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1996 Bottom Trawl Survey of the Eastern Bering Sea Continental Shelf

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1996 BOTTOM TRAWL SURVEY OF THE EASTERN BERING SEA CONTINENTAL SHELF

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ABSTRACT

The Resource Assessment and Conservation Engineering Division of the Alaska Fisheries Science Center conducts annual bottom trawl surveys to monitor the condition of the demersal fish and crab stocks of the eastern Bering Sea continental shelf. The standard study area, surveyed each year since 1979, encompasses a major portion of the eastern Bering Sea shelf between the 20-m and the 200-m isobaths and from the Alaska Peninsula north to approximately the latitude of St. Matthew Island (60° 50′ N). In 1996, this area was again surveyed by two chartered trawlers, the 40-m F/V *Arcturus* and the 40-m F/V *Aldebaran.*

Demersal populations were sampled by trawling for 30 minutes at stations centered in a 20 × 20 nautical mile grid covering the survey area. At each station, species composition of the catch was determined and commercially important species were sampled to obtain length distributions and age structure samples.

Survey results presented in this report include relative fishing powers of the survey vessels, abundance estimates for fish and invertebrates, geographic distributions of important fish species, size composition of principal fish species, and age and growth information for selected species. Surface and bottom temperatures recorded at each sampling station are also presented.

Appendices provide station data, species listings, and detailed results of analyses of abundance and biological data of the sampled populations.

CONTENTS

INTRODUCTION

The eastern Bering Sea continental shelf supports one of the most productive groundfish fisheries in the world (Bakkala 1993). Since 1970, annual commercial catches of groundfish have ranged from 1.2 to 2.2 million metric tons (t) (North Pacific Fishery Management Council 1998). Although many species are caught commercially, the most abundant has been walleye pollock (*Theragra chalcogramma*), which, since 1970, has comprised more than 70% of the total landings. The next most abundant species have been yellowfin sole (*Limanda asper*) and Pacific cod (*Gadus macrocephalus*) which have comprised 8% and 5%, respectively, of the commercial landings.

Since 1971, the Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC) has conducted annual bottom trawl surveys of the eastern Bering Sea continental shelf. In 1975, the first large-scale survey of the eastern Bering Sea shelf was conducted under contract from the Bureau of Land Management in response to a need for baseline data to assess the potential impact of proposed offshore oil exploration and development on fishery resources (Pereyra et al. 1976). During this baseline survey, sampling was conducted over the eastern Bering Sea shelf between the 20-m and 200-m isobaths and from the Alaska Peninsula north to approximately 62°N. In subsequent years, the areal coverage of the annual surveys was reduced, until 1979 when the most comprehensive survey of the Bering Sea shelf was undertaken in cooperation with the Japan Fisheries Agency (Bakkala and Wakabayashi 1985). The 1979 survey encompassed the entire region sampled in the 1975 baseline study, and in addition, the continental slope waters between the Aleutian Islands and the U.S.-U.S.S.R. convention line, and the shelf region between St. Matthew and St. Lawrence

Islands. A hydroacoustic survey was also conducted in 1979 to assess the midwater component of the walleye pollock population. Subsequent annual bottom trawl surveys have essentially resampled the stations established during the 1975 survey, with slight modifications each year. This region encompasses the major portion of economically important eastern Bering Sea groundfish populations, except those primarily located in continental slope waters. Every third year, through 1991 (1979, 1982, 1985, 1988, 1991) an extended survey was conducted, including hydroacoustic assessment of midwater pollock, bottom trawl sampling of the continental slope (the continental slope was not surveyed in 1994), and bottom trawl sampling in the region between St. Matthew and St. Lawrence Islands. The information gathered by the annual surveys serves to: 1) provide the North Pacific Fishery Management Council with annual fishery-independent estimates of abundance and biological condition of commercially exploited stocks, 2) provide distribution and abundance information to commercial fishermen, and 3) develop a time-series database contributing to our understanding of the population dynamics and interactions of groundfish species.

This report presents information collected by the AFSC in the eastern Bering Sea during the 1996 bottom trawl survey. The groundfish/crab survey and several ancillary projects were conducted from 5 June to 8 August by two U.S. vessels. Detailed information on principal crab species can be found in a report by Otto et al. (1997).

METHODS

Survey Area and Sampling Design

The standard station pattern for the eastern Bering Sea survey is based on a systematic 20 × 20 nautical mile grid. In areas surrounding St. Matthew and the Pribilof Islands, grid block corners were also sampled to better assess blue king crab (*Paralithodes platypus*) concentrations. The survey design pattern called for 356 stations. In 1996, 355 standard stations and 20 additional stations north-west of the standard pattern were successfully sampled (Fig. 1 and Appendix A).

Starting with the eastern stations, the two vessels fished alternate north/south lines of stations such that coverage of the survey area was similar for each vessel. This sampling design facilitated the computation of relative fishing powers (or catch efficiencies) of the two vessels. The progression from east to west was established to prevent multiple encounters of yellowfin sole, Alaska plaice (*Pleuronectes quadrituberculatus*), and perhaps other species which may be migrating eastward during the course of the survey (Smith and Bakkala 1982). Tows were usually 30 minutes in duration and fishing was limited to daylight hours. For data analysis, the survey region was divided into six subareas bounded by the 50-m, 100-m, and 200-m isobaths and by a line separating the northwest and southeast portions of the study area (Fig. 1). This stratification scheme was designed to reduce the variances of population and biomass estimates by conforming to oceanographic domains which seem related to distributions of Bering Sea fishes (Bakkala 1993). The presence of high-density sampling for blue king crab in subareas 3, 4, and 6 necessitated a further division of these subareas into high-density and standard-density

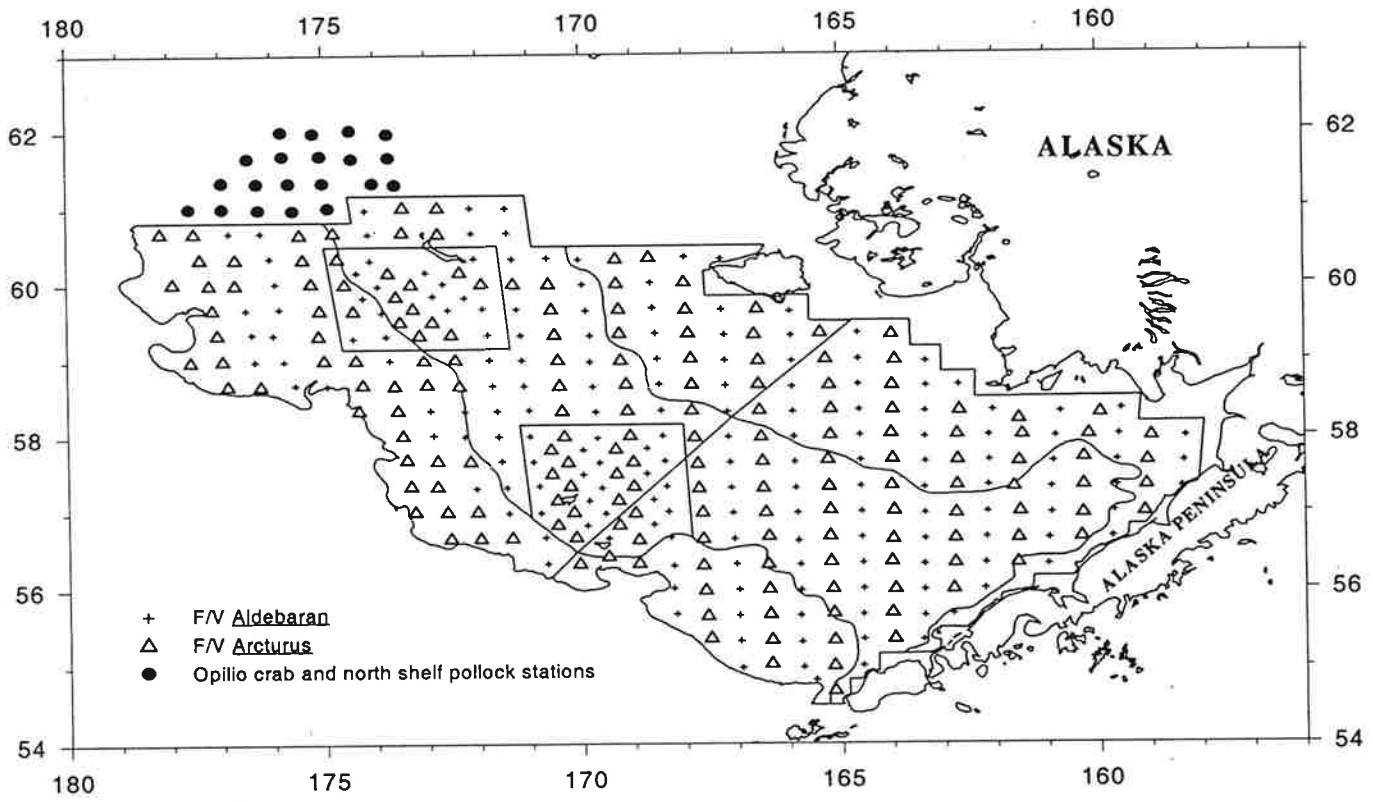

Figure 1.--Standard and special study stations sampled during the 1996 eastern Bering Sea bottom trawl survey, and stratifications used for the analysis of data.

sample strata, resulting in a total of 10 geographic strata. The overall sampling density for the entire survey area was one station per 1,302 km^2 (Table 1). However, because of the high-density sampling in subareas 3, 4, and 6, and the irregular subarea boundaries, sampling density among the six subareas varied from one station per 1,112 km^2 to one per 1,552 km^2.

Table 1.--Size of subareas and strata and sampling densities for the 1996 eastern Bering Sea bottom trawl survey (See also Fig. 1).

Subarea	Area (km^2)	No. Stations successfully sampled	Sampling density (km^2/stn)
1 (10)	77,871	58	1,343
2 (20)	41,027	31	1,323
3	103,300	78	1,324
(31)	94,526	69	1,370
(32)	8,774	9	975
4	107,822	96	1,123
(41)	62,703	44	1,425
(42)	24,011	31	775
(43)	21,108	21	1,005
5 (50)	38,792	25	1,552
6	94,562	67	1,411
(61)	88,134	60	1,469
(62)	6,429	7	918
Subareas Combined	463,374	355	1,305

Vessels and Fishing Gear

The 1996 eastern Bering Sea bottom trawl survey was conducted aboard the 40-m fishing vessels *Arcturus* and *Aldebaran* (Table 2). As in previous years, both vessels were equipped with 83-112 eastern otter trawls which have 25.3-m (83 ft) headropes and 34.1-m (112 ft) footropes (Fig. 2). These nets were attached to tail chains with 54.9-m (30 fathoms) paired dandylines. Each lower dandyline had a 0.61-m chain extension connected to the lower wing edge to improve bottom tending characteristics. Steel "V"-doors measuring 1.8 × 2.7-m and weighing 816 kg were used.

Table 2.--Characteristics of vessels used during the 1996 eastern Bering Sea bottom trawl survey.

Vessel	Overall length (m)	Horsepower	Survey period	
			Start	Finish
F/V *Arcturus*	40	1525	5 June	8 August
F/V *Aldebaran*	40	1525	5 June	8 August

SCANMAR[1] net mensuration systems were used aboard each vessel to measure net height and width. Net width was measured by the distance between two sensors attached to the upper starboard and port dandylines, about 0.61-m in front of the net. Mean net widths were calculated from observations recorded within each tow. These data were then used to establish a net width-scope (wire-out) relationship for each vessel to enable prediction of net width for tows where net width data were not available (Fig. 3) as described by Rose and Walters (1990). Estimates of net width were used in area-swept calculations.

[1] Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.

83/112 EASTERN

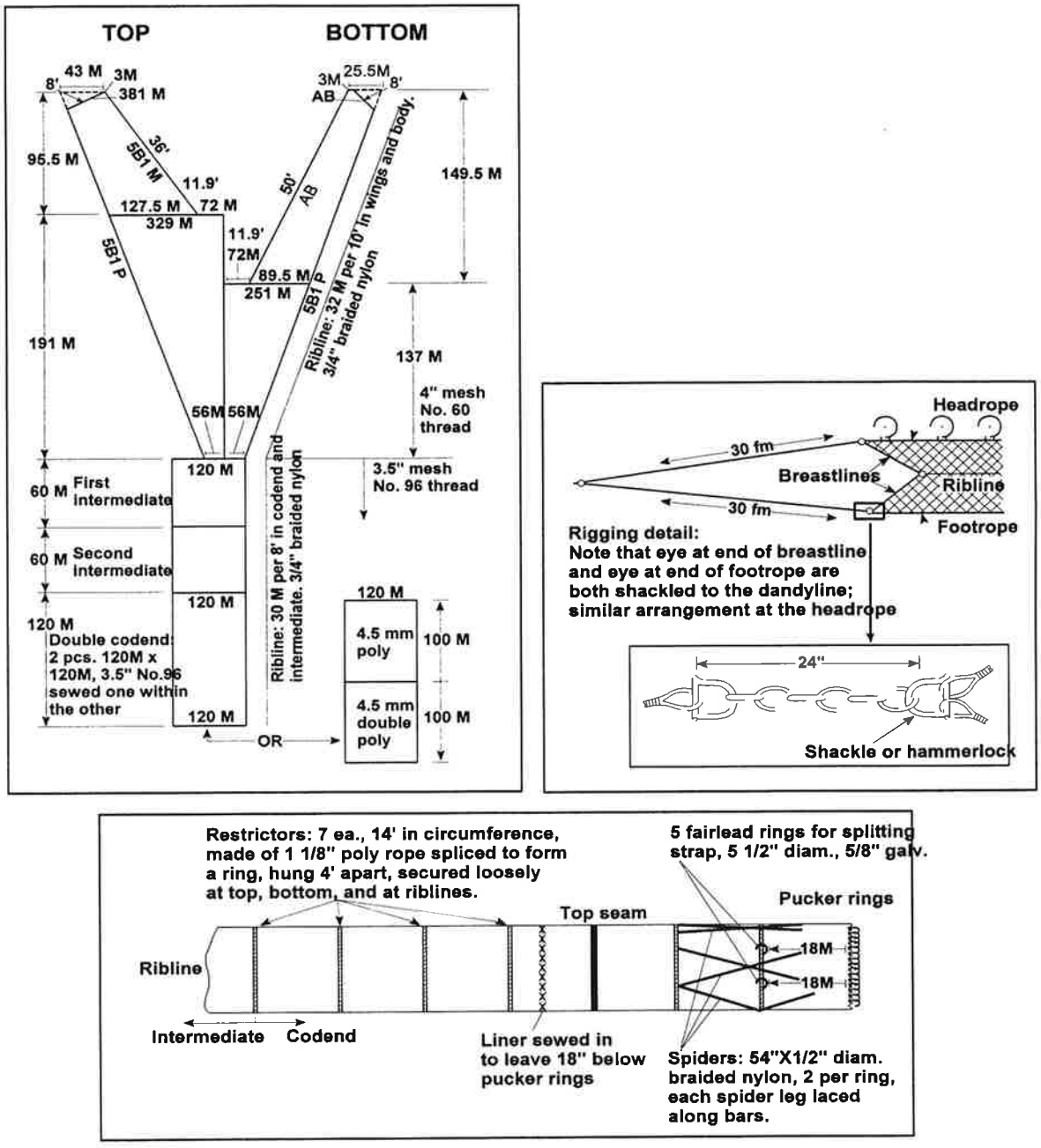

Figure 2.--Schematic diagram of trawl used during the 1996 eastern Bering Sea bottom trawl survey.

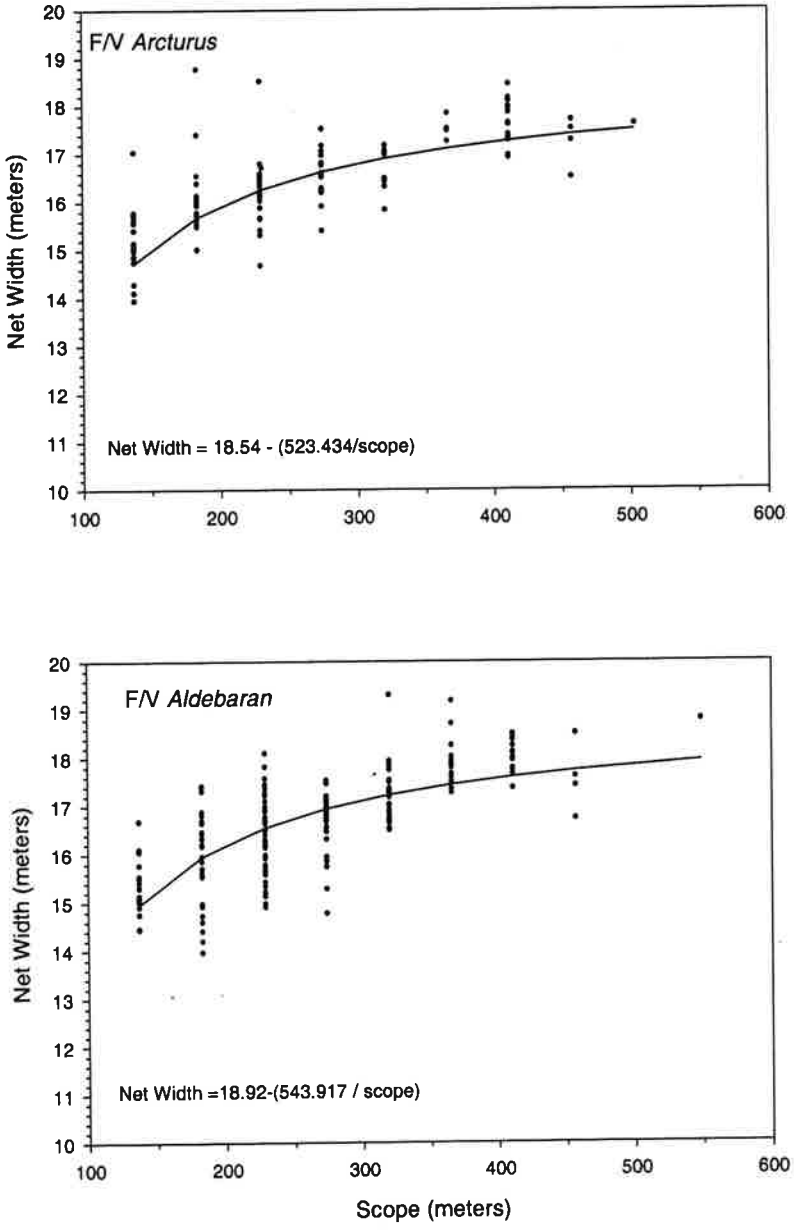

Figure 3.--Relationship between net-width and scope (wire-out) for vessels participating in the 1996 eastern Bering Sea survey.

Data Collection

Sampling procedures used in RACE eastern Bering Sea assessment surveys are described in detail by Wakabayashi et al. (1985). A brief summary follows.

Samples were collected by trawling at the center of each 20 × 20 nautical mile grid block (or corner station, in the case of high-density strata) for 30 minutes (timed after the net had settled on the bottom), towing at a speed of 1.54 m/sec (3 knots). If the bottom appeared to be untrawlable at the specified location, the nearest trawlable site within the same grid square was used. If the net was ripped or "hung up" on some object on the bottom during the tow, the catch was discarded and a new sample obtained.

Catches of less than approximately 1,150 kg (2,500 lb) were processed entirely while larger catches were subsampled. Economically important fish and invertebrates were sorted to species with the exception of two species of flatfish. Similar features between flathead sole (*Hippoglossoides elassodon*) and Bering flounder (*Hippoglossoides robustus*) made identification of these two species (*Hippoglossoides* spp. in text and tables) difficult within the time constraints of the survey; thus, these species were grouped by genus for purposes of this report. Minor species of fish and invertebrates were sorted to the lowest taxonomic level practicable. Catch weights and numbers by species or species group were estimated directly or, when subsampled, estimated by extrapolating the proportion in the subsample to that of the entire catch weight. Pacific halibut (*Hippoglossus stenolepis*) and crab species of the genera *Paralithodes* (red and blue king crabs, *P. camtschaticus* and *P. platypus*, respectively), *Chionoecetes* (snow and Tanner crabs, *C. opilio* and *C. bairdi*, respectively), and *Erimacrus isenbeckii* (hair crabs) were usually weighed and enumerated from the entire catch.

Size composition data were collected for each commercially important species. Pacific halibut, walleye pollock, Pacific cod, and yellowfin sole were measured whenever caught while other species were measured as time permitted (Table 3). Pacific halibut were measured immediately upon capture and returned to the sea in an effort to reduce sampling mortality for this species. Random samples of the remaining species of up to approximately 200 individuals (300 in the case of walleye pollock) were sexed and measured to the nearest centimeter from the tip of the snout to the end of the middle rays of the caudal fin (fork length).

Sagittal otoliths were collected from nine fish species (Table 4). In both the northwestern and southeastern divisions of the survey area, three otolith pairs per sex/centimeter interval were collected for Pacific cod and rock sole (*Lepidopsetta* spp.; two species are now recognized from the Bering Sea, *L. bilineata* and a new species being described by Orr and Matarese, (in prep.)), and five pairs per sex/centimeter interval for all other species. Scales as well as otoliths were taken from Pacific cod to aid in age determination of young fish. Individual fish weight data were collected for arrowtooth flounder (*Atheresthes stomias*) and Kamchatka flounder (*A. evermanni*) in conjunction with otolith sampling. In the case of the *Hippoglossoides* spp., otoliths were collected only from individuals that were identified with certainty as flathead sole. Age structures for roundfish were preserved in 50% ethanol; flatfish otoliths were preserved in 50% glycerol.

Temperature profiles were taken at each station using a micro-bathythermograph (MBT) attached to the head rope of the net; surface temperatures were taken by bucket thermometer.

Table 3.--Number of length measurements taken during the 1996 eastern Bering Sea bottom trawl survey.

	Length measurements by subarea						
Species	1	2	3	4	5	6	Total
Alaska plaice	1,333	1,805	1,889	4,739	---	373	10,139
Bering flounder	---	3	1	1,109	---	159	1,272
Greenland turbot	---	---	3	58	4	232	297
Kamchatka flounder	---	---	111	129	195	375	810
Pacific cod	1,722	521	2,226	2,823	332	1,494	9,118
Pacific halibut	360	126	226	147	54	275	1,188
Pacific ocean	---	---	---	---	---	148	148
arrowtooth flounder	23	---	1,593	789	3,043	3,300	8,748
capelin	---	9	---	---	---	---	9
eulachon	36	---	---	---	378	---	414
flathead sole	846	5	5,402	1,734	4,192	7,065	19,244
light dusky	---	---	---	---	1	---	1
northern rock	7,903	4,499	8,464	10,244	268	3,205	34,583
northern rockfish	---	---	---	---	2	---	2
rex sole	1	---	30	3	157	33	224
starry flounder	139	12	---	---	---	---	151
walleye pollock	2,975	3,696	28,466	41,250	2,082	30,585	109,054
yellowfin sole	7,935	5,192	7,923	6,419	28	4	27,501

Table 4.--Number of fish in which age structures (otoliths and/or scales) were collected, by species and subarea, during the 1996 eastern Bering Sea bottom trawl survey.

	Subarea						
Species	1	2	3	4	5	6	Total[a]
walleye pollock	60	71	430	524	34	249	1424
yellowfin sole	409	243	45	32	--	--	729
Pacific cod[b]	27	62	327	265	--	20	713
rock sole spp.	162	197	71	45	--	6	481
flathead sole	17	33	175	--	55	140	420
Alaska plaice	25	65	85	75	--	--	250
Arrowtooth flounder	--	--	--	--	218	--	218
Kamchatka flounder	--	--	9	12	22	60	128
Greenland turbot	--	--	--	--	--	77	100

[a]Some age structures were collected outside the standard survey area.
[b]Scales were also taken.

Data Analysis

A brief description of the procedures used in the analysis of RACE Bering Sea survey data follows (for a detailed description see Wakabayashi et al. 1985). Some of the species collected were grouped by family for data analysis because of their insignificant commercial value or questionable identification.

Relative fishing powers between the two vessels were determined using the methods of Kappenman (1992). Three-hundred thirty-one stations sampled by the two vessels during the standard survey (Fig. 1) plus 9 stations from special studies were used in that analysis (see Appendix A).

Mean catch per unit effort (CPUE) values for each species were calculated in kilograms per hectare and number per hectare for each of the 10 strata; area swept (hectares) was computed as the distance towed multiplied by the mean net width (Alverson and Pereyra 1969). Mean CPUE values, weighted by strata areas, were calculated for individual subareas and for the overall survey area. Biomass and population estimates were derived for each stratum by multiplying the stratum mean CPUE by the stratum area. Stratum totals were then added together to produce estimates for each subarea and for the total survey area.

In estimating the size composition of populations of principal commercial species, length-frequency data obtained at each station were expanded to the station catch by proportion and then extrapolated to the stratum population by the weighted CPUE. Stratum estimates were summed to derive the estimated size composition by subarea and for the overall survey area.

Otolith and scale samples collected during the survey were read by the Age and Growth Determination Unit of the AFSC's Resource Ecology and Fisheries Management (REFM)

Division. From these age samples, stratified by sex and length, an age-length key was produced that showed the distribution of ages by sex at each centimeter interval. Population age composition was estimated by apportioning ages to the estimated population number at each length interval. Only species whose age samples have been read by the time of writing of this publication have been included in the age analyses. Species completed at a later date will be presented in subsequent publications.

Growth characteristics of principal species were described with von Bertalanffy (1938) growth curves fitted to age-length data collected in this survey.

Special Studies

Stomach samples from several of the most prevalent commercial species in each haul were collected and preserved in formalin for later examination by REFM's Food Habits Program (Table 5).

Additional activities included collecting specimens for observer training programs, collecting samples for fish and crab pathology studies (Table 5), and fulfilling collection requests from academic institutions.

Table 5.--Biological fish samples collected for special studies during the 1996 eastern Bering Sea bottom trawl survey.

Species	Stomach samples collected	Pathology samples
Walleye pollock	1731	
Pacific cod	1459	
Yellowfin sole	303	
Lepidopsetta spp.	311	
Hippoglossoides spp.	195	
Pacific halibut	220	
Alaska plaice	154	
Atheresthes spp.	324	
Greenland turbot	69	
Skates	482	
Red king crab		77
Blue king crab		96

RESULTS

Station Data

Station data from the 1996 survey are listed in Appendix A. Relevant information such as position, tow parameters, time, and environmental measurements are listed for each vessel for all standard bottom trawl stations used in the analyses.

Environmental Conditions

Sea surface temperatures recorded during the survey ranged from 3.5° to 9.4° C (Fig. 4). As in most previous years, surface temperature increased from east to west across the shelf, probably reflecting the progression of summer warming as the survey proceeded from east to west.

Bottom temperatures ranged from -0.8° to 7.7° C (Fig. 5). The warmest temperatures (above 7° C) occurred in shallow waters along the central portion of the inner shelf southeast of Nunivak Island. The coldest bottom temperatures observed were in the northern portion of the mid-shelf at depths between 50 and 100-m.

The mean bottom water temperature for the total survey area in 1996 was 3.4° C (Fig. 6). Historically, this was the highest value recorded for mean summer bottom water temperatures in the standard survey area since 1981 (annual mean temperatures range from 1.7° to 5.1°C; average of annual means is 2.5° C). Mean bottom temperatures observed over a more limited region of the southeast Bering Sea, which has been sampled annually since 1971, have ranged from 1.2° to 4.8°C; the 1996 value for this area was 4.1°C, considerably above the long-term average (3.1° C)(Fig. 6).

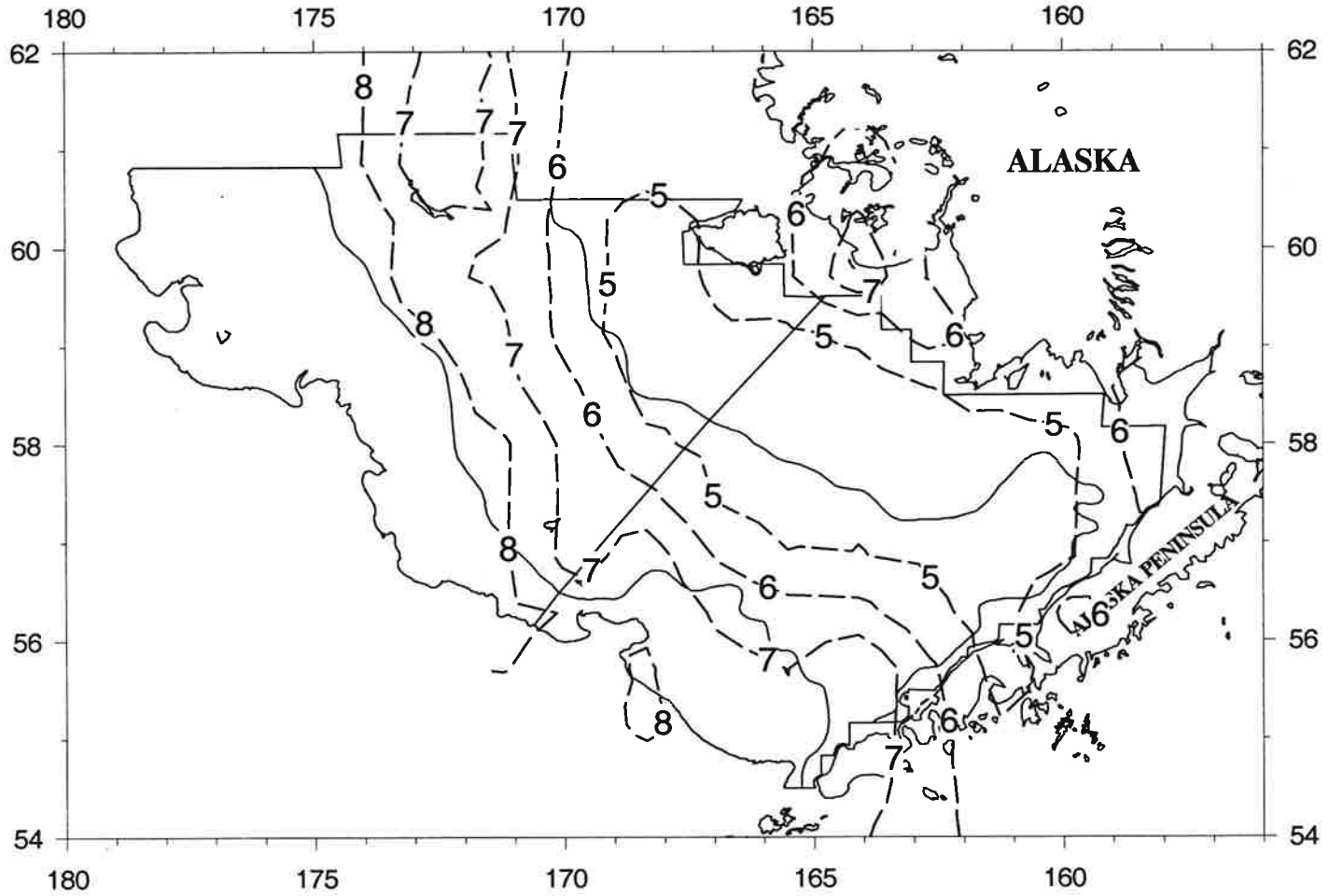

Figure 4.--Distribution of surface water temperatures (° C) observed during the 1996 eastern Bering Sea bottom trawl survey.

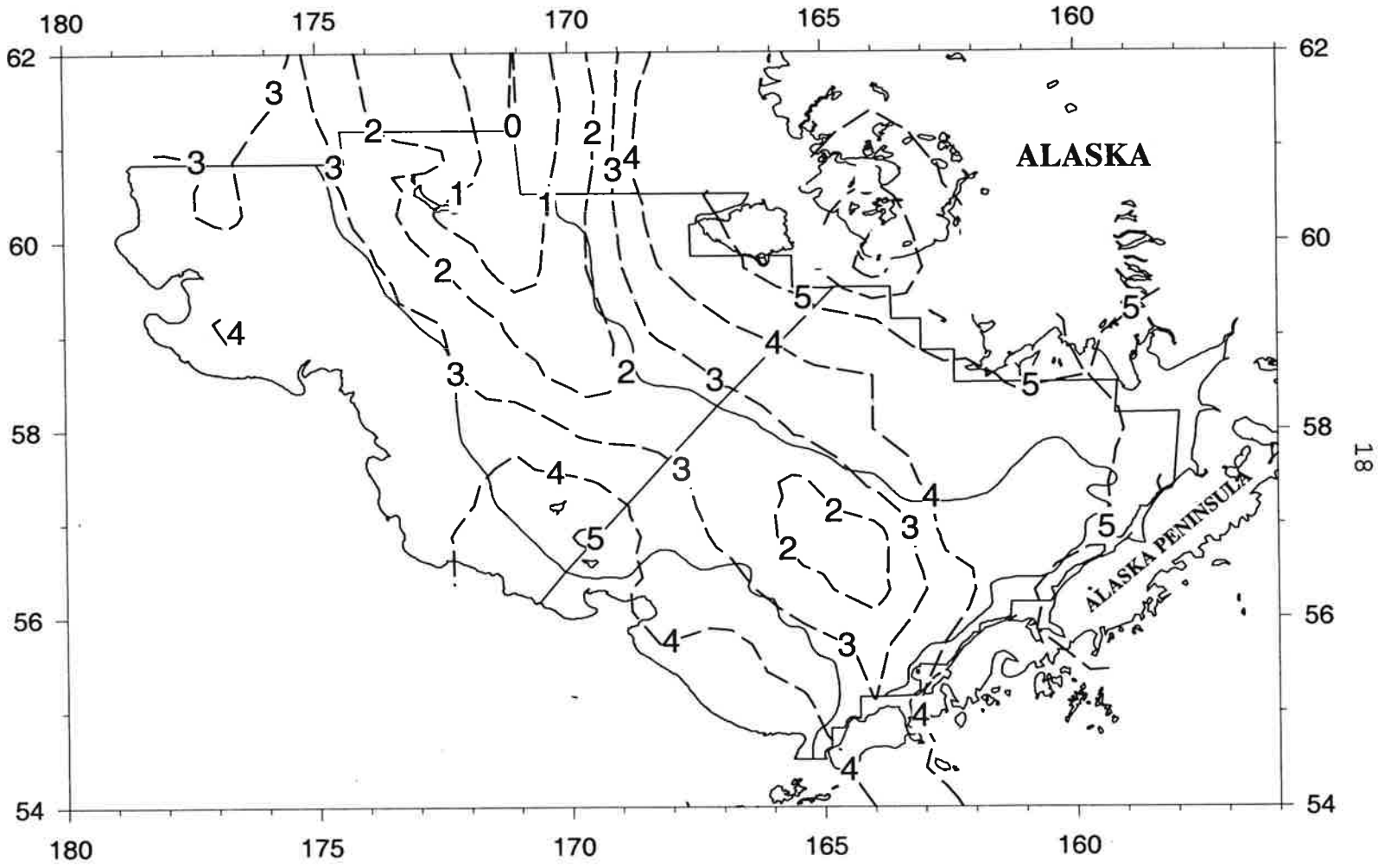

Figure 5.--Distribution of bottom water temperatures (° C) observed during the 1996 eastern Bering Sea bottom trawl survey.

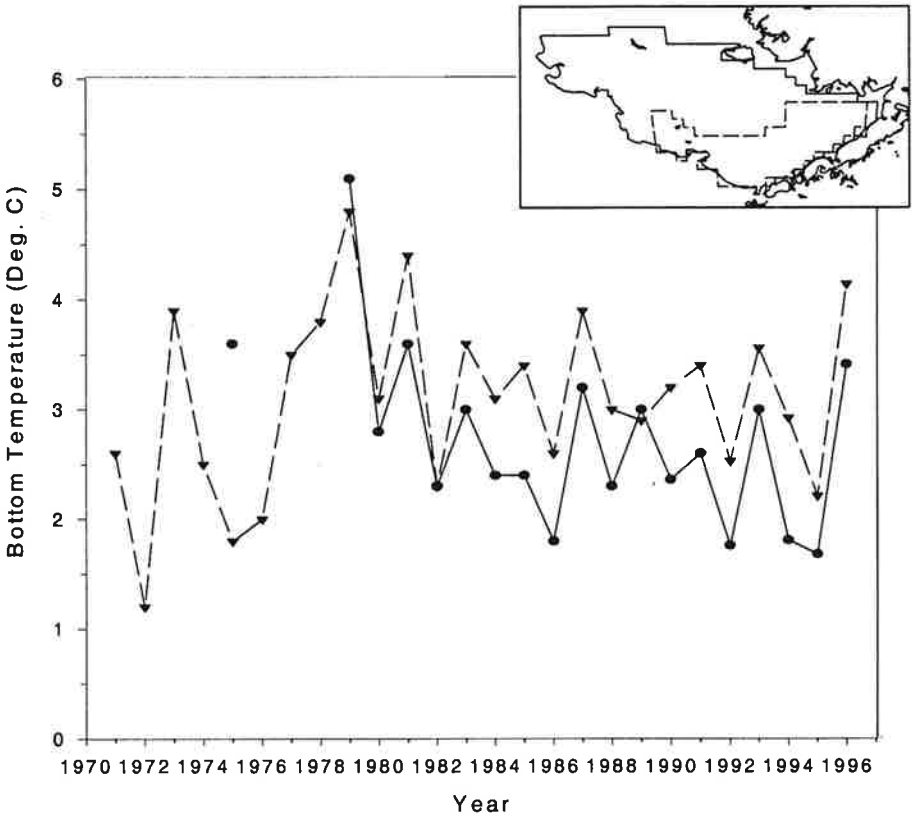

Figure 6.--Mean summer bottom water temperatures based on expendable bathythermograph casts or micro-bathythermographs attached to the net headrope during Alaska Fisheries Science Center bottom trawl surveys. The 1971-95 means (dashed line) are from the southeast Bering Sea (see insert) and the 1975 and 1979-95 means are from the larger survey area outlined on the inset. The 1975 data point for the overall survey area is based on data collected from August through September, while those in all other years and areas were collected from June through early August.

Relative Fishing Powers of Survey Vessels

A total of 340 alternate-row tows were used in the comparison of vessel catch rates with the methods developed by Kappenman (1992). There were 331 tows from the standard area and 9 more from the special studies work (Appendix A). Based on this analysis, the F/V *Aldebaran* was more efficient than the F/V *Arcturus* at capturing skates and walleye pollock, while the F/V *Arcturus* was more efficient at capturing Pacific halibut, yellowfin sole, rock sole, and *Myoxocephalus* sp. Fishing power corrections were applied to catches (by species) of the less efficient vessel (Table 6).

Table 6.--Species for which fishing power corrections were applied in 1996, and scaling factors determined by the method of Kappenman (1992) based on 340 total hauls.

Species	Hauls with catch		Catch multiplier	
	F/V *Arcturus*	F/V *Aldebaran*	F/V *Arcturus*	F/V *Aldebaran*
skate unident.	141	137	1.12	1.00
Pacific halibut	119	115	1.00	1.08
Yellowfin sole	112	126	1.00	1.08
Northern rock sole	160	160	1.00	1.13
Myoxocephalus sp.	109	104	1.00	1.10
Walleye pollock	167	166	1.20	1.00

Estimated Biomass of Major Fish and Invertebrate Groups

Total demersal animal biomass for the overall survey area was estimated at 14.7 million t, of which fish species accounted for 77% (11.3 million t, Table 7), and invertebrates 23% (3.5 million t, Table 8). Concentrations of fish biomass were located in Bristol Bay and along the Alaska Peninsula, around the Pribilof Islands, and northwest of the Pribilofs (Fig. 7). Although 20 families and 68 species of fish were identified in the catches (Appendix B), the fish biomass was dominated by flatfishes (Pleuronectidae, 6.4 million t) and cods (Gadidae, 4.1 million t) (Table 7). The biomass of invertebrates was comprised primarily of the phyla Echinodermata (1.1 million t), Crustacea (0.9 million t), and Mollusca (0.3 million t). A total of 86 invertebrate species from 10 phyla were identified in the survey (Table 8, Appendix B).

Relative Abundance of Individual Fish Species

Relative abundance of the 11 most abundant species and species groups of fish are shown in Figure 8. These taxa accounted for 73% (224 kg/ha) of total animal mean CPUE (307 kg/ha) and 97% of total fish mean CPUE (232 kg/ha). Overall, but particularly in water deeper than 50-m, walleye pollock were the dominant species in the catch with a mean CPUE of 77.6 kg/ha. Pacific cod were abundant across all depths with an overall mean CPUE of 19.6 kg/ha. Yellowfin sole and rock sole, with overall mean catch rates of 50.1kg/ha and 49.0 kg/ha, respectively, dominated catches in water less than 50-m. Yellowfin sole and rock sole were also prominent on the mid-shelf waters between -50 and 100-m along with Alaska plaice and *Hippoglossoides* spp. See Appendix C for a descending rank of all organisms caught.

Table 7.--Biomass estimates (t) for major fish species and fish groups taken during the 1996 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t)[a] and 95% confidence interval	Proportion of total animal biomass[b]	Estimated biomass by subarea (t) 1	2	3	4	5	6
Gadidae (cods)								
Walleye pollock	3,204,106 + 19%	0.217	186,346	52,544	1,339,552	957,589	70,977	597,097
Pacific cod	890,793 + 19%	0.060	146,873	37,421	273,509	252,745	34,185	146,059
Other cods	4,546 + 65%	0.000	1,591	2,789	0	166	0	0
Total cods	4,099,445 + 16%	0.278	334,810	92,754	1,613,062	1,210,501	105,162	743,157
Anoplopomatidae								
Sablefish	0 + 0%	0.000	0	0	0	0	0	0
Scorpaenidae (rockfish)								
Pacific ocean perch	41,936 + 202%	0.003	0	0	0	0	0	41,936
Other rockfish	79 + 114%	0.000	0	0	0	0	79	0
Total rockfish	42,016 + 202%	0.003	0	0	0	0	79	41,936
Pleuronectidae (flatfishes)								
Yellowfin sole	2,298,560 + 17%	0.156	989,320	383,045	633,467	292,088	471	169
Rock sole spp.	0 + 0%	0.000	0	0	0	0	0	0
Hippoglossoides spp.	616,373 + 18%	0.042	30,260	322	284,735	67,479	69,290	164,288
Alaska plaice	529,327 + 25%	0.036	100,505	44,483	135,393	226,561	0	22,384
Arrowtooth flounder	532,159 + 21%	0.036	2,580	0	152,983	24,061	175,195	177,340
Kamchatka flounder	24,196 + 19%	0.002	0	0	4,467	4,483	2,698	12,549
Greenland turbot	30,292 + 31%	0.002	0	0	1,581	5,916	808	21,987
Pacific halibut	170,476 + 14%	0.012	35,044	14,109	30,974	18,346	12,122	59,881
Other flatfish	2,243,296 + 12%	0.152	952,693	383,446	394,292	419,349	11,733	81,782
Total flatfish	6,444,679 + 11%	0.437	2,110,403	825,405	1,637,891	1,058,284	272,316	540,380
Clupeidae								
Pacific herring	24,228 + 56%	0.002	21,965	999	1,202	62	0	0
Cottidae (sculpins)	194,020 + 16%	0.013	41,968	21,316	40,689	43,663	2,124	44,261
Zoarcidae (eelpouts)	26,436 + 27%	0.002	0	0	1,700	10,702	49	13,985
Osmeridae (smelts)	4,717 + 78%	0.000	946	84	169	17	3,494	6
Agonidae (poachers)	15,426 + 16%	0.001	5,750	2,220	3,433	3,758	76	190
Cyclopteridae (snailfishes)	1,899 + 43%	0.000	0	3	159	1,484	33	220
Rajidae (skates)	423,913 + 12%	0.029	12,225	50,842	82,268	115,808	34,633	128,137
Other fish	14,154 + 81%	0.001	242	323	5,861	189	1,245	6,293
Total fish	11,290,931 + 8%	0.766	2,528,308	993,946	3,386,433	2,444,469	419,210	1,518,564

[a]Differences in sums of estimates and totals are due to rounding

[b]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area. Total estimated biomass=14,747,506t.

Table 8.--Biomass estimates (t) for major invertebrate species and invertebrate groups taken during the 1996 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t)[a] and 95% confidence interval	Proportion of total animal biomass[b]	Estimated biomass by subarea (t)					
			1	2	3	4	5	6
Crustacea								
Chionoecetes sp. (snow crab)	540,347 + 14%	0.037	1,260	2,235	131,845	256,894	25,873	122,240
Lithodes sp. king crab	0 + 0%	0.000	0	0	0	0	0	0
Paralithodes sp. (king crab)	69,845 + 29%	0.005	13,823	1,031	33,243	20,627	0	1,121
Erimacrus isenbeckii (hair crab)	4,774 + 47%	0.000	214	943	803	2,797	18	0
Paguridae hermit crab	292,087 + 15%	0.020	29,681	18,793	100,701	89,360	5,482	48,070
Other crab	16,806 + 30%	0.001	5,260	2,990	3,756	4,430	189	182
Total crab	923,860 + 10%	0.063	50,238	25,991	270,347	374,109	31,562	171,612
Shrimps	2,556 + 30%	0.000	51	246	153	154	115	1,836
Other crustaceans	501 + 106%	0.000	52	0	179	187	65	18
Total crustaceans	926,916 + 10%	0.063	50,341	26,237	270,679	374,451	31,742	173,466
Mollusca								
Gastropoda (snails)	286,256 + 15%	0.019	26,671	22,939	89,249	83,140	7,008	57,250
Pelecypoda (bivalves)	13,457 + 140%	0.001	478	296	10,779	1,271	69	564
Squids	6 + 140%	0.000	0	0	0	0	3	3
Octopuses	1,746 + 138%	0.000	0	0	1,422	148	13	164
Other mollusks	22 + 82%	0.000	0	0	3	0	0	18
Total mollusks	301,487 + 16%	0.020	27,149	23,235	101,453	84,560	7,092	57,998
Echinodermata								
Asteroidea (starfish)	921,271 + 15%	0.062	329,941	188,734	236,022	109,570	3,935	53,068
Ophiuroidea (brittle stars)	166,243 + 32%	0.011	6,651	962	62,456	19,908	473	75,792
Echinoidea (sea urchin)	4,746 + 81%	0.000	13	12	1,013	746	2,242	720
Holothuroidea (sea cucumbers)	17,923 + 146%	0.001	286	0	1,985	15,649	0	4
Total echinoderms	1,111,732 + 13%	0.075	336,900	189,712	302,847	146,029	6,659	129,584
Ascidiacea	468,013 + 71%	0.032	35,413	11,501	148,227	272,856	3	13
Porifera (sponges)	237,190 + 79%	0.016	936	260	233,125	1,344	651	874
Coelenterata	212,114 + 18%	0.014	24,465	4,325	99,500	54,523	22,260	7,041
Other invertebrates	200,671 + 20%	0.014	25,291	14,233	89,842	60,123	1,477	9,706
Total invertebrates	3,456,575 + 13%	0.234	500,485	269,500	1,244,303	993,729	69,875	378,683

[a]Differences in sums of estimates and totals are due to rounding

[b]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area. Total estimated biomass=14,747,506t.

