87	4134.24	4134.47	4137.60	4133.90	4134.77	4134.18	4136.75
End longitude	12430.12	12430.12	12432.02	12433.69	12433.12	12435.93	12439.31	12451.84	12502.87
Bottom depth (m)	247	269	486	592	598	784	869	984	1217
Duration (hr)	0.52	0.54	0.52	0.46	0.56	0.53	0.55	0.54	0.58
Distance fished (km)	2.074	2.074	2.037	2.222	2.378	2.268	2.188	2.245	2.192
Net width (m)	18.62	14.66	18.26	17.08	17.35	18.25	18.85	17.66	17.15
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	N
Performance	0	0	0	7	0	0	0	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish	2.9		12.5	0.9	6.9	1.7	0.9	1.3	
Brown catshark	1.3	0.1	8.4	2.0	2.9	0.5	3.7	0.0	
Spiny dogfish	3.2	42.5	275.7	1.6	1.8				
Skates	9.6	1.9	45.3	6.2	7.2			3.6	22.4
Spotted ratfish									
Other elasmobranchs									
Arrowtooth flounder			4.5						
Petrale sole									
English sole									
Dover sole	3.0	0.2	51.2	91.7	8.6	34.6	29.6	29.6	52.4
Deepsea sole				2.9	1.0	3.2	10.5	12.5	20.2
Rex sole	7.4		155.5	0.4	30.1				
Other flatfish			2.3						
Sablefish	37.0	13.7	6.5	21.8	3.2	12.3	6.2	10.1	155.6
Grenadiers	1.4		0.2	1.3	0.1	0.3	0.3	11.4	123.5
Pacific cod									
Pacific flatnose	0.1							0.3	30.4
Lingcod									
Slickheads	0.9					2.5	2.2	8.3	6.8
Eelpouts	35.3		42.7	2.4	15.7	3.5	3.3	6.8	3.5
Pacific whiting	46.9	302.8	338.6	15.1	147.4	0.6		0.9	0.5
Other roundfish	2.3		2.1	0.2	2.6	1.6	0.5	0.6	6.9
Shortspine thornyhead	6.6	27.2	4.9	400.0	9.2	3.0		5.8	22.4
Longspine thornyhead	53.4			64.3	79.6	112.8	137.2	124.4	150.1
Pacific ocean perch									
Darkblotched rockfish		0.6							
Splitnose rockfish		96.4							
Greenstriped rockfish		0.3							
Other rockfish		0.6	13.4						
True tanner crab	12.5		2.1	47.2	8.0	23.9	23.3	16.7	35.6
Sea urchins	16.2	82.2	100.1		1.1	116.7	61.1		
Sea stars	5.9	12.3	23.0	2.2	4.6	4.8	2.8	2.8	42.7
Other invertebrates	22.5	14.8	34.7	16.4	22.9	15.5	8.9	26.0	73.3

Table A-l--Continued.

Haul number	114	115	116	117	118	119	120	121	122
Start date & time	11/18/95 7:01	11/18/95 10:18	11/18/95 14:10	11/18/95 17:28	11/18/95 19:57	11/18/95 22:54	11/19/95 1:11	11/19/95 3:47	11/19/95 5:55
Start latitude	4142.01	4145.69	4144.60	4144.80	4142.64	4142.72	4145.72	4153.73	4156.03
Start longitude	12500.73	12500.37	12445.64	12435.85	12432.80	12432.86	12428.99	12434.76	12433.82
End latitude	4143.36	4144.52	4144.58	4145.50	4143.83	4143.87	4146.97	4154.91	4157.21
End longitude	12500.93	12501.13	12447.16	12437.05	12433.24	12433.39	12429.02	12435.13	12434.54
Bottom depth (m)	1024	1179	864	609	509	511	278	454	224
Duration (hr)	0.53	0.53	0.57	0.52	0.52	0.53	0.5	0.5	0.53
Distance fished (km)	2.491	2.488	2.21	2.125	2.31	2.323	2.351	2.246	2.426
Net width (m)	17.64	17.15	18.07	18.21	13.76	15.41	15.74	16.33	16.8
Net measured?	Y	N	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	5	0	0	0	0
Gear	172	172	172	172	172	172	172	172	172
Hagfish	0.5	0.1	2.2	0.4		0.2		3.9	
Brown catshark			2.8	10.9		4.1	1.5	8.6	3.1
Spiny dogfish						69.4	12.6	130.7	147.5
Skates	30.8	32.5				3.3	19.5	19.0	45.9
Spotted ratfish									31.7
Other elasmobranchs									0.0
Arrowtooth flounder							0.8	2.7	
Petrale sole									5.5
English sole									
Dover sole	69.2	35.3	21.2	78.2		68.4	41.2	30.7	58.9
Deepsea sole	5.2	16.3	4.7	1.3					
Rex sole				1.6		45.5	3.9	69.9	1.8
Other flatfish						0.2	10.6	0.1	1.6
Sablefish	78.2	95.5		7.0		16.6		41.1	4.1
Grenadiers	31.8	130.3				0.1		0.2	
Pacific cod									
Pacific flatnose	0.1	44.5							
Lingcod									
Slickheads	4.0	1.9	0.7	0.1					
Eelpouts	5.9	1.0	1.8	4.2		36.9	7.4	29.7	4.6
Pacific whiting			0.3	17.4		353.8	584.8	154.5	613.7
Other roundfish	1.1	1.8	0.3	1.7		3.1	0.3	2.0	63.9
Shortspine thornyhead	29.4	48.6		18.4		11.1	24.6	21.0	6.0
Longspine thornyhead	221.5	101.6	104.8	78.6		13.0			
Pacific ocean perch									
Darkblotched rockfish									
Splitnose rockfish							7.2		4.7
Greenstriped rockfish							0.4		90.1
Other rockfish						6.7	1.6	25.4	222.3
True tanner crab	33.0	27.1	12.4	94.7		5.1			
Sea urchins			17.7	0.1		52.2		467.1	
Sea stars	22.8	13.6	4.7	3.6		6.0		119.6	6.4
Other invertebrates	30.8	41.1	15.2	10.6		44.6	72.9	108.1	23.9

Table A-l--Continued.

Haul number	123	124	125	126	127	128	129	130
Start date & time	11/19/95 8:38	11/19/95 13:04	11/19/95 16:38	11/19/95 20:45	11/20/95 4:20	11/20/95 7:29	11/20/95 10:24	11/20/95 12:59
Start latitude	4154.15	4152.17	4156.44	4153.93	4229.61	4226.98	4224.73	4224.58
Start longitude	12439.55	12504.02	12503.03	12453.61	12451.09	12448.96	12444.62	12444.67
End latitude	4155.26	4153.42	4157.05	4152.91	4228.87	4227.89	4225.64	4225.25
End longitude	12439.87	12504.09	12503.05	12454.41	12452.56	12450.23	12445.29	12445.22
Bottom depth (m)	632	1175	1088	851	648	435	228	235
Duration (hr)	0.52	0.57	0.27	0.5	0.54	0.52	0.44	0.36
Distance fished (km)	2.153	2.408	1.135	2.217	2.484	2.468	1.956	1.482
Net width (m)	18.11	17.15	17.24	17.71	19.01	15.86	16.52	17.28
Net measured?	Y	N	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	1	0	7	0
Gear	172	172	172	172	172	172	172	172
Hagfish	0.9		0.4	1.7	0.7			
Brown catshark	7.7			1.0	2.1	77.9	2.9	
Spiny dogfish						222.0	1,416.1	1,165.4
Skates		5.1	3.6	4.1	1.2	80.6	12.4	6.1
Spotted ratfish							20.5	5.7
Other elasmobranchs						0.1		
Arrowtooth flounder						14.5		
Petrale sole								
English sole								
Dover sole	92.4	25.0	20.7	87.7	173.9	291.9	154.4	73.8
Deepsea sole	1.4	13.6	5.7	5.9				
Rex sole	48.7					81.9	2.8	3.3
Other flatfish						1.2	5.3	1.3
Sablefish	19.3	46.7	34.3	20.2	19.8	39.6	128.2	38.0
Grenadiers		97.4	102.5	2.3	60.0			
Pacific cod								
Pacific flatnose		24.0	3.7	0.0	0.0			
Lingcod								
Slickheads	0.4	1.4	15.0	4.5	14.0			
Eelpouts	2.4		3.1	2.8	5.5	10.2	3.8	3.2
Pacific whiting	1.7		0.7		2.6	90.8	1.6	4.2
Other roundfish	1.4	0.8	2.2	2.6	1.3	3.4	35.3	4.9
Shortspine thornyhead	18.8	36.2	6.4	9.2	2.8	4.7	25.1	22.1
Longspine thornyhead	136.8	76.1	45.8	106.5	11.0	0.2		
Pacific ocean perch								
Darkblotched rockfish								
Splitnose rockfish							19.5	24.9
Greenstriped rockfish							1.0	
Other rockfish						3.6	95.0	3.3
True tanner crab	285.8	15.1	10.9	20.1	54.2			
Sea urchins					0.6	9.8	6.9	1.3
Sea stars	1.3	20.1	4.0	4.8	8.8	10.1	3.3	54.3
Other invertebrates	10.1	70.4	24.2	48.8	21.8	31.8	137.3	69.0

APPENDIX B

Relative Abundance

Appendix B contains listings of all fish and invertebrate species encountered during the 1995 West Coast upper continental slope bottom trawl survey, ranked in order of relative abundance by catch per unit effort (CPUE in kg/ha). Ranks are presented by by depth stratum and for all depth strata combined.

Table B-l.--Rank or&r of relative abundance (kg/ha) of fish and invertebrate species by depth stratum for the Eureka area from the 1995 West Coast upper continental slope bottom trawl survey. Stratum 1 = 183-366 m, Stratum 2 = 367-549 m, Stratum 3 = 550-732 m, Stratum 4 = 733 - 914 m, Stratum 5 = 915-1,097 m, and Stratum 6 = 1,098-1,280 m.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
1	1	65.250	23.2	0.050947	0.129952	*Merluccius productus*	Pacific hake
2	1	63.615	55.9	0.049670	0.179622	*Squalus acanthias*	Spiny dogfish
3	1	25.544	21.4	0.019945	0.414664	*Microstomus pacificus*	Dover sole
4	1	9.649	36.2	0.007534	0.718181	*Sebastes diploproa*	Splitnose rockfish
5	1	8.818	56.8	0.006885	0.739118	*Anoplopoma fimbria*	Sablefish
6	1	8.538	37.7	0.006667	0.745784	*Sebastes saxicola*	Stripetail rockfish
7	1	7.089	55.9	0.005535	0.775854	*Brisaster sp.*	
8	1	6.752	28.6	0.005272	0.791926	*Cancer magister*	Dungeness crab
9	1	6.612	24.0	0.005163	0.797089	*Raja rhina*	Longnose skate
10	1	5.576	44.1	0.004354	0.815802	Holothuroidea	Sea cucumber
11	1	5.287	35.7	0.004128	0.824243	*Glyptocephalus zachirus*	Rex sole
12	1	4.836	19.5	0.003776	0.831834	*Sebastolobus alascanus*	Shortspine thornyhead
13	1	3.476	18.9	0.002714	0.866971	*Bathyraja interrupta*	Bering skate
14	1	3.044	40.6	0.002377	0.882133	*Rathbunaster californicus*	
15	1	2.909	41.9	0.002272	0.889070	*Allocentrotus fragilis*	Orange-pink sea urchin
16	1	2.804	31.0	0.002190	0.891259	*Lycodes cortezianus*	Bigfin eelpout
17	1	2.423	43.9	0.001892	0.903195	*Lyopsetta exilis*	Slender sole
18	1	2.026	61.1	0.001582	0.908361	Actiniaria (order)	Sea anemone
19	1	1.777	44.7	0.001387	0.918523	*Hydrolagus colliei*	Spotted ratfish
20	1	1.565	78.1	0.001222	0.929875	*Sebastes elongatus*	Greenstriped rockfish
21	1	1.306	66.5	0.001020	0.937732	*Ophiodon elongatus*	Lingcod
22	1	1.149	31.6	0.000897	0.940625	*Apristurus brunneus*	Brown cat shark
23	1	1.133	70.8	0.000885	0.941510	*Sebastes zacentrus*	Sharpchin rockfish
24	1	1.120	24.2	0.000874	0.943265	*Luidia foliata*	
25	1	0.882	73.3	0.000689	0.953943	*Oncorhynchus tshawytscha*	Chinook salmon
26	1	0.777	98.8	0.000607	0.959725	*Sebastolobus altivelis*	Longspine thornyhead
27	1	0.744	38.9	0.000581	0.960908	Scyphozoa (class)	Jellyfish
28	1	0.600	47.1	0.000469	0.967714	*Sebastes goodei*	Chilipepper
29	1	0.597	39.3	0.000466	0.968180	*Sebastes crameri*	Darkblotched rockfish
30	1	0.540	84.5	0.000422	0.970827	*Lycodes diapterus*	Black eelpout
31	1	0.461	71.2	0.000360	0.973922	*Hippoglossus stenolepis*	Pacific halibut
32	1	0.459	30.5	0.000358	0.974280	*Eopsetta jordani*	Petrale sole
33	1	0.351	68.6	0.000274	0.981088	*Neptunea amianta*	
34	1	0.341	48.4	0.000266	0.981624	*Sebastes babcocki*	Redbanded rockfish
35	1	0.322	87.4	0.000251	0.982657	*Sebastes jordani*	Shortbelly rockfish
36	1	0.310	80.3	0.000242	0.983888	*Parophrys vetulus*	English sole
37	1	0.280	42.3	0.000218	0.985024	*Atheresthes stomias*	Arrowtooth flounder
38	1	0.225	25.4	0.000176	0.987391	*Careproctus melanurus*	Blacktail snailfish
39	1	0.222	57.5	0.000174	0.987564	*Sebastes paucispinis*	Bocaccio
40	1	0.202	37.6	0.000157	0.988553	Paguridae	Hermit crab
41	1	0.186	73.3	0.000145	0.989898	*Sebastes entomelas*	Widow rockfish
42	1	0.185	97.1	0.000144	0.990042	*Chionoecetes tanneri*	Groved tanner crab
43	1	0.132	100.0	0.000103	0.992857	*Bathyraja trachura*	Black skate
44	1	0.130	100.0	0.000101	0.992959	*Parastichopus californicus*	
45	1	0.129	47.7	0.000101	0.993060	*Heterozonias alternatus*	
46	1	0.124	100.0	0.000097	0.993156	*Clupea pallasi*	Pacific herring
47	1	0.122	65.0	0.000095	0.993347	Cephlapoda (class)	Cephlapod unident.
48	1	0.110	63.6	0.000086	0.993705	*Sebastes alutus*	Pacific ocean perch
49	1	0.090	69.4	0.000070	0.994555	*Thrissacanthias penicillatus*	
50	1	0.082	100.0	0.000064	0.994891	*Allocentrotus sp.*	
51	1	0.079	100.0	0.000062	0.995015	*Torpedo californica*	Pacific electric ray
52	1	0.076	55.1	0.000059	0.995196	*Trachurus symmetricus*	Jack mackerel
53	1	0.060	99.1	0.000047	0.995991	Polychaeta (class)	Polychaete worm
54	1	0.057	79.4	0.000045	0.996172	*Myoxoderma platyacanthum*	
55	1	0.057	70.5	0.000045	0.996217	Aphroditidae	Sea mouse
56	1	0.052	79.5	0.000040	0.996723	*Eptatretus deani*	Black hagfish
57	1	0.042	94.4	0.000033	0.997063	*Pseudarchaster parelii*	
58	1	0.040	85.4	0.000031	0.997126	*Munida quadrispina*	
59	1	0.037	71.1	0.000029	0.997216	*Hippasteria californica*	
60	1	0.037	100.0	0.000029	0.997302	*Bathybembix bairdii*	

