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Fisheries Service

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2002 Bottom Trawl Survey of the Eastern Bering Sea Continental Shelf

February 2003

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2002 BOTTOM TRAWL SURVEY OF THE EASTERN BERING SEA
CONTINENTAL SHELF

Compilers

Erika Acuna
Pamela Goddard
Stan Kotwicki

Bering Sea Subtask

Erika Acuna
Lyle Britt
Gerald R. Hoff
Stan Kotwicki
Gary Mundell
Daniel Nichol
Terrance Sample
Duane Stevenson
Gary Walters
Ken Weinberg

Resource Assessment and Conservation Engineering Division
Alaska Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
7600 Sand Point Way N.E.
Seattle, WA 98115-6349

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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 2002, 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. Length distributions and age structure samples were collected from ecologically and commercially important species.

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 and size composition of principal fish 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.

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INTRODUCTION

The eastern Bering Sea continental shelf supports one of the most productive groundfish fisheries in the world (Bakkala 1993). Since 1970, groundfish such as walleye pollock (*Theragra chalcogramma*), yellowfin sole (*Limanda aspera*) and Pacific cod (*Gadus macrocephalus*) have been the primary target species among commercial catches. Although many species are caught commercially, the most abundant has been the walleye pollock which, has had catches ranging from 1.2 to 2.2 million metric tons for the past 30 years (North Pacific Fishery Management Council 2001).

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. The first large-scale survey of the eastern Bering Sea shelf was conducted in 1975 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). That survey encompassed the entire region sampled in the 1975 baseline study plus 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 and crab 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, and bottom trawl sampling in the region between St. Matthew and St. Lawrence Islands. The continental slope was not surveyed in 1994 or 1997 but was resumed in 2000 and subsequently sampled biennially independently of the shelf. Results of the 2002 eastern Bering Sea upper continental slope survey will be reported in a separate document. 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 2002 bottom trawl survey. The groundfish/crab survey and several ancillary projects were conducted from 29 May to 1 August by two U.S. vessels. Detailed information on principal crab species can be obtained by contacting B.G. Stevens (NOAA/NMFS/AFSC/KFRC 301 Research Court- Near Island, Kodiak, Alaska 99615).

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 calls for 356 stations. In 2002, 355 standard stations and 20 additional stations northwest of the standard pattern were successfully sampled (Fig. 1). These stations have been sampled annually since 1990 but are not yet considered to be part of the standard survey. For the purposes of this publication, only 2002 standard survey data are included. Two additional experiments were conducted: 18 inshore stations were sampled to further understand yellowfin sole ecology (Fig. 1 and Appendix A) and 43 tows in Bristol Bay were sampled to quantify *Paralithodes camchaticus* escapement under the footrope. Results from these experiments will be presented in subsequent publications.

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 sample strata, resulting in a total of 10 geographic strata. The overall sampling density for the entire survey area was one station per 1,305 km² (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 km² to one per 1,552 km².

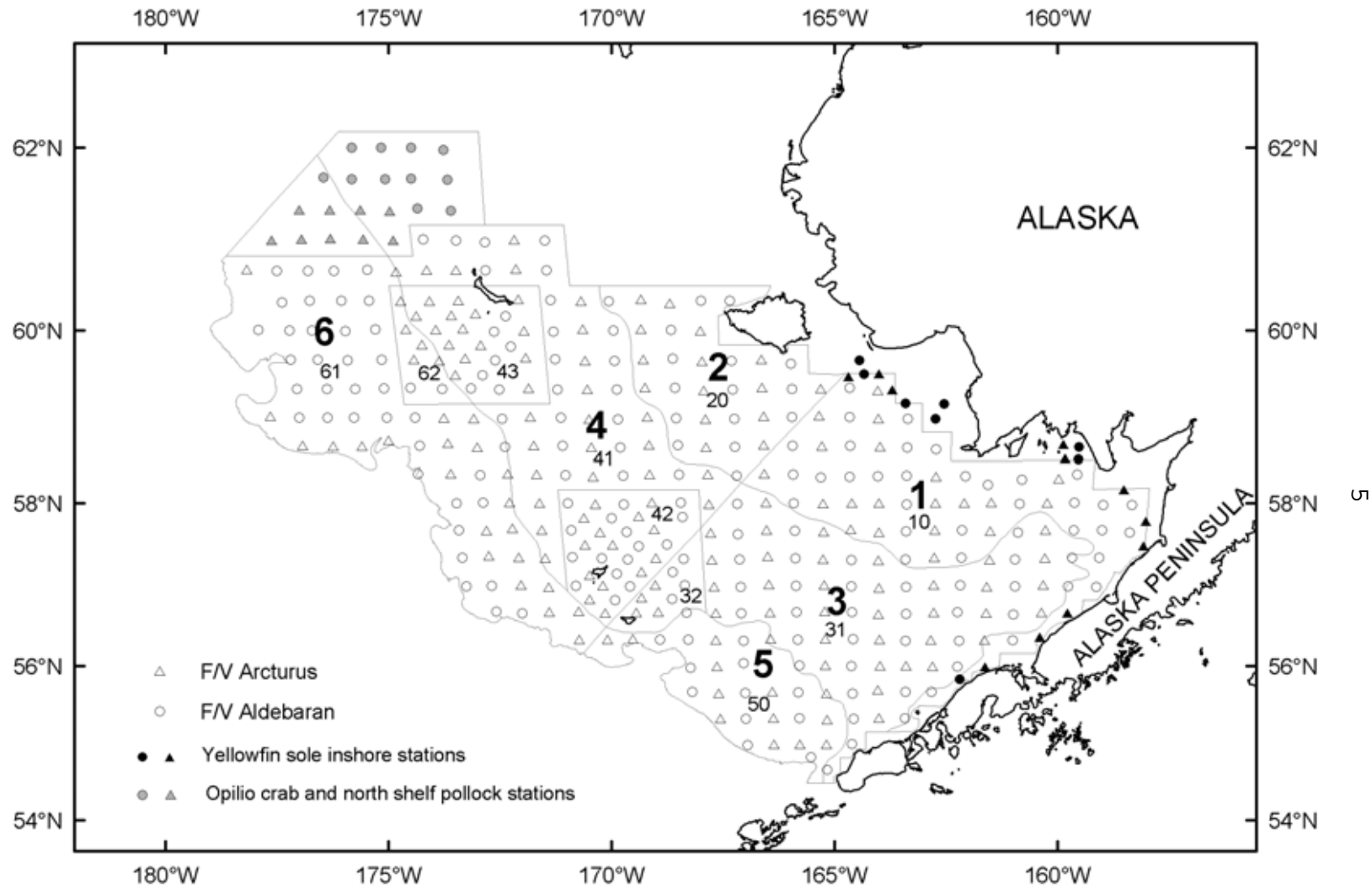


Figure 1—Standard and special study stations sampled during the 2002 eastern Bering Sea bottom trawl survey, and stratifications used for analysis of data (large numbers- strata, small numbers - substrata)

Table 1.--Size of subareas and strata, and sampling densities for the 2002 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	77	1,342
(31)	94,526	69	1,370
(32)	8,774	8	1,097
4	107,822	97	1,112
(41)	62,703	44	1,425
(42)	24,011	31	775
(43)	21,108	22	959
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 2002 eastern Bering Sea bottom trawl survey was conducted aboard the 40-m fishing vessels F/V *Arcturus* and F/V *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 dandyline. 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 2002 eastern Bering Sea bottom trawl survey.

Vessel	Overall length (m)	Horsepower	Survey period	
			Start	Finish
F/V <i>Arcturus</i>	40	1,525	29 May	01 August
F/V <i>Aldebaran</i>	40	1,525	26 May	01 August

NETMIND¹ 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 dandyline, 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

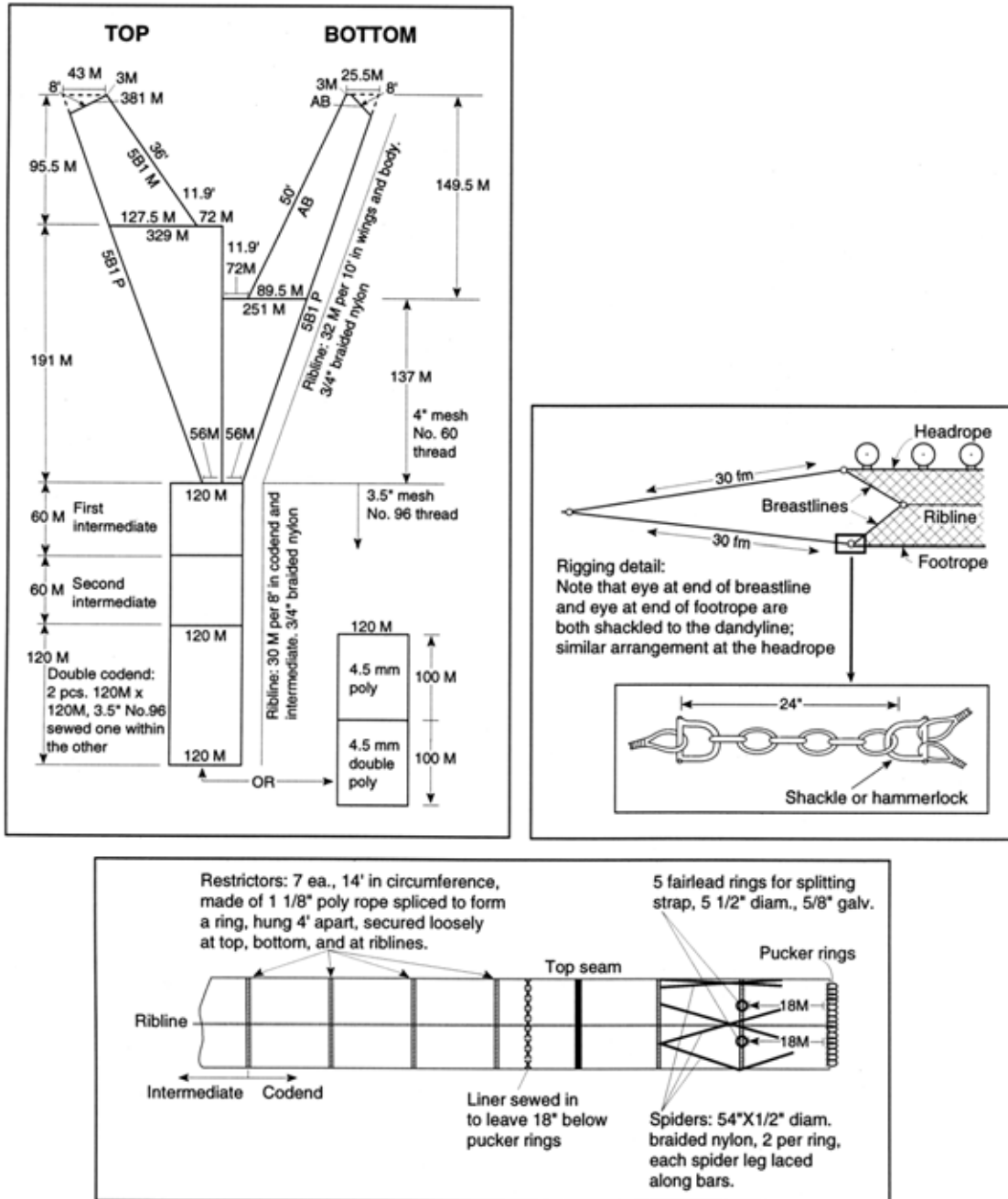


Figure 2.--Schematic diagram of trawl used during the 2002 eastern Bering Sea bottom trawl survey.

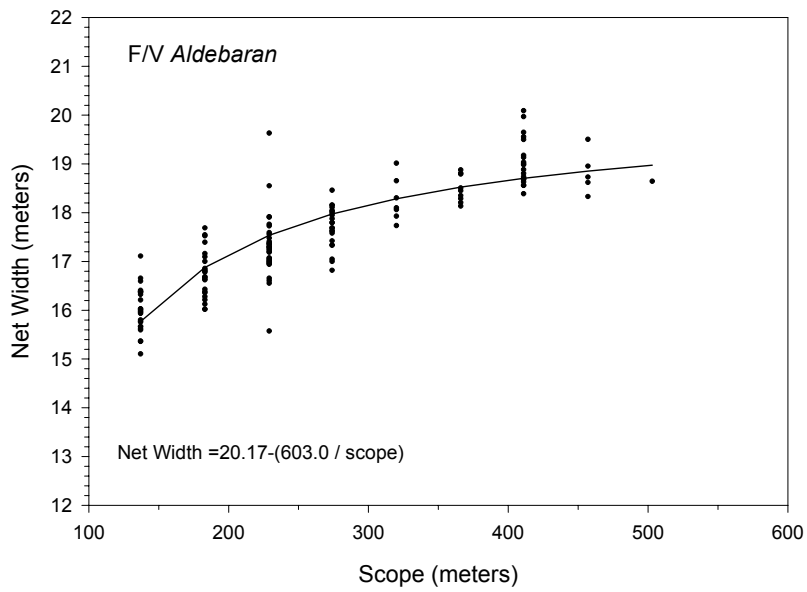
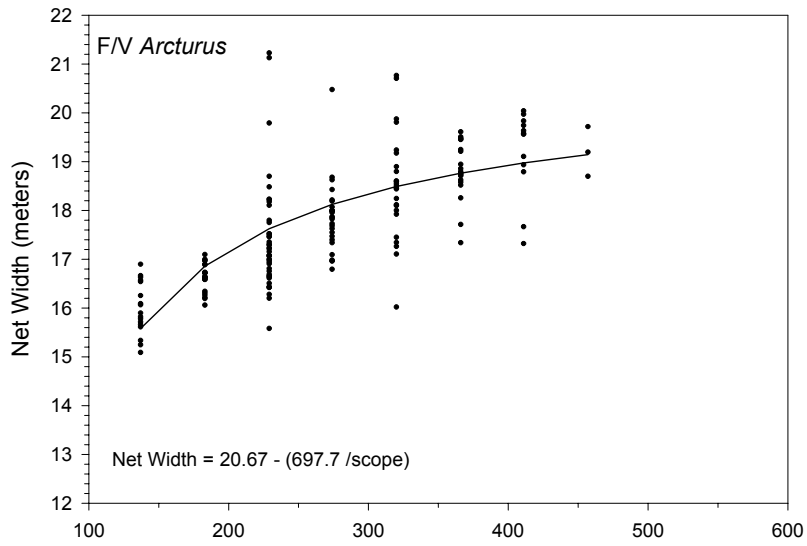


Figure 3.--Relationship between net-width and scope (wire-out) for vessels participating in the 2002 eastern Bering Sea survey.

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 and larger catches were subsampled. Economically important fish and invertebrates were sorted to species with the exception of four species of flatfish. Similar features between flathead sole (*Hippoglossoides elassodon*) and Bering flounder (*Hippoglossoides robustus*), made identification of these 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. Due to low abundance of southern rock sole (*Lepidopsetta bilineata*) and its morphological similarities to northern rock sole (*Lepidopsetta polyxystra*) (Orr and Matarese 2000) these species were also grouped by genus (*Lepidopsetta* spp.). 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 crab) were usually weighed and enumerated from the entire catch.

Size composition data were collected for each commercially important species and many co-habiting species (Table 3). Unless sampled by the International Pacific Halibut Commission (IPHC) for management purposes, 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 twelve 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, Greenland turbot, and *Lepidopsetta* spp., and five otolith pairs per sex/centimeter interval for all other species. Aboard the F/V *Aldebaran*, Pacific halibut otoliths were collected by the IPHC for population and growth analyses. Individual fish weight data were collected for all species for which age structures were taken. In the case of *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 Seabird 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 2002 eastern Bering Sea bottom trawl survey.

Species	Length measurements by subarea						Total ^a
	1	2	3	4	5	6	
Alaska plaice	1,818	2,009	1,632	2,717	---	179	8,409
Alaska skate	180	347	456	907	159	430	2,669
Aleutian skate	---	---	---	---	5	8	13
Atka mackerel	---	---	2	---	2	---	4
Bering flounder	---	13	---	364	---	8	1,607
Bering skate	---	---	15	---	61	94	171
Dover sole	---	---	---	---	2	---	2
Greenland turbot	---	1	4	54	1	142	455
Kamchatka flounder	---	---	147	68	245	591	1,053
Okhotsk skate	---	---	1	---	---	2	3
Pacific cod	2,084	1,062	2,236	4,574	328	1,338	11,897
Pacific halibut	563	232	203	212	41	142	1,396
Pacific ocean perch	---	---	---	---	24	193	217
Pacific sleeper shark	---	---	---	---	---	1	1
Sakhalin sole	---	---	---	---	---	---	51
arrowtooth flounder	58	---	2,424	633	2,750	2,706	8,574
big skate	1	---	1	---	---	---	2
bigmouth sculpin	---	---	20	29	14	57	120
butter sole	66	---	36	---	---	---	102
chum salmon	1	---	---	---	---	---	1
flathead sole	606	4	3,771	2,570	3,331	6,423	16,853
great sculpin	78	8	105	48	4	146	411
longhead dab	1,094	277	8	---	---	---	1,379
longnose skate	---	---	---	1	1	---	2
northern rock sole	8,466	3,677	6,515	7,015	56	1,540	27,565
northern rockfish	---	---	---	---	11	1	12
plain sculpin	904	498	10	57	---	1	1,470
prowfish	---	---	---	---	1	---	1
rex sole	9	---	96	1	1,019	404	1,529
roughey rockfish	---	---	---	---	5	---	5
sablefish	1	---	6	---	---	---	7
southern rock sole	---	---	5	---	---	---	5
starry flounder	457	45	34	---	---	---	536
walleye pollock	1,337	1,775	9,676	19,096	2,167	9,445	46,098
warty sculpin	13	6	5	109	---	8	143
whiteblotched skate	---	---	---	---	---	1	1
yellowfin sole	9,858	4,953	7,198	4,254	1	---	26,309

^aSome length measurements were collected outside the standard survey area.

Table 4.--Number of fish in which age structures (otoliths) were collected, by species and subarea, during the 2002 eastern Bering Sea bottom trawl survey.

Species	Subarea						Total ^a
	1	2	3	4	5	6	
walleye pollock	114	70	712	436	59	182	1678
Pacific halibut ^b	~	~	~	~	~	~	843
Pacific cod	250	110	204	250	27	45	889
yellowfin sole	258	186	159	132	---	---	738
northern rock sole	111	139	134	116	---	3	503
flathead sole	6	---	183	133	84	65	471
Alaska plaice	43	70	71	159	---	8	359
plain sculpin	118	171	5	13	---	---	307
great sculpin	51	---	51	20	---	53	180
longhead dab	71	80	---	---	---	---	151
Greenland turbot	---	---	1	16	1	11	71
bigmouth sculpin	---	---	8	7	3	9	27

^aSome age structures were collected outside the standard survey area.

^bAge structure collection analyzed and managed by the International Pacific Halibut Commission (IPHC); data were not tallied by subareas.

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 and fifty five stations sampled by the two vessels during the standard survey (Fig. 1) 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.

Except for Pacific halibut, otolith samples collected during the survey are read by staff of the Age and Growth Program of the AFSC's Resource Ecology and Fisheries Management (REFM) Division. Age, growth and population analyses will be presented in subsequent publications.

Special Studies

Stomach samples from several of the most prevalent commercial species in each haul were collected and preserved in 10% formalin for later examination by REFM's Food Habits Task (Table 5).

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

Table 5.--Biological fish samples collected for special studies during the 2002 eastern Bering Sea bottom trawl survey.

Species	Stomach samples collected ^a	Pathology samples ^b
Walleye pollock	3,374	
Pacific cod	2,303	
<i>Atheresthes</i> spp.	443	
Yellowfin sole	95	
<i>Lepidopsetta</i> spp.	75	
Pacific halibut	391	
Greenland turbot	152	
<i>Bathyraja</i> spp.	614	
Aleutian alligatorfish	15	
Bering poacher	28	
<i>Careproctus</i> spp.	75	
<i>Liparis</i> spp.	49	
Sawback poacher	59	
Sturgeon poacher	191	
Red king crab		29
Blue king crab		14

^aDetailed information on species collected for food habits studies can be obtained from P. Livingston (NOAA/NMFS/AFSC 7600 Sand Point Way NE, Seattle, WA 98115).

^bDetailed information on species collected for pathology studies can be obtained from F. Morado (NOAA/NMFS/AFSC 7600 Sand Point Way NE, Seattle, WA 98115).

RESULTS

Station Data

Station data from the 2002 survey are listed in Appendix A. Relevant information such as position, tow parameters (net width, depth, distance fished, and duration of tow), time, and environmental measurements (surface and gear temperatures) 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 3.4° to 9.9° 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 0.4° to 7.1° C (Fig. 5). The warmest temperatures (above 3.0° C) occurred in shallow waters along the northern portion of Bristol Bay to Nunivak Island, the southern central shelf, and north of St. George 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 2002 was 3.3° C (Fig. 6). Historically, this was well within the values recorded for mean summer bottom water temperatures in the standard survey area since 1981 (annual mean temperatures range from 0.8° to 5.1° C; average of annual means is 2.7° 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 2002 value for this area was 3.7° C, which is higher than the long-term average (3.1° C) (Fig. 6).

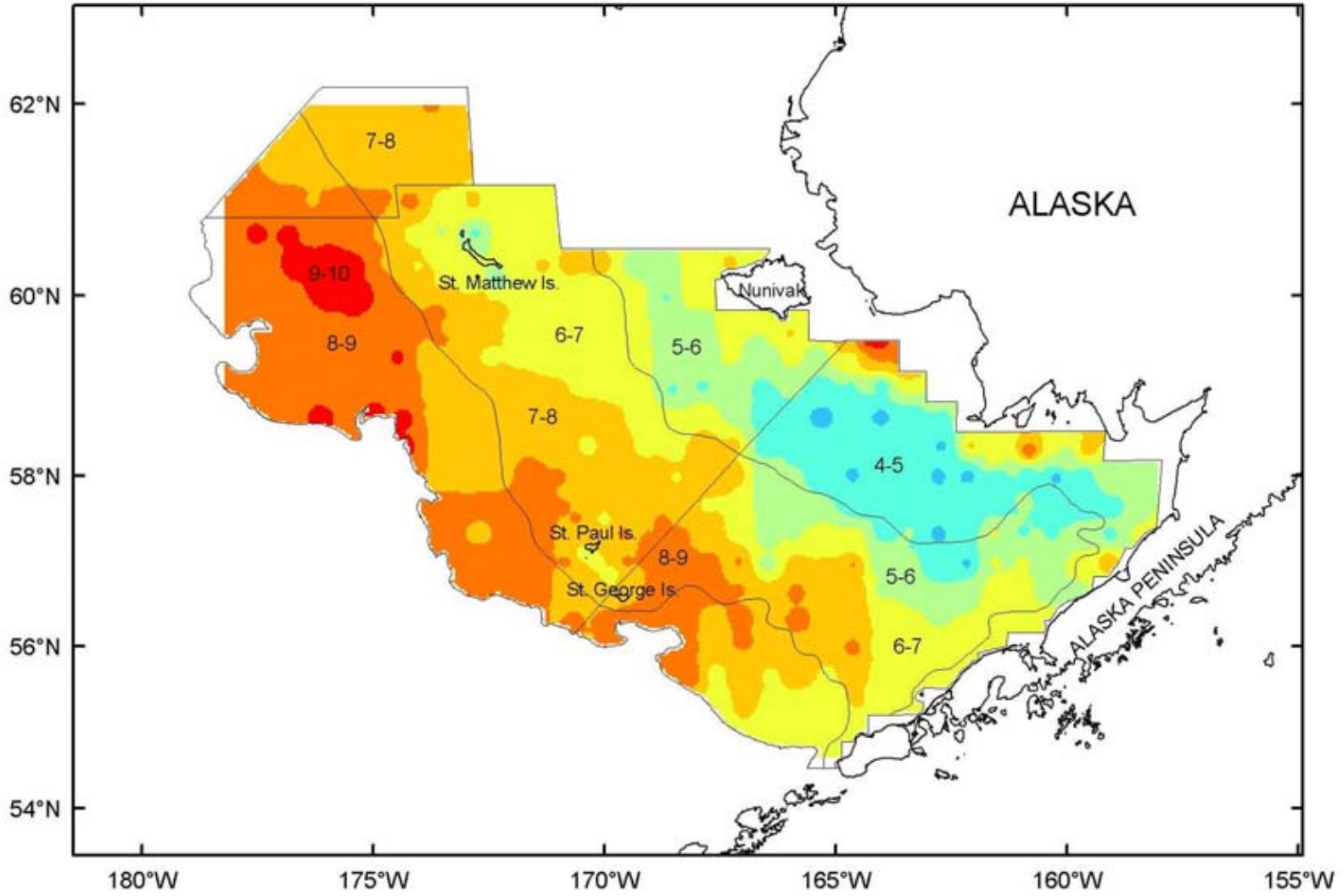


Figure 4. –Distribution of surface water temperatures (°C) observed during the 2002 eastern Bering Sea bottom trawl survey.

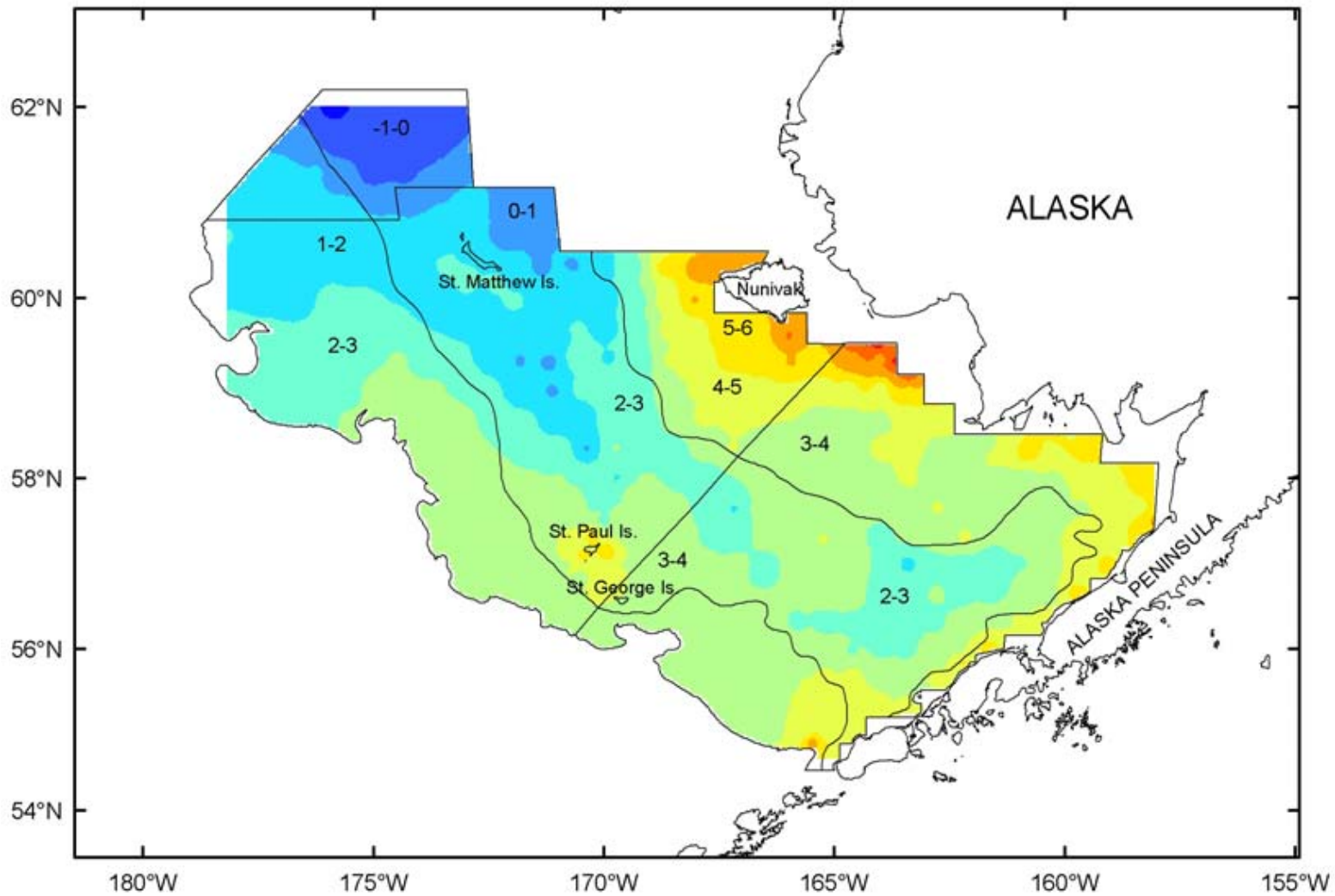


Figure 5.--Distribution of bottom water temperatures (°C) observed during the 2002 eastern Bering Sea bottom trawl survey

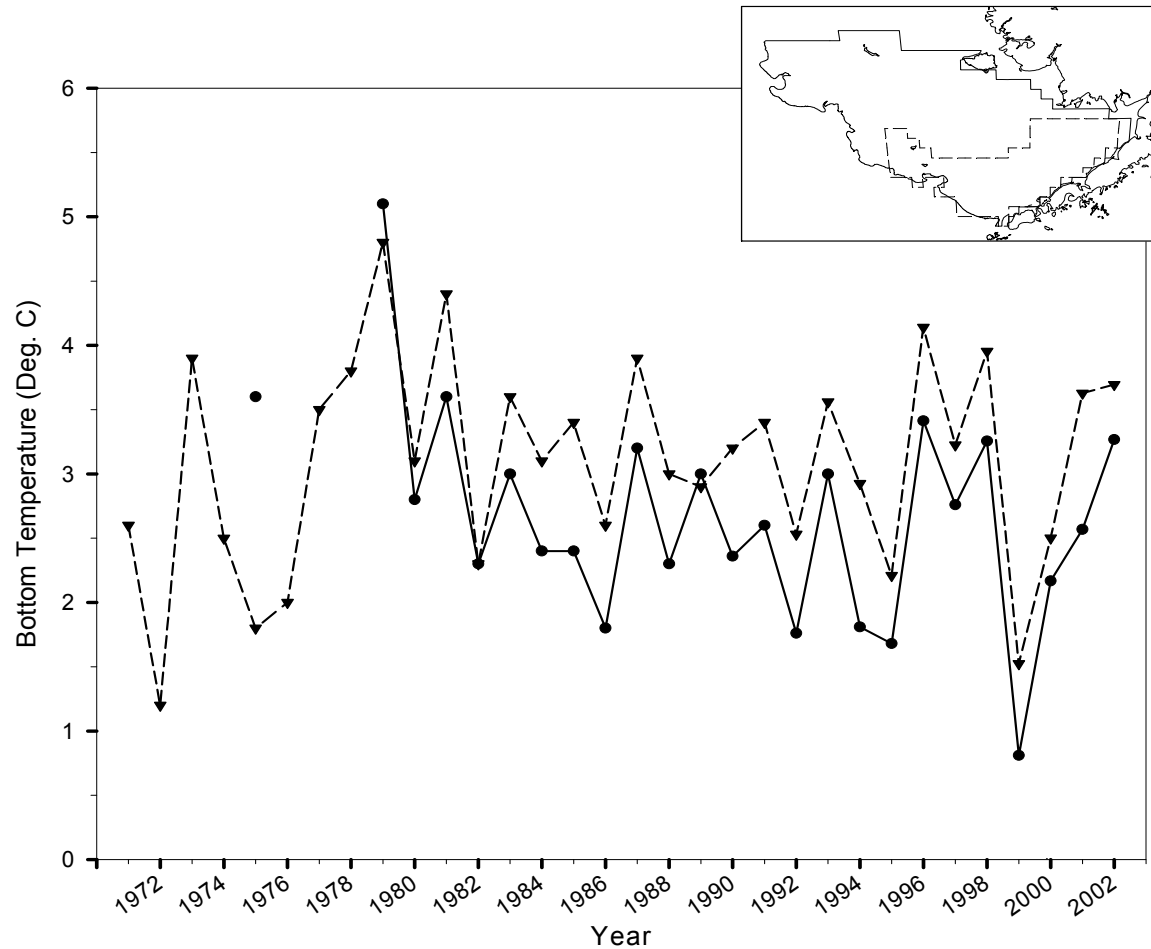


Figure 6.--Mean summer bottom water temperatures based on expendable bathythermograph casts or microbathythermographs attached to the net headrope during Alaska Fisheries Science Center bottom trawl surveys. The 1971-2002 means (dashed line) are from the southeast Bering Sea (see insert) and the 1975 and 1979-2002 (solid line) 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 May through early August.

Relative Fishing Powers of Survey Vessels

A total of 286 alternate-row tows were used in the comparison of vessel catch rates with the methods developed by Kappenman (1992). Based on this analysis, the F/V *Arcturus* was more efficient than the F/V *Aldebaran* at capturing arrowtooth flounder, *Hippoglossoides* sp., Pacific cod, walleye pollock, and wattled eelpout. 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 2002, and scaling factors determined by the method of Kappenman (1992) based on 286 total hauls.

Species	Hauls with catch		Catch multiplier	
	F/V <i>Arcturus</i>	F/V <i>Aldebaran</i>	F/V <i>Arcturus</i>	F/V <i>Aldebaran</i>
Alaska skate	123	121	1.36	1.00
arrowtooth flounder	61	64	1.00	1.10
<i>Hippoglossoides</i> spp.	111	113	1.00	1.09
yellowfin sole	110	116	1.13	1.00
<i>Lepidopsetta</i> spp.	127	132	1.05	1.00
Alaska plaice	114	111	1.02	1.00
Pacific cod	132	136	1.00	1.11
walleye pollock	135	135	1.00	1.03
wattled eelpout	51	59	1.00	1.01

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 79% (11.6 million t, Table 7), and invertebrates 20% (3.1 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 22 families and 92 species of fish were identified in the catches (Appendix B), the fish biomass was dominated by flatfish (Pleuronectidae, 5.0 million t) and cods (Gadidae 5.4 million t) (Table 7). The biomass of invertebrates was comprised primarily of the phyla Echinodermata (1.2 million t), Crustacea (0.64 million t), and Mollusca (0.3 million t) (Table 8). A total of 192 invertebrate species from 11 phyla were identified in the survey.

Relative Abundance of Individual Fish Species

Relative abundance (not weighted by area) of the 11 most abundant species and species groups of fish are shown in Figure 8. These taxa accounted for 77% (247.0 kg/ha) of total animal mean CPUE (319.0 kg/ha) and 97% of total fish mean CPUE (253.5 kg/ha). Overall, but particularly in water deeper than 50 m, walleye pollock was the dominant species in the catch with a mean CPUE of 107.4 kg/ha. Pacific cod were consistently abundant in the 50-100 m depth zone with an overall mean CPUE of 13.8 kg/ha. Yellowfin sole and *Lepidopsetta* spp., with overall mean catch rates of 42.1 kg/ha and 42.5 kg/ha, respectively, dominated catches in water less than 50 m. Yellowfin sole and *Lepidopsetta* spp. were also prominent on the mid-shelf waters between the 50-m and the 100-m isobaths 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 2002 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	4,816,950	+ 19%	0.327	84,256	68,113	1,036,781	1,977,024	338,819	1,311,958
Pacific cod	616,923	+ 23%	0.042	59,270	30,227	110,074	262,193	24,948	130,210
Other cods	23	+ 166%	0.000	0	23	0	0	0	0
Total cods	5,433,896	+ _17%	0.369	143,526	98,363	1,146,855	2,239,217	363,767	1,442,168
Anoplopomatidae									
Sablefish	303	+ 176%	0.000	27	0	276	0	0	0
Scorpaenidae (rockfish)									
Pacific ocean perch	6,106	+ 193%	0.000	0	0	0	0	156	5,950
Other rockfish	502	+ 139%	0.000	0	0	0	0	500	2
Total rockfish	6,608	+ 179%	0.000	0	0	0	0	656	5,952
Pleuronectidae (flatfishes)									
Yellowfin sole	2,003,396	+ 14%	0.136	944,757	363,387	552,345	142,839	68	0
<i>Lepidopsetta</i> spp.	1,901,858	+ 18%	0.129	915,212	261,600	272,894	399,640	1,951	50,561
<i>Hippoglossoides</i> spp.	574,946	+ 36%	0.039	22,843	330	162,219	114,715	65,664	209,175
Alaska plaice	424,971	+ 25%	0.029	47,904	70,606	99,081	185,583	0	21,798
Arrowtooth flounder	329,908	+ 19%	0.022	642	0	88,240	14,480	92,944	133,603
Kamchatka flounder	25,201	+ 25%	0.002	0	0	1,842	4,478	2,692	16,189
Greenland turbot	21,616	+ 44%	0.001	0	0	625	6,115	201	14,676
Pacific halibut	100,854	+ 15%	0.007	23,192	12,534	16,762	15,843	8,648	23,876
Other flatfish	97,937	+ 34%	0.007	61,939	5,744	7,097	10	17,582	5,564
Total flatfish	5,480,689	+ 10%	0.372	2,016,490	714,201	1,201,104	883,703	189,750	475,442
Clupeidae									
Pacific herring	12,217	+ 59%	0.001	847	4,036	349	6,980	0	5
Cottidae (sculpins)									
	174,807	+ 23%	0.012	46,830	16,995	31,025	30,974	14,212	34,771
Zoarcidae (eelpouts)									
	23,611	+ 25%	0.002	3	439	5,640	5,577	709	11,242
Osmeridae (smelts)									
	5,717	+ 48%	0.000	1,321	415	1,118	58	2,805	0
Agonidae (poachers)									
	18,701	+ 35%	0.001	4,790	3,354	4,833	5,518	171	35
Cyclopteridae (snailfishes)									
	3,118	+ 94%	0.000	3	0	51	2,626	48	390
Rajidae (skates)									
	408,014	+ 12%	0.028	30,918	42,286	51,443	111,854	46,961	124,553
Other fish									
	18,219	+ 67%	0.001	1,640	5,134	1,141	2,977	3,422	3,905
Total fish	11,585,899	+ 9%	0.787	2,246,394	885,224	2,443,836	3,289,482	622,500	2,098,463

^aDifferences in sums of estimates and totals are due to rounding

^bProportion of total estimated biomass, fish and invertebrates combined, for the total survey area. **Total estimated biomass= 14,720,411 t.**

Table 8.--Biomass estimates(t) for major invertebrate species and invertebrate groups taken during the 2002 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)	156,544	± 26%	0.011	1,112	8,131	21,410	63,456	13,143	49,293
Lithodes sp. king crab	66	± 198%	0.000	0	0	0	0	0	66
Paralithodes sp. (king crab)	75,852	± 36%	0.005	18,760	639	45,776	10,641	0	36
Erimacrus isenbeckii (hair crab)	1,549	± 39%	0.000	270	788	341	150	0	0
Paguridae hermit crab	385,386	± 13%	0.026	34,849	37,416	131,950	121,866	5,997	53,307
Other crab	11,976	± 47%	0.001	2,419	1,672	2,833	4,737	195	119
Total crab	631,373	± 11%	0.043	57,411	48,646	202,310	200,851	19,335	102,820
Shrimps	4,063	± 112%	0.000	2,250	428	15	155	125	1,090
Other crustaceans	3,670	± 96%	0.000	170	1,356	858	610	8	667
Total crustaceans	639,105	± 11%	0.043	59,832	50,430	203,183	201,616	19,468	104,577
Mollusca									
Gastropoda (snails)	289,563	± 15%	0.020	18,852	16,816	106,805	76,923	5,896	64,271
Pelecypoda (bivalves)	4,787	± 50%	0.000	1,010	99	2,708	221	49	700
Squids	33	± 78%	0.000	0	0	0	0	2	31
Octopuses	2,423	± 89%	0.000	0	0	668	22	1,227	506
Other mollusks	0	± 0%	0.000	0	0	0	0	0	0
Total mollusks	296,807	± 15%	0.020	19,862	16,915	110,181	77,166	7,174	65,507
Echinodermata									
Asteroidea (starfish)	960,510	± 13%	0.065	411,849	92,165	230,178	119,512	768	106,038
Ophiuroidea (brittle stars)	254,054	± 29%	0.017	9,411	2,166	66,322	43,286	620	132,250
Echinoidea (sea urchin)	8,588	± 71%	0.001	72	0	3,557	914	2,742	1,303
Holothuroidea (sea cucumbers)	10,321	± 88%	0.001	4,429	0	3,974	1,915	2	2
Total echinoderms	1,233,849	± 12%	0.084	425,914	94,331	304,139	165,738	4,131	239,595
Ascidiacea	422,032	± 37%	0.029	46,914	51,397	164,379	159,250	51	40
Porifera (sponges)	288,590	± 121%	0.020	1,008	278	283,332	2,954	231	787
Coelenterata	114,260	± 18%	0.008	8,999	5,112	31,451	45,704	14,222	8,771
Other invertebrates	140,245	± 19%	0.010	16,213	16,260	47,921	47,967	1,008	10,876
Total invertebrates	3,134,512	± 13%	0.213	578,589	234,724	1,144,479	700,284	46,285	430,151

^aDifferences in sums of estimates and totals are due to rounding

^bProportion of total estimated biomass, fish and invertebrates combined, for the total survey area. **Total estimated biomass= 14,720,411 t.**

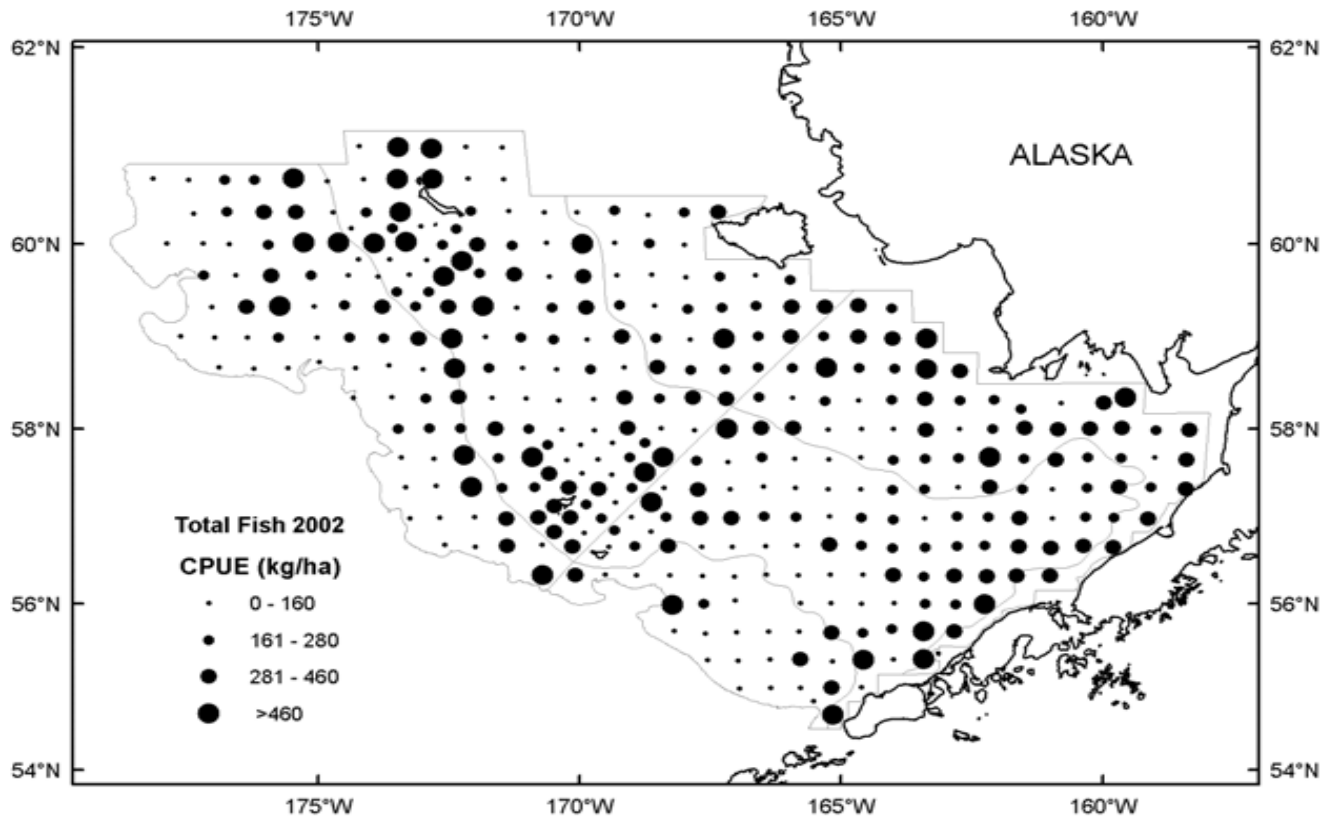


Figure 7.--Distribution and relative abundance of total fish, 2002 eastern Bering Sea bottom trawl survey.