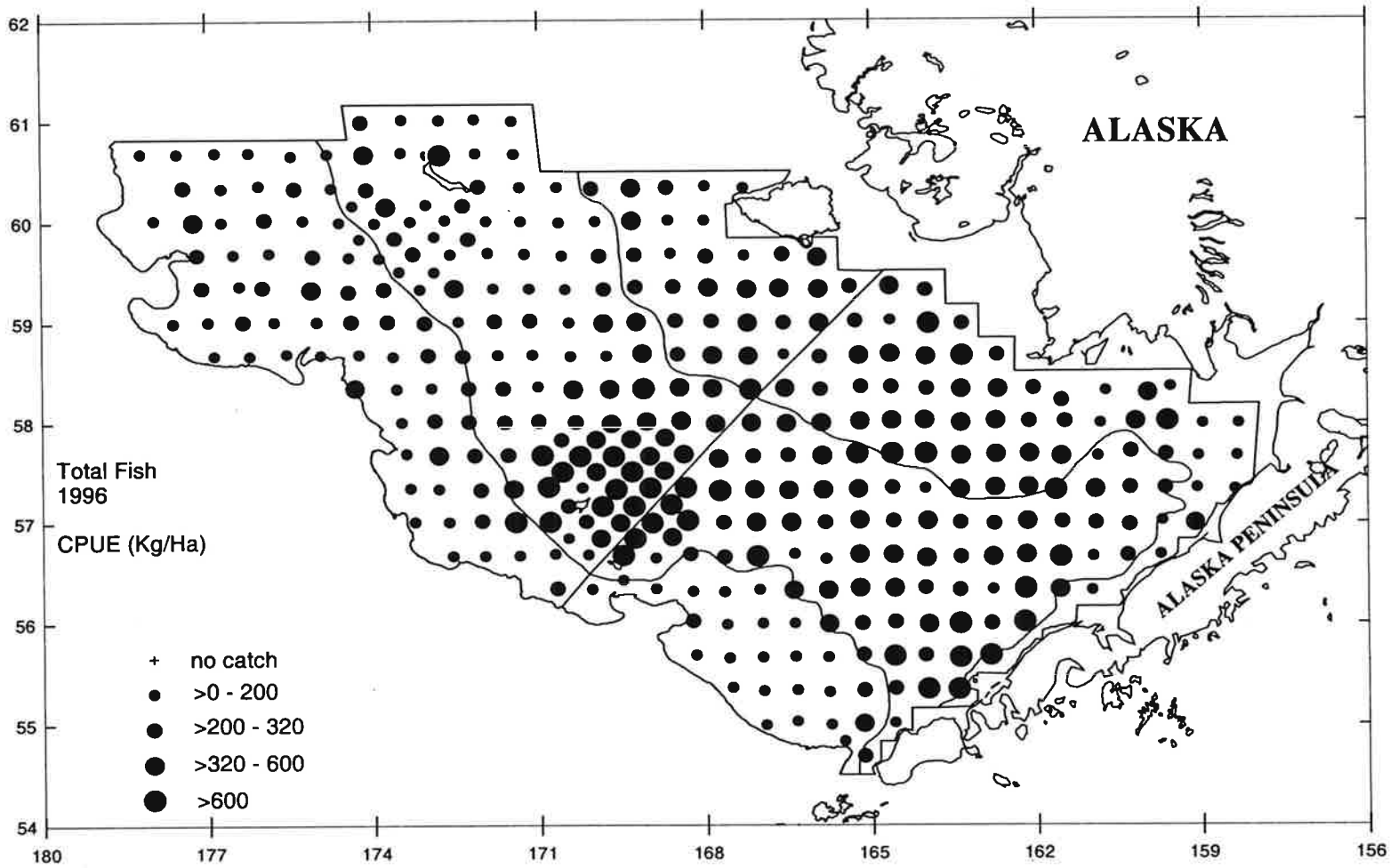

Figure 7.--Distribution and relative abundance of total fish, 1996 eastern Bering Sea bottom trawl survey.

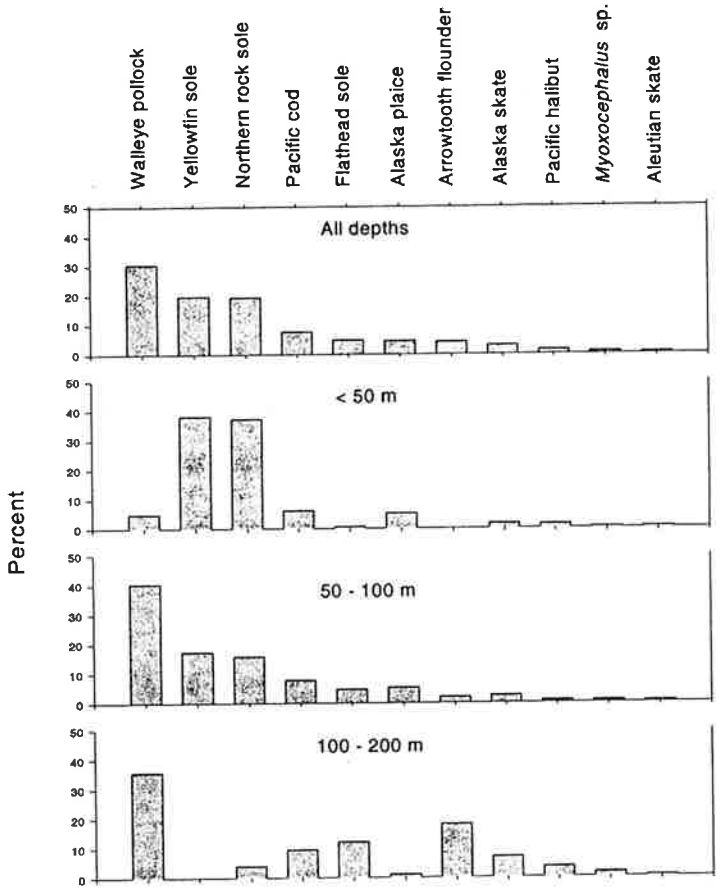

Figure 8.--Relative abundance (% CPUE in kg/ha) of principal groundfish species (top 11 for all depths combined) by depth zones and for all depths combined, 1996 eastern Bering Sea bottom trawl survey.

Abundance, Distribution, and Size and Age Composition of Principal Species and Species Groups

Geographical distributions, population numbers, biomass estimates, and size composition are presented for each of the following commercially important eastern Bering Sea groundfish: walleye pollock, Pacific cod, yellowfin sole, rock sole, *Hippoglossoides* spp., Alaska plaice, Greenland turbot (*Reinhardtius hippoglossoides*), arrowtooth flounder, Kamchatka flounder, and Pacific halibut. Estimated biomass, population numbers, and mean size (by length and weight) are summarized by subarea and for the entire survey area. Size composition data are illustrated in histograms relating the population percentage of length by centimeter interval for each subarea and in population numbers for the total survey area. Age composition and von Bertalanffy growth parameters are given for walleye pollock, yellowfin sole, and rock sole. Geographical distributions for some common, but generally noncommercial fish species are presented. These are total skates, great sculpin (*Myoxocephalus polyacanthocephalus*), plain sculpin (*M. jaok*), bigmouth sculpin (*Hemitripterus bolini*), wattled eelpout (*Lycodes palearis*), shortfin eelpout (*L. brevipes*), marbled eelpout (*L. raridens*), sturgeon poacher (*Podothecus acipenserinus*), Bering poacher (*Occella dodecaedron*), eulachon (*Thaleichthys pacificus*), capelin (*Mallotus villosus*), and Pacific herring (*Clupea pallasi*). Biomass and population estimates as well as mean weight are given by subarea and total area. These tables are not given for the pelagic species such as eulachon, capelin, and Pacific herring due to the bottom sampling nature of the survey. We do not believe these species are adequately represented in the samples; however, plots are shown to give some idea of geographic distribution.

Appendices to the report contain detailed results of the analysis. CPUE, population, and biomass estimates as well as the variances and confidence limits for each species by stratum are given in Appendix D. Population estimates by sex and size class for the total survey area are listed in Appendix E.

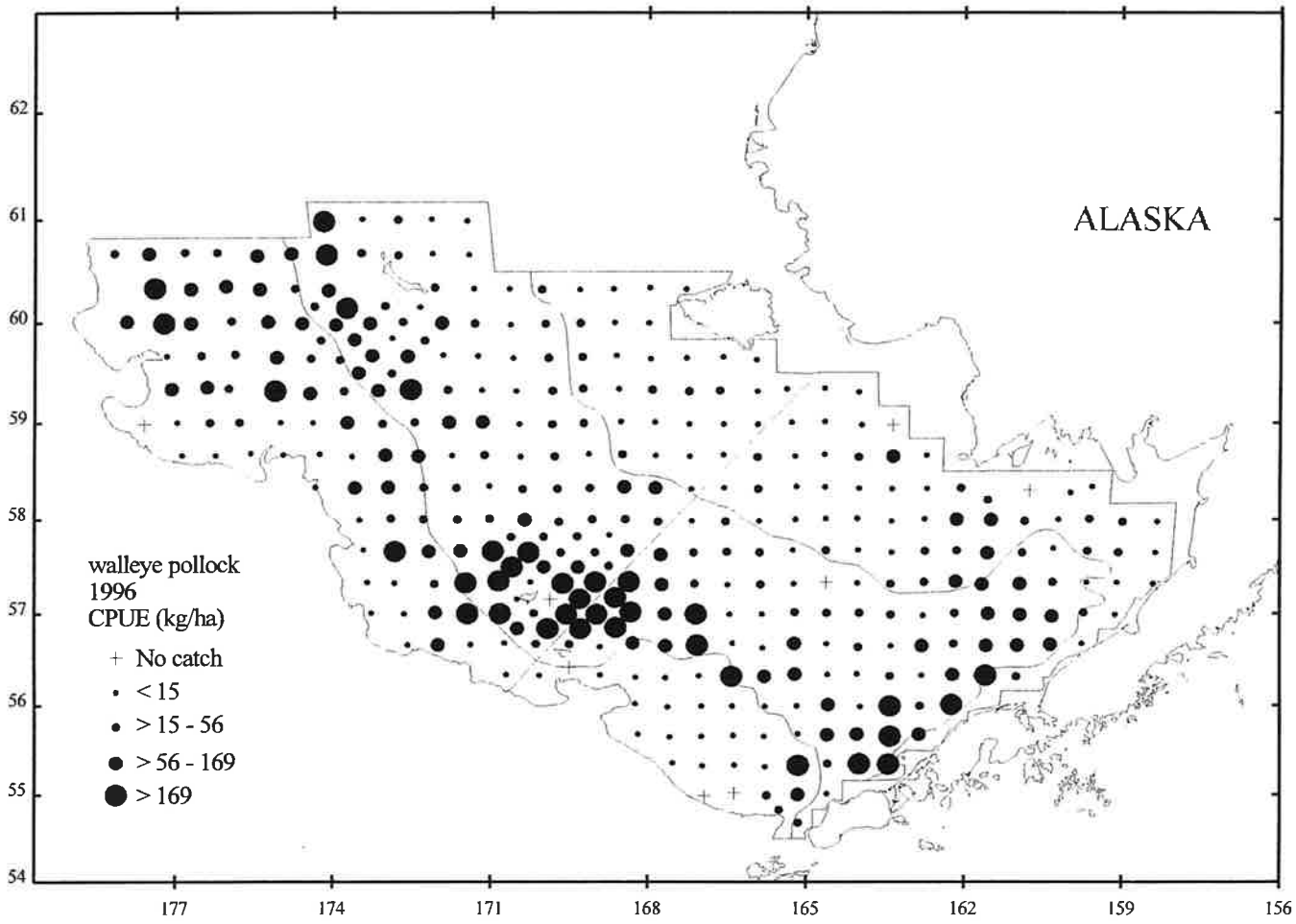

Figure 9--. Distribution and relative abundance in kg/ha of walleye pollock, 1996 eastern Bering Sea bottom trawl survey.

Table 9.--Abundance estimates and mean size of walleye pollock by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	23.93	186,346	0.058	187,869,013	0.034	0.992	41.4
2	12.81	52,544	0.016	134,435,587	0.024	0.391	22.7
3	129.68	1,339,552	0.418	1,906,597,496	0.341	0.703	43.7
4	88.81	957,589	0.299	1,776,924,799	0.318	0.539	38.9
5	18.30	70,977	0.022	100,796,196	0.018	0.704	40.2
6	63.14	597,097	0.186	1,487,656,884	0.266	0.401	31.9
All subareas combined[b]	69.15	3,204,106	1.000	5,594,279,976	1.000	0.573	38.4
95% Confidence interval		±2,061,194		±3,574,587,370			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

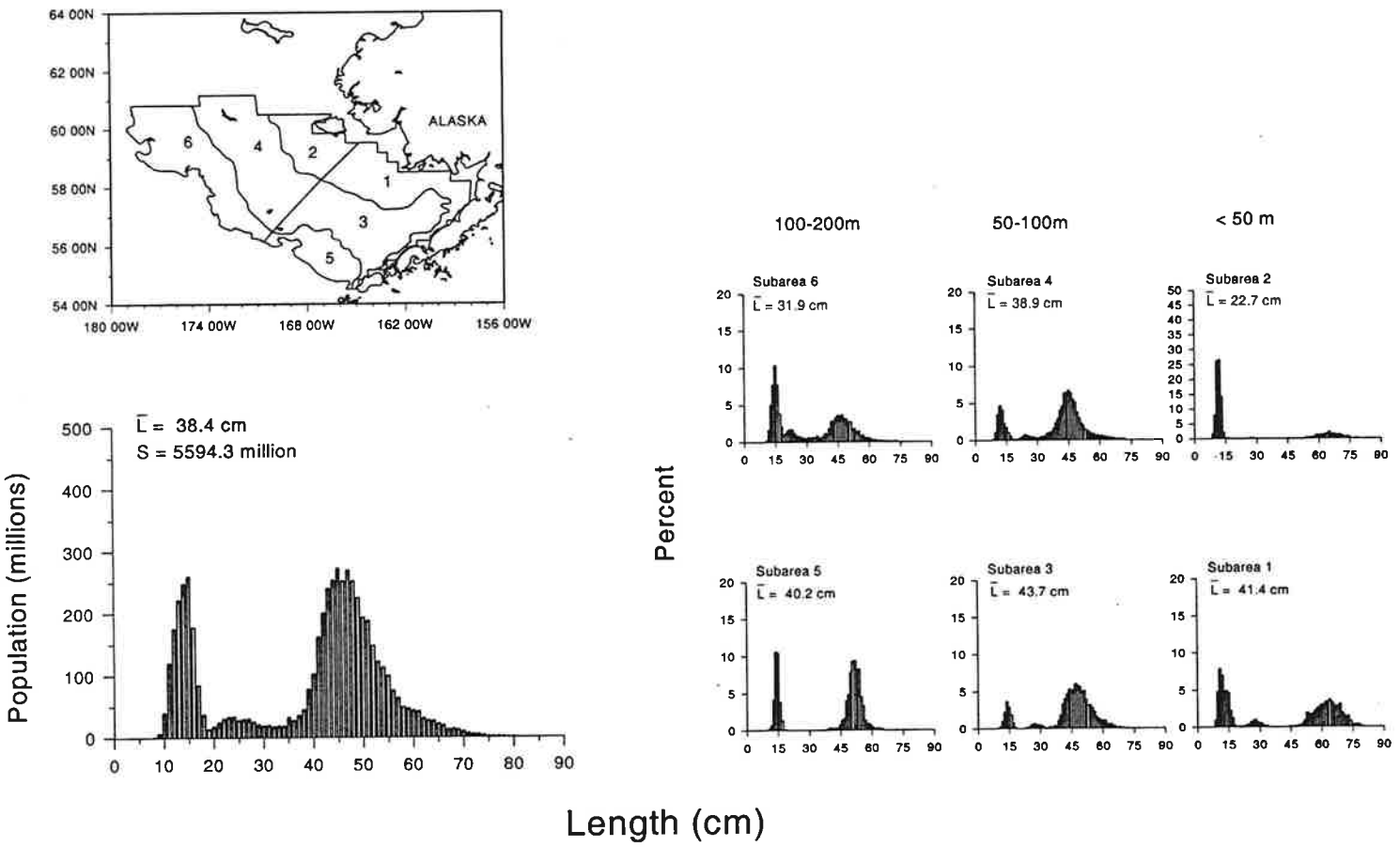

Figure 10.--Estimated relative size distribution (sexes combined) of walleye pollock in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

Table 10.--Estimated population numbers (millions) of walleye pollock by age group and subarea, 1996 eastern Bering Sea bottom trawl survey.

		Depth and Subarea							
		100 - 200 m		50 - 100 m		< 50 m			
Age	Year class	6	5	4	3	2	1	All subareas combined	Proportion
1	1995	526.44	29.91	296.16	228.69	88.25	64.17	1,233.62	0.2205
2	1994	172.23	1.36	96.08	45.71	18.17	12.55	346.10	0.0619
3	1993	40.34	.01	30.21	31.63	.14	4.27	106.60	0.0191
4	1992	57.41	.72	103.93	52.67	.04	1.42	216.18	0.0386
5	1991	146.33	3.73	321.97	270.50	.01	.22	742.75	0.1328
6	1990	198.60	14.72	406.06	444.22	.16	2.83	1,066.58	0.1907
7	1989	189.15	27.71	308.67	441.35	1.03	9.43	977.33	0.1747
8	1988	62.54	10.70	92.77	157.83	.77	6.18	330.79	0.0591
9	1987	16.43	3.32	19.07	40.11	.34	3.04	82.30	0.0147
10	1986	15.72	3.23	19.69	42.86	1.31	5.97	88.77	0.0159
11	1985	7.95	1.20	13.22	27.59	2.21	8.47	60.64	0.0108
12	1984	14.74	1.87	24.82	48.63	5.75	19.59	115.41	0.0206
13	1983	4.22	.49	8.12	15.18	2.36	7.19	37.56	0.0067
14	1982	7.43	.53	15.52	25.38	4.99	15.09	68.94	0.0123
15	1981	2.50	.20	3.76	7.77	1.16	3.57	18.97	0.0034
16	1980	3.30	.19	7.82	11.37	3.51	10.88	37.06	0.0066
17	1979	1.71	.28	3.02	5.06	1.41	3.74	15.21	0.0027
18	1978	1.11	.05	2.44	3.05	1.61	4.59	12.86	0.0023
19	1977	1.00	.18	1.25	3.13	.37	1.62	7.54	0.0013
Age unknown		18.53	.39	2.34	3.87	.86	3.07	29.06	0.0052
All ages combined		1,593.68	105.79	1,830.92	1,909.60	186.45	188.89	5,594.27	1.0000

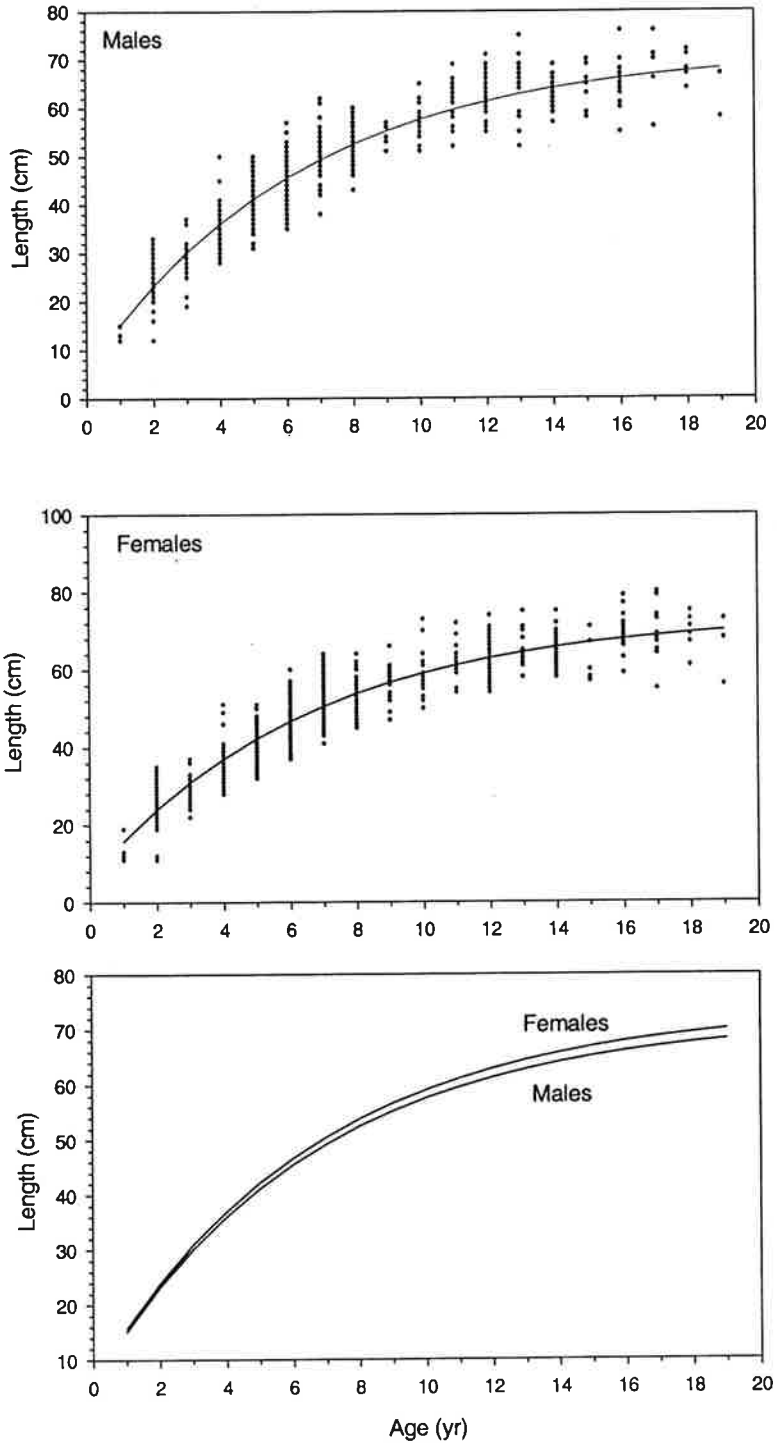

Figure 11.--Distribution of walleye pollock aged samples from the 1996 eastern Bering Sea bottom trawl survey by length for males, females and compared showing non-linear von Bertalanffy estimates.

Table 11.--Von Bertalanffy growth parameter estimates for walleye pollock by sex, based on otolith age reading and length data, from the 1996 eastern Bering Sea bottom trawl survey.

Sex	Number of age readings	Age range (years)	Length range (cm)	Parameters L_{inf}	K	t_o
Male	587	1-19	12-76	71.69	0.15	-0.54
Female	711	1-19	11-80	73.75	0.15	-0.58

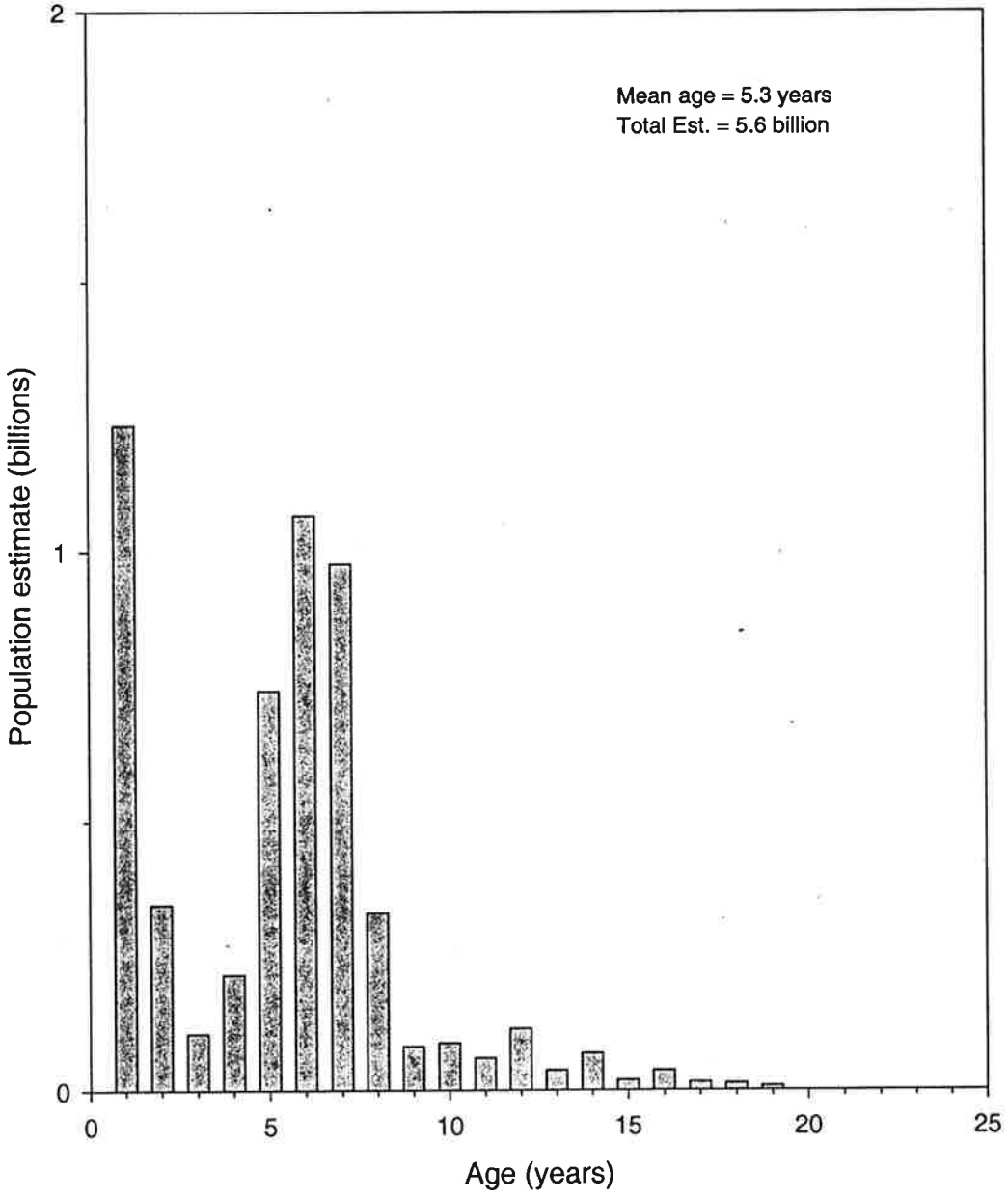

Figure 12.--Population number estimates by age for walleye pollock, 1996 eastern Bering Sea bottom trawl survey.

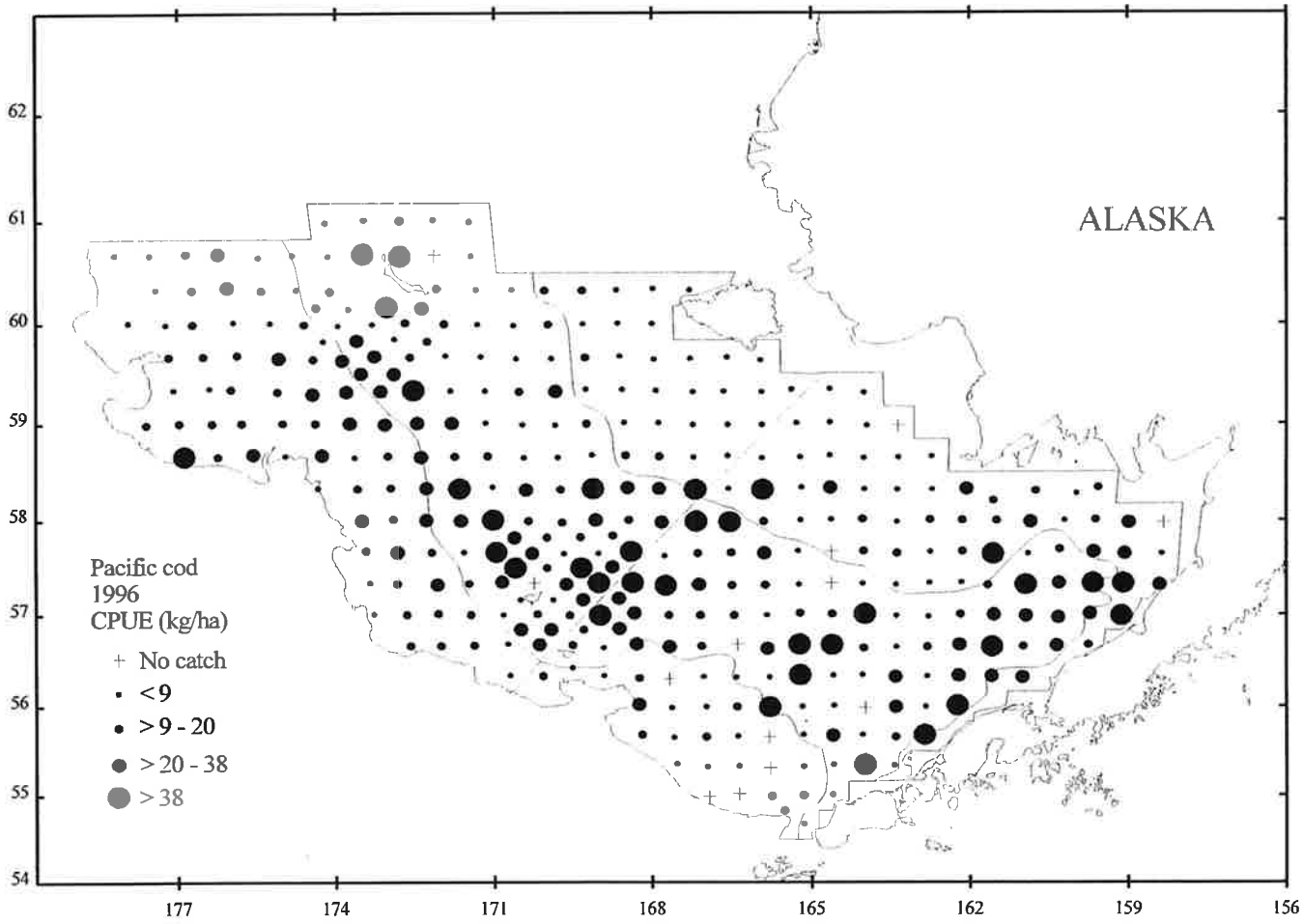

Figure 13--. Distribution and relative abundance in kg/ha of Pacific cod, 1996 eastern Bering Sea bottom trawl survey.

Table 12.--Abundance estimates and mean size of Pacific cod by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	18.86	146,873	0.165	110,698,610	0.182	1.327	43.0
2	9.12	37,421	0.042	39,403,689	0.065	0.950	40.6
3	26.48	273,509	0.307	205,263,920	0.337	1.332	45.0
4	23.44	252,745	0.284	191,856,723	0.315	1.317	45.6
5	8.81	34,185	0.038	11,112,515	0.018	3.076	61.4
6	15.45	146,059	0.164	50,968,757	0.084	2.866	60.2
All subareas combined[b]	19.22	890,793	1.000	609,304,214	1.000	1.462	46.1
95% Confidence interval		±181,646		±149,463,376			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

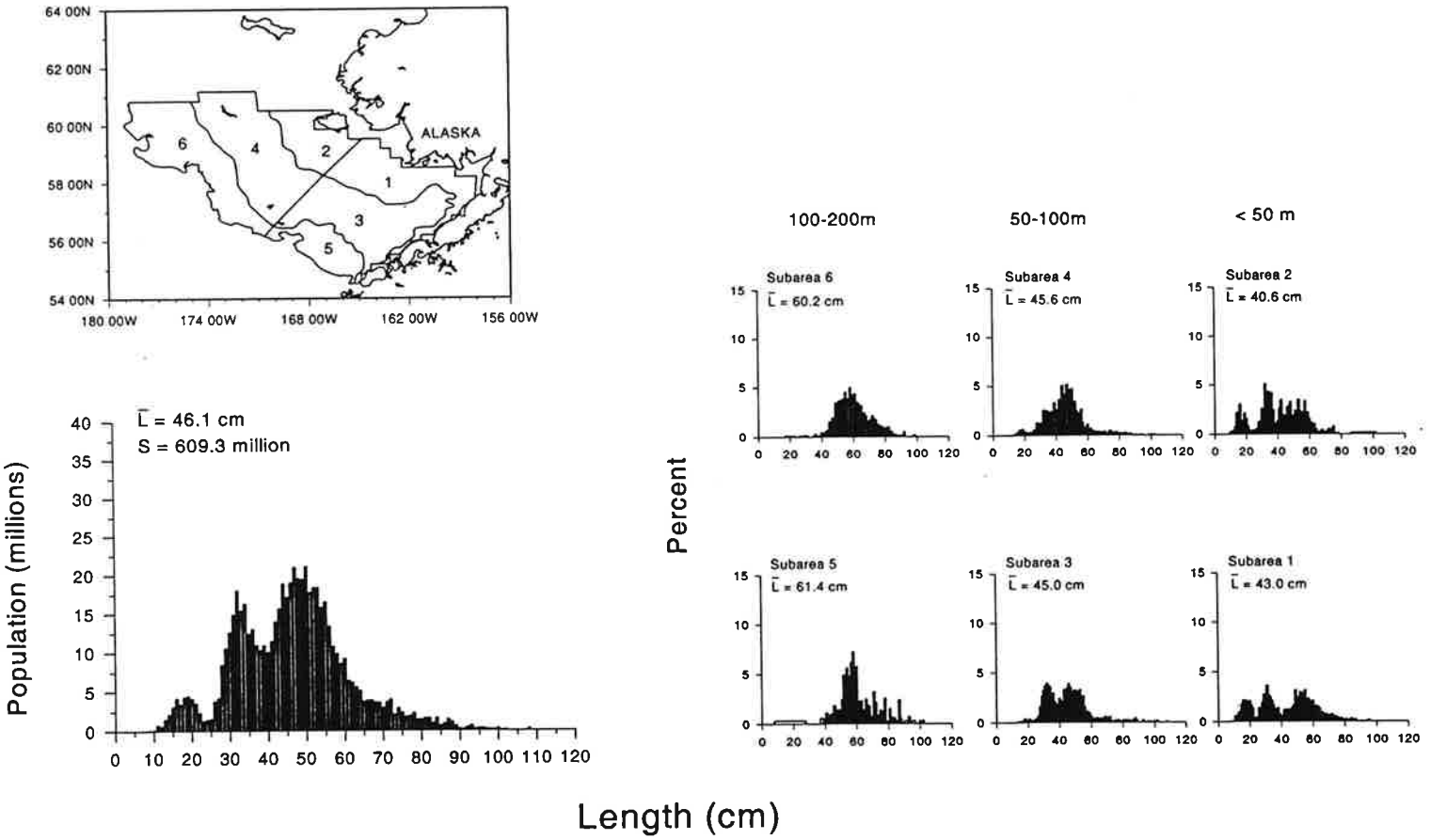

Figure 14.--Estimated relative size distribution (sexes combined) of Pacific cod in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

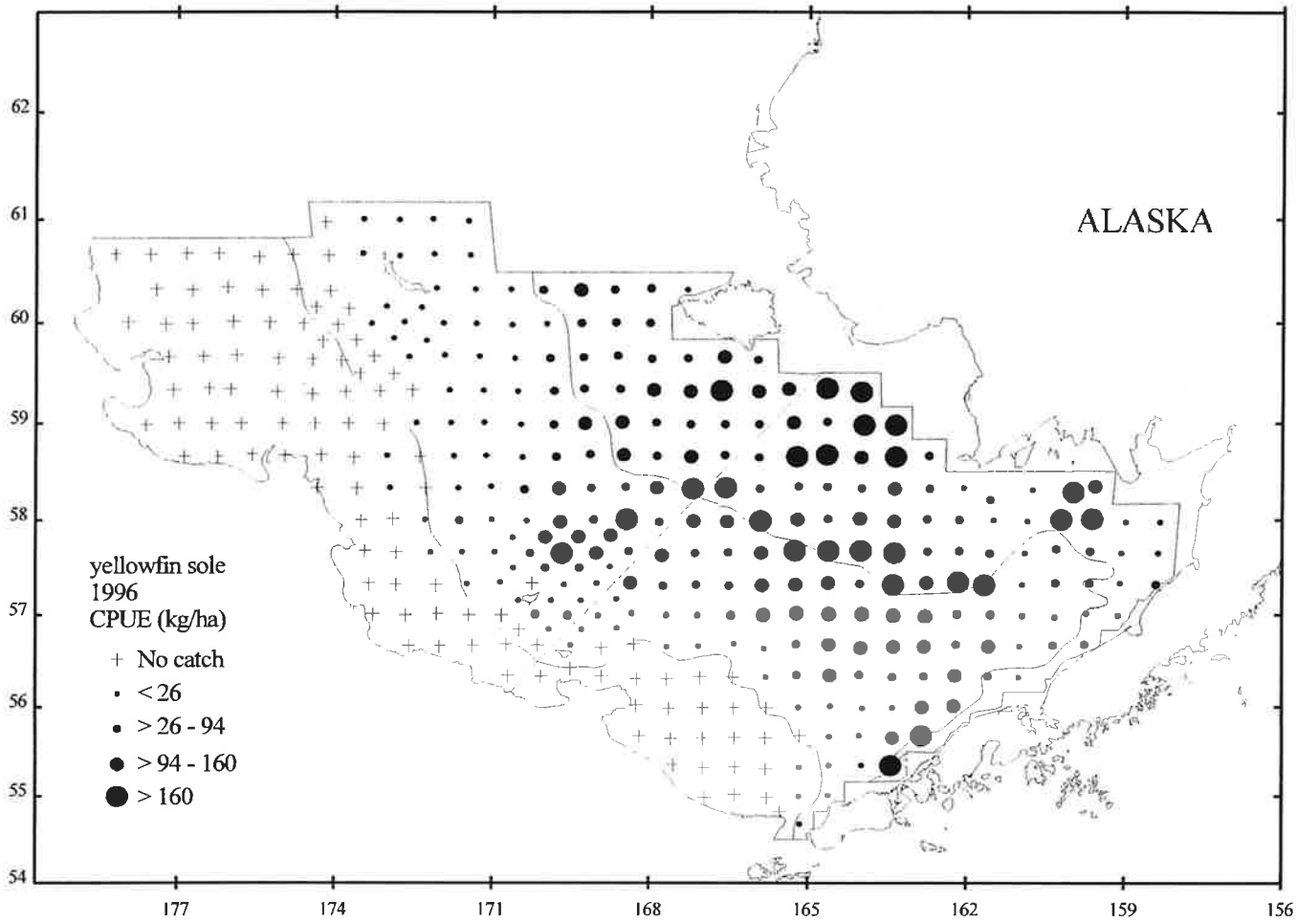

Figure 15--. Distribution and relative abundance in kg/ha of yellowfin sole, 1996 eastern Bering Sea bottom trawl survey.

Table 13.--Abundance estimates and mean size of yellowfin sole by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	127.05	989,320	0.430	4,417,808,910	0.459	0.224	25.3
2	93.36	383,045	0.167	1,884,062,611	0.196	0.203	23.5
3	61.32	633,467	0.276	2,373,166,154	0.247	0.267	27.8
4	27.09	292,088	0.127	948,332,825	0.099	0.308	28.7
5	0.12	471	0.000	934,454	0.000	0.504	33.9
6	0.02	169	0.000	203,955	0.000	0.829	38.6
All subareas combined[b]	49.60	2,298,560	1.000	9,624,508,909	1.000	0.239	25.9
95% Confidence interval		±284,887		±1,226,726,620			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

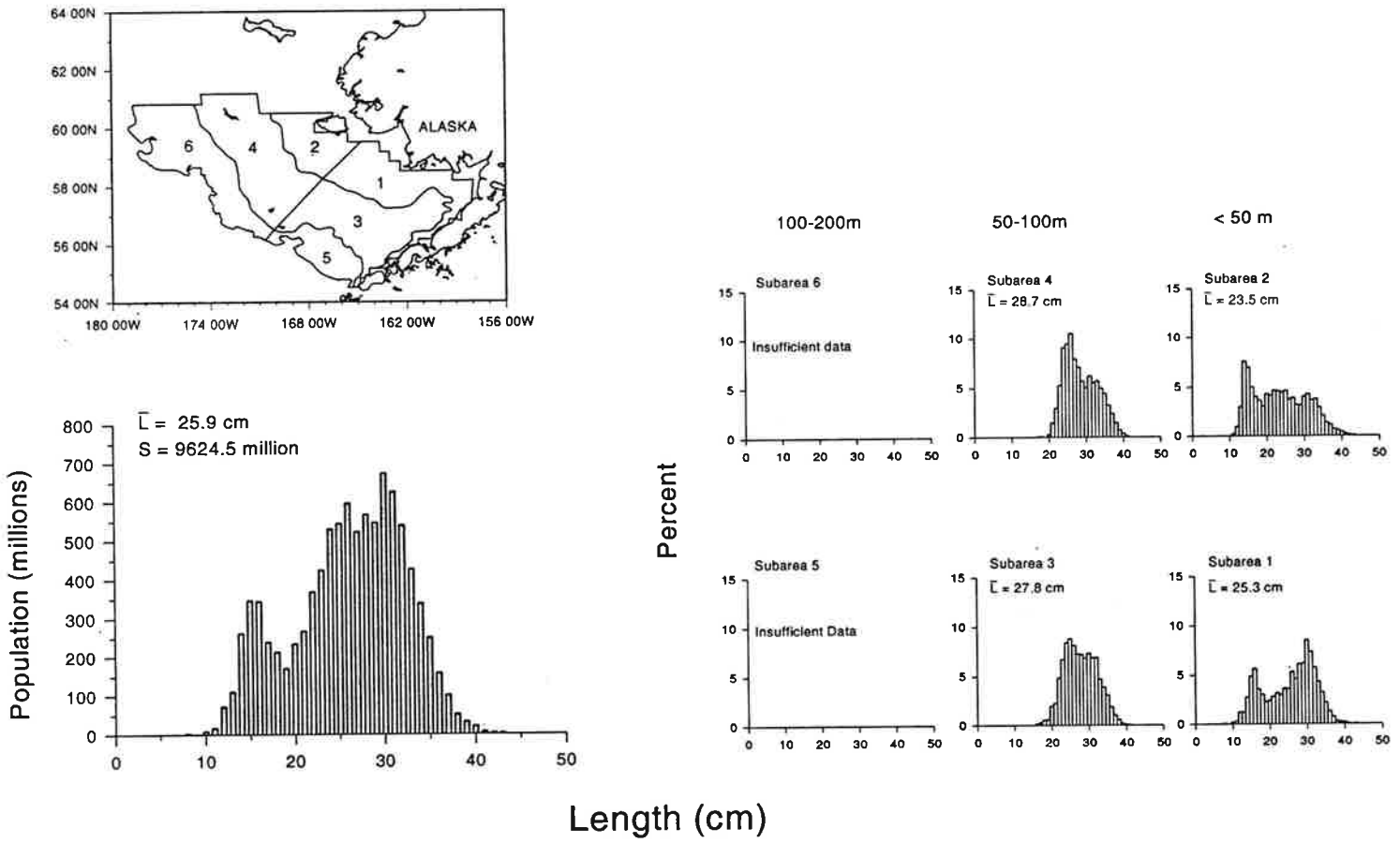

Figure 16.--Estimated size distribution (sexes combined) of yellowfin sole in terms of population numbers, and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

Table 14.--Estimated population numbers (millions) of yellowfin sole by age group and subarea, 1996 eastern Bering Sea bottom trawl survey.

Age	Year class	Depth and Subarea: 100 - 200 m		50 - 100 m		< 50 m		All subareas combined	Proportion
		6	5	4	3	2	1		
3	1993	.00	.00	.00	.00	29.63	62.70	92.33	0.0096
4	1992	.00	.00	.27	4.53	105.81	138.07	248.67	0.0258
5	1991	.00	.00	22.65	112.21	560.39	954.60	1,649.85	0.1714
6	1990	.00	.00	40.24	141.89	137.40	217.62	537.15	0.0558
7	1989	.00	.00	60.53	165.72	105.54	182.43	514.22	0.0534
8	1988	.00	.00	120.47	299.43	145.77	312.43	878.10	0.0912
9	1987	.00	.00	135.31	309.09	130.96	307.43	882.80	0.0917
10	1986	.00	.01	71.57	171.81	72.68	236.95	553.02	0.0575
11	1985	.00	.02	35.73	93.07	35.13	132.11	296.06	0.0308
12	1984	.00	.02	35.47	88.27	36.44	140.01	300.22	0.0312
13	1983	.00	.15	124.80	311.26	129.77	464.34	1,030.32	0.1071
14	1982	.00	.05	21.53	53.48	22.68	84.30	182.04	0.0189
15	1981	.01	.23	128.31	311.67	148.83	526.89	1,115.94	0.1159
16	1980	.01	.04	11.94	39.79	23.91	102.20	177.89	0.0185
17	1979	.01	.03	8.72	27.51	18.84	73.99	129.08	0.0134
18	1978	.02	.03	18.44	32.76	19.38	45.33	115.94	0.0120
19	1977	.01	.04	12.08	28.57	18.51	68.46	127.68	0.0133
20	1976	.00	.04	13.79	23.75	16.86	41.76	96.22	0.0100
21	1975	.02	.08	24.27	39.83	25.26	58.59	148.05	0.0154
22	1974	.03	.05	15.44	24.91	21.01	46.82	108.26	0.0112
23	1973	.02	.05	13.79	31.30	20.90	67.14	133.20	0.0138
24	1972	.01	.02	7.73	15.56	12.20	31.77	67.29	0.0070
25	1971	.03	.02	7.25	9.98	8.38	13.40	39.07	0.0041
26	1970	.00	.02	5.67	12.50	11.39	37.05	66.64	0.0069
27	1969	.01	.01	6.18	14.29	10.17	32.50	63.17	0.0066
28	1968	.00	.00	5.10	9.49	7.80	18.56	40.96	0.0043
29	1967	.01	.00	.77	.43	1.20	1.09	3.51	0.0004
30	1966	.00	.00	.00	.03	1.00	1.18	2.21	0.0002
36	1960	.00	.00	.00	.03	1.00	1.18	2.21	0.0002
Age unknown		0.00	0.00	0.27	0.00	5.22	16.91	22.40	0.0023
All ages combined		106.19	5.91	1,002.32	2,376.16	1,936.06	4,418.81	9,624.50	0.9999

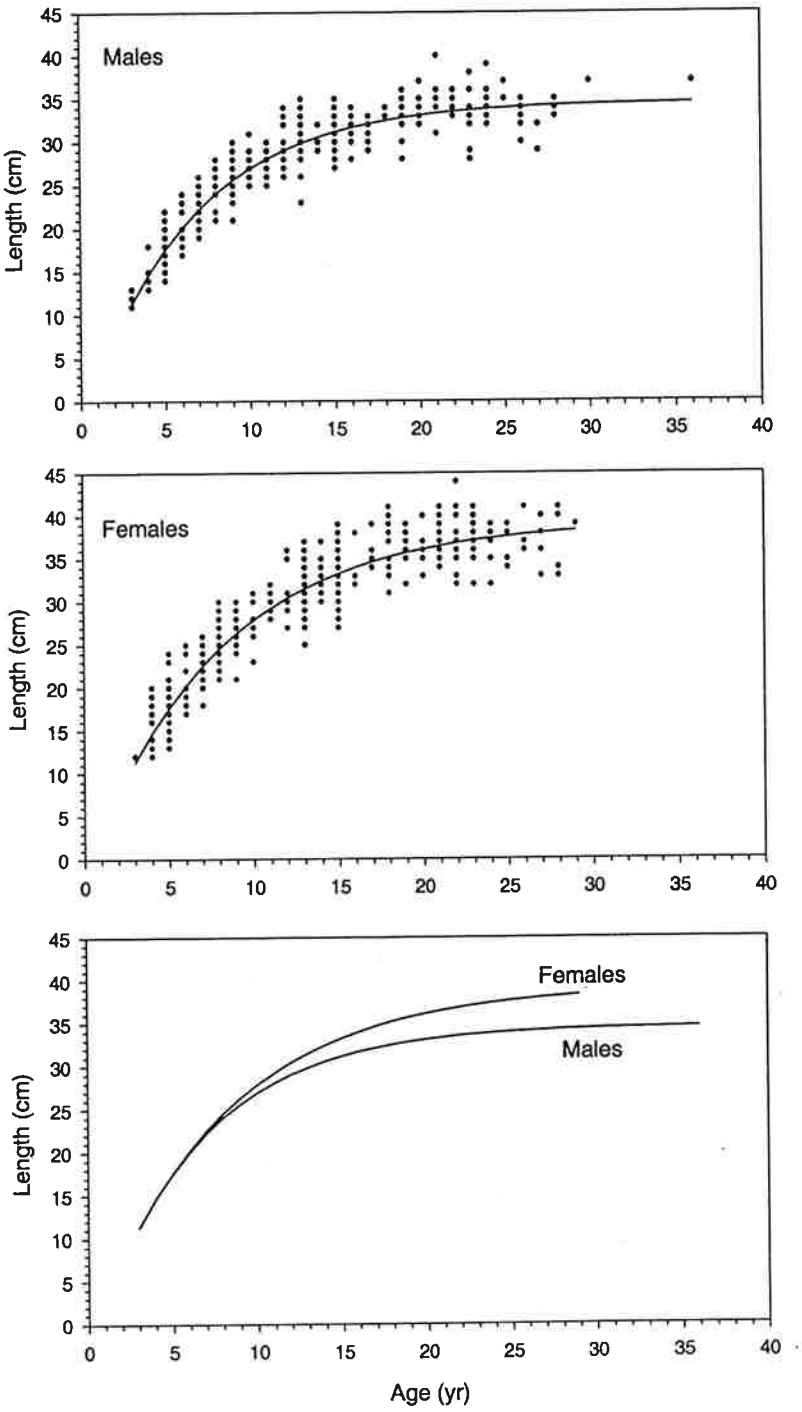

Figure 17.--Distribution of yellowfin sole aged samples from the 1996 eastern Bering Sea bottom trawl survey by length for males, females, and compared showing non-linear von Bertalanffy estimates.