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
61	1	0.037	35.5	0.000029	0.997331	Cephlapoda (class)	Cephlapod unident.
62	1	0.036	68.6	0.000028	0.997388	Thaliacea (class)	Salps
63	1	0.034	100.0	0.000027	0.997525	*Opisthoteuthis californiana*	Flapjack devilfish
64	1	0.027	58.6	0.000021	0.997959	*Hippasteria spinosa*	
65	1	0.027	100.0	0.000021	0.997980	*Sebastes levis*	Cowcod
66	1	0.026	100.0	0.000021	0.998021	*Bothrocara brunneum*	Twoline eelpout
67	1	0.025	68.8	0.000020	0.998061	*Sebastes aurora*	Aurora rockfish
68	1	0.025	32.5	0.000020	0.998101	*Pandalopsis dispar*	Sidestripe shrimp
69	1	0.022	100.0	0.000017	0.998302	*Aphrocallistes vastus*	Clay pipe sponge
70	1	0.022	58.1	0.000017	0.998354	*Sebastes helvomaculatus*	Rosethorn rockfish
71	1	0.021	76.6	0.000016	0.998405	*Tritonia sp.*	
72	1	0.020	100.0	0.000016	0.998469	*Berryteuthis magister*	Magistrate armhook squid
73	1	0.020	100.0	0.000016	0.998501	*Albatrossia pectoralis*	Giant grenadier
74	1	0.018	100.0	0.000014	0.998662	*Pycnopodia helianthoides*	
75	1	0.015	100.0	0.000012	0.998816	*Lopholithodes foraminatus*	Box crab
76	1	0.014	100.0	0.000011	0.998972	*Alepocephalus tenebrosus*	California slickhead
77	1	0.013	45.9	0.000010	0.999053	Heteropoda	
78	1	0.011	73.4	0.000008	0.999135	*Bathylagus sp.*	Blacksmelt
79	1	0.011	100.0	0.000008	0.999159	*Lycenchelys sp.*	
80	1	0.010	81.7	0.000008	0.999223	*Sebastes proriger*	Redstripe rockfish
81	1	0.009	97.6	0.000007	0.999269	Gastropoda (class)	Gastropod unident.
82	1	0.009	93.0	0.000007	0.999283	*Stylasterias forreri*	
83	1	0.009	56.3	0.000007	0.999374	*Pandalus platyceros*	Spot shrimp
84	1	0.008	65.4	0.000006	0.999400	*Lycodes pacificus*	Blackbelly eelpout
85	1	0.007	100.0	0.000006	0.999482	*Scotoplanes theeli*	
86	1	0.007	100.0	0.000005	0.999509	*Nezumia liolepis*	Smooth grenadier
87	1	0.006	77.4	0.000005	0.999561	*Chauliodus macouni*	Pacific viperfish
88	1	0.005	100.0	0.000004	0.999640	*Icelinus filamentosus*	Threadfin sculpin
89	1	0.004	100.0	0.000003	0.999685	*Polinices lewisi*	
90	1	0.004	100.0	0.000003	0.999705	Gastropoda (class)	Gastropod unident.
91	1	0.004	100.0	0.000003	0.999711	*Xeneretmus latifrons*	Blacktip poacher
92	1	0.004	57.1	0.000003	0.999732	Gastropoda (class)	Gastropod unident.
93	1	0.003	100.0	0.000003	0.999754	*Radulinus asprellus*	Slim sculpin
94	1	0.003	100.0	0.000003	0.999767	*Pasiphaea pacifica*	Pacific glass shrimp
95	1	0.003	100.0	0.000002	0.999804	*Cancer productus*	Red rock crab
96	1	0.002	100.0	0.000002	0.999816	*Vampyroteuthis infernalis*	
97	1	0.002	100.0	0.000001	0.999843	*Lycodema barbatum*	Bearded eelpout
98	1	0.002	100.0	0.000001	0.999850	*Liponemis brevicornis*	
99	1	0.002	100.0	0.000001	0.999854	*Pteraster tesselatus*	
100	1	0.002	73.1	0.000001	0.999869	Gastropod	Snail
101	1	0.002	100.0	0.000001	0.999871	*Antimora microlepis*	Pacific flatnose
102	1	0.002	100.0	0.000001	0.999876	*Loligo opalescens*	California market squid
103	1	0.002	100.0	0.000001	0.999884	*Lestidiops ringens*	Slender barracudina
104	1	0.001	100.0	0.000001	0.999906	*Pandalus jordani*	Ocean shrimp
105	1	0.001	71.4	0.000001	0.999907	*Careproctus sp.*	
106	1	0.001	89.0	0.000001	0.999916	*Apristurus brunneus*	
107	1	0.001	100.0	0.000001	0.999928	*Pasiphaea tarda*	Crimson pasiphaeid
108	1	0.001	97.9	0.000001	0.999936	*Ophiura sarsi*	
109	1	0.001	100.0	0.000000	0.999961	*Bathymasteridae*	Ronquil
110	1	0.001	100.0	0.000000	0.999963	*Bathyagonus nigripinnis*	Blackfin poacher
111	1	<0.001	82.7	0.000000	0.999964	Myctophidae	Lanternfish
112	1	<0.001	100.0	0.000000	0.999968	*Polinices sp.*	
113	1	<0.001	100.0	0.000000	0.999969	*Paracaudina chilensis*	
114	1	<0.001	100.0	0.000000	0.999976	*Argis sp.*	
115	1	<0.001	100.0	0.000000	0.999978	*Rossia pacifica*	Eastern pacific bobtail
116	1	<0.001	95.7	0.000000	0.999978	*Eualus sp.*	
117	1	<0.001	100.0	0.000000	0.999982	Porifera	Sponge
118	1	<0.001	100.0	0.000000	0.999982	Moridae	Codlings
119	1	<0.001	100.0	0.000000	0.999982	Galatheidae	Galatheid crab
120	1	<0.001	100.0	0.000000	0.999983	*Cololabis saira*	Pacific saury
121	1	<0.001	100.0	0.000000	0.999985	*Crossaster papposus*	Rose sea star
122	1	<0.001	100.0	0.000000	0.999985	*Pseudarchaster parelii*	
123	1	<0.001	100.0	0.000000	0.999987	*Stylatula sp.*	Slender seawhip
124	1	<0.001	100.0	0.000000	0.999988	*Bathyagonus pentacanthus*	Bigeye poacher
125	1	<0.001	100.0	0.000000	0.999990	*Molpadia sp.*	

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
126	1	<0.001	100.0	0.000000	0.999993	Rajiidae	Rajiidae
127	1	<0.001	100.0	0.000000	0.999993	Gorgonacea (order)	Coral
128	1	<0.001	100.0	0.000000	0.999994	*Antiplanes picna*	
129	1	<0.001	69.9	0.000000	0.999994	*Tarletonbeania crenularis*	Blue lanternfish
130	1	<0.001	100.0	0.000000	0.999995	*Symbolophorus californiensis*	California lanternfish
132	1	<0.001	100.0	0.000000	0.999996	*Crangon communis*	Twospine crangon
131	1	<0.001	100.0	0.000000	0.999996	*Hyas* sp.	
133	1	<0.001	100.0	0.000000	0.999996	*Argentina sialis*	Pacific argentine
134	1	<0.001	100.0	0.000000	0.999996	Shark egg case	
135	1	<0.001	73.4	0.000000	0.999997	Ophiuroid	Brittlestarfish
136	1	<0.001	100.0	0.000000	0.999998	Sipuncula (phylum)	Sipunculid worm
137	1	<0.001	100.0	0.000000	0.999999	*Trachipterus altivelis*	King-of-the-salmon
138	1	<0.001	100.0	0.000000	1.000000	Crangonidae	Crangonid shrimp
139	1	<0.001	100.0	0.000000	1.000000	Isopoda (order)	Isopod
	Total	251.990					
1	2	101.185	20.2	0.079005	0.079005	*Merluccius productus*	Pacific hake
2	2	51.645	54.7	0.040324	0.219947	*Ophiura sarsi*	
3	2	32.696	21.7	0.025529	0.305010	*Microstomus pacificus*	Dover sole
4	2	30.837	29.1	0.024077	0.353483	*Squalus acanthias*	Spiny dogfish
5	2	17.884	16.2	0.013963	0.545055	*Glyptocephalus zachirus*	Rex sole
6	2	12.565	38.9	0.009811	0.641483	*Brisaster* sp.	
7	2	10.926	39.0	0.008531	0.686950	*Myoxoderma platyacanthum*	
8	2	8.253	40.9	0.006444	0.752229	*Raja rhina*	Longnose skate
9	2	6.042	12.0	0.004717	0.806904	*Anoplopoma fimbria*	Sablefish
10	2	5.524	100.0	0.004313	0.820115	*Aphrocallistes vastus*	Clay pipe sponge
11	2	4.772	16.3	0.003726	0.839330	*Lycodes diapterus*	Black eelpout
12	2	4.130	17.6	0.003225	0.849458	*Sebastolobus alascanus*	Shortspine thornyhead
13	2	3.755	27.6	0.002932	0.861446	*Sebastes aurora*	Aurora rockfish
14	2	3.599	35.6	0.002810	0.864256	*Neptunea amianta*	
15	2	3.196	54.1	0.002495	0.877340	*Atheresthes stomias*	Arrowtooth flounder
16	2	2.930	39.2	0.002288	0.886798	*Apristurus brunneus*	Brown cat shark
17	2	2.676	33.8	0.002089	0.895501	Actiniaria (order)	Sea anemone
18	2	2.488	36.7	0.001942	0.897443	*Allocentrotus fragilis*	Orange-pink sea urchin
19	2	1.606	20.5	0.001254	0.924974	*Lycodes cortezianus*	Bigfin eelpout
20	2	1.577	74.6	0.001231	0.926205	*Sebastolobus altivelis*	Longspine thornyhead
21	2	1.009	56.6	0.000788	0.947367	Scyphozoa (class)	Jellyfish
22	2	0.928	97.0	0.000725	0.951842	Holothuroidea	Sea cucumber
23	2	0.860	41.4	0.000672	0.955966	*Bathyraja interrupta*	Bering skate
24	2	0.712	47.7	0.000556	0.962605	*Luidia foliata*	
25	2	0.668	41.7	0.000522	0.964760	*Eptatretus deani*	Black hagfish
26	2	0.551	28.4	0.000430	0.970406	Cephlapoda (class)	Cephlapod unident.
27	2	0.454	65.4	0.000355	0.974635	*Rathbunaster californicus*	
28	2	0.383	18.2	0.000299	0.978813	*Careproctus melanurus*	Blacktail snailfish
29	2	0.320	71.3	0.000250	0.982907	*Albatrossia pectoralis*	Giant grenadier
30	2	0.244	64.5	0.000190	0.986838	*Thrissacanthias penicillatus*	
31	2	0.241	41.3	0.000188	0.987215	*Bothrocara brunneum*	Twoline eelpout
32	2	0.198	48.5	0.000155	0.988862	*Chionoecetes tanneri*	Groved tanner crab
33	2	0.179	80.3	0.000140	0.990323	*Embassichthys bathybius*	Deepsea sole
34	2	0.168	50.3	0.000131	0.990724	*Heterozonias alternatus*	
35	2	0.168	100.0	0.000131	0.990855	*Hippoglossus stenolepis*	Pacific halibut
36	2	0.157	36.1	0.000123	0.991494	*Liponemis brevicornis*	
37	2	0.155	45.7	0.000121	0.991737	*Opisthoteuthis californiana*	Flapjack devilfish
38	2	0.153	68.3	0.000120	0.991977	*Allocentrotus* sp.	
39	2	0.151	40.8	0.000118	0.992095	*Lyopsetta exilis*	Slender sole
40	2	0.140	50.5	0.000109	0.992434	Paguridae	Hermit crab
41	2	0.119	63.6	0.000093	0.993440	*Eopsetta jordani*	Petrale sole
42	2	0.085	96.1	0.000066	0.994827	*Onychoteuthidae*	
43	2	0.079	79.4	0.000061	0.995076	Aphroditidae	Sea mouse
44	2	0.073	70.0	0.000057	0.995429	*Sebastes aleutianus*	Rougheye rockfish
45	2	0.057	33.8	0.000045	0.996127	Cephlapoda (class)	Cephlapod unident.
46	2	0.055	90.4	0.000043	0.996348	*Neptunea* sp.	
47	2	0.054	100.0	0.000042	0.996476	*Sebastes babcocki*	Redbanded rockfish
48	2	0.036	87.7	0.000028	0.997444	*Oregonia bifurca*	
49	2	0.031	69.8	0.000024	0.997778	*Berryteuthis magister*	Magistrate armhook squid

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
50	2	0.024	68.7	0.000019	0.998158	*Sebastes crameri*	Darkblotched rockfish
51	2	0.019	37.5	0.000015	0.998605	*Coryphaenoides acrolepis*	Pacific grenadier
52	2	0.017	100.0	0.000013	0.998717	Hexactinellida	Glass sponge
53	2	0.017	100.0	0.000013	0.998730	*Cancer magister*	Dungeness crab
54	2	0.015	98.8	0.000012	0.998804	*Scotoplanes theeli*	
55	2	0.014	61.9	0.000011	0.998908	*Antimora microlepis*	Pacific flatnose
56	2	0.012	100.0	0.000010	0.999073	*Rossia pacifica*	Eastern pacific bobtail
57	2	0.012	97.2	0.000009	0.999082	*Pasiphaea pacifica*	Pacific glass shrimp
58	2	0.012	73.3	0.000009	0.999091	*Sebastes diploproa*	Splitnose rockfish
59	2	0.010	93.1	0.000008	0.999176	*Colus sp.*	
60	2	0.010	100.0	0.000008	0.999200	*Sebastes alutus*	Pacific ocean perch
61	2	0.010	100.0	0.000008	0.999207	*Bathylagus pacificus*	Pacific blacksmelt
62	2	0.010	48.0	0.000008	0.999254	*Pseudarchaster parelii*	
63	2	0.010	79.1	0.000008	0.999261	*Pseudarchaster parelii*	
64	2	0.009	72.1	0.000007	0.999276	*Buccinum sp.*	
65	2	0.009	100.0	0.000007	0.999381	*Allocyttus folletti*	Oxeye oreo
66	2	0.007	69.7	0.000006	0.999448	*Molpadia sp.*	
67	2	0.007	42.9	0.000006	0.999477	Heteropoda	
68	2	0.006	68.4	0.000004	0.999631	*Hippasteria californica*	
69	2	0.005	84.6	0.000004	0.999674	Gastropoda (class)	Gastropod unident.
70	2	0.005	38.8	0.000004	0.999678	*Chauliodus macouni*	Pacific viperfish
71	2	0.004	100.0	0.000003	0.999688	*Fusitriton oregonensis*	Oregon triton
72	2	0.004	99.1	0.000003	0.999695	Ophiuroid	Brittlestarfish
73	2	0.004	100.0	0.000003	0.999723	Malacostraca (class)	Malacostracan unident.
74	2	0.004	100.0	0.000003	0.999735	*Stylatula sp.*	Slender seawhip
75	2	0.003	75.1	0.000002	0.999794	Sipuncula (phylum)	Sipunculid worm
76	2	0.003	100.0	0.000002	0.999796	*Alepocephalus tenebrosus*	California slickhead
77	2	0.003	100.0	0.000002	0.999798	*Pseudarchaster sp.*	
78	2	0.003	100.0	0.000002	0.999802	*Tochuina tetraquetra*	Giant orange tochui
79	2	0.002	72.9	0.000002	0.999814	*Nezumia stelgidolepis*	California grenadier
80	2	0.002	100.0	0.000001	0.999845	Zoroasteridae	
81	2	0.002	68.5	0.000001	0.999875	*Molpadia intermedia*	
82	2	0.002	100.0	0.000001	0.999879	*Tritonia sp.*	
83	2	0.002	100.0	0.000001	0.999883	*Hippasteria spinosa*	
84	2	0.001	83.8	0.000001	0.999896	*Bathyagonus nigripinnis*	Blackfin poacher
85	2	0.001	100.0	0.000001	0.999897	Gorgonacea (order)	Coral
86	2	0.001	77.4	0.000001	0.999901	*Cololabis saira*	Pacific saury
87	2	0.001	100.0	0.000001	0.999920	*Pannychia moseleyi*	
88	2	0.001	68.3	0.000001	0.999923	Rajiidae	Rajiidae
89	2	0.001	100.0	0.000001	0.999926	*Stylasterias forreri*	
90	2	0.001	100.0	0.000001	0.999927	*Sagamichthys abei*	Shining tubeshoulder
91	2	0.001	100.0	0.000001	0.999935	Shark egg case	
92	2	0.001	100.0	0.000001	0.999948	*Paracaudina chilensis*	
93	2	0.001	100.0	0.000001	0.999951	*Lycodapus endemoscotus*	Deepwater eelpout
94	2	0.001	80.0	0.000000	0.999954	Pennatulacea (order)	Sea pen
95	2	0.001	100.0	0.000000	0.999964	*Crossaster sp.*	
96	2	<0.001	40.0	0.000000	0.999965	Myctophidae	Lanternfish
97	2	<0.001	100.0	0.000000	0.999965	*Lampetra tridentata*	Pacific lamprey
98	2	<0.001	100.0	0.000000	0.999972	*Bathylagus sp.*	Blacksmelt
99	2	<0.001	72.3	0.000000	0.999973	*Careproctus sp.*	
100	2	<0.001	100.0	0.000000	0.999973	*Elassodiscus caudatus*	Humpback snailfish
101	2	<0.001	100.0	0.000000	0.999977	*Paralepis atlantica*	Duckbill barracudina
102	2	<0.001	100.0	0.000000	0.999979	Gastropoda (class)	Gastropod unident.
103	2	<0.001	100.0	0.000000	0.999981	*Xeneretmus latifrons*	Blacktip poacher
104	2	<0.001	100.0	0.000000	0.999990	*Pasiphaea tarda*	Crimson pasiphaeid
105	2	<0.001	100.0	0.000000	0.999990	*Tarletonbeania crenularis*	Blue lanternfish
106	2	<0.001	100.0	0.000000	0.999992	*Lampanyctus ritteri*	Broadfin lanternfish
107	2	<0.001	100.0	0.000000	0.999996	Crinoidea (class)	Crinoidea (class)
108	2	<0.001	100.0	0.000000	0.999997	*Paraliparis sp.*	
109	2	<0.001	100.0	0.000000	0.999998	*Leptychaster sp.*	
110	2	<0.001	100.0	0.000000	0.999999	*Pandalopsis dispar*	Sidestripe shrimp
111	2	<0.001	100.0	0.000000	0.999999	Gastropod	Snail
112	2	<0.001	100.0	0.000000	0.999999	*Ophiopholis aculeata*	
113	2	<0.001	100.0	0.000000	1.000000	Pasiphaeidae	Pasiphaeid shrimp
	Total	317.005					

