



**Alaska  
Fisheries Science  
Center**

National Marine  
Fisheries Service

U.S. DEPARTMENT OF COMMERCE

## **AFSC PROCESSED REPORT 2004-02**

# 2003 Bottom Trawl Survey of the Eastern Bering Sea Continental Shelf

January 2004

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2003 BOTTOM TRAWL SURVEY OF THE EASTERN BERING SEA  
CONTINENTAL SHELF

Compilers

Erika Acuna  
Stan Kotwicki

Bering Sea Subtask

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

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

January 2004



## 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 2003, this area was again surveyed by two chartered trawlers, the 40-m F/V *Arcturus* and the 40-m F/V *Aldebaran*.

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

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

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



## CONTENTS

INTRODUCTION .....	1
METHODS .....	3
Survey Area and Sampling Design .....	3
Vessels and Fishing Gear .....	7
Data Collection .....	10
Data Analysis .....	14
Special Studies .....	15
RESULTS .....	17
Station Data .....	17
Environmental Conditions .....	17
Relative Fishing Powers of Survey Vessels .....	21
Estimated Biomass of Major Fish and Invertebrate Groups .....	22
Relative Abundance of Individual Fish Species .....	22
Abundance, Distribution, and Size Composition of Principal Species and Species Groups .....	27
Walleye pollock .....	29
Pacific cod .....	32
Yellowfin sole .....	35
<i>Lepidopsetta</i> spp. ....	38
<i>Hippoglossoides</i> spp. ....	41
Alaska plaice .....	44
Greenland turbot .....	47
Arrowtooth flounder .....	50
Kamchatka flounder .....	53
Pacific halibut .....	56
Bering skate .....	59
Alaska skate .....	61
Warty sculpin .....	63
Great sculpin .....	65
Plain sculpin .....	67
Bigmouth sculpin .....	69
Wattled eelpout .....	71
Shortfin eelpout .....	73
Marbled eelpout .....	75
Sturgeon poacher .....	77
Bering poacher .....	79
Eulachon .....	80
Capelin .....	81
Pacific herring .....	82

CITATIONS .....	83
Appendix A. Station Data .....	87
Appendix B. List of Species Encountered .....	101
Appendix C. Rank Order of Relative Abundance of Fish and Invertebrates .....	115
Appendix D. Abundance Estimates for Principal Fish Species .....	127
Appendix E. Population Estimates by Sex and Size Groups for Principal Fish Species .....	151



## INTRODUCTION

The eastern Bering Sea continental shelf supports one of the most productive groundfish fisheries in the world (Bakkala 1993). Since 1970, groundfish such as walleye pollock (*Theragra chalcogramma*), yellowfin sole (*Limanda aspera*) and Pacific cod (*Gadus macrocephalus*) have been the primary target species among commercial catches. Although many species are caught commercially, the most abundant has been the walleye pollock with catches ranging from 1.2 to 2.2 million metric tons for the past 30 years (North Pacific Fishery Management Council 2002).

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

walleye pollock population. Subsequent annual bottom trawl surveys have essentially resampled the stations established during the 1975 survey, with slight modifications each year. This region encompasses the major portion of economically important eastern Bering Sea groundfish and crab populations, except those primarily located in continental slope waters. Every third year through 1991 (1979, 1982, 1985, 1988, 1991) an extended survey was conducted, including 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 subsequently sampled biennially independently of the shelf.

The information gathered by the annual surveys serves to 1) provide the North Pacific Fishery Management Council with annual fishery-independent estimates of abundance and biological condition of commercially exploited stocks, 2) provide distribution and abundance information to commercial fishermen, and 3) develop a time-series database contributing to our understanding of the population dynamics and interactions of groundfish species.

This report presents information collected by the AFSC in the eastern Bering Sea during the 2003 bottom trawl survey. The groundfish/crab survey and several ancillary projects were conducted from 29 May to 2 August by two U.S. vessels. Detailed information on principal crab species can be obtained by contacting Dr. L.J. Rugolo (NOAA/NMFS/AFSC/ Kodiak Fishery Research Center 301 Research Court, Kodiak, AK 99615).

## METHODS

### Survey Area and Sampling Design

The standard station pattern for the eastern Bering Sea survey is based on a systematic 20 × 20 nautical mile grid. In areas surrounding St. Matthew and the Pribilof Islands, grid block corners were also sampled to better assess blue king crab (*Paralithodes platypus*) concentrations. The survey design pattern calls for 356 stations. In 2003, 356 standard stations and 20 additional stations northwest of the standard pattern were successfully sampled (Fig. 1). These stations have been sampled annually since 1990 but are not yet considered to be part of the standard survey. For the purposes of this publication, only 2003 standard survey data are included.

Additional experiments were conducted during the survey: 19 inshore stations were sampled for the 4<sup>th</sup> consecutive year to further understand yellowfin sole (ecology (Fig. 1 and Appendix A). A red king crab (*Paralithodes camtschaticus*) “Hot Spot” (>100 legal males in catch) was encountered early in the survey which led to 4 additional tows being made within 5 nautical miles from the survey station in the north, east, south, and west directions. A 9-day special project was conducted after the standard survey was completed to examine trawl footrope size selectivity for skates by utilizing an auxiliary net beneath the survey trawl to account for skates escaping under the footrope. The results of this study will be available in 2004. In addition, an exploratory study was also conducted after the end of the standard survey in the Pribilof Canyon area focusing on northern rockfish (*Sebastes polyspinis*). The goal of the 5-day study was to evaluate the feasibility of sampling patchily distributed rockfish with hydroacoustic and bottom trawl methods.

Starting with the eastern stations, the two vessels fished alternate north/south lines of stations such that coverage of the survey area was similar for each vessel. This sampling design facilitated the computation of relative fishing powers (or catch efficiencies) of the two vessels. The progression from east to west was established to prevent multiple encounters of yellowfin sole, (*Pleuronectes quadrituberculatus*), and perhaps other species which may be migrating eastward during the course of the survey (Smith and Bakkala 1982). Tows were usually 30 minutes in duration and fishing was limited to daylight hours. For data analysis, the survey region was divided into six subareas bounded by the 50-m, 100-m, and 200-m isobaths and by a line separating the northwest and southeast portions of the study area (Fig. 1). This stratification scheme was designed to reduce the variances of population and biomass estimates by conforming to oceanographic domains which seem related to distributions of Bering Sea fishes (Bakkala 1993). The presence of high-density sampling for blue king crab in subareas 3, 4, and 6 necessitated a further division of these subareas into high-density and standard-density sample strata, resulting in a total of 10 geographic strata. The overall sampling density for the entire survey area was one station per 1,305 km<sup>2</sup> (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<sup>2</sup> to one per 1,552 km<sup>2</sup>.

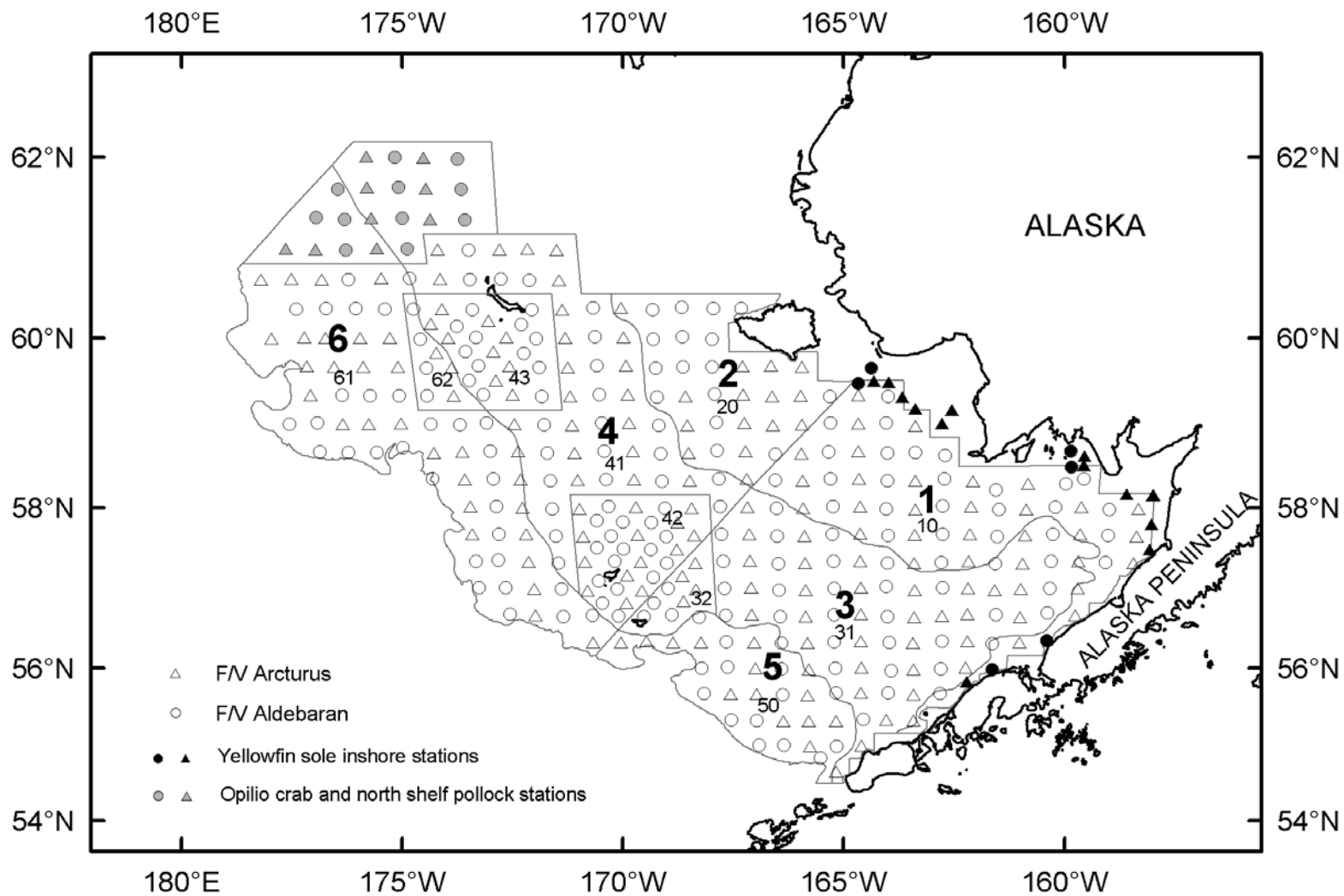


Figure 1 - Standard and special study stations sampled during the 2003 eastern Bering Sea bottom trawl survey, and stratifications used for analysis of data (large numbers = subarea, small numbers = strata).

Table 1.--Size of subareas and strata, and sampling densities for the 2003 eastern Bering Sea bottom trawl survey (See also Fig. 1).

Subarea	Area (km <sup>2</sup> )	No. Stations successfully sampled	Sampling density (km <sup>2</sup> /stn)
1 (10)	77,871	59	1,320
2 (20)	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 (50)	38,792	26	1,492
6	94,562	67	1,411
(61)	88,134	60	1,469
(62)	6,429	7	918
<b>Subareas Combined</b>	<b>463,374</b>	<b>356</b>	<b>1,302</b>

### Vessels and Fishing Gear

The 2003 eastern Bering Sea bottom trawl survey was conducted aboard the 40-m fishing vessels F/V *Arcturus* and F/V *Aldebaran* (Table 2). As in previous years, both vessels were equipped with 83-112 eastern otter trawls which have 25.3-m (83 ft) headropes and 34.1-m (112 ft) footropes (Fig. 2). These nets were attached to tail chains with 54.9-m (30 fathoms) paired dandyline. Each lower dandyline had a 0.61-m chain extension connected to the lower wing edge to improve bottom tending characteristics. Steel "V"-doors measuring  $1.8 \times 2.7$  m and weighing 816 kg were used.

Table 2.--Characteristics of vessels used during the 2003 eastern Bering Sea bottom trawl survey.

Vessel	Overall length (m)	Horsepower	Survey period	
			Start	Finish
F/V <i>Arcturus</i>	40	1,525	29 May	02 August
F/V <i>Aldebaran</i>	40	1,525	29 May	02 August

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

<sup>1</sup> Reference to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.

83/112 EASTERN

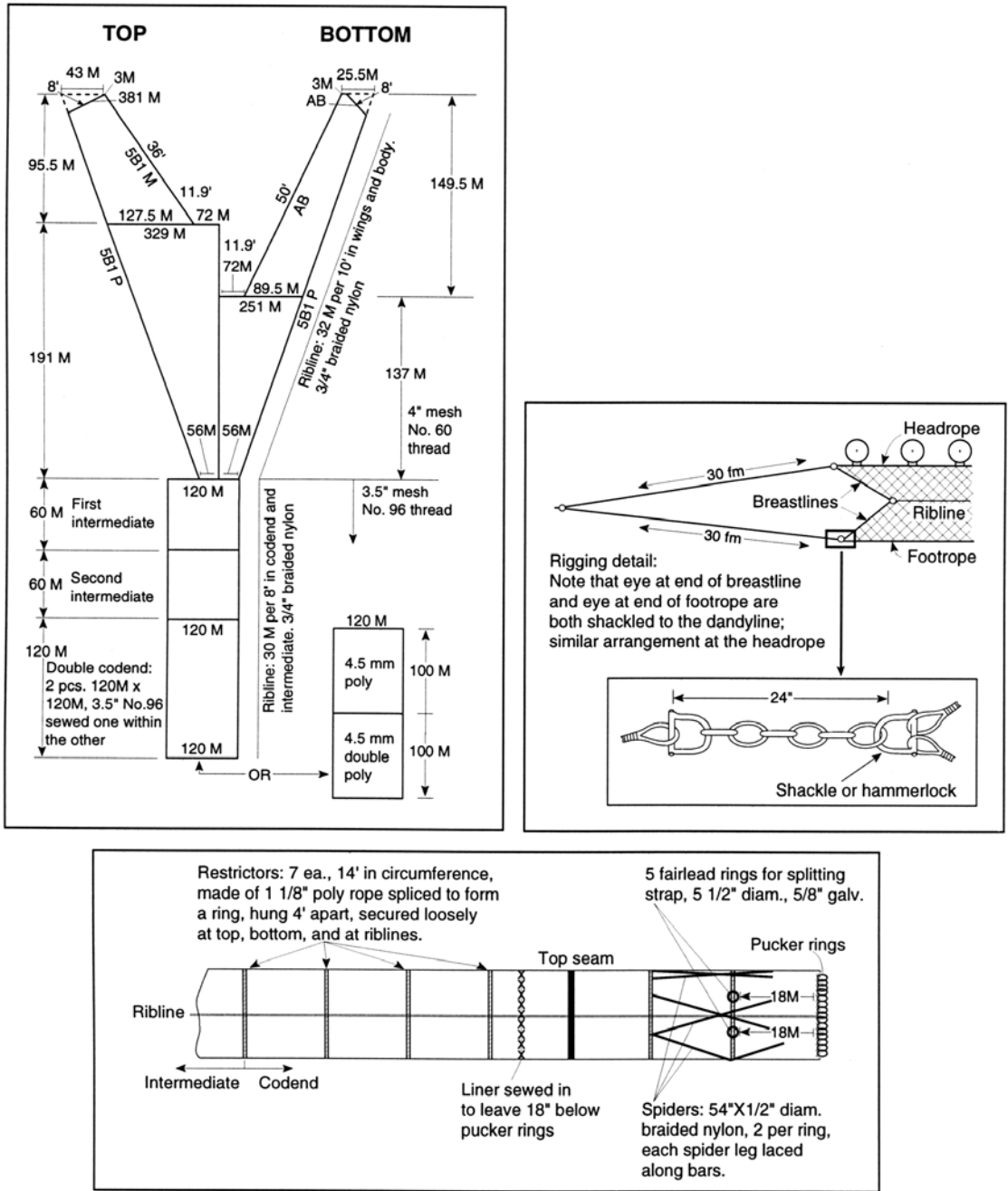


Figure 2.--Schematic diagram of trawl used during the 2003 eastern Bering Sea bottom trawl survey.



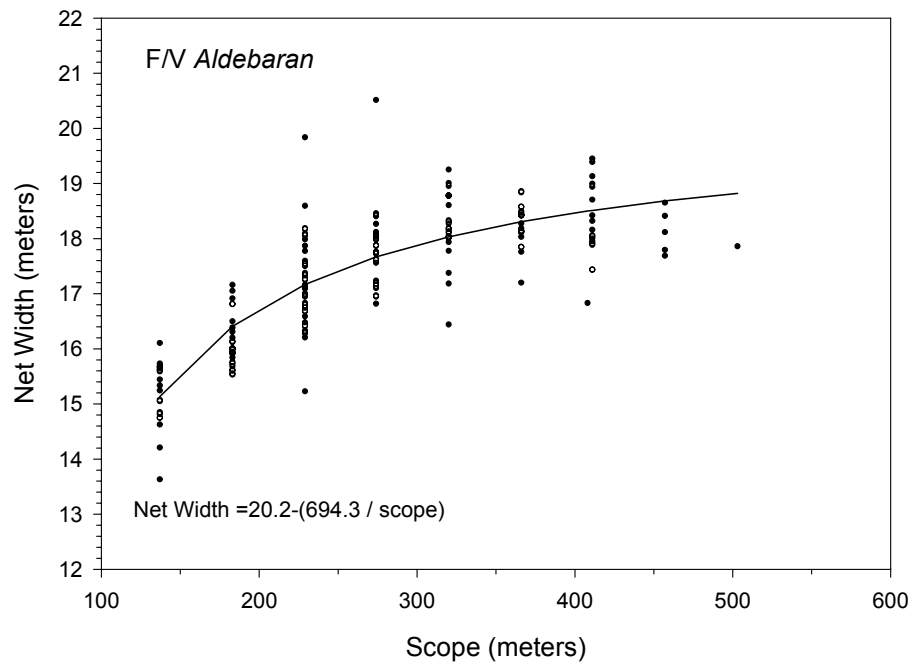
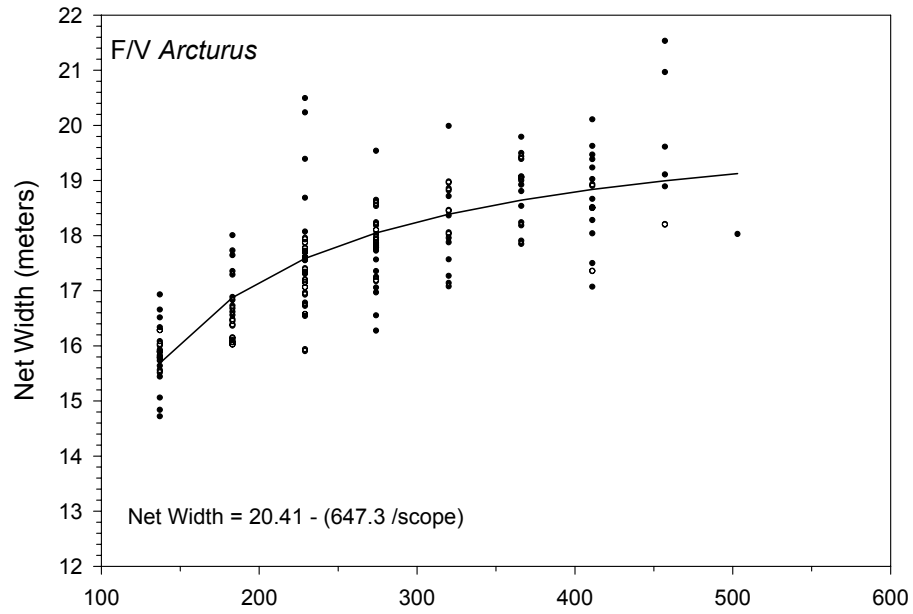


Figure 3.— Relationship between net-width and scope (wire-out) for vessels participating in the 2003 eastern Bering Sea survey.

## Data Collection

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

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

Catches of less than approximately 1,150 kg (2,500 lb) were processed entirely and larger catches were subsampled. Economically important fish and invertebrates were sorted to species with the exception of four species of flatfish. Similar features between flathead sole (*Hippoglossoides elassodon*) and Bering flounder (*H. robustus*) made identification of these species (*Hippoglossoides* spp. in text and tables) difficult within the time constraints of the survey; thus, these species were grouped by genus for purposes of this report. Due to low abundance of southern rock sole (*Lepidopsetta bilineata*) and its morphological similarities to northern rock sole (*L. polyxystra*) (Orr and Matarese 2000) these species were also grouped by genus (*Lepidopsetta* spp.). Minor species of fish and invertebrates were sorted to the lowest taxonomic level practicable. Catch weights and numbers by species or species group were estimated directly or, when subsampled, estimated by extrapolating the proportion in the subsample to that of the entire catch weight. Pacific halibut (*Hippoglossus stenolepis*) and crab species of the genera *Paralithodes* (red and blue king crabs, *P. camtschaticus* and *P. platypus*,

respectively), *Chionoecetes* (snow and Tanner crabs, *C. opilio* and *C. bairdi*, respectively), and *Erimacrus isenbeckii* (hair crab) were usually weighed and enumerated from the entire catch. Size composition data were collected for each commercially important species and many co-habiting species (Table 3). Unless sampled by the International Pacific Halibut Commission (IPHC) for management purposes, Pacific halibut were measured immediately upon capture and returned to sea in an effort to reduce sampling mortality for this species. Random samples of the remaining species of approximately 150-200 individuals (200-300 in the case of walleye pollock) were sexed and measured to the nearest centimeter from the tip of the snout to the end of the middle rays of the caudal fin (fork length measurement).

Sagittal otoliths were collected from twelve fish species (Table 4). In both the northwestern and southeastern divisions of the survey area, three otolith pairs per sex/centimeter interval per vessel (6 pair total) were collected for Pacific cod, Greenland turbot (*Reinhardtius hippoglossoides*), and northern rocksole (*Lepidopsetta polyxystra*), and five otolith pairs per sex/centimeter interval per vessel (10 pair total) for all other species except Alaska plaice and flathead sole which were only collected on one vessel. Aboard the F/V *Arcturus* and F/V *Aldebaran*, Pacific halibut otoliths were collected by the IPHC for population and growth analyses. Individual fish weight data were collected for all species for which age structures were taken. 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 by bucket thermometer.

Table 3.--Number of length measurements taken during the 2003 eastern Bering Sea bottom trawl survey.

Species	Length measurements by subarea						Total <sup>a</sup>
	1	2	3	4	5	6	
Alaska plaice	1,972	1,878	1,711	2,607	---	107	8,343
Alaska skate	275	292	459	797	166	573	2,818
Aleutian skate	---	---	2	---	28	11	41
Arctic cod	---	---	---	1	---	---	142
Bering flounder	---	21	---	485	---	79	2,050
Bering skate	---	---	22	14	76	106	226
Dover sole	1	---	5	---	---	---	6
Greenland turbot	---	---	3	69	---	166	622
Kamchatka flounder	---	---	151	152	313	879	1,530
Pacific cod	2,105	723	2,559	4,270	289	1,257	11,835
Pacific halibut	672	349	282	361	46	153	1,869
Pacific ocean perch	---	---	---	---	36	137	173
Pacific sleeper shark	---	---	---	---	---	---	1
Sakhalin sole	---	---	---	8	---	---	77
arrowtooth flounder	143	4	5,046	1,965	3,635	3,868	14,829
bigmouth sculpin	---	---	40	50	21	52	163
butter sole	1	---	---	---	---	---	1
chum salmon	---	---	---	---	---	1	1
flathead sole	321	4	4,526	2,719	3,610	6,472	17,966
great sculpin	53	4	175	158	8	264	708
light dusky rockfish	---	---	---	---	2	---	2
longhead dab	1,300	384	5	---	---	---	1,689
mud skate	---	---	---	---	6	2	8
northern rock sole	8,441	5,412	7,103	7,375	48	981	29,520
northern rockfish	---	---	---	---	41	1	42
plain sculpin	1,528	1,271	23	66	---	1	2,889
rex sole	18	---	149	2	1,118	449	1,736
rougheye rockfish	---	---	---	---	12	---	12
sablefish	---	---	2	---	5	---	7
saffron cod	50	---	---	---	---	---	50
southern rock sole	---	---	18	---	---	---	18
starry flounder	474	64	54	---	---	---	592
walleye pollock	1,424	1,535	9,775	17,453	1,504	10,767	46,585
warty sculpin	---	13	7	191	---	10	225
yellow Irish lord	2	1	145	355	1	41	546
yellowfin sole	8,360	6,150	6,920	5,638	3	---	27,135

<sup>a</sup>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 2003 eastern Bering Sea bottom trawl survey.

Species	Subarea						Total <sup>a</sup>
	1	2	3	4	5	6	
walleye pollock	81	225	431	595	57	106	1596
Pacific halibut <sup>b</sup>							836
Pacific cod	178	54	363	478	54	78	1278
yellowfin sole	220	217	152	110	---	---	699
flathead sole	28	---	222	157	88	81	640
northern rock sole	257	149	19	69	9	15	518
Greenland turbot	---	---	3	55	---	118	435
plain sculpin	237	120	7	39	---	1	404
great sculpin	22	---	68	95	5	144	372
Alaska plaice	139	51	51	61	---	18	320
yellow Irish lord	---	---	94	117	1	11	223
warty sculpin	---	13	2	169	---	7	194

<sup>a</sup>Some age structures were collected outside the standard survey area.

<sup>b</sup>Age structure collection analyzed and managed by the International Pacific Halibut Commission (IPHC); data were not tallied by subareas.

## Data Analysis

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

Relative fishing powers between the two vessels were determined using the methods of Kappenman (1992). Three hundred and fifty-six stations sampled by the two vessels during the standard survey (Fig. 1) were used in that analysis (see Appendix A).

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

In estimating the size composition of populations of principal commercial species, a 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

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

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

Table 5.--Biological fish samples collected for special studies during the 2003 eastern Bering Sea bottom trawl survey.

Species	Stomach samples collected <sup>a</sup>	Pathology samples <sup>b</sup>
Walleye pollock	2,537	3
Pacific cod	1,924	
<i>Atheresthes</i> spp.	461	2
Pacific halibut	276	
Greenland turbot	258	2
Alaska skate	147	2
Bering skate	7	2
Red king crab		16
Blue king crab		29
Horsehair crab		2
<i>Chionoecetes bairdi</i>		879
<i>Chionoecetes opilio</i>		368
Pacific cod		4
Northern rock sole		4
Kamchatka flounder		2
flathead sole		2
rex sole		1
yellowfin sole		2
Sakhalin sole		1
starry flounder		1
Alaska plaice		2
sawback poacher		2
sturgeon poacher		2
searcher		2
Pacific herring		2
warty sculpin		2
great sculpin		2
plain sculpin		2
capelin		2
wattled eelpout		2
shortfin eelpout		2
Hirudinea unident.		6
<i>Hyas coarctatus</i>		2
Pacific lyre crab		2
Alaska hermit crab		2

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

<sup>b</sup>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

Station data from the 2003 survey are listed in Appendix A. Relevant information such as position, tow parameters (net width, depth, distance fished, and duration of tow), time, and environmental measurements (surface and gear temperatures) are listed for each vessel for all standard bottom trawl stations used in the analyses.

## Environmental Conditions

Sea surface temperatures recorded during the survey ranged from 4.0° to 10.6° C (Fig. 4). As in most previous years, surface temperature increased from east to west across the shelf, probably reflecting the progression of summer warming as the survey proceeded from east to west.

Bottom temperatures ranged from 0.2° to 7.7° C (Fig. 5). The warmest bottom temperatures (above 3.0° C) occurred in shallow waters along the northern portion of Bristol Bay to Nunivak Island, the southern central shelf, and north of St. George Island. The coldest bottom temperatures observed were in the northern portion of the mid-shelf at depths between 50 and 100 m.

The mean bottom water temperature for the total survey area in 2003 was 3.81° C (Fig. 6). This is the largest mean summer bottom temperature recorded in the 22 years since the standard survey began in 1982 (annual mean temperatures range from 0.81° to 3.81° C; average of annual means is 2.53° C). Mean bottom temperatures observed over a more limited region of the southeast Bering Sea, which has been sampled annually since 1971, have ranged from 1.2° to 4.8° C; the 2003 value for this area was 4.38° C, which is significantly higher than the long-term average (3.13° C) (Fig. 6).

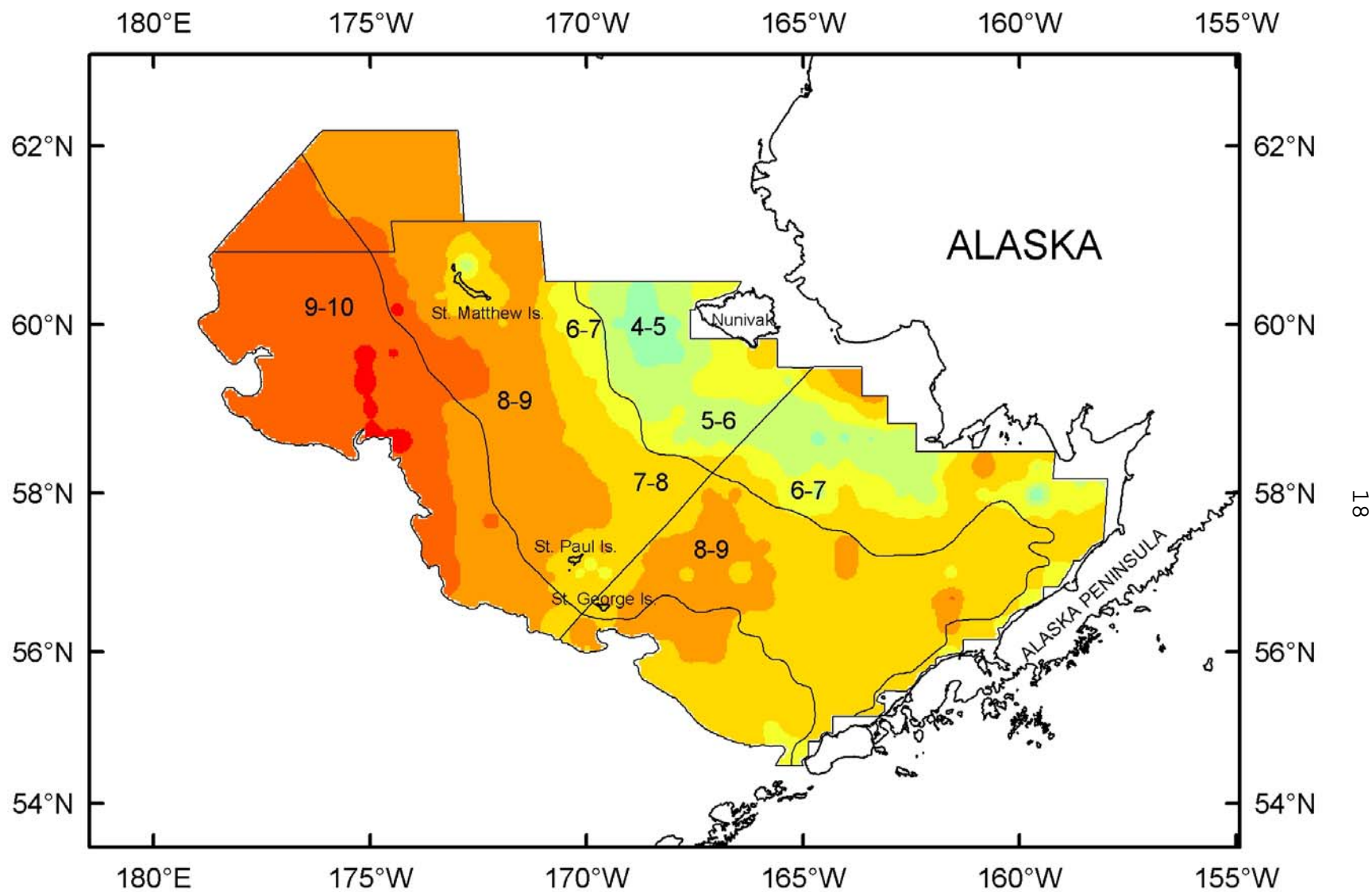


Figure 4.- Distribution of surface water temperatures (°C) observed during the 2003 eastern Bering Sea bottom trawl survey.

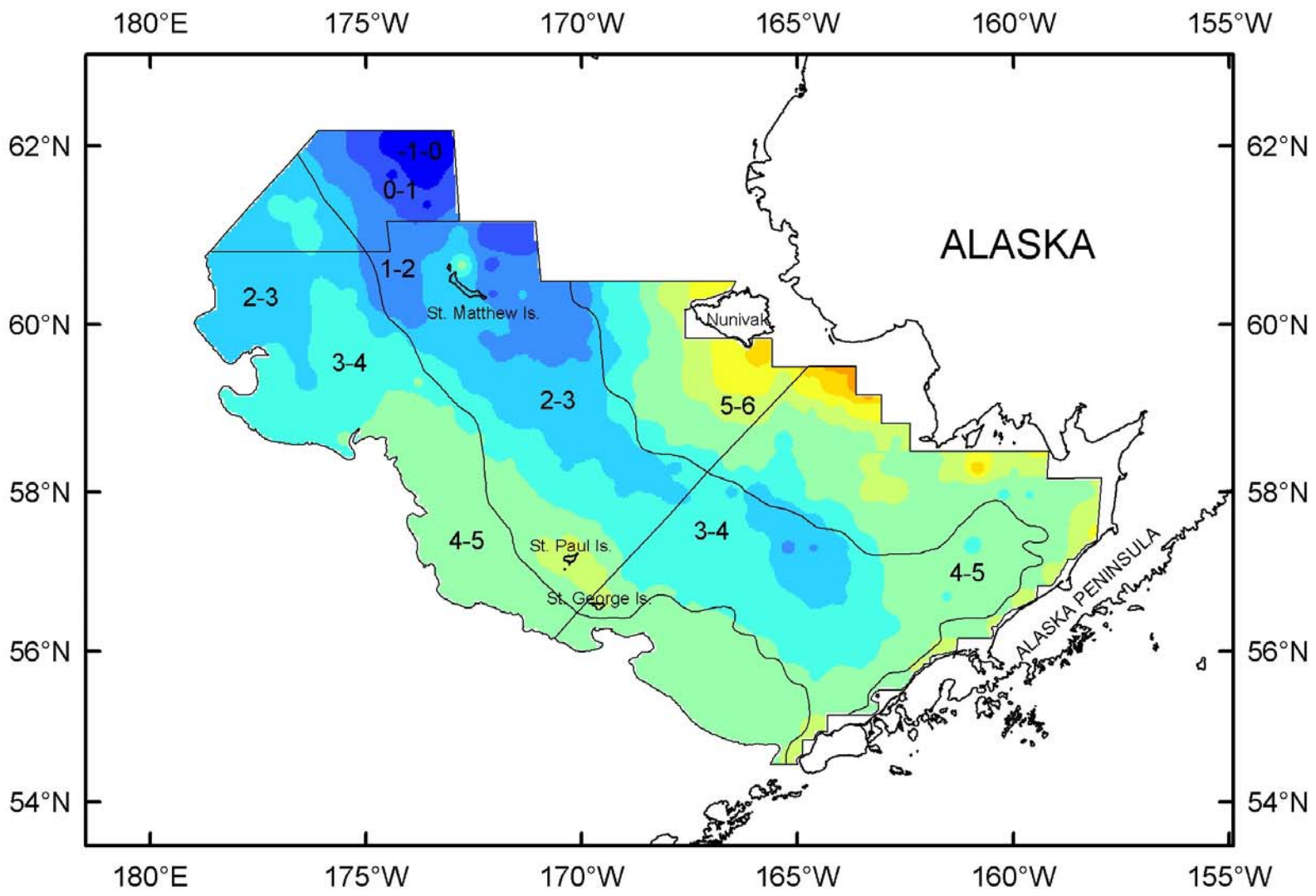


Figure 5.- Distribution of bottom water temperatures (°C) observed during the 2003 eastern Bering Sea bottom trawl survey.

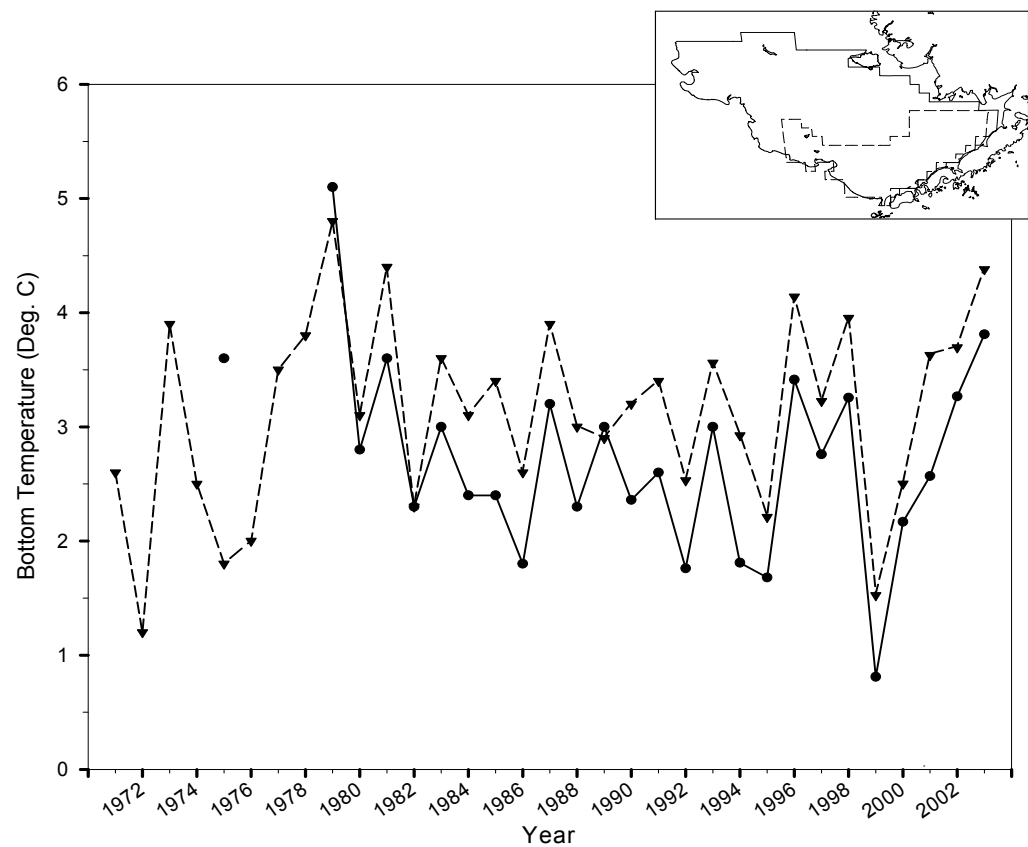


Figure 6.--Mean summer bottom water temperatures based on expendable bathythermograph casts or microbathythermographs attached to the net headrope during Alaska Fisheries Science Center bottom trawl surveys. The 1971-2003 means (dashed line) are from the southeast Bering Sea (see insert) and the 1975 and 1979-2003 (solid line) means are from the larger survey area outlined on the inset 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 tows 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. For example, in 2003 the F/V *Aldebaran* was more efficient than the F/V *Arcturus* at capturing arrowtooth flounder (*Atheresthes stomias*), Pacific cod, sturgeon poacher (*Podothecus acipenserinus*), and both the great and plain sculpin (*Gymnocanthus jaok*). Conversely the F/V *Arcturus* more efficiently caught yellowfin sole. 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 2003, and scaling factors determined by the method of Kappenman (1992) based on 286 total hauls.

Species	Hauls with catch		Catch multiplier	
	F/V <i>Arcturus</i>	F/V <i>Aldebaran</i>	F/V <i>Arcturus</i>	F/V <i>Aldebaran</i>
arrowtooth flounder	116	113	1.06	1.00
yellowfin sole	111	110	1.00	1.10
sturgeon poacher	110	105	1.04	1.00
great sculpin	89	72	1.01	1.00
plain sculpin	58	53	1.21	1.00
Pacific cod	162	162	1.01	1.00

### Estimated Biomass of Major Fish and Invertebrate Groups

Total demersal animal biomass for the overall survey area was estimated at 19.6 million t, of which fish species accounted for 82% (16.1 million t, Table 7), and invertebrates 18% (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 south of St. Matthew Island (Fig. 7). Although 19 families and 94 species of fish were identified in the catches (Appendix B), the fish biomass was dominated by cods (Gadidae, 9.1 million t), and flatfish (Pleuronectidae, 6.2 million t) (Table 7). The biomass of invertebrates was comprised primarily of the phyla Echinodermata (1.2 million t), Crustacea (0.77 million t), and Mollusca (0.41 million t) (Table 8). A total of 229 invertebrate species from 12 phyla were identified in the survey.

### Relative Abundance of Individual Fish Species

Relative abundance (not weighted by area) of the 11 most abundant species and species groups of fish are shown in Figure 8. These taxa accounted for 80% (338.5 kg/ha) of total animal mean CPUE (421.1 kg/ha) and 97% of total fish mean CPUE (347.9 kg/ha). Overall walleye pollock, with a mean CPUE of 181.7 kg/ha, was the dominant species at all depths in the catches. Pacific cod were mostly caught at the 50-100 m depth zone with an overall mean CPUE of 13.4 kg/ha. Yellowfin sole and *Lepidopsetta* spp., with overall mean catch rates of 48.2 kg/ha and 49.2 kg/ha respectively, were abundant in water less than 100m. Arrowtooth flounder and *Hippoglossoides* spp. were mostly caught in water deeper than 100m. See Appendix C for a descending rank of all organisms caught.

Table 7.--Biomass estimates(t) for major fish species and fish groups taken during the 2003 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t) <sup>a</sup> and 95% confidence interval		Proportion of total animal biomass <sup>b</sup>	Estimated biomass by subarea (t)					
	1	2		3	4	5	6		
<b>Gadidae (cods)</b>									
Walleye pollock	8,507,891	± 54%	0.434	356,901	53,863	3,442,334	2,086,297	128,806	2,439,690
Pacific cod	605,681	± 21%	0.031	72,456	15,340	144,824	245,056	19,143	108,862
Other cods	1,618	± 154%	0.000	274	1,342	0	1	0	0
<b>Total cods</b>	<b>9,115,189</b>	<b>± 51%</b>	<b>0.465</b>	<b>429,631</b>	<b>70,545</b>	<b>3,587,158</b>	<b>2,331,355</b>	<b>147,950</b>	<b>2,548,552</b>
<b>Anoplopomatidae</b>									
Sablefish	316	± 132%	0.000	0	0	124	0	192	0
<b>Scorpaenidae (rockfish)</b>									
Pacific ocean perch	72,484	± 201%	0.004	0	0	5	0	251	72,228
Other rockfish	1,849	± 136%	0.000	0	0	0	0	1,593	256
<b>Total rockfish</b>	<b>74,333</b>	<b>± 196%</b>	<b>0.004</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1,844</b>	<b>72,484</b>
<b>Pleuronectidae (flatfishes)</b>									
Yellowfin sole	2,284,821	± 19%	0.117	1,066,061	300,465	630,549	287,581	165	0
Rock sole	2,135,604	± 19%	0.109	909,634	305,913	404,658	492,780	1,035	21,584
Hippoglossoides spp.	529,188	± 21%	0.027	14,562	486	212,662	80,320	60,554	160,604
Alaska plaice	467,326	± 42%	0.024	179,033	25,420	98,241	156,489	0	8,143
Arrowtooth flounder	526,022	± 18%	0.027	4,776	4	169,411	44,748	86,471	220,612
Kamchatka flounder	27,870	± 22%	0.001	0	0	3,277	5,910	2,861	15,822
Greenland turbot	24,093	± 41%	0.001	0	0	642	4,789	0	18,662
Pacific halibut	138,314	± 26%	0.007	32,633	9,550	21,837	36,677	7,913	29,704
Other flatfish	90,329	± 24%	0.005	54,381	3,513	10,323	89	14,459	7,566
<b>Total flatfish</b>	<b>6,223,566</b>	<b>± 13%</b>	<b>0.318</b>	<b>2,261,079</b>	<b>645,351</b>	<b>1,551,599</b>	<b>1,109,383</b>	<b>173,458</b>	<b>482,697</b>
<b>Clupeidae</b>									
Pacific herring	49,989	± 80%	0.003	6,322	4,524	2,911	36,213	0	18
<b>Cottidae (sculpins)</b>									
	202,602	± 17%	0.010	61,105	23,966	42,029	36,521	4,666	34,315
<b>Zoarcidae (eelpouts)</b>									
	38,751	± 21%	0.002	898	115	4,773	13,131	1,597	18,236
<b>Osmeridae (smelts)</b>									
	5,183	± 59%	0.000	2,137	320	373	422	1,921	9
<b>Agonidae (poachers)</b>									
	21,672	± 19%	0.001	4,281	3,286	7,337	6,538	156	74
<b>Cyclopteridae (snailfishes)</b>									
	1,400	± 59%	0.000	26	75	4	832	98	365
<b>Rajidae (skates)</b>									
	393,464	± 11%	0.020	47,811	33,293	73,886	84,445	49,020	105,009
<b>Other fish</b>									
	16,707	± 74%	0.001	7,228	948	1,625	133	4,594	2,180
<b>Total fish</b>	<b>16,143,172</b>	<b>± 30%</b>	<b>0.824</b>	<b>2,820,518</b>	<b>782,421</b>	<b>5,271,825</b>	<b>3,618,972</b>	<b>385,496</b>	<b>3,263,939</b>

<sup>a</sup>Differences in sums of estimates and totals are due to rounding.