Table 15.--Von Bertalanffy growth parameter estimates for yellowfin sole by sex, based on otolith age reading and length data from the 1996 eastern Bering Sea bottom trawl survey.

Sex	Number of age readings	Age range (years)	Length range (cm)	Parameters		
				L_{inf}	K	t_o
Male	338	3-36	11-40	34.69	0.16	0.52
Female	383	3-29	12-44	39.26	0.13	0.36

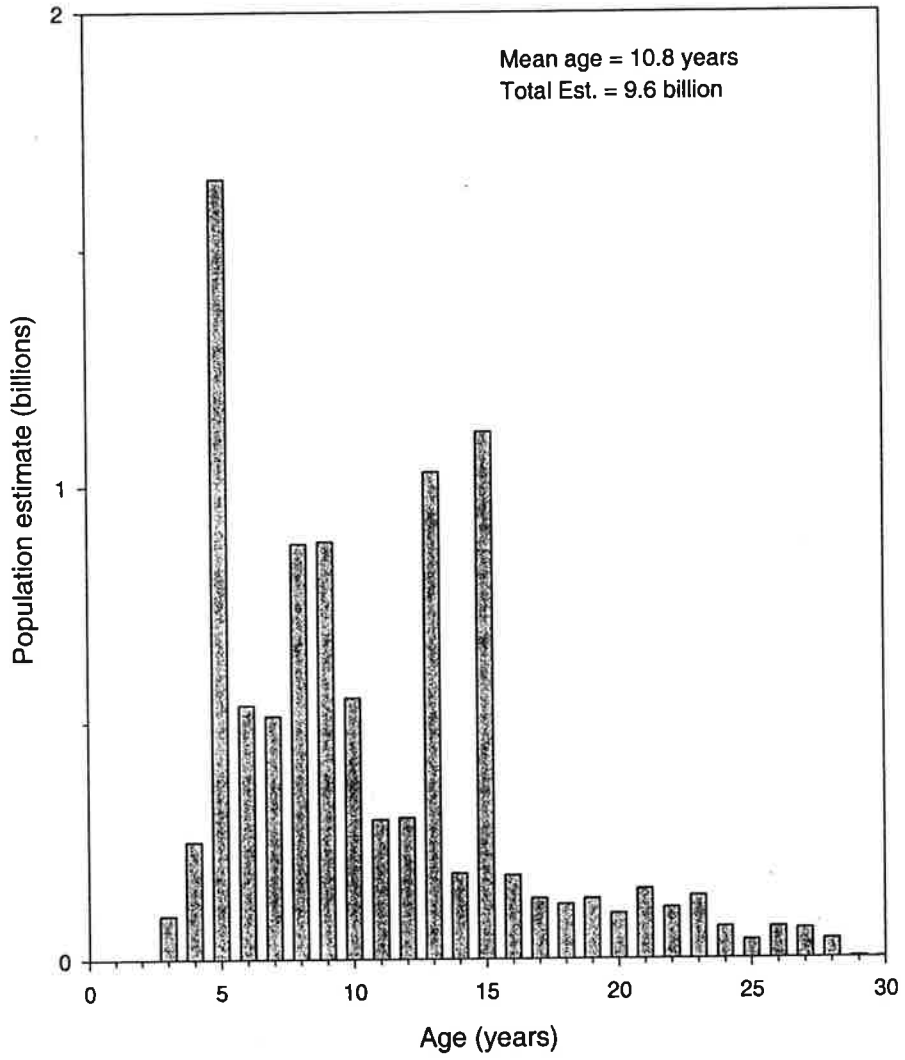

Figure 18.--Population number estimates by age for yellowfin sole, 1996 eastern Bering Sea bottom trawl survey.

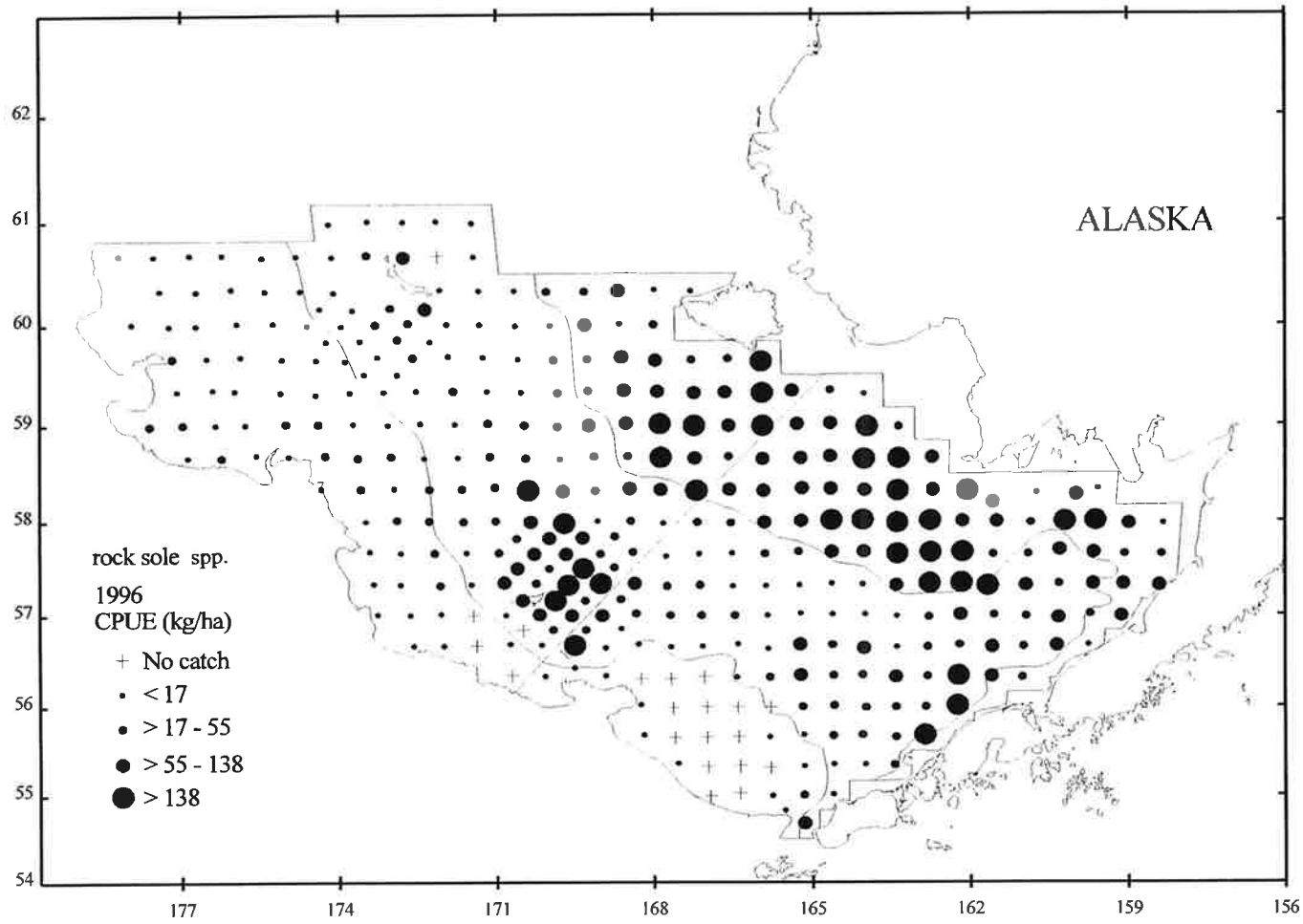

Figure 19--. Distribution and relative abundance in kg/ha of rock sole spp., 1996 eastern Bering Sea bottom trawl survey.

Table 16.--Abundance estimates and mean size of rock sole by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	116.69	908,652	0.416	4,827,190,868	0.466	0.188	24.2
2	92.54	379,664	0.174	2,024,519,464	0.196	0.188	23.0
3	37.87	391,203	0.179	1,859,753,508	0.180	0.210	25.7
4	38.89	419,291	0.192	1,453,029,724	0.140	0.289	28.4
5	1.05	4,089	0.002	11,943,932	0.001	0.342	29.8
6	8.48	80,172	0.037	173,560,359	0.017	0.462	32.5
All subareas combined[b]	47.11	2,183,071	1.000	10,349,997,856	1.000	0.211	25.0
95% Confidence interval		±258,350		±1,514,124,473			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

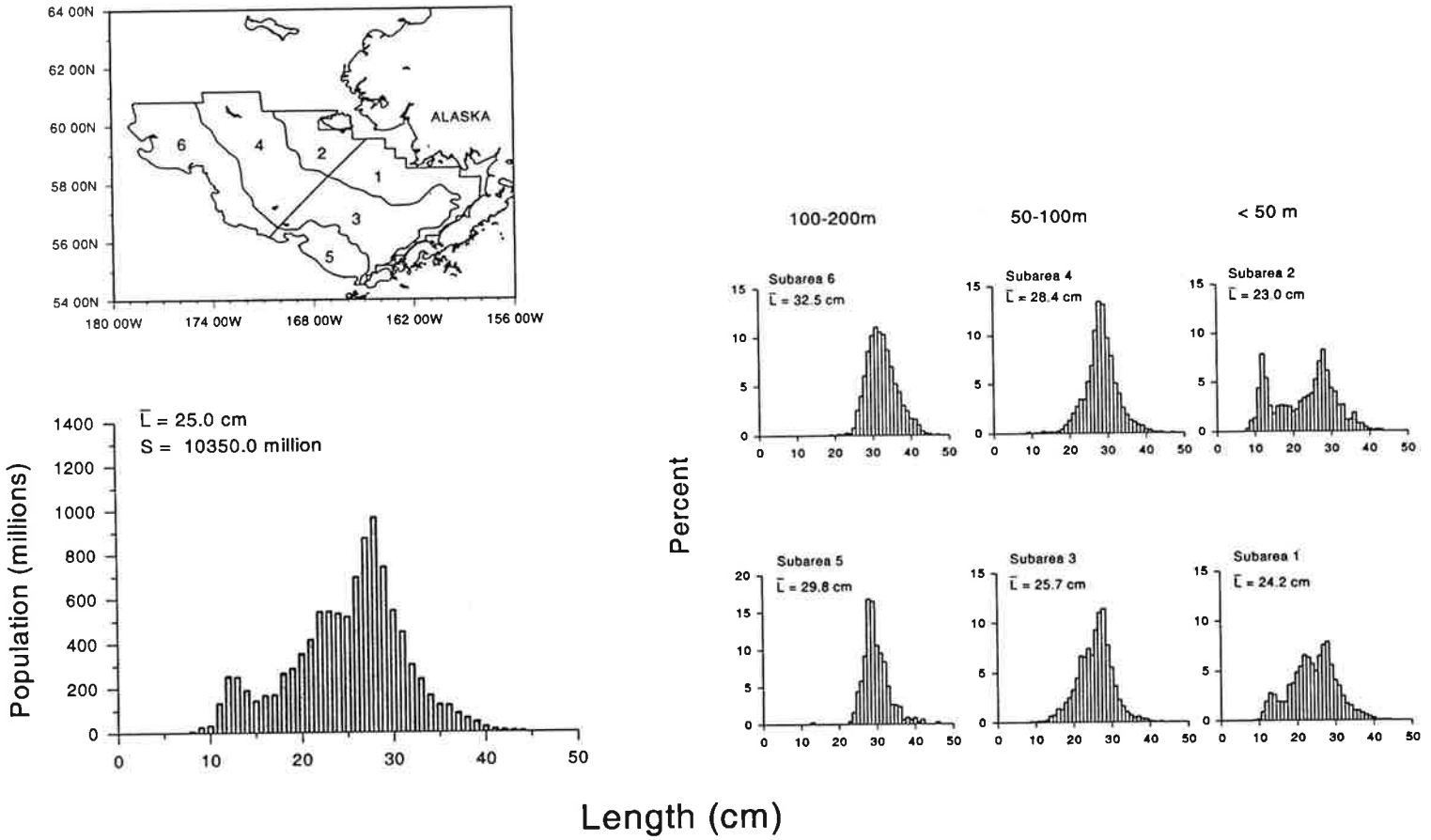

Figure 20.--Estimated relative size distribution (sexes combined) of rock sole in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

Table 17.--Estimated population numbers (millions) of rock sole by age group and subarea, 1996 eastern Bering Sea bottom trawl survey.

		Depth and Subarea							
		100 - 200 m		50 - 100 m		< 50 m			
Age	Year class	6	5	4	3	2	1	All subareas combined	Proportion
2	1994	.00	.00	1.34	1.23	33.19	4.30	40.06	0.0039
3	1993	.00	.03	6.86	38.92	468.19	486.26	1,000.27	0.0966
4	1992	.01	.00	8.86	63.10	109.62	273.30	454.90	0.0440
5	1991	.09	.00	30.57	113.07	124.52	451.04	719.29	0.0695
6	1990	2.32	.39	167.22	415.15	242.23	1,089.63	1,916.95	0.1852
7	1989	1.99	.36	70.88	130.65	81.62	278.82	564.33	0.0545
8	1988	14.91	1.50	169.98	192.76	158.33	405.59	943.06	0.0911
9	1987	41.90	3.95	423.09	471.65	367.29	923.46	2,231.34	0.2156
10	1986	41.09	2.90	275.96	252.83	232.59	523.23	1,328.58	0.1284
11	1985	19.45	.99	109.17	63.64	63.93	128.90	386.07	0.0373
12	1984	8.98	.47	54.46	34.27	36.30	65.16	199.63	0.0193
13	1983	12.32	.51	51.00	38.67	46.58	92.33	241.41	0.0233
14	1982	6.44	.18	19.28	8.73	14.22	23.44	72.29	0.0070
15	1981	5.11	.20	21.37	18.26	18.07	38.98	101.99	0.0099
16	1980	8.71	.19	26.56	10.31	17.50	26.03	89.30	0.0086
17	1979	6.02	.16	11.19	4.00	3.29	8.38	33.04	0.0032
18	1978	1.62	.04	2.16	1.19	2.41	3.64	11.07	0.0011
19	1977	.30	.01	.21	.05	.51	.37	1.44	0.0001
20	1976	1.09	0.04	1.25	0.37	1.62	2.73	7.10	0.00
21	1975	0.16	0.00	0.27	0.21	0.64	0.75	2.04	0.00
Age unknown		1.04	0.03	1.34	0.69	1.85	0.87	5.83	0.00
All ages combined		279.55	16.95	1,507.02	1,862.75	2,076.50	4,828.21	10,349.99	1.00

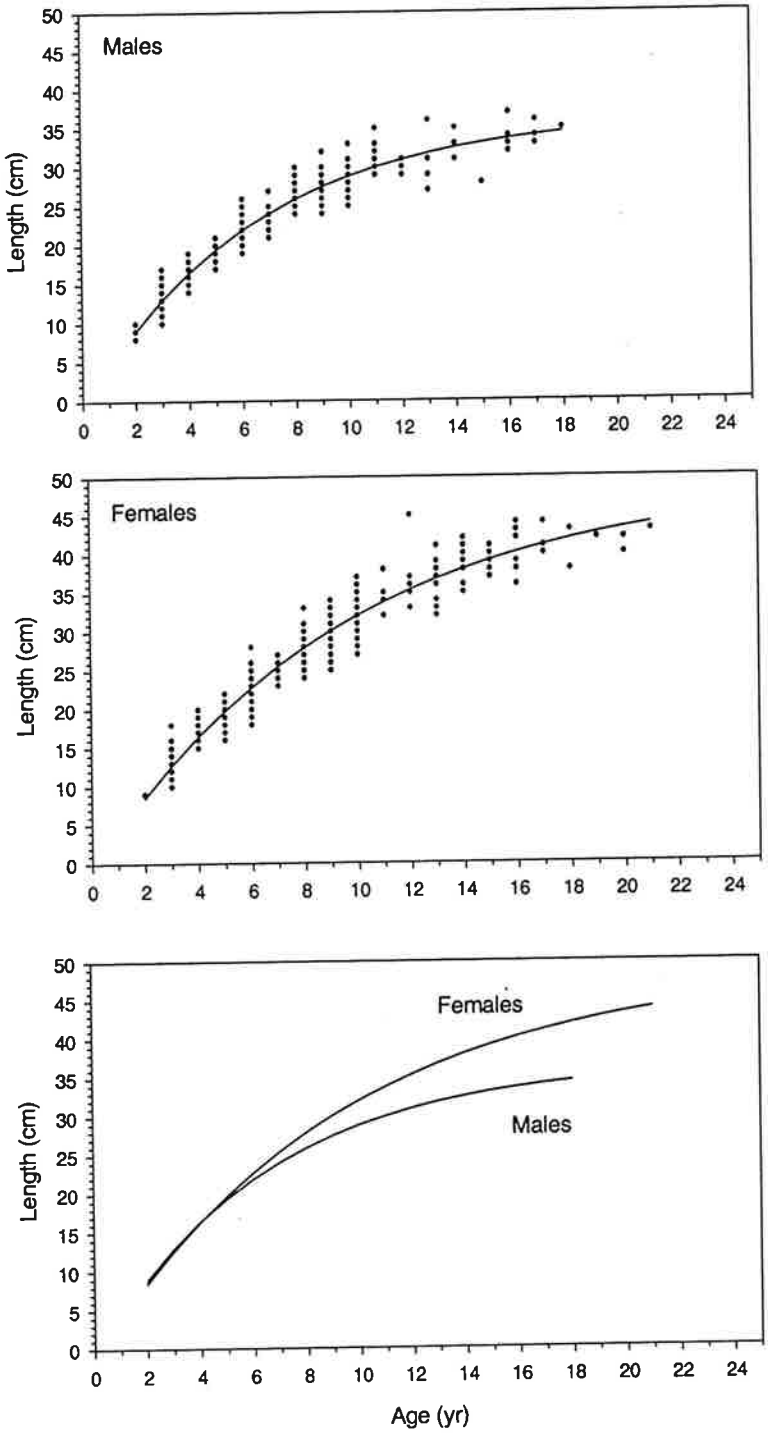

Figure 21.--Distribution of rock sole aged samples from the 1996 eastern Bering Sea bottom trawl survey by length for males, females, and compared showing non-linear von Bertalanffy estimates.

Table 18.--Von Bertalanffy growth parameter estimates for rock sole by sex, based on otolith age reading and length data from the 1996 eastern Bering Sea bottom trawl survey.

Sex	Number of age readings	Age range (years)	Length range (cm)	Parameters L_{inf}	K	t_o
Male	215	2-18	8-37	36.64	0.16	0.23
Female	281	2-21	9-45	48.99	0.11	0.24

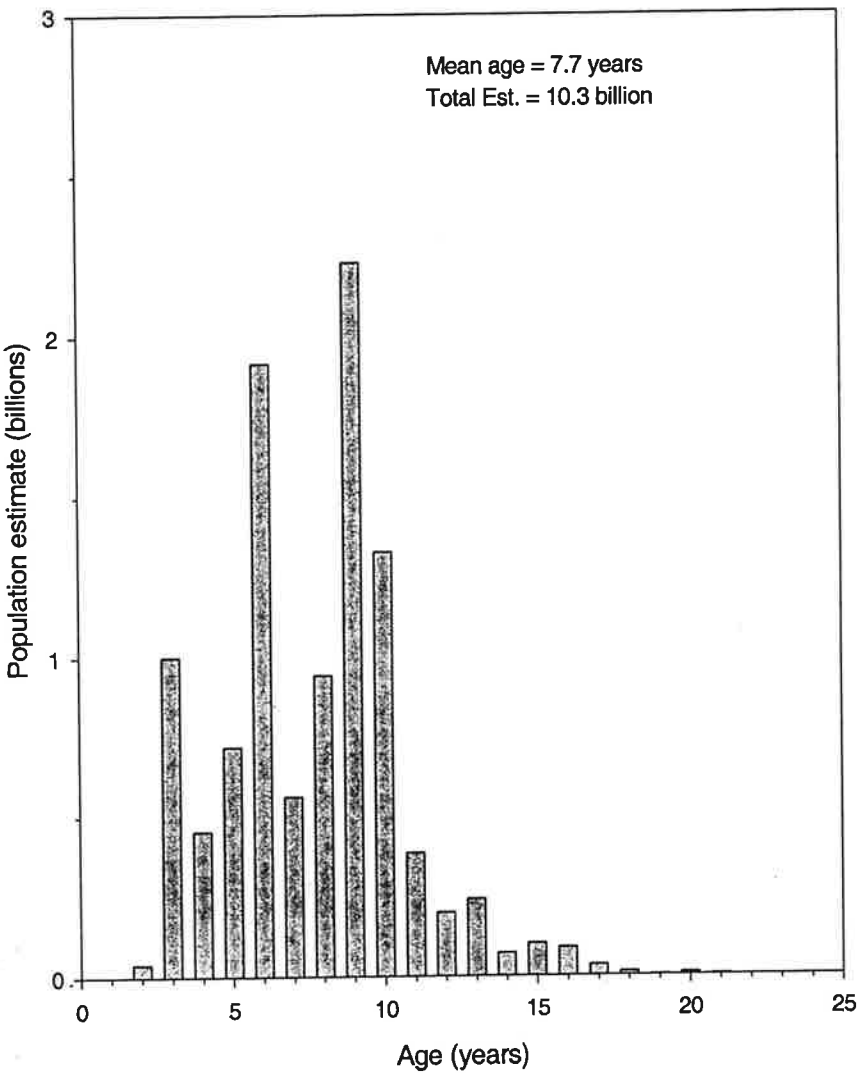

Figure 22.--Population number estimates by age for rock sole, 1996 eastern Bering Sea bottom trawl survey.

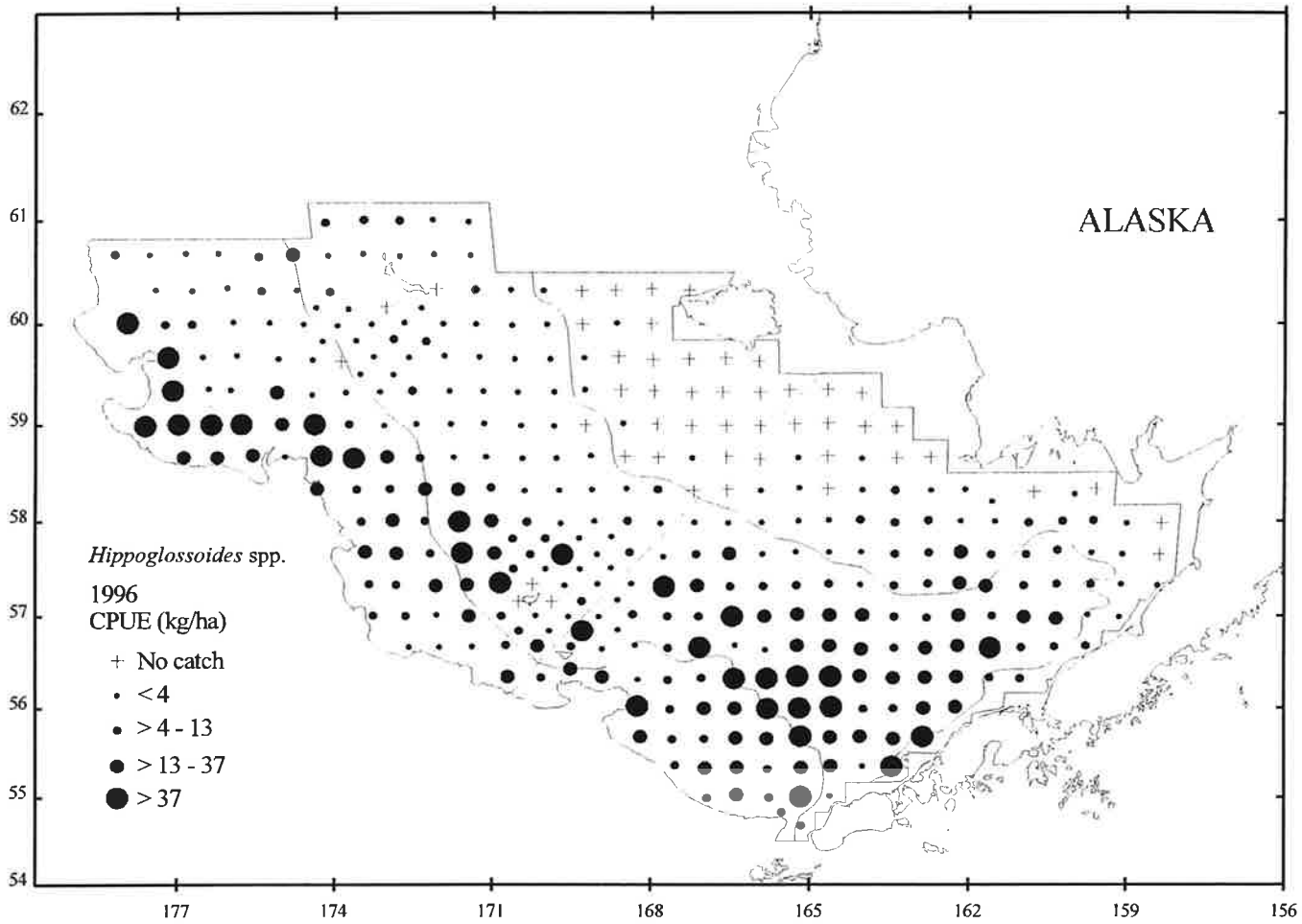

Figure 23--. Distribution and relative abundance in kg/ha of *Hippoglossoides* spp., 1996 eastern Bering Sea bottom trawl survey.

Table 19.--Abundance estimates and mean size of *Hippoglossoides* spp. by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	3.89	30,260	0.049	60,960,951	0.028	0.496	35.9
2	0.08	322	0.001	580,522	0.000	0.555	38.0
3	27.56	284,735	0.462	790,836,204	0.369	0.360	31.8
4	6.26	67,479	0.109	170,761,016	0.080	0.395	31.8
5	17.86	69,290	0.112	429,901,243	0.200	0.161	24.6
6	17.37	164,288	0.267	692,752,324	0.323	0.237	26.7
All subareas combined[b]	13.30	616,373	1.000	2,145,792,260	1.000	0.287	28.8
95% Confidence interval		±102,829		±336,369,369			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

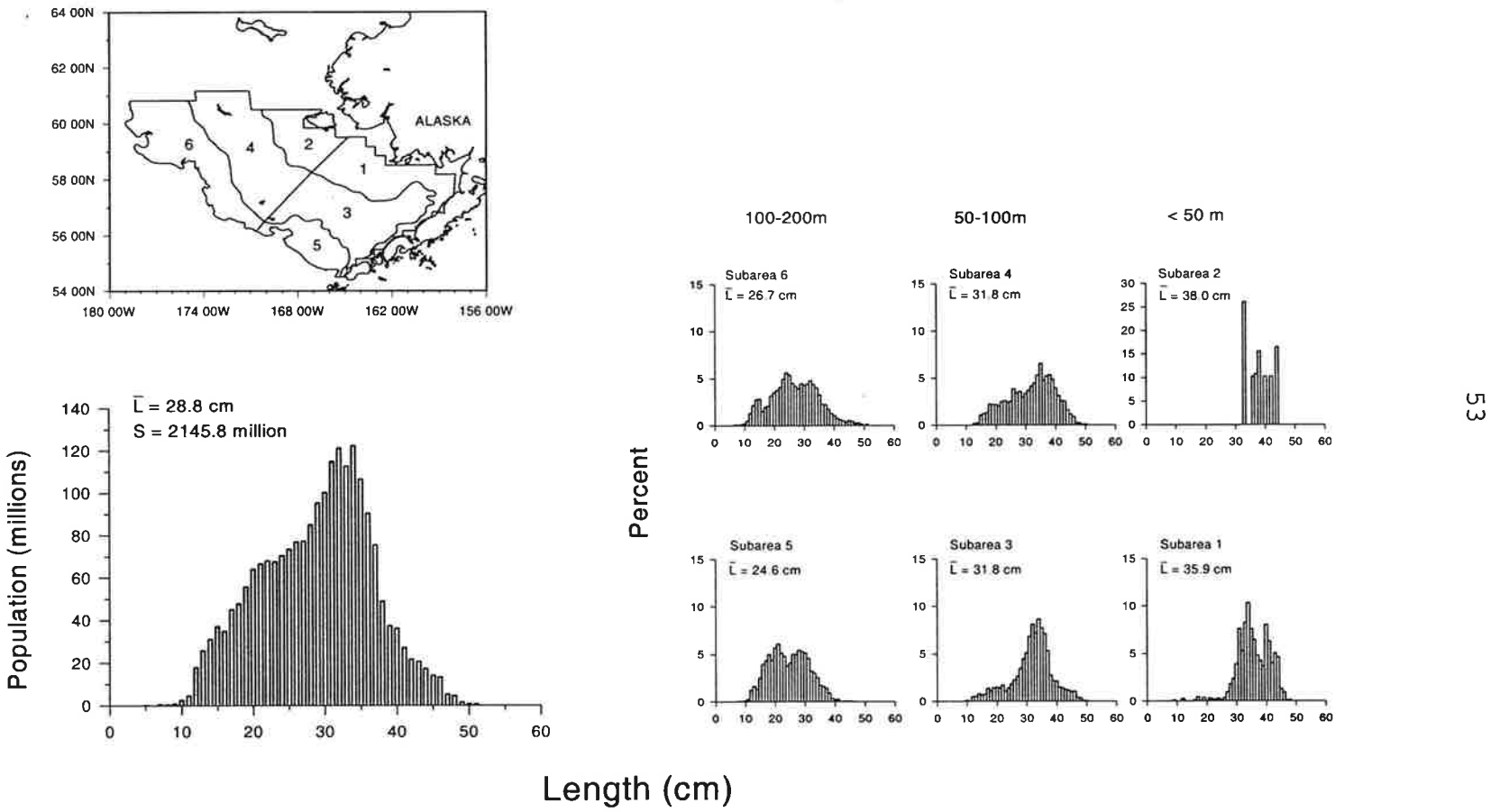

Figure 24.--Estimated relative size distribution (sexes combined) of *Hippoglossoides* spp. in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

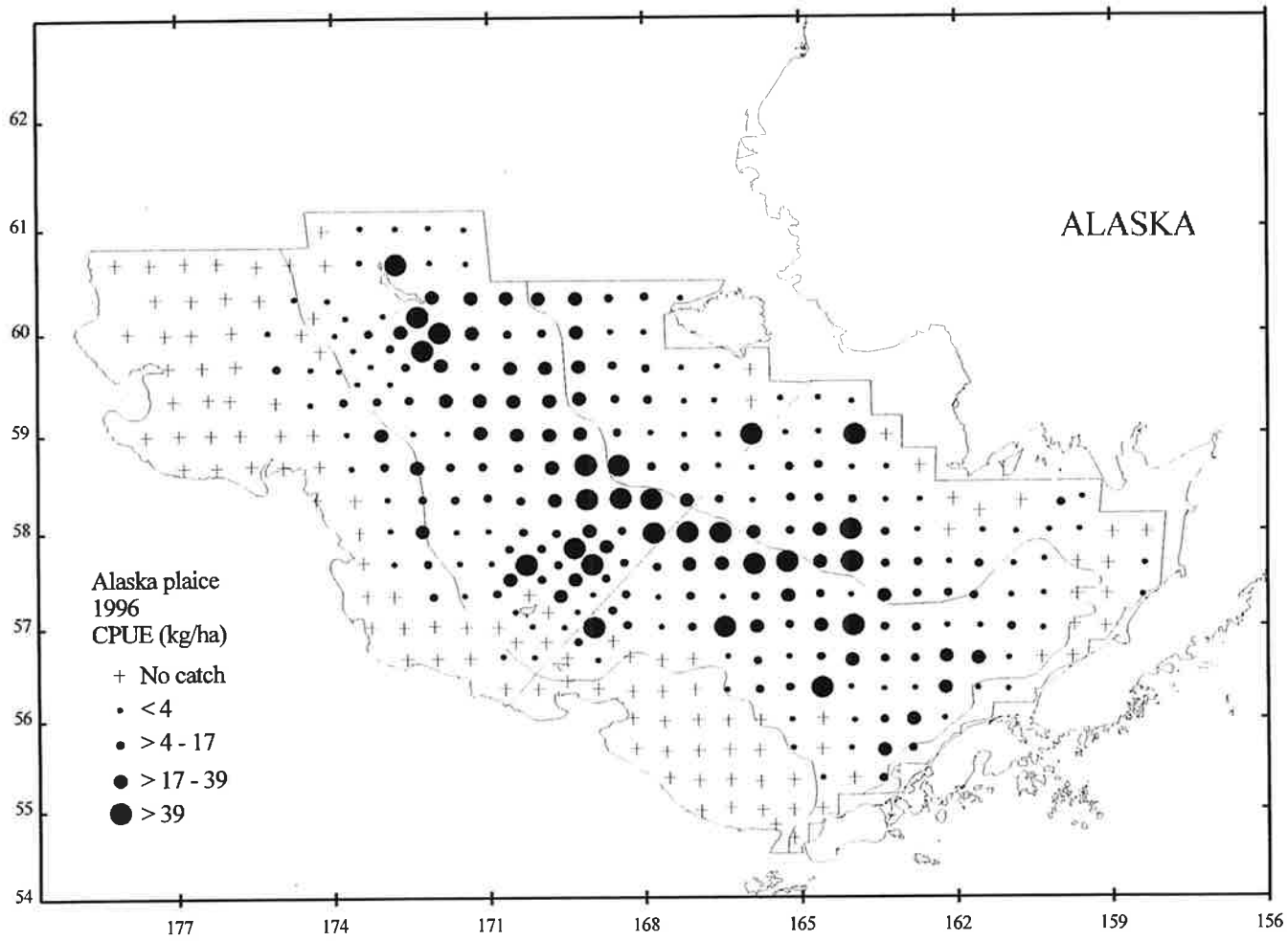

Figure 25--. Distribution and relative abundance in kg/ha of Alaska plaice, 1996 eastern Bering Sea bottom trawl survey.

Table 20.--Abundance estimates and mean size of Alaska plaice by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	12.91	100,505	0.190	213,719,524	0.237	0.470	31.8
2	10.84	44,483	0.084	128,047,404	0.142	0.347	28.9
3	13.11	135,393	0.256	206,441,101	0.229	0.656	35.8
4	21.01	226,561	0.428	337,355,348	0.375	0.672	35.9
5	0.00	0	0.000	0	0.000	0.000	0.0
6	2.37	22,384	0.042	14,805,699	0.016	1.512	45.8
All subareas combined[b]	11.42	529,327	1.000	900,369,075	1.000	0.588	34.1
95% Confidence interval		±124,027		±185,166,846			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

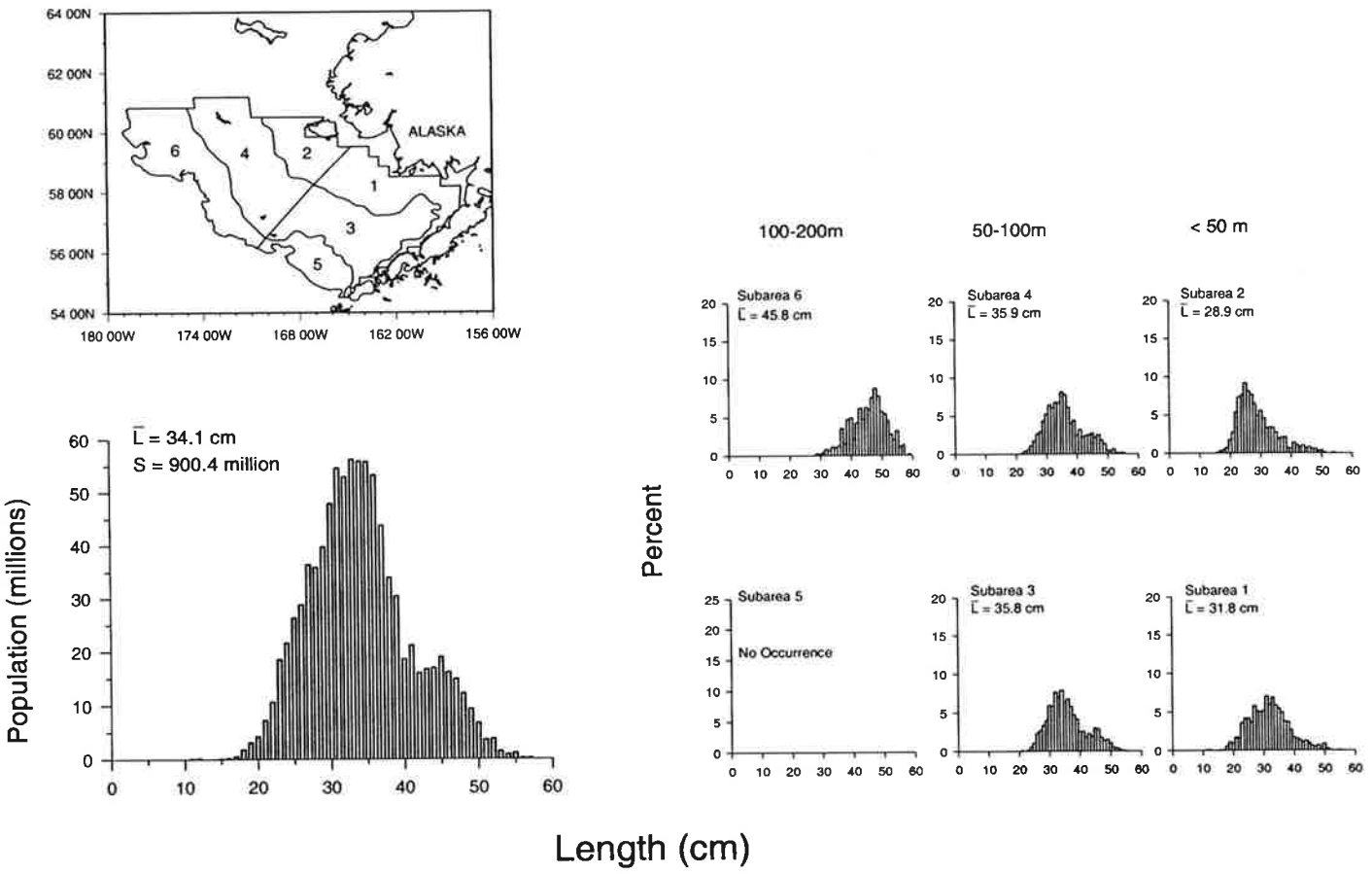

Figure 26.--Estimated relative size distribution (sexes combined) of Alaska plaice in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

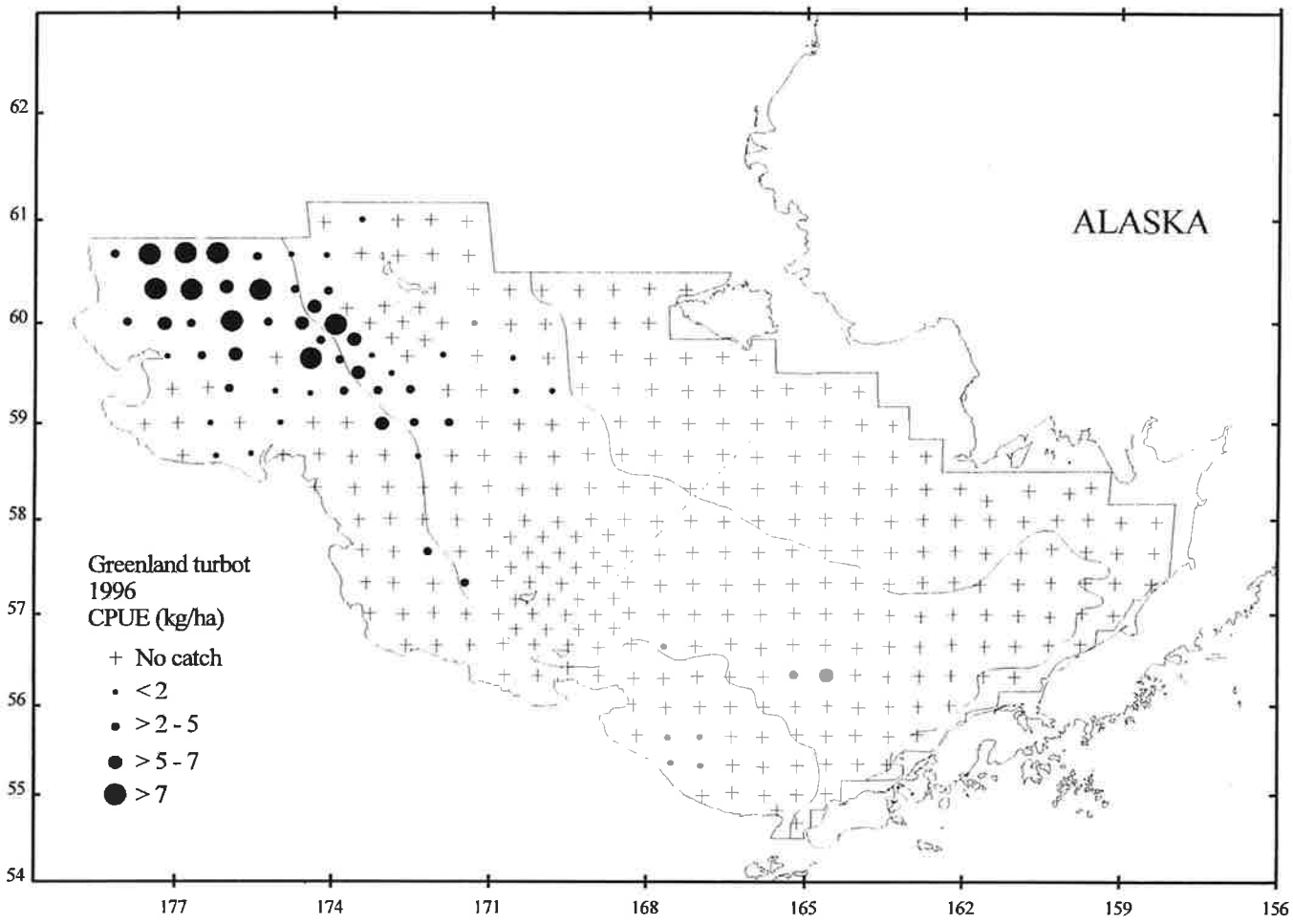

Figure 27--. Distribution and relative abundance in kg/ha of Greenland turbot, 1996 eastern Bering Sea bottom trawl survey.