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
1	3	23.520	18.7	0.018364	0.452323	*Microstomus pacificus*	Dover sole
2	3	19.016	15.6	0.014848	0.516863	*Sebastolobus altivelis*	Longspine thornyhead
3	3	18.222	25.2	0.014228	0.531091	*Chionoecetes tanneri*	Groved tanner crab
4	3	12.096	28.9	0.009445	0.660560	*Anoplopoma fimbria*	Sablefish
5	3	10.306	33.0	0.008047	0.694997	*Albatrossia pectoralis*	Giant grenadier
6	3	4.187	25.2	0.003269	0.846233	*Sebastolobus alascanus*	Shortspine thornyhead
7	3	3.321	90.2	0.002593	0.872258	*Aphrocallistes vastus*	Clay pipe sponge
8	3	3.312	62.4	0.002586	0.874845	*Merluccius productus*	Pacific hake
9	3	3.044	70.8	0.002377	0.884510	*Brisaster sp.*	
10	3	2.277	40.3	0.001778	0.906779	*Glyptocephalus zachirus*	Rex sole
11	3	1.269	15.2	0.000991	0.939728	*Neptunea amianta*	
12	3	1.050	23.3	0.000820	0.945772	*Apristurus brunneus*	Brown cat shark
13	3	0.867	38.6	0.000677	0.954620	*Raja rhina*	Longnose skate
14	3	0.863	23.9	0.000674	0.955294	*Lycodes diapterus*	Black eelpout
15	3	0.807	83.9	0.000630	0.957888	*Allocentrotus fragilis*	Orange-pink sea urchin
16	3	0.780	19.3	0.000609	0.959118	Actiniaria (order)	Sea anemone
17	3	0.675	14.9	0.000527	0.964239	*Heterozonias alternatus*	
18	3	0.504	29.0	0.000394	0.972451	Scyphozoa (class)	Jellyfish
19	3	0.475	32.1	0.000371	0.972822	*Eptatretus deani*	Black hagfish
20	3	0.392	43.0	0.000306	0.977906	*Alepocephalus tenebrosus*	California slickhead
21	3	0.373	23.5	0.000291	0.979402	*Embassichthys bathybius*	Deepsea sole
22	3	0.363	47.8	0.000283	0.979972	*Opisthoteuthis californiana*	Flapjack devilfish
23	3	0.360	20.7	0.000281	0.980254	*Thrissacanthias penicillatus*	
24	3	0.332	23.4	0.000259	0.982406	*Bothrocara brunneum*	Twoline eelpout
25	3	0.313	66.5	0.000244	0.983646	Cephlapoda (class)	Cephlapod unident.
26	3	0.275	56.3	0.000215	0.985456	*Squalus acanthias*	Spiny dogfish
27	3	0.206	44.9	0.000161	0.988236	*Coryphaenoides acrolepis*	Pacific grenadier
28	3	0.203	100.0	0.000159	0.988395	*Scotoplanes theeli*	
29	3	0.169	54.2	0.000132	0.990593	*Bathyraja trachura*	Black skate
30	3	0.164	22.9	0.000128	0.991244	*Careproctus melanurus*	Blacktail snailfish
31	3	0.139	44.5	0.000109	0.992543	*Lycenchelys sp.*	
32	3	0.133	26.2	0.000104	0.992754	Cephlapoda (class)	Cephlapod unident.
33	3	0.106	73.2	0.000082	0.993872	*Bathybembix bairdii*	
34	3	0.089	39.9	0.000069	0.994693	*Myoxoderma platyacanthum*	
35	3	0.078	20.6	0.000061	0.995137	*Bathylagus sp.*	Blacksmelt
36	3	0.069	93.4	0.000053	0.995594	*Pannychia moseleyi*	
37	3	0.062	78.1	0.000048	0.995944	*Antimora microlepis*	Pacific flatnose
38	3	0.055	100.0	0.000043	0.996391	*Trachipterus altivelis*	King-of-the-salmon
39	3	0.033	100.0	0.000026	0.997603	*Neptunea sp.*	
40	3	0.033	100.0	0.000025	0.997654	*Lycodes cortezianus*	Bigfin eelpout
41	3	0.032	72.1	0.000025	0.997679	*Berryteuthis magister*	Magistrate armhook squid
42	3	0.032	100.0	0.000025	0.997730	*Atheresthes stomias*	Arrowtooth flounder
43	3	0.030	66.4	0.000023	0.997826	*Hippasteria californica*	
44	3	0.020	100.0	0.000016	0.998485	*Luidia foliata*	
45	3	0.019	89.6	0.000015	0.998591	*Talismania bifurcata*	Threadfin slickhead
46	3	0.018	46.9	0.000014	0.998634	Paguridae	Hermit crab
47	3	0.017	54.1	0.000013	0.998704	Zoroasteridae	
48	3	0.016	91.6	0.000012	0.998780	*Diplopteraster multipes*	
49	3	0.015	29.6	0.000012	0.998828	*Chauliodus macouni*	Pacific viperfish
50	3	0.014	68.5	0.000011	0.998940	*Icichthys lockingtoni*	Medusafish
51	3	0.013	100.0	0.000010	0.998993	Gastropoda (class)	Gastropod unident.
52	3	0.013	100.0	0.000010	0.999043	*Trachurus symmetricus*	Jack mackerel
53	3	0.010	100.0	0.000008	0.999192	*Argentina sialis*	Pacific argentine
54	3	0.010	100.0	0.000008	0.999231	*Hippasteria sp.*	
55	3	0.010	64.9	0.000008	0.999246	Holothuroidea	Sea cucumber
56	3	0.009	37.0	0.000007	0.999340	*Lampanyctus ritteri*	Broadfin lanternfish
57	3	0.009	53.5	0.000007	0.999361	Heteropoda	
58	3	0.008	58.4	0.000006	0.999425	*Pasiphaea tarda*	Crimson pasiphaeid
59	3	0.007	95.1	0.000006	0.999460	*Rathbunaster californicus*	
60	3	0.007	81.6	0.000005	0.999488	*Vampyroteuthis infernalis*	
61	3	0.007	20.9	0.000005	0.999499	Myctophidae	Lanternfish
62	3	0.006	44.2	0.000005	0.999576	*Tactostoma macropus*	Longfin dragonfish
63	3	0.006	59.4	0.000005	0.999595	*Bathyagonus nigripinnis*	Blackfin poacher
64	3	0.006	49.6	0.000005	0.999613	*Pasiphaea pacifica*	Pacific glass shrimp

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
65	3	0.005	73.7	0.000004	0.999652	*Tritonia* sp.	
66	3	0.005	65.8	0.000004	0.999671	*Lampanyctus* sp.	
67	3	0.004	76.5	0.000003	0.999714	*Crossaster borealis*	
68	3	0.004	100.0	0.000003	0.999717	*Crossaster* sp.	
69	3	0.004	100.0	0.000003	0.999726	*Ampheraster* sp.	
70	3	0.003	95.2	0.000003	0.999772	*Nearchaster aciculosus*	
71	3	0.002	76.6	0.000002	0.999840	*Aristostomias scintillans*	Shining loosejaw
72	3	0.002	59.1	0.000001	0.999844	*Chorilia longipes*	Longhorned decorator crab
73	3	0.002	100.0	0.000001	0.999847	*Melanostomiidae*	Scaleless dragonfish
74	3	0.002	88.8	0.000001	0.999866	*Sagamichthys abei*	Shining tubeshoulder
75	3	0.002	99.1	0.000001	0.999868	Pennatulacea (order)	Sea pen
76	3	0.001	100.0	0.000001	0.999889	Alcyonacea (order)	Soft coral
77	3	0.001	100.0	0.000001	0.999915	*Cololabis saira*	Pacific saury
78	3	0.001	100.0	0.000001	0.999922	*Ceramaster japonicus*	Red bat star
79	3	0.001	100.0	0.000001	0.999924	*Paraliparis* sp.	
80	3	0.001	73.8	0.000001	0.999934	*Leuroglossus stilbius*	California smoothtongue
81	3	0.001	56.2	0.000001	0.999934	*Liponemis brevicornis*	
82	3	0.001	100.0	0.000001	0.999950	Asteroidea (class)	Starfish unident.
83	3	0.001	100.0	0.000001	0.999952	*Leptychaster* sp.	
84	3	0.001	68.6	0.000000	0.999957	*Loligo opalescens*	California market squid
85	3	0.001	60.5	0.000000	0.999960	*Lycodapus fierasfer*	Blackmouth eelpout
86	3	0.001	72.3	0.000000	0.999963	Gorgonacea (order)	Coral
87	3	<0.001	100.0	0.000000	0.999965	*Bathophilus flemingi*	Highfin dragonfish
88	3	<0.001	77.1	0.000000	0.999966	Gastropoda (class)	Gastropod unident.
89	3	<0.001	100.0	0.000000	0.999966	*Fusitriton oregonensis*	Oregon triton
90	3	<0.001	55.1	0.000000	0.999968	Rajiidae	Rajiidae
91	3	<0.001	100.0	0.000000	0.999969	*Amphiophiura ponderosa*	
92	3	<0.001	64.3	0.000000	0.999970	*Oregonia bifurca*	
93	3	<0.001	100.0	0.000000	0.999970	*Hippasteria spinosa*	
94	3	<0.001	68.5	0.000000	0.999972	*Ctenodiscus crispatus*	Common mud star
95	3	<0.001	44.8	0.000000	0.999975	*Eualus macrophthalmus*	
96	3	<0.001	69.1	0.000000	0.999976	*Lestidiops ringens*	Slender barracudina
97	3	<0.001	100.0	0.000000	0.999984	*Luidiaster dawsoni*	
98	3	<0.001	100.0	0.000000	0.999985	*Eualus* sp.	
99	3	<0.001	100.0	0.000000	0.999987	*Nezumia stelgidolepis*	California grenadier
100	3	<0.001	71.4	0.000000	0.999989	*Tarletonbeania crenularis*	Blue lanternfish
101	3	<0.001	100.0	0.000000	0.999991	Ophiuroid	Brittlestarfish
102	3	<0.001	100.0	0.000000	0.999994	*Stenobrachius leucopsarus*	Northern lampfish
103	3	<0.001	100.0	0.000000	0.999994	Porifera	Sponge
104	3	<0.001	100.0	0.000000	0.999996	*Careproctus* sp.	
105	3	<0.001	100.0	0.000000	0.999996	Brachiopoda (class)	Brachiopod unident.
106	3	<0.001	100.0	0.000000	0.999996	*Psolus* sp.	
108	3	<0.001	100.0	0.000000	0.999997	*Nemichthys scolopaceus*	Slender snipe eel
107	3	<0.001	100.0	0.000000	0.999997	*Ophiura sarsi*	
110	3	<0.001	100.0	0.000000	0.999997	*Cataetyx rubrirostris*	Rubynose brotula
109	3	<0.001	100.0	0.000000	0.999997	*Lycodapus dermatinus*	Looseskin eelpout
111	3	<0.001	100.0	0.000000	0.999998	*Benthalbella* sp.	
112	3	<0.001	100.0	0.000000	1.000000	*Delectopecten randolphi*	Randolph scallop
113	3	<0.001	100.0	0.000000	1.000000	Malacostraca (class)	Malacostracan unident.
	Total	110.920					
1	4	35.333	6.3	0.027588	0.279481	*Sebastolobus altivelis*	Longspine thornyhead
2	4	17.479	23.6	0.013647	0.558702	*Chionoecetes tanneri*	Groved tanner crab
3	4	16.793	12.4	0.013112	0.571814	*Microstomus pacificus*	Dover sole
4	4	9.094	29.9	0.007100	0.725281	*Anoplopoma fimbria*	Sablefish
5	4	6.529	34.9	0.005098	0.802187	*Albatrossia pectoralis*	Giant grenadier
6	4	3.095	48.7	0.002416	0.879757	*Sebastolobus alascanus*	Shortspine thornyhead
7	4	1.836	46.9	0.001433	0.914315	*Brisaster* sp.	
8	4	1.806	10.9	0.001410	0.917136	*Embassichthys bathybius*	Deepsea sole
9	4	1.567	25.6	0.001223	0.928654	*Alepocephalus tenebrosus*	California slickhead
10	4	1.034	47.2	0.000807	0.946579	*Coryphaenoides acrolepis*	Pacific grenadier
11	4	0.844	28.8	0.000659	0.956625	*Opisthoteuthis californiana*	Flapjack devilfish
12	4	0.772	58.0	0.000603	0.960327	Actiniaria (order)	Sea anemone
13	4	0.721	11.0	0.000563	0.962049	*Neptunea amianta*	
14	4	0.587	17.8	0.000459	0.968638	*Lycenchelys* sp.	