<sup>b</sup>Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area. **Total estimated biomass = 19,596,009 t.**

Table 8.--Biomass estimates(t) for major invertebrate species and invertebrate groups taken during the 2003 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t) <sup>a</sup> and 95% confidence interval		Proportion of total animal biomass <sup>b</sup>	Estimated biomass by subarea (t)					
				1	2	3	4	5	6
<b>Crustacea</b>									
Chionoecetes sp. (snow crab)	187,258	± 25%	0.010	2,201	791	24,068	76,780	22,909	60,508
Lithodes sp. king crab	0	± 0%	0.000	0	0	0	0	0	0
Paralithodes sp. (king crab)	132,856	± 49%	0.007	51,987	763	64,276	15,790	0	41
Erimacrus isenbeckii (hair crab)	1,285	± 44%	0.000	197	438	453	185	12	0
Paguridae hermit crab	433,581	± 23%	0.022	20,931	44,161	115,431	149,384	6,201	97,472
Other crab	9,739	± 63%	0.000	1,974	992	1,791	4,702	136	143
<b>Total crab</b>	<b>764,719</b>	<b>± 16%</b>	<b>0.039</b>	<b>77,290</b>	<b>47,145</b>	<b>206,020</b>	<b>246,842</b>	<b>29,258</b>	<b>158,164</b>
Shrimps	2,280	± 41%	0.000	82	358	7	248	17	1,568
Other crustaceans	1,751	± 102%	0.000	265	238	103	848	70	227
<b>Total crustaceans</b>	<b>768,750</b>	<b>± 16%</b>	<b>0.039</b>	<b>77,637</b>	<b>47,741</b>	<b>206,130</b>	<b>247,939</b>	<b>29,346</b>	<b>159,958</b>
<b>Mollusca</b>									
Gastropoda (snails)	397,679	± 29%	0.020	15,066	16,297	107,962	99,103	6,661	152,590
Pelecypoda (bivalves)	5,957	± 60%	0.000	648	345	3,101	1,333	64	467
Squids	48	± 81%	0.000	0	0	0	0	21	26
Octopuses	8,413	± 96%	0.000	0	0	4,482	461	716	2,754
Other mollusks	0	± 0%	0.000	0	0	0	0	0	0
<b>Total mollusks</b>	<b>412,097</b>	<b>± 28%</b>	<b>0.021</b>	<b>15,713</b>	<b>16,642</b>	<b>115,545</b>	<b>100,897</b>	<b>7,462</b>	<b>155,838</b>
<b>Echinodermata</b>									
Asterozoa (starfish)	960,718	± 14%	0.049	390,602	98,345	160,034	190,738	909	120,090
Ophiurozoa (brittle stars)	256,298	± 29%	0.013	10,553	3,963	49,487	52,000	117	140,179
Echinozoa (sea urchin)	8,573	± 64%	0.000	34	1	3,658	848	2,475	1,556
Holothurozoa (sea cucumbers)	14,249	± 82%	0.001	5,259	0	6,239	2,717	5	29
<b>Total echinoderms</b>	<b>1,240,510</b>	<b>± 13%</b>	<b>0.063</b>	<b>406,599</b>	<b>102,325</b>	<b>219,883</b>	<b>246,339</b>	<b>3,507</b>	<b>261,857</b>
Ascidiacea	485,934	± 37%	0.025	36,506	69,988	155,043	224,388	0	9
Porifera (sponges)	244,338	± 114%	0.012	1,315	27	239,507	1,310	130	2,048
Coelenterata	107,784	± 20%	0.006	7,798	3,249	43,475	28,134	17,961	7,166
Other invertebrates	194,099	± 22%	0.010	21,417	26,710	60,391	59,930	1,150	24,501
<b>Total invertebrates</b>	<b>3,452,839</b>	<b>± 13%</b>	<b>0.176</b>	<b>566,833</b>	<b>266,666</b>	<b>1,039,509</b>	<b>908,900</b>	<b>59,555</b>	<b>611,375</b>

<sup>a</sup>Differences in sums of estimates and totals are due to rounding.

<sup>b</sup>Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area. **Total estimated biomass = 19,596,009 t.**



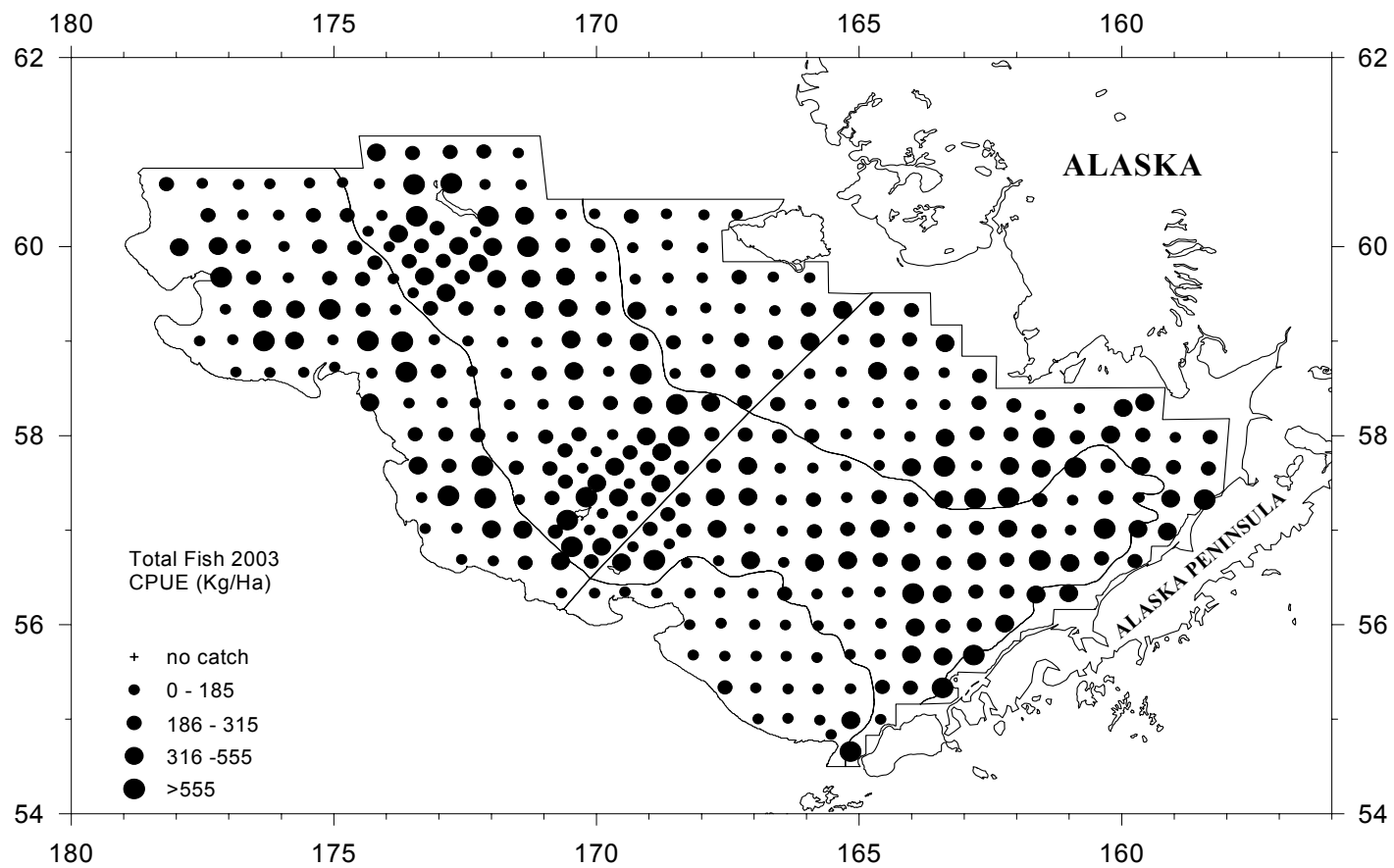


Figure 7.– Distribution and relative abundance of total fish, 2003 eastern Bering Sea bottom trawl survey.

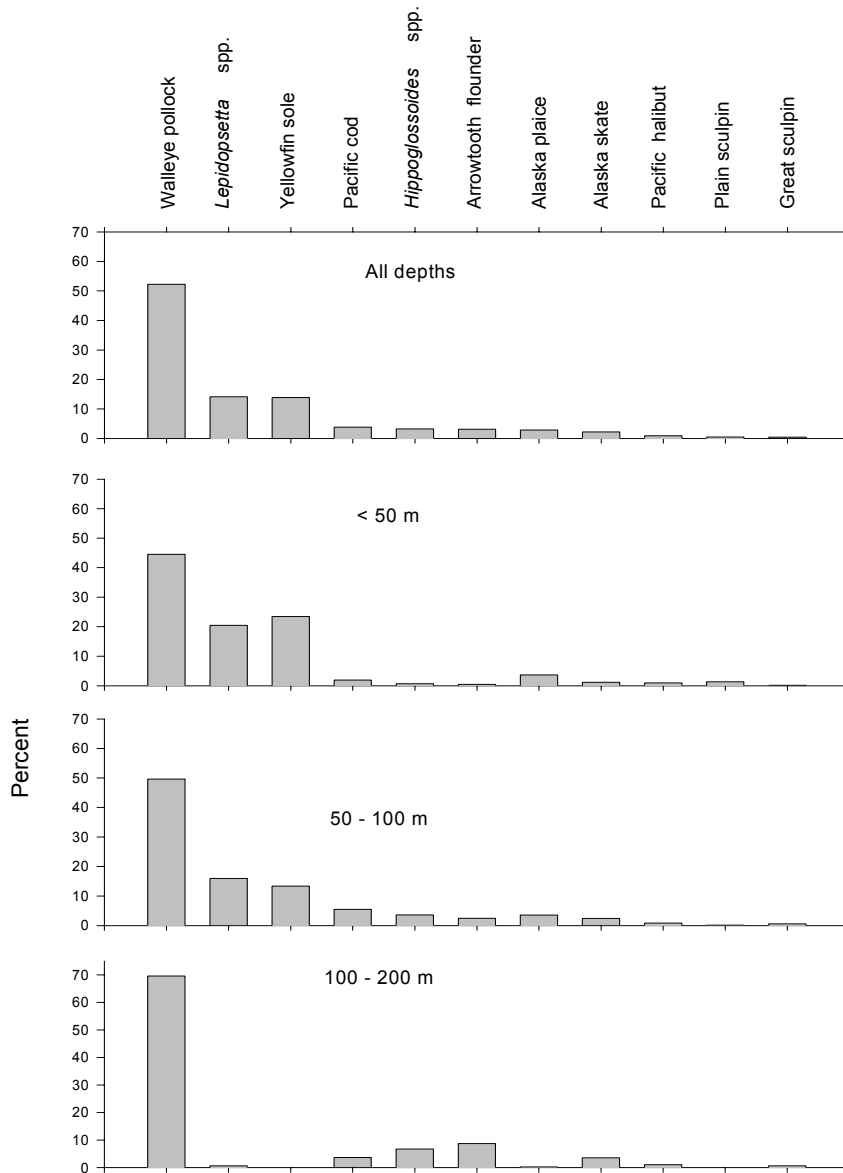


Figure 8.- Relative abundance (% CPUE in kg/ha) of principle groundfish species (top 11 for all depths combined) by depth zones and for all depths combined, 2003 eastern Bering Sea trawl survey.

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

Geographical distributions, population numbers, biomass estimates, and size composition are presented for each of the following commercially important eastern Bering Sea groundfish: walleye pollock, Pacific cod, yellowfin sole, *Lepidopsetta* spp., *Hippoglossoides* spp., Alaska plaice, Greenland turbot (*Reinhardtius hippoglossoides*), arrowtooth flounder, Kamchatka flounder (*Atheresthes evermanni*), and Pacific halibut. Estimated biomass, population numbers, and mean size (by length and weight) are summarized by subarea and for the entire survey area. Size composition data are illustrated in histograms relating the population percentage by 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. Geographical distributions for some common, but generally noncommercial fish species are also presented. These species are Bering skate (*Bathyraja interrupta*), Alaska skate (*B. parmifera*), warty sculpin (*Myoxocephalus verrucosus*), great sculpin (*M. polyacanthocephalus*), plain sculpin (*M. jaok*), bigmouth sculpin (*Hemitripterus bolini*), wattled eelpout (*Lycodes palearis*), shortfin eelpout (*L. brevipes*), marbled eelpout (*L. raridens*), sturgeon poacher (*Podothecus acipenserinus*), Bering poacher (*Ocella dodecaedron*), eulachon (*Thaleichthys pacificus*), capelin (*Mallotus villosus*), and Pacific herring (*Clupea 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 of their distribution are shown to give some idea of geographic distribution.

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

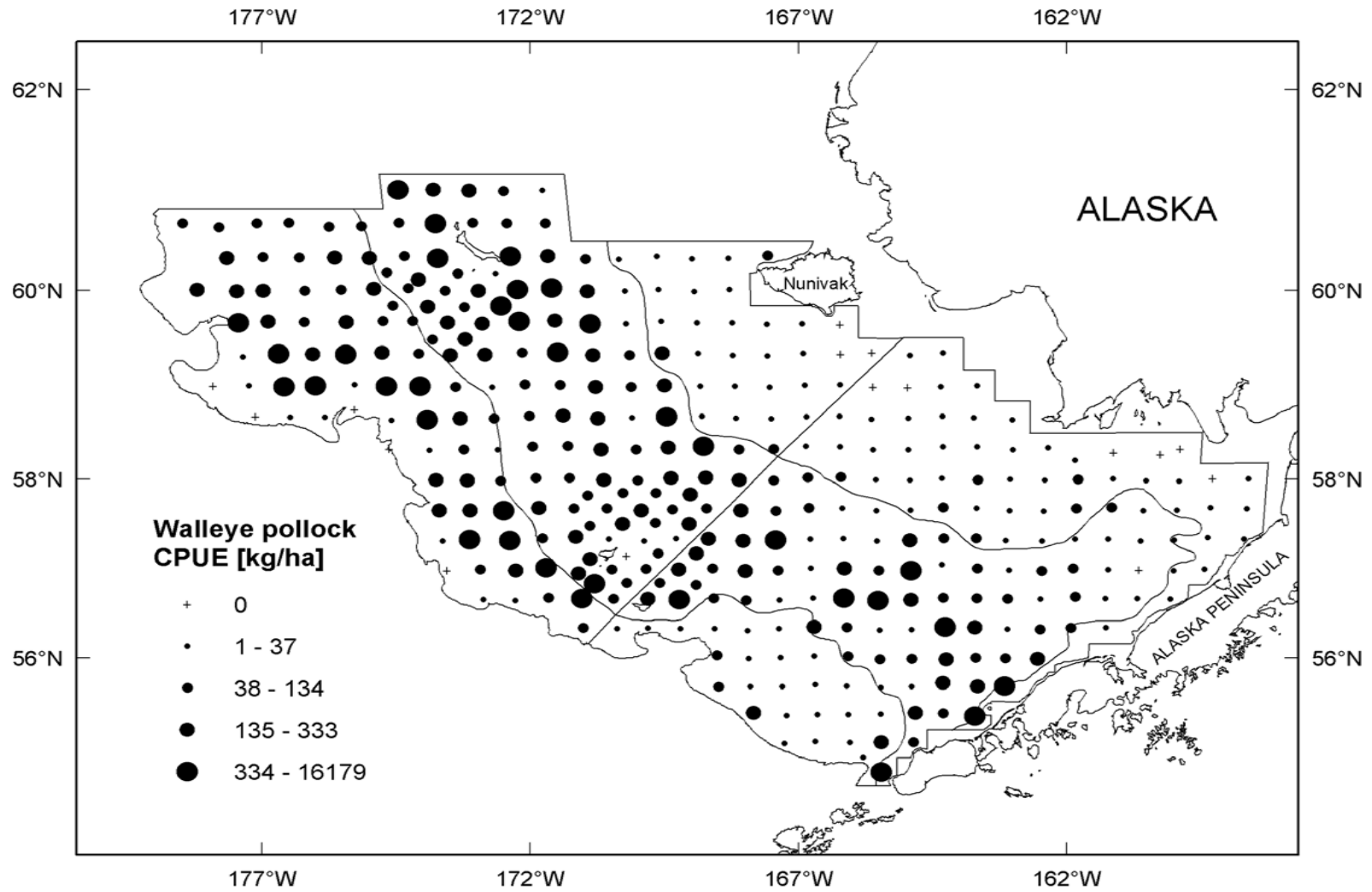


Figure 9.— Distribution and relative abundance in kg/ha of walleye pollock, 2003 eastern Bering Sea bottom trawl survey.

Table 9.— Abundance estimates and mean size of walleye pollock by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size	
						Weight (kg)	Length (cm)
1	45.83	356,901	0.042	309,547,815	0.030	1.153	53.4
2	13.13	53,863	0.006	64,412,624	0.006	0.836	38.0
3	333.24	3,442,334	0.405	3,470,915,440	0.334	0.992	50.1
4	193.49	2,086,297	0.245	3,064,758,372	0.295	0.681	44.6
5	33.20	128,806	0.015	125,846,620	0.012	1.024	51.2
6	258.00	2,439,690	0.287	3,362,984,472	0.323	0.725	45.4
All subareas combined <sup>b</sup>	183.61	8,507,891	1.000	10,398,465,344	1.000	0.818	47.0
95% Confidence interval		±4,635,384		±4,215,374,419			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

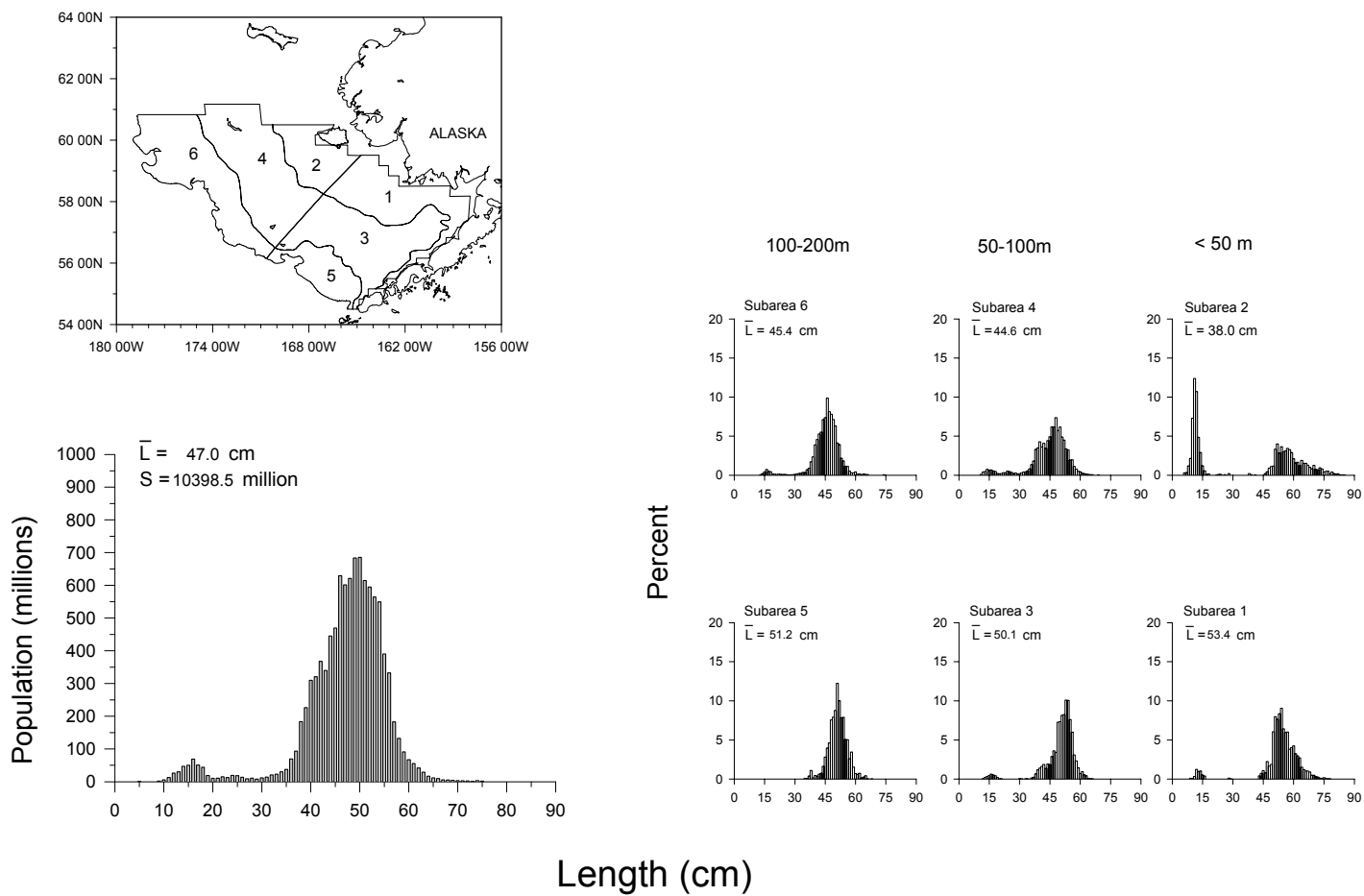


Figure 10.– Estimated relative size distribution (sexes combined) of walleye pollock in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

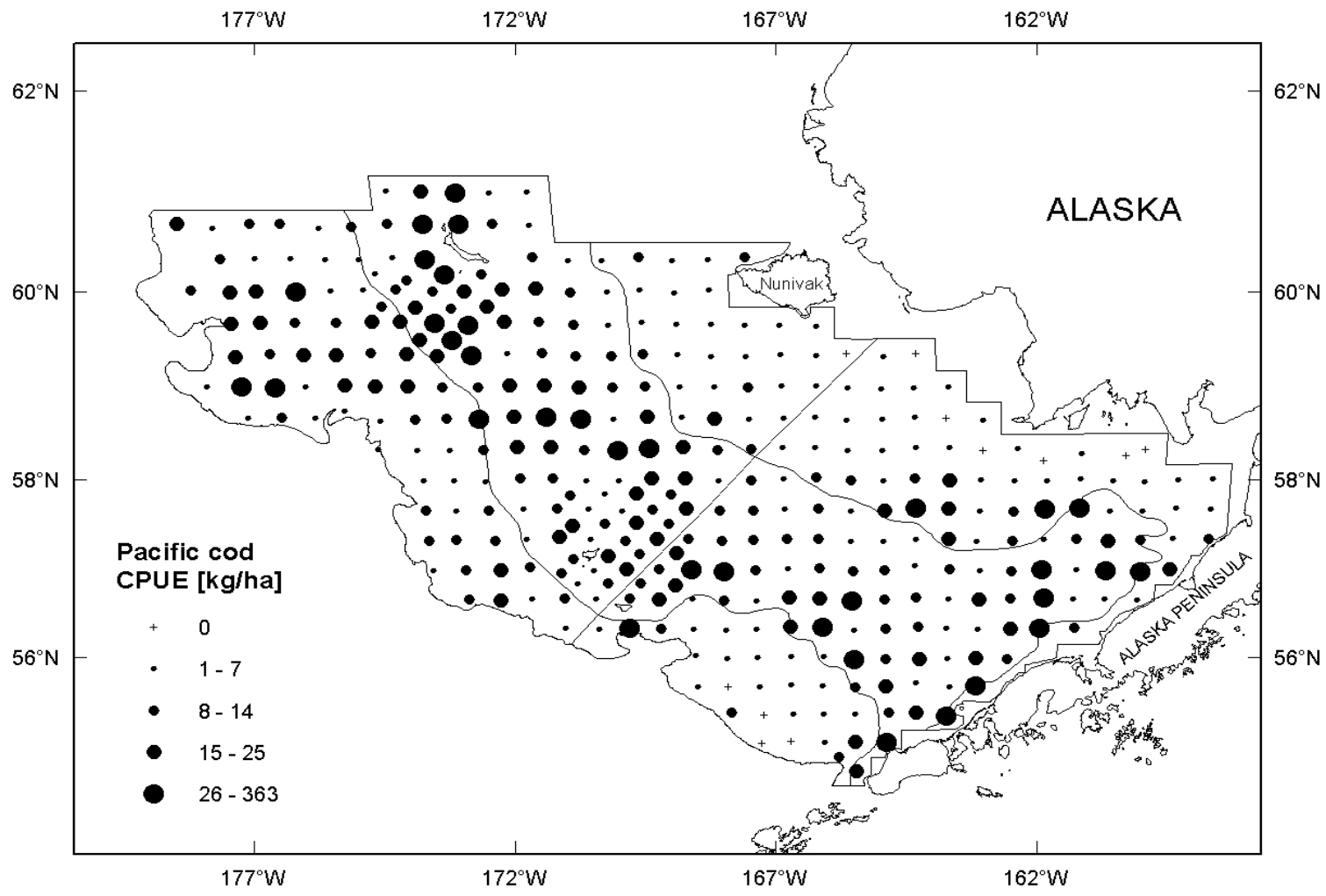


Figure 11.— Distribution and relative abundance in kg/ha of Pacific cod, 2003 eastern Bering Sea bottom trawl survey.

Table 10.— Abundance estimates and mean size of Pacific cod by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	9.30	72,456	0.120	124,970,391	0.245	0.580	32.0
2	3.74	15,340	0.025	22,207,086	0.044	0.691	31.1
3	14.02	144,824	0.239	133,485,616	0.262	1.085	39.8
4	22.73	245,056	0.405	182,788,387	0.358	1.341	45.2
5	4.93	19,143	0.032	9,615,585	0.019	1.991	53.2
6	11.51	108,862	0.180	37,120,259	0.073	2.933	59.1
All subareas combined <sup>b</sup>	13.07	605,681	1.000	510,187,323	1.000	1.187	41.1
95% Confidence interval		±127,202		±126,871,356			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.



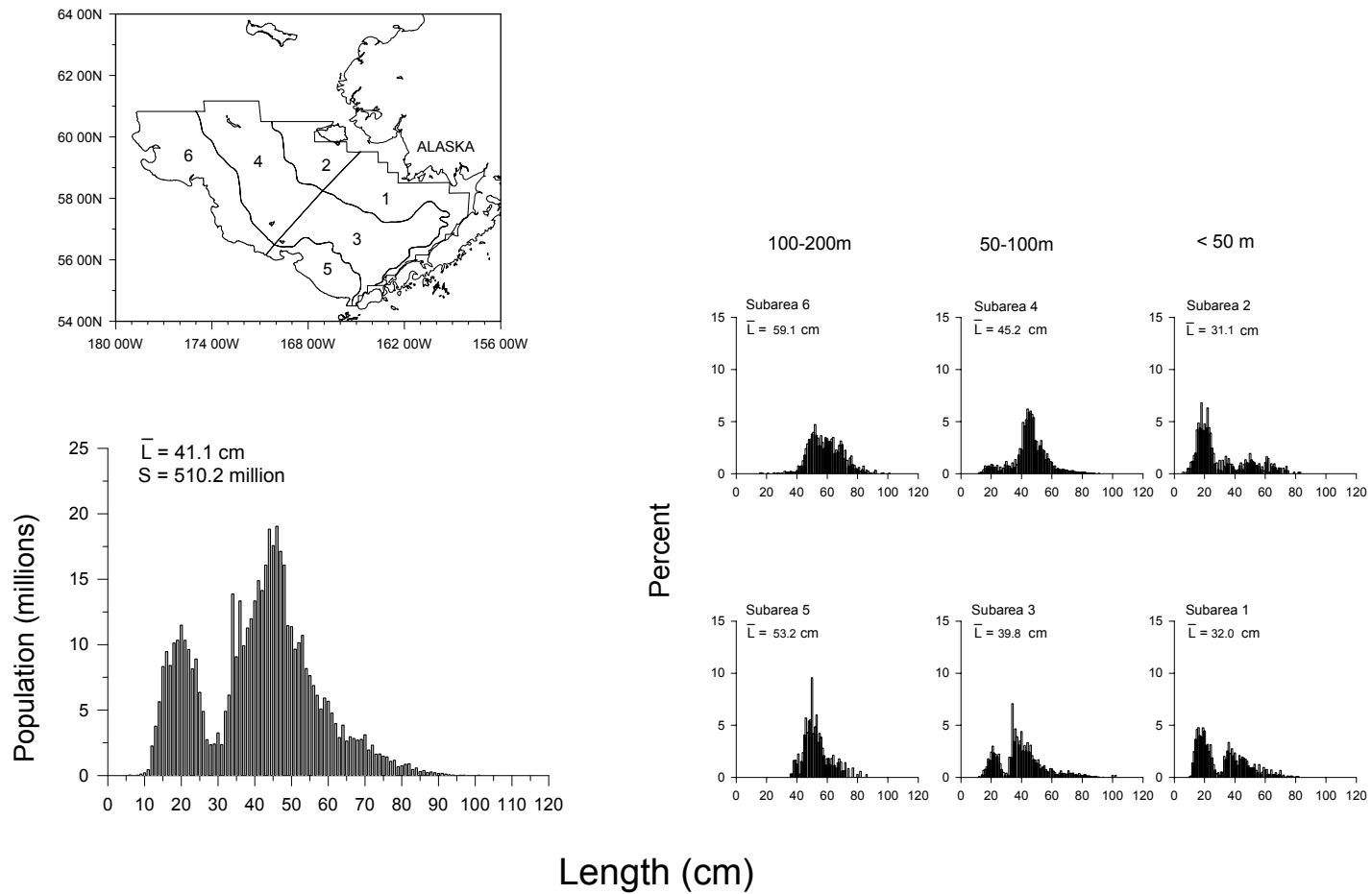


Figure 12.– Estimated relative size distribution (sexes combined) of Pacific cod in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

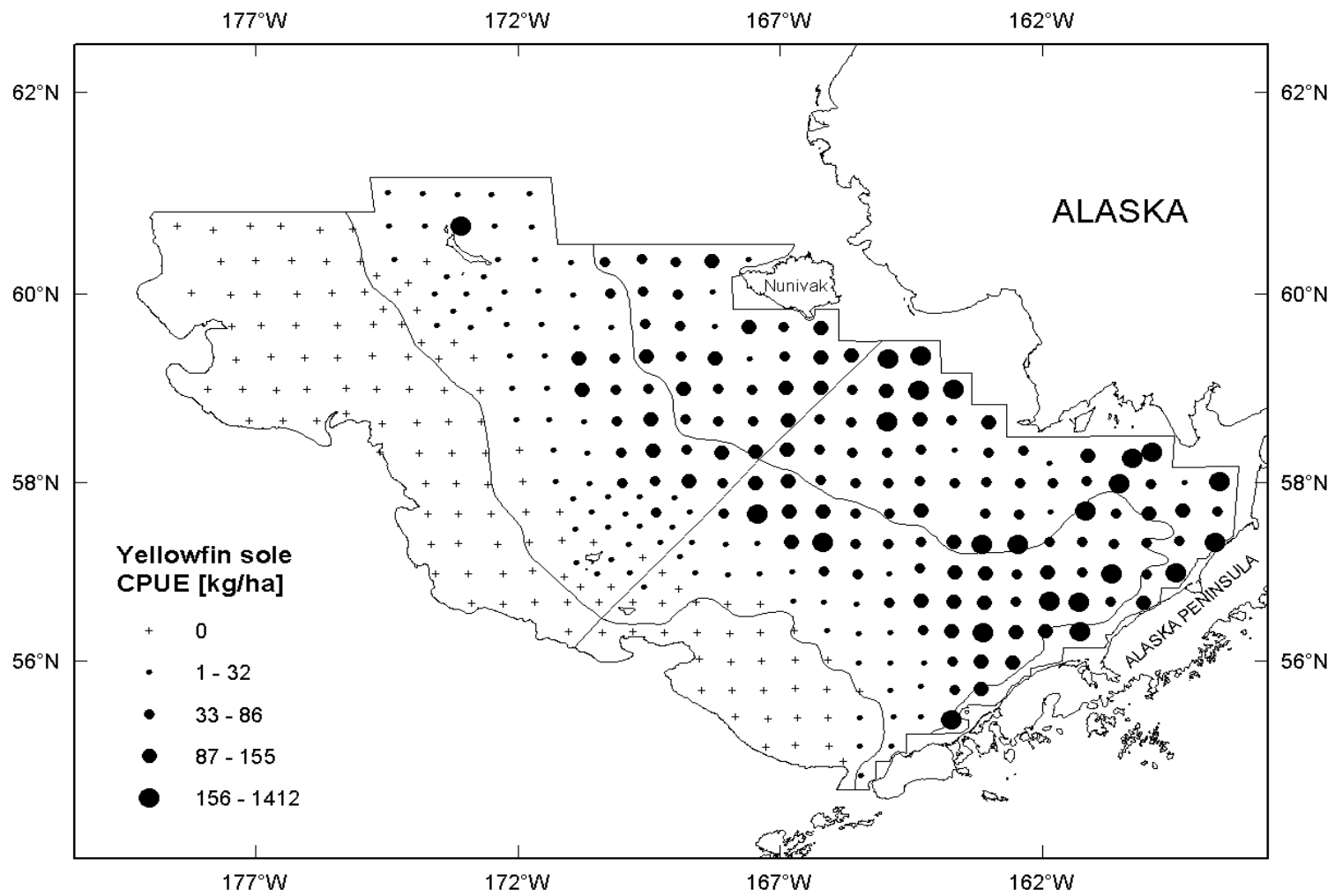


Figure 13– Distribution and relative abundance in kg/ha of yellowfin sole, 2003 eastern Bering Sea bottom trawl survey.

Table 11.— Abundance estimates and mean size of yellowfin sole by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	136.90	1,066,061	0.467	4,472,398,131	0.520	0.238	25.9
2	73.24	300,465	0.132	1,324,219,115	0.154	0.227	24.8
3	61.04	630,549	0.276	1,943,438,387	0.226	0.324	29.1
4	26.67	287,581	0.126	865,757,615	0.101	0.332	28.6
5	0.04	165	0.000	268,189	0.000	0.615	35.9
6	0.00	0	0.000	0	0.000	0.000	0.0
All subareas combined <sup>b</sup>	49.31	2,284,821	1.000	8,606,081,437	1.000	0.265	26.7
95% Confidence interval		±437,366		±1,801,221,887			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

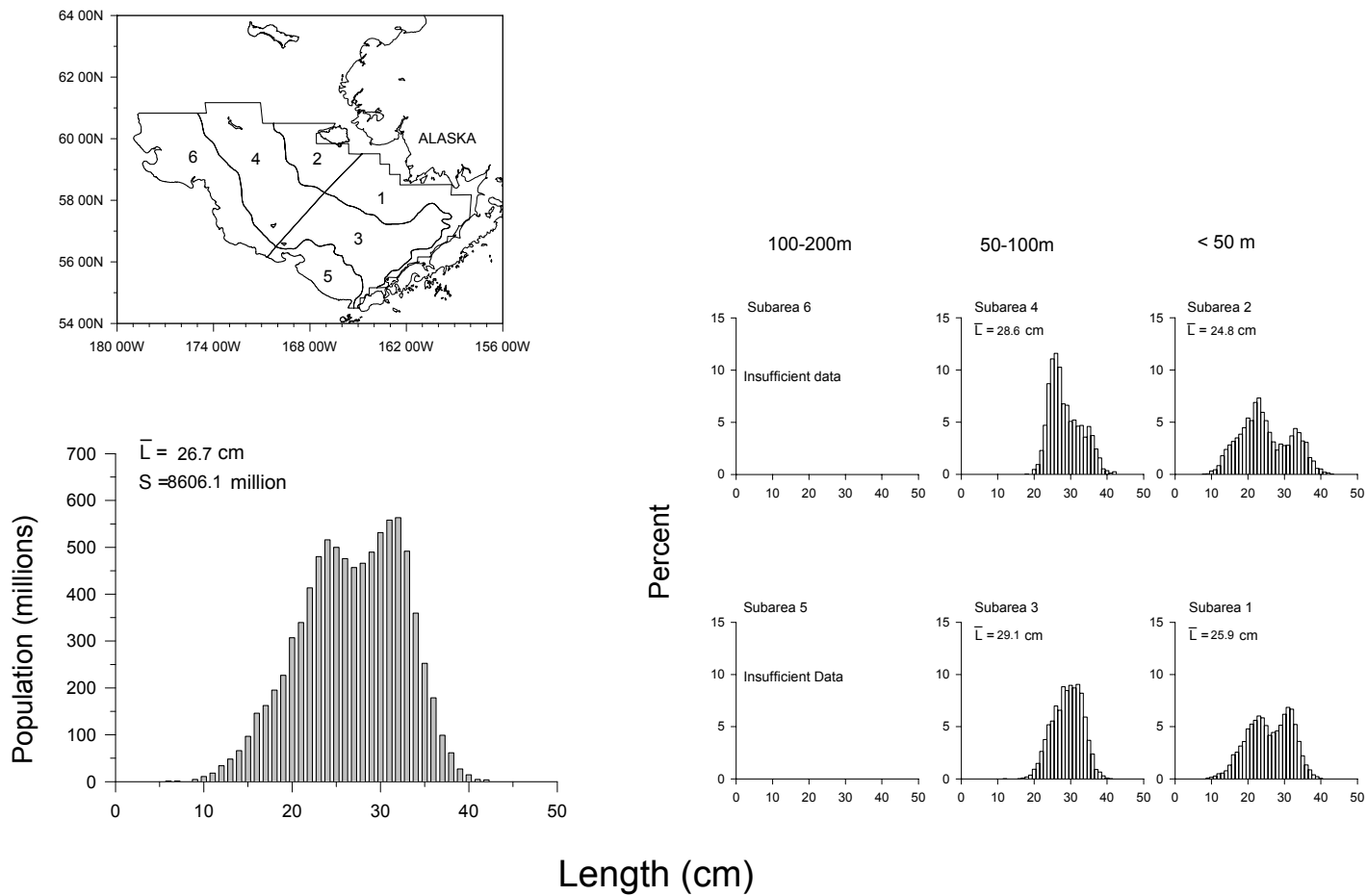


Figure 15.--Estimated size distribution (sexes combined) of yellowfin sole in terms of population numbers, and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

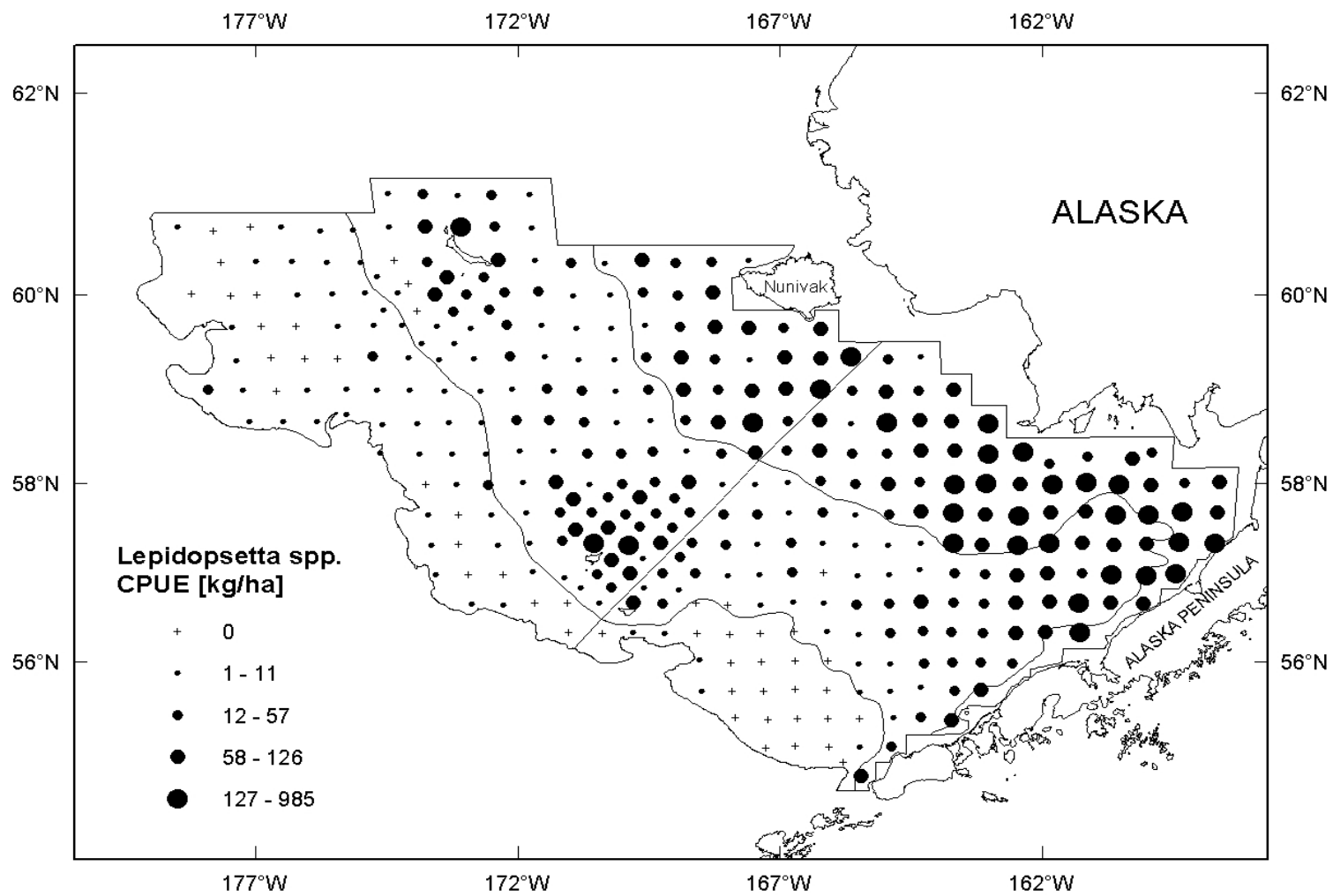


Figure 15.— Distribution and relative abundance in kg/ha of *Lepidopsetta* spp., 2003 eastern Bering Sea bottom trawl survey.

Table 12.— Abundance estimates and mean size of *Lepidopsetta* spp. by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Length (cm)
1	116.81	909,634	0.426	4,241,697,459	0.508	0.214	24.0
2	74.56	305,913	0.143	1,284,002,925	0.154	0.238	23.2
3	39.17	404,658	0.189	1,679,960,501	0.201	0.241	26.1
4	45.70	492,780	0.231	1,110,024,112	0.133	0.444	31.6
5	0.27	1,035	0.000	2,152,938	0.000	0.481	32.7
6	2.28	21,584	0.010	39,322,092	0.005	0.549	34.0
All subareas combined <sup>b</sup>	46.09	2,135,604	1.000	8,357,160,027	1.000	0.256	25.4
95% Confidence interval		±395,444		±1,380,641,113			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

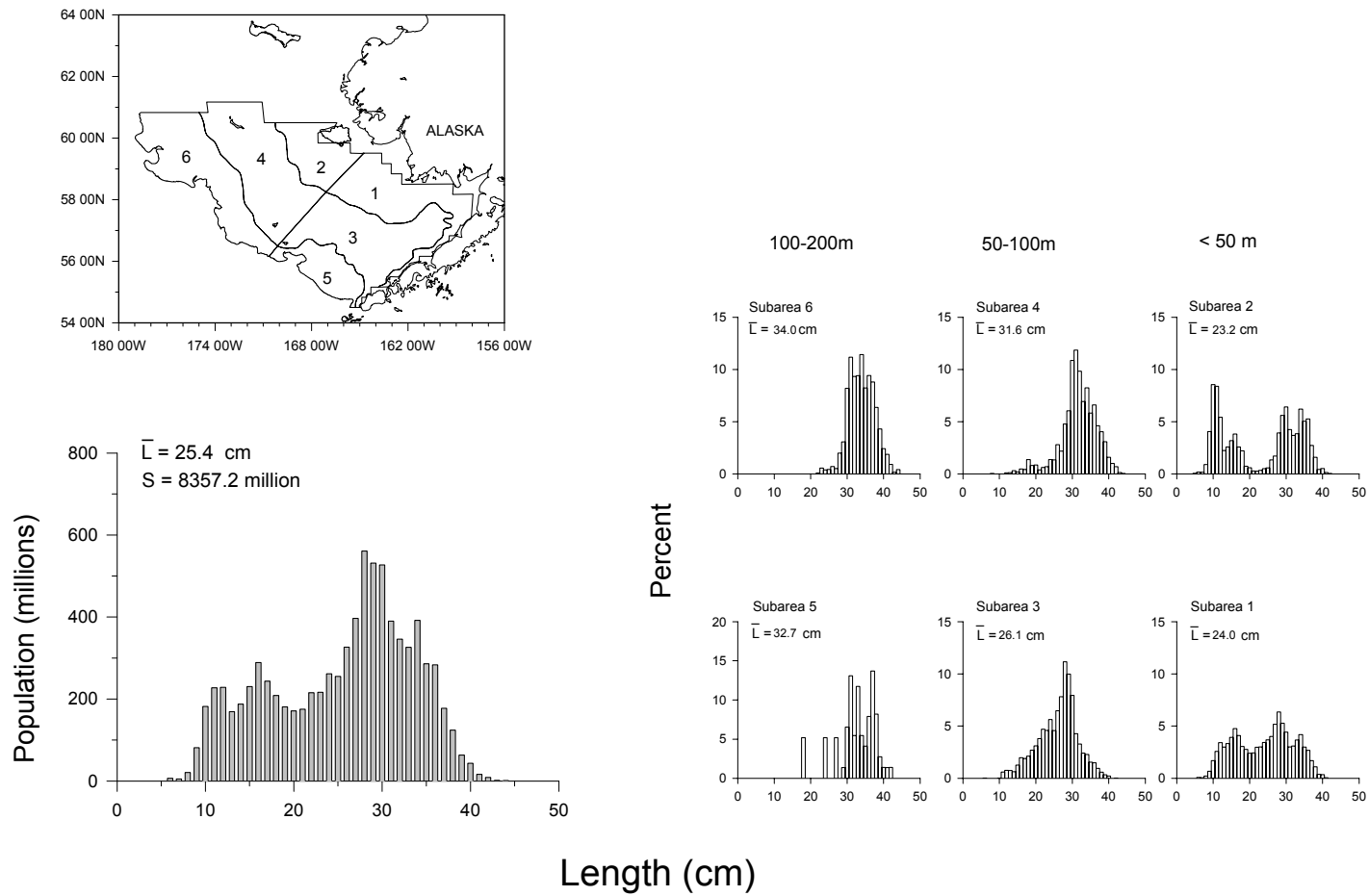


Figure 16.— Estimated relative size distribution (sexes combined) of *Lepidopsetta* spp. in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

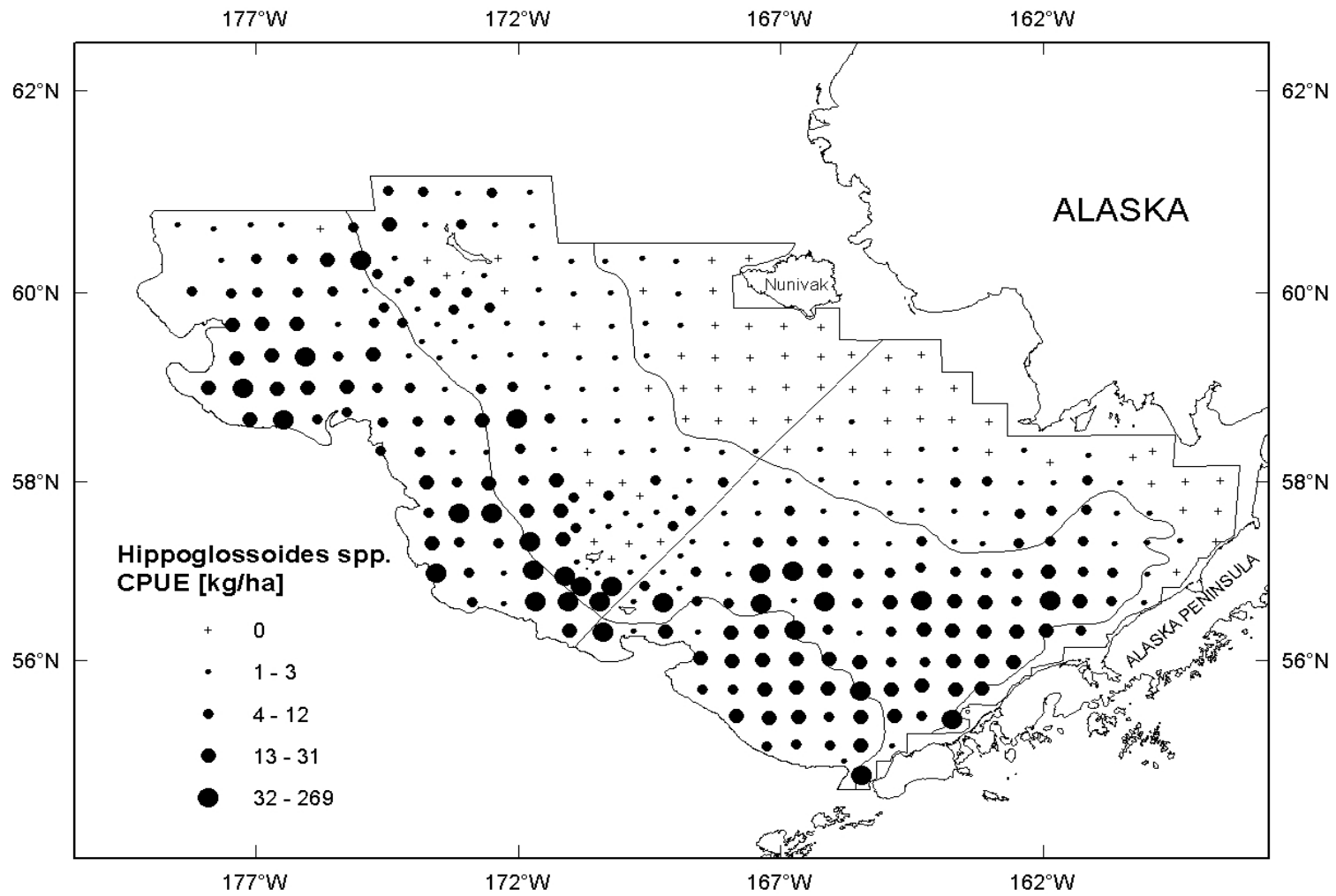


Figure 17.— Distribution and relative abundance in kg/ha of *Hippoglossoides* spp., 2003 eastern Bering Sea bottom trawl survey.