Table 23.--Abundance estimates and mean size of Greenland turbot by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	0.00	0	0.000	0	0.000	0.000	0.0
2	0.00	0	0.000	0	0.000	0.000	0.0
3	0.15	1,581	0.052	268,572	0.029	5.887	83.3
4	0.55	5,916	0.195	1,914,152	0.205	3.091	55.6
5	0.21	808	0.027	127,606	0.014	6.332	84.6
6	2.33	21,987	0.726	7,025,454	0.753	3.130	64.0
All subareas combined[b]	0.65	30,292	1.000	9,335,785	1.000	3.245	63.1
95% Confidence interval		±14,916		±5,222,454			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

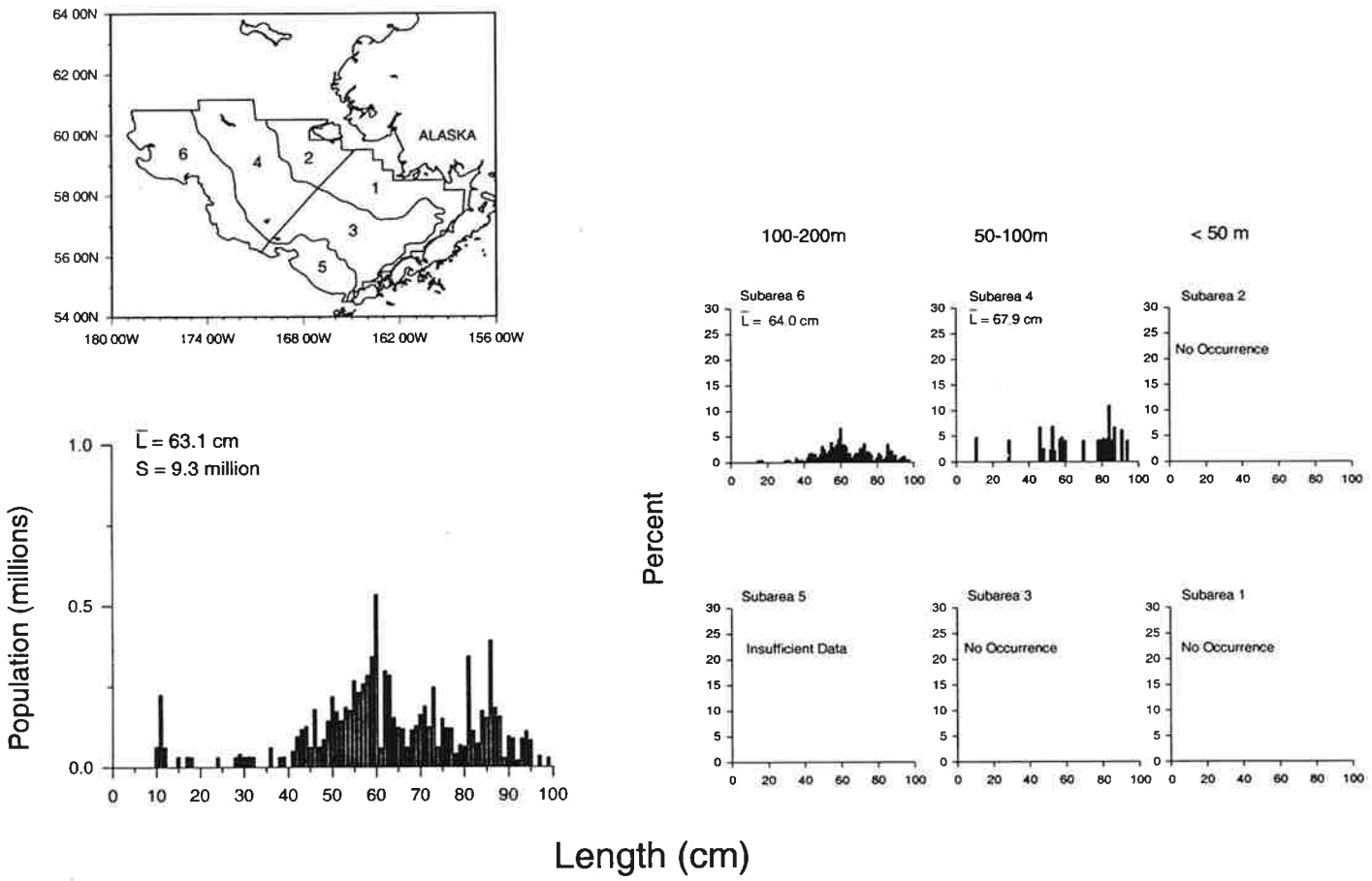

Figure 28.--Estimated relative size distribution (sexes combined) of Greenland turbot in terms of population number and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

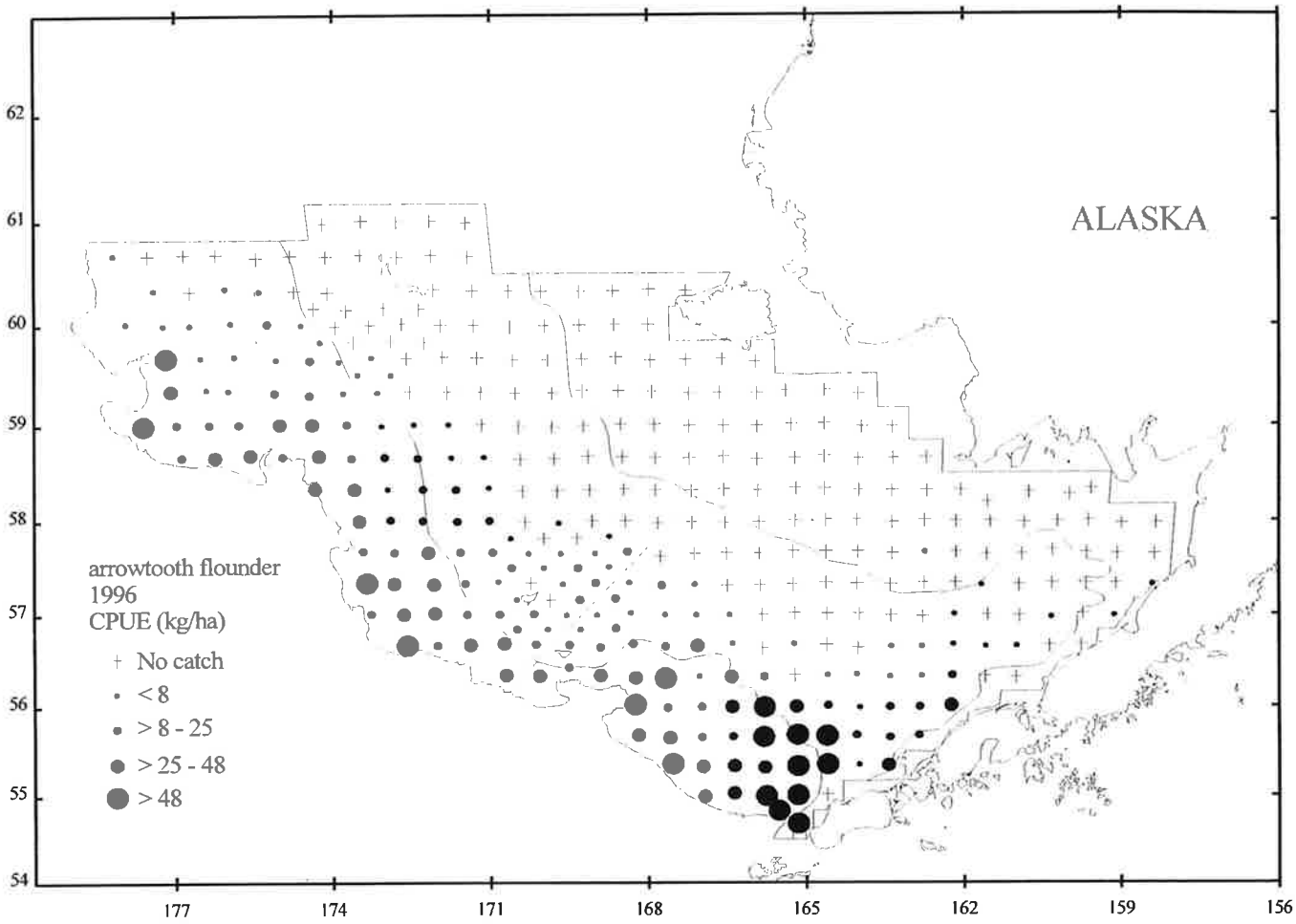

Figure 29--. Distribution and relative abundance in kg/ha of arrowtooth flounder, 1996 eastern Bering Sea bottom trawl survey.

Table 24.--Abundance estimates and mean size of arrowtooth flounder by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	0.33	2,580	0.005	2,865,178	0.004	0.900	42.1
2	0.00	0	0.000	0	0.000	0.000	0.0
3	14.81	152,983	0.287	190,838,630	0.292	0.802	41.6
4	2.23	24,061	0.045	29,865,448	0.046	0.806	39.6
5	45.16	175,195	0.329	252,660,916	0.387	0.693	38.4
6	18.75	177,340	0.333	176,264,741	0.270	1.006	42.9
All subareas combined[b]	11.48	532,159	1.000	652,494,913	1.000	0.816	40.6
95% Confidence interval		±130,094		±199,111,060			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

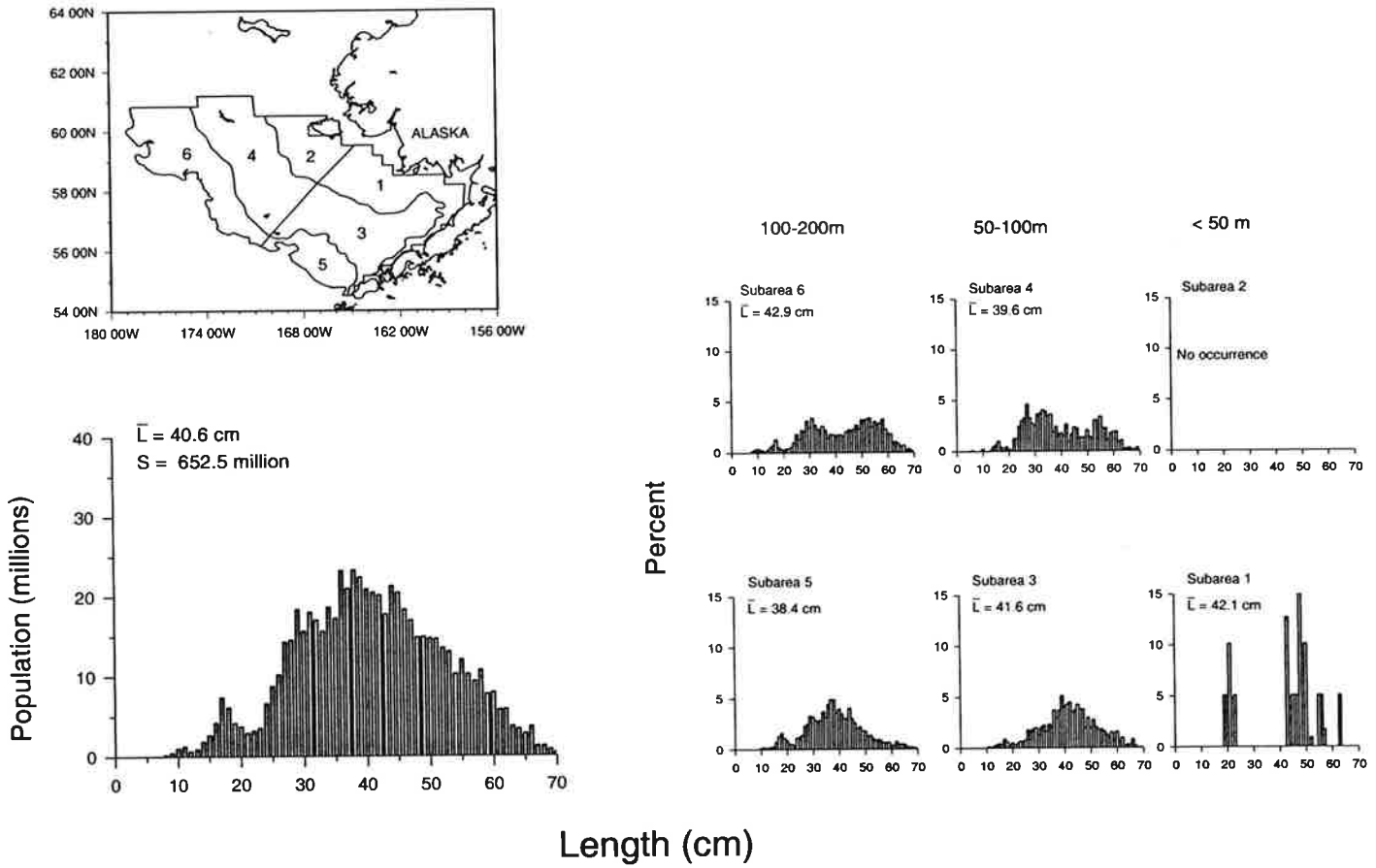

Figure 30.--Estimated relative size distribution (sexes combined) of arrowtooth flounder in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

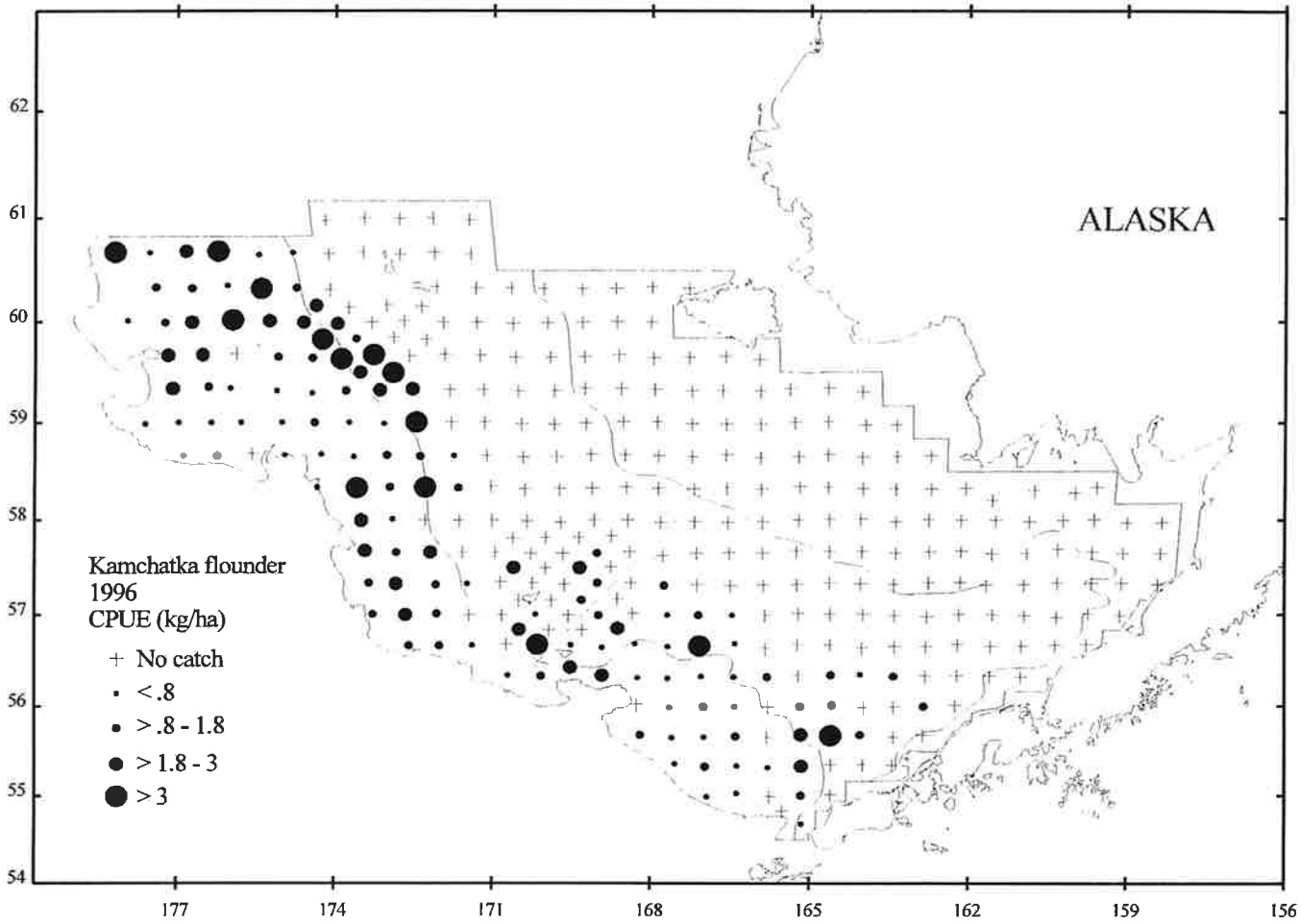

Figure 31--. Distribution and relative abundance in kg/ha of Kamchatka flounder, 1996 eastern Bering Sea bottom trawl survey.

Table 25.--Abundance estimates and mean size of Kamchatka flounder by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	0.00	0	0.000	0	0.000	0.000	0.0
2	0.00	0	0.000	0	0.000	0.000	0.0
3	0.43	4,467	0.185	5,905,438	0.208	0.756	40.3
4	0.42	4,483	0.185	3,592,007	0.126	1.248	47.8
5	0.70	2,698	0.112	6,231,432	0.219	0.433	33.0
6	1.33	12,549	0.519	12,705,350	0.447	0.988	43.6
All subareas combined[b]	0.52	24,196	1.000	28,434,227	1.000	0.851	41.1
95% Confidence interval		±5,919		±7,222,093			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

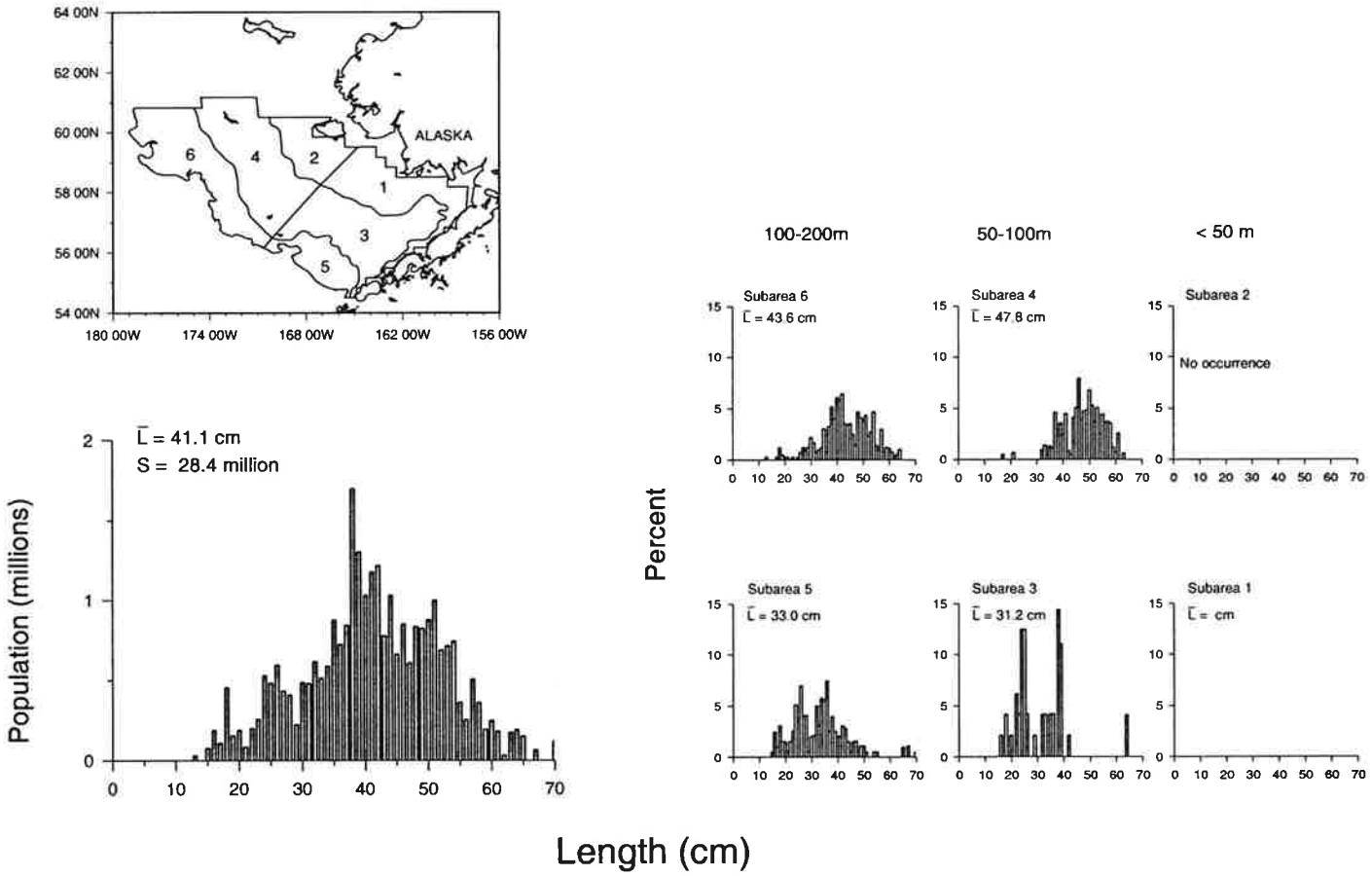

Figure 32.--Estimated relative size distribution (sexes combined) of Kamchatka flounder in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

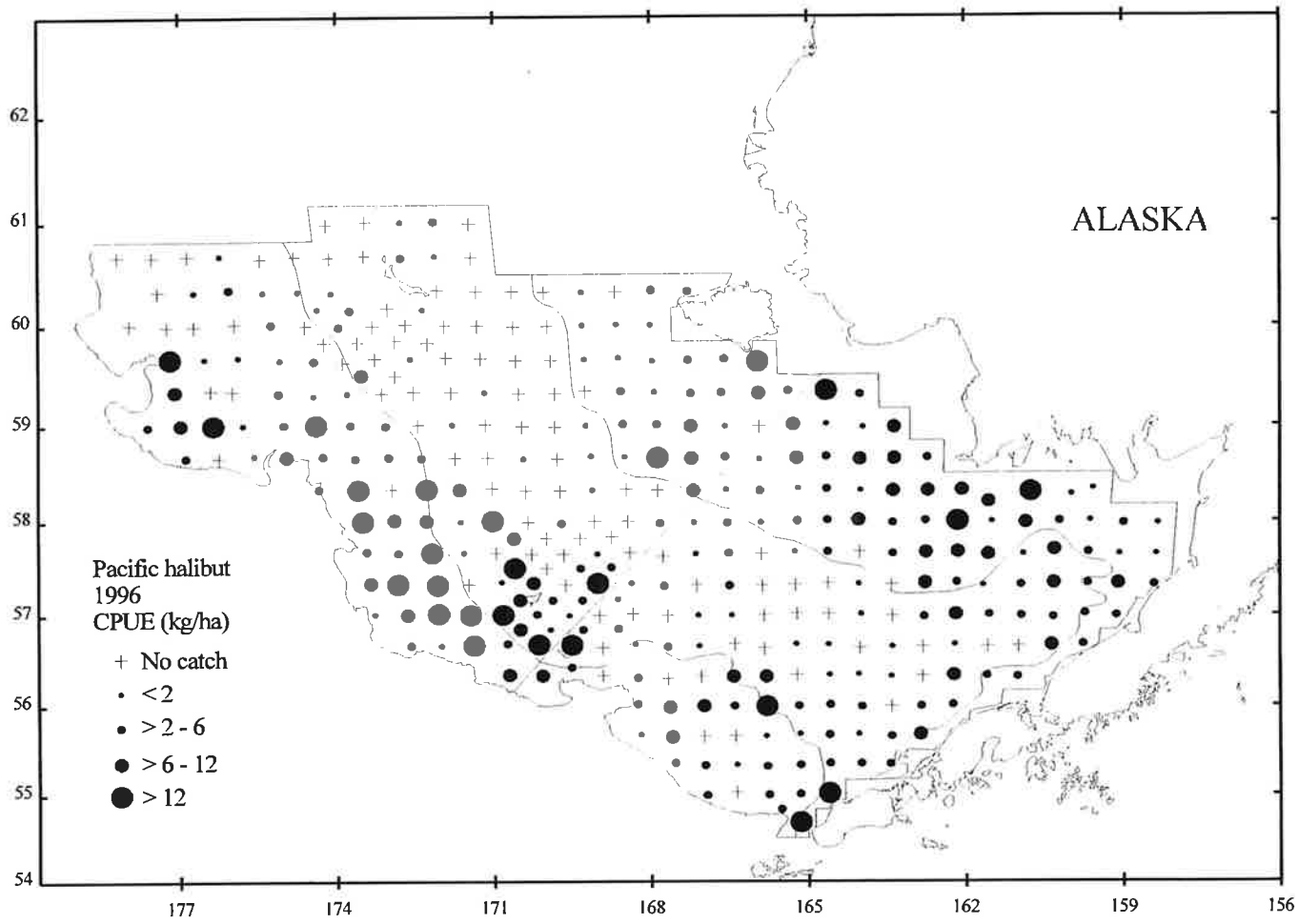

Figure 33--. Distribution and relative abundance in kg/ha of Pacific halibut, 1996 eastern Bering Sea bottom trawl survey.

Table 26.--Abundance estimates and mean size of Pacific halibut by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	4.50	35,044	0.206	11,501,789	0.321	3.047	57.5
2	3.44	14,109	0.083	4,155,315	0.116	3.395	63.4
3	3.00	30,974	0.182	6,768,981	0.189	4.576	68.8
4	1.70	18,346	0.108	3,218,955	0.090	5.699	71.4
5	3.12	12,122	0.071	1,704,060	0.048	7.114	80.0
6	6.33	59,881	0.351	8,457,651	0.236	7.080	79.5
All subareas combined[b]	3.68	170,476	1.000	35,806,751	1.000	4.761	67.8
95% Confidence interval		±22,055		±5,581,793			

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

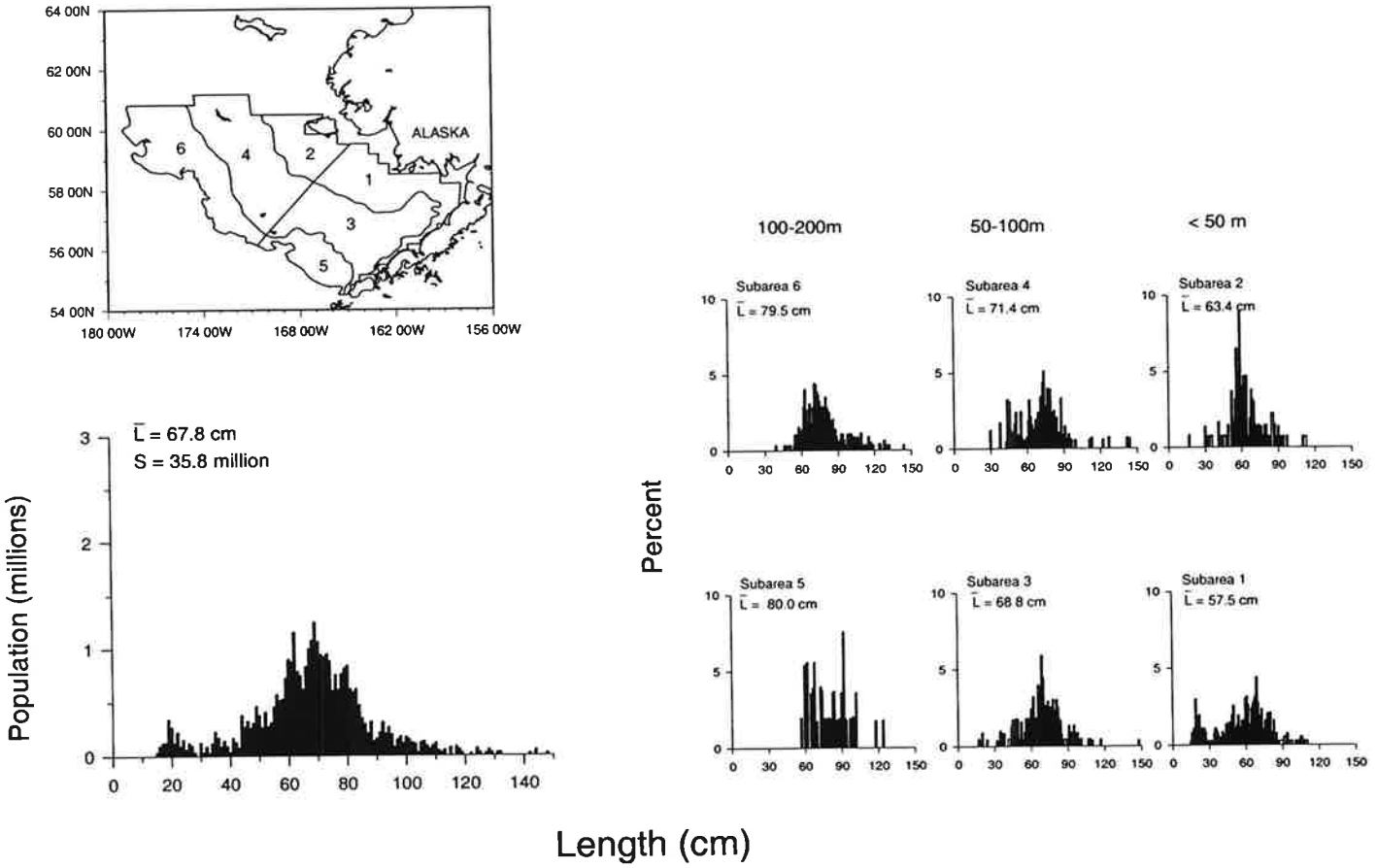

Figure 34.--Estimated relative size distribution (sexes combined) of Pacific halibut in terms of population numbers and percent for subareas 1-6, 1996 eastern Bering Sea bottom trawl survey.

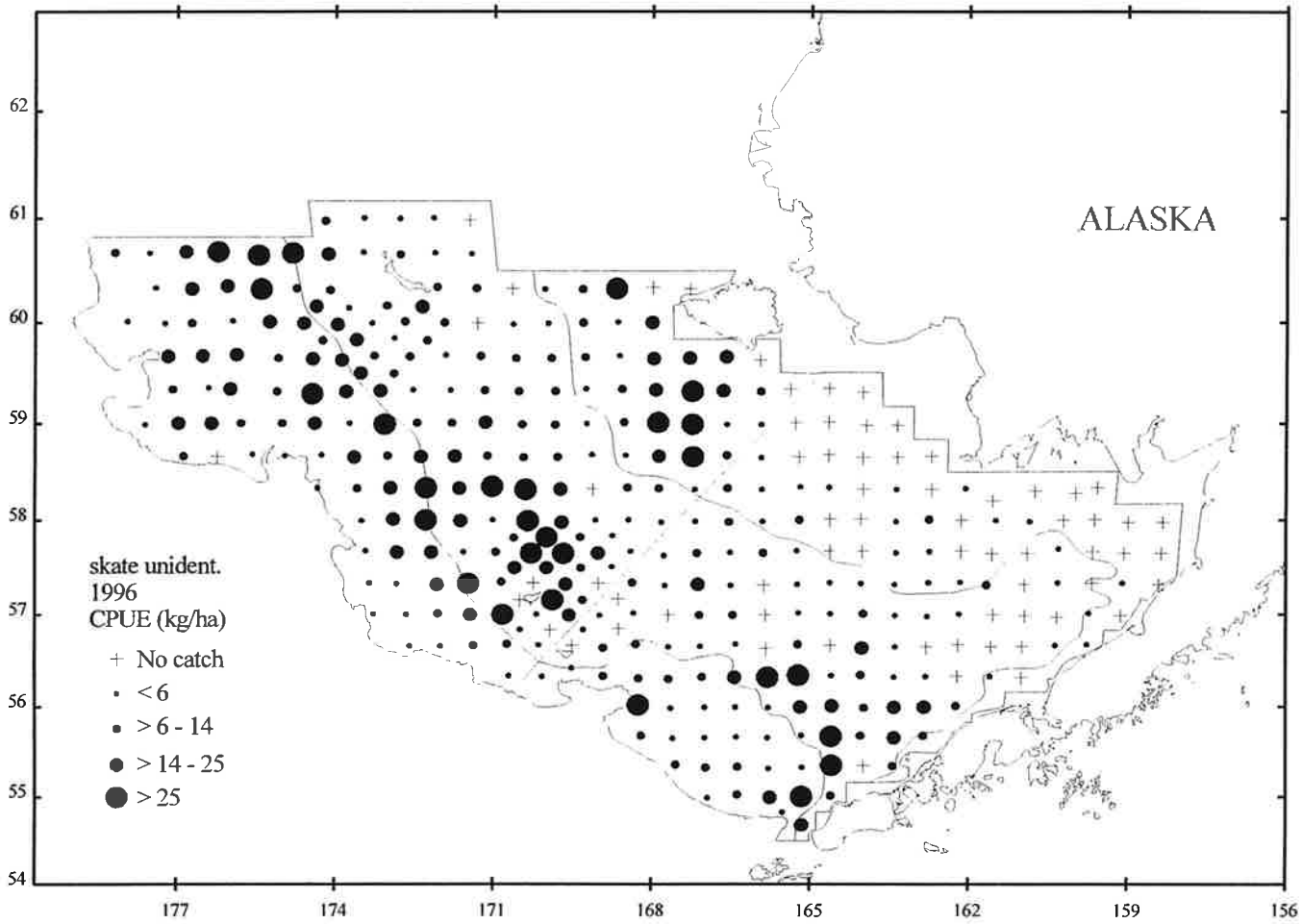

Figure 35--. Distribution and relative abundance in kg/ha of skates, 1996 eastern Bering Sea bottom trawl survey.

Table 27.--Abundance estimates and mean size of skates by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	1.57	12,225	0.029	3,656,626	0.034	3.343
2	12.39	50,842	0.120	8,597,835	0.081	5.913
3	7.96	82,268	0.194	23,889,337	0.224	3.444
4	10.74	115,808	0.273	37,963,469	0.357	3.051
5	8.93	34,633	0.082	5,228,246	0.049	6.624
6	13.55	128,137	0.302	27,110,311	0.255	4.727
All subareas combined[b]	9.15	423,913	1.000	106,445,823	1.000	3.982
95% Confidence interval		±63,919		±12,216,173		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

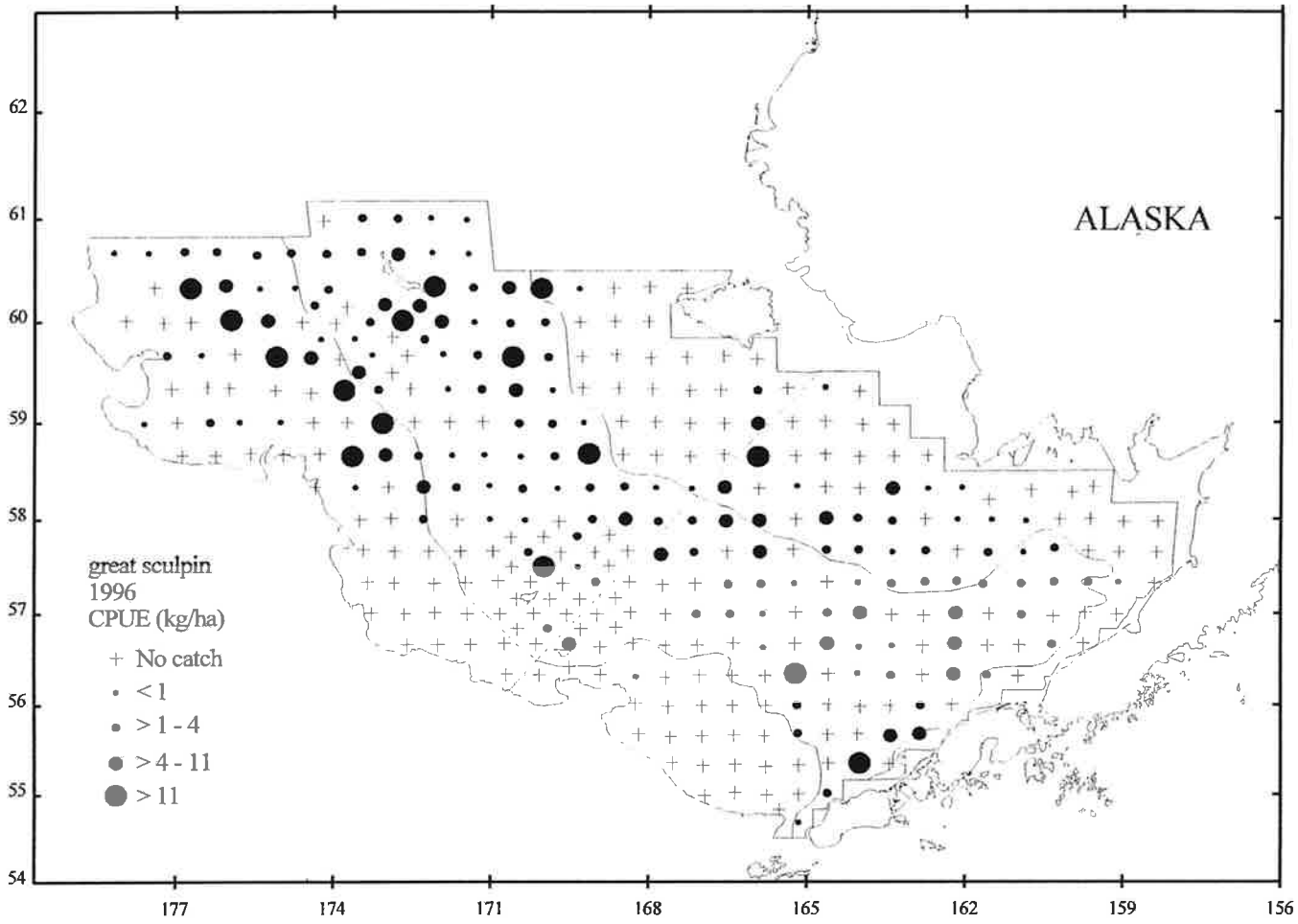

Figure 36--. Distribution and relative abundance in kg/ha of great sculpin, 1996 eastern Bering Sea bottom trawl survey.

Table 28.--Abundance estimates and mean size of great sculpin by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	1.39	10,820	0.122	12,850,844	0.214	0.842
2	0.99	4,061	0.046	5,463,133	0.091	0.743
3	1.89	19,482	0.220	9,907,052	0.165	1.966
4	2.13	22,994	0.259	20,596,277	0.343	1.116
5	0.00	3	0.000	31,028	0.001	0.097
6	3.31	31,337	0.353	11,242,917	0.187	2.787
All subareas combined[b]	1.91	88,698	1.000	60,091,251	1.000	1.476
95% Confidence interval		±32,324		±36,984,815		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

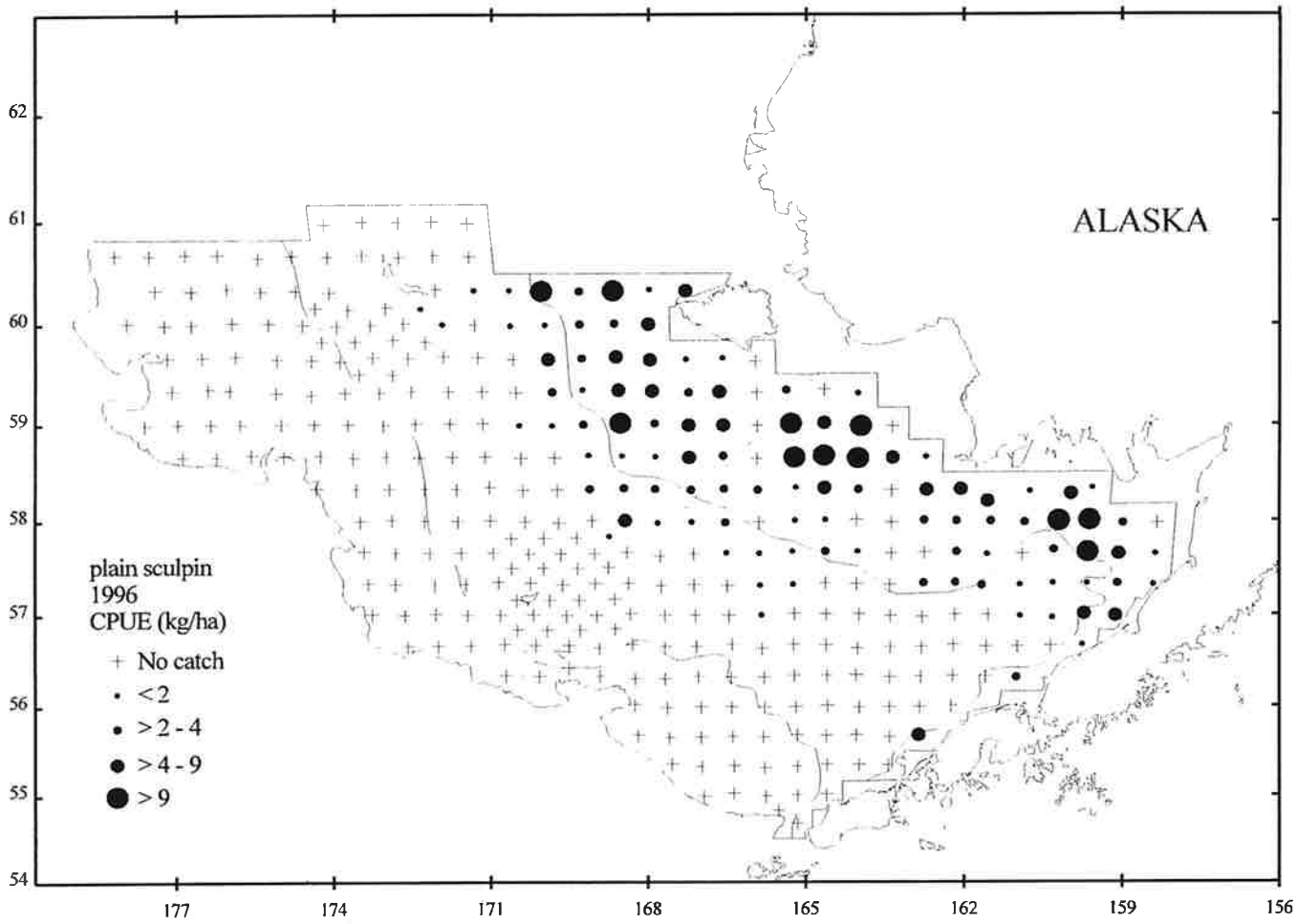

Figure 37--. Distribution and relative abundance in kg/ha of plain sculpin, 1996 eastern Bering Sea bottom trawl survey.

Table 29.--Abundance estimates and mean size of plain sculpin by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	3.92	30,554	0.565	49,963,344	0.581	0.612
2	4.13	16,948	0.313	27,512,624	0.320	0.616
3	0.21	2,174	0.040	2,782,209	0.032	0.781
4	0.41	4,420	0.082	5,678,965	0.066	0.778
5	0.00	0	0.000	0	0.000	0.000
6	0.00	0	0.000	0	0.000	0.000
All subareas combined[b]	1.17	54,096	1.000	85,937,143	1.000	0.629
95% Confidence interval		±17,193		±26,244,191		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

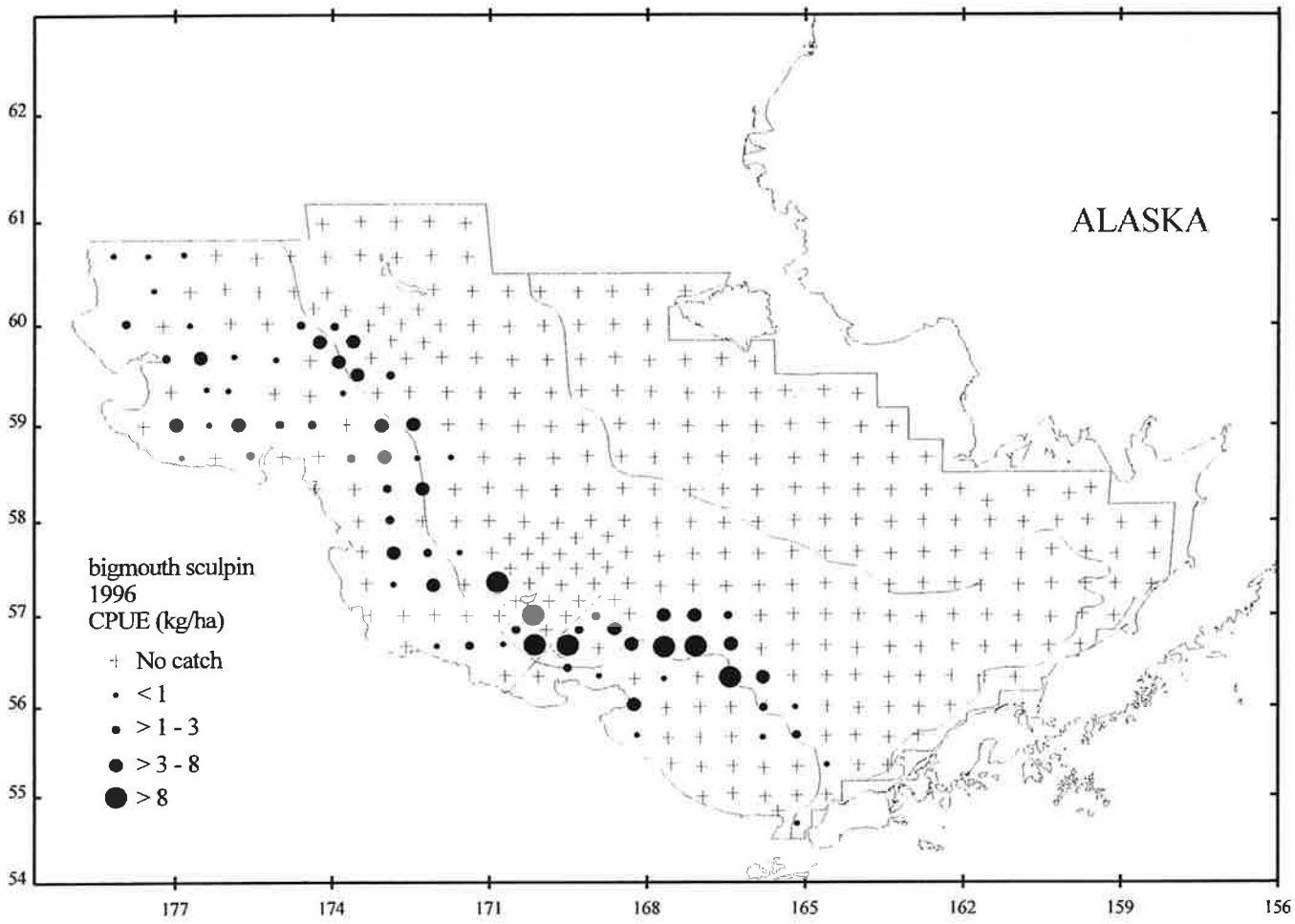

Figure 38--. Distribution and relative abundance in kg/ha of bigmouth sculpin, 1996 eastern Bering Sea bottom trawl survey.