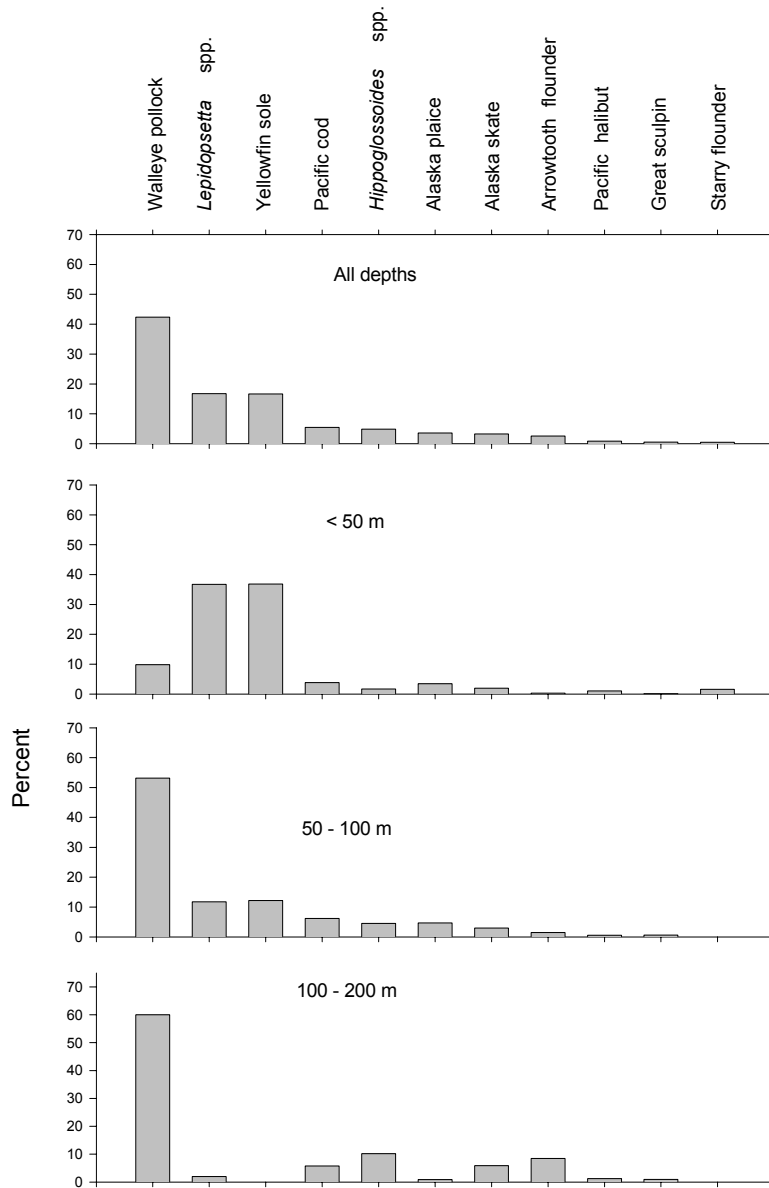


Figure 8.--Relative abundance (% CPUE in kg/ha) of principal groundfish species (top 11 for all depths combined) by depth zones and for all depths combined, 2002 eastern Bering Sea bottom trawl survey.

Abundance, Distribution, and Size 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, *Lepidopsetta* spp., *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 by one centimeter interval of length for each subarea and in population numbers for the total survey area. Age data and growth parameters will be presented at a later date in separate reports. Geographical distributions for some common, but generally noncommercial fish species are also presented. These species are Bering skate (*Bathyraja interrupta*), Alaska skate (*B. parmifera*), warty sculpin (*Myoxocephalus verrucosus*), great sculpin (*M. 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 (*Ocella dodecaedron*), eulachon (*Thaleichthys pacificus*), capelin (*Mallotus villosus*), and Pacific herring (*Clupea pallasii*). Biomass and population estimates as well as mean weight per individual are given by subarea and total area. These tables are not provided 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 of their distribution are shown to give some idea of geographic distribution.

Appendices to the report contain detailed results of the survey. 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.

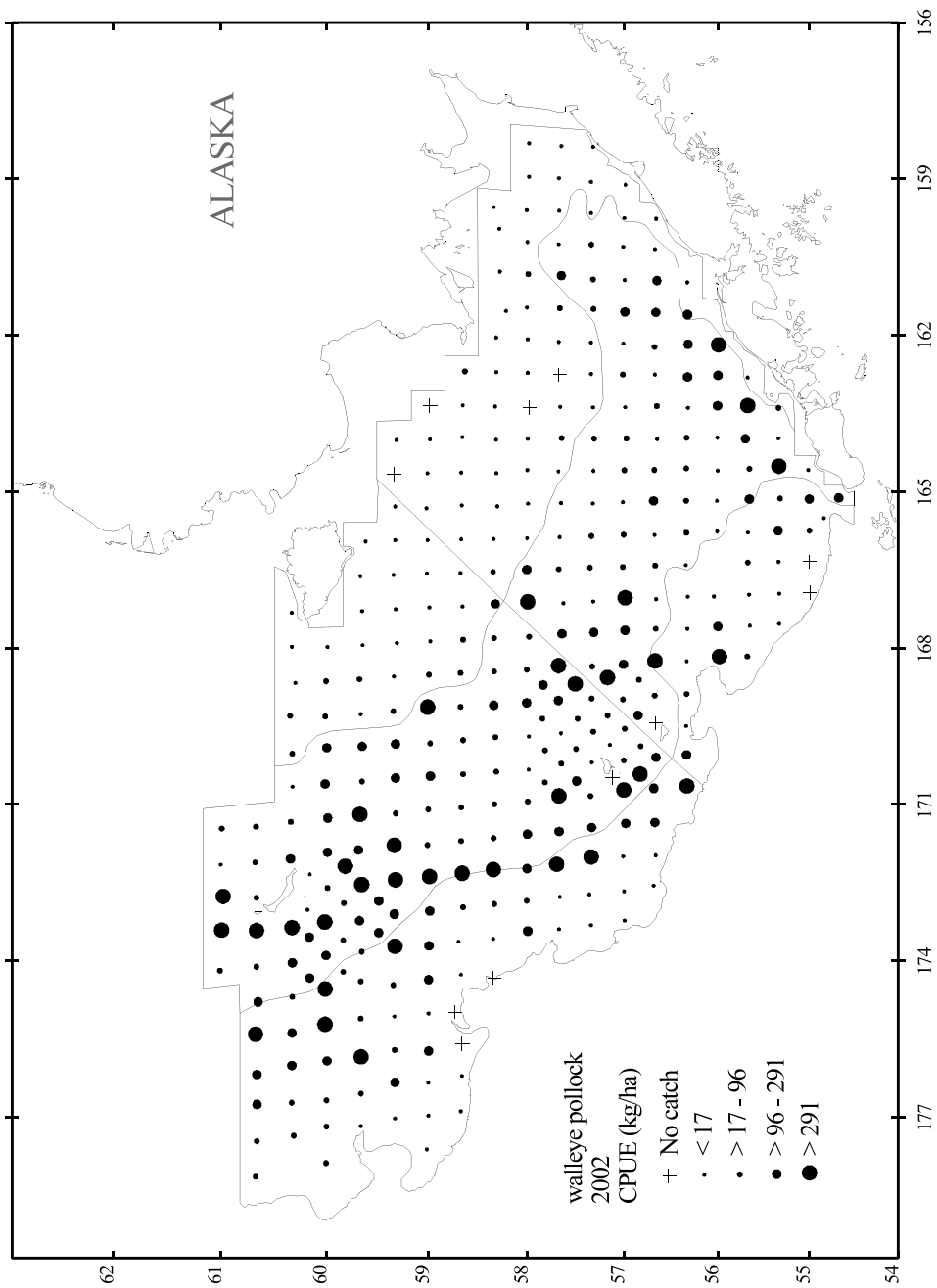


Figure 9.-- Distribution and relative abundance in kg/ha of walleye pollock, 2002 eastern Bering Sea bottom trawl survey.

Table 9.--Abundance estimates and mean size of walleye pollock by subarea, 2002 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)	Length (Cm)
1	10.82	84,256	0.017	95,679,603	0.013	0.881	39.4
2	16.60	68,113	0.014	196,290,886	0.027	0.347	21.3
3	100.37	1,036,781	0.215	1,211,426,998	0.168	0.856	47.5
4	183.36	1,977,024	0.410	3,002,980,258	0.417	0.658	43.8
5	87.34	338,819	0.070	377,770,463	0.052	0.897	49.2
6	138.74	1,311,958	0.272	2,315,315,113	0.322	0.567	40.5
All subareas combined ^b	103.95	4,816,950	1.000	7,199,463,322	1.000	0.669	43.0
95% Confidence interval		$\pm 894,078$		$\pm 1,500,447,755$			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

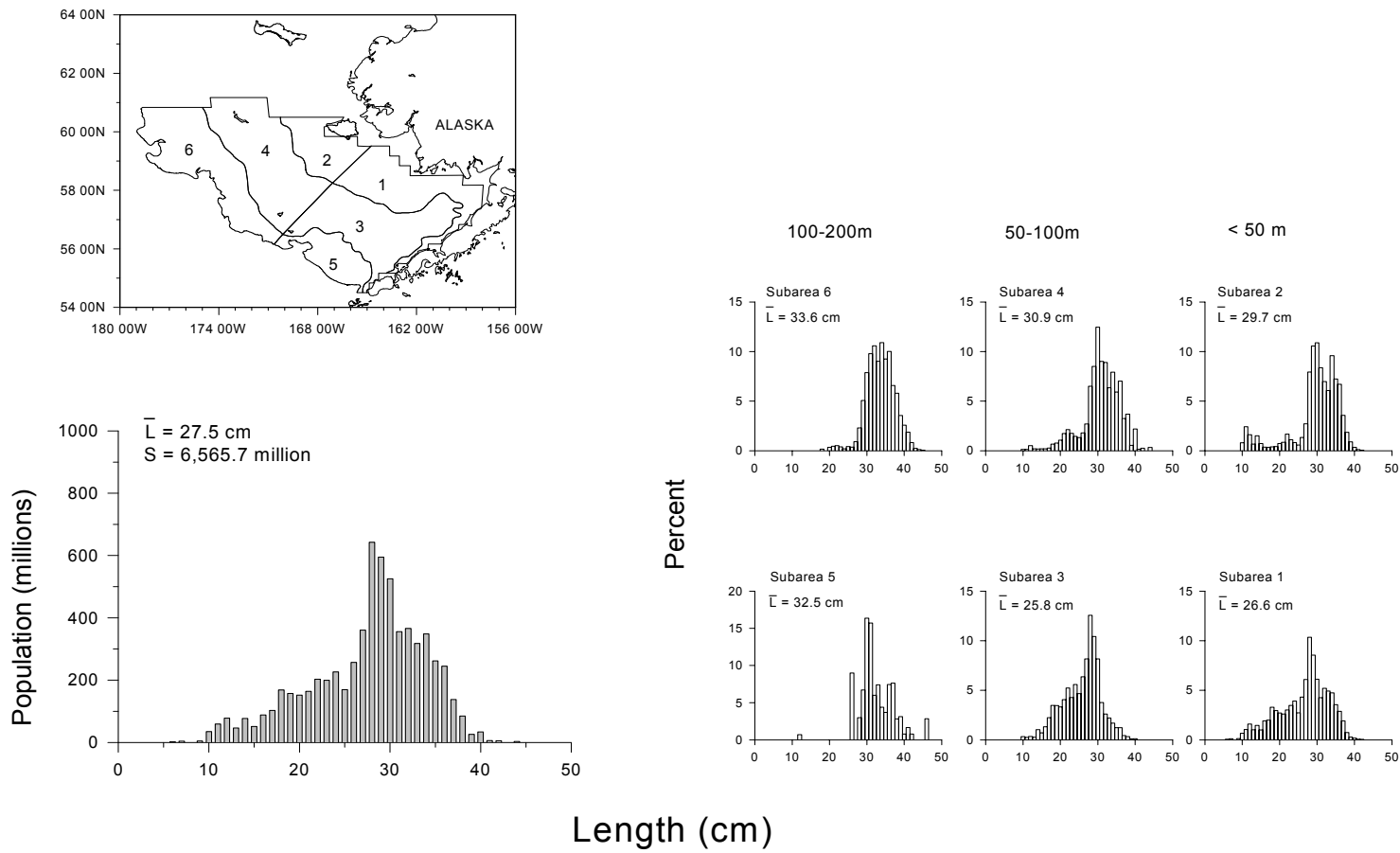


Figure 10.--Estimated relative size distribution (sexes combined) of walleye pollock in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

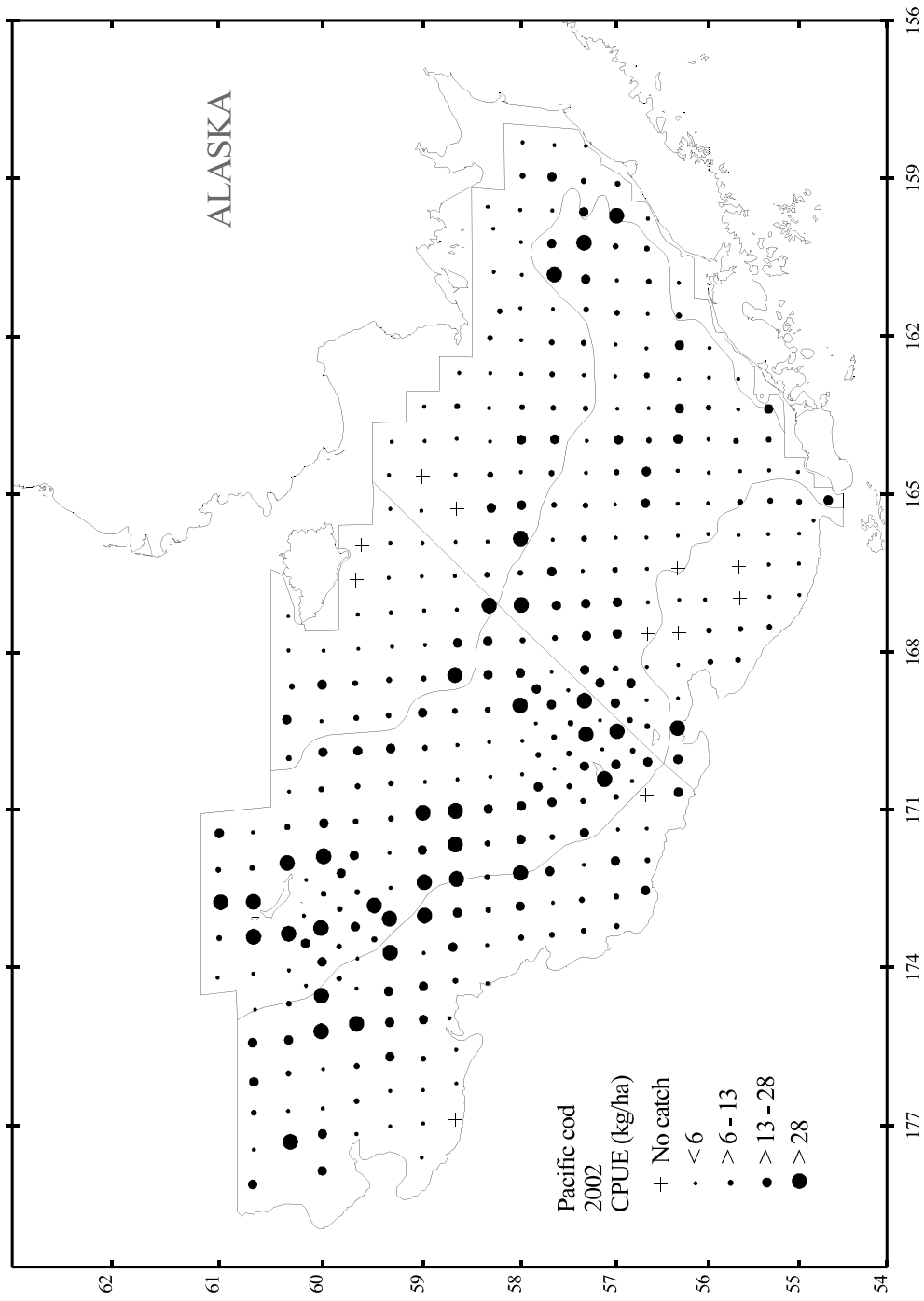


Figure 11.-- Distribution and relative abundance in kg/ha of Pacific cod, 2002 eastern Bering Sea bottom trawl survey.

Table 10.--Abundance estimates and mean size of Pacific cod by subarea, 2002 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)	Length (cm)
1	7.61	59,270	0.096	105,794,031	0.188	0.560	32.2
2	7.37	30,227	0.049	41,976,683	0.074	0.720	34.2
3	10.66	110,074	0.178	122,554,676	0.217	0.898	39.6
4	24.32	262,193	0.425	232,887,743	0.413	1.126	42.8
5	6.43	24,948	0.040	11,923,596	0.021	2.092	54.2
6	13.77	130,210	0.211	48,979,150	0.087	2.658	57.5
All subareas combined ^b	13.31	616,923	1.000	564,115,880	1.000	1.094	41.0
95% Confidence interval		$\pm 139,173$		$\pm 114,562,245$			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

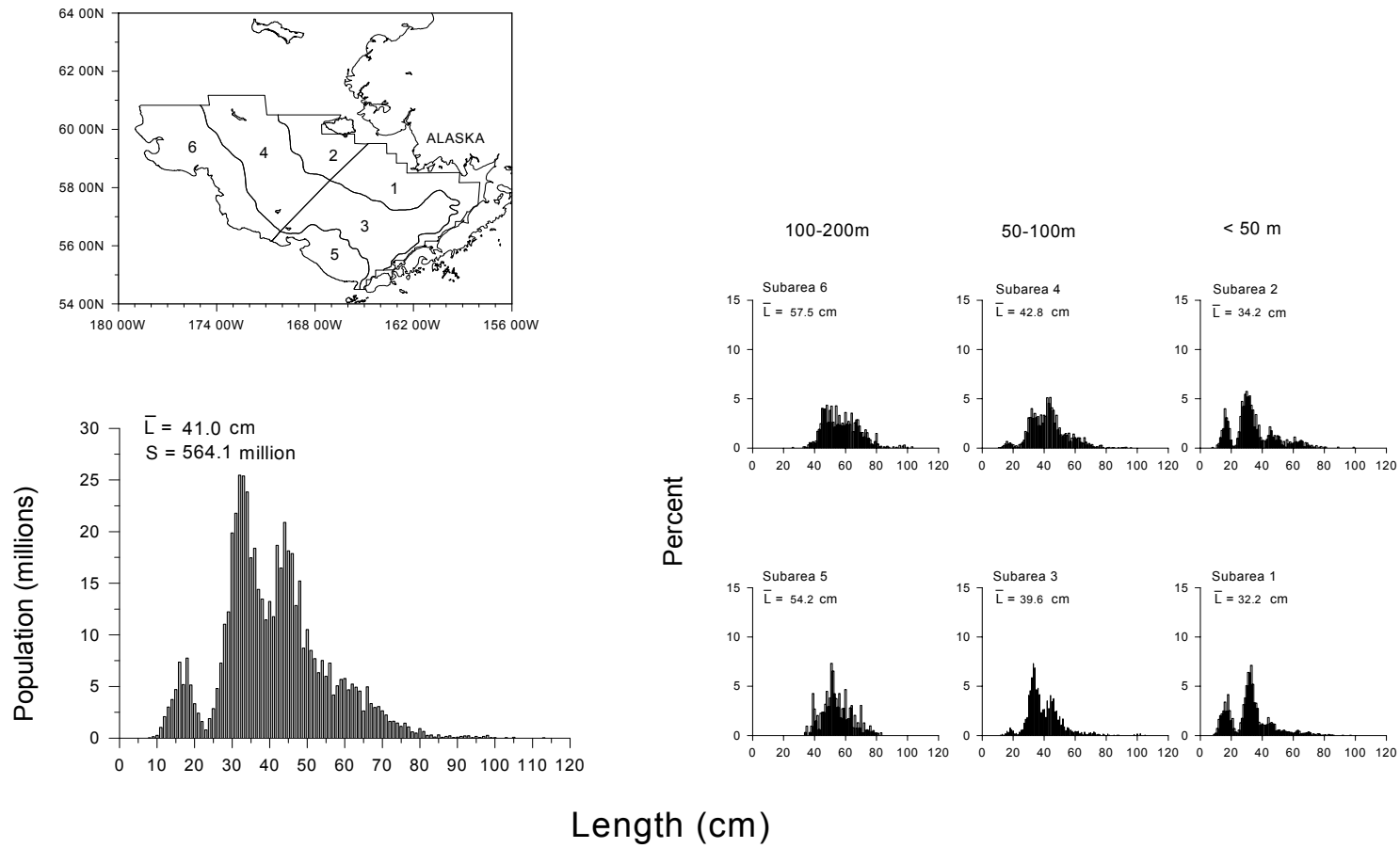


Figure 12.--Estimated relative size distribution (sexes combined) of Pacific cod in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

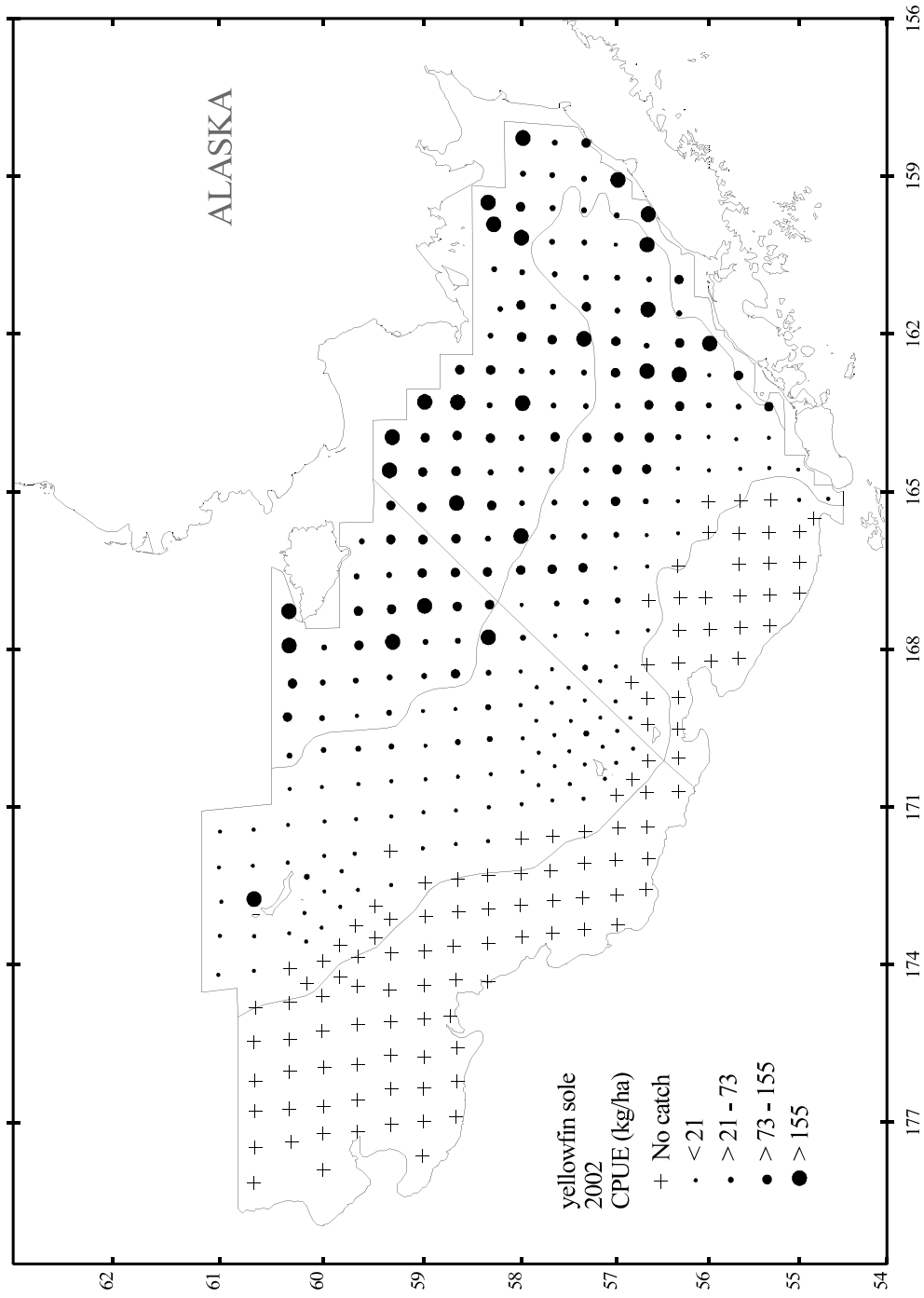


Figure 13.-- Distribution and relative abundance in kg/ha of yellowfin sole, 2002 eastern Bering Sea bottom trawl survey.

Table 11.--Abundance estimates and mean size of yellowfin sole by subarea, 2002 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)	Length (cm)
1	121.32	944,757	0.472	4,504,983,745	0.535	0.210	24.8
2	88.57	363,387	0.181	1,645,854,241	0.195	0.221	24.3
3	53.47	552,345	0.276	1,851,399,084	0.220	0.298	28.6
4	13.25	142,839	0.071	422,283,789	0.050	0.338	28.6
5	0.02	68	0.000	146,983	0.000	0.463	34.0
6	0.00	0	0.000	0	0.000	0.000	0.0
All subareas combined ^b	43.23	2,003,396	1.000	8,424,667,842	1.000	0.238	25.7
95% Confidence interval		+275,213		+1,309,065,665			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

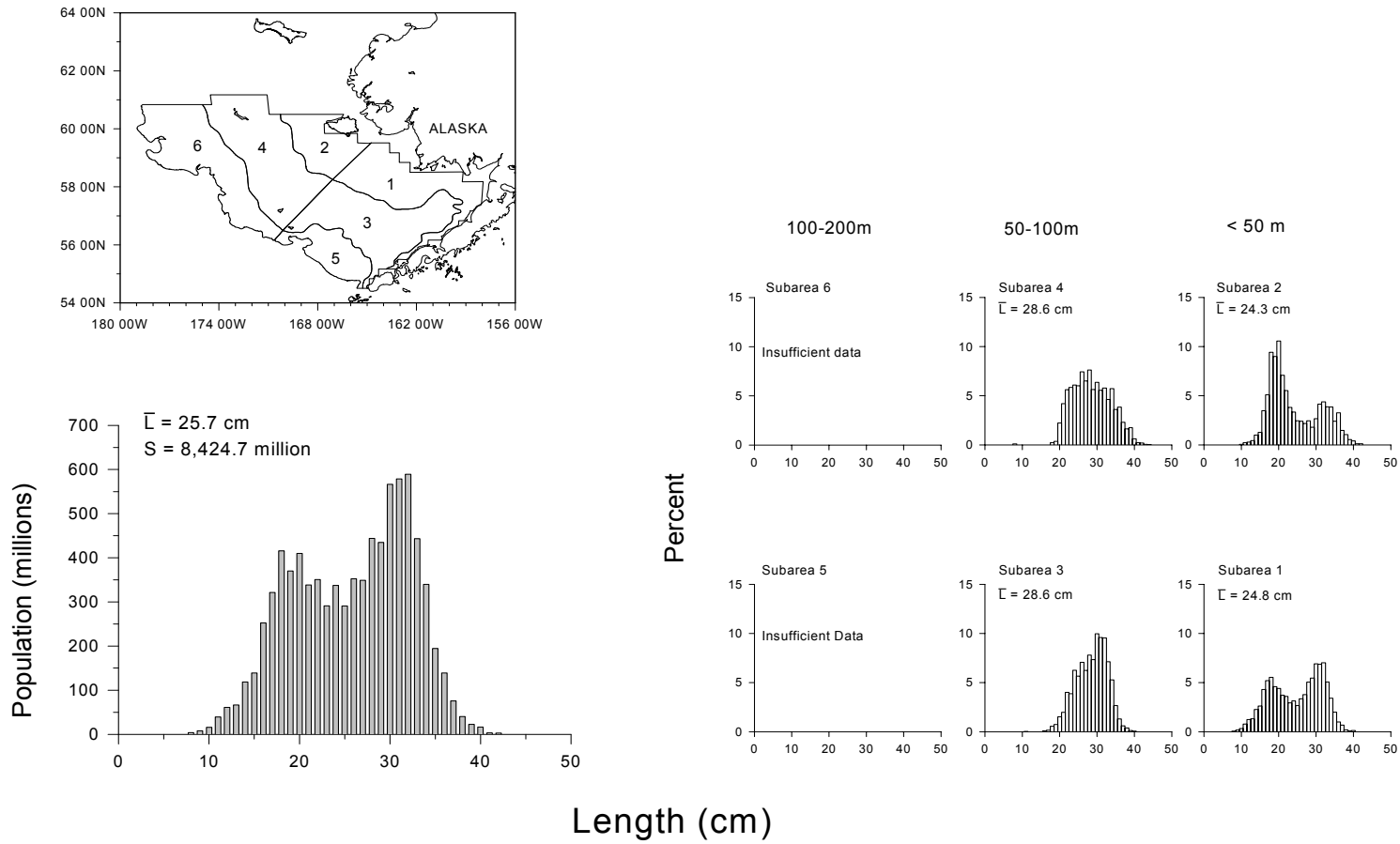


Figure 14.--Estimated size distribution (sexes combined) of yellowfin sole in terms of population numbers, and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

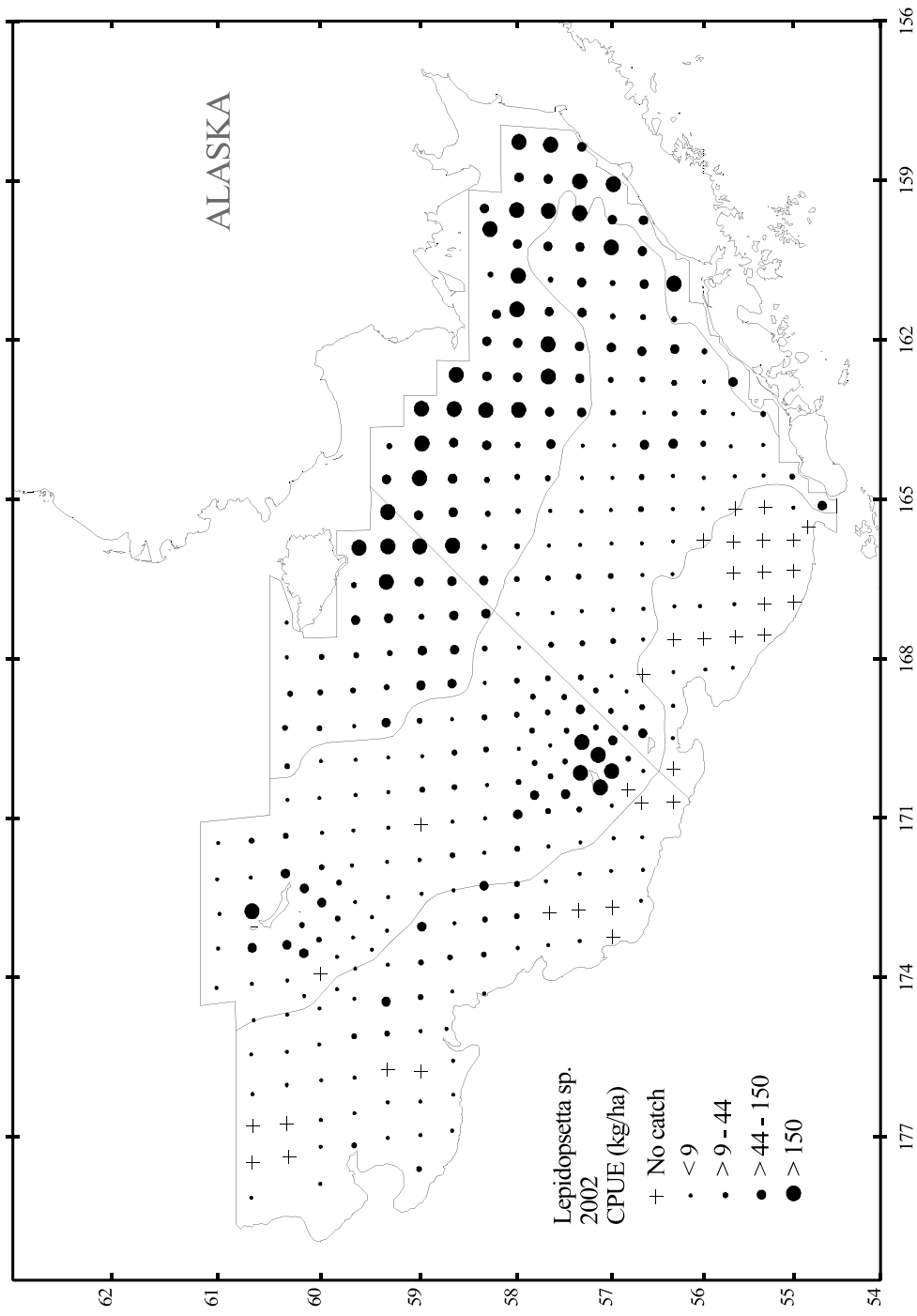


Figure 15.-- Distribution and relative abundance in kg/ha of *Lepidopsetta* spp., 2002 eastern Bering Sea bottom trawl survey.

Table 12.--Abundance estimates and mean size of *Lepidopsetta* spp. by subarea, 2002 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)	Length (cm)
1	117.53	915,212	0.481	3,591,397,107	0.547	0.255	26.6
2	63.76	261,600	0.138	744,326,392	0.113	0.351	29.7
3	26.42	272,894	0.143	1,160,302,366	0.177	0.235	25.8
4	37.06	399,640	0.210	985,047,116	0.150	0.406	30.9
5	0.50	1,951	0.001	4,162,086	0.001	0.469	32.5
6	5.35	50,561	0.027	80,487,385	0.012	0.628	33.6
All subareas combined ^b	41.04	1,901,858	1.000	6,565,722,452	1.000	0.290	27.5
95% Confidence interval		±345,640		±965,236,584			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

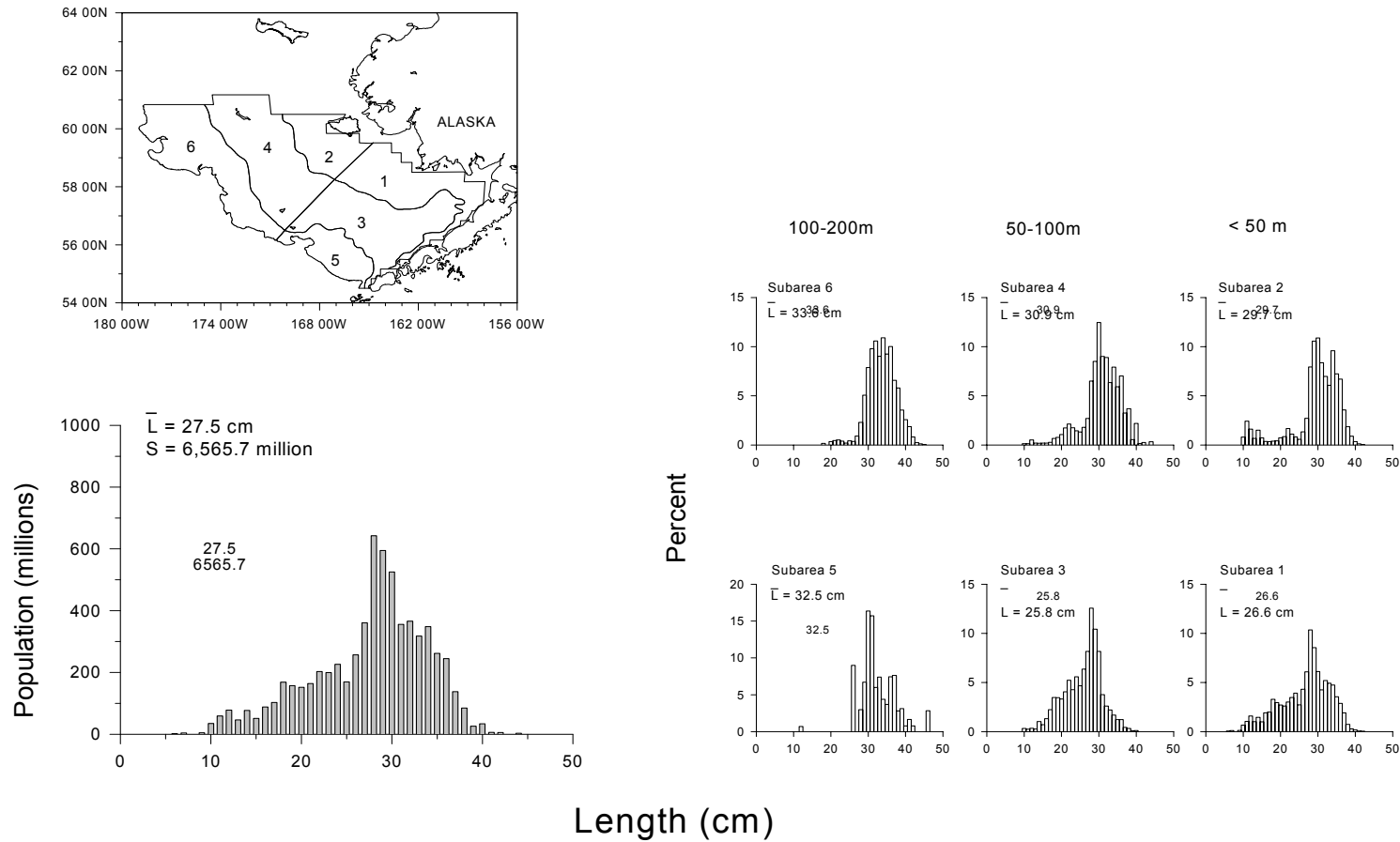


Figure 16.--Estimated relative size distribution (sexes combined) of *Lepidopsetta* spp. in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

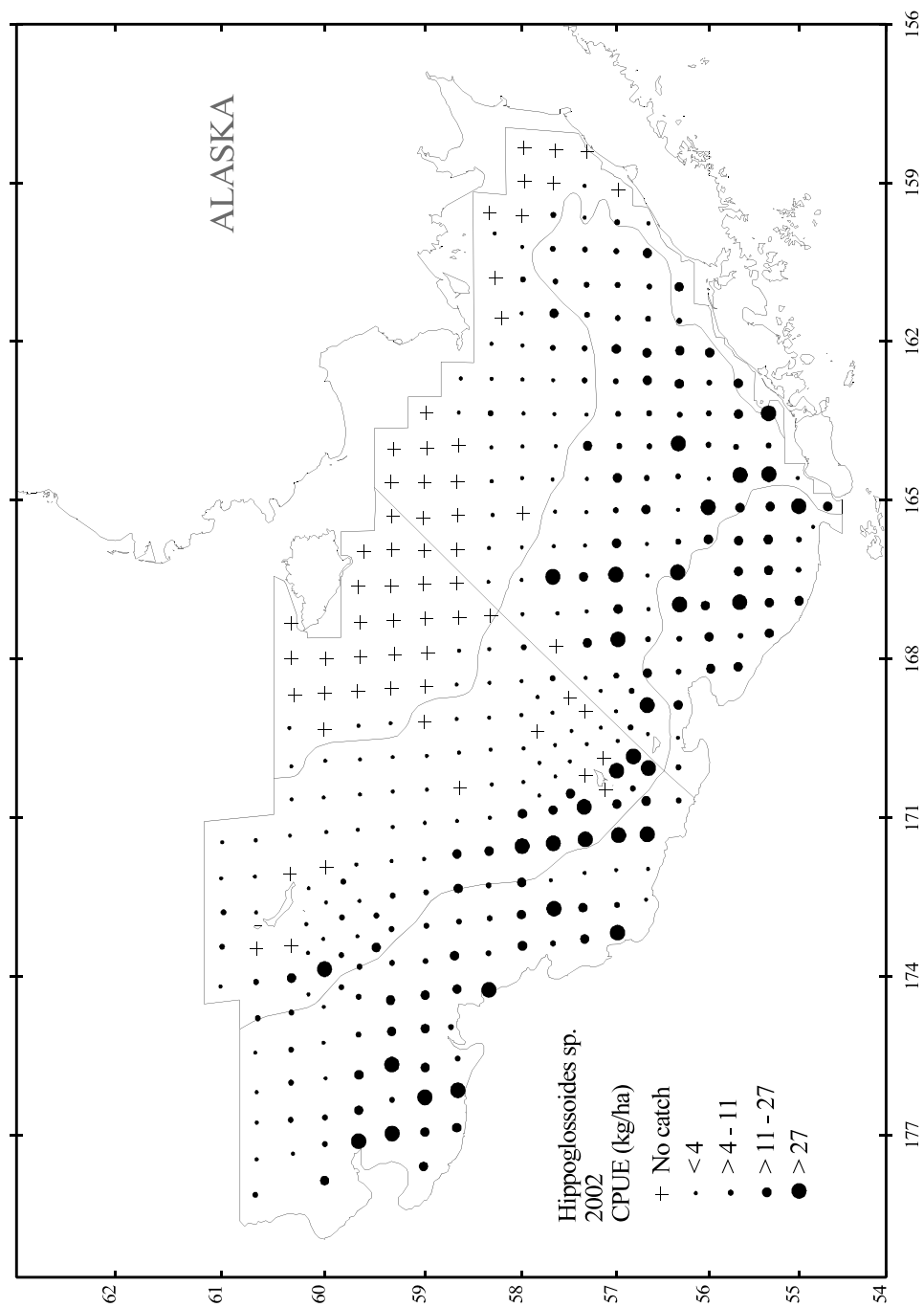


Figure 17.-- Distribution and relative abundance in kg/ha of *Hippoglossoides* spp., 2002 eastern Bering Sea bottom trawl survey.