Table B-l.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
15	4	0.572	14.5	0.000447	0.969536	*Heterozonias alternatus*	
16	4	0.530	36.7	0.000414	0.971241	Scyphozoa (class)	Jellyfish
17	4	0.474	63.8	0.000370	0.973192	*Bathybembix bairdii*	
18	4	0.397	100.0	0.000310	0.977291	*Icosteus aenigmaticus*	Ragfish
19	4	0.389	14.6	0.000304	0.978210	*Eptatretus deani*	Black hagfish
20	4	0.389	25.2	0.000304	0.978514	*Apristurus brunneus*	Brown cat shark
21	4	0.368	79.7	0.000288	0.979689	*Aphrocallistes vastus*	Clay pipe sponge
22	4	0.334	32.4	0.000261	0.982147	*Bothrocara brunneum*	Twoline eelpout
23	4	0.248	71.4	0.000194	0.986456	*Hippasteria californica*	
24	4	0.193	59.4	0.000151	0.989164	*Tritonia sp.*	
25	4	0.180	14.8	0.000141	0.990183	*Bathylagus sp.*	Blacksmelt
26	4	0.148	45.5	0.000115	0.992210	*Bathyraja trachura*	Black skate
27	4	0.115	24.7	0.000090	0.993530	*Thrissacanthias penicillatus*	
28	4	0.114	87.8	0.000089	0.993619	*Embryx crotalinus*	Snakehead eelpout
29	4	0.108	41.5	0.000084	0.993789	*Talismania bifurcata*	Threadfin slickhead
30	4	0.100	16.8	0.000078	0.994266	*Merluccius productus*	Pacific hake
31	4	0.071	21.4	0.000056	0.995485	Cephlapoda (class)	Cephlapod unident.
32	4	0.058	73.2	0.000045	0.996082	*Alepisaurus ferox*	Longnose lancetfish
33	4	0.053	33.6	0.000041	0.996601	*Careproctus melanurus*	Blacktail snailfish
34	4	0.043	61.0	0.000033	0.996997	*Myoxoderma platyacanthum*	
35	4	0.041	40.5	0.000032	0.997095	Zoroasteridae	
36	4	0.036	98.5	0.000028	0.997416	Gorgonacea (order)	Coral
37	4	0.032	100.0	0.000025	0.997754	*Trachipterus altivelis*	King-of-the-salmon
38	4	0.025	90.6	0.000020	0.998081	*Squalus acanthias*	Spiny dogfish
39	4	0.025	49.4	0.000020	0.998120	*Crossaster borealis*	
40	4	0.023	29.3	0.000018	0.998285	*Antimora microlepis*	Pacific flatnose
41	4	0.020	100.0	0.000016	0.998453	*Luidia foliata*	
42	4	0.019	65.9	0.000015	0.998546	*Lycodes diapterus*	Black eelpout
43	4	0.019	58.6	0.000015	0.998576	*Buccinum sp.*	
44	4	0.019	100.0	0.000014	0.998620	*Coryphaenoides cinereus*	Popeye grenadier
45	4	0.017	100.0	0.000013	0.998743	*Lepidopus xantusi*	Scabbardfish
46	4	0.016	23.6	0.000012	0.998792	*Chauliodus macouni*	Pacific viperfish
47	4	0.015	30.8	0.000012	0.998840	Paguridae	Hermit crab
48	4	0.014	70.1	0.000011	0.998885	*Aphanopus carbo*	Black scabbardfish
49	4	0.014	47.2	0.000011	0.998962	*Vampyroteuthis infernalis*	
50	4	0.011	39.1	0.000009	0.999109	Heteropoda	
51	4	0.011	100.0	0.000009	0.999118	*Berryteuthis magister*	Magistrate armhook squid
52	4	0.011	28.0	0.000008	0.999143	*Lampanyctus ritteri*	Broadfin lanternfish
53	4	0.010	86.9	0.000008	0.999238	*Diplopteraster multipes*	
54	4	0.009	22.6	0.000007	0.999312	Myctophidae	Lanternfish
55	4	0.007	35.3	0.000005	0.999525	*Pasiphaea tarda*	Crimson pasiphaeid
56	4	0.006	41.9	0.000005	0.999566	*Lampanyctus sp.*	
57	4	0.006	32.4	0.000005	0.999604	*Tactostoma macropus*	Longfin dragonfish
58	4	0.006	97.8	0.000005	0.999609	*Icichthys lockingtoni*	Medusafish
59	4	0.006	54.4	0.000004	0.999623	Holothuroidea	Sea cucumber
60	4	0.005	100.0	0.000004	0.999663	*Rathbunaster californicus*	
61	4	0.004	100.0	0.000003	0.999692	*Glyptocephalus zachirus*	Rex sole
62	4	0.003	83.2	0.000003	0.999762	Gastropoda (class)	Gastropod unident.
63	4	0.002	100.0	0.000002	0.999818	*Solaster paxillatus*	
64	4	0.002	93.1	0.000002	0.999827	Pennatulacea (order)	Sea pen
65	4	0.002	71.0	0.000002	0.999829	*Pteraster tesselatus*	
66	4	0.002	100.0	0.000002	0.999832	*Pannychia moseleyi*	
67	4	0.002	100.0	0.000001	0.999864	Cephlapoda (class)	Cephlapod unident.
68	4	0.002	55.4	0.000001	0.999870	*Anoplogaster cornuta*	Fangtooth
69	4	0.002	72.5	0.000001	0.999873	*Nearchaster aciculosus*	
70	4	0.002	77.7	0.000001	0.999877	*Lycodapus dermatinus*	Looseskin eelpout
71	4	0.002	76.8	0.000001	0.999880	*Zoraster ophiurus*	
72	4	0.001	100.0	0.000001	0.999891	*Careproctus sp.*	
73	4	0.001	74.5	0.000001	0.999894	Rajiidae	Rajiidae
74	4	0.001	100.0	0.000001	0.999904	Gastropoda (class)	Gastropod unident.
75	4	0.001	67.0	0.000001	0.999912	*Sagamichthys abei*	Shining tubeshoulder
76	4	0.001	100.0	0.000001	0.999919	*Careproctus oregonensis*	Oregon snailfish
77	4	0.001	72.2	0.000001	0.999930	*Ceramaster japonicus*	Red bat star
78	4	0.001	100.0	0.000001	0.999932	*Ceramaster sp.*	
79	4	0.001	62.2	0.000001	0.999939	*Plicifusus griseus*	Gray whelk

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
80	4	0.001	100.0	0.000001	0.999941	*Benthalbella dentata*	Northern pearleye
82	4	0.001	100.0	0.000001	0.999943	*Ampheraster* sp.	
81	4	0.001	100.0	0.000001	0.999943	*Dipsacaster* sp.	
83	4	0.001	69.2	0.000001	0.999951	*Chorilia longipes*	Longhorned decorator crab
84	4	0.001	100.0	0.000001	0.999953	*Macropinna microstoma*	Barreleye
85	4	0.001	100.0	0.000000	0.999954	*Paragorgia* sp.	
86	4	0.001	100.0	0.000000	0.999955	*Bathyagonus nigripinnis*	Blackfin poacher
87	4	0.001	100.0	0.000000	0.999955	Thaliacea (class)	Salps
88	4	0.001	51.2	0.000000	0.999962	*Colus* sp.	
89	4	<0.001	42.2	0.000000	0.999967	*Tarletonbeania crenularis*	Blue lanternfish
90	4	<0.001	100.0	0.000000	0.999976	*Avocettina infans*	Blackline snipe eel
91	4	<0.001	100.0	0.000000	0.999977	Gastropod	Snail
92	4	<0.001	72.0	0.000000	0.999979	*Paraliparis* sp.	
93	4	<0.001	100.0	0.000000	0.999980	*Oregonia bifurca*	
94	4	<0.001	65.6	0.000000	0.999982	*Lycodapus fierasfer*	Blackmouth eelpout
95	4	<0.001	100.0	0.000000	0.999983	*Psilaster pectinatus*	
96	4	<0.001	100.0	0.000000	0.999985	*Liponemis brevicornis*	
97	4	<0.001	100.0	0.000000	0.999987	*Pteraster* sp.	
98	4	<0.001	100.0	0.000000	0.999990	*Leuroglossus stilbius*	California smoothtongue
99	4	<0.001	100.0	0.000000	0.999990	*Scopelosaurus harryi*	Scaly paperbone
100	4	<0.001	73.3	0.000000	0.999992	*Pasiphaea pacifica*	Pacific glass shrimp
101	4	<0.001	100.0	0.000000	0.999994	*Stenobrachius leucopsarus*	Northern lampfish
102	4	<0.001	100.0	0.000000	0.999996	*Paraliparis cephalus*	Swellhead snailfish
103	4	<0.001	100.0	0.000000	0.999996	Aphroditidae	Sea mouse
104	4	<0.001	100.0	0.000000	0.999997	Ascidian	Tunicate
105	4	<0.001	73.0	0.000000	0.999997	Cyclopteridae (Liparidinae)	Snailfish
106	4	<0.001	100.0	0.000000	0.999997	*Loligo opalescens*	California market squid
107	4	<0.001	100.0	0.000000	0.999998	*Liparis* sp.	
108	4	<0.001	100.0	0.000000	0.999998	*Henricia* sp.	
109	4	<0.001	100.0	0.000000	0.999998	Sternoptychidae	Hatchetfish
110	4	<0.001	100.0	0.000000	0.999999	Ophiuroid	Brittlestarfish
111	4	<0.001	100.0	0.000000	1.000000	Isopoda (order)	Isopod
	Total	102.839					
1	5	40.916	11.0	0.031947	0.251894	*Sebastolobus altivelis*	Longspine thornyhead
2	5	24.711	26.2	0.019294	0.433959	*Coryphaenoides acrolepis*	Pacific grenadier
3	5	15.601	22.5	0.012181	0.596848	*Microstomus pacificus*	Dover sole
4	5	14.687	15.5	0.011468	0.620205	*Chionoecetes tanneri*	Groved tanner crab
5	5	14.685	32.3	0.011466	0.631672	*Anoplopoma fimbria*	Sablefish
6	5	11.489	42.8	0.008970	0.669530	*Sebastolobus alascanus*	Shortspine thornyhead
7	5	7.468	30.1	0.005831	0.770319	*Albatrossia pectoralis*	Giant grenadier
8	5	3.809	14.6	0.002974	0.858515	*Embassichthys bathybius*	Deepsea sole
9	5	3.451	60.6	0.002694	0.869665	*Pannychia moseleyi*	
10	5	2.483	82.3	0.001939	0.899381	Holothuroidea	Sea cucumber
11	5	2.313	30.3	0.001806	0.905001	*Bathyraja trachura*	Black skate
12	5	1.956	22.1	0.001527	0.911424	*Alepocephalus tenebrosus*	California slickhead
13	5	1.551	15.6	0.001211	0.931087	*Lycenchelys* sp.	
14	5	1.464	42.1	0.001143	0.933380	*Bathybembix bairdii*	
15	5	1.079	27.9	0.000842	0.944953	Actiniaria (order)	Sea anemone
16	5	0.889	50.5	0.000694	0.953255	Scyphozoa (class)	Jellyfish
17	5	0.811	21.9	0.000634	0.957258	*Antimora microlepis*	Pacific flatnose
18	5	0.739	22.5	0.000577	0.961486	*Bothrocara brunneum*	Twoline eelpout
19	5	0.615	31.0	0.000480	0.966770	*Thrissacanthias penicillatus*	
20	5	0.609	9.4	0.000476	0.967245	*Neptunea amianta*	
21	5	0.449	20.1	0.000351	0.974986	*Heterozonias alternatus*	
22	5	0.412	100.0	0.000322	0.976669	*Bathyraja abyssicola*	Deepsea skate
23	5	0.395	36.7	0.000309	0.977599	*Hippasteria californica*	
24	5	0.381	16.8	0.000298	0.979111	*Eptatretus deani*	Black hagfish
25	5	0.249	19.2	0.000195	0.986262	*Bathylagus* sp.	Blacksmelt
26	5	0.221	36.4	0.000173	0.987737	*Apristurus brunneus*	Brown cat shark
27	5	0.193	96.4	0.000150	0.989314	*Scotoplanes theeli*	
28	5	0.167	27.6	0.000130	0.990986	*Buccinum* sp.	
29	5	0.167	65.4	0.000130	0.991116	*Aphrocallistes vastus*	Clay pipe sponge
30	5	0.123	36.7	0.000096	0.993252	*Careproctus melanurus*	Blacktail snailfish
31	5	0.096	57.0	0.000075	0.994340	*Paralomis multispina*	

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
32	5	0.089	28.9	0.000069	0.994624	*Merluccius productus*	Pacific hake
33	5	0.067	20.6	0.000053	0.995647	*Crossaster borealis*	
34	5	0.063	100.0	0.000050	0.995798	*Alepisaurus ferox*	Longnose lancetfish
35	5	0.059	57.5	0.000046	0.996037	*Opisthoteuthis californiana*	Flapjack devilfish
36	5	0.056	39.4	0.000044	0.996305	*Vampyroteuthis infernalis*	
37	5	0.044	44.1	0.000034	0.996863	Zoroasteridae	
38	5	0.043	40.3	0.000034	0.996964	*Tritonia* sp.	
39	5	0.037	27.2	0.000029	0.997274	Cephlapoda (class)	Cephlapod unident.
40	5	0.035	28.5	0.000027	0.997499	*Pasiphaea tarda*	Crimson pasiphaeid
41	5	0.029	45.4	0.000023	0.997849	*Chauliodus macouni*	Pacific viperfish
42	5	0.029	64.7	0.000023	0.997872	*Zoraster ophiurus*	
43	5	0.022	42.8	0.000017	0.998320	*Lithodes couesi*	
44	5	0.016	100.0	0.000012	0.998768	Gastropoda (class)	Gastropod unident.
45	5	0.015	84.5	0.000012	0.998851	*Luidiaster dawsoni*	
46	5	0.014	44.4	0.000011	0.998897	Paguridae	Hermit crab
47	5	0.014	42.8	0.000011	0.998929	Heteropoda	
48	5	0.012	100.0	0.000009	0.999100	*Psolus squamatus*	Whitescaled sea cucumber
49	5	0.009	100.0	0.000007	0.999291	*Dipsacaster* sp.	
50	5	0.009	32.9	0.000007	0.999298	*Tactostoma macropus*	Longfin dragonfish
51	5	0.009	63.2	0.000007	0.999319	*Nearchaster aciculosus*	
52	5	0.009	100.0	0.000007	0.999333	*Psolus* sp.	
53	5	0.009	100.0	0.000007	0.999354	Asteroidea (class)	Starfish unident.
54	5	0.009	100.0	0.000007	0.999367	*Icichthys lockingtoni*	Medusafish
55	5	0.008	31.3	0.000006	0.999413	Myctophidae	Lanternfish
56	5	0.008	57.8	0.000006	0.999419	Gorgonacea (order)	Coral
57	5	0.008	53.1	0.000006	0.999431	Rajiidae	Rajiidae
58	5	0.008	81.7	0.000006	0.999437	hydroid	Hydroid
59	5	0.007	100.0	0.000006	0.999443	*Crossaster* sp.	
60	5	0.007	29.3	0.000006	0.999471	*Anoplogaster cornuta*	Fangtooth
61	5	0.007	43.9	0.000005	0.999530	Pennatulacea (order)	Sea pen
62	5	0.007	49.0	0.000005	0.999546	*Colus* sp.	
63	5	0.007	39.4	0.000005	0.999551	*Lampanyctus ritteri*	Broadfin lanternfish
64	5	0.006	67.2	0.000005	0.999585	*Talismania bifurcata*	Threadfin slickhead
65	5	0.006	100.0	0.000005	0.999600	*Careproctus* sp.	
66	5	0.005	77.5	0.000004	0.999635	Porifera	Sponge
67	5	0.004	53.1	0.000003	0.999743	Gastropoda (class)	Gastropod unident.
68	5	0.003	100.0	0.000003	0.999757	*Squalus acanthias*	Spiny dogfish
69	5	0.003	91.1	0.000003	0.999770	*Myoxoderma platyacanthum*	
70	5	0.003	48.3	0.000002	0.999787	*Lampanyctus* sp.	
71	5	0.003	100.0	0.000002	0.999792	*Berryteuthis magister*	Magistrate armhook squid
72	5	0.003	69.3	0.000002	0.999806	*Aristostomias scintillans*	Shining loosejaw
73	5	0.002	67.5	0.000002	0.999820	Gastropoda (class)	Gastropod unident.
74	5	0.002	100.0	0.000002	0.999825	*Solaster* sp.	
75	5	0.002	100.0	0.000001	0.999861	*Brisaster* sp.	
76	5	0.002	100.0	0.000001	0.999865	*Pteraster tesselatus*	
77	5	0.001	98.1	0.000001	0.999886	*Yoldia* sp.	
78	5	0.001	100.0	0.000001	0.999900	*Solaster paxillatus*	
79	5	0.001	100.0	0.000001	0.999902	*Coryphaenoides cinereus*	Popeye grenadier
80	5	0.001	100.0	0.000001	0.999909	*Lycodes diapterus*	Black eelpout
81	5	0.001	71.3	0.000001	0.999914	*Diplopteraster multipes*	
82	5	0.001	75.4	0.000001	0.999920	*Benthalbella dentata*	Northern pearleye
83	5	0.001	100.0	0.000001	0.999921	Cephlapoda (class)	Cephlapod unident.
84	5	0.001	88.6	0.000001	0.999925	*Paraliparis* sp.	
85	5	0.001	100.0	0.000001	0.999927	*Plicifusus griseus*	Gray whelk
86	5	0.001	79.9	0.000001	0.999932	*Oregonia bifurca*	
87	5	0.001	64.2	0.000001	0.999936	*Chorilia longipes*	Longhorned decorator crab
88	5	0.001	69.0	0.000001	0.999938	*Chiasmodon niger*	
89	5	0.001	96.5	0.000001	0.999938	Gastropod	Snail
90	5	0.001	82.9	0.000001	0.999943	*Paraliparis pectoralis*	Broadfin snailfish
91	5	0.001	72.7	0.000001	0.999946	*Serrivomer sector*	Sawtooth eel
92	5	0.001	69.1	0.000001	0.999949	Melamphaidae	Bigscale
93	5	0.001	100.0	0.000000	0.999956	*Macropinna microstoma*	Barreleye
94	5	0.001	100.0	0.000000	0.999960	*Liponemis brevicornis*	
95	5	0.001	100.0	0.000000	0.999960	*Pseudarchaster parelii*	
96	5	0.001	100.0	0.000000	0.999961	*Dolichopteryx longipes*	Brownsnout spookfish