Table 30.--Abundance estimates and mean size of bigmouth sculpin by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	1.44	14,924	0.482	3,255,671	0.417	4.584
4	0.41	4,383	0.141	1,010,933	0.130	4.336
5	0.47	1,815	0.059	361,540	0.046	5.020
6	1.04	9,858	0.318	3,172,710	0.407	3.107
All subareas combined[b]	0.67	30,980	1.000	7,800,854	1.000	3.971
95% Confidence interval		±10,394		±2,791,261		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

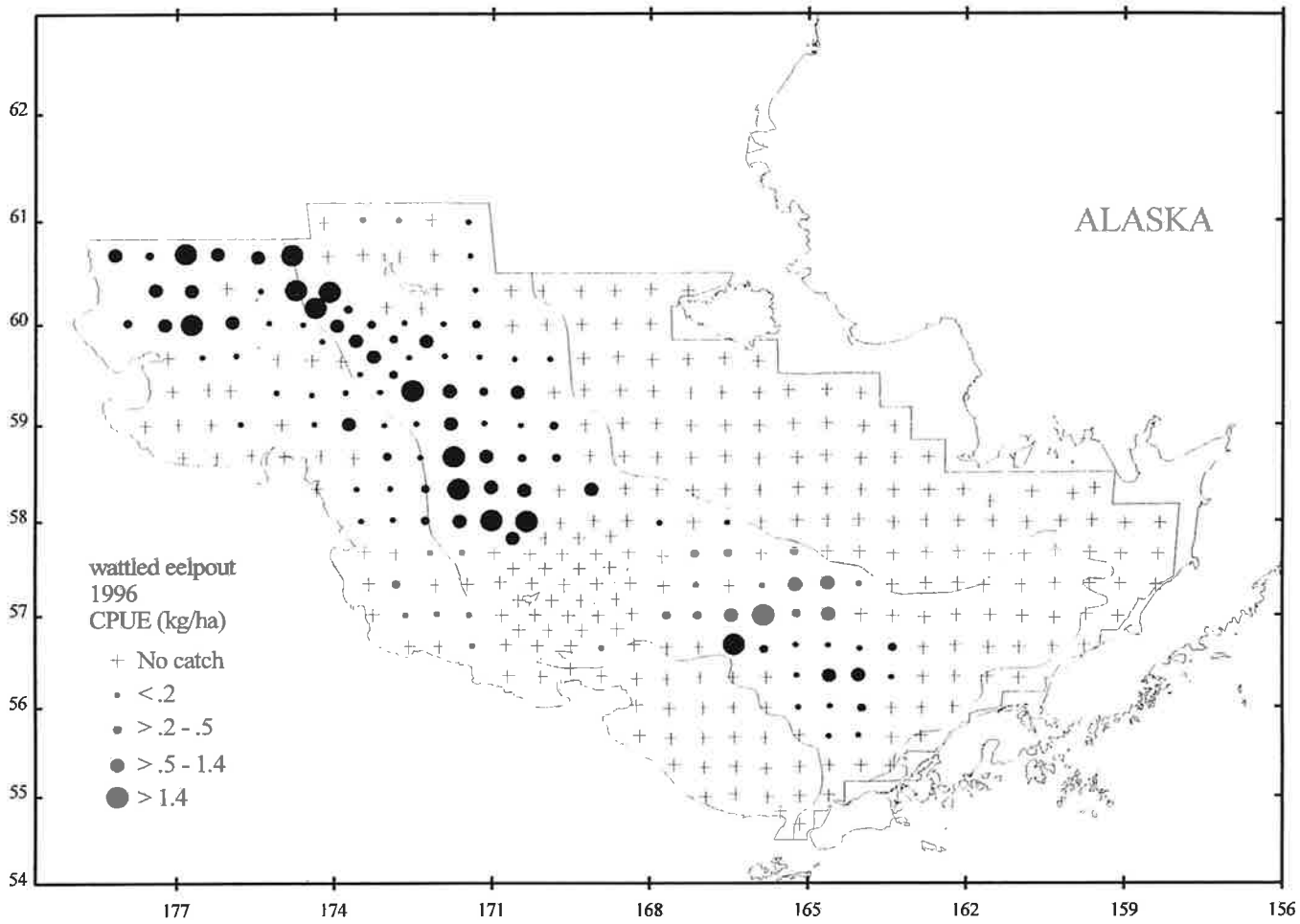

Figure 39--. Distribution and relative abundance in kg/ha of wattled eelpout, 1996 eastern Bering Sea bottom trawl survey.

Table 31.--Abundance estimates and mean size of wattled eelpout by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	0.16	1,665	0.225	13,149,867	0.295	0.127
4	0.35	3,816	0.515	19,807,375	0.444	0.193
5	0.00	0	0.000	0	0.000	0.000
6	0.20	1,935	0.261	11,623,622	0.261	0.166
All subareas combined[b]	0.16	7,415	1.000	44,580,864	1.000	0.166
95% Confidence interval		±2,339		±32,498,609		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

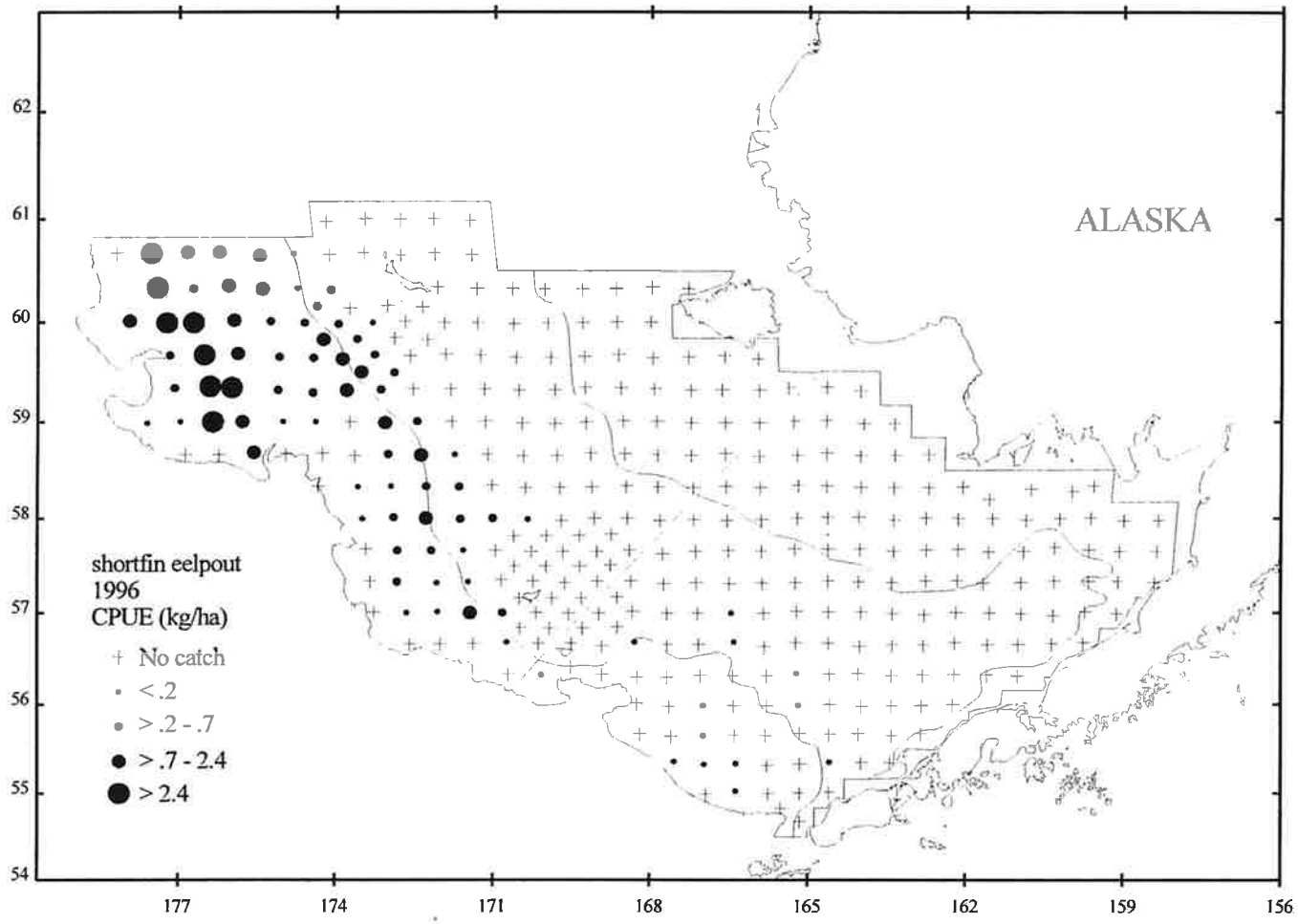

Figure 40--. Distribution and relative abundance in kg/ha of shortfin eelpout, 1996 eastern Bering Sea bottom trawl survey.

Table 32.--Abundance estimates and mean size of shortfin eelpout by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	0.00	35	0.003	395,723	0.002	0.088
4	0.07	739	0.057	19,812,362	0.089	0.037
5	0.01	49	0.004	1,047,158	0.005	0.047
6	1.27	12,051	0.936	200,750,096	0.904	0.060
All subareas combined[b]	0.28	12,873	1.000	222,005,339	1.000	0.058
95% Confidence interval		±6,179		±76,926,246		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

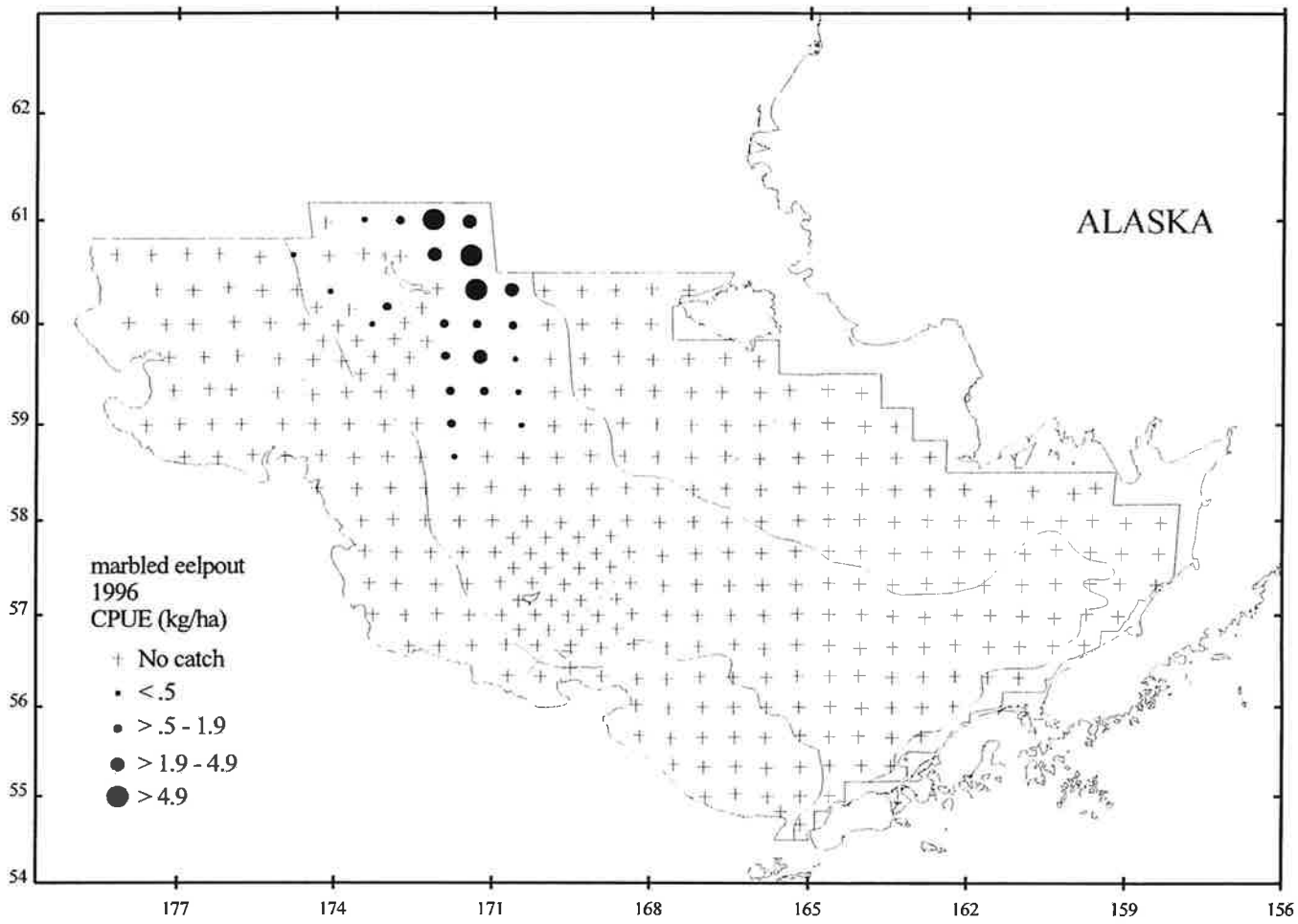

Figure 41--. Distribution and relative abundance in kg/ha of marbled eelpout, 1996 eastern Bering Sea bottom trawl survey.

Table 33.--Abundance estimates and mean size of marbled eelpout by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	0.00	0	0.000	0	0.000	0.000
4	0.57	6,144	1.000	5,999,790	1.000	1.024
5	0.00	0	0.000	0	0.000	0.000
6	0.00	0	0.000	0	0.000	0.000
All subareas combined[b]	0.13	6,144	1.000	5,999,790	1.000	1.024
95% Confidence interval		±3,431		±4,387,359		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

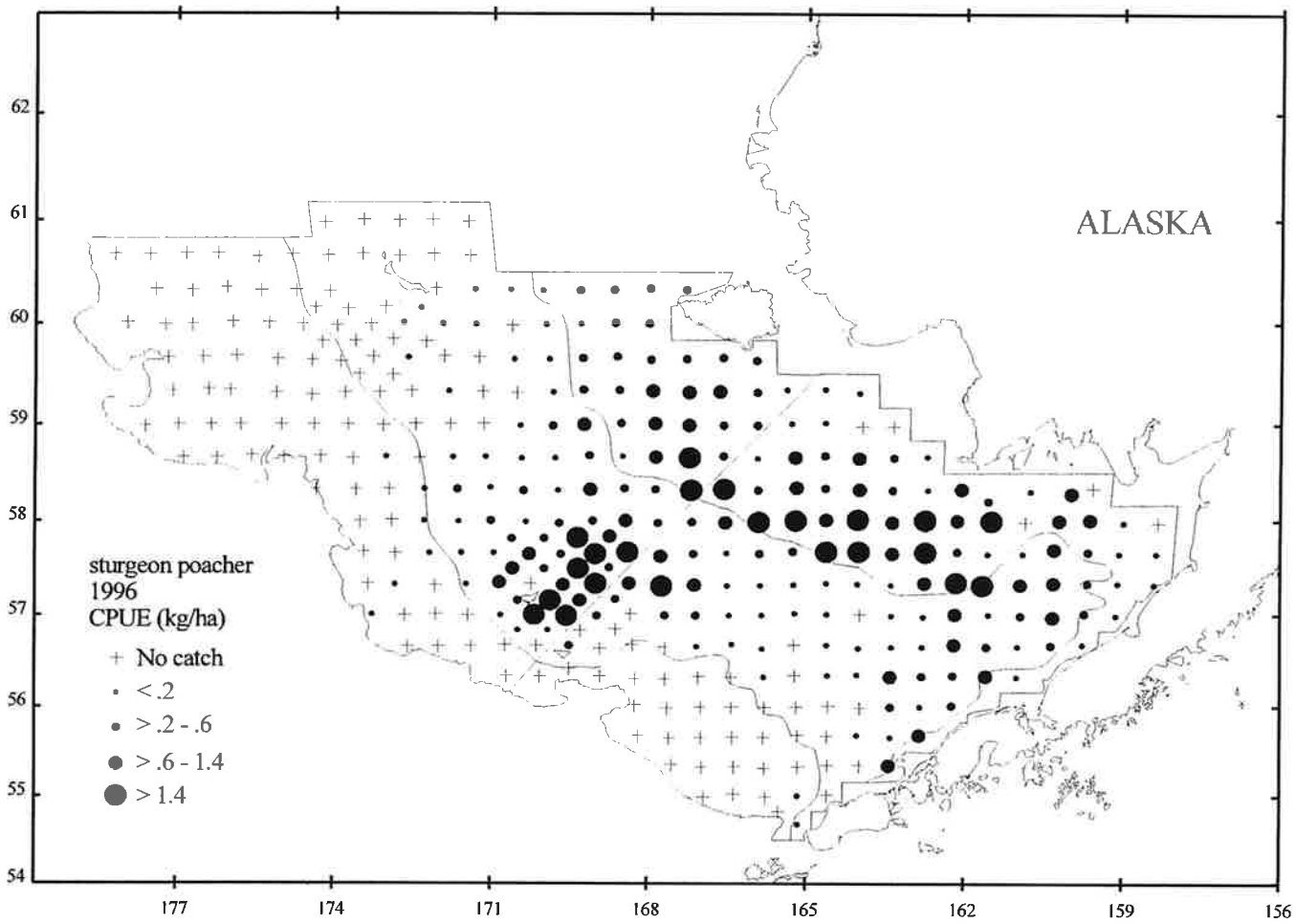

Figure 42--. Distribution and relative abundance in kg/ha of sturgeon poacher, 1996 eastern Bering Sea bottom trawl survey.

Table 34.--Abundance estimates and mean size of sturgeon poacher by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	0.72	5,602	0.385	74,089,455	0.373	0.076
2	0.53	2,171	0.149	28,530,632	0.144	0.076
3	0.31	3,238	0.222	48,630,251	0.245	0.067
4	0.32	3,497	0.240	46,871,483	0.236	0.075
5	0.00	3	0.000	33,397	0.000	0.090
6	0.01	50	0.003	578,091	0.003	0.086
All subareas combined[b]	0.31	14,561	1.000	198,733,309	1.000	0.073
95% Confidence interval		±4,521		±55,771,890		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

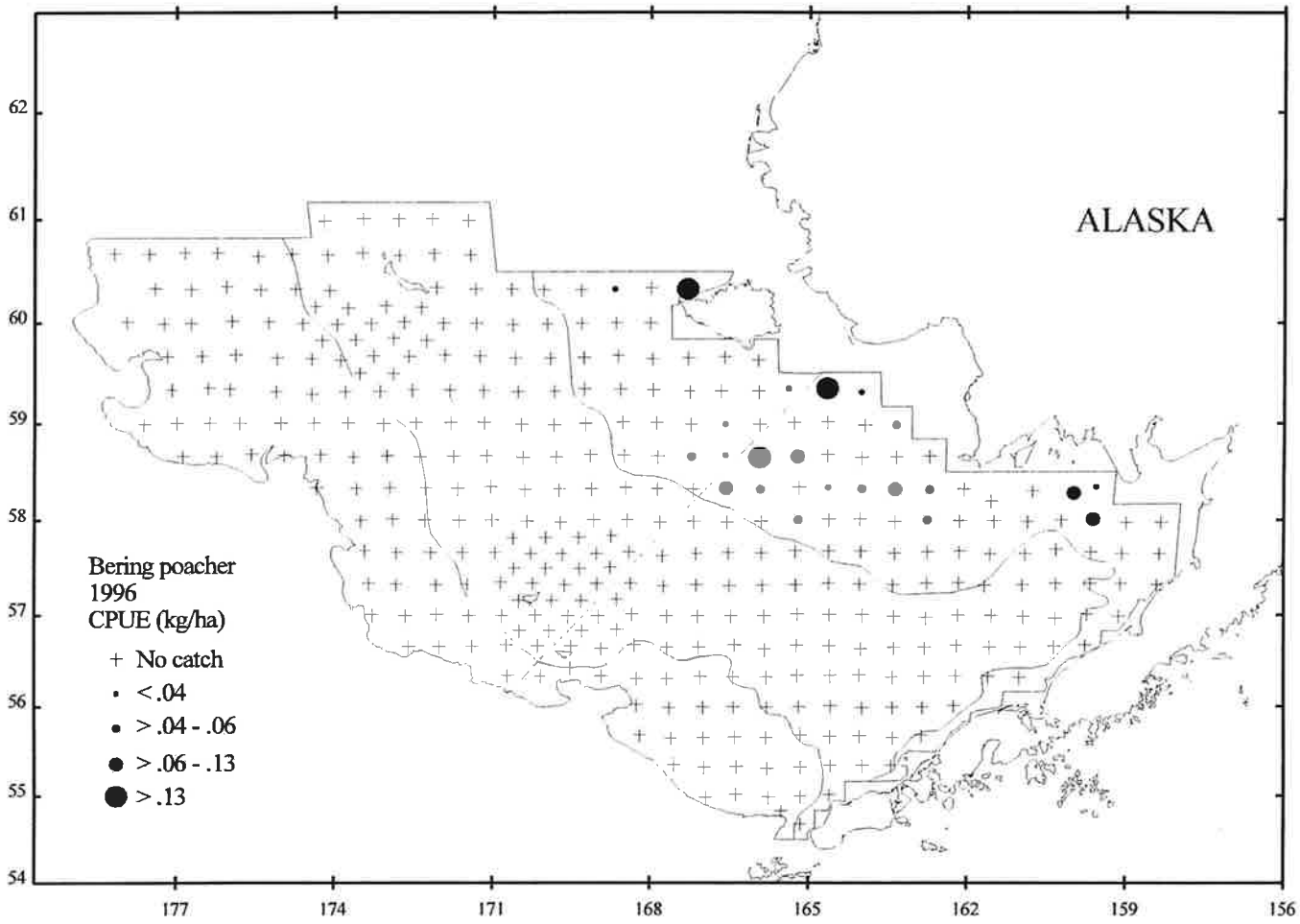

Figure 43--. Distribution and relative abundance in kg/ha of Bering poacher, 1996 eastern Bering Sea bottom trawl survey.

Table 35.--Abundance estimates and mean size of Bering poacher by subarea, 1996 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[a]	Proportion of estimated population	Weight (kg)
1	0.02	148	0.771	2,792,567	0.629	0.053
2	0.01	43	0.224	1,646,624	0.371	0.026
3	0.00	0	0.000	0	0.000	0.000
4	0.00	0	0.000	0	0.000	0.000
5	0.00	0	0.000	0	0.000	0.000
6	0.00	0	0.000	0	0.000	0.000
All subareas combined[b]	0.00	192	1.000	4,439,191	1.000	0.043
95% Confidence interval		±101		±1,814,661		

[a]Variances of abundance estimates are given in Appendix D.
[b]Differences in sums of estimates and totals are due to rounding.

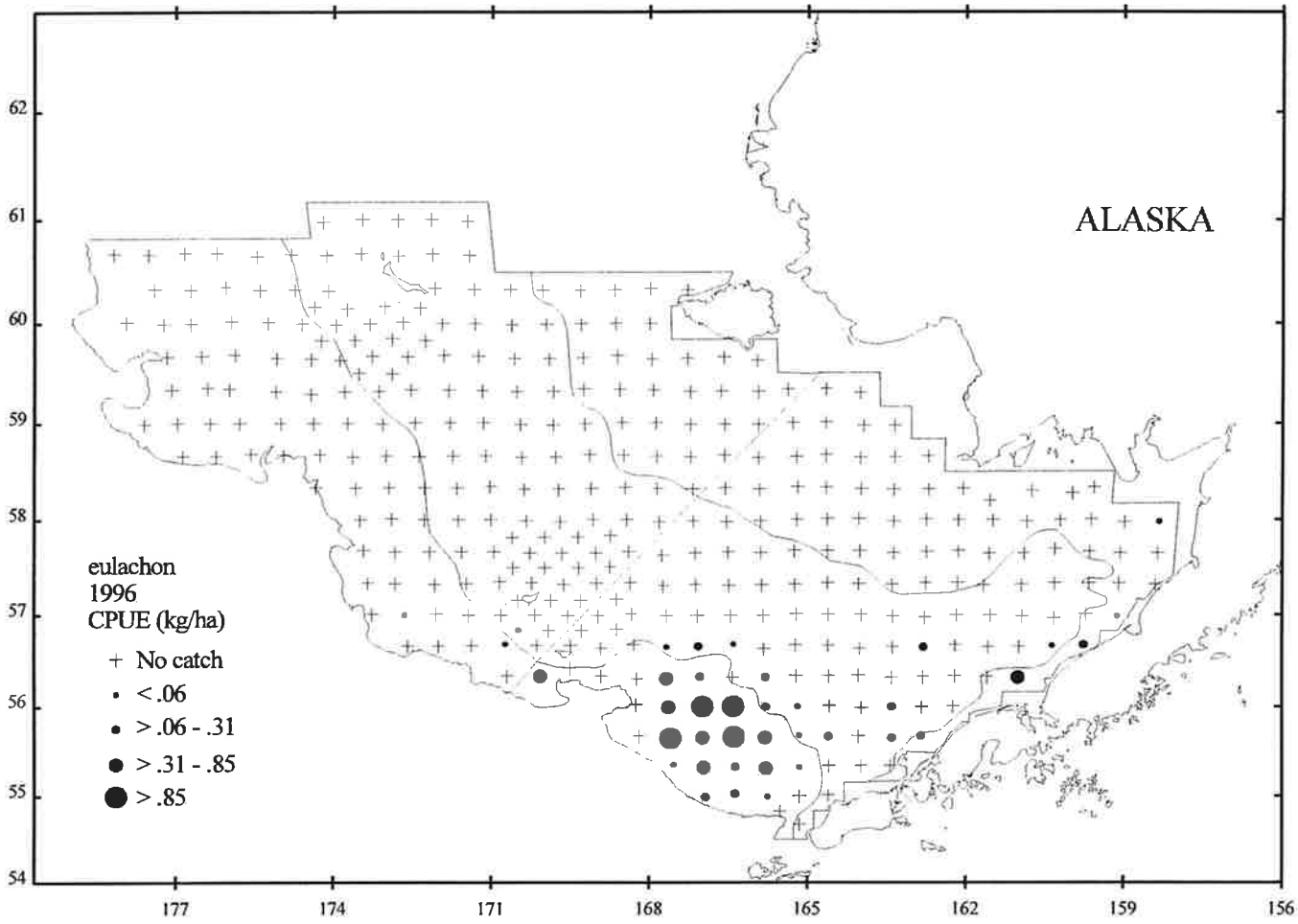

Figure 44--. Distribution and relative abundance in kg/ha of eulachon, 1996 eastern Bering Sea bottom trawl survey.

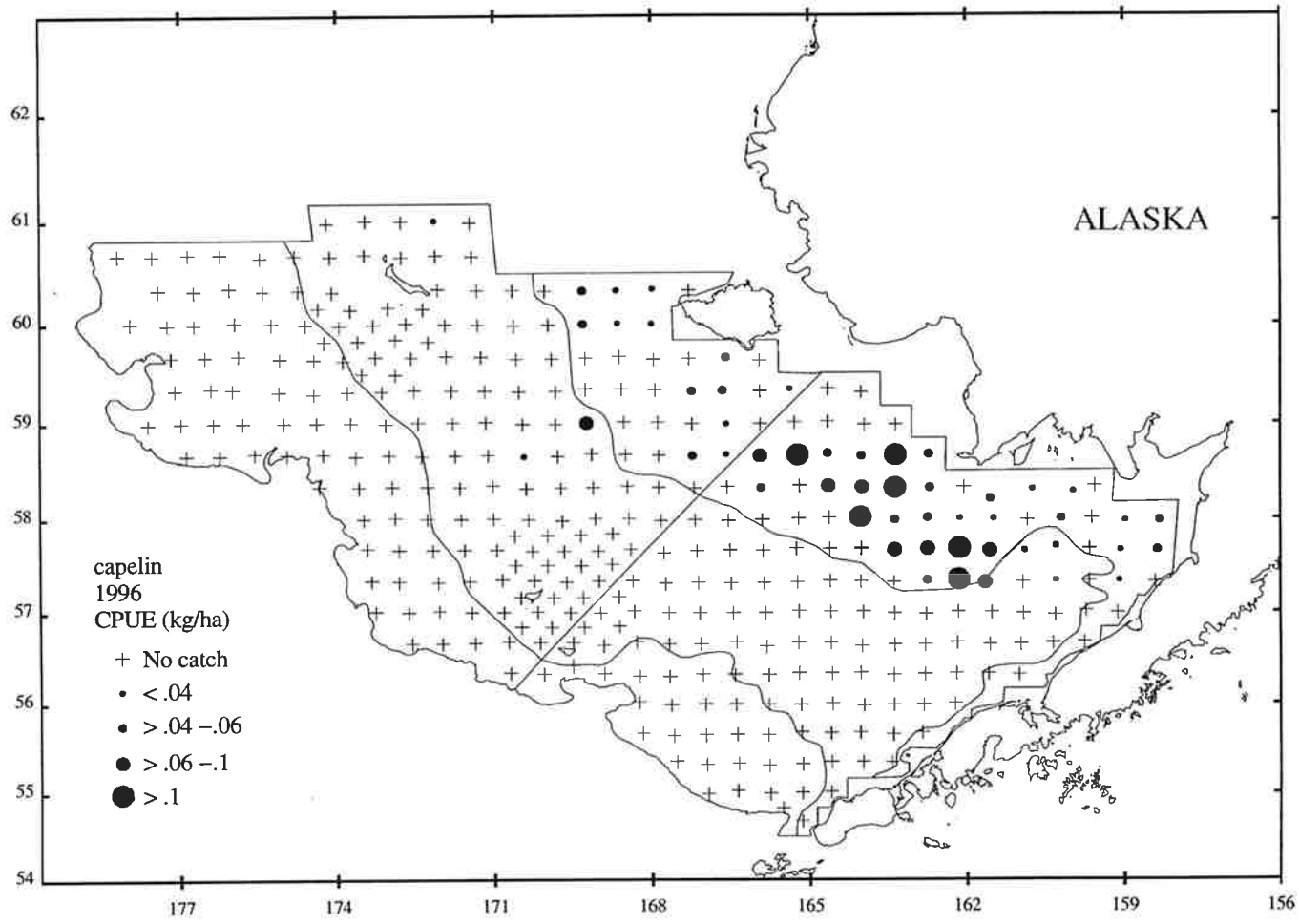

Figure 45--. Distribution and relative abundance in kg/ha of capelin, 1996 eastern Bering Sea bottom trawl survey.

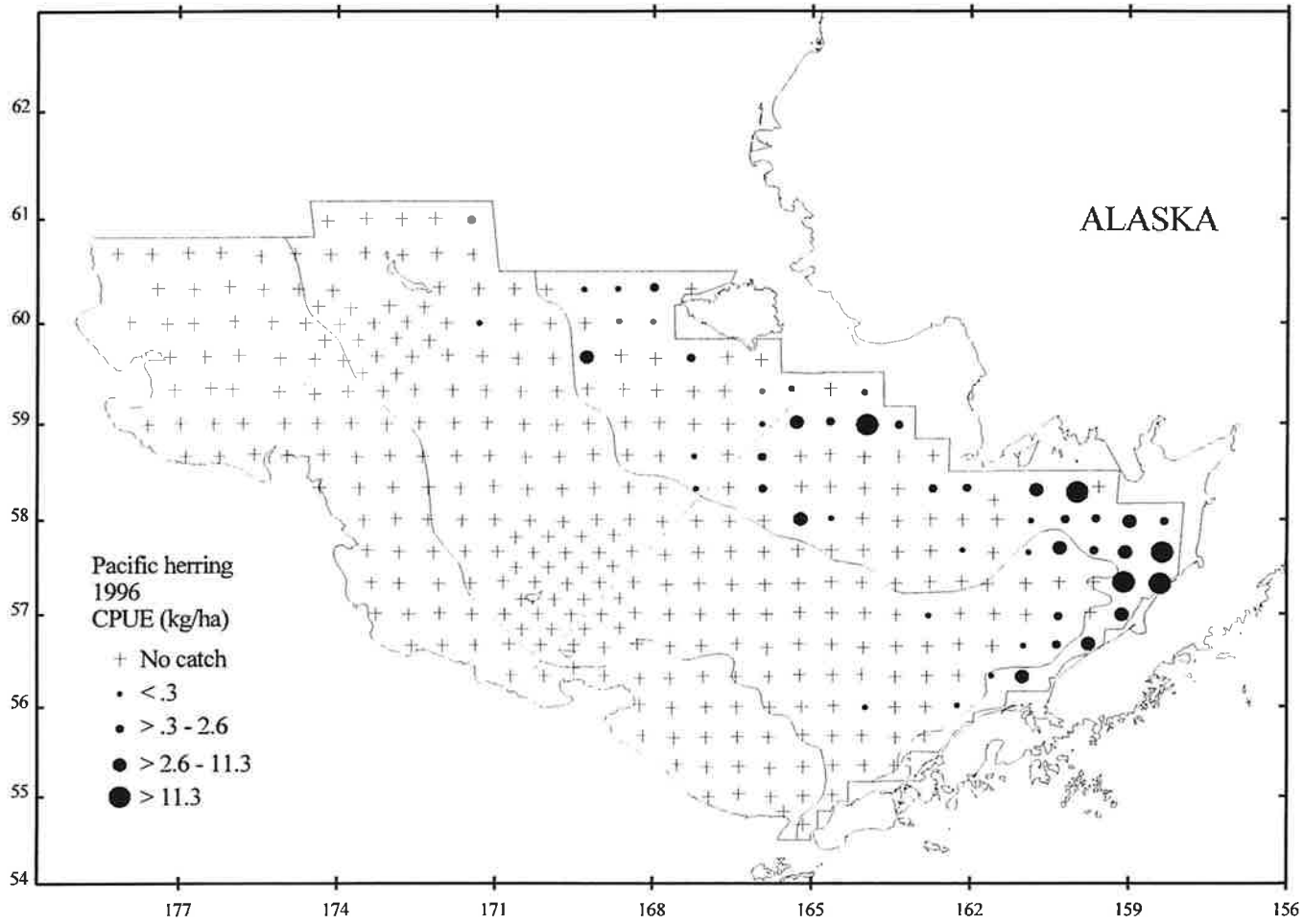

Figure 46--. Distribution and relative abundance in kg/ha of Pacific herring, 1996 eastern Bering Sea bottom trawl survey.

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APPENDIX A

Station Data, 1996 Eastern Bering Sea Bottom Trawl Survey

Appendix A contains station data by vessel for the 355 successfully completed standard survey stations. In using the tables, the following should be noted:

1. Time represents the nearest hour at the start of the tow.
2. Haul numbers are not always sequential because special study and unsatisfactory hauls were omitted.
3. All longitudes are in western hemisphere, latitudes in northern hemisphere. Geodetic positions are displayed as degrees and decimal minutes.
4. Width codes are as follows:

   M = Net width was measured by mensuration gear.

   F = Net width was estimated from a function of wire out or wire out and net height.
5. Hauls marked with an "*" were used for the FPC analysis. Nine additional special study hauls not listed here were also used for that analysis. For reference purposes, these hauls were: F/V *Arcturus*-172-174, 177,179- - F/V *Aldebaran* -168,176-178.

List of Tables

Table A.-1--Haul data for stations sampled by the F/V *Arcturus* during the 1996 eastern Bering Sea Bottom trawl survey.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	1	06/08/96	56.992	159.120	33	06	0.47	2.69	10	6.0	6.0	15.6	M
*	2	06/08/96	57.338	159.082	50	09	0.48	2.74	10	4.9	5.2	15.9	F
*	3	06/08/96	57.657	159.056	46	12	0.49	2.59	10	4.4	4.2	15.7	M
*	4	06/08/96	57.981	158.975	39	15	0.49	2.96	10	5.4	5.0	15.7	M
*	5	06/09/96	58.286	159.967	35	06	0.33	1.77	10	5.1	4.3	15.0	F
*	6	06/09/96	58.004	160.194	50	09	0.50	2.81	10	3.7	3.7	16.1	M
*	7	06/09/96	57.701	160.291	53	13	0.49	2.88	31	4.7	4.4	16.4	M
*	8	06/09/96	57.341	160.306	59	16	0.49	2.92	31	4.5	4.5	16.5	M
*	9	06/10/96	56.973	160.318	59	06	0.49	2.79	31	4.3	---	16.5	M
*	10	06/10/96	56.667	160.350	52	09	0.50	3.21	31	4.9	5.3	16.5	M
*	11	06/10/96	56.331	161.583	62	14	0.49	2.66	10	5.0	4.7	16.1	M
*	12	06/10/96	56.653	161.572	86	17	0.49	2.92	31	4.7	3.4	17.1	F
*	13	06/11/96	57.001	161.537	68	07	0.47	2.63	31	4.1	3.9	16.2	M
*	14	06/11/96	57.318	161.653	53	10	0.48	2.67	31	4.7	4.6	16.5	M
*	15	06/11/96	57.651	161.551	51	14	0.49	2.85	10	4.6	4.5	15.6	M
*	16	06/12/96	58.001	161.481	56	06	0.49	2.90	10	4.7	4.7	18.8	M
*	18	06/12/96	58.209	161.544	36	10	0.24	1.24	10	4.6	4.9	15.0	F
*	19	06/12/96	58.324	162.697	30	14	0.49	3.18	10	4.9	4.6	15.1	M
*	20	06/12/96	58.010	162.742	39	16	0.47	2.66	10	5.0	4.2	14.1	M
*	21	06/13/96	57.672	162.734	43	06	0.49	3.00	10	4.7	4.5	16.0	M
*	22	06/13/96	57.343	162.753	48	08	0.47	2.97	10	4.7	4.5	15.9	F
*	23	06/13/96	56.980	162.775	57	11	0.50	3.15	31	4.8	4.4	16.5	M
*	24	06/13/96	56.652	162.796	70	13	0.49	2.76	31	4.8	3.2	16.3	M
*	25	06/13/96	56.331	162.801	77	16	0.49	2.55	31	5.9	3.0	17.5	M
*	26	06/14/96	55.995	162.833	74	06	0.49	2.83	31	6.7	---	16.3	M
*	27	06/14/96	55.987	163.970	89	11	0.47	2.66	31	8.0	2.7	16.4	M
*	28	06/14/96	55.681	164.032	91	13	0.49	3.15	31	7.7	2.9	16.5	M
*	29	06/14/96	55.349	163.985	73	16	0.43	2.37	31	7.7	3.6	16.5	M
*	30	06/15/96	56.348	164.030	81	06	0.49	2.85	31	6.6	---	16.2	M
*	31	06/15/96	56.640	164.006	74	09	0.49	2.81	31	6.0	1.3	16.6	M
*	33	06/15/96	57.009	163.983	65	12	0.48	2.82	31	5.0	1.5	14.7	M

Table A-1.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	34	06/15/96	57.334	164.024	59	16	0.49	2.85	31	4.9	3.2	15.9	M
*	35	06/16/96	57.681	164.005	49	06	0.48	2.79	10	4.4	3.8	15.5	M
*	36	06/16/96	58.017	164.025	45	08	0.49	2.92	10	4.9	4.3	15.5	M
*	37	06/16/96	58.329	163.993	40	11	0.50	2.87	10	4.4	4.0	15.8	M
*	38	06/16/96	58.651	164.001	33	13	0.49	2.85	10	5.1	4.8	14.9	M
*	40	06/16/96	58.982	163.947	23	17	0.18	0.90	10	7.3	6.7	14.0	M
*	41	06/16/96	59.315	164.004	19	19	0.34	1.76	10	7.9	7.7	15.0	M
*	42	06/17/96	59.347	165.375	18	06	0.52	2.58	20	6.0	5.8	15.6	M
*	43	06/17/96	59.007	165.281	26	09	0.50	2.69	10	5.4	5.3	15.8	M
*	44	06/17/96	58.660	165.211	38	13	0.48	2.97	10	4.4	4.1	15.4	M
*	45	06/17/96	58.348	165.184	42	15	0.50	2.89	10	3.9	3.8	15.9	F
*	46	06/17/96	58.006	165.198	47	18	0.49	2.86	10	4.0	3.9	15.9	F
*	47	06/18/96	57.682	165.248	59	06	0.49	2.78	31	3.9	2.8	16.2	M
*	48	06/18/96	57.325	165.234	65	09	0.50	2.78	31	4.3	1.4	15.7	M
*	49	06/18/96	57.018	165.213	69	11	0.48	2.81	31	4.5	1.0	16.2	M
*	50	06/18/96	56.679	165.220	74	14	0.49	2.80	31	5.7	2.2	17.2	M
*	51	06/18/96	56.345	165.210	84	16	0.47	2.70	31	6.8	2.0	16.8	M
*	52	06/19/96	55.996	165.175	94	06	0.47	2.70	31	7.0	3.6	17.2	M
*	53	06/19/96	55.684	165.156	106	09	0.46	2.47	31	6.8	4.1	17.5	M
*	54	06/19/96	55.332	165.147	108	11	0.47	2.66	50	7.4	4.5	17.8	M
*	55	06/19/96	55.003	165.153	108	14	0.49	2.66	50	7.1	4.6	17.5	M
*	56	06/19/96	54.681	165.147	79	16	0.47	2.61	31	7.2	5.7	16.6	M
*	57	06/20/96	55.026	166.368	139	16	0.45	2.59	50	7.6	4.2	17.9	M
*	58	06/21/96	55.335	166.364	130	06	0.49	2.75	50	7.9	4.2	18.4	M
*	59	06/21/96	55.666	166.389	124	08	0.48	2.74	50	7.8	4.3	18.1	M
*	60	06/21/96	55.994	166.403	122	11	0.49	2.64	50	7.6	4.3	17.4	M
*	61	06/21/96	56.322	166.418	101	14	0.47	2.69	31	7.5	3.3	16.3	M
*	62	06/21/96	56.683	166.399	80	16	0.45	2.45	31	6.5	2.0	16.3	M
*	63	06/22/96	56.995	166.453	72	06	0.49	2.83	31	6.0	1.5	15.9	M
*	64	06/22/96	57.315	166.494	67	08	0.47	2.72	31	4.3	1.6	15.4	M
*	65	06/22/96	57.664	166.508	64	11	0.47	2.58	31	4.6	1.7	16.1	M
*	66	06/22/96	57.985	166.531	60	13	0.46	2.66	31	4.9	2.1	16.0	M

Table A-1.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	67	06/22/96	58.334	166.558	45	15	0.49	2.89	10	4.7	3.2	15.0	M
*	68	06/23/96	58.675	166.577	41	06	0.49	2.84	20	4.7	3.9	17.4	M
*	69	06/23/96	58.990	166.576	33	09	0.49	2.91	20	4.9	4.5	17.0	M
*	70	06/23/96	59.329	166.650	26	11	0.49	2.83	20	5.3	5.2	15.1	M
*	71	06/23/96	59.666	166.593	27	14	0.49	3.08	20	5.0	5.4	15.0	M
*	72	06/29/96	55.359	167.534	144	06	0.49	2.52	50	6.9	4.3	18.0	M
*	73	06/29/96	55.651	167.589	134	09	0.49	2.61	50	7.0	4.3	18.1	M
*	74	06/29/96	55.983	167.629	131	11	0.49	2.64	50	7.4	4.3	18.2	M
*	75	06/29/96	56.306	167.669	129	13	0.50	2.67	50	7.4	4.1	17.9	M
*	76	06/29/96	56.652	167.669	102	16	0.49	3.02	31	7.0	3.2	17.3	F
*	77	06/30/96	56.997	167.679	72	06	0.49	2.85	31	6.4	---	16.2	M
*	78	06/30/96	57.313	167.741	71	09	0.50	3.09	31	4.9	2.5	15.4	M
*	79	06/30/96	57.631	167.761	68	11	0.49	2.66	31	4.4	2.8	15.3	M
*	80	06/30/96	57.983	167.816	66	14	0.49	2.63	41	4.2	2.3	16.6	M
*	81	06/30/96	58.333	167.865	66	16	0.50	2.78	41	4.5	2.3	16.7	M
*	82	07/01/96	58.666	167.864	59	06	0.48	2.84	20	4.3	2.6	16.2	M
*	83	07/01/96	59.009	167.881	37	09	0.49	3.03	20	4.1	4.8	15.5	M
*	84	07/01/96	59.337	167.931	39	11	0.49	2.83	20	4.1	4.6	14.3	M
*	85	07/01/96	59.648	167.971	35	14	0.50	2.89	20	4.5	5.0	14.7	M
*	86	07/01/96	60.003	168.004	26	16	0.50	3.42	20	5.8	6.2	15.0	M
*	87	07/02/96	60.331	168.679	30	06	0.50	2.99	20	4.6	---	14.8	M
*	88	07/02/96	60.326	169.320	39	09	0.50	2.91	20	4.3	---	16.0	M
*	89	07/02/96	60.001	169.309	41	12	0.50	2.85	20	4.2	---	16.0	M
*	90	07/02/96	59.665	169.266	47	14	0.50	2.86	20	3.8	2.9	16.1	M
*	91	07/02/96	59.349	169.252	49	16	0.49	3.05	20	4.2	3.2	15.9	M
*	92	07/03/96	58.998	169.234	54	06	0.50	2.82	41	3.5	2.8	16.0	M
*	93	07/03/96	58.682	169.133	63	09	0.51	2.80	41	3.7	1.3	16.8	M
*	94	07/03/96	58.332	169.109	67	12	0.50	2.91	41	4.2	1.6	16.5	M
*	95	07/03/96	58.006	169.060	70	14	0.50	2.98	42	5.0	1.6	18.5	M
*	96	07/03/96	57.828	169.346	65	16	0.50	3.05	42	5.3	2.6	16.4	M
*	97	07/04/96	57.657	169.008	68	06	0.50	2.96	42	5.3	2.5	16.2	M
*	98	07/04/96	57.501	169.331	65	08	0.48	2.99	42	6.2	4.0	15.6	M

Table A-1.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	99	07/04/96	57.341	169.000	71	11	0.33	1.94	42	6.6	4.0	17.1	M
*	100	07/04/96	57.160	169.296	72	13	0.38	2.13	42	6.6	4.5	16.6	M
*	101	07/04/96	56.993	168.975	79	15	0.50	2.77	32	7.6	3.4	16.8	M
*	102	07/04/96	56.839	169.285	79	18	0.25	1.52	32	7.7	3.6	17.0	M
*	103	07/05/96	56.643	168.910	100	07	0.33	1.78	32	5.7	3.5	17.0	M
*	104	07/05/96	56.339	168.908	129	10	0.50	2.85	50	7.8	4.0	17.3	M
*	106	07/05/96	56.425	169.502	104	14	0.32	1.93	32	8.5	3.8	15.8	M
*	107	07/05/96	56.333	170.059	108	17	0.51	2.99	50	8.4	4.0	17.5	M
*	109	07/06/96	56.675	170.126	96	08	0.36	2.00	42	7.2	6.1	17.1	F
*	110	07/06/96	56.840	170.479	100	10	0.50	2.86	42	8.3	5.1	17.1	F
*	111	07/07/96	57.007	170.165	67	06	0.50	2.80	42	7.8	5.8	16.5	F
*	112	07/07/96	57.161	170.484	58	08	0.35	2.21	42	6.9	6.3	16.5	F
*	114	07/07/96	57.345	170.228	58	13	0.51	2.93	42	6.7	6.2	16.5	F
*	115	07/07/96	57.503	170.583	74	15	0.50	2.91	42	8.0	4.0	16.8	F
*	116	07/07/96	57.657	170.268	72	17	0.50	3.04	42	8.0	3.2	16.8	F
*	117	07/07/96	57.821	170.600	77	19	0.50	2.91	42	8.0	2.7	16.8	F
*	118	07/08/96	57.997	170.335	74	06	0.50	2.95	42	6.7	2.5	16.8	F
*	119	07/08/96	58.322	170.382	73	09	0.50	3.07	41	6.5	2.3	16.8	F
*	120	07/08/96	58.655	170.425	73	12	0.50	2.96	41	6.0	1.0	16.8	F
*	121	07/08/96	58.991	170.453	71	14	0.50	2.93	41	5.6	0.7	16.5	F
*	122	07/08/96	59.325	170.518	68	17	0.50	2.81	41	6.4	0.3	16.5	F
*	123	07/09/96	59.653	170.576	66	06	0.51	2.79	41	6.8	0.1	16.5	F
*	124	07/09/96	59.985	170.628	65	09	0.52	3.22	41	7.1	0.0	16.5	F
	125	07/09/96	59.998	171.310	68	11	0.50	2.86	41	7.6	0.0	16.5	F
*	126	07/09/96	60.002	171.934	64	13	0.50	2.79	43	7.5	0.6	16.5	F
*	127	07/09/96	60.157	172.353	57	15	0.50	2.86	43	5.2	3.1	16.5	F
*	128	07/10/96	60.660	172.768	44	06	0.50	2.89	41	5.3	3.2	15.9	F
*	129	07/10/96	61.002	172.774	66	10	0.50	2.90	41	6.8	1.3	16.5	F
*	130	07/10/96	61.008	173.453	74	12	0.50	2.96	41	7.0	1.4	16.8	F
*	131	07/10/96	60.682	173.469	66	15	0.50	2.72	41	6.6	1.7	16.5	F
*	132	07/11/96	60.147	173.742	85	07	0.53	3.08	43	7.1	1.6	16.8	F
*	133	07/11/96	59.998	173.300	74	09	0.47	2.53	43	7.4	0.6	16.8	F