Table 13.--Abundance estimates and mean size of *Hippoglossoides* spp. by subarea, 2002 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	2.93	22,843	0.040	48,470,062	0.031	0.471	35.0
2	0.08	330	0.001	740,335	0.000	0.446	33.8
3	15.70	162,219	0.282	433,986,077	0.276	0.374	32.1
4	10.64	114,715	0.200	218,500,944	0.139	0.525	34.3
5	16.93	65,664	0.114	267,573,271	0.170	0.245	28.4
6	22.12	209,175	0.364	600,458,508	0.383	0.348	30.4
All subareas combined ^b	12.41	574,946	1.000	1,569,729,197	1.000	0.366	31.2
95% Confidence interval		±205,361		±375,907,258			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

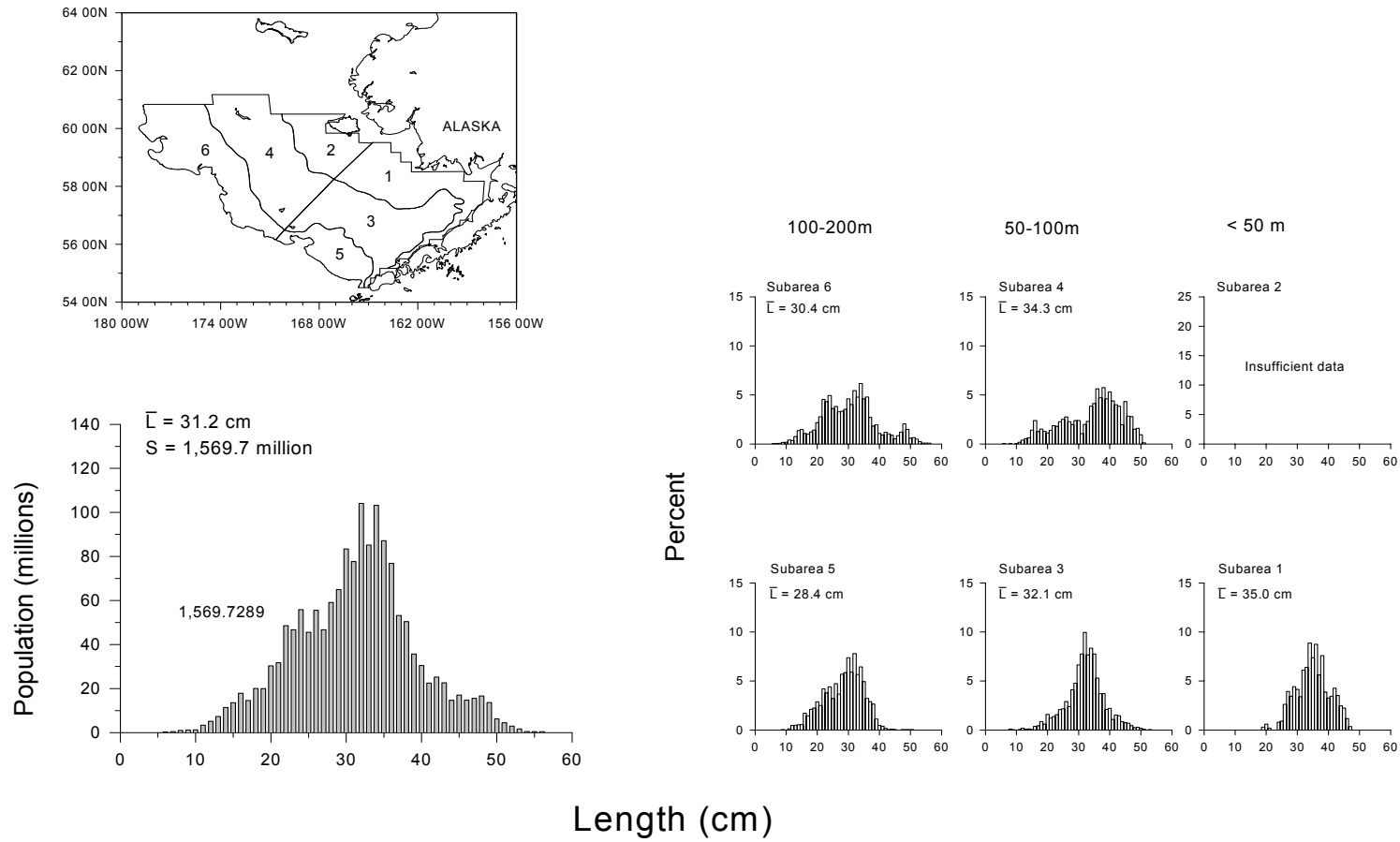


Figure 18.--Estimated relative size distribution (sexes combined) of *Hippoglossoides* spp. in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

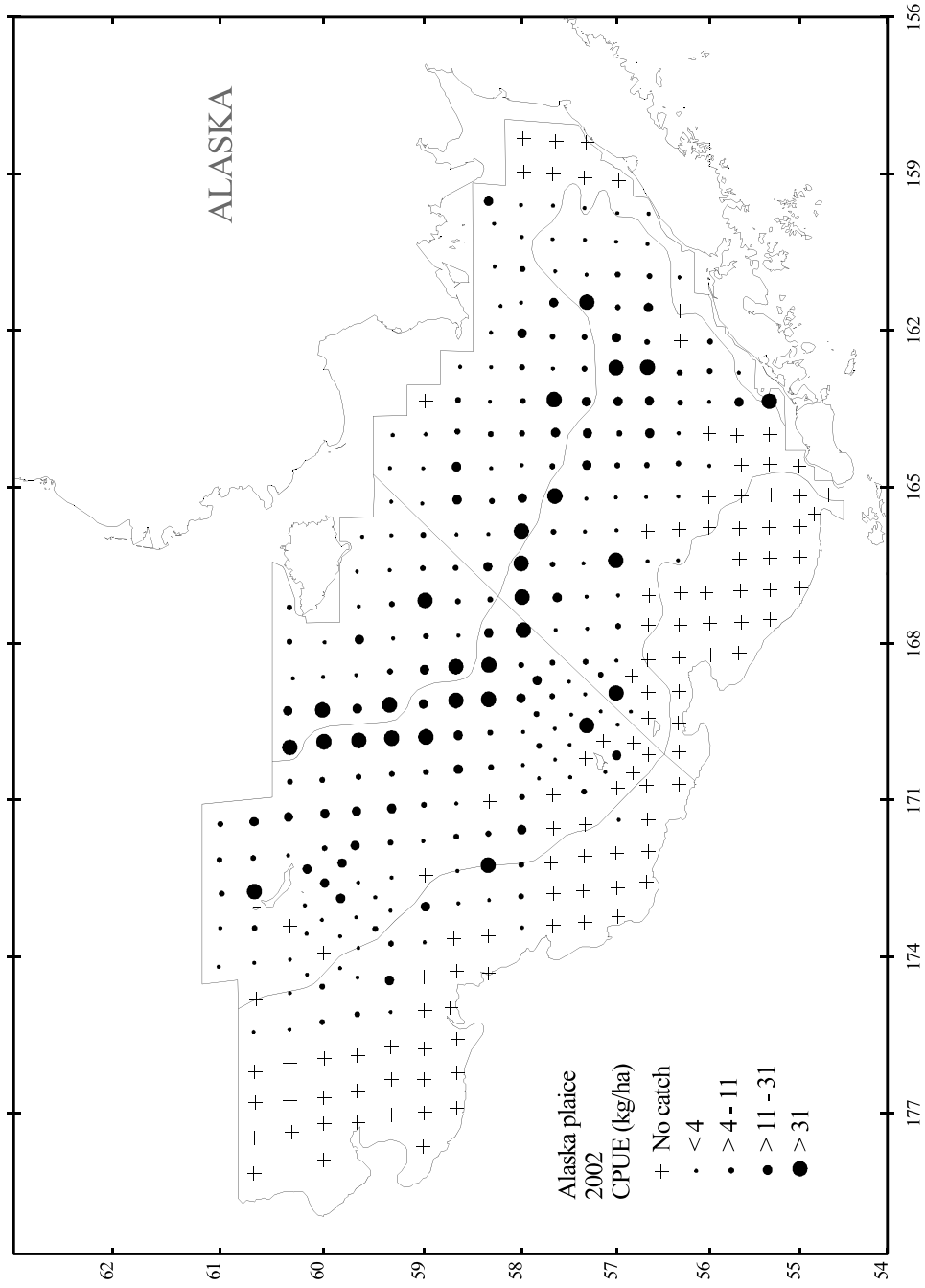


Figure 19.-- Distribution and relative abundance in kg/ha of Alaska plaice, 2002 eastern Bering Sea bottom trawl survey.

Table 14.--Abundance estimates and mean size of Alaska plaice by subarea, 2002 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	6.15	47,904	0.113	112,147,417	0.169	0.427	30.9
2	17.21	70,606	0.166	156,523,007	0.236	0.451	31.6
3	9.59	99,081	0.233	136,779,759	0.206	0.724	36.9
4	17.21	185,583	0.437	243,267,401	0.367	0.763	37.4
5	0.00	0	0.000	0	0.000	0.000	0.0
6	2.31	21,798	0.051	13,874,571	0.021	1.571	46.7
All subareas combined ^b	9.17	424,971	1.000	662,592,155	1.000	0.641	35.0
95% Confidence interval		±107,546		±166,312,129			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

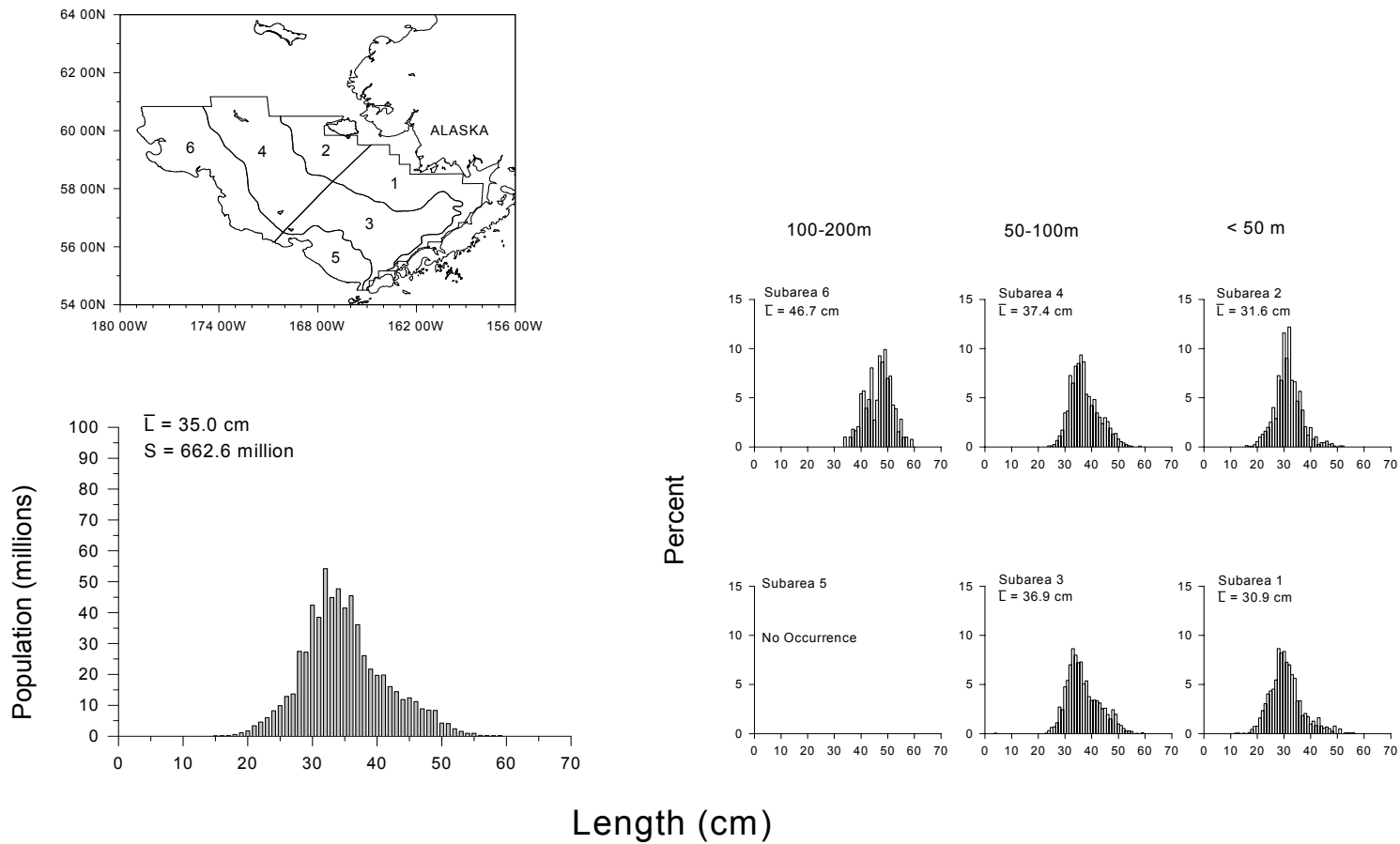


Figure 20.--Estimated relative size distribution (sexes combined) of Alaska plaice in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

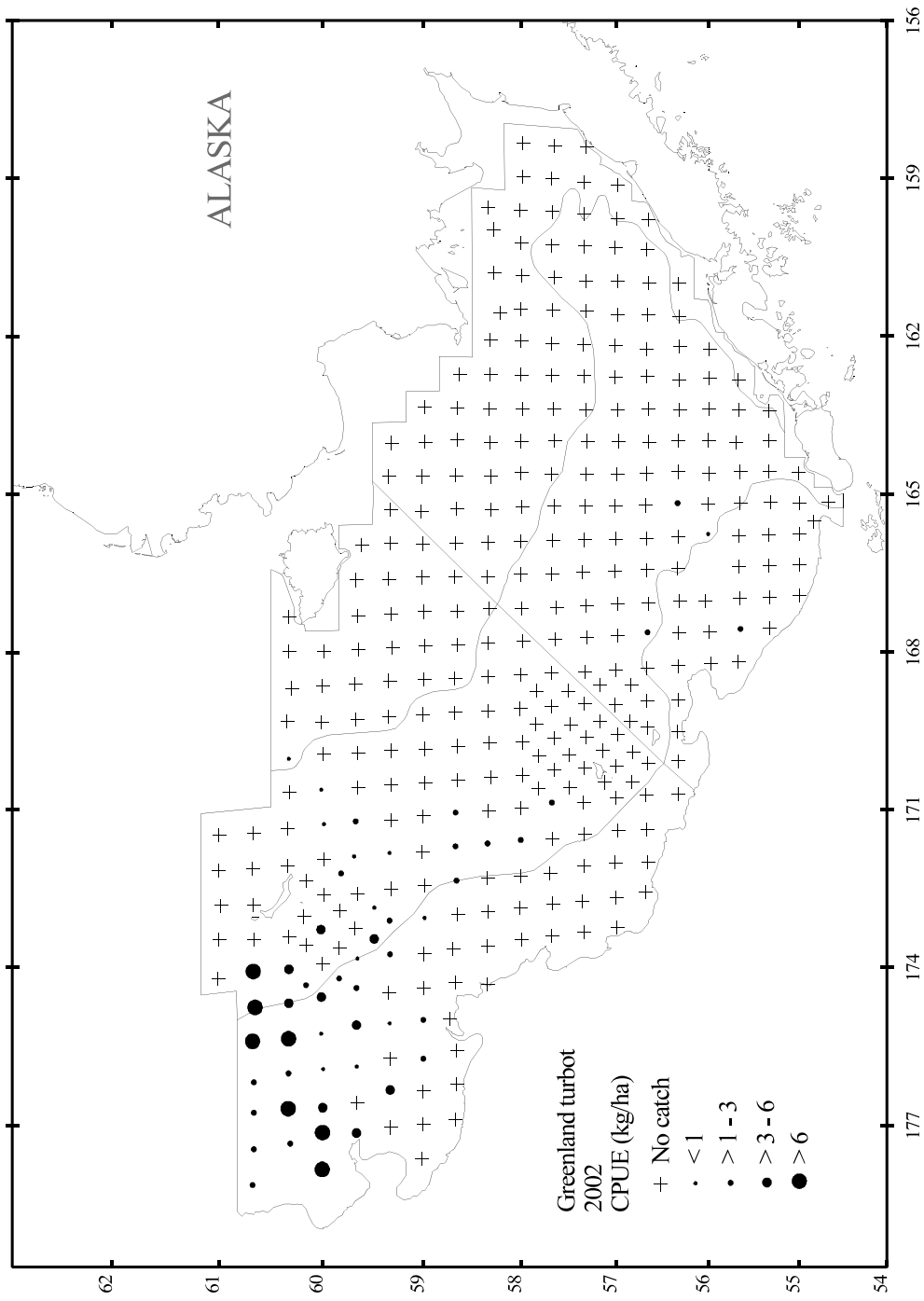


Figure 21.-- Distribution and relative abundance in kg/ha of Greenland turbot, 2002 eastern Bering Sea bottom trawl survey.

Table 15.--Abundance estimates and mean size of Greenland turbot by subarea, 2002 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	28,261	0.004	0.000	9.0
3	0.06	625	0.029	107,263	0.017	5.827	80.8
4	0.57	6,115	0.283	1,278,481	0.202	4.783	64.1
5	0.05	201	0.009	31,672	0.005	6.346	85.0
6	1.55	14,676	0.679	4,898,180	0.772	2.996	52.3
All subareas combined ^b	0.47	21,616	1.000	6,343,857	1.000	3.407	55.2
95% Confidence interval		±9,600		±2,488,991			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

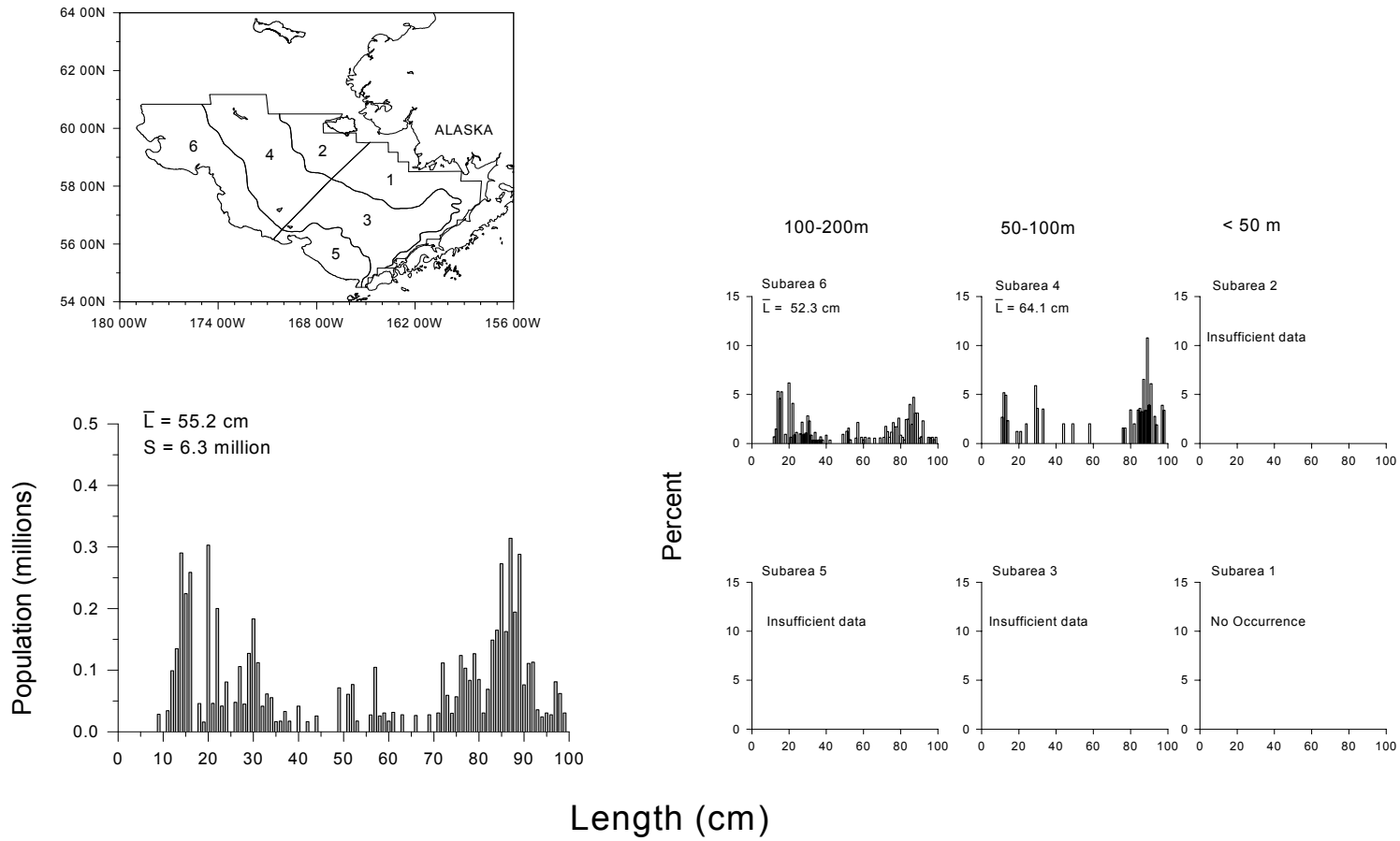


Figure 22.--Estimated relative size distribution (sexes combined) of Greenland turbot in terms of population number and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

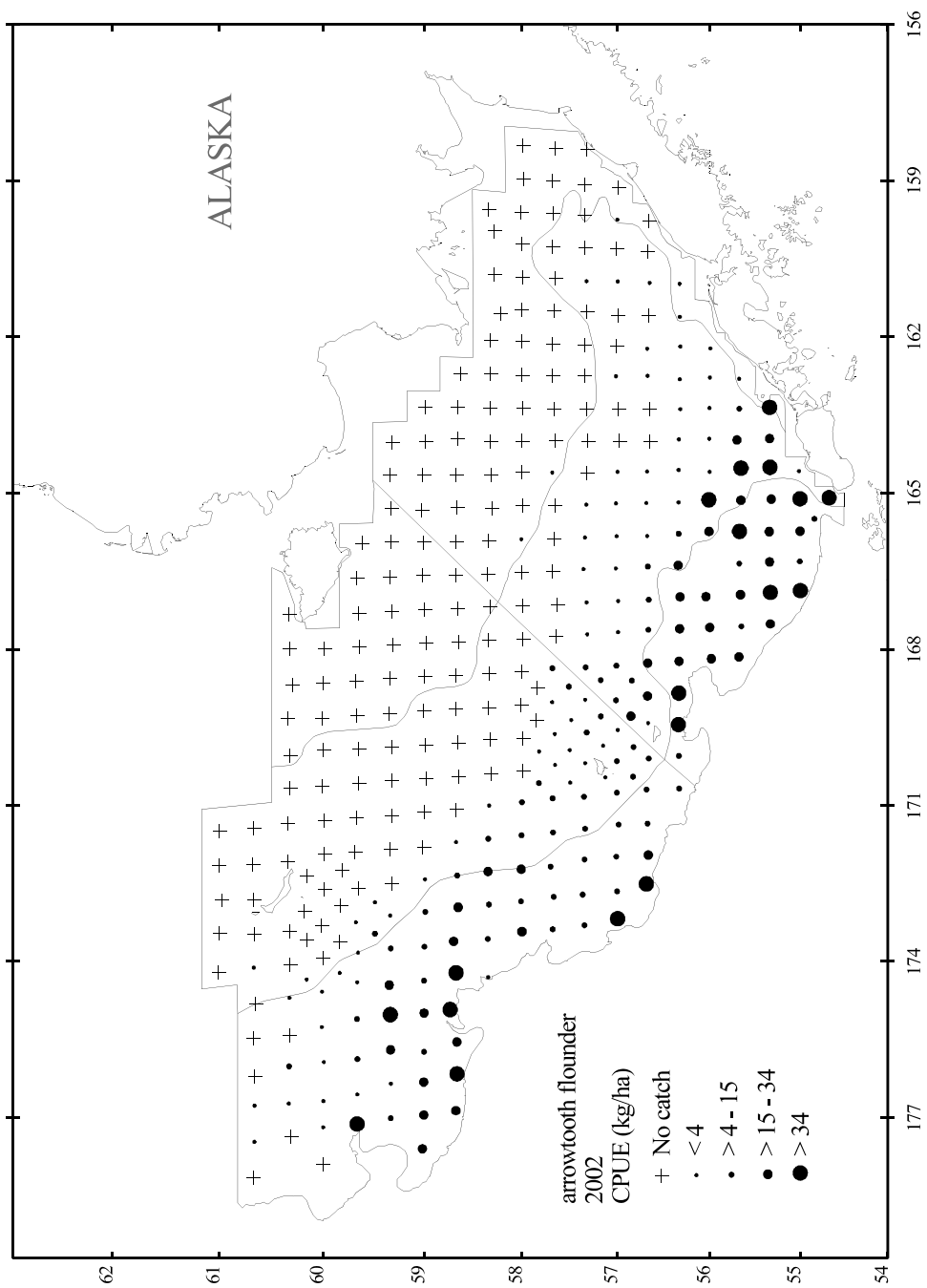


Figure 23.-- Distribution and relative abundance in kg/ha of arrowtooth flounder, 2002 eastern Bering Sea bottom trawl survey.

Table 16.--Abundance estimates and mean size of arrowtooth by subarea, 2002 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	0.08	642	0.002	5,996,785	0.009	0.107	22.0
2	0.00	0	0.000	0	0.000	0.000	0.0
3	8.54	88,240	0.267	277,963,647	0.420	0.317	30.4
4	1.34	14,480	0.044	26,973,111	0.041	0.537	34.5
5	23.96	92,944	0.282	212,655,935	0.321	0.437	33.6
6	14.13	133,603	0.405	137,874,220	0.208	0.969	44.2
All subareas combined ^b	7.12	329,908	1.000	661,463,697	1.000	0.499	34.4
95% Confidence interval		±62,368		±161,927,568			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

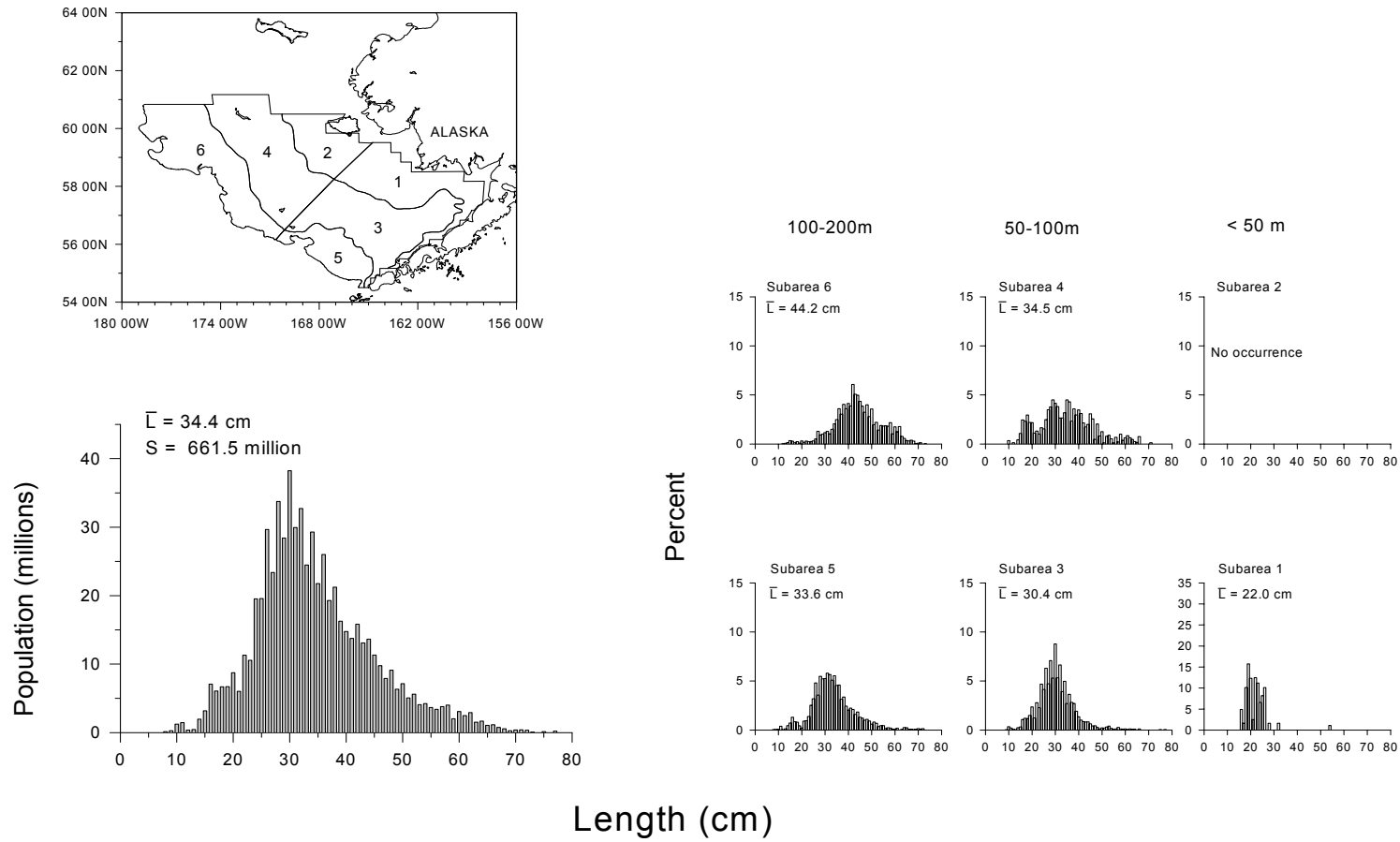


Figure 24.--Estimated relative size distribution (sexes combined) of arrowtooth flounder in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

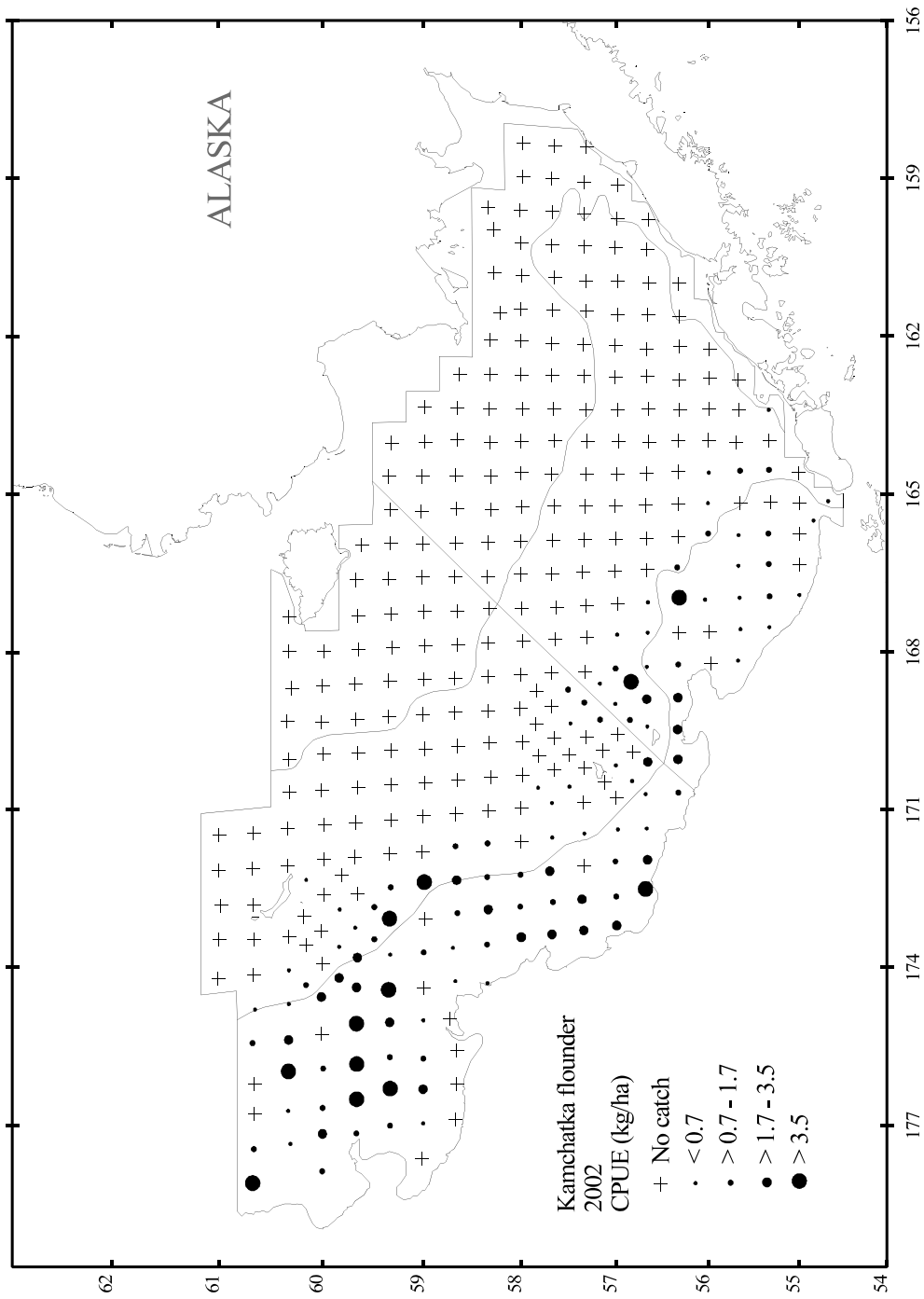


Figure 25.-- Distribution and relative abundance in kg/ha of Kamchatka flounder, 2002 eastern Bering Sea bottom trawl survey.

Table 17.--Abundance estimates and mean size of Kamchatka flounder by subarea, 2002 eastern

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	0.18	1,842	0.073	5,683,933	0.130	0.324	28.5
4	0.42	4,478	0.178	3,509,208	0.080	1.276	46.5
5	0.69	2,692	0.107	8,953,875	0.205	0.301	27.6
6	1.71	16,189	0.642	25,485,409	0.584	0.635	35.9
All subareas combined ^b	0.54	25,201	1.000	43,632,425	1.000	0.578	34.1
95% Confidence interval		±6,261		±9,932,136			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

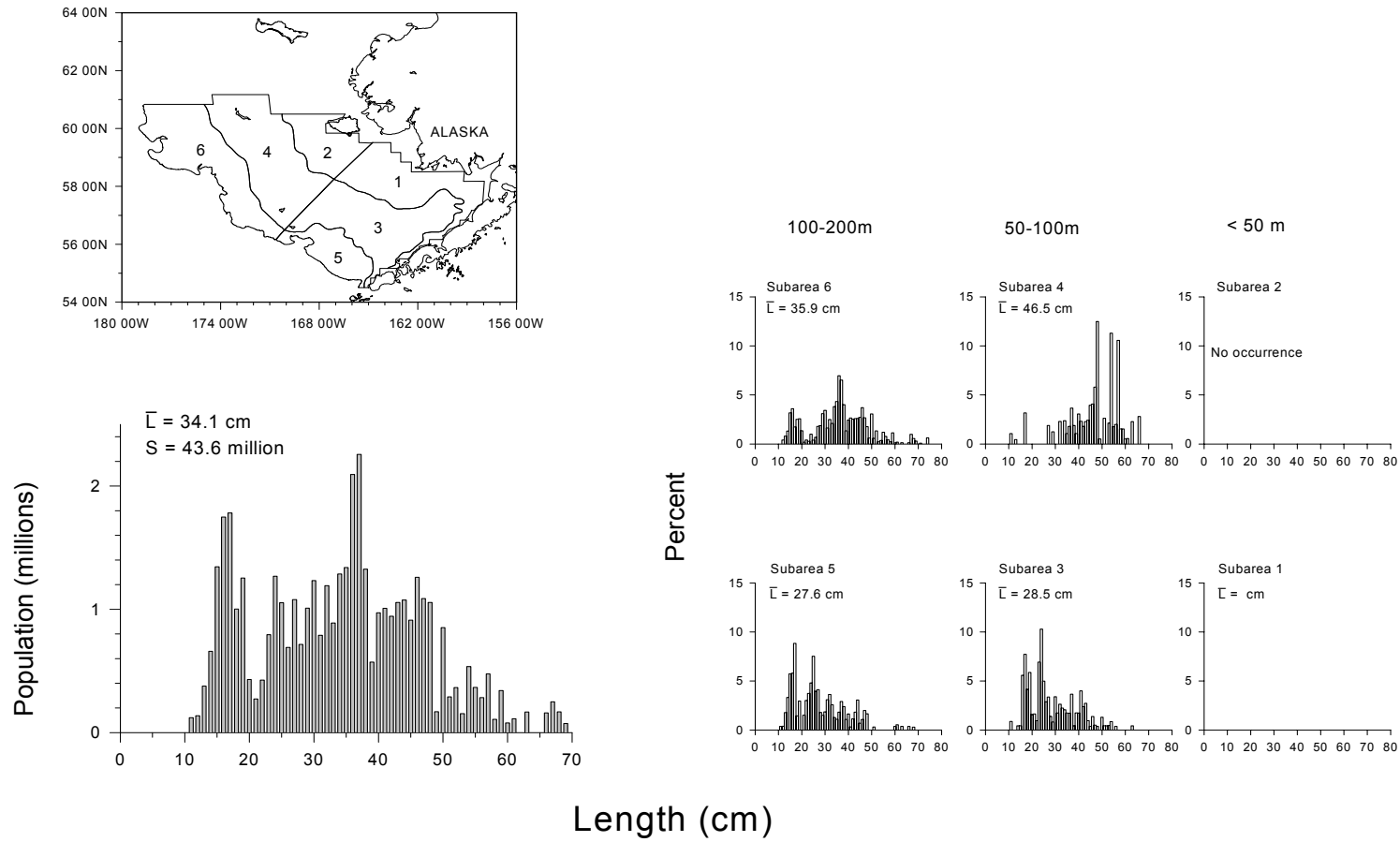


Figure 26.--Estimated relative size distribution (sexes combined) of Kamchatka flounder in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

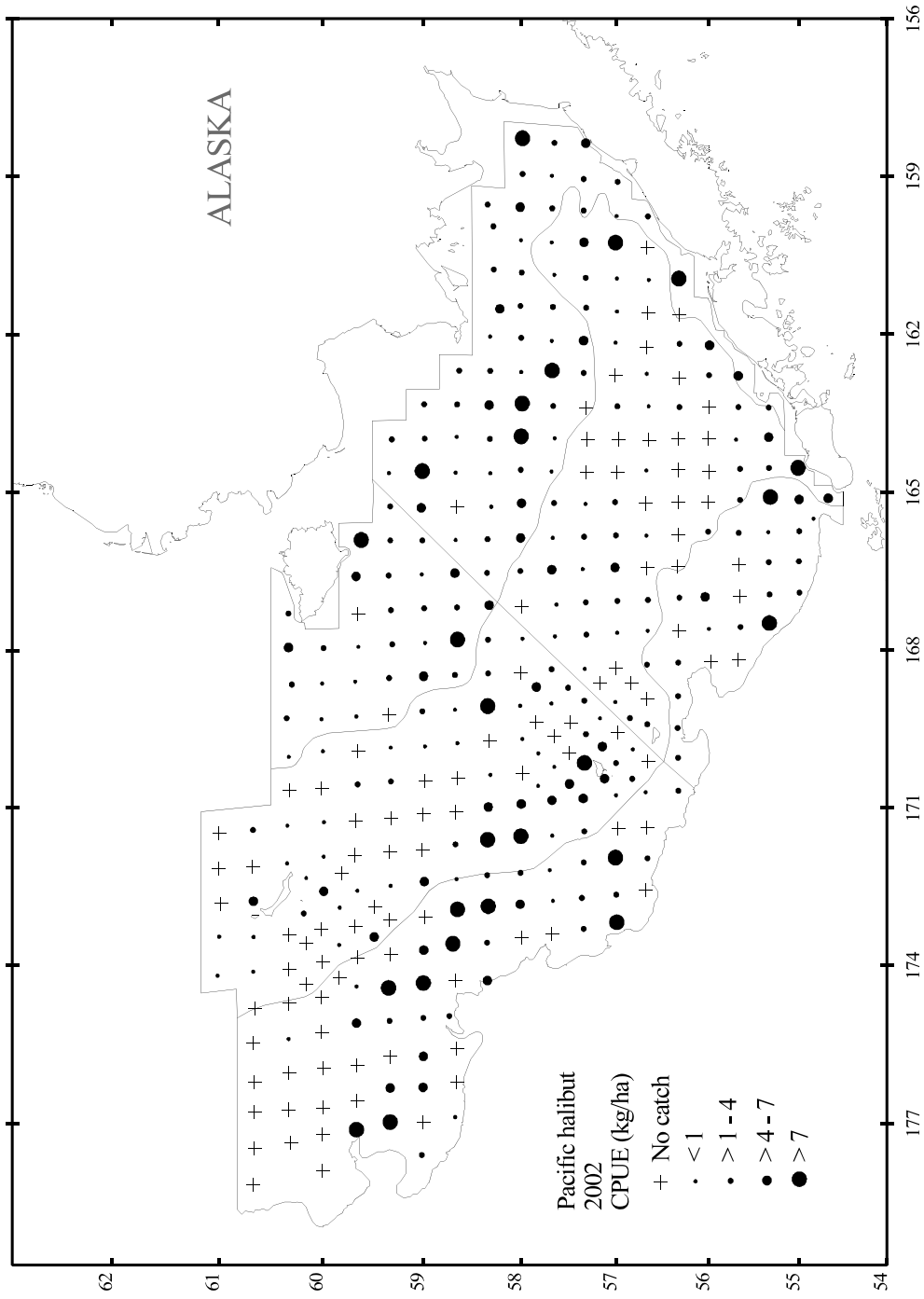


Figure 27.-- Distribution and relative abundance in kg/ha of Pacific halibut, 2002 eastern Bering Sea bottom trawl survey.

Table 18.--Abundance estimates and mean size of Pacific halibut by subarea, 2002 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)	Length (cm)
1	2.98	23,192	0.230	16,713,020	0.426	1.388	41.5
2	3.06	12,534	0.124	6,741,911	0.172	1.859	51.2
3	1.62	16,762	0.166	5,721,948	0.146	2.929	56.1
4	1.47	15,843	0.157	4,779,109	0.122	3.315	57.7
5	2.23	8,648	0.086	1,227,743	0.031	7.044	78.9
6	2.52	23,876	0.237	4,046,398	0.103	5.901	75.6
All subareas combined ^b	2.18	100,854	1.000	39,230,128	1.000	2.571	51.9
95% Confidence interval		±14,904		±7,993,621			

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

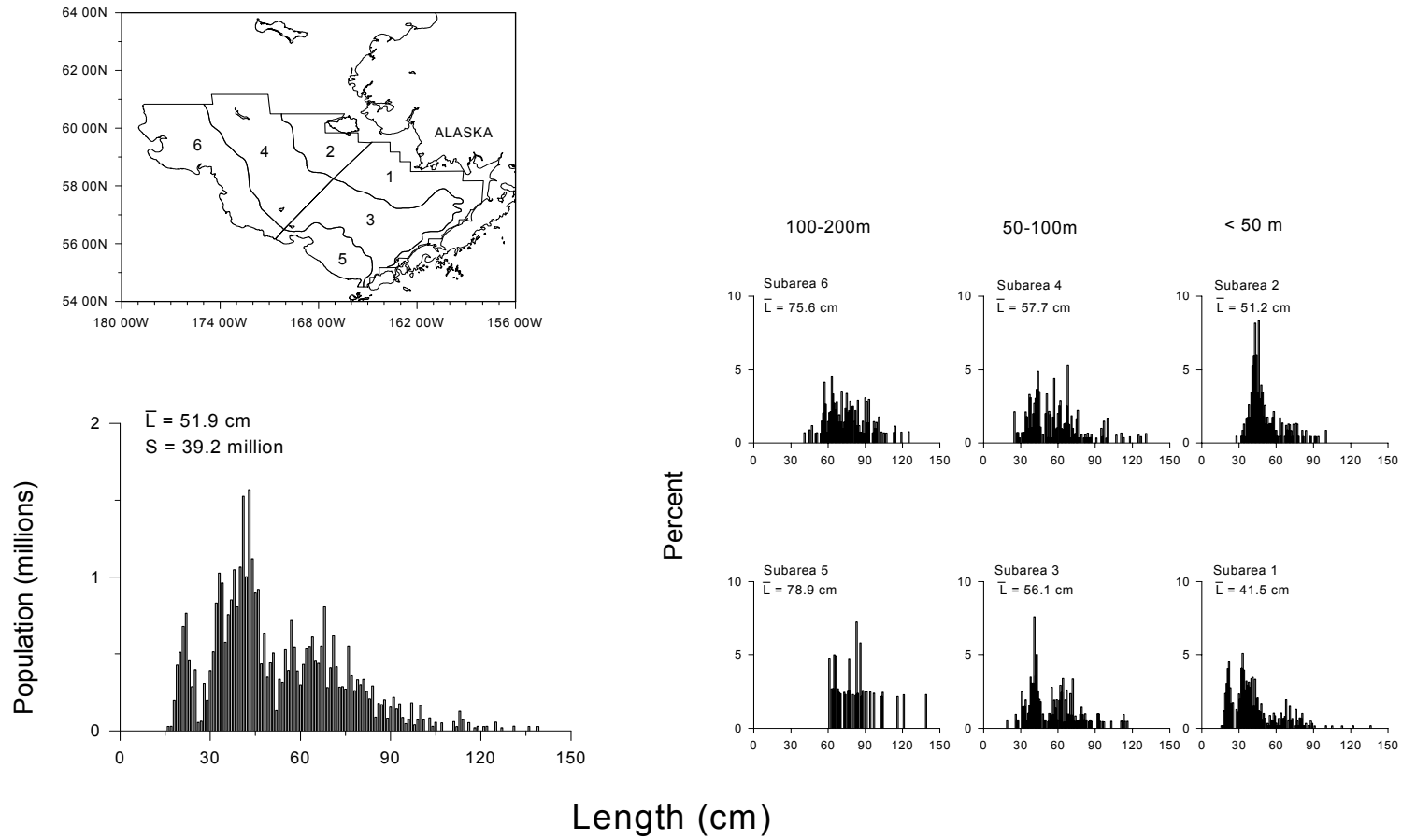


Figure 28.--Estimated relative size distribution (sexes combined) of Pacific halibut in terms of population numbers and percent for subareas 1-6, 2002 eastern Bering Sea bottom trawl survey.

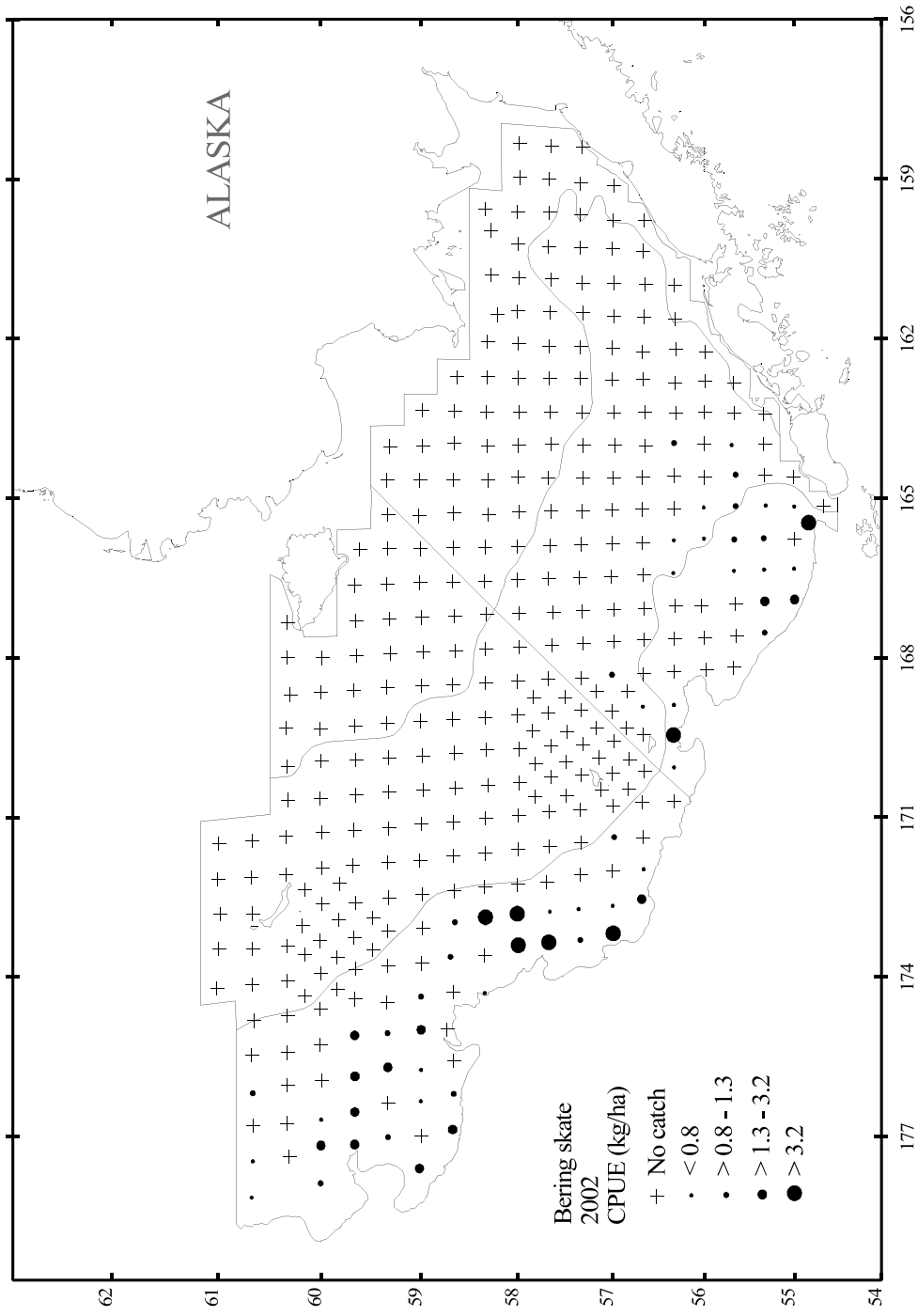


Figure 29.-- Distribution and relative abundance in kg/ha of Bering skate, 2002 eastern Bering Sea bottom trawl survey.

