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2004 Bottom Trawl Survey of the Eastern Bering Sea Continental Shelf

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2004 BOTTOM TRAWL SURVEY OF THE EASTERN BERING SEA CONTINENTAL SHELF

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ABSTRACT

The Resource Assessment and Conservation Engineering Division of the Alaska Fisheries Science Center conducts annual bottom trawl surveys to monitor the condition of the demersal fish and crab stocks of the eastern Bering Sea continental shelf. The standard study area, surveyed each year since 1979, encompasses a major portion of the eastern Bering Sea shelf between the 20-m and the 200-m isobaths and from the Alaska Peninsula north to approximately the latitude of St. Matthew Island (60°50′N). In 2004, two chartered trawlers, the 40-m F/V *Arcturus* and the 40-m F/V *Aldebaran*, again surveyed this area.

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.

395 stations were sampled. Fish biomass was dominated by walleye Pollock and Pacific cod (4.4 metric tons). A total of 229 invertebrate species were identified in the survey.

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.

CONTENTS

INTRODUCTION

The eastern Bering Sea continental shelf supports one of the most productive groundfish and crab 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 of groundfish are caught commercially, the most abundant has been the walleye pollock with catches ranging from 0.9 to 1.5 million metric tons (t) for the past 30 years (North Pacific Fishery Management Council 2002).

Since 1971, the National Marine Fisheries Service (NMFS) Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC) has conducted an annual bottom trawl survey in the eastern Bering Sea (EBS) to determine the distribution and abundance of groundfish and crab resources.

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 area 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 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 the deep continental slope waters. Crab stocks that the Alaska Department of Fish and Game (ADF&G) are responsible for assessing are covered by the *Fishery Management Plan for the Commercial King and Tanner Crab Fisheries in the Bering Sea and Aleutian Islands Regions*. Crab species of interest include Tanner crab (*Chionoecetes bairdi*), snow crab (*Chionoecetes opilio*), two stocks of blue king crab (*Paralithodes platypus*), red king crab (*Paralithodes camtschaticus*) and hair crab (*Erimacrus isenbeckii*). Detailed information on results of the crab survey can be obtained by contacting Dr. Lou Rugolo (NOAA / NMFS / AFSC / Kodiak Fisheries Research Center 301 Research Court, Kodiak, AK 99615).

Every third year through 1991 (1979, 1982, 1985, 1988, 1991) an extended survey was conducted, including an echo-integrated midwater trawl survey for 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 is subsequently sampled biennially independently of the shelf. In 2004 the continental slope was surveyed from 3 June to 11 August. For results of the 2004 Eastern Bering Sea Slope Survey contact Gerald Hoff (NOAA/NMFS/AFSC/RACE 7600 Sand Point Way NE, Seattle, WA 98115).

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 and crab species.
In 2004, the groundfish/crab survey and several ancillary projects were conducted from 1 June to 4 August by two U.S. vessels. This report presents information collected by the AFSC in the eastern Bering Sea during the 2004 bottom trawl survey

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 with a sampling station at the center of each grid (Fig. 1).

In areas surrounding St. Matthew and the Pribilof Islands, a high-density sampling of corner

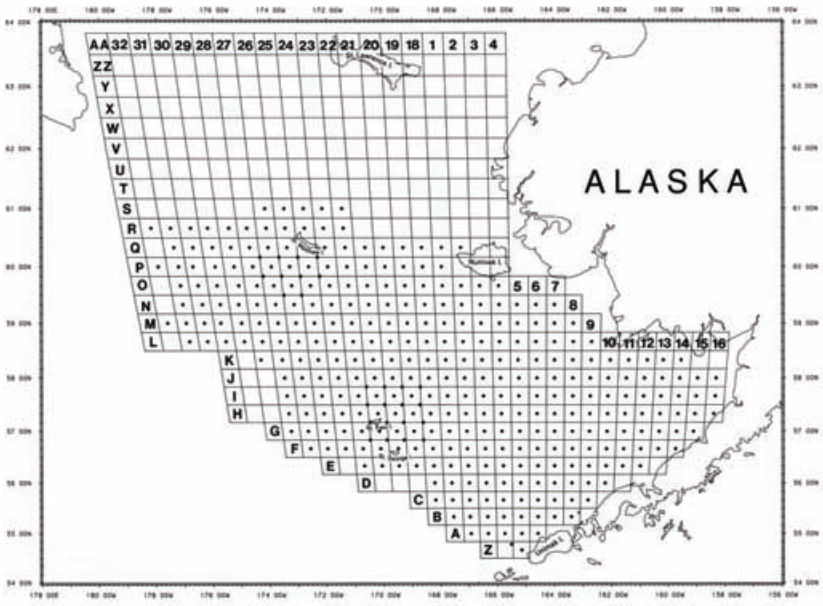


Figure 1. -- Eastern Bering Sea survey grid map of stations.

stations has been implemented to better assess blue king crab concentrations. The survey design pattern calls for 356 standard stations. For the purposes of the data analysis reported in this publication, only the data from these standard survey stations are included in this report. A list of species encountered at all these stations are in Appendix A.

In addition, 19 inshore stations were sampled for the 5th consecutive year to further describe yellowfin sole ecology (Fig. 2). Additional tows were also made during the 2004 survey at two separate red king crab "Hot Spot" stations (a station with more than 100 legal male crabs in catch), which were encountered early in the survey. These eight additional tows were made within 5 nautical miles from the survey station to the north, east, south, and west directions in order to assess the extent of the "high-density" crab.

After the standard survey was completed on 25 July, the F/V *Arcturus* continued on to Pavlov Bay in the Gulf of Alaska to conduct the NMFS annual shrimp survey. For cruise results of this survey contact Dr. Lou Rugolo (NOAA/NMFS/AFSC/ Kodiak Fisheries Research Center, 301 Research Court, Kodiak, AK 99615). The F/V *Aldebaran* was used for 7 days after the completion of the standard survey by scientists from the RACE Division's Midwater Assessment and Conservation Engineering (MACE) and the Groundfish Assessment Programs in a collaborative experiment designed to evaluate the behavior of walleye pollock in response to vessel noise cues from trawling operations. A free-drifting buoy equipped with a calibrated 38 kHz scientific echosounder was used to observe pollock abundance and vertical distribution as the F/V *Aldebaran* towed past the buoy. Data from the acoustic buoy will be used

to determine whether walleye pollock exhibit a behavioral response to the approaching vessel and trawl. For more cruise information contact Dr. David Somerton or Dr. Chris Wilson (NOAA /NMFS /AFSC/ RACE Division 7600 Sand Point Way NE, Seattle, WA 98115).

In addition to the standard groundfish survey, the Groundfish Assessment's Bering Sea subtask team and the Shellfish Assessment Program participated in a bottom trawl survey of high density locations of snow crab in cooperation with the Bering Sea Fisheries Research Foundation (BSFRF) from 6 July to 26 July aboard the F/V *Sea Wolf*. The main objectives of the study were to 1) look at abundance of mature snow crab outside the standard survey area, 2) to examine how survey variance estimates are impacted by selection of random survey station, and 3) to look at a modification to the survey trawl to increase the catchability of crab. Results of this study will be available at a later date.

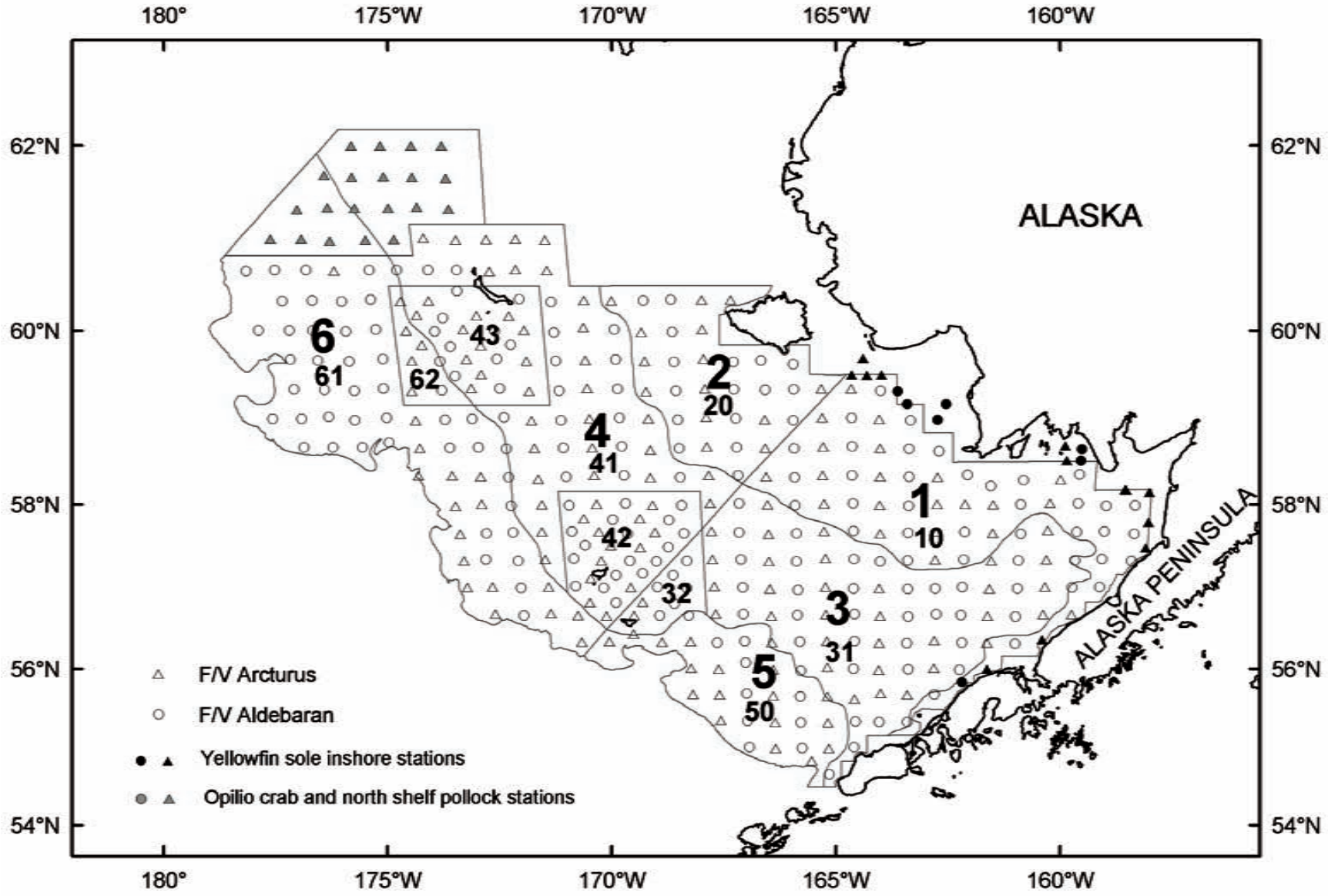


Figure 2. -- Standard and special study stations sampled during the 2004 eastern Bering Sea bottom trawl survey, and stratifications used for analysis of data (large numbers = subarea, small numbers = strata).

Survey Station Sampling Design

Starting with the easternmost stations, the two vessels (F/V *Arcturus* and F/V *Aldebaran*) fished alternate north/south lines of stations such that coverage of the survey area was similar for each vessel. This sampling design facilitates 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 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. 2). 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 1,302 km^2 (Table 1). However, because of the high-density sampling in subareas 3, 4, and 6, and the irregular subarea boundaries, sampling density among the six subareas varied from one station per 1,112 km^2 (subarea 4) to one per 1,411 km^2 (subarea 6).

Table 1. -- Size of subareas and strata and sampling densities for the 2004 eastern Bering Sea bottom trawl survey.

Subarea	**Strata**	**Area (km^2)**	**Stations successfully sampled**	**Sampling density (km^2 / stn)**
1	10	77,871	59	1,320
2	2	41,027	31	1,323
3		103,300	76	1.359
	31	94,526	68	1,390
	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		38,792	26	1,492
6		94,562	67	1,411
	61	88,134	60	1,469
	62	6,429	7	918
Subareas Combined		**463,374**	**356**	**1,302**

Survey Vessels and Sampling Gear

The 2004 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. 3). These nets were attached to tail chains with 54.9-m (30 fathoms) paired dandylines. Each lower dandyline had a 0.61-m chain extension connected to the lower wing edge to improve bottom-tending characteristics. Steel "V"-doors measuring 1.8 × 2.7 m and weighing 816 kg were used.

Table 2. --Vessel characteristics during the 2004 eastern Bering Sea bottom trawl survey.

Vessel	**Overall length (m)**	**Horsepower**	**Survey dates:**
F/V *Arcturus*	40	1,525	1 June – 4 Aug
F/V *Aldebaran*	40	1,525	1 June – 4 Aug

NETMIND[1] net mensuration systems were used aboard each vessel to measure net height and width. Net width was measured by the distance between two sensors attached to the upper starboard and port dandylines, about 0.61 m in front of the net. Mean net widths were calculated from observations recorded within each tow. These data were then used to establish a net width-scope (wire-out) relationship for each vessel to enable prediction of net width for tows where net width data were not available (Fig. 4) 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.

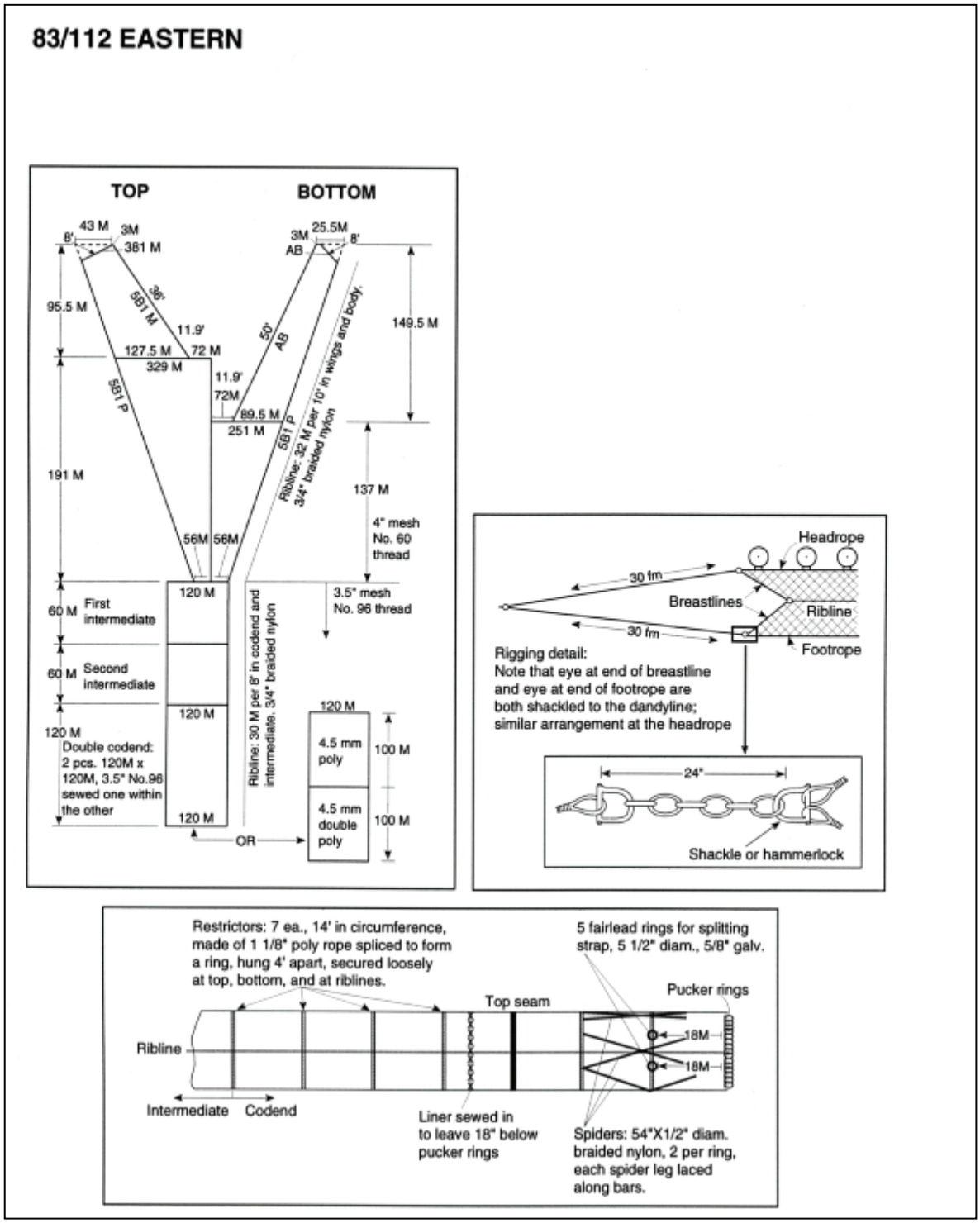


Figure 3. -- Schematic diagram of 83/112 Eastern otter trawl net used during the 2004 Eastern Bering Sea bottom trawl survey.

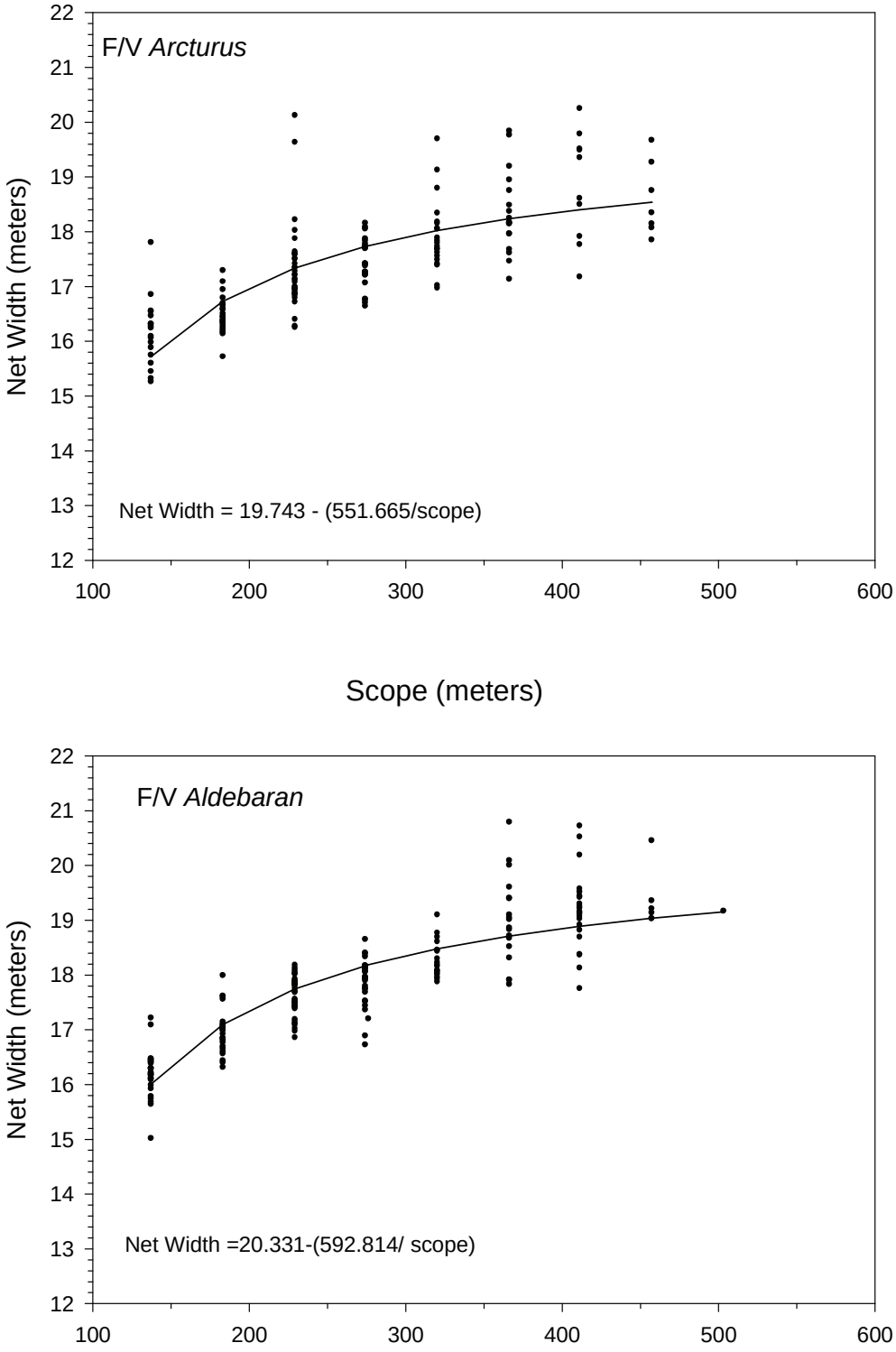


Figure 4. -- Relationship between net-width and scope (wire-out) for vessels participating in the 2004 eastern Bering Sea survey.

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 seafloor 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. Similar features between flathead sole (*Hippoglossoides elassodon*) and Bering flounder (*H. robustus*) make identification of these species difficult within the time constraints of the survey; thus, for the purpose of this report these species are grouped by genus (*Hippoglossoides* spp.). Due to low abundance (believed to be < 1%) of southern rock sole (*Lepidopsetta bilineata*) and its morphological similarities to northern rock sole (*L. polyxystra*) (Orr and Matarese 2000), these species were also grouped by genus (*Lepidopsetta* spp.) for this report.

Minor species of fish and invertebrates were sorted to the lowest taxonomic level practicable. Catch weights and numbers by species or species group were either estimated directly when subsampled, or 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 groundfish species and many co-habiting species (Table 3). Length measurements were collected from randomly chosen samples of approximately 150-200 individuals per species (200-300 in the case of walleye pollock). These specimens 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 measurement). Unless sampled by the International Pacific Halibut Commission (IPHC) for management purposes, Pacific halibut were measured immediately upon capture and returned to sea in an effort to reduce sampling mortality for this species.

Sagittal otoliths were collected from 16 fish species in both the northwestern and southeastern divisions of the survey area (Table 4). Three otolith pairs per sex/centimeter interval per vessel (six pair total) were collected for Pacific cod, Greenland turbot (*Reinhardtius hippoglossoides*), great sculpin (*Myoxocephalus polyacanthocephalus*), plain sculpin (*M. jaok*), warty sculpin (*M. verrucosus*), yellow Irish lord (*Hemilepidotus jordani*), and bigmouth sculpin (*Hemitripterus bolini*). Five otolith pairs per sex/centimeter interval per vessel (10 pair total) were collected for walleye pollock and yellowfin sole. Northern rock sole (*Lepidopsetta polyxystra*), flathead sole (*Hippoglossoides elassodon*), Alaska plaice (*Pleuronectes quadrituberculatus*), and arrowtooth flounder were also collected at five otolith pairs per sex/centimeter interval but only on one vessel. Two otolith pairs per sex/centimeter interval per vessel (four pair total) were collected for marbled eelpout (*Lycodes raridens*) and butterfly

sculpin (*Hemilepidotus papilio*). 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. Age structures for roundfish were preserved in 50% ethanol; flatfish otoliths were preserved in 50% glycerol-thymol solution.

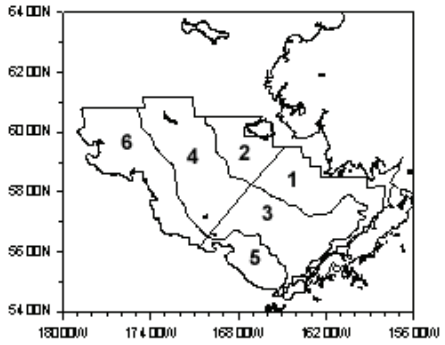
Temperature profiles were taken at each station using a Seabird micro-bathythermograph (MBT) attached to the headrope of the net; surface temperatures were taken using a bucket thermometer.

Table 3. -- Number of length measurements, by subareas, taken during the 2004 eastern Bering Sea bottom trawl survey.

			Subareas				
SPECIES	**1**	**2**	**3**	**4**	**5**	**6**	**TOTAL**[a]
Alaska plaice	1,962	1,778	1,785	2,889	---	68	8,578
Alaska skate	410	541	648	1,350	178	815	4,207
Aleutian skate	---	---	---	---	2	5	7
Arctic cod	---	---	---	11	---	---	11
Atka mackerel	---	---	2	3	1	3	10
Bering flounder	---	12	---	646	---	23	2,060
Bering skate	---	---	27	8	62	101	198
Dover sole	---	---	1	---	3	---	4
Greenland turbot	---	---	2	64	---	185	606
Kamchatka flounder	2	---	536	210	422	1,924	3,112
Pacific cod	1,858	818	1,699	4,485	330	1,056	10,460
Pacific halibut	1,082	449	279	306	48	173	2,342
Pacific ocean perch	---	---	---	---	2	160	162
Pacific sleeper shark	---	---	1	---	---	---	1
Sakhalin sole	---	---	---	3	---	---	3
arrowtooth flounder	284	3	5,043	1,684	2,884	3,590	13,569
big skate	---	---	---	1	---	---	2
bigmouth sculpin	---	---	60	59	13	105	238
butter sole	6	---	117	---	---	---	123
butterfly sculpin	---	---	---	40	---	---	80
chinook salmon	1	---	---	---	---	---	1
chum salmon	---	1	5	9	4	9	28
flathead sole	590	2	5,447	2,563	3,443	6,777	19,089
great sculpin	135	2	259	198	9	60	698
longhead dab	1,519	404	35	1	---	---	1,959
marbled eelpout	---	---	---	34	---	---	126
northern rock sole	10,449	4,746	8,071	8,772	147	1,090	33,376
pink salmon	---	---	---	1	---	---	1
plain sculpin	1,615	1,176	24	106	---	---	2,921
rex sole	32	---	168	4	874	315	1,393
rougheye rockfish	---	---	---	---	14	---	14
sablefish	3	---	4	---	1	---	8
saffron cod	83	152	---	---	---	---	235
southern rock sole	---	---	54	---	---	---	54
spiny dogfish	---	---	---	---	1	---	1
starry flounder	618	104	121	---	---	---	843
walleye pollock	1,734	1,210	8,674	17,160	1,773	9,970	43,858
warty sculpin	3	4	16	296	---	3	326
yellow Irish lord	3	3	242	584	4	61	898
yellowfin sole	8,384	4,838	7,251	5,451	3	1	26,103

[a]Some 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 2004 eastern Bering Sea bottom trawl survey.



SPECIES	Subarea						
	1	**2**	**3**	**4**	**5**	**6**	**TOTAL**[a]
walleye pollock	167	201	365	360	110	329	**1640**
Pacific halibut[b]							**1526**
Pacific cod	165	125	238	307	41	119	**1017**
yellowfin sole	300	227	58	142	---	---	**727**
arrowtooth flounder	5	---	128	47	197	219	**596**
flathead sole	23	---	175	149	97	33	**477**
plain sculpin	252	139	2	36	---	---	**429**
northern rock sole	106	52	29	149	49	23	**408**
Alaska plaice	134	63	68	60	---	---	**325**
Greenland turbot	---	---	2	52	---	157	**290**
great sculpin	57	---	123	69	---	8	**257**
yellow Irish lord	1	1	91	122	4	22	**241**
warty sculpin	2	8	14	106	---	---	**130**
marbled eelpout	---	---	---	24	---	---	**100**
bigmouth sculpin	---	---	37	35	4	15	**91**
butterfly sculpin	1	---	---	1	---	---	**14**

[a] Some age structures were collected outside the standard survey area.
[b] Age structure collection analyzed and managed by the International Pacific Halibut Commission (IPHC); data were not tallied by subareas.

Data Analysis

A total of 356 alternate-row standard station tows (out of 395 total sampled stations) were used in the comparison of vessel catch rates (fishing powers) with the methods developed by Kappenman (1992). Based on this analysis, the value for the vessel with the least efficient catch rate for a particular species is mathematically brought up to match the value for the catch rate of the more efficient vessel for that species.

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-six stations sampled by the two vessels during the standard survey (Fig. 2) were used in that analysis (see Appendix B).

Mean catch per unit effort (CPUE) values for each species were calculated in kilograms per hectare (1 hectare = 10,000m^2) 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 were calculated for individual strata 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, the proportion of fish at each length interval (from subsamples at each station) was weighted by

CPUE (number of fish/ha) and then extrapolated to the stratum population. 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 were 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

Several institutions requested special collections, which were fulfilled during the 2004 survey. These included a special collection of walleye pollock and Pacific cod for the State of Alaska Department of Environmental Conservation (ADEC) who plan to analyze the fish tissue for environmental contaminants such as heavy metals, organic contaminants, PCB, dioxins, and pesticides. Another special collection was fulfilled for the University of Mississippi who requested 50-100 specimens of marine invertebrates and alga which will be screened for various biological activities including *Mycobacterium tuberculosis*, AIDS, opportunistic infections, microbial strains, leis mania, malaria, and cancer.

Among the in-house special collections were stomach samples from walleye pollock which were collected and preserved in 10% formalin for later examination by REFM's Food Habits Task (Table 5) and for samples for crab pathology studies for the RACE pathology lab (Table 5). In addition, collections were made of skate egg cases for identification of skate nursery grounds, hermit crab voucher specimens for identification and distributional studies, and seabird sighting observations were made to determine distribution, relative densities, and to

observe any interaction with fishery operations as required under the biological opinion on the short-tailed albatross (*Phoebastria albatrus*).

Table 5. -- Biological fish samples collected for special studies during the 2004 eastern Bering sea bottom trawl survey.

Scientific name	Species	Stomach samples collected[a]	Pathology samples[b]		
			Blood smear	Preserved blood	Tissue
Theragra chalcogramma	walleye pollock	2,045	0	0	5
Chionoecetes bairdi	Tanner crab		647	49	91
Chionoecetes opilio	snow crab		586	45	36
Clupea pallasi	Pacific herring		0	0	2
Crangon communis	twospine crangon		0	0	5
Gadus macrocephalus	Pacific cod		0	0	5
Gersemia sp.	sea raspberry		0	0	1
Hippoglossoides elassodon	flathead sole		0	0	5
Lepidopsetta polyxystra	northern rock sole		0	0	5
Limanda aspera	yellowfin sole		0	0	5
Lycodes brevipes	shortfin eelpout		0	0	5
Lycodes palearis	wattled eelpout		0	0	5
Mallotus villosus	capelin		0	0	10
Pagurus rathbuni	longfingered hermit		0	0	1
Pagurus trigonocheirus	fuzzy hermit		0	0	3
Pandalus borealis	northern shrimp		0	0	5
Pagurus unid.	hermit crab unid.		0	0	12

[a]Detailed information on species collected for food habit studies can be obtained from P. Livingston (NOAA/NMFS/AFSC 7600 Sand Point Way NE, Seattle, WA 98115).
[b]Detailed 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

In 2004 a total of 395 stations were successfully sampled, which includes the standard stations plus 20 additional stations northwest of the standard pattern (Fig. 2). These 20 northwest stations have been sampled annually since 1987 but are not considered to be part of the standard survey in order to maintain the time-line series of data. Station data from the 2004 survey are listed in Appendix B. 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.

Any tow that experienced significant gear damage or debris such as discarded crab pots were re-sampled immediately following original tow . There were no stations skipped in 2004.

Environmental Conditions

Sea surface temperatures recorded during the survey ranged from 4.0° to 11.0° C (Fig. 5). 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.

Sea bottom temperatures ranged from –1.0° to 6.0° C (Fig. 6). The warmest bottom temperatures (above 3.0° C) occurred in shallow waters along the northern portion of Bristol

Bay to Nunivak Island, and the southern central shelf. The coldest bottom sea temperatures observed were in the northern portion of the mid-shelf at depths between 50 and 100 m.

In general, water temperatures were warmer than the long-term mean from 1982. Surface values were higher at a mean of 8.29^{o}C and a long-term mean of 6.66 ^{o}C (Fig. 7). Mean bottom temperature, however, was slightly cooler for the first time since 1999 with an average of 3.39 ^{o}C but still warmer than the long-term value of 2.61 ^{o}C.

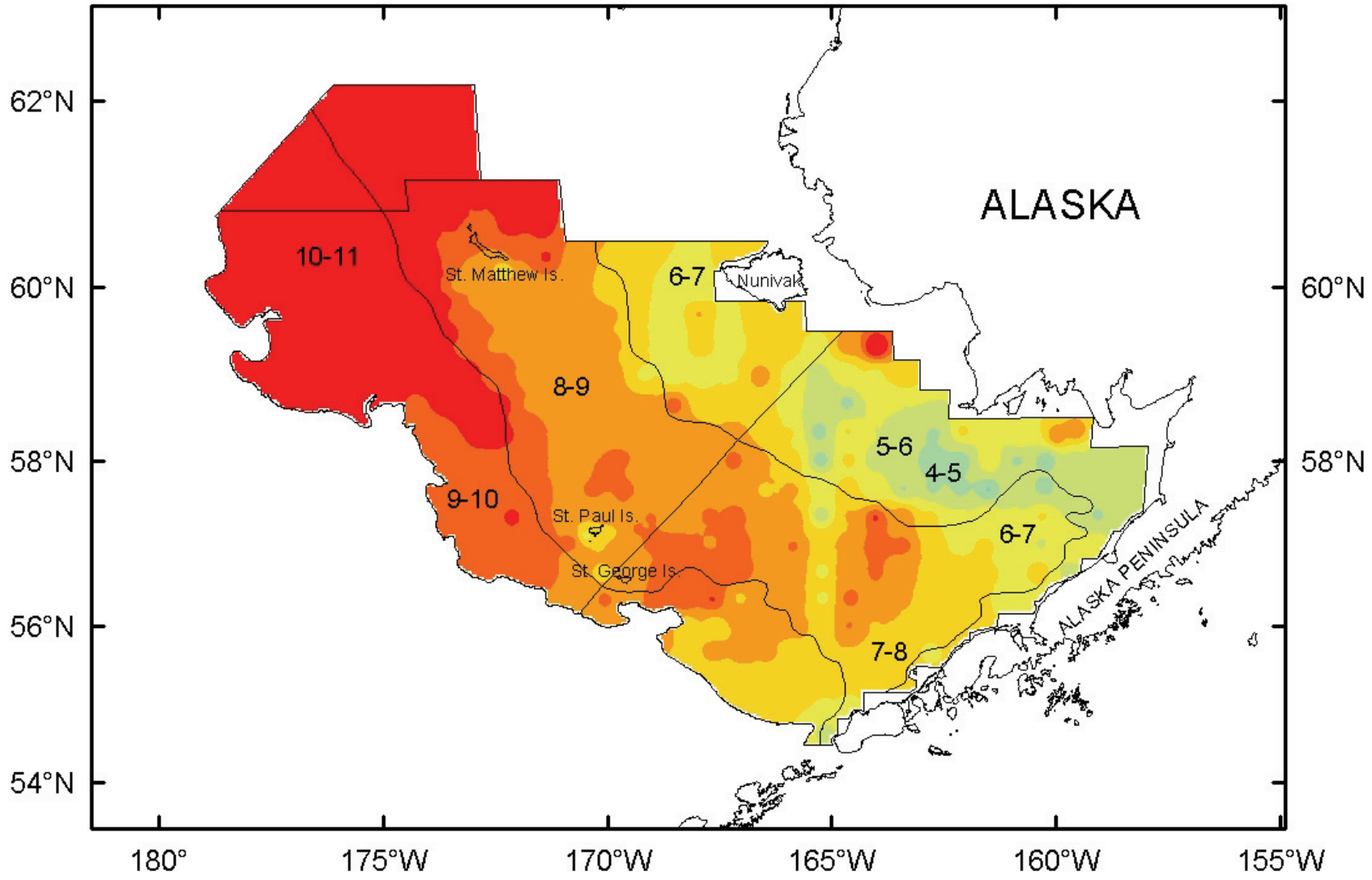


Figure 5. -- Distribution of surface water temperatures (^{o}C) observed during the 2004 eastern Bering Sea bottom trawl survey.

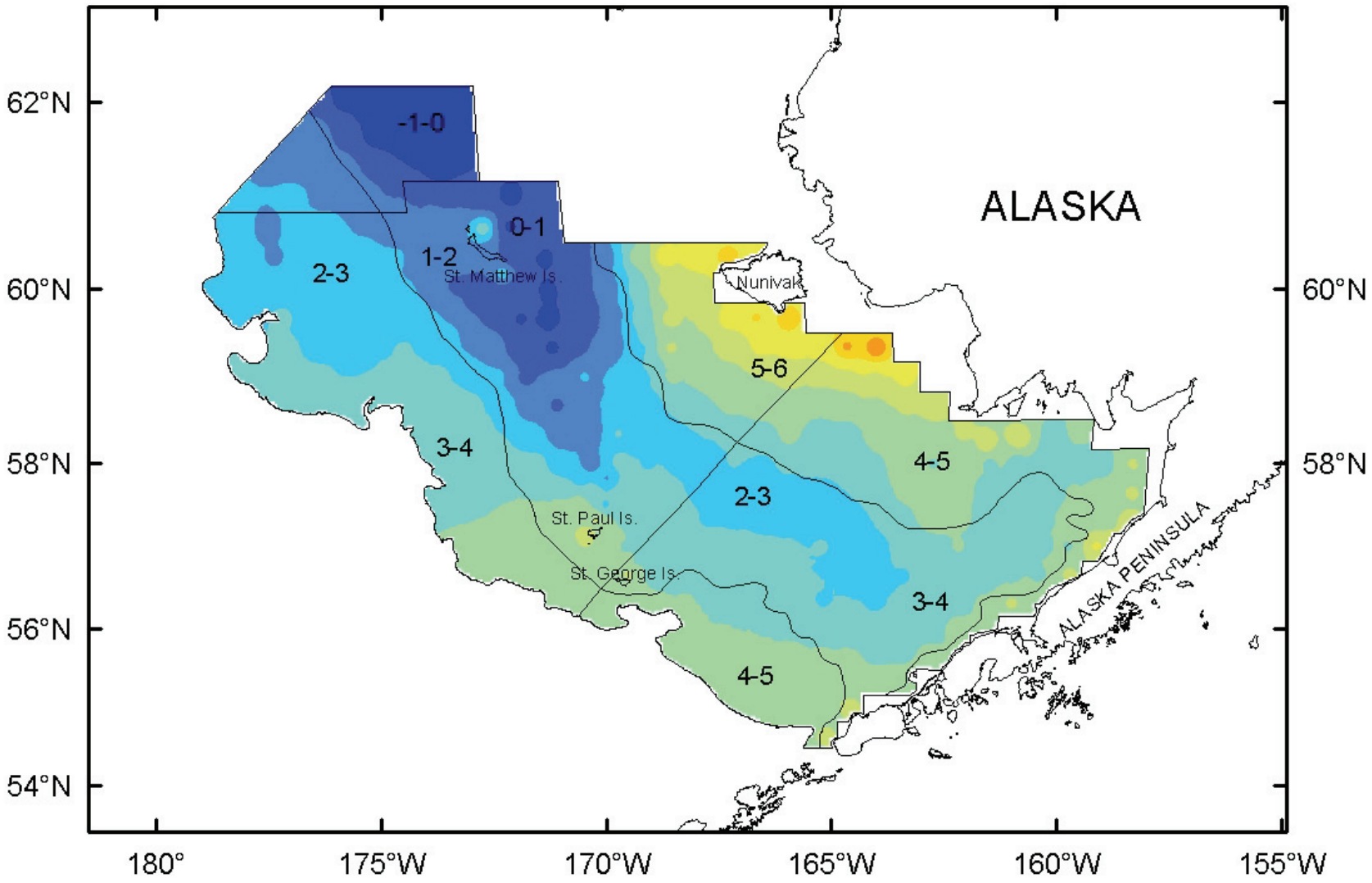


Figure 6. -- Distribution of bottom water temperatures (^{o}C) observed during the 2004 eastern Bering Sea bottom trawl survey.

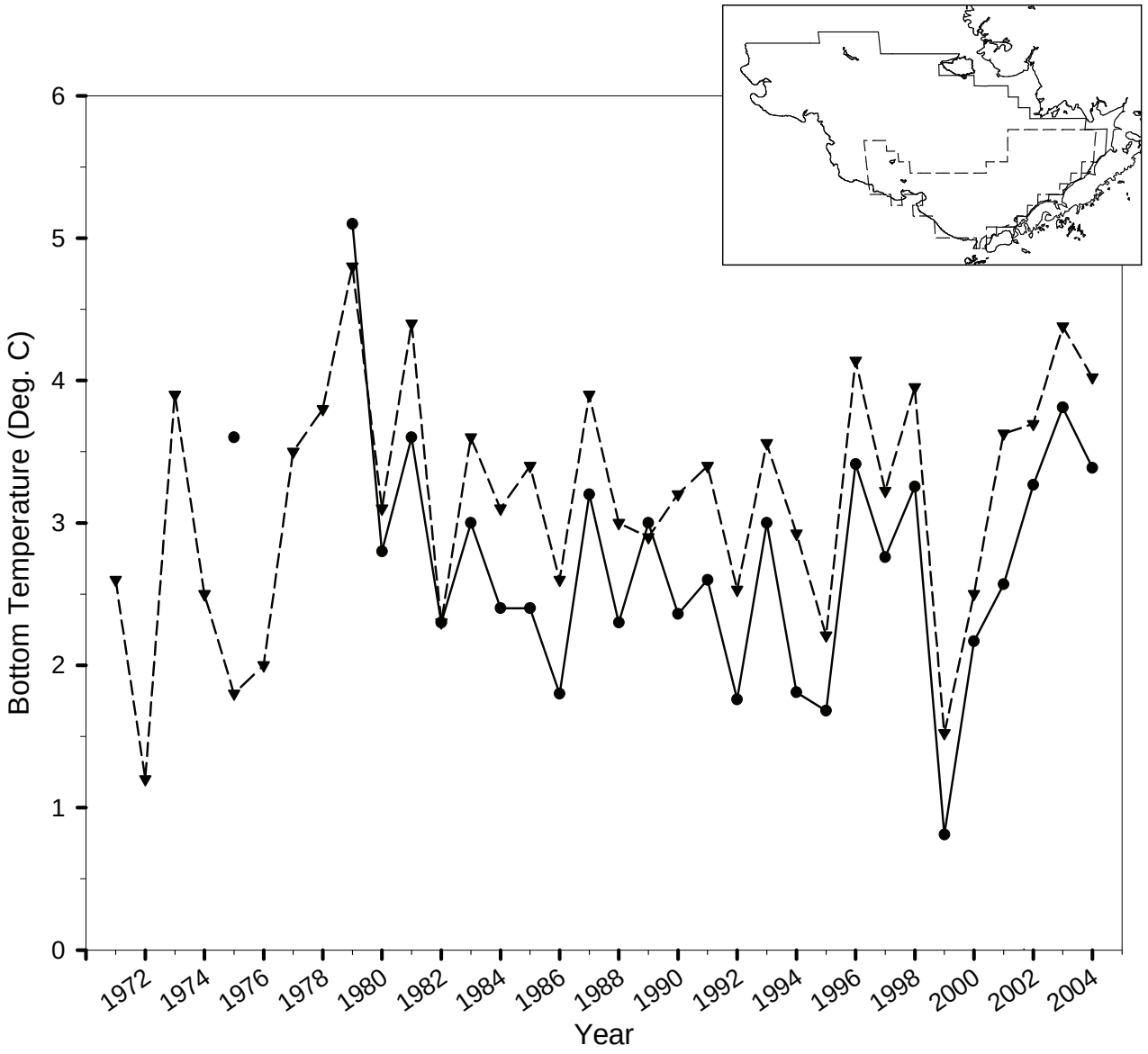


Figure 7. -- Mean summer bottom water temperatures based on expendable bathythermograph casts or microbathythermographs attached to the net headrope during Alaska Fisheries Science Center bottom trawl surveys. The 1971-2003 means (dashed line) are from the southeast Bering Sea (see insert) and the 1975 and 1979-2004 (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 356 alternate-row standard station tows (out of 395 total sampled stations) were used in the comparison of vessel catch rates (fishing powers). Based on this analysis, the value for the vessel with the least efficient catch rate for a particular species is mathematically brought up to match the value for the catch rate of the more efficient vessel for that species. Based on our analysis, in 2004 the F/V *Arcturus* was slightly more efficient than the F/V *Aldebaran* at capturing Tanner crab, great sculpin, and Alaska skate (*Bathyraja parmifera*). Conversely the F/V *Aldebaran* was more efficient at catching Pacific cod, Alaska plaice, and sturgeon poacher (*Podothecus acipenserinus*). Therefore, 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 2004, and scaling factors determined by the method of Kappenman (1992) based on 286 total hauls.

	Hauls with catch		**Catch multiplier**	
Species	**F/V *Arcturus***	**F/V *Aldebaran***	**F/V *Arcturus***	**F/V *Aldebaran***
Tanner crab	99	111	1	1.04
Pacific cod	132	143	1.14	1
great sculpin	72	70	1	1.02
Alaska skate	129	137	1	1.04
Alaska plaice	104	119	1.06	1
sturgeon poacher	105	113	1.08	1

Relative Abundance of Individual Fish Species

Relative abundance (not weighted by area) of the 11 most abundant species and species groups of fish are presented in Figure 8. These taxa accounted for 72.6% (244.97kg/ha) of total mean CPUE (337.5 kg/ha) and 92.6% of total fish mean CPUE (264.5 kg/ha). Overall, walleye pollock with a mean CPUE of 87.3 kg/ha, was the dominant roundfish species at depths between 100 and 200 m in the catches. They were encountered at nearly all sampling sites, with the largest mean catches (134.2 kg/ha) observed in south central shelf waters. Pacific cod were also mostly caught in the 100-200 m-depth zone with an overall mean CPUE of 14.1 kg/ha. Yellowfin sole with overall mean catch rate of 53.4 kg/ha were abundant in water less than 50 m. Snow crab (*Chionoecetes opilio*) was the most abundant commercially important crab species encountered, with a total average catch rate of 4.0 kg/ha. Red king crab (*Paralithodes camtschatica*) had an overall mean CPUE of 2.7 kg/ha while blue king crab (*P. platypus*) and Bairdi Tanner crab had overall catch rates of less than 0.1 kg/ha and 1.2 kg/ha trawled, respectively. See Appendix C for a descending rank of all organisms caught.

Estimated Biomass of Major Fish and Invertebrate Groups

Total demersal fish and invertebrate biomass for the overall survey area was estimated at 15.4 million t, of which fish species accounted for 77% (11.9 million t) (Table 7), and invertebrates 23% (3.5 million t) (Table 8). Concentrations of fish biomass were located in Bristol Bay and along the Alaska Peninsula, around the Pribilof Islands, northwest of the Pribilofs, and north of St. Matthew Island (Fig. 9). Although 20 families, 50 genera, and 81 species of fish were identified in the catches (Appendix A), the

fish biomass was dominated by walleye pollock and Pacific cod (Gadidae 4.4 million t), and flatfish (Pleuronectidae, 6.6 million t) (Table 7). The biomass of invertebrates was comprised primarily of the phyla Echinodermata (1.3 million t), Crustacea (0.76 million t), and Mollusca (0.29 million t) (Table 8). A total of 229 invertebrate individual taxa from 12 phyla were identified in the survey.

Northwest Stations

The 20 northwest non-standard survey stations were sampled in the same manner as the standard survey stations. Species diversity consisted of 104 distinct species similar in composition as the fish and invertebrate species in the standard stations. Table 9 shows the relative abundance of 25 fish species for comparison purposes to the rest of this document.

Table 7. -- Biomass estimates (t) for major fish species and groups taken during the 2004 eastern Bering Sea bottom trawl survey.