Table 13.– Abundance estimates and mean size of *Hippoglossoides* spp. by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	1.87	14,562	0.028	37,781,019	0.023	0.385	32.5
2	0.12	486	0.001	1,156,868	0.001	0.420	27.0
3	20.59	212,662	0.402	522,116,499	0.319	0.407	32.8
4	7.45	80,320	0.152	184,394,143	0.113	0.436	31.8
5	15.61	60,554	0.114	264,106,260	0.161	0.229	28.0
6	16.98	160,604	0.303	628,518,666	0.384	0.256	27.6
All subareas combined <sup>b</sup>	11.42	529,188	1.000	1,638,073,454	1.000	0.323	29.9
95% Confidence interval		±110,847		±301,266,202			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

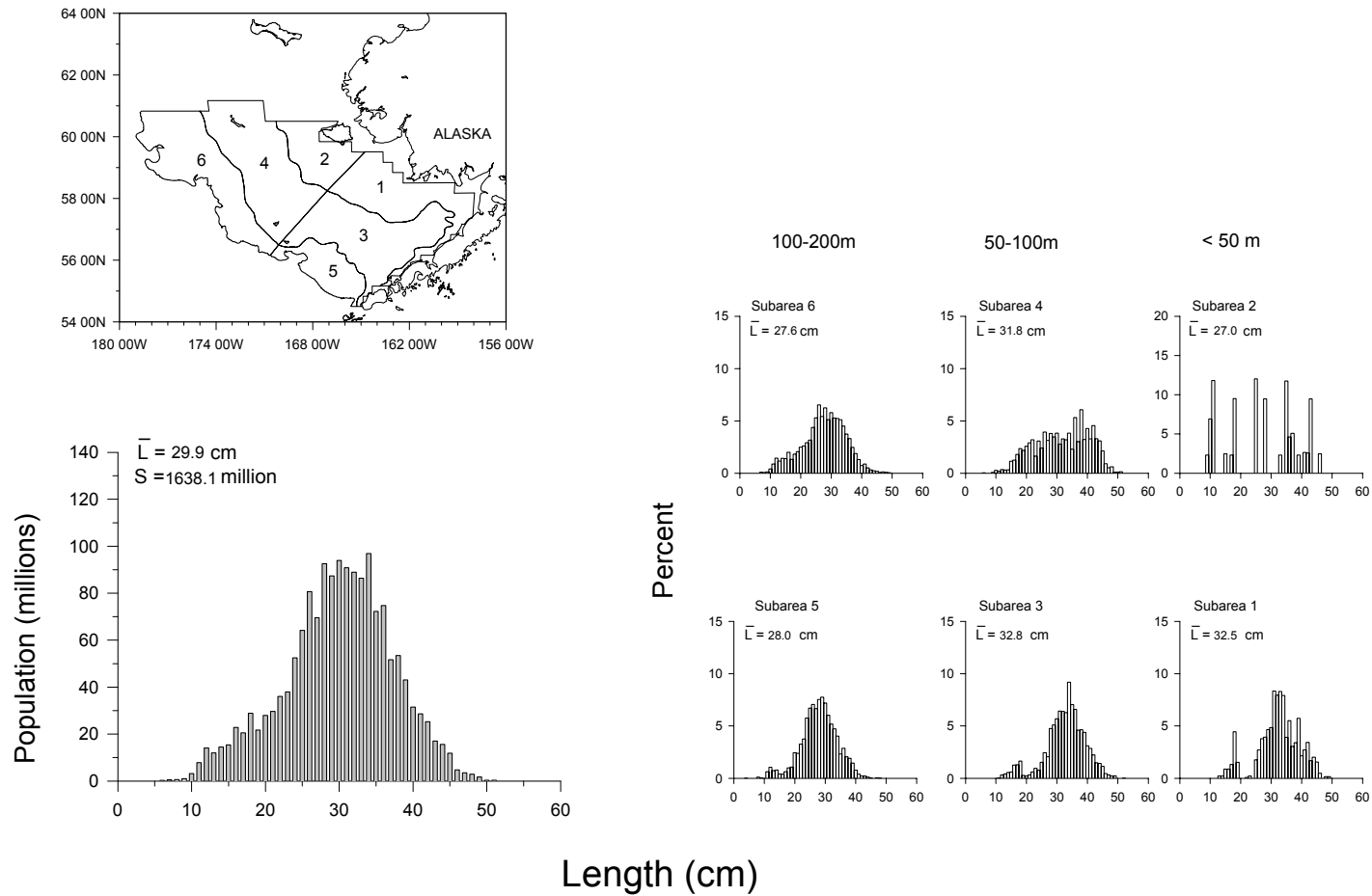


Figure 18.--Estimated relative size distribution (sexes combined) of *Hippoglossoides* spp. in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

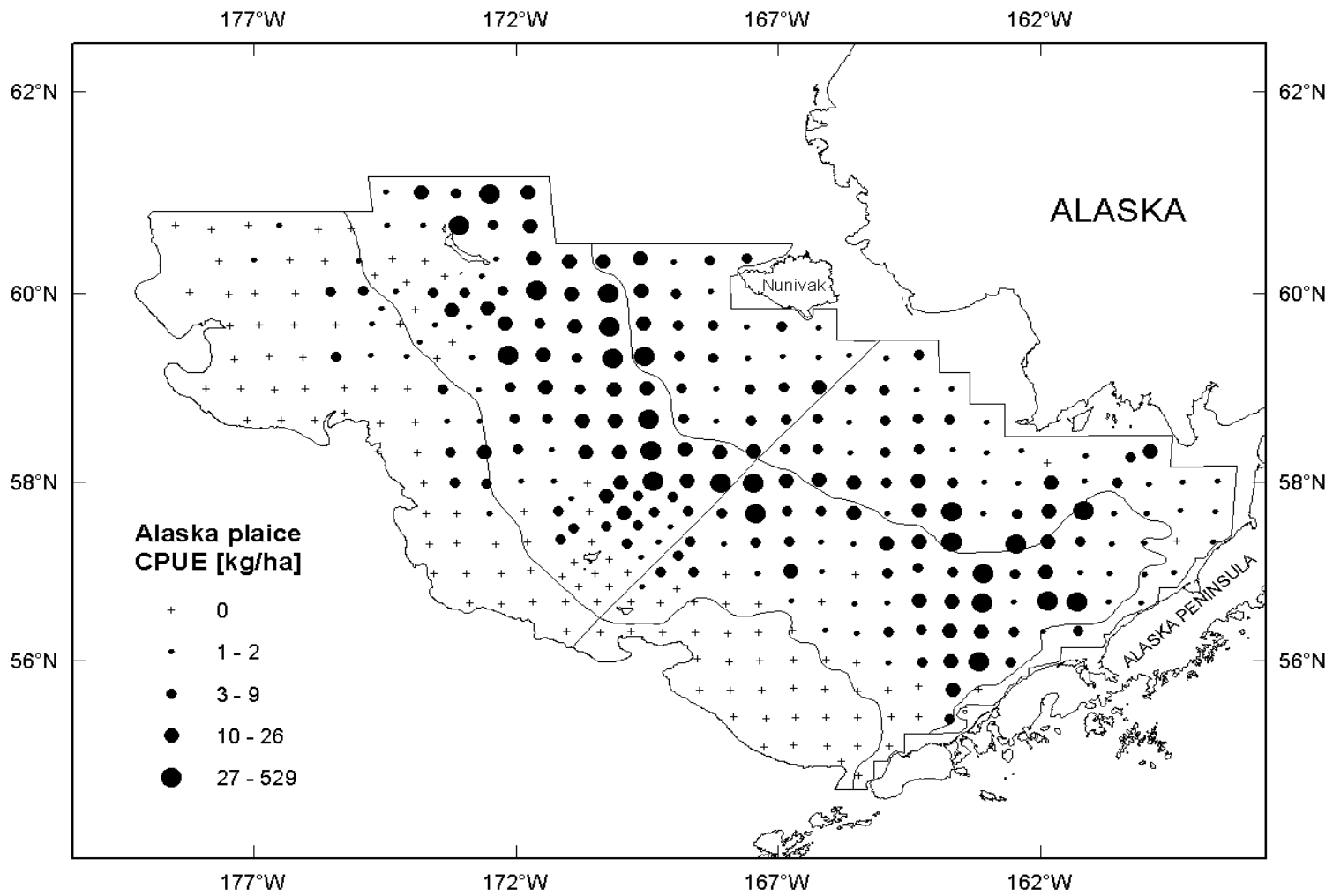


Figure 19.– Distribution and relative abundance in kg/ha of Alaska plaice, 2003 eastern Bering Sea bottom trawl survey.

Table 14.– Abundance estimates and mean size of Alaska plaice by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Length (cm)
1	22.99	179,033	0.383	268,939,637	0.400	0.666	34.9
2	6.20	25,420	0.054	76,831,717	0.114	0.331	28.3
3	9.51	98,241	0.210	125,526,486	0.187	0.783	37.5
4	14.51	156,489	0.335	196,654,327	0.292	0.796	37.6
5	0.00	0	0.000	0	0.000	0.000	0.0
6	0.86	8,143	0.017	4,684,272	0.007	1.738	48.2
All subareas combined <sup>b</sup>	10.09	467,326	1.000	672,636,440	1.000	0.695	35.5
95% Confidence interval		±194,904		±249,743,875			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

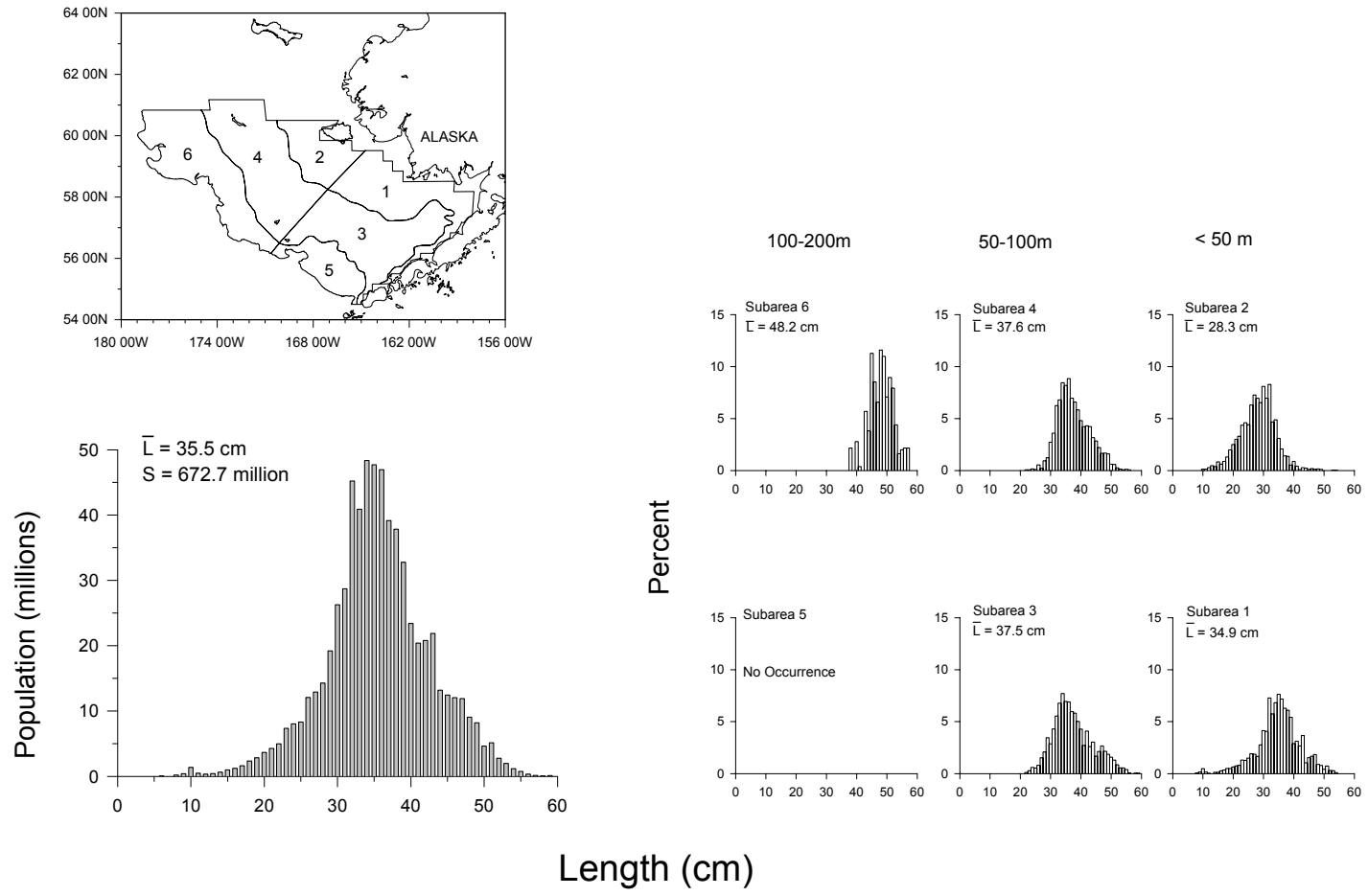


Figure 20.--Estimated relative size distribution (sexes combined) of Alaska plaice in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

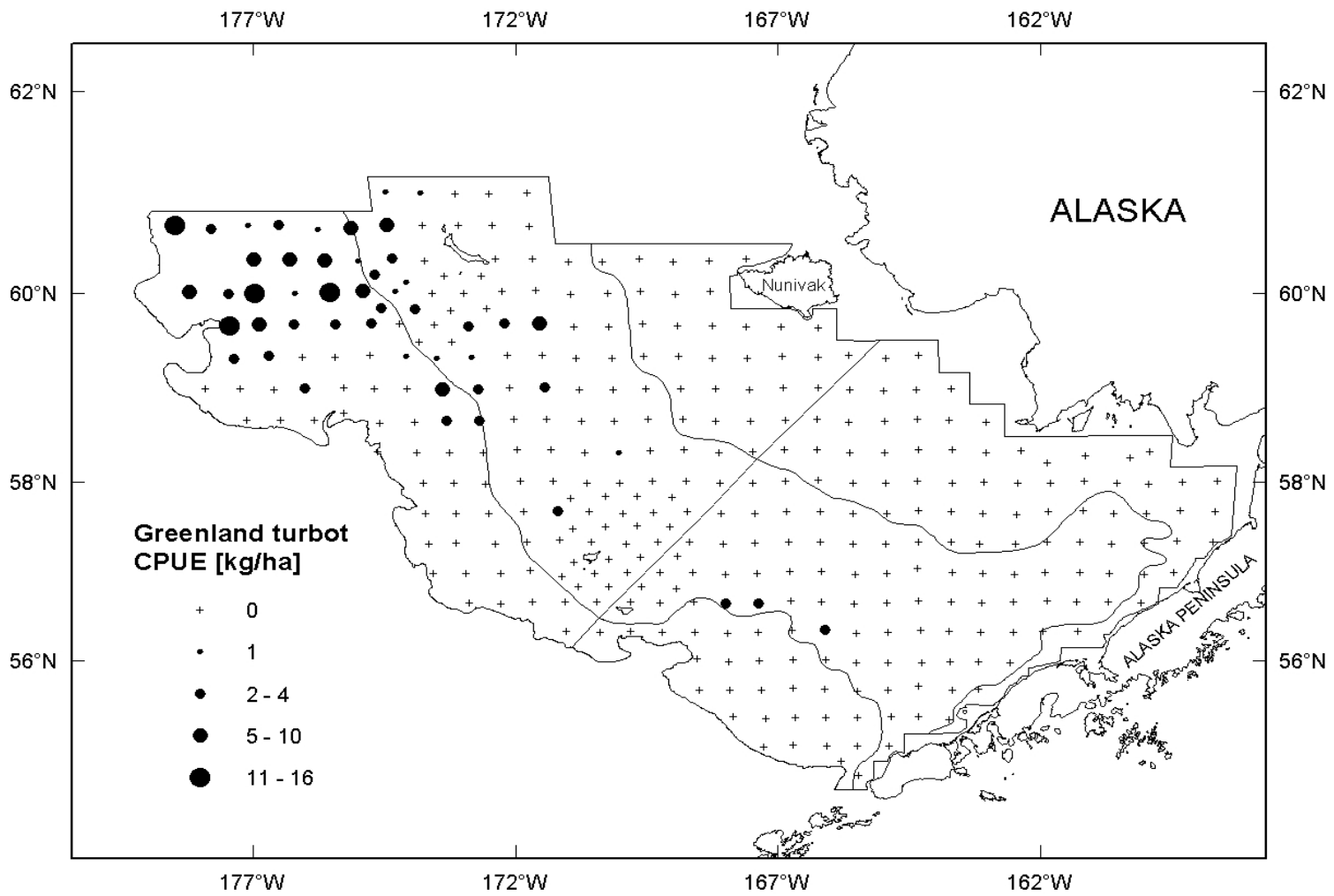


Figure 21.– Distribution and relative abundance in kg/ha of Greenland turbot, 2003 eastern Bering Sea bottom trawl survey.

Table 15.– Abundance estimates and mean size of Greenland turbot by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	0.00	0	0.000	0	0.000	0.000	0.0
2	0.00	0	0.000	0	0.000	0.000	0.0
3	0.06	642	0.027	88,196	0.013	7.279	87.7
4	0.44	4,789	0.199	1,796,280	0.274	2.666	50.9
5	0.00	0	0.000	0	0.000	0.000	0.0
6	1.97	18,662	0.775	4,661,825	0.712	4.003	63.4
All subareas combined <sup>b</sup>	0.52	24,093	1.000	6,546,301	1.000	3.680	60.3
95% Confidence interval		$\pm 9,790$		$\pm 2,229,544$			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

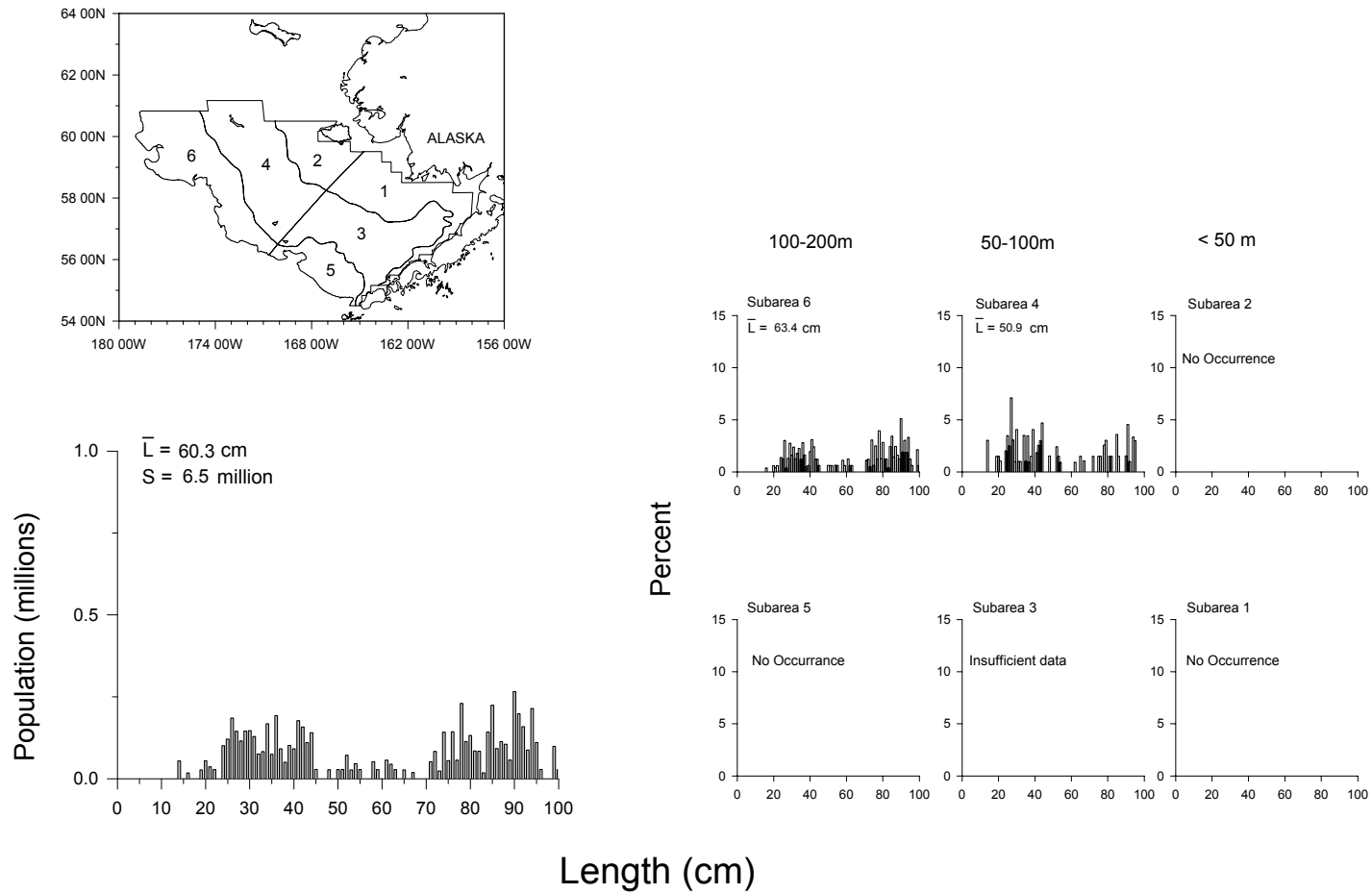


Figure 22.--Estimated relative size distribution (sexes combined) of Greenland turbot in terms of population number and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.



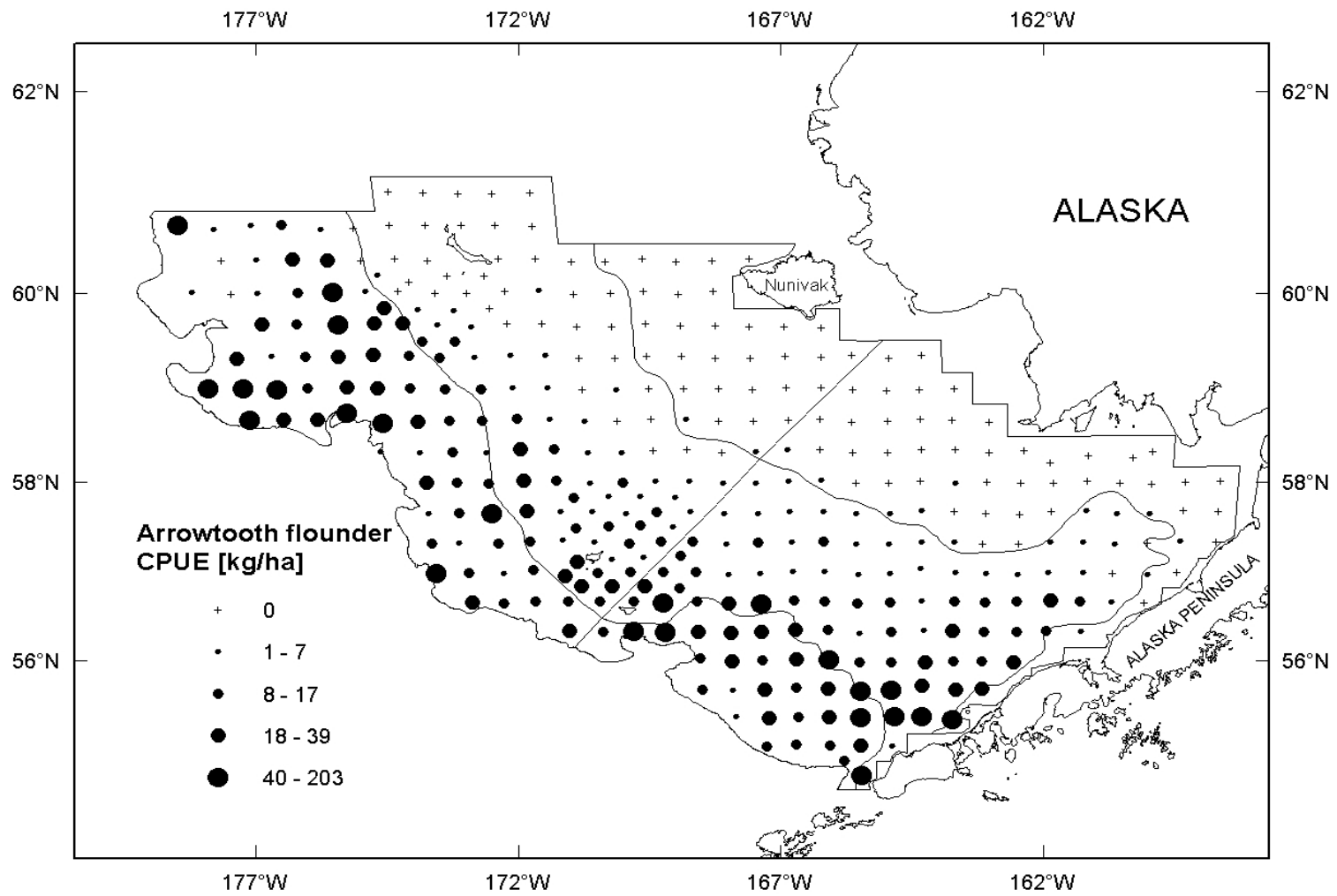


Figure 23.— Distribution and relative abundance in kg/ha of arrowtooth flounder, 2003 eastern Bering Sea bottom trawl survey.

Table 16.– Abundance estimates and mean size of arrowtooth flounder by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Length (cm)
1	0.61	4,776	0.009	20,277,790	0.020	0.236	26.8
2	0.00	4	0.000	111,271	0.000	0.036	18.0
3	16.40	169,411	0.322	473,260,175	0.477	0.358	30.7
4	4.15	44,748	0.085	95,846,605	0.097	0.467	32.6
5	22.29	86,471	0.164	182,323,391	0.184	0.474	34.3
6	23.33	220,612	0.419	220,158,542	0.222	1.002	43.4
All subareas combined <sup>b</sup>	11.35	526,022	1.000	991,977,774	1.000	0.530	34.3
95% Confidence interval		±94,866		±185,384,196			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

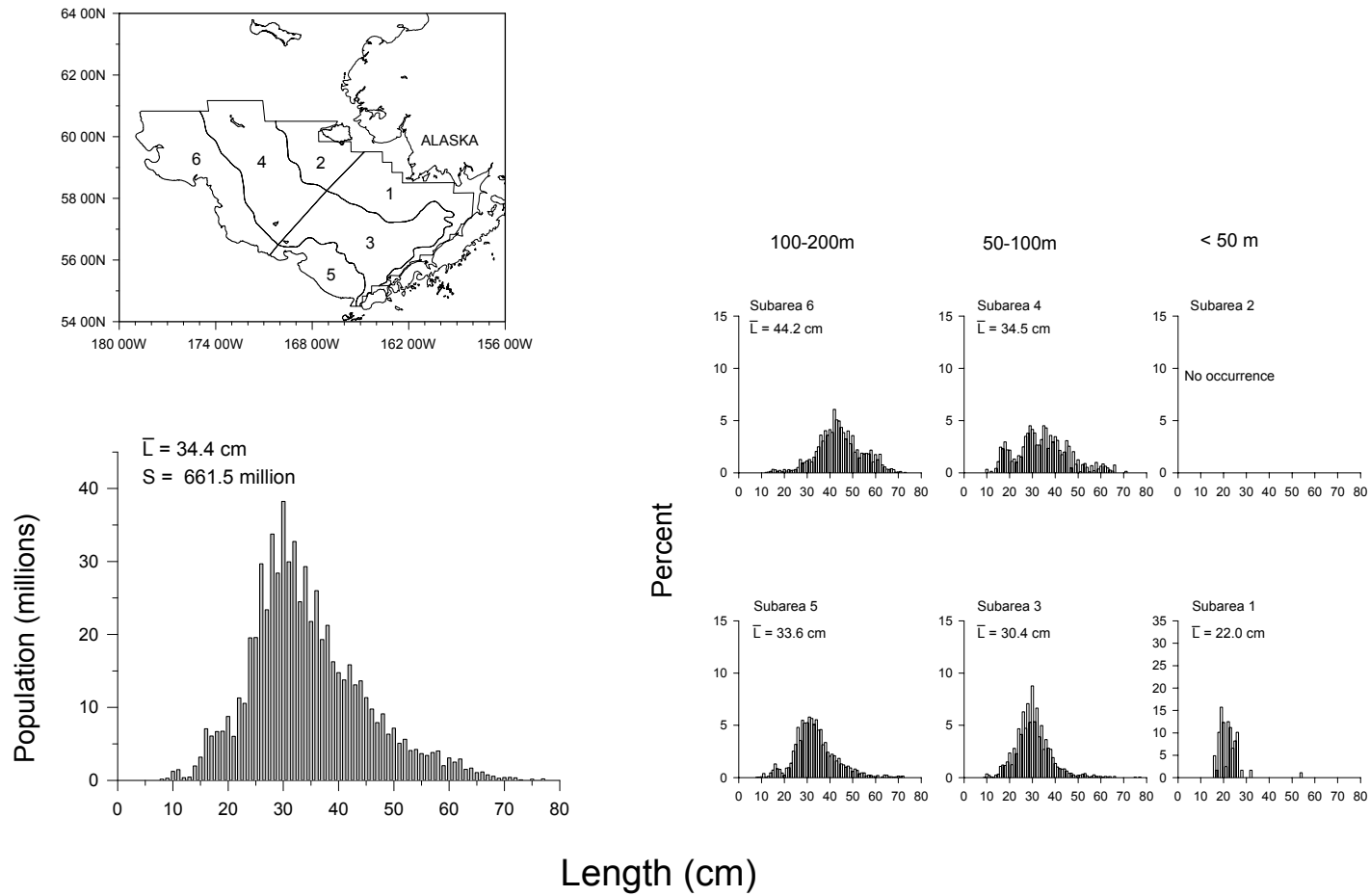


Figure 24.— Estimated relative size distribution (sexes combined) of arrowtooth flounder in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

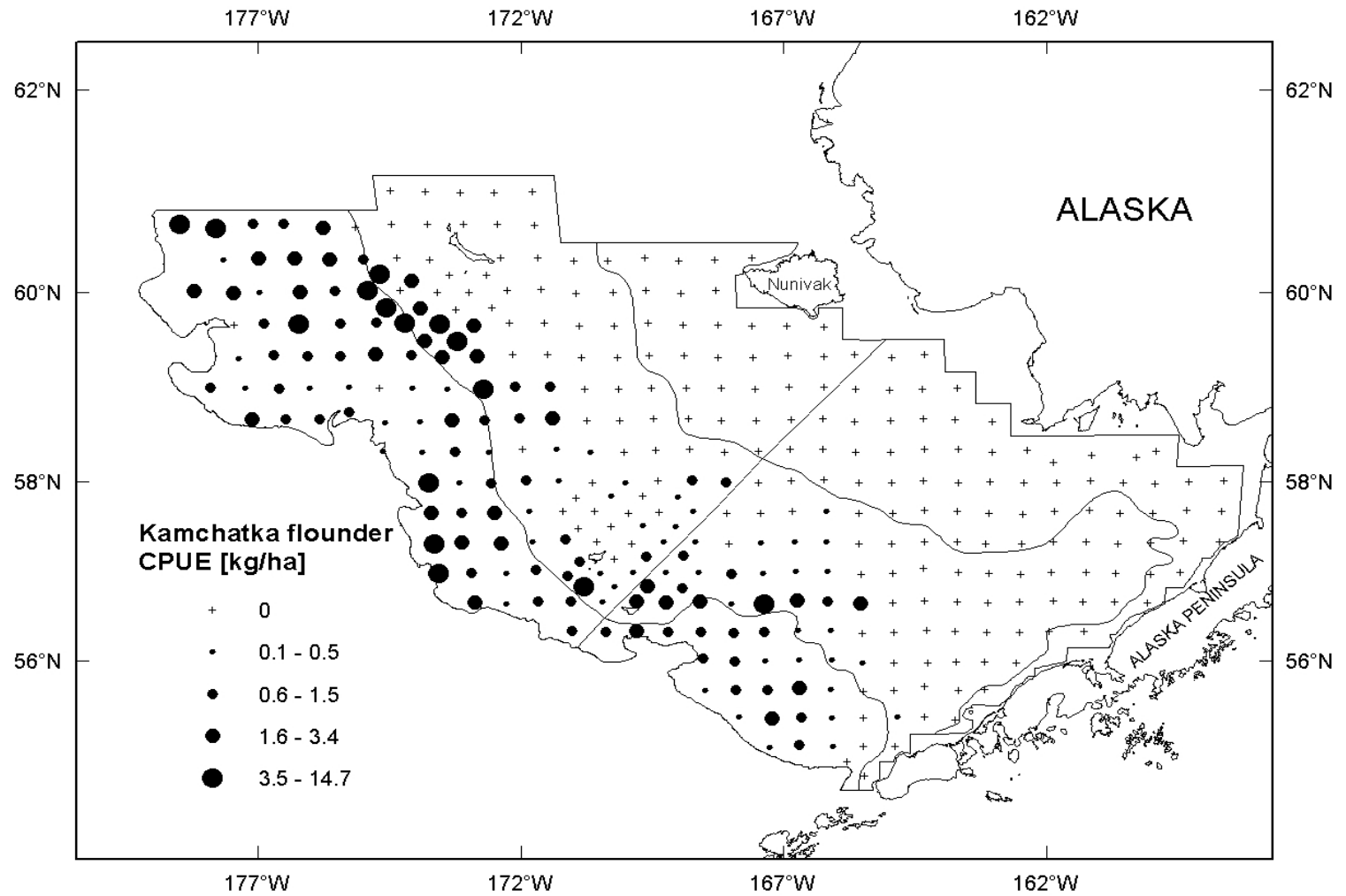


Figure 25.— Distribution and relative abundance in kg/ha of Kamchatka flounder, 2003 eastern Bering Sea bottom trawl survey.

Table 17.– Abundance estimates and mean size of Kamchatka flounder by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	0.00	0	0.000	0	0.000	0.000	0.0
2	0.00	0	0.000	0	0.000	0.000	0.0
3	0.32	3,277	0.118	6,910,822	0.128	0.474	31.0
4	0.55	5,910	0.212	5,983,531	0.111	0.988	41.7
5	0.74	2,861	0.103	9,937,720	0.184	0.288	26.2
6	1.67	15,822	0.568	31,288,269	0.578	0.506	32.5
All subareas combined <sup>b</sup>	0.60	27,870	1.000	54,120,342	1.000	0.515	32.2
95% Confidence interval		$\pm 6,221$		$\pm 11,295,570$			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

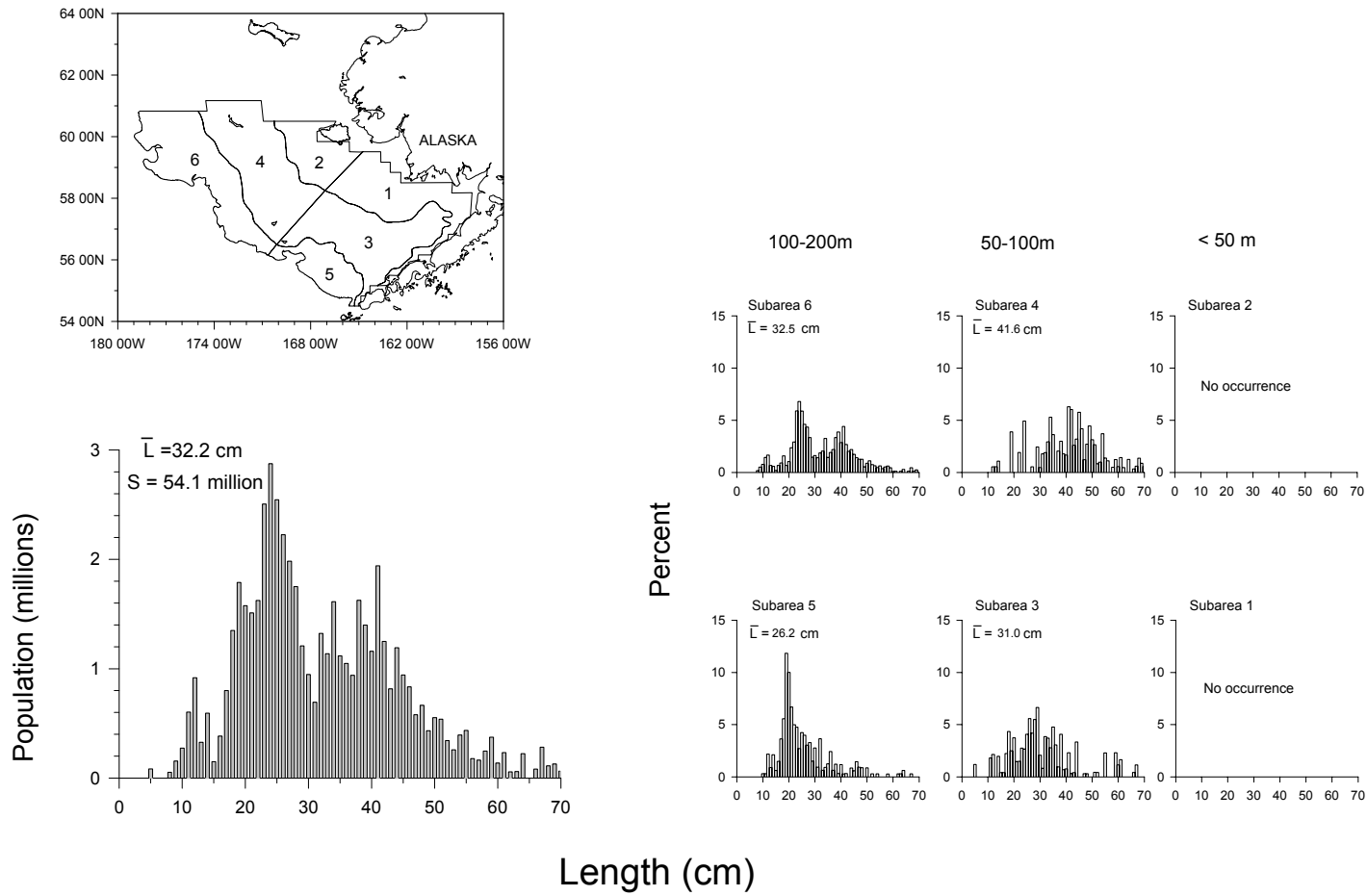


Figure 26.--Estimated relative size distribution (sexes combined) of Kamchatka flounder in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

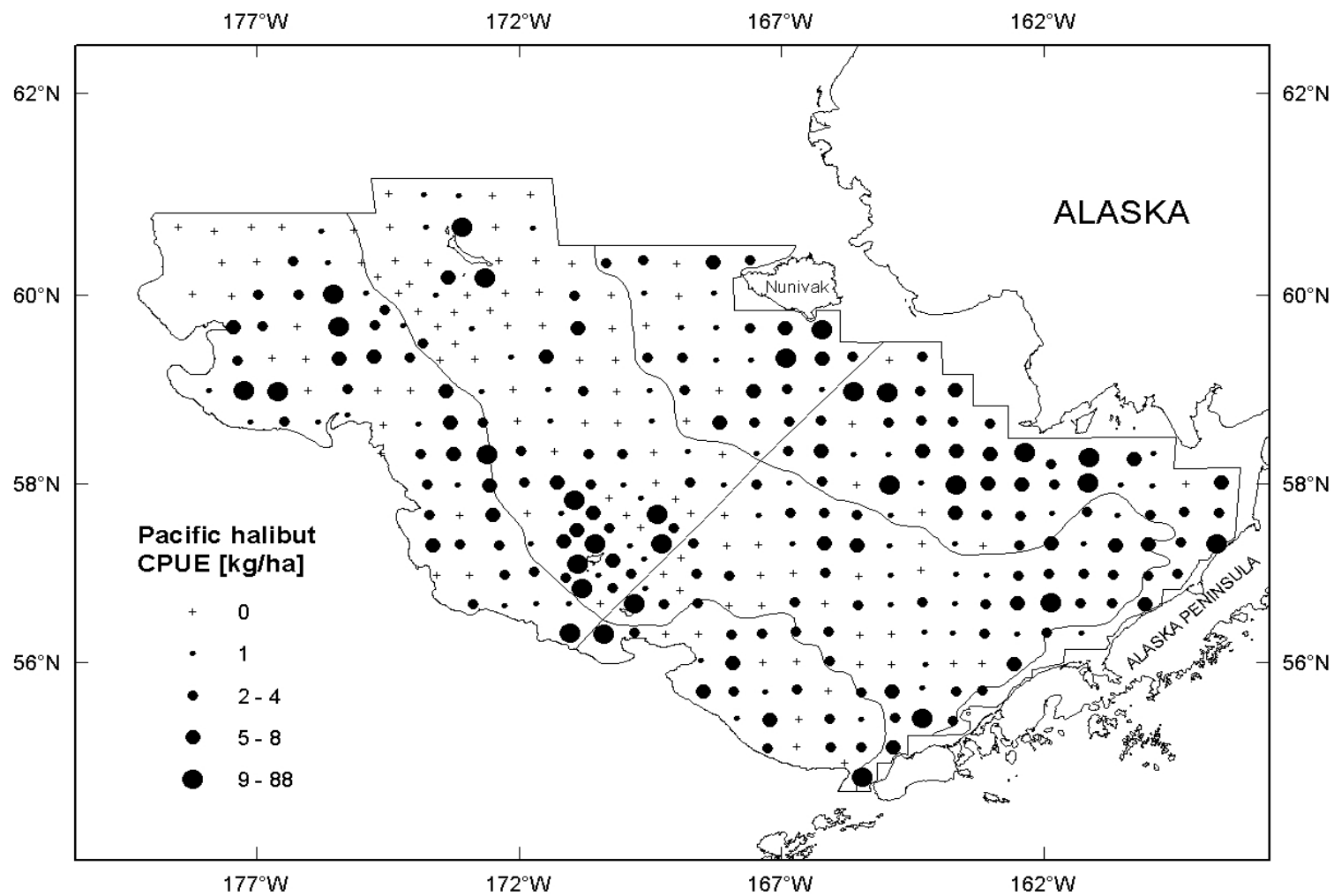


Figure 27.— Distribution and relative abundance in kg/ha of Pacific halibut, 2003 eastern Bering Sea bottom trawl survey.

Table 18.— Abundance estimates and mean size of Pacific halibut by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean size Weight (kg)	Mean size Length (cm)
1	4.19	32,633	0.236	26,051,693	0.421	1.253	43.6
2	2.33	9,550	0.069	10,290,490	0.166	0.928	37.4
3	2.11	21,837	0.158	9,684,213	0.157	2.255	52.6
4	3.40	36,677	0.265	9,953,630	0.161	3.685	61.6
5	2.04	7,913	0.057	1,309,736	0.021	6.042	76.2
6	3.14	29,704	0.215	4,566,474	0.074	6.505	76.1
All subareas combined <sup>b</sup>	2.98	138,314	1.000	61,856,236	1.000	2.236	50.0
95% Confidence interval		±35,329		±19,365,407			

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.