Table 19.--Abundance estimates and mean size of Bering skate by subarea, 2002 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 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	0.07	774	0.062	481,794	0.080	1.606
4	0.00	0	0.000	0	0.000	0.000
5	0.79	3,072	0.246	1,954,909	0.325	1.571
6	0.92	8,665	0.693	3,586,244	0.595	2.416
All subareas combined ^b	0.27	12,511	1.000	6,022,948	1.000	2.077
95% Confidence interval		±3,981		±1,952,655		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

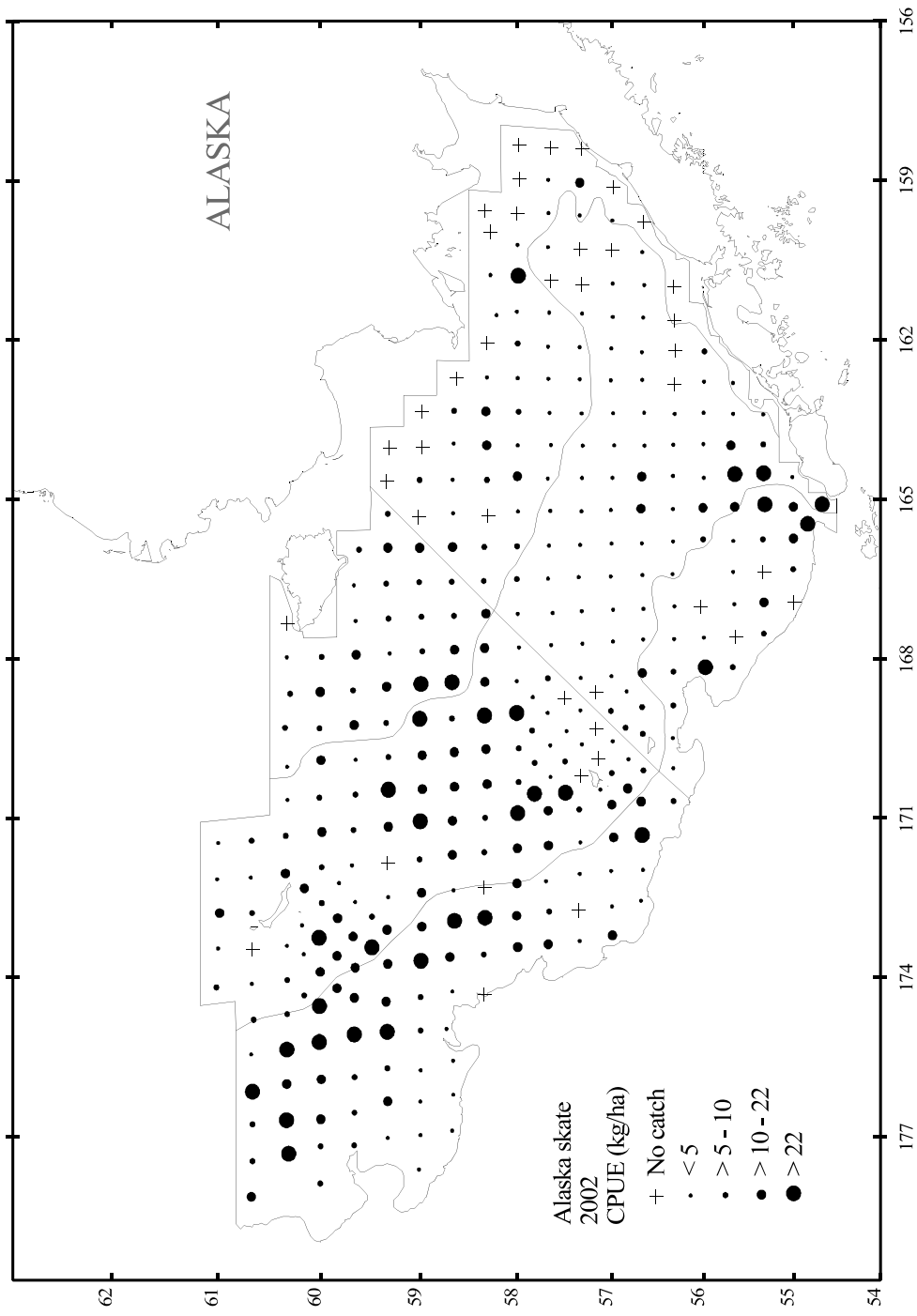


Figure 30.-- Distribution and relative abundance in kg/ha of Alaska skate, 2002 eastern Bering Sea bottom trawl survey.

Table 20.--Abundance estimates and mean weight of Alaska skate by subarea, 2002 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 weight (kg)
1	3.93	30,616	0.079	9,567,286	0.080	3.200
2	10.31	42,286	0.109	14,662,342	0.123	2.884
3	4.78	49,378	0.127	24,166,118	0.203	2.043
4	10.34	111,444	0.286	40,609,942	0.341	2.744
5	11.03	42,804	0.110	6,980,362	0.059	6.132
6	11.95	112,960	0.290	23,098,006	0.194	4.890
All subareas combined ^b	8.41	389,488	1.000	119,084,056	1.000	3.271
95% Confidence interval		$\pm 49,704$		$\pm 13,583,977$		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

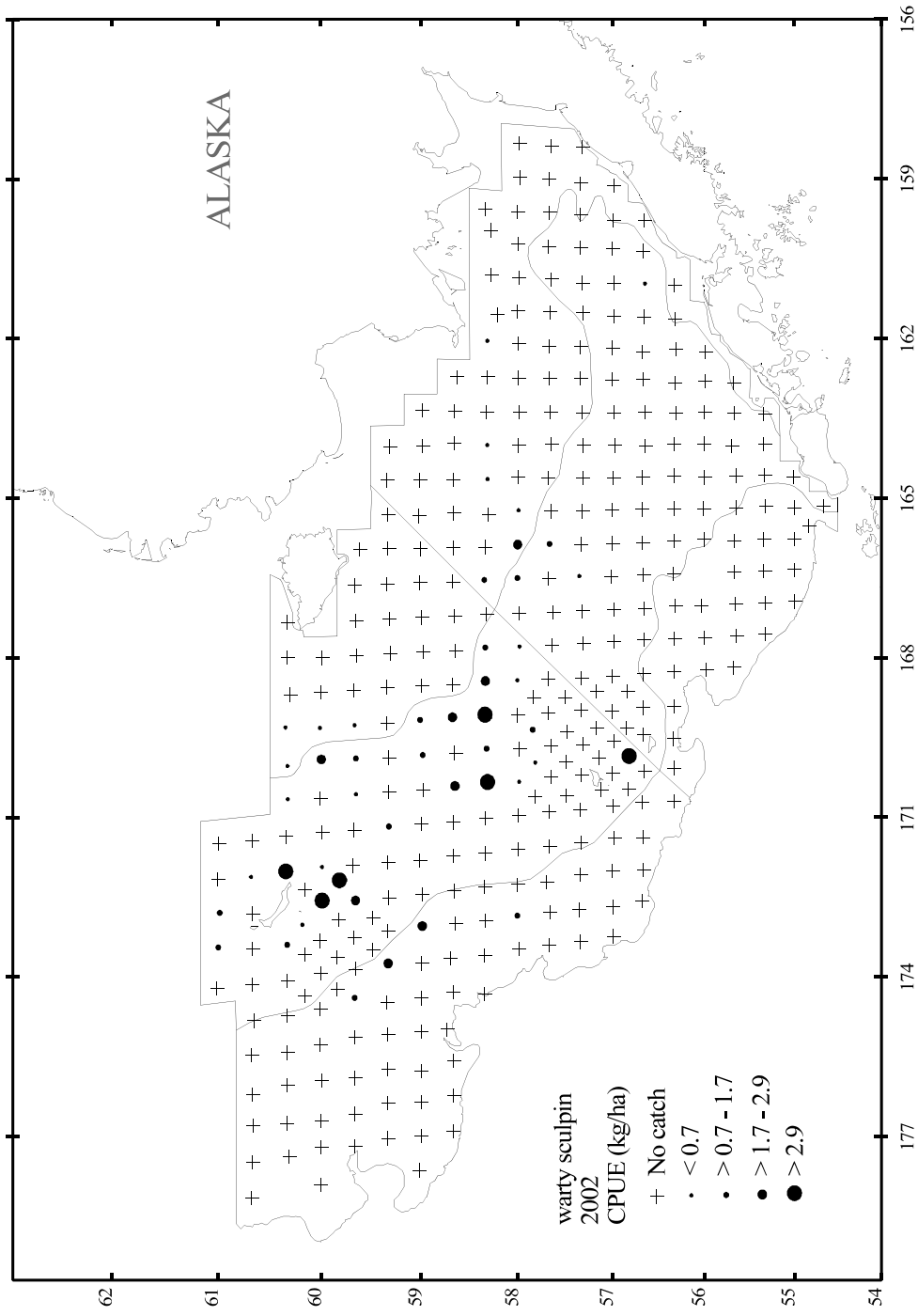


Figure 31.-- Distribution and relative abundance in kg/ha of warty sculpin, 2002 eastern Bering Sea bottom trawl survey.

Table 21.--Abundance estimates and mean weight of warty sculpin by subarea, 2002 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 weight (kg)
1	0.09	673	0.071	828,742	0.106	0.812
2	0.04	171	0.018	209,661	0.027	0.816
3	0.04	412	0.043	371,028	0.047	1.110
4	0.70	7,506	0.788	6,087,185	0.778	1.233
5	0.00	0	0.000	0	0.000	0.000
6	0.08	767	0.080	331,141	0.042	2.316
All subareas combined ^b	0.21	9,530	1.000	7,827,758	1.000	1.217
95% Confidence interval		$\pm 3,958$		$\pm 3,279,908$		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

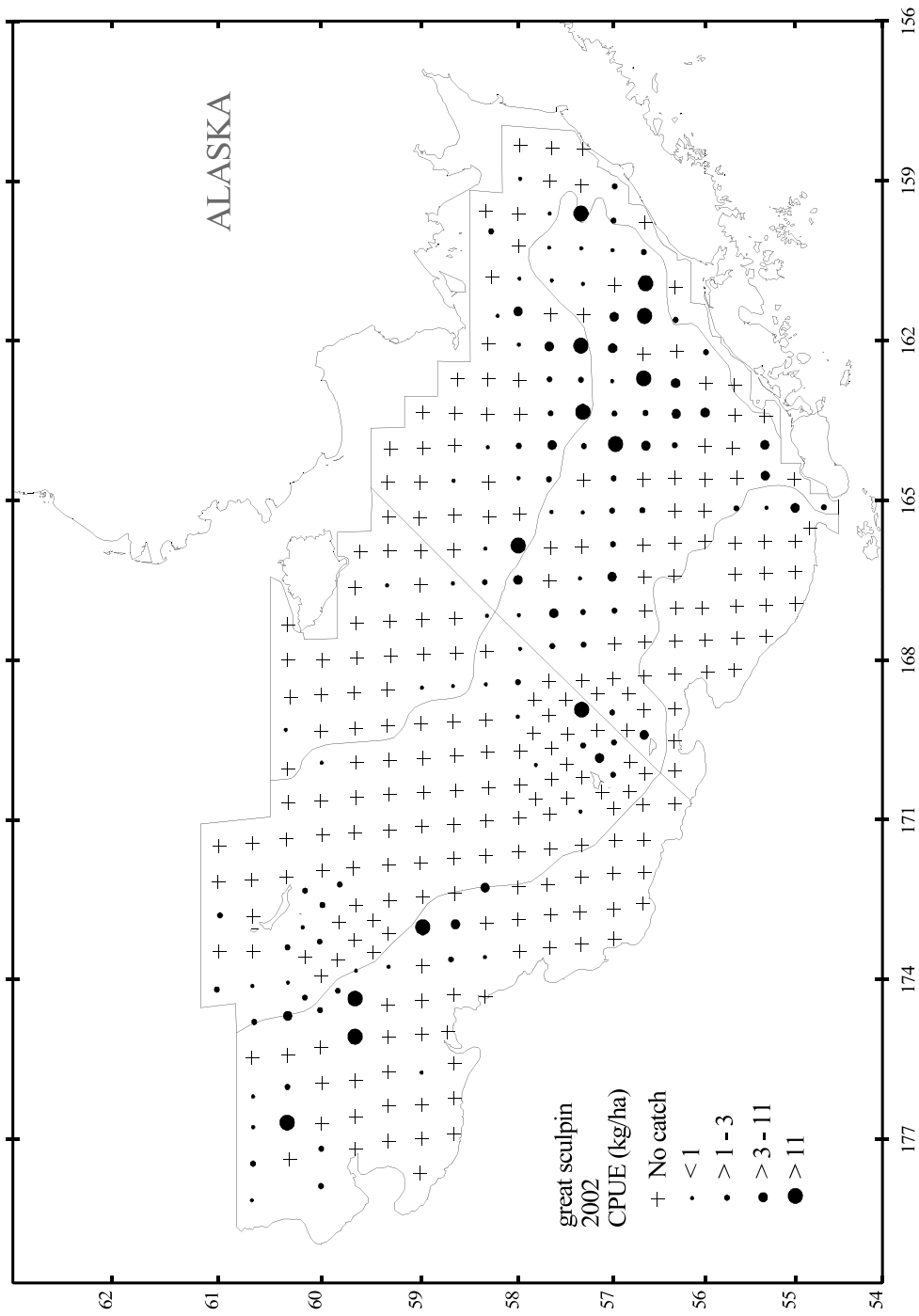


Figure 32.-- Distribution and relative abundance in kg/ha of great sculpin, 2002 eastern Bering Sea bottom trawl survey.

Table 22.--Abundance estimates and mean weight of great sculpin by subarea, 2002 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 weight (kg)
1	1.65	12,832	0.199	5,416,040	0.230	2.369
2	0.07	281	0.004	310,191	0.013	0.906
3	2.27	23,435	0.363	6,777,953	0.287	3.458
4	0.43	4,667	0.072	2,580,289	0.109	1.809
5	0.26	1,008	0.016	288,733	0.012	3.491
6	2.37	22,409	0.347	8,206,415	0.348	2.731
All subareas combined ^b	1.39	64,632	1.000	23,579,621	1.000	2.741
95% Confidence interval		+25,681		+8,777,060		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

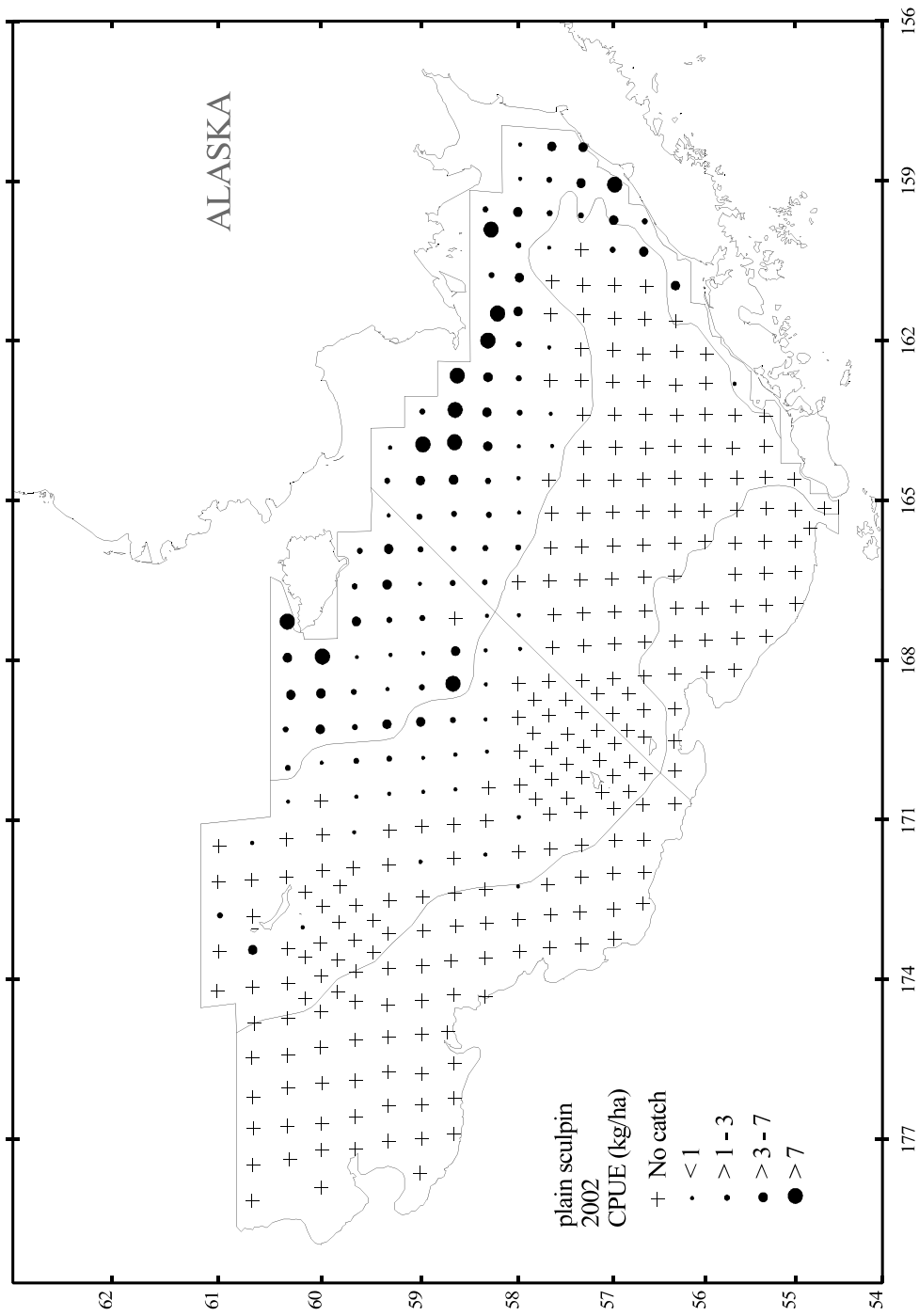


Figure 33.-- Distribution and relative abundance in kg/ha of plain sculpin, 2002 eastern Bering Sea bottom trawl survey.

Table 23.--Abundance estimates and mean weight of plain sculpin by subarea, 2002 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 weight (kg)
1	4.08	31,748	0.607	58,132,213	0.598	0.546
2	4.02	16,512	0.316	35,161,372	0.362	0.470
3	0.08	788	0.015	618,734	0.006	1.274
4	0.29	3,096	0.059	3,133,557	0.032	0.988
5	0.00	0	0.000	0	0.000	0.000
6	0.01	139	0.003	114,630	0.001	1.213
All subareas combined ^b	1.13	52,283	1.000	97,160,505	1.000	0.538
95% Confidence interval		$\pm 17,705$		$\pm 47,525,196$		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

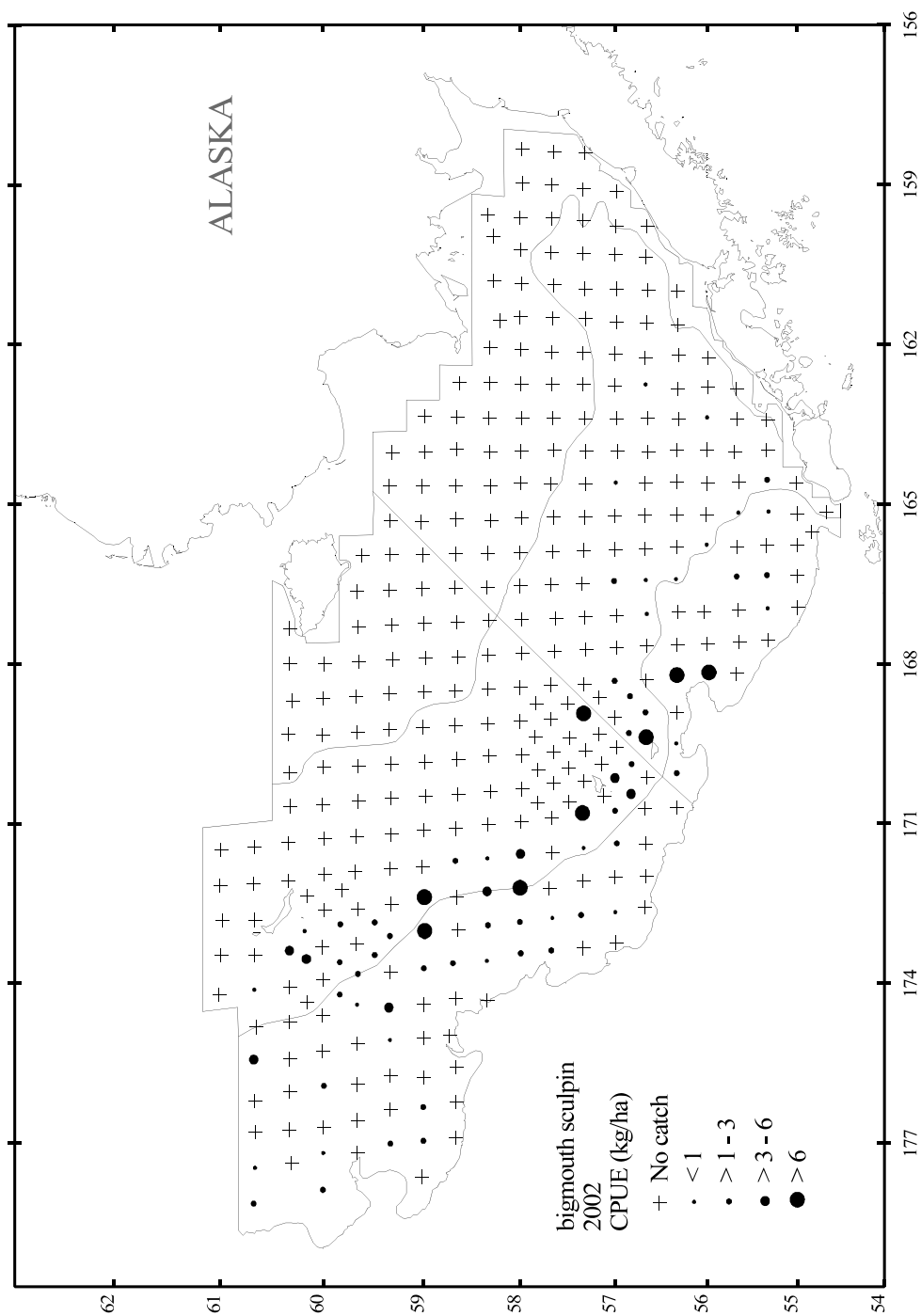


Figure 34.-- Distribution and relative abundance in kg/ha of bigmouth sculpin, 2002 eastern Bering Sea bottom trawl survey.

Table 24.--Abundance estimates and mean weight of bigmouth sculpin by subarea, 2002 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 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	0.27	2,787	0.087	855,862	0.116	3.256
4	0.70	7,507	0.233	1,631,398	0.221	4.602
5	3.32	12,879	0.401	2,448,353	0.332	5.260
6	0.95	8,980	0.279	2,431,280	0.330	3.694
All subareas combined ^b	0.69	32,152	1.000	7,366,893	1.000	4.364
95% Confidence interval		$\pm 22,319$		$\pm 3,968,094$		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

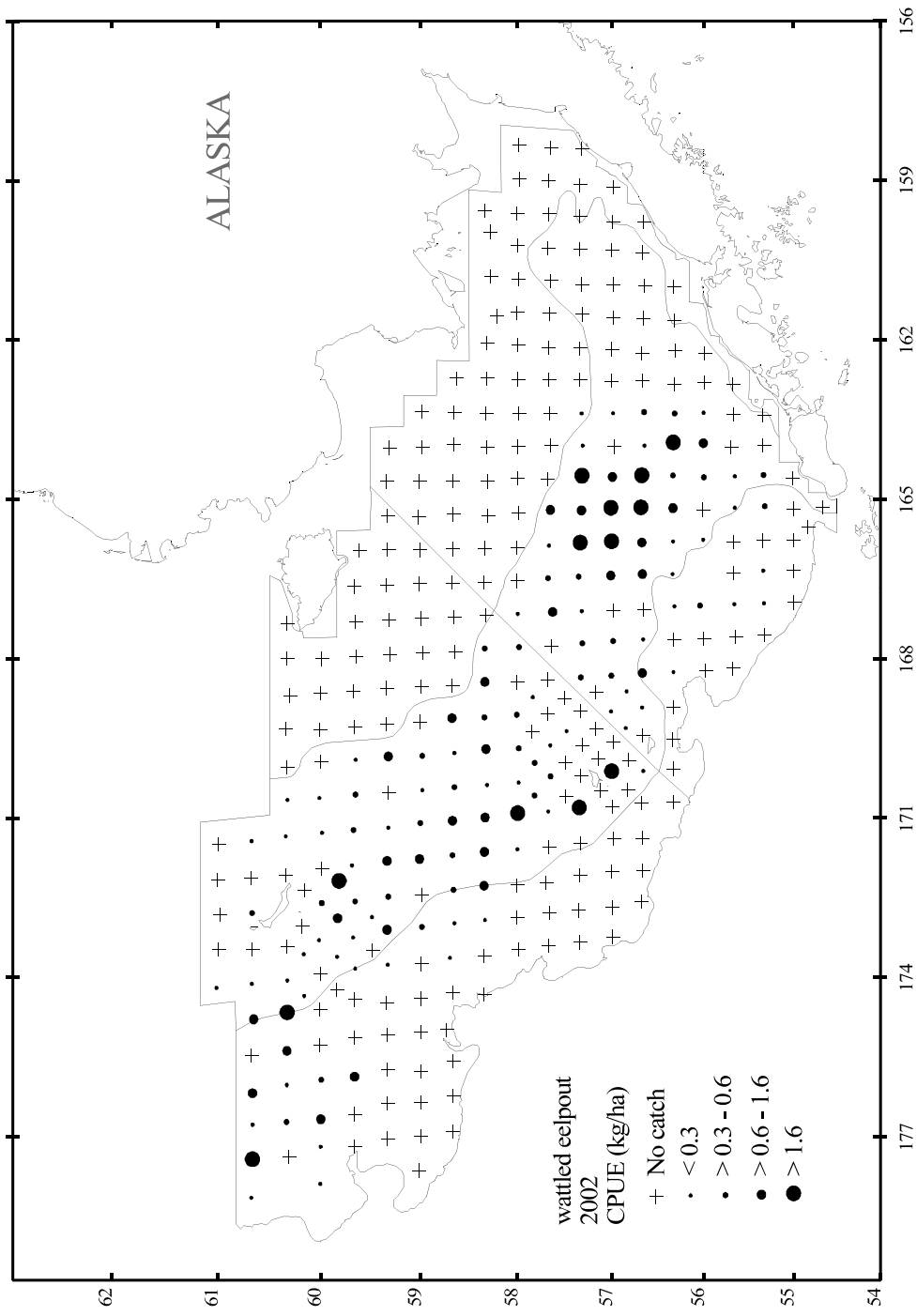


Figure 35.-- Distribution and relative abundance in kg/ha of wattled eelpout, 2002 eastern Bering Sea bottom trawl survey.

Table 25.--Abundance estimates and mean weight of wattled eelpout by subarea, 2002 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 weight (kg)
1	0.00	3	0.000	36,997	0.001	0.081
2	0.00	0	0.000	0	0.000	0.000
3	0.48	4,959	0.470	23,320,688	0.446	0.213
4	0.34	3,687	0.349	18,611,233	0.356	0.198
5	0.09	337	0.032	2,701,110	0.052	0.125
6	0.17	1,567	0.148	7,569,686	0.145	0.207
All subareas combined ^b	0.23	10,554	1.000	52,239,715	1.000	0.202
95% Confidence interval		+2,681		+12,622,650		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

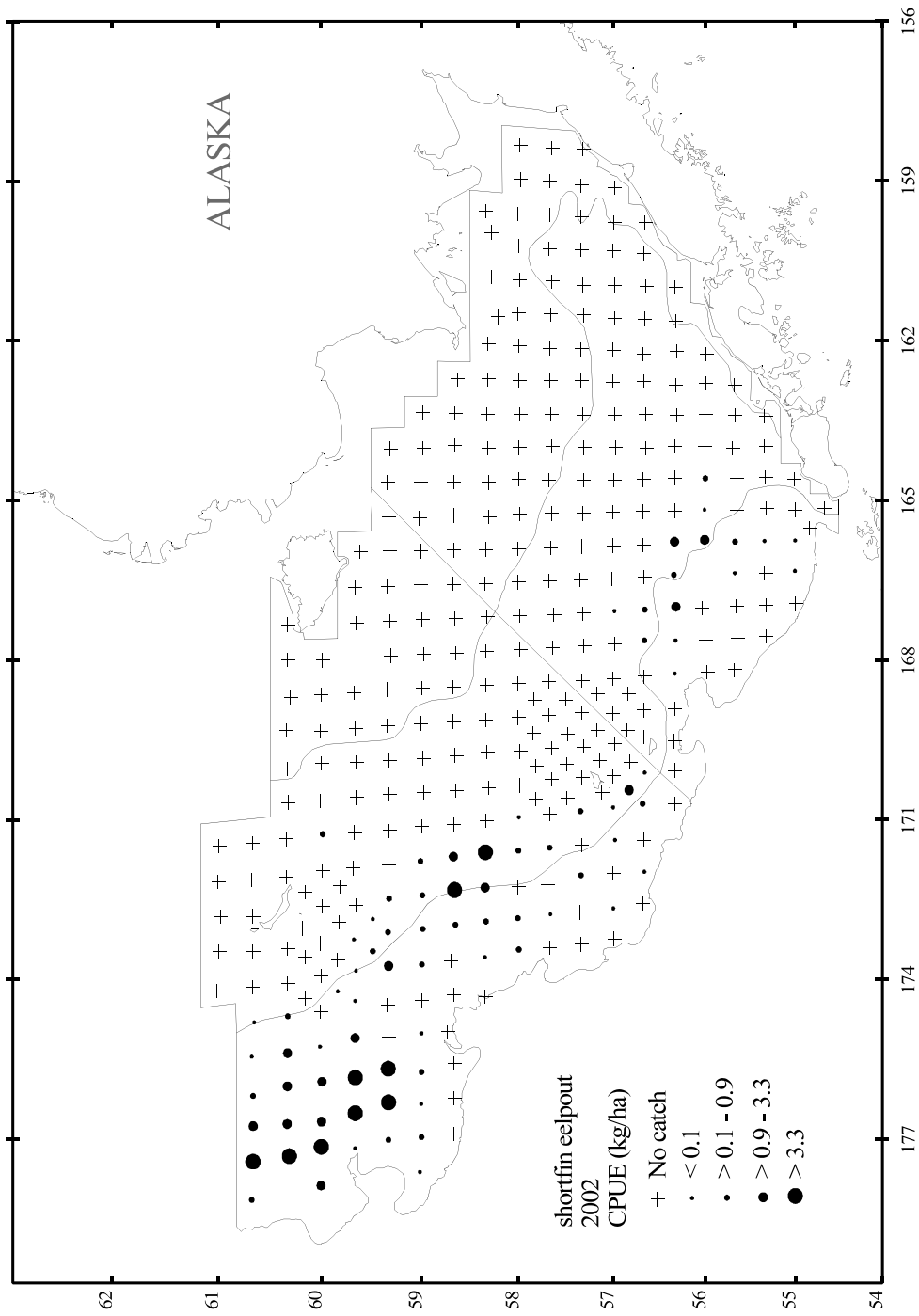


Figure 36.-- Distribution and relative abundance in kg/ha of shortfin eelpout, 2002 eastern Bering Sea bottom trawl survey.

Table 26.--Abundance estimates and mean weight of shortfin eelpout by subarea, 2002 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 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	0.07	681	0.057	14,490,981	0.073	0.047
4	0.12	1,266	0.106	29,661,344	0.149	0.043
5	0.09	356	0.030	6,398,762	0.032	0.056
6	1.02	9,675	0.808	149,112,180	0.747	0.065
All subareas combined ^b	0.26	11,979	1.000	199,663,267	1.000	0.060
95% Confidence interval		+4,678		+69,923,935		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

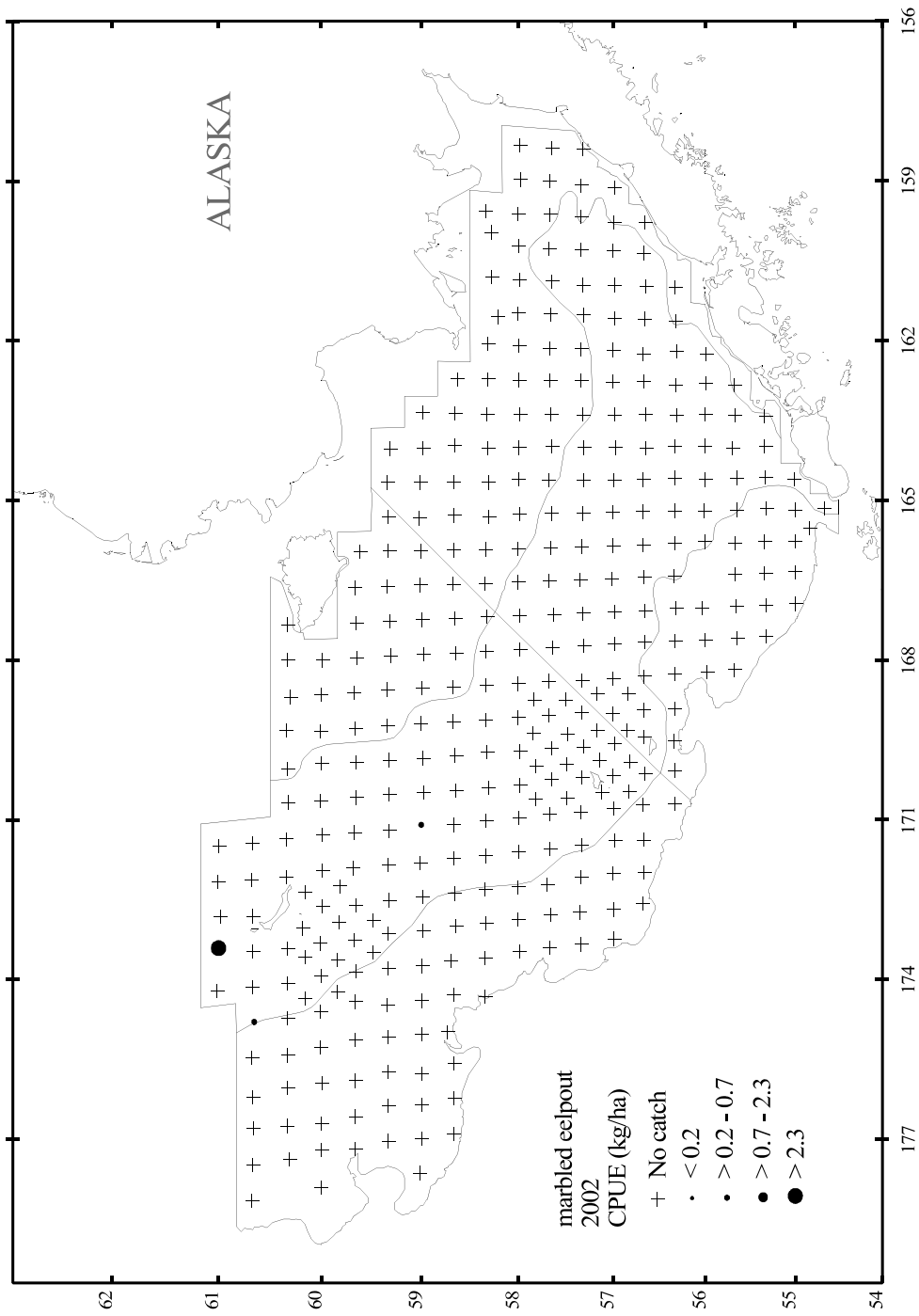


Figure 37.-- Distribution and relative abundance in kg/ha of marbled eelpout, 2002 eastern Bering Sea bottom trawl survey.

Table 27.--Abundance estimates and mean weight of marbled eelpout by subarea, 2002 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 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	0.04	463	1.000	385,233	1.000	1.202
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	0.01	463	1.000	385,233	1.000	1.202
95% Confidence interval		±680		±527,234		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

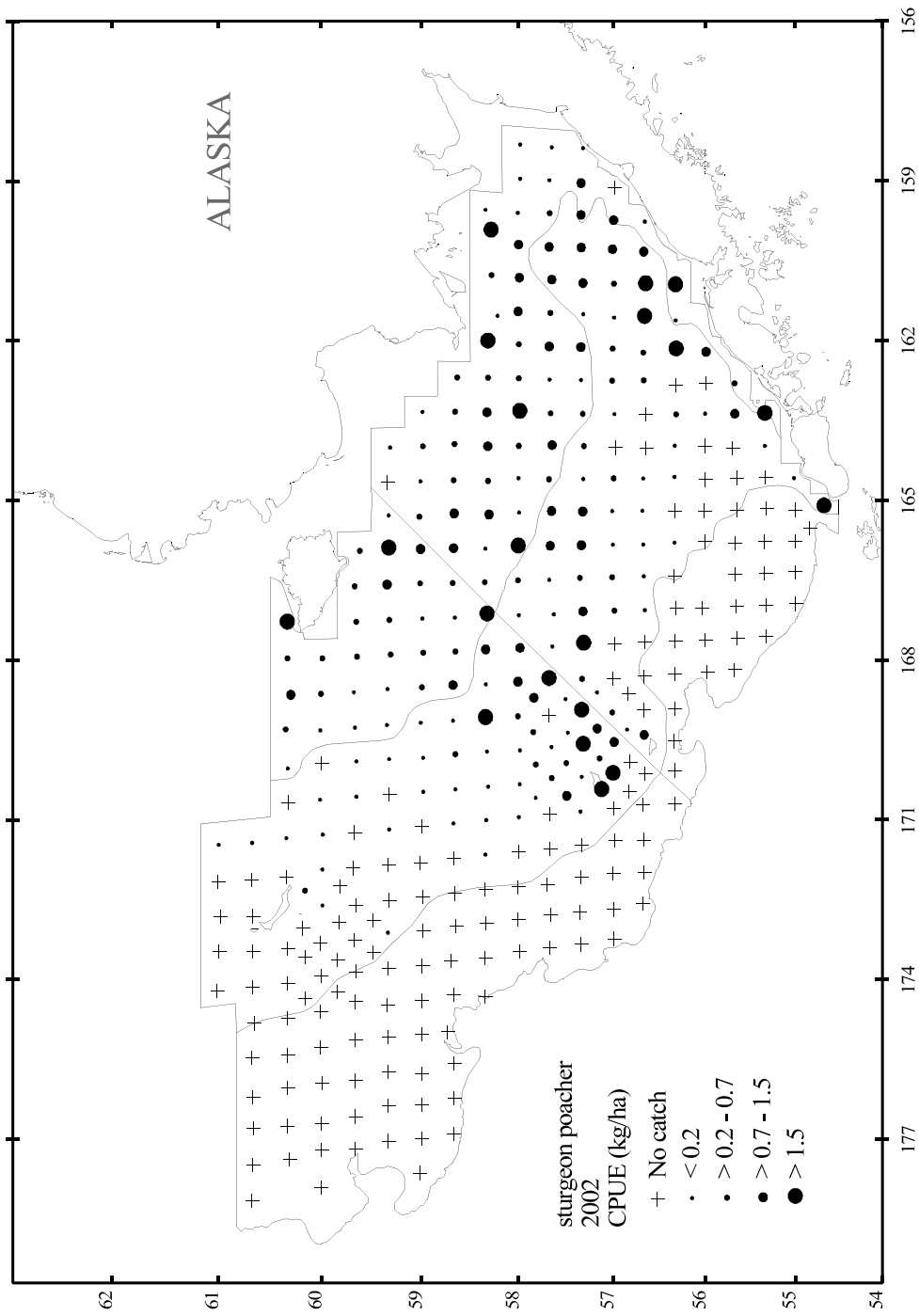


Figure 38.-- Distribution and relative abundance in kg/ha of sturgeon poacher, 2002 eastern Bering Sea bottom trawl survey.

Table 28.--Abundance estimates and mean weight of sturgeon poacher by subarea, 2002 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 weight (kg)
1	0.60	4,710	0.261	63,794,352	0.243	0.074
2	0.77	3,178	0.176	54,818,418	0.209	0.058
3	0.46	4,742	0.263	73,644,316	0.280	0.064
4	0.50	5,410	0.300	70,628,838	0.269	0.077
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	0.39	18,041	1.000	262,885,925	1.000	0.069
95% Confidence interval		±6,391		±65,912,819		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

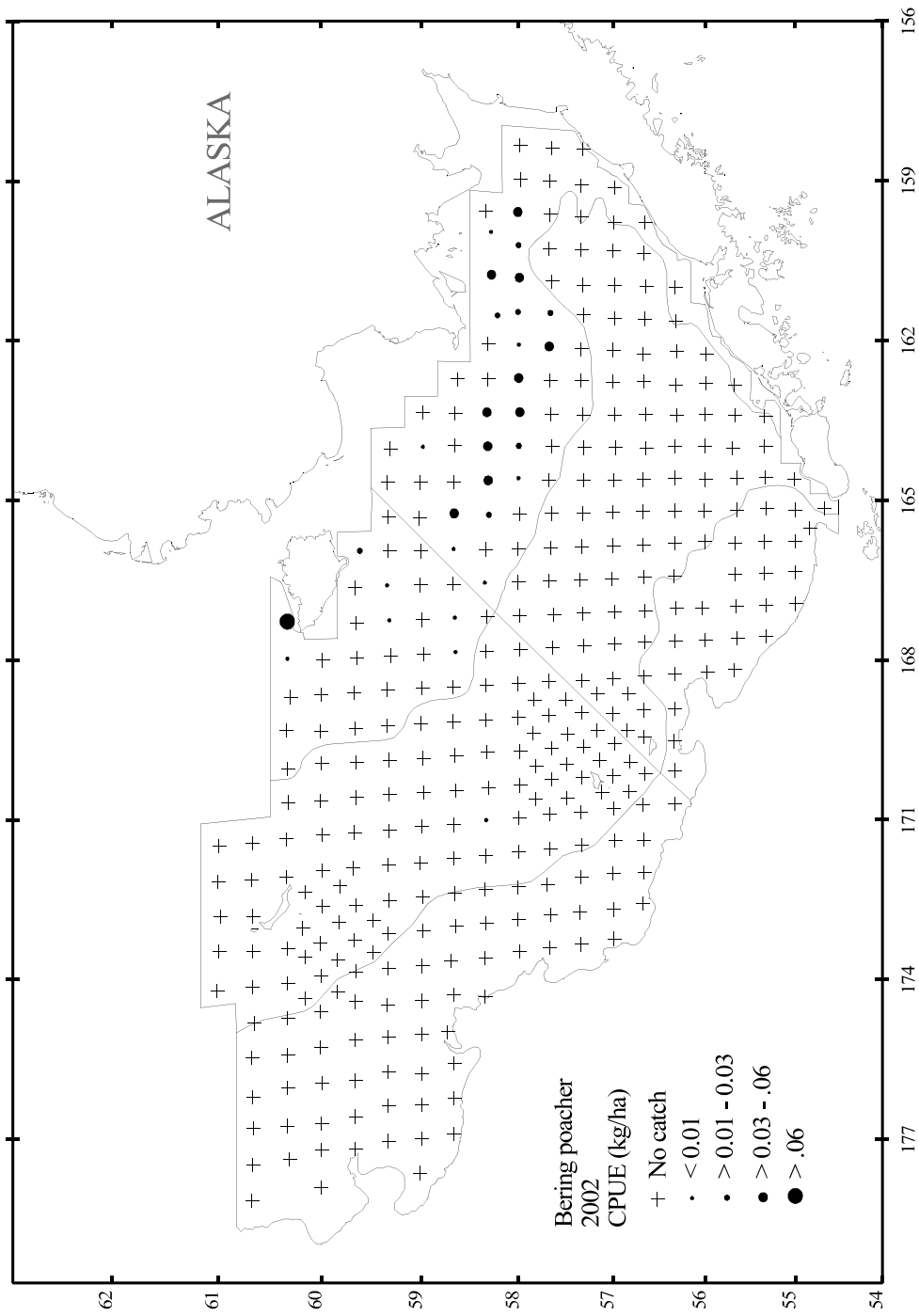


Figure 39.-- Distribution and relative abundance in kg/ha of Bering poacher, 2002 eastern Bering Sea bottom trawl survey.