Taxon	Estimated biomass and 95% confidence interval[a]		Proportion of total animal biomass[b]	Estimated biomass by subarea (t) 1	2	3	4	5	6
Gadidae (cods)									
Walleye pollock	3,751,514	± 19%	0.244	106,566	45,836	1,276,140	1,284,032	135,825	903,116
Pacific cod	596,988	± 12%	0.039	61,678	26,181	105,536	251,506	33,249	118,839
Other cods	3,335	± 98%	0.000	1,477	1,831	0	27	0	0
Total cods	**4,351,838**	**± 16%**	**0.283**	**169,721**	**73,848**	**1,381,676**	**1,535,565**	**169,074**	**1,021,954**
Anoplopomatidae									
Sablefish	155	± 110%	0.000	26	0	55	0	75	0
Scorpaenidae (rockfish)									
Pacific ocean perch	95,488	± 202%	0.006	0	0	0	0	20	95,468
Other rockfish	165	± 125%	0.000	0	0	0	0	165	0
Total rockfish	**95,653**	**± 202%**	**0.006**	**0**	**0**	**0**	**0**	**185**	**95,468**
Pleuronectidae (flatfishes)									
Yellowfin sole	2,530,599	± 15%	0.165	1,136,163	343,439	732,975	317,851	161	11
Rock sole	2,182,240	± 17%	0.142	1,001,644	285,179	441,828	425,924	4,771	22,894
Hippoglossoides spp.	616,668	± 17%	0.040	26,616	403	221,996	125,616	58,341	183,696
Alaska plaice	488,217	± 26%	0.032	69,590	51,195	152,858	209,622	0	4,952
Arrowtooth flounder	517,539	± 15%	0.034	5,763	62	174,880	31,300	136,412	169,122
Kamchatka flounder	29,859	± 18%	0.002	83	0	3,726	5,641	2,460	17,950
Greenland turbot	20,909	± 39%	0.001	0	0	397	2,612	0	17,901
Pacific halibut	128,056	± 15%	0.008	33,974	17,327	17,011	21,896	8,790	29,057
Other flatfish	127,631	± 52%	0.008	58,454	9,722	37,525	122	15,930	5,877
Total flatfish	**6,641,718**	**± 10%**	**0.432**	**2,332,286**	**707,328**	**1,783,196**	**1,140,584**	**226,865**	**451,460**
Clupeidae									
Pacific herring	88,077	± 41%	0.006	33,342	1,738	27,539	24,985	0	474
Cottidae (sculpins)	210,508	± 16%	0.014	51,069	22,540	54,524	57,020	4,241	21,114
Zoarcidae (eelpouts)	43,921	± 24%	0.003	646	0	4,577	15,311	758	22,630
Osmeridae (smelts)	9,236	± 46%	0.001	2,293	1,069	381	2,800	2,688	5
Agonidae (poachers)	27,432	± 23%	0.002	5,924	4,831	7,044	9,371	215	47
Cyclopteridae (snailfishes)	1,643	± 63%	0.000	24	0	3	1,383	32	201
Rajidae (skates)	427,889	± 10%	0.028	41,234	46,728	72,052	102,560	38,637	126,677
Other fish	13,927	± 40%	0.001	2,352	931	2,773	2,179	1,171	4,521
Total fish	**11,911,997**	**± 8%**	**0.775**	**2,638,915**	**859,014**	**3,333,820**	**2,891,757**	**443,941**	**1,744,550**

[a]Differences in sums of estimates and totals are due to rounding.
[b]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area. **Total estimated biomass= 15,372,432 t.**

Table 8. -- Biomass estimates (t) for major invertebrate species and groups taken during the 2004 eastern Bering Sea bottom trawl survey.

Taxon	[a] and interval			Proportion of total animal biomass[b]	Estimated biomass by subarea (t)				
					2	3	4	5	6
Crustacea	217,801	±	21%	0.014	1,275	265	16,396	137,988	16,425	45,451
Chionoecetes sp.	0	±	0%	0.000	0	0	0	0	0	0
Lithodes sp.	129,220	±	61%	0.008	52,452	600	69,641	6,367	0	160
Paralithodes sp.		±	52%	0.000	122	238	320	126	19	53
Erimacrus isenbeckii (king crab)	382,739	±	14%	0.025	29,844	29,295	139,301	128,395	5,724	50,181
Paguridae	15,088	±	44%	0.001	2,820	2,268	3,336	6,333	160	171
Estimated total biomass (t) 95% confidence	**745,726**	**±**	**14%**	**0.049**	**86,513**	**32,666**	**228,993**	**279,209**	**22,329**	**96,016**
Tanner crab	2,500	±	14%	0.000	121	395	19	331	65	1,569
Other crustaceans	8,145	±	31%	0.001	675	545	4,949	1,660	291	24
Total crustaceans	**756,371**	**±**	**14%**	**0.049**	**87,309**	**33,606**	**233,961**	**281,199**	**22,684**	**97,610**
Mollusca	270,898	±	198%	0.018	16,838	10,983	96,068	69,529	5,805	71,676
Gastropoda (snails)	13,433	±	13%	0.001	418	715	10,480	1,424	136	260
Pelecypoda (bivalves)	20	±	95%	0.000	0	0	0	0	1	19
Squids	4,902	±	79%	0.000	0	0	2,537	44	409	1,912
Octopuses	0	±	62%	0.000	0	0	0	0	0	0
Other mollusks										
Total mollusks	**289,253**	**±**	**14%**	**0.019**	**17,256**	**11,697**	**109,086**	**70,997**	**6,350**	**73,867**
Echinodermata	1,005,306	±	16%	0.065	418,774	117,121	218,820	203,121	1,142	46,328
Asteroidea (sea stars)	276,167	±	27%	0.018	11,513	2,966	85,438	40,184	1,476	134,590
Ophiuroidea (brittle stars)	19,336	±	95%	0.001	8	5	13,287	1,527	3,193	1,315
Echinoidea (sea urchins)	3,941	±	76%	0.000	1,578	0	1,512	845	0	6
Total echinoderms	**1,304,812**	**±**	**14%**	**0.085**	**431,873**	**120,092**	**319,087**	**245,709**	**5,811**	**182,239**
Holothuroidea (sea cucumbers)	561,672	±	39%	0.037	75,271	68,257	196,435	221,630	22	57
Ascidiacea	224,860	±	97%	0.015	416	77	222,708	409	123	1,127
Porifera (sponges)	124,350	±	25%	0.008	4,560	3,117	38,937	46,355	23,066	8,315
Coelenterata	199,179	±	20%	0.013	20,349	13,742	87,353	61,190	843	15,701
Other invertebrates										
Total invertebrates	**3,460,435**	**±**	**11%**	**0.225**	**637,035**	**250,589**	**1,207,538**	**927,458**	**58,900**	**378,916**

[a]Differences in sums of estimates and totals are due to rounding.
[b]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area. **Total estimated biomass= 15,372,432 t.**

Table 9. --Relative abundance of fish species from the 20 northwest non-standard survey stations collected during the 2004 eastern Bering sea bottom trawl survey. These 25 species are presented here to provide comparison between the same principal species presented in other sections of this report.

Species			
Common name	**Scientific name**	**Biomass (t)**	**Population numbers**
Bering skate	*Bathyraja interrupta*	0	0
Alaska skate	*Bathyraja parmifera*	23,853	8,564,565
arrowtooth flounder	*Atheresthes stomias*	2,533	2,468,481
Kamchatka flounder	*Atheresthes evermanni*	565	539,031
Greenland turbot	*Reinhardtius hippoglossoides*	7,510	11,590,398
Pacific halibut	*Hippoglossus stenolepis*	1,369	175,602
flathead sole (grouped)	*Hippoglossoides* spp.	23,644	110,301,166
yellowfin sole	*Limanda aspera*	2,588	6,375,705
rocksole (grouped)	*Lepidopsetta* spp.	2,652	5,856,848
Alaska plaice	*Pleuronectes quadrituberculatus*	7,269	5,207,497
sturgeon poacher	*Podothecus acipenserinus*	13	180,143
Bering poacher	*Ocella dodecaedron*	0	0
Pacific herring	*Clupea pallasi*	2,241	8,679,126
butterfly sculpin	*Hemilepidotus papilio*	794	1,521,280
warty sculpin	*Myoxocephalus verrucosus*	143	139,820
great sculpin	*Myoxocephalus polyacanthocephalus*	2,862	1,234,701
plain sculpin	*Myoxocephalus jaok*	0	0
bigmouth sculpin	*Hemitripterus bolini*	3	27,572
Pacific cod	*Gadus macrocephalus*	19,018	8,233,543
walleye pollock	*Theragra chalcogramma*	130,227	247,361,715
eulachon	*Thaleichthys pacificus*	0	0
capelin	*Mallotus villosus*	187	9,880,115
marbled eelpout	*Lycodes raridens*	4,308	3,585,981
wattled eelpout	*Lycodes palearis*	2,785	17,756,410
shortfin eelpout	*Lycodes brevipes*	3,046	41,543,416

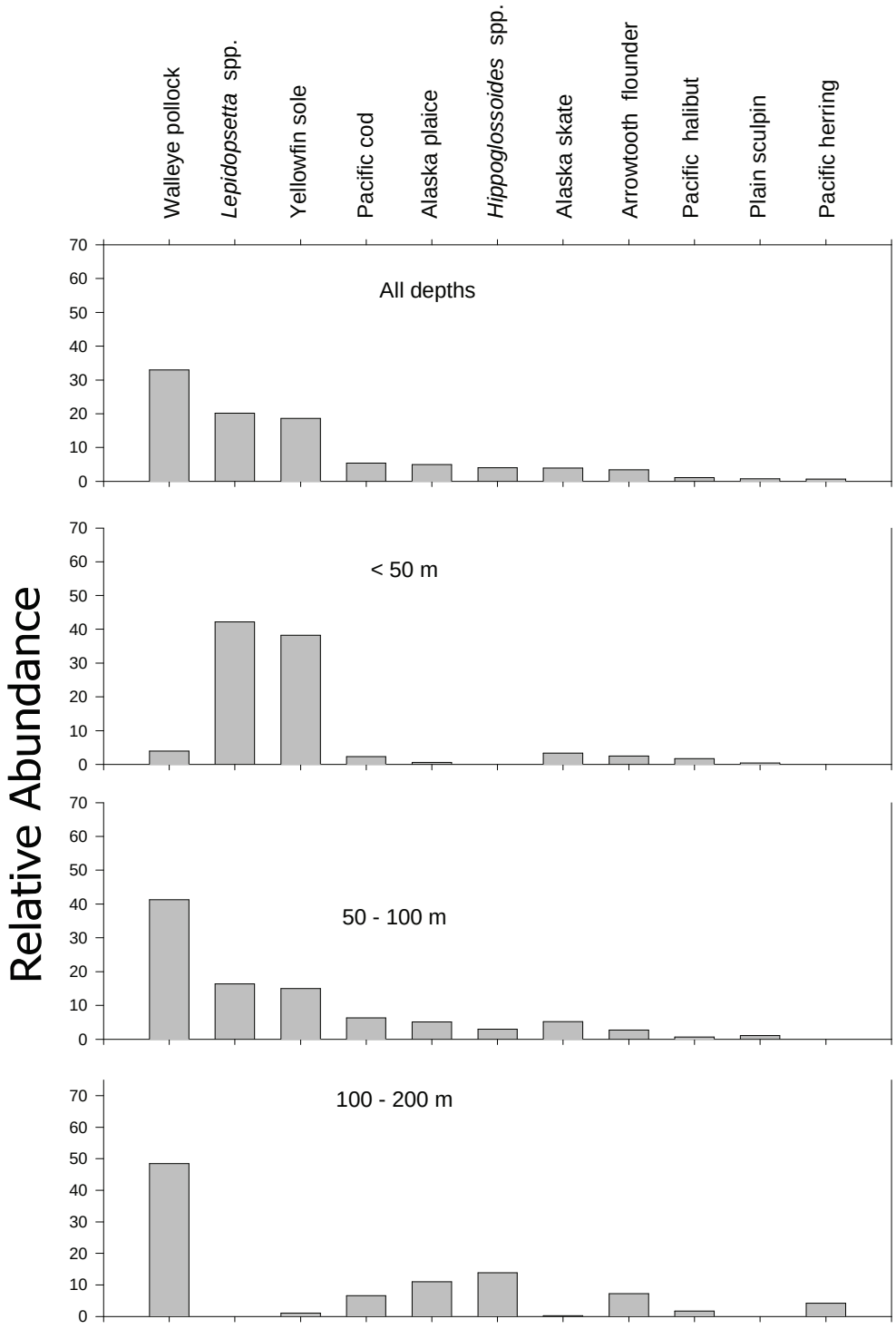


Figure 8. -- Relative abundance (%CPUE in kg/ha) of principle groundfish species (top 11 for all depths combined) by depth zones and for all depths combined, 2004 eastern Bering Sea bottom trawl survey.

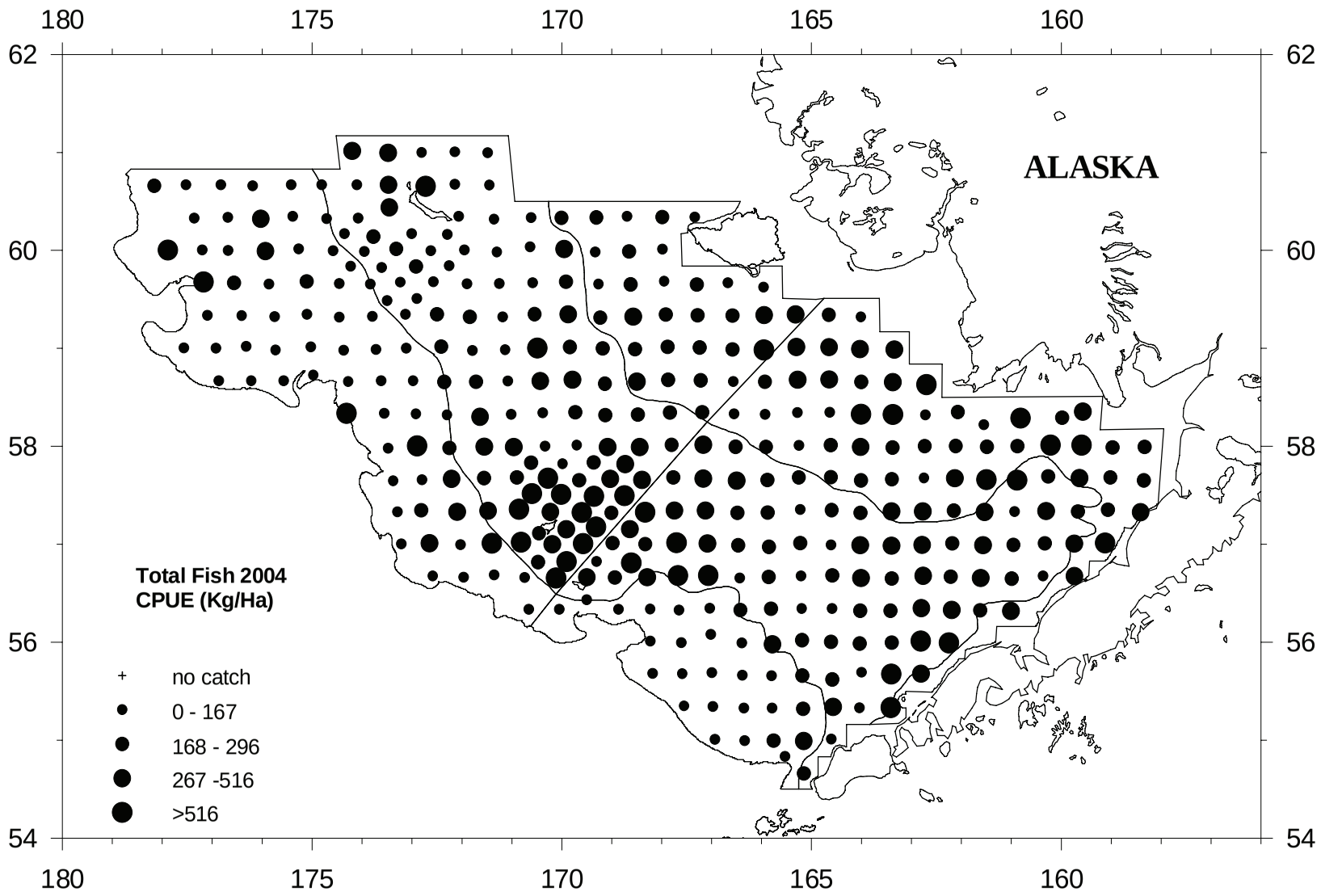


Figure 9. -- Distribution and relative abundance of **total fish** caught during the 2004 eastern Bering Sea bottom trawl survey.

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

Geographical distributions, population numbers, biomass estimates, and size composition are presented in the following figures and tables for each of the following commercially important eastern Bering Sea groundfish: walleye pollock, Pacific cod, yellowfin sole, rock sole grouped (*Lepidopsetta* spp.), flathead sole grouped (*Hippoglossoides* spp.), Alaska plaice, Greenland turbot, arrowtooth flounder, Kamchatka flounder (*Atheresthes evermanni*), and Pacific halibut. Estimates of variance and confidence intervals do not incorporate variation associated with fishing power corrections (FPC) or measurement efforts. Estimates are given separately for each of the 10 geographic strata used in analysis, which are specified in Table 10.

Table 10. -- Stratum codes and the corresponding subareas used to sample in the eastern Bering Sea survey 2004.

Subarea	Stratum	Sampling Protocol
1	10	Inner southeast standard sampling
2	20	Inner northwest standard sampling
3	31	Middle southeast standard sampling
3	32	Pribilof Islands southeast high density sampling
4	41	Middle northwest standard sampling
4	42	Pribilof Islands northwest high density sampling
4	43	St. Matthew Island northwest high density sampling
5	50	Outer southwest standard sampling
6	61	Outer northwest standard sampling
6	62	St. Matthew Island high density sampling

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 1 cm 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. Catch-per-unit-effort (CPUE), population, and biomass estimates as well as the variances and confidence limits for each species are listed by stratum. Geographical distributions for some common, but generally noncommercial fish species are also presented. These species are Bering skate (*Bathyraja interrupta*), Alaska skate, warty sculpin, great sculpin, plain sculpin, bigmouth sculpin, wattled eelpout (*Lycodes palearis*), shortfin eelpout (*L. brevipes*), marbled eelpout, sturgeon poacher, Bering poacher (*Occella dodecaedron*), butterfly sculpin, eulachon (*Thaleichthys pacificus*), capelin (*Mallotus villosus*), and Pacific herring (*Clupea pallasi*).

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 are shown to give some idea of geographic distribution.

Appendices to the report contain detailed results of the survey including population estimates by sex and size classes, and rank of fish and invertebrate taxa by unweighted total CPUE (kg/ha).

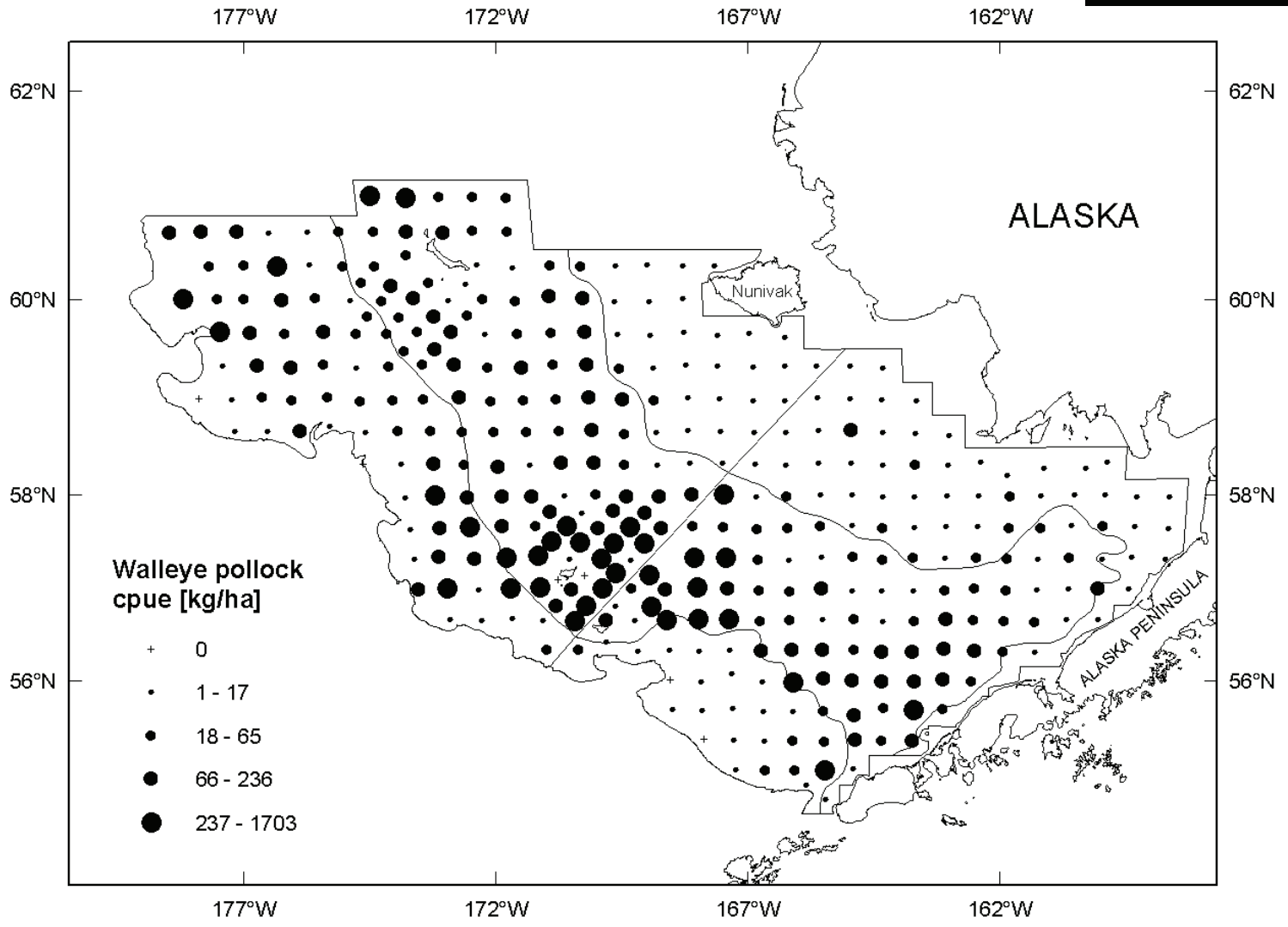

Figure 10. -- Distribution and relative abundance in kg/ha of **walleye pollock** *(Theragra chalcogramma)*, 2004 eastern Bering Sea bottom trawl survey.

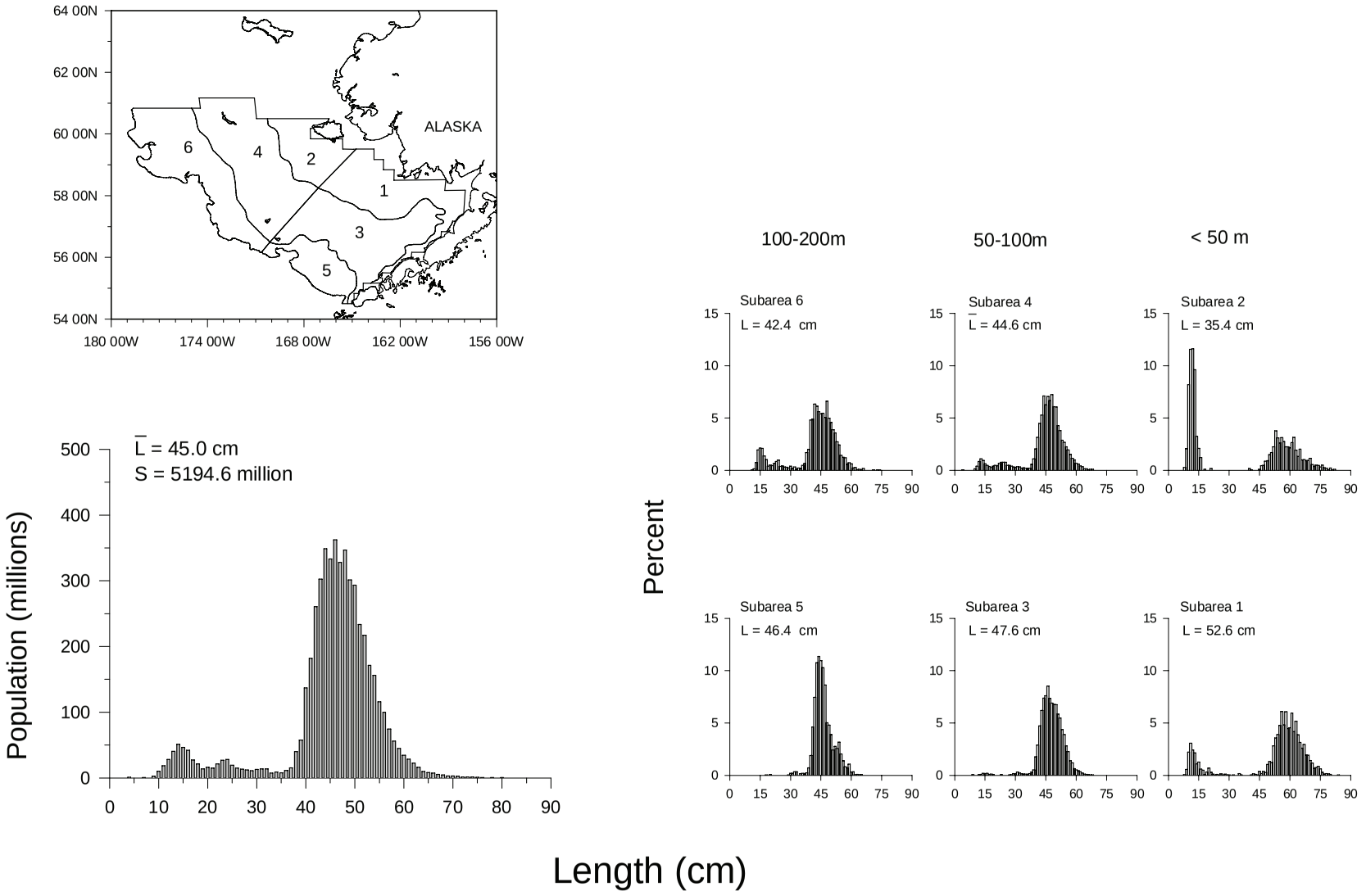

Figure 11. -- Estimated relative size distribution (sexes combined) of **walleye pollock** (*Theragra chalcogramma*) in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 11a. -- Abundance estimates and mean size of **walleye pollock** *(Theragra chalcogramma)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	13.68	106,566	0.028	84,450,804	0.016	1.262	52.6
2	11.17	45,836	0.012	68,658,901	0.013	0.668	35.4
3	123.54	1,276,140	0.340	1,592,915,808	0.307	0.801	47.6
4	119.09	1,284,032	0.342	1,867,400,517	0.359	0.688	44.6
5	35.01	135,825	0.036	175,027,621	0.034	0.776	46.4
6	95.50	903,116	0.241	1,406,162,445	0.271	0.642	42.4
All subareas combined	80.96	3,751,514	1.000	5,194,616,097	1.000	0.722	45.0
95% confidence interval		± 709,071		± 984,662,907			

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

Table 11b. -- 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	59	59	59	59	13.68	.73460E+01	10.84	.29790E+01
20	31	31	31	30	11.17	.62570E+01	16.74	.21440E+02
31	68	68	68	68	99.19	.24080E+03	118.78	.44160E+03
32	8	8	8	8	385.82	.46790E+05	535.86	.90880E+05
Subtotal	76	76	76	76	123.54	.53920E+03	154.20	.10250E+04
41	44	44	44	44	91.19	.20170E+03	124.76	.41890E+03
42	31	29	29	29	254.88	.18060E+04	374.81	.39890E+04
43	22	22	22	22	47.50	.50610E+02	87.70	.20850E+03
Subtotal	97	95	95	95	119.09	.15970E+03	173.19	.34750E+03
50	26	24	24	24	35.01	.25880E+03	45.12	.50170E+03
61	60	58	58	58	100.58	.58100E+03	156.35	.10870E+04
62	7	7	7	7	25.92	.27160E+02	43.85	.98560E+02
Subtotal	67	65	65	65	95.50	.50480E+03	148.70	.94480E+03
Total	356	350	350	349	80.96	.14760E+04	112.10	.28440E+04

Table 11b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	84,450,804	.18066E+15	58.00	57,286,461	111,615,147
20	68,658,901	.36085E+15	30.00	29,812,021	107,505,780
31	1,122,746,935	.39456E+17	67.00	725,475,394	1,520,018,476
32	470,168,873	.69962E+17	7.00	0	1,117,407,107
Subtotal	1,592,915,808	.10942E+18	16.57	891,654,304	2,294,177,313
41	782,311,952	.16470E+17	43.00	522,945,570	1,041,678,335
42	899,970,845	.22998E+17	30.00	590,302,668	1,209,639,022
43	185,117,720	.92907E+15	21.00	121,717,928	248,517,512
Subtotal	1,867,400,517	.40397E+17	68.07	1,465,422,059	2,269,378,975
50	175,027,621	.75499E+16	25.00	0	354,368,464
61	1,377,971,611	.84444E+17	59.00	790,685,527	1,965,257,696
62	28,190,834	.40731E+14	6.00	11,782,395	44,599,273
Subtotal	1,406,162,445	.84484E+17	59.06	818,734,739	1,993,590,152
Total	5,194,616,097	.24239E+18	67.57	4,209,953,189	6,179,279,004

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	106,566	.44547E+09	58.00	63,910	149,222
20	45,836	.10532E+09	30.00	24,849	66,822
31	937,616	.21516E+11	67.00	644,252	1,230,979
32	338,524	.36026E+11	7.00	0	787,411
Subtotal	1,276,140	.57541E+11	17.22	769,999	1,782,281
41	571,781	.79307E+10	43.00	391,802	751,760
42	611,990	.10414E+11	30.00	403,606	820,374
43	100,261	.22546E+09	21.00	68,939	131,583
Subtotal	1,284,032	.18570E+11	67.89	1,011,487	1,556,577
50	135,825	.38951E+10	25.00	7,259	264,390
61	886,453	.45127E+11	59.00	457,130	1,315,776
62	16,663	.11226E+08	6.00	8,464	24,861
Subtotal	903,116	.45138E+11	59.03	473,739	1,332,492
Total	3,751,514	.12570E+12	67.96	3,042,444	4,460,585

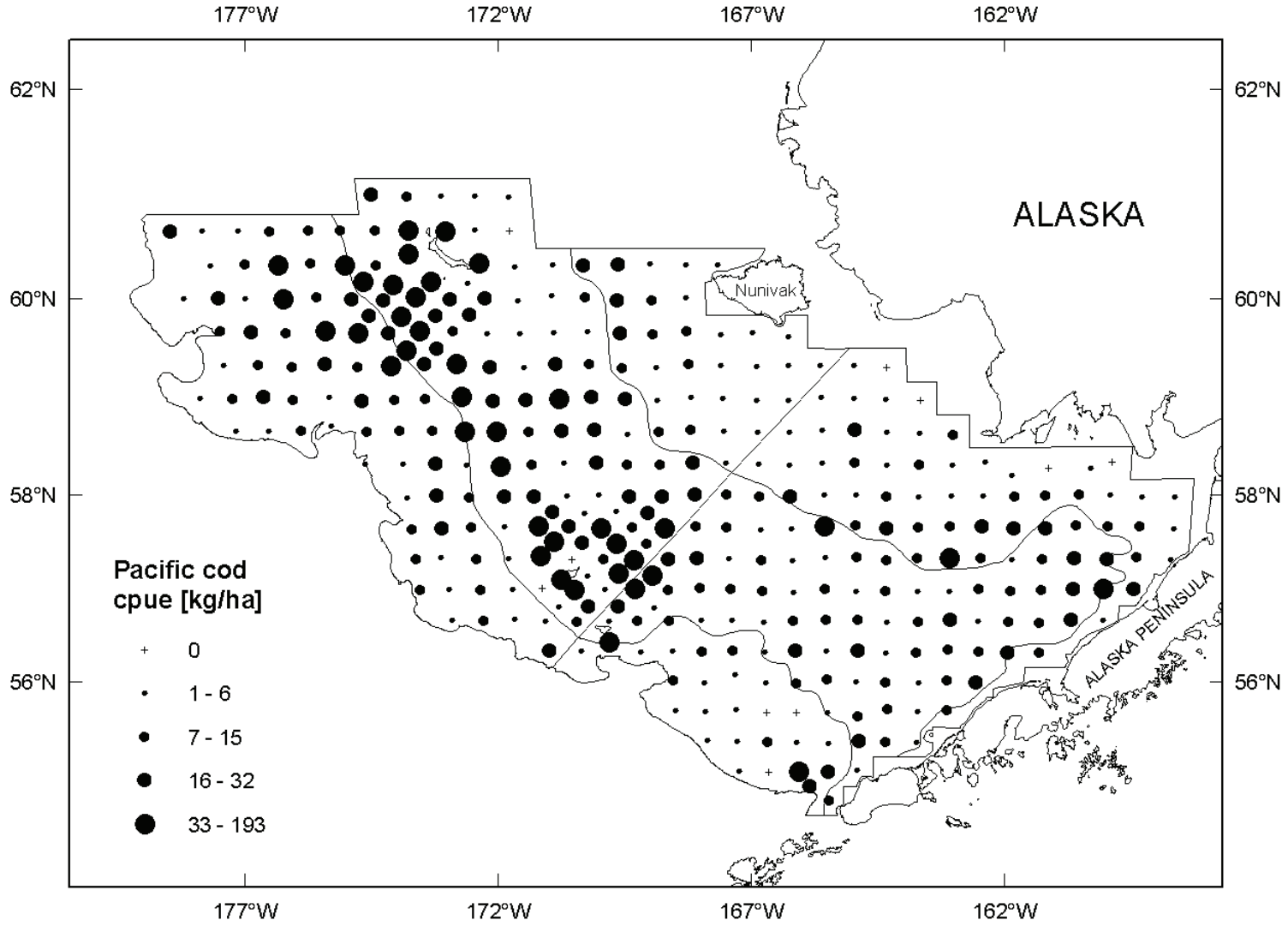

Figure 12. -- Distribution and relative abundance in kg/ha of **Pacific cod** *(Gadus macrocephalus)*, 2004 eastern Bering Sea bottom trawl survey.

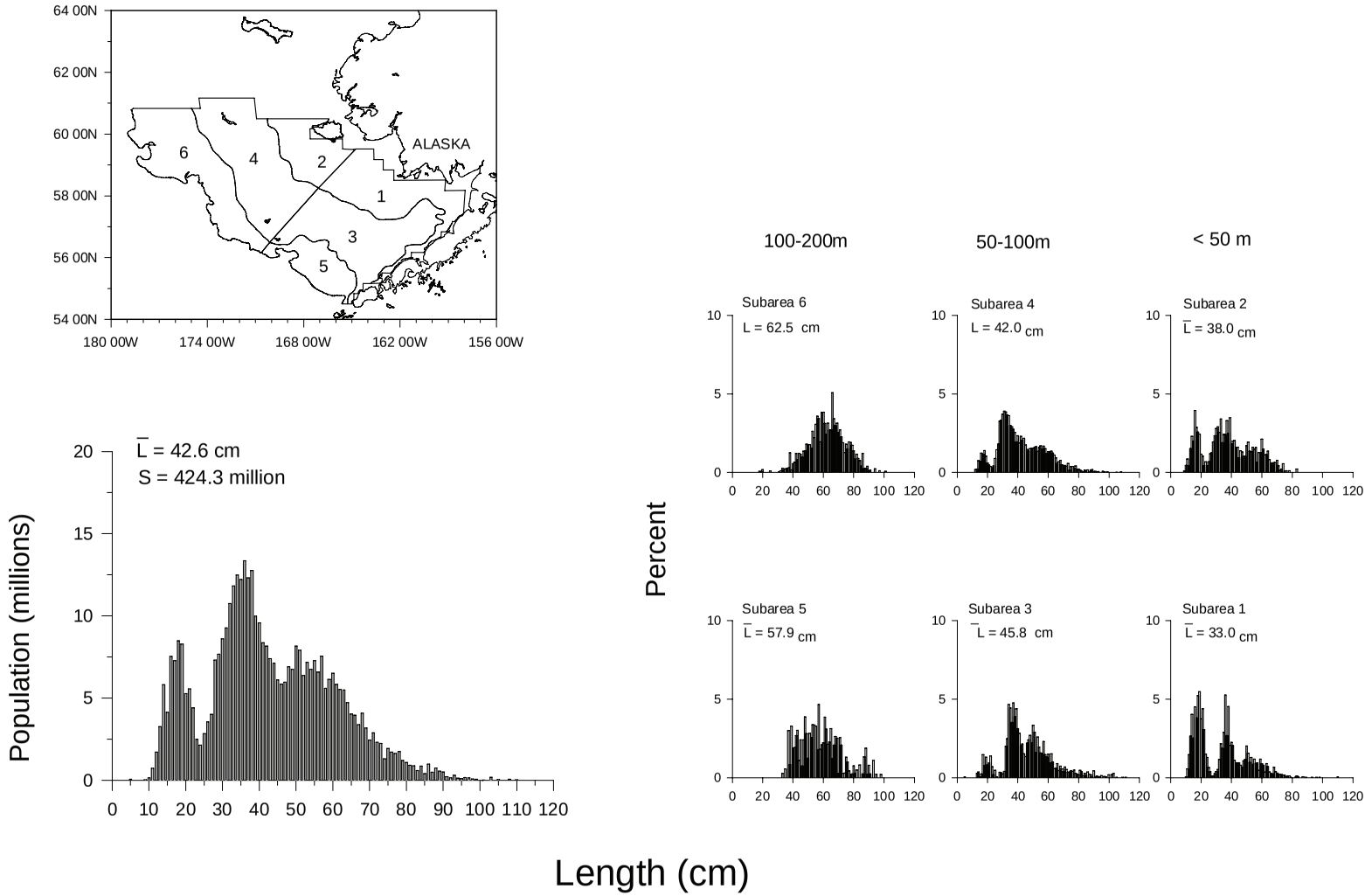

Figure 13. -- Estimated relative size distribution (sexes combined) of **Pacific cod** *(Gadus macrocephalus)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

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Table 12a. -- Abundance estimates and mean size of **Pacific cod** *(Gadus macrocephalus)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	7.92	61,678	0.103	85,220,951	0.201	0.724	33.0
2	6.38	26,181	0.044	27,785,004	0.065	0.942	38.0
3	10.22	105,536	0.177	67,801,106	0.160	1.557	45.8
4	23.33	251,506	0.421	198,110,311	0.467	1.270	42.1
5	8.57	33,249	0.056	11,996,502	0.028	2.772	57.9
6	12.57	118,839	0.199	33,351,298	0.079	3.563	62.5
All subareas combined	12.88	596,988	1.000	424,265,173	1.000	1.407	42.6
95% confidence interval		± 69,567		± 72,115,703			

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

Table 12b. -- 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	59	55	55	55	7.92	.14430E+01	10.94	.40460E+01
20	31	31	31	31	6.38	.16500E+01	6.77	.16160E+01
31	68	68	68	68	9.14	.64740E+00	6.51	.62830E+00
32	8	8	8	8	21.82	.47050E+02	7.11	.26140E+01
Subtotal	76	76	76	76	10.22	.88160E+00	6.56	.54500E+00
41	44	43	43	41	16.87	.99640E+01	12.03	.11750E+02
42	31	29	29	29	31.31	.53380E+02	15.56	.84040E+01
43	22	22	22	22	33.44	.19530E+02	40.42	.97370E+02
Subtotal	97	94	94	92	23.33	.67650E+01	18.37	.81220E+01
50	26	23	23	23	8.57	.53320E+01	3.09	.96990E+00
61	60	60	60	60	11.22	.15680E+01	3.05	.95550E-01
62	7	7	7	7	31.09	.88570E+02	10.04	.78230E+01
Subtotal	67	67	67	67	12.57	.17710E+01	3.53	.11920E+00
Total	356	346	346	344	12.88	.17840E+02	9.16	.15420E+02

Table 12b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	85,220,951	.24536E+15	58.00	53,564,278	116,877,624
20	27,785,004	.27201E+14	30.00	17,134,958	38,435,051
31	61,566,861	.56139E+14	67.00	46,581,671	76,552,052
32	6,234,245	.20124E+13	7.00	2,879,301	9,589,189
Subtotal	67,801,106	.58151E+14	71.02	52,549,699	83,052,513
41	75,437,371	.46195E+15	43.00	32,000,082	118,874,659
42	37,364,356	.48449E+14	30.00	23,130,047	51,598,664
43	85,308,584	.43381E+15	21.00	41,986,032	128,631,136
Subtotal	198,110,311	.94421E+15	63.67	136,654,354	259,566,267
50	11,996,502	.14595E+14	25.00	4,126,481	19,866,524
61	26,899,388	.74220E+13	59.00	21,393,504	32,405,271
62	6,451,911	.32331E+13	6.00	2,052,023	10,851,799
Subtotal	33,351,298	.10655E+14	42.44	26,754,326	39,948,271
Total	424,265,173	.13002E+16	111.79	352,149,470	496,380,875

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	61,678	.87515E+08	58.00	42,772	80,584
20	26,181	.27779E+08	30.00	15,418	36,943
31	86,394	.57847E+08	67.00	71,182	101,605
32	19,142	.36224E+08	7.00	4,414	33,870
Subtotal	105,536	.94071E+08	37.28	85,731	125,341
41	105,750	.39177E+09	43.00	65,748	145,752
42	75,178	.30774E+09	30.00	39,304	111,053
43	70,577	.87008E+08	21.00	51,175	89,979
Subtotal	251,506	.78651E+09	87.29	195,416	307,595
50	33,249	.80234E+08	25.00	14,761	51,737
61	98,852	.12176E+09	59.00	76,551	121,153
62	19,987	.36605E+08	6.00	5,182	34,792
Subtotal	118,839	.15837E+09	52.85	93,406	144,272
Total	596,988	.12345E+10	185.56	527,421	666,556

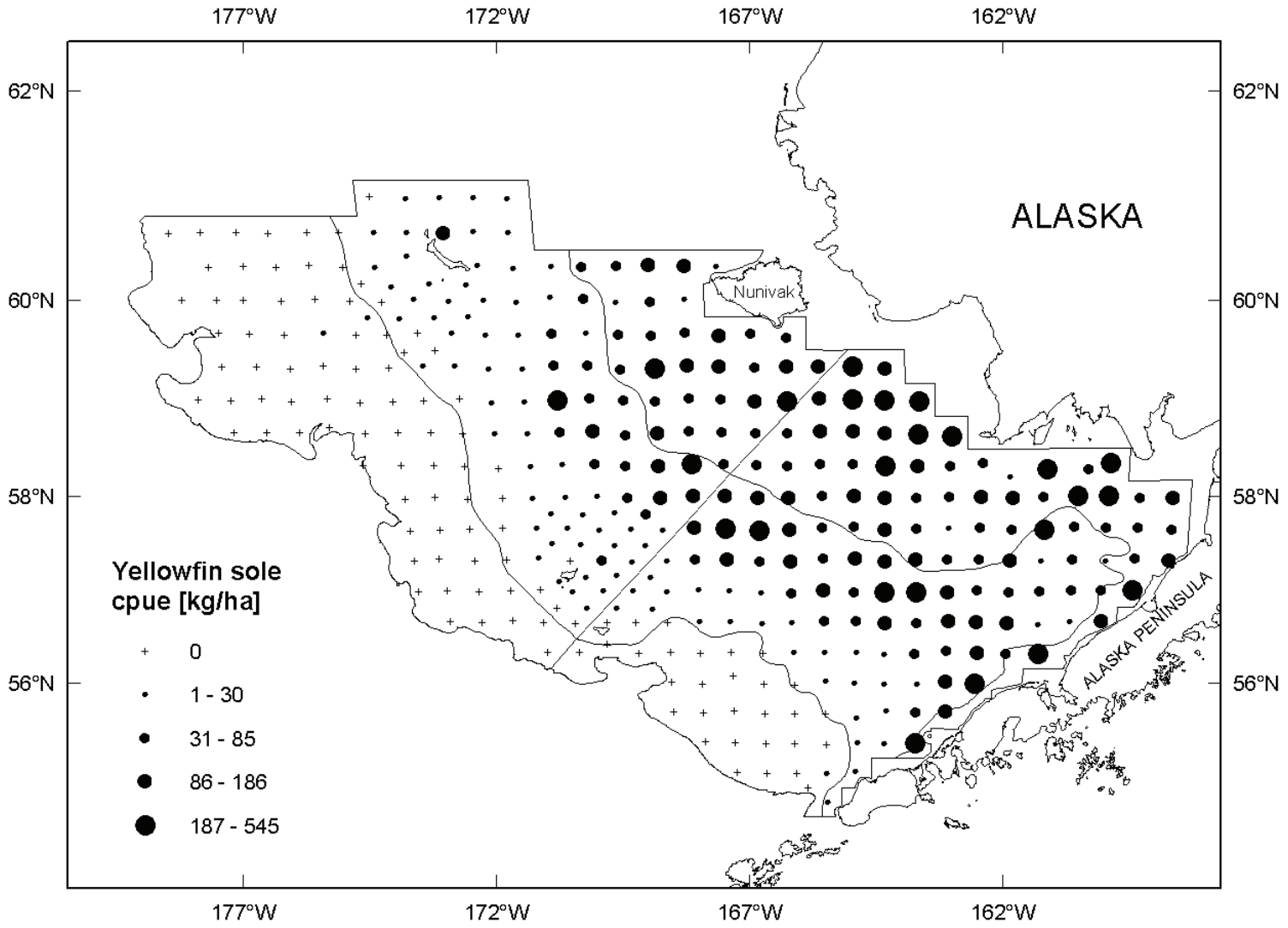

Figure 14. -- Distribution and relative abundance in kg/ha of **yellowfin sole** *(Limanda aspera)*, 2004 eastern Bering Sea bottom trawl.