Table A-1.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	134	07/11/96	59.836	173.594	94	12	0.50	2.58	43	7.2	1.9	17.1	F
*	135	07/11/96	59.678	173.258	94	14	0.50	2.68	43	7.5	2.2	17.1	F
*	136	07/11/96	59.505	173.514	102	16	0.50	2.79	43	7.4	2.5	17.1	F
*	137	07/12/96	59.330	173.138	99	07	0.50	2.84	43	7.3	2.4	17.1	F
*	138	07/12/96	59.501	172.884	93	09	0.50	2.83	43	7.2	1.9	17.1	F
*	139	07/12/96	59.340	172.520	87	10	0.50	2.96	43	6.9	1.9	17.1	F
*	140	07/12/96	59.007	172.445	97	13	0.50	2.83	41	7.7	2.3	17.1	F
*	141	07/12/96	58.993	173.055	106	15	0.50	2.90	61	8.0	2.9	17.3	F
*	142	07/13/96	58.662	172.369	101	06	0.52	2.89	61	8.1	3.2	17.1	F
*	143	07/13/96	58.672	172.997	112	09	0.50	2.82	61	8.1	3.2	17.3	F
	144	07/13/96	58.657	173.630	125	11	0.50	2.92	61	8.4	3.5	17.4	F
*	145	07/13/96	58.681	174.248	153	14	0.50	2.85	61	8.5	3.5	17.5	F
	146	07/13/96	58.342	174.324	176	16	0.45	2.34	61	8.7	3.5	17.6	F
*	147	07/14/96	58.335	173.570	115	06	0.50	2.79	61	8.5	3.7	17.3	F
*	148	07/14/96	58.001	173.481	115	09	0.50	2.85	61	8.5	3.7	17.5	F
*	149	07/14/96	57.684	173.404	145	11	0.52	3.03	61	8.4	3.7	17.5	F
	150	07/14/96	57.668	172.809	118	14	0.50	2.79	61	8.7	3.5	17.3	F
*	151	07/14/96	57.668	172.164	107	17	0.50	2.81	61	8.7	3.7	17.3	F
*	152	07/15/96	57.333	172.814	117	06	0.50	2.86	61	8.7	3.8	17.3	F
*	153	07/15/96	57.341	173.329	120	09	0.50	2.92	61	8.4	3.8	17.3	F
	154	07/15/96	57.008	173.253	140	12	0.50	2.77	61	8.1	3.8	17.3	F
*	156	07/15/96	57.002	172.630	121	16	0.50	2.80	61	8.0	4.0	17.3	F
*	157	07/16/96	57.014	172.038	116	07	0.50	2.82	61	7.9	4.0	17.3	F
	158	07/16/96	56.665	172.562	135	10	0.50	2.82	61	8.1	4.0	17.4	F
	159	07/16/96	56.664	171.985	125	13	0.50	2.74	61	8.3	4.0	17.4	F
*	160	07/16/96	56.669	171.364	118	15	0.50	2.77	61	8.2	4.1	17.3	F
*	161	07/22/96	59.003	174.378	125	08	0.50	2.91	61	8.8	4.5	17.4	F
*	162	07/22/96	59.005	174.998	128	11	0.51	2.86	61	8.6	4.3	17.4	F
*	163	07/22/96	59.325	175.097	131	13	0.50	2.91	61	8.4	4.0	17.4	F
*	164	07/22/96	59.657	175.074	124	16	0.50	2.91	61	8.4	4.0	17.4	F
*	165	07/23/96	59.648	174.423	113	07	0.50	2.72	62	8.2	4.0	17.3	F
*	166	07/23/96	59.997	174.596	106	09	0.50	2.92	62	8.5	3.5	17.3	F

Table A-1.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	167	07/23/96	60.011	175.241	115	12	0.50	2.70	61	8.5	3.9	17.3	F
*	168	07/23/96	60.327	175.397	110	14	0.50	2.82	61	8.6	3.7	17.3	F
*	169	07/23/96	60.335	174.731	101	17	0.50	2.71	62	8.6	3.2	17.1	F
*	170	07/24/96	60.674	174.805	93	07	0.50	2.75	41	8.2	3.0	17.1	F
*	171	07/24/96	60.653	175.452	106	09	0.50	2.68	61	8.5	3.2	17.3	F
	180	07/26/96	60.678	178.173	160	07	0.50	2.70	61	8.3	2.2	17.7	M
*	181	07/26/96	60.674	177.517	145	09	0.50	2.77	61	8.5	1.8	17.3	M
	182	07/26/96	60.338	177.400	145	12	0.50	2.73	61	8.5	3.1	16.5	M
*	183	07/26/96	60.330	176.714	135	14	0.50	2.79	61	8.8	3.2	16.9	M
*	184	07/26/96	59.997	176.715	140	17	0.50	2.67	61	8.8	2.9	17.0	M
	185	07/27/96	59.995	177.224	135	07	0.50	2.68	61	8.6	2.9	17.4	F
	186	07/27/96	60.014	177.936	140	10	0.50	2.69	61	8.6	3.2	17.4	F
*	187	07/27/96	59.672	177.166	173	14	0.50	2.64	61	8.4	4.0	17.6	F
*	188	07/27/96	59.344	177.074	149	16	0.50	2.74	61	8.3	3.9	17.5	F
	189	07/28/96	58.989	177.595	133	07	0.50	2.81	61	8.6	4.3	17.3	M
*	190	07/28/96	59.004	176.964	134	10	0.50	2.65	61	8.7	4.1	17.6	M

Table A.-2--Haul data for stations sampled by the F/V *Aldebaran* during the 1996 eastern Bering Sea Bottom trawl survey.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	1	06/08/96	57.325	158.395	31	06	0.50	3.26	10	6.1	6.1	16.1	M
*	2	06/08/96	57.657	158.355	35	09	0.50	2.95	10	5.8	5.5	16.1	M
*	3	06/08/96	57.983	158.320	32	11	0.51	3.07	10	6.7	5.6	15.4	M
*	4	06/09/96	58.347	159.557	23	06	0.50	2.83	10	6.0	5.6	14.8	M
*	5	06/09/96	58.011	159.610	41	09	0.50	3.04	10	4.8	4.3	16.4	M
*	6	06/09/96	57.674	159.646	47	12	0.50	2.96	10	4.8	4.5	16.6	M
*	7	06/09/96	57.340	159.658	53	15	0.50	2.79	10	4.9	4.6	16.5	M
*	8	06/10/96	57.014	159.716	55	06	0.50	2.89	10	4.9	4.7	16.9	M
*	9	06/10/96	56.676	159.750	34	09	0.50	2.80	10	6.6	6.2	16.0	M
*	10	06/10/96	56.321	161.000	49	13	0.50	2.79	10	4.3	5.2	16.3	M
*	11	06/10/96	56.658	160.981	67	16	0.50	2.98	31	4.6	4.4	16.7	M
*	12	06/11/96	56.989	160.929	66	06	0.50	2.87	31	4.2	4.2	16.5	M
*	13	06/11/96	57.323	160.932	60	09	0.50	2.89	31	4.2	4.2	16.1	M
*	14	06/11/96	57.655	160.886	53	12	0.50	2.75	31	4.6	4.4	17.0	M
*	15	06/11/96	57.988	160.838	41	15	0.50	2.82	10	4.5	4.3	16.7	M
*	16	06/12/96	58.310	160.741	20	06	0.50	3.00	10	7.3	7.4	15.8	M
*	17	06/12/96	58.332	162.052	44	11	0.50	2.84	10	5.8	5.6	16.3	M
*	18	06/12/96	58.004	162.132	34	13	0.50	3.08	10	5.3	4.8	16.2	M
*	19	06/12/96	57.678	162.130	43	16	0.50	2.87	10	5.2	4.6	15.9	M
*	20	06/13/96	57.349	162.150	49	06	0.50	2.72	10	4.9	4.6	15.6	M
*	21	06/13/96	57.006	162.171	59	09	0.49	2.97	31	4.3	4.5	16.2	M
*	22	06/13/96	56.675	162.189	69	11	0.50	2.88	31	4.3	3.7	16.0	M
*	23	06/13/96	56.339	162.210	76	14	0.50	2.98	31	4.3	4.3	15.7	M
*	24	06/13/96	56.009	162.231	67	16	0.33	1.91	31	6.3	4.7	16.2	M
	25	06/14/96	55.679	162.849	52	06	0.50	2.77	10	6.5	4.9	14.7	M
*	26	06/14/96	55.344	163.429	51	09	0.50	2.86	31	7.3	4.0	15.6	M
*	27	06/14/96	55.657	163.401	78	12	0.50	2.72	31	7.3	3.5	16.8	F
*	28	06/14/96	55.992	163.400	85	15	0.33	1.89	31	8.2	3.2	14.8	M
*	29	06/14/96	56.325	163.402	82	17	0.50	2.87	31	7.8	3.2	15.9	M
*	30	06/15/96	56.652	163.382	73	06	0.50	2.93	31	5.7	2.2	15.9	M
*	31	06/15/96	56.991	163.385	64	08	0.50	2.81	31	5.0	3.5	15.2	M

Table A-2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	32	06/15/96	57.322	163.389	51	11	0.50	2.33	10	5.4	4.0	14.2	M
*	33	06/15/96	57.658	163.368	44	13	0.49	2.87	10	5.6	---	14.4	M
*	34	06/15/96	57.987	163.370	40	16	0.50	2.89	10	6.2	4.6	15.0	M
*	35	06/16/96	58.323	163.364	35	06	0.50	2.94	10	4.7	4.5	15.0	M
*	36	06/16/96	58.657	163.345	30	08	0.50	2.90	10	5.7	5.5	15.1	M
	37	06/16/96	58.667	162.709	22	11	0.50	3.00	10	6.6	6.2	14.9	M
*	38	06/16/96	58.981	163.345	20	15	0.50	2.99	10	8.0	7.6	15.3	F
*	39	06/17/96	59.353	164.652	19	06	0.50	2.93	10	7.0	6.9	15.1	M
*	40	06/17/96	59.015	164.646	26	09	0.50	2.85	10	6.0	5.9	15.5	M
*	41	06/17/96	58.678	164.648	35	12	0.50	2.90	10	4.8	4.6	15.1	M
*	42	06/17/96	58.344	164.636	41	14	0.50	3.00	10	4.2	3.9	15.8	M
*	43	06/18/96	58.014	164.622	43	06	0.50	2.95	10	4.8	4.2	15.6	M
*	44	06/18/96	57.680	164.616	51	08	0.49	2.79	10	4.2	4.0	14.9	M
*	45	06/18/96	57.343	164.617	64	11	0.50	2.80	31	5.5	2.5	15.1	M
*	46	06/18/96	57.009	164.603	67	13	0.50	2.87	31	5.5	1.2	16.5	M
*	47	06/18/96	56.675	164.605	72	16	0.50	2.94	31	6.3	2.6	16.9	M
*	48	06/18/96	56.342	164.586	84	18	0.50	2.77	31	7.3	2.5	16.3	M
*	49	06/19/96	56.009	164.574	90	06	0.50	2.85	31	7.0	2.7	16.8	M
*	50	06/19/96	55.673	164.594	92	08	0.50	2.73	31	6.6	---	16.7	M
*	51	06/19/96	55.352	164.584	99	11	0.50	2.95	31	7.4	4.7	16.7	M
*	52	06/19/96	55.012	164.599	61	13	0.50	2.96	31	7.8	5.2	16.7	M
*	53	06/20/96	54.828	165.511	150	14	0.50	2.91	50	6.9	4.1	16.7	M
*	54	06/20/96	54.993	165.750	126	16	0.50	2.93	50	7.4	4.6	17.4	M
*	55	06/21/96	55.317	165.782	118	06	0.50	2.92	50	7.5	4.3	17.8	M
*	56	06/21/96	55.659	165.799	115	08	0.50	2.98	50	7.5	4.4	17.9	M
*	57	06/21/96	55.990	165.784	105	11	0.50	2.88	31	7.7	4.2	17.3	M
*	58	06/21/96	56.322	165.793	89	13	0.49	2.87	31	7.6	2.9	16.9	M
*	59	06/21/96	56.632	165.827	76	15	0.50	2.97	31	7.0	1.4	15.9	M
*	60	06/22/96	56.997	165.838	69	06	0.50	2.78	31	5.2	1.2	14.9	M
*	61	06/22/96	57.318	165.867	66	08	0.50	2.89	31	4.5	2.0	15.4	M
*	62	06/22/96	57.658	165.882	62	11	0.50	2.95	31	5.2	2.3	15.8	M
*	63	06/22/96	57.991	165.897	54	13	0.50	2.97	10	5.3	3.5	15.9	M

Table A-2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	64	06/22/96	58.323	165.915	42	16	0.50	2.88	10	5.3	3.7	14.6	M
*	65	06/23/96	58.650	165.929	35	06	0.50	2.71	10	5.0	4.2	14.4	M
*	66	06/23/96	58.989	165.932	28	08	0.50	2.86	20	5.9	5.6	15.3	F
*	67	06/23/96	59.322	165.942	20	11	0.50	3.07	20	6.3	6.2	15.3	F
*	68	06/23/96	59.638	165.959	22	13	0.50	3.09	20	6.2	---	15.3	F
*	69	06/27/96	54.988	166.931	153	14	0.50	2.94	50	7.2	4.3	18.5	M
*	70	06/29/96	55.327	166.966	136	06	0.51	2.84	50	7.1	4.3	18.1	M
*	71	06/29/96	55.658	166.985	131	09	0.50	2.77	50	7.0	4.3	18.4	M
*	72	06/29/96	55.993	166.985	130	11	0.50	2.89	50	7.4	4.4	18.5	M
*	73	06/29/96	56.327	167.034	110	14	0.50	2.83	50	7.1	3.9	17.9	M
*	74	06/29/96	56.660	167.068	93	16	0.50	2.89	31	6.9	3.0	17.0	M
*	75	06/30/96	56.995	167.089	72	06	0.50	3.00	31	5.7	3.1	16.6	M
*	76	06/30/96	57.324	167.117	68	08	0.50	2.76	31	4.8	2.8	15.2	M
*	77	06/30/96	57.656	167.135	64	11	0.50	2.80	31	4.1	1.0	15.9	M
*	78	06/30/96	57.992	167.168	60	14	0.50	2.88	31	4.2	1.6	16.2	M
*	79	06/30/96	58.323	167.183	49	16	0.50	2.86	20	4.4	3.9	15.8	M
*	80	07/01/96	58.658	167.217	41	06	0.50	2.91	20	5.0	4.4	15.7	M
*	81	07/01/96	58.989	167.231	38	08	0.50	2.88	20	4.6	4.4	15.5	M
*	82	07/01/96	59.322	167.233	29	11	0.50	2.76	20	5.3	4.9	14.5	M
*	83	07/01/96	59.654	167.286	29	13	0.50	2.91	20	5.4	4.9	15.0	M
	84	07/02/96	60.331	167.294	28	06	0.47	2.63	20	6.0	5.9	15.5	M
*	85	07/02/96	60.344	167.988	29	08	0.50	2.76	20	5.8	5.5	16.7	M
*	86	07/02/96	60.008	168.653	37	12	0.50	2.97	20	4.4	3.6	16.9	M
*	87	07/02/96	59.678	168.617	37	14	0.50	2.94	20	4.1	3.6	16.8	M
*	88	07/02/96	59.346	168.568	39	17	0.50	2.78	20	4.3	3.6	16.4	M
*	89	07/03/96	59.013	168.530	44	06	0.48	2.75	20	4.2	3.9	17.4	M
*	90	07/03/96	58.677	168.497	52	08	0.50	2.73	20	3.8	3.6	17.4	M
*	91	07/03/96	58.343	168.458	63	11	0.50	2.90	41	4.5	1.8	18.1	M
*	92	07/03/96	58.008	168.434	67	14	0.49	2.23	42	4.6	2.1	17.8	M
*	93	07/03/96	57.844	168.735	67	16	0.50	2.78	42	5.3	2.1	16.9	M
*	94	07/04/96	57.676	168.393	68	06	0.50	2.67	42	5.5	2.8	16.6	M
*	95	07/04/96	57.513	168.745	69	08	0.50	2.66	42	5.6	3.1	16.8	M

Table A-2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	96	07/04/96	57.344	168.361	71	10	0.50	2.95	32	6.4	3.6	16.7	M
*	97	07/04/96	57.175	168.622	73	13	0.25	1.48	32	7.0	4.0	17.1	M
*	98	07/04/96	57.017	168.333	77	14	0.33	1.95	32	7.7	3.6	16.9	M
*	99	07/04/96	56.851	168.613	92	16	0.50	2.92	32	8.5	3.3	17.3	M
*	100	07/05/96	56.683	168.288	103	06	0.45	2.52	50	7.7	3.6	16.6	M
*	101	07/05/96	56.311	168.239	151	11	0.50	2.87	50	8.2	4.0	17.4	M
*	102	07/05/96	56.019	168.245	150	13	0.50	2.87	50	8.1	4.0	17.6	M
*	103	07/05/96	55.681	168.190	133	16	0.50	2.93	50	8.3	4.1	17.9	M
*	104	07/06/96	56.671	169.496	78	06	0.50	2.79	32	7.1	5.6	15.3	M
*	105	07/06/96	56.839	169.904	70	09	0.25	1.50	42	7.7	4.9	16.5	M
*	106	07/07/96	56.994	169.550	59	06	0.42	2.39	42	6.3	5.4	15.3	M
*	107	07/07/96	57.160	169.864	49	08	0.24	1.41	42	6.0	5.6	14.0	M
*	108	07/07/96	57.327	169.618	61	10	0.50	2.94	42	6.6	4.1	15.7	M
*	109	07/07/96	57.503	169.978	68	12	0.50	3.03	42	7.8	3.7	15.0	M
*	110	07/07/96	57.655	169.662	69	14	0.50	2.88	42	7.3	3.3	15.6	M
*	111	07/07/96	57.824	169.980	71	16	0.40	2.26	42	7.9	2.8	15.2	M
*	112	07/08/96	57.982	169.696	69	06	0.43	2.46	42	6.3	2.4	16.3	M
*	113	07/08/96	58.325	169.724	68	09	0.50	3.12	41	6.1	1.5	16.2	M
*	114	07/08/96	58.658	169.781	66	12	0.50	2.89	41	5.4	1.2	16.9	M
*	115	07/08/96	58.987	169.830	62	14	0.50	2.80	41	5.7	1.9	17.4	M
*	116	07/08/96	59.327	169.826	59	17	0.50	2.82	41	5.7	1.8	17.0	M
*	117	07/09/96	59.654	169.905	55	06	0.50	2.67	41	5.4	1.8	17.1	M
*	118	07/09/96	59.995	169.969	54	09	0.50	2.73	41	6.5	1.3	17.3	M
*	119	07/09/96	60.326	170.038	51	11	0.50	2.98	20	7.4	0.8	16.2	M
	120	07/09/96	60.335	170.653	61	14	0.50	2.85	41	7.6	-0.2	17.4	M
	121	07/09/96	60.336	171.330	65	16	0.50	2.92	41	7.5	-0.4	17.3	M
	122	07/10/96	60.666	171.428	62	06	0.50	2.99	41	7.2	-0.7	17.6	M
	123	07/10/96	60.990	171.462	58	09	0.42	2.95	41	7.0	-0.6	17.2	M
*	124	07/10/96	61.009	172.140	62	11	0.42	2.97	41	7.0	0.3	16.9	M
*	125	07/10/96	60.676	172.120	60	14	0.42	2.65	41	7.3	-0.8	17.0	M
*	126	07/10/96	60.346	172.071	58	16	0.47	2.97	43	7.3	-0.2	15.7	M
*	127	07/11/96	60.168	173.018	59	06	0.42	2.90	43	6.7	2.0	16.4	M

Table A-2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	128	07/11/96	60.013	172.676	64	08	0.47	3.03	43	7.1	0.7	15.6	M
*	129	07/11/96	59.852	172.878	77	11	0.50	3.25	43	7.4	0.7	16.7	M
*	130	07/11/96	59.671	172.584	82	13	0.50	2.82	43	7.1	0.7	16.8	M
*	131	07/11/96	59.829	172.260	74	15	0.50	3.24	43	7.5	0.3	16.8	M
*	132	07/11/96	59.686	171.907	73	17	0.69	4.01	43	7.4	0.4	16.8	M
*	133	07/12/96	59.676	171.247	71	06	0.50	2.83	41	7.1	0.1	17.2	M
*	134	07/12/96	59.334	171.166	74	09	0.50	3.02	41	6.7	0.2	17.0	M
*	135	07/12/96	59.336	171.814	78	11	0.50	2.98	43	7.0	0.5	17.1	M
*	136	07/12/96	59.007	171.788	85	14	0.50	2.84	41	7.0	1.5	16.9	M
*	137	07/12/96	59.011	171.152	76	17	0.50	2.67	41	7.1	0.4	17.5	M
*	138	07/13/96	58.668	171.730	91	06	0.49	3.02	41	7.6	2.5	17.7	M
*	139	07/13/96	58.672	171.111	81	09	0.50	2.83	41	7.1	1.8	17.1	M
*	140	07/13/96	58.354	171.017	82	11	0.50	2.81	41	7.3	2.3	16.5	M
	141	07/13/96	58.335	171.640	94	14	0.50	2.84	41	8.8	3.1	17.2	M
	142	07/13/96	58.339	172.267	101	16	0.50	2.80	61	9.1	3.2	16.5	M
*	143	07/14/96	58.341	172.938	109	06	0.50	2.96	61	8.6	3.3	19.2	M
*	144	07/14/96	58.016	172.883	107	09	0.50	2.70	61	8.5	3.3	17.3	M
	145	07/14/96	58.007	172.269	102	11	0.50	2.90	61	8.5	3.3	16.5	M
	146	07/14/96	58.000	171.615	96	14	0.50	2.77	41	8.5	3.3	16.7	M
*	147	07/14/96	58.009	171.004	85	17	0.50	2.76	42	8.3	3.6	17.1	M
*	148	07/15/96	57.671	171.558	99	06	0.50	2.92	41	8.3	3.6	19.3	M
*	149	07/15/96	57.670	170.943	85	09	0.33	2.00	42	8.1	4.4	17.5	M
*	150	07/15/96	57.354	170.835	81	12	0.33	2.04	42	8.3	4.9	17.2	M
*	151	07/15/96	57.335	171.463	99	14	0.50	2.93	41	8.4	3.8	17.9	M
*	152	07/15/96	57.323	172.055	107	17	0.50	3.22	61	8.4	3.9	17.8	M
*	153	07/16/96	57.002	171.427	108	06	0.33	2.01	61	8.1	4.1	17.3	M
*	154	07/16/96	57.002	170.808	94	09	0.42	2.59	42	8.1	4.6	17.0	M
*	155	07/16/96	56.685	170.722	111	11	0.50	3.00	61	8.6	4.1	17.6	M
*	156	07/16/96	56.342	170.687	119	14	0.50	2.70	61	8.6	4.1	18.7	M
*	157	07/22/96	59.004	173.723	114	07	0.50	2.84	61	9.1	3.4	17.5	M
*	158	07/22/96	59.300	174.430	117	10	0.50	2.77	62	8.8	3.3	17.7	M
*	159	07/22/96	59.324	173.788	107	14	0.50	3.10	62	8.6	3.2	17.5	M

Table A-2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr.)	Duration (hr.)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	160	07/22/96	59.636	173.872	102	16	0.50	2.93	62	8.7	2.7	17.4	M
*	161	07/22/96	59.830	174.234	103	18	0.50	2.81	62	8.7	2.6	18.3	M
*	162	07/23/96	59.983	173.950	94	07	0.50	2.65	43	8.3	2.3	17.3	M
*	163	07/23/96	60.162	174.358	97	09	0.50	2.73	43	8.4	2.3	17.5	M
*	164	07/23/96	60.318	174.094	88	11	0.34	1.97	43	8.0	1.9	17.8	M
*	165	07/23/96	60.665	174.131	84	13	0.33	2.10	41	8.4	1.8	17.9	M
*	166	07/23/96	60.982	174.187	80	16	0.50	2.73	41	8.4	1.5	17.5	M
*	179	07/26/96	60.687	176.829	125	12	0.50	2.64	61	8.7	2.3	18.0	M
*	180	07/26/96	60.686	176.217	115	14	0.50	2.68	61	9.2	2.6	17.9	M
*	181	07/26/96	60.358	176.041	118	17	0.50	2.93	61	8.1	2.8	18.0	M
*	182	07/27/96	60.020	175.937	125	07	0.42	2.61	61	8.8	2.8	17.7	M
*	183	07/27/96	59.690	175.863	133	09	0.50	2.96	61	8.5	2.4	18.1	M
*	184	07/27/96	59.677	176.509	132	12	0.50	2.85	61	8.4	2.3	17.7	M
*	185	07/27/96	59.361	176.396	132	14	0.50	2.66	61	8.1	2.4	17.8	M
*	186	07/27/96	59.349	175.980	133	16	0.50	2.85	61	8.8	2.6	17.8	M
*	187	07/28/96	59.003	176.339	133	07	0.50	2.59	61	8.3	---	18.4	M

APPENDIX B

List of Species Encountered

Appendix B contains a listing of all fish and invertebrate species taken during the 1996 eastern Bering Sea bottom trawl survey.

List of Tables

Table B-1.--Fish species encountered during the 1995 U.S. eastern Bering Sea bottom trawl survey.

Family	Scientific name	Common name
Petromyzontidae	*Lampetra tridentata*	Pacific lamprey
Squalidae	*Somniosus pacificus*	Pacific sleeper shark
Rajidae	*Rajidae unident.*	skate unident.
	Bathyraja sp.	
	Raja binoculata	big skate
	Bathyraja interrupta	Bering skate
	Raja rhina	longnose skate
	Bathyraja parmifera	Alaska skate
	Bathyraja aleutica	Aleutian skate
Pleuronectidae	*Atheresthes stomias*	arrowtooth flounder
	Atheresthes evermanni	Kamchatka flounder
	Reinhardtius hippoglossoides	Greenland turbot
	Hippoglossus stenolepis	Pacific halibut
	Hippoglossoides elassodon	flathead sole
	Hippoglossoides robustus	Bering flounder
	Glyptocephalus zachirus	rex sole
	Limanda asper	yellowfin sole
	Limanda proboscidea	longhead dab
	Limanda sakhalinensis	Sakhalin sole
	Platichthys stellatus	starry flounder
	Lepidopsetta sp. cf. *bilineata*	northern rock sole
	Isopsetta isolepis	butter sole
	Pleuronectes quadrituberculatus	Alaska plaice
Agonidae	*Pallasina barbata*	tubenose poacher
	Sarritor frenatus	sawback poacher
	Podothecus acipenserinus	sturgeon poacher
	Aspidophoroides bartoni	Aleutian alligatorfish

Table B-1.--Continued.

Family	Scientific name	Common name
	Aspidophoroides olriki	Arctic alligatorfish
	Occella dodecaedron	Bering poacher
Ammodytidae	*Ammodytes hexapterus*	Pacific sand lance
Anarhichadidae	*Anarrhichthys ocellatus*	wolf-eel
	Anarhichas orientalis	Bering wolffish
Bathymasteridae	*Bathymaster signatus*	searcher
Clupeidae	*Clupea pallasi*	Pacific herring
Cottidae	*Gymnocanthus* sp.	
	Gymnocanthus galeatus	armorhead sculpin
	Artediellus sp.	
	Malacocottus kincaidi	blackfin sculpin
	Malacocottus zonurus	darkfin sculpin
	Hemilepidotus jordani	yellow Irish lord
	Hemilepidotus papilio	butterfly sculpin
	Triglops sp.	
	Triglops forficata	scissortail sculpin
	Triglops scepticus	spectacled sculpin
	Triglops pingeli	ribbed sculpin
	Myoxocephalus polyacanthocephalus	great sculpin
	Myoxocephalus jaok	plain sculpin
	Dasycottus setiger	spinyhead sculpin
	Psychrolutes paradoxus	tadpole sculpin
	Nautichthys oculofasciatus	sailfin sculpin
	Hemitripterus bolini	bigmouth sculpin
	Icelus spiniger	thorny sculpin
	Icelus sp.	
Trichodontidae	*Trichodon trichodon*	Pacific sandfish
Gadidae	*Gadus macrocephalus*	Pacific cod

Table B-1.--Continued.

Family	Scientific name	Common name
	Boreogadus saida	Arctic cod
	Eleginus gracilis	saffron cod
	Theragra chalcogramma	walleye pollock
Hexagrammidae	Hexagrammidae	greenling unident.
	Hexagrammos sp.	
	Hexagrammos stelleri	whitespotted greenling
Cyclopteridae	Cyclopterinae	lumpsucker unident.
	Aptocyclus ventricosus	smooth lumpsucker
	Liparidinae	snailfish unident.
	Liparis sp.	
	Careproctus sp.	
	Careproctus phasma	monster snailfish
Osmeridae	*Thaleichthys pacificus*	eulachon
	Mallotus villosus	capelin
	Osmerus mordax	rainbow smelt
Salmonidae	*Oncorhynchus keta*	chum salmon
Stichaeidae	Stichaeidae	prickleback unident.
	Lumpenus maculatus	daubed shanny
	Lumpenus sagitta	snake prickleback
	Chirolophis decoratus	decorated warbonnet
Zaproridae	*Zaprora silenus*	prowfish
Zoarcidae	*Lycodes raridens*	marbled eelpout
	Lycodes palearis	wattled eelpout
	Lycodes turneri	polar eelpout
	Lycodes brevipes	shortfin eelpout
Scorpaenidae	*Sebastes alutus*	Pacific ocean perch

Table B-2.--Invertebrate species encountered during the 1996 U.S. eastern Bering Sea bottom trawl survey.

Phylum	Species name	Common name
Cnidaria	Scyphozoa (class)	jellyfish unident.
	Gersemia sp.	sea raspberry
	Gersemia rubiformis	
	Gorgonacea (order)	coral unident.
	Pennatulacea (order)	sea pen or sea whip unident.
	Actiniaria (order)	sea anemone unident.
	Metridium sp.	
	Tealia sp.	
Annelida	Polychaeta (class)	polychaete worm unident.
	Aphroditidae	sea mouse unident.
	Polynoidae	scale worm unident.
	Eunoe sp.	
	Eunoe nodosa	giant scale worm
	Eunoe depressa	depressed scale worm
Arthropoda	Isopoda (order)	isopod unident.
	Thoracica (order)	barnacle unident.
	Balanus evermanni	giant barnacle
	Pandalus borealis	northern shrimp
	Pandalus goniurus	humpy shrimp
	Pandalus hypsinotus	coonstripe shrimp
	Lebbeus sp.	
	Crangon sp.	
	Crangon communis	twospine crangon
	Crangon dalli	ridged crangon
	Argis sp.	
	Argis dentata	Arctic argid
	Sclerocrangon boreas	sculptured shrimp

Table B-2.--Continued.

Phylum	Species name	Common name
	Argis lar	kuro argid
	Cancer sp.	cancer crab unident.
	Cancer oregonensis	Oregon rock crab
	Oregonia gracilis	graceful decorator crab
	Chionoecetes bairdi	Tanner crab
	Hyas coarctatus	circumboreal toad crab
	Hyas lyratus	Pacific lyre crab
	Chionoecetes opilio	narrow snow crab
	Chionoecetes hybrid	tanner crab
	Telmessus cheiragonus	helmet crab
	Paguridae	hermit crab unident.
	Paralithodes camtschaticus	red king crab
	Paralithodes platypus	blue king crab
	Placetron wosnessenskii	scaled crab
	Erimacrus isenbeckii	horsehair crab
	Hyas sp.	
Mollusca	*Tritonia* sp.	
	Gastropod unident.	snail unident.
	Natica sp.	
	Polinices sp.	
	Crepidula grandis	great slippersnail
	Colus sp.	
	Colus herendeenii	thin-ribbed whelk
	Colus halli	
	Volutopsius sp.	
	Pyrulofusus deformis	warped whelk
	Volutopsius fragilis	fragile whelk
	Volutopsius castaneus	volute whelk

Table B-2.--Continued.

Phylum	Species name	Common name
	Pyrulofusus melonis	
	Beringius sp.	
	Beringius kennicottii	
	Beringius beringii	
	Beringius stimpsoni	
	Neptunea sp.	
	Neptunea pribiloffensis	Pribilof whelk
	Neptunea borealis	
	Neptunea lyrata	lyre whelk
	Neptunea ventricosa	fat whelk
	Neptunea heros	
	Neptunea magna	helmet whelk
	Plicifusus sp.	
	Plicifusus kroyeri	
	Aforia sp.	
	Aforia circinata	keeled aforia
	Boreotrophon muriciformis	
	Fusitriton oregonensis	Oregon triton
	Fusitriton sp.	
	Buccinum sp.	
	Buccinum angulosum	
	Buccinum plectrum	sinuous whelk
	Buccinum scalariforme	ladder whelk
	Buccinum polare	polar whelk
	Arctomelon stearnsii	Alaska volute
	Pelecypoda unident.	bivalve unident.
	Mytilidae	mussel unident.
	Modiolus modiolus	northern horsemussel

Table B-2.--Continued.

Phylum	Species name	Common name
	Pectinid unident.	scallop unident.
	Chlamys sp.	
	Chlamys rubida	reddish scallop
	Patinopecten caurinus	weathervane scallop
	Clinocardium sp.	
	Clinocardium ciliatum	hairy cockle
	Mactromeris sp.	
	Mactromeris polynyma	Arctic surfclam
	Tellina sp.	
	Tellina lutea	Alaska great-tellin
	Macoma sp.	
	Siliqua sp.	
	Siliqua patula	Pacific razor
	Siliqua alta	Alaska razor
	Serripes sp.	
	Serripes groenlandicus	Greenland cockle
	Serripes laperousii	broad cockle
	Pododesmus macroschisma	Alaska falsejingle
Echinodermata	*Evasterias echinosoma*	
	Leptasterias hexactis	
	Pycnopodia helianthoides	
	Lethasterias nanimensis	
	Henricia sp.	
	Henricia leviuscula	
	Leptasterias polaris	
	Leptasterias arctica	
	Leptasterias sp.	
	Pseudarchaster parelii	

Table B-2.--Continued.

Phylum	Species name	Common name
	Ceramaster sp.	
	Ceramaster japonicus	red bat star
	Ceramaster patagonicus	orange bat star
	Solaster sp.	
	Crossaster sp.	
	Crossaster papposus	rose sea star
	Pteraster sp.	
	Pteraster tesselatus	
	Pteraster obscurus	
	Diplopteraster multipes	
	Asterias amurensis	purple-orange seastar
	Ctenodiscus sp.	
	Ctenodiscus crispatus	common mud star
	Dipsacaster borealis	
	Strongylocentrotus droebachiensis	green sea urchin
	Echinarachnius parma	Parma sand dollar
	Ophiuroid unident.	brittlestarfish unident.
	Gorgonocephalus eucnemis (prev G. *caryi*)	
	Ophiura sarsi	
	Ophiopholis aculeata	
	Holothuroidea unident.	sea cucumber unident.
	Cucumaria sp.	
	Cucumaria fallax	
	Psolus sp.	
Porifera	Porifera	sponge unident.
Sipuncula	Sipuncula (phylum)	sipunculid worm unident.
Echiura	Echiura (phylum)	echiuroid worm unident.
Bryozoa	*Flustra serrulata*	leafy bryozoan

Table B-2.--Continued.

Phylum	Species name	Common name
	Escharopsis sarsi	
	Rhamphostomella costata	ribbed bryozoan
Chordata	Ascidian unident.	tunicate unident.

APPENDIX C

Rank Order of Relative Abundance of Fish and Invertebrates

Appendix C ranks all fish and invertebrates caught during the 1996 eastern Bering Sea Bottom trawl survey by descending CPUE (kg/ha).

Table C-1.--Rank of fish and invertebrate taxa by relative abundance (kg/ha) from the 1996 eastern Bering Sea bottom trawl survey.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cummulative Proportion	Name
1	21740	77.57059	77.601	60.30465	94.83653	0.23558528	0.23558528	Theragra chalcogramma
2	10210	50.08566	23.392	40.60615	59.56516	0.15211234	0.38769763	Limanda aspera
3	10261	49.00601	12.456	42.08846	55.92356	0.14883339	0.53653102	Lepidopsetta sp.
4	21720	19.59816	3.343	16.01436	23.18196	0.05952047	0.59605150	Gadus macrocephalus
5	81742	17.51957	2.672	14.31577	20.72338	0.05320771	0.64925921	Asterias amurensis
6	10130	12.70052	1.554	10.25719	15.14385	0.03857204	0.68783124	Hippoglossoides elassodon
7	10285	11.56077	2.078	8.73532	14.38622	0.03511056	0.72294180	Pleuronectes quadrituberculatus
8	68580	11.36774	0.962	9.44547	13.29000	0.03452431	0.75746611	Chionoecetes opilio
9	10110	10.61429	1.647	8.09893	13.12965	0.03223606	0.78970217	Atheresthes stomias
10	400	9.30097	0.330	8.17455	10.42740	0.02824747	0.81794963	Rajidae unident.
11	69010	6.80899	0.331	5.68089	7.93709	0.02067921	0.83862884	Paguridae
12	98070	5.64635	31.881	0.00000	16.71319	0.01714821	0.85577705	Thaliacea unident.
13	91000	5.41711	5.229	0.93519	9.89903	0.01645201	0.87222906	Porifera
14	98082	4.95307	1.298	2.71986	7.18629	0.01504270	0.88727176	Styela rustica
15	10120	3.66043	0.081	3.10090	4.21996	0.01111689	0.89838865	Hippoglossus stenolepis
16	40500	3.25145	0.123	2.56516	3.93773	0.00987478	0.90826344	Scyphozoa (class)
17	83020	2.95369	0.254	1.96573	3.94166	0.00897050	0.91723393	Gorgonocephalus eucnemis
18	71884	2.11265	0.088	1.53062	2.69468	0.00641622	0.92365015	Neptunea heros
19	21370	1.93154	0.068	1.42065	2.44243	0.00586616	0.92951632	Myoxocephalus polyacanthocephalus
20	71820	1.45992	0.041	1.06283	1.85701	0.00443385	0.93395016	Neptunea pribiloffensis
21	43000	1.19953	0.133	0.48398	1.91508	0.00364303	0.93759319	Actiniaria (order)
22	21371	1.14556	0.021	0.86367	1.42745	0.00347912	0.94107232	Myoxocephalus jaok
23	69322	1.04936	0.040	0.65778	1.44094	0.00318695	0.94425926	Paralithodes camtschaticus
24	98205	0.89792	0.111	0.24600	1.54984	0.00272702	0.94698628	Halocynthia aurantium
25	68560	0.87131	0.032	0.52159	1.22102	0.00264620	0.94963248	Chionoecetes bairdi
26	10220	0.84760	0.150	0.08890	1.60630	0.00257421	0.95220668	Platichthys stellatus
27	71882	0.84146	0.014	0.60552	1.07740	0.00255555	0.95476224	Neptunea ventricosa
28	98310	0.82386	0.068	0.31384	1.33389	0.00250211	0.95726435	Aplidium sp.
29	30060	0.80422	0.647	0.00000	2.38048	0.00244244	0.95970679	Sebastes alutus
30	80590	0.74683	0.021	0.46169	1.03196	0.00226814	0.96197493	Leptasterias polaris
31	21420	0.69695	0.022	0.40769	0.98621	0.00211667	0.96409160	Hemitripterus bolini
32	69323	0.67513	0.025	0.36256	0.98769	0.00205039	0.96614199	Paralithodes platypus

Table C-1.--Continued.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cummulative Proportion	Name
33	10115	0.65131	0.012	0.43685	0.86578	0.00197807	0.96812006	Reinhardtius hippoglossoides
34	80200	0.60126	0.058	0.12872	1.07381	0.00182606	0.96994612	Lethasterias nanimensis
35	10112	0.52963	0.003	0.41582	0.64344	0.00160852	0.97155463	Atheresthes evermanni
36	21110	0.50804	0.023	0.21289	0.80320	0.00154295	0.97309759	Clupea pallasi
37	85201	0.49084	0.212	0.00000	1.39321	0.00149069	0.97458827	Cucumaria fallax
38	81780	0.48965	0.082	0.00000	1.05049	0.00148709	0.97607536	Ctenodiscus crispatus
39	71870	0.46353	0.008	0.28429	0.64278	0.00140777	0.97748313	Neptunea lyrata
40	21347	0.45289	0.011	0.24491	0.66087	0.00137545	0.97885858	Hemilepidotus jordani
41	83000	0.37682	0.044	0.00000	0.78992	0.00114443	0.98000301	Ophiuroid unident.
42	81779	0.37121	0.040	0.00000	0.76543	0.00112737	0.98113038	Ctenodiscus sp.
43	20040	0.34665	0.001	0.27625	0.41706	0.00105280	0.98218318	Podothecus acipenserinus
44	98105	0.33785	0.011	0.13437	0.54132	0.00102605	0.98320923	Boltenia ovifera
45	72500	0.32239	0.006	0.16858	0.47619	0.00097910	0.98418833	Fusitriton oregonensis
46	68577	0.27771	0.004	0.15349	0.40192	0.00084341	0.98503174	Hyas coarctatus
47	24191	0.25632	0.004	0.13820	0.37443	0.00077844	0.98581018	Lycodes brevipes
48	74120	0.21491	0.038	0.00000	0.59454	0.00065270	0.98646288	Patinopecten caurinus
49	10200	0.19690	0.007	0.03881	0.35500	0.00059801	0.98706089	Glyptocephalus zachirus
50	41201	0.19669	0.002	0.11438	0.27900	0.00059735	0.98765824	Gersemia sp.
51	98200	0.18994	0.028	0.00000	0.51824	0.00057684	0.98823508	Halocynthia sp.
52	10211	0.18043	0.002	0.10327	0.25759	0.00054798	0.98878307	Limanda proboscidea
53	80020	0.17104	0.007	0.01279	0.32929	0.00051944	0.98930251	Evasterias echinosoma
54	71500	0.16575	0.003	0.05869	0.27280	0.00050338	0.98980589	Gastropod unident.
55	24185	0.16306	0.000	0.12000	0.20611	0.00049521	0.99030109	Lycodes palearis
56	71001	0.14969	0.001	0.10197	0.19742	0.00045463	0.99075572	snail (gastropod) eggs
57	43010	0.14366	0.007	0.00000	0.30380	0.00043631	0.99119203	Metridium sp.
58	83320	0.14199	0.006	0.00000	0.29297	0.00043122	0.99162325	Ophiura sarsi
59	69400	0.13923	0.002	0.05963	0.21883	0.00042284	0.99204610	Erimacrus isenbeckii
60	24184	0.12587	0.002	0.04842	0.20332	0.00038227	0.99242837	Lycodes raridens
61	80594	0.12499	0.005	0.00000	0.26883	0.00037959	0.99280795	Leptasterias arctica
62	95000	0.12095	0.009	0.00000	0.30746	0.00036734	0.99317529	bryozoan unident.
63	82510	0.09661	0.002	0.02005	0.17317	0.00029342	0.99346871	Strongylocentrotus droebachiensis
64	21735	0.09597	0.001	0.03147	0.16047	0.00029147	0.99376019	Eleginus gracilis

Table C-1.--Continued.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cummulative Proportion	Name
65	71753	0.09432	0.002	0.01344	0.17521	0.00028646	0.99404664	Pyrulofusus deformis
66	71756	0.09293	0.001	0.02067	0.16519	0.00028222	0.99432886	Volutopsius fragilis
67	72740	0.08543	0.000	0.05469	0.11617	0.00025946	0.99458832	Buccinum sp.
68	85000	0.07983	0.006	0.00000	0.23617	0.00024245	0.99483078	Holothuroidea unident.
69	72752	0.07188	0.000	0.04387	0.09989	0.00021830	0.99504908	Buccinum scalariforme
70	23010	0.06955	0.001	0.00296	0.13614	0.00021122	0.99526030	Thaleichthys pacificus
71	72755	0.06882	0.000	0.03727	0.10037	0.00020901	0.99546931	Buccinum polare
72	71750	0.06674	0.000	0.03516	0.09832	0.00020270	0.99567201	Volutopsius sp.
73	23235	0.06668	0.001	0.01481	0.11855	0.00020251	0.99587452	Oncorhynchus keta
74	20720	0.06618	0.001	0.00582	0.12654	0.00020098	0.99607551	Bathymaster signatus
75	72743	0.06392	0.000	0.03764	0.09021	0.00019414	0.99626964	Buccinum angulosum
76	24001	0.06213	0.004	0.00000	0.18389	0.00018868	0.99645832	Zaprora silenus
77	68781	0.06009	0.000	0.03043	0.08975	0.00018249	0.99664082	Telmessus cheiragonus
78	320	0.05765	0.002	0.00000	0.15026	0.00017508	0.99681590	Somniosus pacificus
79	80595	0.04609	0.000	0.01770	0.07447	0.00013997	0.99695587	Leptasterias sp.
80	71835	0.04596	0.000	0.02472	0.06720	0.00013959	0.99709546	Neptunea borealis
81	21313	0.04517	0.001	0.00000	0.09143	0.00013719	0.99723265	Gymnocanthus sp.
82	78010	0.03679	0.001	0.00000	0.08615	0.00011172	0.99734437	octopus unident.
83	68578	0.03656	0.000	0.01831	0.05480	0.00011102	0.99745539	Hyas lyratus
84	22201	0.02696	0.000	0.00570	0.04821	0.00008186	0.99753726	Liparis sp.
85	50000	0.02647	0.001	0.00000	0.07814	0.00008040	0.99761766	Polychaeta (class)
86	21348	0.02613	0.000	0.00892	0.04333	0.00007935	0.99769701	Hemilepidotus papilio
87	82740	0.02534	0.001	0.00000	0.07205	0.00007697	0.99777398	Echinarachnius parma
88	56311	0.02388	0.000	0.00560	0.04216	0.00007252	0.99784650	Eunoe nodosa
89	98100	0.02363	0.000	0.00000	0.04945	0.00007177	0.99791828	Boltenia sp.
90	21350	0.02303	0.000	0.00014	0.04592	0.00006994	0.99798822	Triglops sp.
91	66031	0.02217	0.000	0.00935	0.03499	0.00006734	0.99805556	Pandalus borealis
92	71891	0.02199	0.000	0.01110	0.03287	0.00006678	0.99812234	Plicifusus kroyeri
93	98300	0.02149	0.000	0.00159	0.04140	0.00006528	0.99818762	compound ascidian unident.
94	71772	0.02061	0.000	0.00934	0.03189	0.00006261	0.99825023	Beringius beringii
95	85210	0.02033	0.000	0.00000	0.05927	0.00006174	0.99831197	Psolus sp.
96	85200	0.01909	0.000	0.00213	0.03606	0.00005799	0.99836995	Cucumaria sp.

