NOAA Technical Memorandum NMFS-AFSC-266

Results of the 2011 Eastern Bering Sea Continental Shelf Bottom Trawl Survey of Groundfish and Invertebrate Fauna

by
R. R. Lauth and J. Conner

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Alaska Fisheries Science Center

January 2014

NOAA Technical Memorandum NMFS

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This document should be cited as follows:

> Lauth, R. R., and J. Conner. 2014. Results of the 2011 Eastern Bering Sea continental shelf bottom trawl survey of groundfish and invertebrate fauna. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-266, 176 p.
>
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> http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-266.pdf

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R. R. Lauth and J. Conner

Resource Assessment and Conservation Engineering Division
Alaska Fisheries Science Center
7600 Sand Point Way NE
Seattle WA 98115

www.afsc.noaa.gov

U.S. DEPARTMENT OF COMMERCE
Penny. S. Pritzker, Secretary
National Oceanic and Atmospheric Administration
Kathryn D. Sullivan, Under Secretary and Administrator
National Marine Fisheries Service
Samuel D. Rauch III, Acting Assistant Administrator for Fisheries

January 2014

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Abstract

From May to August 2011, the Resource Assessment and Conservation Engineering Division, Alaska Fisheries Science Center National Oceanic and Atmospheric Administration, National Marine Fisheries Service conducted its 30th annual eastern Bering Sea (EBS) continental shelf bottom trawl survey of groundfish and invertebrate fauna. The stern trawlers FV *Alaska Knight* (43.5-m) and FV *Aldebaran* (40-m) were chartered to sample this survey area. Demersal populations of fishes and invertebrates were sampled by trawling for 30 minutes at stations centered within a stratified systematic grid, each grid cell measuring 37.04 × 37.04 km (20 × 20 nmi). All 376 standard survey stations were successfully sampled. At each of these stations, species composition of the catch was determined, and length distributions and age structure samples were collected from ecologically and commercially important species.

The average surface water temperature during the survey was 5.0°C, and the average near-bottom water temperature, measured at the height of the trawl headrope over the seafloor, was 2.3°C, the same as the long-term mean from 1982 to 2011. In the 5 years previous to the 2011 EBS survey, near-bottom temperatures were significantly below the long-term mean. A total of 98 fish species representing 60 genera, as well as 240 invertebrate taxa, were identified during the survey. Fishes accounted for 72% of the total CPUE in the EBS, 75% of which was comprised of walleye pollock (*Theragra chalcogramma*), Pacific cod (*Gadus macrocephalus*), yellowfin sole (*Limanda aspera*), and northern rock sole (*Lepidopsetta polyxystra*). Invertebrate biomass largely consisted of echinoderms (43%) and crustaceans (22%).

Survey results presented herein include abundance estimates for fishes and invertebrates, geographic distributions and abundance-at-length of the more common fish species, and summary surface and near-bottom temperature data during the summer survey period. Appendices provide

station data, summarized catch data by station, species listings, and detailed analyses of abundance and biological data of the sampled populations.

Contents

Introduction

In 2011, from May 31 to August 2, the National Marine Fisheries Service (NMFS) Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC) conducted its 30th annual eastern Bering Sea (EBS) continental shelf bottom trawl (BT) survey of groundfish and invertebrate fauna (Fig. 1).

The EBS shelf supports one of the most productive groundfish and crab fisheries in the world (Bakkala 1993), including commercially valuable species such as walleye pollock (*Theragra chalcogramma*), yellowfin sole (*Limanda aspera*), Pacific cod (*Gadus macrocephalus*), snow crab (*Chionoecetes opilio*), blue king crab (*Paralithodes platypus*), and red king crab (*P. camtschaticus*). Fishery-independent data from annual EBS BT surveys are vital to the management and conservation of commercial and non-target groundfish and crab species under the North Pacific Fishery Management Council (NPFMC) fishery management plans. Commercial king, snow, and Tanner crab fisheries in the Bering Sea and Aleutian Islands regions are managed by the Alaska Department of Fish and Game (ADF&G) under an NPFMC fishery management plan.

Objectives for the EBS shelf survey were to provide data on 1) distribution, abundance, and biological condition of groundfishes, crabs, and other demersal macrofauna; 2) the age and growth, biology, and dynamics of key ecosystem components for ongoing studies; and 3) catch per unit effort (CPUE) and size composition of commercially important fish and invertebrate species.