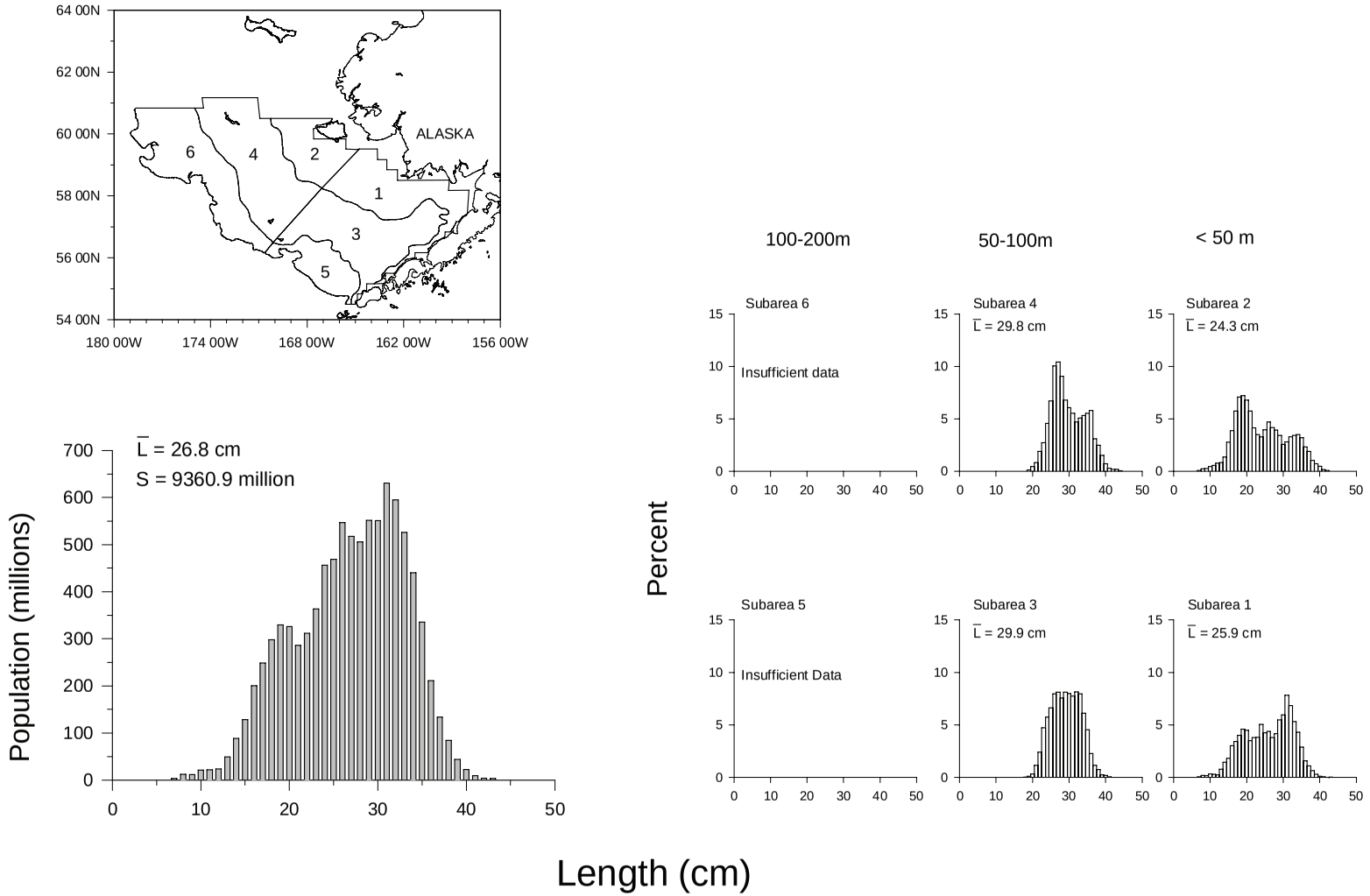

Figure 15. -- Estimated relative size distribution (sexes combined) of **yellowfin sole** *(Limanda aspera)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 13a. -- Abundance estimates and mean size of **yellowfin sole** *(Limanda aspera)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	145.90	1,136,163	0.449	4,593,631,393	0.491	0.247	25.9
2	83.71	343,439	0.136	1,597,384,180	0.171	0.215	24.3
3	70.96	732,975	0.290	2,311,261,287	0.247	0.317	29.1
4	29.48	317,851	0.126	858,371,500	0.092	0.370	29.8
5	0.04	161	0.000	253,467	0.000	0.635	36.0
6	0.00	11	0.000	44,872	0.000	0.245	11.8
All subareas combined	54.61	2,530,599	1.000	9,360,946,699	1.000	0.270	26.8
95% confidence interval		± 382,676		± 1,489,429,901			

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

Table 13b. -- 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	59	59	59	59	145.90	.31560E+03	589.90	.60660E+04
20	31	31	31	31	83.71	.79060E+02	389.35	.22830E+04
31	68	65	64	64	77.02	.10910E+03	243.45	.12060E+04
32	8	6	6	6	5.59	.47290E+01	11.40	.26700E+02
Subtotal	76	71	70	70	70.96	.91380E+02	223.74	.10100E+04
41	44	37	37	37	42.53	.17600E+03	117.01	.12800E+04
42	31	27	27	27	18.94	.36250E+02	44.60	.24880E+03
43	22	17	17	17	2.70	.72500E+00	8.34	.76000E+01
Subtotal	97	81	81	81	29.48	.61340E+02	79.61	.44570E+03
50	26	1	1	1	0.04	.17200E-02	0.07	.42690E-02
61	60	1	1	0	0.00	.54410E-06	0.00	.81750E-05
62	7	1	1	1	0.01	.58540E-04	0.03	.93660E-03
Subtotal	67	2	2	1	0.00	.74320E-06	0.00	.11430E-04
Total	356	245	244	243	54.61	.54740E+03	202.02	.98050E+04

Table 13b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	4,593,631,393	.36782E+18	58.00	3,367,927,194	5,819,335,592
20	1,597,384,180	.38436E+17	30.00	1,197,046,654	1,997,721,706
31	2,301,261,681	.10777E+18	67.00	1,644,691,787	2,957,831,575
32	9,999,606	.20552E+14	7.00	0	21,092,801
Subtotal	2,311,261,287	.10779E+18	67.03	1,654,628,793	2,967,893,781
41	733,694,284	.50342E+17	43.00	280,242,177	1,187,146,391
42	107,081,432	.14344E+16	30.00	29,743,502	184,419,363
43	17,595,784	.33861E+14	21.00	5,492,134	29,699,433
Subtotal	858,371,500	.51810E+17	45.49	398,354,233	1,318,388,767
50	253,467	.64245E+11	25.00	0	776,621
61	25,198	.63496E+09	59.00	0	76,125
62	19,674	.38705E+09	6.00	0	70,255
Subtotal	44,872	.10220E+10	32.86	0	110,153
Total	9,360,946,699	.56586E+18	122.48	7,871,516,798	10,850,376,600

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	1,136,163	.19140E+11	58.00	856,564	1,415,761
20	343,439	.13308E+10	30.00	268,836	418,041
31	728,069	.97477E+10	67.00	530,608	925,530
32	4,905	.36406E+07	7.00	236	9,574
Subtotal	732,975	.97513E+10	67.05	535,477	930,472
41	266,670	.69193E+10	43.00	98,558	434,781
42	45,482	.20900E+09	30.00	15,962	75,003
43	5,699	.32300E+07	21.00	1,961	9,437
Subtotal	317,851	.71315E+10	45.62	147,181	488,521
50	161	.25878E+05	25.00	0	493
61	7	.42266E+02	59.00	0	20
62	5	.24191E+02	6.00	0	17
Subtotal	11	.66457E+02	34.57	0	28
Total	2,530,599	.37354E+11	156.63	2,147,923	2,913,275

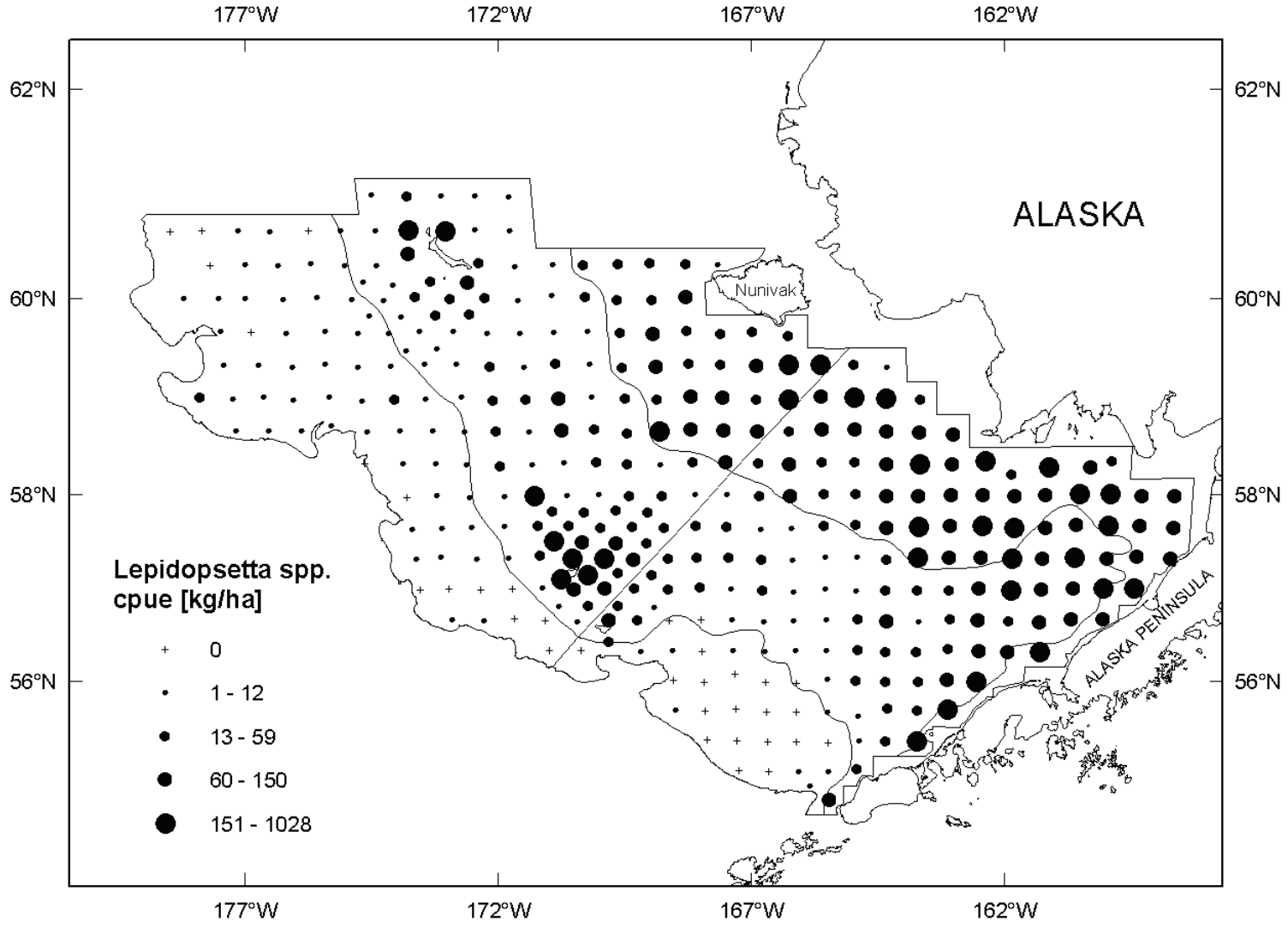

Figure 16. -- Distribution and relative abundance in kg/ha of **northern** and **southern rock sole** grouped *(Lepidopsetta* spp.*)*, 2004 eastern Bering Sea bottom trawl survey.

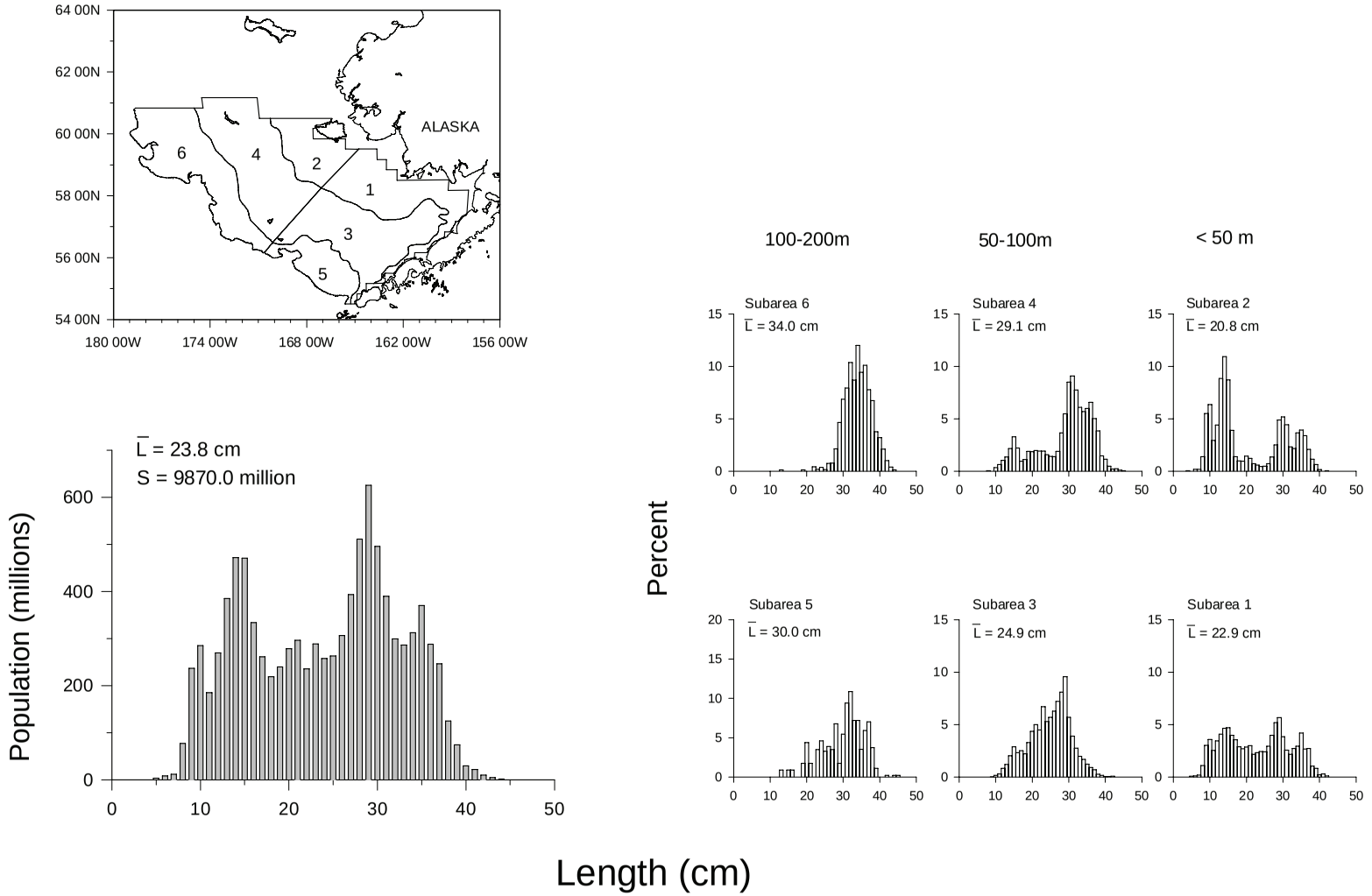

Figure 17. --Estimated relative size distribution (sexes combined) of **northern** and **southern rock sole** *(Lepidopsetta* spp.*)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 14a. -- Abundance estimates and mean size of **northern** and **southern rock sole** *(Lepidopsetta* spp.*)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	128.63	1,001,644	0.459	4,943,909,919	0.501	0.203	22.9
2	69.51	285,179	0.131	1,586,615,370	0.161	0.180	20.8
3	42.77	441,828	0.202	2,107,330,438	0.214	0.210	24.9
4	39.50	425,924	0.195	1,178,844,521	0.119	0.361	29.1
5	1.23	4,771	0.002	12,838,893	0.001	0.372	30.0
6	2.42	22,894	0.010	40,433,111	0.004	0.566	34.0
All subareas combined	47.09	2,182,240	1.000	9,869,972,253	1.000	0.221	23.8
95% confidence interval		± 361,311		± 1,274,220,740			

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

Table 14b. -- CPUE, population, and biomass estimates for **rock sole grouped.**

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	59	59	59	59	128.63	.35610E+03	634.88	.35120E+04
20	31	31	31	31	69.51	.12760E+03	386.72	.24360E+04
31	68	66	66	66	43.27	.40230E+02	213.07	.13120E+04
32	8	8	8	8	37.36	.14270E+03	106.28	.84120E+03
Subtotal	76	74	74	74	42.77	.34710E+02	204.00	.11040E+04
41	44	44	44	44	28.65	.91630E+02	85.47	.77470E+03
42	31	31	31	31	82.56	.34740E+03	223.88	.18870E+04
43	22	22	22	22	22.76	.48280E+02	49.89	.19120E+03
Subtotal	97	97	97	97	39.50	.50070E+02	109.33	.36290E+03
50	26	8	8	8	1.23	.89600E+00	3.31	.74460E+01
61	60	46	46	46	2.48	.21590E+00	4.35	.71870E+00
62	7	7	7	7	1.59	.24850E+00	3.23	.74560E+00
Subtotal	67	53	53	53	2.42	.18870E+00	4.28	.62770E+00
Total	356	322	322	322	47.09	.56960E+03	213.00	.74230E+04

Table 14b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	4,943,909,919	.21294E+18	58.00	4,011,304,062	5,876,515,775
20	1,586,615,370	.41005E+17	30.00	1,173,118,794	2,000,111,947
31	2,014,077,606	.11720E+18	67.00	1,329,393,693	2,698,761,520
32	93,252,832	.64761E+15	7.00	33,067,922	153,437,742
Subtotal	2,107,330,438	.11785E+18	67.72	1,420,757,429	2,793,903,448
41	535,957,336	.30460E+17	43.00	183,237,916	888,676,757
42	537,570,434	.10878E+17	30.00	324,594,904	750,545,963
43	105,316,751	.85201E+15	21.00	44,603,230	166,030,272
Subtotal	1,178,844,521	.42190E+17	69.64	768,041,815	1,589,647,226
50	12,838,893	.11205E+15	25.00	0	34,686,650
61	38,358,519	.55822E+14	59.00	23,258,795	53,458,244
62	2,074,592	.30815E+12	6.00	716,238	3,432,945
Subtotal	40,433,111	.56130E+14	59.64	25,291,767	55,574,455
Total	9,869,972,253	.41415E+18	160.53	8,595,751,513	11,144,192,993

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	1,001,644	.21596E+11	58.00	704,645	1,298,642
20	285,179	.21478E+10	30.00	190,405	379,953
31	409,044	.35943E+10	67.00	289,139	528,949
32	32,784	.10986E+09	7.00	7,996	57,572
Subtotal	441,828	.37042E+10	70.53	320,104	563,552
41	179,639	.36028E+10	43.00	58,332	300,946
42	198,237	.20027E+10	30.00	106,855	289,620
43	48,048	.21511E+09	21.00	17,541	78,555
Subtotal	425,924	.58206E+10	77.39	273,338	578,510
50	4,771	.13483E+08	25.00	0	12,336
61	21,869	.16774E+08	59.00	13,592	30,146
62	1,025	.10271E+06	6.00	241	1,809
Subtotal	22,894	.16876E+08	59.70	14,591	31,196
Total	2,182,240	.33299E+11	125.61	1,820,929	2,543,551

Flathead sole

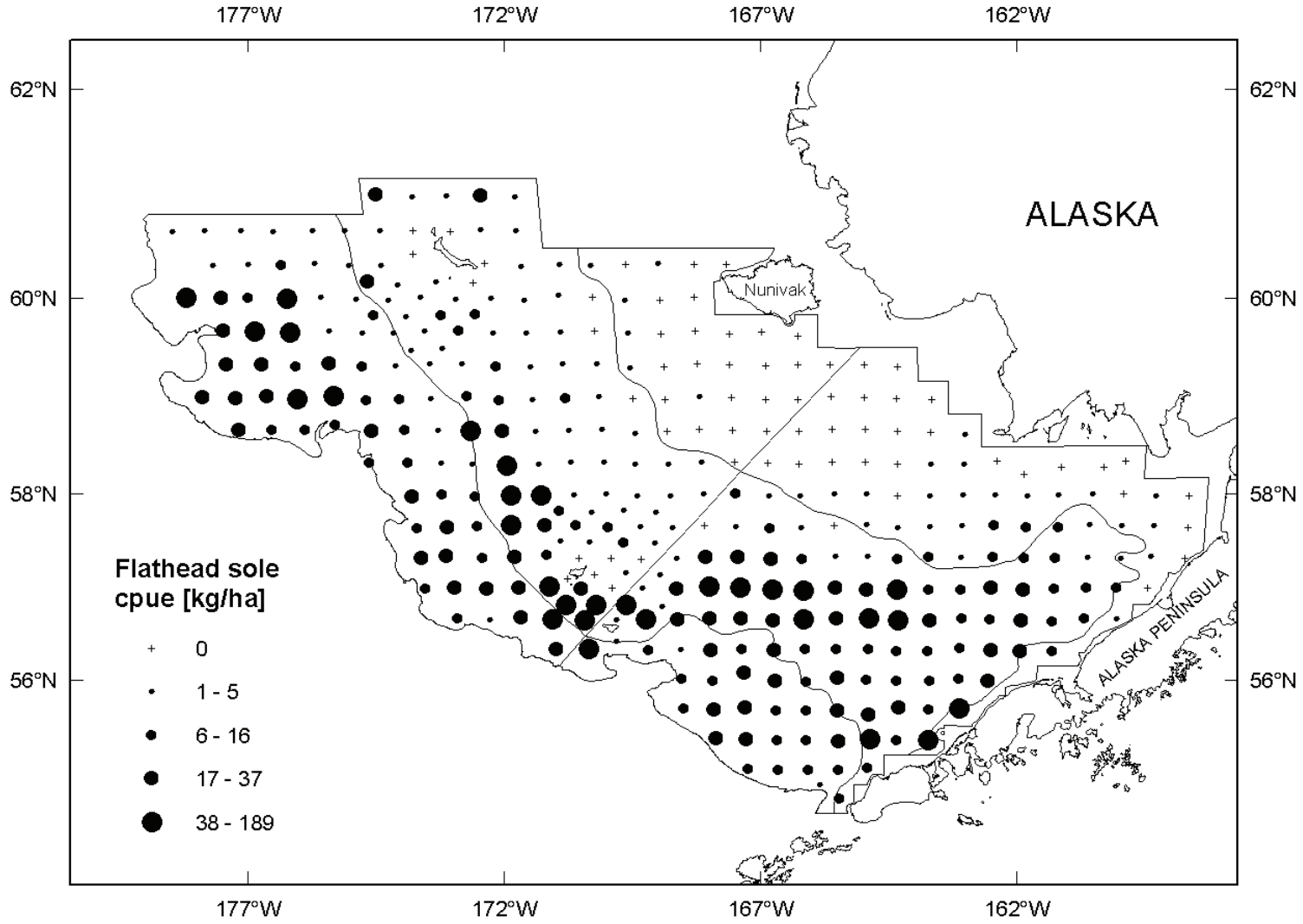

Figure 18. -- Distribution and relative abundance in kg/ha of **flathead sole** and **Bering flounder** grouped *(Hippoglossoides* spp.*)*, 2004 eastern Bering Sea bottom trawl survey.

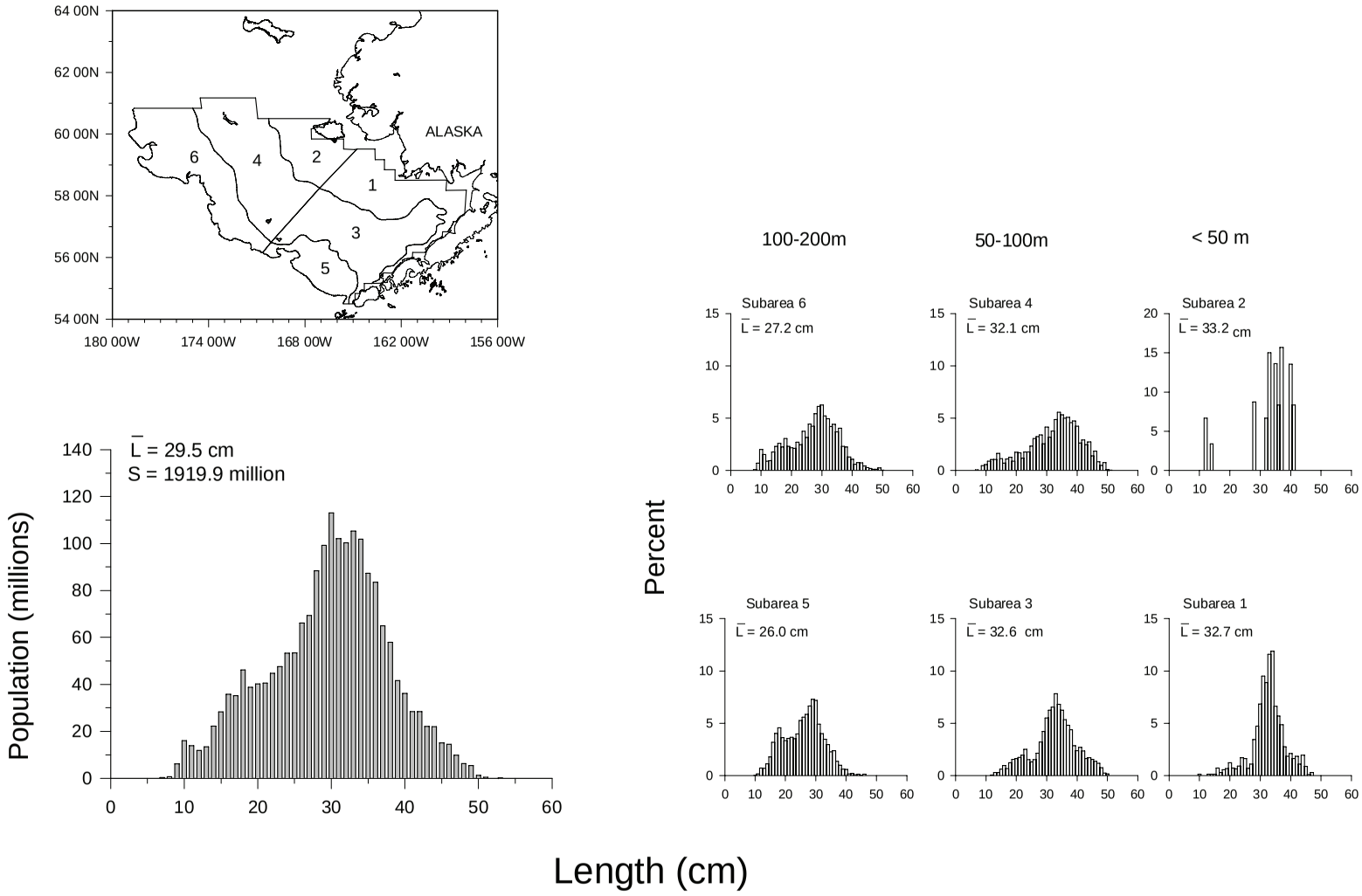

Figure 19. -- Estimated relative size distribution (sexes combined) of **flathead sole** and **Bering flounder** *(Hippoglossoides* spp.*)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 15a. -- Abundance estimates and mean size of **flathead sole** and **Bering flounder** *(Hippoglossoides* spp.*)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	3.42	26,616	0.043	71,968,885	0.037	0.370	32.7
2	0.10	403	0.001	835,375	0.000	0.482	33.2
3	21.49	221,996	0.360	543,803,522	0.283	0.408	32.6
4	11.65	125,616	0.204	291,134,472	0.152	0.431	32.1
5	15.04	58,341	0.095	303,868,726	0.158	0.192	26.0
6	19.43	183,696	0.298	708,337,206	0.369	0.259	27.2
All subareas combined	13.31	616,668	1.000	1,919,948,187	1.000	0.321	29.5
95% confidence interval		± 103,319		± 272,806,280			

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

Table 15b. -- CPUE, population, and biomass estimates for **flathead sole** and **Bering flounder grouped.**

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	59	32	32	32	3.42	.29770E+01	9.24	.29050E+02
20	31	6	6	6	0.10	.20010E-02	0.20	.84510E-02
31	68	66	66	66	21.48	.59710E+01	53.43	.38400E+02
32	8	8	8	8	21.62	.15830E+03	44.21	.71150E+03
Subtotal	76	74	74	74	21.49	.61420E+01	52.64	.37290E+02
41	44	39	39	39	12.97	.26780E+02	32.03	.12080E+03
42	31	25	25	25	15.89	.26780E+02	28.96	.81710E+02
43	22	19	19	19	2.89	.98800E+00	9.82	.14330E+02
Subtotal	97	83	83	83	11.65	.10420E+02	27.00	.45460E+02
50	26	26	26	26	15.04	.33170E+01	78.33	.74770E+02
61	60	60	60	60	20.49	.80390E+01	78.46	.87660E+02
62	7	7	7	7	4.82	.24170E+01	26.18	.56980E+02
Subtotal	67	67	67	67	19.43	.69940E+01	74.91	.76410E+02
Total	356	288	288	288	13.31	.29850E+02	41.43	.26300E+03

Table 15b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	71,968,885	.17617E+16	58.00	0	156,796,373
20	835,375	.14225E+12	30.00	64,093	1,606,657
31	505,016,316	.34315E+16	67.00	387,858,222	622,174,411
32	38,787,206	.54775E+15	7.00	0	94,137,834
Subtotal	543,803,522	.39793E+16	72.43	417,640,844	669,966,200
41	200,865,525	.47502E+16	43.00	61,574,662	340,156,388
42	69,532,505	.47106E+15	30.00	25,147,880	113,917,130
43	20,736,441	.63837E+14	21.00	4,069,662	37,403,221
Subtotal	291,134,472	.52851E+16	52.47	144,210,304	438,058,640
50	303,868,726	.11251E+16	25.00	234,769,938	372,967,514
61	691,505,777	.68087E+16	59.00	524,743,752	858,267,802
62	16,831,430	.23549E+14	6.00	4,956,702	28,706,157
Subtotal	708,337,206	.68322E+16	59.40	541,287,037	875,387,376
Total	1,919,948,187	.18984E+17	219.61	1,647,141,907	2,192,754,467

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	26,616	.18050E+09	58.00	0	53,768
20	403	.33685E+05	30.00	28	778
31	203,029	.53354E+09	67.00	156,832	249,226
32	18,967	.12184E+09	7.00	0	45,977
Subtotal	221,996	.65538E+09	67.44	170,795	273,196
41	81,353	.10528E+10	43.00	15,777	146,930
42	38,165	.15441E+09	30.00	12,791	63,539
43	6,098	.44020E+07	21.00	1,734	10,462
Subtotal	125,616	.12117E+10	55.24	55,267	195,964
50	58,341	.49910E+08	25.00	43,788	72,895
61	180,601	.62440E+09	59.00	130,100	231,102
62	3,096	.99882E+06	6.00	650	5,541
Subtotal	183,696	.62540E+09	59.19	133,155	234,238
Total	616,668	.27229E+10	184.36	513,350	719,987

Alaska plaice

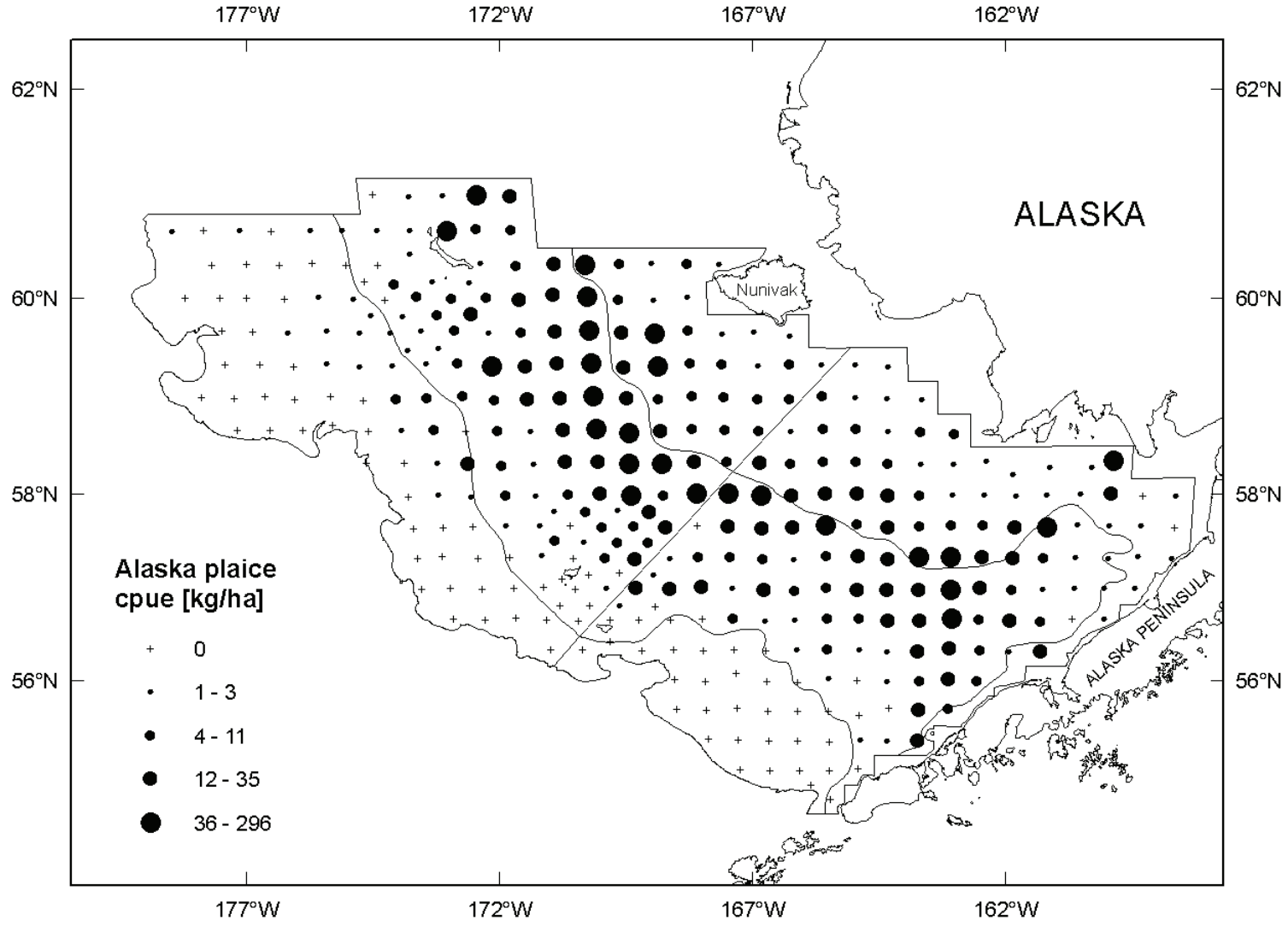

Figure 20. -- Distribution and relative abundance in kg/ha of **Alaska plaice** *(Pleuronectes quadrituberculatus)*, 2004 eastern Bering Sea bottom trawl survey.

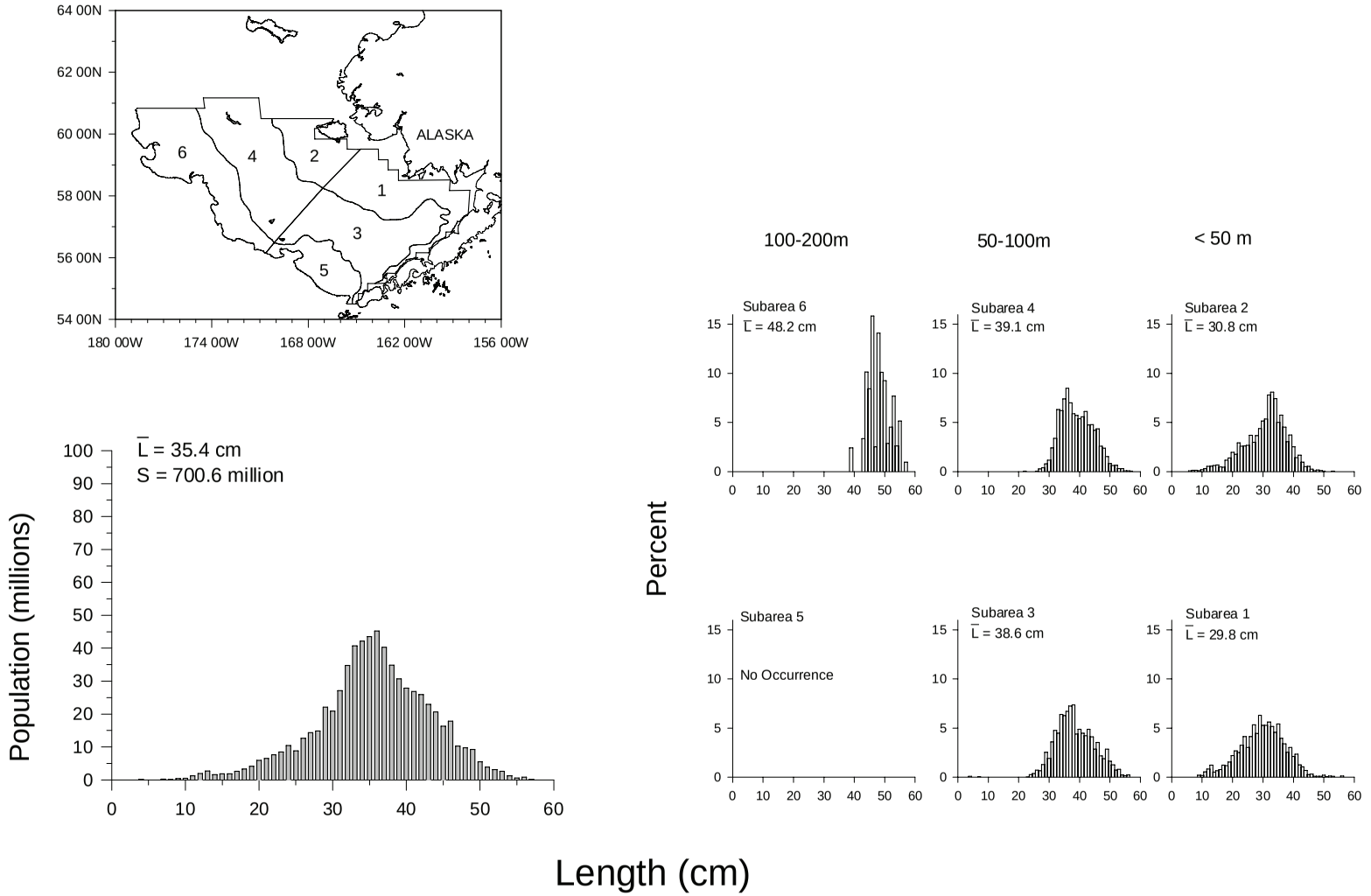

Figure 21. -- Estimated relative size distribution (sexes combined) of **Alaska plaice** *(Pleuronectes quadrituberculatus)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 16a. -- Abundance estimates and mean size of **Alaska plaice** *(Pleuronectes quadrituberculatus)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	8.94	69,590	0.143	171,820,866	0.245	0.405	29.8
2	12.48	51,195	0.105	110,090,181	0.157	0.465	30.8
3	14.80	152,858	0.313	182,441,826	0.260	0.838	38.6
4	19.44	209,622	0.429	233,533,813	0.333	0.898	39.2
5	0.00	0	0.000	0	0.000	0.000	0.0
6	0.52	4,952	0.010	2,726,468	0.004	1.816	48.2
All subareas combined	10.54	488,217	1.000	700,613,153	1.000	0.697	35.4
95% confidence interval		± 126,383		± 157,084,400			

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

Table 16b. -- 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	59	57	57	59	8.94	.58050E+01	22.06	.24150E+02
20	31	31	31	31	12.48	.17980E+02	26.83	.39740E+02
31	68	57	57	66	15.74	.15750E+02	18.99	.21720E+02
32	8	5	5	8	4.67	.58180E+01	3.31	.26510E+01
Subtotal	76	62	62	74	14.80	.13230E+02	17.66	.18210E+02
41	44	42	42	44	28.69	.48630E+02	33.18	.55170E+02
42	31	21	21	31	6.01	.41190E+01	6.10	.41260E+01
43	22	19	19	22	7.25	.15340E+02	5.12	.53020E+01
Subtotal	97	82	82	97	19.44	.17240E+02	21.66	.19070E+02
50	26	0	0	8	0.00	.00000E+00	0.00	.00000E+00
61	60	15	15	46	0.54	.47600E-01	0.30	.16800E-01
62	7	6	6	7	0.31	.30660E-02	0.17	.84680E-03
Subtotal	67	21	21	53	0.52	.41360E-01	0.29	.14600E-01
Total	356	253	253	322	10.54	.54290E+02	15.12	.10120E+03

Table 16b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	171,820,866	.14642E+16	58.00	94,488,100	249,153,632
20	110,090,181	.66896E+15	30.00	57,275,501	162,904,861
31	179,536,215	.19409E+16	67.00	91,424,068	267,648,362
32	2,905,611	.20406E+13	7.00	0	6,401,112
Subtotal	182,441,826	.19430E+16	67.14	94,283,374	270,600,278
41	208,074,717	.21693E+16	43.00	113,945,162	302,204,273
42	14,650,463	.23787E+14	30.00	4,676,540	24,624,385
43	10,808,633	.23624E+14	21.00	669,630	20,947,637
Subtotal	233,533,813	.22167E+16	44.88	138,381,179	328,686,447
50	0	.00000E+00	25.00	0	0
61	2,615,254	.13048E+13	59.00	306,722	4,923,787
62	111,213	.34997E+09	6.00	65,436	156,991
Subtotal	2,726,468	.13051E+13	59.03	417,625	5,035,310
Total	700,613,153	.62941E+16	182.10	543,528,753	857,697,553

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	69,590	.35200E+09	58.00	31,673	107,508
20	51,195	.30264E+09	30.00	15,620	86,771
31	148,761	.14074E+10	67.00	73,731	223,791
32	4,098	.44789E+07	7.00	0	9,103
Subtotal	152,858	.14119E+10	67.42	77,709	228,008
41	179,876	.19120E+10	43.00	91,506	268,247
42	14,436	.23749E+08	30.00	4,470	24,401
43	15,310	.68332E+08	21.00	0	32,504
Subtotal	209,622	.20041E+10	47.11	119,148	300,095
50	0	.00000E+00	25.00	0	0
61	4,754	.36973E+07	59.00	868	8,640
62	198	.12670E+04	6.00	111	285
Subtotal	4,952	.36985E+07	59.04	1,065	8,838
Total	488,217	.40743E+10	138.35	361,834	614,600

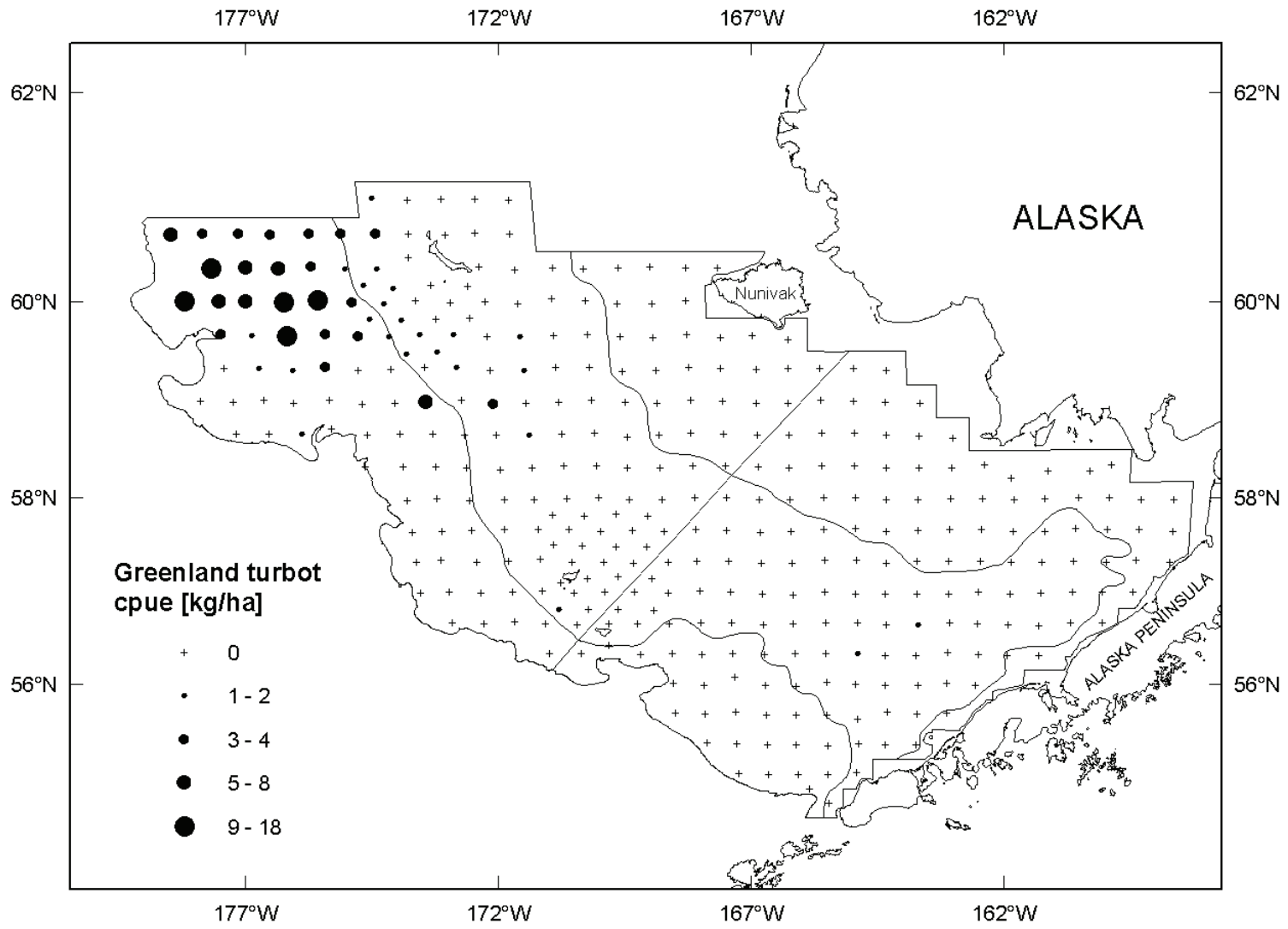

Figure 22. -- Distribution and relative abundance in kg/ha of **Greenland turbot** *(Reinhardtius hippoglossoides)*, 2004 eastern Bering Sea bottom trawl survey.