Table C-1.--Continued.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cummulative Proportion	Name
97	20322	0.01886	0.000	0.00000	0.05243	0.00005729	0.99842724	Anarhichas orientalis
98	81355	0.01861	0.000	0.00791	0.02931	0.00005652	0.99848376	Pteraster obscurus
99	71886	0.01653	0.000	0.00720	0.02586	0.00005020	0.99853397	Neptunea magna
100	66045	0.01640	0.000	0.00967	0.02314	0.00004981	0.99858378	Pandalus goniurus
101	81310	0.01608	0.000	0.00156	0.03060	0.00004883	0.99863261	Pteraster sp.
102	75600	0.01573	0.000	0.00000	0.04369	0.00004776	0.99868037	Pododesmus macroschisma
103	50160	0.01535	0.000	0.00209	0.02860	0.00004662	0.99872699	Aphroditidae
104	42000	0.01484	0.000	0.00014	0.02953	0.00004506	0.99877205	Pennatulacea (order)
105	21390	0.01464	0.000	0.00780	0.02147	0.00004445	0.99881649	Dasycottus setiger
106	10270	0.01424	0.000	0.00000	0.02914	0.00004324	0.99885974	Isopsetta isolepis
107	21446	0.01384	0.000	0.00951	0.01817	0.00004203	0.99890177	Icelus sp.
108	20006	0.01338	0.000	0.00929	0.01747	0.00004064	0.99894241	Sarritor frenatus
109	21316	0.01298	0.000	0.00465	0.02130	0.00003941	0.99898182	Gymnocanthus galeatus
110	65203	0.01198	0.000	0.00000	0.02872	0.00003638	0.99901820	Balanus evermanni
111	23055	0.01185	0.000	0.00039	0.02330	0.00003598	0.99905418	Osmerus mordax
112	71760	0.01181	0.000	0.00000	0.03495	0.00003586	0.99909003	Volutopsius castaneus
113	71769	0.01170	0.000	0.00317	0.02023	0.00003554	0.99912558	Beringius sp.
114	81095	0.01166	0.000	0.00461	0.01871	0.00003542	0.99916100	Crossaster papposus
115	22200	0.01095	0.000	0.00402	0.01787	0.00003325	0.99919425	Liparidinae
116	80160	0.01028	0.000	0.00000	0.03043	0.00003122	0.99922547	Pycnopodia helianthoides
117	68590	0.00878	0.000	0.00272	0.01484	0.00002667	0.99925214	Chionoecetes hybrid
118	74050	0.00870	0.000	0.00000	0.01877	0.00002641	0.99927855	Mytilidae
119	22226	0.00831	0.000	0.00000	0.01722	0.00002523	0.99930378	Careproctus phasma
120	72751	0.00831	0.000	0.00000	0.01799	0.00002523	0.99932901	Buccinum plectrum
121	75286	0.00817	0.000	0.00187	0.01446	0.00002480	0.99935381	Serripes laperousii
122	74000	0.00803	0.000	0.00120	0.01485	0.00002438	0.99937819	Pelecypoda unident.
123	23041	0.00767	0.000	0.00525	0.01010	0.00002331	0.99940150	Mallotus villosus
124	71525	0.00729	0.000	0.00079	0.01380	0.00002215	0.99942365	Natica sp.
125	72063	0.00702	0.000	0.00248	0.01157	0.00002133	0.99944497	Aforia circinata
126	74983	0.00694	0.000	0.00000	0.01578	0.00002109	0.99946606	Clinocardium ciliatum
127	82730	0.00685	0.000	0.00123	0.01248	0.00002082	0.99948688	sand dollar unident.
128	66502	0.00683	0.000	0.00010	0.01357	0.00002076	0.99950763	Crangon sp.

Table C-1.--Continued.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cummulative Proportion	Name
129	43040	0.00682	0.000	0.00000	0.01419	0.00002071	0.99952834	Tealia sp.
130	71010	0.00651	0.000	0.00052	0.01250	0.00001978	0.99954812	nudibranch unident.
131	75111	0.00642	0.000	0.00172	0.01112	0.00001950	0.99956762	Mactromeris polynyma
132	56300	0.00630	0.000	0.00117	0.01143	0.00001913	0.99958675	Polynoidae
133	82500	0.00617	0.000	0.00000	0.01521	0.00001875	0.99960550	sea urchin unident.
134	75285	0.00597	0.000	0.00000	0.01270	0.00001813	0.99962362	Serripes groenlandicus
135	71761	0.00591	0.000	0.00141	0.01041	0.00001795	0.99964157	Pyrulofusus melonis
136	66570	0.00586	0.000	0.00227	0.00944	0.00001779	0.99965936	Argis sp.
137	68510	0.00504	0.000	0.00244	0.00765	0.00001532	0.99967468	Oregonia gracilis
138	71710	0.00417	0.000	0.00004	0.00831	0.00001268	0.99968736	Colus sp.
139	98000	0.00413	0.000	0.00000	0.01173	0.00001253	0.99969989	Ascidian unident.
140	71681	0.00409	0.000	0.00000	0.00983	0.00001241	0.99971230	Crepidula grandis
141	20061	0.00403	0.000	0.00207	0.00600	0.00001225	0.99972455	Occella dodecaedron
142	80540	0.00397	0.000	0.00160	0.00634	0.00001205	0.99973661	Henricia sp.
143	21438	0.00364	0.000	0.00063	0.00665	0.00001106	0.99974766	Icelus spiniger
144	72059	0.00362	0.000	0.00004	0.00720	0.00001099	0.99975866	Aforia sp.
145	20320	0.00357	0.000	0.00000	0.01055	0.00001083	0.99976949	Anarrhichthys ocellatus
146	74980	0.00328	0.000	0.00000	0.00872	0.00000996	0.99977945	Clinocardium sp.
147	71774	0.00316	0.000	0.00000	0.00782	0.00000960	0.99978904	Beringius stimpsoni
148	21592	0.00313	0.000	0.00063	0.00563	0.00000950	0.99979855	Trichodon trichodon
149	74981	0.00303	0.000	0.00000	0.00631	0.00000919	0.99980774	cockle unident.
150	41221	0.00297	0.000	0.00000	0.00879	0.00000902	0.99981676	Gersemia rubiformis
151	71025	0.00289	0.000	0.00000	0.00770	0.00000878	0.99982554	Tritonia sp.
152	95070	0.00289	0.000	0.00000	0.00690	0.00000877	0.99983432	Rhamphostomella costata
153	20050	0.00279	0.000	0.00125	0.00432	0.00000847	0.99984278	Aspidophoroides bartoni
154	21355	0.00277	0.000	0.00000	0.00618	0.00000841	0.99985119	Triglops pingeli
155	81315	0.00263	0.000	0.00002	0.00524	0.00000799	0.99985918	Pteraster tesselatus
156	65100	0.00256	0.000	0.00003	0.00508	0.00000776	0.99986695	Thoracica (order)
157	99904	0.00225	0.000	0.00000	0.00667	0.00000685	0.99987379	Molgula retortiformis
158	81360	0.00204	0.000	0.00005	0.00403	0.00000620	0.99988000	Diplopteraster multipes
159	71721	0.00183	0.000	0.00000	0.00375	0.00000557	0.99988557	Colus herendeenii
160	56310	0.00170	0.000	0.00000	0.00504	0.00000517	0.99989074	Eunoe sp.

Table C-1.--Continued.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cummulative Proportion	Name
161	95030	0.00154	0.000	0.00000	0.00362	0.00000468	0.99989542	Flustra serrulata
162	81060	0.00147	0.000	0.00000	0.00382	0.00000446	0.99989988	Solaster sp.
163	21932	0.00146	0.000	0.00000	0.00319	0.00000442	0.99990431	Hexagrammos stelleri
164	71890	0.00143	0.000	0.00000	0.00422	0.00000433	0.99990864	Plicifusus sp.
165	23808	0.00129	0.000	0.00035	0.00223	0.00000393	0.99991256	Lumpenus sagitta
166	56312	0.00127	0.000	0.00000	0.00296	0.00000385	0.99991641	Eunoe depressa
167	75284	0.00126	0.000	0.00000	0.00308	0.00000384	0.99992025	Serripes sp.
168	50010	0.00124	0.000	0.00000	0.00312	0.00000375	0.99992400	tube worm unident.
169	80730	0.00116	0.000	0.00000	0.00343	0.00000351	0.99992752	Ceramaster patagonicus
170	71800	0.00116	0.000	0.00000	0.00342	0.00000351	0.99993103	Neptunea sp.
171	95060	0.00111	0.000	0.00000	0.00235	0.00000336	0.99993439	Escharopsis sarsi
172	74104	0.00111	0.000	0.00000	0.00327	0.00000336	0.99993775	Chlamys sp.
173	66580	0.00101	0.000	0.00011	0.00190	0.00000306	0.99994081	Argis dentata
174	20202	0.00098	0.000	0.00031	0.00166	0.00000299	0.99994380	Ammodytes hexapterus
175	81090	0.00095	0.000	0.00000	0.00227	0.00000289	0.99994669	Crossaster sp.
176	10212	0.00077	0.000	0.00022	0.00133	0.00000235	0.99994904	Limanda sakhalinensis
177	30420	0.00076	0.000	0.00000	0.00182	0.00000232	0.99995135	Sebastes polyspinis
178	68040	0.00073	0.000	0.00013	0.00134	0.00000222	0.99995358	Cancer oregonensis
179	30152	0.00067	0.000	0.00000	0.00199	0.00000204	0.99995562	Sebastes new
180	80000	0.00067	0.000	0.00000	0.00141	0.00000203	0.99995765	starfish unident.
181	75264	0.00066	0.000	0.00000	0.00167	0.00000202	0.99995967	Siliqua sp.
182	66530	0.00059	0.000	0.00000	0.00138	0.00000180	0.99996147	Crangon dalli
183	80544	0.00058	0.000	0.00000	0.00171	0.00000176	0.99996323	Henricia leviuscula
184	71731	0.00055	0.000	0.00000	0.00121	0.00000166	0.99996489	Colus halli
185	23805	0.00054	0.000	0.00008	0.00101	0.00000165	0.99996654	Lumpenus maculatus
186	22175	0.00054	0.000	0.00000	0.00161	0.00000165	0.99996819	Aptocyclus ventricosus
187	72501	0.00053	0.000	0.00000	0.00156	0.00000160	0.99996979	Fusitriton sp.
188	41500	0.00053	0.000	0.00000	0.00156	0.00000160	0.99997139	Gorgonacea (order)
189	21900	0.00050	0.000	0.00000	0.00148	0.00000152	0.99997291	Hexagrammidae
190	80660	0.00045	0.000	0.00008	0.00082	0.00000136	0.99997427	Pseudarchaster parelii
191	78001	0.00044	0.000	0.00007	0.00081	0.00000135	0.99997561	cuttlefish unident.
192	75240	0.00035	0.000	0.00000	0.00094	0.00000107	0.99997669	Macoma sp.

Table C-1.--Continued.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cummulative Proportion	Name
193	94500	0.00035	0.000	0.00000	0.00093	0.00000106	0.99997775	Echiura (phylum)
194	80111	0.00035	0.000	0.00000	0.00085	0.00000105	0.99997880	Leptasterias hexactis
195	66611	0.00034	0.000	0.00000	0.00068	0.00000102	0.99997982	Argis lar
196	20051	0.00033	0.000	0.00000	0.00071	0.00000100	0.99998082	Aspidophoroides olriki
197	80728	0.00033	0.000	0.00000	0.00072	0.00000099	0.99998181	Ceramaster sp.
198	21930	0.00031	0.000	0.00000	0.00093	0.00000095	0.99998276	Hexagrammos sp.
199	21341	0.00030	0.000	0.00000	0.00090	0.00000092	0.99998368	Malacocottus zonurus
200	75266	0.00030	0.000	0.00000	0.00071	0.00000091	0.99998459	Siliqua patula
201	72790	0.00029	0.000	0.00000	0.00086	0.00000088	0.99998547	Arctomelon stearnsii
202	68010	0.00027	0.000	0.00000	0.00070	0.00000082	0.99998629	Cancer sp.
203	21340	0.00026	0.000	0.00000	0.00076	0.00000078	0.99998707	Malacocottus kincaidi
204	72403	0.00024	0.000	0.00000	0.00071	0.00000073	0.99998780	Boreotrophon muriciformis
205	21	0.00024	0.000	0.00000	0.00070	0.00000071	0.99998852	Lampetra tridentata
206	75201	0.00022	0.000	0.00000	0.00064	0.00000066	0.99998918	Tellina sp.
207	75267	0.00021	0.000	0.00000	0.00053	0.00000064	0.99998982	Siliqua alta
208	95010	0.00021	0.000	0.00000	0.00062	0.00000063	0.99999045	bryozoan sp. A unident. (brain coral appearance)
209	23800	0.00019	0.000	0.00000	0.00056	0.00000057	0.99999102	Stichaeidae
210	21352	0.00018	0.000	0.00000	0.00055	0.00000056	0.99999158	Triglops forficata
211	21331	0.00018	0.000	0.00000	0.00038	0.00000054	0.99999213	Artediellus sp.
212	74100	0.00017	0.000	0.00000	0.00051	0.00000052	0.99999265	Pectinid unident.
213	21354	0.00017	0.000	0.00000	0.00051	0.00000052	0.99999317	Triglops scepticus
214	69520	0.00017	0.000	0.00000	0.00041	0.00000051	0.99999367	Hyas sp.
215	80729	0.00017	0.000	0.00000	0.00049	0.00000050	0.99999418	Ceramaster japonicus
216	21406	0.00015	0.000	0.00000	0.00044	0.00000045	0.99999463	Nautichthys oculofasciatus
217	22170	0.00013	0.000	0.00000	0.00030	0.00000039	0.99999502	Cyclopterinae
218	75205	0.00012	0.000	0.00000	0.00036	0.00000036	0.99999538	Tellina lutea
219	66601	0.00011	0.000	0.00000	0.00034	0.00000034	0.99999573	Sclerocrangon boreas
220	66515	0.00011	0.000	0.00000	0.00027	0.00000034	0.99999607	Crangon communis
221	79000	0.00011	0.000	0.00000	0.00027	0.00000034	0.99999641	squid unident.
222	22219	0.00011	0.000	0.00000	0.00032	0.00000033	0.99999673	Careproctus sp.
223	74106	0.00010	0.000	0.00000	0.00029	0.00000030	0.99999703	Chlamys rubida
224	23841	0.00008	0.000	0.00000	0.00023	0.00000024	0.99999727	Chirolophis decoratus

APPENDIX D

Abundance Estimates for Principal Fish Species

Appendix D presents estimates of catch-per-unit-effort (CPUE), population numbers and biomass for the principal fish species. Estimates of variance and confidence intervals do not incorporate variation associated with fishing power corrections or measurements of effort. CPUE is measured in kilograms (kg) and numbers (no.) per hectare. Estimates are given separately for each of the 10 geographic strata used in the analysis; estimates for each of the six standard subareas are presented as subtotals of the component strata. Stratum codes correspond to subareas as follows:

Subarea	Stratum
1	10
2	20
3	31
	32 (Pribilof Islands high density)
4	41
	42 (Pribilof Islands high density)
	43 (St. Matthew Island high density)
5	50
6	61
	62 (St. Matthew Island high density)

List of Tables

Table D-1.--CPUE, population, and biomass estimates for walleye pollock.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	56	56	56	23.93	.25730E+02	24.13	.27250E+02
20	31	31	31	31	12.81	.41960E+01	32.77	.61230E+02
31	69	68	68	68	93.50	.32940E+03	126.66	.67890E+03
32	9	8	8	7	519.46	.33010E+05	808.44	.85610E+05
Subtotal	78	76	76	75	129.68	.51400E+03	184.57	.11860E+04
41	44	44	44	44	49.88	.10470E+03	88.18	.36290E+03
42	31	30	30	30	190.80	.22710E+04	343.61	.67730E+04
43	21	21	21	21	88.44	.59040E+03	189.02	.23370E+04
Subtotal	96	95	95	95	88.81	.17070E+03	164.80	.54820E+03
50	25	23	23	22	18.30	.74680E+02	25.98	.83920E+02
61	60	59	59	59	63.94	.14910E+03	160.99	.59000E+03
62	7	7	7	7	52.25	.21530E+02	107.06	.80780E+02
Subtotal	67	66	66	66	63.14	.12960E+03	157.32	.51280E+03
Total	355	347	347	345	77.57	.77600E+02	135.18	.21150E+03

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	187,869,013	.16525E+16	57.00	105,712,924	270,025,102
20	134,435,587	.10306E+16	30.00	68,786,407	200,084,767
31	1,197,259,981	.60663E+17	68.00	704,661,498	1,689,858,464
32	709,337,515	.65905E+17	8.00	117,343,185	1,301,331,846
Subtotal	1,906,597,496	.12657E+18	26.84	1,175,146,689	2,638,048,304
41	552,890,246	.14270E+17	43.00	311,470,415	794,310,077
42	825,052,952	.39048E+17	30.00	420,949,365	1,229,156,539
43	398,981,601	.10412E+17	20.00	186,132,155	611,831,048
Subtotal	1,776,924,799	.63729E+17	66.62	1,272,031,851	2,281,817,748
50	100,796,196	.12628E+16	24.00	27,449,640	174,142,752
61	1,418,830,859	.45825E+17	59.00	986,198,418	1,851,463,299
62	68,826,026	.33383E+14	6.00	53,971,268	83,680,783
Subtotal	1,487,656,884	.45859E+17	59.09	1,054,866,889	1,920,446,879
Total	5,594,279,976	.24010E+18	83.11	4,614,276,193	6,574,283,760

Table D-1.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	186,346	.15605E+10	57.00	106,510	266,182
20	52,544	.70633E+08	30.00	35,357	69,731
31	883,772	.29429E+11	68.00	540,677	1,226,867
32	455,780	.25416E+11	8.00	88,148	823,412
Subtotal	1,339,552	.54845E+11	32.18	861,338	1,817,767
41	312,773	.41161E+10	43.00	183,113	442,434
42	458,129	.13096E+11	30.00	224,452	691,807
43	186,687	.26306E+10	20.00	79,697	293,676
Subtotal	957,589	.19842E+11	60.99	675,865	1,239,314
50	70,977	.11238E+10	24.00	1,786	140,168
61	563,508	.11580E+11	59.00	346,032	780,984
62	33,590	.88991E+07	6.00	25,920	41,259
Subtotal	597,097	.11588E+11	59.09	379,538	814,657
Total	3,204,106	.89030E+11	77.49	2,607,347	3,800,864

Table D-2.--CPUE, population, and biomass estimates for Pacific cod.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	55	55	55	18.86	.17080E+02	14.22	.90470E+01
20	31	31	30	30	9.12	.18020E+02	9.60	.22310E+02
31	69	66	66	66	26.61	.22630E+02	20.89	.32700E+02
32	9	9	9	8	25.02	.31150E+02	8.94	.10070E+02
Subtotal	78	75	75	74	26.48	.19170E+02	19.87	.27450E+02
41	44	43	43	43	24.02	.99570E+02	20.33	.97950E+02
42	31	30	30	30	25.90	.26610E+02	16.63	.85580E+01
43	21	21	21	21	18.92	.10730E+02	11.59	.53900E+01
Subtotal	96	94	94	94	23.44	.35410E+02	17.79	.33760E+02
50	25	20	20	20	8.81	.35300E+01	2.86	.56970E+00
61	60	60	60	60	15.25	.13350E+01	5.28	.18430E+00
62	7	7	7	7	18.09	.18560E+02	6.84	.31970E+01
Subtotal	67	67	67	67	15.45	.12450E+01	5.39	.17490E+00
Total	355	342	341	340	19.60	.33430E+01	13.34	.33100E+01

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	110,698,610	.54863E+15	57.00	63,361,132	158,036,088
20	39,403,689	.37547E+15	30.00	0	78,971,402
31	197,418,498	.29219E+16	68.00	89,309,227	305,527,768
32	7,845,422	.77544E+13	8.00	1,259,692	14,431,153
Subtotal	205,263,920	.29297E+16	68.36	97,011,291	313,516,549
41	127,473,465	.38510E+16	43.00	2,058,183	252,888,746
42	39,922,287	.49341E+14	30.00	25,578,659	54,265,915
43	24,460,972	.24015E+14	20.00	14,238,442	34,683,502
Subtotal	191,856,723	.39243E+16	44.64	65,252,570	318,460,877
50	11,112,515	.85725E+13	24.00	5,069,367	17,155,662
61	46,574,165	.14318E+14	59.00	38,926,828	54,221,502
62	4,394,592	.13211E+13	6.00	1,439,496	7,349,687
Subtotal	50,968,757	.15639E+14	64.95	43,059,448	58,878,065
Total	609,304,214	.78023E+16	126.68	434,409,873	784,198,555

Table D-2.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	146,873	.10355E+10	57.00	81,839	211,906
20	37,421	.30329E+09	30.00	1,859	72,983
31	251,559	.20220E+10	68.00	161,626	341,493
32	21,950	.23980E+08	8.00	10,658	33,243
Subtotal	273,509	.20460E+10	69.54	183,044	363,974
41	150,626	.39150E+10	43.00	24,172	277,079
42	62,184	.15342E+09	30.00	36,891	87,477
43	39,936	.47785E+08	20.00	25,516	54,356
Subtotal	252,745	.41162E+10	47.41	123,083	382,408
50	34,185	.53125E+08	24.00	19,141	49,229
61	134,431	.10368E+09	59.00	113,852	155,009
62	11,628	.76692E+07	6.00	4,852	18,405
Subtotal	146,059	.11135E+09	64.58	124,955	167,164
Total	890,793	.76654E+10	133.62	717,439	1,064,146

Table D-3.--CPUE, population, and biomass estimates for yellowfin sole.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	58	58	58	127.05	.51350E+03	567.32	.11970E+05
20	31	31	31	31	93.36	.74670E+02	459.22	.37300E+04
31	69	66	65	65	65.00	.47550E+02	243.68	.81490E+03
32	9	7	7	6	21.68	.21820E+03	79.53	.37340E+04
Subtotal	78	73	72	71	61.32	.41390E+02	229.73	.70930E+03
41	44	41	41	41	24.99	.31980E+02	87.47	.54020E+03
42	31	27	27	26	54.35	.15230E+03	160.81	.14360E+04
43	21	11	11	11	2.31	.15580E+01	6.50	.13750E+02
Subtotal	96	79	79	78	27.09	.18430E+02	87.95	.25440E+03
50	25	2	2	2	0.12	.13690E-01	0.24	.53940E-01
61	60	4	4	4	0.02	.92300E-04	0.02	.13540E-03
62	7	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Subtotal	67	4	4	4	0.02	.80180E-04	0.02	.11760E-03
Total	355	247	246	244	50.09	.23390E+02	207.36	.51600E+03

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	4,417,808,910	.72594E+18	57.00	2,695,876,275	6,139,741,545
20	1,884,062,611	.62779E+17	30.00	1,372,424,428	2,395,700,793
31	2,303,387,513	.72813E+17	68.00	1,763,711,536	2,843,063,490
32	69,778,641	.28748E+16	8.00	0	193,419,728
Subtotal	2,373,166,154	.75687E+17	72.51	1,822,939,524	2,923,392,783
41	548,481,377	.21240E+17	43.00	253,939,955	843,022,799
42	386,125,918	.82762E+16	30.00	200,084,465	572,167,372
43	13,725,530	.61239E+14	20.00	0	30,049,644
Subtotal	948,332,825	.29578E+17	68.47	604,369,168	1,292,296,482
50	934,454	.81172E+12	24.00	0	2,794,027
61	203,955	.10517E+11	59.00	0	411,212
62	0	.00000E+00	6.00	0	0
Subtotal	203,955	.10517E+11	8.30	0	440,439
Total	9,624,508,909	.89398E+18	84.41	7,733,495,241	11,515,522,577

Table D-3.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	989,320	.31141E+11	57.00	632,680	1,345,960
20	383,045	.12569E+10	30.00	310,545	455,545
31	614,448	.42490E+10	68.00	484,079	744,817
32	19,019	.16798E+09	8.00	0	48,906
Subtotal	633,467	.44170E+10	72.52	500,545	766,388
41	156,715	.12575E+10	43.00	85,047	228,383
42	130,492	.87801E+09	30.00	69,896	191,088
43	4,881	.69417E+07	20.00	0	10,396
Subtotal	292,088	.21425E+10	73.47	199,515	384,662
50	471	.20595E+06	24.00	0	1,407
61	169	.71697E+04	59.00	0	340
62	0	.00000E+00	6.00	0	0
Subtotal	169	.71697E+04	7.54	0	369
Total	2,298,560	.38957E+11	87.23	1,903,808	2,693,311

Table D-4.--CPUE, population, and biomass estimates for northern rock sole.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	58	58	58	116.69	.12190E+03	619.89	.28060E+04
20	31	31	31	31	92.54	.15190E+03	493.46	.51850E+04
31	69	68	68	68	36.87	.22140E+02	178.71	.59050E+03
32	9	9	9	8	48.68	.21910E+03	194.26	.35050E+04
Subtotal	78	77	77	76	37.87	.20120E+02	180.03	.51980E+03
41	44	43	43	43	29.89	.74860E+02	99.89	.90250E+03
42	31	30	30	30	80.69	.18420E+03	301.27	.23500E+04
43	21	21	21	20	18.07	.23580E+02	48.94	.16630E+03
Subtotal	96	94	94	93	38.89	.35350E+02	134.76	.42810E+03
50	25	11	11	11	1.05	.50750E+00	3.08	.54220E+01
61	60	57	57	57	8.80	.21600E+01	18.97	.95570E+01
62	7	7	7	7	4.04	.16580E+01	9.91	.95110E+01
Subtotal	67	64	64	64	8.48	.18840E+01	18.35	.83460E+01
Total	355	335	335	333	49.01	.12460E+02	229.23	.30380E+03

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	4,827,190,868	.17016E+18	57.00	3,993,522,647	5,660,859,089
20	2,024,519,464	.87274E+17	30.00	1,420,382,788	2,628,656,141
31	1,689,302,904	.52765E+17	68.00	1,229,888,515	2,148,717,292
32	170,450,604	.26984E+16	8.00	50,663,310	290,237,899
Subtotal	1,859,753,508	.55464E+17	73.50	1,388,738,545	2,330,768,471
41	626,359,658	.35483E+17	43.00	245,666,504	1,007,052,812
42	723,377,916	.13546E+17	30.00	485,712,979	961,042,854
43	103,292,150	.74087E+15	20.00	46,513,612	160,070,688
Subtotal	1,453,029,724	.49770E+17	69.92	1,006,846,465	1,899,212,983
50	11,943,932	.81598E+14	24.00	0	30,588,345
61	167,187,313	.74236E+15	59.00	112,122,606	222,252,021
62	6,373,046	.39307E+13	6.00	1,275,808	11,470,284
Subtotal	173,560,359	.74629E+15	59.61	118,350,065	228,770,654
Total	10,349,997,856	.36349E+18	157.45	9,156,246,841	11,543,748,871

Table D-4.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	908,652	.73933E+10	57.00	734,877	1,082,427
20	379,664	.25567E+10	30.00	276,413	482,915
31	348,487	.19786E+10	68.00	259,523	437,450
32	42,716	.16867E+09	8.00	12,001	73,431
Subtotal	391,203	.21473E+10	75.43	298,525	483,881
41	187,412	.29432E+10	43.00	77,771	297,053
42	193,744	.10620E+10	30.00	127,102	260,387
43	38,135	.10505E+09	20.00	16,683	59,586
Subtotal	419,291	.41102E+10	70.50	291,069	547,512
50	4,089	.76372E+07	24.00	0	9,807
61	77,576	.16781E+09	59.00	51,396	103,757
62	2,595	.68532E+06	6.00	570	4,621
Subtotal	80,172	.16850E+09	59.47	53,938	106,406
Total	2,183,071	.16384E+11	181.60	1,929,634	2,436,508

Table D-5.--CPUE, population, and biomass estimates for *Hippoglossoides* spp.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	42	42	42	3.89	.74780E+00	7.83	.54510E+01
20	31	6	6	5	0.08	.13740E-02	0.14	.36600E-02
31	69	69	69	69	28.71	.20870E+02	79.68	.17290E+03
32	9	9	9	8	15.19	.81030E+02	42.97	.56240E+03
Subtotal	78	78	78	77	27.56	.18060E+02	76.56	.14890E+03
41	44	43	43	43	7.06	.53870E+01	18.61	.27490E+02
42	31	28	28	28	7.47	.37190E+01	15.27	.14010E+02
43	21	19	19	19	2.49	.39540E+00	8.25	.47940E+01
Subtotal	96	90	90	90	6.26	.20210E+01	15.84	.10180E+02
50	25	25	25	25	17.86	.12480E+02	110.82	.24800E+03
61	60	60	60	60	18.55	.91770E+01	78.12	.21190E+03
62	7	6	6	6	1.28	.22130E+00	6.55	.61120E+01
Subtotal	67	66	66	66	17.37	.79730E+01	73.26	.18410E+03
Total	355	307	307	305	12.70	.15540E+01	43.13	.18550E+02

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	60,960,951	.33055E+15	57.00	24,217,253	97,704,648
20	580,522	.61609E+11	30.00	73,674	1,087,371
31	753,136,812	.15451E+17	68.00	504,533,184	1,001,740,440
32	37,699,392	.43300E+15	8.00	0	85,683,922
Subtotal	790,836,204	.15884E+17	71.39	538,773,220	1,042,899,188
41	116,664,796	.10810E+16	43.00	50,216,621	183,112,971
42	36,676,506	.80774E+14	30.00	18,324,107	55,028,905
43	17,419,715	.21358E+14	20.00	7,779,424	27,060,006
Subtotal	170,761,016	.11832E+16	51.05	101,244,743	240,277,290
50	429,901,243	.37325E+16	24.00	303,802,702	555,999,784
61	688,540,933	.16456E+17	59.00	429,283,959	947,797,908
62	4,211,391	.25260E+13	6.00	322,316	8,100,466
Subtotal	692,752,324	.16459E+17	59.02	433,475,453	952,029,195
Total	2,145,792,260	.37589E+17	161.77	1,761,912,783	2,529,671,738

Table D-5.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	30,260	.45343E+08	57.00	16,651	43,869
20	322	.23132E+05	30.00	11	632
31	271,405	.18648E+10	68.00	185,037	357,772
32	13,330	.62379E+08	8.00	0	31,543
Subtotal	284,735	.19272E+10	71.94	196,934	372,535
41	44,284	.21180E+09	43.00	14,872	73,696
42	17,944	.21444E+08	30.00	8,474	27,414
43	5,251	.17616E+07	20.00	2,482	8,020
Subtotal	67,479	.23501E+09	52.16	36,497	98,460
50	69,290	.18778E+09	24.00	41,006	97,574
61	163,465	.71284E+09	59.00	109,506	217,424
62	823	.91462E+05	6.00	83	1,563
Subtotal	164,288	.71293E+09	59.02	110,326	218,251
Total	616,373	.31083E+10	153.84	505,983	726,762

Table D-6.--CPUE, population, and biomass estimates for Alaska plaice.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	43	43	42	12.91	.27650E+02	27.45	.14750E+03
20	31	29	29	29	10.84	.64300E+01	31.21	.55040E+02
31	69	60	60	60	13.52	.75440E+01	21.08	.20710E+02
32	9	6	6	5	8.64	.25320E+02	8.14	.20360E+02
Subtotal	78	66	66	65	13.11	.65000E+01	19.98	.17480E+02
41	44	41	41	41	26.87	.48660E+02	41.01	.90190E+02
42	31	26	26	26	12.38	.65540E+01	18.21	.14540E+02
43	21	20	20	20	13.41	.13160E+02	17.30	.28000E+02
Subtotal	96	87	87	87	21.01	.17290E+02	31.29	.32300E+02
50	25	0	0	0	0.00	.00000E+00	0.00	.00000E+00
61	60	15	15	15	2.31	.79350E+00	1.55	.35950E+00
62	7	5	5	5	3.12	.44040E+01	1.77	.12440E+01
Subtotal	67	20	20	20	2.37	.70960E+00	1.57	.31800E+00
Total	355	245	245	243	11.56	.20780E+01	19.51	.71240E+01

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	213,719,524	.89413E+16	57.00	22,616,798	404,822,249
20	128,047,404	.92644E+15	30.00	65,802,786	190,292,021
31	199,296,646	.18501E+16	68.00	113,270,457	285,322,835
32	7,144,455	.15676E+14	8.00	0	16,274,551
Subtotal	206,441,101	.18658E+16	69.11	120,051,236	292,830,966
41	257,117,892	.35461E+16	43.00	136,768,860	377,466,923
42	43,727,975	.83824E+14	30.00	25,004,933	62,451,017
43	36,509,481	.12477E+15	20.00	13,209,174	59,809,788
Subtotal	337,355,348	.37547E+16	48.04	213,517,311	461,193,385
50	0	.00000E+00	24.00	0	0
61	13,664,784	.27921E+14	59.00	2,985,760	24,343,807
62	1,140,915	.51411E+12	6.00	0	2,895,442
Subtotal	14,805,699	.28435E+14	60.99	4,140,789	25,470,608
Total	900,369,075	.15517E+17	135.65	653,728,395	1,147,009,754

Table D-6.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	100,505	.16770E+10	57.00	17,744	183,267
20	44,483	.10824E+09	30.00	23,239	65,728
31	127,815	.67410E+09	68.00	75,888	179,742
32	7,578	.19496E+08	8.00	0	17,760
Subtotal	135,393	.69360E+09	71.48	82,721	188,065
41	168,511	.19131E+10	43.00	80,113	256,908
42	29,736	.37786E+08	30.00	17,166	42,307
43	28,314	.58614E+08	20.00	12,344	44,285
Subtotal	226,561	.20095E+10	47.32	135,964	317,158
50	0	.00000E+00	24.00	0	0
61	20,380	.61634E+08	59.00	4,514	36,246
62	2,004	.18202E+07	6.00	0	5,473
Subtotal	22,384	.63454E+08	62.00	6,453	38,316
Total	529,327	.45518E+10	146.08	395,742	662,912

Table D-7.--CPUE, population, and biomass estimates for Greenland turbot.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	0	0	0	0.00	.00000E+00	0.00	.00000E+00
20	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
31	69	3	3	3	0.17	.11260E-01	0.03	.32930E-03
32	9	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Subtotal	78	3	3	3	0.15	.94250E-02	0.03	.27580E-03
41	44	10	10	10	0.27	.15710E-01	0.15	.28890E-02
42	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
43	21	10	10	10	2.01	.50420E+00	0.46	.18410E-01
Subtotal	96	20	20	20	0.55	.24640E-01	0.18	.16830E-02
50	25	4	4	4	0.21	.99480E-02	0.03	.23750E-03
61	60	26	26	26	2.19	.22710E+00	0.72	.28680E-01
62	7	7	7	7	4.14	.12350E+01	1.06	.67670E-01
Subtotal	67	33	33	33	2.33	.20300E+00	0.74	.25230E-01
Total	355	60	60	60	0.65	.11970E-01	0.20	.11940E-02

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	57.00	0	0
20	0	.00000E+00	30.00	0	0
31	268,572	.29427E+11	68.00	0	611,657
32	0	.00000E+00	8.00	0	0
Subtotal	268,572	.29427E+11	14.25	0	636,530
41	944,476	.11358E+12	43.00	263,353	1,625,599
42	0	.00000E+00	30.00	0	0
43	969,676	.82032E+11	20.00	370,214	1,569,138
Subtotal	1,914,152	.19562E+12	81.39	1,029,580	2,798,723
50	127,606	.35736E+10	24.00	4,221	250,991
61	6,341,786	.22279E+13	59.00	3,325,242	9,358,329
62	683,669	.27965E+11	6.00	274,461	1,092,876
Subtotal	7,025,454	.22558E+13	60.40	4,021,578	10,029,330
Total	9,335,785	.24844E+13	162.73	6,214,891	12,456,679

Table D-7.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	57.00	0	0
20	0	.00000E+00	30.00	0	0
31	1,581	.10058E+07	68.00	0	3,587
32	0	.00000E+00	8.00	0	0
Subtotal	1,581	.10058E+07	75.42	0	3,587
41	1,680	.61767E+06	43.00	92	3,268
42	0	.00000E+00	30.00	0	0
43	4,236	.22463E+07	20.00	1,110	7,363
Subtotal	5,916	.28640E+07	35.46	2,461	9,372
50	808	.14971E+06	24.00	10	1,607
61	19,328	.17643E+08	59.00	10,839	27,817
62	2,658	.51057E+06	6.00	910	4,407
Subtotal	21,987	.18154E+08	61.95	13,465	30,508
Total	30,292	.22173E+08	102.63	20,875	39,710

Table D-8.--CPUE, population, and biomass estimates for arrowtooth flounder.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	4	4	4	0.33	.88350E-01	0.37	.11190E+00
20	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
31	69	39	39	39	15.17	.23930E+02	18.58	.34480E+02
32	9	9	9	8	10.92	.26540E+01	17.36	.15090E+02
Subtotal	78	48	48	47	14.81	.20050E+02	18.47	.28980E+02
41	44	9	9	9	1.49	.47890E+00	1.05	.23680E+00
42	31	24	24	24	5.91	.13860E+01	9.55	.57280E+01
43	21	4	4	4	0.24	.15820E-01	0.17	.67210E-02
Subtotal	96	37	37	37	2.23	.23130E+00	2.77	.36440E+00
50	25	25	25	24	45.16	.29580E+02	65.13	.66890E+02
61	60	55	55	55	19.75	.60300E+01	19.78	.10520E+02
62	7	6	6	6	5.14	.50110E+01	3.01	.21960E+01
Subtotal	67	61	61	61	18.75	.52610E+01	18.64	.91480E+01
Total	355	175	175	173	10.61	.16470E+01	13.07	.27440E+01

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	2,865,178	.67881E+13	57.00	0	8,130,697
20	0	.00000E+00	30.00	0	0
31	175,602,455	.30811E+16	68.00	64,587,247	286,617,663
32	15,236,175	.11619E+14	8.00	7,375,754	23,096,595
Subtotal	190,838,630	.30927E+16	68.51	79,614,294	302,062,966
41	6,574,810	.93117E+13	43.00	407,704	12,741,917
42	22,933,202	.33022E+14	30.00	11,198,866	34,667,538
43	357,435	.29943E+11	20.00	0	719,607
Subtotal	29,865,448	.42364E+14	46.79	16,711,263	43,019,633
50	252,660,916	.10066E+16	24.00	187,175,031	318,146,801
61	174,327,408	.81711E+15	59.00	116,556,798	232,098,017
62	1,937,333	.90742E+12	6.00	0	4,268,317
Subtotal	176,264,741	.81802E+15	59.13	118,462,063	234,067,419
Total	652,494,913	.49665E+16	127.70	512,957,185	792,032,640

Table D-8.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	2,580	.53578E+07	57.00	0	7,258
20	0	.00000E+00	30.00	0	0
31	143,405	.21380E+10	68.00	50,928	235,882
32	9,578	.20431E+07	8.00	6,282	12,874
Subtotal	152,983	.21400E+10	68.13	60,462	245,504
41	9,358	.18828E+08	43.00	589	18,128
42	14,190	.79906E+07	30.00	8,409	19,970
43	513	.70488E+05	20.00	0	1,067
Subtotal	24,061	.26889E+08	69.70	13,690	34,432
50	175,195	.44514E+09	24.00	131,648	218,742
61	174,035	.46837E+09	59.00	130,297	217,773
62	3,305	.20710E+07	6.00	0	6,826
Subtotal	177,340	.47044E+09	59.51	133,505	221,175
Total	532,159	.30879E+10	120.42	422,133	642,185

Table D-9.--CPUE, population, and biomass estimates for Kamchatka flounder.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	0	0	0	0.00	.00000E+00	0.00	.00000E+00
20	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
31	69	19	19	19	0.40	.19420E-01	0.45	.15950E-01
32	9	5	5	4	0.82	.11670E+00	1.90	.11610E+01
Subtotal	78	24	24	23	0.43	.17100E-01	0.57	.21730E-01
41	44	5	5	5	0.16	.96390E-02	0.11	.37030E-02
42	31	8	8	8	0.48	.37350E-01	0.56	.51400E-01
43	21	8	8	8	1.11	.13400E+00	0.75	.63160E-01
Subtotal	96	21	21	21	0.42	.10250E-01	0.33	.62220E-02
50	25	21	21	21	0.70	.20080E-01	1.61	.22470E+00
61	60	55	55	55	1.27	.26780E-01	1.35	.24880E-01
62	7	7	7	7	2.04	.42810E+00	1.30	.12200E+00
Subtotal	67	62	62	62	1.33	.25240E-01	1.34	.22170E-01
Total	355	128	128	127	0.53	.33720E-02	0.61	.46940E-02

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	57.00	0	0
20	0	.00000E+00	30.00	0	0
31	4,241,584	.14249E+13	68.00	1,854,228	6,628,941
32	1,663,854	.89350E+12	8.00	0	3,899,369
Subtotal	5,905,438	.23184E+13	41.47	2,828,228	8,982,648
41	666,717	.14557E+12	43.00	0	1,437,812
42	1,348,666	.29634E+12	30.00	237,070	2,460,263
43	1,576,624	.28139E+12	20.00	466,376	2,686,872
Subtotal	3,592,007	.72329E+12	70.90	1,891,073	5,292,942
50	6,231,432	.33814E+13	24.00	2,436,051	10,026,813
61	11,867,351	.19323E+13	59.00	9,058,035	14,676,667
62	837,999	.50434E+11	6.00	288,461	1,387,536
Subtotal	12,705,350	.19827E+13	61.71	9,889,177	15,521,522
Total	28,434,227	.84057E+13	141.44	22,693,687	34,174,767

Table D-9.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	57.00	0	0
20	0	.00000E+00	30.00	0	0
31	3,751	.17348E+07	68.00	1,117	6,385
32	716	.89839E+05	8.00	24	1,407
Subtotal	4,467	.18246E+07	73.55	1,765	7,168
41	988	.37896E+06	43.00	0	2,232
42	1,155	.21533E+06	30.00	208	2,103
43	2,340	.59705E+06	20.00	728	3,951
Subtotal	4,483	.11913E+07	62.50	2,300	6,666
50	2,698	.30215E+06	24.00	1,563	3,832
61	11,235	.20800E+07	59.00	8,320	14,150
62	1,314	.17692E+06	6.00	232	2,395
Subtotal	12,549	.22569E+07	64.85	9,544	15,553
Total	24,196	.55750E+07	286.15	19,520	28,871

Table D-10.--CPUE, population, and biomass estimates for Pacific halibut.

CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	56	56	56	4.50	.24870E+00	1.48	.29670E-01
20	31	27	27	27	3.44	.49790E+00	1.01	.32640E-01
31	69	49	49	49	2.87	.18940E+00	0.65	.95660E-02
32	9	6	6	6	4.41	.74790E+01	0.67	.84130E-01
Subtotal	78	55	55	55	3.00	.21250E+00	0.66	.86170E-02
41	44	14	14	14	0.64	.45230E-01	0.12	.12650E-02
42	31	19	19	19	4.99	.17930E+01	0.93	.61210E-01
43	21	7	7	7	1.10	.23270E+00	0.11	.21910E-02
Subtotal	96	40	40	40	1.70	.11310E+00	0.30	.35470E-02
50	25	19	19	19	3.12	.34140E+00	0.44	.58920E-02
61	60	47	47	47	6.73	.11740E+01	0.95	.20700E-01
62	7	4	4	4	0.87	.12630E+00	0.18	.73730E-02
Subtotal	67	51	51	51	6.33	.10210E+01	0.89	.18010E-01
Total	355	248	248	248	3.66	.81500E-01	0.77	.30560E-02

POPULATION

Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	11,501,789	.17992E+13	57.00	8,790,972	14,212,606
20	4,155,315	.54941E+12	30.00	2,641,746	5,668,883
31	6,180,078	.85472E+12	68.00	4,331,053	8,029,103
32	588,903	.64769E+11	8.00	0	1,190,791
Subtotal	6,768,981	.91949E+12	75.03	4,851,178	8,686,785
41	747,019	.49726E+11	43.00	296,350	1,197,687
42	2,229,894	.35291E+12	30.00	1,016,817	3,442,971
43	242,043	.97608E+10	20.00	35,953	448,132
Subtotal	3,218,955	.41240E+12	40.37	1,921,105	4,516,805
50	1,704,060	.88668E+11	24.00	1,089,457	2,318,662
61	8,343,413	.16078E+13	59.00	5,780,773	10,906,052
62	114,239	.30469E+10	6.00	0	249,310
Subtotal	8,457,651	.16109E+13	59.22	5,892,584	11,022,718
Total	35,806,751	.53800E+13	228.84	31,214,175	40,399,328

Table D-10.--Continued.

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	35,044	.15081E+08	57.00	27,196	42,893
20	14,109	.83811E+07	30.00	8,189	20,029
31	27,107	.16922E+08	68.00	18,879	35,334
32	3,867	.57578E+07	8.00	0	9,401
Subtotal	30,974	.22680E+08	61.57	21,449	40,499
41	4,027	.17784E+07	43.00	1,332	6,722
42	11,990	.10338E+08	30.00	5,415	18,565
43	2,330	.10367E+07	20.00	206	4,454
Subtotal	18,346	.13153E+08	46.90	11,017	25,676
50	12,122	.51383E+07	24.00	7,432	16,812
61	59,322	.91210E+08	59.00	40,020	78,623
62	559	.52182E+05	6.00	0	1,147
Subtotal	59,881	.91262E+08	59.07	40,574	79,188
Total	170,476	.15569E+09	151.04	145,770	195,182

APPENDIX E

Population Estimates by Sex and Size Groups for Principal Fish Species

Appendix E presents estimates of the numbers of individuals within the overall survey area by sex and size group for principal fish species.