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
97	5	<0.001	100.0	0.000000	0.999969	Alcyonacea (order)	Soft coral
98	5	<0.001	100.0	0.000000	0.999974	*Bathyagonus nigripinnis*	Blackfin poacher
99	5	<0.001	72.9	0.000000	0.999975	*Sagamichthys abei*	Shining tubeshoulder
100	5	<0.001	100.0	0.000000	0.999977	*Loligo opalescens*	California market squid
101	5	<0.001	100.0	0.000000	0.999980	Bivalvia (class)	Bivalve
102	5	<0.001	100.0	0.000000	0.999981	*Amphiophiura ponderosa*	
103	5	<0.001	100.0	0.000000	0.999983	Benthopectinidae	
105	5	<0.001	100.0	0.000000	0.999986	*Idiacanthus antrostomus*	Pacific blackdragon
104	5	<0.001	100.0	0.000000	0.999986	Malacostraca (class)	Malacostracan unident.
106	5	<0.001	100.0	0.000000	0.999986	*Lycodapus fierasfer*	Blackmouth eelpout
107	5	<0.001	100.0	0.000000	0.999988	*Rondeletia loricata*	Armored redmouth whalefish
108	5	<0.001	100.0	0.000000	0.999990	*Molpadia* sp.	
109	5	<0.001	69.2	0.000000	0.999991	*Poromitra crassiceps*	Crested bigscale
110	5	<0.001	100.0	0.000000	0.999993	*Lycodapus endemoscotus*	Deepwater eelpout
111	5	<0.001	83.9	0.000000	0.999994	*Eualus* sp.	
112	5	<0.001	100.0	0.000000	0.999995	*Psilaster pectinatus*	
113	5	<0.001	100.0	0.000000	0.999995	*Paraliparis cephalus*	Swellhead snailfish
114	5	<0.001	100.0	0.000000	0.999995	*Lycodes* sp.	
115	5	<0.001	100.0	0.000000	0.999996	Crinoidea (class)	Crinoidea (class)
116	5	<0.001	84.8	0.000000	0.999997	Sternoptychidae	Hatchetfish
117	5	<0.001	100.0	0.000000	0.999998	*Placiphorella* sp.	
118	5	<0.001	100.0	0.000000	0.999999	*Tarletonbeania crenularis*	Blue lanternfish
119	5	<0.001	100.0	0.000000	0.999999	*Symbolophorus californiensis*	California lanternfish
120	5	<0.001	100.0	0.000000	0.999999	*Anthomastus* sp.	
121	5	<0.001	100.0	0.000000	1.000000	*Pasiphaea pacifica*	Pacific glass shrimp
122	5	<0.001	100.0	0.000000	1.000000	*Florometra serratissima*	Featherstar crinoid
	Total	155.011					
1	6	31.244	24.2	0.024395	0.329405	*Coryphaenoides acrolepis*	Pacific grenadier
2	6	25.855	14.0	0.020187	0.394720	*Sebastolobus altivelis*	Longspine thornyhead
3	6	22.440	18.0	0.017521	0.469844	*Anoplopoma fimbria*	Sablefish
4	6	16.462	17.0	0.012853	0.584667	*Albatrossia pectoralis*	Giant grenadier
5	6	11.385	50.7	0.008889	0.678419	*Scotoplanes theeli*	
6	6	8.903	19.5	0.006952	0.732233	*Chionoecetes tanneri*	Groved tanner crab
7	6	8.050	31.3	0.006285	0.758514	*Microstomus pacificus*	Dover sole
8	6	6.885	15.6	0.005376	0.786654	*Sebastolobus alascanus*	Shortspine thornyhead
9	6	4.886	15.3	0.003815	0.828059	*Antimora microlepis*	Pacific flatnose
10	6	4.828	17.1	0.003770	0.835604	*Bathyraja trachura*	Black skate
11	6	4.653	12.1	0.003633	0.842963	*Embassichthys bathybius*	Deepsea sole
12	6	2.756	23.7	0.002152	0.893412	Actiniaria (order)	Sea anemone
13	6	1.807	83.7	0.001411	0.915726	*Pannychia moseleyi*	
14	6	1.569	44.7	0.001225	0.927430	*Paralomis multispina*	
15	6	1.473	38.8	0.001150	0.932237	*Bathyraja abyssicola*	Deepsea skate
16	6	1.382	24.0	0.001079	0.936713	*Thrissacanthias penicillatus*	
17	6	0.966	100.0	0.000754	0.949661	Holothuroidea	Sea cucumber
18	6	0.664	28.8	0.000519	0.965800	*Alepocephalus tenebrosus*	California slickhead
19	6	0.627	21.3	0.000489	0.966290	*Heterozonias alternatus*	
20	6	0.519	67.6	0.000405	0.972058	*Psychrolutes phrictus*	Blob sculpin
21	6	0.446	18.5	0.000348	0.975334	*Bothrocara brunneum*	Twoline eelpout
22	6	0.358	29.9	0.000280	0.980814	*Hippasteria californica*	
23	6	0.347	54.5	0.000271	0.981358	Scyphozoa (class)	Jellyfish
24	6	0.315	32.9	0.000246	0.983402	Zoroasteridae	
25	6	0.296	40.8	0.000231	0.984584	Cephlapoda (class)	Cephlapod unident.
26	6	0.283	13.8	0.000221	0.984805	*Bathylagus* sp.	Blacksmelt
27	6	0.261	22.8	0.000204	0.985864	*Neptunea amianta*	
28	6	0.245	39.5	0.000191	0.986647	*Merluccius productus*	Pacific hake
29	6	0.242	63.8	0.000189	0.987026	*Trachipterus altivelis*	King-of-the-salmon
30	6	0.216	51.4	0.000168	0.988076	*Luidiaster dawsoni*	
31	6	0.198	51.2	0.000155	0.988707	*Nearchaster aciculosus*	
32	6	0.194	64.3	0.000151	0.989013	*Bathybembix bairdii*	
33	6	0.177	55.8	0.000138	0.990461	*Lycenchelys* sp.	
34	6	0.156	24.9	0.000122	0.991616	*Crossaster borealis*	
35	6	0.154	43.4	0.000120	0.991857	Pennatulacea (order)	Sea pen
36	6	0.100	46.9	0.000078	0.994188	*Apristurus brunneus*	Brown cat shark
37	6	0.091	39.0	0.000071	0.994485	*Eptatretus deani*	Black hagfish

Table B-l.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
38	6	0.076	27.2	0.000059	0.995255	*Vampyroteuthis infernalis*	
39	6	0.075	98.8	0.000059	0.995314	*Zoraster ophiurus*	
40	6	0.063	38.8	0.000049	0.995848	Cephlapoda (class)	Cephlapod unident.
41	6	0.062	46.6	0.000049	0.995896	*Careproctus melanurus*	Blacktail snailfish
42	6	0.057	71.2	0.000045	0.996261	*Opisthoteuthis californiana*	Flapjack devilfish
43	6	0.054	42.2	0.000042	0.996518	*Lithodes couesi*	
44	6	0.048	29.0	0.000038	0.996760	*Buccinum* sp.	
45	6	0.044	43.4	0.000034	0.996795	*Tritonia* sp.	
46	6	0.044	72.1	0.000034	0.996829	*Lophaster furcilliger*	
47	6	0.043	100.0	0.000034	0.996931	*Squalus acanthias*	Spiny dogfish
48	6	0.039	99.8	0.000031	0.997157	*Asteronyx* sp.	
49	6	0.033	68.6	0.000026	0.997551	*Icichthys lockingtoni*	Medusafish
50	6	0.033	88.8	0.000026	0.997577	Gorgonacea (order)	Coral
51	6	0.033	67.0	0.000026	0.997629	Rajiidae	Rajiidae
52	6	0.032	53.5	0.000025	0.997705	*Careproctus* sp.	
53	6	0.029	100.0	0.000022	0.997894	*Neptunea* sp.	
54	6	0.026	49.3	0.000020	0.998041	*Tactostoma macropus*	Longfin dragonfish
55	6	0.025	36.1	0.000019	0.998140	*Liponemis brevicornis*	
56	6	0.024	76.4	0.000019	0.998177	*Berryteuthis magister*	Magistrate armhook squid
57	6	0.024	15.5	0.000019	0.998196	*Pasiphaea tarda*	Crimson pasiphaeid
58	6	0.023	23.4	0.000018	0.998214	*Chauliodus macouni*	Pacific viperfish
59	6	0.023	35.3	0.000018	0.998232	Heteropoda	
60	6	0.023	68.8	0.000018	0.998250	*Solaster* sp.	
61	6	0.019	100.0	0.000015	0.998561	*Sebastes aurora*	Aurora rockfish
62	6	0.018	69.8	0.000014	0.998690	Gastropoda (class)	Gastropod unident.
63	6	0.015	71.2	0.000011	0.998874	*Psolus* sp.	
64	6	0.014	45.4	0.000011	0.998919	Paguridae	Hermit crab
65	6	0.014	80.5	0.000011	0.998951	*Diplopteraster multipes*	
66	6	0.011	100.0	0.000008	0.999151	*Atheresthes stomias*	Arrowtooth flounder
67	6	0.010	92.7	0.000008	0.999168	*Pandalus platyceros*	Spot shrimp
68	6	0.009	100.0	0.000007	0.999305	*Lophaster* sp.	
69	6	0.009	100.0	0.000007	0.999326	Porifera	Sponge
70	6	0.008	35.4	0.000007	0.999387	*Lampanyctus ritteri*	Broadfin lanternfish
71	6	0.008	32.4	0.000007	0.999394	*Lampanyctus* sp.	
72	6	0.007	100.0	0.000005	0.999504	*Crossaster* sp.	
73	6	0.007	23.1	0.000005	0.999541	Myctophidae	Lanternfish
74	6	0.006	100.0	0.000005	0.999571	*Careproctus microstomus*	Smallmouth snailfish
75	6	0.006	42.2	0.000005	0.999590	*Solaster paxillatus*	
76	6	0.005	73.8	0.000004	0.999648	Aphroditidae	Sea mouse
77	6	0.005	100.0	0.000004	0.999660	*Icosteus aenigmaticus*	Ragfish
78	6	0.004	100.0	0.000003	0.999729	*Aphrocallistes vastus*	Clay pipe sponge
79	6	0.004	60.7	0.000003	0.999746	Melamphaidae	Bigscale
80	6	0.003	53.8	0.000003	0.999749	Malacostraca (class)	Malacostracan unident.
81	6	0.003	57.6	0.000003	0.999752	*Anoplogaster cornuta*	Fangtooth
82	6	0.003	100.0	0.000003	0.999760	Trichiuridae	
83	6	0.003	86.1	0.000003	0.999775	*Molpadia* sp.	
84	6	0.002	69.5	0.000002	0.999823	*Poromitra crassiceps*	Crested bigscale
85	6	0.002	79.2	0.000002	0.999837	*Pseudarchaster parelii*	
86	6	0.002	100.0	0.000002	0.999838	*Colus* sp.	
87	6	0.002	69.7	0.000001	0.999848	*Aristostomias scintillans*	Shining loosejaw
88	6	0.002	100.0	0.000001	0.999857	Opisthobranchia	Opisthobranch gastropod
89	6	0.002	100.0	0.000001	0.999860	*Serrivomer sector*	Sawtooth eel
90	6	0.002	100.0	0.000001	0.999881	*Macropinna microstoma*	Barreleye
91	6	0.001	100.0	0.000001	0.999890	*Dipsacaster* sp.	
92	6	0.001	70.7	0.000001	0.999899	*Gorgonocephalus caryi*	
93	6	0.001	100.0	0.000001	0.999903	Ceratiidae	Seadevils
94	6	0.001	78.2	0.000001	0.999905	Gastropoda (class)	Gastropod unident.
95	6	0.001	100.0	0.000001	0.999910	*Pseudarchaster* sp.	
96	6	0.001	89.2	0.000001	0.999924	*Benthalbella dentata*	Northern pearleye
97	6	0.001	100.0	0.000001	0.999929	*Eurypharynx pelecanoides*	Umbrellamouth gulper
98	6	0.001	100.0	0.000001	0.999930	*Stylatula* sp.	Slender seawhip
99	6	0.001	100.0	0.000001	0.999933	Melanostomiidae	Scaleless dragonfish
100	6	0.001	68.0	0.000001	0.999937	Bivalvia (class)	Bivalve
101	6	0.001	100.0	0.000001	0.999940	*Paraliparis dactylosus*	Red snailfish
102	6	0.001	61.0	0.000001	0.999944	*Eualus macrophthalmus*	