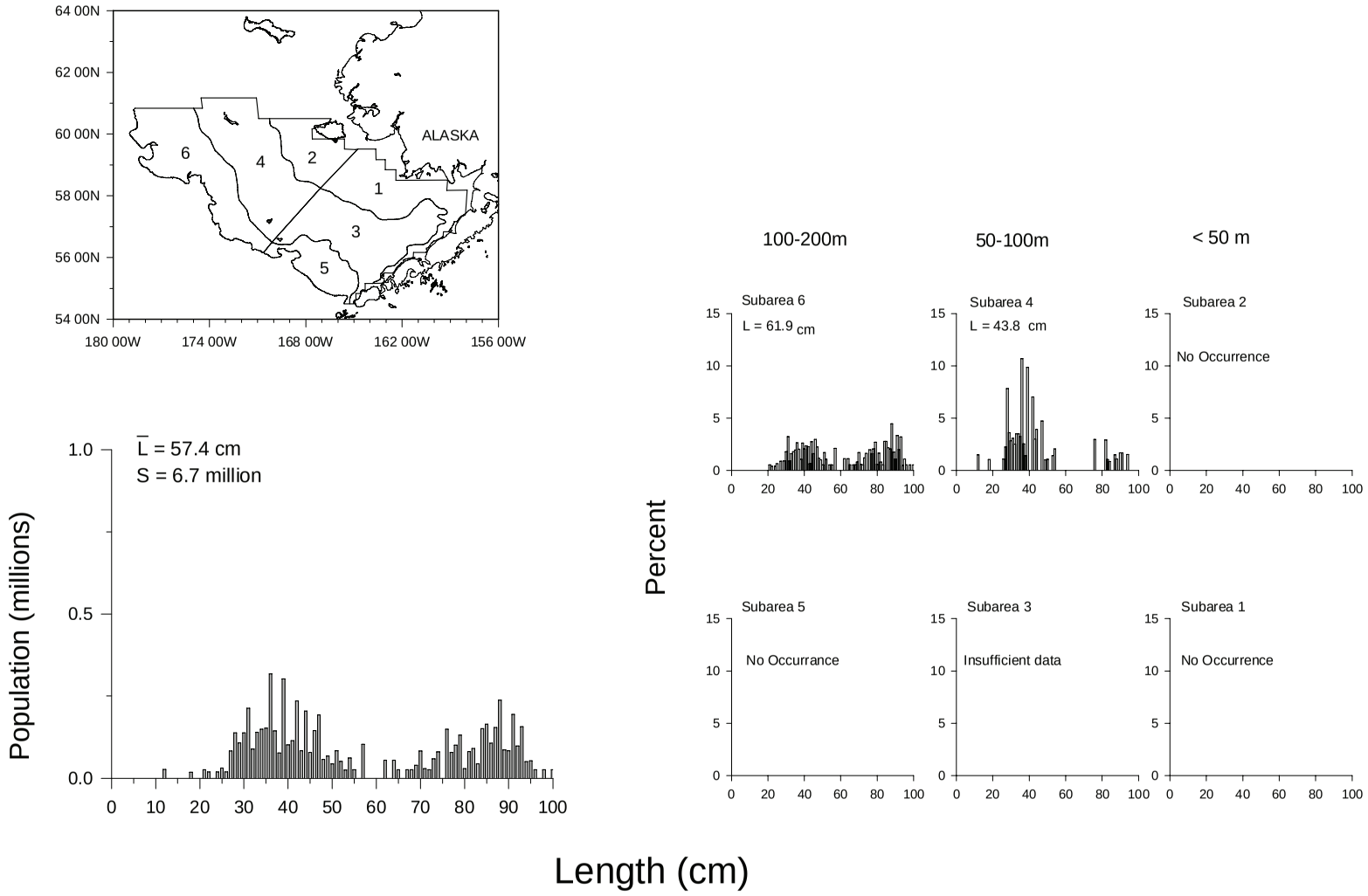

Figure 23. -- Estimated relative size distribution (sexes combined) of **Greenland turbot** *(Reinhardtius hippoglossoides)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 17a. -- Abundance estimates and mean size of **Greenland turbot** *(Reinhardtius hippoglossoides)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean 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	0.04	397	0.019	54,964	0.008	7.223	86.0
4	0.24	2,612	0.125	1,762,994	0.262	1.482	43.8
5	0.00	0	0.000	0	0.000	0.000	0.0
6	1.89	17,901	0.856	4,900,122	0.729	3.653	61.9
All subareas combined	0.45	20,909	1.000	6,718,080	1.000	3.112	57.4
95% confidence interval		± 8,173		± 2,395,001			

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

Table 17b. -- 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	59	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	68	2	2	2	0.04	.86800E-03	0.01	.16660E-04
32	8	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Subtotal	76	2	2	2	0.04	.72680E-03	0.01	.13950E-04
41	44	7	7	7	0.31	.18260E-01	0.17	.78530E-02
42	31	1	1	1	0.05	.27440E-02	0.01	.39740E-04
43	22	10	10	10	0.27	.11390E-01	0.31	.10830E-01
Subtotal	97	18	18	18	0.24	.67490E-02	0.16	.30730E-02
50	26	0	0	0	0.00	.00000E+00	0.00	.00000E+00
61	60	23	23	23	1.94	.20190E+00	0.51	.13750E-01
62	7	5	5	5	1.23	.37460E+00	0.67	.87060E-01
Subtotal	67	28	28	28	1.89	.17710E+00	0.52	.12350E-01
Total	356	48	48	48	0.45	.18460E+00	0.14	.15440E-01

Table 17b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	58.00	0	0
20	0	.00000E+00	30.00	0	0
31	54,964	.14885E+10	67.00	0	132,126
32	0	.00000E+00	7.00	0	0
Subtotal	54,964	.14885E+10	7.22	0	146,208
41	1,096,916	.30876E+12	43.00	0	2,219,912
42	15,136	.22910E+09	30.00	0	46,089
43	650,942	.48248E+11	21.00	194,063	1,107,822
Subtotal	1,762,994	.35724E+12	54.82	555,053	2,970,935
50	0	.00000E+00	25.00	0	0
61	4,467,599	.10684E+13	59.00	2,378,608	6,556,589
62	432,523	.35980E+11	6.00	0	896,681
Subtotal	4,900,122	.11044E+13	62.34	2,798,317	7,001,927
Total	6,718,080	.14631E+13	212.76	4,323,079	9,113,081

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	58.00	0	0
20	0	.00000E+00	30.00	0	0
31	397	.77554E+05	67.00	0	954
32	0	.00000E+00	7.00	0	0
Subtotal	397	.77554E+05	21.38	0	976
41	1,922	.71808E+06	43.00	210	3,635
42	126	.15821E+05	30.00	0	383
43	564	.50744E+05	21.00	95	1,032
Subtotal	2,612	.78465E+06	50.78	822	4,402
50	0	.00000E+00	25.00	0	0
61	17,112	.15684E+08	59.00	9,108	25,116
62	789	.15483E+06	6.00	0	1,752
Subtotal	17,901	.15839E+08	60.11	9,941	25,860
Total	20,909	.16701E+08	84.90	12,736	29,083

Arrowtooth flounder

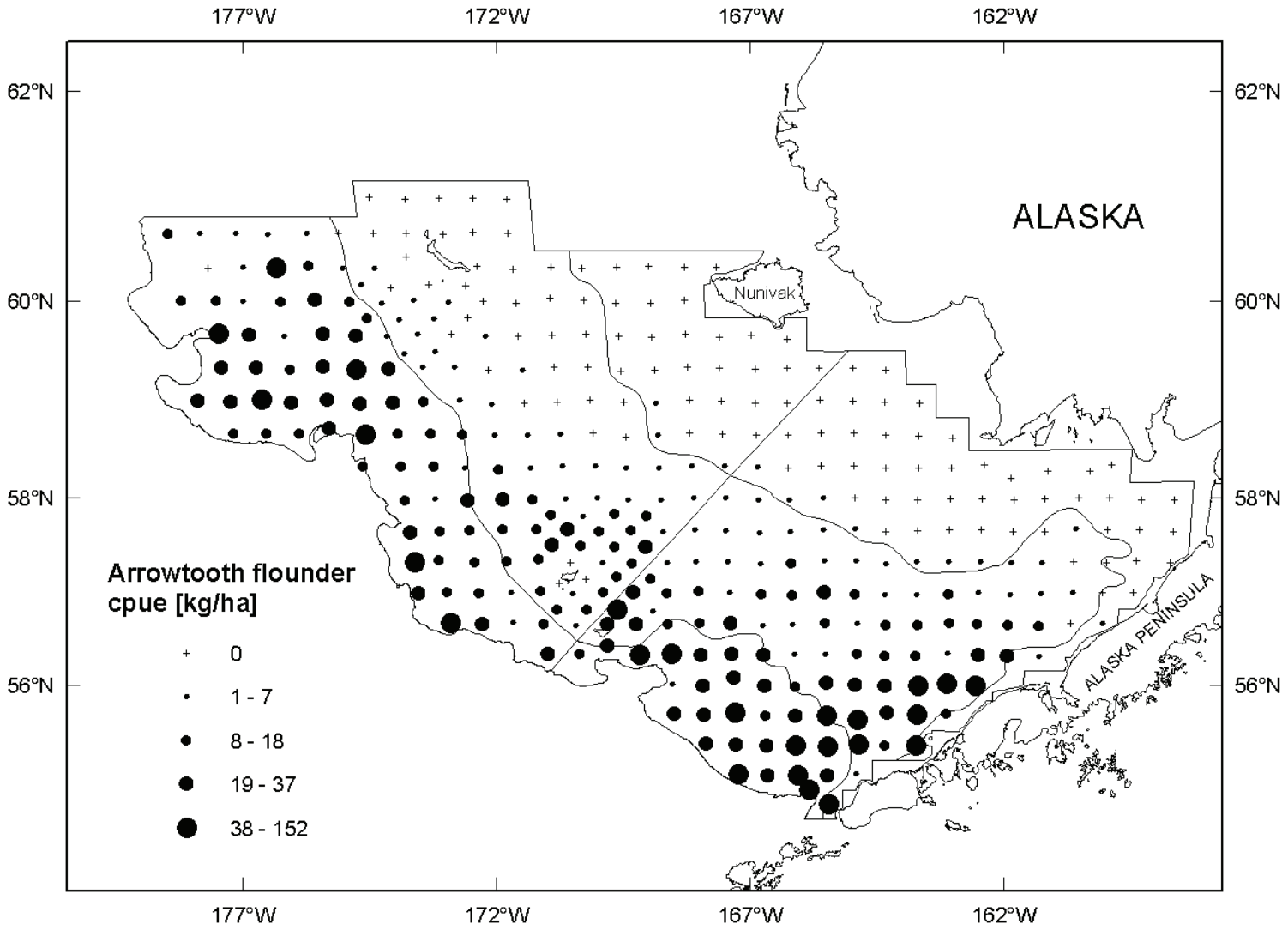

Figure 24. -- Distribution and relative abundance in kg/ha of **arrowtooth flounder** *(Atheresthes stomias)*, 2004 eastern Bering Sea bottom trawl survey.

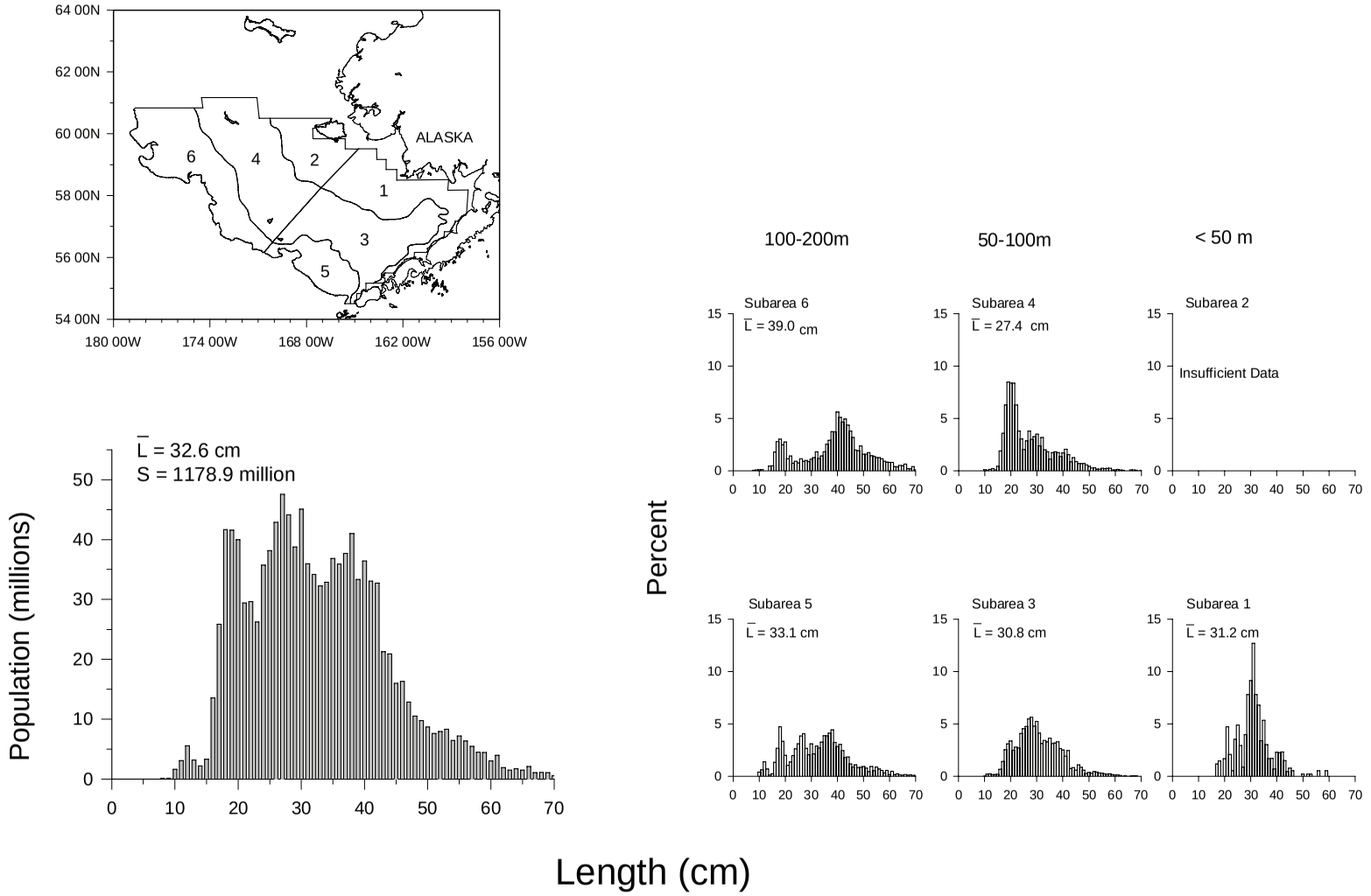

Figure 25. -- Estimated relative size distribution (sexes combined) of **arrowtooth flounder** *(Atheresthes stomias)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 18a**. --** Abundance estimates and mean size of **arrowtooth flounder** *(Atheresthes stomias),* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	0.74	5,763	0.011	18,657,801	0.016	0.309	31.2
2	0.02	62	0.000	190,657	0.000	0.325	31.7
3	16.93	174,880	0.338	532,397,368	0.452	0.328	30.9
4	2.90	31,300	0.060	117,920,867	0.100	0.265	27.4
5	35.16	136,412	0.264	290,728,637	0.247	0.469	33.1
6	17.88	169,122	0.327	218,996,609	0.186	0.772	39.0
All subareas combined	11.17	517,539	1.000	1,178,891,938	1.000	0.439	32.6
95% confidence interval		± 75,917		± 180,390,505			

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

Table 18b. -- 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	59	12	12	12	0.74	.17790E+00	2.40	.17360E+01
20	31	3	3	3	0.02	.12950E-03	0.05	.69850E-03
31	68	65	65	65	16.73	.68950E+01	50.10	.60210E+02
32	8	8	8	8	19.10	.19090E+02	67.06	.27770E+03
Subtotal	76	73	73	73	16.93	.59110E+01	51.54	.52420E+02
41	44	17	17	17	1.71	.79370E+00	4.50	.49630E+01
42	31	28	28	28	8.10	.13420E+01	36.66	.55590E+02
43	22	13	13	13	0.54	.59350E-01	0.80	.86670E-01
Subtotal	97	58	58	58	2.90	.33720E+00	10.94	.44380E+01
50	26	26	26	26	35.16	.31750E+02	74.94	.10000E+03
61	60	59	59	59	18.02	.38850E+01	23.80	.73820E+01
62	7	7	7	7	15.99	.23790E+02	14.31	.15900E+02
Subtotal	67	66	66	66	17.88	.34840E+01	23.16	.64860E+01
Total	356	238	238	238	11.17	.41660E+02	25.44	.16510E+03

Table 18b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	18,657,801	.10526E+15	58.00	0	39,392,737
20	190,657	.11757E+11	30.00	0	412,068
31	473,557,939	.53802E+16	67.00	326,858,010	620,257,869
32	58,839,429	.21383E+15	7.00	23,057,257	94,621,600
Subtotal	532,397,368	.55940E+16	71.35	382,810,660	681,984,076
41	28,207,418	.19512E+15	43.00	0	56,437,487
42	88,018,599	.32049E+15	30.00	51,408,524	124,628,674
43	1,694,849	.38615E+12	21.00	402,317	2,987,380
Subtotal	117,920,867	.51599E+15	61.80	72,489,974	163,351,759
50	290,728,637	.15051E+16	25.00	210,809,902	370,647,371
61	209,794,493	.57339E+15	59.00	161,400,606	258,188,381
62	9,202,115	.65707E+13	6.00	2,611,776	15,792,454
Subtotal	218,996,609	.57996E+15	60.28	170,831,957	267,161,260
Total	1,178,891,938	.83004E+16	127.75	998,501,434	1,359,282,443

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	5,763	.10785E+08	58.00	0	12,400
20	62	.21801E+04	30.00	0	158
31	158,121	.61606E+09	67.00	108,479	207,762
32	16,759	.14693E+08	7.00	7,694	25,825
Subtotal	174,880	.63076E+09	69.85	124,650	225,110
41	10,711	.31207E+08	43.00	0	22,001
42	19,449	.77358E+07	30.00	13,769	25,128
43	1,140	.26442E+06	21.00	71	2,210
Subtotal	31,300	.39207E+08	62.36	18,777	43,823
50	136,412	.47779E+09	25.00	91,296	181,527
61	158,844	.30174E+09	59.00	123,738	193,950
62	10,278	.98329E+07	6.00	2,605	17,951
Subtotal	169,122	.31158E+09	62.26	133,818	204,425
Total	517,539	.14701E+10	131.68	441,621	593,456

Kamchatka flounder

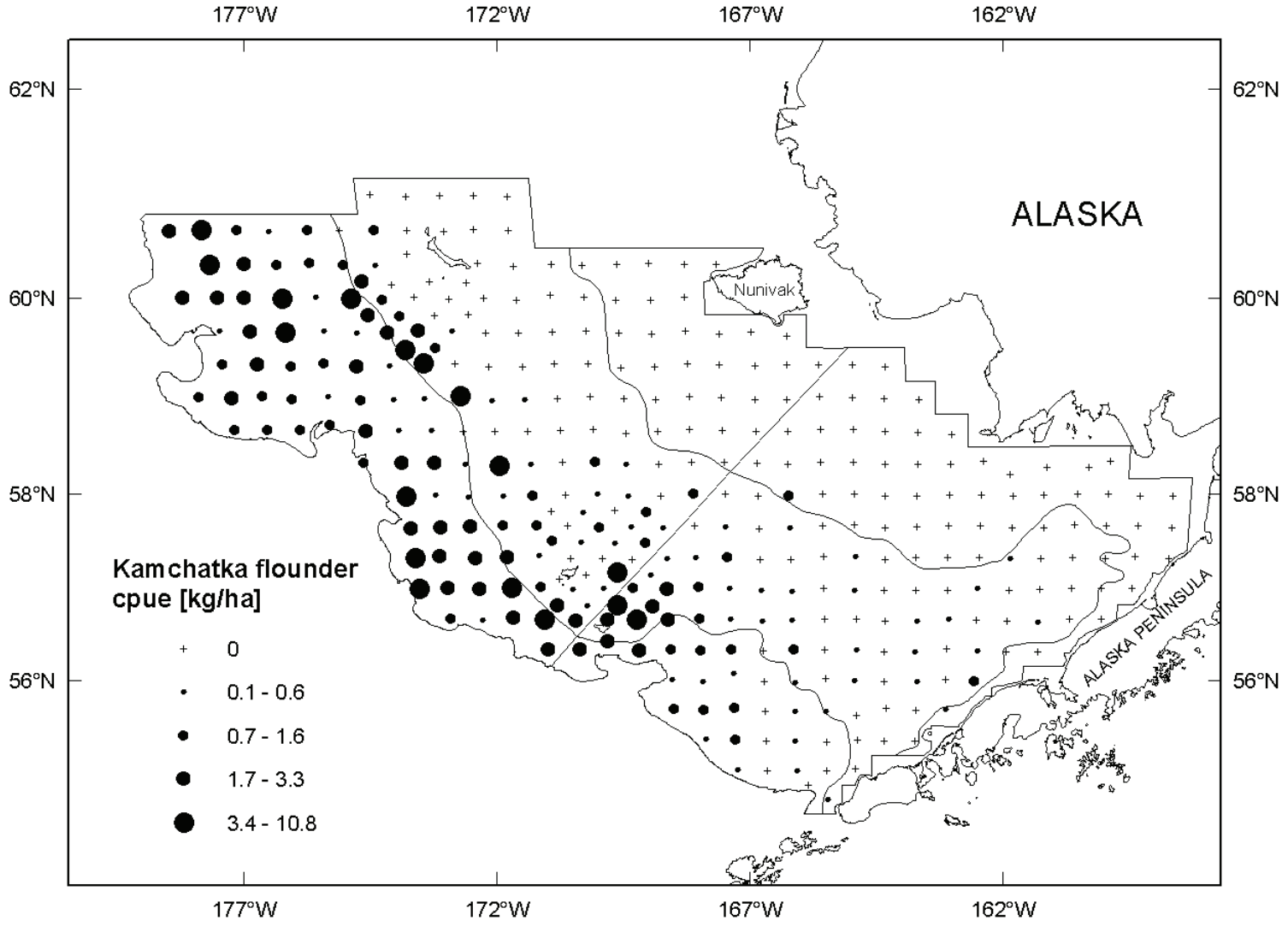

Figure 26. -- Distribution and relative abundance in kg/ha of **Kamchatka flounder** *(Atheresthes evermanni)*, 2004 eastern Bering Sea bottom trawl survey.

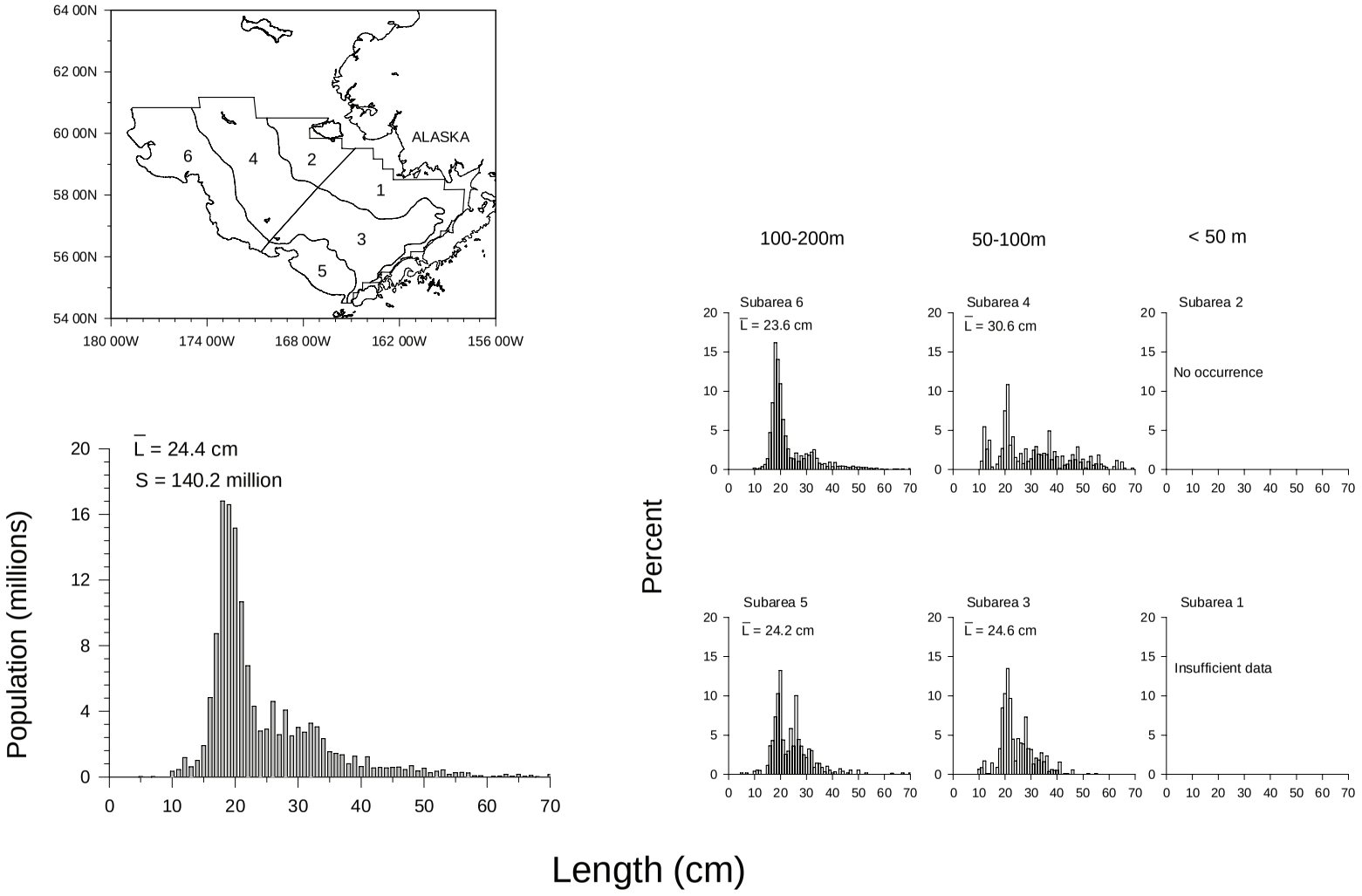

Figure 27. -- Estimated relative size distribution (sexes combined) of **Kamchatka flounder** *(Atheresthes evermanni)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 19a. -- Abundance estimates and mean size of **Kamchatka flounder** *(Atheresthes evermanni)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	0.01	83	0.003	213,873	0.002	0.388	29.4
2	0.00	0	0.000	0	0.000	0.000	0.0
3	0.36	3,726	0.125	22,192,740	0.158	0.168	24.6
4	0.52	5,641	0.189	10,883,259	0.078	0.518	30.6
5	0.63	2,460	0.082	15,608,656	0.111	0.158	24.2
6	1.90	17,950	0.601	91,263,049	0.651	0.197	23.6
All subareas combined	0.64	29,859	1.000	140,161,577	1.000	0.213	24.4
95% confidence interval		± 5,412		± 33,926,286			

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

Table 19b. -- 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	59	2	2	2	0.01	.10550E-03	0.03	.37120E-03
20	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
31	68	29	29	28	0.16	.11180E-02	0.74	.43690E-01
32	8	8	8	7	2.55	.49360E+00	17.35	.28700E+02
Subtotal	76	37	37	35	0.36	.44970E-02	2.15	.24360E+00
41	44	12	12	12	0.43	.50410E-01	0.54	.52350E-01
42	31	21	21	21	0.60	.29320E-01	2.63	.34420E+00
43	22	9	9	9	0.70	.73310E-01	0.56	.42570E-01
Subtotal	97	42	42	42	0.52	.21310E-01	1.01	.36400E-01
50	26	19	19	19	0.63	.24590E-01	4.02	.12180E+01
61	60	59	59	58	1.86	.48990E-01	10.18	.30760E+01
62	7	7	7	7	2.38	.80060E+00	2.43	.50230E+00
Subtotal	67	66	66	65	1.90	.46250E-01	9.65	.26750E+01
Total	356	166	166	163	0.64	.96760E-01	3.02	.41730E+01

Table 19b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	213,873	.22509E+11	58.00	0	517,082
20	0	.00000E+00	30.00	0	0
31	6,972,382	.39035E+13	67.00	3,020,941	10,923,824
32	15,220,358	.22094E+14	7.00	4,103,757	26,336,958
Subtotal	22,192,740	.25998E+14	9.66	10,659,236	33,726,244
41	3,391,365	.20581E+13	43.00	492,012	6,290,718
42	6,307,382	.19843E+13	30.00	3,426,670	9,188,094
43	1,184,511	.18967E+12	21.00	278,652	2,090,370
Subtotal	10,883,259	.42321E+13	77.38	6,768,841	14,997,677
50	15,608,656	.18337E+14	25.00	6,787,496	24,429,817
61	89,698,680	.23895E+15	59.00	58,457,940	120,939,419
62	1,564,370	.20761E+12	6.00	449,424	2,679,315
Subtotal	91,263,049	.23916E+15	59.10	60,008,741	122,517,357
Total	140,161,577	.28775E+15	79.05	106,235,292	174,087,863

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	83	.63999E+04	58.00	0	244
20	0	.00000E+00	30.00	0	0
31	1,485	.99930E+05	67.00	853	2,117
32	2,240	.37997E+06	7.00	783	3,698
Subtotal	3,726	.47990E+06	11.09	2,201	5,250
41	2,723	.19820E+07	43.00	0	5,568
42	1,440	.16903E+06	30.00	599	2,281
43	1,478	.32663E+06	21.00	290	2,667
Subtotal	5,641	.24777E+07	63.03	2,493	8,790
50	2,460	.37008E+06	25.00	1,206	3,713
61	16,420	.38050E+07	59.00	12,478	20,363
62	1,530	.33085E+06	6.00	51	3,009
Subtotal	17,950	.41359E+07	64.88	13,883	22,018
Total	29,859	.74699E+07	161.68	24,448	35,271

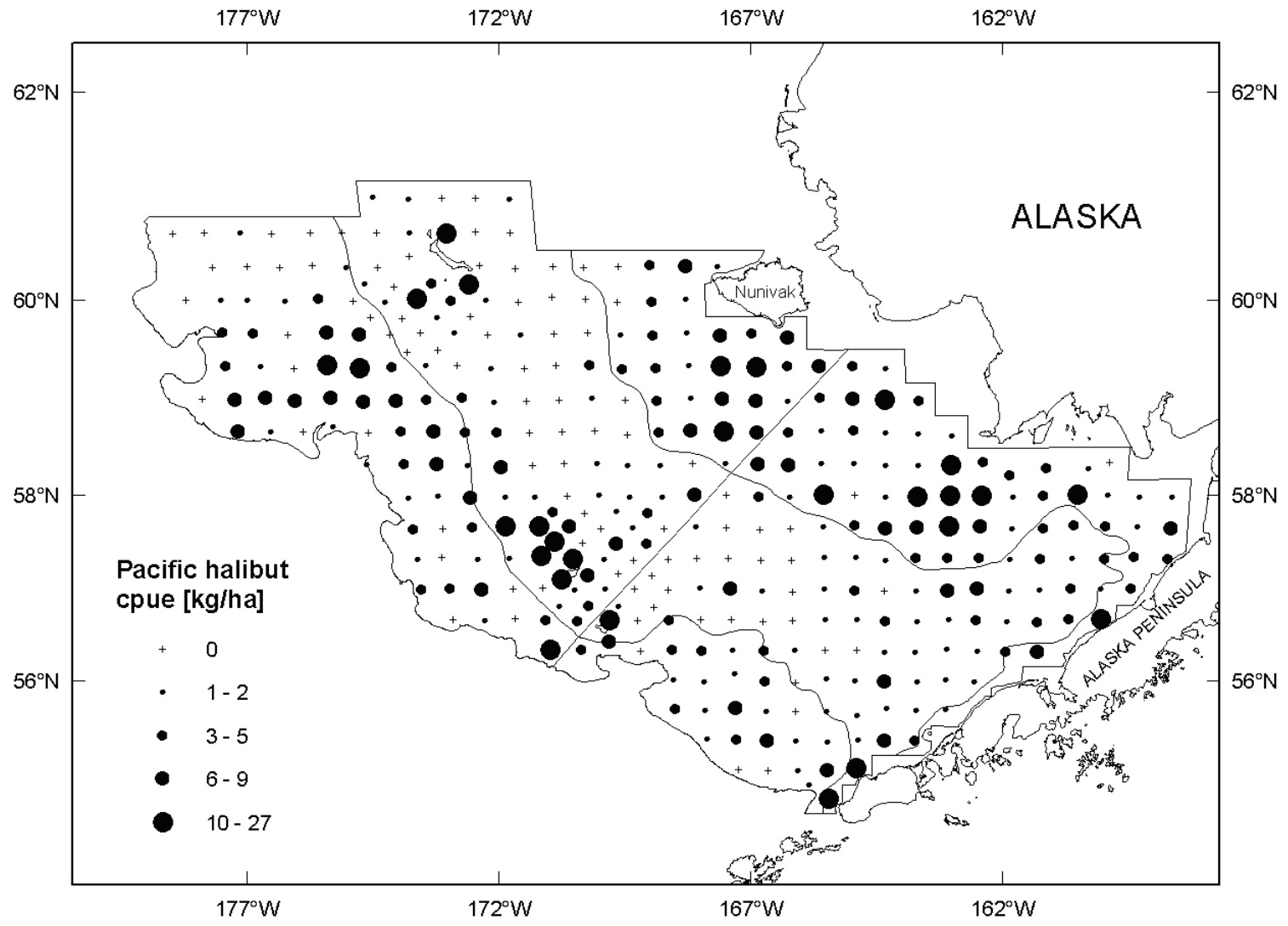

Figure 28. -- Distribution and relative abundance in kg/ha of **Pacific halibut** *(Hippoglossus stenolepis)*, 2004 eastern Bering Sea bottom trawl survey.

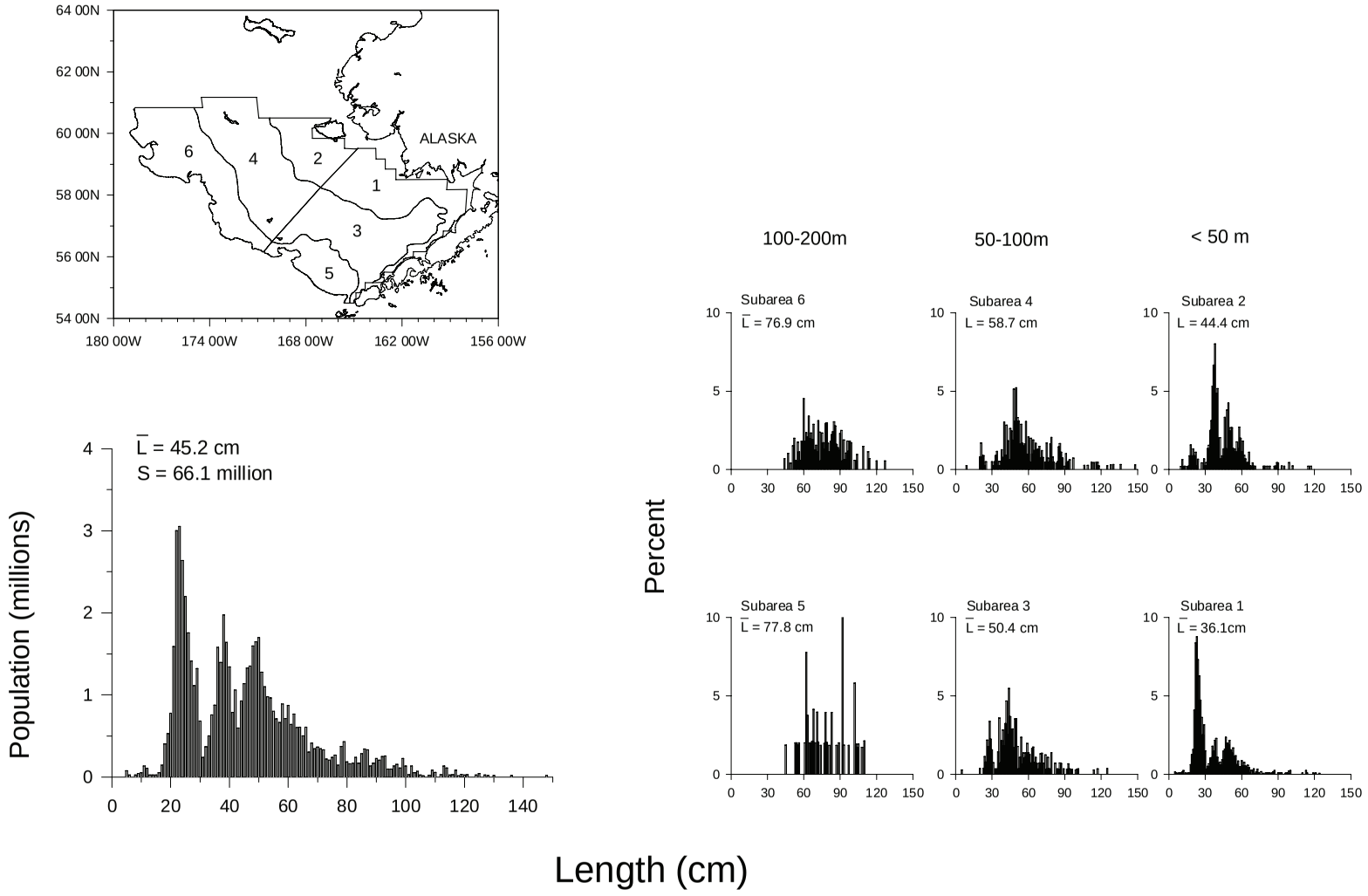

Figure 29. -- Estimated relative size distribution (sexes combined) of **Pacific halibut** *(Hippoglossus stenolepis)* in terms of population numbers and percent for subareas 1-6, 2004 eastern Bering Sea bottom trawl survey.

Table 20a. -- Abundance estimates and mean size of **Pacific halibut** *(Hippoglossus stenolepis)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	4.36	33,974	0.265	33,511,997	0.507	1.014	36.1
2	4.22	17,327	0.135	12,440,962	0.188	1.393	44.4
3	1.65	17,011	0.133	7,855,277	0.119	2.166	50.4
4	2.03	21,896	0.171	6,290,732	0.095	3.481	58.7
5	2.27	8,790	0.069	1,399,231	0.021	6.282	77.8
6	3.07	29,057	0.227	4,585,441	0.069	6.337	76.9
All subareas combined	2.76	128,056	1.000	66,083,640	1.000	1.938	45.2
95% confidence interval		± 19,061		± 20,618,254			

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

Table 20b. -- 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	59	57	57	57	4.36	.42010E+00	4.30	.15190E+01
20	31	28	28	28	4.22	.51060E+00	3.03	.47320E+00
31	68	51	51	51	1.66	.77400E-01	0.80	.32650E-01
32	8	2	2	2	1.46	.18230E+01	0.30	.60520E-01
Subtotal	76	53	53	53	1.65	.77960E-01	0.76	.27780E-01
41	44	19	19	19	1.36	.22130E+00	0.31	.21400E-01
42	31	23	23	23	3.78	.10710E+01	1.63	.31870E+00
43	22	11	11	11	2.04	.10820E+01	0.21	.35050E-02
Subtotal	97	53	53	53	2.03	.16940E+00	0.58	.23180E-01
50	26	22	22	22	2.27	.16430E+00	0.36	.50250E-02
61	60	41	41	41	2.98	.32340E+00	0.48	.58710E-02
62	7	4	4	4	4.29	.72600E+01	0.53	.61210E-01
Subtotal	67	45	45	45	3.07	.31450E+00	0.48	.53820E-02
Total	356	258	258	258	2.76	.16570E+01	1.43	.20530E+01

Table 20b. -- Continued.

POPULATION

Stratum	Population	Variance population	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	33,511,997	.92097E+14	58.00	14,116,993	52,907,002
20	12,440,962	.79653E+13	30.00	6,677,846	18,204,078
31	7,594,097	.29176E+13	67.00	4,177,872	11,010,322
32	261,180	.46595E+11	7.00	0	771,685
Subtotal	7,855,277	.29642E+13	68.99	4,411,881	11,298,672
41	1,919,358	.84151E+12	43.00	65,417	3,773,298
42	3,922,035	.18371E+13	30.00	1,150,217	6,693,853
43	449,339	.15614E+11	21.00	188,681	709,997
Subtotal	6,290,732	.26943E+13	56.29	2,973,418	9,608,045
50	1,399,231	.75626E+11	25.00	831,626	1,966,835
61	4,247,591	.45600E+12	59.00	2,882,862	5,612,320
62	337,850	.25296E+11	6.00	0	746,764
Subtotal	4,585,441	.48129E+12	63.80	3,197,938	5,972,945
Total	66,083,640	.10628E+15	76.00	45,465,386	86,701,894

BIOMASS

Stratum	Biomass (t)	Variance biomass	Eff.deg. freedom	95% Confidence Limits Lower	Upper
10	33,974	.25472E+08	58.00	23,774	44,174
20	17,327	.85950E+07	30.00	11,341	23,314
31	15,732	.69156E+07	67.00	10,473	20,992
32	1,279	.14035E+07	7.00	0	4,178
Subtotal	17,011	.83191E+07	69.54	11,243	22,780
41	8,511	.87028E+07	43.00	2,549	14,473
42	9,081	.61727E+07	30.00	4,000	14,161
43	4,304	.48214E+07	21.00	0	8,885
Subtotal	21,896	.19697E+08	93.75	13,019	30,772
50	8,790	.24726E+07	25.00	5,551	12,030
61	26,297	.25120E+08	59.00	16,168	36,427
62	2,760	.30006E+07	6.00	0	6,999
Subtotal	29,057	.28121E+08	64.84	18,451	39,663
Total	128,056	.92676E+08	275.07	108,994	147,117

Bering skate

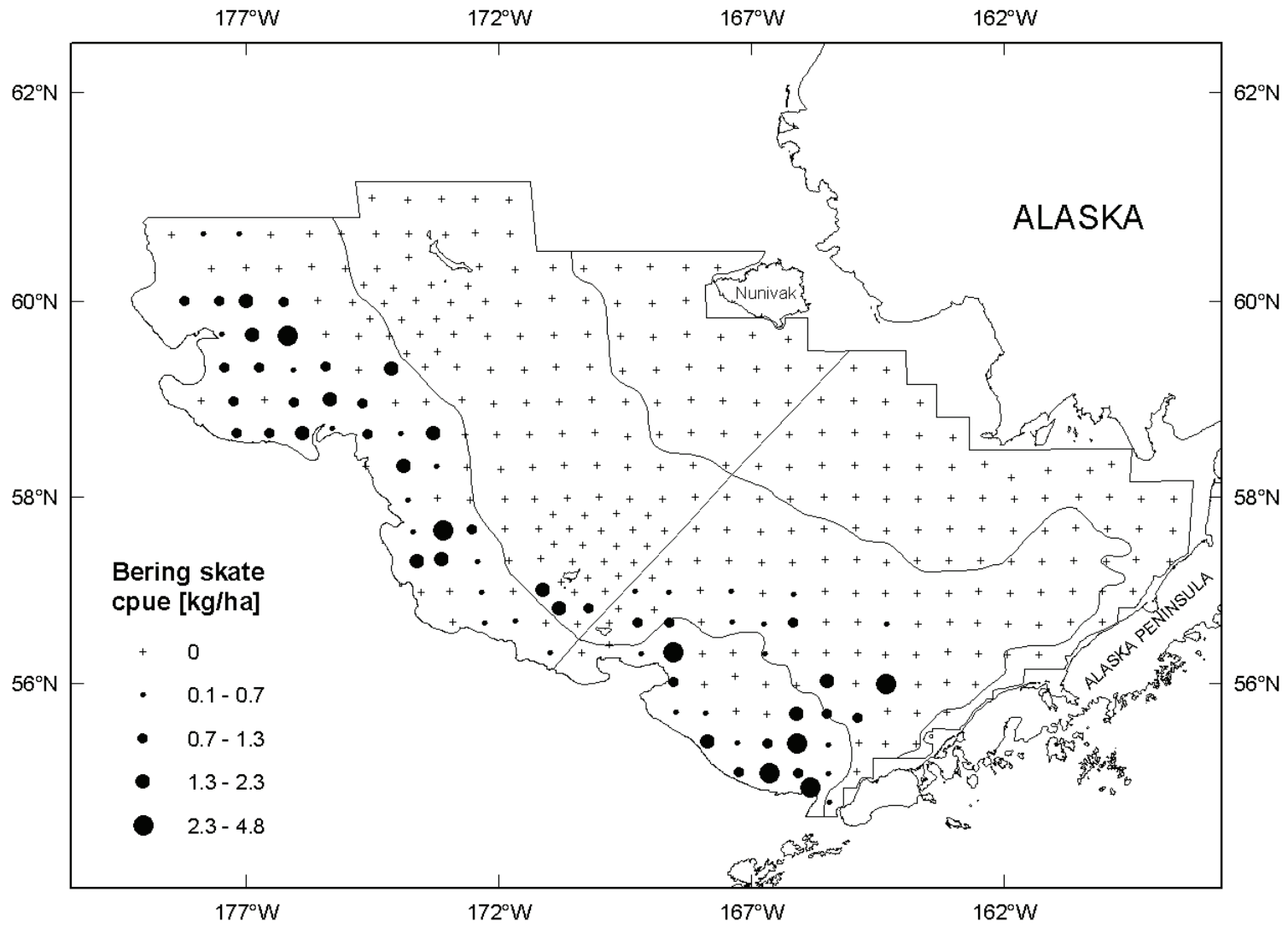

Figure 30. -- Distribution and relative abundance in kg/ha of **Bering skate** *(Bathyraja interrupta)*, 2004 eastern Bering Sea bottom trawl survey.

Table 21. -- Abundance estimates and mean size of **Bering skate** *(Bathyraja interrupta)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean 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	0.16	1,649	0.141	736,430	0.133	2.239	67.4
4	0.03	321	0.027	132,213	0.024	2.428	72.4
5	0.95	3,667	0.313	1,791,794	0.324	2.047	62.6
	0.64	6,072	0.519	2,864,588	0.518	2.120	66.9
All subareas combined	0.25	11,709	1.000	5,525,025	1.000	2.119	65.7
95% confidence interval		± 2,870		± 1,437,230			

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

Alaska skate

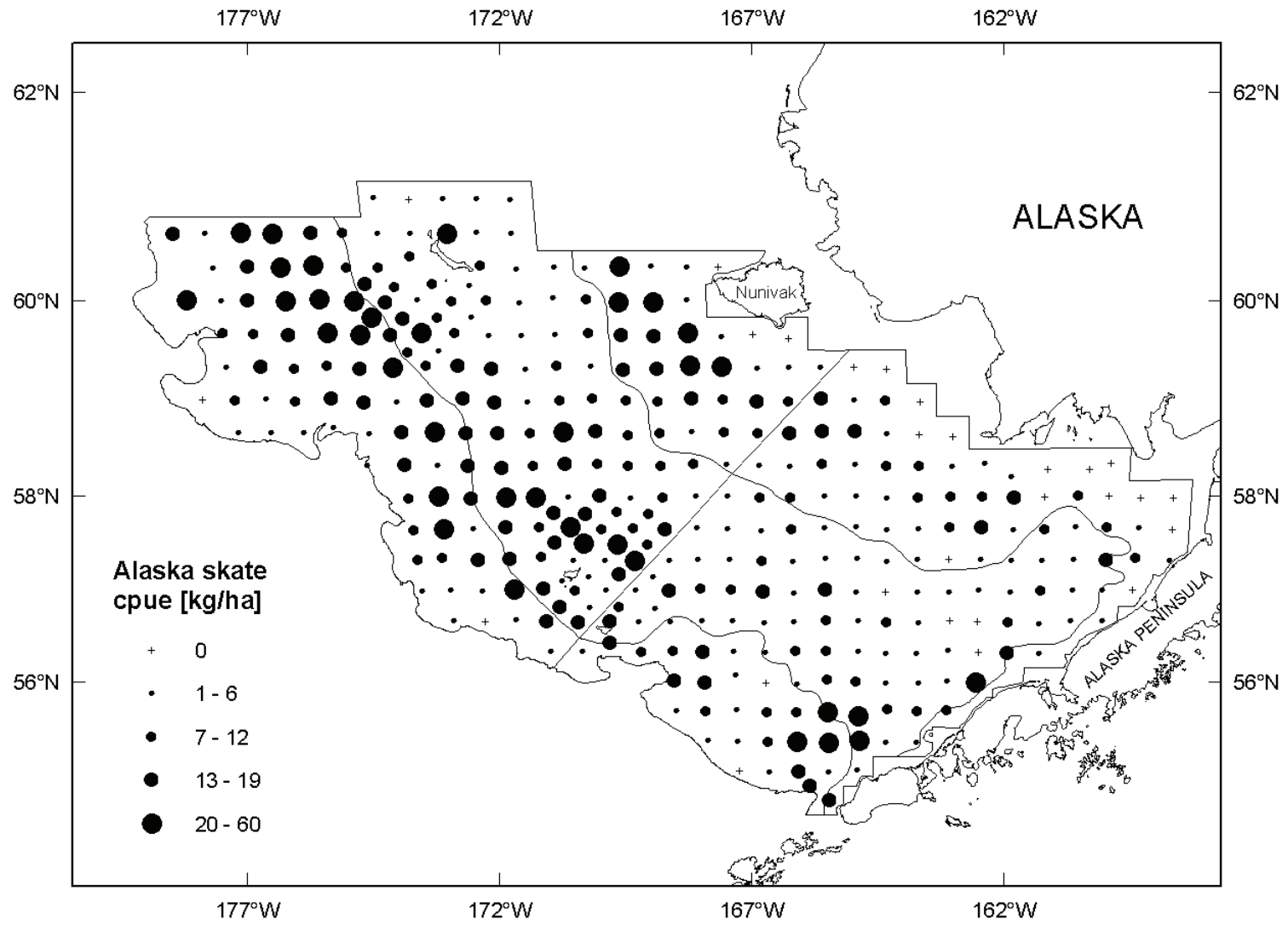

Figure 31. -- Distribution and relative abundance in kg/ha of **Alaska skate** *(Bathyraja parmifera)*, 2004 eastern Bering Sea bottom
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Table 22. -- Abundance estimates and mean size of **Alaska skate** *(Bathyraja parmifera)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	5.29	41,219	0.100	12,220,543	0.108	3.373	71.7
2	11.39	46,728	0.113	16,982,067	0.150	2.752	67.7
3	6.82	70,400	0.170	19,413,072	0.171	3.626	69.1
4	9.44	101,759	0.246	35,288,826	0.311	2.884	64.6
5	8.81	34,185	0.083	5,193,507	0.046	6.582	88.0
6	12.56	118,770	0.288	24,377,085	0.215	4.872	76.2
All subareas combined	8.91	413,061	1.000	113,475,100	1.000	3.640	70.2
95% confidence interval		± 40,882		± 11,677,806			

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

Warty sculpin

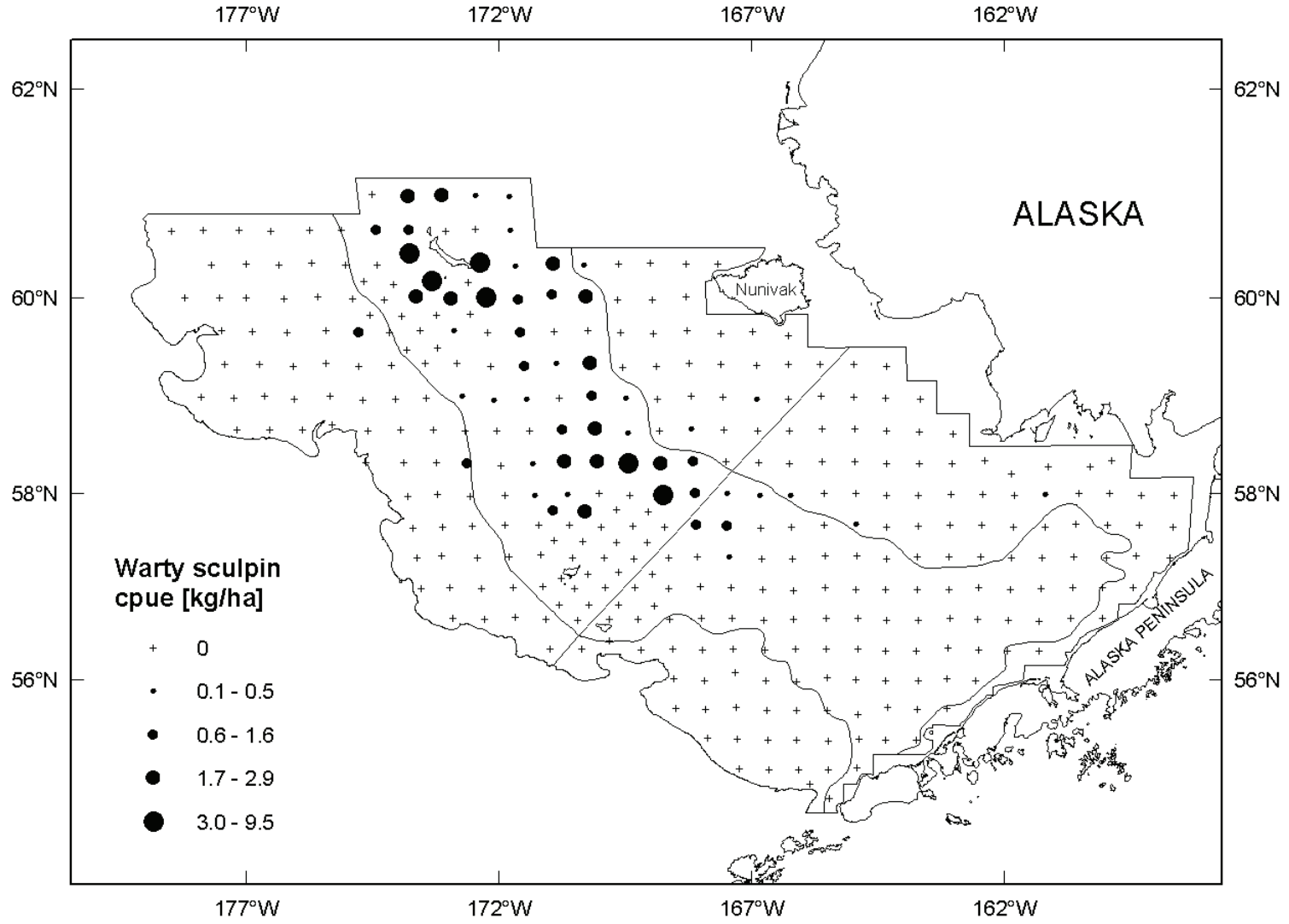

Figure 32. -- Distribution and relative abundance in kg/ha of **warty sculpin** *(Myoxocephalus verrucosus)*, 2004 eastern Bering Sea bottom trawl survey.