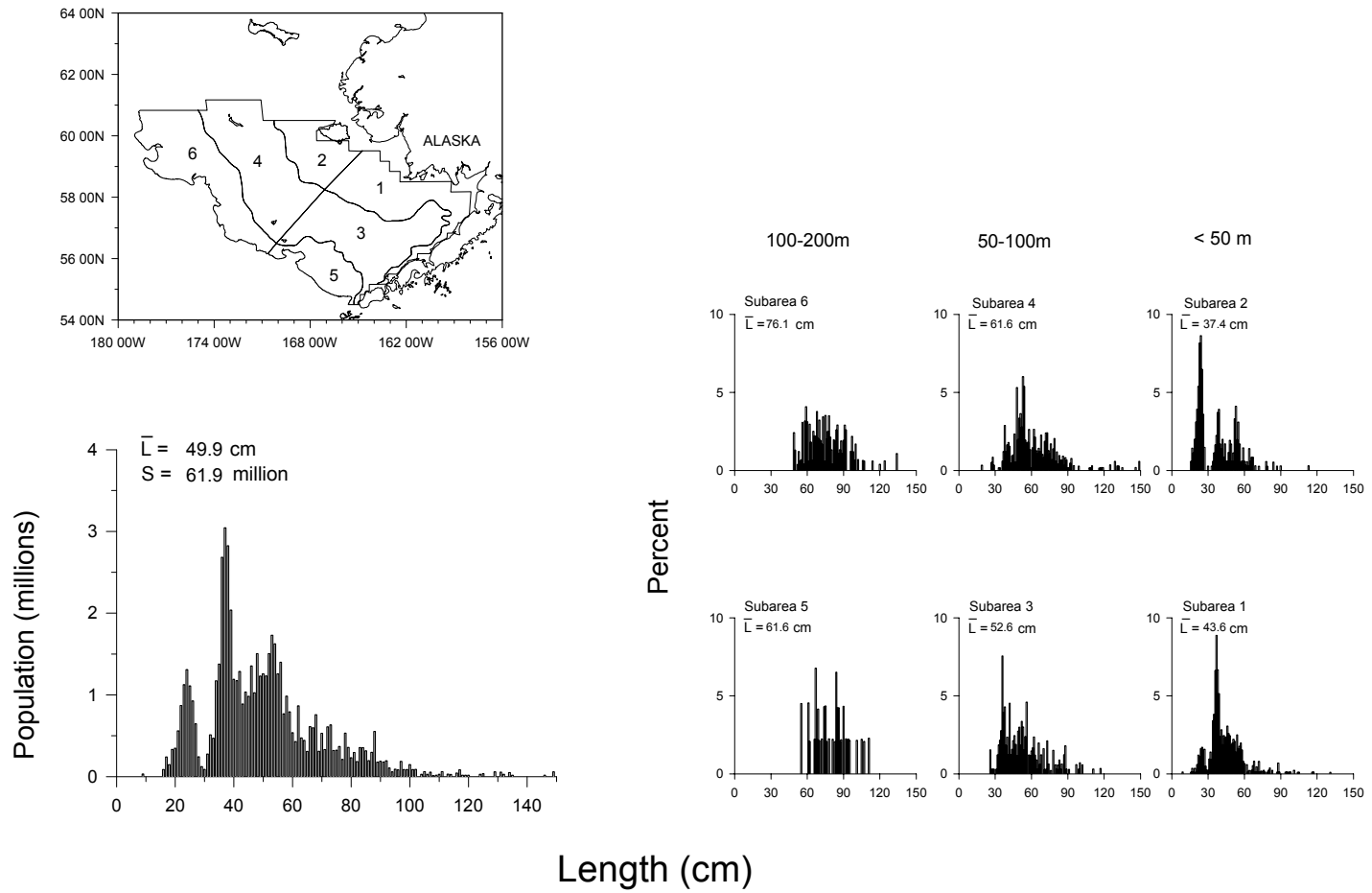


Figure 28.--Estimated relative size distribution (sexes combined) of Pacific halibut in terms of population numbers and percent for subareas 1-6, 2003 eastern Bering Sea bottom trawl survey.

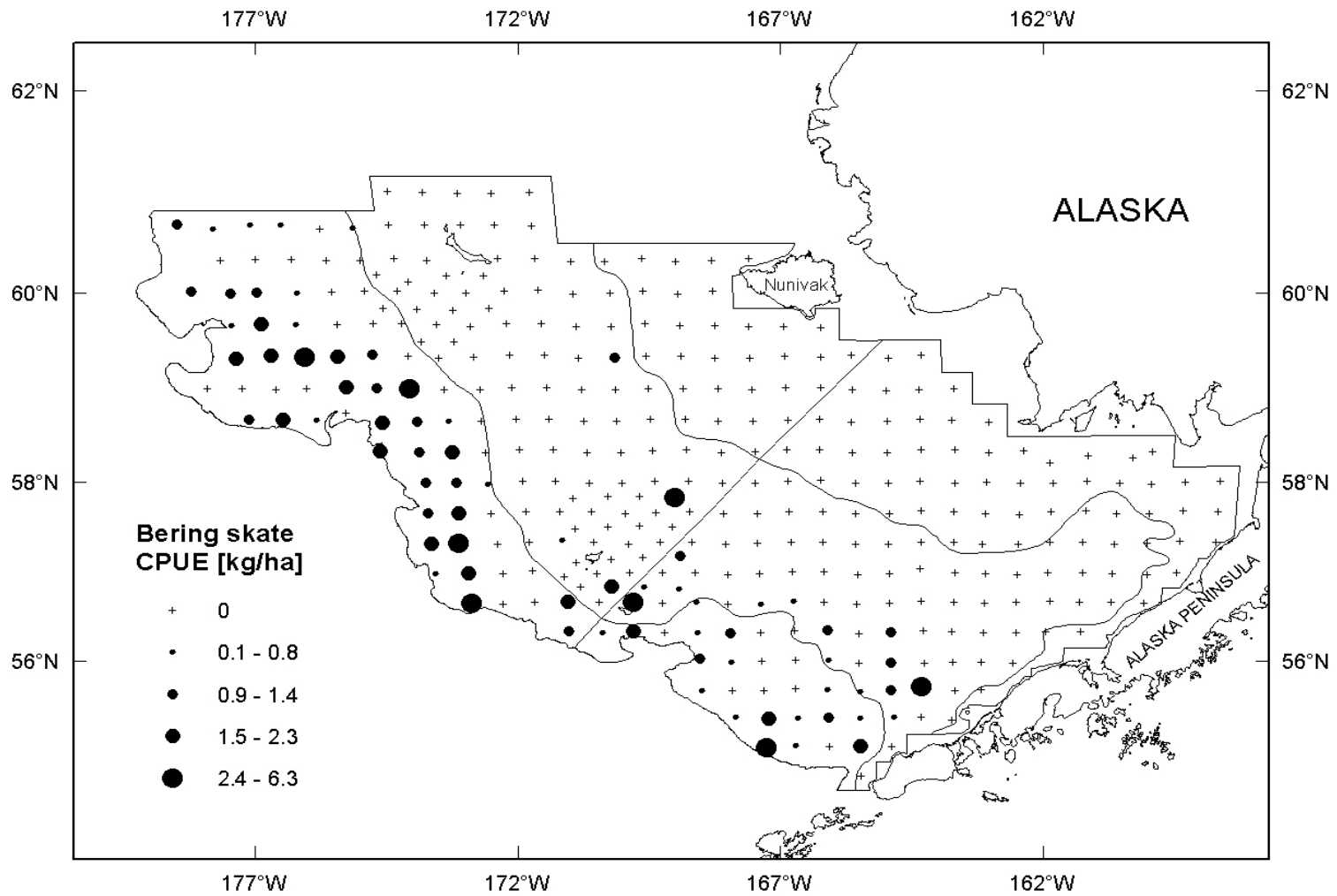


Figure 29.— Distribution and relative abundance in kg/ha of Bering skate, 2003 eastern Bering Sea bottom trawl survey.

Table 19.– Abundance estimates and mean size of Bering skate by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	0.19	1,977	0.146	1,137,007	0.147	1.739
4	0.06	669	0.049	249,843	0.032	2.678
5	0.85	3,292	0.243	2,598,307	0.336	1.267
6	0.80	7,587	0.561	3,748,480	0.485	2.024
All subareas combined <sup>b</sup>	0.29	13,526	1.000	7,733,638	1.000	1.749
95% Confidence interval		$\pm 3,155$		$\pm 2,175,489$		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

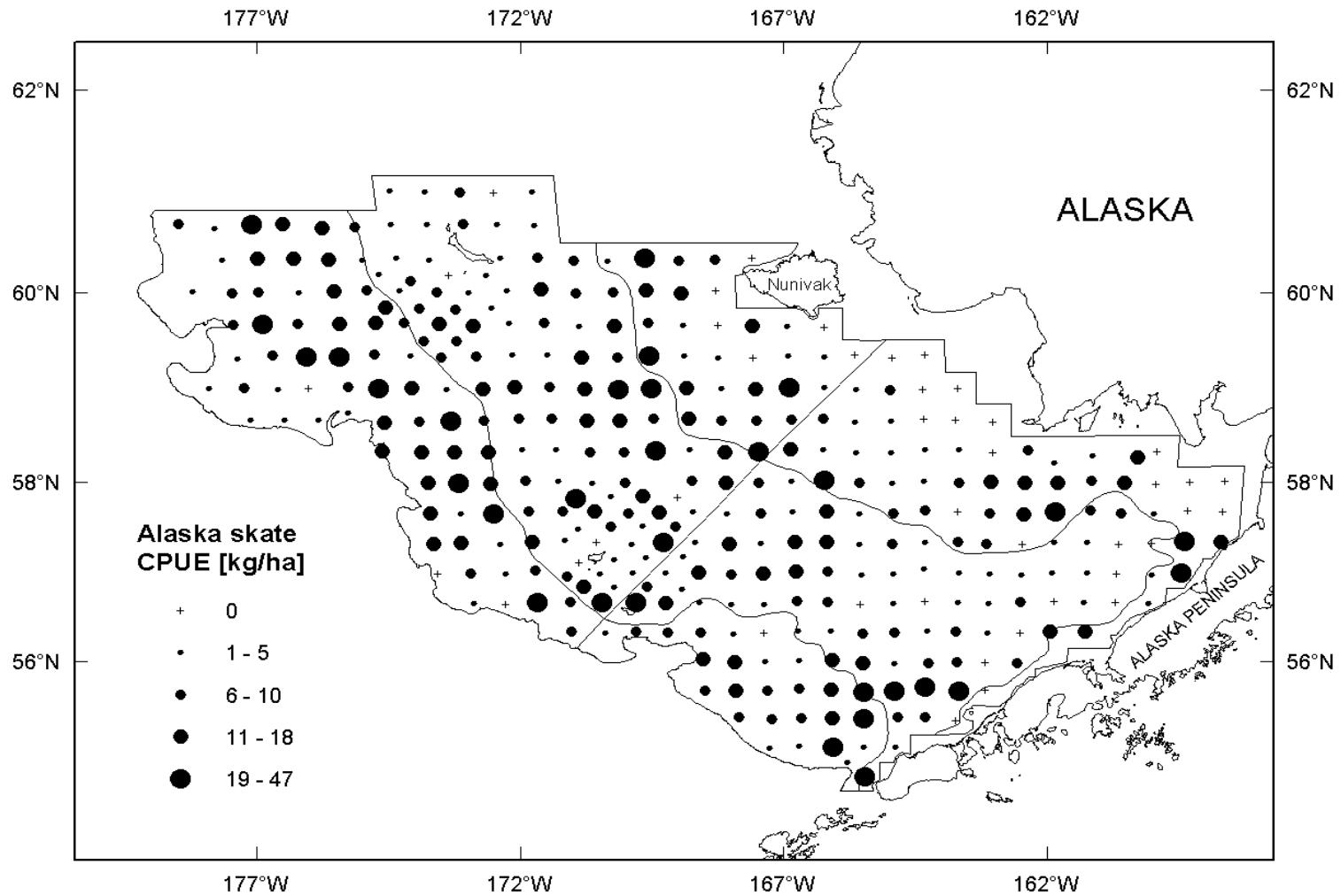


Figure 30.— Distribution and relative abundance in kg/ha of Alaska skate, 2003 eastern Bering Sea bottom trawl survey.

Table 20.--Abundance estimates and mean weight of Alaska skate by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	6.14	47,811	0.133	13,485,141	0.132	3.545
2	8.11	33,293	0.093	12,052,815	0.118	2.762
3	6.58	68,018	0.189	23,981,226	0.235	2.836
4	7.77	83,767	0.233	28,245,385	0.276	2.966
5	8.71	33,790	0.094	5,136,800	0.050	6.578
6	9.85	93,131	0.259	19,323,144	0.189	4.820
All subareas combined <sup>b</sup>	7.76	359,810	1.000	102,224,510	1.000	3.520
95% Confidence interval		±38,994		±11,234,126		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

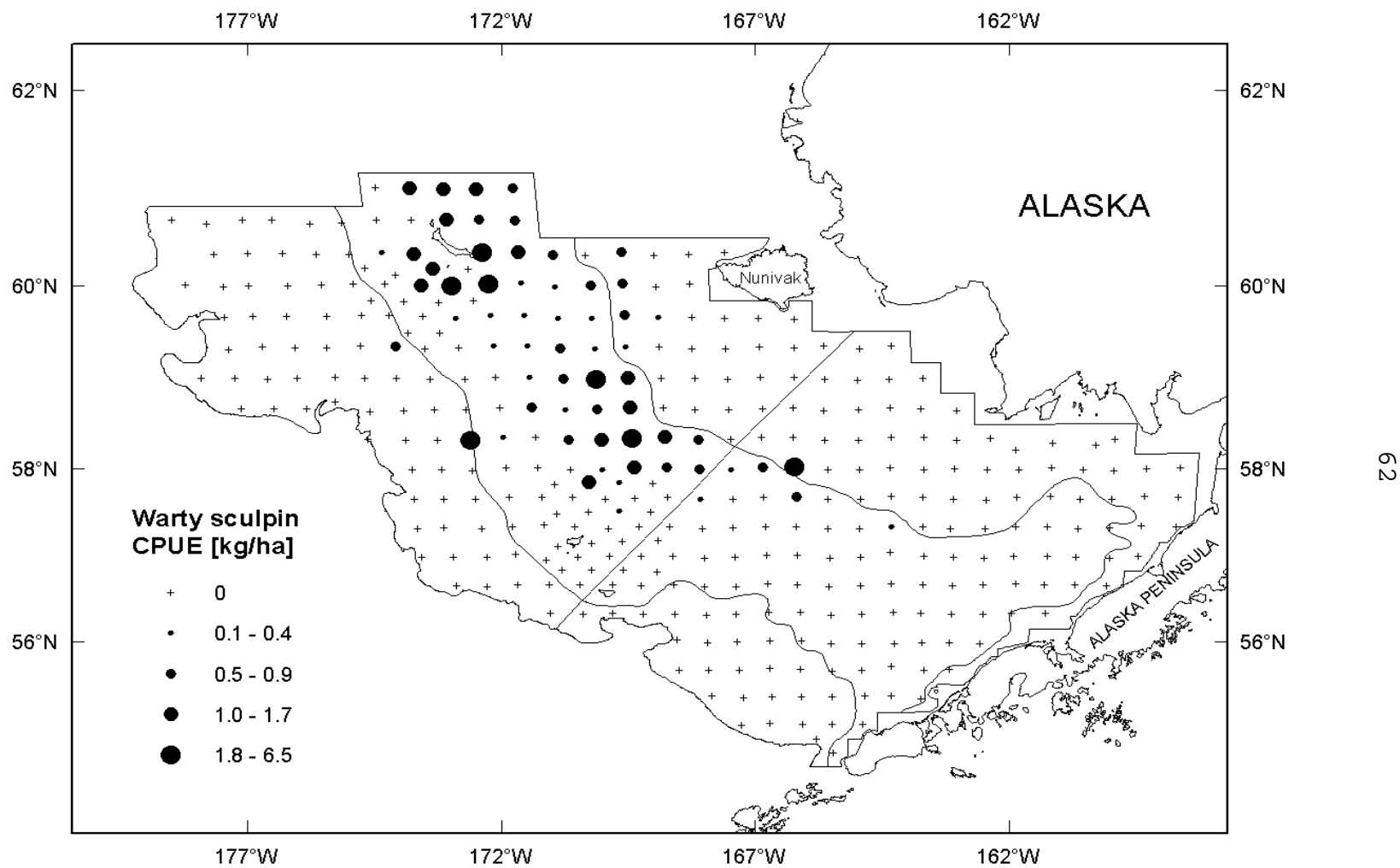


Figure 31.— Distribution and relative abundance in kg/ha of warty sculpin, 2003 eastern Bering Sea bottom trawl survey.

Table 21.--Abundance estimates and mean weight of warty sculpin by subarea, 2003  
eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.04	322	0.045	54,803	0.009	5.876
2	0.05	195	0.027	418,463	0.069	0.466
3	0.02	250	0.035	232,885	0.038	1.073
4	0.52	5,557	0.778	5,043,586	0.833	1.102
5	0.00	0	0.000	0	0.000	0.000
6	0.09	818	0.115	304,038	0.050	2.690
All subareas combined <sup>b</sup>	0.15	7,142	1.000	6,053,774	1.000	1.180
95% Confidence interval		$\pm 2,456$		$\pm 1,829,589$		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

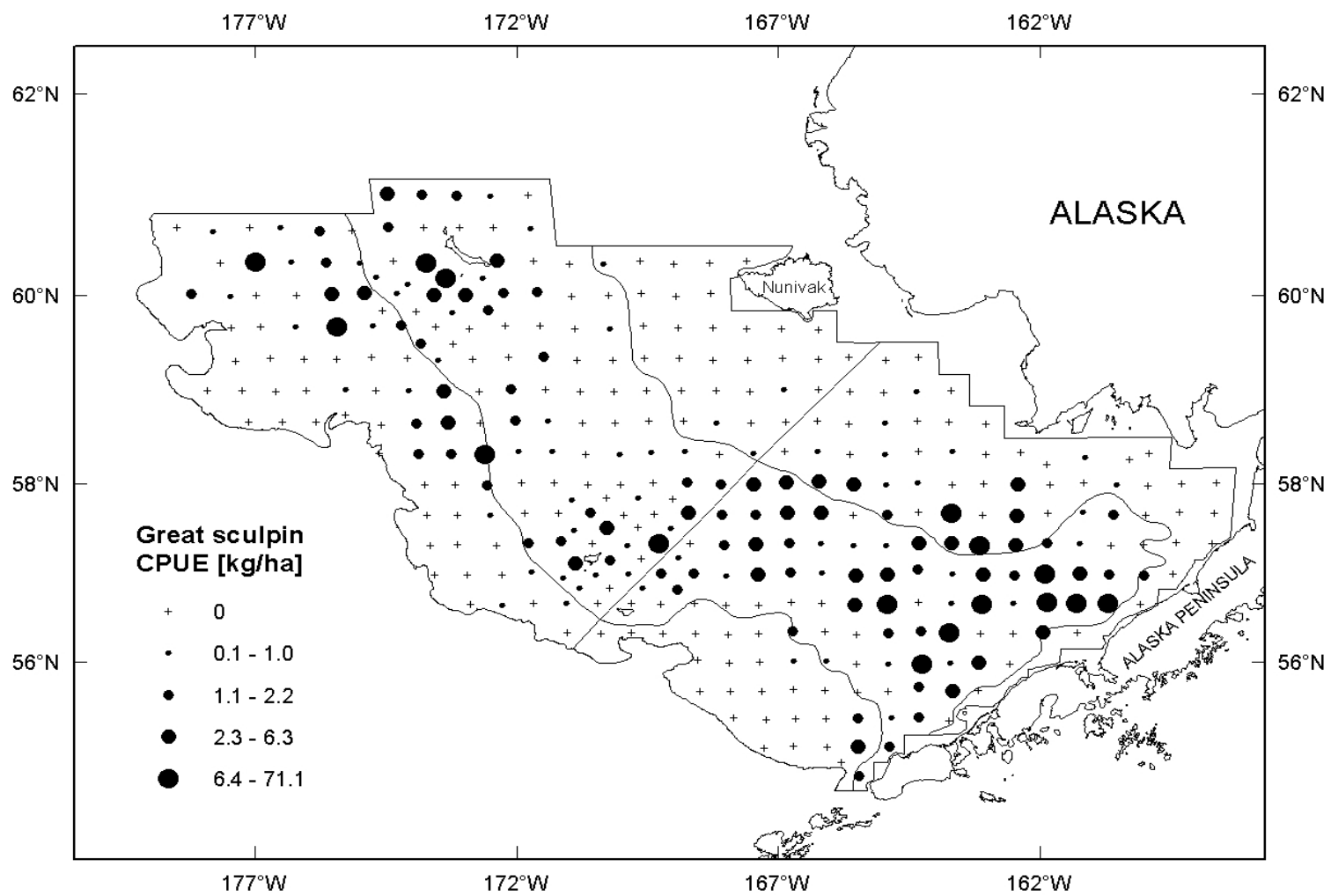


Figure 32.— Distribution and relative abundance in kg/ha of great sculpin, 2003 eastern Bering Sea bottom trawl survey.



Table 22.--Abundance estimates and mean weight of great sculpin by subarea, 2003  
eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.93	7,252	0.111	3,071,951	0.120	2.361
2	0.02	82	0.001	141,777	0.006	0.578
3	2.40	24,829	0.379	9,383,077	0.366	2.646
4	0.92	9,969	0.152	4,899,305	0.191	2.035
5	0.20	760	0.012	378,690	0.015	2.007
6	2.40	22,668	0.346	7,747,816	0.302	2.926
All subareas combined <sup>b</sup>	1.41	65,560	1.000	25,622,617	1.000	2.559
95% Confidence interval		±26,120		±8,905,338		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

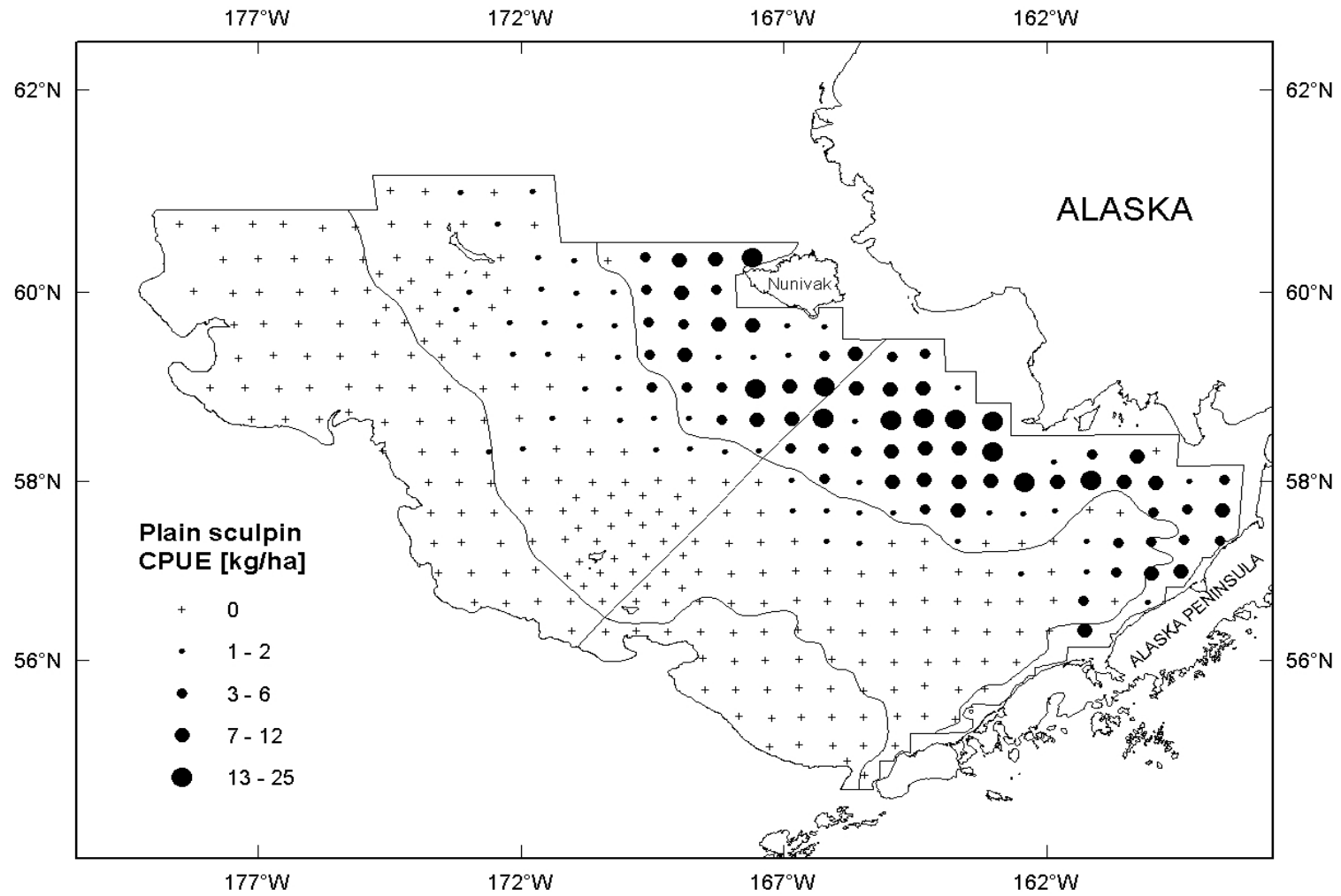


Figure 33.— Distribution and relative abundance in kg/ha of plain sculpin, 2003 eastern Bering Sea bottom trawl survey.

Table 23.--Abundance estimates and mean weight of plain sculpin by subarea, 2003  
eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	6.74	52,506	0.651	97,063,174	0.664	0.541
2	5.75	23,609	0.293	45,354,501	0.310	0.521
3	0.19	1,914	0.024	1,655,555	0.011	1.156
4	0.23	2,500	0.031	1,984,487	0.014	1.260
5	0.00	0	0.000	0	0.000	0.000
6	0.01	70	0.001	31,839	0.000	2.199
All subareas combined <sup>b</sup>	1.74	80,600	1.000	146,089,555	1.000	0.552
95% Confidence interval		±14,515		±31,182,638		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

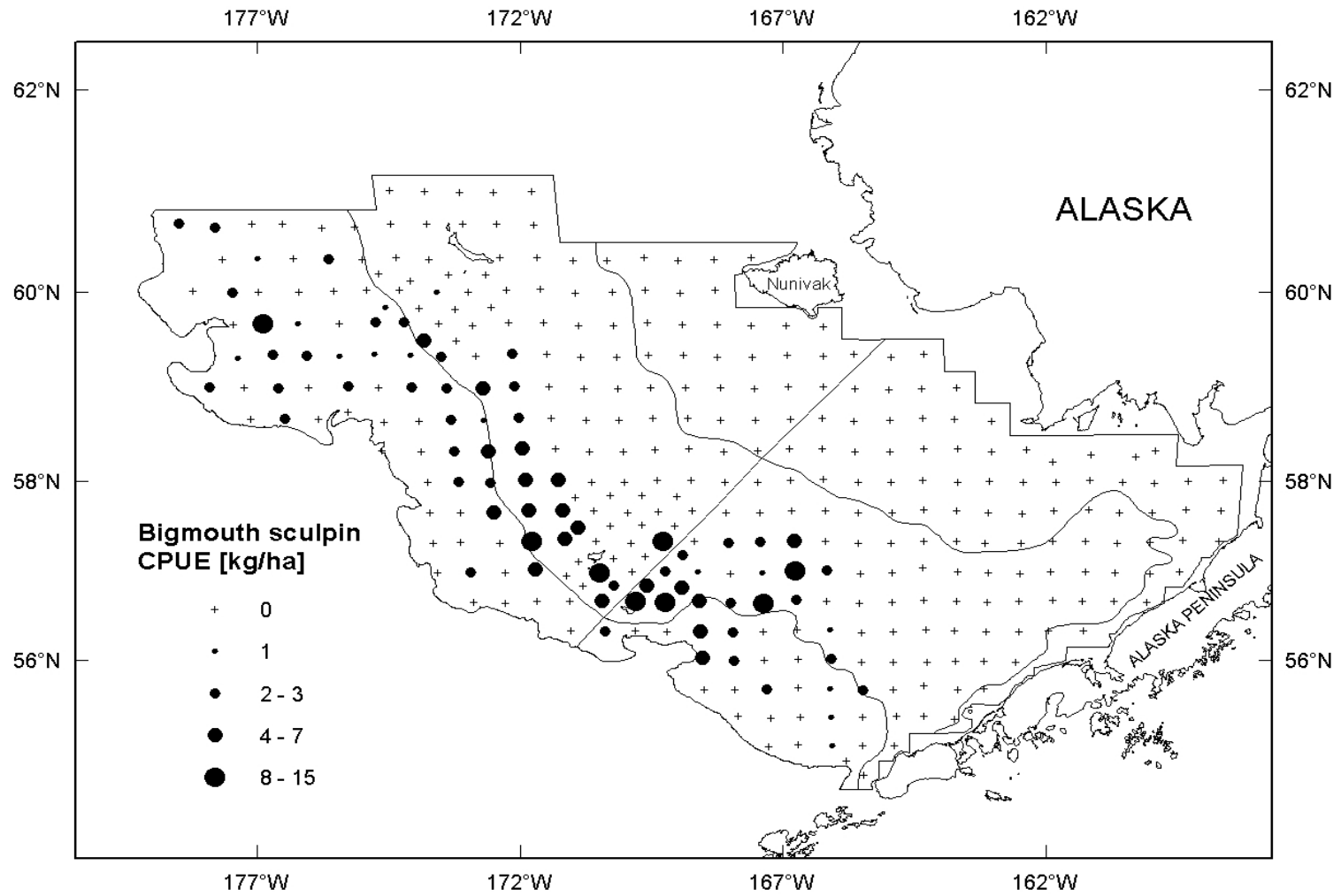


Figure 34.— Distribution and relative abundance in kg/ha of bigmouth sculpin, 2003 eastern Bering Sea bottom trawl survey.

Table 24.--Abundance estimates and mean weight of bigmouth sculpin by subarea, 2003 eastern

Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	0.88	9,133	0.307	1,565,043	0.253	5.836
4	0.77	8,291	0.279	1,534,638	0.248	5.403
5	0.89	3,453	0.116	741,043	0.120	4.660
6	0.94	8,850	0.298	2,348,143	0.379	3.769
All subareas combined <sup>b</sup>	0.64	29,727	1.000	6,188,866	1.000	4.803
95% Confidence interval		±8,207		±1,657,485		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

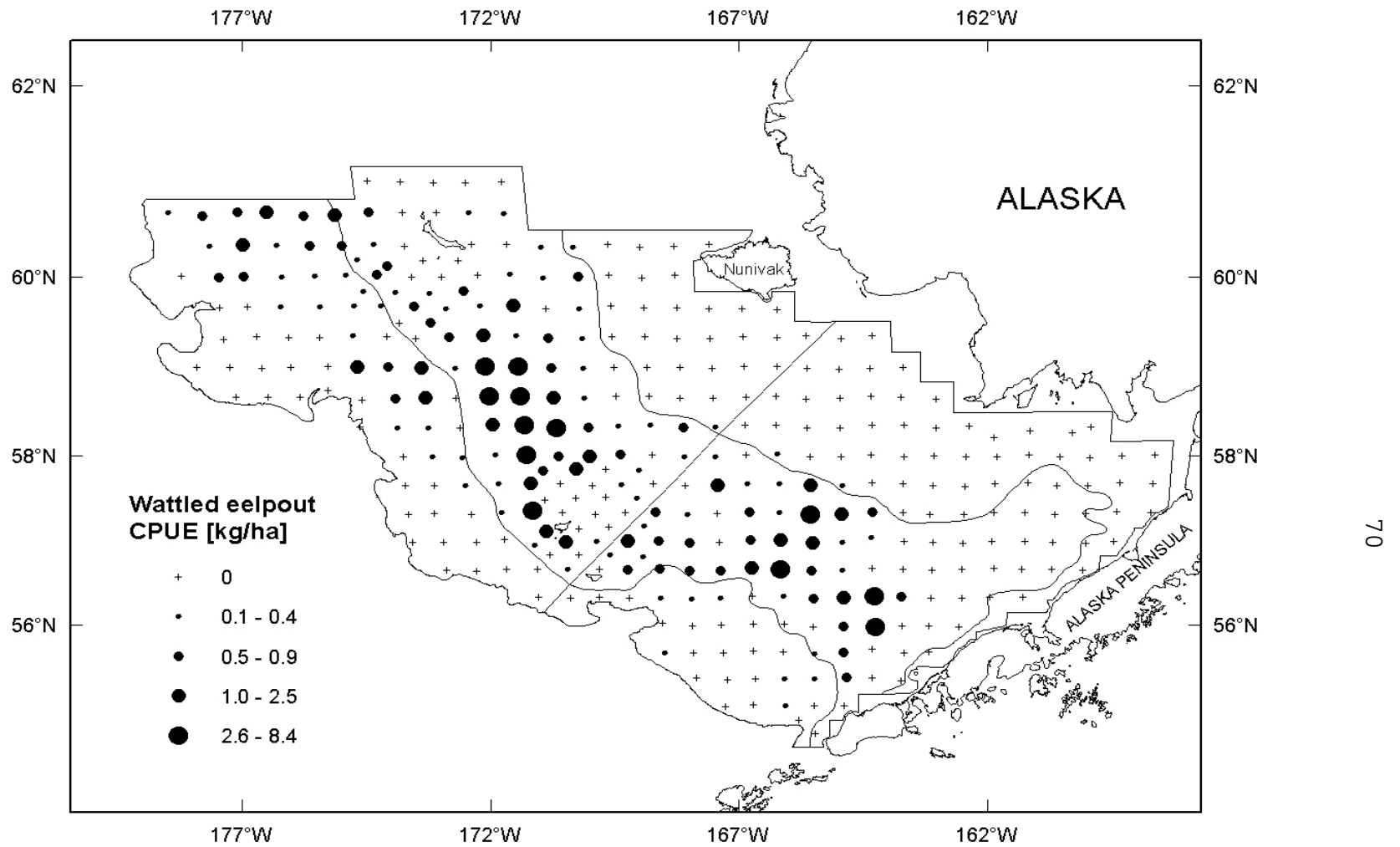


Figure 35.— Distribution and relative abundance in kg/ha of wattled eelpout, 2003 eastern Bering Sea bottom trawl survey.

Table 25.--Abundance estimates and mean weight of wattled eelpout by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.12	898	0.055	3,801,096	0.055	0.236
2	0.00	11	0.001	55,210	0.001	0.199
3	0.42	4,378	0.268	19,675,062	0.284	0.223
4	0.77	8,351	0.510	32,514,854	0.470	0.257
5	0.06	241	0.015	1,333,888	0.019	0.181
6	0.26	2,481	0.152	11,780,657	0.170	0.211
All subareas combined <sup>b</sup>	0.35	16,360	1.000	69,160,766	1.000	0.237
95% Confidence interval		±4,443		±17,502,994		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

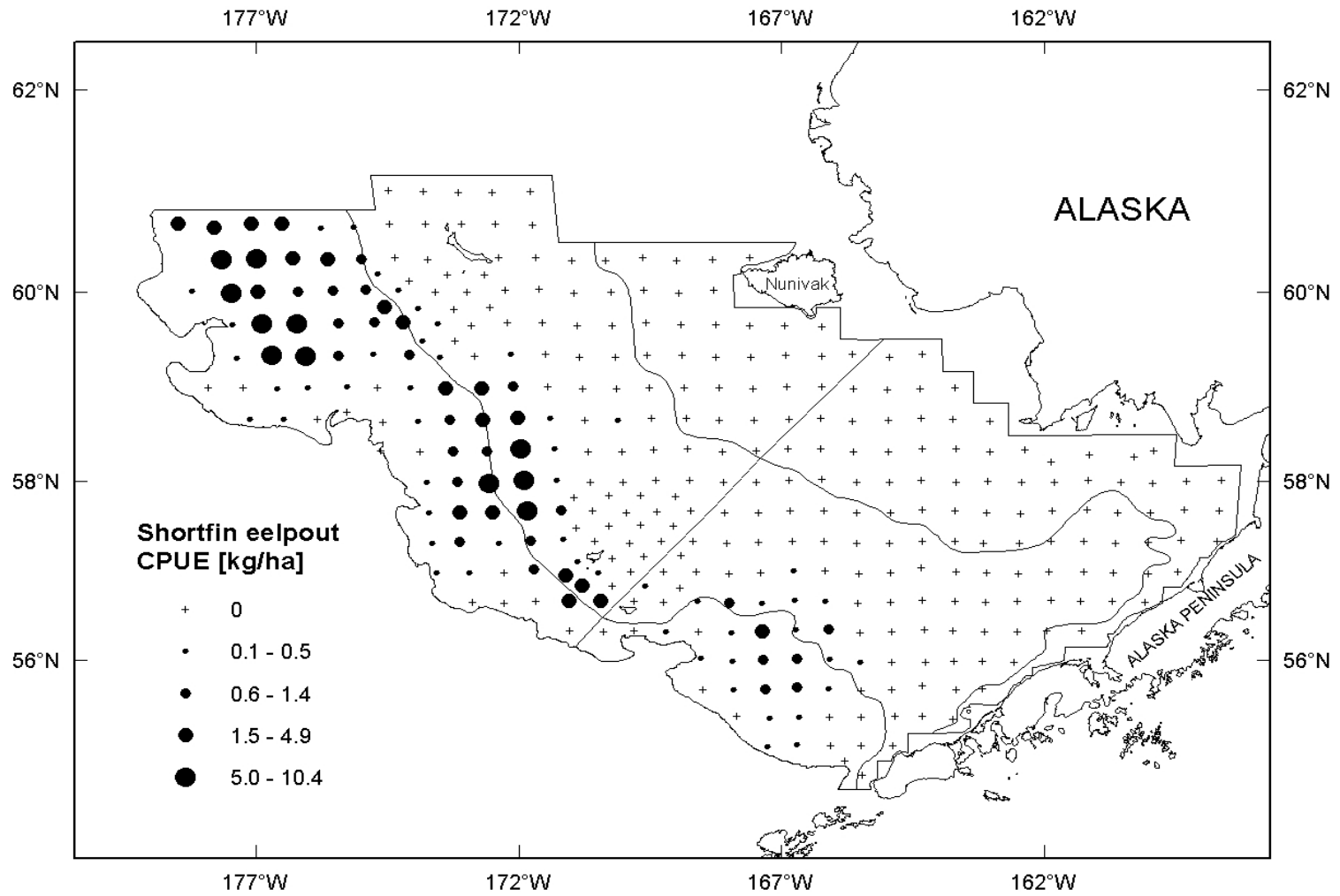


Figure 36.— Distribution and relative abundance in kg/ha of shortfin eelpout, 2003 eastern Bering Sea bottom trawl survey.



Table 26.--Abundance estimates and mean weight of shortfin eelpout by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	0.04	395	0.018	6,794,777	0.020	0.058
4	0.44	4,764	0.214	82,711,300	0.240	0.058
5	0.35	1,356	0.061	16,255,796	0.047	0.083
6	1.67	15,755	0.707	239,103,695	0.693	0.066
All subareas combined <sup>b</sup>	0.48	22,271	1.000	344,865,569	1.000	0.065
95% Confidence interval		±6,929		±103,909,152		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

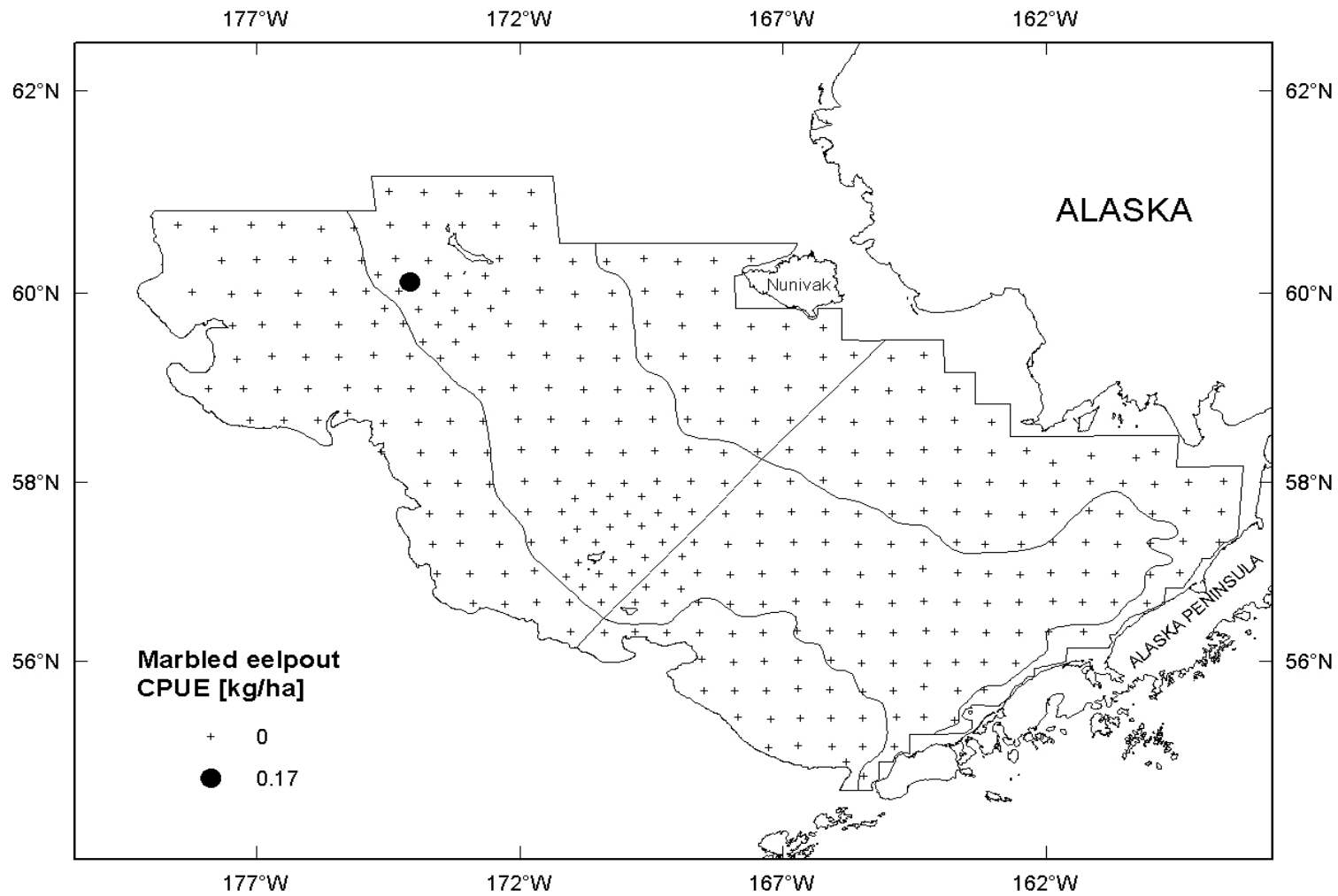


Figure 37.— Distribution and relative abundance in kg/ha of marbled eelpout, 2003 eastern Bering Sea bottom trawl survey.

Table 27.--Abundance estimates and mean weight of marbled eelpout by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.00	0	0.000	0	0.000	0.000
2	0.00	0	0.000	0	0.000	0.000
3	0.00	0	0.000	0	0.000	0.000
4	0.00	16	1.000	18,592	1.000	0.861
5	0.00	0	0.000	0	0.000	0.000
6	0.00	0	0.000	0	0.000	0.000
All subareas combined <sup>b</sup>	0.00	16	1.000	18,592	1.000	0.861
95% Confidence interval		±32		±36,440		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

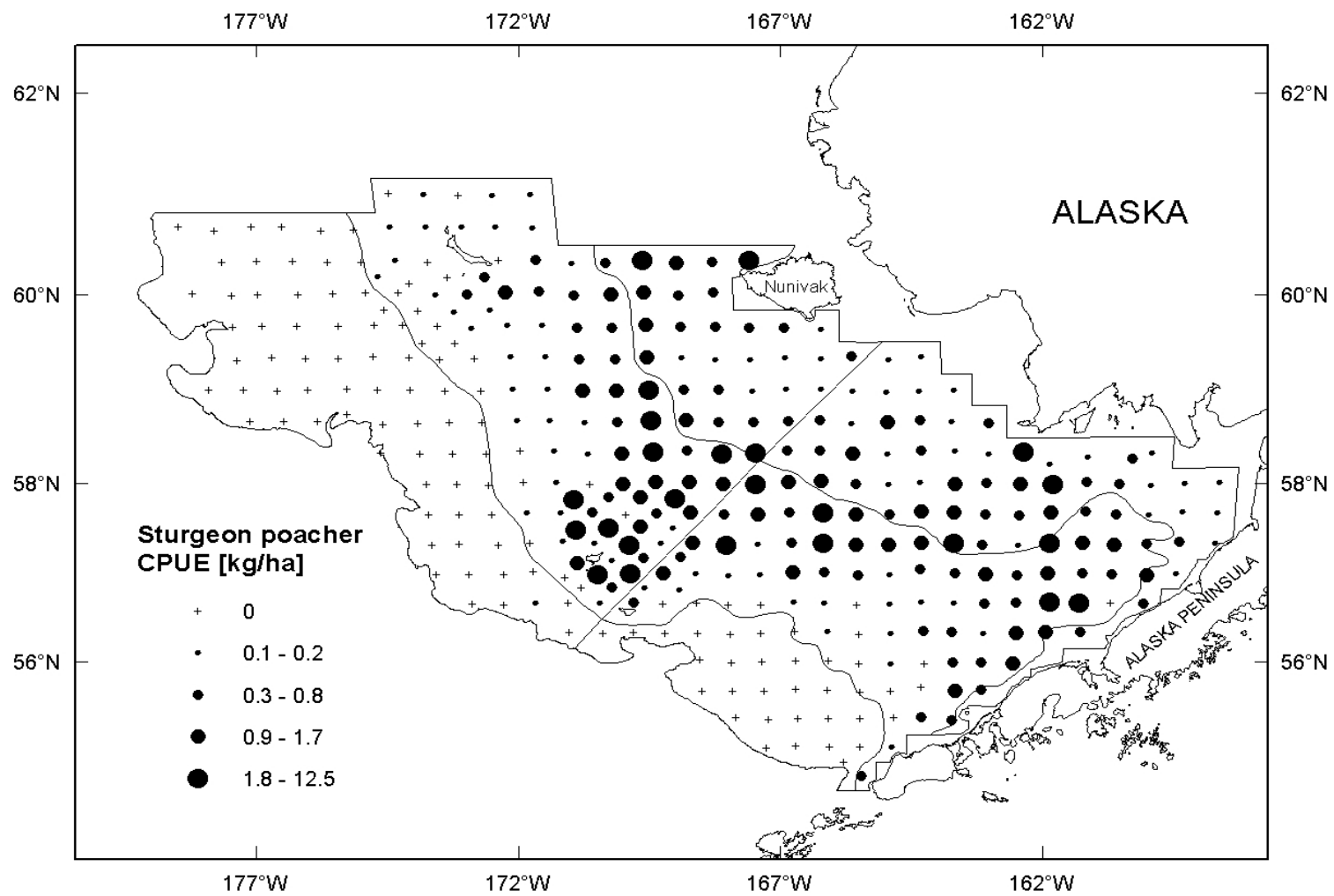


Figure 38.— Distribution and relative abundance in kg/ha of sturgeon poacher, 2003 eastern Bering Sea bottom trawl survey.