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
103	6	0.001	100.0	0.000001	0.999947	*Chiasmodon niger*	
104	6	0.001	95.1	0.000001	0.999952	*Paraliparis pectoralis*	Broadfin snailfish
105	6	0.001	100.0	0.000001	0.999953	*Sagamichthys abei*	Shining tubeshoulder
106	6	0.001	100.0	0.000000	0.999956	*Pteraster tesselatus*	
107	6	0.001	73.9	0.000000	0.999957	Ophiuroid	Brittlestarfish
108	6	0.001	100.0	0.000000	0.999958	hydroid	Hydroid
109	6	0.001	100.0	0.000000	0.999962	Pandalidae	Pandalid shrimp
110	6	<0.001	100.0	0.000000	0.999968	*Talismania bifurcata*	Threadfin slickhead
111	6	<0.001	100.0	0.000000	0.999979	Alcyonacea (order)	Soft coral
112	6	<0.001	100.0	0.000000	0.999980	Paralepididae	Barracudina
113	6	<0.001	100.0	0.000000	0.999982	*Hippasteria spinosa*	
114	6	<0.001	100.0	0.000000	0.999983	*Nemichthys scolopaceus*	Slender snipe eel
115	6	<0.001	71.9	0.000000	0.999984	*Lestidiops ringens*	Slender barracudina
116	6	<0.001	100.0	0.000000	0.999984	Crangonidae	Crangonid shrimp
117	6	<0.001	88.3	0.000000	0.999985	Gastropod	Snail
118	6	<0.001	76.5	0.000000	0.999988	Crinoidea (class)	Crinoidea (class)
119	6	<0.001	100.0	0.000000	0.999988	*Pandalus jordani*	Ocean shrimp
120	6	<0.001	100.0	0.000000	0.999989	*Anotopterus pharao*	Daggertooth
121	6	<0.001	100.0	0.000000	0.999989	Nemichthyidae	Snipe eel
122	6	<0.001	100.0	0.000000	0.999991	invertebrate	Invertebrate
123	6	<0.001	100.0	0.000000	0.999992	Brachiopoda (class)	Brachiopod unident.
124	6	<0.001	100.0	0.000000	0.999992	amphipod	Amphipod
125	6	<0.001	100.0	0.000000	0.999993	*Mirorictus taningi*	Striped tubeshoulder
126	6	<0.001	100.0	0.000000	0.999993	*Rhinoliparis attenuatus*	Slim snailfish
127	6	<0.001	100.0	0.000000	0.999994	*Prysoma* sp.	Green colonial tunicate
128	6	<0.001	100.0	0.000000	0.999994	*Scopelengys tristis*	Blackchin
129	6	<0.001	100.0	0.000000	0.999997	*Lycenchelys camchatica*	Kamchatka eelpout
130	6	<0.001	100.0	0.000000	0.999997	*Paraliparis cephalus*	Swellhead snailfish
131	6	<0.001	100.0	0.000000	0.999998	*Tarletonbeania crenularis*	Blue lanternfish
132	6	<0.001	100.0	0.000000	0.999999	*Leptasterias* sp.	
133	6	<0.001	100.0	0.000000	0.999999	*Yoldia myalis*	
134	6	<0.001	100.0	0.000000	1.000000	*Amphiophiura ponderosa*	
135	6	<0.001	100.0	0.000000	1.000000	*Pasiphaea pacifica*	Pacific glass shrimp
136	6	<0.001	100.0	0.000000	1.000000	*Benthalbella* sp.	
137	6	<0.001	100.0	0.000000	1.000000	*Idiacanthus antrostomus*	Pacific blackdragon
	Total	162.593					
1	All	26.959	20.3	0.021050	0.374532	*Merluccius productus*	Pacific hake
2	All	21.144	9.0	0.016509	0.486353	*Sebastolobus altivelis*	Longspine thornyhead
3	All	20.060	9.5	0.015663	0.502016	*Microstomus pacificus*	Dover sole
4	All	15.227	41.8	0.011889	0.608737	*Squalus acanthias*	Spiny dogfish
5	All	12.336	13.1	0.009632	0.651115	*Anoplopoma fimbria*	Sablefish
6	All	10.096	13.1	0.007883	0.702880	*Chionoecetes tanneri*	Groved tanner crab
7	All	9.946	21.4	0.007766	0.710646	*Coryphaenoides acrolepis*	Pacific grenadier
8	All	7.651	58.0	0.005974	0.764488	*Ophiura sarsi*	
9	All	6.947	15.1	0.005425	0.781279	*Albatrossia pectoralis*	Giant grenadier
10	All	5.819	16.8	0.004543	0.811447	*Sebastolobus alascanus*	Shortspine thornyhead
11	All	3.901	28.8	0.003046	0.852503	*Brisaster* sp.	
12	All	3.890	20.6	0.003037	0.855540	*Glyptocephalus zachirus*	Rex sole
13	All	2.461	26.1	0.001922	0.901303	*Raja rhina*	Longnose skate
14	All	1.967	52.1	0.001536	0.909897	*Scotoplanes theeli*	
15	All	1.866	12.2	0.001457	0.912881	*Embassichthys bathybius*	Deepsea sole
16	All	1.699	36.0	0.001326	0.919850	Holothuroidea	Sea cucumber
17	All	1.681	43.5	0.001313	0.921162	*Myoxoderma platyacanthum*	
18	All	1.666	17.7	0.001301	0.922463	Actiniaria (order)	Sea anemone
19	All	1.610	41.4	0.001257	0.923720	*Sebastes diploproa*	Splitnose rockfish
20	All	1.463	65.6	0.001143	0.934522	*Aphrocallistes vastus*	Clay pipe sponge
21	All	1.423	42.7	0.001111	0.935634	*Sebastes saxicola*	Stripetail rockfish
22	All	1.288	19.5	0.001005	0.938738	*Bathyraja trachura*	Black skate
23	All	1.128	35.2	0.000881	0.942391	*Cancer magister*	Dungeness crab
24	All	1.082	20.6	0.000845	0.944110	*Neptunea amianta*	
25	All	0.991	21.8	0.000774	0.948141	*Antimora microlepis*	Pacific flatnose
26	All	0.980	29.1	0.000765	0.948907	*Allocentrotus fragilis*	Orange-pink sea urchin
27	All	0.937	22.4	0.000731	0.950392	*Lycodes diapterus*	Black eelpout
28	All	0.929	22.2	0.000725	0.951117	*Apristurus brunneus*	Brown cat shark

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
29	All	0.920	49.5	0.000718	0.952560	*Pannychia moseleyi*	
30	All	0.795	16.5	0.000621	0.958509	*Alepocephalus tenebrosus*	California slickhead
31	All	0.710	25.8	0.000555	0.963159	*Lycodes cortezianus*	Bigfin eelpout
32	All	0.707	24.2	0.000552	0.963711	*Bathyraja interrupta*	Bering skate
33	All	0.668	20.4	0.000521	0.965281	Scyphozoa (class)	Jellyfish
34	All	0.577	40.3	0.000450	0.969089	*Rathbunaster californicus*	
35	All	0.564	35.0	0.000440	0.969976	*Sebastes aurora*	Aurora rockfish
36	All	0.527	51.7	0.000411	0.971652	*Atheresthes stomias*	Arrowtooth flounder
37	All	0.474	17.5	0.000370	0.973562	*Thrissacanthias penicillatus*	
38	All	0.440	9.8	0.000343	0.975677	*Heterozonias alternatus*	
39	All	0.432	17.1	0.000337	0.976014	*Lycenchelys sp.*	
40	All	0.426	45.4	0.000333	0.976347	*Lyopsetta exilis*	Slender sole
41	All	0.399	33.0	0.000312	0.976980	*Bathybembix bairdii*	
42	All	0.359	13.1	0.000280	0.980534	*Bothrocara brunneum*	Twoline eelpout
43	All	0.336	16.2	0.000262	0.981886	*Eptatretus deani*	Black hagfish
44	All	0.318	40.3	0.000248	0.983156	*Bathyraja abyssicola*	Deepsea skate
45	All	0.299	26.3	0.000234	0.984122	*Luidia foliata*	
46	All	0.296	48.7	0.000231	0.984353	*Hydrolagus colliei*	Spotted ratfish
47	All	0.278	45.7	0.000217	0.985241	*Paralomis multispina*	
48	All	0.262	23.2	0.000204	0.985660	*Opisthoteuthis californiana*	Flapjack devilfish
49	All	0.261	79.3	0.000204	0.986068	*Sebastes elongatus*	Greenstriped rockfish
50	All	0.218	68.5	0.000170	0.987907	*Ophiodon elongatus*	Lingcod
51	All	0.189	72.4	0.000147	0.989462	*Sebastes zacentrus*	Sharpchin rockfish
52	All	0.187	25.6	0.000146	0.989608	Cephlapoda (class)	Cephlapod unident.
53	All	0.186	24.7	0.000145	0.989753	*Hippasteria californica*	
54	All	0.164	12.8	0.000128	0.991371	*Careproctus melanurus*	Blacktail snailfish
55	All	0.147	74.8	0.000115	0.992325	*Oncorhynchus tshawytscha*	Chinook salmon
56	All	0.138	11.7	0.000108	0.992650	*Bathylagus sp.*	Blacksmelt
57	All	0.103	42.5	0.000080	0.993952	*Sebastes crameri*	Darkblotched rockfish
58	All	0.102	59.9	0.000079	0.994031	*Hippoglossus stenolepis*	Pacific halibut
59	All	0.100	50.8	0.000078	0.994109	*Sebastes goodei*	Chilipepper
60	All	0.094	31.9	0.000073	0.994414	*Eopsetta jordani*	Petrale sole
61	All	0.086	69.5	0.000068	0.994761	*Psychrolutes phrictus*	Blob sculpin
62	All	0.080	19.7	0.000063	0.994953	Cephlapoda (class)	Cephlapod unident.
63	All	0.074	98.9	0.000058	0.995372	*Icosteus aenigmaticus*	Ragfish
64	All	0.071	29.3	0.000056	0.995541	Zoroasteridae	
65	All	0.066	27.4	0.000051	0.995698	Paguridae	Hermit crab
66	All	0.065	47.0	0.000051	0.995749	*Sebastes babcocki*	Redbanded rockfish
67	All	0.055	51.7	0.000043	0.996433	*Trachipterus altivelis*	King-of-the-salmon
68	All	0.054	88.1	0.000042	0.996560	*Sebastes jordani*	Shortbelly rockfish
69	All	0.053	39.4	0.000041	0.996642	*Tritonia sp.*	
70	All	0.052	81.3	0.000040	0.996683	*Parophrys vetulus*	English sole
71	All	0.044	20.8	0.000034	0.996897	*Crossaster borealis*	
72	All	0.042	24.4	0.000033	0.997030	*Buccinum sp.*	
73	All	0.039	51.1	0.000030	0.997187	*Luidiaster dawsoni*	
74	All	0.037	60.1	0.000029	0.997245	*Sebastes paucispinis*	Bocaccio
75	All	0.036	57.4	0.000028	0.997360	*Allocentrotus sp.*	
76	All	0.035	50.7	0.000028	0.997472	*Nearchaster aciculosus*	
77	All	0.031	74.7	0.000024	0.997803	*Sebastes entomelas*	Widow rockfish
78	All	0.028	35.2	0.000022	0.997916	*Liponemis brevicornis*	
79	All	0.028	44.2	0.000022	0.997938	Pennatulacea (order)	Sea pen
80	All	0.026	22.6	0.000021	0.998001	*Vampyroteuthis infernalis*	
81	All	0.023	39.1	0.000018	0.998267	*Talismania bifurcata*	Threadfin slickhead
82	All	0.022	52.3	0.000017	0.998337	Aphroditidae	Sea mouse
83	All	0.022	62.4	0.000017	0.998371	*Alepisaurus ferox*	Longnose lancetfish
84	All	0.022	100.0	0.000017	0.998388	*Parastichopus californicus*	
85	All	0.021	88.4	0.000016	0.998421	*Embryx crotalinus*	Snakehead eelpout
86	All	0.021	100.0	0.000016	0.998437	*Clupea pallasi*	Pacific herring
87	All	0.020	61.1	0.000015	0.998516	*Sebastes alutus*	Pacific ocean perch
88	All	0.020	35.2	0.000015	0.998531	*Berryteuthis magister*	Magistrate armhook squid
89	All	0.018	55.9	0.000014	0.998648	*Neptunea sp.*	
90	All	0.018	71.3	0.000014	0.998676	*Zoraster ophiurus*	
91	All	0.016	18.3	0.000013	0.998756	*Chauliodus macouni*	Pacific viperfish
92	All	0.015	51.7	0.000011	0.998863	*Trachurus symmetricus*	Jack mackerel
93	All	0.013	58.1	0.000011	0.998983	Gorgonacea (order)	Coral

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
94	All	0.013	100.0	0.000010	0.999003	*Torpedo californica*	Pacific electric ray
95	All	0.013	34.8	0.000010	0.999013	*Lithodes couesi*	
96	All	0.013	17.8	0.000010	0.999023	Heteropoda	
97	All	0.013	18.5	0.000010	0.999034	*Pasiphaea tarda*	Crimson pasiphaeid
98	All	0.013	96.3	0.000010	0.999063	Onychoteuthidae	
99	All	0.011	72.0	0.000008	0.999126	*Sebastes aleutianus*	Rougheye rockfish
100	All	0.010	43.8	0.000008	0.999184	*Icichthys lockingtoni*	Medusafish
101	All	0.010	99.2	0.000008	0.999215	Polychaeta (class)	Polychaete worm
102	All	0.009	74.8	0.000007	0.999347	*Pseudarchaster parelii*	
103	All	0.008	29.7	0.000006	0.999407	*Tactostoma macropus*	Longfin dragonfish
104	All	0.007	52.3	0.000006	0.999454	Rajiidae	Rajiidae
105	All	0.007	73.6	0.000006	0.999465	*Lophaster furcilliger*	
106	All	0.007	45.8	0.000005	0.999493	*Careproctus* sp.	
107	All	0.007	48.7	0.000005	0.999515	*Diplopteraster multipes*	
108	All	0.007	53.0	0.000005	0.999520	Gastropoda (class)	Gastropod unident.
109	All	0.007	86.2	0.000005	0.999535	*Munida quadrispina*	
110	All	0.007	99.8	0.000005	0.999556	*Asteronyx* sp.	
111	All	0.006	69.1	0.000005	0.999581	Thaliacea (class)	Salps
112	All	0.006	18.1	0.000005	0.999618	*Lampanyctus ritteri*	Broadfin lanternfish
113	All	0.006	83.8	0.000004	0.999627	*Oregonia bifurca*	
114	All	0.005	13.7	0.000004	0.999644	Myctophidae	Lanternfish
115	All	0.005	57.0	0.000004	0.999656	*Hippasteria spinosa*	
116	All	0.005	55.5	0.000004	0.999667	Gastropoda (class)	Gastropod unident.
117	All	0.005	100.0	0.000004	0.999681	*Sebastes levis*	Cowcod
118	All	0.004	38.3	0.000003	0.999698	*Pandalopsis dispar*	Sidestripe shrimp
119	All	0.004	64.5	0.000003	0.999702	*Solaster* sp.	
120	All	0.004	58.5	0.000003	0.999708	*Psolus* sp.	
121	All	0.004	23.3	0.000003	0.999720	*Lampanyctus* sp.	
122	All	0.004	93.7	0.000003	0.999738	*Coryphaenoides cinereus*	Popeye grenadier
123	All	0.004	60.7	0.000003	0.999741	*Sebastes helvomaculatus*	Rosethorn rockfish
124	All	0.003	56.8	0.000003	0.999765	*Pasiphaea pacifica*	Pacific glass shrimp
125	All	0.003	50.7	0.000002	0.999777	*Colus* sp.	
126	All	0.003	57.2	0.000002	0.999780	*Pandalus platyceros*	Spot shrimp
127	All	0.003	58.2	0.000002	0.999782	*Crossaster* sp.	
128	All	0.003	100.0	0.000002	0.999785	*Lepidopus xantusi*	Scabbardfish
129	All	0.003	100.0	0.000002	0.999790	*Pycnopodia helianthoides*	
130	All	0.003	71.5	0.000002	0.999800	*Aphanopus carbo*	Black scabbardfish
131	All	0.003	100.0	0.000002	0.999808	*Lopholithodes foraminatus*	Box crab
132	All	0.003	66.1	0.000002	0.999810	Porifera	Sponge
133	All	0.003	100.0	0.000002	0.999812	Hexactinellida	Glass sponge
134	All	0.002	34.8	0.000002	0.999822	Gastropoda (class)	Gastropod unident.
135	All	0.002	26.8	0.000002	0.999830	*Anoplogaster cornuta*	Fangtooth
136	All	0.002	100.0	0.000002	0.999833	*Psolus squamatus*	Whitescaled sea cucumber
137	All	0.002	82.0	0.000002	0.999835	*Dipsacaster* sp.	
138	All	0.002	96.7	0.000001	0.999841	*Rossia pacifica*	Eastern pacific bobtail
139	All	0.002	53.1	0.000001	0.999851	*Molpadia* sp.	
140	All	0.002	85.9	0.000001	0.999852	*Stylasterias forreri*	
141	All	0.002	39.4	0.000001	0.999855	*Solaster paxillatus*	
142	All	0.002	93.6	0.000001	0.999856	Asteroidea (class)	Starfish unident.
143	All	0.002	82.7	0.000001	0.999859	*Sebastes proriger*	Redstripe rockfish
144	All	0.002	98.8	0.000001	0.999863	*Argentina sialis*	Pacific argentine
145	All	0.002	100.0	0.000001	0.999874	*Hippasteria* sp.	
146	All	0.002	100.0	0.000001	0.999882	*Lophaster*+N922	
147	All	0.001	77.9	0.000001	0.999887	*Pseudarchaster parelii*	
148	All	0.001	100.0	0.000001	0.999888	*Bathylagus pacificus*	Pacific blacksmelt
149	All	0.001	43.9	0.000001	0.999893	*Bathyagonus nigripinnis*	Blackfin poacher
150	All	0.001	77.2	0.000001	0.999895	hydroid	Hydroid
151	All	0.001	67.4	0.000001	0.999898	*Lycodes pacificus*	Blackbelly eelpout
152	All	0.001	100.0	0.000001	0.999908	*Allocyttus folletti*	Oxeye oreo
153	All	0.001	54.5	0.000001	0.999911	Malacostraca (class)	Malacostracan unident.
154	All	0.001	100.0	0.000001	0.999913	*Nezumia liolepis*	Smooth grenadier
155	All	0.001	46.6	0.000001	0.999916	*Pteraster tesselatus*	
156	All	0.001	100.0	0.000001	0.999917	*Careproctus microstomus*	Smallmouth snailfish
157	All	0.001	42.2	0.000001	0.999918	*Aristostomias scintillans*	Shining loosejaw
158	All	0.001	100.0	0.000001	0.999931	*Icelinus filamentosus*	Threadfin sculpin