Table 23. -- Abundance estimates and mean size of **warty sculpin** *(Myoxocephalus verrucosus)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	0.01	103	0.010	80,033	0.008	1.287	44.2
2	0.02	95	0.009	109,906	0.011	0.864	37.2
3	0.04	393	0.039	533,392	0.052	0.737	35.5
4	0.86	9,265	0.918	9,529,686	0.921	0.972	38.3
5	0.00	0	0.000	0	0.000	0.000	0.0
6	0.02	234	0.023	93,324	0.009	2.507	50.4
All subareas combined	0.22	10,089	1.000	10,346,341	1.000	0.975	38.3
95% confidence interval		± 3,577		± 4,010,623			

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

Great sculpin

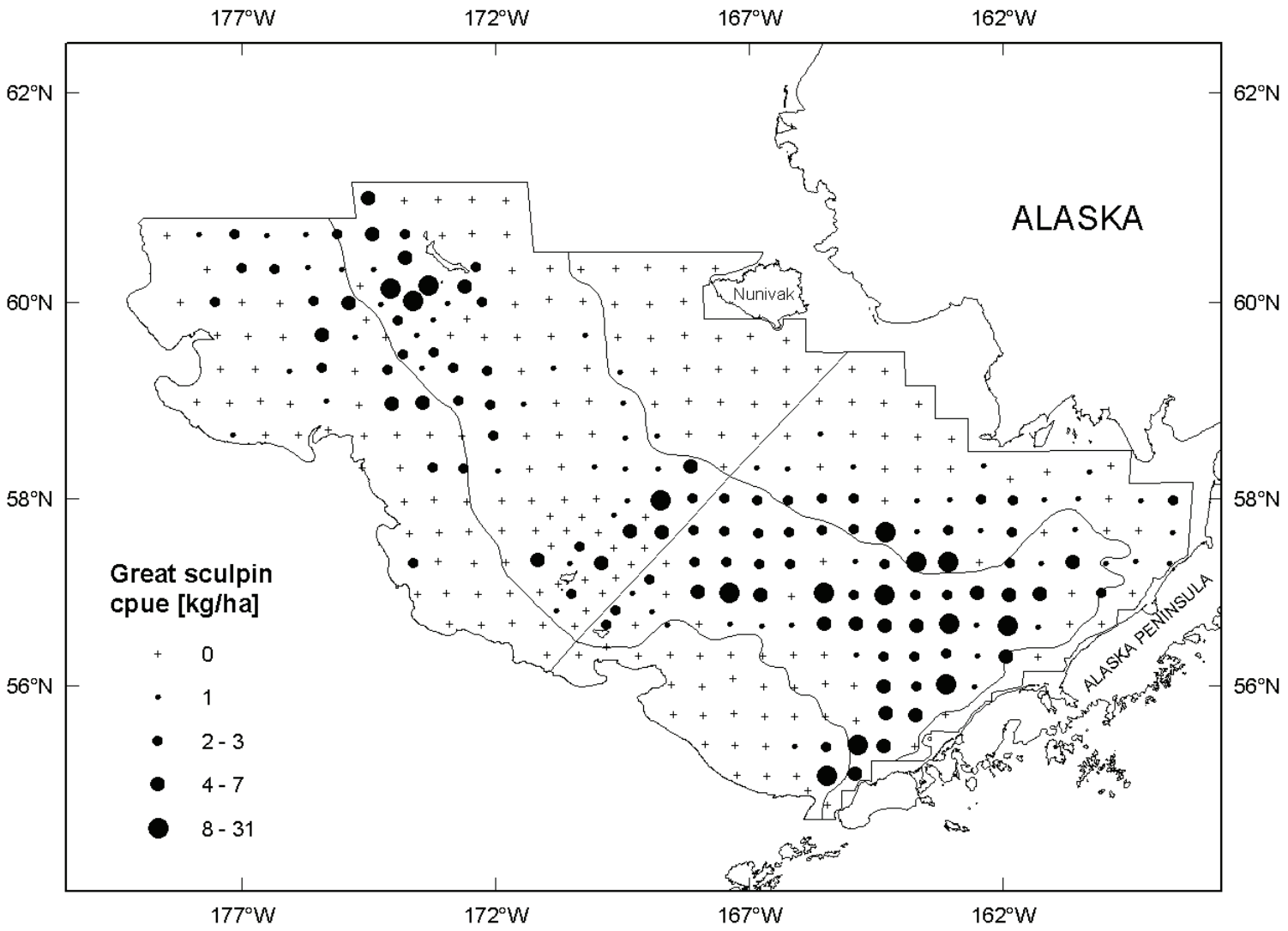

Figure 33. -- Distribution and relative abundance in kg/ha of **great sculpin** (*Myoxocephalus polyacanthocephalus*), 2004 eastern Bering Sea bottom trawl survey.

Table 24. -- Abundance estimates and mean size of **great sculpin** (*Myoxocephalus polyacanthocephalus*) by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	1.07	8,352	0.143	5,119,098	0.228	1.632	41.2
2	0.01	40	0.001	109,535	0.005	0.365	28.5
3	2.82	29,178	0.499	9,255,493	0.412	3.153	54.5
4	1.30	14,041	0.240	5,764,942	0.256	2.436	48.9
5	0.41	1,599	0.027	536,371	0.024	2.981	52.4
6	0.56	5,295	0.091	1,692,382	0.075	3.129	54.2
All subareas combined	1.26	58,505	1.000	22,477,821	1.000	2.603	49.8
95% confidence interval		± 12,591		± 4,406,850			

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

Plain sculpin

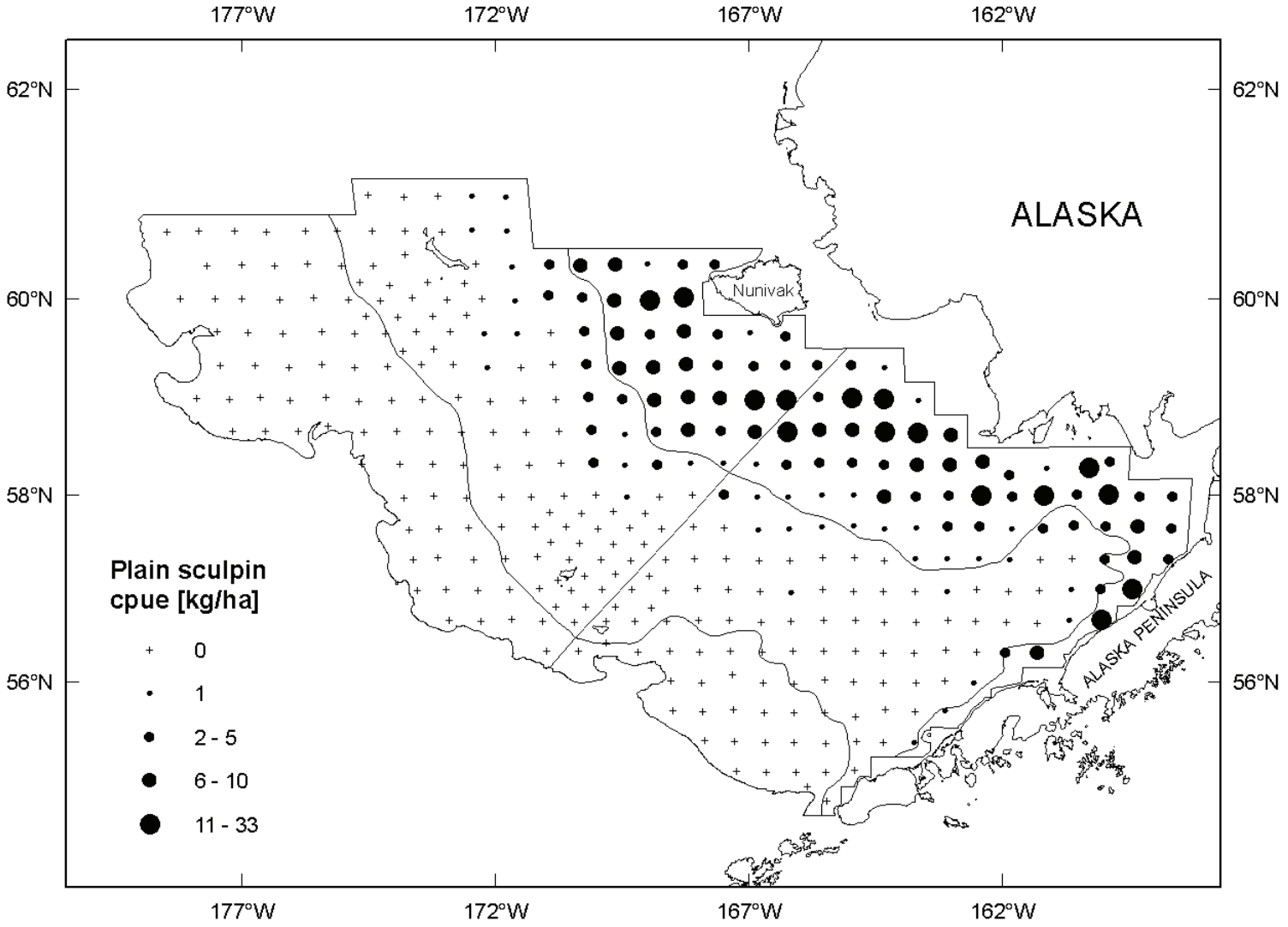

Figure 34. -- Distribution and relative abundance in kg/ha of **plain sculpin** (*Myoxocephalus jaok*), 2004 eastern Bering Sea bottom trawl survey.

Table 25. -- Abundance estimates and mean size of **plain sculpin** (*Myoxocephalus jaok*) by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	5.29	41,167	0.599	69,306,304	0.577	0.594	34.7
2	5.36	21,986	0.320	45,442,305	0.379	0.484	31.6
3	0.12	1,235	0.018	1,174,632	0.010	1.051	40.9
4	0.40	4,282	0.062	4,117,083	0.034	1.040	42.3
5	0.00	0	0.000	0	0.000	0.000	0.0
6	0.00	0	0.000	0	0.000	0.000	0.0
All subareas combined	1.48	68,671	1.000	120,040,323	1.000	0.572	33.9
95% confidence interval		± 13,522		± 27,894,570			

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

Bigmouth sculpin

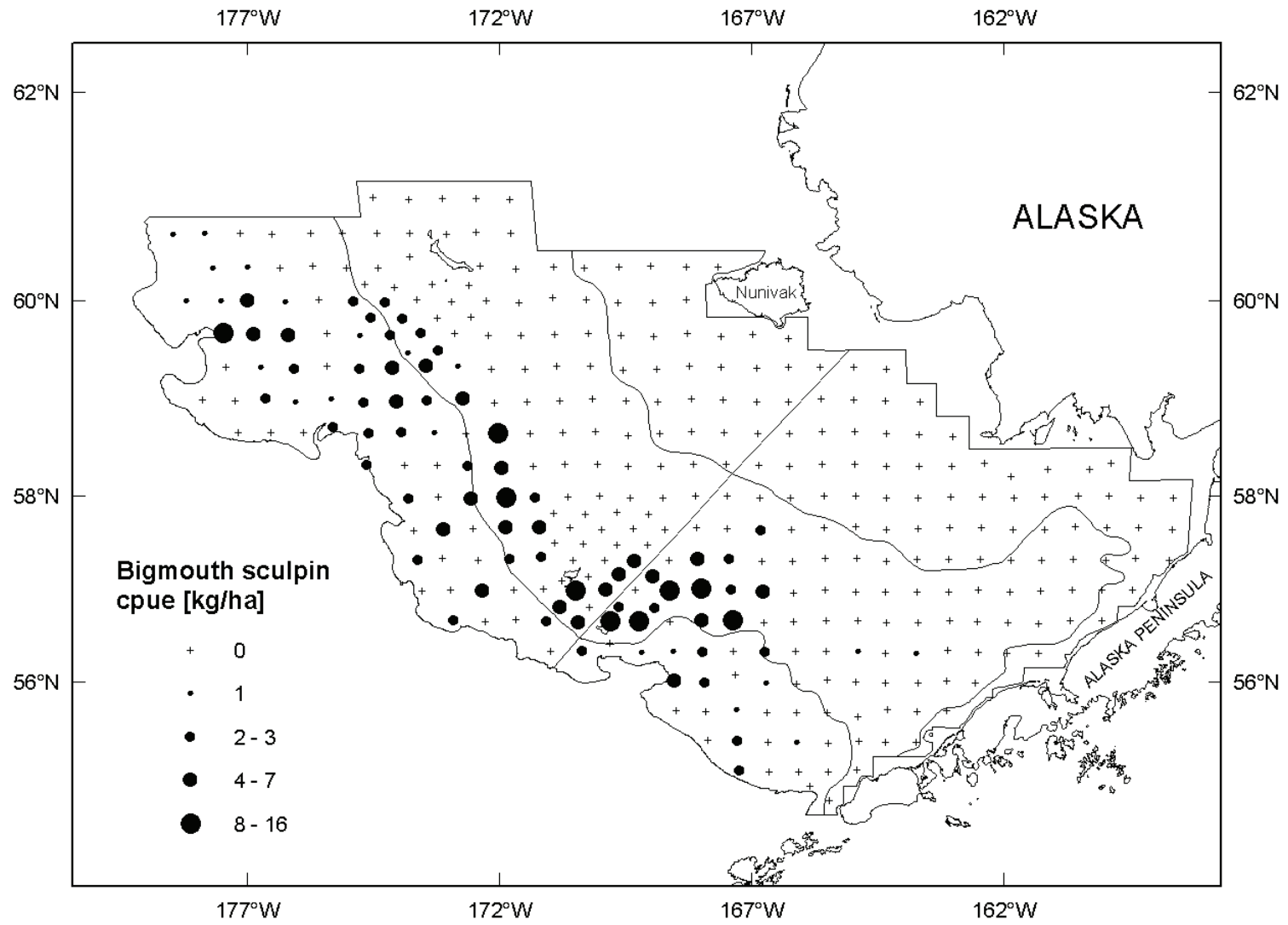

Figure 35. -- Distribution and relative abundance in kg/ha of **bigmouth sculpin** (*Hemitripterus bolini*), 2004 eastern Bering Sea bottom trawl survey.

Table 26. -- Abundance estimates and mean size of **bigmouth sculpin** (*Hemitripterus bolini*) by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean 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	0.98	10,118	0.291	1,658,286	0.222	6.101	63.7
4	0.94	10,170	0.293	1,928,225	0.259	5.274	61.7
5	0.51	1,982	0.057	435,928	0.058	4.547	62.6
6	1.32	12,478	0.359	3,433,563	0.461	3.634	51.2
All subareas combined	0.75	34,748	1.000	7,456,003	1.000	4.660	57.4
95% confidence interval		± 9,758		± 1,889,928			

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

Wattled eelpout

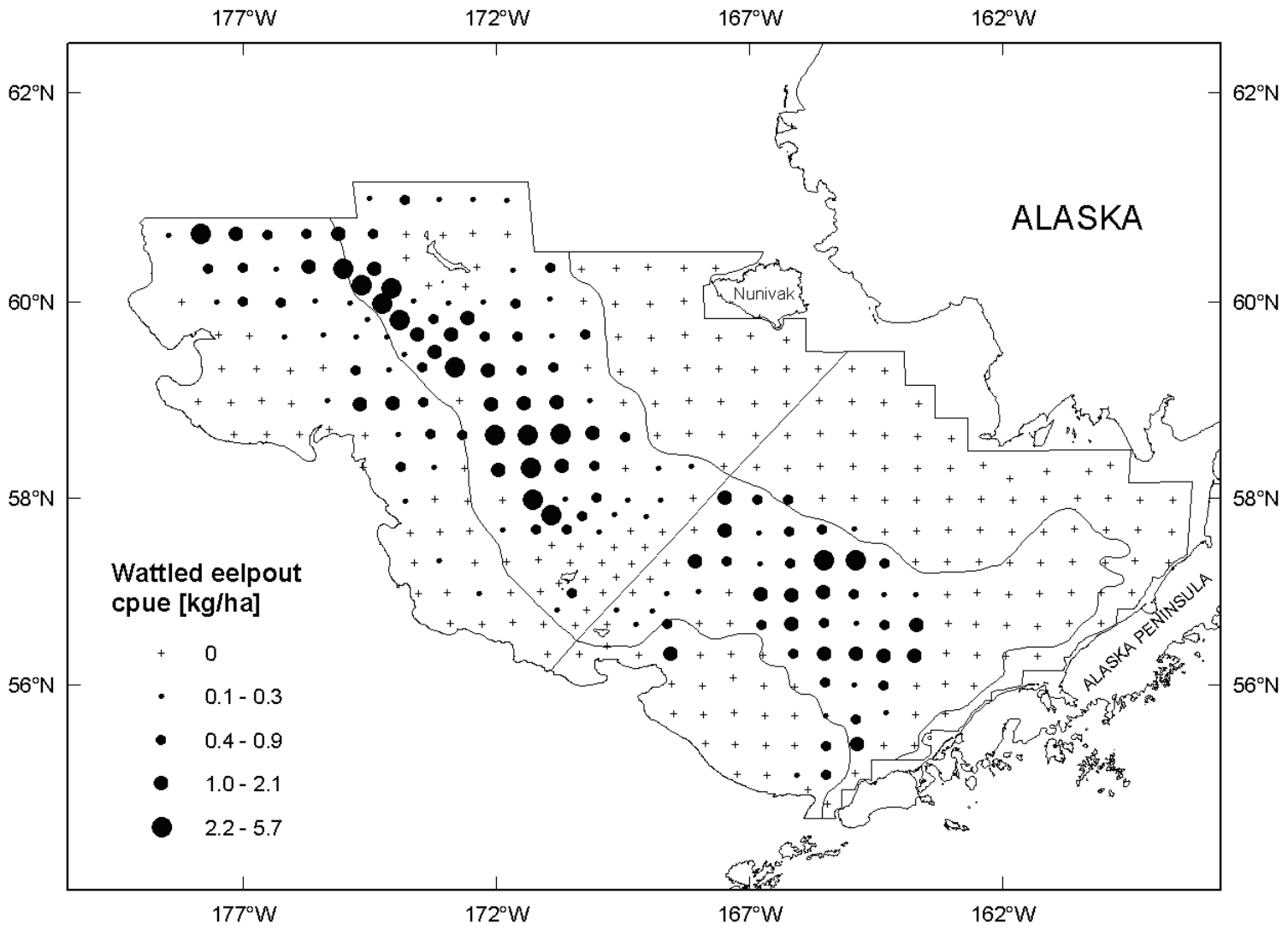

Figure 36. -- Distribution and relative abundance in kg/ha of **wattled eelpout** *(Lycodes palearis)*, 2004 eastern Bering Sea bottom trawl survey.

Table 27. -- Abundance estimates and mean size of **wattled eelpout** *(Lycodes palearis)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	0.08	646	0.039	633,020	0.009	1.021	0.0
2	0.00	0	0.000	0	0.000	0.000	0.0
3	0.44	4,556	0.276	18,257,510	0.251	0.250	0.0
4	0.80	8,582	0.519	42,753,809	0.588	0.201	0.0
5	0.10	395	0.024	1,402,411	0.019	0.282	0.0
6	0.25	2,348	0.142	9,666,136	0.133	0.243	0.0
All subareas combined	0.36	16,527	1.000	72,712,885	1.000	0.227	0.0
95% confidence interval		± 3,535		± 14,186,217			

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

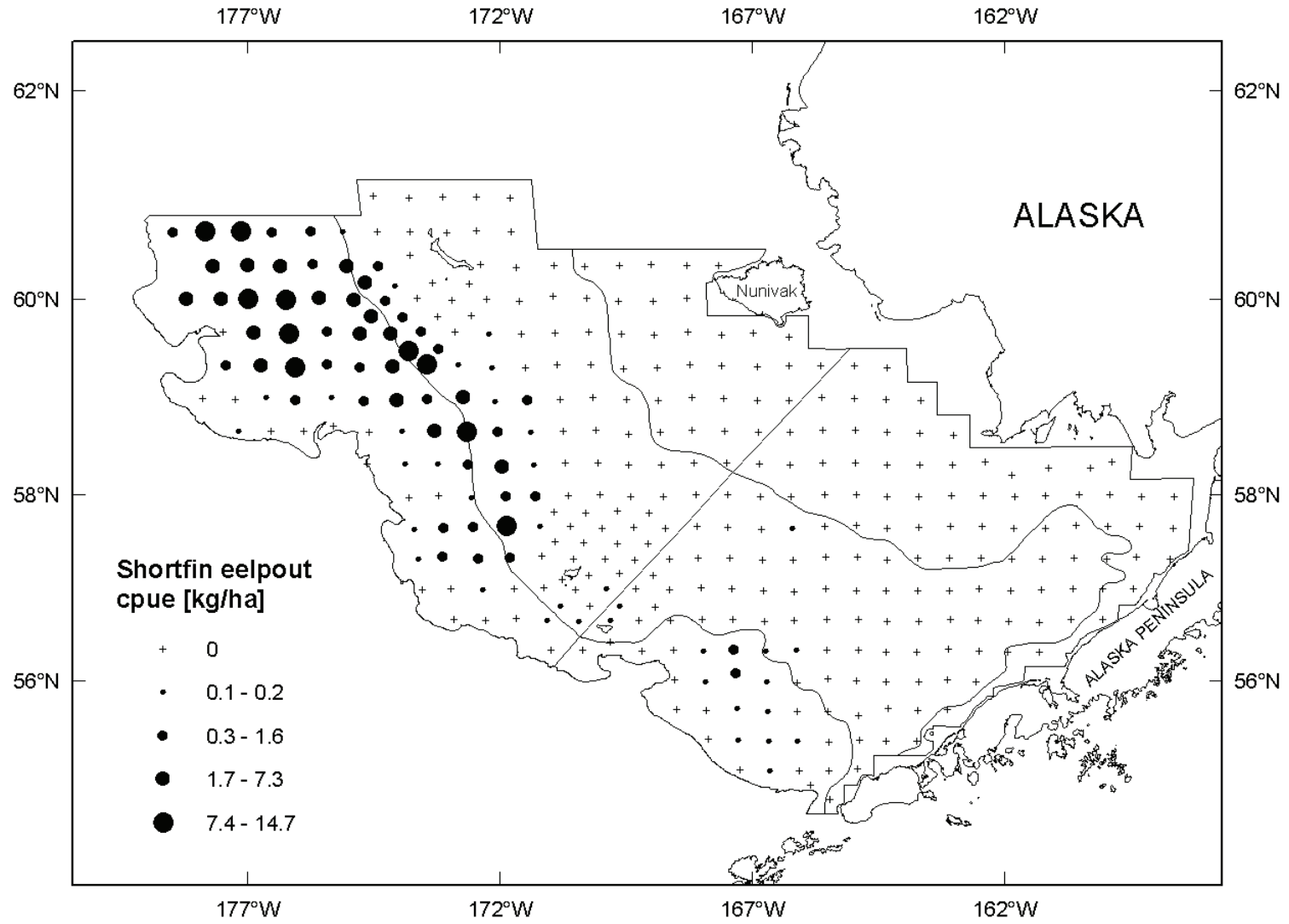

Figure 37. -- Distribution and relative abundance in kg/ha of **shortfin eelpout** *(Lycodes brevipes)*, 2004 eastern Bering Sea bottom trawl survey.

Table 28. -- Abundance estimates and mean size of **shortfin eelpout** *(Lycodes brevipes)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean 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	0.00	21	0.001	529,490	0.002	0.040	0.0
4	0.45	4,816	0.189	74,218,592	0.212	0.065	0.0
5	0.09	362	0.014	5,845,761	0.017	0.062	0.0
6	2.14	20,282	0.796	269,776,653	0.770	0.075	0.0
All subareas combined	0.55	25,481	1.000	350,370,496	1.000	0.073	0.0
95% confidence interval		± 9,415		± 122,031,778			

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

Marbled eelpout

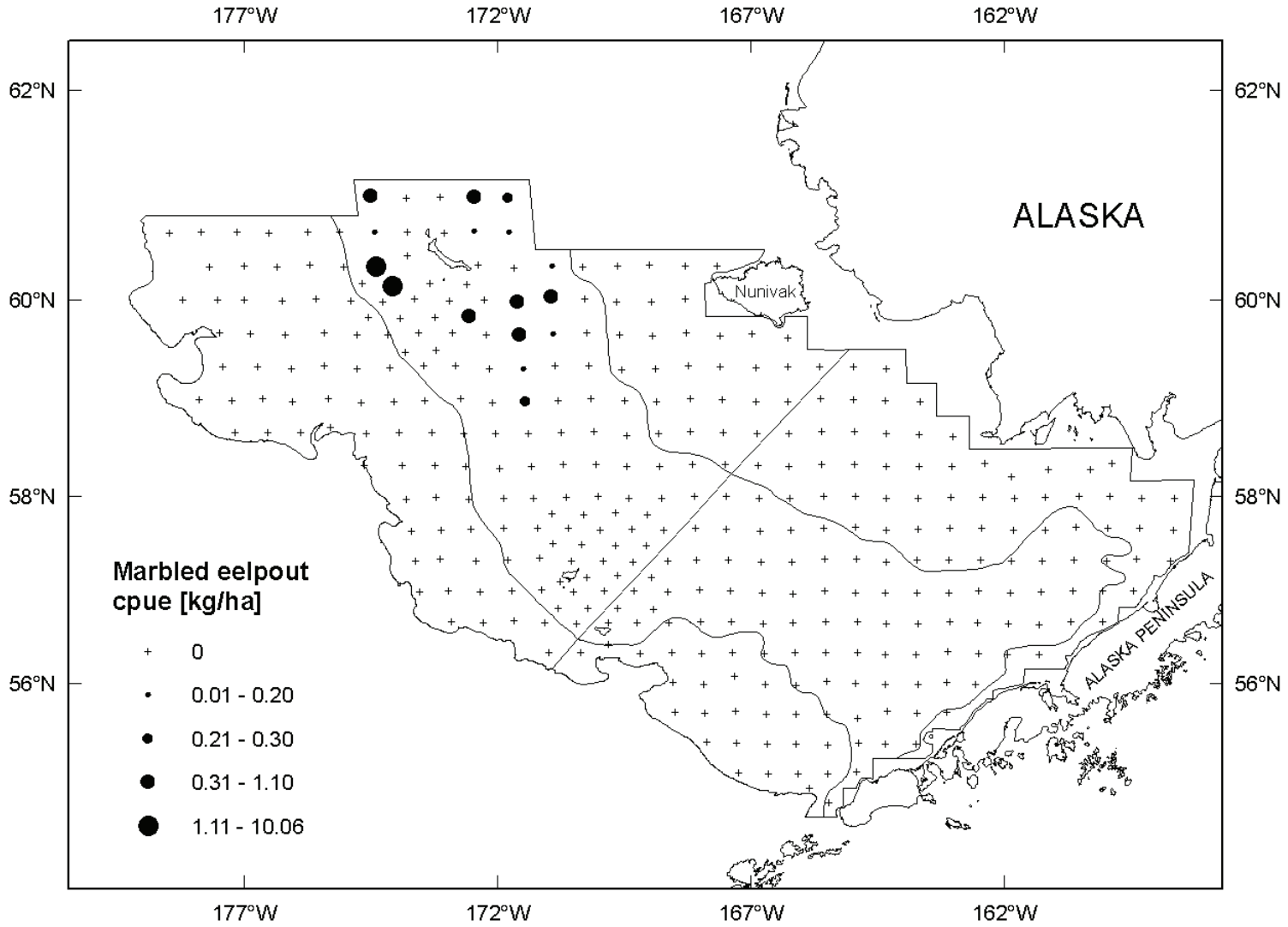

Figure 38. -- Distribution and relative abundance in kg/ha of **marbled eelpout** *(Lycodes raridens)*, 2004 eastern Bering Sea bottom trawl survey.

Table 29. -- Abundance estimates and mean size of **marbled eelpout** *(Lycodes raridens)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean 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	0.00	0	0.000	0	0.000	0.000	0.0
4	0.18	1,890	1.000	1,874,684	1.000	1.008	51.9
5	0.00	0	0.000	0	0.000	0.000	0.0
6	0.00	0	0.000	0	0.000	0.000	0.0
All subareas combined	0.04	1,890	1.000	1,874,684	1.000	1.008	51.9
95% confidence interval		± 1,993		± 1,728,670			

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

Sturgeon poacher

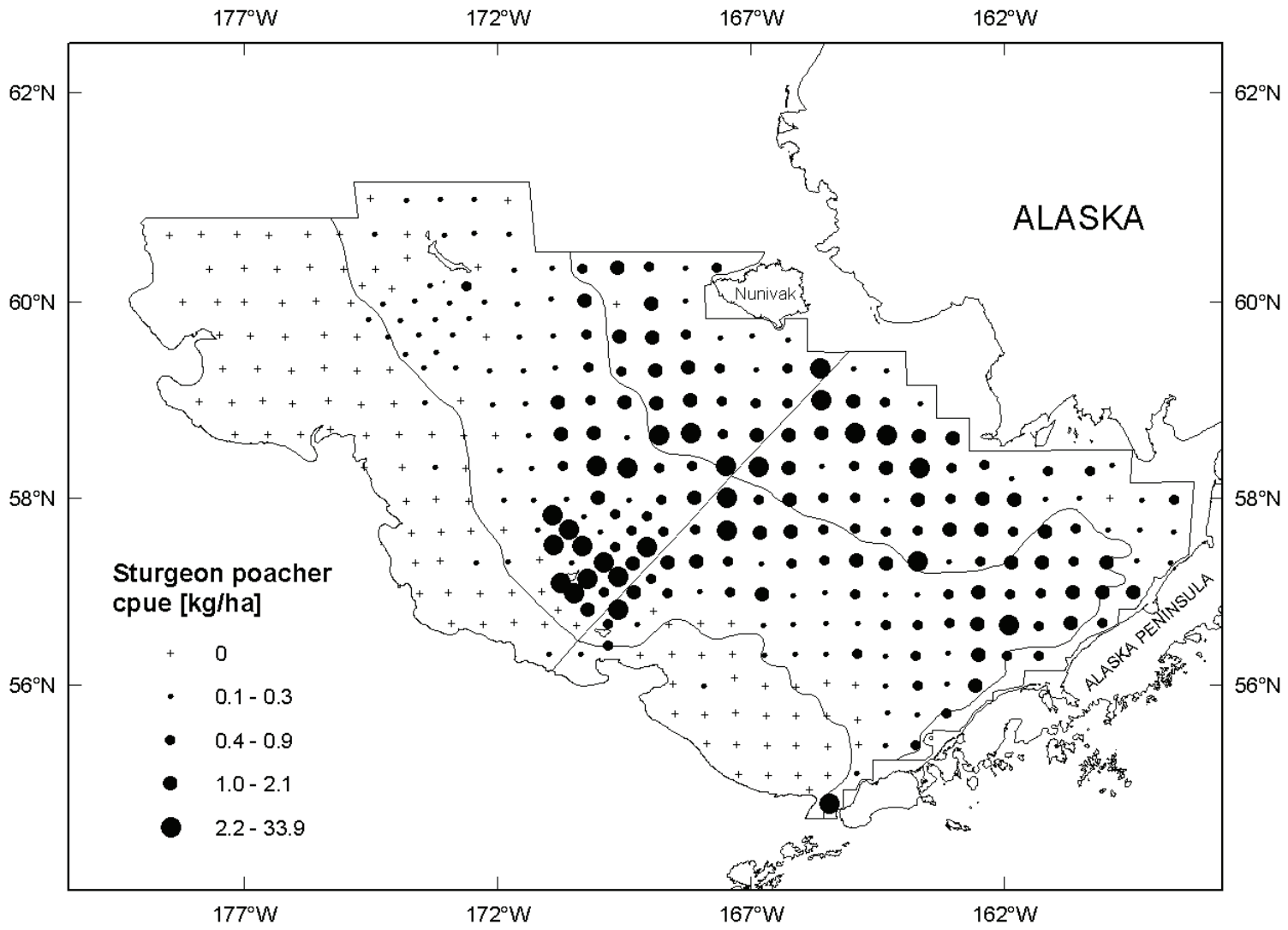

Figure 39. -- Distribution and relative abundance in kg/ha of **sturgeon poacher** *(Podothecus acipenserinus)*, 2004 eastern Bering Sea bottom trawl survey.

Table 30. -- Abundance estimates and mean size of **sturgeon poacher** *(Podothecus acipenserinus)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	0.74	5,741	0.214	78,910,230	0.188	0.073	0.0
2	1.17	4,781	0.178	94,965,388	0.227	0.050	0.0
3	0.68	6,992	0.260	103,650,809	0.248	0.067	0.0
4	0.86	9,242	0.344	139,570,761	0.333	0.066	0.0
5	0.03	109	0.004	1,237,357	0.003	0.088	0.0
6	0.00	17	0.001	348,475	0.001	0.049	0.0
All subareas combined	0.58	26,882	1.000	418,683,021	1.000	0.064	0.0
95% confidence interval		± 6,235		± 89,197,730			

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

Bering poacher

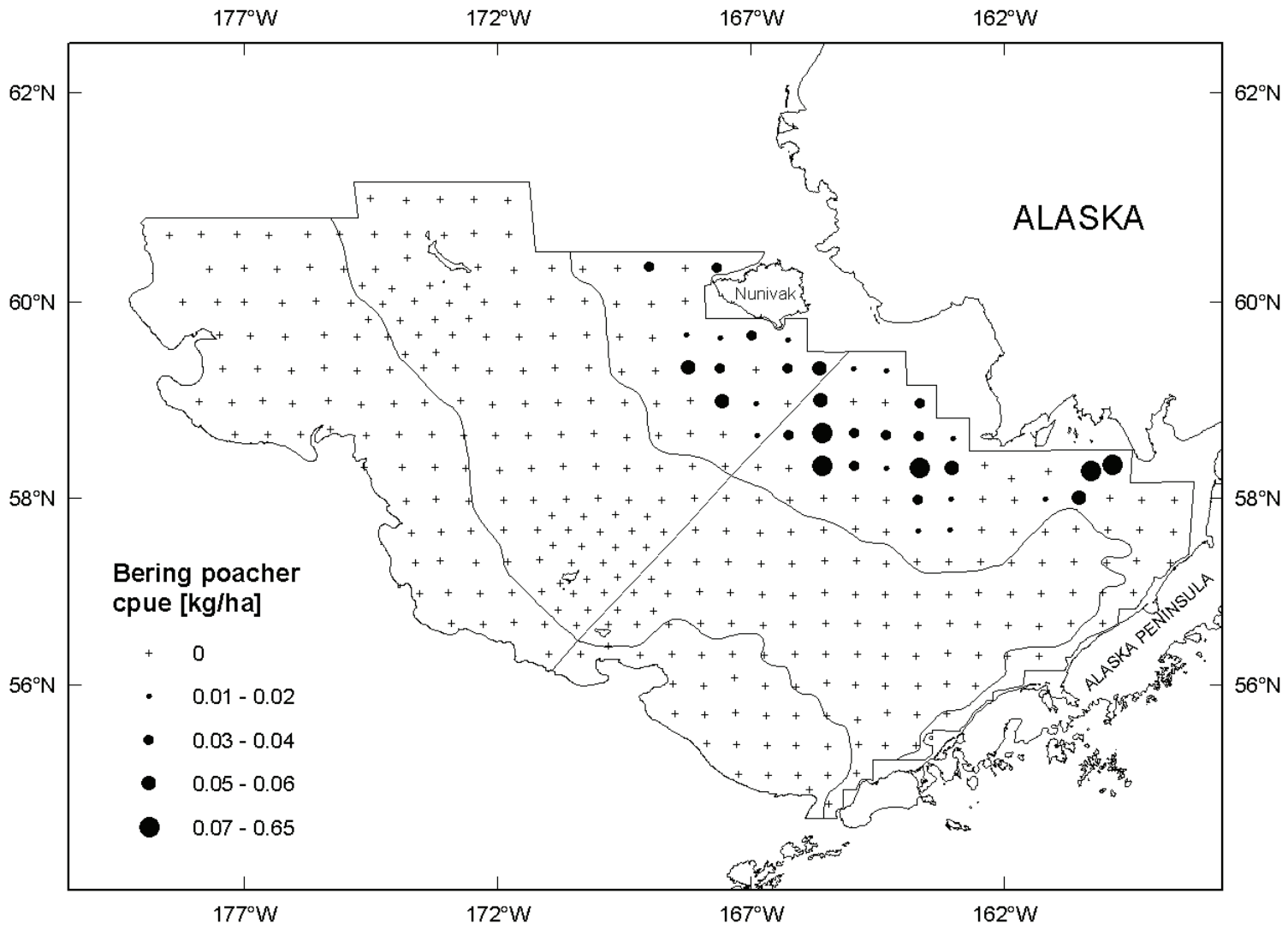

Figure 40. -- Distribution and relative abundance in kg/ha of **Bering poacher** *(Ocella dodecaedron)*, 2004 eastern Bering Sea bottom trawl survey.

Table 31. -- Abundance estimates and mean size of **Bering poacher** *(Ocella dodecaedron)* by subarea, 2004 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (Kg/ha)	Estimated biomass (t)[a]	Proportion of estimated biomass	Estimated population numbers[b]	Proportion of estimated population	Mean weight (kg)	Mean length (cm)
1	0.02	181	0.784	6,978,607	0.765	0.026	0.0
2	0.01	50	0.216	2,139,185	0.235	0.023	0.0
3	0.00	0	0.000	0	0.000	0.000	0.0
4	0.00	0	0.000	0	0.000	0.000	0.0
5	0.00	0	0.000	0	0.000	0.000	0.0
6	0.00	0	0.000	0	0.000	0.000	0.0
All subareas combined	0.00	231	1.000	9,117,791	1.000	0.025	0.0
95% confidence interval		± 173		± 7,021,047			

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

Butterfly sculpin

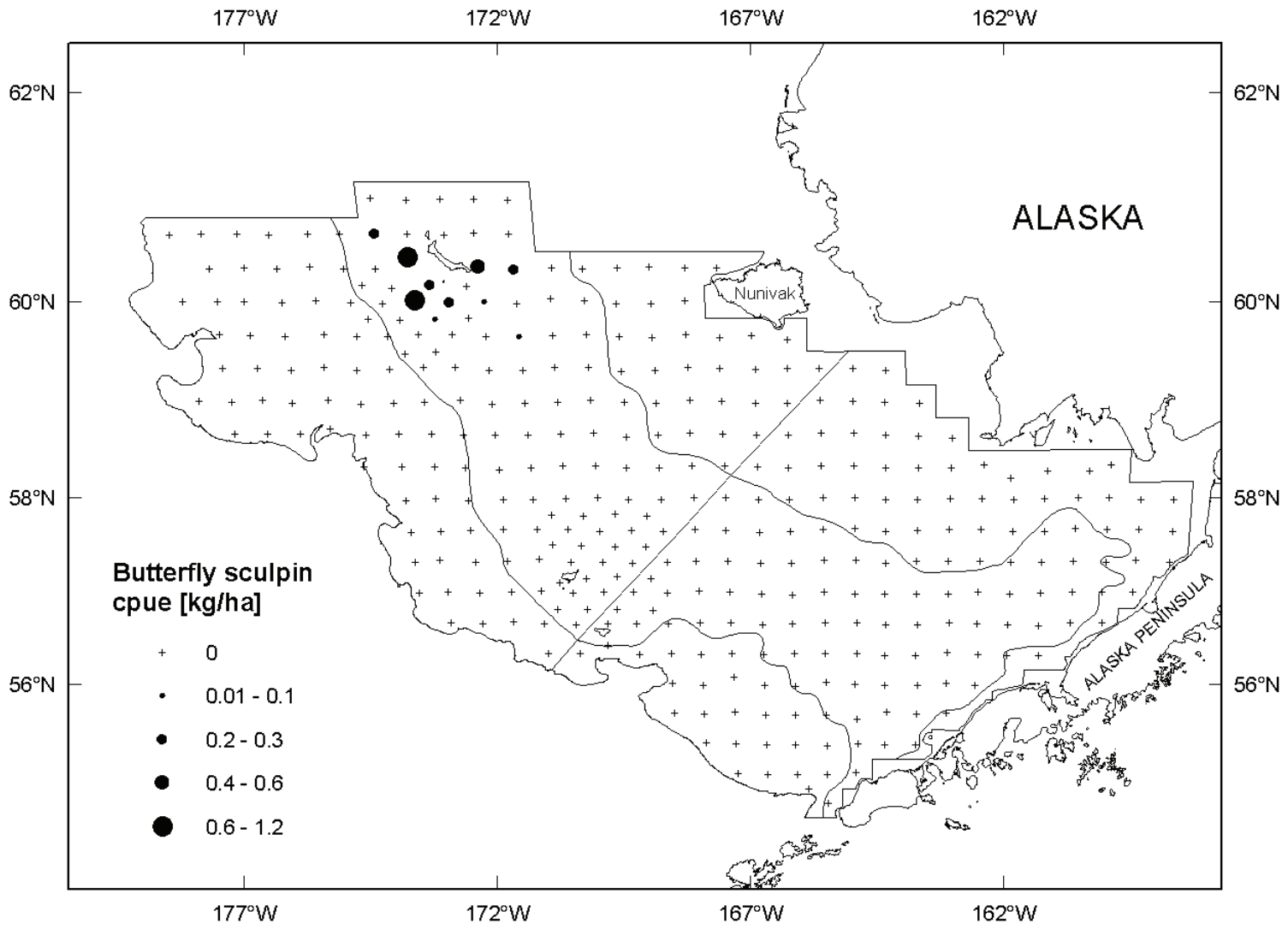

Figure 41. -- Distribution and relative abundance in kg/ha of **butterfly scuplin** *(Hemilepidotus papilio)*, 2004 eastern Bering Sea bottom trawl survey.

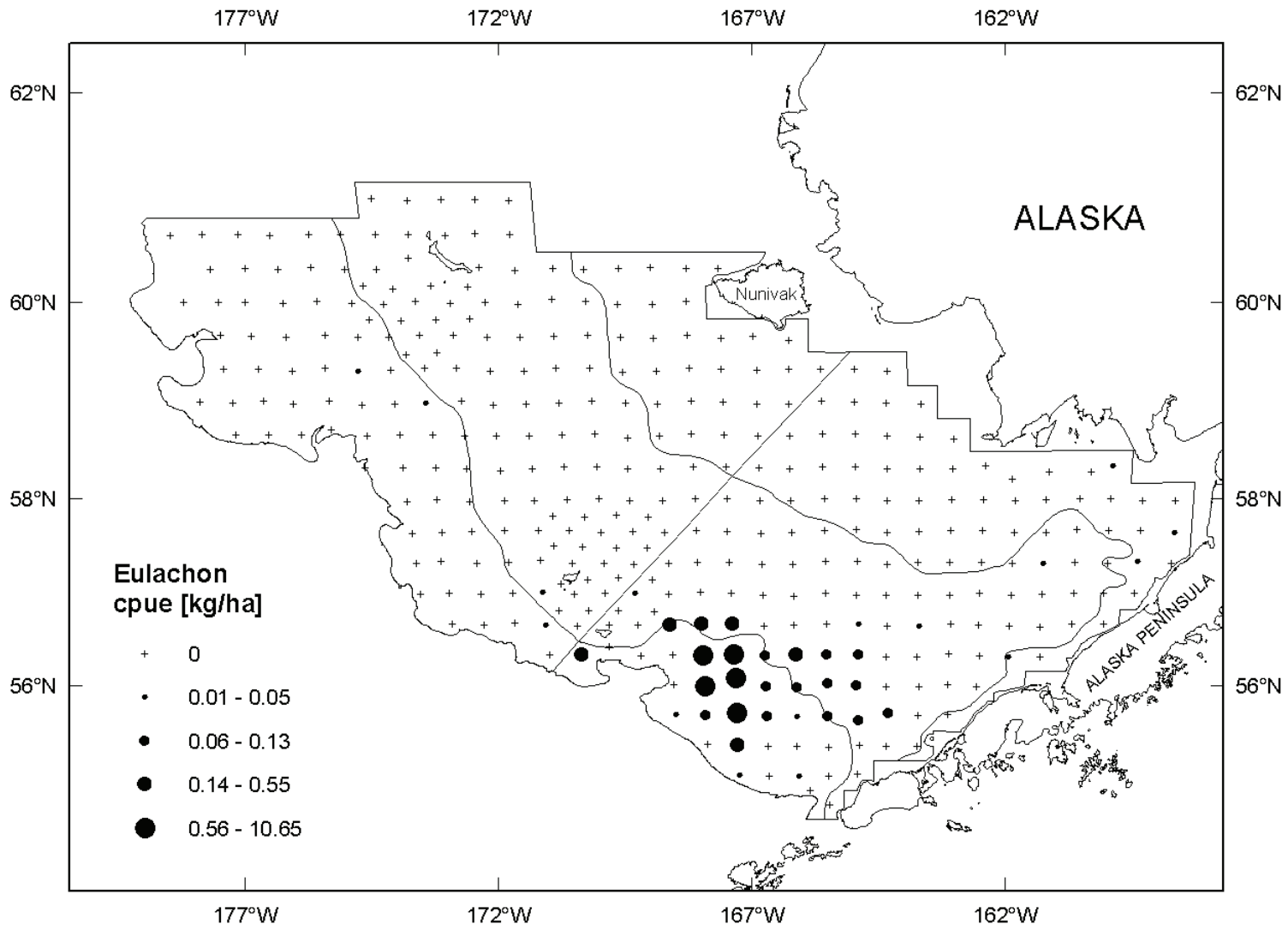

Figure 42. -- Distribution and relative abundance in kg/ha of **eulachon** *(Thaleichthys pacificus)*, 2004 eastern Bering Sea bottom trawl survey.