Table 29.--Abundance estimates and mean weight of Bering poacher by subarea, 2002 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 weight (kg)
1	0.01	78	0.306	2,869,113	0.262	0.027
2	0.04	176	0.690	8,060,939	0.736	0.022
3	0.00	0	0.000	0	0.000	0.000
4	0.00	0	0.000	28,376	0.003	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	0.01	255	1.000	10,958,429	1.000	0.023
95% Confidence interval		\pm 337		\pm 15,652,792		

^aVariances of abundance estimates are given in Appendix D.

^bDifferences in sums of estimates and totals are due to rounding.

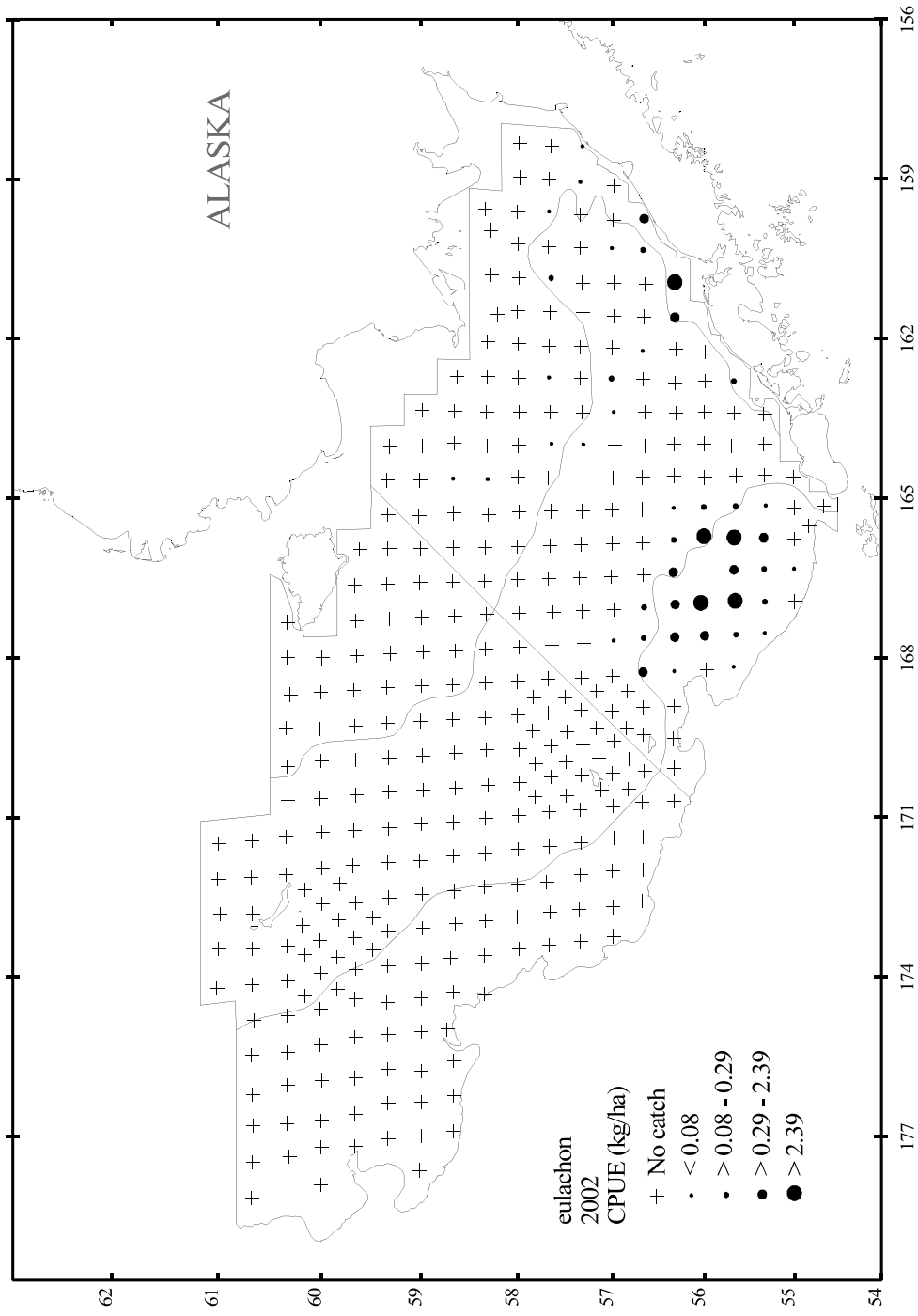


Figure 40.-- Distribution and relative abundance in kg/ha of eulachon, 2002 eastern Bering Sea bottom trawl survey.

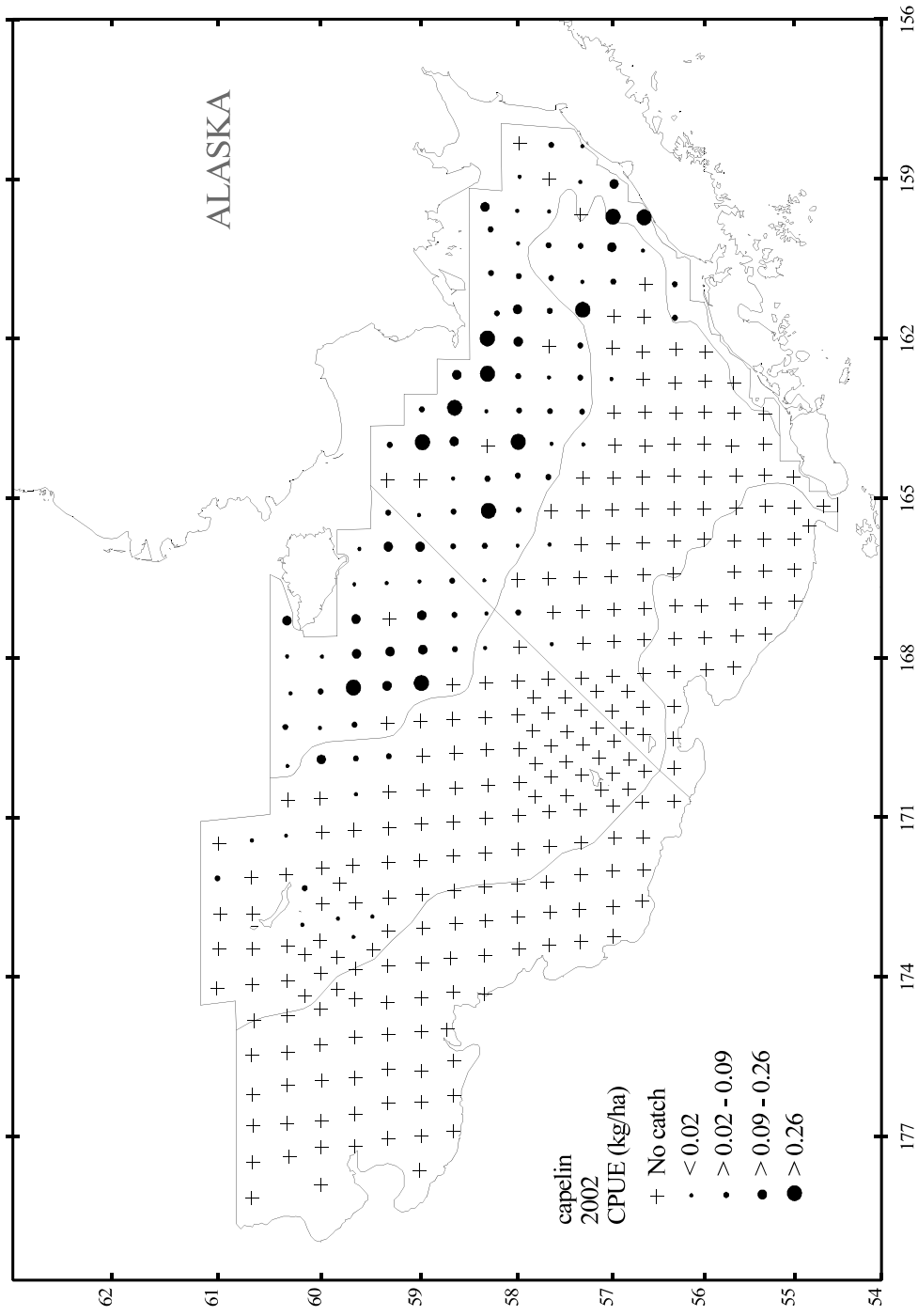


Figure 41.-- Distribution and relative abundance in kg/ha of capelin, 2002 eastern Bering Sea bottom trawl survey.

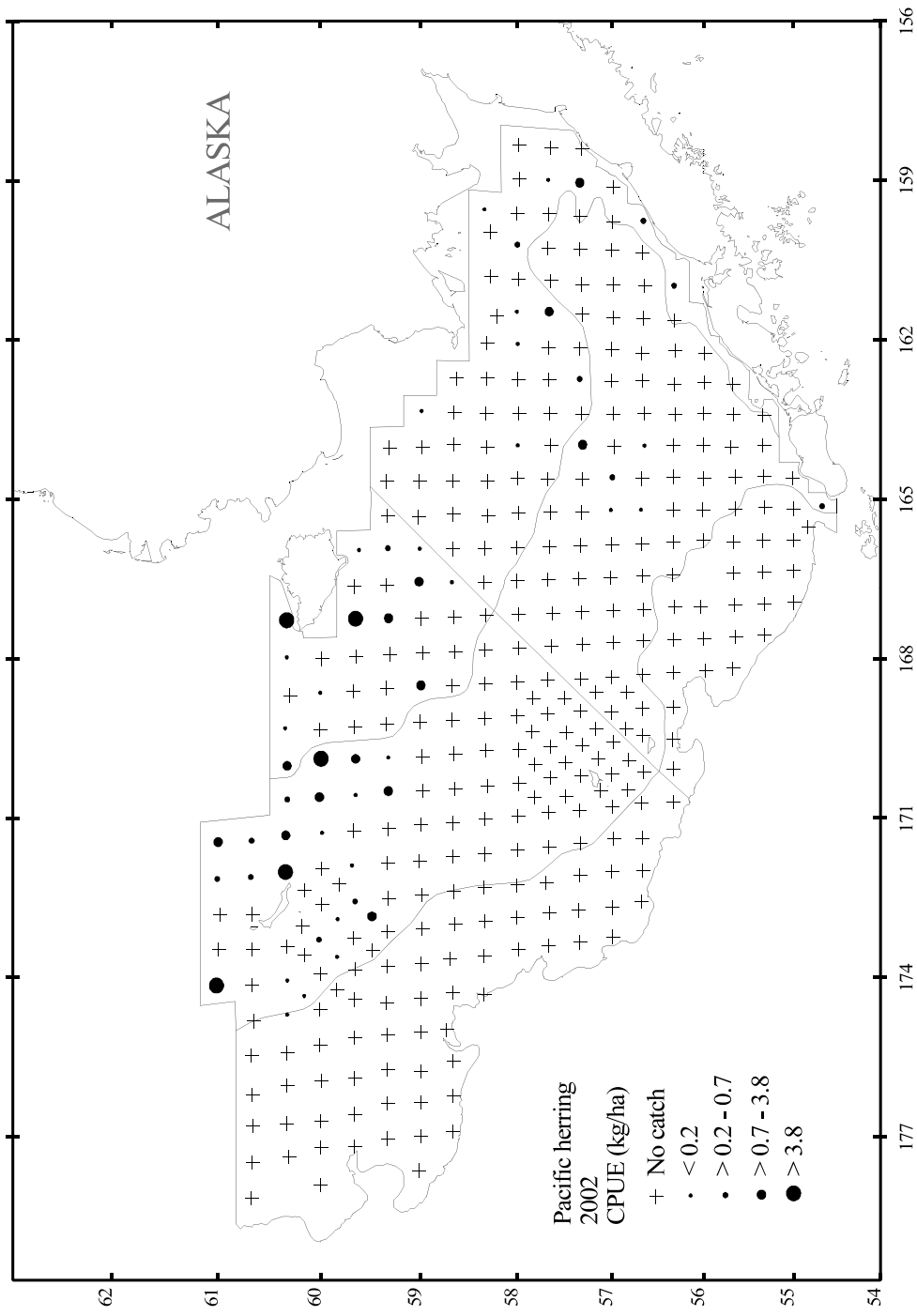


Figure 42.-- Distribution and relative abundance in kg/ha of Pacific herring, 2002 eastern Bering Sea bottom trawl survey.

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APPENDIX A

Station Data, 2002 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.

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Appendix A Table 1.--Haul data for stations sampled by the F/V *Arcturus* during the 2002 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	
*	8	06/03/02	58.288	159.970	41	10	0.52	2.94	10	5.7	5.0	16.3	M
*	9	06/03/02	58.002	160.227	48	12	0.51	2.98	10	3.7	3.5	16.6	M
*	10	06/03/02	57.682	160.269	51	15	0.52	2.79	31	4.1	3.9	16.7	M
*	11	06/04/02	57.342	160.282	60	06	0.54	2.89	31	4.9	4.0	16.6	M
*	12	06/04/02	57.008	160.315	61	09	0.52	2.98	31	5.5	3.5	16.4	M
*	13	06/04/02	56.673	160.360	56	12	0.52	2.93	31	5.0	3.5	15.6	M
*	14	06/04/02	56.660	159.780	33	14	0.50	2.77	10	5.7	5.5	15.3	M
*	17	06/05/02	56.326	161.632	61	09	0.52	2.82	10	6.6	3.9	16.7	M
*	18	06/05/02	56.664	161.594	86	11	0.29	1.52	31	6.6	2.4	16.0	M
*	19	06/05/02	56.991	161.582	66	14	0.51	2.76	31	6.1	2.3	16.9	M
*	20	06/05/02	57.320	161.517	53	16	0.55	2.52	31	6.2	3.0	17.2	M
*	21	06/06/02	57.669	161.500	51	06	0.51	2.84	10	4.7	3.3	16.6	M
*	23	06/06/02	58.007	161.482	53	10	0.51	2.76	10	4.3	3.5	16.1	M
*	24	06/06/02	58.000	162.089	35	13	0.51	2.91	10	3.7	3.4	15.7	M
*	25	06/06/02	58.000	162.732	38	15	0.50	2.80	10	3.8	3.4	15.8	M
*	26	06/06/02	58.320	162.718	30	18	0.50	2.69	10	3.8	3.8	16.6	M
*	27	06/07/02	58.663	163.964	32	06	0.51	2.90	10	3.6	3.5	15.7	M
*	28	06/07/02	58.986	164.006	26	08	0.53	2.87	10	4.4	4.4	15.2	M
*	29	06/07/02	59.317	164.022	19	11	0.54	2.93	10	8.1	6.7	15.6	M
*	34	06/08/02	59.332	165.296	18	10	0.54	3.10	20	5.4	5.3	15.1	M
*	35	06/08/02	59.021	165.331	25	13	0.54	2.96	10	4.3	4.3	16.1	M
*	36	06/08/02	58.669	165.276	36	15	0.51	2.70	10	3.4	3.3	16.3	M
*	37	06/09/02	57.678	162.746	42	06	0.52	2.95	10	4.1	4.1	17.0	M
*	38	06/09/02	57.345	162.755	47	09	0.52	2.85	10	3.7	3.5	16.6	M
*	39	06/09/02	57.012	162.773	58	11	0.55	3.03	31	4.1	2.7	16.2	M
*	40	06/09/02	56.673	162.765	68	14	0.53	2.89	31	5.1	3.3	16.4	M
*	41	06/09/02	56.326	162.831	75	17	0.54	2.97	31	5.9	2.7	17.0	M
*	42	06/10/02	55.997	162.799	76	06	0.55	2.95	31	6.6	3.0	17.9	M
*	43	06/10/02	56.003	163.382	86	09	0.56	3.07	31	6.3	2.7	17.4	M
*	44	06/10/02	56.006	163.975	87	11	0.30	1.68	31	6.4	2.6	17.3	M
*	45	06/10/02	55.701	164.016	91	13	0.55	2.99	31	6.5	3.8	17.3	M

Appendix A Table 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
*	46	06/10/02	55.339	163.990	73	16	0.56	3.02	31	6.3	4.2	17.8	M
*	47	06/12/02	55.001	166.341	141	06	0.56	3.07	50	6.6	3.7	19.7	M
*	48	06/12/02	54.998	165.768	127	09	0.57	3.12	50	6.7	4.1	17.7	M
*	49	06/12/02	54.999	165.172	108	12	0.57	3.05	50	6.1	4.5	17.3	M
*	50	06/12/02	55.321	165.154	108	14	0.55	3.12	50	6.2	4.6	18.6	M
*	51	06/12/02	55.657	165.174	105	17	0.55	3.12	31	6.7	4.2	18.7	M
*	52	06/13/02	56.336	163.986	84	07	0.52	2.89	31	6.5	2.7	17.5	M
*	53	06/13/02	56.650	164.004	73	09	0.44	2.48	31	5.7	2.2	17.3	M
*	54	06/13/02	56.976	163.998	66	12	0.51	2.73	31	5.0	2.8	16.6	M
*	55	06/13/02	57.314	164.002	59	14	0.51	2.83	31	4.7	2.5	17.2	M
*	56	06/13/02	57.651	163.991	48	17	0.52	2.86	10	4.1	3.2	16.6	M
*	57	06/14/02	58.000	163.998	44	06	0.51	2.78	10	4.2	3.9	16.6	M
*	58	06/14/02	58.003	164.598	43	09	0.52	2.96	10	3.8	3.6	16.7	M
*	59	06/14/02	57.684	164.624	51	12	0.52	2.92	10	4.3	3.2	17.0	M
*	60	06/14/02	57.657	165.233	59	14	0.53	3.00	31	5.1	3.1	17.1	M
*	61	06/14/02	57.996	165.244	48	17	0.52	2.95	10	4.2	3.1	16.2	M
*	62	06/15/02	59.672	166.634	25	06	0.53	3.04	20	6.0	5.9	16.1	M
*	63	06/15/02	59.348	166.611	25	08	0.53	2.88	20	5.5	5.4	15.8	M
*	64	06/15/02	59.016	166.581	32	11	0.52	2.85	20	4.6	4.5	16.9	M
*	65	06/15/02	58.682	166.574	39	13	0.53	3.00	20	4.1	4.0	16.9	M
*	66	06/15/02	58.353	166.560	45	16	0.52	2.88	10	4.4	3.7	17.0	M
*	67	06/16/02	58.008	166.525	58	06	0.52	2.82	31	5.2	3.3	17.4	M
*	68	06/16/02	57.682	166.507	64	08	0.52	2.81	31	5.4	3.6	17.5	M
*	69	06/16/02	57.357	166.480	67	11	0.51	2.74	31	5.2	3.6	17.5	M
*	70	06/16/02	57.014	166.466	71	14	0.52	2.98	31	5.4	2.2	17.7	M
*	71	06/16/02	56.671	166.439	82	16	0.52	2.86	31	7.0	3.0	18.0	M
*	72	06/16/02	56.344	166.422	101	18	0.52	2.86	31	7.4	3.5	18.1	M
*	73	06/17/02	57.327	165.241	65	06	0.52	2.86	31	6.8	4.1	17.5	M
*	74	06/17/02	57.012	165.216	68	08	0.51	2.77	31	7.0	3.9	16.9	M
*	75	06/17/02	56.688	165.209	73	11	0.53	2.88	31	7.3	3.2	17.0	M
*	76	06/17/02	56.339	165.196	84	14	0.50	2.82	31	7.5	2.6	17.0	M
*	77	06/17/02	56.010	165.191	93	16	0.54	2.98	31	7.6	3.3	17.1	M

Appendix A Table 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
*	79	06/18/02	55.675	166.380	124	08	0.51	2.78	50	6.8	3.8	20.0	M
*	80	06/18/02	55.339	166.357	130	11	0.53	2.86	50	6.7	3.6	19.7	M
*	81	06/21/02	55.331	167.548	145	06	0.52	2.93	50	6.2	3.6	18.7	M
*	82	06/21/02	55.652	167.587	132	09	0.52	2.83	50	6.4	3.7	17.3	M
*	83	06/21/02	55.999	167.616	129	12	0.49	2.73	50	7.5	3.7	19.6	M
*	84	06/21/02	56.327	167.643	126	14	0.52	2.97	50	7.6	3.6	19.1	M
*	85	06/21/02	56.664	167.652	99	17	0.51	2.82	31	8.4	3.0	18.5	F
*	86	06/22/02	56.989	167.690	75	06	0.51	2.74	31	8.2	3.2	16.8	M
*	87	06/22/02	57.316	167.731	71	09	0.50	2.84	31	7.2	2.8	17.4	M
*	88	06/22/02	57.648	167.758	65	11	0.51	2.84	31	6.8	2.3	17.0	M
*	89	06/22/02	57.987	167.802	64	14	0.51	2.83	41	7.6	2.2	16.4	M
*	91	06/22/02	58.344	167.831	56	16	0.32	1.75	41	8.0	3.5	16.3	M
*	92	06/23/02	58.654	167.861	44	06	0.52	2.77	20	6.8	4.3	16.6	M
*	93	06/23/02	58.983	167.882	40	09	0.52	2.82	20	4.8	4.2	17.1	M
*	94	06/23/02	59.313	167.916	37	11	0.49	2.89	20	6.0	4.3	16.6	M
*	95	06/23/02	59.649	167.957	33	14	0.50	2.84	20	5.0	4.6	16.7	M
*	97	06/23/02	59.991	167.990	25	16	0.53	2.96	20	6.8	6.1	15.9	M
*	98	06/24/02	60.300	168.683	34	06	0.50	2.75	20	5.4	5.4	16.5	M
*	99	06/24/02	60.350	169.319	41	09	0.51	2.92	20	5.4	2.7	16.9	M
*	100	06/24/02	60.012	169.330	43	11	0.51	2.49	20	6.4	2.3	16.2	M
*	101	06/24/02	59.670	169.277	45	14	0.50	2.83	20	6.8	2.2	16.7	M
*	102	06/24/02	59.350	169.230	47	16	0.49	2.74	20	6.5	2.3	16.3	M
*	103	06/25/02	59.010	169.187	51	06	0.51	2.80	41	6.2	2.5	16.6	M
*	104	06/25/02	58.680	169.149	60	08	0.51	2.90	41	6.6	2.2	17.0	M
*	105	06/25/02	58.346	169.126	65	11	0.51	2.77	41	6.8	2.5	16.8	M
*	106	06/25/02	58.010	169.078	66	14	0.51	2.75	42	7.6	3.1	17.1	M
*	107	06/25/02	57.848	169.371	64	16	0.51	2.91	42	7.8	3.4	16.8	M
*	108	06/25/02	57.685	169.034	66	18	0.51	2.85	42	7.8	3.8	16.5	M
*	109	06/26/02	57.501	169.952	66	06	0.52	2.90	42	6.6	2.6	17.3	M
*	110	06/26/02	57.655	170.239	70	08	0.38	2.06	42	7.2	2.9	18.0	M
*	111	06/26/02	57.824	170.598	75	10	0.53	2.88	42	7.4	3.2	18.2	M
*	112	06/26/02	57.990	170.344	71	12	0.52	2.77	42	7.4	2.0	18.0	M

Appendix A Table 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
*	113	06/26/02	58.319	170.391	71	15	0.53	2.91	41	6.6	0.9	18.0	M
*	114	06/26/02	58.655	170.440	70	17	0.20	1.05	41	7.6	1.7	17.6	M
*	115	06/27/02	58.983	170.485	68	06	0.51	2.78	41	6.8	2.3	18.1	M
*	116	06/27/02	59.327	170.522	65	09	0.52	2.75	41	6.8	2.9	17.8	M
*	117	06/27/02	59.655	170.577	65	11	0.51	2.74	41	7.0	2.1	18.2	M
*	118	06/27/02	60.014	170.634	62	13	0.49	2.59	41	6.6	1.4	18.5	M
*	119	06/27/02	60.328	170.669	59	16	0.49	2.77	41	7.2	0.9	19.8	M
*	120	06/28/02	61.007	172.164	62	06	0.48	2.71	41	6.4	0.4	21.2	M
*	121	06/28/02	60.683	172.130	59	08	0.48	2.64	41	6.5	0.5	21.1	M
*	122	06/28/02	60.346	172.072	56	11	0.50	2.83	43	6.5	1.0	16.7	M
*	124	06/29/02	59.991	171.944	65	09	0.53	2.81	43	6.5	2.3	18.2	M
*	125	06/29/02	59.691	171.902	75	12	0.55	3.08	43	6.2	1.1	18.2	M
*	126	06/29/02	59.340	171.836	78	15	0.53	2.91	43	6.8	0.9	18.4	M
*	127	06/29/02	59.012	171.799	85	17	0.53	2.97	41	7.6	1.3	18.7	M
*	128	06/30/02	58.676	171.721	91	06	0.55	2.98	41	7.6	2.4	17.9	M
*	129	06/30/02	58.347	171.666	94	08	0.53	3.02	41	8.0	2.7	18.4	M
*	130	06/30/02	58.003	171.599	96	11	0.53	2.86	41	8.4	3.1	18.6	M
*	131	06/30/02	57.677	171.545	97	14	0.53	2.93	41	8.1	3.5	18.1	M
*	132	06/30/02	57.339	171.470	98	16	0.53	2.38	41	8.6	3.4	18.8	M
*	133	07/03/02	57.339	168.987	67	06	0.50	2.79	42	8.0	3.8	17.1	M
*	134	07/03/02	57.173	169.314	70	08	0.49	2.58	42	8.0	3.7	17.3	M
*	135	07/03/02	57.010	169.006	77	10	0.52	2.51	32	8.4	3.6	18.0	M
*	136	07/03/02	56.853	169.318	77	13	0.51	2.52	32	7.8	3.9	18.1	M
*	137	07/03/02	56.675	168.932	98	15	0.51	2.77	32	8.4	3.2	18.5	M
	138	07/03/02	56.668	169.434	75	18	0.28	1.38	32	7.6	4.0	17.1	M
	139	07/04/02	56.662	170.124	95	06	0.51	2.56	42	7.6	4.2	18.6	M
*	140	07/04/02	56.831	170.472	98	09	0.49	2.72	42	7.8	3.6	18.9	M
*	141	07/04/02	57.003	170.173	65	11	0.50	2.60	42	6.4	5.0	17.2	M
*	142	07/04/02	57.126	170.477	48	13	0.51	2.69	42	6.5	5.3	16.9	F
*	143	07/04/02	57.497	170.578	72	16	0.52	2.69	42	8.2	3.8	17.5	M
	144	07/05/02	58.655	172.991	110	06	0.52	2.66	61	7.4	3.3	19.5	M
	145	07/05/02	58.988	173.072	104	09	0.49	2.68	61	7.4	3.0	18.5	M

Appendix A Table 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
	147	07/05/02	58.997	173.740	115	13	0.52	2.60	61	7.4	3.2	19.5	M
	148	07/05/02	58.701	173.643	124	15	0.52	2.76	61	7.4	3.3	19.8	M
	149	07/05/02	58.352	173.589	114	18	0.51	2.84	61	7.5	3.4	19.6	M
*	150	07/06/02	58.350	172.304	100	06	0.50	2.78	61	7.8	3.0	18.5	M
*	151	07/06/02	58.007	172.261	102	09	0.49	2.74	61	7.8	3.2	18.7	M
	152	07/06/02	57.702	172.202	105	12	0.52	2.74	61	8.2	3.3	18.9	M
	153	07/06/02	57.669	172.782	117	15	0.51	2.68	61	8.2	3.4	19.2	M
	154	07/06/02	57.364	172.735	115	17	0.51	2.71	61	7.8	3.5	19.5	M
	155	07/07/02	57.345	172.062	106	06	0.52	2.81	61	8.0	3.5	18.7	M
	156	07/07/02	57.009	172.005	114	09	0.50	2.64	61	8.0	3.5	18.8	M
	157	07/07/02	56.674	171.372	116	12	0.50	2.64	61	8.3	3.7	18.8	M
*	158	07/07/02	56.982	171.391	107	15	0.38	2.10	61	8.4	3.4	18.6	M
	159	07/08/02	56.685	170.718	111	07	0.53	2.87	61	7.2	3.5	18.3	M
	160	07/08/02	56.333	170.700	118	09	0.49	2.61	61	8.2	3.8	17.7	M
	161	07/08/02	56.336	170.073	106	12	0.52	2.72	50	8.2	3.7	19.4	M
*	162	07/08/02	56.341	169.507	140	15	0.48	2.49	50	8.5	3.6	18.8	M
*	163	07/12/02	59.492	173.487	99	14	0.49	2.49	43	8.2	2.2	19.2	M
*	164	07/12/02	59.680	173.259	92	17	0.52	2.85	43	7.8	1.7	18.0	M
*	165	07/13/02	59.833	172.914	78	06	0.49	2.78	43	7.5	1.5	18.6	M
*	166	07/13/02	60.017	173.310	72	09	0.53	2.85	43	7.3	1.6	17.8	M
*	167	07/13/02	60.184	173.033	57	13	0.51	2.69	43	6.3	2.5	17.5	M
*	168	07/13/02	60.332	173.416	60	16	0.26	1.44	43	6.7	2.2	18.2	M
*	169	07/13/02	60.670	173.472	64	19	0.50	2.87	41	5.9	1.9	17.8	M
	170	07/14/02	60.673	174.133	85	06	0.50	2.88	41	6.7	1.8	20.5	M
	171	07/14/02	60.330	174.068	89	09	0.52	2.96	43	6.9	1.7	20.7	M
	173	07/14/02	60.167	173.572	73	13	0.26	1.49	43	6.9	1.7	17.7	M
	174	07/14/02	60.005	173.925	93	15	0.50	2.84	43	7.7	1.9	18.2	M
	175	07/14/02	59.839	173.623	92	18	0.51	2.75	43	8.4	1.6	19.2	M
	176	07/15/02	59.659	173.845	102	06	0.53	2.91	62	8.2	2.0	19.2	M
*	177	07/15/02	59.668	174.413	112	09	0.51	2.84	62	8.6	2.5	18.5	M
	178	07/15/02	59.839	174.231	104	12	0.48	2.49	62	8.2	2.0	18.8	M
*	179	07/15/02	60.013	174.593	105	14	0.52	2.75	62	8.3	2.0	18.9	M

Appendix A Table 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
	180	07/15/02	60.163	174.357	97	16	0.50	2.78	43	7.9	1.8	19.9	M
*	181	07/16/02	60.331	174.712	100	06	0.51	2.68	62	7.9	1.7	19.8	M
*	182	07/16/02	60.656	174.817	95	09	0.51	2.68	41	7.8	1.6	20.8	M
	191	07/17/02	60.678	178.158	158	20	0.50	2.69	61	8.7	2.1	19.2	M
	192	07/18/02	59.017	177.627	132	07	0.51	2.87	61	8.9	2.8	18.9	M
	193	07/18/02	58.678	176.896	132	10	0.51	2.75	61	8.2	3.0	20.0	M
	194	07/18/02	58.667	176.217	138	13	0.52	2.83	61	9.4	3.0	19.0	F
	195	07/18/02	58.669	175.578	133	16	0.51	2.82	61	8.9	3.1	19.6	M
	196	07/18/02	58.737	174.981	141	18	0.50	2.78	61	9.1	3.2	19.60	M

Appendix A Table 2.--Haul data for stations sampled by the F/V *Aldebaran* during the 2002 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	06/02/02	57.324	158.397	30	06	0.52	2.94	10	6.4	5.4	16.3	M
2	06/02/02	57.654	158.383	36	09	0.50	2.74	10	5.1	4.5	15.9	M
3	06/02/02	57.986	158.330	32	12	0.52	2.82	10	6.0	5.5	16.2	M
4	06/02/02	57.985	158.972	38	14	0.51	2.81	10	5.8	4.6	16.0	M
* 7	06/03/02	58.346	159.557	24	10	0.53	2.91	10	7.6	5.5	16.0	M
* 8	06/03/02	58.009	159.613	39	13	0.52	3.03	10	4.3	4.0	16.4	M
* 9	06/03/02	57.676	159.627	47	15	0.52	2.89	10	4.5	3.9	17.0	M
10	06/04/02	57.679	159.001	46	06	0.52	2.85	10	4.5	4.1	17.1	M
11	06/04/02	57.345	159.070	48	09	0.51	2.83	10	4.7	4.2	16.4	M
* 12	06/04/02	57.345	159.671	54	11	0.54	3.01	10	5.6	4.3	17.0	M
* 13	06/04/02	56.997	159.767	54	14	0.54	2.92	10	6.9	4.2	17.2	M
14	06/04/02	56.985	159.126	30	16	0.51	2.84	10	7.9	5.3	15.8	M
* 15	06/05/02	56.328	160.999	52	06	0.52	2.80	10	6.4	4.1	16.1	M
* 16	06/05/02	56.652	160.981	69	08	0.49	2.70	31	6.5	3.0	17.0	M
* 17	06/05/02	56.992	160.953	60	11	0.52	2.90	31	6.1	2.9	17.5	F
* 18	06/05/02	57.324	160.949	57	14	0.53	2.87	31	4.9	3.4	17.7	M
* 19	06/05/02	57.654	160.885	54	16	0.51	2.78	31	5.2	3.6	17.5	M
* 20	06/06/02	57.993	160.848	43	06	0.51	2.71	10	4.5	3.6	16.4	M
* 21	06/06/02	58.284	160.792	29	09	0.27	1.51	10	8.8	5.7	16.4	M
* 23	06/06/02	58.221	161.549	37	13	0.28	1.55	10	6.7	4.2	16.4	M
* 24	06/06/02	58.321	162.057	45	15	0.52	2.91	10	7.2	3.3	17.4	M
* 25	06/06/02	58.636	162.713	24	18	0.28	1.46	10	4.8	4.2	16.6	M
* 28	06/07/02	58.658	163.357	29	12	0.44	2.39	10	4.1	4.1	17.1	M
* 29	06/07/02	58.991	163.352	17	15	0.52	2.89	10	6.3	5.9	15.4	M
* 34	06/08/02	59.345	164.654	19	11	0.51	2.94	10	6.4	6.1	16.4	M
* 35	06/08/02	59.012	164.658	24	14	0.51	2.93	10	4.8	4.5	16.7	M
* 36	06/08/02	58.674	164.644	34	16	0.50	2.76	10	4.0	3.6	15.8	F
* 37	06/09/02	57.681	162.140	44	06	0.50	2.75	10	4.0	4.0	17.7	M
* 38	06/09/02	57.346	162.152	49	09	0.48	2.64	10	4.7	4.3	17.5	M
* 39	06/09/02	57.007	162.173	57	11	0.49	2.73	31	3.8	2.4	17.8	M
* 40	06/09/02	56.677	162.245	65	14	0.50	2.84	31	5.2	2.5	17.9	M

Appendix A Table 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
*	41	06/09/02	56.319	162.203	71	17	0.51	2.88	31	6.1	3.5	17.8	M
*	42	06/10/02	55.993	162.240	67	06	0.50	2.67	31	6.3	3.8	17.9	M
*	44	06/10/02	55.677	162.823	47	11	0.34	1.82	10	6.7	4.3	16.9	M
*	45	06/10/02	55.675	163.405	78	13	0.50	2.79	31	6.9	3.0	18.2	M
*	46	06/10/02	55.340	163.414	49	16	0.50	2.80	31	6.8	4.3	16.8	M
	47	06/12/02	54.837	165.520	150	06	0.49	2.68	50		6.5	18.3	M
	48	06/12/02	54.672	165.152	79	09	0.51	2.88	31	6.0	4.9	17.3	M
*	49	06/12/02	55.010	164.597	59	13	0.50	2.73	31	6.4	5.0	17.0	M
*	50	06/12/02	55.335	164.567	98	15	0.51	2.81	31	7.3	4.7	18.1	M
*	51	06/12/02	55.656	164.582	93	18	0.51	2.81	31	7.6	4.3	18.7	M
*	52	06/13/02	56.320	163.406	83	06	0.51	2.77	31	6.3	3.0	17.7	M
*	54	06/13/02	56.654	163.382	72	10	0.48	2.71	31	5.7	2.2	18.0	M
*	55	06/13/02	56.989	163.393	63	13	0.48	2.71	31	5.4	1.6	17.4	M
*	56	06/13/02	57.325	163.396	50	15	0.38	2.18	10	5.1	3.3	16.7	M
*	57	06/13/02	57.666	163.386	43	18	0.51	2.75	10	4.9	3.9	16.6	M
*	58	06/14/02	57.989	163.374	40	06	0.51	2.86	10	4.6	4.2	16.8	M
*	59	06/14/02	58.331	163.379	34	08	0.50	2.94	10	4.8	4.4	16.0	M
*	60	06/14/02	58.322	164.014	39	11	0.20	1.03	10	4.9	4.2	16.3	M
*	61	06/14/02	58.319	164.656	41	14	0.51	2.80	10	5.0	3.7	16.4	M
*	62	06/14/02	58.310	165.294	42	16	0.51	2.92	10	4.6	3.3	16.7	M
*	63	06/15/02	59.620	165.968	23	06	0.51	2.92	20	7.1	7.1	15.4	M
*	64	06/15/02	59.332	165.943	21	08	0.52	2.81	20	6.4	6.1	15.6	M
*	65	06/15/02	59.010	165.944	27	11	0.50	2.77	20	5.3	4.9	15.8	M
*	66	06/15/02	58.674	165.929	34	13	0.49	2.73	10	4.7	4.0	16.0	M
*	67	06/15/02	58.347	165.921	41	16	0.49	2.73	10	4.8	3.5	16.8	M
*	68	06/16/02	58.006	165.905	53	06	0.51	2.85	10	5.3	3.3	16.9	M
*	69	06/16/02	57.671	165.884	61	09	0.50	2.75	31	5.8	3.4	17.4	M
*	70	06/16/02	57.341	165.872	65	11	0.49	2.71	31	5.9	3.9	17.1	M
*	71	06/16/02	57.004	165.847	69	14	0.52	2.81	31	7.5	3.4	17.4	M
*	72	06/16/02	56.677	165.844	75	16	0.51	2.88	31	8.4	3.0	17.6	M
*	73	06/16/02	56.338	165.808	88	19	0.51	2.77	31	8.6	2.8	17.7	M
*	74	06/17/02	57.321	164.612	63	07	0.50	2.72	31	6.7	3.2	16.6	M

Appendix A Table 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
* 75	06/17/02	56.996	164.609	66	09	0.49	2.71	31	8.1	4.0	16.5	M
* 76	06/17/02	56.678	164.604	72	12	0.50	2.73	31	7.9	3.8	17.0	M
* 77	06/17/02	56.339	164.575	84	14	0.50	2.80	31	8.0	2.7	17.7	M
* 78	06/17/02	56.001	164.608	90	17	0.49	2.74	31	8.5	2.9	18.1	M
* 79	06/18/02	56.007	165.775	104	06	0.53	2.87	31	7.5	3.8	18.3	M
* 80	06/18/02	55.673	165.798	114	09	0.32	1.80	50	7.6	4.0	18.9	M
* 81	06/18/02	55.343	165.776	117	11	0.50	2.76	50	6.7	4.0	18.8	M
* 82	06/21/02	54.995	166.934	152	06	0.51	2.72	50	7.0	3.7	18.7	M
* 83	06/21/02	55.330	166.970	136	09	0.47	2.59	50	7.3	3.6	19.0	M
* 84	06/21/02	55.662	166.988	131	11	0.49	2.62	50	7.9	3.7	19.6	M
* 85	06/21/02	56.041	167.024	130	14	0.49	2.74	50	8.3	3.7	20.1	M
* 86	06/21/02	56.322	167.029	111	17	0.51	2.78	50	8.4	3.5	18.1	M
* 87	06/22/02	56.661	167.076	93	06	0.51	2.73	31	8.1	3.0	17.9	M
* 88	06/22/02	56.988	167.092	71	09	0.51	2.83	31	8.1	3.4	17.0	M
* 89	06/22/02	57.323	167.118	67	11	0.50	2.81	31	6.8	2.2	17.3	M
* 90	06/22/02	57.632	167.153	65	13	0.50	2.84	31	6.9	1.9	17.3	M
* 91	06/22/02	57.999	167.169	61	16	0.51	2.75	31	7.8	3.0	17.1	M
* 92	06/23/02	58.330	167.182	49	06	0.50	2.82	20	7.4	4.1	16.0	M
* 93	06/23/02	58.661	167.217	41	09	0.51	2.78	20	5.7	4.4	16.6	M
* 94	06/23/02	58.992	167.234	36	11	0.49	2.69	20	5.4	4.5	15.7	M
* 95	06/23/02	59.325	167.269	29	14	0.51	2.73	20	6.3	5.6	16.0	M
* 96	06/23/02	59.655	167.305	28	16	0.51	2.93	20	6.6	6.0	15.6	M
* 97	06/24/02	60.334	167.333	29	06	0.51	2.72	20	7.1	7.0	15.8	F
* 98	06/24/02	60.333	167.986	29	09	0.51	2.80	20	6.9	6.7	15.7	M
* 99	06/24/02	60.005	168.654	36	13	0.49	2.81	20	4.9	4.3	15.8	M
* 100	06/24/02	59.680	168.617	36	15	0.50	2.79	20	5.0	4.3	15.1	M
* 101	06/24/02	59.344	168.559	39	18	0.51	2.76	20	5.4	4.2	16.0	M
* 102	06/25/02	58.997	168.531	43	06	0.51	2.78	20	4.8	3.9	16.3	M
* 103	06/25/02	58.680	168.501	51	08	0.50	2.78	20	6.1	3.4	16.2	M
* 104	06/25/02	58.341	168.469	62	11	0.50	2.79	41	6.7	2.3	16.9	M
* 105	06/25/02	58.009	168.435	66	13	0.49	2.72	42	6.9	2.6	17.2	M
* 106	06/25/02	57.842	168.737	67	15	0.49	2.74	42	7.2	3.2	16.7	M

Appendix A Table 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
* 107	06/25/02	57.683	168.393	67	17	0.48	2.63	42	7.5	3.4	15.6	M
* 108	06/26/02	57.485	169.376	68	06	0.52	2.86	42	7.6	3.6	17.3	M
* 109	06/26/02	57.657	169.645	68	08	0.48	2.65	42	7.6	3.0	17.4	M
* 110	06/26/02	57.822	169.979	69	10	0.48	2.57	42	7.1	2.3	17.9	M
* 111	06/26/02	57.988	169.709	67	12	0.48	2.54	42	7.2	1.9	17.5	F
* 112	06/26/02	58.330	169.731	66	15	0.48	2.60	41	7.5	3.1	17.2	M
* 113	06/26/02	58.656	169.788	64	17	0.51	2.75	41	7.3	2.4	17.4	M
* 114	06/27/02	58.984	169.847	61	06	0.51	2.75	41	6.8	2.3	17.0	M
* 115	06/27/02	59.327	169.870	58	09	0.51	2.78	41	6.4	1.9	17.5	M
* 116	06/27/02	59.655	169.915	54	11	0.52	2.79	41	6.3	1.7	17.6	M
* 117	06/27/02	59.998	169.939	51	13	0.52	2.74	41	6.9	1.5	17.3	M
* 118	06/27/02	60.330	170.046	49	16	0.50	2.73	20	7.4	1.6	17.2	M
* 119	06/28/02	60.997	171.482	57	06	0.51	2.82	41	6.9	0.4	18.5	M
* 120	06/28/02	60.675	171.445	60	08	0.51	2.80	41	7.0	0.8	17.5	F
* 121	06/28/02	60.344	171.354	63	11	0.50	2.78	41	7.1	0.8	17.5	F
* 122	06/29/02	59.988	171.288	67	06	0.50	2.75	41	6.9	2.0	17.6	M
* 123	06/29/02	59.676	171.244	70	08	0.52	2.84	41	6.8	1.9	18.0	F
* 124	06/29/02	59.327	171.192	73	11	0.49	2.70	41	6.6	0.7	17.8	M
* 125	06/29/02	59.004	171.116	75	14	0.49	2.72	41	7.1	0.8	17.6	M
* 126	06/29/02	58.675	171.081	80	16	0.51	2.80	41	7.5	1.2	18.5	M
* 127	06/30/02	58.339	171.018	81	06	0.51	2.77	41	8.0	2.8	18.1	M
* 128	06/30/02	58.000	170.962	84	09	0.50	2.72	42	8.2	3.1	17.9	M
* 129	06/30/02	57.679	170.890	82	12	0.49	2.73	42	8.2	3.4	18.0	M
* 130	06/30/02	57.350	170.857	80	14	0.50	2.79	42	7.9	4.1	18.2	M
* 131	06/30/02	57.002	170.777	92	17	0.53	2.89	42	8.2	3.9	19.0	M
* 132	07/03/02	57.510	168.742	68	06	0.49	2.71	42	8.2	3.7	17.5	F
* 133	07/03/02	57.335	168.376	71	08	0.51	2.87	32	8.2	3.6	18.0	F
* 134	07/03/02	57.173	168.621	73	10	0.51	2.66	32	8.2	3.7	18.0	F
* 135	07/03/02	57.006	168.343	78	12	0.50	2.78	32	8.3	3.3	18.0	F
* 136	07/03/02	56.842	168.628	94	15	0.50	2.66	32	8.2	3.3	18.3	F
* 137	07/03/02	56.672	168.302	104	17	0.51	2.77	50	8.6	3.3	18.5	F
* 138	07/04/02	56.824	169.904	70	06	0.51	2.72	42	6.2	4.6	18.0	F

Appendix A Table 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
* 139	07/04/02	56.992	169.567	57	08	0.50	2.75	42	8.2	3.9	17.5	F
* 140	07/04/02	57.148	169.868	47	10	0.50	2.73	42	7.5	5.8	16.9	F
* 141	07/04/02	57.322	169.625	59	12	0.51	2.60	42	8.2	3.6	17.5	F
* 142	07/04/02	57.338	170.205	53	15	0.50	2.68	42	7.4	5.6	16.9	F
143	07/05/02	58.664	172.373	98	06	0.48	2.56	61	7.7	2.6	18.3	F
144	07/05/02	58.991	172.436	95	09	0.31	1.61	41	7.5	2.2	18.3	F
145	07/05/02	59.329	172.500	84	12	0.49	2.61	43	6.6	1.4	18.0	F
146	07/05/02	59.340	173.131	97	15	0.50	2.69	43	7.2	2.4	18.3	F
147	07/05/02	59.333	173.773	107	18	0.48	2.63	62	7.2	2.8	18.5	F
* 148	07/06/02	58.340	172.932	106	06	0.51	2.66	61	7.6	3.3	18.5	F
* 149	07/06/02	58.010	172.867	105	09	0.51	2.66	61	7.8	3.3	18.5	F
150	07/06/02	58.000	173.457	113	11	0.51	2.79	61	7.7	3.3	18.5	F
151	07/06/02	57.679	173.403	144	14	0.47	2.60	61	8.3	3.3	18.9	F
152	07/06/02	57.345	173.326	118	17	0.47	2.61	61	8.2	3.7	18.5	F
153	07/07/02	56.995	173.237	137	06	0.48	2.51	61	8.1	3.7	18.7	F
154	07/07/02	57.000	172.674	119	09	0.49	2.65	61	8.2	3.6	18.5	F
155	07/07/02	56.687	172.567	131	11	0.50	2.67	61	8.0	3.9	18.7	F
156	07/07/02	56.666	171.984	123	14	0.47	2.53	61	8.4	3.6	18.7	F
* 157	07/08/02	56.336	168.902	127	06	0.51	2.84	50	8.8	3.8	18.7	F
* 158	07/08/02	56.334	168.266	150	09	0.50	2.73	50	8.1	3.8	18.9	F
* 159	07/08/02	55.982	168.217	145	12	0.51	2.78	50	8.3	3.8	18.9	F
* 160	07/08/02	55.679	168.181	132	15	0.47	2.40	50	9.0	3.7	18.7	F
* 161	07/12/02	59.492	172.879	50	14	0.50	2.71	43	7.9	---	18.3	F
* 162	07/12/02	59.659	172.590	45	16	0.50	2.62	43	7.8	---	18.3	M
* 163	07/13/02	59.820	172.238	40	06	0.50	2.71	43	7.6	---	18.0	F
* 164	07/13/02	59.990	172.619	63	08	0.50	2.76	43	7.1	1.7	16.8	M
* 165	07/13/02	60.161	172.353	55	10	0.52	2.74	43	4.6	2.5	17.3	M
* 167	07/13/02	60.671	172.809	22	16	0.22	1.12	41	4.8	---	16.7	M
168	07/14/02	60.983	172.817	63	06	0.34	1.63	41	7.2	1.8	19.6	M
169	07/14/02	60.998	173.464	72	08	0.33	1.64	41	6.7	1.0	18.0	M
* 181	07/16/02	61.013	174.207	80	15	0.50	2.84	41	8.3	0.6	17.6	M
* 183	07/19/02	60.679	175.461	103	08	0.27	1.44	61	8.9	1.7	18.5	M

Appendix A Table 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
184	07/19/02	60.667	176.206	115	11	0.34	1.87	61	8.8	1.6	18.8	M
185	07/19/02	60.666	176.781	126	13	0.47	2.39	61	9.2	1.8	18.7	M
186	07/19/02	60.668	177.476	142	15	0.52	2.85	61	9.2	1.4	18.9	F
187	07/20/02	60.315	177.370	144	06	0.54	2.84	61	8.7	---	18.6	M
188	07/20/02	60.336	176.741	133	09	0.51	2.60	61	9.2	1.5	18.6	M
189	07/20/02	60.334	176.034	117	11	0.35	1.74	61	9.6	1.9	18.4	M
* 190	07/20/02	60.332	175.412	108	14	0.53	2.76	61	9.3	1.7	18.5	F
* 191	07/20/02	60.016	175.272	114	16	0.27	1.40	61	9.9	2.1	18.2	M
192	07/21/02	59.995	175.945	127	06	0.54	2.68	61	9.3	2.3	18.6	M
193	07/21/02	60.000	176.696	137	09	0.53	2.90	61	8.9	1.5	18.7	M
194	07/21/02	60.003	177.196	135	11	0.50	2.96	61	8.6	---	18.9	M
195	07/21/02	60.005	177.896	139	13	0.50	2.83	61	8.9	---	18.6	M
196	07/21/02	59.669	177.178	172	18	0.50	2.64	61	8.7	---	19.2	M
197	07/22/02	59.667	176.566	132	06	0.50	2.53	61	8.6	---	18.8	M
198	07/22/02	59.665	175.896	133	09	0.53	2.65	61	8.6	2.1	18.4	M
* 199	07/22/02	59.668	175.128	121	12	0.54	2.51	61	8.8	2.5	18.7	M
200	07/22/02	59.350	174.483	117	16	0.52	2.71	62	9.2	3.2	18.3	M
201	07/22/02	59.338	175.076	129	18	0.53	2.82	61	9.0	3.0	18.7	M
202	07/23/02	59.337	175.728	134	06	0.52	2.72	61	8.7	2.5	18.7	F
203	07/23/02	59.334	176.360	132	09	0.36	1.87	61	8.8	2.0	19.0	M
204	07/23/02	59.334	177.033	144	11	0.37	1.92	61	8.8	2.5	19.5	M
205	07/23/02	59.002	176.980	132	14	0.54	2.59	61	8.6	2.6	19.6	M
206	07/23/02	59.004	176.347	132	17	0.54	2.72	61	8.6	2.7	19.0	M
207	07/24/02	59.000	175.758	131	06	0.53	2.72	61	8.5	2.4	19.5	M
208	07/24/02	59.000	175.020	127	09	0.54	2.80	61	8.7	3.2	20.0	M
209	07/24/02	59.000	174.391	123	11	0.53	2.75	61	9.0	3.3	19.1	M
210	07/24/02	58.676	174.276	154	14	0.52	2.78	61	9.3	3.3	18.9	M
211	07/24/02	58.348	174.317	171	17	0.53	2.73	61	9.6	3.5	18.6	M

APPENDIX B

List of Species Encountered

Appendix B contains a listing of all fish and invertebrate species taken during the 2002 eastern Bering Sea bottom trawl survey.