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
159	All	0.001	80.6	0.000001	0.999940	Ophiuroid	Brittlestarfish
160	All	0.001	40.8	0.000001	0.999941	*Sagamichthys abei*	Shining tubeshoulder
161	All	0.001	76.7	0.000001	0.999944	*Stylatula* sp.	Slender seawhip
162	All	0.001	100.0	0.000001	0.999945	*Polinices lewisi*	
163	All	0.001	83.0	0.000001	0.999946	*Ampheraster* sp.	
164	All	0.001	90.2	0.000001	0.999947	*Fusitriton oregonensis*	Oregon triton
165	All	0.001	53.3	0.000001	0.999948	Melamphaidae	Bigscale
166	All	0.001	93.5	0.000001	0.999949	*Xeneretmus latifrons*	Blacktip poacher
167	All	0.001	74.2	0.000000	0.999956	*Pseudarchaster* sp.	
168	All	0.001	38.7	0.000000	0.999958	*Chorilia longipes*	Longhorned decorator crab
169	All	0.001	100.0	0.000000	0.999959	*Radulinus asprellus*	Slim sculpin
170	All	0.001	100.0	0.000000	0.999959	Trichiuridae	
171	All	0.001	47.5	0.000000	0.999963	Gastropod	Snail
172	All	<0.001	50.3	0.000000	0.999966	*Benthalbella dentata*	Northern pearleye
173	All	<0.001	62.1	0.000000	0.999967	*Macropinna microstoma*	Barreleye
174	All	<0.001	74.7	0.000000	0.999970	Sipuncula (phylum)	Sipunculid worm
175	All	<0.001	100.0	0.000000	0.999971	*Cancer productus*	Red rock crab
176	All	<0.001	73.9	0.000000	0.999971	Melanostomiidae	Scaleless dragonfish
177	All	<0.001	63.5	0.000000	0.999971	*Loligo opalescens*	California market squid
178	All	<0.001	56.4	0.000000	0.999972	*Cololabis saira*	Pacific saury
179	All	<0.001	67.9	0.000000	0.999973	*Nezumia stelgidolepis*	California grenadier
180	All	<0.001	65.3	0.000000	0.999974	*Poromitra crassiceps*	Crested bigscale
181	All	<0.001	71.6	0.000000	0.999974	*Serrivomer sector*	Sawtooth eel
182	All	<0.001	54.7	0.000000	0.999975	*Paraliparis* sp.	
183	All	<0.001	100.0	0.000000	0.999976	*Tochuina tetraquetra*	Giant orange tochui
184	All	<0.001	67.5	0.000000	0.999978	Alcyonacea (order)	Soft coral
185	All	<0.001	71.6	0.000000	0.999978	*Lestidiops ringens*	Slender barracudina
186	All	<0.001	60.7	0.000000	0.999980	*Ceramaster japonicus*	Red bat star
187	All	<0.001	60.6	0.000000	0.999981	*Plicifusus griseus*	Gray whelk
188	All	<0.001	100.0	0.000000	0.999981	*Lycodema barbatum*	Bearded eelpout
189	All	<0.001	100.0	0.000000	0.999984	*Opisthobranchia*	Opisthobranch gastropod
190	All	<0.001	75.0	0.000000	0.999984	*Lycodapus dermatinus*	Looseskin eelpout
191	All	<0.001	59.3	0.000000	0.999986	*Chiasmodon niger*	
192	All	<0.001	98.2	0.000000	0.999987	*Yoldia* sp.	
193	All	<0.001	85.9	0.000000	0.999987	*Pandalus jordani*	Ocean shrimp
194	All	<0.001	62.6	0.000000	0.999988	*Paraliparis pectoralis*	Broadfin snailfish
195	All	<0.001	70.6	0.000000	0.999988	*Molpadia intermedia*	
196	All	<0.001	72.3	0.000000	0.999989	*Gorgonocephalus caryi*	
197	All	<0.001	100.0	0.000000	0.999989	Ceratiidae	Seadevils
198	All	<0.001	29.8	0.000000	0.999991	*Tarletonbeania crenularis*	Blue lanternfish
199	All	<0.001	57.0	0.000000	0.999991	Bivalvia (class)	Bivalve
200	All	<0.001	42.2	0.000000	0.999991	*Lycodapus fierasfer*	Blackmouth eelpout
201	All	<0.001	100.0	0.000000	0.999991	*Careproctus oregonensis*	Oregon snailfish
202	All	<0.001	45.0	0.000000	0.999992	*Eualus macrophthalmus*	
203	All	<0.001	71.3	0.000000	0.999992	*Paracaudina chilensis*	
204	All	<0.001	89.5	0.000000	0.999992	*Apristurus brunneus*	
205	All	<0.001	62.8	0.000000	0.999993	*Leuroglossus stilbius*	California smoothtongue
206	All	<0.001	100.0	0.000000	0.999993	*Ceramaster* sp.	
207	All	<0.001	100.0	0.000000	0.999993	*Eurypharynx pelecanoides*	Umbrellamouth gulper
208	All	<0.001	88.3	0.000000	0.999994	Shark egg case	
209	All	<0.001	100.0	0.000000	0.999995	*Paraliparis dactylosus*	Red snailfish
210	All	<0.001	68.5	0.000000	0.999995	*Amphiophiura ponderosa*	
211	All	<0.001	81.0	0.000000	0.999995	*Lycodapus endemoscotus*	Deepwater eelpout
212	All	<0.001	57.6	0.000000	0.999995	*Eualus* sp.	
213	All	<0.001	100.0	0.000000	0.999996	*Paragorgia* sp.	
214	All	<0.001	91.5	0.000000	0.999996	*Leptychaster* sp.	
215	All	<0.001	100.0	0.000000	0.999997	*Dolichopteryx longipes*	Brownsnout spookfish
216	All	<0.001	100.0	0.000000	0.999997	Bathymasteridae	Ronquil
217	All	<0.001	100.0	0.000000	0.999997	Pandalidae	Pandalid shrimp
218	All	<0.001	100.0	0.000000	0.999998	*Polinices* sp.	
219	All	<0.001	75.4	0.000000	0.999998	*Psilaster pectinatus*	
220	All	<0.001	100.0	0.000000	0.999998	*Bathophilus flemingi*	Highfin dragonfish
221	All	<0.001	52.6	0.000000	0.999998	Crinoidea (class)	Crinoidea (class)
222	All	<0.001	100.0	0.000000	0.999998	*Lampetra tridentata*	Pacific lamprey
223	All	<0.001	100.0	0.000000	0.999998	*Avocettina infans*	Blackline snipe eel

Table B-1.--Continued.

Rank	Stratum	Mean CPUE (kg/ha)	CV%	Proportion	Cummulative Proportion	Species Name	Common Name
224	All	<0.001	70.4	0.000000	0.999998	*Ctenodiscus crispatus*	Common mud star
225	All	<0.001	80.3	0.000000	0.999998	*Nemichthys scolopaceus*	Slender snipe eel
226	All	<0.001	100.0	0.000000	0.999998	*Argis* sp.	
227	All	<0.001	100.0	0.000000	0.999998	*Elassodiscus caudatus*	Humpback snailfish
228	All	<0.001	58.3	0.000000	0.999999	*Paraliparis cephalus*	Swellhead snailfish
229	All	<0.001	100.0	0.000000	0.999999	*Paralepis atlantica*	Duckbill barracudina
230	All	<0.001	100.0	0.000000	0.999999	Paralepididae	Barracudina
231	All	<0.001	70.6	0.000000	0.999999	*Stenobrachius leucopsarus*	Northern lampfish
232	All	<0.001	100.0	0.000000	0.999999	Moridae	Codlings
233	All	<0.001	100.0	0.000000	0.999999	Galatheidae	Galatheid crab
234	All	<0.001	95.8	0.000000	0.999999	*Idiacanthus antrostomus*	Pacific blackdragon
235	All	<0.001	100.0	0.000000	0.999999	Benthopectinidae	
236	All	<0.001	95.0	0.000000	0.999999	Crangonidae	Crangonid shrimp
237	All	<0.001	72.5	0.000000	0.999999	Brachiopoda (class)	Brachiopod unident.
238	All	<0.001	100.0	0.000000	0.999999	*Pteraster* sp.	
239	All	<0.001	100.0	0.000000	0.999999	*Crossaster papposus*	Rose sea star
240	All	<0.001	100.0	0.000000	0.999999	*Rondeletia loricata*	Armored redmouth whalefish
241	All	<0.001	100.0	0.000000	0.999999	*Scopelosaurus harryi*	Scaly paperbone
242	All	<0.001	100.0	0.000000	0.999999	*Bathyagonus pentacanthus*	Bigeye poacher
243	All	<0.001	100.0	0.000000	0.999999	*Anotopterus pharao*	Daggertooth
244	All	<0.001	100.0	0.000000	0.999999	Nemichthyidae	Snipe eel
245	All	<0.001	100.0	0.000000	0.999999	invertebrate	Invertebrate
246	All	<0.001	76.3	0.000000	0.999999	*Symbolophorus californiensis*	California lanternfish
247	All	<0.001	100.0	0.000000	1.000000	amphipod	Amphipod
248	All	<0.001	100.0	0.000000	1.000000	*Mirorictus taningi*	Striped tubeshoulder
249	All	<0.001	64.7	0.000000	1.000000	Sternoptychidae	Hatchetfish
250	All	<0.001	100.0	0.000000	1.000000	*Rhinoliparis attenuatus*	Slim snailfish
251	All	<0.001	100.0	0.000000	1.000000	*Prysoma* sp.	Green colonial tunicate
252	All	<0.001	100.0	0.000000	1.000000	*Scopelengys tristis*	Blackchin
253	All	<0.001	100.0	0.000000	1.000000	*Antiplanes piona*	
254	All	<0.001	100.0	0.000000	1.000000	*Lycodes* sp.	
256	All	<0.001	100.0	0.000000	1.000000	*Crangon communis*	Twospine crangon
255	All	<0.001	100.0	0.000000	1.000000	*Hyas* sp.	
257	All	<0.001	100.0	0.000000	1.000000	*Lycenchelys camchatica*	Kamchatka eelpout
258	All	<0.001	100.0	0.000000	1.000000	*Liparis* sp.	
259	All	<0.001	100.0	0.000000	1.000000	*Henricia* sp.	
260	All	<0.001	100.0	0.000000	1.000000	Ascidian	Tunicate
261	All	<0.001	74.5	0.000000	1.000000	Cyclopteridae (Liparidinae)	Snailfish
262	All	<0.001	100.0	0.000000	1.000000	*Cataetyx rubrirostris*	Rubynose brotula
263	All	<0.001	100.0	0.000000	1.000000	*Placiphorella* sp.	
264	All	<0.001	82.6	0.000000	1.000000	*Benthalbella* sp.	
265	All	<0.001	100.0	0.000000	1.000000	*Leptasterias* sp.	
266	All	<0.001	100.0	0.000000	1.000000	*Yoldia myalis*	
267	All	<0.001	74.4	0.000000	1.000000	Isopoda (order)	Isopod
268	All	<0.001	100.0	0.000000	1.000000	*Anthomastus* sp.	
269	All	<0.001	100.0	0.000000	1.000000	*Ophiopholis aculeata*	
270	All	<0.001	100.0	0.000000	1.000000	*Delectopecten randolphi*	Randolph scallop
271	All	<0.001	100.0	0.000000	1.000000	*Florometra serratissima*	Featherstar crinoid
272	All	<0.001	100.0	0.000000	1.000000	Pasiphaeidae	Pasiphaeid shrimp
	Total	180.384					

APPENDIX C

Population Numbers by Sex and Size Group

Appendix C contains listings of population numbers by sex and size group (cm) for selected species from the 1995 West Coast upper continental slope bottom trawl surveys. For each species, estimates are presented for all depth strata combined.

Table C-l.--Arrowtooth flounder population estimates for all depth strata combined by sex and centimeter interval for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
20	1,615	0	0	1,615	0.00220	0.00220
21	3,231	3,231	0	6,461	0.00881	0.01101
22	4,846	0	0	4,846	0.00661	0.01762
23	3,231	0	0	3,231	0.00440	0.02202
30	5,730	0	0	5,730	0.00781	0.02983
31	6,843	0	0	6,843	0.00933	0.03916
32	18,592	1,513	0	20,104	0.02741	0.06657
33	53,691	0	0	53,691	0.07320	0.13977
34	44,962	7,314	0	52,276	0.07127	0.21104
35	78,539	0	0	78,539	0.10707	0.31812
36	86,375	1,721	0	88,096	0.12010	0.43822
37	78,809	0	0	78,809	0.10744	0.54566
38	66,565	6,647	0	73,211	0.09981	0.64547
39	17,733	12,006	0	29,739	0.04054	0.68602
40	19,638	19,580	0	39,218	0.05347	0.73949
41	0	13,603	0	13,603	0.01855	0.75803
42	4,001	42,483	0	46,484	0.06337	0.82141
43	5,730	28,343	0	34,074	0.04645	0.86786
44	2,020	20,441	0	22,461	0.03062	0.89848
45	0	20,348	0	20,348	0.02774	0.92622
46	0	14,929	0	14,929	0.02035	0.94658
47	0	9,764	0	9,764	0.01331	0.95989
48	0	2,358	0	2,358	0.00321	0.96310
49	0	5,469	0	5,469	0.00746	0.97056
50	0	6,359	0	6,359	0.00867	0.97923
51	0	4,001	0	4,001	0.00545	0.98468
53	0	1,948	0	1,948	0.00266	0.98734
54	0	1,854	0	1,854	0.00253	0.98987
55	0	1,912	0	1,912	0.00261	0.99247
59	0	1,762	0	1,762	0.00240	0.99487
60	0	1,912	0	1,912	0.00261	0.99748
67	0	1,848	0	1,848	0.00252	1.00000
Total	502,151	231,344	0	733,494	1.00000	1.00000

Table C-Z.--Dover sole population estimates for all depth strata combined by sex and centimeter interval for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
16	28,769	5,384	0	34,153	0.00105	0.00105
17	28,384	13,263	0	41,647	0.00128	0.00233
18	36,263	52,198	0	88,460	0.00272	0.00504
19	47,202	33,489	0	80,692	0.00248	0.00752
20	49,195	58,240	0	107,435	0.00330	0.01082
21	44,523	60,262	0	104,784	0.00322	0.01404
22	109,057	97,453	0	206,510	0.00634	0.02038
23	175,500	127,026	0	302,526	0.00929	0.02966
24	259,570	144,585	0	404,155	0.01241	0.04207
25	343,804	203,270	0	547,073	0.01680	0.05887
26	497,631	219,632	0	717,263	0.02202	0.08089
27	757,791	300,089	0	1,057,880	0.03248	0.11337
28	775,936	315,072	0	1,091,008	0.03349	0.14686
29	948,079	365,365	0	1,313,444	0.04032	0.18718
30	1,096,997	352,029	0	1,449,026	0.04449	0.23167
31	1,120,500	505,301	0	1,625,801	0.04991	0.28158
32	1,447,811	558,879	0	2,006,690	0.06161	0.34319
33	1,352,322	508,223	0	1,860,546	0.05712	0.40031
34	1,509,778	734,913	0	2,244,691	0.06891	0.46922
35	1,228,283	846,914	0	2,075,198	0.06371	0.53293
36	1,069,482	608,255	0	1,677,737	0.05151	0.58444
37	832,955	725,208	0	1,558,163	0.04784	0.63228
38	806,632	699,125	0	1,505,758	0.04623	0.67851
39	523,865	664,348	0	1,188,213	0.03648	0.71499
40	524,101	778,282	0	1,302,383	0.03998	0.75497
41	406,177	745,063	0	1,151,240	0.03534	0.79031
42	308,238	878,601	0	1,186,839	0.03644	0.82675
43	269,758	758,739	0	1,028,497	0.03158	0.85833
44	86,264	903,954	0	990,218	0.03040	0.88873
45	84,374	874,922	0	959,296	0.02945	0.91818
46	62,194	736,161	0	798,355	0.02451	0.94269
47	33,615	595,198	0	628,814	0.01931	0.96199
48	32,994	385,479	0	418,473	0.01285	0.97484
49	11,053	285,148	0	296,201	0.00909	0.98394
50	4,960	203,643	0	208,603	0.00640	0.99034
51	13,000	101,623	0	114,623	0.00352	0.99386
52	0	85,018	0	85,018	0.00261	0.99647
53	0	31,466	0	31,466	0.00097	0.99743
54	0	31,688	0	31,688	0.00097	0.99841
55	0	26,665	0	26,665	0.00082	0.99923
56	0	9,751	0	9,751	0.00030	0.99953
57	0	8,012	0	8,012	0.00025	0.99977
58	0	2,435	0	2,435	0.00007	0.99985
60	0	2,186	0	2,186	0.00007	0.99991
72	0	2,817	0	2,817	0.00009	1.00000
Total	16,927,059	15,645,372	0	32,572,431	1.00000	1.00000