List of Tables

Table E-1.--Population estimates by sex and size group for walleye pollock from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
80	72,001	0	551,267	623,268	0.0001	0.0001
90	71,171	0	6,263,810	6,334,980	0.0011	0.0012
100	118,290	0	39,962,635	40,080,925	0.0072	0.0084
110	565,652	170,732	119,713,848	120,450,232	0.0215	0.0299
120	1,506,722	499,544	173,678,585	175,684,851	0.0314	0.0613
130	1,891,572	1,563,292	218,973,421	222,428,285	0.0398	0.1011
140	1,406,629	3,315,685	243,497,166	248,219,481	0.0444	0.1455
150	1,673,430	5,581,117	252,210,069	259,464,616	0.0464	0.1919
160	2,720,790	3,328,369	172,173,807	178,222,966	0.0319	0.2237
170	3,584,049	2,958,333	78,521,989	85,064,371	0.0152	0.2389
180	3,152,576	3,244,380	31,052,850	37,449,805	0.0067	0.2456
190	3,364,711	5,151,802	5,263,464	13,779,977	0.0025	0.2481
200	7,138,587	8,239,261	2,733,200	18,111,048	0.0032	0.2513
210	11,189,962	12,431,734	1,359,889	24,981,585	0.0045	0.2558
220	15,648,010	13,530,565	1,056,704	30,235,280	0.0054	0.2612
230	14,467,548	17,846,262	986,536	33,300,347	0.0060	0.2671
240	17,319,973	16,730,478	0	34,050,451	0.0061	0.2732
250	13,787,754	14,346,451	0	28,134,205	0.0050	0.2783
260	15,725,802	14,285,076	0	30,010,878	0.0054	0.2836
270	13,892,974	16,633,458	0	30,526,432	0.0055	0.2891
280	13,464,064	12,224,059	0	25,688,123	0.0046	0.2937
290	11,592,635	10,104,422	0	21,697,057	0.0039	0.2975
300	9,649,528	9,060,808	0	18,710,336	0.0033	0.3009
310	9,846,747	9,971,380	0	19,818,127	0.0035	0.3044
320	10,246,484	7,569,841	0	17,816,324	0.0032	0.3076
330	9,421,459	9,444,296	0	18,865,755	0.0034	0.3110
340	9,472,558	8,895,187	0	18,367,745	0.0033	0.3143
350	18,865,001	13,354,203	0	32,219,204	0.0058	0.3200
360	17,059,594	10,734,769	0	27,794,364	0.0050	0.3250
370	22,819,698	12,749,577	0	35,569,276	0.0064	0.3314
380	25,698,578	19,431,187	0	45,129,764	0.0081	0.3394
390	46,546,541	31,853,894	0	78,400,435	0.0140	0.3534
400	73,751,389	29,065,350	0	102,816,739	0.0184	0.3718
410	107,500,274	54,413,145	0	161,913,419	0.0289	0.4008
420	126,375,298	74,045,815	0	200,421,113	0.0358	0.4366
430	147,677,063	92,585,739	0	240,262,802	0.0429	0.4795
440	146,624,957	106,783,811	0	253,408,767	0.0453	0.5248
450	153,446,309	119,115,807	0	272,562,115	0.0487	0.5736
460	150,009,302	102,289,145	0	252,298,447	0.0451	0.6187
470	153,611,571	115,523,194	0	269,134,766	0.0481	0.6668
480	162,257,029	89,948,259	0	252,205,288	0.0451	0.7118
490	124,404,955	100,628,797	0	225,033,752	0.0402	0.7521
500	102,541,777	90,740,740	0	193,282,516	0.0346	0.7866

Table E-1.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
510	99,787,512	88,375,857	0	188,163,369	0.0336	0.8203
520	78,705,118	69,530,035	0	148,235,153	0.0265	0.8468
530	56,535,177	65,592,625	0	122,127,803	0.0218	0.8686
540	51,216,566	62,142,895	0	113,359,461	0.0203	0.8888
550	42,035,384	57,670,207	0	99,705,591	0.0178	0.9067
560	32,572,795	43,352,339	0	75,925,134	0.0136	0.9202
570	27,508,826	36,167,683	0	63,676,510	0.0114	0.9316
580	23,126,834	25,517,146	0	48,643,980	0.0087	0.9403
590	25,374,141	21,113,142	0	46,487,283	0.0083	0.9486
600	21,783,209	21,777,799	0	43,561,009	0.0078	0.9564
610	20,700,122	21,043,084	0	41,743,206	0.0075	0.9639
620	15,635,572	15,194,345	0	30,829,917	0.0055	0.9694
630	13,660,940	14,107,714	0	27,768,654	0.0050	0.9744
640	11,602,328	15,168,264	0	26,770,592	0.0048	0.9791
650	11,087,639	11,489,067	0	22,576,706	0.0040	0.9832
660	7,864,940	11,587,055	0	19,451,995	0.0035	0.9867
670	5,646,921	6,964,531	0	12,611,452	0.0023	0.9889
680	5,268,281	8,328,856	0	13,597,137	0.0024	0.9913
690	3,353,110	9,200,684	0	12,553,794	0.0022	0.9936
700	3,586,905	5,716,728	0	9,303,634	0.0017	0.9952
710	2,023,626	4,566,120	0	6,589,746	0.0012	0.9964
720	1,821,279	3,610,349	0	5,431,629	0.0010	0.9974
730	1,198,048	3,537,150	0	4,735,198	0.0008	0.9982
740	198,251	3,233,466	0	3,431,717	0.0006	0.9989
750	441,128	953,597	0	1,394,724	0.0002	0.9991
760	28,550	1,152,022	0	1,180,572	0.0002	0.9993
770	69,852	1,081,062	0	1,150,914	0.0002	0.9995
780	180,120	1,220,684	0	1,400,804	0.0003	0.9998
790	0	588,607	0	588,607	0.0001	0.9999
800	0	471,613	0	471,613	0.0001	1.0000
810	0	189,830	0	189,830	0.0000	1.0000
820	0	52,025	0	52,025	0.0000	1.0000
Total	2,345,194,189	1,901,086,547	1,347,999,240	5,594,279,976	1.0000	1.0000

Table E-2.--Population estimates by sex and size group for Pacific cod from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
90	0	0	63,003	63,003	0.0001	0.0001
100	0	0	101,661	101,661	0.0002	0.0003
110	515,377	101,521	117,186	734,085	0.0012	0.0015
120	202,027	74,614	334,001	610,642	0.0010	0.0025
130	611,177	535,614	334,022	1,480,813	0.0024	0.0049
140	250,699	619,909	1,278,281	2,148,889	0.0035	0.0084
150	1,448,097	689,378	973,987	3,111,463	0.0051	0.0135
160	1,554,924	1,264,418	1,331,485	4,150,827	0.0068	0.0204
170	1,188,920	1,369,137	883,954	3,442,011	0.0056	0.0260
180	1,594,595	1,578,975	1,126,918	4,300,488	0.0071	0.0331
190	2,319,561	1,461,628	691,492	4,472,681	0.0073	0.0404
200	1,678,383	2,012,168	442,420	4,132,971	0.0068	0.0472
210	2,213,722	1,242,784	74,852	3,531,358	0.0058	0.0530
220	1,478,689	703,747	143,534	2,325,971	0.0038	0.0568
230	167,006	1,135,165	0	1,302,172	0.0021	0.0589
240	748,077	674,020	0	1,422,097	0.0023	0.0613
250	543,831	975,336	0	1,519,167	0.0025	0.0638
260	1,663,485	2,102,524	0	3,766,009	0.0062	0.0699
270	1,867,951	2,325,046	0	4,192,997	0.0069	0.0768
280	4,938,890	3,525,102	0	8,463,993	0.0139	0.0907
290	5,242,305	5,352,751	0	10,595,056	0.0174	0.1081
300	6,057,493	6,552,153	0	12,609,646	0.0207	0.1288
310	8,492,005	6,427,521	0	14,919,526	0.0245	0.1533
320	8,663,120	9,356,855	0	18,019,975	0.0296	0.1829
330	6,899,693	8,485,630	0	15,385,323	0.0253	0.2081
340	8,720,195	7,577,593	0	16,297,788	0.0267	0.2349
350	8,517,712	3,909,315	0	12,427,027	0.0204	0.2553
360	5,932,848	7,043,087	0	12,975,936	0.0213	0.2766
370	5,871,007	5,113,031	0	10,984,038	0.0180	0.2946
380	4,914,981	5,427,455	0	10,342,436	0.0170	0.3116
390	4,146,256	6,800,941	0	10,947,197	0.0180	0.3295
400	5,182,954	4,909,910	0	10,092,864	0.0166	0.3461
410	7,210,691	4,243,591	0	11,454,282	0.0188	0.3649
420	7,079,571	6,897,457	0	13,977,028	0.0229	0.3878
430	8,364,468	7,318,973	0	15,683,441	0.0257	0.4136
440	7,326,110	11,538,884	0	18,864,995	0.0310	0.4445
450	10,144,866	7,011,605	0	17,156,471	0.0282	0.4727
460	9,837,290	9,206,895	0	19,044,185	0.0313	0.5039
470	10,564,878	10,437,033	0	21,001,911	0.0345	0.5384
480	8,581,118	10,980,494	0	19,561,611	0.0321	0.5705
490	9,787,527	9,702,096	0	19,489,623	0.0320	0.6025
500	11,260,112	9,848,209	0	21,108,320	0.0346	0.6371

Table E-2.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
510	9,355,144	8,415,365	0	17,770,509	0.0292	0.6663
520	10,032,035	8,359,577	0	18,391,613	0.0302	0.6965
530	9,384,155	9,004,401	0	18,388,556	0.0302	0.7267
540	7,723,064	8,100,411	0	15,823,474	0.0260	0.7526
550	8,737,557	7,772,280	0	16,509,837	0.0271	0.7797
560	7,204,659	6,159,103	0	13,363,762	0.0219	0.8017
570	5,884,483	4,934,366	0	10,818,850	0.0178	0.8194
580	4,906,170	4,991,097	0	9,897,267	0.0162	0.8357
590	4,034,421	4,575,789	0	8,610,210	0.0141	0.8498
600	4,715,030	4,484,957	0	9,199,987	0.0151	0.8649
610	2,823,259	3,576,599	0	6,399,859	0.0105	0.8754
620	3,636,072	2,542,591	0	6,178,663	0.0101	0.8855
630	3,061,636	2,555,105	0	5,616,741	0.0092	0.8948
640	2,228,623	2,877,240	0	5,105,863	0.0084	0.9031
650	2,021,493	1,712,345	0	3,733,838	0.0061	0.9093
660	1,847,897	2,057,880	0	3,905,777	0.0064	0.9157
670	2,242,014	1,640,751	0	3,882,766	0.0064	0.9221
680	1,801,409	1,825,952	0	3,627,361	0.0060	0.9280
690	1,287,157	2,303,046	0	3,590,203	0.0059	0.9339
700	1,125,146	1,798,529	0	2,923,674	0.0048	0.9387
710	1,869,520	1,792,295	0	3,661,815	0.0060	0.9447
720	1,758,829	2,217,624	0	3,976,453	0.0065	0.9512
730	1,184,485	857,913	0	2,042,398	0.0034	0.9546
740	1,356,570	1,506,736	0	2,863,306	0.0047	0.9593
750	1,291,280	1,044,650	0	2,335,930	0.0038	0.9631
760	955,603	829,347	0	1,784,950	0.0029	0.9660
770	1,029,037	839,908	0	1,868,945	0.0031	0.9691
780	1,028,934	1,223,934	0	2,252,867	0.0037	0.9728
790	988,010	435,339	0	1,423,349	0.0023	0.9751
800	677,273	719,060	0	1,396,332	0.0023	0.9774
810	949,818	630,767	0	1,580,585	0.0026	0.9800
820	499,699	1,084,544	0	1,584,243	0.0026	0.9826
830	246,730	723,496	0	970,226	0.0016	0.9842
840	806,505	798,519	0	1,605,024	0.0026	0.9869
850	28,414	610,318	0	638,732	0.0010	0.9879
860	306,284	565,843	0	872,127	0.0014	0.9893
870	1,006,606	439,488	0	1,446,094	0.0024	0.9917
880	435,667	655,861	0	1,091,528	0.0018	0.9935
890	325,897	265,829	0	591,726	0.0010	0.9945
900	48,458	158,641	0	207,099	0.0003	0.9948
910	44,568	123,269	0	167,838	0.0003	0.9951
920	146,901	267,034	0	413,935	0.0007	0.9958
930	0	642,867	0	642,867	0.0011	0.9968
940	111,416	84,892	0	196,308	0.0003	0.9971
950	29,484	281,789	0	311,273	0.0005	0.9977

Table E-2.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
960	175,035	117,183	0	292,217	0.0005	0.9981
970	91,875	91,726	0	183,601	0.0003	0.9984
980	89,071	53,554	0	142,625	0.0002	0.9987
990	33,524	95,028	0	128,551	0.0002	0.9989
1000	0	251,975	0	251,975	0.0004	0.9993
1010	29,607	56,759	0	86,366	0.0001	0.9994
1020	0	115,813	0	115,813	0.0002	0.9996
1040	0	28,473	0	28,473	0.0000	0.9997
1080	0	197,856	0	197,856	0.0003	1.0000
Total	305,379,133	296,028,282	7,896,798	609,304,214	1.0000	1.0000

Table E-3.--Population estimates by sex and size group for yellowfin sole from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
80	2,731,509	0	0	2,731,509	0.0003	0.0003
90	508,154	0	0	508,154	0.0001	0.0003
100	5,689,888	2,801,481	0	8,491,368	0.0009	0.0012
110	11,621,201	4,991,651	0	16,612,852	0.0017	0.0029
120	40,296,387	31,816,432	0	72,112,819	0.0075	0.0104
130	49,014,000	62,165,262	0	111,179,262	0.0116	0.0220
140	135,337,814	127,111,805	0	262,449,619	0.0273	0.0493
150	177,612,261	168,912,783	0	346,525,044	0.0360	0.0853
160	173,776,517	170,315,839	0	344,092,356	0.0358	0.1210
170	127,535,237	111,445,923	0	238,981,160	0.0248	0.1458
180	94,987,127	117,991,304	0	212,978,431	0.0221	0.1680
190	78,943,353	92,315,197	0	171,258,551	0.0178	0.1858
200	118,323,690	114,935,936	1,176,401	234,436,027	0.0244	0.2101
210	132,097,819	133,610,853	1,873,688	267,582,360	0.0278	0.2379
220	180,610,981	183,005,406	4,881,009	368,497,396	0.0383	0.2762
230	223,853,873	195,158,200	6,536,524	425,548,597	0.0442	0.3204
240	250,917,264	268,271,013	10,369,438	529,557,714	0.0550	0.3755
250	268,321,702	264,282,816	11,721,243	544,325,761	0.0566	0.4320
260	288,701,090	288,793,928	19,215,996	596,711,014	0.0620	0.4940
270	263,615,589	241,174,138	18,518,709	523,308,436	0.0544	0.5484
280	308,361,257	242,057,646	16,905,962	567,324,865	0.0589	0.6073
290	290,933,797	241,654,554	14,074,045	546,662,396	0.0568	0.6641
300	379,782,790	274,543,571	19,609,572	673,935,933	0.0700	0.7341
310	304,380,723	302,212,208	19,519,706	626,112,637	0.0651	0.7992
320	202,199,834	313,620,215	23,485,255	539,305,303	0.0560	0.8552
330	133,946,939	282,835,332	10,848,552	427,630,823	0.0444	0.8997
340	86,762,204	246,623,914	4,966,546	338,352,664	0.0352	0.9348
350	45,558,780	203,728,094	1,655,515	250,942,389	0.0261	0.9609
360	13,807,357	142,180,120	2,570,975	158,558,452	0.0165	0.9774
370	8,466,527	90,632,203	2,091,861	101,190,591	0.0105	0.9879
380	842,881	49,897,289	1,176,401	51,916,571	0.0054	0.9933
390	406,709	31,572,335	0	31,979,044	0.0033	0.9966
400	205,486	19,982,033	0	20,187,519	0.0021	0.9987
410	0	6,588,615	0	6,588,615	0.0007	0.9994
420	0	3,176,546	0	3,176,546	0.0003	0.9997
430	0	2,476,102	0	2,476,102	0.0003	1.0000
440	0	258,642	0	258,642	0.0000	1.0000
450	0	21,385	0	21,385	0.0000	1.0000
Total	4,400,150,737	5,033,160,773	191,197,398	9,624,508,909	1.0000	1.0000

Table E-4.--Population estimates by sex and size group for rock sole from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
80	3,909,015	1,615,976	591,816	6,116,807	0.0006	0.0006
90	17,770,150	6,157,482	3,045,666	26,973,299	0.0026	0.0032
100	23,694,045	7,445,546	2,760,924	33,900,515	0.0033	0.0065
110	77,582,781	41,206,077	14,909,570	133,698,428	0.0129	0.0194
120	129,373,665	97,514,160	27,612,144	254,499,969	0.0246	0.0440
130	146,057,602	94,556,710	10,328,147	250,942,460	0.0242	0.0682
140	103,709,728	82,066,795	4,803,394	190,579,917	0.0184	0.0866
150	86,306,491	57,847,081	383,591	144,537,164	0.0140	0.1006
160	96,643,340	71,224,106	383,591	168,251,037	0.0163	0.1169
170	81,174,076	89,820,774	0	170,994,850	0.0165	0.1334
180	142,686,112	125,536,777	0	268,222,889	0.0259	0.1593
190	159,492,231	129,184,135	0	288,676,366	0.0279	0.1872
200	211,194,825	142,348,982	0	353,543,807	0.0342	0.2213
210	241,929,569	175,474,266	0	417,403,836	0.0403	0.2617
220	314,038,071	227,098,822	0	541,136,894	0.0523	0.3140
230	326,446,578	217,418,926	0	543,865,504	0.0525	0.3665
240	315,782,783	217,861,772	0	533,644,554	0.0516	0.4181
250	315,859,796	202,681,629	0	518,541,425	0.0501	0.4682
260	479,123,487	218,427,878	0	697,551,365	0.0674	0.5356
270	609,566,318	263,646,304	0	873,212,622	0.0844	0.6199
280	618,823,122	348,187,289	0	967,010,411	0.0934	0.7134
290	409,757,531	332,874,563	0	742,632,094	0.0718	0.7851
300	230,745,908	315,684,005	0	546,429,913	0.0528	0.8379
310	137,984,764	313,210,946	0	451,195,710	0.0436	0.8815
320	67,524,319	237,851,247	0	305,375,566	0.0295	0.9110
330	37,841,341	203,244,965	0	241,086,306	0.0233	0.9343
340	15,926,774	151,486,447	0	167,413,221	0.0162	0.9505
350	5,577,819	120,058,898	0	125,636,717	0.0121	0.9626
360	3,294,435	119,042,837	0	122,337,272	0.0118	0.9744
370	1,911,373	84,405,065	0	86,316,437	0.0083	0.9828
380	762,619	64,549,104	0	65,311,723	0.0063	0.9891
390	1,200,555	46,772,642	0	47,973,197	0.0046	0.9937
400	33,973	25,281,859	0	25,315,832	0.0024	0.9962
410	0	14,312,903	0	14,312,903	0.0014	0.9976
420	0	8,648,958	0	8,648,958	0.0008	0.9984
430	0	8,155,186	0	8,155,186	0.0008	0.9992
440	0	5,599,737	0	5,599,737	0.0005	0.9997
450	32,379	735,517	0	767,895	0.0001	0.9998
460	0	1,023,571	0	1,023,571	0.0001	0.9999
470	0	642,353	0	642,353	0.0001	0.9999
480	197,438	0	0	197,438	0.0000	1.0000
490	0	292,296	0	292,296	0.0000	1.0000
520	0	29,412	0	29,412	0.0000	1.0000
Total	5,413,955,013	4,871,223,998	64,818,845	10,349,997,85	1.0000	1.0000

Table E-5.--Population estimates by sex and size group for *Hippoglossoides* spp. from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
50	0	0	184,016	184,016	0.0001	0.0001
60	0	0	149,023	149,023	0.0001	0.0002
70	65,223	0	573,273	638,496	0.0003	0.0005
80	176,435	82,553	198,414	457,403	0.0002	0.0007
90	450,713	100,238	364,201	915,151	0.0004	0.0011
100	782,918	1,398,310	384,263	2,565,492	0.0012	0.0023
110	2,363,877	1,639,329	611,244	4,614,450	0.0022	0.0044
120	9,261,269	6,950,389	1,809,323	18,020,981	0.0084	0.0128
130	10,440,743	11,774,032	3,652,987	25,867,762	0.0121	0.0249
140	16,237,486	13,398,812	1,560,005	31,196,303	0.0145	0.0394
150	21,780,013	14,810,656	606,819	37,197,488	0.0173	0.0568
160	15,657,236	18,294,019	1,028,897	34,980,152	0.0163	0.0731
170	19,988,464	24,762,508	326,562	45,077,534	0.0210	0.0941
180	24,914,111	23,028,616	0	47,942,727	0.0223	0.1164
190	30,815,211	24,900,821	56,200	55,772,232	0.0260	0.1424
200	32,249,854	31,770,923	0	64,020,777	0.0298	0.1722
210	36,862,891	29,803,317	0	66,666,208	0.0311	0.2033
220	36,718,871	31,394,048	0	68,112,919	0.0317	0.2351
230	37,943,870	29,720,153	0	67,664,023	0.0315	0.2666
240	37,201,928	33,341,007	0	70,542,935	0.0329	0.2995
250	40,699,513	32,910,018	0	73,609,531	0.0343	0.3338
260	44,106,289	32,882,649	0	76,988,938	0.0359	0.3696
270	45,103,461	32,235,135	0	77,338,596	0.0360	0.4057
280	52,901,283	32,233,649	0	85,134,932	0.0397	0.4454
290	63,273,054	32,070,865	0	95,343,919	0.0444	0.4898
300	64,260,901	35,891,473	27,145	100,179,518	0.0467	0.5365
310	75,028,514	39,934,403	0	114,962,917	0.0536	0.5901
320	75,823,527	45,451,809	0	121,275,336	0.0565	0.6466
330	70,030,856	42,593,002	0	112,623,858	0.0525	0.6991
340	73,066,918	49,323,419	27,145	122,417,481	0.0571	0.7561
350	62,720,255	43,782,111	0	106,502,365	0.0496	0.8057
360	48,703,705	41,949,616	0	90,653,321	0.0422	0.8480
370	36,295,289	39,096,543	0	75,391,833	0.0351	0.8831
380	21,240,192	27,764,906	27,145	49,032,243	0.0229	0.9060
390	12,515,777	24,859,567	27,145	37,402,490	0.0174	0.9234
400	6,766,965	29,454,892	27,145	36,249,001	0.0169	0.9403
410	3,557,472	23,613,190	27,145	27,197,807	0.0127	0.9530
420	2,055,061	19,712,448	0	21,767,509	0.0101	0.9631
430	863,818	19,889,745	0	20,753,563	0.0097	0.9728
440	113,653	17,254,599	0	17,368,252	0.0081	0.9809
450	31,590	14,196,218	0	14,227,808	0.0066	0.9875
460	0	13,335,471	0	13,335,471	0.0062	0.9937
470	0	5,323,742	0	5,323,742	0.0025	0.9962

Table E-5.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
480	0	4,665,428	0	4,665,428	0.0022	0.9984
490	0	1,555,792	0	1,555,792	0.0007	0.9991
500	0	826,627	0	826,627	0.0004	0.9995
510	0	771,429	0	771,429	0.0004	0.9999
520	0	129,648	0	129,648	0.0001	0.9999
530	30,783	146,050	0	176,833	0.0001	1.0000
Total	1,133,099,989	1,001,024,176	11,668,095	2,145,792,260	1.0000	1.0000

Table E-6.--Population estimates by sex and size group for Alaska plaice from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
110	0	123,153	0	123,153	0.0001	0.0001
120	50,953	123,153	0	174,106	0.0002	0.0003
130	50,953	0	0	50,953	0.0001	0.0004
150	0	83,747	0	83,747	0.0001	0.0005
160	32,405	199,509	0	231,914	0.0003	0.0007
170	437,610	97,214	0	534,824	0.0006	0.0013
180	1,211,612	591,043	0	1,802,655	0.0020	0.0033
190	1,517,615	1,649,219	0	3,166,834	0.0035	0.0069
200	2,659,309	1,551,436	0	4,210,745	0.0047	0.0115
210	4,741,666	2,558,140	0	7,299,805	0.0081	0.0196
220	7,233,164	3,439,631	0	10,672,796	0.0119	0.0315
230	11,857,077	6,715,760	0	18,572,837	0.0206	0.0521
240	12,121,445	9,566,989	0	21,688,434	0.0241	0.0762
250	14,195,246	12,190,814	0	26,386,060	0.0293	0.1055
260	18,567,775	10,291,570	0	28,859,345	0.0321	0.1376
270	21,846,429	14,558,690	0	36,405,119	0.0404	0.1780
280	21,465,801	14,451,634	0	35,917,435	0.0399	0.2179
290	26,493,867	13,238,854	0	39,732,722	0.0441	0.2620
300	32,415,247	15,522,695	28,068	47,966,010	0.0533	0.3153
310	41,747,839	12,836,429	0	54,584,268	0.0606	0.3759
320	37,936,926	15,019,219	0	52,956,145	0.0588	0.4347
330	40,671,486	15,539,542	0	56,211,028	0.0624	0.4972
340	42,929,736	12,965,878	0	55,895,613	0.0621	0.5592
350	35,663,037	20,142,213	0	55,805,250	0.0620	0.6212
360	36,226,560	17,033,389	56,136	53,316,086	0.0592	0.6804
370	26,519,595	17,209,867	0	43,729,461	0.0486	0.7290
380	14,166,897	19,775,888	0	33,942,786	0.0377	0.7667
390	11,895,783	18,583,786	0	30,479,569	0.0339	0.8006
400	2,873,930	15,795,147	0	18,669,077	0.0207	0.8213
410	2,360,156	18,860,234	0	21,220,390	0.0236	0.8449
420	923,514	15,128,184	0	16,051,697	0.0178	0.8627
430	308,577	16,440,251	0	16,748,828	0.0186	0.8813
440	822,799	16,126,847	0	16,949,646	0.0188	0.9001
450	746,791	18,298,542	0	19,045,334	0.0212	0.9213
460	543,151	15,604,869	0	16,148,020	0.0179	0.9392
470	1,684,271	13,188,301	0	14,872,572	0.0165	0.9557
480	1,049,696	11,190,949	0	12,240,645	0.0136	0.9693
490	349,899	9,062,760	0	9,412,659	0.0105	0.9798
500	43,003	6,731,488	0	6,774,491	0.0075	0.9873
510	450,117	3,136,987	0	3,587,105	0.0040	0.9913
520	699,797	3,106,244	0	3,806,041	0.0042	0.9955
530	0	1,462,250	0	1,462,250	0.0016	0.9971
540	46,994	876,383	0	923,377	0.0010	0.9982
550	0	1,159,832	0	1,159,832	0.0013	0.9994

Table E-6.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
560	0	216,514	0	216,514	0.0002	0.9997
570	0	218,578	0	218,578	0.0002	0.9999
580	0	38,498	0	38,498	0.0000	1.0000
590	0	23,824	0	23,824	0.0000	1.0000
Total	477,558,726	422,726,145	84,204	900,369,075	1.0000	1.0000

Table E-7.--Population estimates by sex and size group for Greenland turbot from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
100	0	0	61,853	61,853	0.0066	0.0066
110	0	0	224,120	224,120	0.0240	0.0306
120	0	0	61,062	61,062	0.0065	0.0372
150	30,942	0	0	30,942	0.0033	0.0405
170	31,831	0	0	31,831	0.0034	0.0439
180	30,394	0	0	30,394	0.0033	0.0472
240	30,394	0	0	30,394	0.0033	0.0504
280	30,394	0	0	30,394	0.0033	0.0537
290	39,974	0	0	39,974	0.0043	0.0579
300	30,494	0	0	30,494	0.0033	0.0612
310	31,831	0	0	31,831	0.0034	0.0646
320	30,494	0	0	30,494	0.0033	0.0679
360	60,667	0	0	60,667	0.0065	0.0744
380	30,173	0	0	30,173	0.0032	0.0776
390	0	31,831	0	31,831	0.0034	0.0810
410	18,256	30,394	0	48,651	0.0052	0.0862
420	94,057	0	0	94,057	0.0101	0.0963
430	116,394	0	0	116,394	0.0125	0.1088
440	30,942	94,775	0	125,716	0.0135	0.1222
450	30,494	31,112	0	61,606	0.0066	0.1288
460	146,670	31,590	0	178,260	0.0191	0.1479
470	30,942	31,112	0	62,054	0.0066	0.1546
480	31,112	55,283	0	86,395	0.0093	0.1638
490	62,964	79,542	0	142,506	0.0153	0.1791
500	218,150	0	0	218,150	0.0234	0.2025
510	171,042	0	0	171,042	0.0183	0.2208
520	81,541	62,702	0	144,243	0.0155	0.2362
530	142,604	42,841	0	185,445	0.0199	0.2561
540	144,841	30,783	0	175,624	0.0188	0.2749
550	143,083	125,065	0	268,148	0.0287	0.3036
560	119,694	112,019	0	231,712	0.0248	0.3285
570	121,314	137,181	0	258,495	0.0277	0.3562
580	232,786	51,968	0	284,755	0.0305	0.3867
590	153,172	188,469	0	341,641	0.0366	0.4232
600	227,915	305,345	0	533,261	0.0571	0.4804
610	0	58,908	0	58,908	0.0063	0.4867
620	181,591	115,788	0	297,379	0.0319	0.5185
630	191,809	93,113	0	284,923	0.0305	0.5491
640	58,805	93,186	0	151,992	0.0163	0.5653
650	90,942	31,112	0	122,054	0.0131	0.5784
660	27,383	89,668	0	117,052	0.0125	0.5909
670	31,560	30,173	0	61,733	0.0066	0.5976
680	61,810	51,340	0	113,150	0.0121	0.6097
690	95,789	30,494	0	126,283	0.0135	0.6232

Table E-7.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
700	133,998	27,383	0	161,381	0.0173	0.6405
710	188,479	0	0	188,479	0.0202	0.6607
720	92,752	30,942	0	123,694	0.0132	0.6739
730	216,644	30,173	0	246,817	0.0264	0.7004
740	30,494	30,394	0	60,888	0.0065	0.7069
750	118,140	30,942	0	149,082	0.0160	0.7229
760	30,698	89,140	0	119,839	0.0128	0.7357
770	0	119,174	0	119,174	0.0128	0.7485
780	0	39,974	0	39,974	0.0043	0.7527
790	27,383	39,974	0	67,357	0.0072	0.7600
800	0	62,654	0	62,654	0.0067	0.7667
810	0	342,690	0	342,690	0.0367	0.8034
820	0	111,634	0	111,634	0.0120	0.8153
830	0	72,763	0	72,763	0.0078	0.8231
840	0	174,149	0	174,149	0.0187	0.8418
850	0	150,919	0	150,919	0.0162	0.8579
860	0	391,379	0	391,379	0.0419	0.8999
870	0	183,752	0	183,752	0.0197	0.9195
880	0	154,862	0	154,862	0.0166	0.9361
890	0	27,383	0	27,383	0.0029	0.9391
900	0	94,238	0	94,238	0.0101	0.9492
910	0	87,610	0	87,610	0.0094	0.9585
920	0	19,833	0	19,833	0.0021	0.9607
930	0	86,520	0	86,520	0.0093	0.9699
940	0	109,775	0	109,775	0.0118	0.9817
950	0	81,754	0	81,754	0.0088	0.9905
970	0	32,570	0	32,570	0.0035	0.9939
990	0	27,118	0	27,118	0.0029	0.9968
1030	0	29,412	0	29,412	0.0032	1.0000
Total	4,273,841	4,714,908	347,036	9,335,785	1.0000	1.0000

Table E-8.--Population estimates by sex and size group for arrowtooth flounder from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
60	22,698	0	0	22,698	0.0000	0.0000
80	0	0	238,387	238,387	0.0004	0.0004
90	29,824	0	472,210	502,034	0.0008	0.0012
100	284,410	168,387	573,457	1,026,254	0.0016	0.0027
110	609,703	288,486	372,070	1,270,259	0.0019	0.0047
120	196,158	172,265	305,282	673,705	0.0010	0.0057
130	549,486	370,491	31,006	950,982	0.0015	0.0072
140	957,210	952,263	0	1,909,473	0.0029	0.0101
150	748,684	1,962,158	0	2,710,841	0.0042	0.0143
160	1,879,868	2,327,164	29,469	4,236,501	0.0065	0.0208
170	2,405,702	5,013,526	0	7,419,228	0.0114	0.0321
180	1,686,758	4,482,111	0	6,168,869	0.0095	0.0416
190	1,585,895	2,625,082	0	4,210,977	0.0065	0.0480
200	1,461,350	2,299,472	0	3,760,822	0.0058	0.0538
210	650,587	2,319,471	0	2,970,058	0.0046	0.0583
220	1,094,944	2,167,416	0	3,262,360	0.0050	0.0633
230	715,627	2,871,697	0	3,587,325	0.0055	0.0688
240	2,912,335	3,715,289	0	6,627,624	0.0102	0.0790
250	3,424,953	5,383,563	0	8,808,517	0.0135	0.0925
260	3,804,387	6,446,603	0	10,250,990	0.0157	0.1082
270	4,797,892	9,487,221	0	14,285,114	0.0219	0.1301
280	4,586,239	9,986,922	0	14,573,162	0.0223	0.1524
290	6,545,948	11,845,654	0	18,391,602	0.0282	0.1806
300	4,951,110	10,711,876	0	15,662,986	0.0240	0.2046
310	5,906,175	12,154,440	0	18,060,615	0.0277	0.2323
320	5,838,072	11,230,742	0	17,068,814	0.0262	0.2585
330	5,344,975	10,351,197	0	15,696,172	0.0241	0.2825
340	6,276,398	12,372,119	0	18,648,518	0.0286	0.3111
350	5,754,983	11,521,805	0	17,276,788	0.0265	0.3376
360	7,137,063	16,089,644	0	23,226,707	0.0356	0.3732
370	7,802,153	13,219,663	0	21,021,816	0.0322	0.4054
380	7,703,645	15,640,984	0	23,344,628	0.0358	0.4412
390	7,722,821	14,731,397	0	22,454,218	0.0344	0.4756
400	6,641,022	14,315,599	0	20,956,621	0.0321	0.5077
410	7,407,220	13,123,624	0	20,530,844	0.0315	0.5392
420	7,641,325	12,533,036	0	20,174,361	0.0309	0.5701
430	6,005,956	11,788,370	0	17,794,326	0.0273	0.5974
440	7,056,660	14,270,315	0	21,326,975	0.0327	0.6300
450	6,721,282	13,790,951	0	20,512,233	0.0314	0.6615
460	5,962,403	12,414,680	0	18,377,083	0.0282	0.6896
470	3,654,110	13,339,194	0	16,993,304	0.0260	0.7157
480	2,853,591	11,995,829	0	14,849,420	0.0228	0.7384
490	1,405,266	13,532,261	0	14,937,527	0.0229	0.7613
500	795,066	13,964,310	0	14,759,376	0.0226	0.7840

Table E-8.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
510	1,166,297	13,516,065	0	14,682,361	0.0225	0.8065
520	542,639	13,041,646	0	13,584,286	0.0208	0.8273
530	503,010	12,604,416	0	13,107,426	0.0201	0.8474
540	355,471	9,954,833	0	10,310,305	0.0158	0.8632
550	712,766	11,358,786	0	12,071,551	0.0185	0.8817
560	176,574	10,119,883	0	10,296,457	0.0158	0.8975
570	375,225	9,018,313	0	9,393,538	0.0144	0.9118
580	387,883	10,406,203	0	10,794,086	0.0165	0.9284
590	464,720	7,325,830	0	7,790,551	0.0119	0.9403
600	88,697	7,891,984	0	7,980,682	0.0122	0.9526
610	168,283	5,621,749	0	5,790,032	0.0089	0.9614
620	79,371	5,788,467	0	5,867,838	0.0090	0.9704
630	243,121	3,534,068	0	3,777,189	0.0058	0.9762
640	69,806	3,377,835	0	3,447,640	0.0053	0.9815
650	87,169	2,775,174	0	2,862,344	0.0044	0.9859
660	0	3,702,153	0	3,702,153	0.0057	0.9916
670	22,698	1,268,729	0	1,291,427	0.0020	0.9935
680	82,379	1,205,018	0	1,287,397	0.0020	0.9955
690	22,698	824,740	0	847,438	0.0013	0.9968
700	0	477,841	0	477,841	0.0007	0.9975
710	0	593,431	0	593,431	0.0009	0.9985
720	0	462,082	0	462,082	0.0007	0.9992
730	0	123,633	0	123,633	0.0002	0.9994
740	0	422,111	0	422,111	0.0006	1.0000
Total	167,080,766	483,392,266	2,021,881	652,494,913	1.0000	1.0000

Table E-9.--Population estimates by sex and size group for Kamchatka flounder from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
130	29,824	0	0	29,824	0.0010	0.0010
150	75,325	0	0	75,325	0.0026	0.0037
160	64,125	123,132	0	187,257	0.0066	0.0103
170	60,856	47,571	0	108,428	0.0038	0.0141
180	268,708	185,388	0	454,096	0.0160	0.0301
190	92,314	62,746	0	155,060	0.0055	0.0355
200	99,544	89,772	0	189,315	0.0067	0.0422
210	60,924	22,698	0	83,622	0.0029	0.0451
220	132,936	65,892	0	198,828	0.0070	0.0521
230	130,662	125,974	0	256,636	0.0090	0.0611
240	355,944	172,556	0	528,500	0.0186	0.0797
250	259,864	223,771	0	483,636	0.0170	0.0967
260	409,983	183,693	0	593,676	0.0209	0.1176
270	185,714	248,644	0	434,358	0.0153	0.1329
280	187,671	220,049	0	407,720	0.0143	0.1472
290	95,923	127,160	0	223,084	0.0078	0.1551
300	334,812	153,517	0	488,329	0.0172	0.1722
310	328,406	152,266	0	480,672	0.0169	0.1892
320	391,301	223,947	0	615,248	0.0216	0.2108
330	264,908	248,329	0	513,237	0.0180	0.2288
340	118,948	469,361	0	588,310	0.0207	0.2495
350	406,466	468,960	0	875,427	0.0308	0.2803
360	451,118	272,210	0	723,327	0.0254	0.3058
370	441,255	402,283	0	843,538	0.0297	0.3354
380	846,204	851,295	0	1,697,499	0.0597	0.3951
390	571,459	730,097	0	1,301,556	0.0458	0.4409
400	740,925	288,750	0	1,029,674	0.0362	0.4771
410	770,898	404,321	0	1,175,219	0.0413	0.5184
420	628,467	589,843	0	1,218,311	0.0428	0.5613
430	465,980	312,084	0	778,065	0.0274	0.5886
440	534,894	494,651	0	1,029,545	0.0362	0.6249
450	273,289	388,723	0	662,012	0.0233	0.6481
460	631,939	218,972	0	850,911	0.0299	0.6781
470	244,121	362,941	0	607,062	0.0213	0.6994
480	487,444	347,257	0	834,701	0.0294	0.7288
490	504,138	320,687	0	824,824	0.0290	0.7578
500	456,576	421,179	0	877,755	0.0309	0.7886
510	591,063	408,433	0	999,497	0.0352	0.8238
520	209,825	478,785	0	688,610	0.0242	0.8480
530	169,446	544,321	0	713,767	0.0251	0.8731
540	0	744,006	0	744,006	0.0262	0.8993
550	30,251	331,896	0	362,147	0.0127	0.9120
560	41,574	211,936	0	253,510	0.0089	0.9209
570	89,423	417,504	0	506,927	0.0178	0.9388

Table E-9.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
580	29,840	331,077	0	360,917	0.0127	0.9515
590	89,852	103,067	0	192,919	0.0068	0.9582
600	89,852	158,700	0	248,552	0.0087	0.9670
610	38,380	143,034	0	181,414	0.0064	0.9734
620	0	31,572	0	31,572	0.0011	0.9745
630	0	173,718	0	173,718	0.0061	0.9806
640	0	189,455	0	189,455	0.0067	0.9872
650	0	149,579	0	149,579	0.0053	0.9925
670	0	64,690	0	64,690	0.0023	0.9948
700	0	118,839	0	118,839	0.0042	0.9990
720	0	29,524	0	29,524	0.0010	1.0000
Total	13,783,373	14,650,854	0	28,434,227	1.0000	1.0000

Table E-10.--Population estimates by sex and size group for Pacific halibut from the 1996 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
150	0	0	32,138	32,138	0.0009	0.0009
160	0	0	93,667	93,667	0.0026	0.0035
170	0	0	122,518	122,518	0.0034	0.0069
180	0	0	124,389	124,389	0.0035	0.0104
190	0	0	342,470	342,470	0.0096	0.0200
200	0	0	267,621	267,621	0.0075	0.0274
210	0	0	123,602	123,602	0.0035	0.0309
220	0	0	225,822	225,822	0.0063	0.0372
230	0	0	89,568	89,568	0.0025	0.0397
240	0	0	154,618	154,618	0.0043	0.0440
250	0	0	61,093	61,093	0.0017	0.0457
260	0	0	123,820	123,820	0.0035	0.0492
270	0	0	95,483	95,483	0.0027	0.0519
280	0	0	32,348	32,348	0.0009	0.0528
300	0	0	125,310	125,310	0.0035	0.0563
310	0	0	31,894	31,894	0.0009	0.0572
320	0	0	86,218	86,218	0.0024	0.0596
330	0	0	27,187	27,187	0.0008	0.0603
340	0	0	118,319	118,319	0.0033	0.0636
350	0	0	227,908	227,908	0.0064	0.0700
360	0	0	170,196	170,196	0.0048	0.0747
370	0	0	86,719	86,719	0.0024	0.0772
380	0	0	141,542	141,542	0.0040	0.0811
390	0	0	90,528	90,528	0.0025	0.0836
400	0	0	35,978	35,978	0.0010	0.0846
410	0	0	169,283	169,283	0.0047	0.0894
420	0	0	127,877	127,877	0.0036	0.0929
430	0	0	75,172	75,172	0.0021	0.0950
440	0	0	378,297	378,297	0.0106	0.1056
450	0	0	268,203	268,203	0.0075	0.1131
460	0	0	325,379	325,379	0.0091	0.1222
470	0	0	258,948	258,948	0.0072	0.1294
480	0	0	308,626	308,626	0.0086	0.1380
490	0	0	463,766	463,766	0.0130	0.1510
500	0	0	375,781	375,781	0.0105	0.1615
510	0	0	263,801	263,801	0.0074	0.1689
520	0	0	408,093	408,093	0.0114	0.1803
530	0	0	274,915	274,915	0.0077	0.1879
540	0	0	308,755	308,755	0.0086	0.1966
550	0	0	457,132	457,132	0.0128	0.2093
560	0	0	573,212	573,212	0.0160	0.2253
570	0	0	515,004	515,004	0.0144	0.2397
580	0	0	528,093	528,093	0.0147	0.2545
590	0	0	722,386	722,386	0.0202	0.2746

Table E-10.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
600	0	0	900,058	900,058	0.0251	0.2998
610	0	0	875,413	875,413	0.0244	0.3242
620	0	0	1,152,847	1,152,847	0.0322	0.3564
630	0	0	787,138	787,138	0.0220	0.3784
640	0	0	749,425	749,425	0.0209	0.3993
650	0	0	620,820	620,820	0.0173	0.4167
660	0	0	834,112	834,112	0.0233	0.4400
670	0	0	998,657	998,657	0.0279	0.4678
680	0	0	1,076,823	1,076,823	0.0301	0.4979
690	0	0	1,250,325	1,250,325	0.0349	0.5328
700	0	0	1,065,906	1,065,906	0.0298	0.5626
710	0	0	944,259	944,259	0.0264	0.5890
720	0	0	926,783	926,783	0.0259	0.6149
730	0	0	950,787	950,787	0.0266	0.6414
740	0	0	884,883	884,883	0.0247	0.6661
750	0	0	611,381	611,381	0.0171	0.6832
760	0	0	755,006	755,006	0.0211	0.7043
770	0	0	616,745	616,745	0.0172	0.7215
780	0	0	763,032	763,032	0.0213	0.7428
790	0	0	815,849	815,849	0.0228	0.7656
800	0	0	843,384	843,384	0.0236	0.7892
810	0	0	622,085	622,085	0.0174	0.8065
820	0	0	595,463	595,463	0.0166	0.8232
830	0	0	622,704	622,704	0.0174	0.8406
840	0	0	471,782	471,782	0.0132	0.8537
850	0	0	351,154	351,154	0.0098	0.8635
860	0	0	298,523	298,523	0.0083	0.8719
870	0	0	212,340	212,340	0.0059	0.8778
880	0	0	316,341	316,341	0.0088	0.8866
890	0	0	137,088	137,088	0.0038	0.8905
900	0	0	162,922	162,922	0.0046	0.8950
910	0	0	216,552	216,552	0.0060	0.9011
920	0	0	313,545	313,545	0.0088	0.9098
930	0	0	208,051	208,051	0.0058	0.9156
940	0	0	266,278	266,278	0.0074	0.9231
950	0	0	200,540	200,540	0.0056	0.9287
960	0	0	81,218	81,218	0.0023	0.9309
970	0	0	151,301	151,301	0.0042	0.9352
980	0	0	178,859	178,859	0.0050	0.9402
990	0	0	117,232	117,232	0.0033	0.9434
1000	0	0	174,000	174,000	0.0049	0.9483
1010	0	0	153,252	153,252	0.0043	0.9526
1020	0	0	123,101	123,101	0.0034	0.9560
1030	0	0	106,740	106,740	0.0030	0.9590
1040	0	0	29,824	29,824	0.0008	0.9598
1050	0	0	124,002	124,002	0.0035	0.9633
1060	0	0	132,661	132,661	0.0037	0.9670

Table E-10.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
1070	0	0	89,351	89,351	0.0025	0.9695
1080	0	0	63,929	63,929	0.0018	0.9713
1090	0	0	95,907	95,907	0.0027	0.9740
1100	0	0	119,197	119,197	0.0033	0.9773
1110	0	0	47,597	47,597	0.0013	0.9786
1120	0	0	29,171	29,171	0.0008	0.9794
1130	0	0	54,067	54,067	0.0015	0.9809
1150	0	0	75,641	75,641	0.0021	0.9830
1170	0	0	75,293	75,293	0.0021	0.9852
1180	0	0	59,776	59,776	0.0017	0.9868
1190	0	0	30,194	30,194	0.0008	0.9877
1220	0	0	19,402	19,402	0.0005	0.9882
1240	0	0	66,571	66,571	0.0019	0.9901
1250	0	0	30,768	30,768	0.0009	0.9909
1270	0	0	23,744	23,744	0.0007	0.9916
1280	0	0	55,483	55,483	0.0015	0.9931
1290	0	0	30,883	30,883	0.0009	0.9940
1310	0	0	30,259	30,259	0.0008	0.9948
1320	0	0	30,883	30,883	0.0009	0.9957
1420	0	0	23,424	23,424	0.0007	0.9964
1440	0	0	52,679	52,679	0.0015	0.9978
1480	0	0	24,964	24,964	0.0007	0.9985
1640	0	0	36,320	36,320	0.0010	0.9995
1710	0	0	16,374	16,374	0.0005	1.0000
Total	0	0	35,806,751	35,806,751	1.0000	1.0000