This report presents results of a standardized BT survey conducted by the AFSC on the EBS continental shelf in 2011. Data reports with results from earlier EBS BT surveys can be found in AFSC/NOAA Technical Memoranda (years 2008-2010) or in AFSC Processed Reports

(prior to 2008) from the AFSC Publications Database (http://access.afsc.noaa.gov/pubs/search.cfm). Detailed results for the analysis of crab data from this and previous surveys are presented in annual Bering Sea crab survey reports also available from the AFSC Publications Database.

History of Bering Sea Bottom Trawl Surveys

The involvement of the U.S. government in Bering Sea BT surveys dates back to the 1940s, when the effort was primarily an exploration for commercial fisheries resources (Zimmermann et al. 2009). Early BT survey work led to the development of a valuable single-species fishery in Alaska for red king crab, and surveys continued into the 1970s, focusing on cooperative arrangements with private industry to study the biology, distribution, abundance, and best fishing practices for red king crab (Zimmermann et al. 2009).

The first large-scale systematic survey of the EBS shelf was conducted in 1975 under contract from the U.S. Bureau of Land Management to collect baseline data for assessing the potential impact of the growth in the offshore oil industry on the development of Bering Sea groundfish and crab fishery resources (Pereyra et al. 1976). During the 1975 baseline survey, sampling was conducted over the EBS shelf between the 20-m and 200-m isobaths from the Alaska Peninsula north to approximately 62°N. In 1979, a more 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 upper continental slope waters and part of the northern Bering Sea (NBS). Additionally, a hydroacoustic survey was initiated in 1979 to assess the midwater component of the walleye pollock population.

Following the expansive 1979 effort, BT surveys continued annually on the EBS shelf, and triennially in the combined NBS shelf and upper continental slope. Because trawl gear and sampling methods were inconsistent for the surveys through 1981, 1982 is generally considered the starting point for the shelf BT survey time-series for analysis. In 1982, efforts were made to standardize survey trawl methods and to establish a systematically designed sampling grid consisting of 356 stations (Bakkala 1993). Beginning in 1987, survey coverage was increased to include more of the known ranges of walleye pollock and snow crabs by adding 20 stations constituting Strata 82 and 90, extending the survey grid north to the edge of the U.S.-Russian Convention Line (Fig. 2).

The triennial surveys of the NBS and EBS slope were discontinued after 1991 due to decreased program funding; however, starting in 2000, the slope BT survey resumed on a biennial basis, beginning a new time series using standard AFSC gear and methods (Stauffer 2004, Hoff and Britt 2011). The AFSC surveyed the NBS shelf again in 2010 as part an effort funded by the U.S. Bureau of Ocean Energy Management (BOEM) to establish a new baseline of biological resources in the area.

Methods

Survey Area and Sampling Design

The standard BT survey is based on a stratified systematic design consisting of a grid with a fixed sampling station at the center of each 37.04 × 37.04 km (20 × 20 nautical mile) grid square (Fig. 1). In areas surrounding St. Matthew and the Pribilof Islands, high-density "corner stations" are sampled to better assess local blue king crab concentrations (Fig. 1). The results reported herein consist of data collected at all 376 standard EBS sampling stations. Data from