Table C-3.--Giant grenadier population estimates for all depth strata combined by sex and centimeter interval (snout-to-anal fin) for the International North Pacific Fisheries Commission Eureka area from. the 1995 West Coast upper continental slope bottom trawl survey.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
12	4,997	2,498	0	7,495	0.00109	0.00109
13	9,588	2,110	0	11,697	0.00170	0.00278
14	69,579	68,447	0	138,027	0.02002	0.02281
15	233,890	173,032	0	406,922	0.05903	0.08183
16	592,136	483,115	2,328	1,077,579	0.15631	0.23814
17	609,335	556,510	2,328	1,168,172	0.16945	0.40760
18	652,912	694,274	6,983	1,354,169	0.19643	0.60403
19	420,540	478,152	2,328	901,020	0.13070	0.73473
20	320,089	441,190	9,310	770,590	0.11178	0.84651
21	178,030	239,086	0	417,116	0.06051	0.90701
22	63,209	215,610	0	278,819	0.04044	0.94746
23	34,862	93,420	0	128,282	0.01861	0.96607
24	17,640	68,330	0	85,970	0.01247	0.97854
25	6,526	30,935	0	37,461	0.00543	0.98397
26	8,013	25,806	0	33,819	0.00491	0.98888
27	1,968	10,970	0	12,938	0.00188	0.99075
28	0	11,097	0	11,097	0.00161	0.99236
29	0	8,879	0	8,879	0.00129	0.99365
30	0	5,231	0	5,231	0.00076	0.99441
31	0	1,730	0	1,730	0.00025	0.99466
32	0	13,651	0	13,651	0.00198	0.99664
34	0	6,668	0	6,668	0.00097	0.99761
36	0	4,801	0	4,801	0.00070	0.99830
37	0	5,023	0	5,023	0.00073	0.99903
39	0	2,328	0	2,328	0.00034	0.99937
41	2,122	0	0	2,122	0.00031	0.99968
51	0	2,217	0	2,217	0.00032	1.00000
Total	3,225,437	3,645,110	23,276	6,893,822	1.00000	1.00000

Table C-4.--Longspine thornyhead population estimates for all depth strata combined by sex and centimeter interval for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
6	0	0	83,191	83,191	0.00038	0.00038
7	0	0	477,932	477,932	0.00217	0.00255
8	0	0	1,349,289	1,349,289	0.00613	0.00868
9	7,174	0	4,441,963	4,449,137	0.02021	0.02889
10	0	0	8,724,669	8,724,669	0.03964	0.06853
11	13,079	0	12,228,374	12,241,453	0.05561	0.12414
12	18,884	0	13,177,757	13,196,641	0.05995	0.18409
13	153,397	143,682	10,492,788	10,789,867	0.04902	0.23310
14	1,164,708	701,964	7,790,158	9,656,830	0.04387	0.27697
15	2,586,178	1,620,387	5,138,462	9,345,027	0.04245	0.31943
16	5,016,429	2,888,912	3,398,739	11,304,079	0.05135	0.37078
17	5,998,513	4,022,881	1,726,066	11,747,460	0.05337	0.42415
18	7,796,945	6,553,430	845,702	15,196,077	0.06903	0.49318
19	7,380,703	6,835,602	193,456	14,409,761	0.06546	0.55864
20	7,236,051	6,572,270	88,247	13,896,568	0.06313	0.62177
21	6,486,384	6,416,850	33,884	12,937,118	0.05877	0.68055
22	6,005,289	6,531,903	0	12,537,192	0.05695	0.73750
23	6,193,183	6,538,723	0	12,731,907	0.05784	0.79534
24	6,317,645	5,438,406	0	11,756,051	0.05341	0.84875
25	4,788,147	4,782,825	13,115	9,584,088	0.04354	0.89229
26	5,450,644	4,201,572	0	9,652,216	0.04385	0.93614
27	3,558,752	2,630,150	0	6,188,902	0.02812	0.96425
28	2,672,940	1,872,513	0	4,545,453	0.02065	0.98490
29	1,314,648	849,523	0	2,164,170	0.00983	0.99473
30	366,039	410,657	0	776,696	0.00353	0.99826
31	136,941	89,899	18,899	245,740	0.00112	0.99938
32	68,360	38,051	0	106,411	0.00048	0.99986
33	15,255	0	0	15,255	0.00007	0.99993
34	0	6,222	0	6,222	0.00003	0.99996
36	9,390	0	0	9,390	0.00004	1.00000
Total	80,755,677	69,146,423	70,222,692	220,124,793	1.00000	1.00000

Table c-5 .--Pacific grenadier population estimates for all depth strata combined by sex and centimeter interval (snout-to-anal fin) for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
2	0	0	16,210	16,210	0.00084	0.00084
3	0	0	52,914	52,914	0.00274	0.00358
4	34,820	8,628	472,919	516,368	0.02674	0.03032
5	86,385	66,367	585,309	738,061	0.03822	0.06853
6	181,740	161,020	630,213	972,972	0.05038	0.11892
7	273,647	256,265	434,796	964,708	0.04995	0.16887
8	447,191	279,218	247,560	973,969	0.05043	0.21930
9	417,093	241,891	161,838	820,822	0.04250	0.26180
10	414,516	392,349	91,868	898,733	0.04654	0.30834
11	287,483	274,732	51,566	613,780	0.03178	0.34012
12	294,213	204,998	10,350	509,561	0.02639	0.36651
13	209,426	198,903	3,193	411,523	0.02131	0.38782
14	275,417	186,057	2,740	464,214	0.02404	0.41185
15	226,604	93,537	0	320,141	0.01658	0.42843
16	708,613	73,660	0	782,273	0.04051	0.46894
17	1,145,761	51,450	0	1,197,211	0.06199	0.53093
18	2,689,964	83,459	0	2,773,424	0.14361	0.67454
19	2,334,261	151,572	0	2,485,833	0.12872	0.80326
20	1,940,152	136,470	0	2,076,622	0.10753	0.91078
21	865,681	116,106	2,336	984,123	0.05096	0.96174
22	310,035	153,800	0	463,836	0.02402	0.98576
23	85,167	94,645	0	179,812	0.00931	0.99507
24	17,735	37,902	0	55,636	0.00288	0.99795
25	0	11,869	0	11,869	0.00061	0.99857
26	0	16,221	0	16,221	0.00084	0.99941
27	2,332	2,705	0	5,037	0.00026	0.99967
28	0	4,167	2,247	6,414	0.00033	1.00000
Total	13,248,234	3,297,992	2,766,058	19,312,285	1.00000	1.00000

Table C-6.--Sablefish population estimates for all depth strata combined by sex and centimeter interval for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
23	0	1,603	0	1,603	0.00025	0.00025
25	22,398	22,398	0	44,797	0.00695	0.00720
26	38,934	29,864	0	68,798	0.01067	0.01786
27	77,867	44,797	0	122,664	0.01902	0.03688
28	91,197	97,060	0	188,256	0.02919	0.06608
29	44,797	22,398	0	67,195	0.01042	0.07650
30	22,398	25,646	0	48,044	0.00745	0.08395
31	7,466	22,398	0	29,864	0.00463	0.08858
32	7,466	0	0	7,466	0.00116	0.08973
34	0	2,805	0	2,805	0.00043	0.09017
37	14,932	7,466	0	22,398	0.00347	0.09364
38	11,313	17,860	0	29,173	0.00452	0.09817
39	46,623	26,292	0	72,916	0.01131	0.10947
40	97,705	105,806	0	203,512	0.03156	0.14103
41	62,962	126,966	0	189,929	0.02945	0.17048
42	55,524	111,852	0	167,376	0.02595	0.19644
43	69,290	64,332	0	133,621	0.02072	0.21716
44	42,081	52,967	0	95,048	0.01474	0.23190
45	5,269	16,154	0	21,422	0.00332	0.23522
46	9,515	6,950	0	16,465	0.00255	0.23777
47	27,353	2,049	0	29,402	0.00456	0.24233
48	83,835	6,209	0	90,044	0.01396	0.25629
49	96,568	16,896	0	113,464	0.01759	0.27389
50	201,405	11,699	0	213,104	0.03305	0.30693
51	248,210	23,504	0	271,715	0.04213	0.34907
52	314,539	46,776	0	361,315	0.05603	0.40509
53	257,677	49,276	0	306,953	0.04760	0.45269
54	330,510	86,492	0	417,001	0.06466	0.51735
55	236,538	102,114	0	338,652	0.05251	0.56987
56	249,701	106,487	0	356,189	0.05523	0.62510
57	148,036	92,805	0	240,842	0.03735	0.66245
58	163,249	152,939	0	316,188	0.04903	0.71148
59	109,059	128,529	0	237,588	0.03684	0.74832
60	109,218	213,957	0	323,175	0.05011	0.79843
61	62,492	142,566	0	205,058	0.03180	0.83023
62	93,073	136,087	0	229,161	0.03553	0.86576
63	17,219	99,474	0	116,692	0.01810	0.88386
64	41,492	86,788	0	128,280	0.01989	0.90375
65	24,295	65,670	0	89,966	0.01395	0.91770

Table C-6.--Continued.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
66	16,543	114,773	0	131,316	0.02036	0.93806
67	13,592	65,119	0	78,712	0.01221	0.95027
68	8,694	63,436	0	72,131	0.01119	0.96145
69	0	67,052	0	67,052	0.01040	0.97185
70	1,765	48,385	0	50,149	0.00778	0.97963
71	4,497	27,705	0	32,201	0.00499	0.98462
72	0	28,461	0	28,461	0.00441	0.98904
73	0	17,120	0	17,120	0.00265	0.99169
74	0	11,645	0	11,645	0.00181	0.99350
75	0	6,053	0	6,053	0.00094	0.99443
76	0	9,563	0	9,563	0.00148	0.99592
77	0	6,001	0	6,001	0.00093	0.99685
78	0	2,360	0	2,360	0.00037	0.99721
80	0	2,308	0	2,308	0.00036	0.99757
81	0	2,403	0	2,403	0.00037	0.99794
82	0	2,412	0	2,412	0.00037	0.99832
83	0	8,483	0	8,483	0.00132	0.99963
85	2,360	0	0	2,360	0.00037	1.00000
Total	3,589,658	2,859,213	0	6,448,871	1.00000	1.00000

Table C-7.--Shortspine thornyhead population estimates for all depth strata combined by sex and centimeter interval for the International North Pacific Fisheries Commission Eureka area from the 1995 West Coast upper continental slope bottom trawl survey.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
7	0	0	4,386	4,386	0.00037	0.00037
8	0	0	2,020	2,020	0.00017	0.00054
9	0	0	23,051	23,051	0.00195	0.00250
10	0	0	98,071	98,071	0.00831	0.01080
11	0	0	187,972	187,972	0.01592	0.02673
12	3,961	0	330,734	334,695	0.02835	0.05508
13	33,104	3,464	402,226	438,794	0.03717	0.09225
14	104,921	0	375,621	480,543	0.04071	0.13296
15	203,626	32,868	466,398	702,892	0.05955	0.19251
16	344,160	62,231	422,092	828,482	0.07019	0.26269
17	256,469	122,612	252,303	631,384	0.05349	0.31618
18	353,740	165,969	166,073	685,783	0.05810	0.37428
19	372,721	211,939	90,824	675,484	0.05722	0.43150
20	450,799	329,945	90,124	870,868	0.07378	0.50528
21	338,851	373,536	56,623	769,009	0.06515	0.57043
22	344,007	328,473	36,353	708,833	0.06005	0.63047
23	220,648	190,638	20,909	432,195	0.03661	0.66709
24	181,977	164,007	4,700	350,684	0.02971	0.69680
25	133,784	137,169	2,878	273,831	0.02320	0.71999
26	121,018	119,750	0	240,768	0.02040	0.74039
27	62,891	72,403	0	135,294	0.01146	0.75185
28	71,655	71,522	0	143,177	0.01213	0.76398
29	86,164	61,404	2,878	150,445	0.01275	0.77673
30	53,069	33,389	0	86,459	0.00732	0.78405
31	67,398	33,100	0	100,498	0.00851	0.79256
32	57,180	51,796	0	108,976	0.00923	0.80180
33	35,796	35,253	0	71,050	0.00602	0.80782
34	36,053	27,832	0	63,885	0.00541	0.81323
35	35,653	21,407	0	57,060	0.00483	0.81806
36	20,389	7,517	0	27,906	0.00236	0.82043
37	32,744	4,455	0	37,199	0.00315	0.82358
38	22,961	20,899	0	43,859	0.00372	0.82729
39	19,477	13,874	0	33,352	0.00283	0.83012
40	26,899	19,581	0	46,480	0.00394	0.83406
41	35,989	7,388	0	43,377	0.00367	0.83773
42	27,239	10,016	0	37,255	0.00316	0.84089
43	60,130	15,376	0	75,506	0.00640	0.84728
44	65,850	21,296	0	87,147	0.00738	0.85467
45	78,341	16,110	0	94,451	0.00800	0.86267

Table C-7.--Continued.

Length (cm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
46	83,832	9,882	0	93,715	0.00794	0.87061
47	54,162	28,959	0	83,121	0.00704	0.87765
48	75,060	29,712	0	104,772	0.00888	0.88652
49	57,029	33,037	0	90,065	0.00763	0.89415
50	62,441	47,469	0	109,910	0.00931	0.90346
51	50,534	48,698	0	99,231	0.00841	0.91187
52	40,979	50,439	0	91,417	0.00774	0.91962
53	37,112	57,602	0	94,714	0.00802	0.92764
54	25,824	63,921	0	89,745	0.00760	0.93524
55	12,929	59,396	0	72,325	0.00613	0.94137
56	15,860	67,701	0	83,561	0.00708	0.94845
57	10,872	81,924	0	92,795	0.00786	0.95631
58	12,563	72,341	0	84,904	0.00719	0.96350
59	7,664	83,006	0	90,670	0.00768	0.97118
60	8,305	70,935	0	79,240	0.00671	0.97790
61	5,197	63,681	0	68,878	0.00584	0.98373
62	6,981	57,684	0	64,665	0.00548	0.98921
63	0	31,728	0	31,728	0.00269	0.99190
64	2,407	21,285	0	23,692	0.00201	0.99390
65	0	21,857	0	21,857	0.00185	0.99576
66	0	12,000	0	12,000	0.00102	0.99677
67	0	12,687	0	12,687	0.00107	0.99785
68	0	10,317	0	10,317	0.00087	0.99872
70	0	7,429	0	7,429	0.00063	0.99935
71	0	2,473	0	2,473	0.00021	0.99956
72	0	2,473	0	2,473	0.00021	0.99977
73	0	2,726	0	2,726	0.00023	1.00000
Total	4,929,417	3,838,581	3,036,234	11,804,231	1.00000	1.00000

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