Table 28.--Abundance estimates and mean weight of sturgeon poacher by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.53	4,133	0.198	57,322,548	0.180	0.072
2	0.79	3,257	0.156	60,829,045	0.191	0.054
3	0.69	7,126	0.341	92,170,074	0.290	0.077
4	0.59	6,386	0.305	107,393,326	0.338	0.059
5	0.00	0	0.000	0	0.000	0.000
6	0.00	4	0.000	84,789	0.000	0.047
All subareas combined <sup>b</sup>	0.45	20,907	1.000	317,799,782	1.000	0.066
95% Confidence interval		±4,032		±57,615,348		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

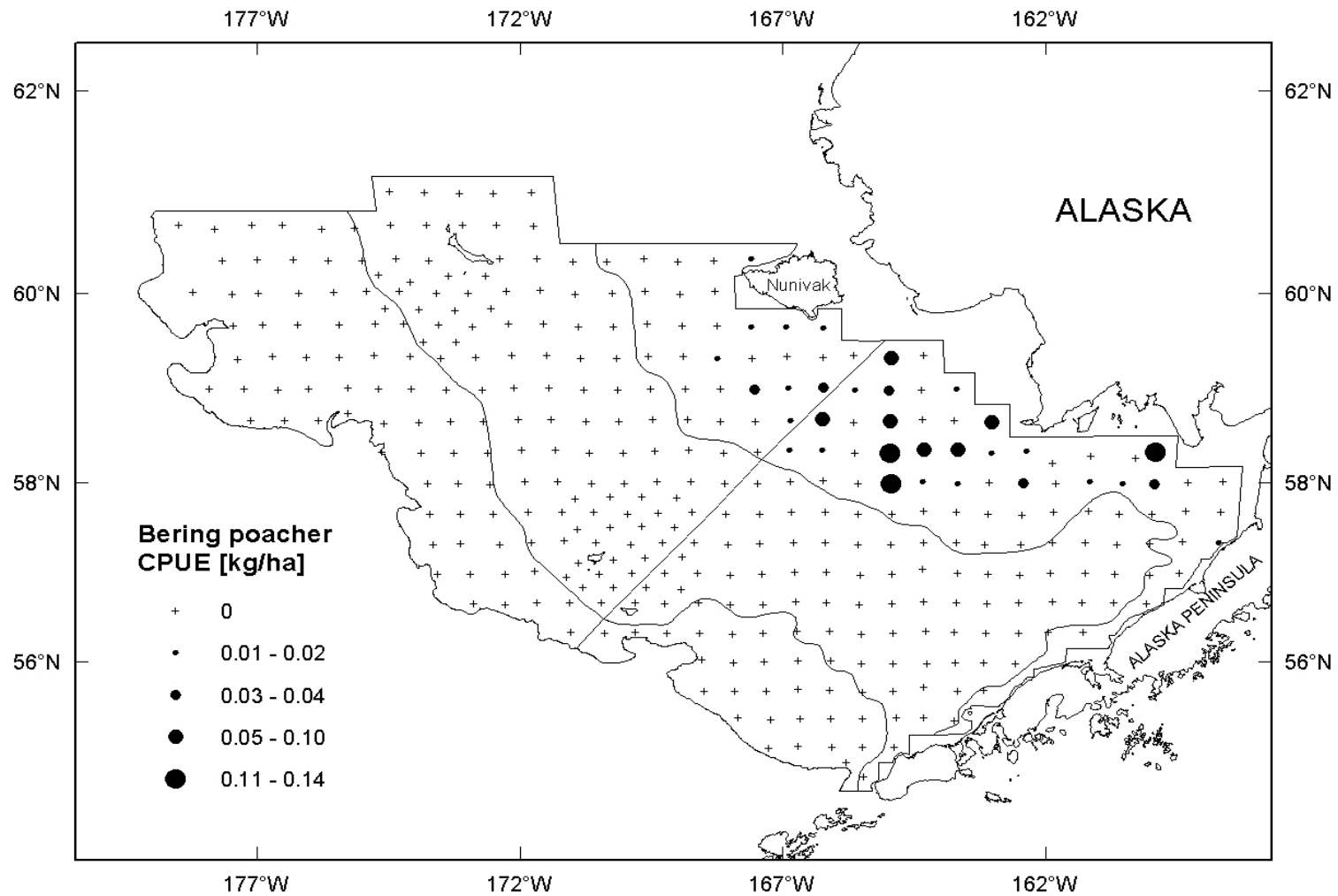


Figure 39.— Distribution and relative abundance in kg/ha of Bering poacher, 2003 eastern Bering Sea bottom trawl survey.

Table 29.--Abundance estimates and mean weight of Bering poacher by subarea, 2003 eastern Bering Sea bottom trawl survey.

Subarea	Mean CPUE (kg/ha)	Estimated biomass (t) <sup>a</sup>	Proportion of estimated biomass	Estimated population numbers <sup>a</sup>	Proportion of estimated population	Mean weight (kg)
1	0.02	147	0.845	6,639,371	0.837	0.022
2	0.01	27	0.155	1,291,221	0.163	0.021
3	0.00	0	0.000	0	0.000	0.000
4	0.00	0	0.000	0	0.000	0.000
5	0.00	0	0.000	0	0.000	0.000
6	0.00	0	0.000	0	0.000	0.000
All subareas combined <sup>b</sup>	0.00	174	1.000	7,930,592	1.000	0.022
95% Confidence interval		±72		±3,151,242		

<sup>a</sup>Variances of abundance estimates are given in Appendix D.

<sup>b</sup>Differences in sums of estimates and totals are due to rounding.

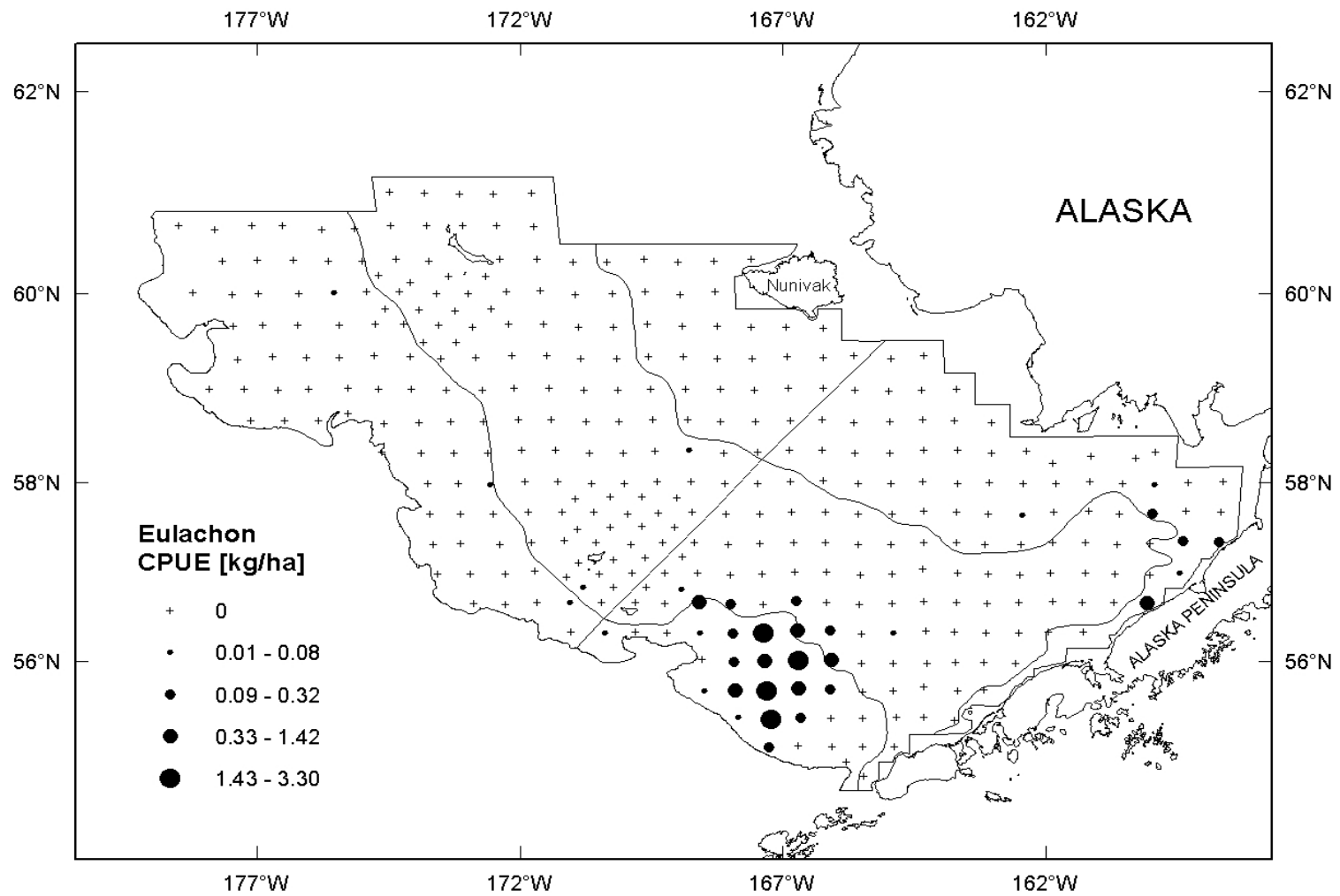


Figure 40.– Distribution and relative abundance in kg/ha of eulachon, 2003 eastern Bering Sea bottom trawl survey.



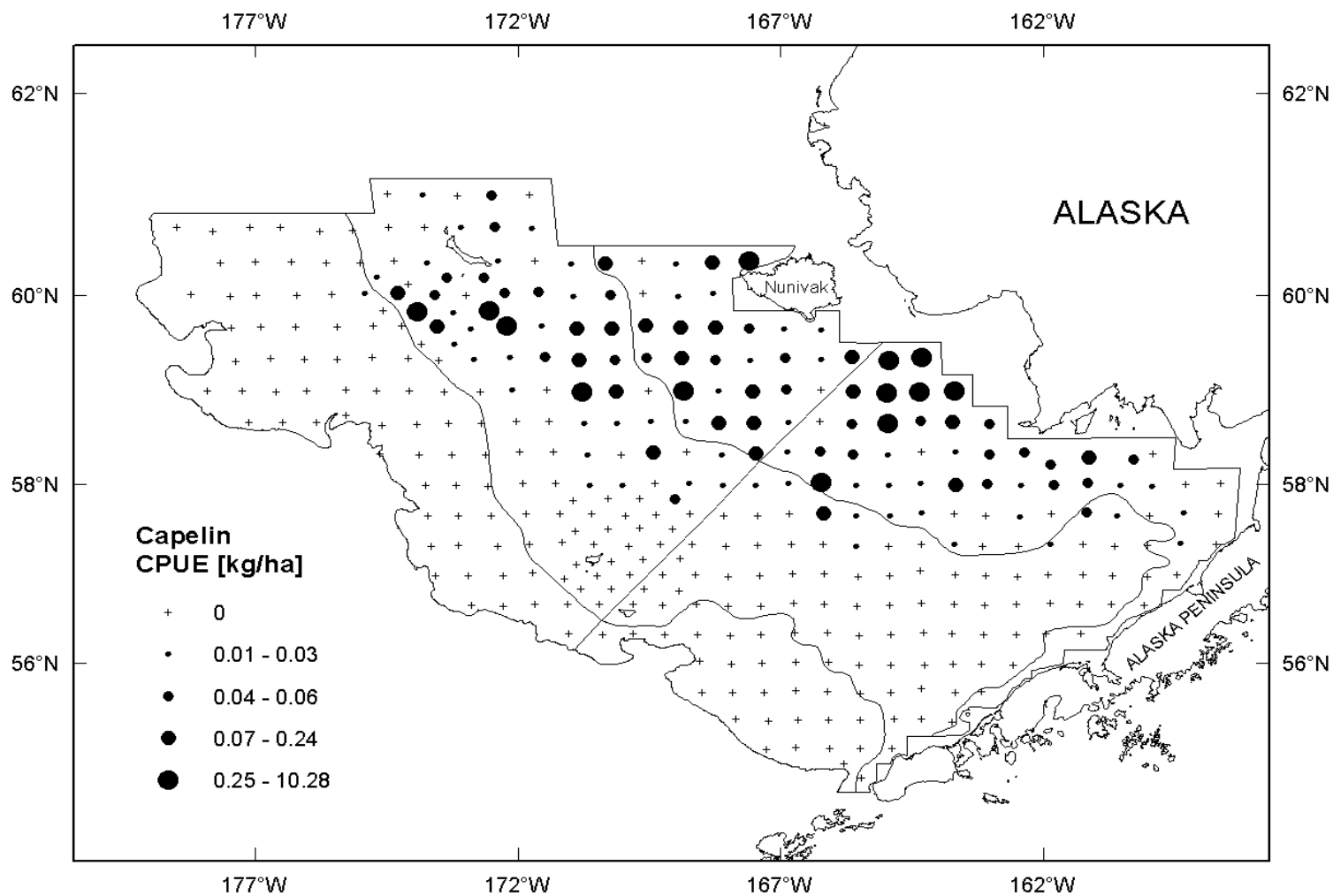


Figure 41.— Distribution and relative abundance in kg/ha of capelin, 2003 eastern Bering Sea bottom trawl survey.

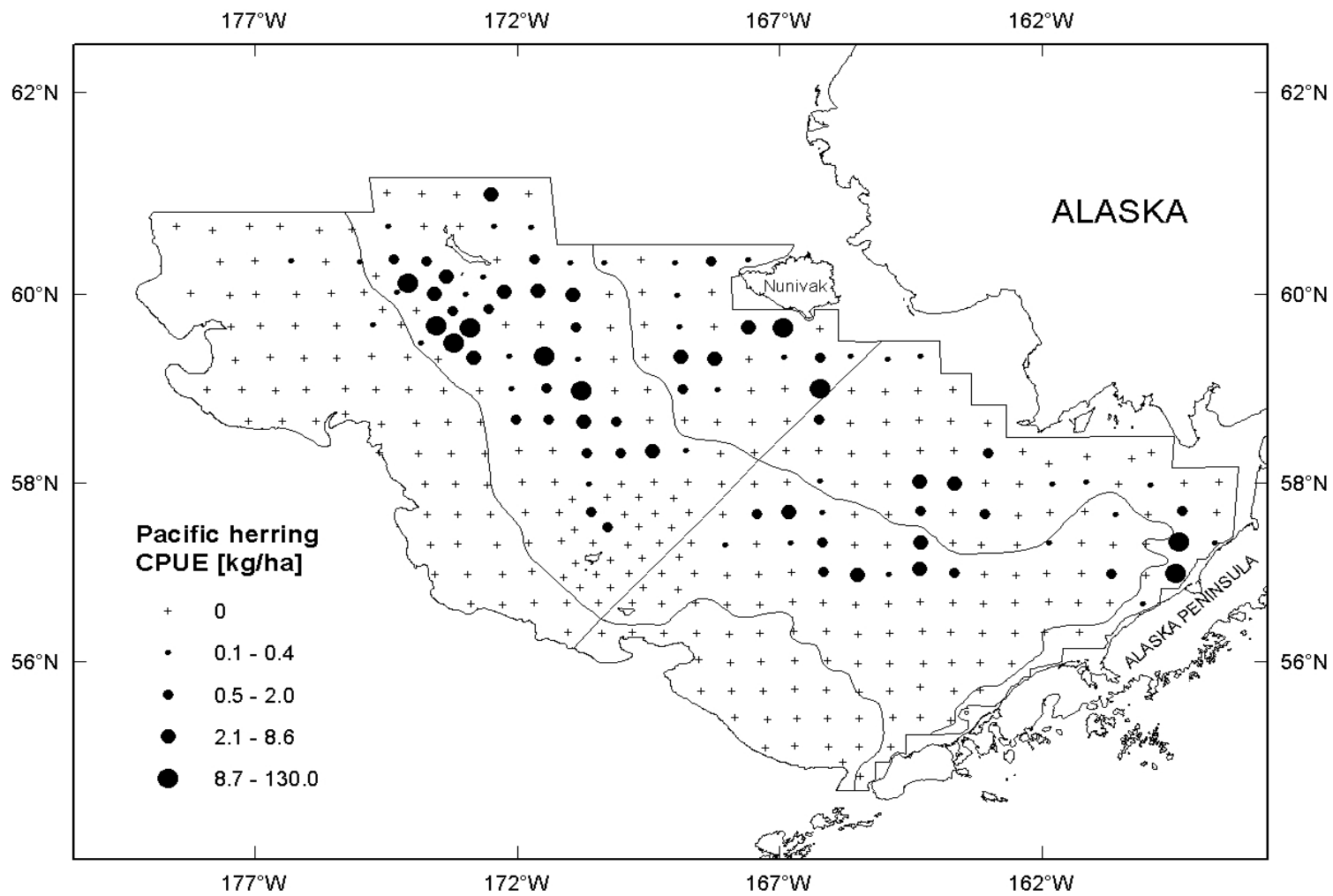


Figure 42.— Distribution and relative abundance in kg/ha of Pacific herring, 2003 eastern Bering Sea bottom trawl survey.

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## APPENDIX A

## Station Data, 2003 Eastern Bering Sea Bottom Trawl Survey

Appendix A 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 special study and unsatisfactory hauls were omitted.
3. All longitudes are in Western Hemisphere, latitudes in Northern Hemisphere.

Geodetic positions are displayed as degrees and decimal minutes.

4. Width codes are as follows:

M = Net width was measured by mensuration gear.

F = Net width was estimated from a function of wire out or wire out and net height.

5. Hauls marked with an "\*" were used for the FPC analysis.

## List of Tables

<u>Table</u>	<u>Page</u>
Appendix A Table 1.--Haul data for stations sampled by the F/V <i>Arcturus</i> . . . . .	87
Appendix A Table 2.--Haul data for stations sampled by the F/V <i>Aldebaran</i> . . . . .	93

Appendix A Table 1.--Haul data for stations sampled by the F/V *Arcturus* during the 2003 eastern Bering Sea bottom trawl survey.

Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code	
*	1	06/02/03	57.321	158.421	29	08	0.51	2.73	10	7.0	5.3	14.8	M
*	3	06/02/03	57.652	158.348	32	13	0.51	2.75	10	7.3	5.3	15.4	M
*	5	06/02/03	57.984	158.315	33	17	0.50	2.72	10	6.7	4.6	16.0	M
*	11	06/04/03	58.005	159.600	41	06	0.49	2.67	10	4.0	3.9	15.8	M
*	12	06/04/03	57.677	159.634	49	08	0.36	1.92	10	7.2	4.2	16.0	M
*	13	06/04/03	57.344	159.668	55	11	0.49	2.63	10	7.7	4.2	16.2	M
*	14	06/04/03	57.010	159.689	54	13	0.51	2.77	10	7.4	4.4	15.9	M
*	15	06/04/03	56.672	159.747	34	16	0.24	1.28	10	6.6	5.6	15.6	M
*	16	06/05/03	56.332	161.010	52	06	0.50	2.71	10	7.6	5.0	16.4	M
*	17	06/05/03	56.652	160.986	66	09	0.50	2.72	31	7.0	4.4	17.2	M
*	18	06/05/03	56.987	161.574	68	12	0.50	2.75	31	6.7	4.0	17.4	M
*	19	06/05/03	57.000	160.975	62	14	0.50	2.74	31	7.4	4.2	17.2	M
*	20	06/05/03	57.316	160.934	62	17	0.50	2.73	31	7.2	3.9	16.9	M
*	21	06/06/03	57.661	160.885	55	06	0.52	2.85	31	7.0	4.1	15.9	M
*	22	06/06/03	57.982	160.845	45	08	0.51	2.76	10	6.8	4.4	16.1	M
*	23	06/06/03	58.288	160.806	31	11	0.26	1.42	10	8.9	7.7	15.1	M
*	24	06/06/03	58.318	162.055	45	15	0.51	2.75	10	5.4	4.3	16.1	M
*	27	06/07/03	58.976	163.362	20	10	0.53	3.03	10	7.5	6.1	14.7	M
*	30	06/08/03	59.342	164.662	21	13	0.53	2.82	10	7.0	6.7	16.9	M
*	33	06/09/03	59.006	164.653	26	11	0.52	2.82	10	5.5	4.9	16.0	M
*	34	06/09/03	58.682	164.651	35	14	0.50	2.67	10	4.7	4.4	16.5	M
*	35	06/10/03	58.014	162.107	36	06	0.51	2.74	10	5.0	4.9	16.3	M
*	36	06/10/03	57.677	162.134	45	08	0.51	2.78	10	7.1	4.6	16.1	M
*	37	06/10/03	57.345	162.153	49	11	0.51	2.82	10	7.1	4.5	16.6	M
*	38	06/10/03	57.013	162.168	58	13	0.52	2.85	31	7.7	4.4	17.7	M
*	39	06/10/03	56.684	162.187	68	16	0.25	1.37	31	8.0	4.4	17.8	M
*	40	06/10/03	56.668	162.758	70	18	0.52	2.88	31	8.0	4.5	17.3	M
*	41	06/11/03	56.349	162.186	78	06	0.51	2.81	31	7.7	4.3	16.3	M
*	42	06/11/03	56.009	162.229	69	09	0.50	2.80	31	7.1	4.4	16.6	M
*	45	06/11/03	55.331	163.411	47	17	0.07	0.35	31	7.7	---	16.5	M
*	46	06/13/03	54.655	165.164	81	10	0.17	0.90	31	6.5	5.3	17.8	M

Appendix A Table 1.–Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	47	06/13/03	54.997	164.591	58	13	0.50	2.77	31	7.3	5.6	17.6	M
*	48	06/13/03	55.333	164.024	76	16	0.51	2.87	31	7.1	4.8	17.1	M
*	49	06/13/03	55.661	163.405	80	19	0.51	2.68	31	7.6	4.0	16.6	M
*	50	06/14/03	55.985	163.403	87	06	0.27	1.46	31	7.6	3.8	17.3	M
*	51	06/14/03	56.322	163.419	84	09	0.49	2.73	31	7.5	3.4	17.4	M
*	52	06/14/03	56.652	163.386	73	11	0.50	2.78	31	7.4	3.2	17.7	M
*	54	06/14/03	56.987	163.383	63	14	0.49	2.76	31	7.7	3.7	17.1	M
*	55	06/14/03	57.324	163.388	51	17	0.50	2.80	10	7.3	3.8	16.7	M
*	57	06/15/03	57.673	163.376	46	07	0.17	0.89	10	7.0	4.7	16.4	M
*	58	06/15/03	57.975	163.363	43	09	0.25	1.32	10	6.8	5.4	16.6	M
*	59	06/15/03	58.326	163.365	36	11	0.51	2.75	10	5.8	5.2	16.1	M
*	60	06/15/03	58.347	164.638	42	15	0.52	2.86	10	6.1	4.5	16.4	M
*	61	06/16/03	58.016	164.618	43	06	0.52	2.79	10	5.7	4.5	16.8	M
*	62	06/16/03	57.684	164.618	53	09	0.49	2.69	10	7.1	2.8	18.0	M
*	63	06/16/03	57.349	164.619	64	11	0.51	2.75	31	7.4	1.9	17.4	M
*	64	06/16/03	57.016	164.601	68	14	0.49	2.72	31	7.7	2.3	17.6	M
*	65	06/16/03	56.684	164.600	72	16	0.52	2.82	31	7.5	2.9	17.8	M
*	66	06/17/03	56.347	164.604	85	13	0.49	2.66	31	7.4	3.4	18.0	M
*	67	06/17/03	56.013	164.584	90	16	0.50	2.85	31	7.5	3.4	18.4	M
*	68	06/17/03	55.685	164.596	94	19	0.34	1.83	31	7.5	3.9	18.0	M
*	69	06/20/03	54.990	165.749	129	07	0.50	2.73	50	6.9	4.7	18.5	M
*	70	06/20/03	55.322	165.164	110	10	0.50	2.75	50	7.2	4.9	19.4	M
*	71	06/20/03	55.319	165.781	119	13	0.49	2.69	50	7.1	4.5	19.8	M
*	72	06/20/03	55.319	166.350	131	16	0.49	2.63	50	7.7	4.5	19.5	M
*	73	06/21/03	55.650	165.801	116	06	0.49	2.68	50	7.4	4.7	19.5	M
*	74	06/21/03	55.989	165.780	106	09	0.49	2.73	31	8.0	4.5	18.5	M
*	75	06/21/03	56.323	165.801	90	11	0.51	2.79	31	7.8	3.7	17.6	M
*	76	06/21/03	56.655	165.848	77	14	0.50	2.75	31	8.3	3.4	17.2	M
*	77	06/21/03	56.987	165.849	71	16	0.50	2.81	31	8.3	3.3	17.2	M
*	78	06/22/03	57.321	165.867	67	06	0.49	2.70	31	8.1	3.6	16.7	M
*	79	06/22/03	57.656	165.881	62	09	0.50	2.76	31	7.9	2.7	16.5	M
*	80	06/22/03	57.994	165.902	53	11	0.52	2.91	10	8.0	2.6	16.6	M



Appendix A Table 1.–Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	81	06/22/03	58.328	165.924	42	14	0.51	2.84	10	6.2	4.3	16.0	M
*	82	06/22/03	58.654	165.940	36	16	0.50	2.77	10	5.5	4.9	15.7	M
	83	06/23/03	58.991	165.932	29	06	0.50	2.78	20	6.0	5.9	15.5	M
	84	06/23/03	58.983	166.587	32	09	0.51	2.83	20	5.6	5.5	16.3	M
	85	06/23/03	59.322	166.602	26	11	0.52	2.92	20	6.7	6.6	15.9	M
	86	06/23/03	59.333	165.965	23	14	0.52	2.91	20	6.9	6.9	15.9	M
	88	06/23/03	59.669	165.939	22	17	0.53	2.95	20	7.9	7.7	15.8	M
	89	06/24/03	59.678	166.633	26	06	0.52	2.83	20	7.0	6.7	15.8	M
*	90	06/24/03	59.676	167.283	30	09	0.51	2.77	20	5.8	5.7	15.6	M
*	91	06/24/03	59.344	167.269	30	11	0.51	2.90	20	6.7	5.8	16.3	M
*	92	06/24/03	59.012	167.235	38	14	0.50	2.76	20	5.4	4.7	15.9	M
*	93	06/24/03	58.680	167.214	43	16	0.52	2.83	20	5.5	4.3	16.7	M
*	94	06/25/03	58.352	167.179	50	06	0.50	2.75	20	7.7	3.2	16.9	M
*	95	06/25/03	58.011	167.166	62	09	0.50	2.79	31	8.1	3.0	17.1	M
*	96	06/25/03	57.678	167.119	66	11	0.50	2.76	31	8.1	3.0	17.2	M
*	97	06/25/03	57.352	167.117	69	14	0.49	2.70	31	8.2	3.2	18.1	M
*	98	06/25/03	57.016	167.084	72	16	0.52	2.81	31	8.2	3.8	17.8	M
*	99	06/26/03	56.678	167.064	94	06	0.49	2.60	31	8.2	3.8	17.1	M
*	100	06/26/03	56.331	167.020	112	09	0.50	2.78	50	8.2	4.5	19.0	M
*	101	06/26/03	56.000	166.987	132	12	0.50	2.74	50	8.2	4.5	20.1	M
*	102	06/26/03	55.667	166.957	133	15	0.49	2.72	50	7.9	4.5	19.6	M
*	103	06/26/03	55.667	167.553	134	18	0.49	2.80	50	7.9	4.6	19.4	M
	104	06/27/03	56.332	168.217	151	07	0.49	2.72	50	8.1	4.5	18.9	M
	105	06/27/03	56.332	168.850	127	09	0.50	2.73	50	8.2	4.6	18.8	F
	106	06/27/03	56.346	169.456	139	12	0.49	2.73	50	8.0	4.5	18.5	M
	107	06/27/03	56.332	170.035	108	14	0.51	2.88	50	8.3	4.5	19.0	M
	108	06/27/03	56.333	170.664	120	17	0.50	2.80	61	7.9	4.6	17.9	M
*	109	06/28/03	56.853	168.615	95	07	0.51	3.03	32	8.3	3.9	18.4	M
*	110	06/29/03	56.824	169.900	71	07	0.51	2.77	42	7.3	5.2	17.0	M
*	111	06/29/03	56.984	169.550	59	10	0.51	2.80	42	6.6	5.4	16.8	M
*	112	06/29/03	57.174	169.886	47	13	0.51	2.84	42	6.7	5.6	16.1	M
*	113	07/02/03	56.993	168.338	81	07	0.51	2.87	32	8.1	3.8	18.1	F

Appendix A Table 1.–Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	114	07/02/03	57.166	168.642	75	10	0.52	2.83	32	8.1	3.8	17.8	M
*	115	07/02/03	57.320	168.352	72	13	0.52	2.85	32	8.1	3.6	17.8	M
*	116	07/02/03	57.492	168.774	69	16	0.50	2.77	42	7.9	3.5	17.3	M
*	117	07/02/03	57.660	168.381	69	18	0.51	2.89	42	7.8	3.0	17.9	M
*	118	07/03/03	57.825	168.758	69	06	0.50	2.80	42	7.8	3.0	17.0	M
*	119	07/03/03	57.990	168.434	68	09	0.50	2.85	42	7.6	3.0	17.1	M
*	120	07/03/03	58.330	168.470	64	11	0.51	2.89	41	7.4	2.6	17.7	M
*	121	07/03/03	58.655	168.504	52	14	0.50	2.72	20	6.8	3.1	17.6	M
*	122	07/03/03	58.987	168.535	45	16	0.27	1.45	20	5.2	4.7	17.4	M
*	123	07/03/03	59.322	168.575	40	19	0.50	2.85	20	5.5	4.7	16.7	M
*	124	07/04/03	60.344	170.035	51	06	0.51	2.80	20	6.0	1.2	17.7	M
*	125	07/04/03	60.009	169.971	53	09	0.49	2.78	41	6.7	1.6	17.3	M
*	126	07/04/03	59.681	169.913	55	12	0.52	2.84	41	6.8	1.8	17.6	M
*	127	07/04/03	59.346	169.873	59	15	0.51	2.84	41	7.1	2.4	18.0	M
*	128	07/04/03	59.013	169.846	61	17	0.51	2.85	41	7.4	2.5	17.9	M
*	129	07/05/03	58.677	169.766	65	06	0.50	2.76	41	7.7	2.6	17.6	M
*	130	07/05/03	58.344	169.733	68	09	0.49	2.68	41	8.0	3.1	17.3	M
*	131	07/05/03	58.010	169.691	69	12	0.50	2.74	42	8.1	3.5	17.6	F
*	132	07/05/03	57.670	169.651	69	15	0.39	2.21	42	8.3	4.0	17.6	F
*	133	07/05/03	57.342	169.580	63	17	0.51	2.82	42	8.4	4.3	17.3	M
*	135	07/06/03	56.982	170.784	97	09	0.51	2.80	42	8.1	4.6	18.4	F
*	136	07/06/03	57.339	170.847	82	12	0.50	2.83	42	8.6	5.3	17.9	M
*	137	07/06/03	57.651	170.886	84	14	0.51	2.84	42	8.6	4.3	18.2	M
*	138	07/06/03	57.987	170.967	85	17	0.50	2.83	42	8.5	4.0	18.1	M
*	139	07/07/03	59.001	172.445	97	06	0.51	2.88	41	8.8	3.5	18.1	M
*	140	07/07/03	58.679	172.369	100	09	0.50	2.79	61	8.7	4.1	17.9	M
*	141	07/07/03	58.344	172.308	101	12	0.48	2.69	61	8.7	4.1	17.1	M
*	142	07/07/03	58.004	172.259	103	15	0.50	2.78	61	8.7	4.3	18.0	M
*	143	07/07/03	57.679	172.173	106	17	0.52	2.89	61	9.2	4.5	17.8	M
*	144	07/08/03	57.337	172.120	107	07	0.50	2.75	61	8.5	4.6	18.2	M
*	145	07/08/03	57.007	171.997	115	11	0.49	2.70	61	8.5	4.6	18.2	M
*	146	07/08/03	56.674	171.962	125	14	0.49	2.71	61	8.5	4.6	18.3	M

Appendix A Table 1.–Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	147	07/12/03	58.332	171.017	82	07	0.49	2.72	41	8.7	3.6	17.9	M
*	148	07/12/03	58.658	171.088	81	11	0.50	2.69	41	8.9	3.2	18.0	M
*	149	07/12/03	58.986	171.135	75	13	0.51	2.84	41	8.8	2.2	18.2	M
*	150	07/12/03	59.328	171.186	73	16	0.52	2.88	41	8.9	2.1	17.6	M
*	151	07/12/03	59.659	171.244	71	18	0.51	2.87	41	8.8	2.0	18.1	M
*	152	07/13/03	59.997	171.302	66	06	0.51	2.84	41	8.5	---	17.8	M
*	153	07/13/03	60.324	171.368	65	09	0.50	2.78	41	8.5	2.1	17.9	M
*	154	07/13/03	60.653	171.435	61	12	0.51	2.85	41	9.0	1.0	19.4	M
*	155	07/13/03	60.988	171.489	58	14	0.51	2.82	41	8.9	0.2	20.5	M
*	156	07/13/03	61.004	172.145	62	17	0.51	2.83	41	8.4	0.3	18.7	M
*	157	07/13/03	60.999	172.785	65	20	0.50	2.75	41	8.0	2.5	20.2	M
*	158	07/14/03	60.328	174.085	90	06	0.51	2.90	43	8.9	1.4	20.0	M
*	159	07/14/03	60.664	174.133	85	09	0.49	2.72	41	8.9	1.2	19.5	M
*	160	07/14/03	60.994	174.188	81	12	0.50	2.80	41	9.0	1.2	18.6	M
*	168	07/15/03	60.671	175.462	105	17	0.50	2.84	61	9.3	2.7	19.1	M
*	169	07/16/03	60.657	176.815	128	07	0.51	2.84	61	9.1	2.9	19.0	M
*	172	07/16/03	60.668	177.504	145	15	0.53	2.94	61	9.5	2.2	21.0	M
*	173	07/16/03	60.659	178.186	159	18	0.49	2.69	61	9.5	2.8	19.1	M
*	174	07/17/03	59.991	177.944	141	07	0.48	2.63	61	9.1	2.7	18.9	M
*	175	07/17/03	60.004	177.206	136	10	0.49	2.76	61	9.3	2.4	18.9	M
*	176	07/17/03	59.997	176.723	139	13	0.49	2.71	61	9.4	2.2	19.2	M
*	177	07/17/03	60.000	175.948	127	15	0.50	2.80	61	9.6	3.6	18.5	M
*	178	07/17/03	59.998	175.271	115	18	0.51	2.79	61	9.5	3.9	19.1	M
*	179	07/18/03	60.194	173.035	58	06	0.52	2.92	43	7.6	2.5	17.6	M
*	180	07/18/03	60.007	172.623	65	09	0.51	2.83	43	8.8	2.2	17.7	M
*	181	07/18/03	59.847	172.917	78	11	0.50	2.80	43	9.1	2.1	18.6	M
*	182	07/18/03	59.676	172.558	83	14	0.51	2.86	43	9.1	2.4	18.5	M
*	183	07/18/03	59.509	172.863	89	16	0.51	2.88	43	9.3	---	18.9	M
*	184	07/18/03	59.343	172.485	86	19	0.51	2.98	43	9.3	2.6	18.7	M
*	185	07/19/03	59.330	173.826	109	07	0.51	2.70	62	9.3	4.1	19.4	M
*	186	07/19/03	59.658	173.864	103	10	0.50	2.79	62	9.5	3.1	18.8	M
*	187	07/19/03	59.829	174.219	105	13	0.50	2.77	62	9.7	3.6	18.5	M

Appendix A Table 1.–Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	188	07/19/03	59.997	173.947	95	15	0.50	2.83	43	9.9	1.6	19.0	M
*	189	07/19/03	60.160	174.348	98	17	0.50	2.73	43	10.6	1.6	19.0	M
*	190	07/20/03	59.664	175.080	123	07	0.49	2.71	61	10.2	3.9	19.6	M
*	191	07/20/03	59.669	175.866	136	10	0.47	2.60	61	9.9	3.2	18.0	M
*	192	07/20/03	59.669	176.529	134	13	0.49	2.63	61	9.6	2.9	17.1	M
*	193	07/20/03	59.674	177.145	168	15	0.22	1.15	61	9.7	3.4	18.0	M
*	194	07/20/03	59.335	177.065	147	18	0.49	2.68	61	9.6	3.4	21.5	M
*	195	07/21/03	58.999	176.332	133	07	0.47	2.59	61	9.5	3.3	17.4	M
*	196	07/21/03	59.003	175.749	131	10	0.48	2.62	61	9.6	3.0	17.5	M
*	197	07/21/03	59.011	175.017	128	13	0.49	2.73	61	10.1	4.0	17.4	M
*	199	07/21/03	58.661	174.276	155	19	0.50	2.79	61	10.5	4.1	18.2	M
*	200	07/22/03	58.670	173.618	124	07	0.52	2.84	61	9.8	4.3	18.7	M
*	201	07/22/03	58.342	173.567	114	10	0.52	2.82	61	9.8	4.4	18.8	M
*	202	07/22/03	58.014	173.450	115	13	0.51	2.82	61	9.4	4.4	18.9	M
*	203	07/22/03	57.681	173.396	145	16	0.51	2.79	61	9.7	4.4	18.2	M

Appendix A Table 2.--Haul data for stations sampled by the F/V *Aldebaran* during the 2003 eastern Bering Sea bottom trawl survey.

Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
* 1	06/02/03	56.982	159.132	30	09	0.51	2.81	10	6.1	5.3	14.7	M
* 2	06/02/03	57.332	159.069	46	13	0.50	2.77	10	7.9	4.5	15.6	M
* 3	06/02/03	57.666	159.015	45	15	0.52	2.80	10	7.4	4.6	15.7	M
* 4	06/03/03	57.981	158.979	40	06	0.51	2.74	10	6.5	4.1	16.5	M
* 5	06/03/03	58.348	159.559	23	10	0.51	2.80	10	5.8	5.2	14.6	M
* 8	06/03/03	58.290	159.972	39	16	0.52	2.82	10	7.3	4.9	15.6	M
* 9	06/04/03	58.009	160.212	49	06	0.50	2.71	10	6.8	3.8	15.5	M
* 10	06/04/03	57.679	160.260	52	09	0.49	2.73	31	7.3	4.0	16.0	M
* 11	06/04/03	57.344	160.302	60	11	0.50	2.75	31	7.2	4.2	16.7	M
* 12	06/04/03	57.013	160.326	62	14	0.50	2.73	31	7.8	4.3	16.5	M
* 13	06/04/03	56.701	160.384	59	16	0.51	2.79	31	7.4	4.5	16.3	M
* 16	06/05/03	56.318	161.632	62	14	0.51	2.71	10	8.6	4.8	16.3	M
* 17	06/05/03	56.680	161.559	88	16	0.26	1.36	31	9.1	3.9	16.4	M
* 18	06/06/03	57.318	161.560	53	06	0.51	2.77	31	7.3	4.0	16.2	M
* 19	06/06/03	57.650	161.531	50	09	0.51	2.77	10	7.2	4.0	15.9	M
* 20	06/06/03	57.978	161.484	52	11	0.30	1.68	10	7.4	4.3	16.0	M
* 21	06/06/03	58.218	161.549	36	13	0.26	1.42	10	7.9	5.3	15.9	M
* 22	06/07/03	58.630	162.704	23	06	0.26	1.38	10	5.2	4.9	14.9	M
* 23	06/07/03	58.665	163.380	28	08	0.51	2.83	10	4.9	4.5	15.1	F
* 24	06/07/03	58.657	164.003	31	11	0.50	2.78	10	4.8	4.1	15.4	M
* 25	06/07/03	59.016	164.039	27	13	0.51	2.78	10	6.4	5.7	15.2	M
* 26	06/07/03	59.327	164.001	20	16	0.52	2.84	10	8.2	7.3	15.1	M
* 27	06/08/03	59.326	165.313	17	15	0.52	2.89	20	5.8	5.4	13.6	M
* 30	06/09/03	59.014	165.300	25	13	0.51	2.82	10	5.2	4.5	15.1	F
* 31	06/09/03	58.674	165.339	37	16	0.49	2.70	10	5.1	3.6	15.7	M
* 32	06/10/03	58.346	162.718	29	06	0.51	2.83	10	5.2	4.8	15.7	M
* 33	06/10/03	58.023	162.753	38	09	0.49	2.79	10	5.9	5.6	15.3	M
* 34	06/10/03	57.682	162.761	41	11	0.51	2.80	10	7.0	4.4	16.0	M
* 35	06/10/03	57.333	162.791	46	14	0.51	2.76	10	7.6	4.1	16.0	M
* 40	06/11/03	57.022	162.766	59	06	0.52	2.84	31	7.8	4.1	17.2	F
* 41	06/11/03	56.348	162.776	75	11	0.52	2.90	31	8.0	3.8	17.7	F

Appendix A Table 2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	42	06/11/03	55.997	162.806	75	13	0.51	2.83	31	7.6	4.1	17.2	M
*	43	06/11/03	55.677	162.816	49	16	0.49	2.72	10	7.7	4.6	15.6	M
*	44	06/13/03	54.836	165.532	150	11	0.48	2.63	50	6.9	4.5	17.8	M
*	45	06/13/03	54.988	165.156	108	13	0.50	2.79	50	7.1	5.0	17.8	M
*	46	06/13/03	55.340	164.556	99	17	0.50	2.80	31	7.7	4.5	18.0	M
*	47	06/13/03	55.684	164.001	93	20	0.51	2.77	31	7.5	4.1	17.8	M
*	48	06/14/03	55.970	163.932	90	06	0.26	1.36	31	7.6	3.9	17.4	M
*	49	06/14/03	56.328	163.970	84	09	0.48	2.63	31	7.6	3.3	16.8	M
*	50	06/14/03	56.657	164.013	72	11	0.50	2.71	31	7.3	2.9	17.1	M
*	51	06/14/03	57.030	164.037	64	14	0.49	2.72	31	8.4	2.5	16.6	M
*	52	06/14/03	57.320	164.015	59	17	0.55	2.95	31	9.0	2.7	16.7	M
*	53	06/15/03	57.664	164.002	49	06	0.49	2.67	10	7.3	3.4	15.8	M
*	54	06/15/03	57.989	164.031	45	08	0.50	2.73	10	7.4	4.2	15.7	M
*	55	06/15/03	58.330	164.003	39	11	0.51	2.75	10	6.1	4.9	16.2	M
*	56	06/15/03	58.347	165.297	41	15	0.51	2.76	10	5.8	3.7	15.8	M
*	57	06/16/03	58.017	165.246	47	06	0.50	2.66	10	5.9	3.0	16.1	M
*	58	06/16/03	57.679	165.253	60	09	0.50	2.81	31	7.1	2.1	18.6	M
*	59	06/16/03	57.345	165.234	65	12	0.50	2.76	10	7.1	1.7	17.5	M
*	60	06/16/03	57.011	165.217	68	14	0.49	2.68	31	7.4	2.7	17.1	M
*	61	06/16/03	56.679	165.218	73	17	0.51	2.76	31	7.3	3.1	17.6	M
*	62	06/17/03	56.342	165.217	84	13	0.52	2.91	31	7.5	3.1	18.3	M
*	63	06/17/03	56.005	165.183	93	16	0.49	2.81	31	7.5	3.6	18.3	M
*	64	06/17/03	55.684	165.172	106	19	0.50	2.71	31	7.9	4.6	18.8	M
*	65	06/20/03	55.008	166.354	141	06	0.51	2.71	50	7.1	---	18.7	M
*	66	06/20/03	55.002	166.921	153	09	0.54	2.79	50	7.2	4.5	18.7	M
*	67	06/20/03	55.336	167.550	145	12	0.54	2.87	50	7.3	4.6	17.7	M
*	68	06/20/03	55.330	166.967	137	15	0.52	2.79	50	7.9	4.5	18.4	M
*	69	06/21/03	55.664	166.387	125	06	0.54	2.85	50	7.6	4.6	19.4	M
*	70	06/21/03	55.996	166.403	122	09	0.52	2.81	50	7.7	4.6	18.6	M
*	71	06/21/03	56.326	166.416	101	11	0.52	2.85	31	7.9	4.0	18.1	M
*	72	06/21/03	56.658	166.434	82	13	0.51	2.79	31	8.1	3.6	16.9	M
*	73	06/21/03	56.989	166.463	72	16	0.51	2.88	31	7.8	3.6	17.2	M

Appendix A Table 2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	74	06/22/03	57.318	166.484	67	06	0.50	2.76	31	8.1	3.5	16.4	M
*	75	06/22/03	57.655	166.503	64	08	0.50	2.81	31	8.0	3.3	16.4	M
*	76	06/22/03	57.991	166.516	59	11	0.51	2.89	31	8.1	2.9	17.0	M
*	77	06/22/03	58.331	166.550	45	14	0.52	2.87	10	7.8	4.3	16.1	M
*	78	06/22/03	58.647	166.546	39	16	0.52	2.85	20	5.5	4.3	15.9	M
	79	06/23/03	59.986	167.980	23	06	0.52	2.82	20	4.9	5.0	15.0	M
	80	06/23/03	60.337	167.324	29	09	0.50	2.81	20	6.7	6.6	14.2	M
	81	06/23/03	60.333	167.954	29	12	0.51	2.84	20	5.6	5.6	15.6	M
	82	06/23/03	60.345	168.668	34	14	0.50	2.79	20	4.6	4.0	14.8	M
	83	06/23/03	60.014	168.654	36	17	0.49	2.76	20	4.4	3.6	16.1	M
	84	06/24/03	59.666	168.639	37	06	0.50	2.75	20	4.3	3.9	15.7	M
*	85	06/24/03	59.669	167.986	33	08	0.50	2.77	20	4.6	4.4	15.6	M
*	86	06/24/03	59.350	167.920	37	11	0.50	2.76	20	5.6	4.7	15.6	M
*	87	06/24/03	59.023	167.880	38	13	0.49	2.67	20	6.1	4.5	14.8	M
*	88	06/24/03	58.685	167.875	44	16	0.51	2.77	20	5.7	4.4	16.3	M
*	89	06/25/03	58.346	167.823	58	06	0.51	2.83	41	7.8	2.9	17.3	M
*	90	06/25/03	58.014	167.801	65	08	0.51	2.81	41	7.7	2.9	17.2	M
*	91	06/25/03	57.679	167.769	66	11	0.50	2.78	31	7.9	3.1	16.8	M
*	92	06/25/03	57.347	167.736	71	14	0.52	2.82	31	8.2	3.1	17.7	M
*	93	06/25/03	57.011	167.703	68	16	0.51	2.79	31	7.9	---	17.8	M
*	94	06/26/03	56.676	167.673	100	06	0.50	2.60	31	8.1	3.9	18.8	M
*	95	06/26/03	56.338	167.654	127	09	0.51	2.72	50	8.2	4.6	19.1	M
*	96	06/26/03	56.014	167.625	130	11	0.51	2.72	50	8.1	4.6	19.5	M
*	97	06/26/03	55.677	168.159	133	15	0.50	2.70	50	7.8	4.6	19.0	M
*	98	06/26/03	55.998	168.224	149	18	0.53	2.79	50	7.8	4.6	18.7	F
*	99	06/27/03	56.651	168.281	105	06	0.51	2.81	50	8.4	4.4	17.8	M
	101	06/27/03	56.682	168.899	97	11	0.41	2.34	32	8.5	4.3	18.1	M
	102	06/27/03	56.658	169.524	77	14	0.34	1.89	32	8.2	5.5	17.0	M
	103	06/27/03	56.667	170.100	95	16	0.51	2.89	42	7.2	4.5	18.0	M
	104	06/27/03	56.669	170.685	109	19	0.51	2.92	61	8.1	---	18.0	M
*	105	06/28/03	56.824	169.308	77	06	0.52	2.85	32	7.1	---	17.8	M
*	106	06/28/03	57.012	168.976	78	10	0.52	2.80	32	8.0	3.7	17.9	M

Appendix A Table 2.--Continued.

Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
* 107	06/28/03	57.151	169.318	70	13	0.52	3.01	42	7.4	4.2	17.6	M
* 108	06/28/03	57.324	169.008	69	15	0.53	2.90	42	7.5	3.8	17.6	M
* 109	06/28/03	57.491	169.374	69	19	0.53	3.05	42	7.2	3.9	17.7	M
* 110	06/29/03	56.823	170.468	100	07	0.51	2.80	42	7.9	4.4	18.2	M
* 111	06/29/03	57.001	170.132	67	10	0.51	2.78	42	6.8	5.1	17.1	M
* 112	06/29/03	57.105	170.556	66	13	0.36	2.06	42	7.3	5.8	17.1	M
* 114	07/01/03	57.347	170.189	55	10	0.52	2.84	42	7.6	6.8	15.2	M
* 115	07/01/03	57.495	169.995	66	13	0.34	1.82	42	8.0	4.2	16.9	M
* 116	07/01/03	57.655	170.265	70	16	0.52	2.85	42	8.1	4.1	17.5	M
* 117	07/01/03	57.827	170.004	70	18	0.50	2.77	42	8.2	3.4	17.8	M
* 118	07/02/03	57.650	169.027	67	06	0.50	2.66	42	8.0	3.7	16.7	M
* 119	07/02/03	57.821	169.360	65	09	0.51	2.77	42	8.0	3.8	17.2	M
* 120	07/02/03	57.991	169.049	69	12	0.51	2.79	42	7.8	2.7	17.3	M
* 121	07/02/03	58.319	169.119	66	15	0.51	2.75	41	7.4	2.5	17.6	M
* 122	07/02/03	58.649	169.154	61	18	0.52	2.85	41	7.2	2.6	17.5	M
* 123	07/03/03	58.988	169.188	52	06	0.34	1.80	41	6.6	3.2	17.1	M
* 124	07/03/03	59.320	169.235	48	09	0.51	2.83	20	5.6	3.2	16.8	M
* 125	07/03/03	59.653	169.263	46	11	0.52	2.78	20	5.1	2.8	17.2	M
* 126	07/03/03	59.987	169.309	44	14	0.52	2.84	20	4.9	3.2	16.8	M
* 127	07/03/03	60.320	169.336	42	16	0.52	2.86	20	5.0	3.4	16.9	M
* 128	07/04/03	60.341	170.671	60	06	0.52	2.82	41	6.4	1.1	18.1	M
* 129	07/04/03	60.012	170.641	63	09	0.51	2.75	41	6.9	1.5	17.9	M
* 130	07/04/03	59.681	170.587	65	11	0.51	2.80	41	7.0	1.9	18.2	M
* 131	07/04/03	59.348	170.539	66	14	0.51	2.76	41	7.3	2.1	18.1	M
* 132	07/04/03	59.014	170.484	69	16	0.50	2.72	41	7.9	2.4	18.0	M
* 133	07/05/03	58.681	170.429	72	06	0.53	2.91	41	7.9	2.4	18.0	M
* 134	07/05/03	58.345	170.387	73	09	0.52	2.84	41	8.2	2.9	18.1	M
* 135	07/05/03	58.014	170.332	73	12	0.53	2.92	42	8.2	3.2	18.3	M
* 136	07/05/03	57.842	170.596	76	14	0.52	2.86	42	8.2	4.0	18.0	M
* 137	07/05/03	57.512	170.591	73	16	0.52	2.91	42	8.3	4.7	17.9	M
* 138	07/06/03	56.654	171.357	118	07	0.51	2.84	61	8.5	4.6	18.3	F
* 139	07/06/03	57.002	171.400	107	09	0.40	2.23	61	8.6	4.6	18.4	M



Appendix A Table 2.--Continued.

	Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
*	140	07/06/03	57.322	171.466	100	12	0.51	2.84	41	8.6	4.5	18.2	M
*	141	07/06/03	57.659	171.526	98	15	0.51	2.91	41	8.6	4.5	18.0	M
*	142	07/06/03	57.987	171.598	96	17	0.52	2.85	41	8.7	4.4	18.0	M
*	143	07/07/03	59.014	173.087	105	06	0.53	2.93	61	8.6	4.1	18.1	M
*	144	07/07/03	58.681	173.008	111	10	0.52	2.87	61	8.6	4.3	18.1	M
*	145	07/07/03	58.347	172.937	108	12	0.52	2.86	61	8.4	4.3	18.2	M
*	146	07/07/03	58.013	172.869	107	15	0.53	2.93	61	8.8	4.4	18.1	M
*	147	07/07/03	57.679	172.805	118	17	0.52	2.90	61	8.8	4.4	18.4	M
*	148	07/07/03	57.362	172.819	116	20	0.53	2.89	61	8.6	4.5	18.4	M
*	149	07/08/03	57.019	172.655	120	07	0.51	2.72	61	8.7	4.5	18.9	M
*	150	07/08/03	56.690	172.565	133	10	0.51	2.79	61	8.6	4.5	18.9	M
*	151	07/12/03	58.327	171.653	95	07	0.52	2.85	41	8.7	4.1	18.3	M
*	152	07/12/03	58.657	171.714	91	09	0.53	2.83	41	8.7	3.0	17.9	M
*	153	07/12/03	58.989	171.786	85	12	0.49	2.75	41	8.9	2.7	18.1	M
*	154	07/12/03	59.325	171.842	79	14	0.53	2.89	43	8.6	2.2	20.5	M
*	155	07/12/03	59.656	171.899	76	17	0.52	2.83	43	8.8	1.8	18.1	M
*	156	07/13/03	59.824	172.248	75	06	0.35	1.87	43	8.7	1.8	17.1	M
*	157	07/13/03	59.995	171.976	65	08	0.51	2.80	43	7.9	2.1	17.2	M
*	158	07/13/03	60.154	172.302	56	11	0.52	2.95	43	7.5	2.9	17.5	M
*	159	07/13/03	60.320	172.066	57	13	0.52	2.89	43	7.8	0.8	16.8	M
*	160	07/13/03	60.656	172.123	59	15	0.51	2.93	41	8.1	0.7	19.8	M
*	161	07/13/03	60.668	172.765	43	18	0.35	1.92	41	5.3	4.4	16.4	M
*	162	07/14/03	60.320	173.420	62	07	0.19	0.99	43	7.9	2.5	18.2	M
*	163	07/14/03	60.657	173.471	64	09	0.50	2.70	41	8.6	2.4	17.4	M
*	164	07/14/03	60.989	173.503	74	12	0.51	2.84	41	8.4	1.2	18.5	M
*	172	07/15/03	60.677	174.835	96	17	0.49	2.77	41	9.1	1.2	19.2	M
*	173	07/16/03	60.663	176.219	116	07	0.52	2.85	61	9.1	---	18.5	M
*	178	07/17/03	60.330	177.395	146	07	0.49	2.80	61	9.2	2.7	18.4	M
*	179	07/17/03	60.335	176.732	135	10	0.49	2.78	61	9.3	2.3	17.9	M
*	180	07/17/03	60.332	176.051	120	12	0.48	2.74	61	9.4	3.5	18.5	M
*	181	07/17/03	60.331	175.389	109	15	0.50	2.83	61	9.6	3.3	18.4	M
*	182	07/17/03	60.330	174.744	101	17	0.49	2.81	62	9.0	1.0	18.6	M

Appendix A Table 2.--Continued.

Haul	MM/DD/YY	Latitude	Longitude	Depth (m)	Time (hr)	Duration (hr)	Distance (km)	Strata	Surf. Temp.	Gear Temp.	Net Width (m)	Width Code
* 183	07/18/03	60.134	173.769	87	07	0.50	2.80	43	8.5	1.7	18.4	M
* 184	07/18/03	60.006	173.332	74	09	0.52	2.90	43	8.7	2.0	18.0	M
* 185	07/18/03	59.844	173.564	93	11	0.51	2.88	43	9.1	2.3	18.8	M
* 186	07/18/03	59.684	173.275	94	13	0.52	2.83	43	9.2	2.9	19.0	M
* 187	07/18/03	59.509	173.490	101	15	0.51	2.89	43	9.5	3.7	19.0	M
* 188	07/18/03	59.345	173.159	98	18	0.51	2.81	43	9.4	3.6	18.8	M
* 189	07/19/03	58.993	173.698	116	07	0.51	2.88	61	9.4	4.2	18.6	M
* 190	07/19/03	59.001	174.351	126	09	0.22	1.22	61	9.4	4.2	18.3	M
* 191	07/19/03	59.329	174.443	119	12	0.51	2.84	62	9.6	4.0	17.9	M
* 192	07/19/03	59.655	174.452	113	14	0.52	2.83	62	10.1	3.9	17.2	M
* 193	07/19/03	59.988	174.599	106	17	0.53	2.92	62	9.3	2.1	18.3	M
* 194	07/20/03	59.334	175.076	131	07	0.53	2.97	61	10.3	3.8	17.9	M
* 195	07/20/03	59.334	175.731	135	10	0.21	1.14	61	9.6	3.0	17.4	M
* 196	07/20/03	59.339	176.362	134	12	0.26	1.39	61	9.5	2.7	18.2	M
* 197	07/20/03	59.014	176.922	136	15	0.35	1.64	61	9.7	3.6	18.0	M
* 198	07/20/03	59.001	177.557	133	19	0.51	2.92	61	9.7	3.6	18.0	M
* 199	07/21/03	58.672	176.863	134	07	0.51	2.92	61	9.9	3.8	16.8	M
* 200	07/21/03	58.667	176.219	138	10	0.50	2.84	61	9.7	3.8	17.4	M
* 201	07/21/03	58.668	175.571	133	12	0.51	2.88	61	9.8	4.1	18.1	M
* 202	07/21/03	58.723	174.985	144	15	0.52	2.95	61	10.1	4.1	18.1	M
* 203	07/21/03	58.348	174.316	170	19	0.43	1.84	61	9.7	4.0	17.9	M
* 204	07/22/03	57.345	173.328	119	07	0.51	2.72	61	9.4	4.5	18.1	M
* 205	07/22/03	57.016	173.259	140	10	0.50	2.78	61	9.7	4.2	17.9	M



APPENDIX B

List of Species Encountered

Appendix B contains a listing of all fish and invertebrate species taken during the 2003 eastern Bering Sea bottom trawl survey.

List of Tables

<u>Table</u>	<u>Page</u>
Appendix B Table 1.--Fish species encountered during the 2003 eastern Bering Sea bottom trawl survey. ....	101
Appendix B Table 2.--Invertebrate species encountered during the 2003 eastern Bering Sea bottom trawl survey. ....	105

Appendix B Table 1.--Fish species encountered during the 2003 eastern Bering Sea bottom trawl survey.

Family	Scientific name	Common name
Squalidae	<i>Somniosus pacificus</i>	Pacific sleeper shark
Rajidae	<i>Bathyraja</i> sp.	
	<i>Bathyraja interrupta</i>	Bering skate
	<i>Bathyraja taranetzi</i>	mud skate
	<i>Bathyraja parmifera</i>	Alaska skate
	<i>Bathyraja aleutica</i>	Aleutian skate
Pleuronectidae	<i>Atheresthes stomias</i>	arrowtooth flounder
	<i>Atheresthes evermanni</i>	Kamchatka flounder
	<i>Reinhardtius hippoglossoides</i>	Greenland turbot
	<i>Hippoglossus stenolepis</i>	Pacific halibut
	<i>Hippoglossoides elassodon</i>	flathead sole
	<i>Hippoglossoides robustus</i>	Bering flounder
	<i>Lyopsetta exilis</i>	slender sole
	<i>Microstomus pacificus</i>	Dover sole
	<i>Glyptocephalus zachirus</i>	rex sole
	<i>Limanda aspera</i>	yellowfin sole
	<i>Limanda proboscidea</i>	longhead dab
	<i>Limanda sakhalinensis</i>	Sakhalin sole
	<i>Platichthys stellatus</i>	starry flounder
	<i>Lepidopsetta polyxystra</i>	northern rock sole
	<i>Lepidopsetta bilineata</i>	southern rock sole
	<i>Isopsetta isolepis</i>	butter sole
<i>Pleuronectes quadrituberculatus</i>	Alaska plaice	
Agonidae	<i>Pallasina barbata</i>	tubenose poacher
	<i>Percis japonicus</i>	dragon poacher

Family	Scientific name	Common name
	<i>Leptagonus frenatus</i>	sawback poacher
	<i>Bathyagonus alascanus</i>	gray starsnout
	<i>Bathyagonus pentacanthus</i>	bigeye poacher
	<i>Podothecus acipenserinus</i>	sturgeon poacher
	<i>Aspidophoroides bartoni</i>	Aleutian alligatorfish
	<i>Occella dodecaedron</i>	Bering poacher
Ammodytidae	<i>Ammodytes hexapterus</i>	Pacific sand lance
Anarhichadidae	<i>Anarrhichthys ocellatus</i>	wolf-eel
	<i>Anarhichas orientalis</i>	Bering wolffish
Anoplopomatidae	<i>Anoplopoma fimbria</i>	sablefish
Bathymasteridae	<i>Bathymaster signatus</i>	searcher
Clupeidae	<i>Clupea pallasii</i>	Pacific herring
Cottidae	Cottidae	sculpin unident.
	<i>Gymnocanthus pistilliger</i>	threaded sculpin
	<i>Gymnocanthus galeatus</i>	armorhead sculpin
	<i>Artediellus pacificus</i>	Pacific hookear sculpin
	<i>Malacocottus zonurus</i>	darkfin sculpin
	<i>Hemilepidotus hemilepidotus</i>	red Irish lord
	<i>Hemilepidotus jordani</i>	yellow Irish lord
	<i>Hemilepidotus papilio</i>	butterfly sculpin
	<i>Triglops szepticus</i>	spectacled sculpin
	<i>Triglops pingeli</i>	ribbed sculpin
	<i>Triglops macellus</i>	roughspine sculpin
	<i>Myoxocephalus verrucosus</i>	warty sculpin
	<i>Myoxocephalus polyacanthocephalus</i>	great sculpin
	<i>Myoxocephalus jaok</i>	plain sculpin
	<i>Myoxocephalus</i> sp.	

Family	Scientific name	Common name
	<i>Leptocottus armatus</i>	Pacific staghorn sculpin
	<i>Dasycottus setiger</i>	spinyhead sculpin
	<i>Psychrolutes paradoxus</i>	tadpole sculpin
	<i>Blepsias bilobus</i>	crested sculpin
	<i>Nautichthys pribilovius</i>	eyeshade sculpin
	<i>Hemitripterus bolini</i>	bigmouth sculpin
	<i>Eurymen gyrinus</i>	smoothcheek sculpin
	<i>Icelus spiniger</i>	thorny sculpin
	<i>Icelus spatula</i>	spatulate sculpin
Trichodontidae	<i>Trichodon trichodon</i>	Pacific sandfish
Gadidae	<i>Gadus macrocephalus</i>	Pacific cod
	<i>Boreogadus saida</i>	Arctic cod
	<i>Eleginus gracilis</i>	saffron cod
	<i>Theragra chalcogramma</i>	walleye pollock
Hexagrammidae	Hexagrammidae	greenling unident.
	<i>Pleurogrammus monopterygius</i>	Atka mackerel
	<i>Hexagrammos stelleri</i>	whitespotted greenling
	<i>Hexagrammos decagrammus</i>	kelp greenling
Cyclopteridae	<i>Aptocyclus ventricosus</i>	smooth lumpsucker
	Liparidinae	snailfish unident.
	<i>Liparis</i> sp.	
	<i>Liparis gibbus</i>	variegated snailfish
	<i>Crystallichthys cyclospilus</i>	blotched snailfish
	<i>Careproctus rastrinus</i>	salmon snailfish
Osmeridae	<i>Thaleichthys pacificus</i>	eulachon
	<i>Mallotus villosus</i>	capelin
	<i>Osmerus mordax</i>	rainbow smelt

Family	Scientific name	Common name
Salmonidae	<i>Oncorhynchus keta</i>	chum salmon
Stichaeidae	Stichaeidae	prickleback unident.
	<i>Lumpenus</i> sp.	
	<i>Lumpenus maculatus</i>	daubed shanny
	<i>Poroclinus rothrocki</i>	whitebarred prickleback
Zaproridae	<i>Zaprora silenus</i>	prowfish
Zoarcidae	<i>Lycodes raridens</i>	marbled eelpout
	<i>Lycodes palearis</i>	wattled eelpout
	<i>Lycodes mucosus</i>	saddled eelpout
	<i>Lycodes polaris</i>	Canadian eelpout
	<i>Lycodes brevipes</i>	shortfin eelpout
Scorpaenidae	<i>Sebastes aleutianus</i>	rougheyeye rockfish
	<i>Sebastes alutus</i>	Pacific ocean perch
	<i>Sebastes variabilis</i>	light dusky rockfish
	<i>Sebastes polyspinis</i>	northern rockfish



Appendix B Table 2.--Invertebrate species encountered during the 2003 eastern Bering Sea bottom trawl survey.

Phylum	Species name	Common name
Cnidaria	Scyphozoa	jellyfish unident.
	<i>Chrysaora</i> sp.	chrysaora jellyfish
	<i>Chrysaora melanaster</i>	
	<i>Aequorea</i> sp.	
	<i>Aurelia</i> sp.	
	<i>Aurelia labiata</i>	
	<i>Cyanea</i> sp.	
	<i>Cyanea capillata</i>	lion's mane
	<i>Gersemia</i> sp.	sea raspberry
	<i>Gersemia rubiformis</i>	
	Pennatulacea	sea pen or sea whip unident.
	Virgularidae	sea whip unident.
	<i>Halipteris</i> sp.	
	Actiniaria	sea anemone unident.
	<i>Metridium</i> sp.	
	<i>Metridium senile</i>	clonal plumose anemone
	<i>Metridium farcimen</i>	gigantic anemone
	<i>Stomphia</i> sp.	
	<i>Urticina</i> sp.	
	<i>Urticina crassicornis</i>	mottled anemone
<i>Bathypheia australis</i>	hot dog sea anemone	
<i>Cribrinopsis fernaldi</i>	chevron-tentacled anemone	
<i>Liponema brevicornis</i>	tentacle-shedding anemone	
Ctenophora	Ctenophora	comb jelly unident.
Annelida	Polychaeta	polychaete worm unident.
	Aphroditidae	sea mouse unident.

Phylum	Species name	Common name
	<i>Aphrodita</i> sp.	
	<i>Eunoe</i> sp.	
	<i>Eunoe nodosa</i>	giant scale worm
	<i>Eunoe depressa</i>	depressed scale worm
	Hirudinea unident	leech unident.
	<i>Carcinobdella</i> sp.	
	<i>Carcinobdella cyclostomum</i>	striped sea leech
Arthropoda	Gammaridae	gammarid amphipod unident.
	Isopoda	isopod unident.
	Thoracica	barnacle unident.
	<i>Balanus</i> sp.	
	<i>Balanus balanus</i>	
	<i>Balanus evermanni</i>	giant barnacle
	<i>Pandalus</i> sp.	
	<i>Pandalus borealis</i>	northern shrimp
	<i>Pandalus tridens</i>	yellowleg pandalid
	<i>Pandalus goniurus</i>	humpy shrimp
	<i>Pandalus hypsinotus</i>	coonstripe shrimp
	<i>Spirontocaris</i> sp.	
	<i>Lebbeus groenlandicus</i>	spiny lebbeid
	<i>Crangon</i> sp.	
	<i>Crangon communis</i>	twospine crangon
	<i>Crangon dalli</i>	ridged crangon
	<i>Crangon septemspinosa</i>	sevenspine bay shrimp
	<i>Argis</i> sp.	
	<i>Argis dentata</i>	Arctic argid
	<i>Argis lar</i>	kuro argid

Phylum	Species name	Common name
	<i>Cancer oregonensis</i>	Oregon rock crab
	<i>Oregonia gracilis</i>	graceful decorator crab
	<i>Chionoecetes bairdi</i>	Tanner crab
	<i>Hyas coarctatus</i>	circumboreal toad crab
	<i>Hyas lyratus</i>	Pacific lyre crab
	<i>Chionoecetes opilio</i>	snow crab
	<i>Chionoecetes hybrid</i>	hybrid tanner crab
	<i>Telmessus cheiragonus</i>	helmet crab
	Paguridae	hermit crab unident.
	<i>Pagurus</i> sp.	
	<i>Pagurus brandti</i>	sponge hermit
	<i>Pagurus aleuticus</i>	Aleutian hermit
	<i>Labidochirus splendescens</i>	splendid hermit
	<i>Pagurus confragosus</i>	knobbyhand hermit
	<i>Pagurus trigonocheirus</i>	fuzzy hermit crab
	<i>Pagurus ochotensis</i>	Alaskan hermit
	<i>Pagurus rathbuni</i>	longfinger hermit
	<i>Elassochirus tenuimanus</i>	widehand hermit crab
	<i>Pagurus capillatus</i>	hairy hermit crab
	<i>Elassochirus cavimanus</i>	purple hermit
	<i>Dermaturus mandti</i>	
	<i>Hapalogaster grebnitzkii</i>	
	<i>Paralithodes camtschaticus</i>	red king crab
	<i>Paralithodes platypus</i>	blue king crab
	<i>Erimacrus isenbeckii</i>	horsehair crab
Mollusca	<i>Nudibranchia unident.</i>	nudibranch unident.
	<i>Dendronotus</i> sp.	

Phylum	Species name	Common name
	<i>Tritonia</i> sp.	
	<i>Tritonia diomedea</i>	rosy tritonia
	Gastropod unident.	snail unident.
	<i>Natica</i> sp.	
	<i>Natica clausa</i>	Arctic moonsnail
	<i>Natica russa</i>	rusty moonsnail
	<i>Polinices</i> sp.	
	<i>Polinices pallidus</i>	pale moonsnail
	<i>Crepidula grandis</i>	great slippersnail
	<i>Colus</i> sp.	
	<i>Colus herendeenii</i>	thin-ribbed whelk
	<i>Colus ombronius</i>	shady whelk
	<i>Colus spitzbergensis</i>	thick-ribbed whelk
	<i>Colus halli</i>	shrew whelk
	<i>Volutopsius</i> sp.	
	<i>Pyrulofusus deformis</i>	warped whelk
	<i>Pyrulofusus harpa</i>	left-hand whelk
	<i>Volutopsius fragilis</i>	fragile whelk
	<i>Pyrulofusus melonis</i>	
	<i>Volutopsius stefanssoni</i>	shouldered whelk
	<i>Volutopsius middendorffii</i>	tulip whelk
	<i>Volutopsius trophonius</i>	frilled whelk
	<i>Beringius</i> sp.	
	<i>Beringius kennicottii</i>	
	<i>Beringius frielei</i>	
	<i>Beringius beringii</i>	
	<i>Beringius stimpsoni</i>	

Phylum	Species name	Common name
	<i>Beringius undatus</i>	
	<i>Neptunea</i> sp.	
	<i>Neptunea pribiloffensis</i>	Pribilof whelk
	<i>Neptunea borealis</i>	
	<i>Neptunea lyrata</i>	lyre whelk
	<i>Neptunea ventricosa</i>	fat whelk
	<i>Neptunea insularis</i>	
	<i>Neptunea heros</i>	
	<i>Neptunea magna</i>	helmet whelk
	<i>Plicifusus krorei</i>	
	<i>Plicifusus</i> sp.	
	<i>Liomesus</i> sp.	
	<i>Aforia</i> sp.	
	<i>Aforia circinata</i>	keeled aforia
	<i>Boreotrophon muriciformis</i>	
	<i>Boreotrophon</i> sp.	
	<i>Fusitriton oregonensis</i>	Oregon triton
	<i>Buccinum</i> sp.	
	<i>Buccinum angulosum</i>	angular whelk
	<i>Buccinum plectrum</i>	sinuous whelk
	<i>Buccinum scalariforme</i>	ladder whelk
	<i>Buccinum polare</i>	polar whelk
	<i>Arctomelon</i> sp.	
	<i>Velutina plicatilis</i>	oblique lamellaria
	<i>Velutina</i> sp.	
	<i>Bivalvia unident.</i>	bivalve unident.
	<i>Modiolus modiolus</i>	northern horse mussel

Phylum	Species name	Common name
	<i>Mytilus</i> sp.	
	<i>Mytilus edulis</i>	blue mussel
	<i>Chlamys</i> sp.	
	<i>Chlamys rubida</i>	reddish scallop
	<i>Chlamys pseudoislandica</i>	false iceland scallop
	<i>Patinopecten caurinus</i>	weathervane scallop
	<i>Hiatella</i> sp.	
	<i>Yoldia</i> sp.	
	<i>Yoldia scissurata</i>	crisscrossed yoldia
	<i>Nuculana</i> sp.	
	<i>Musculus discors</i>	discordant mussel
	<i>Cyclocardia crebricostata</i>	many-rib cyclocardia
	<i>Clinocardium ciliatum</i>	hairy cockle
	<i>Clinocardium californiense</i>	California cockle
	<i>Mactromeris polynyma</i>	Arctic surfclam
	<i>Tellina</i> sp.	
	<i>Tellina lutea</i>	Alaska great-tellin
	<i>Macoma</i> sp	
	<i>Siliqua alta</i>	Alaska razor
	<i>Serripes</i> sp.	
	<i>Serripes groenlandicus</i>	Greenland cockle
	<i>Serripes laperousii</i>	broad cockle
	<i>Mya truncata</i>	truncate softshell
	<i>Pododesmus</i> sp.	
	Octopodidae	octopus unident.
	<i>Benthoctopus leioderma</i>	smoothskin octopus
	<i>Octopus</i> sp.	

Phylum	Species name	Common name
	<i>Octopus dofleini</i>	giant octopus
	<i>Rossia pacifica</i>	eastern Pacific bobtail
	<i>Berryteuthis magister</i>	magistrate armhook squid
Echinodermata	<i>Asteroidea</i> unident.	starfish unident.
	<i>Evasterias</i> sp.	
	<i>Evasterias troschelii</i>	mottled sea star
	<i>Evasterias echinosoma</i>	giant sea star
	<i>Leptasterias groenlandica</i>	
	<i>Leptasterias hylodes</i>	Aleutian sea star
	<i>Pycnopodia helianthoides</i>	sunflower sea star
	<i>Lethasterias nanimensis</i>	blackspined sea star
	<i>Henricia</i> sp.	
	<i>Henricia leviuscula</i>	blood sea star
	<i>Henricia tumida</i>	tumid sea star
	<i>Leptasterias polaris</i>	
	<i>Leptasterias arctica</i>	
	<i>Pseudarchaster parelii</i>	scarlet sea star
	<i>Ceramaster patagonicus</i>	orange bat sea star
	<i>Solaster</i> sp.	
	<i>Crossaster</i> sp.	
	<i>Crossaster papposus</i>	rose sea star
	<i>Pteraster</i> sp.	
	<i>Pteraster tessellatus</i>	
	<i>Pteraster obscurus</i>	obscure sea star
	<i>Diplopteraster multipes</i>	pincushion sea star
	<i>Asterias amurensis</i>	purple-orange sea star
	<i>Ctenodiscus</i> sp.	

Phylum	Species name	Common name
	<i>Ctenodiscus crispatus</i>	common mud star
	<i>Leptychaster pacificus</i>	
	<i>Dipsacaster borealis</i>	northern sea star
	Echinacea unident.	sea urchin unident.
	<i>Strongylocentrotus droebachiensis</i>	green sea urchin
	<i>Strongylocentrotus</i> sp.	
	<i>Allocentrotus</i> sp.	
	<i>Echinarachnius parma</i>	Parma sand dollar
	Ophiuroid unident.	brittlestarfish unident.
	<i>Gorgonocephalus eucnemis</i>	basketstar
	<i>Ophiura</i> sp.	
	<i>Ophiura sarsi</i>	notched brittlestar
	<i>Ophiopholis aculeata</i>	ubiquitous brittle star
	<i>Holothuroidea</i> unident.	sea cucumber unident.
	<i>Molpadia intermedia</i>	sweet sea potato
	<i>Pentamera lissoplaca</i>	crescent sea cucumber
	<i>Bathypotes</i> sp.	
	<i>Cucumaria</i> sp.	
	<i>Cucumaria fallax</i>	sea football
	<i>Psolus</i> sp.	
Porifera	Porifera	sponge unident.
	<i>Aphrocallistes vastus</i>	clay pipe sponge
	<i>Mycale loveni</i>	tree sponge
	<i>Leucosolenia blanca</i>	yellow leafy sponge
	stone sponge	
Sipuncula	Sipuncula	peanut worm unid.
Echiura	Echiura	echiuroid worm unident.



Phylum	Species name	Common name
Bryozoa	Bryozoa unident.	bryozoan unident.
	<i>Flustra serrulata</i>	leafy bryozoan
	<i>Flustrellidra corniculata</i>	
	<i>Rhizophostomella costata</i>	ribbed bryozoan
Brachiopoda	brachiopod unident.	lampshells unident.
Chordata	Ascidian unident.	tunicate unident.
	<i>Styela rustica</i>	sea potato
	<i>Boltenia</i> sp.	
	<i>Boltenia ovifera</i>	
	<i>Halocynthia</i> sp.	sea peach unident.
	<i>Halocynthia aurantium</i>	sea peach
	<i>Aplidium</i> sp.	sea glob
	<i>Synoicum</i> sp.	sea blob
	<i>Molgula griffithsii</i>	sea grape

APPENDIX C

Rank Order of Relative Abundance of Fish and Invertebrates

Appendix C ranks all fish and invertebrates caught during the 2003 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 2003 eastern Bering Sea bottom trawl survey.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
1	21740	181.71094	2210.954	89.55019	273.87168	0.43149884	0.43149884	<i>Theragra chalcogramma</i>
2	10260	49.17070	31.023	38.25383	60.08756	0.11676291	0.54826176	<i>Lepidopsetta</i> sp.
3	10210	48.19884	27.547	37.91174	58.48595	0.11445511	0.66271686	<i>Limanda aspera</i>
4	81742	17.97197	3.010	14.57168	21.37226	0.04267703	0.70539389	<i>Asterias amurensis</i>
5	21720	13.43548	2.243	10.49974	16.37122	0.03190448	0.73729837	<i>Gadus macrocephalus</i>
6	10129	11.32481	1.699	8.77009	13.87953	0.02689239	0.76419077	<i>Hippoglossoides</i> sp.
7	10110	10.87618	1.124	8.79826	12.95410	0.02582705	0.79001782	<i>Atheresthes stomias</i>
8	10285	9.90189	4.401	5.79017	14.01361	0.02351347	0.81353129	<i>Pleuronectes quadrituberculatus</i>
9	471	7.68266	0.177	6.85741	8.50791	0.01824359	0.83177488	<i>Bathyraja parmitifera</i>
10	98082	6.13975	1.265	3.93566	8.34383	0.01457971	0.84635459	<i>Styela rustica</i>
11	83020	4.78107	0.574	3.29651	6.26564	0.01135335	0.85770794	<i>Gorgonocephalus eucnemis</i>
12	91000	4.53454	7.933	0.00000	10.05503	0.01076793	0.86847587	Porifera
13	71820	3.33515	0.769	1.61641	5.05389	0.00791979	0.87639566	<i>Neptunea pribiloffensis</i>
14	98205	3.31538	1.868	0.63659	5.99417	0.00787285	0.88426851	<i>Halocynthia aurantium</i>
15	10120	3.10172	0.171	2.29066	3.91279	0.00736549	0.89163400	<i>Hippoglossus stenolepis</i>
16	69060	2.80644	0.412	1.54869	4.06420	0.00666431	0.89829830	<i>Pagurus aleuticus</i>
17	68580	2.69854	0.225	1.76792	3.62916	0.00640807	0.90470638	<i>Chionoecetes opilio</i>
18	69322	2.68476	0.498	1.30128	4.06824	0.00637536	0.91108173	<i>Paralithodes camtschaticus</i>
19	69086	2.65565	0.251	1.67295	3.63834	0.00630621	0.91738795	<i>Pagurus trigonocheirus</i>
20	81780	2.06174	0.461	0.73091	3.39257	0.00489591	0.92228385	<i>Ctenodiscus crispatus</i>
21	69035	1.96758	0.158	1.18849	2.74668	0.00467231	0.92695616	<i>Pagurus</i> sp.
22	71884	1.92123	0.074	1.38740	2.45507	0.00456225	0.93151841	<i>Neptunea heros</i>
23	21371	1.71067	0.045	1.29687	2.12447	0.00406224	0.93558065	<i>Myoxocephalus jaok</i>
24	98200	1.63348	0.896	0.00000	3.48838	0.00387893	0.93945958	<i>Halocynthia</i> sp.
25	21370	1.39733	0.070	0.87968	1.91498	0.00331816	0.94277774	<i>Myoxocephalus polyacanthocephalus</i>
26	30060	1.38605	1.908	0.00000	4.09323	0.00329138	0.94606912	<i>Sebastes alutus</i>
27	68560	1.17255	0.026	0.85742	1.48768	0.00278438	0.94885350	<i>Chionoecetes bairdi</i>
28	10220	1.12075	0.051	0.68028	1.56123	0.00266139	0.95151489	<i>Platichthys stellatus</i>
29	21110	1.11250	0.174	0.29376	1.93124	0.00264179	0.95415668	<i>Clupea pallasii</i>
30	80590	0.89106	0.033	0.53467	1.24746	0.00211595	0.95627263	<i>Leptasterias polaris</i>

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
31	71870	0.87784	0.031	0.53205	1.22364	0.00208457	0.95835720	Neptunea lyrata
32	69095	0.75276	0.044	0.34188	1.16364	0.00178754	0.96014474	Pagurus rathbuni
33	21420	0.67085	0.010	0.47442	0.86728	0.00159303	0.96173777	Hemitripterus bolini
34	71882	0.64980	0.008	0.47993	0.81968	0.00154305	0.96328082	Neptunea ventricosa
35	10112	0.61203	0.006	0.46449	0.75956	0.00145335	0.96473417	Atheresthes evermanni
36	69010	0.60490	0.061	0.12239	1.08741	0.00143641	0.96617058	Paguridae
37	98105	0.58072	0.021	0.29510	0.86634	0.00137900	0.96754958	Boltenia ovifera
38	83320	0.57350	0.019	0.30345	0.84355	0.00136186	0.96891144	Ophiura sarsi
39	10200	0.53958	0.009	0.35437	0.72479	0.00128130	0.97019275	Glyptocephalus zachirus
40	91087	0.52659	0.277	0.00000	1.55872	0.00125048	0.97144322	stone sponge
41	10115	0.48691	0.010	0.28618	0.68763	0.00115623	0.97259945	Reinhardtius hippoglossoides
42	43010	0.48176	0.034	0.12282	0.84070	0.00114401	0.97374347	Metridium sp.
43	20040	0.48038	0.003	0.37376	0.58700	0.00114074	0.97488421	Podothecus acipenserinus
44	69090	0.46480	0.004	0.33386	0.59574	0.00110374	0.97598795	Pagurus ochotensis
45	40504	0.45327	0.006	0.30346	0.60308	0.00107635	0.97706430	Chrysaora melanaster
46	24191	0.44839	0.006	0.30088	0.59589	0.00106476	0.97812906	Lycodes brevipes
47	21347	0.44412	0.016	0.19613	0.69211	0.00105463	0.97918369	Hemilepidotus jordani
48	72500	0.42981	0.007	0.26303	0.59660	0.00102066	0.98020434	Fusitriton oregonensis
49	40500	0.37462	0.015	0.13587	0.61337	0.00088958	0.98109392	Scyphozoa
50	472	0.36713	0.024	0.06109	0.67317	0.00087180	0.98196573	Bathyraja aleutica
51	24185	0.36227	0.003	0.26102	0.46353	0.00086027	0.98282600	Lycodes palearis
52	40501	0.35340	0.008	0.17323	0.53357	0.00083920	0.98366520	Chrysaora sp.
53	69070	0.34063	0.014	0.10632	0.57494	0.00080888	0.98447408	Pagurus confragosus
54	43090	0.31495	0.013	0.08826	0.54163	0.00074789	0.98522196	Liponema brevicornis
55	99902	0.30868	0.095	0.00000	0.91371	0.00073302	0.98595498	Molgula griffithsii
56	80200	0.29772	0.005	0.16121	0.43423	0.00070698	0.98666196	Lethasterias nanimensis
57	69323	0.29328	0.036	0.00000	0.66772	0.00069643	0.98735838	Paralithodes platypus
58	85201	0.27515	0.020	0.00000	0.55089	0.00065339	0.98801177	Cucumaria fallax
59	435	0.27042	0.001	0.19919	0.34165	0.00064215	0.98865392	Bathyraja interrupta
60	69120	0.24529	0.005	0.11333	0.37725	0.00058248	0.98923640	Pagurus capillatus
61	43000	0.22688	0.004	0.09970	0.35405	0.00053875	0.98977516	Actiniaria
62	10211	0.18777	0.002	0.09798	0.27755	0.00044588	0.99022104	Limanda proboscidea
63	71681	0.17670	0.031	0.00000	0.52189	0.00041961	0.99064064	Crepidula grandis
64	80020	0.17531	0.005	0.03587	0.31475	0.00041630	0.99105694	Evasterias echinosoma

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
65	68577	0.16401	0.008	0.00000	0.33401	0.00038948	0.99144642	Hyas coarctatus
66	21368	0.16144	0.001	0.10073	0.22215	0.00038336	0.99182978	Myoxocephalus verrucosus
67	82510	0.15930	0.003	0.05595	0.26264	0.00037827	0.99220805	Strongylocentrotus droebachiensis
68	21592	0.14621	0.010	0.00000	0.33885	0.00034719	0.99255524	Trichodon trichodon
69	71753	0.14412	0.002	0.05713	0.23111	0.00034223	0.99289747	Pyrulofusus deformis
70	78403	0.12854	0.007	0.00000	0.29670	0.00030525	0.99320272	Octopus dofleini
71	20720	0.12659	0.005	0.00000	0.26804	0.00030060	0.99350331	Bathymaster signatus
72	71750	0.11785	0.001	0.04756	0.18813	0.00027984	0.99378315	Volutopsius sp.
73	72740	0.10834	0.001	0.03743	0.17926	0.00025728	0.99404043	Buccinum sp.
74	71001	0.09678	0.000	0.06676	0.12680	0.00022982	0.99427025	gastropod eggs
75	69061	0.09267	0.000	0.05236	0.13299	0.00022007	0.99449031	Labidochirus splendescens
76	41201	0.08598	0.000	0.05024	0.12171	0.00020417	0.99469448	Gersemia sp.
77	72752	0.08369	0.000	0.05065	0.11672	0.00019873	0.99489321	Buccinum scalariforme
78	71756	0.08252	0.001	0.03409	0.13094	0.00019595	0.99508916	Volutopsius fragilis
79	71886	0.06890	0.000	0.03686	0.10094	0.00016362	0.99525278	Neptunea magna
80	83000	0.06744	0.001	0.00000	0.13715	0.00016015	0.99541293	Ophiuroid unident.
81	69121	0.06152	0.000	0.02594	0.09711	0.00014610	0.99555903	Elassochirus cavimanus
82	23041	0.06045	0.001	0.00304	0.11786	0.00014355	0.99570258	Mallotus villosus
83	78020	0.06035	0.001	0.00000	0.13058	0.00014332	0.99584590	Octopus sp.
84	98310	0.05927	0.001	0.01170	0.10685	0.00014076	0.99598666	Aplidium sp.
85	85200	0.05805	0.001	0.00000	0.11827	0.00013785	0.99612451	Cucumaria sp.
86	71769	0.05394	0.000	0.02508	0.08281	0.00012810	0.99625261	Beringius sp.
87	72743	0.05371	0.000	0.02343	0.08400	0.00012755	0.99638016	Buccinum angulosum
88	80594	0.05227	0.000	0.02411	0.08043	0.00012413	0.99650429	Leptasterias arctica
89	68578	0.04824	0.000	0.02983	0.06664	0.00011454	0.99661884	Hyas lyratus
90	23010	0.04620	0.000	0.01810	0.07431	0.00010972	0.99672855	Thaleichthys pacificus
91	72755	0.04593	0.000	0.02887	0.06298	0.00010906	0.99683761	Buccinum polare
92	81315	0.04586	0.002	0.00000	0.13339	0.00010891	0.99694652	Pteraster tessellatus
93	69042	0.04005	0.001	0.00000	0.08788	0.00009510	0.99704161	Pagurus brandti
94	74120	0.04001	0.001	0.00000	0.09821	0.00009502	0.99713663	Patinopecten caurinus
95	50161	0.03888	0.000	0.01537	0.06239	0.00009232	0.99722895	Aphrodita sp.
96	71891	0.03767	0.000	0.00045	0.07489	0.00008945	0.99731840	Plicifusus (=Colus)
97	71772	0.03555	0.000	0.01081	0.06029	0.00008442	0.99740282	Beringius beringii
98	66031	0.03508	0.000	0.01875	0.05140	0.00008329	0.99748612	Pandalus borealis

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
99	21735	0.03427	0.001	0.00000	0.08661	0.00008138	0.99756750	Eleginus gracilis
100	80010	0.03306	0.001	0.00000	0.08950	0.00007850	0.99764600	Evasterias sp.
101	74562	0.03304	0.000	0.00000	0.06939	0.00007846	0.99772446	Musculus discors
102	65201	0.03148	0.001	0.00000	0.07958	0.00007475	0.99779921	Balanus sp.
103	30420	0.03013	0.001	0.00000	0.07672	0.00007154	0.99787075	Sebastes polyspinis
104	21390	0.02922	0.000	0.01764	0.04081	0.00006940	0.99794015	Dasycottus setiger
105	69400	0.02869	0.000	0.01618	0.04119	0.00006813	0.99800827	Erimacrus isenbeckii
106	21314	0.02667	0.000	0.00830	0.04504	0.00006333	0.99807160	Gymnocanthus pistilliger
107	42000	0.02654	0.000	0.00000	0.07033	0.00006302	0.99813463	Pennatulacea
108	68781	0.02289	0.000	0.00948	0.03630	0.00005435	0.99818898	Telmessus cheiragonus
109	22205	0.02282	0.000	0.00364	0.04201	0.00005419	0.99824317	Liparis gibbus
110	42003	0.02210	0.000	0.00000	0.04440	0.00005248	0.99829565	Virgularidae
111	71835	0.02205	0.000	0.01485	0.02925	0.00005237	0.99834802	Neptunea borealis
112	43030	0.02170	0.000	0.00207	0.04134	0.00005154	0.99839956	Stomphia sp.
113	82500	0.01979	0.000	0.00000	0.05633	0.00004699	0.99844655	Echinacea unident.
114	95000	0.01976	0.000	0.00630	0.03322	0.00004693	0.99849347	Bryozoa unident.
115	43040	0.01974	0.000	0.00023	0.03924	0.00004686	0.99854034	Urticina sp.
116	20322	0.01968	0.000	0.00012	0.03925	0.00004674	0.99858708	Anarhichas orientalis
117	71764	0.01928	0.000	0.00719	0.03137	0.00004579	0.99863286	Volutopsius middendorffii
118	21316	0.01819	0.000	0.00000	0.04254	0.00004319	0.99867606	Gymnocanthus galeatus
119	21348	0.01812	0.000	0.00000	0.03703	0.00004303	0.99871909	Hemilepidotus papilio
120	72063	0.01800	0.000	0.00000	0.04197	0.00004274	0.99876183	Aforia circinata
121	320	0.01505	0.000	0.00000	0.04455	0.00003574	0.99879757	Somniosus pacificus
122	40561	0.01463	0.000	0.00000	0.03138	0.00003474	0.99883231	Cyanea capillata
123	21438	0.01460	0.000	0.00814	0.02106	0.00003468	0.99886699	Icelus spiniger
124	81355	0.01437	0.000	0.00776	0.02098	0.00003413	0.99890112	Pteraster obscurus
125	20006	0.01412	0.000	0.00663	0.02160	0.00003352	0.99893464	Leptagonus frenatus
126	71721	0.01395	0.000	0.00000	0.02999	0.00003313	0.99896776	Colus herendeenii
127	20320	0.01372	0.000	0.00000	0.04062	0.00003259	0.99900035	Anarrhichthys ocellatus
128	72751	0.01340	0.000	0.00234	0.02445	0.00003181	0.99903216	Buccinum plectrum
129	43042	0.01313	0.000	0.00071	0.02556	0.00003119	0.99906335	Urticina crassicornis
130	68590	0.01274	0.000	0.00770	0.01779	0.00003026	0.99909362	Chionoecetes hybrid
131	81095	0.01274	0.000	0.00541	0.02006	0.00003024	0.99912386	Crossaster papposus
132	71763	0.01269	0.000	0.00000	0.02979	0.00003014	0.99915400	Volutopsius stefanssoni

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
133	71761	0.01261	0.000	0.00372	0.02150	0.00002994	0.99918394	Pyrulofusus melonis
134	71710	0.01252	0.000	0.00468	0.02036	0.00002973	0.99921367	Colus sp.
135	75111	0.01133	0.000	0.00633	0.01633	0.00002690	0.99924057	Mactromeris polynyma
136	82740	0.01116	0.000	0.00000	0.02800	0.00002650	0.99926707	Echinarachnius parma
137	41221	0.01099	0.000	0.00412	0.01787	0.00002610	0.99929318	Gersemia rubiformis
138	75285	0.01024	0.000	0.00193	0.01855	0.00002432	0.99931750	Serripes groenlandicus
139	455	0.01011	0.000	0.00237	0.01785	0.00002401	0.99934151	Bathyraja taranetzi
140	56311	0.00968	0.000	0.00511	0.01425	0.00002299	0.99936450	Eunoe nodosa
141	68510	0.00908	0.000	0.00395	0.01422	0.00002157	0.99938607	Oregonia gracilis
142	81310	0.00893	0.000	0.00000	0.02013	0.00002120	0.99940727	Pteraster sp.
143	21932	0.00824	0.000	0.00192	0.01456	0.00001957	0.99942684	Hexagrammos stelleri
144	401	0.00813	0.000	0.00000	0.01669	0.00001931	0.99944615	skate egg case unident.
145	85210	0.00726	0.000	0.00000	0.01644	0.00001724	0.99946339	Psolus sp.
146	74080	0.00713	0.000	0.00000	0.02111	0.00001694	0.99948032	Mytilus edulis
147	10180	0.00707	0.000	0.00000	0.01619	0.00001678	0.99949710	Microstomus pacificus
148	71010	0.00693	0.000	0.00233	0.01153	0.00001645	0.99951356	Nudibranchia unident.
149	65100	0.00692	0.000	0.00000	0.01578	0.00001643	0.99952999	Thoracica
150	21354	0.00637	0.000	0.00000	0.01355	0.00001513	0.99954512	Triglops scepticus
151	56310	0.00637	0.000	0.00208	0.01065	0.00001511	0.99956024	Eunoe sp.
152	20510	0.00612	0.000	0.00000	0.01399	0.00001453	0.99957477	Anoplopoma fimbria
153	83310	0.00597	0.000	0.00000	0.01767	0.00001418	0.99958895	Ophiura sp.
154	71030	0.00581	0.000	0.00264	0.00897	0.00001379	0.99960274	Tritonia diomedea
155	22236	0.00558	0.000	0.00208	0.00907	0.00001324	0.99961598	Careproctus rastrinus
156	40506	0.00550	0.000	0.00000	0.01309	0.00001307	0.99962905	Aequorea sp.
157	80160	0.00496	0.000	0.00000	0.01467	0.00001177	0.99964082	Pycnopodia helianthoides
158	43020	0.00479	0.000	0.00000	0.01296	0.00001138	0.99965220	Metridium senile
159	75284	0.00463	0.000	0.00119	0.00808	0.00001100	0.99966320	Serripes sp.
160	24001	0.00460	0.000	0.00000	0.01276	0.00001091	0.99967411	Zaprora silenus
161	75286	0.00452	0.000	0.00025	0.00880	0.00001074	0.99968486	Serripes laperousii
162	66502	0.00452	0.000	0.00219	0.00685	0.00001074	0.99969559	Crangon sp.
163	66045	0.00451	0.000	0.00000	0.01251	0.00001070	0.99970629	Pandalus goniurus
164	71774	0.00422	0.000	0.00000	0.00899	0.00001002	0.99971631	Beringius stimpsoni
165	71025	0.00403	0.000	0.00000	0.00882	0.00000956	0.99972587	Tritonia sp.
166	30050	0.00371	0.000	0.00000	0.01038	0.00000880	0.99973467	Sebastes aleutianus

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
167	20061	0.00370	0.000	0.00203	0.00536	0.00000878	0.99974345	Ocella dodecaedron
168	69110	0.00368	0.000	0.00000	0.00771	0.00000874	0.99975219	Elassochirus tenuimanus
169	10270	0.00366	0.000	0.00000	0.00800	0.00000869	0.99976087	Isopsetta isolepis
170	71726	0.00364	0.000	0.00000	0.00970	0.00000865	0.99976953	Colus spitzbergensis
171	74985	0.00356	0.000	0.00000	0.00735	0.00000845	0.99977797	Clinocardium californiense
172	81360	0.00344	0.000	0.00000	0.00840	0.00000816	0.99978613	Diplopteraster multipes
173	21355	0.00316	0.000	0.00172	0.00459	0.00000750	0.99979363	Triglops pingeli
174	65203	0.00301	0.000	0.00000	0.00634	0.00000714	0.99980077	Balanus evermanni
175	80540	0.00298	0.000	0.00117	0.00478	0.00000707	0.99980784	Henricia sp.
176	74065	0.00298	0.000	0.00000	0.00858	0.00000707	0.99981491	Mytilus sp.
177	82730	0.00294	0.000	0.00000	0.00810	0.00000698	0.99982189	sand dollar unident.
178	71500	0.00293	0.000	0.00000	0.00647	0.00000697	0.99982886	Gastropod unident.
179	22206	0.00268	0.000	0.00000	0.00637	0.00000637	0.99983523	Crystallichthys cyclospilus
180	72789	0.00267	0.000	0.00000	0.00682	0.00000635	0.99984158	Arctomelon sp.
181	80000	0.00255	0.000	0.00000	0.00746	0.00000606	0.99984764	Asteroidea unident.
182	23235	0.00245	0.000	0.00000	0.00724	0.00000581	0.99985345	Oncorhynchus keta
183	80660	0.00237	0.000	0.00069	0.00405	0.00000563	0.99985908	Pseudarchaster parelii
184	22175	0.00216	0.000	0.00000	0.00640	0.00000514	0.99986422	Aptocyclus ventricosus
185	95070	0.00212	0.000	0.00062	0.00362	0.00000503	0.99986925	Rhamphostomella costata
186	65202	0.00198	0.000	0.00000	0.00472	0.00000469	0.99987394	Balanus balanus
187	74983	0.00184	0.000	0.00000	0.00370	0.00000438	0.99987832	Clinocardium ciliatum
188	68040	0.00166	0.000	0.00000	0.00368	0.00000395	0.99988227	Cancer oregonensis
189	72059	0.00164	0.000	0.00010	0.00318	0.00000390	0.99988617	Aforia sp.
190	56312	0.00162	0.000	0.00087	0.00236	0.00000384	0.99989001	Eunoe depressa
191	75240	0.00161	0.000	0.00000	0.00334	0.00000382	0.99989383	Macoma sp.
192	24188	0.00160	0.000	0.00000	0.00475	0.00000381	0.99989764	Lycodes polaris
193	95030	0.00149	0.000	0.00000	0.00302	0.00000355	0.99990119	Flustra serrulata
194	71755	0.00144	0.000	0.00000	0.00426	0.00000342	0.99990461	Pyrulofusus harpa
195	74104	0.00142	0.000	0.00000	0.00338	0.00000337	0.99990798	Chlamys sp.
196	71800	0.00139	0.000	0.00000	0.00411	0.00000329	0.99991128	Neptunea sp.
197	98300	0.00139	0.000	0.00026	0.00251	0.00000329	0.99991457	compound ascidian unident.
198	91068	0.00134	0.000	0.00000	0.00301	0.00000317	0.99991774	Leucosolenia blanca
199	66570	0.00131	0.000	0.00073	0.00190	0.00000312	0.99992086	Argis sp.
200	81779	0.00130	0.000	0.00000	0.00385	0.00000309	0.99992395	Ctenodiscus sp.



Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
201	10212	0.00129	0.000	0.00023	0.00234	0.00000305	0.99992701	Limanda sakhalinensis
202	71580	0.00126	0.000	0.00000	0.00286	0.00000299	0.99993000	Polinices pallidus
203	78012	0.00123	0.000	0.00000	0.00335	0.00000292	0.99993292	Benthoctopus leioderma
204	81870	0.00114	0.000	0.00000	0.00272	0.00000270	0.99993562	Dipsacaster borealis
205	21423	0.00112	0.000	0.00000	0.00332	0.00000267	0.99993829	Eurymen gyrinus
206	30152	0.00105	0.000	0.00000	0.00252	0.00000250	0.99994079	Sebastes variabilis
207	21921	0.00102	0.000	0.00000	0.00244	0.00000241	0.99994320	Pleurogrammus monopterygius
208	50160	0.00101	0.000	0.00000	0.00272	0.00000239	0.99994559	Aphroditidae
209	50010	0.00090	0.000	0.00000	0.00225	0.00000215	0.99994774	tube worm unident.
210	71018	0.00090	0.000	0.00007	0.00174	0.00000215	0.99994988	Dendronotus sp.
211	85000	0.00085	0.000	0.00000	0.00203	0.00000201	0.99995189	Holothuroidea unident.
212	98100	0.00084	0.000	0.00000	0.00188	0.00000200	0.99995390	Boltenia sp.
213	82511	0.00080	0.000	0.00000	0.00164	0.00000189	0.99995579	Strongylocentrotus sp.
214	72806	0.00073	0.000	0.00000	0.00188	0.00000172	0.99995751	Velutina sp.
215	66050	0.00072	0.000	0.00000	0.00213	0.00000171	0.99995922	Pandalus hypsinotus
216	71770	0.00069	0.000	0.00000	0.00149	0.00000163	0.99996084	Beringius kennicottii
217	71537	0.00067	0.000	0.00000	0.00135	0.00000159	0.99996243	Natica russa
218	81060	0.00064	0.000	0.00000	0.00154	0.00000153	0.99996396	Solaster sp.
219	75201	0.00060	0.000	0.00000	0.00128	0.00000143	0.99996540	Tellina sp.
220	24186	0.00060	0.000	0.00000	0.00178	0.00000143	0.99996683	Lycodes mucosus
221	74060	0.00058	0.000	0.00000	0.00151	0.00000137	0.99996820	Modiolus modiolus
222	79020	0.00055	0.000	0.00013	0.00097	0.00000131	0.99996950	Rossia pacifica
223	43021	0.00052	0.000	0.00000	0.00154	0.00000123	0.99997074	Metridium farcimen
224	78010	0.00051	0.000	0.00000	0.00152	0.00000122	0.99997195	Octopodidae
225	24184	0.00047	0.000	0.00000	0.00140	0.00000112	0.99997308	Lycodes raridens
226	71731	0.00047	0.000	0.00000	0.00123	0.00000111	0.99997419	Colus halli
227	50000	0.00046	0.000	0.00000	0.00096	0.00000110	0.99997529	Polychaeta
228	71890	0.00040	0.000	0.00000	0.00119	0.00000095	0.99997625	Plicifusus (=Colus)
229	23805	0.00039	0.000	0.00013	0.00065	0.00000092	0.99997717	Lumpenus maculatus
230	21935	0.00036	0.000	0.00000	0.00108	0.00000086	0.99997803	Hexagrammos decagrammus
231	71575	0.00035	0.000	0.00000	0.00076	0.00000084	0.99997887	Polinices sp.
232	75267	0.00033	0.000	0.00015	0.00052	0.00000079	0.99997967	Siliqua alta

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
233	74106	0.00032	0.000	0.00000	0.00081	0.00000076	0.99998042	<i>Chlamys rubida</i>
234	71525	0.00031	0.000	0.00000	0.00065	0.00000074	0.99998116	<i>Natica</i> sp.
235	75333	0.00031	0.000	0.00000	0.00072	0.00000073	0.99998189	<i>Mya truncata</i>
236	405	0.00030	0.000	0.00000	0.00074	0.00000072	0.99998261	<i>Bathyraja</i> sp.
237	79210	0.00030	0.000	0.00000	0.00089	0.00000071	0.99998332	<i>Berryteuthis magister</i>
238	94500	0.00029	0.000	0.00000	0.00082	0.00000069	0.99998401	<i>Echiura</i>
239	40011	0.00028	0.000	0.00000	0.00083	0.00000066	0.99998468	hydroid unident.
240	95035	0.00027	0.000	0.00000	0.00079	0.00000063	0.99998531	<i>Flustrellidra corniculata</i>
241	21341	0.00024	0.000	0.00000	0.00058	0.00000057	0.99998588	<i>Malacocottus zonurus</i>
242	80015	0.00023	0.000	0.00000	0.00069	0.00000055	0.99998644	<i>Evasterias troschelii</i>
243	42008	0.00023	0.000	0.00000	0.00061	0.00000054	0.99998698	<i>Halipteris</i> sp.
244	72403	0.00022	0.000	0.00000	0.00049	0.00000052	0.99998750	<i>Boreotrophon muriciformis</i>
245	81090	0.00020	0.000	0.00000	0.00048	0.00000048	0.99998798	<i>Crossaster</i> sp.
246	20050	0.00020	0.000	0.00008	0.00031	0.00000047	0.99998845	<i>Aspidophoroides bartoni</i>
247	66515	0.00019	0.000	0.00007	0.00031	0.00000046	0.99998891	<i>Crangon communis</i>
248	21356	0.00019	0.000	0.00000	0.00046	0.00000046	0.99998936	<i>Triglops macellus</i>
249	71883	0.00018	0.000	0.00000	0.00055	0.00000044	0.99998980	<i>Neptunea insularis</i>
250	40512	0.00018	0.000	0.00000	0.00044	0.00000043	0.99999023	<i>Aurelia labiata</i>
251	20002	0.00016	0.000	0.00000	0.00048	0.00000039	0.99999062	<i>Percis japonicus</i>
252	71765	0.00016	0.000	0.00000	0.00048	0.00000038	0.99999100	<i>Volutopsius trophonius</i>
253	80730	0.00016	0.000	0.00000	0.00047	0.00000038	0.99999138	<i>Ceramaster patagonicus</i>
254	74310	0.00016	0.000	0.00000	0.00031	0.00000037	0.99999175	<i>Hiatella</i> sp.
255	75205	0.00015	0.000	0.00000	0.00033	0.00000036	0.99999211	<i>Tellina lutea</i>
256	91040	0.00015	0.000	0.00000	0.00043	0.00000035	0.99999245	<i>Mycale loveni</i>
257	71723	0.00015	0.000	0.00000	0.00043	0.00000035	0.99999280	<i>Colus ombronius</i>
258	74112	0.00014	0.000	0.00000	0.00035	0.00000034	0.99999314	<i>Chlamys pseudoislandica</i>
259	80546	0.00014	0.000	0.00003	0.00025	0.00000033	0.99999347	<i>Henricia tumida</i>
260	43045	0.00014	0.000	0.00000	0.00038	0.00000032	0.99999379	<i>Bathypheia australis</i>
261	21900	0.00013	0.000	0.00000	0.00037	0.00000030	0.99999409	Hexagrammidae
262	71776	0.00012	0.000	0.00000	0.00034	0.00000027	0.99999436	<i>Beringius undatus</i>

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
263	83400	0.00011	0.000	0.00000	0.00026	0.00000026	0.99999463	Ophiopholis aculeata
264	81830	0.00010	0.000	0.00000	0.00030	0.00000024	0.99999487	Leptychaster pacificus
265	82535	0.00009	0.000	0.00000	0.00025	0.00000020	0.99999527	Alloccentrotus sp.
266	85180	0.00009	0.000	0.00000	0.00025	0.00000020	0.99999527	Bathyploetes sp.
267	21346	0.00008	0.000	0.00000	0.00025	0.00000020	0.99999547	Hemilepidotus hemilepidotus
268	71771	0.00008	0.000	0.00000	0.00024	0.00000019	0.99999567	Beringius frielei
269	40511	0.00008	0.000	0.00000	0.00023	0.00000019	0.99999585	Aurelia sp.
270	66548	0.00008	0.000	0.00000	0.00023	0.00000019	0.99999604	Crangon septemspinosa
271	21725	0.00008	0.000	0.00002	0.00013	0.00000018	0.99999622	Boreogadus saida
272	85169	0.00008	0.000	0.00000	0.00023	0.00000018	0.99999640	Pentamera lissoplaca
273	66580	0.00007	0.000	0.00000	0.00015	0.00000018	0.99999658	Argis dentata
274	20202	0.00007	0.000	0.00002	0.00012	0.00000017	0.99999675	Ammodytes hexapterus
275	91030	0.00007	0.000	0.00000	0.00021	0.00000017	0.99999692	Aphrocallistes vastus
276	40560	0.00007	0.000	0.00000	0.00017	0.00000017	0.99999709	Cyanea sp.
277	21441	0.00007	0.000	0.00001	0.00013	0.00000017	0.99999725	Icelus spatula
278	74655	0.00006	0.000	0.00000	0.00016	0.00000015	0.99999740	Cyclocardia crebricostata
279	71530	0.00006	0.000	0.00000	0.00017	0.00000015	0.99999755	Natica clausa
280	98000	0.00006	0.000	0.00000	0.00015	0.00000014	0.99999769	Ascidian unident.
281	50001	0.00006	0.000	0.00000	0.00013	0.00000014	0.99999784	worm unident.
282	43082	0.00006	0.000	0.00000	0.00017	0.00000014	0.99999798	Cribrinopsis fernaldi
283	45000	0.00006	0.000	0.00000	0.00017	0.00000014	0.99999811	Ctenophora
284	23055	0.00005	0.000	0.00000	0.00016	0.00000013	0.99999824	Osmerus mordax
285	79000	0.00005	0.000	0.00000	0.00016	0.00000013	0.99999837	squid unident.
286	80110	0.00005	0.000	0.00000	0.00014	0.00000012	0.99999849	Leptasterias groenlandica
287	20035	0.00005	0.000	0.00000	0.00013	0.00000012	0.99999860	Bathyagonus alascanus
288	10150	0.00005	0.000	0.00000	0.00014	0.00000011	0.99999871	Lyopsetta exilis
289	74435	0.00005	0.000	0.00000	0.00013	0.00000011	0.99999883	Nuculana sp.
290	20001	0.00004	0.000	0.00000	0.00009	0.00000010	0.99999893	Pallasina barbata
291	66611	0.00004	0.000	0.00000	0.00009	0.00000010	0.99999903	Argis lar
292	98320	0.00004	0.000	0.00000	0.00011	0.00000009	0.99999912	Synoicum sp.
293	66203	0.00004	0.000	0.00000	0.00010	0.00000008	0.99999921	Lebbeus groenlandicus

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
294	21397	0.00004	0.000	0.00000	0.00010	0.00000008	0.99999929	Blepsias bilobus
295	85120	0.00003	0.000	0.00000	0.00008	0.00000006	0.99999936	Molpadia intermedia
296	72802	0.00002	0.000	0.00000	0.00007	0.00000006	0.99999941	Velutina plicatilis
297	94000	0.00002	0.000	0.00000	0.00005	0.00000005	0.99999947	Sipuncula
298	74000	0.00002	0.000	0.00000	0.00005	0.00000005	0.99999951	Bivalvia unident.
299	75605	0.00002	0.000	0.00000	0.00005	0.00000004	0.99999955	Pododesmus sp.
300	80544	0.00002	0.000	0.00000	0.00005	0.00000004	0.99999959	Henricia leviuscula
301	74416	0.00002	0.000	0.00000	0.00004	0.00000004	0.99999963	Yoldia scissurata
302	69312	0.00002	0.000	0.00000	0.00005	0.00000004	0.99999967	Dermaturus mandti
303	21333	0.00001	0.000	0.00000	0.00003	0.00000003	0.99999970	Arteidiellus pacificus
304	80112	0.00001	0.000	0.00000	0.00003	0.00000003	0.99999972	Leptasterias hylodes
305	22201	0.00001	0.000	0.00000	0.00003	0.00000002	0.99999974	Liparis sp.
306	23801	0.00001	0.000	0.00000	0.00002	0.00000002	0.99999977	Lumpenus sp.
307	21300	0.00001	0.000	0.00000	0.00002	0.00000002	0.99999978	Cottidae
308	23800	0.00001	0.000	0.00000	0.00002	0.00000002	0.99999980	Stichaeidae
309	23850	0.00001	0.000	0.00000	0.00002	0.00000002	0.99999982	Poroclinus rothrocki
310	21394	0.00001	0.000	0.00000	0.00002	0.00000002	0.99999983	Psychrolutes paradoxus
311	66530	0.00001	0.000	0.00000	0.00002	0.00000001	0.99999985	Crangon dalli
312	72420	0.00001	0.000	0.00000	0.00001	0.00000001	0.99999986	Boreotrophon sp.
313	97000	0.00001	0.000	0.00000	0.00002	0.00000001	0.99999988	brachiopod unident.
314	21405	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999989	Nautichthys pribilovius
315	74414	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999990	Yoldia sp.
316	20037	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999991	Bathyagonus pentacanthus
317	71910	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999992	Liomesus sp.
318	66033	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999993	Pandalus tridens
319	59110	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999994	Carcinobdella sp.
320	62000	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999995	Isopoda
321	21380	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999996	Leptocottus armatus
322	22200	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999997	Liparidinae
323	21375	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999998	Myoxocephalus sp.
324	59111	0.00000	0.000	0.00000	0.00001	0.00000001	0.99999998	Carcinobdella cyclostomum
325	59100	0.00000	0.000	0.00000	0.00001	0.00000000	0.99999999	Hirudinea unident.

Rank	Species	Mean CPUE (kg/ha)	Variance	95 Percent Confidence Limits		Proportion	Cumulative Proportion	Name
326	60110	0.00000	0.000	0.00000	0.00000	0.00000000	0.99999999	Gammaridae
327	69316	0.00000	0.000	0.00000	0.00000	0.00000000	0.99999999	Hapalogaster grebnitzkii
328	66020	0.00000	0.000	0.00000	0.00000	0.00000000	1.00000000	Pandalus sp.
329	66160	0.00000	0.000	0.00000	0.00000	0.00000000	1.00000000	Spirontocaris sp.

## APPENDIX D

## Abundance Estimates for Principal Fish Species

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

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

## List of Tables

<u>Table</u>	<u>Page</u>
Appendix D Table 1.--CPUE, population, and biomass estimates for walleye pollock. . . . .	128
Appendix D Table 2.--CPUE, population, and biomass estimates for Pacific cod. . . . .	130
Appendix D Table 3.--CPUE, population, and biomass estimates for yellowfin sole. . . . .	132
Appendix D Table 4.--CPUE, population, and biomass estimates for <i>Lepidopsetta</i> spp. . . . .	134
Appendix D Table 5.--CPUE, population, and biomass estimates for <i>Hippoglossoides</i> spp. . .	136
Appendix D Table 6.--CPUE, population, and biomass estimates for Alaska plaice. . . . .	138
Appendix D Table 7.--CPUE, population, and biomass estimates for Greenland turbot. . . . .	140
Appendix D Table 8.--CPUE, population, and biomass estimates for arrowtooth flounder. . .	142
Appendix D Table 9.--CPUE, population, and biomass estimates for Kamchatka flounder. . .	144
Appendix D Table 10.--CPUE, population, and biomass estimates for Pacific halibut. . . . .	146

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

CPUE								
Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	59	54	54	52	45.83	.88000E+03	39.75	.72220E+03
20	31	30	30	30	13.13	.23140E+02	15.70	.22940E+02
31	68	67	67	67	347.63	.56070E+05	343.11	.43540E+05
32	8	8	8	8	178.21	.25970E+04	259.42	.72410E+04
Subtotal	76	75	75	75	333.24	.46970E+05	336.00	.36510E+05
41	44	44	44	44	183.35	.60080E+03	246.10	.88980E+03
42	31	30	30	30	136.76	.37750E+03	195.73	.72990E+03
43	22	22	22	22	288.16	.52830E+04	498.22	.14870E+05
Subtotal	97	96	96	96	193.49	.42440E+03	284.24	.90710E+03
50	26	26	26	26	33.20	.21750E+03	32.44	.20060E+03
61	60	55	55	55	265.84	.32630E+04	360.51	.50450E+04
62	7	7	7	7	150.52	.50830E+03	288.85	.51090E+04
Subtotal	67	62	62	62	258.00	.28370E+04	355.64	.44060E+04
Total	356	343	343	341	183.61	.51350E+05	224.41	.42770E+05

POPULATION						
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Lower	95% Confidence Upper	Limits
10	309,547,815	.43795E+17	58.00	0	732,485,303	
20	64,412,624	.38614E+15	30.00	24,227,306	104,597,942	
31	3,243,298,468	.38901E+19	67.00	0	7,187,976,740	
32	227,616,972	.55747E+16	7.00	44,914,948	410,318,996	
Subtotal	3,470,915,440	.38957E+19	67.19	0	7,418,419,124	
41	1,543,158,384	.34984E+17	43.00	1,165,149,145	1,921,167,623	
42	469,963,795	.42084E+16	30.00	337,300,866	602,626,724	
43	1,051,636,194	.66258E+17	21.00	514,685,939	1,588,586,448	
Subtotal	3,064,758,372	.10545E+18	46.71	2,408,475,359	3,721,041,385	
50	125,846,620	.30186E+16	25.00	12,667,259	239,025,982	
61	3,177,293,439	.39189E+18	59.00	1,912,128,363	4,442,458,515	
62	185,691,033	.21112E+16	6.00	73,255,585	298,126,481	
Subtotal	3,362,984,472	.39400E+18	59.62	2,094,416,017	4,631,552,927	
Total	10,398,465,344	.44423E+19	86.27	6,183,090,925	14,613,839,763	



## Appendix D Table-1.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Lower	Limits Upper
10	356,901	.53362E+11	58.00	0	823,756
20	53,863	.38953E+09	30.00	13,561	94,165
31	3,285,972	.50097E+13	67.00	0	7,762,438
32	156,362	.19991E+10	7.00	50,619	262,104
Subtotal	3,442,334	.50117E+13	67.05	0	7,919,693
41	1,149,687	.23623E+11	43.00	839,067	1,460,308
42	328,379	.21763E+10	30.00	233,118	423,640
43	608,231	.23538E+11	21.00	288,191	928,270
Subtotal	2,086,297	.49337E+11	61.60	1,642,057	2,530,538
50	128,806	.32730E+10	25.00	10,953	246,659
61	2,342,926	.25344E+12	59.00	1,325,501	3,360,351
62	96,764	.21006E+09	6.00	61,298	132,230
Subtotal	2,439,690	.25365E+12	59.10	1,421,843	3,457,537
Total	8,507,891	.53717E+13	76.79	3,872,507	13,143,275

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

CPUE								
Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	59	53	53	53	9.30	.56620E+01	16.05	.13520E+02
20	31	30	30	29	3.74	.58660E+00	5.41	.12890E+01
31	68	68	68	68	13.90	.19590E+01	13.40	.55300E+01
32	8	8	8	7	15.31	.10690E+02	7.77	.26120E+01
Subtotal	76	76	76	75	14.02	.17180E+01	12.92	.46490E+01
41	44	44	44	44	22.34	.57520E+02	16.71	.49380E+02
42	31	31	31	31	11.40	.12330E+01	8.22	.17520E+01
43	22	22	22	22	36.78	.25380E+03	27.61	.18000E+03
Subtotal	97	97	97	97	22.73	.29240E+02	16.95	.23690E+02
50	26	22	22	22	4.93	.15990E+01	2.48	.48550E+00
61	60	60	60	60	11.36	.10420E+01	3.86	.91360E-01
62	7	7	7	7	13.62	.10100E+02	4.85	.73660E+00
Subtotal	67	67	67	67	11.51	.95180E+00	3.93	.82760E-01
Total	356	345	345	343	13.07	.39760E+02	11.01	.43710E+02

POPULATION					
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Lower	Limits Upper
10	124,970,391	.81970E+15	58.00	67,108,318	182,832,464
20	22,207,086	.21692E+14	30.00	12,696,548	31,717,624
31	126,666,714	.49412E+15	67.00	82,208,904	171,124,524
32	6,818,902	.20112E+13	7.00	3,464,899	10,172,905
Subtotal	133,485,616	.49614E+15	67.54	88,937,419	178,033,813
41	104,783,003	.19416E+16	43.00	15,730,740	193,835,267
42	19,730,610	.10099E+14	30.00	13,241,208	26,220,013
43	58,274,773	.80187E+15	21.00	0	117,174,667
Subtotal	182,788,387	.27536E+16	64.10	77,839,724	287,737,050
50	9,615,585	.73061E+13	25.00	4,036,653	15,194,517
61	34,004,479	.70963E+13	59.00	28,620,756	39,388,201
62	3,115,780	.30441E+12	6.00	1,697,265	4,534,296
Subtotal	37,120,259	.74007E+13	63.03	31,679,404	42,561,114
Total	510,187,323	.41058E+16	126.24	383,315,968	637,058,679

## Appendix D Table-2.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Lower	Limits Upper
10	72,456	.34332E+09	58.00	35,009	109,902
20	15,340	.98737E+07	30.00	8,923	21,756
31	131,390	.17508E+09	67.00	104,926	157,854
32	13,434	.82330E+07	7.00	6,648	20,220
Subtotal	144,824	.18332E+09	71.93	117,745	171,903
41	140,049	.22615E+10	43.00	43,940	236,158
42	27,375	.71083E+07	30.00	21,931	32,820
43	77,632	.11308E+10	21.00	7,485	147,778
Subtotal	245,056	.33994E+10	64.26	128,448	361,665
50	19,143	.24058E+08	25.00	9,039	29,247
61	100,104	.80934E+08	59.00	81,922	118,285
62	8,758	.41735E+07	6.00	3,759	13,757
Subtotal	108,862	.85107E+08	63.58	90,411	127,312
Total	605,681	.40451E+10	89.67	478,479	732,882

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

## CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	58	58	58	121.32	.17680E+03	578.52	.51860E+04
20	31	31	31	31	88.57	.11750E+03	401.16	.19990E+04
31	69	64	64	64	57.77	.59150E+02	194.31	.71270E+03
32	8	5	5	5	7.12	.15150E+02	16.68	.10370E+03
Subtotal	77	69	69	69	53.47	.49640E+02	179.23	.59750E+03
41	44	39	39	39	19.01	.33250E+02	57.48	.41760E+03
42	31	28	28	28	7.04	.16000E+01	17.36	.10740E+02
43	22	13	13	13	3.18	.13000E+01	9.55	.88660E+01
Subtotal	97	80	80	80	13.25	.11370E+02	39.16	.14210E+03
50	25	1	1	1	0.02	.30920E-03	0.04	.14360E-02
61	60	0	0	0	0.00	.00000E+00	0.00	.00000E+00
62	7	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Subtotal	67	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Total	355	239	239	239	43.23	.35530E+03	181.81	.79240E+04

## POPULATION

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

## Appendix D Table-3.--Continued.

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

Appendix D Table 4.--CPUE, population, and biomass estimates for *Lepidopsetta* spp.

## CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	58	58	58	117.53	.99380E+02	461.20	.18080E+04
20	31	31	31	31	63.76	.11700E+03	181.42	.65980E+03
31	69	67	66	66	26.31	.18490E+02	115.15	.41770E+03
32	8	8	8	8	27.57	.12500E+03	81.87	.86200E+03
Subtotal	77	75	74	74	26.42	.16380E+02	112.32	.35600E+03
41	44	43	43	43	31.07	.45810E+03	68.47	.16680E+04
42	31	30	29	29	65.53	.30720E+03	185.63	.20950E+04
43	22	21	21	20	22.49	.43310E+02	52.12	.22810E+03
Subtotal	97	94	93	92	37.06	.17180E+03	91.36	.67670E+03
50	25	9	9	9	0.50	.10440E+00	1.07	.64300E+00
61	60	48	47	47	5.08	.16590E+01	8.07	.29590E+01
62	7	7	7	7	9.02	.35800E+02	14.59	.79260E+02
Subtotal	67	55	54	54	5.35	.16070E+01	8.51	.29360E+01
Total	355	322	319	318	41.04	.40630E+03	141.69	.35040E+04

## POPULATION

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

Appendix D Table-4.--Continued.

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

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

## CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	37	37	36	2.93	.47780E+00	6.22	.39800E+01
20	31	6	6	6	0.08	.14360E-02	0.18	.84280E-02
31	69	68	68	68	15.77	.20990E+02	43.32	.22870E+03
32	8	8	8	8	15.03	.12890E+03	27.94	.39350E+03
Subtotal	77	76	76	76	15.70	.18500E+02	42.01	.19430E+03
41	44	41	41	41	4.72	.17940E+01	13.42	.11510E+02
42	31	25	25	25	9.14	.78130E+01	17.91	.26410E+02
43	22	19	19	19	29.92	.67930E+03	43.28	.98900E+03
Subtotal	97	85	85	85	10.64	.27030E+02	20.26	.43110E+02
50	25	25	25	25	16.93	.72870E+01	68.98	.94060E+02
61	60	60	60	60	23.27	.68060E+02	65.85	.11110E+03
62	7	7	7	7	6.31	.28880E+01	31.32	.38350E+02
Subtotal	67	67	67	67	22.12	.59140E+02	63.50	.96640E+02
Total	355	296	296	295	12.41	.11240E+03	33.88	.43210E+03

## POPULATION

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



Appendix D Table-5.--Continued.

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

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

## CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	49	49	58	6.15	.15440E+01	14.40	.53300E+01
20	31	31	31	31	17.21	.34940E+02	38.15	.15300E+03
31	69	54	54	66	9.86	.35840E+01	13.99	.83770E+01
32	8	5	5	8	6.75	.17530E+02	5.18	.92610E+01
Subtotal	77	59	59	74	9.59	.31280E+01	13.24	.70810E+01
41	44	39	39	43	25.99	.45710E+02	34.91	.81690E+02
42	31	24	24	29	4.94	.15800E+01	5.55	.15920E+01
43	22	20	20	20	5.11	.15270E+01	5.21	.19380E+01
Subtotal	97	83	83	92	17.21	.15600E+02	22.56	.27780E+02
50	25	0	0	9	0.00	.00000E+00	0.00	.00000E+00
61	60	15	15	47	1.95	.71820E+00	1.28	.36350E+00
62	7	7	7	7	7.18	.17070E+02	3.98	.55830E+01
Subtotal	67	22	22	54	2.31	.70280E+00	1.47	.34150E+00
Total	355	244	244	318	9.17	.55910E+02	14.30	.19360E+03

## POPULATION

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

Appendix D Table-6.--Continued.

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

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

## CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	0	0	0	0.00	.00000E+00	0.00	.00000E+00
20	31	1	1	1	0.00	.17080E-08	0.01	.47450E-04
31	69	3	3	3	0.07	.15990E-02	0.01	.46480E-04
32	8	0	0	0	0.00	.00000E+00	0.00	.00000E+00
Subtotal	77	3	3	3	0.06	.13390E-02	0.01	.38920E-04
41	44	9	9	9	0.66	.12710E+00	0.13	.51510E-02
42	31	1	1	1	0.06	.32890E-02	0.01	.43060E-04
43	22	9	9	9	0.86	.11280E+00	0.21	.47430E-02
Subtotal	97	19	19	19	0.57	.47460E-01	0.12	.19260E-02
50	25	1	1	1	0.05	.26790E-02	0.01	.66660E-04
61	60	23	23	23	1.53	.22130E+00	0.50	.17120E-01
62	7	6	6	6	1.92	.36060E+00	0.71	.49100E-01
Subtotal	67	29	29	29	1.55	.19390E+00	0.52	.15100E-01
Total	355	53	53	53	0.47	.24540E+00	0.14	.17180E-01

## POPULATION

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

Appendix D Table-7.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	57.00	0	0
20	0	.28753E-01	30.00	0	1
31	625	.14286E+06	68.00	0	1,381
32	0	.00000E+00	7.00	0	0
Subtotal	625	.14286E+06	35.22	0	1,397
41	4,165	.49958E+07	43.00	0	8,682
42	138	.18963E+05	30.00	0	419
43	1,813	.50269E+06	21.00	334	3,292
Subtotal	6,115	.55175E+07	51.38	1,368	10,862
50	201	.40321E+05	24.00	0	616
61	13,442	.17192E+08	59.00	5,062	21,822
62	1,234	.14901E+06	6.00	289	2,178
Subtotal	14,676	.17341E+08	59.98	6,260	23,092
Total	21,616	.23042E+08	103.94	12,016	31,217

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

## CPUE

Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	6	6	6	0.08	.28950E-02	0.77	.30410E+00
20	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
31	69	47	47	46	8.53	.63780E+01	27.75	.61700E+02
32	8	8	8	8	8.62	.30100E+01	17.87	.73360E+01
Subtotal	77	55	55	54	8.54	.53620E+01	26.91	.51720E+02
41	44	8	8	8	0.86	.15310E+00	0.88	.17520E+00
42	31	25	25	25	3.49	.40520E+00	8.72	.30360E+01
43	22	5	5	4	0.33	.44040E-01	0.23	.20160E-01
Subtotal	97	38	38	37	1.34	.73560E-01	2.50	.21060E+00
50	25	25	25	25	23.96	.51410E+01	54.82	.39840E+02
61	60	54	54	54	14.80	.42270E+01	15.33	.50050E+01
62	7	7	7	7	4.92	.13410E+02	4.37	.11720E+02
Subtotal	67	61	61	61	14.13	.37340E+01	14.58	.44020E+01
Total	355	185	185	183	7.12	.14310E+02	14.27	.96480E+02

## POPULATION

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

Appendix D Table-8.--Continued.

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

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

CPUE								
Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	0	0	0	0.00	.00000E+00	0.00	.00000E+00
20	31	0	0	0	0.00	.00000E+00	0.00	.00000E+00
31	69	11	11	11	0.08	.63840E-03	0.35	.21300E-01
32	8	7	7	7	1.27	.24610E+00	2.73	.94820E+00
Subtotal	77	18	18	18	0.18	.23100E-02	0.55	.24670E-01
41	44	6	6	6	0.38	.87050E-01	0.26	.32050E-01
42	31	10	10	10	0.23	.66630E-02	0.42	.33860E-01
43	22	10	10	10	0.73	.19180E+00	0.43	.53600E-01
Subtotal	97	26	26	26	0.42	.37120E-01	0.33	.14570E-01
50	25	18	18	18	0.69	.37220E-01	2.31	.30150E+00
61	60	49	48	48	1.67	.61300E-01	2.78	.20890E+00
62	7	7	7	7	2.23	.28020E+00	1.51	.16560E+00
Subtotal	67	56	55	55	1.71	.54550E-01	2.70	.18230E+00
Total	355	118	117	117	0.54	.13120E+00	0.94	.52300E+00

POPULATION						
Stratum	Population	Variance population	Eff. deg. freedom	95% Confidence Limits		
				Lower	Upper	
10	0	.00000E+00	57.00	0	0	
20	0	.00000E+00	30.00	0	0	
31	3,285,571	.19030E+13	68.00	526,580	6,044,562	
32	2,398,362	.72998E+12	7.00	377,731	4,418,994	
Subtotal	5,683,933	.26330E+13	53.59	2,404,560	8,963,307	
41	1,602,585	.12601E+13	43.00	0	3,871,206	
42	998,793	.19523E+12	30.00	96,538	1,901,048	
43	907,829	.23881E+12	21.00	0	1,927,211	
Subtotal	3,509,208	.16941E+13	70.14	906,059	6,112,356	
50	8,953,875	.45371E+13	24.00	4,546,818	13,360,932	
61	24,512,821	.16230E+14	59.00	16,370,928	32,654,715	
62	972,588	.68417E+11	6.00	300,100	1,645,076	
Subtotal	25,485,409	.16298E+14	59.49	17,326,373	33,644,445	
Total	43,632,425	.25163E+14	129.58	33,700,288	53,564,561	



Appendix D Table-9.--Continued.

BIOMASS					
Stratum	Biomass (t)	Variance biomass	Eff. deg. freedom	95% Confidence Limits Lower	Upper
10	0	.00000E+00	57.00	0	0
20	0	.00000E+00	30.00	0	0
31	726	.57039E+05	68.00	249	1,204
32	1,116	.18949E+06	7.00	50	2,181
Subtotal	1,842	.24653E+06	11.74	749	2,935
41	2,380	.34227E+07	43.00	0	6,119
42	559	.38413E+05	30.00	158	959
43	1,539	.85433E+06	21.00	0	3,462
Subtotal	4,478	.43155E+07	60.61	323	8,632
50	2,692	.56009E+06	24.00	1,147	4,237
61	14,757	.47617E+07	59.00	10,347	19,167
62	1,432	.11579E+06	6.00	600	2,265
Subtotal	16,189	.48775E+07	61.55	11,772	20,606
Total	25,201	.99995E+07	181.20	18,939	31,462

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

CPUE								
Stratum	Total hauls	Hauls with catch	Hauls with nums.	Hauls with L-F	Mean CPUE (kg/ha)	Variance mean CPUE (kg/ha)	Mean CPUE (no/ha)	Variance mean CPUE (no/ha)
10	58	55	55	55	2.98	.13500E+00	2.15	.14860E+00
20	31	29	29	29	3.06	.70280E+00	1.64	.18600E+00
31	69	47	47	47	1.73	.92910E-01	0.59	.30170E-01
32	8	4	4	4	0.41	.43860E-01	0.16	.45530E-02
Subtotal	77	51	51	51	1.62	.78110E-01	0.55	.25300E-01
41	44	28	28	28	1.37	.12350E+00	0.37	.76030E-02
42	31	23	23	23	2.32	.25010E+00	0.91	.87750E-01
43	22	10	10	10	0.80	.12030E+00	0.14	.13680E-02
Subtotal	97	61	61	61	1.47	.58770E-01	0.44	.69760E-02
50	25	20	20	20	2.23	.19440E+00	0.32	.31380E-02
61	60	34	34	34	2.60	.22660E+00	0.44	.72530E-02
62	7	2	2	2	1.55	.22970E+01	0.32	.81000E-01
Subtotal	67	36	36	36	2.52	.20750E+00	0.43	.66750E-02
Total	355	252	252	252	2.18	.13760E+01	0.85	.37670E+00

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

Appendix D Table-10.--Continued.