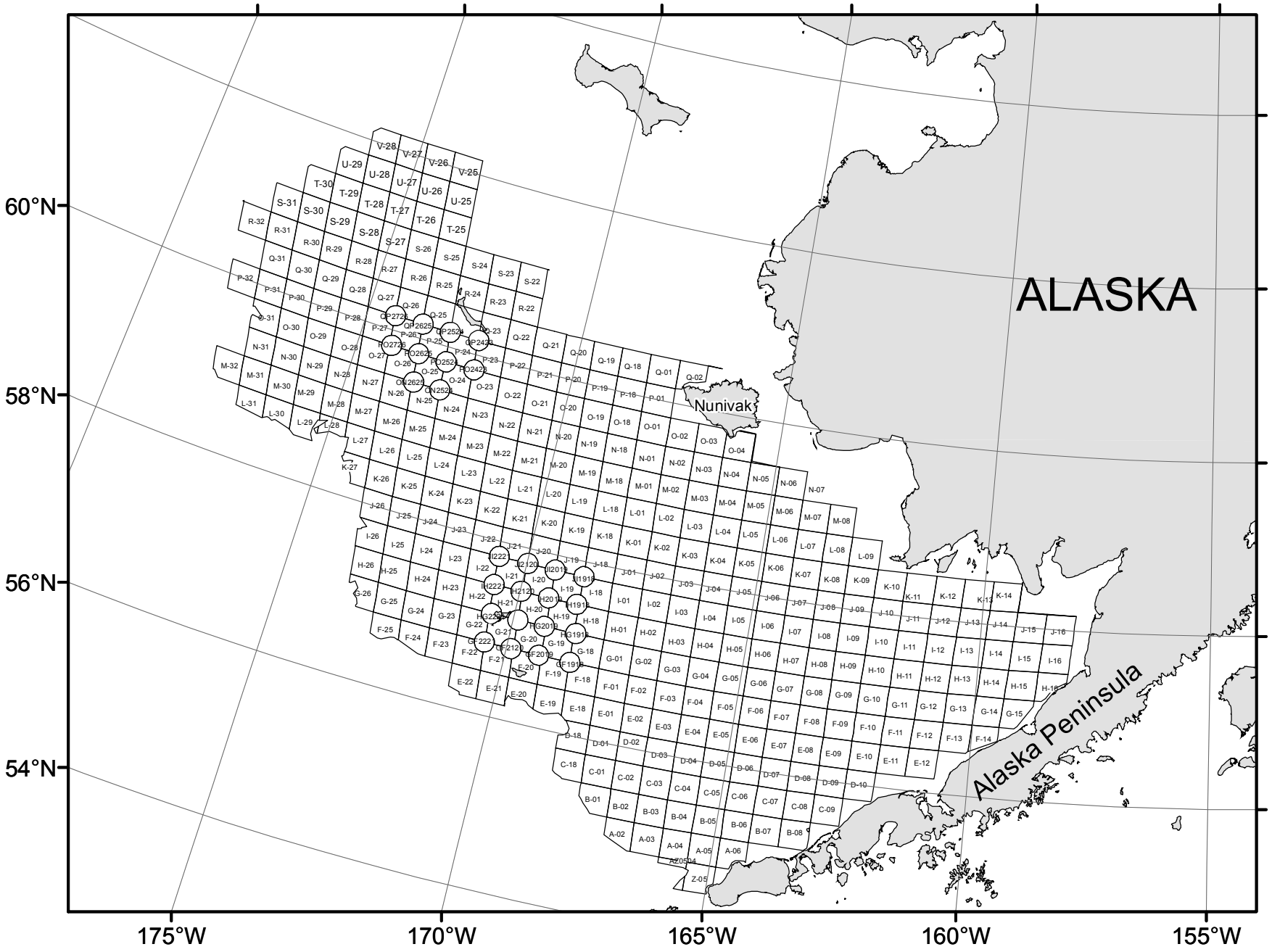

Figure 1. -- Map of the station sampling grid for the 2011 eastern Bering Sea continental shelf bottom trawl survey.