Eulachon

Capelin

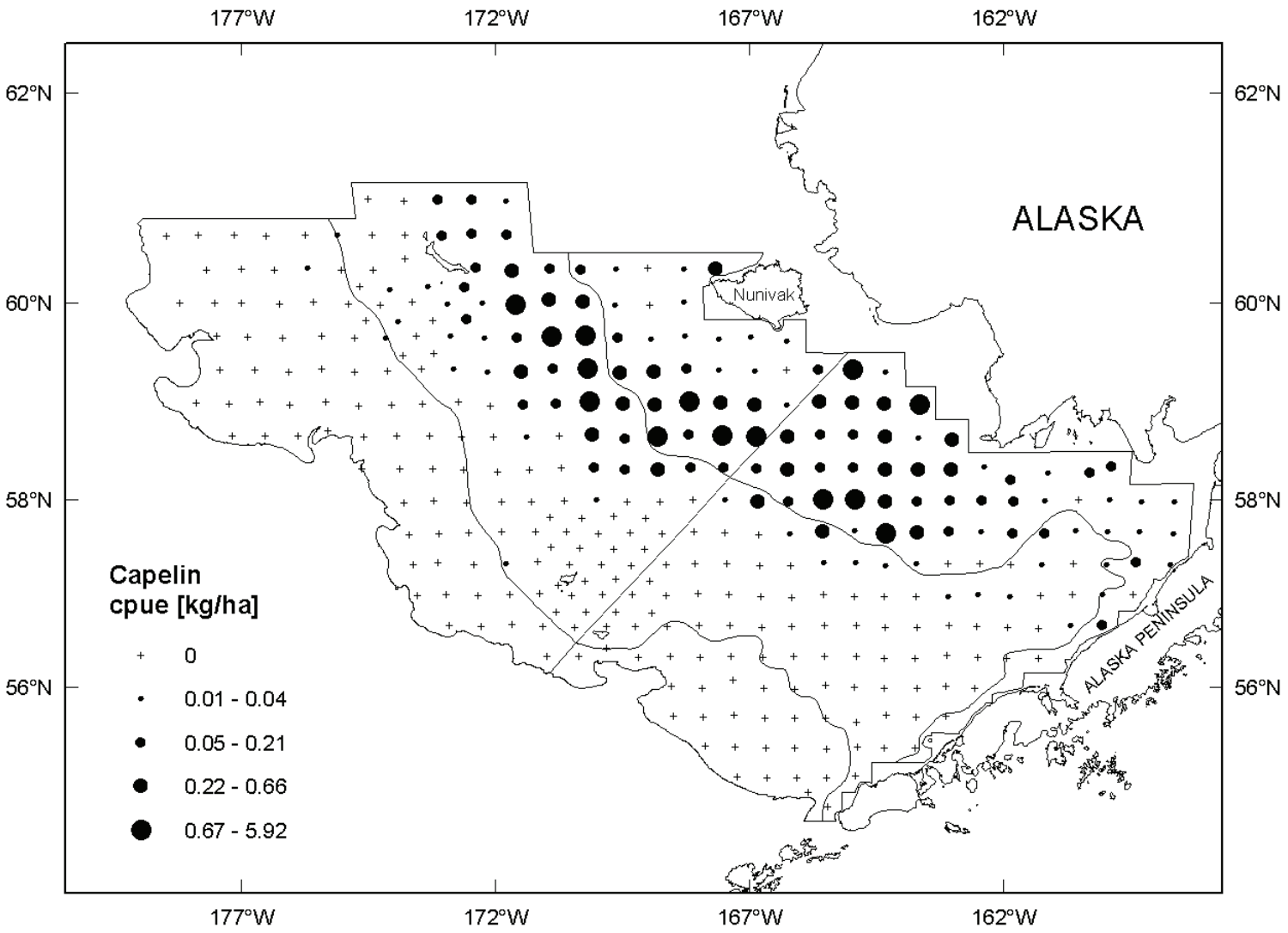

Figure 43. -- Distribution and relative abundance in kg/ha of **capelin** *(Mallotus villosus)*, 2004 eastern Bering Sea bottom trawl survey.

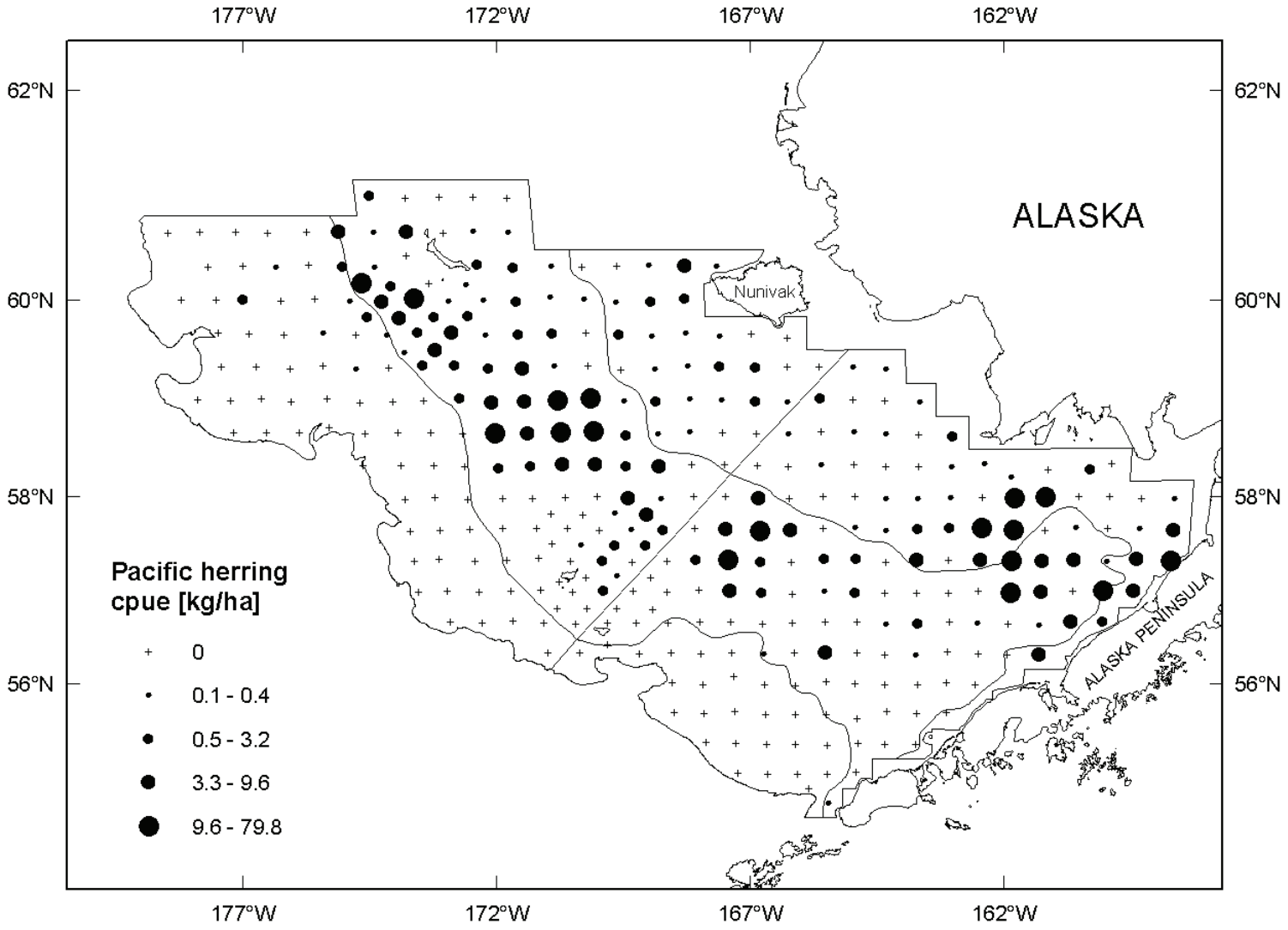

Figure 44. -- Distribution and relative abundance in kg/ha of **Pacific herring** *(Clupea pallasi)*, 2004 eastern Bering Sea bottom trawl survey.

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Appendix A: List of Species Encountered

Appendix A contains a listing of all fish and invertebrate species taken during the 2004 eastern Bering Sea bottom trawl survey.

List of Tables:

Appendix A Table 1. -- Fish species encountered during the 2004 eastern Bering Sea bottom trawl survey.

FAMILY	SPECIES NAME	COMMON NAME
Petromyzontidae	*Lampetra tridentata*	Pacific lamprey
Squalidae	*Squalus acanthias*	spiny dogfish
	Somniosus pacificus	Pacific sleeper shark
Rajidae	*Rajidae* unident.	skate unident.
	Raja binoculata	big skate
	Bathyraja interrupta	Bering skate
	Bathyraja parmifera	Alaska skate
	Bathyraja aleutica	Aleutian skate
Pleuronectidae	*Atheresthes stomias*	arrowtooth flounder
	Atheresthes evermanni	Kamchatka flounder
	Reinhardtius hippoglossoides	Greenland turbot
	Hippoglossus stenolepis	Pacific halibut
	Hippoglossoides elassodon	flathead sole
	Hippoglossoides robustus	Bering flounder
	Microstomus pacificus	Dover sole
	Glyptocephalus zachirus	rex sole
	Limanda aspera	yellowfin sole
	Limanda proboscidea	longhead dab
	Limanda sakhalinensis	Sakhalin sole
	Platichthys stellatus	starry flounder
	Lepidopsetta polyxystra	northern rock sole
	Lepidopsetta bilineata	southern rock sole
	Isopsetta isolepis	butter sole
	Pleuronectes quadrituberculatus	Alaska plaice

Appendix A Table 1. -- Continued.

FAMILY	SPECIES NAME	COMMON NAME
Agonidae	*Pallasina barbata*	tubenose poacher
	Leptagonus frenatus	sawback poacher
	Bathyagonus infraspinatus	spinycheek starsnout
	Podothecus accipenserinus	sturgeon poacher
	Aspidophoroides bartoni	Aleutian alligatorfish
	Occella dodecaedron	Bering poacher
Ammodytidae	*Ammodytes hexapterus*	Pacific sand lance
Anarhichadidae	*Anarhichas orientalis*	Bering wolffish
Anoplopomatidae	*Anoplopoma fimbria*	sablefish
Bathymasteridae	*Bathymaster signatus*	searcher
Clupeidae	*Clupea pallasi*	Pacific herring
Cottidae	Cottidae	sculpin unident.
	Gymnocanthus sp.	
	Gymnocanthus pistilliger	threaded sculpin
	Gymnocanthus galeatus	armorhead sculpin
	Artediellus miacanthus	bride sculpin
	Artediellus pacificus	Pacific hookear sculpin
	Malacocottus zonurus	darkfin sculpin
	Hemilepidotus jordani	yellow Irish lord
	Hemilepidotus papilio	butterfly sculpin
	Triglops scepticus	spectacled sculpin
	Triglops pingeli	ribbed sculpin
	Triglops macellus	roughspine sculpin
	Myoxocephalus verrucosus	warty sculpin
	Myoxocephalus polyacanthocephalus	great sculpin
	Myoxocephalus jaok	plain sculpin

Appendix A Table 1. --Continued.

FAMILY	SPECIES NAME	COMMON NAME
	Dasycottus setiger	spinyhead sculpin
	Hemitripterus bolini	bigmouth sculpin
	Icelus spiniger	thorny sculpin
	Icelus spatula	spatulate sculpin
	Icelus sp.	
Trichodontidae	*Trichodon trichodon*	Pacific sandfish
Gadidae	*Gadus macrocephalus*	Pacific cod
	Boreogadus saida	Arctic cod
	Eleginus gracilis	saffron cod
	Theragra chalcogramma	walleye pollock
Hexagrammidae	*Pleurogrammus monopterygius*	Atka mackerel
	Hexagrammos stelleri	whitespotted greenling
	Hexagrammos decagrammus	kelp greenling
Cyclopteridae	*Aptocyclus ventricosus*	smooth lumpsucker
	Liparis gibbus	variegated snailfish
	Crystallichthys cyclospilus	blotched snailfish
	Careproctus sp.	
	Careproctus rastrinus	salmon snailfish
Osmeridae	*Thaleichthys pacificus*	eulachon
	Mallotus villosus	capelin
	Osmerus mordax	rainbow smelt
Salmonidae	*Oncorhynchus tshawytscha*	chinook salmon
	Oncorhynchus gorbuscha	pink salmon
	Oncorhynchus keta	chum salmon
Stichaeidae	*Lumpenus* sp.	
	Lumpenus maculatus	daubed shanny

Appendix A Table 1. --Continued.

FAMILY	SPECIES NAME	COMMON NAME
	Lumpenus medius	stout eelblenny
	Lumpenus fabricii	slender eelblenny
	Lumpenus sagitta	snake prickleback
	Poroclinus rothrocki	whitebarred prickleback
Zoarcidae	*Lycodes raridens*	marbled eelpout
	Lycodes palearis	wattled eelpout
	Lycodes mucosus	saddled eelpout
	Lycodes turneri	polar eelpout
	Lycodes brevipes	shortfin eelpout
Scorpaenidae	*Sebastes aleutianus*	rougheye rockfish
	Sebastes alutus	Pacific ocean perch

Appendix A Table 2. -- Invertebrate species encountered during the 2004 eastern Bering Sea bottom trawl survey.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
Cnidaria		Scyphozoa	jellyfish unident.
		Chrysaora sp.	chrysaora jellyfish
		Chrysaora melanaster	
		Aurelia sp.	
		Cyanea sp.	
		Gersemia sp.	sea raspberry
		Gersemia rubiformis	
		Gorgonacea	gorgonian coral unident.
		Pennatulacea	sea pen or sea whip unident.
		Virgularidae	sea whip unident.
		Halipteris sp.	
		Actiniaria	sea anemone unident.
		Metridium sp.	
		Stomphia sp.	
		Stomphia coccinea	swimming anemone
		Urticina sp.	
		Urticina crassicornis	mottled anemone
		Liponema brevicornis	tentacle-shedding anemone
Ctenophora		Ctenophora	comb jelly unident.
Annelida		Polychaeta	polychaete worm unident.
		Aphroditidae	sea mouse unident.
		Aphrodita sp.	
		Eunoe nodosa	giant scale worm
		Eunoe depressa	depressed scale worm

Appendix A Table 2. -- Continued.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
		Hirudinea unident.	leech unident.
Arthropoda		Isopoda	isopod unident.
		Thoracica	barnacle unident.
		Balanus sp.	
		Balanus balanus	
		Balanus evermanni	giant barnacle
		Pandalus borealis	northern shrimp
		Pandalus goniurus	humpy shrimp
		Pandalus hypsinotus	coonstripe shrimp
		Lebbeus groenlandicus	spiny lebbeid
		Crangon sp.	
		Crangon communis	twospine crangon
		Crangon dalli	ridged crangon
		Argis sp.	
		Argis dentata	Arctic argid
		Sclerocrangon boreas	sculptured shrimp
		Argis lar	kuro argid
		Cancer oregonensis	Oregon rock crab
		Oregonia gracilis	graceful decorator crab
		Chionoecetes bairdi	Tanner crab
		Hyas coarctatus	circumboreal toad crab
		Hyas lyratus	Pacific lyre crab
		Chionoecetes opilio	snow crab
		Chionoecetes hybrid	hybrid tanner crab
		Telmessus cheiragonus	helmet crab
		Paguridae	hermit crab unident.

Appendix A Table 2. -- Continued.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
		Pagurus sp.	
		Pagurus brandti	sponge hermit
		Pagurus aleuticus	Aleutian hermit
		Labidochirus splendescens	splendid hermit
		Pagurus confragosus	knobbyhand hermit
		Pagurus cornutus	
		Pagurus dalli	whiteknee hermit
		Pagurus trigonocheirus	fuzzy hermit crab
		Pagurus ochotensis	Alaskan hermit
		Pagurus rathbuni	longfinger hermit
		Elassochirus tenuimanus	widehand hermit crab
		Pagurus capillatus	hairy hermit crab
		Elassochirus cavimanus	purple hermit
		Hapalogaster sp.	
		Paralithodes camtschaticus	red king crab
		Paralithodes platypus	blue king crab
		Erimacrus isenbeckii	horsehair crab
Mollusca		Nudibranchia unident.	nudibranch unident.
		Dendronotus sp.	
		Tritonia sp.	
		Tritonia diomedea	rosy tritonia
		Gastropod unident.	snail unident.
		Natica sp.	
		Natica clausa	
		Cryptonatica	Aleutian moonsnail
		Natica russa	rusty moonsnail

Appendix A Table 2. -- Continued.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
		Polinices pallidus	pale moonsnail
		Crepidula sp.	slipper shell
		Crepidula grandis	great slippersnail
		Colus sp.	
		Colus herendeenii	thin-ribbed whelk
		Colus hypolispus	
		Colus spitzbergensis	thick-ribbed whelk
		Volutopsius sp.	
		Pyrulofusus deformis	warped whelk
		Volutopsius fragilis	fragile whelk
		Pyrulofusus melonis	
		Volutopsius stefanssoni	shouldered whelk
		Volutopsius middendorffii	tulip whelk
		Beringius sp.	
		Beringius kennicottii	
		Beringius frielei	
		Beringius beringii	
		Beringius stimpsoni	
		Neptunea sp.	
		Neptunea pribiloffensis	Pribilof whelk
		Neptunea borealis	
		Neptunea lyrata	lyre whelk
		Neptunea ventricosa	fat whelk
		Neptunea heros	
		Neptunea magna	helmet whelk
		Plicifusus sp.	

Appendix A Table 2. -- Continued.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
		Plicifusus kroyeri	
		Aforia sp.	
		Aforia circinata	keeled aforia
		Trichotropidae	
		Fusitriton oregonensis	Oregon triton
		Buccinum sp.	
		Buccinum angulosum	angular whelk
		Buccinum plectrum	sinuous whelk
		Buccinum scalariforme	ladder whelk
		Buccinum polare	polar whelk
		Arctomelon stearnsii	Alaska volute
		Bivalvia unident.	bivalve unident.
		Modiolus modiolus	northern horsemussel
		Mytilus edulis	blue mussel
		Chlamys sp.	
		Chlamys rubida	reddish scallop
		Patinopecten caurinus	weathervane scallop
		Hiatella sp.	
		Hiatella arctica	Arctic hiatella
		Yoldia sp.	
		Yoldia scissurata	crisscrossed yoldia
		Musculus discors	discordant mussel
		Cardita sp.	
		Cyclocardia crebricostata	many-rib cyclocardia
		Clinocardium sp.	
		Clinocardium ciliatum	hairy cockle

Appendix A Table 2. -- Continued.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
		Mactromeris polynyma	Arctic surfclam
		Tellina sp.	
		Tellina lutea	Alaska great-tellin
		Macoma sp.	
		Siliqua alta	Alaska razor
		Serripes sp.	
		Serripes groenlandicus	Greenland cockle
		Serripes laperousii	broad cockle
		Dentalium sp.	
		Octopodidae	octopus unident.
		Octopus sp.	
		Octopus dofleini	giant octopus
		Rossia pacifica	eastern Pacific bobtail
Echinodermata		*Evasterias* sp.	
		Evasterias troschelii	mottled sea star
		Evasterias echinosoma	giant sea star
		Lethasterias nanimensis	blackspined sea star
		Henricia sp.	
		Henricia tumida	tumid sea star
		Leptasterias polaris	
		Leptasterias arctica	
		Leptasterias sp.	
		Pseudarchaster parelii	scarlet sea star
		Ceramaster sp.	
		Ceramaster japonicus	red bat star
		Crossaster papposus	rose sea star

Appendix A Table 2. -- Continued.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
		Pteraster tesselatus	
		Pteraster obscurus	obscure sea star
		Diplopteraster multipes	pincushion sea star
		Asterias amurensis	purple-orange sea star
		Ctenodiscus crispatus	common mud star
		Dipsacaster borealis	northern sea star
		Echinacea unident.	sea urchin unident.
		Strongylocentrotus droebachiensis	green sea urchin
		Strongylocentrotus sp.	
		Strongylocentrotus pallidus	white sea urchin
		Echinarachnius parma	Parma sand dollar
		Ophiuroid unident.	brittlestarfish unident.
		Gorgonocephalus eucnemis	basketstar
		Ophiura sarsi	notched brittlestar
		Ophiopholis aculeata	ubiquitous brittle star
		Holothuroidea unident.	sea cucumber unident.
		Pentamera lissoplaca	crescent sea cucumber
		Cucumaria fallax	sea football
		Psolus sp.	
Porifera		Porifera	sponge unident.
		Mycale loveni	tree sponge
		stone sponge	
Sipuncula		Sipuncula	peanut worm unid.
Echiura		Echiura	echiuroid worm unident.
Bryozoa		Bryozoa unident.	bryozoan unident.
		Flustra serrulata	leafy bryozoan

Appendix A Table 2. -- Continued.

PHYLUM	FAMILY	SPECIES NAME	COMMON NAME
		Rhamphostomella costata	ribbed bryozoan
Brachiopoda		brachiopod unident.	lampshells unident.
Chordata		Ascidian unident.	tunicate unident.
		Thaliacea unident.	salps unident.
		Styela rustica	sea potato
		Boltenia ovifera	sea onion
		Halocynthia sp.	sea peach unident.
		Halocynthia aurantium	sea peach
		Aplidium sp.	sea glob

Appendix B: Station Data, 2004 Eastern Bering Sea Trawl Survey

Appendix B contains station data by vessel for the 356 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 unsatisfactory hauls were omitted.
3. All longitudes are in Western Hemisphere and latitudes in Northern Hemisphere. Geodetic positions are displayed as degrees and decimal minutes.
4. Net width codes are as follows:
   M = Net width was measured by net 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 Fishing Powers Correction (FPC) analysis.

List of Tables:

Appendix B Table 1. --Haul data for stations sampled by the **F/V *Arcturus*** during the 2004 eastern Bering Sea bottom trawl survey.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
	8	6/6/2004	58.29	159.979	37	10	0.51	2.87	10	9	3	15.7	M
*	9	6/6/2004	58.01	160.212	48	12	0.5	2.77	10	4.1	3.3	16.3	M
*	10	6/6/2004	57.691	160.259	51	15	0.49	2.76	31	4.5	3.8	16.2	M
*	11	6/6/2004	57.337	160.301	59	17	0.51	2.85	31	7.2	3.7	16.3	M
*	12	6/7/2004	57.007	160.329	60	6	0.48	2.67	31	5.9	3.7	17.1	M
*	13	6/7/2004	56.673	160.365	56	9	0.5	2.86	31	7.6	3.9	16.4	M
*	14	6/7/2004	56.674	159.734	34	12	0.49	2.74	10	5.7	5.2	15.3	M
*	17	6/8/2004	56.322	161.621	61	8	0.49	2.66	10	7	4.1	16.8	M
*	18	6/8/2004	56.654	161.61	87	11	0.5	2.81	31	7.2	3.4	17	M
*	19	6/8/2004	56.988	161.566	66	14	0.49	2.69	31	7.3	3.4	17.1	M
*	20	6/8/2004	57.327	161.531	53	16	0.51	2.82	31	7	3.7	17	M
*	21	6/9/2004	57.657	161.497	50	6	0.49	2.71	10	3.9	3.5	16.2	M
*	22	6/9/2004	57.993	161.488	53	9	0.49	2.8	10	7	3.8	17.1	M
*	23	6/9/2004	58.001	162.111	35	11	0.5	2.76	10	4.4	4	15.3	M
*	24	6/9/2004	57.999	162.733	38	13	0.51	2.88	10	4	3.9	16.2	M
*	25	6/9/2004	58.319	162.719	29	16	0.51	2.84	10	4.8	4.8	15.5	M
*	26	6/10/2004	57.675	162.746	41	6	0.5	2.84	10	4.8	4.5	16.7	M
*	27	6/10/2004	57.334	162.772	46	9	0.5	2.79	10	7.2	4.5	16.5	M
*	33	6/11/2004	56.347	162.797	76	6	0.49	2.66	31	7.6	3.4	17.2	M
*	34	6/11/2004	56.009	162.809	75	9	0.5	2.78	31	7.5	3.4	16.8	M
*	35	6/11/2004	55.673	163.403	78	12	0.49	2.69	31	7.5	3.9	17.2	M
*	37	6/11/2004	55.691	163.994	92	17	0.51	2.93	31	7.4	3.4	18.8	M
*	38	6/13/2004	54.833	165.531	152	7	0.49	2.76	50	6.6	4.1	18.8	M
*	39	6/13/2004	54.989	165.154	109	9	0.51	2.88	50	6.8	4.6	18.4	M

Appendix B Table 1. --Continued

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	40	6/13/2004	55.319	165.167	108	12	0.49	2.77	50	7.9	4.4	19.2	M
*	41	6/13/2004	55.657	165.185	106	14	0.51	2.92	31	7.8	4.2	18.8	M
*	42	6/13/2004	55.618	164.582	96	17	0.51	2.85	31	7.9	4.4	18.3	M
*	44	6/14/2004	55.985	164.034	88	9	0.51	2.86	31	7.9	3.1	17	M
*	45	6/14/2004	56.319	164.022	84	11	0.5	2.79	31	8.6	2.9	18.1	M
*	46	6/14/2004	56.654	164.008	72	14	0.52	2.93	31	9.2	2.9	17.8	M
*	47	6/14/2004	56.989	164.023	66	16	0.5	2.78	31	9.7	2.5	16.9	M
*	52	6/15/2004	57.65	164.009	50	9	0.5	2.82	10	6	3.9	16.7	M
*	53	6/15/2004	57.992	164.018	45	11	0.51	2.89	10	5.4	3.9	16.9	M
*	54	6/15/2004	58.325	164.007	39	14	0.5	2.82	10	6	4.2	15.9	M
*	55	6/15/2004	58.656	164.003	32	16	0.51	2.9	10	6.3	4.7	16.1	M
*	56	6/15/2004	58.991	164.028	26	18	0.53	2.97	10	6.7	5.9	15.6	M
*	61	6/16/2004	59.34	164.653	21	13	0.53	3.02	10	8.8	8.2	15.8	M
*	62	6/16/2004	59.343	165.318	19	15	0.54	3.03	20	6.5	6.4	16	M
*	63	6/17/2004	59.012	165.302	26	6	0.52	2.92	10	5.2	5.2	16.3	M
*	64	6/17/2004	58.677	165.277	38	9	0.49	2.78	10	5.1	4	16.1	M
*	65	6/17/2004	58.342	165.284	44	11	0.5	2.84	10	4.4	3.5	16.9	M
*	66	6/17/2004	58.009	165.251	48	13	0.5	2.8	10	4.3	3.9	16.4	M
*	67	6/17/2004	57.68	165.252	58	16	0.51	2.88	31	6.6	2.3	17.3	M
*	68	6/18/2004	57.352	165.222	65	6	0.49	2.71	10	5.1	2.5	18.2	M
*	69	6/18/2004	57.009	165.222	69	9	0.52	2.9	31	7.7	3.1	18.1	M
*	70	6/18/2004	56.674	165.21	74	11	0.49	2.75	31	6.5	3	17.7	M
*	71	6/18/2004	56.342	165.196	84	14	0.49	2.8	31	6.6	2.9	18.2	M
*	72	6/18/2004	56.019	165.186	93	16	0.49	2.76	31	7.4	3.1	18.2	M
*	73	6/19/2004	54.992	166.337	142	7	0.27	1.59	50	7.9	4.1	19.3	M
*	74	6/19/2004	55.326	166.35	130	9	0.5	2.82	50	7.8	4.1	19.5	M

Appendix B Table 1. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	75	6/19/2004	55.66	166.384	124	11	0.51	2.82	50	8.1	4.1	20.3	M
*	76	6/19/2004	55.99	166.393	122	14	0.49	2.8	50	8.3	4	19.8	M
*	77	6/19/2004	56.326	166.424	101	16	0.49	2.79	31	8.2	3.7	19.1	M
*	78	6/20/2004	55.993	167.605	131	7	0.51	2.91	50	7.2	4	19.8	M
		6/20/2004	56.009	168.226	148	10	0.51	2.89	50	7.2	4.1	18.1	M
		6/20/2004	55.68	168.183	133	13	0.5	2.78	50	7.8	4.1	19.4	M
*	81	6/20/2004	55.675	167.587	132	16	0.51	2.83	50	8.4	4.1	19.5	M
79													
*	82	6/20/2004	55.348	167.55	145	18	0.51	2.89	50	7	4.2	19.7	M
80													
*	83	6/24/2004	56.653	166.434	83	13	0.5	2.79	31	8.6	3	17.8	M
*	84	6/24/2004	56.987	166.468	72	15	0.51	2.91	31	8.5	3.2	17.7	M
*	85	6/24/2004	57.319	166.483	67	18	0.5	2.82	31	8.3	2.7	17.2	M
*	86	6/25/2004	57.646	166.498	64	6	0.51	2.81	31	7.8	3	17.6	M
*	87	6/25/2004	57.993	166.518	59	9	0.51	2.93	31	8.1	2.7	17.6	M
*	88	6/25/2004	58.328	166.549	45	11	0.51	2.89	10	7.9	3.7	16.4	M
*	89	6/25/2004	58.659	166.567	39	13	0.52	2.98	20	7.9	4.3	16.3	M
*	90	6/25/2004	58.987	166.583	32	16	0.51	2.92	20	8.9	5	16.6	M
		6/26/2004	60.339	167.339	31	7	0.27	1.52	20	7.4	7.3	16.5	M
*	93	6/26/2004	60.339	167.985	29	9	0.52	2.94	20	6.8	6.7	16.3	M
*	94	6/26/2004	60.011	167.983	24	12	0.53	3	20	6.1	5.5	16.2	M
92													
*	95	6/26/2004	59.683	167.949	34	14	0.51	2.89	20	8.1	5	17.8	M
*	96	6/26/2004	59.344	167.916	38	17	0.5	2.83	20	7.7	4.4	16.5	M
*	97	6/27/2004	59.013	167.882	40	6	0.5	2.83	20	6.1	4.2	16.3	M
*	98	6/27/2004	58.676	167.868	44	8	0.52	2.94	20	7.2	3.9	16.8	M
*	99	6/27/2004	58.343	167.834	54	11	0.51	2.89	41	8.1	---	17.6	M
*	100	6/27/2004	58.012	167.801	65	13	0.5	2.8	41	8.5	2.5	17.5	M
*	101	6/27/2004	57.679	167.764	67	16	0.5	2.86	31	8.8	2.1	17.4	M

Appendix B Table 1. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	102	6/28/2004	57.343	167.744	71	6	0.52	2.94	31	9.1	2.8	17.1	M
*	103	6/28/2004	57.014	167.7	75	9	0.51	2.93	31	8.9	3.5	16.8	M
*	104	6/28/2004	56.679	167.67	99	11	0.5	2.81	31	9.4	3.6	17.7	M
*	105	6/28/2004	56.337	168.231	150	15	0.49	2.79	50	9.8	4.1	17.9	M
	106	6/28/2004	56.333	168.864	128	17	0.5	2.87	50	9.5	4.1	17.9	M
	108	6/29/2004	56.433	169.5	99	9	0.13	0.75	50	8.9	4.3	17.6	M
	109	6/29/2004	56.335	170.047	106	11	0.5	2.79	50	9.2	4.2	19	M
	110	6/29/2004	56.335	170.66	118	14	0.48	2.71	61	8.7	4.2	17.1	M
	111	6/29/2004	56.659	170.74	112	16	0.48	2.72	61	8.9	4.1	17.5	M
	112	6/30/2004	56.654	170.113	95	7	0.49	2.79	42	7.3	4.5	17.8	M
*	113	6/30/2004	56.661	169.499	77	10	0.5	2.84	32	8	5.3	17.7	F
*	114	6/30/2004	56.824	169.303	77	12	0.5	2.85	32	8.6	3.9	17.7	F
*	115	6/30/2004	57.005	169.57	58	15	0.51	2.79	42	8.7	3.8	16.9	M
*	116	7/2/2004	56.816	170.475	99	8	0.5	2.81	42	8.5	4.1	18.2	M
*	117	7/2/2004	57.11	170.455	47	11	0.5	2.92	42	6.6	5.9	16.1	M
*	118	7/2/2004	57.327	170.228	52	14	0.32	1.88	42	8	5.1	16.5	M
*	119	7/2/2004	57.506	170.013	66	16	0.5	2.79	42	8.1	2.8	16.3	M
*	120	7/3/2004	57.487	169.354	69	6	0.49	2.83	42	8.7	3.7	17.1	M
*	121	7/3/2004	57.666	169.032	67	9	0.5	2.83	42	8.5	3.8	16.7	M
*	122	7/3/2004	57.833	169.362	64	11	0.5	2.77	42	8.6	3.8	16.9	M
*	123	7/3/2004	57.99	169.083	67	14	0.49	2.77	42	8.6	2.8	17	M
*	124	7/3/2004	58.316	169.129	65	16	0.49	2.78	41	8.8	2.1	17	M
*	125	7/4/2004	58.636	169.137	61	6	0.51	2.8	41	8.3	2	17	M
*	126	7/4/2004	58.998	169.177	52	9	0.48	2.63	41	6.7	2.9	16.7	M
*	127	7/4/2004	59.31	169.228	48	11	0.5	2.78	20	7	2.9	16.4	M
*	128	7/4/2004	59.655	169.264	45	14	0.5	2.67	20	7	3.2	16.6	M

Appendix B Table 1. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	129	7/4/2004	59.983	169.332	43	16	0.5	2.78	20	7.6	3.2	16.3	M
*	130	7/5/2004	60.331	170.007	50	6	0.49	2.75	20	7.9	1.6	17.3	M
*	131	7/5/2004	60.334	170.616	59	8	0.49	2.81	41	8.2	0.4	17.9	M
*	132	7/5/2004	60.034	170.633	62	11	0.49	2.66	41	8.2	0.3	18	M
*	133	7/5/2004	59.667	170.583	64	14	0.5	2.68	41	8.5	0.1	17.6	M
*	134	7/5/2004	59.346	170.543	65	16	0.5	2.68	41	8.6	0.9	17.3	M
*	135	7/6/2004	59	170.488	69	7	0.49	2.66	41	8.4	2.1	16.9	M
*	136	7/6/2004	58.665	170.43	71	9	0.51	2.72	41	8.6	1.9	17.3	M
*	137	7/6/2004	58.34	170.38	72	12	0.51	2.78	41	8.6	1.2	17.3	M
*	138	7/6/2004	58	170.333	72	14	0.51	2.81	42	9	1.1	16.6	M
*	139	7/6/2004	57.672	170.277	69	17	0.51	2.73	42	9.8	3.3	16.7	M
*	140	7/7/2004	57.83	170.615	76	7	0.51	2.81	42	8.4	2.4	17.3	M
*	141	7/7/2004	57.994	171.55	95	10	0.5	2.77	41	9.1	3.5	17.6	M
*	142	7/7/2004	58.298	171.636	93	12	0.5	2.8	41	9.4	2.5	17.5	M
*	143	7/7/2004	58.657	171.715	90	15	0.48	2.7	41	8.8	1.4	18.1	M
*	144	7/7/2004	58.977	171.787	85	17	0.48	2.69	41	8.6	0.8	17.7	M
*	145	7/8/2004	59.318	171.838	77	7	0.5	2.77	43	8.5	0.1	17.4	M
*	146	7/8/2004	59.657	171.897	75	9	0.51	2.87	43	8.6	-0.1	17.4	M
*	147	7/8/2004	60.002	171.948	64	12	0.44	2.46	43	8.6	0.4	16.8	M
*	148	7/8/2004	60.16	172.293	55	14	0.5	2.77	43	6.8	2.6	17.3	M
*	149	7/8/2004	60.168	173.007	57	17	0.52	2.77	43	8.6	1	17.2	M
*	151	7/9/2004	60.013	173.312	72	8	0.52	2.84	43	8.4	0.5	17.4	M
*	152	7/9/2004	59.833	172.917	78	11	0.5	2.75	43	8.8	0.4	17.7	M
*	153	7/9/2004	59.674	173.235	93	13	0.5	2.68	43	9.1	1.7	17.7	M
*	154	7/9/2004	59.505	172.902	91	15	0.5	2.82	43	9.5	1.5	18.1	M
*	155	7/9/2004	59.346	173.129	97	17	0.48	2.74	43	9.8	2	17.7	M

Appendix B Table 1. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	156	7/10/2004	57.674	171.553	97	7	0.48	2.63	41	9.3	4	18	F
*	157	7/10/2004	57.34	171.475	98	9	0.49	2.74	41	9.4	4.2	17.4	M
*	158	7/10/2004	57.009	171.401	106	12	0.27	1.46	61	9.6	4.2	17.6	M
*	159	7/10/2004	56.685	171.353	117	14	0.47	2.6	61	9.4	4.2	19.8	M
	160	7/15/2004	56.675	172.583	131	13	0.48	2.68	61	9.4	4.2	17.8	M
	161	7/15/2004	57.009	172.647	119	16	0.41	2.28	61	9.8	4.2	17.7	M
	162	7/15/2004	57.002	173.214	137	19	0.48	2.59	61	9.9	4.1	17.2	M
	163	7/16/2004	57.328	173.292	118	7	0.48	2.59	61	9.6	4	18.1	M
	164	7/16/2004	57.647	173.376	141	10	0.48	2.56	61	9.4	3.7	18.6	M
	165	7/16/2004	57.979	173.479	115	12	0.48	2.64	61	9.6	3.7	18.5	M
*	166	7/16/2004	58.003	172.898	106	15	0.49	2.48	61	10	3.7	18.3	M
*	167	7/16/2004	58.328	172.921	106	18	0.49	2.74	61	10.1	3.4	18	M
	168	7/17/2004	58.334	173.552	113	7	0.49	2.53	61	9.9	3.6	18.1	M
	169	7/17/2004	58.335	174.309	164	10	0.47	2.71	61	9.7	3.7	18.1	M
	170	7/17/2004	58.659	174.275	153	13	0.49	2.63	61	9.8	3.5	18.4	M
*	171	7/17/2004	58.978	174.369	124	15	0.49	2.7	61	10.2	3.3	18.5	M
*	172	7/17/2004	59.317	174.455	118	17	0.48	2.63	62	10.5	3.1	18.2	M
*	173	7/18/2004	59.66	174.453	112	7	0.48	2.68	62	10.7	3	18	M
*	174	7/18/2004	59.836	174.229	104	9	0.47	2.68	62	10.7	2.2	17.4	M
*	175	7/18/2004	59.994	174.58	105	11	0.48	2.77	62	10.7	2.4	17.7	M
*	176	7/18/2004	60.17	174.351	97	13	0.48	2.81	43	10.8	1.9	17.8	M
*	177	7/18/2004	60.321	174.708	99	15	0.48	2.73	62	11	2.2	17.9	M
*	178	7/18/2004	60.327	174.079	88	18	0.45	2.56	43	10.5	1.6	19.7	M
	179	7/19/2004	60.651	172.729	42	7	0.32	1.86	41	9.7	3.6	16.6	M
	180	7/19/2004	60.673	172.139	59	9	0.49	2.68	41	10.6	-0.2	20.1	M
	181	7/19/2004	60.665	171.449	61	12	0.31	1.74	41	10.5	0	17.3	F

Appendix B Table 1. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
	182	7/19/2004	60.995	171.481	57	14	0.49	2.66	41	10.6	0.1	19.6	M
	183	7/19/2004	61.004	172.142	61	17	0.48	2.78	41	10.9	-0.4	17.5	M
	184	7/20/2004	60.998	172.805	62	7	0.5	2.72	41	0.2		17.3	F
*	185	7/20/2004	60.993	173.477	73	9	0.49	2.67	41	10.1	0.7	17.9	M
*	197	7/22/2004	61.014	174.195	80	14	0.48	2.64	41	11	0.9	17.4	M
	199	7/23/2004	60.658	176.191	116	7	0.47	2.62	61	11	2.4	18.2	M

Appendix B Table 2. --Haul station data sampled by the **F/V *Aldebaran*** during the 2004 eastern Bering Sea bottom trawl survey.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
		6/5/2004	57.326	158.408	30	6	0.54	3.03	10	5.7	5.2	16	M
		6/5/2004	57.649	158.346	33	9	0.4	2.21	10	5.7	5.1	16.1	M
1	3	6/5/2004	57.992	158.327	31	11	0.5	2.83	10	5.2	5.1	16.5	M
2		6/5/2004	57.986	158.972	40	14	0.52	2.92	10	5	3.4	16.4	M
*	7	6/6/2004	58.352	159.565	23	10	0.52	2.94	10	8.9	4.7	15	M
*	8	6/6/2004	58.011	159.593	40	12	0.53	2.97	10	5.6	3.1	16.3	M
4 *	9	6/6/2004	57.674	159.633	48	15	0.5	2.79	10	5.4	4.1	16.4	M
		6/7/2004	57.68	159.015	47	7	0.5	2.79	10	5	4.2	18	M
	12	6/7/2004	57.35	159.066	46	10	0.5	2.8	10	4.8	4.8	16.8	M
*	13	6/7/2004	57.331	159.666	54	13	0.51	2.83	10	6	4.4	17.4	M
11 *	14	6/7/2004	57.004	159.737	56	15	0.51	2.9	10	6.5	3.9	17.1	M
		6/7/2004	57.01	159.123	31	18	0.51	2.81	10	6.5	6.2	15.6	M
*	16	6/8/2004	56.317	161.003	51	6	0.5	2.79	10	6.4	5.2	17	M
*	17	6/8/2004	56.647	160.99	66	9	0.5	2.82	31	7	3.9	17.9	M
15 *	18	6/8/2004	56.992	160.956	61	11	0.49	2.78	31	6	4	17.9	M
*	19	6/8/2004	57.331	160.936	60	14	0.51	2.85	31	6.1	4	17.8	M
*	20	6/8/2004	57.653	160.883	55	16	0.53	2.99	31	5.8	3.6	17	M
*	22	6/9/2004	57.999	160.874	43	8	0.51	2.93	10	4.8	3.6	17.1	M
		6/9/2004	58.286	160.816	30	11	0.26	1.41	10	6.6	6	17.1	M
		6/9/2004	58.218	161.55	37	14	0.26	1.37	10	6.4	5.6	17.2	M
23		6/9/2004	58.348	162.07	44	16	0.52	2.99	10	7.3	5.2	16.4	M
* 24	26	6/10/2004	57.671	162.128	45	6	0.5	2.89	10	4.7	4.4	17.1	F
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Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	27	6/10/2004	57.341	162.151	49	8	0.49	2.74	10	6.1	4.2	17	M
*	28	6/10/2004	57.008	162.179	58	11	0.5	2.94	31	6.4	4.1	17.8	M
*	29	6/10/2004	56.666	162.214	70	13	0.33	1.86	31	7.8	3.5	18.1	M
*	30	6/10/2004	56.676	162.763	69	16	0.5	2.82	31	7.7	3.6	18	M
*	31	6/10/2004	56.992	162.783	59	18	0.5	2.86	31	7.5	3.7	18.2	M
*	32	6/11/2004	56.327	162.19	74	6	0.33	1.84	31	7.6	3.9	17.7	M
*	33	6/11/2004	55.99	162.245	65	8	0.5	2.92	31	7.5	4.4	17.2	M
*	35	6/11/2004	55.677	162.808	49	14	0.49	2.8	10	6.6	4.5	17	M
		6/11/2004	55.331	163.413	50	17	0.49	2.73	31	7.4	4.7	17.6	M
*	37	6/13/2004	54.659	165.15	81	7	0.51	2.82	31	5.4	5.3	17.9	M
*	38	6/13/2004	55.01	164.602	61	10	0.5	2.77	31	6.5	5.4	17.7	F
*	39	6/13/2004	55.337	164.566	99	13	0.51	2.88	31	7.8	4.5	18.1	M
		6/13/2004	55.328	164.038	77	16	0.51	2.91	31	7.9	4.9	16.9	M
*	41	6/14/2004	55.994	163.391	87	6	0.52	2.91	31	8	3.2	18	M
*	42	6/14/2004	56.32	163.419	83	9	0.49	2.74	31	8.1	3	17.8	M
*	43	6/14/2004	56.649	163.391	72	12	0.49	2.85	31	8.1	2.9	18.1	M
*	44	6/14/2004	56.984	163.397	63	15	0.49	2.77	31	9.4	3.2	17.7	M
*	45	6/14/2004	57.334	163.398	51	17	0.5	2.81	10	8.9	3.9	16.9	M
*	46	6/14/2004	57.318	164.019	61	20	0.51	2.87	31	10.2	3	18	M
*	47	6/15/2004	57.662	163.39	45	6	0.33	1.85	10	4.9	4.2	17	M
*	48	6/15/2004	57.985	163.376	42	8	0.52	2.93	10	5.6	4.4	17	M
*	49	6/15/2004	58.323	163.369	35	11	0.51	2.83	10	5.4	4.5	16.4	M
*	50	6/15/2004	58.652	163.372	29	13	0.52	2.9	10	6	5.1	16.2	M

Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
	51	6/15/2004	58.627	162.7	25	16	0.52	2.98	10	6	5.3	15.9	M
*	54	6/16/2004	58.984	163.337	21	10	0.53	3.03	10	7.8	6.3	15.7	M
*	57	6/16/2004	59.318	164.01	20	15	0.53	3.02	10	11.9	8.8	16.4	M
*	58	6/17/2004	59.01	164.648	26	6	0.52	2.89	10	6.4	5.9	16.3	M
*	59	6/17/2004	58.681	164.645	35	8	0.51	2.79	10	4.6	4.2	16.5	M
*	60	6/17/2004	58.344	164.636	42	11	0.52	2.93	10	7.1	3.6	17.1	M
*	61	6/17/2004	58.011	164.615	43	14	0.52	2.91	10	7.4	3.6	16.7	M
*	62	6/17/2004	57.683	164.612	50	16	0.5	2.8	10	7.5	3	16.8	M
*	63	6/18/2004	57.346	164.595	64	6	0.49	2.79	31	8.1	2.1	17.9	M
*	64	6/18/2004	56.991	164.609	68	9	0.5	2.84	31	8.2	2.8	18.3	M
*	66	6/18/2004	56.68	164.584	72	14	0.5	2.84	31	8.9	2.9	18.2	M
*	67	6/18/2004	56.341	164.586	84	17	0.49	2.74	31	9.5	3	18.2	M
*	68	6/18/2004	56.002	164.607	91	19	0.49	2.79	31	9.1	3.5	18.8	M
*	69	6/19/2004	54.993	165.758	128	6	0.49	2.79	50	7.4	4.2	19.4	M
*	70	6/19/2004	55.326	165.787	118	10	0.48	2.78	50	7.9	4.1	20	M
*	71	6/19/2004	55.656	165.8	115	12	0.48	2.74	50	7.2	4.3	20.8	M
*	72	6/19/2004	55.977	165.78	106	15	0.5	2.85	31	8.5	4	19.6	M
*	73	6/19/2004	56.339	165.807	89	18	0.51	2.9	31	8.4	3.1	18.7	M
*	74	6/20/2004	56.344	167.035	111	7	0.49	2.86	50	7.8	4	20.1	M
*	75	6/20/2004	56.079	167.014	130	10	0.52	2.92	50	8.1	4	20.2	M
*	76	6/20/2004	55.688	166.992	132	13	0.49	2.77	50	8.4	4	20.7	M
*	77	6/20/2004	55.342	166.971	137	16	0.52	3.02	50	7.8	4.1	20.5	M
*	78	6/20/2004	55.006	166.933	154	19	0.49	2.83	50	7.4	4	20.5	M

Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	79	6/24/2004	56.665	165.857	88	12	0.49	2.71	31	8.8	---	17.5	M
*	80	6/24/2004	56.972	165.851	70	15	0.51	2.9	31	9.2	3.1	18	M
*	81	6/24/2004	57.321	165.878	66	17	0.5	2.81	31	8.8	2.9	17.5	M
*	82	6/25/2004	57.654	165.883	62	6	0.51	2.82	31	8.3	2.4	17.8	M
*	83	6/25/2004	57.992	165.909	53	9	0.52	2.99	10	7.8	3.1	17.1	M
*	84	6/25/2004	58.323	165.928	42	11	0.51	2.92	10	7.1	4.4	16.6	M
*	85	6/25/2004	58.658	165.93	35	15	0.5	2.84	10	6.2	4.6	16.2	M
*	86	6/25/2004	58.982	165.951	28	17	0.52	2.9	20	6.8	5.3	16.1	M
*	87	6/26/2004	59.649	167.293	29	6	0.52	2.95	20	6.6	6.4	16.4	M
		6/26/2004	59.666	166.671	25	9	0.52	2.97	20	7.4	7.1	16.1	M
	89	6/26/2004	59.624	165.957	24	11	0.52	2.94	20	7.9	7.5	16.3	M
88		6/26/2004	59.337	165.945	23	14	0.53	2.97	20	7.4	6.4	15.8	M
		6/26/2004	59.332	166.581	26	16	0.52	2.95	20	7	6.2	16.2	M
*	92	6/27/2004	59.336	167.278	31	6	0.51	2.89	20	6.3	5.5	16.5	M
*	93	6/27/2004	59.007	167.24	37	9	0.5	2.83	20	6.8	4.5	16.2	M
*	94	6/27/2004	58.672	167.218	41	11	0.52	2.93	20	7	4.3	16.9	M
*	95	6/27/2004	58.345	167.186	50	14	0.5	2.83	20	8.3	3.1	16.7	M
*	96	6/27/2004	58.013	167.167	62	17	0.51	2.88	31	9.4	3.1	17.5	M
*	97	6/28/2004	57.669	167.166	66	6	0.5	2.84	31	8.8	2.1	17.2	M
*	98	6/28/2004	57.342	167.123	68	9	0.49	2.73	31	9.3	2.8	16.9	M
*	99	6/28/2004	57.006	167.083	71	11	0.52	2.89	31	9.4	3.5	16.7	M
*	100	6/28/2004	56.68	167.064	93	14	0.49	2.75	31	9.8	3.3	18	M
*	101	6/28/2004	56.328	167.652	127	18	0.48	2.76	50	10.1	4	19.2	M

Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	102	6/29/2004	56.661	168.29	104	7	0.5	2.83	50	9.4	3.9	17.8	M
*	103	6/29/2004	56.807	168.607	95	10	0.51	2.85	32	9.1	3.5	18.1	M
*	104	6/29/2004	56.66	168.936	97	12	0.49	2.75	32	9.2	3.6	18.6	M
*	105	6/29/2004	57.01	168.984	78	15	0.51	2.89	32	9.4	3.7	18.2	M
*	106	6/29/2004	56.999	168.329	79	18	0.51	2.98	32	9.3	3.6	17.7	M
*	107	6/30/2004	57.326	168.33	72	7	0.51	2.82	32	8.3	3.5	17.4	M
*	108	6/30/2004	57.153	168.637	73	10	0.51	2.97	32	9	3.8	18.2	M
*	109	6/30/2004	57.319	169.007	68	13	0.31	1.85	42	9.1	3.9	17.6	M
*	110	6/30/2004	57.174	169.316	70	16	0.51	2.87	42	9.1	3.8	17.5	M
*	111	7/2/2004	56.998	170.188	68	8	0.51	2.91	42	7.9	4.7	17.5	M
*	112	7/2/2004	56.82	169.904	70	10	0.53	2.86	42	8.3	4.6	17.9	M
*	113	7/2/2004	57.151	169.91	48	13	0.51	2.89	42	7.7	5	17	M
*	114	7/2/2004	57.323	169.602	60	15	0.52	3.04	42	9	3.6	17.7	M
*	115	7/3/2004	57.494	168.745	69	6	0.51	2.88	42	8.3	4	17.5	M
*	116	7/3/2004	57.655	168.392	69	9	0.51	2.88	42	8.5	3	17.7	M
*	117	7/3/2004	57.816	168.732	68	12	0.51	2.85	42	8.6	3.2	17.4	M
*	118	7/3/2004	57.99	168.441	67	14	0.51	2.95	42	8.9	2.6	17.4	M
*	119	7/3/2004	58.322	168.476	63	16	0.52	3	41	8.7	2.7	17.5	M
*	120	7/4/2004	58.657	168.498	51	6	0.51	2.89	20	9.7	3.1	17	M
*	121	7/4/2004	58.989	168.534	45	9	0.51	2.91	20	6.3	4.2	16.8	M
*	122	7/4/2004	59.321	168.568	40	11	0.53	2.94	20	6.4	5.2	16.6	M
*	123	7/4/2004	59.65	168.619	37	14	0.51	2.85	20	6.3	5.3	15.7	M
*	124	7/4/2004	59.987	168.653	36	16	0.51	2.82	20	6.3	5.3	16.2	M

Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	125	7/5/2004	60.344	168.692	34	6	0.51	2.87	20	7	6.8	16.3	M
*	126	7/5/2004	60.333	169.307	41	8	0.53	3.01	20	7.7	4.4	17.1	M
*	127	7/5/2004	60.012	169.951	52	12	0.51	2.93	41	7.4	1.4	17.6	M
*	128	7/5/2004	59.678	169.916	54	14	0.51	2.79	41	8.2	1	17.6	M
*	129	7/5/2004	59.345	169.872	58	17	0.5	2.86	41	8.3	1.1	18.1	M
*	130	7/6/2004	59.012	169.837	61	6	0.52	2.94	41	8.3	2.1	18.1	M
*	131	7/6/2004	58.678	169.785	65	9	0.52	2.98	41	8.5	2.2	17.9	M
*	132	7/6/2004	58.345	169.728	68	11	0.52	2.9	41	8.7	3.1	17.4	M
*	133	7/6/2004	58.011	169.7	68	14	0.51	2.91	42	9.2	3.4	17.4	M
*	134	7/6/2004	57.652	169.653	68	17	0.51	2.89	42	9.9	3.4	17	M
*	135	7/7/2004	57.819	169.984	70	6	0.25	1.41	42	9.3	1.9	18	M
*	136	7/7/2004	57.989	170.961	85	10	0.52	3	42	8.6	2.2	18.4	M
*	137	7/7/2004	58.324	171.015	82	12	0.51	2.9	41	8.6	1.4	18.1	M
*	138	7/7/2004	58.663	171.08	80	15	0.51	2.92	41	8.5	0.8	18.1	M
*	139	7/7/2004	58.984	171.133	75	17	0.53	3.03	41	8.6	1.2	18.1	M
*	140	7/8/2004	59.318	171.182	73	6	0.53	2.97	41	8.4	-0.2	17.9	M
*	141	7/8/2004	59.66	171.25	70	9	0.54	3.1	41	8.6	-0.2	17.8	M
*	142	7/8/2004	59.982	171.299	67	11	0.52	2.91	41	8.7	-0.2	17.8	M
*	143	7/8/2004	60.318	171.357	64	14	0.52	2.96	41	10.2	-0.2	17.9	M
*	144	7/8/2004	60.347	172.065	57	17	0.53	3.03	43	9.2	0.2	17.1	M
*	145	7/9/2004	59.995	172.624	64	6	0.51	2.88	43	8.6	0.4	17.5	M
*	146	7/9/2004	59.841	172.256	73	9	0.53	3.02	43	8.9	0.1	18	M
*	147	7/9/2004	59.679	172.568	82	11	0.52	2.97	43	8.8	0.6	17.9	M

Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	148	7/9/2004	59.345	172.501	86	14	0.53	2.96	43	8.7	1.4	17.9	M
*	149	7/9/2004	59.016	172.413	96	16	0.52	2.96	41	9.7	2.2	18.2	M
*	150	7/10/2004	57.679	170.898	83	7	0.52	2.98	42	8.8	3.9	18.4	M
*	151	7/10/2004	57.514	170.596	73	9	0.53	2.98	42	9	4.8	17.2	M
*	152	7/10/2004	57.355	170.856	81	11	0.51	2.89	42	8	4.9	17.4	M
*	153	7/10/2004	57.018	170.812	93	13	0.36	2.07	42	9.6	4.5	18.1	M
*	154	7/15/2004	56.661	171.966	122	12	0.54	3.14	61	---		19.5	M
*	155	7/15/2004	56.995	172.025	114	14	0.5	2.85	61	9.8	4.2	17.9	M
*	156	7/15/2004	57.328	172.095	106	17	0.54	3.06	61	10.2	4.2	17.9	M
*	157	7/16/2004	57.345	172.814	115	7	0.54	2.98	61	9.7	4	19	M
*	158	7/16/2004	57.657	172.8	117	9	0.53	2.85	61	9.6	3.8	18.7	M
*	159	7/16/2004	57.666	172.205	105	13	0.54	2.85	61	9.8	4	18.9	M
*	160	7/16/2004	57.982	172.251	102	15	0.52	3	61	9.9	3.4	18.5	M
*	161	7/16/2004	58.319	172.299	101	18	0.52	2.89	61	10.4	3	18.4	M
*	162	7/17/2004	58.655	172.354	100	7	0.53	3	61	10.5	2.9	18.2	M
*	163	7/17/2004	58.669	172.977	110	9	0.53	2.98	61	10.3	3.3	18.5	M
*	164	7/17/2004	58.666	173.616	124	12	0.54	3.01	61	10	3.4	18.4	M
*	165	7/17/2004	58.988	173.72	115	15	0.52	2.94	61	10.4	3.3	19	M
*	166	7/17/2004	59	173.115	105	17	0.53	3.03	61	10.6	2.9	18.7	M
*	167	7/18/2004	59.324	173.794	107	7	0.5	2.79	62	---		18.8	M
*	168	7/18/2004	59.486	173.496	100	9	0.52	2.93	43	10.5	2.6	18	M
*	169	7/18/2004	59.655	173.835	102	12	0.51	2.92	62	10.6	2.2	18.5	M
*	170	7/18/2004	59.823	173.603	93	14	0.52	3	43	10.4	1.8	18.2	M

Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
*	171	7/18/2004	59.988	173.952	95	17	0.52	3.04	43	10.3	1.8	18.3	M
*	172	7/18/2004	60.138	173.773	86	19	0.53	3	43	10.1	1.3	17.9	M
*	173	7/19/2004	60.437	173.453	59	7	0.35	2.02	43	9.5	1.8	17.8	M
*	174	7/19/2004	60.667	173.47	64	9	0.52	2.89	41	10.1	1.9	17.9	M
*	175	7/19/2004	60.669	174.105	84	12	0.51	2.9	41	---		18.7	M
		7/19/2004	60.668	174.806	95	14	0.52	2.98	41	10.5	1.3	19.1	M
		7/19/2004	60.669	175.42	104	17	0.53	3.16	61	10.9	1.9	19.4	M
176		7/20/2004	60.345	175.385	109	7	0.53	2.91	61	10.7	2.6	19.1	M
177		7/20/2004	60.012	175.268	115	9	0.52	2.92	61	10.7	2.8	19.4	M
178	180	7/20/2004	59.68	175.107	123	12	0.54	3.05	61	10.4	2.9	19.1	M
179	181	7/20/2004	59.346	175.1	130	14	0.53	2.91	61	10.2	2.9	19.6	M
		7/20/2004	59.013	175.027	126	17	0.52	2.96	61	---		19.3	M
		7/21/2004	58.982	175.731	131	7	0.53	2.96	61	---		19.2	M
182		7/21/2004	59.321	175.749	135	10	0.51	2.99	61	10.5	2.4	19	M
183		7/21/2004	59.655	175.862	135	12	0.51	2.94	61	10.5	2.3	18.1	M
184		7/21/2004	59.99	175.932	127	15	0.35	2	61	10.8	2.5	18.4	M
185		7/21/2004	60.321	176.027	119	17	0.51	2.9	61	11.1	2.6	18.3	M
186		7/22/2004	60.335	176.686	134	7	0.52	2.94	61	10.9	2	19.1	M
187		7/22/2004	60.327	177.358	146	10	0.52	2.97	61	10.9	1.9	19.1	M
188		7/22/2004	60.657	178.16	158	13	0.51	2.93	61	10.8	2.6	19	M
189		7/22/2004	60.668	177.525	144	16	0.53	3	61	11	1.6	19.2	M
190		7/22/2004	60.667	176.828	127	19	0.52	2.97	61	11.2	2.3	18.7	M
191		7/23/2004	59.999	176.682	139	7	0.52	2.93	61	10.7	2.1	18.9	M
192													
193													

Appendix B Table 2. – Continued.

FPC	Haul	Date	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Bottom Temp.	Net Width (m)	Width Code
	194	7/23/2004	60.002	177.199	135	9	0.51	2.95	61	10.8	2.1	19.1	M
		7/23/2004	60.002	177.89	140	12	0.49	2.81	61	10.7	2.3	17.8	M
		7/23/2004	59.675	177.171	171	15	0.41	2.38	61	10.6	3.4	19.2	M
195		7/23/2004	59.666	176.563	133	18	0.52	2.97	61	10.7	2.3	19.3	M
196		7/24/2004	59.335	177.093	148	7	0.53	3.04	61	10.4	3.3	19.4	M
197		7/24/2004	59.333	176.409	134	10	0.52	2.99	61	10.6	2.6	19.2	M
198		7/24/2004	59.02	176.316	134	13	0.52	2.95	61	10.4	3.2	19.4	M
199		7/24/2004	58.999	176.922	135	15	0.52	2.94	61	10.3	3.5	18.8	M
200	202	7/24/2004	59.002	177.565	133	18	0.53	3.12	61	10.1	3.5	18.9	F
201	203	7/25/2004	58.669	176.866	134	7	0.52	2.96	61	10.4	3.3	19.5	M
		7/25/2004	58.668	176.219	138	10	0.51	2.94	61	10.4	3.2	19.2	M
	205	7/25/2004	58.669	175.57	133	13	0.52	3.04	61	10.4	3.2	19.4	M
204		7/25/2004	58.726	174.975	143	15	0.54	3.02	61	10.6	3.5	19	M
206													

Appendix C: Rank Order of Relative Abundance of Fish and Invertebrates

Appendix C ranks all fish and invertebrates caught during the 2004 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 2004 eastern Bering Sea trawl survey.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
1	21740	87.27641	2210.954	89.55019	273.87168	0.25856609	0.25856609	*Theragra chalcogramma*
2	10210	53.38378	27.547	37.91174	58.48595	0.15815541	0.41672150	*Limanda aspera*
3	10260	49.15201	31.023	38.25383	60.08756	0.14561830	0.56233980	*Lepidopsetta* sp.
4	81742	20.47692	3.010	14.57168	21.37226	0.06066516	0.62300496	*Asterias amurensis*
5	21720	14.10924	2.243	10.49974	16.37122	0.04180018	0.66480514	*Gadus macrocephalus*
6	10129	12.97633	1.699	8.77009	13.87953	0.03844383	0.70324897	*Hippoglossoides* sp.
7	10110	10.61838	1.124	8.79826	12.95410	0.03145813	0.73470710	*Atheresthes stomias*
8	10285	10.29293	4.401	5.79017	14.01361	0.03049395	0.76520104	*Pleuronectes quadrituberculatus*
9	471	9.07178	0.177	6.85741	8.50791	0.02687616	0.79207721	*Bathyraja parmifera*
10	98082	7.00082	1.265	3.93566	8.34383	0.02074072	0.81281792	*Styela rustica*
11	91000	4.65576	7.933	0.00000	10.05503	0.01379322	0.82661114	Porifera
12	98205	4.43567	1.868	0.63659	5.99417	0.01314117	0.83975231	*Halocynthia aurantium*
13	83020	4.41912	0.574	3.29651	6.26564	0.01309214	0.85284445	*Gorgonocephalus eucnemis*
14	68580	3.88660	0.225	1.76792	3.62916	0.01151448	0.86435894	*Chionoecetes opilio*
15	69086	2.89706	0.251	1.67295	3.63834	0.00858288	0.87294181	*Pagurus trigonocheirus*
16	10120	2.81737	0.171	2.29066	3.91279	0.00834677	0.88128859	*Hippoglossus stenolepis*
17	69322	2.69315	0.498	1.30128	4.06824	0.00797876	0.88926735	*Paralithodes camtschaticus*
18	21110	1.89257	0.174	0.29376	1.93124	0.00560695	0.89487430	*Clupea pallasi*
19	30060	1.82602	1.908	0.00000	4.09323	0.00540978	0.90028409	*Sebastes alutus*
20	10220	1.81149	0.051	0.68028	1.56123	0.00536674	0.90565083	*Platichthys stellatus*
21	71884	1.72832	0.074	1.38740	2.45507	0.00512034	0.91077117	*Neptunea heros*

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
22	69060	1.65987	0.412	1.54869	4.06420	0.00491756	0.91568873	*Pagurus aleuticus*
23	40504	1.48648	0.006	0.30346	0.60308	0.00440385	0.92009258	*Chrysaora melanaster*
24	21371	1.45385	0.045	1.29687	2.12447	0.00430720	0.92439979	*Myoxocephalus jaok*
25	98105	1.41217	0.021	0.29510	0.86634	0.00418370	0.92858349	*Boltenia ovifera*
26	69010	1.40713	0.061	0.12239	1.08741	0.00416878	0.93275227	Paguridae
27	21370	1.30635	0.070	0.87968	1.91498	0.00387019	0.93662246	*Myoxocephalus polyacanthocephalus*
28	83320	1.27339	0.019	0.30345	0.84355	0.00377256	0.94039502	*Ophiura sarsi*
29	71820	1.16850	0.769	1.61641	5.05389	0.00346182	0.94385684	*Neptunea pribiloffensis*
30	68560	1.16770	0.026	0.85742	1.48768	0.00345944	0.94731628	*Chionoecetes bairdi*
31	69120	1.04207	0.005	0.11333	0.37725	0.00308725	0.95040353	*Pagurus capillatus*
32	71870	1.01932	0.031	0.53205	1.22364	0.00301984	0.95342337	*Neptunea lyrata*
33	21347	1.00701	0.016	0.19613	0.69211	0.00298338	0.95640675	*Hemilepidotus jordani*
34	80590	0.89922	0.033	0.53467	1.24746	0.00266403	0.95907077	*Leptasterias polaris*
35	43010	0.87622	0.034	0.12282	0.84070	0.00259591	0.96166668	*Metridium* sp.
36	21420	0.77980	0.010	0.47442	0.86728	0.00231024	0.96397692	*Hemitripterus bolini*
37	20040	0.65923	0.003	0.37376	0.58700	0.00195304	0.96592997	*Podothecus (Leptagonus* sp.*)*
38	10112	0.64543	0.006	0.46449	0.75956	0.00191217	0.96784214	*Atheresthes evermanni*
39	81780	0.64406	0.461	0.73091	3.39257	0.00190811	0.96975025	*Ctenodiscus crispatus*
40	69090	0.59938	0.004	0.33386	0.59574	0.00177574	0.97152599	*Pagurus ochotensis*
41	71882	0.56249	0.008	0.47993	0.81968	0.00166644	0.97319243	*Neptunea ventricosa*
42	10200	0.55595	0.009	0.35437	0.72479	0.00164706	0.97483949	*Glyptocephalus zachirus*
43	24191	0.53342	0.006	0.30088	0.59589	0.00158032	0.97641981	*Lycodes brevipes*
44	69095	0.42984	0.044	0.34188	1.16364	0.00127344	0.97769325	*Pagurus rathbuni*
45	10115	0.41834	0.010	0.28618	0.68763	0.00123937	0.97893262	*Reinhardtius hippoglossoides*

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
46	82510	0.40552	0.003	0.05595	0.26264	0.00120138	0.98013400	*Strongylocentrotus droebachiensis*
47	69070	0.40500	0.014	0.10632	0.57494	0.00119985	0.98133386	*Pagurus confragosus*
48	24185	0.37568	0.003	0.26102	0.46353	0.00111300	0.98244686	*Lycodes palearis*
49	72500	0.33942	0.007	0.26303	0.59660	0.00100556	0.98345241	*Fusitriton oregonensis*
50	80200	0.27562	0.005	0.16121	0.43423	0.00081654	0.98426896	*Lethasterias nanimensis*
51	43090	0.27493	0.013	0.08826	0.54163	0.00081451	0.98508347	*Liponema brevicornis*
52	21368	0.24371	0.001	0.10073	0.22215	0.00072202	0.98580549	*Myoxocephalus verrucosus*
53	10211	0.23988	0.002	0.09798	0.27755	0.00071068	0.98651617	*Limanda proboscidea*
54	68577	0.23362	0.008	0.00000	0.33401	0.00069211	0.98720828	*Hyas coarctatus*
55	435	0.23259	0.001	0.19919	0.34165	0.00068906	0.98789735	*Bathyraja interrupta*
56	71753	0.17886	0.002	0.05713	0.23111	0.00052989	0.98842723	*Pyrulofusus deformis*
57	74120	0.17427	0.001	0.00000	0.09821	0.00051630	0.98894353	*Patinopecten caurinus*
58	65100	0.16145	0.000	0.00000	0.01578	0.00047831	0.98942184	Thoracica
59	80020	0.12766	0.005	0.03587	0.31475	0.00037821	0.98980005	*Evasterias echinosoma*
60	69042	0.12499	0.001	0.00000	0.08788	0.00037030	0.99017035	*Pagurus brandti*
61	71750	0.12452	0.001	0.04756	0.18813	0.00036889	0.99053925	*Volutopsius* sp.
62	23041	0.11539	0.001	0.00304	0.11786	0.00034187	0.99088111	*Mallotus villosus*
63	72740	0.11175	0.001	0.03743	0.17926	0.00033106	0.99121217	*Buccinum* sp.
64	71001	0.10764	0.000	0.06676	0.12680	0.00031891	0.99153108	gastropod eggs
65	69061	0.10471	0.000	0.05236	0.13299	0.00031020	0.99184128	*Labidochirus splendescens*
66	69035	0.10414	0.158	1.18849	2.74668	0.00030851	0.99214979	*Pagurus* sp.
67	78403	0.09710	0.007	0.00000	0.29670	0.00028768	0.99243747	*Octopus dofleini*
68	320	0.09396	0.000	0.00000	0.04455	0.00027835	0.99271582	*Somniosus pacificus*
69	68578	0.09272	0.000	0.02983	0.06664	0.00027470	0.99299053	*Hyas lyratus*

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
70	41201	0.09189	0.000	0.05024	0.12171	0.00027225	0.99326277	*Gersemia* sp.
71	80594	0.08958	0.000	0.02411	0.08043	0.00026539	0.99352817	*Leptasterias arctica*
72	85201	0.08216	0.020	0.00000	0.55089	0.00024341	0.99377157	*Cucumaria fallax*
73	20720	0.07727	0.005	0.00000	0.26804	0.00022893	0.99400051	*Bathymaster signatus*
74	21735	0.07023	0.001	0.00000	0.08661	0.00020807	0.99420857	*Eleginus gracilis*
75	69323	0.06588	0.036	0.00000	0.66772	0.00019516	0.99440374	*Paralithodes platypus*
76	69121	0.06271	0.000	0.02594	0.09711	0.00018580	0.99458954	*Elassochirus cavimanus*
77	23235	0.05800	0.000	0.00000	0.00724	0.00017183	0.99476137	*Oncorhynchus keta*
78	98310	0.05635	0.001	0.01170	0.10685	0.00016694	0.99492831	*Aplidium* sp.
79	71886	0.05597	0.000	0.03686	0.10094	0.00016581	0.99509412	*Neptunea magna*
80	23010	0.05572	0.000	0.01810	0.07431	0.00016509	0.99525921	*Thaleichthys pacificus*
81	72752	0.05508	0.000	0.05065	0.11672	0.00016318	0.99542239	*Buccinum scalariforme*
82	50161	0.05455	0.000	0.01537	0.06239	0.00016161	0.99558400	*Aphrodita* sp.
83	71756	0.05099	0.001	0.03409	0.13094	0.00015105	0.99573505	*Volutopsius fragilis*
84	50010	0.05038	0.000	0.00000	0.00225	0.00014927	0.99588432	tube worm unident.
85	24184	0.05033	0.000	0.00000	0.00140	0.00014911	0.99603343	*Lycodes raridens*
86	72755	0.05004	0.000	0.02887	0.06298	0.00014826	0.99618169	*Buccinum polare*
87	81315	0.04823	0.002	0.00000	0.13339	0.00014288	0.99632457	*Pteraster tesselatus*
88	72743	0.04754	0.000	0.02343	0.08400	0.00014083	0.99646540	*Buccinum angulosum*
89	472	0.04691	0.024	0.06109	0.67317	0.00013898	0.99660439	*Bathyraja aleutica*
90	41221	0.04047	0.000	0.00412	0.01787	0.00011990	0.99672429	*Gersemia rubiformis*
91	66031	0.03973	0.000	0.01875	0.05140	0.00011772	0.99684200	*Pandalus borealis*
92	74562	0.03741	0.000	0.00000	0.06939	0.00011082	0.99695282	*Musculus discors*
93	21592	0.03719	0.010	0.00000	0.33885	0.00011018	0.99706300	*Trichodon trichodon*

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
94	71769	0.03614	0.000	0.02508	0.08281	0.00010708	0.99717008	*Beringius* sp.
95	98000	0.03507	0.000	0.00000	0.00015	0.00010390	0.99727399	Ascidian unident.
96	22205	0.03265	0.000	0.00364	0.04201	0.00009672	0.99737071	*Liparis gibbus*
97	71835	0.03103	0.000	0.01485	0.02925	0.00009194	0.99746265	*Neptunea borealis*
98	68510	0.03021	0.000	0.00395	0.01422	0.00008951	0.99755216	*Oregonia gracilis*
99	42003	0.02881	0.000	0.00000	0.04440	0.00008536	0.99763752	Virgularidae
100	43000	0.02766	0.004	0.09970	0.35405	0.00008194	0.99771946	Actiniaria
101	71891	0.02760	0.000	0.00045	0.07489	0.00008178	0.99780124	*Plicifusus kroyeri*
102	21314	0.02712	0.000	0.00830	0.04504	0.00008036	0.99788160	*Gymnocanthus pistilliger*
103	75111	0.02575	0.000	0.00633	0.01633	0.00007630	0.99795790	*Mactromeris polynyma*
104	21932	0.02446	0.000	0.00192	0.01456	0.00007248	0.99803037	*Hexagrammos stelleri*
105	21390	0.02392	0.000	0.01764	0.04081	0.00007086	0.99810123	*Dasycottus setiger*
106	21316	0.02260	0.000	0.00000	0.04254	0.00006696	0.99816819	*Gymnocanthus galeatus*
107	98200	0.02012	0.896	0.00000	3.48838	0.00005960	0.99822780	*Halocynthia* sp.
108	43040	0.01959	0.000	0.00023	0.03924	0.00005804	0.99828583	*Urticina* sp.
109	69400	0.01903	0.000	0.01618	0.04119	0.00005639	0.99834222	*Erimacrus isenbeckii*
110	81355	0.01828	0.000	0.00776	0.02098	0.00005416	0.99845065	*Pteraster obscurus*
111	68781	0.01787	0.000	0.00948	0.03630	0.00005295	0.99850360	*Telmessus cheiragonus*
112	95000	0.01729	0.000	0.00630	0.03322	0.00005122	0.99860630	Bryozoa unident.
113	10270	0.01712	0.000	0.00000	0.00800	0.00005071	0.99865701	*Isopsetta isolepis*
114	80015	0.01709	0.000	0.00000	0.00069	0.00005063	0.99870763	*Evasterias troschelii*
115	71763	0.01701	0.000	0.00000	0.02979	0.00005040	0.99875804	*Volutopsius stefanssoni*
116	43030	0.01513	0.000	0.00207	0.04134	0.00004482	0.99880285	*Stomphia* sp.
117	75286	0.01473	0.000	0.00025	0.00880	0.00004363	0.99884648	*Serripes laperousii*

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
118	23055	0.01435	0.000	0.00000	0.00016	0.00004252	0.99888900	*Osmerus mordax*
119	75284	0.01419	0.000	0.00119	0.00808	0.00004205	0.99893105	*Serripes* sp.
120	80010	0.01361	0.001	0.00000	0.08950	0.00004033	0.99897138	*Evasterias* sp.
121	21355	0.01313	0.000	0.00172	0.00459	0.00003891	0.99901029	*Triglops pingeli*
122	21438	0.01270	0.000	0.00814	0.02106	0.00003763	0.99904792	*Icelus spiniger*
123	81095	0.01252	0.000	0.00541	0.02006	0.00003708	0.99908500	*Crossaster papposus*
124	20322	0.01199	0.000	0.00012	0.03925	0.00003553	0.99912052	*Anarhichas orientalis*
125	21348	0.01053	0.000	0.00000	0.03703	0.00003121	0.99915173	*Hemilepidotus papilio*
126	71025	0.01020	0.000	0.00000	0.00882	0.00003023	0.99918196	*Tritonia* sp.
127	75285	0.01019	0.000	0.00193	0.01855	0.00003020	0.99921216	*Serripes groenlandicus*
128	68590	0.01018	0.000	0.00770	0.01779	0.00003015	0.99924231	*Chionoecetes hybrid*
129	71030	0.00958	0.000	0.00264	0.00897	0.00002839	0.99927070	*Tritonia diomedea*
130	69110	0.00950	0.000	0.00000	0.00771	0.00002814	0.99929884	*Elassochirus tenuimanus*
131	56311	0.00945	0.000	0.00511	0.01425	0.00002799	0.99932683	*Eunoe nodosa*
132	71772	0.00939	0.000	0.01081	0.06029	0.00002781	0.99935464	*Beringius beringii*
133	66502	0.00918	0.000	0.00219	0.00685	0.00002718	0.99938182	*Crangon* sp.
134	43042	0.00898	0.000	0.00071	0.02556	0.00002660	0.99940842	*Urticina crassicornis*
135	71010	0.00881	0.000	0.00233	0.01153	0.00002609	0.99943451	Nudibranchia unident.
136	21921	0.00879	0.000	0.00000	0.00244	0.00002604	0.99946055	*Pleurogrammus monopterygius*
137	65201	0.00848	0.001	0.00000	0.07958	0.00002512	0.99948567	*Balanus* sp.
138	85210	0.00820	0.000	0.00000	0.01644	0.00002430	0.99953453	*Psolus* sp.
139	20006	0.00772	0.000	0.00663	0.02160	0.00002288	0.99955741	*Leptagonus frenatus*
140	40501	0.00726	0.008	0.17323	0.53357	0.00002151	0.99960067	*Chrysaora* sp.
141	65203	0.00701	0.000	0.00000	0.00634	0.00002077	0.99962145	*Balanus evermanni*

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
142	72063	0.00627	0.000	0.00000	0.04197	0.00001859	0.99964004	*Aforia circinata*
143	71761	0.00603	0.000	0.00372	0.02150	0.00001786	0.99965790	*Pyrulofusus melonis*
144	20061	0.00491	0.000	0.00203	0.00536	0.00001455	0.99968750	*Occella dodecaedron*
145	40500	0.00408	0.015	0.13587	0.61337	0.00001209	0.99969960	Scyphozoa
146	71721	0.00360	0.000	0.00000	0.02999	0.00001067	0.99971026	*Colus herendeenii*
147	401	0.00335	0.000	0.00000	0.01669	0.00000993	0.99972019	skate egg case unident.
148	85000	0.00330	0.000	0.00000	0.00203	0.00000977	0.99973981	Holothuroidea unident.
149	30050	0.00311	0.000	0.00000	0.01038	0.00000921	0.99976803	*Sebastes aleutianus*
150	20510	0.00306	0.000	0.00000	0.01399	0.00000908	0.99977711	*Anoplopoma fimbria*
151	82511	0.00296	0.000	0.00000	0.00164	0.00000878	0.99978589	*Strongylocentrotus* sp.
152	21935	0.00294	0.000	0.00000	0.00108	0.00000871	0.99979461	*Hexagrammos decagrammus*
153	80540	0.00290	0.000	0.00117	0.00478	0.00000859	0.99980319	*Henricia* sp.
154	21341	0.00233	0.000	0.00000	0.00058	0.00000691	0.99981010	*Malacocottus zonurus*
155	65202	0.00216	0.000	0.00000	0.00472	0.00000641	0.99982324	*Balanus balanus*
156	71681	0.00213	0.031	0.00000	0.52189	0.00000631	0.99982955	*Crepidula grandis*
157	71500	0.00211	0.000	0.00000	0.00647	0.00000626	0.99983581	Gastropod unident.
158	42000	0.00209	0.000	0.00000	0.07033	0.00000619	0.99984200	Pennatulacea
159	56312	0.00200	0.000	0.00087	0.00236	0.00000594	0.99984794	*Eunoe depressa*
160	71726	0.00196	0.000	0.00000	0.00970	0.00000580	0.99985374	*Colus spitzbergensis*
161	74060	0.00191	0.000	0.00000	0.00151	0.00000566	0.99985940	*Modiolus modiolus*
162	40511	0.00173	0.000	0.00000	0.00023	0.00000512	0.99986452	*Aurelia* sp.
163	66045	0.00167	0.000	0.00000	0.01251	0.00000496	0.99986948	*Pandalus goniurus*
164	71710	0.00163	0.000	0.00468	0.02036	0.00000484	0.99987432	*Colus* sp.
165	66570	0.00155	0.000	0.00073	0.00190	0.00000458	0.99987890	*Argis* sp.

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
166	81870	0.00153	0.000	0.00000	0.00272	0.00000452	0.99988342	*Dipsacaster borealis*
167	71800	0.00150	0.000	0.00000	0.00411	0.00000446	0.99989238	*Neptunea* sp.
168	71580	0.00147	0.000	0.00000	0.00286	0.00000436	0.99989674	*Polinices pallidus*
169	98300	0.00146	0.000	0.00026	0.00251	0.00000432	0.99990106	compound ascidian unident.
170	72751	0.00137	0.000	0.00234	0.02445	0.00000405	0.99990511	*Buccinum plectrum*
171	71774	0.00135	0.000	0.00000	0.00899	0.00000399	0.99990910	*Beringius stimpsoni*
172	71764	0.00133	0.000	0.00719	0.03137	0.00000394	0.99991303	*Volutopsius middendorffii*
173	22236	0.00130	0.000	0.00208	0.00907	0.00000386	0.99991689	*Careproctus rastrinus*
174	21356	0.00117	0.000	0.00000	0.00046	0.00000347	0.99992036	*Triglops macellus*
175	74080	0.00113	0.000	0.00000	0.02111	0.00000334	0.99992370	*Mytilus edulis*
176	42008	0.00094	0.000	0.00000	0.00061	0.00000279	0.99992935	*Halipteris* sp.
177	71890	0.00089	0.000	0.00000	0.00119	0.00000265	0.99993466	*Plicifusus* sp.
178	82740	0.00088	0.000	0.00000	0.02800	0.00000259	0.99993725	*Echinarachnius parma*
179	71770	0.00080	0.000	0.00000	0.00149	0.00000237	0.99993962	*Beringius kennicottii*
180	66515	0.00075	0.000	0.00007	0.00031	0.00000221	0.99994184	*Crangon communis*
181	81360	0.00072	0.000	0.00000	0.00840	0.00000213	0.99994612	*Diplopteraster multipes*
182	75205	0.00070	0.000	0.00000	0.00033	0.00000207	0.99994819	*Tellina lutea*
183	22175	0.00066	0.000	0.00000	0.00640	0.00000195	0.99995015	*Aptocyclus ventricosus*
184	78010	0.00065	0.000	0.00000	0.00152	0.00000194	0.99995403	Octopodidae
185	82730	0.00064	0.000	0.00000	0.00810	0.00000188	0.99995591	sand dollar unident.
186	21725	0.00063	0.000	0.00002	0.00013	0.00000187	0.99995778	*Boreogadus saida*
187	80660	0.00061	0.000	0.00069	0.00405	0.00000181	0.99995959	*Pseudarchaster parelii*
188	10180	0.00060	0.000	0.00000	0.01619	0.00000178	0.99996137	*Microstomus pacificus*
189	21354	0.00055	0.000	0.00000	0.01355	0.00000164	0.99996300	*Triglops scepticus*

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
190	22206	0.00053	0.000	0.00000	0.00637	0.00000158	0.99996458	*Crystallichthys cyclospilus*
191	68040	0.00046	0.000	0.00000	0.00368	0.00000136	0.99996750	*Cancer oregonensis*
192	45000	0.00046	0.000	0.00000	0.00017	0.00000135	0.99996885	Ctenophora
193	75240	0.00043	0.000	0.00000	0.00334	0.00000128	0.99997013	*Macoma* sp.
194	72059	0.00043	0.000	0.00010	0.00318	0.00000127	0.99997140	*Aforia* sp.
195	91087	0.00042	0.277	0.00000	1.55872	0.00000126	0.99997265	stone sponge
196	95030	0.00040	0.000	0.00000	0.00302	0.00000119	0.99997384	*Flustra serrulata*
197	66530	0.00039	0.000	0.00000	0.00002	0.00000115	0.99997499	*Crangon dalli*
198	71537	0.00036	0.000	0.00000	0.00135	0.00000105	0.99997715	*Natica russa*
199	40560	0.00034	0.000	0.00000	0.00017	0.00000100	0.99997815	*Cyanea* sp.
200	97000	0.00033	0.000	0.00000	0.00002	0.00000099	0.99997914	brachiopod unident.
201	74104	0.00033	0.000	0.00000	0.00338	0.00000096	0.99998010	*Chlamys* sp.
202	71530	0.00032	0.000	0.00000	0.00017	0.00000096	0.99998106	*Natica clausa*
203	21441	0.00029	0.000	0.00001	0.00013	0.00000087	0.99998283	*Icelus spatula*
204	20050	0.00029	0.000	0.00008	0.00031	0.00000086	0.99998454	*Aspidophoroides bartoni*
205	79000	0.00026	0.000	0.00000	0.00016	0.00000078	0.99998696	squid unident.
206	75267	0.00026	0.000	0.00015	0.00052	0.00000077	0.99998773	*Siliqua alta*
207	23805	0.00025	0.000	0.00013	0.00065	0.00000074	0.99998922	*Lumpenus maculatus*
208	74414	0.00024	0.000	0.00000	0.00001	0.00000071	0.99998993	*Yoldia* sp.
209	74106	0.00023	0.000	0.00000	0.00081	0.00000068	0.99999061	*Chlamys rubida*
210	50000	0.00023	0.000	0.00000	0.00096	0.00000068	0.99999129	Polychaeta
211	10212	0.00019	0.000	0.00023	0.00234	0.00000055	0.99999375	*Limanda sakhalinensis*
212	20202	0.00014	0.000	0.00002	0.00012	0.00000043	0.99999468	*Ammodytes hexapterus*
213	82500	0.00013	0.000	0.00000	0.05633	0.00000038	0.99999545	Echinacea unident.

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
214	79020	0.00011	0.000	0.00013	0.00097	0.00000033	0.99999577	*Rossia pacifica*
215	66611	0.00010	0.000	0.00000	0.00009	0.00000030	0.99999608	*Argis lar*
216	80546	0.00009	0.000	0.00003	0.00025	0.00000027	0.99999635	*Henricia tumida*
217	66580	0.00009	0.000	0.00000	0.00015	0.00000027	0.99999661	*Argis dentata*
218	74983	0.00009	0.000	0.00000	0.00370	0.00000026	0.99999688	*Clinocardium ciliatum*
219	59100	0.00009	0.000	0.00000	0.00001	0.00000026	0.99999714	Hirudinea unident.
220	71018	0.00008	0.000	0.00007	0.00174	0.00000024	0.99999738	*Dendronotus* sp.
221	74310	0.00007	0.000	0.00000	0.00031	0.00000020	0.99999758	*Hiatella* sp.
222	71771	0.00006	0.000	0.00000	0.00024	0.00000019	0.99999796	*Beringius frielei*
223	94500	0.00006	0.000	0.00000	0.00082	0.00000018	0.99999814	Echiura
224	66050	0.00005	0.000	0.00000	0.00213	0.00000015	0.99999830	*Pandalus hypsinotus*
225	74000	0.00005	0.000	0.00000	0.00005	0.00000015	0.99999844	Bivalvia unident.
226	21300	0.00004	0.000	0.00000	0.00002	0.00000011	0.99999881	Cottidae
227	83000	0.00004	0.001	0.00000	0.13715	0.00000011	0.99999892	Ophiuroid unident.
228	71525	0.00003	0.000	0.00000	0.00065	0.00000010	0.99999902	*Natica* sp.
229	85169	0.00003	0.000	0.00000	0.00023	0.00000008	0.99999918	*Pentamera lissoplaca*
230	75201	0.00002	0.000	0.00000	0.00128	0.00000007	0.99999925	*Tellina* sp.
231	40011	0.00002	0.000	0.00000	0.00083	0.00000007	0.99999932	hydroid unident.
232	94000	0.00002	0.000	0.00000	0.00005	0.00000007	0.99999939	Sipuncula
233	50160	0.00002	0.000	0.00000	0.00272	0.00000006	0.99999952	Aphroditidae
234	95070	0.00002	0.000	0.00062	0.00362	0.00000006	0.99999957	*Rhamphostomella costata*
235	23850	0.00002	0.000	0.00000	0.00002	0.00000006	0.99999963	*Poroclinus rothrocki*
236	83400	0.00001	0.000	0.00000	0.00026	0.00000004	0.99999967	*Ophiopholis aculeata*
237	23801	0.00001	0.000	0.00000	0.00002	0.00000004	0.99999971	*Lumpenus* sp.

Appendix C Table 1. -- Continued.

Rank	Species code	Mean CPUE (Kg/ha)	Variance	95% Confidence Limits		Proportion	Cumulative Proportion	Species Name
238	21333	0.00001	0.000	0.00000	0.00003	0.00000003	0.99999977	*Artediellus pacificus*
239	91040	0.00001	0.000	0.00000	0.00043	0.00000003	0.99999980	*Mycale loveni*
240	78020	0.00001	0.001	0.00000	0.13058	0.00000003	0.99999986	*Octopus* sp.
241	66203	0.00001	0.000	0.00000	0.00010	0.00000003	0.99999989	*Lebbeus groenlandicus*
242	24186	0.00001	0.000	0.00000	0.00178	0.00000003	0.99999992	*Lycodes mucosus*
243	20001	0.00001	0.000	0.00000	0.00009	0.00000002	0.99999994	*Pallasina barbata*
244	74416	0.00001	0.000	0.00000	0.00004	0.00000002	0.99999995	*Yoldia scissurata*
245	62000	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999998	Isopoda
246	74655	0.00000	0.000	0.00000	0.00016	0.00000001	0.99999999	*Cyclocardia crebricostata*

Appendix D: Population Estimates by Sex and Size Groups for Principal Fish Species

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

List of Tables:

Population estimates by sex and size group from the 2004 eastern Bering Sea bottom trawl survey.

Appendix D Table 1. -- Population estimates by sex and size group for **walleye pollock** (*Theragra chalcogramma*) from the 2004 eastern Bering Sea bottom trawl survey.

Walleye pollock

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
50	0	0	48,173	48,173	0.0000	0.0002
60	0	0	229,882	229,882	0.0000	0.0002
70	0	0	718,195	718,195	0.0001	0.0004
80	0	0	287,264	287,264	0.0001	0.0004
90	296,223	244,105	2,205,195	2,745,523	0.0005	0.0010
100	0	0	10,125,715	10,125,715	0.0019	0.0029
110	207,910	0	18,460,325	18,668,234	0.0036	0.0065
120	397,200	320,632	27,430,354	28,148,187	0.0054	0.0119
130	585,136	215,969	39,903,269	40,704,374	0.0078	0.0198
140	2,390,509	2,068,619	46,840,314	51,299,443	0.0099	0.0296
150	3,119,784	4,644,600	38,898,043	46,662,427	0.0090	0.0386
160	5,013,852	5,435,198	31,507,653	41,956,703	0.0081	0.0467
170	7,370,460	3,883,998	16,320,201	27,574,659	0.0053	0.0520
180	6,642,829	7,099,653	7,632,688	21,375,170	0.0041	0.0561
190	4,772,460	5,478,012	3,616,013	13,866,484	0.0027	0.0588
200	7,851,229	7,352,554	1,160,878	16,364,661	0.0032	0.0619
210	8,058,447	6,469,340	266,460	14,794,247	0.0028	0.0648
220	10,807,415	10,703,286	33,328	21,544,028	0.0041	0.0689
230	14,921,939	11,825,754	0	26,747,694	0.0051	0.0741
240	16,292,744	11,793,775	0	28,086,519	0.0054	0.0795
250	10,922,599	8,563,161	0	19,485,760	0.0038	0.0832
260	7,876,843	7,157,584	0	15,034,427	0.0029	0.0861
270	8,678,439	4,936,308	0	13,614,747	0.0026	0.0888
280	5,044,465	6,925,284	0	11,969,749	0.0023	0.0911
290	7,069,519	4,024,907	0	11,094,426	0.0021	0.0932
300	8,178,706	4,750,513	0	12,929,219	0.0025	0.0957
310	7,528,665	6,483,918	0	14,012,583	0.0027	0.0984
320	8,184,663	5,593,265	0	13,777,929	0.0027	0.1010
330	4,477,568	2,732,533	0	7,210,101	0.0014	0.1024
340	6,103,030	3,085,029	0	9,188,059	0.0018	0.1042
350	4,669,400	3,181,924	0	7,851,323	0.0015	0.1057
360	7,917,663	3,682,124	0	11,599,786	0.0022	0.1079

Appendix D Table 1. -- Continued.

Walleye pollock

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
370	11,573,314	3,794,423	0	15,367,737	0.0030	0.1109
380	25,218,185	14,767,477	0	39,985,662	0.0077	0.1186
390	35,572,669	22,180,058	0	57,752,727	0.0111	0.1297
400	84,450,612	52,568,040	0	137,018,652	0.0264	0.1561
410	116,208,865	65,719,972	0	181,928,837	0.0350	0.1911
420	155,325,963	105,471,150	30,197	260,827,311	0.0502	0.2413
430	179,039,800	123,242,132	0	302,281,931	0.0582	0.2995
440	210,983,918	137,623,150	0	348,607,068	0.0671	0.3666
450	188,561,018	144,890,700	0	333,451,717	0.0642	0.4308
460	205,418,809	156,`836,976	0	362,255,785	0.0697	0.5005
470	179,762,247	148,163,694	0	327,925,941	0.0631	0.5637
480	199,283,801	147,655,111	0	346,938,913	0.0668	0.6305
490	177,238,328	124,294,000	0	301,532,328	0.0580	0.6885
500	155,126,977	138,332,042	0	293,459,019	0.0565	0.7450
510	111,501,645	122,030,818	0	233,532,463	0.0450	0.7900
520	103,207,301	114,004,788	0	217,212,090	0.0418	0.8318
530	80,598,917	90,929,768	26,627	171,555,312	0.0330	0.8648
540	62,523,971	93,921,909	0	156,445,880	0.0301	0.8949
550	51,021,011	64,857,676	0	115,878,688	0.0223	0.9172
560	39,042,369	60,704,982	0	99,747,351	0.0192	0.9364
570	24,141,805	50,216,959	0	74,358,764	0.0143	0.9507
580	17,076,218	38,932,452	0	56,008,671	0.0108	0.9615
590	16,178,931	28,976,524	0	45,155,456	0.0087	0.9702
600	11,018,654	23,612,443	0	34,631,097	0.0067	0.9769
610	8,314,899	20,163,289	0	28,478,188	0.0055	0.9824
620	6,788,498	15,672,559	41,855	22,502,912	0.0043	0.9867
630	4,575,455	11,737,629	0	16,313,084	0.0031	0.9898
640	3,168,372	6,618,850	0	9,787,222	0.0019	0.9917
650	2,372,194	6,011,495	0	8,383,689	0.0016	0.9933
660	1,626,781	5,636,241	0	7,263,022	0.0014	0.9947
670	1,482,699	4,125,390	0	5,608,088	0.0011	0.9958
680	1,216,485	3,487,471	0	4,703,956	0.0009	0.9967
690	997,129	2,117,468	0	3,114,597	0.0006	0.9973
700	1,118,331	1,824,461	0	2,942,793	0.0006	0.9979
710	1,032,190	1,540,933	0	2,573,123	0.0005	0.9984

Appendix D Table 1. -- Continued.