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

## APPENDIX E

Population Estimates by Sex and Size  
Groups for Principal Fish Species

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

List of Tables

<u>Table</u>	<u>Page</u>
Appendix E Table 1.--Population estimates by sex and size group for walleye pollock . . . . .	149
Appendix E Table 2.--Population estimates by sex and size group for Pacific cod . . . . .	151
Appendix E Table 3.--Population estimates by sex and size group for yellowfin sole . . . . .	154
Appendix E Table 4.--Population estimates by sex and size group for <i>Lepidopsetta</i> spp. . . . .	155
Appendix E Table 5.--Population estimates by sex and size group for <i>Hippoglossoides</i> spp. . . . .	156
Appendix E Table 6.--Population estimates by sex and size group for Alaska plaice . . . . .	158
Appendix E Table 7.--Population estimates by sex and size group for Greenland turbot . . . . .	160
Appendix E Table 8.--Population estimates by sex and size group for arrowtooth flounder . . . . .	162
Appendix E Table 9.--Population estimates by sex and size group for Kamchatka flounder . . . . .	164
Appendix E Table 10.--Population estimates by sex and size group for Pacific halibut . . . . .	166

Appendix E Table 1.--Population estimates by sex and size group for walleye pollock from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
40	0	0	240,540	240,540	0.0000	0.0000
50	0	0	1,202,178	1,202,178	0.0001	0.0001
60	0	0	368,670	368,670	0.0000	0.0002
70	0	0	353,491	353,491	0.0000	0.0002
80	0	0	858,042	858,042	0.0001	0.0003
90	0	0	1,911,093	1,911,093	0.0002	0.0005
100	196,185	227,368	5,480,063	5,903,616	0.0006	0.0010
110	459,914	1,082,383	11,428,732	12,971,029	0.0012	0.0023
120	2,179,939	3,222,378	21,071,181	26,473,498	0.0025	0.0048
130	3,467,689	2,380,507	24,149,248	29,997,443	0.0029	0.0077
140	6,297,476	7,054,231	33,630,283	46,981,991	0.0045	0.0122
150	8,119,798	7,904,435	34,457,035	50,481,268	0.0049	0.0171
160	13,044,497	12,729,406	43,398,417	69,172,320	0.0067	0.0237
170	8,812,137	10,955,230	31,426,660	51,194,027	0.0049	0.0287
180	11,547,322	8,647,914	23,989,799	44,185,035	0.0042	0.0329
190	4,417,913	4,997,522	9,568,624	18,984,059	0.0018	0.0347
200	3,102,818	4,825,841	2,921,821	10,850,480	0.0010	0.0358
210	3,569,267	5,305,896	2,045,946	10,921,109	0.0011	0.0368
220	7,803,549	5,475,518	1,595,296	14,874,363	0.0014	0.0383
230	5,908,661	6,592,171	245,633	12,746,465	0.0012	0.0395
240	9,003,909	10,051,805	205,206	19,260,919	0.0019	0.0413
250	9,960,111	8,372,802	245,633	18,578,545	0.0018	0.0431
260	6,469,585	7,323,837	0	13,793,422	0.0013	0.0445
270	4,396,584	4,865,217	0	9,261,801	0.0009	0.0453
280	4,027,043	7,064,393	0	11,091,436	0.0011	0.0464
290	4,062,969	3,909,713	0	7,972,682	0.0008	0.0472
300	6,311,170	5,721,312	0	12,032,483	0.0012	0.0483
310	9,501,866	4,438,381	0	13,940,247	0.0013	0.0497
320	11,353,965	9,539,502	0	20,893,467	0.0020	0.0517
330	14,239,579	9,067,565	0	23,307,144	0.0022	0.0539
340	18,815,134	11,561,736	0	30,376,870	0.0029	0.0569
350	26,885,173	10,822,016	0	37,707,189	0.0036	0.0605
360	40,851,182	28,940,559	0	69,791,741	0.0067	0.0672
370	60,148,481	33,684,661	0	93,833,142	0.0090	0.0762
380	117,096,514	66,710,457	0	183,806,971	0.0177	0.0939
390	147,581,064	79,081,593	0	226,662,657	0.0218	0.1157
400	180,500,277	129,443,085	0	309,943,362	0.0298	0.1455
410	182,419,351	138,525,100	0	320,944,450	0.0309	0.1764
420	207,466,095	160,582,724	0	368,048,818	0.0354	0.2118
430	197,263,556	142,777,847	0	340,041,403	0.0327	0.2445
440	263,011,503	182,369,274	0	445,380,777	0.0428	0.2873
450	280,584,830	189,148,310	0	469,733,140	0.0452	0.3325
460	374,864,601	254,301,262	0	629,165,862	0.0605	0.3930
470	359,175,289	242,579,206	0	601,754,495	0.0579	0.4508
480	327,219,774	294,192,590	0	621,412,364	0.0598	0.5106

Appendix E Table 1.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
490	404,440,037	279,377,662	29,777	683,847,475	0.0658	0.5764
500	374,622,297	310,758,636	0	685,380,933	0.0659	0.6423
510	365,904,837	248,752,227	0	614,657,063	0.0591	0.7014
520	340,507,680	254,418,726	0	594,926,406	0.0572	0.7586
530	334,401,373	230,110,174	0	564,511,546	0.0543	0.8129
540	336,140,593	213,256,065	0	549,396,659	0.0528	0.8657
550	238,747,039	151,578,466	0	390,325,505	0.0375	0.9033
560	140,361,542	192,441,101	0	332,802,643	0.0320	0.9353
570	90,445,951	92,163,746	0	182,609,697	0.0176	0.9528
580	74,555,145	58,304,193	0	132,859,338	0.0128	0.9656
590	41,068,838	50,283,333	0	91,352,171	0.0088	0.9744
600	26,913,827	40,409,754	0	67,323,581	0.0065	0.9809
610	32,863,450	22,500,994	0	55,364,443	0.0053	0.9862
620	21,070,087	20,748,532	0	41,818,619	0.0040	0.9902
630	16,757,255	12,753,132	0	29,510,387	0.0028	0.9930
640	2,909,562	14,363,137	0	17,272,699	0.0017	0.9947
650	2,165,140	9,642,910	0	11,808,051	0.0011	0.9958
660	2,132,488	7,787,506	0	9,919,994	0.0010	0.9968
670	1,414,050	4,605,728	0	6,019,777	0.0006	0.9974
680	1,806,375	3,626,166	0	5,432,541	0.0005	0.9979
690	844,098	3,607,735	0	4,451,834	0.0004	0.9983
700	1,465,153	1,838,453	0	3,303,606	0.0003	0.9986
710	843,769	1,769,791	0	2,613,560	0.0003	0.9989
720	518,222	2,006,804	0	2,525,026	0.0002	0.9991
730	456,710	844,575	0	1,301,284	0.0001	0.9993
740	355,334	2,789,949	0	3,145,283	0.0003	0.9996
750	485,352	1,377,647	0	1,862,999	0.0002	0.9997
760	198,992	633,381	0	832,373	0.0001	0.9998
770	282,902	250,312	0	533,214	0.0001	0.9999
780	66,331	293,611	0	359,942	0.0000	0.9999
790	198,992	214,842	0	413,835	0.0000	0.9999
800	66,331	138,998	0	205,329	0.0000	1.0000
810	66,331	79,189	0	145,520	0.0000	1.0000
820	33,165	93,244	0	126,409	0.0000	1.0000
830	33,165	0	0	33,165	0.0000	1.0000
840	33,165	0	0	33,165	0.0000	1.0000
850	33,165	0	0	33,165	0.0000	1.0000
<b>Total</b>	<b>5,797,345,513</b>	<b>4,350,296,466</b>	<b>250,823,368</b>	<b>10,398,465,341</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 2.--Population estimates by sex and size group for Pacific cod from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
60	0	0	50,763	50,763	0.0001	0.0001
80	0	0	27,878	27,878	0.0001	0.0002
90	0	0	114,264	114,264	0.0002	0.0004
100	31,103	0	181,147	212,250	0.0004	0.0008
110	196,313	60,233	187,384	443,930	0.0009	0.0017
120	170,989	393,400	1,699,555	2,263,944	0.0044	0.0061
130	609,626	1,032,612	2,131,520	3,773,757	0.0074	0.0135
140	1,206,380	1,468,302	2,973,409	5,648,091	0.0111	0.0246
150	3,116,473	2,548,840	2,662,415	8,327,728	0.0163	0.0409
160	3,115,938	3,885,268	2,470,053	9,471,259	0.0186	0.0595
170	3,767,762	3,562,929	1,087,090	8,417,781	0.0165	0.0760
180	4,964,362	4,123,433	1,037,033	10,124,828	0.0198	0.0958
190	4,743,200	5,285,937	312,710	10,341,848	0.0203	0.1161
200	5,704,197	5,262,443	519,549	11,486,189	0.0225	0.1386
210	5,418,594	4,776,872	147,251	10,342,718	0.0203	0.1589
220	4,913,015	4,597,929	117,429	9,628,372	0.0189	0.1777
230	4,562,644	3,481,952	111,512	8,156,108	0.0160	0.1937
240	4,948,212	3,896,912	55,756	8,900,881	0.0174	0.2112
250	2,873,517	3,429,419	55,756	6,358,692	0.0125	0.2236
260	2,628,896	2,250,235	27,878	4,907,009	0.0096	0.2332
270	1,531,979	1,206,388	0	2,738,367	0.0054	0.2386
280	1,296,568	1,051,441	0	2,348,009	0.0046	0.2432
290	1,366,712	1,045,838	0	2,412,550	0.0047	0.2479
300	1,632,882	1,622,186	0	3,255,068	0.0064	0.2543
310	1,263,324	1,103,174	0	2,366,498	0.0046	0.2590
320	1,524,421	3,385,071	0	4,909,492	0.0096	0.2686
330	2,817,119	3,326,425	0	6,143,544	0.0120	0.2806
340	3,414,891	10,458,467	0	13,873,358	0.0272	0.3078
350	4,758,274	4,320,422	0	9,078,697	0.0178	0.3256
360	9,165,740	4,175,275	0	13,341,014	0.0261	0.3518
370	5,368,079	4,548,510	0	9,916,589	0.0194	0.3712
380	6,677,209	4,599,986	0	11,277,195	0.0221	0.3933
390	5,258,599	6,720,463	0	11,979,062	0.0235	0.4168
400	7,459,690	5,876,913	0	13,336,603	0.0261	0.4429
410	7,273,446	7,619,668	0	14,893,114	0.0292	0.4721
420	7,152,800	6,992,799	0	14,145,599	0.0277	0.4998
430	9,258,404	6,814,688	0	16,073,092	0.0315	0.5313
440	9,092,869	9,730,363	0	18,823,231	0.0369	0.5682
450	9,164,003	8,397,600	0	17,561,602	0.0344	0.6027
460	9,817,882	9,224,631	0	19,042,513	0.0373	0.6400
470	9,735,501	7,395,730	0	17,131,231	0.0336	0.6736
480	8,352,700	7,721,838	0	16,074,538	0.0315	0.7051
490	7,019,350	4,425,641	0	11,444,991	0.0224	0.7275
500	5,280,050	6,090,491	0	11,370,541	0.0223	0.7498
510	4,946,458	4,703,523	0	9,649,981	0.0189	0.7687

Appendix E Table 2.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
520	5,328,527	4,819,872	0	10,148,399	0.0199	0.7886
530	5,511,798	5,198,937	0	10,710,735	0.0210	0.8096
540	4,306,029	3,864,548	0	8,170,577	0.0160	0.8256
550	3,301,781	4,329,939	0	7,631,720	0.0150	0.8406
560	3,056,484	3,820,026	0	6,876,510	0.0135	0.8540
570	3,541,427	2,586,452	0	6,127,879	0.0120	0.8661
580	2,583,549	2,508,204	0	5,091,753	0.0100	0.8760
590	3,087,718	2,839,152	0	5,926,870	0.0116	0.8877
600	2,612,613	3,065,354	0	5,677,967	0.0111	0.8988
610	2,825,191	1,945,914	0	4,771,105	0.0094	0.9081
620	2,151,597	1,804,233	0	3,955,830	0.0078	0.9159
630	1,708,257	1,193,279	0	2,901,535	0.0057	0.9216
640	2,154,188	1,708,363	0	3,862,551	0.0076	0.9291
650	1,566,073	1,067,996	0	2,634,070	0.0052	0.9343
660	1,400,953	1,567,541	0	2,968,494	0.0058	0.9401
670	1,487,525	1,356,741	0	2,844,266	0.0056	0.9457
680	1,365,402	1,349,812	0	2,715,214	0.0053	0.9510
690	1,415,908	1,353,503	0	2,769,411	0.0054	0.9565
700	1,832,886	1,290,211	0	3,123,098	0.0061	0.9626
710	1,201,576	758,006	0	1,959,583	0.0038	0.9664
720	1,364,836	960,098	0	2,324,934	0.0046	0.9710
730	549,008	1,085,487	0	1,634,496	0.0032	0.9742
740	1,014,708	641,774	0	1,656,482	0.0032	0.9774
750	653,929	827,273	0	1,481,202	0.0029	0.9803
760	727,886	697,545	0	1,425,431	0.0028	0.9831
770	603,039	484,347	0	1,087,386	0.0021	0.9853
780	599,487	565,006	0	1,164,493	0.0023	0.9875
790	346,384	327,839	0	674,222	0.0013	0.9889
800	413,985	326,948	0	740,933	0.0015	0.9903
810	339,449	520,926	0	860,375	0.0017	0.9920
820	400,575	493,011	0	893,586	0.0018	0.9937
830	261,193	207,651	0	468,844	0.0009	0.9947
840	131,251	445,865	0	577,116	0.0011	0.9958
850	80,203	225,299	0	305,502	0.0006	0.9964
860	154,085	237,026	0	391,110	0.0008	0.9972
870	86,419	145,611	0	232,030	0.0005	0.9976
880	90,859	190,439	0	281,298	0.0006	0.9982
890	94,121	125,398	0	219,520	0.0004	0.9986
900	27,992	129,773	0	157,765	0.0003	0.9989
910	28,218	151,598	0	179,815	0.0004	0.9993
920	0	114,795	0	114,795	0.0002	0.9995
930	44,584	30,813	0	75,398	0.0001	0.9996
940	51,742	0	0	51,742	0.0001	0.9997
960	41,759	0	0	41,759	0.0001	0.9998
970	29,258	0	0	29,258	0.0001	0.9999
980	0	14,353	0	14,353	0.0000	0.9999
1010	0	32,368	0	32,368	0.0001	1.0000



Appendix E Table 2.--Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
1030	0	18,773	0	18,773	0.0000	1.0000
<b>Total</b>	<b>254,174,623</b>	<b>240,042,346</b>	<b>15,970,352</b>	<b>510,187,322</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 3.--Population estimates by sex and size group for yellowfin sole from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total <sup>a</sup>	Proportion	Cumulative Proportion
50	0	261,580	0	261,580	0.0000	0.0000
60	1,188,805	280,921	0	1,469,726	0.0002	0.0002
70	1,188,805	280,921	0	1,469,726	0.0002	0.0004
80	227,644	227,644	0	455,288	0.0001	0.0004
90	2,282,692	2,314,158	0	4,596,850	0.0005	0.0010
100	4,679,006	6,390,253	0	11,069,259	0.0013	0.0022
110	10,386,179	7,622,986	0	18,009,164	0.0021	0.0043
120	14,003,148	19,881,768	0	33,884,916	0.0039	0.0083
130	20,358,032	27,845,559	0	48,203,591	0.0056	0.0139
140	28,296,270	38,013,442	0	66,309,712	0.0077	0.0216
150	42,518,591	54,040,278	0	96,558,869	0.0112	0.0328
160	78,789,754	67,297,692	0	146,087,446	0.0170	0.0498
170	78,308,339	83,915,378	0	162,223,717	0.0188	0.0686
180	99,634,888	95,869,441	0	195,504,328	0.0227	0.0913
190	110,736,071	116,014,475	0	226,750,546	0.0263	0.1177
200	157,610,155	149,480,382	0	307,090,537	0.0357	0.1534
210	157,913,937	181,814,076	0	339,728,014	0.0395	0.1928
220	197,115,144	216,392,704	146,580	413,654,428	0.0481	0.2409
230	224,807,782	255,360,902	0	480,168,684	0.0558	0.2967
240	262,973,409	252,165,026	879,477	516,017,913	0.0600	0.3567
250	237,360,924	262,237,329	293,159	499,891,412	0.0581	0.4148
260	239,644,031	235,258,207	1,026,057	475,928,295	0.0553	0.4701
270	240,482,997	216,310,769	0	456,793,766	0.0531	0.5231
280	259,931,635	205,329,718	586,318	465,847,672	0.0541	0.5773
290	266,846,375	222,621,130	146,580	489,614,084	0.0569	0.6342
300	306,243,426	223,816,094	1,465,795	531,525,315	0.0618	0.6959
310	298,404,919	259,639,640	146,580	558,191,138	0.0649	0.7608
320	234,203,686	327,770,650	1,319,216	563,293,552	0.0655	0.8262
330	162,162,230	329,343,070	293,159	491,798,459	0.0571	0.8834
340	92,671,637	265,295,291	1,758,954	359,725,882	0.0418	0.9252
350	39,710,782	212,416,479	439,739	252,567,000	0.0293	0.9545
360	19,712,015	157,975,683	1,465,795	179,153,493	0.0208	0.9753
370	5,421,831	93,046,699	439,739	98,908,268	0.0115	0.9868
380	5,201,262	56,026,944	439,739	61,667,944	0.0072	0.9940
390	1,714,291	24,829,617	293,159	26,837,067	0.0031	0.9971
400	1,491,997	12,818,434	0	14,310,432	0.0017	0.9988
410	254,718	4,572,787	0	4,827,504	0.0006	0.9993
420	0	3,949,952	0	3,949,952	0.0005	0.9998
430	0	608,787	0	608,787	0.0001	0.9999
440	293,556	178,587	0	472,143	0.0001	0.9999
450	0	335,132	0	335,132	0.0000	1.0000
470	0	43,834	0	43,834	0.0000	1.0000
490	0	276,013	0	276,013	0.0000	1.0000
<b>Total</b>	<b>3,904,770,963</b>	<b>4,690,170,432</b>	<b>11,140,042</b>	<b>8,606,081,437</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 4.--Population estimates by sex and size group for *Lepidopsetta* spp. from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
50	0	0	738,386	738,386	0.0001	0.0001
60	0	0	6,487,930	6,487,930	0.0008	0.0009
70	0	0	5,062,205	5,062,205	0.0006	0.0015
80	0	0	20,783,493	20,783,493	0.0025	0.0040
90	0	0	81,186,137	81,186,137	0.0097	0.0137
100	106,901,554	64,066,238	10,946,476	181,914,268	0.0218	0.0354
110	119,611,088	97,848,978	9,775,873	227,235,939	0.0272	0.0626
120	148,188,520	74,919,862	5,417,774	228,526,156	0.0273	0.0900
130	106,964,065	60,612,472	1,670,906	169,247,444	0.0203	0.1102
140	109,599,770	75,631,429	2,443,430	187,674,629	0.0225	0.1327
150	139,001,907	88,634,329	2,764,932	230,401,168	0.0276	0.1603
160	168,980,920	116,668,205	3,311,857	288,960,981	0.0346	0.1948
170	155,598,852	86,874,471	1,032,568	243,505,892	0.0291	0.2240
180	129,969,891	77,213,111	1,312,695	208,495,697	0.0249	0.2489
190	111,839,907	68,813,944	0	180,653,851	0.0216	0.2705
200	103,109,697	67,729,530	0	170,839,226	0.0204	0.2910
210	106,712,527	68,170,685	0	174,883,212	0.0209	0.3119
220	123,909,431	91,338,415	309,472	215,557,318	0.0258	0.3377
230	127,777,237	88,582,827	0	216,360,064	0.0259	0.3636
240	137,848,321	123,597,597	247,578	261,693,496	0.0313	0.3949
250	151,008,661	104,005,928	61,894	255,076,483	0.0305	0.4254
260	196,688,417	129,378,731	680,838	326,747,986	0.0391	0.4645
270	261,695,943	134,934,472	185,683	396,816,098	0.0475	0.5120
280	420,483,179	139,521,896	804,627	560,809,702	0.0671	0.5791
290	414,894,575	116,427,348	185,683	531,507,605	0.0636	0.6427
300	388,822,864	137,393,495	557,050	526,773,408	0.0630	0.7057
310	232,533,723	157,225,664	309,472	390,068,859	0.0467	0.7524
320	119,508,567	226,454,547	247,578	346,210,691	0.0414	0.7938
330	35,596,813	290,478,312	61,894	326,137,020	0.0390	0.8329
340	24,582,185	366,697,379	247,578	391,527,142	0.0468	0.8797
350	6,788,877	279,102,272	61,894	285,953,043	0.0342	0.9139
360	2,320,450	280,759,082	61,894	283,141,426	0.0339	0.9478
370	1,209,248	176,374,045	0	177,583,294	0.0212	0.9691
380	1,848,690	121,993,359	185,683	124,027,732	0.0148	0.9839
390	736,301	62,239,101	0	62,975,401	0.0075	0.9914
400	378,205	42,861,553	0	43,239,758	0.0052	0.9966
410	65,222	16,039,220	0	16,104,442	0.0019	0.9985
420	0	9,010,953	0	9,010,953	0.0011	0.9996
430	0	1,655,238	0	1,655,238	0.0002	0.9998
440	0	1,229,569	0	1,229,569	0.0001	1.0000
460	0	202,422	0	202,422	0.0000	1.0000
480	0	124,912	0	124,912	0.0000	1.0000
490	29,353	0	0	29,353	0.0000	1.0000
<b>Total</b>	<b>4,155,204,960</b>	<b>4,044,811,591</b>	<b>157,143,480</b>	<b>8,357,160,029</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 5.--Population estimates by sex and size group for *Hippoglossoides* spp. from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total <sup>a</sup>	Proportion	Cumulative Proportion
40	0	0	115,908	115,908	0.0001	0.0001
50	0	0	27,817	27,817	0.0000	0.0001
60	0	0	251,560	251,560	0.0002	0.0002
70	0	0	566,318	566,318	0.0003	0.0006
80	0	0	659,140	659,140	0.0004	0.0010
90	0	0	1,021,765	1,021,765	0.0006	0.0016
100	1,068,280	701,979	1,428,629	3,198,888	0.0020	0.0036
110	3,416,627	1,403,649	3,064,187	7,884,463	0.0048	0.0084
120	5,771,268	5,037,936	3,296,113	14,105,317	0.0086	0.0170
130	5,071,919	4,389,064	2,518,240	11,979,223	0.0073	0.0243
140	6,539,582	5,289,946	2,651,254	14,480,782	0.0088	0.0331
150	6,305,542	6,351,532	2,754,624	15,411,698	0.0094	0.0426
160	12,419,341	7,396,767	3,045,346	22,861,454	0.0140	0.0565
170	11,551,236	7,638,047	1,343,177	20,532,459	0.0125	0.0690
180	16,759,884	11,096,293	997,747	28,853,924	0.0176	0.0867
190	12,865,068	8,265,473	578,854	21,709,396	0.0133	0.0999
200	15,286,360	12,278,809	414,594	27,979,763	0.0171	0.1170
210	16,269,259	13,244,874	141,050	29,655,183	0.0181	0.1351
220	20,861,154	15,198,881	0	36,060,035	0.0220	0.1571
230	22,732,849	15,203,239	0	37,936,088	0.0232	0.1803
240	30,521,446	21,932,457	0	52,453,903	0.0320	0.2123
250	40,825,367	23,349,514	0	64,174,881	0.0392	0.2515
260	46,474,399	34,184,954	0	80,659,353	0.0492	0.3007
270	40,971,501	28,629,130	0	69,600,631	0.0425	0.3432
280	56,745,551	35,827,876	0	92,573,427	0.0565	0.3997
290	49,318,701	38,035,850	0	87,354,551	0.0533	0.4530
300	60,926,333	32,974,908	30,135	93,931,376	0.0573	0.5104
310	56,143,382	34,676,432	60,270	90,880,084	0.0555	0.5659
320	54,203,039	34,594,346	150,675	88,948,060	0.0543	0.6202
330	47,618,082	38,540,215	180,810	86,339,107	0.0527	0.6729
340	51,091,644	45,583,781	241,080	96,916,505	0.0592	0.7320
350	39,083,505	32,987,162	150,675	72,221,342	0.0441	0.7761
360	42,472,345	32,167,306	120,540	74,760,191	0.0456	0.8218
370	23,665,259	27,845,143	150,675	51,661,077	0.0315	0.8533
380	19,828,621	33,560,378	90,405	53,479,405	0.0326	0.8859
390	13,243,240	29,765,533	60,270	43,069,043	0.0263	0.9122
400	4,978,910	26,441,743	90,405	31,511,057	0.0192	0.9315
410	2,114,262	26,331,121	180,810	28,626,192	0.0175	0.9490
420	1,670,187	23,532,877	60,270	25,263,334	0.0154	0.9644
430	1,799,553	15,226,971	30,135	17,056,659	0.0104	0.9748
440	308,139	15,289,374	0	15,597,513	0.0095	0.9843
450	98,685	11,719,528	0	11,818,212	0.0072	0.9915
460	0	4,787,371	0	4,787,371	0.0029	0.9944
470	0	3,490,199	30,135	3,520,334	0.0021	0.9966
480	89,963	2,812,386	0	2,902,349	0.0018	0.9984
490	0	1,723,678	0	1,723,678	0.0011	0.9994

Appendix E Table 5.--Continued

Length (mm)	Males	Females	Unsexed	Total <sup>a</sup>	Proportion	Cumulative Proportion
500	0	345,086	0	345,086	0.0002	0.9996
510	0	359,753	0	359,753	0.0002	0.9998
520	0	166,095	0	166,095	0.0001	1.0000
600	0	52,576	0	52,576	0.0000	1.0000
630	0	29,126	0	29,126	0.0000	1.0000
<b>Total</b>	<b>841,110,483</b>	<b>770,459,358</b>	<b>26,503,613</b>	<b>1,638,073,452</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 6.--Population estimates by sex and size group for Alaska plaice from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
60	0	0	67,955	67,955	0.0001	0.0001
80	0	0	204,917	204,917	0.0003	0.0004
90	0	0	407,730	407,730	0.0006	0.0010
100	85,763	0	1,291,143	1,376,906	0.0020	0.0031
110	57,648	28,824	407,730	494,202	0.0007	0.0038
120	145,922	57,175	135,910	339,007	0.0005	0.0043
130	275,847	148,225	0	424,072	0.0006	0.0049
140	509,512	57,648	67,955	635,115	0.0009	0.0059
150	480,301	303,046	203,865	987,212	0.0015	0.0073
160	348,931	461,916	407,730	1,218,577	0.0018	0.0092
170	652,683	699,052	271,820	1,623,555	0.0024	0.0116
180	1,327,663	959,658	67,955	2,355,277	0.0035	0.0151
190	2,047,598	745,344	67,955	2,860,897	0.0043	0.0193
200	1,682,091	1,976,203	0	3,658,294	0.0054	0.0248
210	2,488,737	1,727,908	67,955	4,284,600	0.0064	0.0311
220	2,784,304	2,202,481	0	4,986,785	0.0074	0.0385
230	4,103,617	3,252,982	0	7,356,599	0.0109	0.0495
240	5,188,822	2,844,097	0	8,032,919	0.0119	0.0614
250	4,104,662	4,197,206	0	8,301,868	0.0123	0.0738
260	7,128,523	4,866,443	67,955	12,062,921	0.0179	0.0917
270	7,232,903	5,490,901	203,865	12,927,668	0.0192	0.1109
280	8,823,627	4,997,526	475,684	14,296,838	0.0213	0.1322
290	11,741,334	7,162,052	309,441	19,212,826	0.0286	0.1607
300	19,307,813	6,371,531	611,594	26,290,938	0.0391	0.1998
310	21,328,319	7,351,380	37,621	28,717,320	0.0427	0.2425
320	33,812,132	11,362,799	37,621	45,212,552	0.0672	0.3097
330	28,854,364	12,048,996	0	40,903,360	0.0608	0.3705
340	35,105,196	13,139,151	112,863	48,357,210	0.0719	0.4424
350	28,947,986	18,760,463	0	47,708,449	0.0709	0.5134
360	27,381,142	19,492,411	75,242	46,948,795	0.0698	0.5832
370	18,749,550	20,297,046	112,863	39,159,460	0.0582	0.6414
380	11,901,304	25,785,617	150,484	37,837,406	0.0563	0.6976
390	7,992,613	24,738,726	37,621	32,768,960	0.0487	0.7463
400	3,505,865	19,864,212	37,621	23,407,698	0.0348	0.7811
410	1,840,262	18,415,319	150,484	20,406,064	0.0303	0.8115
420	478,965	20,258,456	75,242	20,812,663	0.0309	0.8424
430	183,525	21,637,469	75,242	21,896,236	0.0326	0.8750
440	111,515	13,044,835	37,621	13,193,971	0.0196	0.8946
450	0	12,289,147	150,484	12,439,631	0.0185	0.9131
460	100,398	11,880,292	75,242	12,055,932	0.0179	0.9310
470	0	11,538,820	376,210	11,915,030	0.0177	0.9487
480	0	9,040,949	37,621	9,078,570	0.0135	0.9622
490	0	8,099,273	112,863	8,212,136	0.0122	0.9744
500	57,206	4,477,424	112,863	4,647,492	0.0069	0.9813
510	0	5,110,786	37,621	5,148,407	0.0077	0.9890
520	0	2,761,228	0	2,761,228	0.0041	0.9931

Appendix E Table 6.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
530	30,078	1,959,454	0	1,989,532	0.0030	0.9961
540	184,938	1,000,125	0	1,185,063	0.0018	0.9978
550	58,183	718,736	0	776,919	0.0012	0.9990
560	0	343,780	0	343,780	0.0005	0.9995
570	0	135,241	0	135,241	0.0002	0.9997
580	0	69,527	0	69,527	0.0001	0.9998
590	0	113,352	0	113,352	0.0002	1.0000
610	0	26,778	0	26,778	0.0000	1.0000
<b>Total</b>	<b>301,141,842</b>	<b>364,312,010</b>	<b>7,182,588</b>	<b>672,636,440</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 7.--Population estimates by sex and size group for Greenland turbot from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
200	0	54,699	0	54,699	0.0084	0.0234
300	27,924	118,792	0	146,715	0.0224	0.1798
400	0	90,890	0	90,890	0.0139	0.3411
500	28,184	0	0	28,184	0.0043	0.4435
800	56,613	75,080	0	131,693	0.0201	0.6706
900	0	265,582	0	265,582	0.0406	0.8518
1000	0	28,184	0	28,184	0.0043	0.9932
140	54,330	0	0	54,330	0.0083	0.0083
160	0	0	17,482	17,482	0.0027	0.0110
190	26,778	0	0	26,778	0.0041	0.0151
210	17,951	18,530	0	36,481	0.0056	0.0290
220	0	27,924	0	27,924	0.0043	0.0333
240	27,924	72,616	0	100,539	0.0154	0.0486
250	55,724	65,200	0	120,924	0.0185	0.0671
260	108,147	76,726	0	184,873	0.0282	0.0953
270	73,086	71,929	0	145,015	0.0222	0.1175
280	67,677	47,950	0	115,627	0.0177	0.1351
290	62,883	82,555	0	145,437	0.0222	0.1574
310	56,567	72,102	0	128,669	0.0197	0.1994
320	75,489	0	0	75,489	0.0115	0.2110
330	28,361	54,380	0	82,741	0.0126	0.2236
340	141,307	26,778	0	168,085	0.0257	0.2493
350	74,507	0	0	74,507	0.0114	0.2607
360	136,387	56,285	0	192,672	0.0294	0.2901
370	46,546	44,913	0	91,460	0.0140	0.3041
380	50,642	0	0	50,642	0.0077	0.3118
390	73,086	28,184	0	101,270	0.0155	0.3273
410	114,571	62,706	0	177,278	0.0271	0.3682
420	139,221	18,773	0	157,994	0.0241	0.3924
430	56,562	53,551	0	110,113	0.0168	0.4092
440	85,864	54,961	0	140,826	0.0215	0.4307
450	28,361	0	0	28,361	0.0043	0.4350
480	27,472	0	0	27,472	0.0042	0.4392
510	28,507	0	0	28,507	0.0044	0.4479
520	43,327	27,924	0	71,251	0.0109	0.4588
530	26,778	0	0	26,778	0.0041	0.4629
540	16,552	29,420	0	45,972	0.0070	0.4699
550	28,184	0	0	28,184	0.0043	0.4742
580	23,864	28,184	0	52,047	0.0080	0.4821
590	28,184	0	0	28,184	0.0043	0.4864
610	28,621	28,184	0	56,805	0.0087	0.4951
620	44,658	0	0	44,658	0.0068	0.5019
630	28,184	0	0	28,184	0.0043	0.5062
650	26,775	0	0	26,775	0.0041	0.5103
670	18,773	0	0	18,773	0.0029	0.5132
710	28,184	23,864	0	52,047	0.0080	0.5212



Appendix E Table 7.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
720	83,065	0	0	83,065	0.0127	0.5338
730	0	23,864	0	23,864	0.0036	0.5375
740	84,885	57,243	0	142,128	0.0217	0.5592
750	28,184	26,778	0	54,961	0.0084	0.5676
760	83,143	59,975	0	143,117	0.0219	0.5895
770	56,691	0	0	56,691	0.0087	0.5981
780	131,667	98,115	0	229,782	0.0351	0.6332
790	56,989	56,293	0	113,282	0.0173	0.6505
810	28,507	56,198	0	84,705	0.0129	0.6836
820	28,507	55,283	0	83,790	0.0128	0.6964
830	0	17,951	0	17,951	0.0027	0.6991
840	29,412	112,933	0	142,345	0.0217	0.7209
850	0	224,039	0	224,039	0.0342	0.7551
860	0	91,783	0	91,783	0.0140	0.7691
870	0	113,360	0	113,360	0.0173	0.7864
880	0	105,249	0	105,249	0.0161	0.8025
890	0	57,053	0	57,053	0.0087	0.8112
910	0	198,185	0	198,185	0.0303	0.8821
920	0	158,798	0	158,798	0.0243	0.9063
930	0	87,461	0	87,461	0.0134	0.9197
940	0	214,560	0	214,560	0.0328	0.9525
950	0	110,686	0	110,686	0.0169	0.9694
960	0	28,621	0	28,621	0.0044	0.9737
990	0	98,922	0	98,922	0.0151	0.9889
1010	0	27,615	0	27,615	0.0042	0.9974
1020	0	17,187	0	17,187	0.0026	1.0000
<b>Total</b>	<b>2,723,805</b>	<b>3,805,014</b>	<b>17,482</b>	<b>6,546,301</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 8.--Population estimates by sex and size group for arrowtooth flounder from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
40	0	0	247,829	247,829	0.0002	0.0002
50	0	0	100,072	100,072	0.0001	0.0004
60	0	0	233,834	233,834	0.0002	0.0006
70	0	0	149,228	149,228	0.0002	0.0007
80	0	0	51,882	51,882	0.0001	0.0008
90	0	0	125,466	125,466	0.0001	0.0009
100	379,346	194,541	37,173	611,060	0.0006	0.0015
110	660,912	550,051	105,358	1,316,320	0.0013	0.0029
120	1,001,493	988,555	27,423	2,017,471	0.0020	0.0049
130	673,773	446,958	28,678	1,149,409	0.0012	0.0061
140	631,019	977,861	31,011	1,639,892	0.0017	0.0077
150	3,545,523	1,721,200	65,851	5,332,574	0.0054	0.0131
160	4,722,378	4,774,535	162,713	9,659,626	0.0097	0.0228
170	7,132,172	11,763,987	0	18,896,159	0.0190	0.0419
180	11,632,222	20,059,712	74,346	31,766,280	0.0320	0.0739
190	13,423,451	18,010,374	0	31,433,825	0.0317	0.1056
200	11,180,799	19,804,239	0	30,985,037	0.0312	0.1368
210	8,138,679	16,185,535	0	24,324,214	0.0245	0.1613
220	10,308,189	15,388,561	0	25,696,750	0.0259	0.1872
230	11,683,328	12,404,990	0	24,088,317	0.0243	0.2115
240	8,703,960	12,241,832	0	20,945,792	0.0211	0.2326
250	8,963,245	10,575,912	0	19,539,157	0.0197	0.2523
260	9,566,500	11,504,326	0	21,070,826	0.0212	0.2736
270	6,726,173	9,390,853	0	16,117,026	0.0162	0.2898
280	7,899,556	12,363,285	0	20,262,841	0.0204	0.3102
290	7,061,727	21,999,875	0	29,061,602	0.0293	0.3395
300	11,673,423	18,299,973	0	29,973,397	0.0302	0.3698
310	12,082,654	19,303,128	0	31,385,781	0.0316	0.4014
320	13,292,696	27,014,338	0	40,307,034	0.0406	0.4420
330	11,072,226	24,954,975	0	36,027,201	0.0363	0.4784
340	13,089,560	29,802,277	0	42,891,837	0.0432	0.5216
350	10,508,899	24,280,638	0	34,789,537	0.0351	0.5567
360	13,434,412	35,434,747	0	48,869,159	0.0493	0.6059
370	11,513,274	24,992,154	0	36,505,428	0.0368	0.6427
380	10,592,940	29,352,144	0	39,945,083	0.0403	0.6830
390	7,647,646	24,151,102	0	31,798,749	0.0321	0.7151
400	7,011,074	23,680,112	0	30,691,186	0.0309	0.7460
410	5,045,467	18,389,792	0	23,435,260	0.0236	0.7696
420	4,872,259	18,417,151	0	23,289,411	0.0235	0.7931
430	4,654,959	13,195,402	0	17,850,361	0.0180	0.8111
440	4,588,250	15,908,846	0	20,497,096	0.0207	0.8318
450	2,962,279	11,732,344	0	14,694,623	0.0148	0.8466
460	1,768,908	10,817,191	0	12,586,099	0.0127	0.8593
470	1,545,033	12,325,492	0	13,870,525	0.0140	0.8732
480	1,151,899	10,871,685	0	12,023,584	0.0121	0.8854
490	627,625	9,463,711	0	10,091,336	0.0102	0.8955

Appendix E Table 8.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
500	960,192	10,578,026	0	11,538,218	0.0116	0.9072
510	753,029	8,665,731	0	9,418,760	0.0095	0.9167
520	433,342	8,669,127	0	9,102,469	0.0092	0.9258
530	422,046	8,168,500	0	8,590,545	0.0087	0.9345
540	171,622	6,597,074	0	6,768,696	0.0068	0.9413
550	239,364	5,901,369	0	6,140,733	0.0062	0.9475
560	265,346	6,728,126	0	6,993,472	0.0071	0.9546
570	45,184	5,026,208	0	5,071,392	0.0051	0.9597
580	150,589	4,917,787	0	5,068,376	0.0051	0.9648
590	0	3,095,015	0	3,095,015	0.0031	0.9679
600	64,469	4,862,621	0	4,927,089	0.0050	0.9729
610	0	4,234,786	0	4,234,786	0.0043	0.9771
620	0	4,630,368	0	4,630,368	0.0047	0.9818
630	22,784	3,571,552	0	3,594,335	0.0036	0.9854
640	154,958	2,740,783	0	2,895,742	0.0029	0.9883
650	96,084	2,409,498	0	2,505,583	0.0025	0.9909
660	0	1,909,091	0	1,909,091	0.0019	0.9928
670	0	1,605,427	0	1,605,427	0.0016	0.9944
680	0	782,561	0	782,561	0.0008	0.9952
690	0	801,444	0	801,444	0.0008	0.9960
700	0	1,017,655	0	1,017,655	0.0010	0.9970
710	0	848,534	0	848,534	0.0009	0.9979
720	0	595,610	0	595,610	0.0006	0.9985
730	0	294,185	0	294,185	0.0003	0.9988
740	0	366,715	0	366,715	0.0004	0.9992
750	35,570	262,590	0	298,161	0.0003	0.9995
760	0	126,282	0	126,282	0.0001	0.9996
780	0	306,100	0	306,100	0.0003	0.9999
800	0	64,832	0	64,832	0.0001	1.0000
820	40,420	0	0	40,420	0.0000	1.0000
<b>Total</b>	<b>287,024,927</b>	<b>703,511,981</b>	<b>1,440,864</b>	<b>991,977,772</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 9.--Population estimates by sex and size group for Kamchatka flounder from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
50	0	0	82,811	82,811	0.0015	0.0015
80	0	0	52,962	52,962	0.0010	0.0025
90	0	0	156,255	156,255	0.0029	0.0054
100	123,872	31,506	118,329	273,708	0.0051	0.0105
110	249,893	176,558	176,664	603,115	0.0111	0.0216
120	310,629	337,981	268,315	916,925	0.0169	0.0385
130	117,571	59,638	149,986	327,194	0.0060	0.0446
140	319,585	213,875	59,994	593,454	0.0110	0.0556
150	32,380	87,328	29,997	149,705	0.0028	0.0583
160	205,432	148,299	29,997	383,729	0.0071	0.0654
170	476,353	323,118	0	799,472	0.0148	0.0802
180	651,651	697,223	0	1,348,874	0.0249	0.1051
190	986,327	803,198	0	1,789,525	0.0331	0.1382
200	884,025	691,337	0	1,575,362	0.0291	0.1673
210	683,808	827,165	0	1,510,972	0.0279	0.1952
220	869,579	754,949	0	1,624,528	0.0300	0.2252
230	1,240,279	1,265,047	0	2,505,326	0.0463	0.2715
240	1,590,773	1,283,764	0	2,874,538	0.0531	0.3246
250	1,359,286	1,184,541	0	2,543,827	0.0470	0.3716
260	1,223,036	1,001,404	0	2,224,440	0.0411	0.4127
270	1,309,500	672,919	0	1,982,419	0.0366	0.4494
280	1,238,277	511,463	0	1,749,740	0.0323	0.4817
290	856,292	352,879	0	1,209,171	0.0223	0.5040
300	594,986	352,390	0	947,375	0.0175	0.5215
310	300,394	392,720	0	693,114	0.0128	0.5343
320	914,557	408,405	0	1,322,962	0.0244	0.5588
330	578,469	527,343	30,813	1,136,625	0.0210	0.5798
340	1,031,373	580,784	0	1,612,157	0.0298	0.6096
350	470,475	646,182	0	1,116,658	0.0206	0.6302
360	535,088	512,915	0	1,048,003	0.0194	0.6496
370	601,078	338,316	0	939,394	0.0174	0.6669
380	1,100,014	525,763	0	1,625,777	0.0300	0.6970
390	809,618	588,590	0	1,398,208	0.0258	0.7228
400	870,739	289,445	0	1,160,184	0.0214	0.7442
410	815,946	1,124,975	0	1,940,921	0.0359	0.7801
420	768,695	481,471	0	1,250,166	0.0231	0.8032
430	586,556	229,503	0	816,058	0.0151	0.8183
440	574,710	616,925	0	1,191,635	0.0220	0.8403
450	673,039	269,069	0	942,108	0.0174	0.8577
460	452,591	381,742	0	834,333	0.0154	0.8731
470	255,030	325,015	0	580,045	0.0107	0.8838
480	339,529	325,998	0	665,527	0.0123	0.8961
490	199,879	232,835	0	432,714	0.0080	0.9041
500	240,124	311,360	0	551,484	0.0102	0.9143
510	339,591	198,002	0	537,593	0.0099	0.9243
520	101,317	240,780	0	342,097	0.0063	0.9306

Appendix E Table 9.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
530	227,769	29,099	0	256,867	0.0047	0.9353
540	343,754	48,940	0	392,694	0.0073	0.9426
550	194,378	240,292	0	434,671	0.0080	0.9506
560	114,929	63,486	0	178,415	0.0033	0.9539
570	162,951	0	0	162,951	0.0030	0.9569
580	131,560	115,817	0	247,377	0.0046	0.9615
590	41,587	331,619	0	373,207	0.0069	0.9684
600	32,726	104,939	0	137,664	0.0025	0.9709
610	29,099	203,090	0	232,189	0.0043	0.9752
620	0	56,547	0	56,547	0.0010	0.9763
630	0	58,984	0	58,984	0.0011	0.9774
640	0	222,271	0	222,271	0.0041	0.9815
660	0	81,334	0	81,334	0.0015	0.9830
670	0	282,176	0	282,176	0.0052	0.9882
680	0	111,564	0	111,564	0.0021	0.9902
690	0	128,604	0	128,604	0.0024	0.9926
700	0	62,559	0	62,559	0.0012	0.9938
710	0	62,709	0	62,709	0.0012	0.9949
720	0	29,460	0	29,460	0.0005	0.9955
730	0	88,870	0	88,870	0.0016	0.9971
750	0	42,330	0	42,330	0.0008	0.9979
760	0	26,993	0	26,993	0.0005	0.9984
770	0	30,270	0	30,270	0.0006	0.9990
800	0	56,450	0	56,450	0.0010	1.0000
<b>Total</b>	<b>29,161,099</b>	<b>23,803,123</b>	<b>1,156,123</b>	<b>54,120,346</b>	<b>1.0000</b>	<b>1.0000</b>

Appendix E Table 10.--Population estimates by sex and size group for Pacific halibut from the 2003 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
90	0	0	32,587	32,587	0.0005	0.0005
160	0	0	88,267	88,267	0.0014	0.0020
170	0	0	239,861	239,861	0.0039	0.0058
180	0	0	146,865	146,865	0.0024	0.0082
190	0	0	332,784	332,784	0.0054	0.0136
200	0	0	348,362	348,362	0.0056	0.0192
210	0	0	560,121	560,121	0.0091	0.0283
220	0	0	870,197	870,197	0.0141	0.0423
230	0	0	1,125,368	1,125,368	0.0182	0.0605
240	0	0	1,310,578	1,310,578	0.0212	0.0817
250	0	0	1,110,840	1,110,840	0.0180	0.0997
260	0	0	926,120	926,120	0.0150	0.1147
270	0	0	645,002	645,002	0.0104	0.1251
280	0	0	243,122	243,122	0.0039	0.1290
290	0	0	123,259	123,259	0.0020	0.1310
300	0	0	89,440	89,440	0.0014	0.1324
310	0	0	277,012	277,012	0.0045	0.1369
320	0	0	512,058	512,058	0.0083	0.1452
330	0	0	469,849	469,849	0.0076	0.1528
340	0	0	1,172,798	1,172,798	0.0190	0.1718
350	0	0	1,378,151	1,378,151	0.0223	0.1940
360	25,641	0	2,658,110	2,683,752	0.0434	0.2374
370	0	0	3,045,411	3,045,411	0.0492	0.2867
380	0	0	2,824,568	2,824,568	0.0457	0.3323
390	0	0	2,038,181	2,038,181	0.0330	0.3653
400	0	0	1,191,049	1,191,049	0.0193	0.3845
410	0	0	1,174,157	1,174,157	0.0190	0.4035
420	0	0	1,286,840	1,286,840	0.0208	0.4243
430	0	0	889,944	889,944	0.0144	0.4387
440	0	0	1,035,202	1,035,202	0.0167	0.4554
450	0	18,354	964,570	982,924	0.0159	0.4713
460	0	0	1,354,771	1,354,771	0.0219	0.4932
470	0	0	1,025,773	1,025,773	0.0166	0.5098
480	0	0	1,505,412	1,505,412	0.0243	0.5342
490	0	115,691	1,113,646	1,229,337	0.0199	0.5540
500	31,054	28,285	1,197,718	1,257,057	0.0203	0.5743
510	0	0	1,233,584	1,233,584	0.0199	0.5943
520	0	17,482	1,486,918	1,504,401	0.0243	0.6186
530	27,615	0	1,703,130	1,730,745	0.0280	0.6466
540	43,634	55,279	1,525,381	1,624,295	0.0263	0.6729
550	31,054	0	1,224,888	1,255,942	0.0203	0.6932
560	55,976	0	1,344,827	1,400,804	0.0226	0.7158
570	0	17,951	751,139	769,090	0.0124	0.7282
580	28,947	57,556	897,578	984,081	0.0159	0.7441
590	98,408	85,834	609,682	793,923	0.0128	0.7570
600	58,669	55,409	423,971	538,048	0.0087	0.7657

Appendix E Table 10.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
610	27,472	27,680	373,268	428,419	0.0069	0.7726
620	47,088	56,459	763,094	866,641	0.0140	0.7866
630	55,320	0	418,104	473,424	0.0077	0.7943
640	18,685	0	424,893	443,578	0.0072	0.8014
650	55,230	27,615	225,665	308,510	0.0050	0.8064
660	45,549	27,615	537,420	610,584	0.0099	0.8163
670	45,969	73,181	478,691	597,841	0.0097	0.8260
680	0	113,954	643,807	757,762	0.0123	0.8382
690	0	0	310,508	310,508	0.0050	0.8432
700	27,615	18,113	485,981	531,709	0.0086	0.8518
710	0	48,463	281,960	330,423	0.0053	0.8572
720	18,874	29,778	561,261	609,912	0.0099	0.8670
730	27,155	117,520	488,171	632,847	0.0102	0.8773
740	27,680	0	292,326	320,005	0.0052	0.8824
750	57,397	46,603	219,622	323,621	0.0052	0.8877
760	0	51,308	318,082	369,390	0.0060	0.8936
770	27,615	86,349	96,872	210,836	0.0034	0.8970
780	49,790	53,156	429,221	532,167	0.0086	0.9057
790	49,790	36,827	270,947	357,563	0.0058	0.9114
800	32,623	0	200,035	232,658	0.0038	0.9152
810	18,874	18,685	256,301	293,860	0.0048	0.9199
820	0	29,778	155,463	185,241	0.0030	0.9229
830	0	27,615	327,303	354,918	0.0057	0.9287
840	0	0	353,358	353,358	0.0057	0.9344
850	27,615	49,790	237,749	315,154	0.0051	0.9395
860	49,790	0	146,230	196,020	0.0032	0.9427
870	0	0	297,287	297,287	0.0048	0.9475
880	27,680	28,875	494,655	551,210	0.0089	0.9564
890	49,790	0	125,822	175,611	0.0028	0.9592
900	0	0	188,867	188,867	0.0031	0.9623
910	0	67,279	111,947	179,226	0.0029	0.9652
920	62,374	27,680	103,432	193,486	0.0031	0.9683
930	0	18,526	87,182	105,708	0.0017	0.9700
940	0	0	58,726	58,726	0.0009	0.9709
950	0	0	91,124	91,124	0.0015	0.9724
960	0	0	84,123	84,123	0.0014	0.9738
970	70,728	0	116,761	187,489	0.0030	0.9768
980	27,580	27,680	31,902	87,162	0.0014	0.9782
990	0	29,778	58,009	87,786	0.0014	0.9796
1000	0	77,470	68,784	146,253	0.0024	0.9820
1010	0	0	88,617	88,617	0.0014	0.9834
1020	0	0	88,942	88,942	0.0014	0.9849
1040	0	0	28,139	28,139	0.0005	0.9853
1050	0	0	59,309	59,309	0.0010	0.9863
1060	0	0	29,416	29,416	0.0005	0.9868
1070	0	27,619	27,199	54,818	0.0009	0.9876
1080	0	0	15,098	15,098	0.0002	0.9879
1090	0	0	17,535	17,535	0.0003	0.9882

Appendix E Table 10.--Continued

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative Proportion
1100	0	0	29,131	29,131	0.0005	0.9886
1110	0	0	60,394	60,394	0.0010	0.9896
1130	0	0	30,143	30,143	0.0005	0.9901
1140	0	27,680	0	27,680	0.0004	0.9906
1160	0	0	44,753	44,753	0.0007	0.9913
1170	0	0	83,151	83,151	0.0013	0.9926
1180	0	18,526	0	18,526	0.0003	0.9929
1190	0	0	17,944	17,944	0.0003	0.9932
1200	0	18,142	0	18,142	0.0003	0.9935
1240	0	0	28,198	28,198	0.0005	0.9940
1250	0	0	35,418	35,418	0.0006	0.9945
1290	0	0	58,467	58,467	0.0009	0.9955
1310	0	28,202	27,346	55,548	0.0009	0.9964
1320	0	0	28,056	28,056	0.0005	0.9968
1340	0	0	49,790	49,790	0.0008	0.9976
1350	0	0	17,944	17,944	0.0003	0.9979
1460	0	18,526	0	18,526	0.0003	0.9982
1490	0	0	58,467	58,467	0.0009	0.9992
1530	0	32,623	0	32,623	0.0005	0.9997
1700	0	0	18,526	18,526	0.0003	1.0000
<b>Total</b>	<b>1,349,279</b>	<b>1,840,930</b>	<b>58,666,028</b>	<b>61,856,236</b>	<b>1.0000</b>	<b>1.0000</b>