List of Tables

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Appendix B Table 1.--Fish species encountered during the 2002 eastern Bering Sea bottom trawl survey.

Family	Scientific name	Common name
Petromyzontidae	<i>Lampetra tridentata</i>	Pacific lamprey
Squalidae	<i>Somniosus pacificus</i>	Pacific sleeper shark
Rajidae	<i>Raja binoculata</i>	big skate
	<i>Bathyraja interrupta</i>	Bering skate
	<i>Raja rhina</i>	longnose skate
	<i>Bathyraja parmifera</i>	Alaska skate
	<i>Bathyraja aleutica</i>	Aleutian skate
	<i>Bathyraja maculata</i>	whiteblotched skate
	<i>Bathyraja violacea</i>	Okhotsk skate
Pleuronectidae	<i>Atheresthes stomias</i>	arrowtooth flounder
	<i>Atheresthes evermanni</i>	Kamchatka flounder
	<i>Reinhardtius hippoglossoides</i>	Greenland turbot
	<i>Hippoglossus stenolepis</i>	Pacific halibut
	<i>Hippoglossoides elassodon</i>	flathead sole
	<i>Hippoglossoides robustus</i>	Bering flounder
	<i>Microstomus pacificus</i>	Dover sole
	<i>Glyptocephalus zachirus</i>	rex sole
	<i>Limanda aspera</i>	yellowfin sole
	<i>Limanda proboscidea</i>	longhead dab
	<i>Limanda sakhalinensis</i>	Sakhalin sole
	<i>Platichthys stellatus</i>	starry flounder
	<i>Lepidopsetta polyxystra</i>	northern rock sole
	<i>Lepidopsetta bilineata</i>	southern rock sole
<i>Isopsetta isolepis</i>	butter sole	
<i>Pleuronectes quadrituberculatus</i>	Alaska plaice	
Agonidae	<i>Leptagonus frenatus</i>	sawback poacher
	<i>Bathyagonus infraspinatus</i>	spinycheek starsnout

Family	Scientific name	Common name
	<i>Podothecus acipenserinus</i>	sturgeon poacher
	<i>Aspidophoroides bartoni</i>	Aleutian alligatorfish
	<i>Occella dodecaedron</i>	Bering poacher
Ammodytidae	<i>Ammodytes hexapterus</i>	Pacific sand lance
Anarhichadidae	<i>Anarrhichthys ocellatus</i>	wolf-eel
	<i>Anarhichas orientalis</i>	Bering wolffish
Anoplopomatidae	<i>Anoplopoma fimbria</i>	sablefish
Bathymasteridae	<i>Bathymaster signatus</i>	searcher
Clupeidae	<i>Clupea pallasii</i>	Pacific herring
Cottidae	<i>Gymnocanthus</i> sp.	
	<i>Gymnocanthus pistilliger</i>	threaded sculpin
	<i>Gymnocanthus galeatus</i>	armorhead sculpin
	<i>Artediellus pacificus</i>	Pacific hookear sculpin
	<i>Malacocottus zonurus</i>	darkfin sculpin
	<i>Hemilepidotus hemilepidotus</i>	red Irish lord
	<i>Hemilepidotus jordani</i>	yellow Irish lord
	<i>Hemilepidotus papilio</i>	butterfly sculpin
	<i>Triglops forficata</i>	scissortail sculpin
	<i>Triglops scepticus</i>	spectacled sculpin
	<i>Triglops pingeli</i>	ribbed sculpin
	<i>Triglops macellus</i>	roughspine sculpin
	<i>Myoxocephalus verrucosus</i>	warty sculpin
	<i>Myoxocephalus polyacanthocephalus</i>	great sculpin
	<i>Myoxocephalus jaok</i>	plain sculpin
	<i>Dasycottus setiger</i>	spinyhead sculpin
	<i>Blepsias bilobus</i>	crested sculpin
	<i>Nautichthys pribilovius</i>	eyeshade sculpin
	<i>Hemitripterus bolini</i>	bigmouth sculpin
	<i>Icelus spiniger</i>	thorny sculpin

Appendix B Table 1.--Continued.

Family	Scientific name	Common name
	<i>Icelus spatula</i>	spatulate sculpin
Trichodontidae	<i>Trichodon trichodon</i>	Pacific sandfish
Gadidae	<i>Gadus macrocephalus</i>	Pacific cod
	<i>Eleginus gracilis</i>	saffron cod
	<i>Theragra chalcogramma</i>	walleye pollock
Hexagrammidae	<i>Hexagrammidae</i>	greenling unident.
	<i>Pleurogrammus monoptyerygius</i>	Atka mackerel
	<i>Hexagrammos stelleri</i>	whitespotted greenling
	<i>Hexagrammos decagrammus</i>	kelp greenling
Cyclopteridae	<i>Eumicrotremus orbis</i>	Pacific spiny lumpsucker
	<i>Liparis</i> sp.	
	<i>Liparis dennyi</i>	marbled snailfish
	<i>Liparis gibbus</i>	variegated snailfish
	<i>Crystallichthys cyclospilus</i>	blotched snailfish
	<i>Liparis ochotensis</i>	
	<i>Careproctus rastrinus</i>	salmon snailfish
Osmeridae	<i>Thaleichthys pacificus</i>	eulachon
	<i>Mallotus villosus</i>	capelin
Salmonidae	<i>Oncorhynchus keta</i>	chum salmon
Stichaeidae	<i>Lumpenus</i> sp.	
	<i>Lumpenus maculatus</i>	daubed shanny
	<i>Poroclinus rothrocki</i>	whitebarred prickleback
Zaproridae	<i>Zaprora silenus</i>	prowfish
Zoarcidae	<i>Lycodes raridens</i>	marbled eelpout
	<i>Lycodes palearis</i>	wattled eelpout
	<i>Lycodes polaris</i>	Canadian eelpout
	<i>Lycodes turneri</i>	polar eelpout
	<i>Lycodes brevipes</i>	shortfin eelpout
Scorpaenidae	<i>Sebastes aleutianus</i>	rougheye rockfish

Family	Scientific name	Common name
	<i>Sebastes alutus</i>	Pacific ocean perch
	<i>Sebastes polyspinis</i>	northern rockfish
	<i>Lycodes turneri</i>	polar eelpout
	<i>Lycodes brevipes</i>	shortfin eelpout
Scorpaenidae	<i>Sebastes aleutianus</i>	rougheye rockfish
	<i>Sebastes alutus</i>	Pacific ocean perch
	<i>Sebastes polyspinis</i>	northern rockfish

Appendix B Table 2.--Invertebrate species encountered during the 2002 eastern Bering Sea bottom trawl survey.

Phylum	Species name	Common name
Cnidaria	Scyphozoa (class)	jellyfish unident.
	<i>Chrysaora</i> sp.	chrysaora jellyfish
	<i>Aurelia</i> sp.	
	<i>Cyanea</i> sp.	
	<i>Gersemia</i> sp.	sea raspberry
	<i>Gersemia rubiformis</i>	
	Pennatulacea (order)	sea pen or sea whip unident.
	Virgularidae	sea whip unident.
	<i>Halipteris willemoesi</i>	
	Actiniaria (order)	sea anemone unident.
	<i>Metridium</i> sp.	
	<i>Metridium senile</i>	clonal plumose anemone
	<i>Stomphia coccinea</i>	swimming anemone
	<i>Urticina</i> sp.	
	<i>Urticina crassicornis</i>	mottled anemone
	<i>Liponema brevicornis</i>	tentacle-shedding anemone
<i>Amphilaphis</i> sp.		
Annelida	Polychaeta (class)	polychaete worm unident.
	Aphroditidae	sea mouse unident.
	<i>Aphrodita negligens</i>	
	<i>Cheilonereis cyclurus</i>	
	<i>Eunoe</i> sp.	
	<i>Eunoe nodosa</i>	giant scale worm
	<i>Eunoe depressa</i>	depressed scale worm
	Hirudinea unident.	leech unident.
<i>Carcinobdella cyclostomum</i>	striped sea leech	
Arthropoda	Thoracica (order)	barnacle unident.

Appendix B Table 2.--Continued.

Phylum	Species name	Common name
	<i>Balanus evermanni</i>	giant barnacle
	<i>Pandalus borealis</i>	northern shrimp
	<i>Pandalus goniurus</i>	humpy shrimp
	<i>Pandalus hypsinotus</i>	coonstripe shrimp
	<i>Lebbeus groenlandicus</i>	spiny lebbeid
	<i>Crangon</i> sp.	
	<i>Crangon abyssorum</i>	abyssal crangon
	<i>Crangon dalli</i>	ridged crangon
	<i>Argis</i> sp.	
	<i>Argis dentata</i>	Arctic argid
	<i>Argis lar</i>	kuro argid
	<i>Cancer oregonensis</i>	Oregon rock crab
	<i>Oregonia gracilis</i>	graceful decorator crab
	<i>Chionoecetes bairdi</i>	Tanner crab
	<i>Hyas coarctatus</i>	circumboreal toad crab
	<i>Hyas lyratus</i>	Pacific lyre crab
	<i>Chionoecetes opilio</i>	snow crab
	<i>Chionoecetes hybrid</i>	hybrid tanner crab
	<i>Telmessus cheiragonus</i>	helmet crab
	Paguridae	hermit crab unident.
	<i>Pagurus</i> sp.	
	<i>Pagurus brandti</i>	sponge hermit
	<i>Pagurus aleuticus</i>	Aleutian hermit
	<i>Labidochirus splendescens</i>	splendid hermit
	<i>Pagurus confragosus</i>	knobbyhand hermit
	<i>Pagurus trigonocheirus</i>	fuzzy hermit crab
	<i>Pagurus ochotensis</i>	Alaskan hermit
	<i>Pagurus rathbuni</i>	longfinger hermit
	<i>Elassochirus tenuimanus</i>	widehand hermit crab

Appendix B Table 2.--Continued.

Phylum	Species name	Common name
	<i>Pagurus capillatus</i>	hairy hermit crab
	<i>Elassochirus cavimanus</i>	purple hermit
	<i>Lithodes aequispina</i>	golden king crab
	<i>Hapalogaster</i> sp.	
	<i>Hapalogaster grebnitzkii</i>	
	<i>Paralithodes camtschaticus</i>	red king crab
	<i>Paralithodes platypus</i>	blue king crab
	<i>Erimacrus isenbeckii</i>	horsehair crab
Mollusca	Nudibranchia unident.	nudibranch unident.
	<i>Dendronotus</i> sp.	
	<i>Tritonia diomedea</i>	rosy tritonia
	Gastropod unident.	snail unident.
	<i>Natica</i> sp.	
	<i>Natica clausa</i>	Arctic moonsnail
	<i>Cryptonatica aleutica</i>	Aleutian moonsnail
	<i>Natica russa</i>	rusty moonsnail
	<i>Polinices pallidus</i>	pale moonsnail
	<i>Crepidula</i> sp.	slipper shell
	<i>Crepidula grandis</i>	great slippersnail
	<i>Colus</i> sp.	
	<i>Colus herendeenii</i>	thin-ribbed whelk
	<i>Colus spitzbergensis</i>	thick-ribbed whelk
	<i>Colus halli</i>	shrew whelk
	<i>Volutopsius</i> sp.	
	<i>Pyrulofusus deformis</i>	warped whelk
	<i>Volutopsius fragilis</i>	fragile whelk
	<i>Pyrulofusus melonis</i>	
	<i>Volutopsius stefanssoni</i>	shouldered whelk
	<i>Volutopsius middendorffii</i>	tulip whelk

Appendix B Table 2.--Continued.

Phylum	Species name	Common name
	<i>Beringius</i> sp.	
	<i>Beringius kennicottii</i>	
	<i>Beringius beringii</i>	
	<i>Neptunea</i> sp.	
	<i>Neptunea pribiloffensis</i>	Pribilof whelk
	<i>Neptunea borealis</i>	
	<i>Neptunea lyrata</i>	lyre whelk
	<i>Neptunea ventricosa</i>	fat whelk
	<i>Neptunea heros</i>	
	<i>Neptunea magna</i>	helmet whelk
	<i>Plicifusus</i> sp.	
	<i>Aforia circinata</i>	keeled aforia
	<i>Trichotropis bicarinata</i>	two-keel hairsnail
	<i>Fusitriton oregonensis</i>	Oregon triton
	<i>Buccinum</i> sp.	
	<i>Buccinum angulosum</i>	angular whelk
	<i>Buccinum plectrum</i>	sinuous whelk
	<i>Buccinum scalariforme</i>	ladder whelk
	<i>Buccinum polare</i>	polar whelk
	<i>Arctomelon stearnsii</i>	Alaska volute
	<i>Modiolus modiolus</i>	northern horse mussel
	<i>Mytilus</i> sp.	
	<i>Mytilus edulis</i>	blue mussel
	Pectinid unident.	scallop unident.
	<i>Chlamys</i> sp.	
	<i>Chlamys rubida</i>	reddish scallop
	<i>Chlamys pseudoislandica</i>	false iceland scallop
	<i>Patinopecten caurinus</i>	weathervane scallop
	<i>Yoldia</i> sp.	

Appendix B Table 2.--Continued.

Phylum	Species name	Common name
	<i>Nuculana</i> sp.	
	<i>Musculus discors</i>	discordant mussel
	<i>Cyclocardia crebricostata</i>	many-rib cyclocardia
	<i>Clinocardium</i> sp.	
	<i>Clinocardium nuttallii</i>	Nuttall cockle
	<i>Clinocardium ciliatum</i>	hairy cockle
	<i>Mactromeris polynyma</i>	Arctic surfclam
	<i>Tellina</i> sp.	
	<i>Tellina lutea</i>	Alaska great-tellin
	<i>Macoma</i> sp.	
	<i>Siliqua</i> sp.	
	<i>Siliqua alta</i>	Alaska razor
	<i>Serripes</i> sp.	
	<i>Serripes groenlandicus</i>	Greenland cockle
	<i>Serripes laperousii</i>	broad cockle
	<i>Mya</i> sp.	
	<i>Pododesmus</i> sp.	
	Octopodidae	octopus unident.
	<i>Octopus dofleini</i>	giant octopus
	<i>Rossia pacifica</i>	eastern Pacific bobtail
Echinodermata	<i>Evasterias</i> sp.	
	<i>Evasterias troschelii</i>	mottled sea star
	<i>Evasterias echinosoma</i>	giant sea star
	<i>Leptasterias hylodes</i>	Aleutian sea star
	<i>Pycnopodia helianthoides</i>	sunflower sea star
	<i>Lethasterias nanimensis</i>	blackspined sea star
	<i>Henricia</i> sp.	
	<i>Henricia tumida</i>	tumid sea star
	<i>Leptasterias polaris</i>	

Appendix B Table 2.--Continued.

Phylum	Species name	Common name
	<i>Leptasterias arctica</i>	
	<i>Leptasterias</i> sp.	
	<i>Pseudarchaster</i> sp.	
	<i>Hippasteria spinosa</i>	spiny red sea star
	<i>Pseudarchaster parelii</i>	scarlet sea star
	<i>Ceramaster</i> sp.	
	<i>Ceramaster japonicus</i>	red bat star
	<i>Solaster dawsoni</i>	morning sun sea star
	<i>Crossaster</i> sp.	
	<i>Crossaster papposus</i>	rose sea star
	<i>Pteraster</i> sp.	
	<i>Pteraster tessellatus</i>	
	<i>Pteraster obscurus</i>	obscure sea star
	<i>Diplopteraster multipes</i>	pincushion sea star
	<i>Asterias amurensis</i>	purple-orange sea star
	<i>Ctenodiscus crispatus</i>	common mud star
	<i>Dipsacaster borealis</i>	northern sea star
	Echinacea unident.	sea urchin unident.
	<i>Strongylocentrotus droebachiensis</i>	green sea urchin
	<i>Strongylocentrotus pallidus</i>	white sea urchin
	<i>Echinarachnius parma</i>	Parma sand dollar
	Ophiuroid unident.	brittlestarfish unident.
	<i>Gorgonocephalus eucnemis</i>	basketstar
	<i>Ophiura</i> sp.	
	<i>Ophiura sarsi</i>	notched brittlestar
	<i>Ophiopholis aculeata</i>	ubiquitous brittle star
	Holothuroidea unident.	sea cucumber unident.
	<i>Pentamera lissoplaca</i>	crescent sea cucumber
	<i>Cucumaria</i> sp.	

Appendix B Table 2.--Continued.

Phylum	Species name	Common name
	<i>Cucumaria fallax</i>	sea football
	<i>Psolus</i> sp.	
	<i>Psolus squamatus</i>	whitescaled sea cucumber
Porifera	Porifera	sponge unident.
	<i>Halichondria panicea</i>	barrel sponge
Platyhelminthes	Platyhelminthes (phylum)	flatworm unident.
Sipuncula	Sipuncula	peanut worm unid.
Echiura	Echiura (phylum)	echiuroid worm unident.
Bryozoa	Bryozoa unident.	bryozoan unident.
	<i>Eucratea loricata</i>	feathery bryozoan
	<i>Flustra serrulata</i>	leafy bryozoan
	<i>Rhizophostomella costata</i>	ribbed bryozoan
Chordata	Ascidian unident.	tunicate unident.
	Thaliacea unident.	salps unident.
	<i>Styela rustica</i>	sea potato
	<i>Boltenia</i> sp.	
	<i>Boltenia ovifera</i>	
	<i>Halocynthia</i> sp.	sea peach unident.
	<i>Halocynthia aurantium</i>	sea peach
	<i>Aplidium</i> sp.	sea glob
	<i>Synoicum</i> sp.	sea blob
	<i>Molgula griffithsii</i>	sea grape
	<i>Halocynthia</i> sp.	sea peach unident.
	<i>Halocynthia aurantium</i>	sea peach
	<i>Aplidium</i> sp.	sea glob
	<i>Molgula griffithsii</i>	sea grape

APPENDIX C

Rank Order of Relative Abundance of Fish and Invertebrates

Appendix C ranks all fish and invertebrates caught during the 2002 eastern Bering Sea bottom trawl survey by descending unweighted CPUE (kg/ha).

Appendix C Table 1.--Rank of fish and invertebrate taxa by unweighted total CPUE (kg/ha) from the 2002 eastern Bering Sea bottom trawl survey.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
1	21740	107.39287	103.408	87.46168	127.32405	0.33624216	0.33624216	Theragra chalcogramma
2	10260	42.54378	17.812	34.27178	50.81579	0.13320264	0.46944480	Lepidopsetta sp.
3	10210	42.11553	13.948	34.79544	49.43561	0.13186179	0.60130659	Limanda aspera
4	81742	17.56821	2.420	14.51943	20.61698	0.05500525	0.65631183	Asterias amurensis
5	21720	13.79319	2.399	10.75735	16.82903	0.04318585	0.69949768	Gadus macrocephalus
6	10129	12.37724	5.614	7.73332	17.02115	0.03875257	0.73825025	Hippoglossoides sp.
7	10285	9.01527	1.341	6.74546	11.28509	0.02822641	0.76647666	Pleuronectes quadrituberculatus
8	471	8.36501	0.289	7.31067	9.41935	0.02619047	0.79266713	Bathyraja parmifera
9	10110	6.58436	0.539	5.14568	8.02304	0.02061533	0.81328246	Atheresthes stomias
10	98082	6.28735	1.756	3.68991	8.88479	0.01968540	0.83296786	Styela rustica
11	91000	6.00185	13.137	0.00000	13.10599	0.01879152	0.85175938	Porifera
12	83020	4.44846	0.518	3.03774	5.85918	0.01392793	0.86568731	Gorgonocephalus eucnemis
13	69010	3.27074	0.171	2.46067	4.08082	0.01024055	0.87592786	Paguridae
14	98205	2.60174	0.812	0.83511	4.36837	0.00814593	0.88407379	Halocynthia aurantium
15	68580	2.58372	0.197	1.71285	3.45459	0.00808950	0.89216329	Chionoecetes opilio
16	10120	2.14789	0.026	1.83228	2.46351	0.00672495	0.89888824	Hippoglossus stenolepis
17	69086	2.14493	0.172	1.33107	2.95879	0.00671569	0.90560393	Pagurus trigonocheirus
18	81780	1.93554	0.291	0.87773	2.99335	0.00606009	0.91166402	Ctenodiscus crispatus
19	71884	1.78250	0.040	1.39010	2.17489	0.00558091	0.91724493	Neptunea heros
20	71820	1.73704	0.068	1.22520	2.24887	0.00543859	0.92268352	Neptunea pribiloffensis
21	69060	1.67306	0.046	1.25387	2.09225	0.00523827	0.92792179	Pagurus aleuticus
22	69322	1.59476	0.105	0.96061	2.22890	0.00499311	0.93291490	Paralithodes camtschaticus
23	21370	1.38457	0.069	0.86870	1.90044	0.00433504	0.93724994	Myoxocephalus polyacanthocephalus
24	10220	1.25619	0.101	0.63465	1.87773	0.00393308	0.94118302	Platichthys stellatus
25	21371	1.09892	0.043	0.69469	1.50315	0.00344068	0.94462369	Myoxocephalus jaok
26	71870	0.86470	0.025	0.55521	1.17419	0.00270734	0.94733103	Neptunea lyrata
27	40500	0.83932	0.014	0.60705	1.07158	0.00262786	0.94995889	Scyphozoa (class)
28	68560	0.81462	0.012	0.59706	1.03217	0.00255052	0.95250942	Chionoecetes bairdi
29	80590	0.76574	0.016	0.51690	1.01457	0.00239748	0.95490690	Leptasterias polaris
30	69090	0.70690	0.026	0.39291	1.02088	0.00221326	0.95712016	Pagurus ochotensis

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
31	21420	0.68543	0.042	0.28457	1.08628	0.00214604	0.95926619	Hemitripteris bolini
32	71882	0.66765	0.008	0.49034	0.84497	0.00209039	0.96135659	Neptunea ventricosa
33	69035	0.60518	0.027	0.28465	0.92570	0.00189478	0.96325137	Pagurus sp.
34	40501	0.59515	0.013	0.36883	0.82148	0.00186340	0.96511477	Chrysaora sp.
35	10112	0.53193	0.005	0.38828	0.67557	0.00166544	0.96678021	Atheresthes evermanni
36	98105	0.51586	0.014	0.28385	0.74788	0.00161514	0.96839535	Boltenia ovifera
37	10200	0.48603	0.013	0.26436	0.70771	0.00152175	0.96991711	Glyptocephalus zachirus
38	10115	0.45266	0.010	0.25859	0.64673	0.00141726	0.97133436	Reinhardtius hippoglossoides
39	20040	0.44972	0.012	0.23556	0.66388	0.00140805	0.97274242	Podothecus acipenserinus
40	72500	0.32581	0.010	0.13462	0.51700	0.00102010	0.97376252	Fusitriton oregonensis
41	43010	0.32227	0.009	0.13637	0.50817	0.00100900	0.97477152	Metridium sp.
42	83000	0.31108	0.017	0.05463	0.56753	0.00097397	0.97574549	Ophiuroid unident.
43	83310	0.30659	0.015	0.06341	0.54977	0.00095993	0.97670542	Ophiura sp.
44	21347	0.30549	0.015	0.06901	0.54197	0.00095647	0.97766190	Hemilepidotus jordani
45	21110	0.26480	0.007	0.10377	0.42583	0.00082907	0.97849097	Clupea pallasi
46	83320	0.24874	0.011	0.04499	0.45248	0.00077878	0.97926975	Ophiura sarsi
47	435	0.23869	0.002	0.15433	0.32305	0.00074734	0.98001709	Bathyraja interrupta
48	24191	0.23735	0.002	0.14080	0.33391	0.00074314	0.98076023	Lycodes brevipes
49	24185	0.23441	0.001	0.17332	0.29549	0.00073391	0.98149414	Lycodes palearis
50	43000	0.23293	0.014	0.00265	0.46321	0.00072930	0.98222344	Actiniaria (order)
51	21368	0.23104	0.003	0.12184	0.34024	0.00072337	0.98294681	Myoxocephalus verrucosus
52	43090	0.21605	0.008	0.04497	0.38714	0.00067646	0.98362327	Liponema brevicornis
53	85201	0.20632	0.010	0.01395	0.39870	0.00064599	0.98426926	Cucumaria fallax
54	80200	0.20506	0.001	0.14460	0.26552	0.00064204	0.98491130	Lethasterias nanimensis
55	10211	0.20456	0.002	0.10763	0.30149	0.00064048	0.98555177	Limanda proboscidea
56	68577	0.18753	0.006	0.03813	0.33694	0.00058716	0.98613894	Hyas coarctatus
57	69070	0.18190	0.003	0.07980	0.28401	0.00056953	0.98670846	Pagurus confragosus
58	71500	0.17576	0.002	0.09244	0.25909	0.00055030	0.98725877	Gastropod unident.
59	80020	0.16642	0.003	0.06021	0.27262	0.00052104	0.98777981	Evasterias echinosoma
60	71753	0.16216	0.003	0.05408	0.27025	0.00050772	0.98828753	Pyrulofusus deformis
61	72740	0.15848	0.001	0.10594	0.21102	0.00049619	0.98878372	Buccinum sp.
62	40560	0.14808	0.001	0.07964	0.21652	0.00046362	0.98924734	Cyanea sp.
63	82510	0.14142	0.004	0.02274	0.26010	0.00044279	0.98969013	Strongylocentrotus droebachiensis

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
64	98200	0.14072	0.015	0.00000	0.37694	0.00044059	0.99013072	Halocynthia sp.
65	69095	0.14003	0.002	0.06071	0.21936	0.00043844	0.99056915	Pagurus rathbuni
66	320	0.13481	0.009	0.00000	0.31890	0.00042208	0.99099123	Somniosus pacificus
67	69323	0.12667	0.003	0.01336	0.23999	0.00039661	0.99138784	Paralithodes platypus
68	20322	0.11826	0.009	0.00000	0.30025	0.00037027	0.99175811	Anarhichas orientalis
69	30060	0.11694	0.013	0.00000	0.33885	0.00036612	0.99212423	Sebastes alutus
70	71001	0.10625	0.000	0.06789	0.14461	0.00033267	0.99245689	gastropod eggs
71	69061	0.10478	0.000	0.06265	0.14691	0.00032805	0.99278495	Labidochirus splendescens
72	71750	0.09485	0.001	0.03559	0.15412	0.00029698	0.99308192	Volutopsius sp.
73	50010	0.09270	0.006	0.00000	0.24398	0.00029025	0.99337218	tube worm unident.
74	23010	0.08580	0.001	0.03175	0.13984	0.00026862	0.99364080	Thaleichthys pacificus
75	41221	0.07237	0.001	0.01987	0.12487	0.00022658	0.99386738	Gersemia rubiformis
76	65100	0.06885	0.001	0.00000	0.14244	0.00021556	0.99408294	Thoracica (order)
77	68578	0.06826	0.000	0.02975	0.10676	0.00021371	0.99429665	Hyas lyratus
78	41201	0.06463	0.000	0.02269	0.10657	0.00020237	0.99449901	Gersemia sp.
79	98310	0.06077	0.000	0.02997	0.09157	0.00019028	0.99468929	Aplidium sp.
80	80594	0.05793	0.001	0.01025	0.10561	0.00018138	0.99487067	Leptasterias arctica
81	20720	0.05618	0.000	0.01864	0.09372	0.00017589	0.99504657	Bathymaster signatus
82	472	0.05425	0.001	0.00377	0.10472	0.00016984	0.99521641	Bathyraja aleutica
83	22205	0.05115	0.001	0.00000	0.10720	0.00016016	0.99537657	Liparis gibbus
84	71886	0.04989	0.000	0.02597	0.07381	0.00015620	0.99553276	Neptunea magna
85	10270	0.04697	0.001	0.00000	0.10590	0.00014707	0.99567983	Isopsetta isolepis
86	66510	0.04662	0.002	0.00000	0.13800	0.00014597	0.99582580	Crangon abyssorum
87	21316	0.04541	0.001	0.00000	0.12028	0.00014218	0.99596798	Gymnocanthus galeatus
88	69120	0.03748	0.001	0.00000	0.11094	0.00011735	0.99608533	Pagurus capillatus
89	72752	0.03748	0.000	0.02307	0.05189	0.00011735	0.99620268	Buccinum scalariforme
90	69400	0.03435	0.000	0.02069	0.04802	0.00010756	0.99631024	Erimacrus isenbeckii
91	21314	0.03349	0.000	0.00000	0.06742	0.00010487	0.99641511	Gymnocanthus pistilliger
92	78010	0.03333	0.000	0.00048	0.06617	0.00010435	0.99651946	Octopodidae
93	82500	0.03158	0.000	0.00246	0.06070	0.00009888	0.99661834	Echinacea unident.
94	95000	0.03131	0.000	0.01928	0.04334	0.00009803	0.99671637	Bryozoa unident.
95	420	0.03009	0.000	0.00000	0.06523	0.00009422	0.99681059	Raja binoculata
96	98000	0.02937	0.000	0.00569	0.05305	0.00009196	0.99690255	Ascidian unident.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
97	74120	0.02860	0.000	0.00000	0.06584	0.00008954	0.99699208	Patinopecten caurinus
98	50160	0.02841	0.000	0.00309	0.05374	0.00008896	0.99708104	Aphroditidae
99	66031	0.02684	0.000	0.01655	0.03714	0.00008404	0.99716509	Pandalus borealis
100	21390	0.02628	0.000	0.01493	0.03764	0.00008229	0.99724738	Dasycottus setiger
101	21592	0.02614	0.000	0.00194	0.05034	0.00008184	0.99732922	Trichodon trichodon
102	23041	0.02594	0.000	0.01793	0.03395	0.00008121	0.99741043	Mallotus villosus
103	24001	0.02522	0.000	0.00000	0.05351	0.00007895	0.99748938	Zaprora silenus
104	440	0.02392	0.000	0.00000	0.05803	0.00007489	0.99756427	Raja rhina
105	80010	0.02295	0.000	0.00000	0.06593	0.00007185	0.99763612	Evasterias sp.
106	71769	0.02279	0.000	0.00000	0.04993	0.00007136	0.99770748	Beringius sp.
107	71030	0.02197	0.000	0.00000	0.05770	0.00006879	0.99777627	Tritonia diomedea
108	71763	0.02152	0.000	0.00000	0.05273	0.00006739	0.99784366	Volutopsius stefanssoni
109	68781	0.02073	0.000	0.00792	0.03353	0.00006490	0.99790856	Telmessus cheiragonus
110	71835	0.02050	0.000	0.01338	0.02762	0.00006418	0.99797273	Neptunea borealis
111	72755	0.01956	0.000	0.00619	0.03293	0.00006124	0.99803398	Buccinum polare
112	69121	0.01926	0.000	0.00865	0.02987	0.00006030	0.99809427	Elassochirus cavimanus
113	85210	0.01891	0.000	0.00000	0.04669	0.00005922	0.99815349	Psolus sp.
114	98300	0.01846	0.000	0.00418	0.03274	0.00005780	0.99821129	compound ascidian unident.
115	21348	0.01783	0.000	0.00000	0.03718	0.00005584	0.99826713	Hemilepidotus papilio
116	72743	0.01760	0.000	0.00763	0.02756	0.00005509	0.99832222	Buccinum angulosum
117	71764	0.01707	0.000	0.00540	0.02873	0.00005344	0.99837566	Volutopsius middendorffii
118	56311	0.01676	0.000	0.01044	0.02308	0.00005248	0.99842814	Eunoe nodosa
119	81355	0.01660	0.000	0.00872	0.02449	0.00005199	0.99848012	Pteraster obscurus
120	71891	0.01636	0.000	0.00922	0.02349	0.00005121	0.99853133	Plicifusus (=Colus)
121	68510	0.01621	0.000	0.00759	0.02483	0.00005075	0.99858208	Oregonia gracilis
122	21438	0.01526	0.000	0.00788	0.02264	0.00004778	0.99862986	Icelus spiniger
123	43032	0.01443	0.000	0.00551	0.02334	0.00004517	0.99867503	Stomphia coccinea
124	74562	0.01393	0.000	0.00000	0.03382	0.00004362	0.99871865	Musculus discors
125	22236	0.01340	0.000	0.00611	0.02070	0.00004197	0.99876062	Careproctus rastrinus
126	78403	0.01320	0.000	0.00000	0.03786	0.00004132	0.99880194	Octopus dofleini
127	75111	0.01290	0.000	0.00624	0.01956	0.00004039	0.99884233	Mactromeris polynyma
128	65203	0.01208	0.000	0.00000	0.03444	0.00003783	0.99888016	Balanus evermanni
129	68590	0.01197	0.000	0.00688	0.01705	0.00003747	0.99891763	Chionoecetes hybrid

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
130	75284	0.01189	0.000	0.00000	0.03236	0.00003722	0.99895484	Serripes sp.
131	85000	0.01167	0.000	0.00000	0.02577	0.00003653	0.99899137	Holothuroidea unident.
132	42000	0.01097	0.000	0.00000	0.02384	0.00003435	0.99902573	Pennatulacea (order)
133	21341	0.01012	0.000	0.00000	0.02349	0.00003169	0.99905741	Malacocottus zonurus
134	81315	0.00990	0.000	0.00000	0.02301	0.00003101	0.99908843	Pteraster tessellatus
135	71761	0.00988	0.000	0.00000	0.02560	0.00003094	0.99911936	Pyrulofusus melonis
136	20320	0.00968	0.000	0.00000	0.02308	0.00003030	0.99914967	Anarrhichthys ocellatus
137	98100	0.00923	0.000	0.00000	0.01977	0.00002890	0.99917857	Boltenia sp.
138	24184	0.00915	0.000	0.00000	0.02256	0.00002866	0.99920723	Lycodes raridens
139	95030	0.00911	0.000	0.00145	0.01677	0.00002851	0.99923575	Flustra serrulata
140	20006	0.00909	0.000	0.00369	0.01449	0.00002847	0.99926422	Leptagonus frenatus
141	24189	0.00884	0.000	0.00000	0.02411	0.00002768	0.99929190	Lycodes turneri
142	81095	0.00878	0.000	0.00381	0.01374	0.00002748	0.99931938	Crossaster papposus
143	75285	0.00832	0.000	0.00260	0.01404	0.00002605	0.99934543	Serripes groenlandicus
144	495	0.00774	0.000	0.00000	0.01703	0.00002422	0.99936965	Bathyraja violacea
145	80160	0.00729	0.000	0.00000	0.02158	0.00002283	0.99939248	Pycnopodia helianthoides
146	74065	0.00701	0.000	0.00000	0.01501	0.00002196	0.99941444	Mytilus sp.
147	30420	0.00686	0.000	0.00000	0.01920	0.00002149	0.99943593	Sebastes polyspinis
148	20510	0.00624	0.000	0.00000	0.01713	0.00001954	0.99945547	Anoplopoma fimbria
149	71010	0.00616	0.000	0.00088	0.01145	0.00001930	0.99947477	Nudibranchia unident.
150	82740	0.00573	0.000	0.00000	0.01198	0.00001794	0.99949271	Echinarachnius parma
151	21935	0.00565	0.000	0.00000	0.01673	0.00001769	0.99951040	Hexagrammos decagrammus
152	21921	0.00550	0.000	0.00000	0.01219	0.00001722	0.99952762	Pleurogrammus monopterygius
153	20061	0.00540	0.000	0.00000	0.01250	0.00001690	0.99954452	Ocella dodecaedron
154	95020	0.00536	0.000	0.00000	0.01508	0.00001678	0.99956130	Eucratea loricata
155	24188	0.00533	0.000	0.00000	0.01364	0.00001669	0.99957799	Lycodes polaris
156	66050	0.00485	0.000	0.00000	0.01435	0.00001518	0.99959317	Pandalus hypsinotus
157	21354	0.00476	0.000	0.00000	0.01190	0.00001490	0.99960808	Triglops scepticus
158	74983	0.00462	0.000	0.00000	0.00949	0.00001447	0.99962255	Clinocardium ciliatum
159	21355	0.00461	0.000	0.00000	0.01051	0.00001445	0.99963699	Triglops pingeli
160	480	0.00460	0.000	0.00000	0.01362	0.00001440	0.99965140	Bathyraja maculata
161	95070	0.00436	0.000	0.00000	0.01049	0.00001364	0.99966503	Rhamphostomella costata
162	71756	0.00408	0.000	0.00106	0.00709	0.00001277	0.99967780	Volutopsius fragilis

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
163	80540	0.00396	0.000	0.00000	0.00842	0.00001239	0.99969019	Henricia sp.
164	82526	0.00394	0.000	0.00000	0.00977	0.00001233	0.99970252	Strongylocentrotus pallidus
165	71772	0.00383	0.000	0.00000	0.00898	0.00001198	0.99971451	Beringius beringii
166	74106	0.00366	0.000	0.00000	0.01067	0.00001146	0.99972597	Chlamys rubida
167	401	0.00355	0.000	0.00043	0.00668	0.00001113	0.99973709	skate egg case unident.
168	81360	0.00354	0.000	0.00000	0.00807	0.00001109	0.99974818	Diplopteraster multipes
169	21932	0.00352	0.000	0.00000	0.00770	0.00001103	0.99975921	Hexagrammos stelleri
170	23235	0.00320	0.000	0.00000	0.00947	0.00001002	0.99976923	Oncorhynchus keta
171	56312	0.00315	0.000	0.00178	0.00452	0.00000985	0.99977909	Eunoe depressa
172	71721	0.00315	0.000	0.00102	0.00527	0.00000985	0.99978894	Colus herendeenii
173	82730	0.00306	0.000	0.00000	0.00779	0.00000958	0.99979851	sand dollar unident.
174	66045	0.00293	0.000	0.00000	0.00791	0.00000916	0.99980767	Pandalus goniurus
175	69110	0.00263	0.000	0.00000	0.00592	0.00000823	0.99981590	Elassochirus tenuimanus
176	66502	0.00244	0.000	0.00000	0.00578	0.00000764	0.99982354	Crangon sp.
177	30050	0.00225	0.000	0.00000	0.00576	0.00000706	0.99983060	Sebastes aleutianus
178	43040	0.00213	0.000	0.00000	0.00629	0.00000667	0.99983727	Urticina sp.
179	1	0.00207	0.000	0.00000	0.00494	0.00000649	0.99984376	fish eggs unident.
180	85220	0.00203	0.000	0.00000	0.00602	0.00000637	0.99985013	Psolus squamatus
181	91057	0.00176	0.000	0.00000	0.00392	0.00000552	0.99985565	scapula sponge
182	72790	0.00175	0.000	0.00000	0.00433	0.00000547	0.99986112	Arctomelon stearnsii
183	74655	0.00174	0.000	0.00000	0.00425	0.00000544	0.99986655	Cyclocardia crebricostata
184	40011	0.00171	0.000	0.00000	0.00376	0.00000536	0.99987191	hydroid unident.
185	42012	0.00170	0.000	0.00000	0.00414	0.00000531	0.99987722	Halipteris willemoesi
186	22204	0.00155	0.000	0.00000	0.00459	0.00000485	0.99988207	Liparis dennyi
187	50192	0.00151	0.000	0.00004	0.00299	0.00000474	0.99988681	Aphrodita negligens
188	80660	0.00135	0.000	0.00022	0.00249	0.00000424	0.99989105	Pseudarchaster parelii
189	75201	0.00127	0.000	0.00000	0.00355	0.00000396	0.99989501	Tellina sp.
190	69310	0.00126	0.000	0.00000	0.00372	0.00000394	0.99989895	Lithodes aequispina
191	71681	0.00120	0.000	0.00022	0.00217	0.00000375	0.99990270	Crepidula grandis
192	81064	0.00112	0.000	0.00000	0.00331	0.00000350	0.99990620	Solaster dawsoni
193	71580	0.00110	0.000	0.00020	0.00199	0.00000343	0.99990963	Polinices pallidus
194	22206	0.00107	0.000	0.00000	0.00276	0.00000334	0.99991632	Crystallichthys cyclospilus
195	75286	0.00107	0.000	0.00000	0.00255	0.00000335	0.99991298	Serripes laperousii