Walleye pollock

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
720	287,262	1,059,746	0	1,347,008	0.0003	0.9986
730	341,695	1,330,733	0	1,672,427	0.0003	0.9990
740	218,169	1,351,451	0	1,569,620	0.0003	0.9993
750	168,582	825,015	0	993,597	0.0002	0.9995
760	71,678	673,814	0	745,492	0.0001	0.9996
770	45,706	307,068	0	352,774	0.0001	0.9997
780	79,072	370,118	0	449,190	0.0001	0.9998
790	0	355,476	0	355,476	0.0001	0.9998
800	0	649,502	0	649,502	0.0001	0.9999
810	0	27,720	0	27,720	0.0000	0.9999
820	0	53,936	0	53,936	0.0000	1.0000
830	0	38,402	0	38,402	0.0000	1.0000
840	0	172,585	0	172,585	0.0000	1.0000
TOTAL	**2,650,116,969**	**2,298,530,642**	**245,968,485**	**5,194,616,097**	**1.0000**	**1.0000**

Appendix D Table 2. -- Population estimates by sex and size group for **Pacific cod** (*Gadus macrocephalus*) from the 2004 eastern Bering Sea bottom trawl survey.

Pacific cod						
Length (mm)	**Males**	**Females**	**Unsexed**	**Total**	**Proportion**	**Cumulative Proportion**
90	0	0	27,703	27,703	0.0001	0.0002
100	67,946	0	94,169	162,115	0.0004	0.0006
110	84,766	87,891	562,996	735,654	0.0017	0.0023
120	187,235	318,883	1,214,167	1,720,285	0.0041	0.0064
130	725,410	487,774	2,053,309	3,266,493	0.0077	0.0141
140	1,907,383	1,356,001	2,557,460	5,820,844	0.0137	0.0278
150	1,663,579	1,724,175	755,535	4,143,289	0.0098	0.0376
160	4,304,699	2,801,454	431,941	7,538,094	0.0178	0.0553
170	3,751,244	3,290,321	241,657	7,283,222	0.0172	0.0725
180	5,008,036	3,010,493	468,358	8,486,887	0.0200	0.0925
190	4,736,257	3,344,315	204,127	8,284,700	0.0195	0.1120
200	3,427,534	1,825,050	30,748	5,283,331	0.0125	0.1245
210	3,048,775	2,491,419	30,748	5,570,943	0.0131	0.1376
220	2,441,396	1,958,286	0	4,399,683	0.0104	0.1480
230	1,559,774	947,377	0	2,507,152	0.0059	0.1539
240	1,202,875	951,010	0	2,153,885	0.0051	0.1590
250	1,670,421	1,176,359	0	2,846,780	0.0067	0.1657
260	2,050,035	1,501,137	0	3,551,172	0.0084	0.1741
270	2,199,012	1,809,520	0	4,008,532	0.0094	0.1835
280	4,239,531	3,077,273	0	7,316,804	0.0172	0.2007
290	3,786,964	3,894,397	0	7,681,361	0.0181	0.2188
300	5,103,135	3,504,093	0	8,607,228	0.0203	0.2391
310	4,894,392	4,384,957	0	9,279,350	0.0219	0.2610
320	5,362,519	5,382,509	0	10,745,028	0.0253	0.2863
330	5,729,627	6,092,310	0	11,821,938	0.0279	0.3142
340	6,914,563	5,583,189	0	12,497,752	0.0295	0.3437
350	6,977,376	5,235,527	0	12,212,902	0.0288	0.3724
360	7,032,901	6,312,331	0	13,345,232	0.0315	0.4039
370	6,962,514	5,353,805	0	12,316,319	0.0290	0.4329
380	6,874,287	5,887,294	0	12,761,580	0.0301	0.4630
390	5,078,943	4,911,215	0	9,990,157	0.0235	0.4866
400	5,769,644	3,775,706	31,390	9,576,740	0.0226	0.5091

Appendix D Table 2. -- Continued.

Pacific cod

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
410	4,627,600	3,737,704	0	8,365,304	0.0197	0.5288
420	4,283,772	3,880,092	0	8,163,864	0.0192	0.5481
430	4,339,574	3,055,872	0	7,395,446	0.0174	0.5655
440	3,729,039	3,394,843	0	7,123,882	0.0168	0.5823
450	3,324,279	2,783,968	0	6,108,247	0.0144	0.5967
460	2,719,687	3,130,887	0	5,850,574	0.0138	0.6105
470	3,119,208	2,860,038	0	5,979,246	0.0141	0.6246
480	3,457,685	3,455,324	0	6,913,009	0.0163	0.6409
490	3,238,952	3,510,226	0	6,749,178	0.0159	0.6568
500	3,437,525	4,731,733	0	8,169,257	0.0193	0.6760
510	3,665,662	4,252,034	0	7,917,696	0.0187	0.6947
520	3,411,876	2,962,020	0	6,373,896	0.0150	0.7097
530	3,762,504	3,416,911	0	7,179,415	0.0169	0.7267
540	3,836,736	2,911,832	0	6,748,568	0.0159	0.7426
550	4,024,023	3,256,298	0	7,280,321	0.0172	0.7597
560	3,674,216	2,916,923	0	6,591,138	0.0155	0.7753
570	4,162,918	3,393,449	0	7,556,367	0.0178	0.7931
580	2,955,320	2,641,601	0	5,596,920	0.0132	0.8063
590	3,682,709	2,466,147	0	6,148,856	0.0145	0.8207
600	3,360,715	3,153,869	0	6,514,584	0.0154	0.8361
610	3,155,992	2,677,478	0	5,833,470	0.0137	0.8499
620	2,588,061	2,932,125	0	5,520,187	0.0130	0.8629
630	2,792,968	2,693,910	0	5,486,878	0.0129	0.8758
640	2,686,708	2,037,166	0	4,723,874	0.0111	0.8869
650	2,007,156	2,034,004	0	4,041,161	0.0095	0.8965
660	1,807,360	2,160,181	0	3,967,541	0.0094	0.9058
670	1,737,651	1,654,290	0	3,391,940	0.0080	0.9138
680	1,972,933	2,104,776	0	4,077,709	0.0096	0.9234
690	1,416,717	1,759,919	0	3,176,636	0.0075	0.9309
700	968,777	1,484,170	0	2,452,947	0.0058	0.9367
710	1,070,924	1,822,391	0	2,893,316	0.0068	0.9435
720	1,198,548	1,117,829	0	2,316,377	0.0055	0.9490
730	1,332,342	915,507	0	2,247,849	0.0053	0.9543
740	511,649	792,188	0	1,303,838	0.0031	0.9573
750	1,218,080	721,266	0	1,939,346	0.0046	0.9619

Appendix D Table 2. -- Continued.

Pacific cod						
Length (mm)	**Males**	**Females**	**Unsexed**	**Total**	**Proportion**	**Cumulative Proportion**
760	633,393	1,091,213	0	1,724,605	0.0041	0.9660
770	877,257	759,315	0	1,636,571	0.0039	0.9698
780	1,087,270	675,998	0	1,763,268	0.0042	0.9740
790	775,100	430,455	0	1,205,555	0.0028	0.9768
800	275,890	809,485	0	1,085,375	0.0026	0.9794
810	475,930	445,322	0	921,252	0.0022	0.9816
820	273,467	609,062	0	882,528	0.0021	0.9836
830	254,955	352,091	0	607,046	0.0014	0.9851
840	581,973	282,342	0	864,314	0.0020	0.9871
850	144,278	259,250	0	403,528	0.0010	0.9881
860	502,917	492,015	0	994,933	0.0023	0.9904
870	109,531	387,497	0	497,028	0.0012	0.9916
880	217,188	536,797	0	753,985	0.0018	0.9933
890	287,602	273,075	0	560,677	0.0013	0.9947
900	109,650	400,731	0	510,381	0.0012	0.9959
910	20,337	201,553	0	221,891	0.0005	0.9964
920	28,270	123,626	0	151,896	0.0004	0.9968
930	213,577	87,437	0	301,013	0.0007	0.9975
940	0	144,390	0	144,390	0.0003	0.9978
950	27,408	84,543	0	111,951	0.0003	0.9981
960	63,214	104,671	0	167,885	0.0004	0.9985
970	36,912	117,857	0	154,769	0.0004	0.9988
980	0	82,618	0	82,618	0.0002	0.9990
990	63,214	0	0	63,214	0.0001	0.9992
1010	25,198	0	0	25,198	0.0001	0.9992
1030	184,613	0	0	184,613	0.0004	0.9997
1050	0	44,718	0	44,718	0.0001	0.9998
1080	0	63,214	0	63,214	0.0001	0.9999
1100	0	33,594	0	33,594	0.0001	1.0000
TOTAL	**221,339,191**	**194,187,914**	**8,738,068**	**424,265,173**	**1.0000**	**1.0000**

Appendix D Table 3. -- Population estimates by sex and size group for **yellowfin sole** *(Limanda aspera)* from the 2004 eastern Bering Sea bottom trawl survey.

Yellowfin sole

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
70	1,093,832	2,175,171	0	3,269,004	0.0003	0.0004
80	6,250,131	5,952,550	0	12,202,681	0.0013	0.0017
90	5,125,180	6,026,899	708,881	11,860,960	0.0013	0.0030
100	14,682,896	6,847,636	0	21,530,532	0.0023	0.0053
110	14,610,797	6,512,091	708,881	21,831,769	0.0023	0.0076
120	15,297,084	6,056,349	2,126,644	23,480,077	0.0025	0.0101
130	21,318,910	26,509,340	1,417,763	49,246,013	0.0053	0.0154
140	45,294,082	43,199,670	0	88,493,752	0.0095	0.0248
150	59,728,854	68,502,242	0	128,231,096	0.0137	0.0385
160	83,044,852	117,666,349	0	200,711,201	0.0214	0.0600
170	119,794,851	128,629,628	0	248,424,479	0.0265	0.0865
180	144,077,047	154,031,583	0	298,108,630	0.0318	0.1184
190	162,140,560	167,303,563	0	329,444,123	0.0352	0.1535
200	171,846,557	154,014,834	0	325,861,391	0.0348	0.1884
210	153,529,599	132,501,412	0	286,031,011	0.0306	0.2189
220	144,688,153	166,627,706	0	311,315,859	0.0333	0.2522
230	195,014,189	168,331,471	0	363,345,660	0.0388	0.2910
240	235,556,573	220,654,066	0	456,210,639	0.0487	0.3397
250	234,484,285	234,271,396	0	468,755,682	0.0501	0.3898
260	294,104,466	252,718,335	0	546,822,801	0.0584	0.4482
270	272,696,318	245,043,265	0	517,739,583	0.0553	0.5035
280	256,187,736	249,681,240	0	505,868,975	0.0540	0.5576
290	316,613,956	234,979,597	0	551,593,552	0.0589	0.6165
300	299,286,874	251,390,669	0	550,677,544	0.0588	0.6753
310	357,903,021	272,819,441	0	630,722,462	0.0674	0.7427
320	289,573,079	305,316,647	0	594,889,726	0.0636	0.8062
330	199,336,952	326,748,527	0	526,085,479	0.0562	0.8624
340	111,239,719	329,081,965	0	440,321,684	0.0470	0.9095
350	56,462,124	279,084,556	0	335,546,680	0.0358	0.9453
360	21,438,061	189,403,095	0	210,841,156	0.0225	0.9678
370	6,043,491	127,649,426	0	133,692,916	0.0143	0.9821
380	2,138,677	81,909,580	0	84,048,257	0.0090	0.9911

Appendix D Table 3. -- Continued.

Yellowfin sole						
Length (mm)	**Males**	**Females**	**Unsexed**	**Total**	**Proportion**	**Cumulative Proportion**
390	1,199,824	42,476,265	0	43,676,089	0.0047	0.9958
400	206,500	22,557,025	0	22,763,525	0.0024	0.9982
410	0	9,295,613	0	9,295,613	0.0010	0.9992
420	0	3,782,776	0	3,782,776	0.0004	0.9996
430	221,192	3,074,625	0	3,295,817	0.0004	1.0000
440	0	391,220	0	391,220	0.0000	1.0000
460	0	18,112	0	18,112	0.0000	1.0000
TOTAL	**4,312,230,420**	**5,043,728,912**	**4,962,169**	**9,360,921,500**	**1.0000**	**1.0000**

Appendix D Table 4. -- Population estimates by sex and size group for **northern** and **southern rock sole grouped** (*Lepidopsetta* spp.) from the 2004 eastern Bering Sea bottom trawl survey.

Rock sole

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
50	0	0	3,471,439	3,471,439	0.0004	0.0004
60	483,268	0	7,801,091	8,284,359	0.0008	0.0012
70	298,063	581,519	10,839,520	11,719,102	0.0012	0.0024
80	502,717	689,206	76,329,918	77,521,841	0.0079	0.0103
90	10,381,989	5,178,097	221,173,080	236,733,167	0.0240	0.0343
100	15,711,193	15,687,436	253,710,862	285,109,491	0.0289	0.0632
110	31,719,155	30,549,411	122,725,357	184,993,922	0.0187	0.0819
120	102,424,051	58,175,609	109,211,534	269,811,195	0.0273	0.1092
130	162,313,579	117,265,613	105,287,178	384,866,369	0.0390	0.1482
140	220,586,393	159,394,202	91,807,302	471,787,897	0.0478	0.1960
150	241,842,701	181,942,731	46,538,664	470,324,097	0.0477	0.2437
160	188,521,524	126,756,775	18,689,551	333,967,850	0.0338	0.2775
170	155,764,389	98,077,301	7,391,408	261,233,097	0.0265	0.3040
180	129,921,543	84,047,768	4,843,854	218,813,164	0.0222	0.3262
190	136,136,736	99,821,768	3,857,105	239,815,609	0.0243	0.3505
200	159,141,859	112,850,286	6,528,442	278,520,588	0.0282	0.3787
210	173,209,654	116,578,339	6,326,475	296,114,469	0.0300	0.4087
220	135,248,564	94,568,742	5,948,575	235,765,880	0.0239	0.4326
230	181,276,843	101,938,634	5,469,691	288,685,168	0.0292	0.4618
240	144,944,851	106,795,940	5,772,641	257,513,432	0.0261	0.4879
250	161,998,526	93,220,605	7,965,094	263,184,224	0.0267	0.5146
260	180,494,952	117,843,869	7,789,160	306,127,981	0.0310	0.5456
270	263,543,031	119,023,808	10,662,464	393,229,303	0.0398	0.5854
280	380,354,799	121,677,556	9,049,878	511,082,233	0.0518	0.6372
290	469,448,595	147,751,852	8,167,061	625,367,508	0.0634	0.7006
300	374,482,012	115,085,838	6,127,657	495,695,507	0.0502	0.7508
310	245,290,422	142,251,402	2,420,453	389,962,277	0.0395	0.7903
320	124,335,407	173,143,298	1,866,618	299,345,324	0.0303	0.8206
330	55,350,930	228,672,152	2,270,552	286,293,634	0.0290	0.8496
340	19,095,795	291,315,655	1,716,717	312,128,167	0.0316	0.8813
350	7,647,863	360,070,502	2,296,585	370,014,950	0.0375	0.9187
360	3,981,185	281,563,466	2,296,585	287,841,237	0.0292	0.9479

Appendix D Table 4. -- Continued.

Rock sole

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
370	550,623	244,599,755	1,185,768	246,336,146	0.0250	0.9729
380	865,873	123,263,841	882,818	125,012,531	0.0127	0.9855
390	617,453	73,170,898	302,950	74,091,301	0.0075	0.9930
400	0	29,673,387	100,983	29,774,370	0.0030	0.9961
410	78,134	21,827,568	0	21,905,702	0.0022	0.9983
420	0	10,069,641	0	10,069,641	0.0010	0.9993
430	52,142	4,465,210	0	4,517,352	0.0005	0.9998
440	0	1,530,061	0	1,530,061	0.0002	0.9999
450	0	701,805	0	701,805	0.0001	1.0000
480	0	157,422	0	157,422	0.0000	1.0000
TOTAL	**4,478,616,814**	**4,211,978,972**	**1,179,376,467**	**9,869,972,253**	**1.0000**	**1.0000**

Appendix D Table 5. -- Population estimates by sex and size group for **flathead sole** and **Bering flounder grouped** (*Hippoglossoides* spp.) from the 2004 eastern Bering Sea bottom trawl survey.

Flathead sole / Bering flounder

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
70	54,167	0	300,990	355,157	0.0002	0.0002
80	84,999	84,133	553,253	722,385	0.0004	0.0006
90	356,674	510,465	5,302,088	6,169,227	0.0032	0.0038
100	1,039,348	1,203,599	13,819,155	16,062,101	0.0084	0.0122
110	1,952,911	1,386,396	10,573,176	13,912,484	0.0072	0.0195
120	3,793,056	3,084,742	4,965,125	11,842,923	0.0062	0.0256
130	6,518,636	3,044,816	3,816,834	13,380,286	0.0070	0.0326
140	8,460,637	7,866,909	5,879,041	22,206,586	0.0116	0.0442
150	13,071,134	10,013,421	5,205,777	28,290,332	0.0147	0.0589
160	17,705,197	15,692,545	2,371,990	35,769,731	0.0186	0.0775
170	15,175,424	18,043,030	1,906,523	35,124,976	0.0183	0.0958
180	25,898,739	19,442,911	792,621	46,134,271	0.0240	0.1198
190	20,502,152	17,619,226	662,282	38,783,660	0.0202	0.1400
200	20,011,844	20,180,372	62,674	40,254,890	0.0210	0.1610
210	21,260,010	17,685,910	1,582,730	40,528,650	0.0211	0.1821
220	25,629,687	18,038,293	1,069,800	44,737,780	0.0233	0.2054
230	24,562,335	22,347,998	726,890	47,637,222	0.0248	0.2302
240	29,651,046	22,278,501	1,368,770	53,298,317	0.0278	0.2580
250	29,149,368	22,563,925	1,711,680	53,424,973	0.0278	0.2858
260	40,132,299	24,478,431	1,554,393	66,165,124	0.0345	0.3203
270	38,684,091	29,392,814	1,340,433	69,417,338	0.0362	0.3564
280	54,224,204	33,912,028	270,633	88,406,865	0.0460	0.4025
290	62,091,641	36,656,637	456,257	99,204,535	0.0517	0.4542
300	68,766,432	44,191,627	113,347	113,071,406	0.0589	0.5130
310	64,467,078	37,249,776	389,981	102,106,836	0.0532	0.5662
320	60,707,807	39,418,041	85,010	100,210,859	0.0522	0.6184
330	62,443,863	42,677,251	242,297	105,363,411	0.0549	0.6733
340	65,346,240	36,440,579	85,010	101,871,829	0.0531	0.7264
350	50,671,381	36,612,823	56,674	87,340,877	0.0455	0.7719
360	41,494,551	41,800,958	298,970	83,594,479	0.0435	0.8154
370	30,119,341	34,778,025	56,674	64,954,040	0.0338	0.8492
380	25,706,405	32,235,285	28,337	57,970,027	0.0302	0.8794

Appendix D Table 5. -- Continued.

Flathead sole / Bering flounder

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
390	18,751,073	22,712,347	113,347	41,576,767	0.0217	0.9011
400	8,603,234	27,471,310	28,337	36,102,880	0.0188	0.9199
410	4,573,188	23,766,188	28,337	28,367,713	0.0148	0.9347
420	2,587,951	25,812,885	28,337	28,429,173	0.0148	0.9495
430	1,049,819	21,006,159	0	22,055,978	0.0115	0.9609
440	286,756	21,737,220	0	22,023,976	0.0115	0.9724
450	312,850	14,756,730	0	15,069,580	0.0078	0.9803
460	0	14,477,695	0	14,477,695	0.0075	0.9878
470	0	9,838,255	0	9,838,255	0.0051	0.9929
480	0	6,292,442	0	6,292,442	0.0033	0.9962
490	67,666	5,313,661	0	5,381,327	0.0028	0.9990
500	0	1,300,606	0	1,300,606	0.0007	0.9997
510	0	399,141	0	399,141	0.0002	0.9999
530	0	194,483	0	194,483	0.0001	1.0000
TOTAL	**965,992,316**	**886,077,540**	**67,878,331**	**1,919,948,187**	**1.0000**	**1.0000**

Appendix D Table 6. -- Population estimates by sex and size group for **Alaska plaice** (*Pleuronectes quadrituberculatus*) from the 2004 eastern Bering Sea bottom trawl survey.

Alaska plaice

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
40	0	162,948	0	162,948	0.0002	0.0002
60	0	0	66,976	66,976	0.0001	0.0003
70	114,452	0	133,951	248,404	0.0004	0.0007
80	0	0	133,951	133,951	0.0002	0.0009
90	196,830	222,478	0	419,309	0.0006	0.0015
100	370,502	55,306	66,976	492,783	0.0007	0.0022
110	929,588	196,334	133,951	1,259,873	0.0018	0.0040
120	993,222	1,001,610	0	1,994,833	0.0028	0.0068
130	1,596,105	1,113,513	0	2,709,617	0.0039	0.0107
140	1,134,372	468,286	0	1,602,658	0.0023	0.0130
150	1,245,308	637,361	0	1,882,669	0.0027	0.0157
160	1,429,733	401,359	0	1,831,092	0.0026	0.0183
170	1,878,991	693,845	0	2,572,836	0.0037	0.0219
180	2,045,157	1,260,089	0	3,305,246	0.0047	0.0267
190	2,661,831	1,496,484	0	4,158,316	0.0059	0.0326
200	3,417,716	2,513,903	0	5,931,619	0.0085	0.0411
210	3,674,983	2,841,050	0	6,516,033	0.0093	0.0504
220	4,437,285	3,206,376	0	7,643,661	0.0109	0.0613
230	4,463,382	4,050,433	0	8,513,815	0.0122	0.0734
240	6,767,855	3,670,728	0	10,438,583	0.0149	0.0883
250	4,770,888	4,062,271	0	8,833,159	0.0126	0.1009
260	8,088,854	4,520,765	0	12,609,620	0.0180	0.1189
270	8,770,991	5,555,731	0	14,326,721	0.0204	0.1394
280	9,948,830	4,934,465	0	14,883,296	0.0212	0.1606
290	13,496,934	8,596,755	0	22,093,689	0.0315	0.1922
300	14,720,217	6,164,687	0	20,884,905	0.0298	0.2220
310	20,460,623	6,639,057	0	27,099,680	0.0387	0.2607
320	26,649,205	8,155,160	0	34,804,365	0.0497	0.3103
330	31,738,478	8,943,813	0	40,682,291	0.0581	0.3684
340	32,764,353	9,380,225	0	42,144,577	0.0602	0.4285
350	34,302,856	9,254,391	0	43,557,247	0.0622	0.4907
360	31,683,151	13,517,968	0	45,201,118	0.0645	0.5552

Appendix D Table 6. --Continued.

Alaska plaice

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
370	24,717,416	15,582,844	0	40,300,260	0.0575	0.6128
380	14,670,739	20,175,519	0	34,846,259	0.0497	0.6625
390	9,433,614	21,261,659	0	30,695,273	0.0438	0.7063
400	5,884,813	21,997,690	0	27,882,503	0.0398	0.7461
410	2,398,318	24,461,397	0	26,859,715	0.0383	0.7844
420	1,567,013	24,379,647	0	25,946,660	0.0370	0.8215
430	858,250	22,131,508	0	22,989,757	0.0328	0.8543
440	384,290	20,268,166	0	20,652,455	0.0295	0.8838
450	0	16,322,833	0	16,322,833	0.0233	0.9071
460	0	17,822,051	0	17,822,051	0.0254	0.9325
470	0	10,289,673	0	10,289,673	0.0147	0.9472
480	0	9,743,831	0	9,743,831	0.0139	0.9611
490	0	9,297,503	0	9,297,503	0.0133	0.9744
500	235,910	5,299,778	0	5,535,688	0.0079	0.9823
510	26,979	3,864,604	0	3,891,583	0.0056	0.9878
520	0	3,129,365	0	3,129,365	0.0045	0.9923
530	135,840	2,463,199	0	2,599,039	0.0037	0.9960
540	0	1,219,979	0	1,219,979	0.0017	0.9977
550	0	590,519	0	590,519	0.0008	0.9986
560	159,889	672,471	0	832,360	0.0012	0.9998
570	0	133,166	0	133,166	0.0002	1.0000
580	0	26,791	0	26,791	0.0000	1.0000
TOTAL	**335,225,765**	**364,851,583**	**535,806**	**700,613,153**	**1.0000**	**1.0000**

Appendix D Table 7. -- Population estimates by sex and size group for **Greenland turbot** (*Reinhardtius hippoglossoides*) from the 2004 eastern Bering Sea bottom trawl survey.

Greenland turbot						
Length (mm)	**Males**	**Females**	**Unsexed**	**Total**	**Proportion**	**Cumulative Proportion**
180	0	18,162	0	18,162	0.0027	0.0067
210	25,964	0	0	25,964	0.0039	0.0105
220	18,780	0	0	18,780	0.0028	0.0133
240	0	18,780	0	18,780	0.0028	0.0161
250	0	30,854	0	30,854	0.0046	0.0207
260	19,145	0	0	19,145	0.0028	0.0236
270	43,525	39,393	0	82,918	0.0123	0.0359
280	68,852	69,053	0	137,905	0.0205	0.0565
290	88,919	19,145	0	108,064	0.0161	0.0725
300	37,560	100,484	0	138,044	0.0205	0.0931
310	156,156	56,694	0	212,850	0.0317	0.1248
320	64,350	25,010	0	89,360	0.0133	0.1381
330	89,218	50,815	0	140,032	0.0208	0.1589
340	124,705	25,010	0	149,715	0.0223	0.1812
350	65,875	86,838	0	152,713	0.0227	0.2039
360	249,067	69,032	0	318,100	0.0473	0.2513
370	37,813	106,357	0	144,169	0.0215	0.2727
380	76,982	0	0	76,982	0.0115	0.2842
390	213,878	88,189	0	302,067	0.0450	0.3292
400	37,504	63,986	0	101,489	0.0151	0.3443
410	57,336	57,336	0	114,671	0.0171	0.3613
420	163,859	71,339	0	235,197	0.0350	0.3963
430	57,189	26,336	0	83,525	0.0124	0.4088
440	121,959	82,345	0	204,305	0.0304	0.4392
450	78,420	0	0	78,420	0.0117	0.4509
460	79,097	66,379	0	145,476	0.0217	0.4725
470	147,938	44,839	0	192,777	0.0287	0.5012
480	57,244	0	0	57,244	0.0085	0.5097
490	23,983	44,192	0	68,175	0.0101	0.5199
500	25,490	18,833	0	44,323	0.0066	0.5265
510	84,279	0	0	84,279	0.0125	0.5390
520	51,623	0	0	51,623	0.0077	0.5467

Appendix D Table 7. --Continued.

Greenland turbot

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
530	25,010	0	0	25,010	0.0037	0.5504
540	42,733	19,145	0	61,877	0.0092	0.5596
550	0	26,482	0	26,482	0.0039	0.5636
570	51,623	51,623	0	103,247	0.0154	0.5790
620	23,983	30,854	0	54,836	0.0082	0.5871
640	0	55,157	0	55,157	0.0082	0.5953
650	26,133	0	0	26,133	0.0039	0.5992
670	25,939	0	0	25,939	0.0039	0.6031
680	26,133	0	0	26,133	0.0039	0.6070
690	0	39,897	0	39,897	0.0059	0.6129
700	29,461	53,671	0	83,132	0.0124	0.6253
710	29,461	0	0	29,461	0.0044	0.6297
720	0	26,340	0	26,340	0.0039	0.6336
730	58,922	0	0	58,922	0.0088	0.6424
740	0	79,954	0	79,954	0.0119	0.6543
760	149,120	0	0	149,120	0.0222	0.6765
770	78,748	0	0	78,748	0.0117	0.6882
780	101,016	0	0	101,016	0.0150	0.7032
790	105,473	26,482	0	131,956	0.0196	0.7229
800	0	29,461	0	29,461	0.0044	0.7272
810	0	81,063	0	81,063	0.0121	0.7393
820	39,897	51,345	0	91,242	0.0136	0.7529
830	0	44,125	0	44,125	0.0066	0.7595
840	15,136	136,084	0	151,220	0.0225	0.7820
850	0	164,978	0	164,978	0.0246	0.8065
860	0	106,981	0	106,981	0.0159	0.8224
870	0	153,956	0	153,956	0.0229	0.8454
880	0	237,379	0	237,379	0.0353	0.8807
890	30,854	55,266	0	86,120	0.0128	0.8935
900	0	83,811	0	83,811	0.0125	0.9060
910	0	194,125	0	194,125	0.0289	0.9349
920	0	97,859	0	97,859	0.0146	0.9495
930	0	157,186	0	157,186	0.0234	0.9729
940	0	50,940	0	50,940	0.0076	0.9804
950	0	53,614	0	53,614	0.0080	0.9884

Appendix D Table 7. -- Continued.

Greenland turbot						
Length (mm)	**Males**	**Females**	**Unsexed**	**Total**	**Proportion**	**Cumulative Proportion**
960	0	25,939	0	25,939	0.0039	0.9923
980	0	25,939	0	25,939	0.0039	0.9961
1000	0	25,939	0	25,939	0.0039	1.0000
TOTAL	**3,253,086**	**3,464,994**	**0**	**6,718,080**	**1.0000**	**1.0000**

Appendix D Table 8. -- Population estimates by sex and size group for **arrowtooth flounder** (*Atheresthes stomias*) from the 2004 eastern Bering Sea bottom trawl survey.

Arrowtooth flounder

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
80	69,090	91,426	0	160,517	0.0001	0.0001
90	135,968	30,940	0	166,908	0.0001	0.0003
100	377,878	467,281	771,820	1,616,979	0.0014	0.0016
110	816,122	1,349,362	924,433	3,089,916	0.0026	0.0043
120	1,682,565	2,056,999	1,830,264	5,569,827	0.0047	0.0090
130	1,821,689	764,986	582,120	3,168,795	0.0027	0.0117
140	744,027	1,159,409	310,166	2,213,602	0.0019	0.0136
150	1,808,105	1,296,706	233,489	3,338,300	0.0028	0.0164
160	7,781,991	5,539,303	233,489	13,554,783	0.0115	0.0279
170	12,295,768	13,378,457	175,652	25,849,877	0.0219	0.0498
180	17,315,552	24,266,356	59,145	41,641,053	0.0353	0.0851
190	18,497,770	23,069,163	0	41,566,933	0.0353	0.1204
200	15,703,499	24,279,260	0	39,982,759	0.0339	0.1543
210	11,969,237	17,442,247	0	29,411,483	0.0249	0.1793
220	12,705,219	16,915,551	0	29,620,770	0.0251	0.2044
230	11,057,798	15,162,067	0	26,219,866	0.0222	0.2266
240	15,164,496	20,556,534	0	35,721,030	0.0303	0.2569
250	14,169,662	23,990,651	0	38,160,313	0.0324	0.2893
260	14,907,537	27,982,497	0	42,890,034	0.0364	0.3257
270	14,905,461	32,673,289	0	47,578,750	0.0404	0.3660
280	14,794,044	29,331,494	0	44,125,538	0.0374	0.4035
290	13,342,580	25,445,666	0	38,788,246	0.0329	0.4364
300	14,918,644	30,170,867	0	45,089,511	0.0382	0.4746
310	9,979,322	25,981,733	0	35,961,055	0.0305	0.5051
320	11,729,420	22,458,893	0	34,188,313	0.0290	0.5341
330	9,616,672	22,659,095	0	32,275,767	0.0274	0.5615
340	10,317,384	22,551,696	0	32,869,080	0.0279	0.5894
350	9,704,180	27,130,541	0	36,834,722	0.0312	0.6206
360	9,506,352	26,382,136	0	35,888,488	0.0304	0.6511
370	13,920,679	23,772,085	0	37,692,764	0.0320	0.6830
380	13,784,884	27,217,281	0	41,002,165	0.0348	0.7178
390	10,193,641	23,130,767	0	33,324,408	0.0283	0.7461

Appendix D Table 8. -- Continued.

Arrowtooth flounder

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
400	9,048,360	27,389,024	0	36,437,384	0.0309	0.7770
410	6,298,549	26,765,696	0	33,064,245	0.0280	0.8050
420	6,147,177	26,598,662	0	32,745,839	0.0278	0.8328
430	3,361,772	17,893,119	0	21,254,891	0.0180	0.8509
440	3,209,824	17,683,329	0	20,893,153	0.0177	0.8686
450	2,816,266	13,166,546	0	15,982,812	0.0136	0.8821
460	1,719,210	14,609,040	0	16,328,251	0.0139	0.8960
470	1,359,537	11,497,272	0	12,856,809	0.0109	0.9069
480	915,718	9,594,406	0	10,510,123	0.0089	0.9158
490	1,263,876	8,531,433	0	9,795,309	0.0083	0.9241
500	827,275	7,875,570	0	8,702,845	0.0074	0.9315
510	559,217	7,071,213	0	7,630,430	0.0065	0.9380
520	399,605	7,555,640	0	7,955,245	0.0067	0.9447
530	1,019,286	7,298,635	0	8,317,921	0.0071	0.9518
540	84,304	6,381,665	0	6,465,969	0.0055	0.9573
550	264,771	6,909,755	0	7,174,527	0.0061	0.9633
560	99,190	6,243,313	0	6,342,503	0.0054	0.9687
570	483,237	5,001,428	0	5,484,666	0.0047	0.9734
580	42,152	4,461,998	0	4,504,150	0.0038	0.9772
590	789,751	3,677,556	0	4,467,307	0.0038	0.9810
600	0	3,045,837	0	3,045,837	0.0026	0.9836
610	283,219	3,676,950	0	3,960,168	0.0034	0.9869
620	0	1,891,066	0	1,891,066	0.0016	0.9885
630	0	1,505,078	0	1,505,078	0.0013	0.9898
640	0	1,731,712	0	1,731,712	0.0015	0.9913
650	0	1,469,922	0	1,469,922	0.0012	0.9925
660	230,119	1,890,221	0	2,120,340	0.0018	0.9943
670	111,483	981,033	0	1,092,517	0.0009	0.9953
680	35,487	1,088,472	0	1,123,959	0.0010	0.9962
690	0	1,081,923	0	1,081,923	0.0009	0.9971
700	0	528,498	0	528,498	0.0004	0.9976
710	0	199,519	0	199,519	0.0002	0.9977
720	0	707,507	0	707,507	0.0006	0.9983
730	0	336,110	0	336,110	0.0003	0.9986
740	0	861,857	0	861,857	0.0007	0.9994

Appendix D Table 8. -- Continued.

Arrowtooth flounder						
Length (mm)	**Males**	**Females**	**Unsexed**	**Total**	**Proportion**	**Cumulative Proportion**
750	0	355,763	0	355,763	0.0003	0.9997
770	0	174,768	0	174,768	0.0001	0.9998
780	0	80,479	0	80,479	0.0001	0.9999
790	0	91,782	0	91,782	0.0001	1.0000
830	0	56,205	0	56,205	0.0000	1.0000
TOTAL	**357,106,621**	**816,664,740**	**5,120,578**	**1,178,891,938**	**1.0000**	**1.0000**

Appendix D Table 9. -- Population estimates by sex and size group for **Kamchatka flounder** (*Atheresthes evermanni*) from the 2004 eastern Bering Sea bottom trawl survey.

Kamchatka flounder

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
70	26,997	0	0	26,997	0.0002	0.0004
80	0	0	25,875	25,875	0.0002	0.0006
100	217,586	30,850	107,425	355,861	0.0025	0.0031
110	27,699	143,423	287,838	458,959	0.0033	0.0064
120	778,781	163,991	247,939	1,190,710	0.0085	0.0149
130	324,383	124,891	184,063	633,338	0.0045	0.0194
140	770,242	222,125	25,875	1,018,243	0.0073	0.0267
150	955,582	822,571	139,078	1,917,231	0.0137	0.0404
160	2,864,234	1,954,603	25,875	4,844,712	0.0346	0.0749
170	4,577,900	4,155,707	0	8,733,607	0.0623	0.1372
180	8,856,337	7,947,653	0	16,803,990	0.1199	0.2571
190	9,214,309	7,376,048	0	16,590,356	0.1184	0.3755
200	8,147,221	7,013,228	0	15,160,449	0.1082	0.4837
210	5,694,474	4,987,312	0	10,681,786	0.0762	0.5599
220	2,822,550	3,962,346	0	6,784,897	0.0484	0.6083
230	1,939,443	2,373,192	0	4,312,635	0.0308	0.6390
240	1,554,628	1,248,405	0	2,803,034	0.0200	0.6590
250	1,460,958	1,462,340	0	2,923,299	0.0209	0.6799
260	1,872,712	2,725,591	0	4,598,303	0.0328	0.7127
270	1,092,007	1,481,592	0	2,573,599	0.0184	0.7311
280	1,938,467	2,131,452	0	4,069,920	0.0290	0.7601
290	1,085,432	1,420,827	0	2,506,259	0.0179	0.7780
300	1,491,311	1,529,905	0	3,021,216	0.0216	0.7995
310	1,139,932	1,593,773	0	2,733,705	0.0195	0.8190
320	1,418,823	1,853,834	0	3,272,657	0.0233	0.8424
330	1,546,831	1,505,582	0	3,052,413	0.0218	0.8642
340	1,128,777	1,208,312	0	2,337,089	0.0167	0.8808
350	748,496	782,206	0	1,530,702	0.0109	0.8918
360	474,457	973,363	0	1,447,820	0.0103	0.9021
370	731,034	598,170	25,875	1,355,079	0.0097	0.9118
380	340,730	469,903	0	810,633	0.0058	0.9176
390	433,207	841,914	0	1,275,121	0.0091	0.9266

Appendix D Table 9. -- Continued.

Kamchatka flounder

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
400	452,394	188,626	0	641,020	0.0046	0.9312
410	217,293	1,018,425	0	1,235,718	0.0088	0.9400
420	241,423	294,244	25,875	561,541	0.0040	0.9440
430	307,914	284,108	0	592,022	0.0042	0.9483
440	331,202	228,805	0	560,006	0.0040	0.9523
450	334,460	260,360	0	594,819	0.0042	0.9565
460	276,753	335,913	0	612,666	0.0044	0.9609
470	236,924	218,429	0	455,354	0.0032	0.9641
480	386,344	312,979	0	699,323	0.0050	0.9691
490	137,179	222,796	0	359,975	0.0026	0.9717
500	269,058	238,129	25,875	533,062	0.0038	0.9755
510	51,639	209,835	0	261,474	0.0019	0.9774
520	26,148	323,569	0	349,717	0.0025	0.9798
530	187,754	247,797	0	435,551	0.0031	0.9830
540	62,820	109,145	0	171,966	0.0012	0.9842
550	75,425	186,302	0	261,726	0.0019	0.9861
560	238,740	45,287	0	284,027	0.0020	0.9881
570	75,438	176,793	0	252,231	0.0018	0.9899
580	19,782	52,483	0	72,266	0.0005	0.9904
590	0	80,861	0	80,861	0.0006	0.9910
610	0	45,078	0	45,078	0.0003	0.9913
620	0	65,112	0	65,112	0.0005	0.9918
630	0	168,746	0	168,746	0.0012	0.9930
640	0	51,639	0	51,639	0.0004	0.9933
650	0	168,614	0	168,614	0.0012	0.9945
660	0	46,704	0	46,704	0.0003	0.9949
670	0	100,651	0	100,651	0.0007	0.9956
680	0	27,553	0	27,553	0.0002	0.9958
690	0	18,162	0	18,162	0.0001	0.9959
700	0	143,867	0	143,867	0.0010	0.9969
710	0	98,790	0	98,790	0.0007	0.9976
720	0	244,028	0	244,028	0.0017	0.9994
740	0	30,958	0	30,958	0.0002	0.9996
750	0	24,934	0	24,934	0.0002	0.9998
780	0	30,958	0	30,958	0.0002	1.0000

Appendix D Table 9. -- Continued.

Kamchatka flounder

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
TOTAL	**69,604,230**	**69,405,788**	**1,151,559**	**140,161,577**	**1.0000**	**1.0000**

Appendix D Table 10. -- Population estimates by sex and size group for **Pacific halibut** (*Hippoglossus stenolepis*) from the 2004 eastern Bering Sea bottom trawl survey.

Pacific halibut

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
60	0	0	27,773	27,773	0.0004	0.0016
80	0	0	27,773	27,773	0.0004	0.0020
90	0	0	43,823	43,823	0.0007	0.0026
100	0	0	53,465	53,465	0.0008	0.0035
110	0	0	135,936	135,936	0.0021	0.0055
120	0	0	109,010	109,010	0.0016	0.0072
130	0	0	27,337	27,337	0.0004	0.0076
140	0	0	27,773	27,773	0.0004	0.0080
150	0	0	25,692	25,692	0.0004	0.0084
160	0	0	55,188	55,188	0.0008	0.0092
170	27,290	0	118,715	146,005	0.0022	0.0114
180	84,869	0	317,862	402,731	0.0061	0.0175
190	0	27,290	504,286	531,576	0.0080	0.0256
200	55,401	27,290	694,003	776,695	0.0118	0.0373
210	59,225	0	1,529,890	1,589,115	0.0240	0.0614
220	43,962	43,464	2,914,003	3,001,429	0.0454	0.1068
230	31,522	0	3,021,764	3,053,285	0.0462	0.1530
240	15,761	0	2,621,480	2,637,241	0.0399	0.1929
250	15,761	15,761	2,166,765	2,198,286	0.0333	0.2262
260	0	0	1,758,506	1,758,506	0.0266	0.2528
270	0	54,415	1,357,405	1,411,820	0.0214	0.2741
280	0	0	1,114,702	1,114,702	0.0169	0.2910
290	27,767	55,471	1,237,044	1,320,282	0.0200	0.3110
300	15,761	44,095	624,662	684,518	0.0104	0.3213
310	0	43,528	197,655	241,183	0.0036	0.3250
320	55,535	59,225	255,205	369,965	0.0056	0.3306
330	126,543	43,464	332,886	502,894	0.0076	0.3382
340	102,827	146,355	508,009	757,191	0.0115	0.3497
350	140,325	125,726	608,809	874,860	0.0132	0.3629
360	247,641	318,691	1,015,061	1,581,393	0.0239	0.3868
370	348,682	248,473	797,947	1,395,102	0.0211	0.4079
380	353,148	404,891	1,217,400	1,975,438	0.0299	0.4378

Appendix D Table 10. -- Continued.

Pacific halibut

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
390	264,921	208,510	1,167,539	1,640,971	0.0248	0.4627
400	231,707	307,333	803,151	1,342,191	0.0203	0.4830
410	83,736	196,413	507,026	787,175	0.0119	0.4949
420	138,768	131,785	791,181	1,061,734	0.0161	0.5109
430	70,796	27,767	498,213	596,776	0.0090	0.5200
440	43,528	86,477	795,160	925,164	0.0140	0.5340
450	54,479	71,299	1,014,505	1,140,284	0.0173	0.5512
460	155,099	166,420	1,007,503	1,329,022	0.0201	0.5713
470	73,490	83,226	1,194,444	1,351,161	0.0204	0.5918
480	198,731	240,147	1,157,144	1,596,023	0.0242	0.6159
490	245,522	278,614	1,122,826	1,646,962	0.0249	0.6409
500	114,409	255,626	1,329,203	1,699,238	0.0257	0.6666
510	164,181	154,482	959,819	1,278,482	0.0193	0.6859
520	168,075	199,091	732,544	1,099,710	0.0166	0.7026
530	29,649	198,762	749,235	977,647	0.0148	0.7174
540	53,628	126,436	786,217	966,281	0.0146	0.7320
550	135,932	82,210	584,023	802,165	0.0121	0.7441
560	216,440	15,133	478,250	709,824	0.0107	0.7549
570	108,694	83,195	475,112	667,002	0.0101	0.7650
580	179,674	155,269	555,317	890,260	0.0135	0.7784
590	69,121	108,735	534,667	712,524	0.0108	0.7892
600	198,990	164,027	510,883	873,900	0.0132	0.8024
610	56,938	236,601	347,684	641,224	0.0097	0.8121
620	69,568	114,629	583,981	768,177	0.0116	0.8238
630	0	123,821	482,694	606,515	0.0092	0.8329
640	51,707	110,445	445,261	607,414	0.0092	0.8421
650	30,717	80,858	391,660	503,235	0.0076	0.8497
660	0	176,326	433,159	609,484	0.0092	0.8590
670	55,720	30,494	218,979	305,192	0.0046	0.8636
680	98,733	67,654	245,778	412,165	0.0062	0.8698
690	41,538	41,845	263,112	346,495	0.0052	0.8751
700	52,007	47,524	267,664	367,196	0.0056	0.8806
710	82,974	56,043	206,011	345,029	0.0052	0.8858
720	104,592	48,494	178,289	331,375	0.0050	0.8909
730	25,451	111,105	85,494	222,050	0.0034	0.8942

Appendix D Table 10. -- Continued.

Pacific halibut

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
740	39,303	0	167,310	206,613	0.0031	0.8973
750	65,636	25,592	148,389	239,617	0.0036	0.9010
760	39,697	67,687	159,471	266,855	0.0040	0.9050
770	0	26,837	117,736	144,574	0.0022	0.9072
780	104,392	114,585	155,357	374,334	0.0057	0.9129
790	51,707	115,627	262,876	430,211	0.0065	0.9194
800	106,260	0	78,350	184,610	0.0028	0.9222
810	0	26,836	135,129	161,965	0.0025	0.9246
820	0	52,342	114,587	166,929	0.0025	0.9271
830	76,905	53,449	108,899	239,254	0.0036	0.9308
840	0	125,055	45,259	170,314	0.0026	0.9333
850	40,332	51,497	193,299	285,128	0.0043	0.9377
860	0	122,793	220,738	343,531	0.0052	0.9429
870	26,569	97,448	209,406	333,423	0.0050	0.9479
880	0	82,241	54,307	136,548	0.0021	0.9500
890	0	53,613	114,484	168,097	0.0025	0.9525
900	106,884	39,850	80,070	226,804	0.0034	0.9559
910	0	96,661	111,743	208,404	0.0032	0.9591
920	39,856	14,105	195,491	249,451	0.0038	0.9629
930	32,156	54,544	169,871	256,571	0.0039	0.9668
940	0	0	97,495	97,495	0.0015	0.9682
950	27,608	17,462	52,562	97,632	0.0015	0.9697
960	0	79,431	56,903	136,335	0.0021	0.9718
970	0	53,732	100,065	153,797	0.0023	0.9741
980	0	51,659	59,570	111,230	0.0017	0.9758
990	0	134,232	91,394	225,625	0.0034	0.9792
1000	0	0	137,182	137,182	0.0021	0.9813
1010	0	0	28,270	28,270	0.0004	0.9817
1020	28,235	55,787	53,146	137,168	0.0021	0.9838
1030	25,860	0	26,916	52,776	0.0008	0.9846
1040	0	25,451	43,200	68,651	0.0010	0.9856
1050	0	0	27,177	27,177	0.0004	0.9860
1060	0	0	16,416	16,416	0.0002	0.9863
1080	0	0	24,112	24,112	0.0004	0.9866
1090	0	0	85,006	85,006	0.0013	0.9879

Appendix D Table 10. --Continued.

Pacific halibut Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
1100	0	0	57,898	57,898	0.0009	0.9888
1120	0	0	29,247	29,247	0.0004	0.9892
1130	0	52,342	84,609	136,951	0.0021	0.9913
1140	0	27,620	82,158	109,778	0.0017	0.9930
1150	0	26,712	0	26,712	0.0004	0.9934
1160	0	0	29,086	29,086	0.0004	0.9938
1170	0	0	83,790	83,790	0.0013	0.9951
1180	0	15,361	0	15,361	0.0002	0.9953
1190	0	0	31,579	31,579	0.0005	0.9958
1200	0	25,751	0	25,751	0.0004	0.9962
1210	0	0	28,000	28,000	0.0004	0.9966
1240	0	0	26,482	26,482	0.0004	0.9970
1250	0	28,752	16,050	44,802	0.0007	0.9977
1270	0	25,751	0	25,751	0.0004	0.9981
1280	0	0	19,370	19,370	0.0003	0.9984
1300	0	0	19,989	19,989	0.0003	0.9987
1360	0	0	19,989	19,989	0.0003	0.9990
1480	0	0	19,370	19,370	0.0003	0.9993
1610	0	0	19,222	19,222	0.0003	0.9996
1750	0	0	29,176	29,176	0.0004	1.0000
TOTAL	**6,232,938**	**8,085,745**	**51,764,957**	**66,083,640**	**1.0000**	**1.0000**