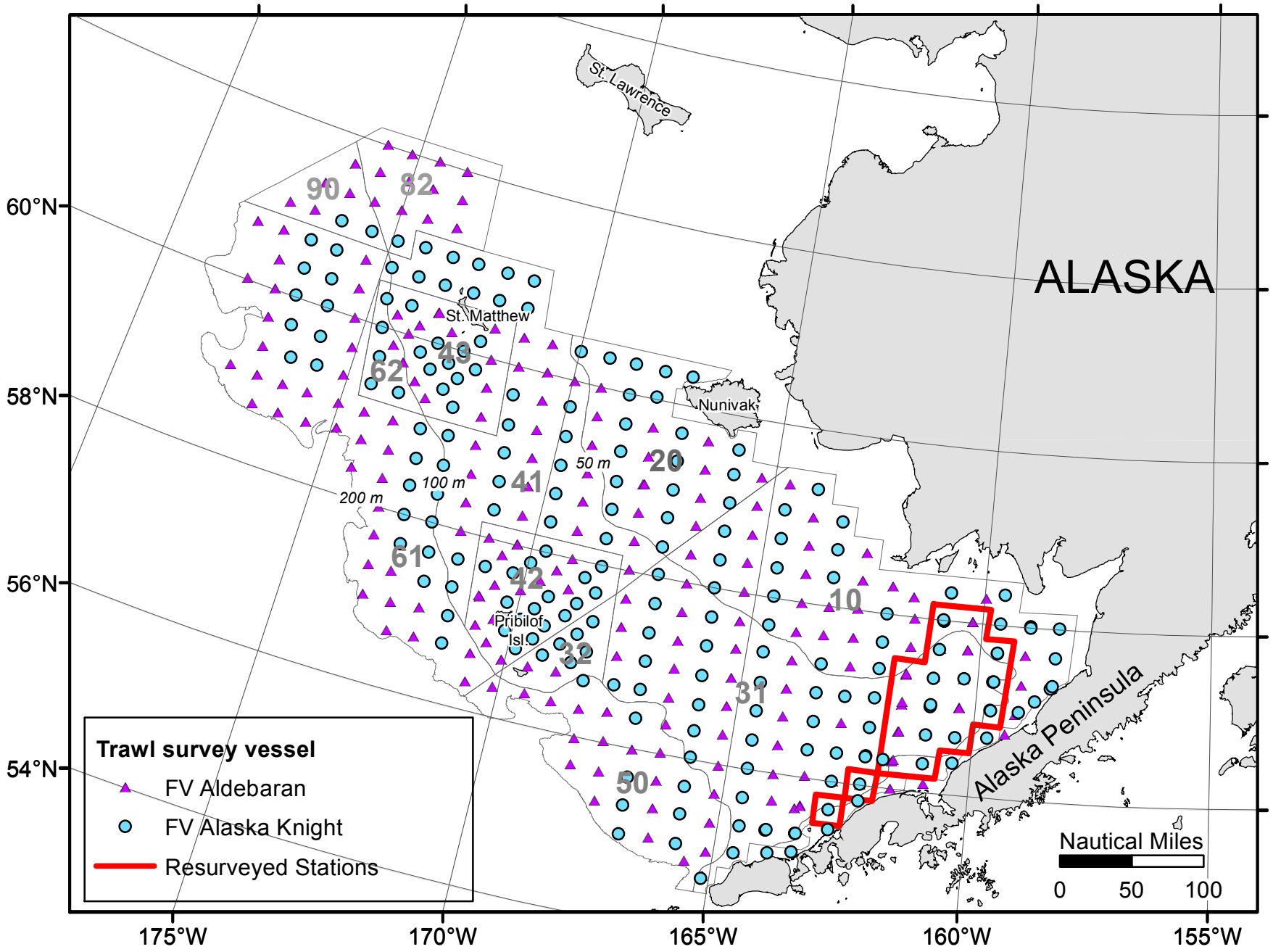

Figure 2. -- Sampled survey stations by vessel and the stratification scheme used for data analysis of the 2011 eastern Bering Sea bottom trawl survey. See Table 1 for information about stratum areas and sampling densities.

trawl samples where the performance of the survey gear did not conform to survey standards or where gear sustained damage or contained debris such as discarded crab pots were omitted, and those stations were trawled again to obtain a valid sample.

Survey Vessels and Sampling Gear

Sampling at survey stations in the EBS was coordinated between two chartered commercial fishing vessels, the FV *Aldebaran* and FV *Alaska Knight*. Both vessels are house-forward trawlers with stern ramps. The *Aldebaran* has a length overall (LOA) of 39.6 m (130 ft), and the *Alaska Knight* has an LOA of 43.5 m (143 ft). The AFSC equipped each of the vessels with standard 83-112 Eastern otter trawls, which have 25.3-m (83 ft) headropes and 34.1-m (112 ft) footropes (Fig. 3). Survey trawls were towed behind 816 kg, 1.8 × 2.7 m, steel V-doors and paired 54.9 m (30-fathom) dandylines. Each lower dandyline had a 61 cm chain extension connected to the lower wing edge to improve bottom-tending characteristics. All fishing operations were conducted in rigorous compliance with national and regional protocols detailed in Stauffer (2004).

Netmind acoustic net mensuration systems (Northstar Technical Inc., St. John's, Newfoundland) were used aboard each vessel to monitor and record net height and width during fishing operations. Net width was measured as the distance between two sensors attached immediately forward of the connection of the upper breastline to the dandyline, and net height was measured from the center of the headrope to the seafloor bottom. Distance towed was calculated using GPS data; start and end points of each tow were selected using bottom contact sensor data to determine the time when the footrope first touched the seafloor and the time it departed the seafloor. Estimates of mean net width and distance towed for each haul were used to