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
196	75240	0.00104	0.000	0.00017	0.00192	0.00000327	0.99991959	Macoma sp.
197	72063	0.00103	0.000	0.00028	0.00177	0.00000322	0.99992280	Aforia circinata
198	72751	0.00101	0.000	0.00027	0.00174	0.00000315	0.99992912	Buccinum plectrum
199	74980	0.00101	0.000	0.00000	0.00294	0.00000316	0.99992597	Clinocardium sp.
200	71525	0.00088	0.000	0.00012	0.00165	0.00000277	0.99993189	Natica sp.
201	95010	0.00086	0.000	0.00000	0.00254	0.00000269	0.99993458	bryozoan sp. A unident.
202	22210	0.00076	0.000	0.00000	0.00224	0.00000236	0.99993933	Liparis ochotensis
203	80595	0.00076	0.000	0.00000	0.00157	0.00000236	0.99994170	Leptasterias sp.
204	83400	0.00076	0.000	0.00000	0.00204	0.00000239	0.99993697	Ophiopholis aculeata
205	21346	0.00075	0.000	0.00006	0.00143	0.00000234	0.99994638	Hemilepidotus hemilepidotus
206	43042	0.00075	0.000	0.00000	0.00150	0.00000235	0.99994405	Urticina crassicornis
207	81310	0.00069	0.000	0.00000	0.00204	0.00000216	0.99994854	Pteraster sp.
208	20050	0.00066	0.000	0.00000	0.00169	0.00000205	0.99995265	Aspidophoroides bartoni
209	66570	0.00066	0.000	0.00039	0.00093	0.00000205	0.99995060	Argis sp.
210	79020	0.00064	0.000	0.00013	0.00114	0.00000200	0.99995464	Rossia pacifica
211	44094	0.00062	0.000	0.00000	0.00147	0.00000193	0.99995657	Amphilaphis sp.
212	21	0.00056	0.000	0.00000	0.00136	0.00000177	0.99995834	Lampetra tridentata
213	21441	0.00056	0.000	0.00000	0.00123	0.00000176	0.99996010	Icelus spatula
214	71726	0.00054	0.000	0.00000	0.00114	0.00000168	0.99996178	Colus spitzbergensis
215	68040	0.00053	0.000	0.00000	0.00112	0.00000167	0.99996344	Cancer oregonensis
216	99902	0.00051	0.000	0.00000	0.00129	0.00000159	0.99996503	Molgula griffithsii
217	21735	0.00050	0.000	0.00000	0.00132	0.00000155	0.99996658	Eleginus gracilis
218	43020	0.00049	0.000	0.00000	0.00146	0.00000154	0.99996813	Metridium senile
219	74100	0.00049	0.000	0.00000	0.00133	0.00000153	0.99996965	Pectinid unident.
220	85200	0.00046	0.000	0.00000	0.00106	0.00000142	0.99997108	Cucumaria sp.
221	80015	0.00045	0.000	0.00000	0.00099	0.00000141	0.99997249	Evasterias troschelii
222	80650	0.00044	0.000	0.00000	0.00130	0.00000137	0.99997386	Hippasteria spinosa
223	40511	0.00043	0.000	0.00000	0.00127	0.00000134	0.99997656	Aurelia sp.
224	75205	0.00043	0.000	0.00002	0.00085	0.00000135	0.99997521	Tellina lutea
225	75267	0.00040	0.000	0.00013	0.00068	0.00000127	0.99997782	Siliqua alta
226	75330	0.00037	0.000	0.00000	0.00098	0.00000117	0.99997899	Mya sp.
227	42003	0.00036	0.000	0.00000	0.00106	0.00000112	0.99998124	Virgularidae
228	71710	0.00036	0.000	0.00000	0.00090	0.00000114	0.99998013	Colus sp.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
229	20202	0.00035	0.000	0.00000	0.00083	0.00000110	0.99998234	Ammodytes hexapterus
230	81870	0.00034	0.000	0.00000	0.00099	0.00000105	0.99998339	Dipsacaster borealis
231	75605	0.00030	0.000	0.00000	0.00089	0.00000095	0.99998434	Pododesmus sp.
232	80729	0.00028	0.000	0.00000	0.00066	0.00000088	0.99998522	Ceramaster japonicus
233	71770	0.00027	0.000	0.00000	0.00068	0.00000086	0.99998607	Beringius kennicottii
234	72305	0.00027	0.000	0.00000	0.00080	0.00000085	0.99998692	Trichotropis bicarinata
235	69042	0.00026	0.000	0.00000	0.00078	0.00000083	0.99998775	Pagurus brandti
236	74080	0.00025	0.000	0.00000	0.00073	0.00000077	0.99998852	Mytilus edulis
237	54030	0.00024	0.000	0.00000	0.00061	0.00000075	0.99998927	Cheilonereis cyclurus
238	74060	0.00024	0.000	0.00000	0.00070	0.00000074	0.99999001	Modiolus modiolus
239	91050	0.00020	0.000	0.00000	0.00059	0.00000062	0.99999063	Halichondria panicea
240	21900	0.00016	0.000	0.00000	0.00046	0.00000049	0.99999265	Hexagrammidae
241	74112	0.00016	0.000	0.00000	0.00049	0.00000051	0.99999166	Chlamys pseudoislandica
242	94000	0.00016	0.000	0.00000	0.00042	0.00000050	0.99999217	Sipuncula (phylum)
243	75264	0.00016	0.000	0.00000	0.00040	0.00000049	0.99999314	Siliqua sp.
244	71731	0.00016	0.000	0.00000	0.00047	0.00000052	0.99999115	Colus halli
245	71640	0.00015	0.000	0.00000	0.00044	0.00000047	0.99999408	Crepidula sp.
246	98320	0.00015	0.000	0.00000	0.00037	0.00000047	0.99999361	Synoicum sp.
247	10212	0.00014	0.000	0.00000	0.00032	0.00000042	0.99999494	Limanda sakhalinensis
248	69316	0.00014	0.000	0.00000	0.00042	0.00000044	0.99999452	Hapalogaster grebnitzkii
249	10180	0.00013	0.000	0.00000	0.00033	0.00000040	0.99999575	Microstomus pacificus
250	23805	0.00013	0.000	0.00002	0.00023	0.00000040	0.99999535	Lumpenus maculatus
251	92000	0.00011	0.000	0.00000	0.00032	0.00000035	0.99999610	Platyhelminthes (phylum)
252	98070	0.00009	0.000	0.00000	0.00027	0.00000028	0.99999638	Thaliacea unident.
253	21352	0.00008	0.000	0.00000	0.00020	0.00000026	0.99999664	Triglops forficata
254	21405	0.00008	0.000	0.00000	0.00022	0.00000025	0.99999689	Nautichthys pribilovius
255	66611	0.00007	0.000	0.00002	0.00012	0.00000023	0.99999712	Argis lar
256	74104	0.00007	0.000	0.00000	0.00018	0.00000022	0.99999757	Chlamys sp.
257	80546	0.00007	0.000	0.00000	0.00015	0.00000022	0.99999734	Henricia tumida
258	21333	0.00006	0.000	0.00000	0.00014	0.00000018	0.99999794	Arteidiellus pacificus

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
259	22201	0.00006	0.000	0.00000	0.00014	0.00000020	0.99999776	Liparis sp.
260	21356	0.00005	0.000	0.00000	0.00015	0.00000016	0.99999826	Triglops macellus
261	23850	0.00005	0.000	0.00000	0.00012	0.00000015	0.99999856	Poroclinus rothrocki
262	22178	0.00005	0.000	0.00000	0.00011	0.00000015	0.99999841	Eumicrotremus orbis
263	74435	0.00005	0.000	0.00000	0.00013	0.00000016	0.99999810	Nuculana sp.
264	20036	0.00004	0.000	0.00000	0.00010	0.00000011	0.99999894	Bathyagonus infraspinus
265	66530	0.00004	0.000	0.00002	0.00007	0.00000013	0.99999882	Crangon dalli
266	71800	0.00004	0.000	0.00000	0.00013	0.00000013	0.99999869	Neptunea sp.
267	21397	0.00003	0.000	0.00000	0.00009	0.00000010	0.99999925	Blepsias bilobus
268	80728	0.00003	0.000	0.00000	0.00010	0.00000011	0.99999904	Ceramaster sp.
269	85169	0.00003	0.000	0.00000	0.00008	0.00000011	0.99999915	Pentamera lissoplaca
270	74982	0.00003	0.000	0.00000	0.00008	0.00000008	0.99999941	Clinocardium nuttallii
271	66580	0.00003	0.000	0.00000	0.00006	0.00000008	0.99999933	Argis dentata
272	23801	0.00002	0.000	0.00000	0.00004	0.00000005	0.99999976	Lumpenus sp.
273	50000	0.00002	0.000	0.00000	0.00005	0.00000006	0.99999961	Polychaeta (class)
274	59111	0.00002	0.000	0.00000	0.00004	0.00000005	0.99999971	Carcinobdella cyclostomum
275	71535	0.00002	0.000	0.00000	0.00005	0.00000007	0.99999948	Cryptonatica (=Natica)
276	94500	0.00002	0.000	0.00000	0.00006	0.00000006	0.99999955	Echiura (phylum)
277	80112	0.00002	0.000	0.00000	0.00005	0.00000005	0.99999966	Leptasterias hylodes
278	56310	0.00001	0.000	0.00000	0.00002	0.00000002	0.99999996	Eunoe sp.
279	71018	0.00001	0.000	0.00000	0.00002	0.00000003	0.99999992	Dendronotus sp.
280	71530	0.00001	0.000	0.00000	0.00002	0.00000002	0.99999994	Natica clausa
281	66203	0.00001	0.000	0.00000	0.00003	0.00000003	0.99999989	Lebbeus groenlandicus
282	80610	0.00001	0.000	0.00000	0.00003	0.00000004	0.99999983	Pseudarchaster sp.
283	81090	0.00001	0.000	0.00000	0.00003	0.00000004	0.99999983	Crossaster sp.
284	74414	0.00001	0.000	0.00000	0.00003	0.00000003	0.99999986	Yoldia sp.
285	21313	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999997	Gymnocanthus sp.
286	59100	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999998	Hirudinea unident.
287	71537	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999999	Natica russa
289	69315	0.00000	0.000	0.00000	0.00001	0.00000001	1.00000000	Hapalogaster sp.

APPENDIX D

Abundance Estimates for Principal Fish Species

Appendix D presents estimates of area weighted 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:

<u>Subarea</u>	<u>Stratum</u>
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)

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Appendix D Table 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	54	54	54	10.82	.19030E+02	12.29	.17140E+02
20	31	31	31	31	16.60	.15200E+02	47.84	.27560E+03
31	69	69	69	69	99.39	.25950E+03	110.58	.29040E+03
32	8	7	7	7	110.92	.35180E+04	189.37	.11570E+05
Subtotal	77	76	76	76	100.37	.24260E+03	117.27	.32660E+03
41	44	44	44	44	174.12	.18100E+04	250.52	.56950E+04
42	31	30	30	30	137.87	.11660E+04	278.13	.49100E+04
43	22	22	22	22	262.57	.32850E+04	362.11	.55330E+04
Subtotal	97	96	96	96	183.36	.79570E+03	278.51	.23810E+04
50	25	23	23	23	87.34	.11260E+04	97.38	.13400E+04
61	60	57	57	55	137.44	.84010E+03	240.39	.29700E+04
62	7	7	7	7	156.52	.45650E+04	305.92	.14620E+05
Subtotal	67	64	64	62	138.74	.75090E+03	244.85	.26470E+04
Total	355	344	344	342	103.95	.29500E+04	155.37	.69880E+04

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	95,679,603	.10396E+16	57.00	30,517,081	160,842,126
20	196,290,886	.46396E+16	30.00	57,201,086	335,380,686
31	1,045,268,785	.25948E+17	68.00	723,103,093	1,367,434,477
32	166,158,212	.89041E+16	7.00	0	389,322,931
Subtotal	1,211,426,998	.34852E+17	57.23	834,134,077	1,588,719,918
41	1,570,824,468	.22390E+18	43.00	614,531,330	2,527,117,607
42	667,832,097	.28308E+17	30.00	324,265,581	1,011,398,614
43	764,323,692	.24651E+17	21.00	437,752,402	1,090,894,982
Subtotal	3,002,980,258	.27686E+18	62.74	1,950,637,392	4,055,323,124
50	377,770,463	.20169E+17	24.00	83,934,483	671,606,444
61	2,118,653,636	.23067E+18	59.00	1,148,014,239	3,089,293,033
62	196,661,477	.60414E+16	6.00	0	396,496,029
Subtotal	2,315,315,113	.23671E+18	61.71	1,342,263,853	3,288,366,374
Total	7,199,463,322	.57426E+18	152.08	5,699,015,567	8,699,911,076

Appendix D Table-1.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	84,256	.11539E+10	57.00	15,603	152,909
20	68,113	.25588E+09	30.00	35,449	100,777
31	939,455	.23185E+11	68.00	634,925	1,243,984
32	97,326	.27082E+10	7.00	0	220,402
Subtotal	1,036,781	.25893E+11	74.89	714,956	1,358,605
41	1,091,772	.71149E+11	43.00	552,695	1,630,849
42	331,033	.67216E+10	30.00	163,618	498,447
43	554,219	.14636E+11	21.00	301,856	806,582
Subtotal	1,977,024	.92507E+11	66.11	1,368,726	2,585,322
50	338,819	.16950E+11	24.00	70,102	607,536
61	1,211,337	.65255E+11	59.00	695,069	1,727,604
62	100,621	.18865E+10	6.00	0	206,905
Subtotal	1,311,958	.67142E+11	61.95	793,722	1,830,193
Total	4,816,950	.20390E+12	186.30	3,922,873	5,711,028

Appendix D Table 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	56	56	56	7.61	.13980E+01	13.59	.77540E+01
20	31	29	29	29	7.37	.34630E+01	10.23	.71120E+01
31	69	67	67	67	10.54	.33610E+01	12.28	.71620E+01
32	8	8	8	8	11.86	.39960E+01	7.35	.20610E+01
Subtotal	77	75	75	75	10.66	.28430E+01	11.86	.60120E+01
41	44	44	44	44	24.46	.84050E+02	20.78	.33530E+02
42	31	31	31	31	14.32	.45110E+01	15.28	.13880E+02
43	22	22	22	22	35.27	.16520E+03	31.23	.14970E+03
Subtotal	97	97	97	97	24.32	.34980E+02	21.60	.17770E+02
50	25	22	22	22	6.43	.34680E+01	3.07	.84020E+00
61	60	58	58	58	13.07	.31100E+01	4.84	.41990E+00
62	7	7	7	7	23.30	.84990E+02	9.84	.13750E+02
Subtotal	67	65	65	65	13.77	.30950E+01	5.18	.42830E+00
Total	355	344	344	344	13.31	.49250E+02	12.17	.39910E+02

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	105,794,031	.47023E+15	57.00	61,969,235	149,618,827
20	41,976,683	.11971E+15	30.00	19,634,493	64,318,873
31	116,108,544	.63993E+15	68.00	65,515,010	166,702,079
32	6,446,132	.15864E+13	7.00	3,467,347	9,424,916
Subtotal	122,554,676	.64151E+15	68.33	71,898,468	173,210,884
41	130,280,151	.13183E+16	43.00	56,900,913	203,659,389
42	36,696,108	.80048E+14	30.00	18,399,634	54,992,582
43	65,911,484	.66701E+15	21.00	12,192,335	119,630,633
Subtotal	232,887,743	.20654E+16	69.00	141,995,391	323,780,096
50	11,923,596	.12644E+14	24.00	4,566,635	19,280,556
61	42,652,212	.32614E+14	59.00	31,110,494	54,193,929
62	6,326,939	.56821E+13	6.00	198,416	12,455,462
Subtotal	48,979,150	.38296E+14	62.65	36,602,334	61,355,966
Total	564,115,880	.33477E+16	155.18	449,553,635	678,678,124

Appendix D Table-2.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	59,270	.84797E+08	57.00	40,660	77,881
20	30,227	.58293E+08	30.00	14,637	45,818
31	99,665	.30032E+09	68.00	65,006	134,325
32	10,409	.30766E+07	7.00	6,260	14,557
Subtotal	110,074	.30340E+09	69.33	75,237	144,911
41	153,377	.33047E+10	43.00	37,197	269,556
42	34,379	.26007E+08	30.00	23,965	44,792
43	74,437	.73621E+09	21.00	18,000	130,874
Subtotal	262,193	.40669E+10	59.11	133,310	391,076
50	24,948	.52184E+08	24.00	10,001	39,894
61	115,234	.24160E+09	59.00	83,820	146,647
62	14,977	.35123E+08	6.00	474	29,479
Subtotal	130,210	.27673E+09	64.09	96,940	163,481
Total	616,923	.48423E+10	82.94	477,750	756,096

Appendix D Table 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	121.32	.17680E+03	578.52	.51860E+04
20	31	31	31	31	88.57	.11750E+03	401.16	.19990E+04
31	69	64	64	64	57.77	.59150E+02	194.31	.71270E+03
32	8	5	5	5	7.12	.15150E+02	16.68	.10370E+03
Subtotal	77	69	69	69	53.47	.49640E+02	179.23	.59750E+03
41	44	39	39	39	19.01	.33250E+02	57.48	.41760E+03
42	31	28	28	28	7.04	.16000E+01	17.36	.10740E+02
43	22	13	13	13	3.18	.13000E+01	9.55	.88660E+01
Subtotal	97	80	80	80	13.25	.11370E+02	39.16	.14210E+03
50	25	1	1	1	0.02	.30920E-03	0.04	.14360E-02
61	60	0	0	0	0.00	.00000E+00	0.00	.00000E+00
62	7	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Subtotal	67	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Total	355	239	239	239	43.23	.35530E+03	181.81	.79240E+04

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	4,504,983,745	.31449E+18	57.00	3,371,614,484	5,638,353,006
20	1,645,854,241	.33640E+17	30.00	1,270,778,866	2,020,929,616
31	1,836,760,278	.63683E+17	68.00	1,332,052,158	2,341,468,397
32	14,638,807	.79865E+14	7.00	0	35,774,214
Subtotal	1,851,399,084	.63762E+17	68.17	1,346,374,583	2,356,423,586
41	360,425,162	.16417E+17	43.00	101,474,131	619,376,193
42	41,690,694	.61905E+14	30.00	25,624,245	57,757,143
43	20,167,933	.39500E+14	21.00	7,057,547	33,278,318
Subtotal	422,283,789	.16519E+17	43.53	162,534,250	682,033,328
50	146,983	.21604E+11	24.00	0	450,355
61	0	.00000E+00	59.00	0	0
62	0	.00000E+00	6.00	0	0
Subtotal	0	.00000E+00	63.21	0	0
Total	8,424,667,842	.42841E+18	99.81	7,115,602,177	9,733,733,507

Appendix D Table-3.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	944,757	.10723E+11	57.00	735,483	1,154,032
20	363,387	.19778E+10	30.00	272,574	454,200
31	546,094	.52856E+10	68.00	400,690	691,498
32	6,251	.11663E+08	7.00	0	14,328
Subtotal	552,345	.52972E+10	68.30	406,781	697,909
41	119,220	.13073E+10	43.00	46,146	192,293
42	16,912	.92256E+07	30.00	10,710	23,115
43	6,707	.57932E+07	21.00	1,686	11,728
Subtotal	142,839	.13224E+10	43.99	69,346	216,331
50	68	.46532E+04	24.00	0	209
61	0	.00000E+00	59.00	0	0
62	0	.00000E+00	6.00	0	0
Subtotal	0	.00000E+00	63.21	0	0
Total	2,003,396	.19320E+11	143.69	1,728,184	2,278,609

Appendix D Table 4.--CPUE, population, and biomass estimates for *Lepidopsetta* 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	58	58	58	117.53	.99380E+02	461.20	.18080E+04
20	31	31	31	31	63.76	.11700E+03	181.42	.65980E+03
31	69	67	66	66	26.31	.18490E+02	115.15	.41770E+03
32	8	8	8	8	27.57	.12500E+03	81.87	.86200E+03
Subtotal	77	75	74	74	26.42	.16380E+02	112.32	.35600E+03
41	44	43	43	43	31.07	.45810E+03	68.47	.16680E+04
42	31	30	29	29	65.53	.30720E+03	185.63	.20950E+04
43	22	21	21	20	22.49	.43310E+02	52.12	.22810E+03
Subtotal	97	94	93	92	37.06	.17180E+03	91.36	.67670E+03
50	25	9	9	9	0.50	.10440E+00	1.07	.64300E+00
61	60	48	47	47	5.08	.16590E+01	8.07	.29590E+01
62	7	7	7	7	9.02	.35800E+02	14.59	.79260E+02
Subtotal	67	55	54	54	5.35	.16070E+01	8.51	.29360E+01
Total	355	322	319	318	41.04	.40630E+03	141.69	.35040E+04

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	3,591,397,107	.10962E+18	57.00	2,922,280,863	4,260,513,351
20	744,326,392	.11105E+17	30.00	529,137,491	959,515,293
31	1,088,469,383	.37322E+17	68.00	702,092,079	1,474,846,687
32	71,832,983	.66359E+15	7.00	8,797,458	134,868,507
Subtotal	1,160,302,366	.37985E+17	70.22	770,505,240	1,550,099,492
41	429,314,842	.65574E+17	43.00	0	946,842,784
42	445,721,874	.12081E+17	30.00	220,948,313	670,495,435
43	110,010,400	.10161E+16	21.00	43,709,272	176,311,529
Subtotal	985,047,116	.78672E+17	58.98	418,187,868	1,551,906,364
50	4,162,086	.96764E+13	24.00	0	10,582,549
61	71,106,205	.22980E+15	59.00	40,469,315	101,743,094
62	9,381,181	.32757E+14	6.00	0	24,095,905
Subtotal	80,487,385	.26256E+15	64.20	48,079,964	112,894,806
Total	6,565,722,452	.23765E+18	165.92	5,600,485,867	7,530,959,036

Appendix D Table-4.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	915,212	.60264E+10	57.00	758,322	1,072,102
20	261,600	.19698E+10	30.00	170,837	352,363
31	248,702	.16520E+10	68.00	167,413	329,992
32	24,192	.96240E+08	7.00	991	47,393
Subtotal	272,894	.17482E+10	73.72	189,270	356,518
41	194,830	.18013E+11	43.00	0	466,074
42	157,336	.17710E+10	30.00	71,402	243,269
43	47,474	.19297E+09	21.00	18,497	76,452
Subtotal	399,640	.19977E+11	52.15	113,991	685,289
50	1,951	.15708E+07	24.00	0	4,544
61	44,764	.12889E+09	59.00	21,820	67,708
62	5,798	.14794E+08	6.00	0	15,210
Subtotal	50,561	.14368E+09	64.91	26,588	74,535
Total	1,901,858	.29867E+11	105.43	1,556,218	2,247,498

Appendix D Table 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	37	37	36	2.93	.47780E+00	6.22	.39800E+01
20	31	6	6	6	0.08	.14360E-02	0.18	.84280E-02
31	69	68	68	68	15.77	.20990E+02	43.32	.22870E+03
32	8	8	8	8	15.03	.12890E+03	27.94	.39350E+03
Subtotal	77	76	76	76	15.70	.18500E+02	42.01	.19430E+03
41	44	41	41	41	4.72	.17940E+01	13.42	.11510E+02
42	31	25	25	25	9.14	.78130E+01	17.91	.26410E+02
43	22	19	19	19	29.92	.67930E+03	43.28	.98900E+03
Subtotal	97	85	85	85	10.64	.27030E+02	20.26	.43110E+02
50	25	25	25	25	16.93	.72870E+01	68.98	.94060E+02
61	60	60	60	60	23.27	.68060E+02	65.85	.11110E+03
62	7	7	7	7	6.31	.28880E+01	31.32	.38350E+02
Subtotal	67	67	67	67	22.12	.59140E+02	63.50	.96640E+02
Total	355	296	296	295	12.41	.11240E+03	33.88	.43210E+03

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	48,470,062	.24135E+15	57.00	17,073,150	79,866,973
20	740,335	.14186E+12	30.00	0	1,509,437
31	409,473,805	.20431E+17	68.00	123,602,206	695,345,404
32	24,512,272	.30297E+15	7.00	0	65,677,287
Subtotal	433,986,077	.20734E+17	69.88	146,002,681	721,969,473
41	84,149,534	.45255E+15	43.00	41,156,452	127,142,616
42	42,999,272	.15229E+15	30.00	17,799,865	68,198,680
43	91,352,138	.44065E+16	21.00	0	229,425,447
Subtotal	218,500,944	.50113E+16	27.00	73,238,370	363,763,518
50	267,573,271	.14154E+16	24.00	189,920,663	345,225,878
61	580,324,597	.86261E+16	59.00	392,620,354	768,028,840
62	20,133,911	.15849E+14	6.00	10,392,164	29,875,659
Subtotal	600,458,508	.86420E+16	59.21	412,581,906	788,335,111
Total	1,569,729,197	.36044E+17	154.16	1,193,821,939	1,945,636,455

Appendix D Table-5.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	22,843	.28970E+08	57.00	11,966	33,721
20	330	.24174E+05	30.00	12	647
31	149,030	.18754E+10	68.00	62,419	235,640
32	13,189	.99235E+08	7.00	0	36,748
Subtotal	162,219	.19746E+10	73.39	73,346	251,091
41	29,609	.70544E+08	43.00	12,635	46,584
42	21,948	.45043E+08	30.00	8,243	35,653
43	63,157	.30265E+10	21.00	0	177,585
Subtotal	114,715	.31421E+10	22.63	0	230,971
50	65,664	.10966E+09	24.00	44,050	87,279
61	205,117	.52867E+10	59.00	58,170	352,064
62	4,058	.11934E+07	6.00	1,250	6,867
Subtotal	209,175	.52879E+10	59.03	62,212	356,139
Total	574,946	.10543E+11	115.36	369,586	780,307

Appendix D Table 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	49	49	58	6.15	.15440E+01	14.40	.53300E+01
20	31	31	31	31	17.21	.34940E+02	38.15	.15300E+03
31	69	54	54	66	9.86	.35840E+01	13.99	.83770E+01
32	8	5	5	8	6.75	.17530E+02	5.18	.92610E+01
Subtotal	77	59	59	74	9.59	.31280E+01	13.24	.70810E+01
41	44	39	39	43	25.99	.45710E+02	34.91	.81690E+02
42	31	24	24	29	4.94	.15800E+01	5.55	.15920E+01
43	22	20	20	20	5.11	.15270E+01	5.21	.19380E+01
Subtotal	97	83	83	92	17.21	.15600E+02	22.56	.27780E+02
50	25	0	0	9	0.00	.00000E+00	0.00	.00000E+00
61	60	15	15	47	1.95	.71820E+00	1.28	.36350E+00
62	7	7	7	7	7.18	.17070E+02	3.98	.55830E+01
Subtotal	67	22	22	54	2.31	.70280E+00	1.47	.34150E+00
Total	355	244	244	318	9.17	.55910E+02	14.30	.19360E+03

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	112,147,417	.32319E+15	57.00	75,814,918	148,479,916
20	156,523,007	.25758E+16	30.00	52,887,444	260,158,571
31	132,234,645	.74849E+15	68.00	77,517,596	186,951,693
32	4,545,114	.71293E+13	7.00	0	10,859,850
Subtotal	136,779,759	.75562E+15	69.24	81,802,739	191,756,778
41	218,928,308	.32120E+16	43.00	104,389,103	333,467,513
42	13,336,330	.91808E+13	30.00	7,140,024	19,532,635
43	11,002,763	.86360E+13	21.00	4,890,241	17,115,286
Subtotal	243,267,401	.32298E+16	43.48	128,410,963	358,123,838
50	0	.00000E+00	24.00	0	0
61	11,318,844	.28233E+14	59.00	580,260	22,057,428
62	2,555,727	.23071E+13	6.00	0	6,272,515
Subtotal	13,874,571	.30540E+14	64.78	2,821,899	24,927,243
Total	662,592,155	.69149E+16	101.50	496,280,026	828,904,284

Appendix D Table-6.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	47,904	.93607E+08	57.00	28,350	67,457
20	70,606	.58806E+09	30.00	21,015	120,197
31	93,157	.32024E+09	68.00	57,366	128,948
32	5,924	.13495E+08	7.00	0	14,913
Subtotal	99,081	.33374E+09	72.60	62,544	135,618
41	162,936	.17974E+10	43.00	77,255	248,617
42	11,854	.91085E+07	30.00	5,682	18,026
43	10,793	.68046E+07	21.00	5,367	16,219
Subtotal	185,583	.18133E+10	43.76	99,523	271,643
50	0	.00000E+00	24.00	0	0
61	17,183	.55788E+08	59.00	2,088	32,279
62	4,614	.70529E+07	6.00	0	11,442
Subtotal	21,798	.62841E+08	64.69	5,943	37,652
Total	424,971	.28915E+10	94.61	317,425	532,518

Appendix D Table 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	1	1	1	0.00	.17080E-08	0.01	.47450E-04
31	69	3	3	3	0.07	.15990E-02	0.01	.46480E-04
32	8	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Subtotal	77	3	3	3	0.06	.13390E-02	0.01	.38920E-04
41	44	9	9	9	0.66	.12710E+00	0.13	.51510E-02
42	31	1	1	1	0.06	.32890E-02	0.01	.43060E-04
43	22	9	9	9	0.86	.11280E+00	0.21	.47430E-02
Subtotal	97	19	19	19	0.57	.47460E-01	0.12	.19260E-02
50	25	1	1	1	0.05	.26790E-02	0.01	.66660E-04
61	60	23	23	23	1.53	.22130E+00	0.50	.17120E-01
62	7	6	6	6	1.92	.36060E+00	0.71	.49100E-01
Subtotal	67	29	29	29	1.55	.19390E+00	0.52	.15100E-01
Total	355	53	53	53	0.47	.24540E+00	0.14	.17180E-01

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	0	.00000E+00	57.00	0	0
20	28,261	.79869E+09	30.00	0	86,055
31	107,263	.41526E+10	68.00	0	236,145
32	0	.00000E+00	7.00	0	0
Subtotal	107,263	.41526E+10	7.62	0	259,666
41	823,575	.20254E+12	43.00	0	1,733,106
42	15,756	.24825E+09	30.00	0	47,977
43	439,150	.21131E+11	21.00	136,792	741,508
Subtotal	1,278,481	.22391E+12	51.41	322,151	2,234,812
50	31,672	.10031E+10	24.00	0	97,202
61	4,442,072	.13301E+13	59.00	2,111,294	6,772,850
62	456,108	.20292E+11	6.00	107,535	804,681
Subtotal	4,898,180	.13503E+13	60.67	2,574,093	7,222,267
Total	6,343,857	.15802E+13	143.78	3,854,867	8,832,848

Appendix D Table-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	.28753E-01	30.00	0		1
31	625	.14286E+06	68.00	0		1,381
32	0	.00000E+00	7.00	0		0
Subtotal	625	.14286E+06	35.22	0		1,397
41	4,165	.49958E+07	43.00	0		8,682
42	138	.18963E+05	30.00	0		419
43	1,813	.50269E+06	21.00	334		3,292
Subtotal	6,115	.55175E+07	51.38	1,368		10,862
50	201	.40321E+05	24.00	0		616
61	13,442	.17192E+08	59.00	5,062		21,822
62	1,234	.14901E+06	6.00	289		2,178
Subtotal	14,676	.17341E+08	59.98	6,260		23,092
Total	21,616	.23042E+08	103.94	12,016		31,217

Appendix D Table 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	6	6	6	0.08	.28950E-02	0.77	.30410E+00
20	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
31	69	47	47	46	8.53	.63780E+01	27.75	.61700E+02
32	8	8	8	8	8.62	.30100E+01	17.87	.73360E+01
Subtotal	77	55	55	54	8.54	.53620E+01	26.91	.51720E+02
41	44	8	8	8	0.86	.15310E+00	0.88	.17520E+00
42	31	25	25	25	3.49	.40520E+00	8.72	.30360E+01
43	22	5	5	4	0.33	.44040E-01	0.23	.20160E-01
Subtotal	97	38	38	37	1.34	.73560E-01	2.50	.21060E+00
50	25	25	25	25	23.96	.51410E+01	54.82	.39840E+02
61	60	54	54	54	14.80	.42270E+01	15.33	.50050E+01
62	7	7	7	7	4.92	.13410E+02	4.37	.11720E+02
Subtotal	67	61	61	61	14.13	.37340E+01	14.58	.44020E+01
Total	355	185	185	183	7.12	.14310E+02	14.27	.96480E+02

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	5,996,785	.18441E+14	57.00	0	14,675,565
20	0	.00000E+00	30.00	0	0
31	262,286,423	.55134E+16	68.00	113,782,021	410,790,824
32	15,677,224	.56478E+13	7.00	9,861,901	21,492,547
Subtotal	277,963,647	.55190E+16	68.14	129,383,202	426,544,091
41	5,547,350	.68878E+13	43.00	243,312	10,851,388
42	20,933,596	.17505E+14	30.00	12,389,992	29,477,200
43	492,165	.89826E+11	21.00	0	1,115,563
Subtotal	26,973,111	.24483E+14	52.97	16,973,147	36,973,074
50	212,655,935	.59958E+15	24.00	161,993,692	263,318,177
61	135,067,070	.38875E+15	59.00	95,219,636	174,914,505
62	2,807,149	.48443E+13	6.00	0	8,192,960
Subtotal	137,874,220	.39359E+15	60.39	98,195,899	177,552,540
Total	661,463,697	.65551E+16	92.51	499,536,128	823,391,265

Appendix D Table-8.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	642	.17555E+06	57.00	0	1,489
20	0	.00000E+00	30.00	0	0
31	80,675	.56991E+09	68.00	32,929	128,420
32	7,565	.23174E+07	7.00	3,840	11,290
Subtotal	88,240	.57223E+09	68.54	40,397	136,082
41	5,400	.60190E+07	43.00	442	10,358
42	8,378	.23362E+07	30.00	5,257	11,499
43	701	.19623E+06	21.00	0	1,626
Subtotal	14,480	.85514E+07	71.24	8,631	20,329
50	92,944	.77361E+08	24.00	74,790	111,098
61	130,443	.32832E+09	59.00	93,823	167,062
62	3,160	.55432E+07	6.00	0	9,213
Subtotal	133,603	.33386E+09	60.84	97,059	170,147
Total	329,908	.99218E+09	143.66	267,541	392,276

Appendix D Table 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	11	11	11	0.08	.63840E-03	0.35	.21300E-01
32	8	7	7	7	1.27	.24610E+00	2.73	.94820E+00
Subtotal	77	18	18	18	0.18	.23100E-02	0.55	.24670E-01
41	44	6	6	6	0.38	.87050E-01	0.26	.32050E-01
42	31	10	10	10	0.23	.66630E-02	0.42	.33860E-01
43	22	10	10	10	0.73	.19180E+00	0.43	.53600E-01
Subtotal	97	26	26	26	0.42	.37120E-01	0.33	.14570E-01
50	25	18	18	18	0.69	.37220E-01	2.31	.30150E+00
61	60	49	48	48	1.67	.61300E-01	2.78	.20890E+00
62	7	7	7	7	2.23	.28020E+00	1.51	.16560E+00
Subtotal	67	56	55	55	1.71	.54550E-01	2.70	.18230E+00
Total	355	118	117	117	0.54	.13120E+00	0.94	.52300E+00

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	3,285,571	.19030E+13	68.00	526,580	6,044,562	
32	2,398,362	.72998E+12	7.00	377,731	4,418,994	
Subtotal	5,683,933	.26330E+13	53.59	2,404,560	8,963,307	
41	1,602,585	.12601E+13	43.00	0	3,871,206	
42	998,793	.19523E+12	30.00	96,538	1,901,048	
43	907,829	.23881E+12	21.00	0	1,927,211	
Subtotal	3,509,208	.16941E+13	70.14	906,059	6,112,356	
50	8,953,875	.45371E+13	24.00	4,546,818	13,360,932	
61	24,512,821	.16230E+14	59.00	16,370,928	32,654,715	
62	972,588	.68417E+11	6.00	300,100	1,645,076	
Subtotal	25,485,409	.16298E+14	59.49	17,326,373	33,644,445	
Total	43,632,425	.25163E+14	129.58	33,700,288	53,564,561	

Appendix D Table-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	726	.57039E+05	68.00	249	1,204	
32	1,116	.18949E+06	7.00	50	2,181	
Subtotal	1,842	.24653E+06	11.74	749	2,935	
41	2,380	.34227E+07	43.00	0	6,119	
42	559	.38413E+05	30.00	158	959	
43	1,539	.85433E+06	21.00	0	3,462	
Subtotal	4,478	.43155E+07	60.61	323	8,632	
50	2,692	.56009E+06	24.00	1,147	4,237	
61	14,757	.47617E+07	59.00	10,347	19,167	
62	1,432	.11579E+06	6.00	600	2,265	
Subtotal	16,189	.48775E+07	61.55	11,772	20,606	
Total	25,201	.99995E+07	181.20	18,939	31,462	

Appendix D Table 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	55	55	55	2.98	.13500E+00	2.15	.14860E+00
20	31	29	29	29	3.06	.70280E+00	1.64	.18600E+00
31	69	47	47	47	1.73	.92910E-01	0.59	.30170E-01
32	8	4	4	4	0.41	.43860E-01	0.16	.45530E-02
Subtotal	77	51	51	51	1.62	.78110E-01	0.55	.25300E-01
41	44	28	28	28	1.37	.12350E+00	0.37	.76030E-02
42	31	23	23	23	2.32	.25010E+00	0.91	.87750E-01
43	22	10	10	10	0.80	.12030E+00	0.14	.13680E-02
Subtotal	97	61	61	61	1.47	.58770E-01	0.44	.69760E-02
50	25	20	20	20	2.23	.19440E+00	0.32	.31380E-02
61	60	34	34	34	2.60	.22660E+00	0.44	.72530E-02
62	7	2	2	2	1.55	.22970E+01	0.32	.81000E-01
Subtotal	67	36	36	36	2.52	.20750E+00	0.43	.66750E-02
Total	355	252	252	252	2.18	.13760E+01	0.85	.37670E+00

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits	
				Lower	Upper
10	16,713,020	.90136E+13	57.00	10,645,433	22,780,607
20	6,741,911	.31307E+13	30.00	3,128,866	10,354,957
31	5,581,666	.26960E+13	68.00	2,297,760	8,865,572
32	140,282	.35053E+10	7.00	262	280,303
Subtotal	5,721,948	.26995E+13	68.18	2,435,908	9,007,988
41	2,304,520	.29895E+12	43.00	1,199,515	3,409,525
42	2,177,835	.50591E+12	30.00	723,274	3,632,396
43	296,753	.60959E+10	21.00	133,887	459,620
Subtotal	4,779,109	.81096E+12	61.99	2,978,044	6,580,173
50	1,227,743	.47224E+11	24.00	778,128	1,677,357
61	3,843,850	.56339E+12	59.00	2,326,897	5,360,802
62	202,548	.33474E+11	6.00	0	672,935
Subtotal	4,046,398	.59687E+12	64.00	2,501,255	5,591,541
Total	39,230,128	.16299E+14	141.66	31,236,507	47,223,749

Appendix D Table-10.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	23,192	.81841E+07	57.00	17,410	28,974
20	12,534	.11830E+08	30.00	5,500	19,567
31	16,399	.83016E+07	68.00	10,637	22,162
32	363	.33765E+05	7.00	0	797
Subtotal	16,762	.83353E+07	68.54	10,987	22,536
41	8,588	.48542E+07	43.00	4,135	13,041
42	5,560	.14417E+07	30.00	3,109	8,012
43	1,695	.53617E+06	21.00	167	3,222
Subtotal	15,843	.68321E+07	73.97	10,616	21,071
50	8,648	.29249E+07	24.00	5,109	12,186
61	22,883	.17602E+08	59.00	14,404	31,362
62	993	.94941E+06	6.00	0	3,499
Subtotal	23,876	.18551E+08	63.71	15,262	32,490
Total	100,854	.56657E+08	242.40	85,951	115,758

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.

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Appendix E Table 1.--Population estimates by sex and size group for walleye pollock from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
40	0	0	311,431	311,431	0.0000	0.0000
50	0	0	232,581	232,581	0.0000	0.0001
60	0	0	394,104	394,104	0.0001	0.0001
70	0	228,782	1,533,579	1,762,360	0.0002	0.0004
80	0	76,072	24,607,202	24,683,275	0.0034	0.0038
90	431,997	142,022	52,456,702	53,030,721	0.0074	0.0112
100	440,563	83,997	64,391,674	64,916,233	0.0090	0.0202
110	381,702	23,573	85,421,399	85,826,674	0.0119	0.0321
120	151,548	329,357	78,029,825	78,510,730	0.0109	0.0430
130	2,658,988	1,023,005	77,698,382	81,380,375	0.0113	0.0543
140	1,523,506	1,081,424	89,479,335	92,084,265	0.0128	0.0671
150	1,446,414	2,602,311	73,188,746	77,237,471	0.0107	0.0778
160	2,185,162	1,861,327	47,810,780	51,857,270	0.0072	0.0850
170	1,984,551	2,592,083	26,007,873	30,584,507	0.0042	0.0893
180	1,533,878	1,484,451	13,766,653	16,784,982	0.0023	0.0916
190	3,622,556	1,149,349	3,444,287	8,216,192	0.0011	0.0928
200	4,789,839	4,056,446	1,584,641	10,430,926	0.0014	0.0942
210	6,847,351	4,628,884	858,969	12,335,204	0.0017	0.0959
220	14,146,286	11,084,227	2,010,915	27,241,428	0.0038	0.0997
230	14,429,935	15,005,467	1,970,775	31,406,177	0.0044	0.1041
240	27,867,028	23,195,817	0	51,062,845	0.0071	0.1112
250	19,323,833	14,225,457	858,969	34,408,258	0.0048	0.1159
260	15,801,910	19,279,913	414,675	35,496,498	0.0049	0.1209
270	12,961,370	12,618,025	414,675	25,994,070	0.0036	0.1245
280	12,706,347	14,489,343	858,969	28,054,659	0.0039	0.1284
290	11,215,069	14,968,984	1,688,318	27,872,372	0.0039	0.1322
300	20,745,525	26,878,534	85,161	47,709,220	0.0066	0.1389
310	18,958,635	18,841,060	1,142,838	38,942,533	0.0054	0.1443
320	42,520,286	24,664,523	499,835	67,684,645	0.0094	0.1537
330	43,410,886	32,429,498	1,057,677	76,898,061	0.0107	0.1644
340	46,317,803	35,561,127	1,671,060	83,549,990	0.0116	0.1760
350	25,336,985	31,928,721	2,530,029	59,795,735	0.0083	0.1843
360	66,875,612	44,438,809	1,887,026	113,201,448	0.0157	0.2000
370	56,793,652	42,874,541	1,472,352	101,140,545	0.0140	0.2140
380	108,011,430	63,427,097	7,396,276	178,834,804	0.0248	0.2389
390	94,826,665	70,852,130	4,502,216	170,181,011	0.0236	0.2625
400	132,848,790	91,188,114	3,315,257	227,352,162	0.0316	0.2941
410	110,433,502	91,626,874	3,444,539	205,504,915	0.0285	0.3227
420	136,285,497	100,933,956	7,350,631	244,570,083	0.0340	0.3566
430	134,068,725	87,861,681	5,047,697	226,978,103	0.0315	0.3881
440	174,127,377	117,052,563	5,378,444	296,558,384	0.0412	0.4293
450	170,622,526	133,395,223	3,228,572	307,246,322	0.0427	0.4720
460	200,555,155	178,719,329	4,434,314	383,708,798	0.0533	0.5253
470	181,629,799	155,990,668	3,029,864	340,650,331	0.0473	0.5726
480	225,534,356	201,504,484	2,899,058	429,937,898	0.0597	0.6323

Appendix E Table 1.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
490	189,285,035	163,887,611	3,245,831	356,418,476	0.0495	0.6819
500	194,800,090	202,731,212	1,256,385	398,787,687	0.0554	0.7372
510	155,350,660	163,922,592	482,577	319,755,828	0.0444	0.7817
520	129,888,086	185,516,873	567,737	315,972,696	0.0439	0.8255
530	96,019,407	136,015,098	613,383	232,647,888	0.0323	0.8579
540	85,088,723	133,798,416	698,543	219,585,682	0.0305	0.8884
550	62,093,128	117,980,251	397,416	180,470,795	0.0251	0.9134
560	51,679,815	93,719,592	1,671,060	147,070,467	0.0204	0.9339
570	31,706,689	61,476,628	0	93,183,318	0.0129	0.9468
580	31,406,873	55,787,683	897,251	88,091,807	0.0122	0.9590
590	19,230,311	34,694,470	85,161	54,009,941	0.0075	0.9665
600	16,690,638	37,485,653	198,708	54,374,999	0.0076	0.9741
610	10,151,086	20,804,933	198,708	31,154,728	0.0043	0.9784
620	10,437,116	25,544,057	198,708	36,179,881	0.0050	0.9834
630	6,639,779	14,958,186	198,708	21,796,673	0.0030	0.9865
640	8,133,120	12,526,343	85,161	20,744,624	0.0029	0.9894
650	4,187,489	10,462,534	499,835	15,149,858	0.0021	0.9915
660	5,609,087	8,301,639	85,161	13,995,887	0.0019	0.9934
670	4,221,656	5,508,599	0	9,730,256	0.0014	0.9948
680	2,245,909	7,628,749	0	9,874,658	0.0014	0.9961
690	2,082,776	3,502,860	414,675	6,000,311	0.0008	0.9970
700	938,914	6,774,169	0	7,713,083	0.0011	0.9980
710	640,750	3,337,980	0	3,978,730	0.0006	0.9986
720	1,009,601	2,052,280	0	3,061,881	0.0004	0.9990
730	309,720	1,733,472	0	2,043,192	0.0003	0.9993
740	0	1,310,483	0	1,310,483	0.0002	0.9995
750	87,624	1,222,669	0	1,310,294	0.0002	0.9997
760	92,110	783,757	0	875,866	0.0001	0.9998
770	0	342,648	0	342,648	0.0000	0.9998
780	0	348,932	0	348,932	0.0000	0.9999
790	0	134,040	0	134,040	0.0000	0.9999
800	447,894	257,570	0	705,464	0.0001	1.0000
810	0	26,014	0	26,014	0.0000	1.0000
820	0	27,479	0	27,479	0.0000	1.0000
850	0	28,165	0	28,165	0.0000	1.0000
Total	3,266,827,126	3,211,032,886	721,603,310	7,199,463,322	1.0000	1.0000

Appendix E Table 2.--Population estimates by sex and size group for Pacific cod from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
80	0	0	27,532	27,532	0.0000	0.0000
90	0	0	139,226	139,226	0.0002	0.0003
100	53,144	0	217,959	271,103	0.0005	0.0008
110	83,085	93,019	840,896	1,017,000	0.0018	0.0026
120	230,640	157,307	1,692,553	2,080,500	0.0037	0.0063
130	1,122,431	465,881	1,430,267	3,018,579	0.0054	0.0116
140	1,378,276	947,323	1,413,769	3,739,368	0.0066	0.0182
150	2,107,161	2,337,927	254,660	4,699,748	0.0083	0.0266
160	4,755,263	2,312,282	289,206	7,356,750	0.0130	0.0396
170	2,258,479	2,824,812	92,784	5,176,076	0.0092	0.0488
180	4,625,452	3,094,668	30,268	7,750,388	0.0137	0.0625
190	3,211,441	1,934,495	0	5,145,936	0.0091	0.0717
200	1,772,415	1,459,560	92,784	3,324,759	0.0059	0.0775
210	1,421,757	995,120	0	2,416,877	0.0043	0.0818
220	761,713	851,925	0	1,613,638	0.0029	0.0847
230	476,763	321,663	0	798,426	0.0014	0.0861
240	1,078,549	823,175	0	1,901,724	0.0034	0.0895
250	1,394,035	1,456,703	0	2,850,738	0.0051	0.0945
260	2,197,627	2,610,177	0	4,807,803	0.0085	0.1031
270	4,107,746	3,154,688	0	7,262,434	0.0129	0.1159
280	5,877,591	5,164,806	0	11,042,397	0.0196	0.1355
290	5,714,133	6,517,600	0	12,231,733	0.0217	0.1572
300	9,840,657	10,041,966	0	19,882,623	0.0352	0.1924
310	10,837,344	10,948,791	0	21,786,135	0.0386	0.2311
320	13,493,784	11,967,941	0	25,461,725	0.0451	0.2762
330	13,061,419	12,313,113	0	25,374,532	0.0450	0.3212
340	12,816,776	11,019,267	0	23,836,043	0.0423	0.3634
350	8,659,081	8,803,203	0	17,462,284	0.0310	0.3944
360	8,730,267	9,655,855	0	18,386,123	0.0326	0.4270
370	6,697,825	7,707,868	0	14,405,694	0.0255	0.4525
380	6,586,842	6,886,619	0	13,473,461	0.0239	0.4764
390	5,966,241	5,485,051	0	11,451,292	0.0203	0.4967
400	7,104,086	6,137,004	0	13,241,090	0.0235	0.5202
410	4,529,648	7,234,292	0	11,763,940	0.0209	0.5410
420	9,797,169	8,879,073	0	18,676,242	0.0331	0.5741
430	7,113,381	9,354,625	0	16,468,006	0.0292	0.6033
440	11,063,408	9,829,341	0	20,892,749	0.0370	0.6404
450	9,501,488	8,646,257	0	18,147,746	0.0322	0.6725
460	7,673,669	10,200,475	0	17,874,144	0.0317	0.7042
470	5,666,846	7,181,718	0	12,848,564	0.0228	0.7270
480	7,621,788	7,594,480	0	15,216,269	0.0270	0.7540
490	4,424,296	4,290,754	0	8,715,051	0.0154	0.7694
500	4,630,434	5,888,191	0	10,518,624	0.0186	0.7881
510	3,089,113	5,404,614	0	8,493,727	0.0151	0.8031
520	3,552,232	4,141,180	0	7,693,413	0.0136	0.8168

Appendix E Table 2.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
530	3,013,994	3,331,331	0	6,345,326	0.0112	0.8280
540	3,256,396	4,253,781	0	7,510,176	0.0133	0.8413
550	2,458,442	3,531,963	0	5,990,405	0.0106	0.8519
560	3,817,173	3,445,475	0	7,262,648	0.0129	0.8648
570	2,267,770	1,904,373	0	4,172,143	0.0074	0.8722
580	2,491,390	2,576,335	0	5,067,725	0.0090	0.8812
590	2,874,457	2,805,109	0	5,679,566	0.0101	0.8913
600	2,261,271	3,509,821	0	5,771,092	0.0102	0.9015
610	2,168,963	2,510,782	0	4,679,745	0.0083	0.9098
620	2,984,843	2,249,303	0	5,234,146	0.0093	0.9191
630	2,661,350	2,279,323	0	4,940,672	0.0088	0.9278
640	2,463,645	2,089,492	0	4,553,137	0.0081	0.9359
650	1,326,415	1,303,717	0	2,630,133	0.0047	0.9405
660	1,716,485	3,239,914	0	4,956,399	0.0088	0.9493
670	1,263,515	2,077,694	0	3,341,209	0.0059	0.9553
680	1,158,571	1,807,932	0	2,966,503	0.0053	0.9605
690	1,446,951	1,613,963	0	3,060,914	0.0054	0.9659
700	1,224,687	1,428,093	0	2,652,780	0.0047	0.9706
710	809,189	1,427,812	0	2,237,001	0.0040	0.9746
720	649,844	979,091	0	1,628,935	0.0029	0.9775
730	687,838	958,885	0	1,646,722	0.0029	0.9804
740	497,280	964,117	0	1,461,396	0.0026	0.9830
750	529,811	609,529	0	1,139,340	0.0020	0.9850
760	580,163	873,996	0	1,454,158	0.0026	0.9876
770	259,051	835,395	0	1,094,446	0.0019	0.9895
780	142,345	461,410	0	603,755	0.0011	0.9906
790	175,067	309,720	0	484,787	0.0009	0.9915
800	220,354	710,018	0	930,372	0.0016	0.9931
810	178,262	464,937	0	643,199	0.0011	0.9943
820	200,005	65,048	0	265,053	0.0005	0.9947
830	85,620	210,119	0	295,739	0.0005	0.9953
840	33,464	82,970	0	116,434	0.0002	0.9955
850	125,597	187,504	0	313,101	0.0006	0.9960
860	0	81,563	0	81,563	0.0001	0.9962
870	115,443	52,881	0	168,324	0.0003	0.9965
880	122,322	102,779	0	225,101	0.0004	0.9969
890	0	73,588	0	73,588	0.0001	0.9970
900	49,362	44,889	0	94,251	0.0002	0.9972
910	63,188	100,548	0	163,736	0.0003	0.9975
920	0	218,531	0	218,531	0.0004	0.9978
930	71,098	157,598	0	228,696	0.0004	0.9982
940	43,278	0	0	43,278	0.0001	0.9983
950	29,411	132,841	0	162,252	0.0003	0.9986
960	0	72,279	0	72,279	0.0001	0.9987
970	31,446	127,539	0	158,984	0.0003	0.9990
980	99,887	173,047	0	272,934	0.0005	0.9995
990	0	46,678	0	46,678	0.0001	0.9996

Appendix E Table 2.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
1000	37,070	27,911	0	64,981	0.0001	0.9997
1030	0	58,823	0	58,823	0.0001	0.9998
1050	0	83,798	0	83,798	0.0001	1.0000
1130	0	26,710	0	26,710	0.0000	1.0000
Total	273,778,208	283,815,766	6,521,906	564,115,880	1.0000	1.0000

Appendix E Table 3.--Population estimates by sex and size group for yellowfin sole from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total ^a	Proportion	Cumulative Proportion
70	327,224	0	0	327,224	0.0000	0.0000
80	671,104	3,384,318	0	4,055,422	0.0005	0.0005
90	4,112,809	3,897,250	0	8,010,060	0.0010	0.0015
100	9,078,426	6,743,335	0	15,821,761	0.0019	0.0033
110	21,022,827	18,240,808	0	39,263,635	0.0047	0.0080
120	38,012,576	22,998,830	0	61,011,406	0.0072	0.0153
130	36,543,432	29,541,587	280,811	66,365,829	0.0079	0.0231
140	60,931,597	57,116,816	561,621	118,610,034	0.0141	0.0372
150	72,931,817	66,090,533	280,811	139,303,160	0.0165	0.0537
160	133,108,981	118,474,395	842,432	252,425,808	0.0300	0.0837
170	157,017,154	160,492,464	3,931,348	321,440,966	0.0382	0.1219
180	208,973,301	202,519,711	4,212,159	415,705,170	0.0493	0.1712
190	185,189,627	179,249,000	5,616,211	370,054,839	0.0439	0.2151
200	206,886,150	198,504,772	4,492,969	409,883,892	0.0487	0.2638
210	167,250,917	169,082,793	1,965,674	338,299,384	0.0402	0.3039
220	179,062,989	170,083,791	1,404,053	350,550,833	0.0416	0.3455
230	155,878,323	134,261,929	1,123,242	291,263,494	0.0346	0.3801
240	171,423,651	164,291,864	1,684,863	337,400,378	0.0400	0.4202
250	163,874,010	125,678,427	1,404,053	290,956,490	0.0345	0.4547
260	179,765,582	170,829,655	1,965,674	352,560,911	0.0418	0.4966
270	207,414,848	138,564,123	3,088,916	349,067,887	0.0414	0.5380
280	262,561,749	178,395,730	3,088,916	444,046,395	0.0527	0.5907
290	262,834,720	168,504,622	3,650,537	434,989,879	0.0516	0.6423
300	327,059,299	233,751,705	5,616,211	566,427,216	0.0672	0.7096
310	293,757,741	280,712,228	4,212,159	578,682,128	0.0687	0.7783
320	256,088,842	329,986,718	3,088,916	589,164,476	0.0699	0.8482
330	135,943,392	305,204,623	2,246,485	443,394,500	0.0526	0.9008
340	73,134,205	265,861,133	842,432	339,837,769	0.0403	0.9412
350	33,870,169	160,331,015	280,811	194,481,994	0.0231	0.9642
360	13,048,025	126,210,712	0	139,258,736	0.0165	0.9808
370	7,370,350	68,296,981	0	75,667,331	0.0090	0.9898
380	57,639	40,228,757	0	40,286,396	0.0048	0.9945
390	0	22,419,252	280,811	22,700,062	0.0027	0.9972
400	0	16,624,373	0	16,624,373	0.0020	0.9992
410	0	3,303,146	0	3,303,146	0.0004	0.9996
420	0	3,024,001	0	3,024,001	0.0004	1.0000
430	0	172,723	0	172,723	0.0000	1.0000
440	0	228,132	0	228,132	0.0000	1.0000
Total	4,025,203,476	4,343,302,252	56,162,114	8,424,667,842	1.0000	1.0000

Appendix E Table 4.--Population estimates by sex and size group for *Lepidopsetta* spp. from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
60	1,464,262	0	1,121,417	2,585,679	0.0004	0.0004
70	690,797	605,310	2,858,452	4,154,560	0.0006	0.0010
80	0	0	85,487	85,487	0.0000	0.0010
90	4,287,000	277,166	0	4,564,166	0.0007	0.0017
100	21,496,257	8,839,531	4,595,358	34,931,146	0.0053	0.0071
110	27,623,281	19,633,738	12,115,035	59,372,054	0.0090	0.0161
120	47,253,757	26,350,677	4,606,825	78,211,259	0.0119	0.0280
130	25,178,178	19,934,644	1,253,279	46,366,101	0.0071	0.0351
140	41,541,274	35,345,298	417,760	77,304,333	0.0118	0.0468
150	31,079,036	20,602,677	0	51,681,713	0.0079	0.0547
160	53,380,649	35,267,808	0	88,648,457	0.0135	0.0682
170	59,170,233	43,731,847	0	102,902,081	0.0157	0.0839
180	100,187,918	68,105,766	0	168,293,684	0.0256	0.1095
190	78,344,098	78,814,327	0	157,158,425	0.0239	0.1335
200	81,951,488	70,066,881	0	152,018,368	0.0232	0.1566
210	86,585,531	77,390,635	0	163,976,165	0.0250	0.1816
220	108,426,854	94,765,895	0	203,192,749	0.0309	0.2125
230	106,369,746	93,376,681	0	199,746,427	0.0304	0.2430
240	108,709,334	117,563,896	0	226,273,230	0.0345	0.2774
250	94,491,402	75,160,962	0	169,652,364	0.0258	0.3033
260	169,855,026	87,391,250	0	257,246,275	0.0392	0.3424
270	276,836,313	83,732,320	0	360,568,633	0.0549	0.3974
280	502,340,430	140,367,111	0	642,707,541	0.0979	0.4952
290	444,533,001	150,175,423	0	594,708,424	0.0906	0.5858
300	333,792,122	191,673,574	0	525,465,697	0.0800	0.6659
310	144,603,305	211,135,854	0	355,739,160	0.0542	0.7200
320	70,881,373	294,904,828	0	365,786,202	0.0557	0.7757
330	15,098,546	302,751,566	0	317,850,113	0.0484	0.8242
340	10,722,506	337,655,453	0	348,377,958	0.0531	0.8772
350	8,343,749	253,648,261	0	261,992,011	0.0399	0.9171
360	6,183,634	238,572,729	0	244,756,364	0.0373	0.9544
370	3,277,738	134,880,680	0	138,158,418	0.0210	0.9754
380	875,036	84,231,469	0	85,106,505	0.0130	0.9884
390	274,991	25,770,566	0	26,045,557	0.0040	0.9924
400	765,837	33,118,406	0	33,884,243	0.0052	0.9975
410	111,728	6,130,504	0	6,242,232	0.0010	0.9985
420	0	5,485,718	0	5,485,718	0.0008	0.9993
430	0	764,892	0	764,892	0.0001	0.9994
440	0	3,286,540	0	3,286,540	0.0005	0.9999
450	0	256,884	0	256,884	0.0000	1.0000
460	0	174,637	0	174,637	0.0000	1.0000
Total	3,066,726,432	3,471,942,406	27,053,614	6,565,722,452	1.0000	1.0000

Appendix E Table 5.--Population estimates by sex and size group for *Hippoglossoides* spp. from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total ^a	Proportion	Cumulative Proportion
60	0	193,504	134,201	327,706	0.0002	0.0002
70	72,828	0	357,122	429,950	0.0003	0.0005
80	59,717	193,504	727,200	980,422	0.0006	0.0011
90	441,375	418,988	346,472	1,206,835	0.0008	0.0019
100	580,511	540,243	113,249	1,234,003	0.0008	0.0027
110	1,349,948	1,557,241	474,745	3,381,934	0.0022	0.0048
120	2,597,541	1,888,055	642,192	5,127,788	0.0033	0.0081
130	3,869,174	3,084,439	372,579	7,326,191	0.0047	0.0128
140	6,025,393	5,158,278	245,916	11,429,588	0.0073	0.0200
150	7,362,319	6,121,777	129,752	13,613,847	0.0087	0.0287
160	9,873,823	7,966,547	32,438	17,872,809	0.0114	0.0401
170	8,039,282	6,424,901	129,752	14,593,934	0.0093	0.0494
180	11,071,685	8,896,545	97,314	20,065,544	0.0128	0.0622
190	10,706,179	9,115,534	162,190	19,983,903	0.0127	0.0749
200	18,860,128	11,344,337	129,752	30,334,217	0.0193	0.0942
210	16,935,527	14,803,930	32,438	31,771,895	0.0202	0.1145
220	30,242,266	18,295,679	64,876	48,602,821	0.0310	0.1454
230	26,981,633	19,482,280	227,066	46,690,978	0.0297	0.1752
240	32,014,552	23,543,684	259,504	55,817,739	0.0356	0.2107
250	27,272,179	18,147,597	194,628	45,614,403	0.0291	0.2398
260	30,477,797	24,912,571	162,190	55,552,558	0.0354	0.2752
270	28,818,536	17,477,089	389,256	46,684,880	0.0297	0.3049
280	31,305,404	27,626,727	162,190	59,094,321	0.0376	0.3426
290	43,090,900	21,671,584	194,628	64,957,112	0.0414	0.3839
300	57,657,510	25,437,987	291,942	83,387,439	0.0531	0.4371
310	50,281,341	27,030,767	356,818	77,668,926	0.0495	0.4866
320	63,236,104	40,619,181	227,066	104,082,351	0.0663	0.5529
330	51,954,133	32,878,646	324,380	85,157,159	0.0542	0.6071
340	59,709,505	43,396,901	97,314	103,203,720	0.0657	0.6729
350	47,015,336	39,930,081	194,628	87,140,045	0.0555	0.7284
360	40,434,233	36,361,088	97,314	76,892,635	0.0490	0.7773
370	22,381,811	30,782,565	64,876	53,229,252	0.0339	0.8113
380	16,781,307	33,651,110	0	50,432,417	0.0321	0.8434
390	8,986,380	26,616,163	97,314	35,699,857	0.0227	0.8661
400	5,024,870	25,416,853	0	30,441,723	0.0194	0.8855
410	3,586,613	18,910,229	0	22,496,842	0.0143	0.8999
420	3,769,149	21,451,737	0	25,220,886	0.0161	0.9159
430	1,277,200	21,392,432	0	22,669,632	0.0144	0.9304
440	729,132	13,994,785	0	14,723,916	0.0094	0.9397
450	0	17,059,871	0	17,059,871	0.0109	0.9506
460	1,079,677	13,682,602	0	14,762,279	0.0094	0.9600
470	495,497	15,044,014	0	15,539,510	0.0099	0.9699
480	1,410,314	15,232,728	0	16,643,041	0.0106	0.9805
490	16,388	13,663,166	0	13,679,554	0.0087	0.9892
500	0	6,242,101	0	6,242,101	0.0040	0.9932
510	0	4,497,399	0	4,497,399	0.0029	0.9961

Appendix E Table 5.--Continued

Length (mm)	Males	Females	Unsexed	Total ^a	Proportion	Cumulative Proportion
520	0	2,975,126	0	2,975,126	0.0019	0.9980
530	0	1,686,819	0	1,686,819	0.0011	0.9990
540	0	545,399	0	545,399	0.0003	0.9994
550	0	477,960	0	477,960	0.0003	0.9997
560	0	477,960	0	477,960	0.0003	1.0000
Total	783,875,196	778,320,702	7,533,298	1,569,729,197	1.0000	1.0000

Appendix E Table 6.--Population estimates by sex and size group for Alaska plaice from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
100	0	28,189	0	28,189	0.0000	0.0000
120	0	55,536	0	55,536	0.0001	0.0001
130	69,892	0	0	69,892	0.0001	0.0002
140	29,919	0	0	29,919	0.0000	0.0003
150	0	90,222	0	90,222	0.0001	0.0004
160	83,279	94,483	0	177,762	0.0003	0.0007
170	119,550	102,900	0	222,450	0.0003	0.0010
180	500,843	83,919	0	584,761	0.0009	0.0019
190	913,237	257,986	0	1,171,223	0.0018	0.0037
200	1,079,856	618,923	0	1,698,778	0.0026	0.0062
210	2,265,308	1,085,234	0	3,350,543	0.0051	0.0113
220	2,768,576	1,831,902	0	4,600,478	0.0069	0.0182
230	3,309,021	2,702,213	0	6,011,234	0.0091	0.0273
240	4,862,607	3,346,481	28,991	8,238,078	0.0124	0.0397
250	5,621,297	4,196,076	86,972	9,904,345	0.0149	0.0547
260	7,803,879	5,028,202	0	12,832,081	0.0194	0.0741
270	8,513,195	5,189,769	28,991	13,731,954	0.0207	0.0948
280	16,776,893	10,659,546	28,991	27,465,429	0.0415	0.1362
290	20,757,991	6,414,095	57,982	27,230,068	0.0411	0.1773
300	29,435,851	12,845,455	144,954	42,426,260	0.0640	0.2414
310	30,536,616	7,723,416	202,936	38,462,968	0.0580	0.2994
320	36,474,771	17,555,536	173,945	54,204,252	0.0818	0.3812
330	34,047,816	10,752,696	115,963	44,916,475	0.0678	0.4490
340	32,685,288	14,519,650	482,678	47,687,615	0.0720	0.5210
350	25,528,359	15,712,668	221,760	41,462,788	0.0626	0.5835
360	23,989,497	21,190,580	279,742	45,459,820	0.0686	0.6522
370	19,343,608	16,358,137	385,539	36,087,283	0.0545	0.7066
380	9,311,731	16,344,398	452,179	26,108,309	0.0394	0.7460
390	5,429,833	15,964,999	307,225	21,702,057	0.0328	0.7788
400	2,329,470	17,125,519	336,216	19,791,205	0.0299	0.8086
410	1,934,351	17,531,375	384,031	19,849,758	0.0300	0.8386
420	1,025,295	14,751,138	269,576	16,046,008	0.0242	0.8628
430	525,444	13,636,288	259,410	14,421,142	0.0218	0.8846
440	146,311	11,538,779	182,603	11,867,693	0.0179	0.9025
450	150,361	12,133,447	144,954	12,428,762	0.0188	0.9213
460	185,906	10,893,918	134,788	11,214,612	0.0169	0.9382
470	209,681	8,513,852	153,613	8,877,145	0.0134	0.9516
480	289,837	8,018,606	163,779	8,472,222	0.0128	0.9644
490	29,262	8,240,028	86,972	8,356,263	0.0126	0.9770
500	0	4,252,885	47,815	4,300,700	0.0065	0.9835
510	0	4,118,268	0	4,118,268	0.0062	0.9897
520	52,906	2,376,066	0	2,428,972	0.0037	0.9933
530	0	1,584,070	0	1,584,070	0.0024	0.9957
540	0	928,230	0	928,230	0.0014	0.9971
550	0	915,390	0	915,390	0.0014	0.9985
560	0	292,138	0	292,138	0.0004	0.9990

Appendix E Table 6.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
570	0	233,467	0	233,467	0.0004	0.9993
580	0	209,795	0	209,795	0.0003	0.9996
590	0	225,213	0	225,213	0.0003	1.0000
610	0	20,330	0	20,330	0.0000	1.0000
9999	329,137,539	328,292,012	5,162,605	662,592,155	1.0000	1.0000
Total	329,137,539	328,292,012	5,162,605	662,592,155	1.0000	1.0000

Appendix E Table 7.--Population estimates by sex and size group for Greenland turbot from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
90	28,261	0	0	28,261	0.0045	0.0045
110	34,183	0	0	34,183	0.0054	0.0098
120	62,450	36,736	0	99,187	0.0156	0.0255
130	80,583	0	54,331	134,914	0.0213	0.0467
140	157,390	133,134	0	290,525	0.0458	0.0925
150	149,146	45,658	29,379	224,184	0.0353	0.1279
160	258,624	0	0	258,624	0.0408	0.1686
180	45,658	0	0	45,658	0.0072	0.1758
190	15,682	0	0	15,682	0.0025	0.1783
200	258,624	44,371	0	302,995	0.0478	0.2261
210	30,453	15,682	0	46,135	0.0073	0.2334
220	105,222	94,998	0	200,220	0.0316	0.2649
230	41,818	0	0	41,818	0.0066	0.2715
240	80,946	0	0	80,946	0.0128	0.2843
260	47,773	0	0	47,773	0.0075	0.2918
270	0	106,017	0	106,017	0.0167	0.3085
280	17,489	27,389	0	44,878	0.0071	0.3156
290	127,229	0	0	127,229	0.0201	0.3356
300	110,126	73,151	0	183,277	0.0289	0.3645
310	112,287	0	0	112,287	0.0177	0.3822
320	41,432	0	0	41,432	0.0065	0.3888
330	19,383	42,045	0	61,428	0.0097	0.3984
340	55,289	0	0	55,289	0.0087	0.4072
350	0	16,388	0	16,388	0.0026	0.4097
360	17,320	0	0	17,320	0.0027	0.4125
370	32,951	0	0	32,951	0.0052	0.4177
380	17,320	0	0	17,320	0.0027	0.4204
400	0	41,432	0	41,432	0.0065	0.4269
420	0	16,388	0	16,388	0.0026	0.4295
440	25,657	0	0	25,657	0.0040	0.4336
490	0	71,315	0	71,315	0.0112	0.4448
510	30,453	30,453	0	60,906	0.0096	0.4544
520	76,528	0	0	76,528	0.0121	0.4665
530	17,489	0	0	17,489	0.0028	0.4692
560	27,389	0	0	27,389	0.0043	0.4735
570	63,260	41,432	0	104,693	0.0165	0.4900
580	25,657	0	0	25,657	0.0040	0.4941
590	30,453	0	0	30,453	0.0048	0.4989
600	0	17,320	0	17,320	0.0027	0.5016
610	31,342	0	0	31,342	0.0049	0.5066
630	27,802	0	0	27,802	0.0044	0.5109
660	0	26,320	0	26,320	0.0041	0.5151
690	27,802	0	0	27,802	0.0044	0.5195
710	0	30,453	0	30,453	0.0048	0.5243
720	0	111,761	0	111,761	0.0176	0.5419
730	26,320	32,951	0	59,271	0.0093	0.5512

Appendix E Table 7.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
740	30,130	0	0	30,130	0.0047	0.5560
750	30,453	26,320	0	56,773	0.0089	0.5649
760	0	123,876	0	123,876	0.0195	0.5845
770	26,320	76,870	0	103,190	0.0163	0.6007
780	28,483	55,054	0	83,536	0.0132	0.6139
790	0	126,786	0	126,786	0.0200	0.6339
800	0	85,116	0	85,116	0.0134	0.6473
810	0	30,453	0	30,453	0.0048	0.6521
820	0	69,131	0	69,131	0.0109	0.6630
830	0	149,034	0	149,034	0.0235	0.6865
840	17,927	147,172	0	165,099	0.0260	0.7125
850	0	272,846	0	272,846	0.0430	0.7555
860	0	162,675	0	162,675	0.0256	0.7812
870	0	314,023	0	314,023	0.0495	0.8307
880	0	194,433	0	194,433	0.0306	0.8613
890	0	288,277	0	288,277	0.0454	0.9067
900	0	76,177	0	76,177	0.0120	0.9188
910	0	110,975	0	110,975	0.0175	0.9362
920	0	112,793	0	112,793	0.0178	0.9540
930	0	35,451	0	35,451	0.0056	0.9596
940	0	24,201	0	24,201	0.0038	0.9634
950	0	30,453	0	30,453	0.0048	0.9682
960	0	27,802	0	27,802	0.0044	0.9726
970	0	81,199	0	81,199	0.0128	0.9854
980	0	62,075	0	62,075	0.0098	0.9952
990	0	30,453	0	30,453	0.0048	1.0000
Total	2,491,106	3,769,042	83,710	6,343,857	1.0000	1.0000

Appendix E Table 8.--Population estimates by sex and size group for arrowtooth flounder from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
70	0	0	46,440	46,440	0.0001	0.0001
80	0	113,490	33,824	147,314	0.0002	0.0003
90	83,566	30,909	159,724	274,199	0.0004	0.0007
100	559,036	402,357	284,605	1,245,998	0.0019	0.0026
110	534,097	279,635	635,104	1,448,836	0.0022	0.0048
120	140,209	52,040	161,368	353,617	0.0005	0.0053
130	34,956	396,610	30,809	462,375	0.0007	0.0060
140	651,788	1,216,970	92,428	1,961,186	0.0030	0.0090
150	1,538,327	1,569,787	61,619	3,169,733	0.0048	0.0138
160	3,010,183	3,754,636	308,094	7,072,913	0.0107	0.0245
170	1,993,472	3,917,331	154,047	6,064,850	0.0092	0.0336
180	3,160,463	3,389,463	123,237	6,673,163	0.0101	0.0437
190	1,937,785	4,773,390	0	6,711,174	0.0101	0.0539
200	4,036,993	4,719,021	0	8,756,015	0.0132	0.0671
210	2,217,308	3,811,499	0	6,028,807	0.0091	0.0762
220	3,362,689	7,925,631	0	11,288,320	0.0171	0.0933
230	3,941,570	6,478,852	125,904	10,546,326	0.0159	0.1092
240	5,750,845	13,786,038	0	19,536,883	0.0295	0.1388
250	5,949,804	13,362,651	251,808	19,564,263	0.0296	0.1683
260	9,018,726	20,520,479	125,904	29,665,109	0.0448	0.2132
270	5,052,038	17,826,481	503,616	23,382,136	0.0353	0.2485
280	10,621,879	23,115,553	0	33,737,432	0.0510	0.2995
290	7,551,503	20,858,051	0	28,409,553	0.0429	0.3425
300	10,605,756	27,493,947	125,904	38,225,607	0.0578	0.4003
310	7,629,123	22,042,571	251,808	29,923,503	0.0452	0.4455
320	9,041,489	23,682,488	0	32,723,977	0.0495	0.4950
330	6,920,467	17,546,508	0	24,466,975	0.0370	0.5320
340	6,264,482	23,024,916	0	29,289,398	0.0443	0.5763
350	5,817,766	15,940,889	0	21,758,655	0.0329	0.6092
360	7,685,662	18,316,745	0	26,002,407	0.0393	0.6485
370	6,383,298	12,651,691	251,808	19,286,797	0.0292	0.6776
380	5,574,581	15,658,852	0	21,233,433	0.0321	0.7097
390	3,603,777	12,664,103	0	16,267,881	0.0246	0.7343
400	3,142,783	11,621,983	0	14,764,766	0.0223	0.7566
410	3,054,149	10,712,105	0	13,766,254	0.0208	0.7775
420	3,174,203	12,657,338	0	15,831,541	0.0239	0.8014
430	1,864,502	11,233,204	0	13,097,706	0.0198	0.8212
440	1,507,483	12,138,260	0	13,645,743	0.0206	0.8418
450	2,172,529	9,168,160	0	11,340,689	0.0171	0.8590
460	1,186,161	8,574,404	0	9,760,565	0.0148	0.8737
470	882,206	7,023,389	0	7,905,596	0.0120	0.8857
480	1,245,729	7,886,409	0	9,132,138	0.0138	0.8995
490	362,073	5,966,812	0	6,328,885	0.0096	0.9090
500	379,643	6,764,996	0	7,144,639	0.0108	0.9198
510	375,235	4,703,680	0	5,078,915	0.0077	0.9275
520	875,947	4,738,400	0	5,614,347	0.0085	0.9360

Appendix E Table 8.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
530	327,429	3,746,239	0	4,073,667	0.0062	0.9422
540	164,246	4,075,487	0	4,239,733	0.0064	0.9486
550	175,162	3,498,103	0	3,673,265	0.0056	0.9541
560	283,438	3,126,360	0	3,409,799	0.0052	0.9593
570	31,104	3,763,966	0	3,795,070	0.0057	0.9650
580	526,463	3,487,907	0	4,014,370	0.0061	0.9711
590	168,213	1,857,443	0	2,025,656	0.0031	0.9742
600	437,005	2,649,975	0	3,086,981	0.0047	0.9788
610	0	2,494,384	0	2,494,384	0.0038	0.9826
620	224,574	2,701,013	0	2,925,587	0.0044	0.9870
630	0	1,513,376	0	1,513,376	0.0023	0.9893
640	0	1,662,740	0	1,662,740	0.0025	0.9918
650	0	1,064,180	0	1,064,180	0.0016	0.9934
660	0	1,148,961	0	1,148,961	0.0017	0.9952
670	0	761,862	0	761,862	0.0012	0.9963
680	132,831	431,504	0	564,334	0.0009	0.9972
690	0	282,874	0	282,874	0.0004	0.9976
700	0	390,294	0	390,294	0.0006	0.9982
710	0	409,178	0	409,178	0.0006	0.9988
720	0	339,642	0	339,642	0.0005	0.9993
730	0	77,430	0	77,430	0.0001	0.9994
750	0	141,366	0	141,366	0.0002	0.9996
770	0	196,937	0	196,937	0.0003	0.9999
800	0	34,956	0	34,956	0.0001	1.0000
Total	163,366,749	494,368,895	3,728,052	661,463,697	1.0000	1.0000

Appendix E Table 9.--Population estimates by sex and size group for Kamchatka flounder from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
110	24,958	95,619	0	120,577	0.0028	0.0028
120	102,795	33,532	0	136,326	0.0031	0.0059
130	344,585	33,112	0	377,697	0.0087	0.0145
140	297,174	361,769	0	658,943	0.0151	0.0296
150	741,879	552,409	50,303	1,344,590	0.0308	0.0605
160	746,424	901,511	100,606	1,748,541	0.0401	0.1005
170	869,589	911,241	0	1,780,830	0.0408	0.1414
180	543,718	458,663	0	1,002,381	0.0230	0.1643
190	867,829	386,819	0	1,254,648	0.0288	0.1931
200	258,465	172,659	0	431,124	0.0099	0.2030
210	104,052	169,341	0	273,394	0.0063	0.2092
220	200,608	225,817	0	426,425	0.0098	0.2190
230	267,259	427,161	100,606	795,027	0.0182	0.2372
240	406,307	761,245	100,606	1,268,158	0.0291	0.2663
250	634,144	368,981	50,303	1,053,428	0.0241	0.2904
260	499,832	191,694	0	691,526	0.0158	0.3063
270	632,620	445,880	0	1,078,500	0.0247	0.3310
280	325,270	390,679	0	715,948	0.0164	0.3474
290	466,723	542,692	0	1,009,414	0.0231	0.3705
300	607,626	624,749	0	1,232,375	0.0282	0.3988
310	443,095	346,345	0	789,440	0.0181	0.4169
320	718,507	472,510	0	1,191,018	0.0273	0.4442
330	634,645	254,604	0	889,249	0.0204	0.4646
340	871,762	414,776	0	1,286,538	0.0295	0.4940
350	785,710	552,884	0	1,338,595	0.0307	0.5247
360	1,043,419	1,049,517	0	2,092,936	0.0480	0.5727
370	1,255,200	1,001,020	0	2,256,220	0.0517	0.6244
380	429,840	845,183	50,303	1,325,325	0.0304	0.6548
390	278,978	293,433	0	572,411	0.0131	0.6679
400	603,240	368,260	0	971,500	0.0223	0.6902
410	587,666	420,009	0	1,007,675	0.0231	0.7132
420	525,133	418,307	0	943,440	0.0216	0.7349
430	566,265	489,522	0	1,055,787	0.0242	0.7591
440	206,087	818,380	50,303	1,074,770	0.0246	0.7837
450	284,018	628,307	0	912,325	0.0209	0.8046
460	470,403	789,826	0	1,260,229	0.0289	0.8335
470	309,144	777,745	0	1,086,890	0.0249	0.8584
480	606,411	449,481	0	1,055,892	0.0242	0.8826
490	16,388	153,764	0	170,152	0.0039	0.8865
500	302,990	548,097	0	851,087	0.0195	0.9060
510	198,894	90,970	0	289,864	0.0066	0.9127
520	108,905	256,426	0	365,331	0.0084	0.9210
530	0	153,517	0	153,517	0.0035	0.9245
540	425,963	108,695	0	534,658	0.0123	0.9368
550	260,691	105,661	0	366,352	0.0084	0.9452
560	75,162	209,023	0	284,185	0.0065	0.9517

Appendix E Table 9.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
570	0	475,431	0	475,431	0.0109	0.9626
580	26,814	81,629	0	108,443	0.0025	0.9651
590	0	340,361	0	340,361	0.0078	0.9729
600	0	78,543	0	78,543	0.0018	0.9747
610	0	112,936	0	112,936	0.0026	0.9773
630	0	166,449	0	166,449	0.0038	0.9811
660	0	160,224	0	160,224	0.0037	0.9848
670	0	249,331	0	249,331	0.0057	0.9905
680	0	167,638	0	167,638	0.0038	0.9943
690	0	73,420	0	73,420	0.0017	0.9960
710	0	19,649	0	19,649	0.0005	0.9965
740	0	154,764	0	154,764	0.0035	1.0000
Total	20,977,189	22,152,208	503,028	43,632,425	1.0000	1.0000

Appendix E Table 10.--Population estimates by sex and size group for Pacific halibut from the 2002 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
160	29,368	0	0	29,368	0.0007	0.0007
170	0	29,869	0	29,869	0.0008	0.0015
180	111,375	88,605	0	199,979	0.0051	0.0066
190	29,368	201,045	196,557	426,970	0.0109	0.0175
200	85,768	341,647	83,183	510,598	0.0130	0.0305
210	230,812	252,674	195,878	679,364	0.0173	0.0478
220	139,872	314,208	311,607	765,687	0.0195	0.0673
230	115,638	229,189	116,229	461,056	0.0118	0.0791
240	201,406	85,768	0	287,175	0.0073	0.0864
250	205,729	157,362	34,188	397,279	0.0101	0.0965
260	26,958	0	27,963	54,921	0.0014	0.0979
270	16,807	17,101	29,427	63,335	0.0016	0.0996
280	77,521	118,315	112,307	308,142	0.0079	0.1074
290	156,181	16,807	26,749	199,737	0.0051	0.1125
300	198,758	166,012	26,749	391,519	0.0100	0.1225
310	204,120	114,528	195,323	513,972	0.0131	0.1356
320	156,886	314,010	361,709	832,606	0.0212	0.1568
330	234,600	371,617	419,911	1,026,129	0.0262	0.1830
340	282,525	290,281	389,343	962,149	0.0245	0.2075
350	146,127	212,444	217,562	576,132	0.0147	0.2222
360	172,637	293,156	289,784	755,576	0.0193	0.2414
370	207,595	215,496	428,793	851,884	0.0217	0.2632
380	439,885	148,079	459,975	1,047,939	0.0267	0.2899
390	338,892	56,816	410,648	806,356	0.0206	0.3104
400	543,430	201,321	320,765	1,065,515	0.0272	0.3376
410	460,982	392,732	672,532	1,526,246	0.0389	0.3765
420	413,785	329,271	259,642	1,002,697	0.0256	0.4020
430	717,740	352,368	498,297	1,568,405	0.0400	0.4420
440	342,612	357,028	419,936	1,119,577	0.0285	0.4706
450	393,232	252,068	282,741	928,041	0.0237	0.4942
460	197,232	423,703	298,718	919,653	0.0234	0.5177
470	102,356	164,872	198,167	465,395	0.0119	0.5295
480	199,046	178,326	259,142	636,514	0.0162	0.5457
490	88,242	204,610	56,411	349,263	0.0089	0.5547
500	85,837	177,616	178,432	441,885	0.0113	0.5659
510	136,019	136,128	233,948	506,094	0.0129	0.5788
520	56,460	29,512	46,419	132,391	0.0034	0.5822
530	76,816	74,952	183,190	334,958	0.0085	0.5907
540	77,000	29,552	208,254	314,806	0.0080	0.5988
550	205,341	89,549	233,397	528,287	0.0135	0.6122
560	179,725	26,169	186,726	392,620	0.0100	0.6222
570	187,460	254,005	276,668	718,133	0.0183	0.6405
580	174,398	123,912	249,178	547,488	0.0140	0.6545
590	104,646	59,063	226,152	389,861	0.0099	0.6644
600	45,634	57,743	196,306	299,682	0.0076	0.6721
610	58,724	192,442	181,213	432,379	0.0110	0.6831

Appendix E Table 10.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
620	160,953	64,800	307,315	533,068	0.0136	0.6967
630	85,107	191,706	272,861	549,674	0.0140	0.7107
640	202,849	181,232	227,173	611,255	0.0156	0.7263
650	30,343	59,913	368,170	458,425	0.0117	0.7380
660	146,668	103,212	189,583	439,462	0.0112	0.7492
670	178,948	161,011	213,333	553,292	0.0141	0.7633
680	246,859	218,728	340,937	806,524	0.0206	0.7838
690	59,926	138,454	83,576	281,955	0.0072	0.7910
700	124,815	26,154	259,119	410,087	0.0105	0.8015
710	28,611	270,676	317,914	617,201	0.0157	0.8172
720	179,610	56,982	180,515	417,107	0.0106	0.8278
730	85,656	172,587	26,710	284,953	0.0073	0.8351
740	14,083	120,940	152,605	287,628	0.0073	0.8424
750	58,176	132,733	80,350	271,259	0.0069	0.8493
760	90,833	273,463	189,143	553,439	0.0141	0.8634
770	75,800	172,168	115,102	363,070	0.0093	0.8727
780	116,396	60,658	84,764	261,818	0.0067	0.8794
790	155,977	32,877	142,369	331,223	0.0084	0.8878
800	57,616	104,072	138,932	300,620	0.0077	0.8955
810	116,813	114,836	102,262	333,911	0.0085	0.9040
820	89,599	57,492	110,658	257,750	0.0066	0.9106
830	60,662	62,145	85,828	208,635	0.0053	0.9159
840	85,334	122,260	84,560	292,155	0.0074	0.9233
850	0	34,365	55,413	89,777	0.0023	0.9256
860	29,593	75,521	74,419	179,534	0.0046	0.9302
870	0	58,502	112,879	171,381	0.0044	0.9346
880	86,811	57,934	58,421	203,166	0.0052	0.9397
890	0	26,260	57,153	83,413	0.0021	0.9419
900	69,151	85,662	0	154,813	0.0039	0.9458
910	87,777	115,179	16,459	219,415	0.0056	0.9514
920	0	0	142,264	142,264	0.0036	0.9550
930	58,900	31,276	86,776	176,952	0.0045	0.9595
940	58,397	29,512	0	87,909	0.0022	0.9618
950	0	47,246	0	47,246	0.0012	0.9630
960	27,080	0	48,381	75,461	0.0019	0.9649
970	0	28,832	155,130	183,963	0.0047	0.9696
980	0	39,274	0	39,274	0.0010	0.9706
990	15,284	29,870	26,815	71,969	0.0018	0.9724
1000	29,334	48,345	89,454	167,133	0.0043	0.9767
1010	29,881	41,432	0	71,314	0.0018	0.9785
1030	29,870	0	54,752	84,623	0.0022	0.9807
1040	0	30,255	0	30,255	0.0008	0.9814
1050	0	27,883	28,054	55,937	0.0014	0.9829
1070	0	0	52,627	52,627	0.0013	0.9842
1110	0	28,304	32,016	60,321	0.0015	0.9857
1120	0	0	27,980	27,980	0.0007	0.9865
1130	0	74,400	54,521	128,921	0.0033	0.9897
1140	0	74,343	0	74,343	0.0019	0.9916

Appendix E Table 10.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
1160	0	0	54,743	54,743	0.0014	0.9930
1180	0	0	20,097	20,097	0.0005	0.9935
1190	0	0	29,640	29,640	0.0008	0.9943
1210	0	28,223	0	28,223	0.0007	0.9950
1220	0	29,700	0	29,700	0.0008	0.9958
1250	0	31,315	25,574	56,889	0.0015	0.9972
1270	0	20,702	0	20,702	0.0005	0.9978
1310	0	0	30,598	30,598	0.0008	0.9985
1360	0	0	29,099	29,099	0.0007	0.9993
1390	0	0	28,304	28,304	0.0007	1.0000
9999	11,629,254	12,135,404	15,465,470	39,230,128	1.0000	1.0000
1390	0	0	28,304	28,304	0.0007	1.0000
Total	11,629,254	12,135,404	15,465,470	39,230,128	1.0000	1.0000