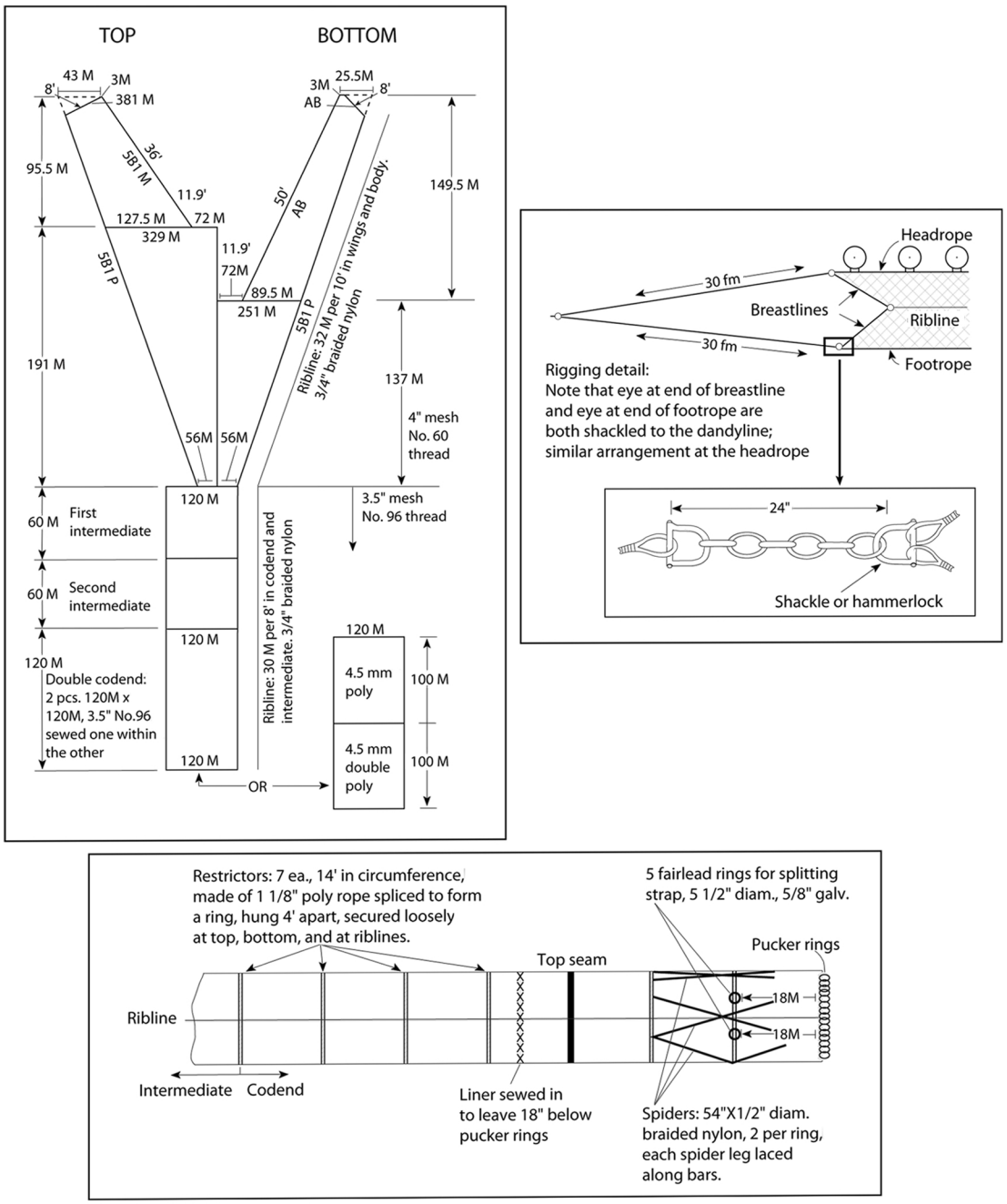

Figure 3. -- Schematic diagram of the 83/112 Eastern otter trawl gear used during the 2011 eastern Bering Sea bottom trawl survey.

calculate the area swept as a measure of fishing effort at each station (Rose and Walters 1990). For tows without observed net width values, a mean net width-inverse scope regression (Zar 1999) was calculated for each vessel (Rose and Walters 1990; Fig. 4). A secondary net mensuration system, Marport Deep Sea Technologies Inc., was deployed to measure net height at selected stations as part of a beta test for modernizing survey hardware.

Sampling Logistics and Stratification Scheme

The charters of the *Alaska Knight* and *Aldebaran* began in Dutch Harbor, Alaska, on 31 May 2011. Survey trawl sampling of the EBS shelf began in eastern Bristol Bay and proceeded westward to the shelf edge (Fig. 2). The progression from east to west was established in response to movements of yellowfin sole and perhaps other species, which may migrate eastward during the course of the survey (Smith and Bakkala 1982). Both vessels completed the EBS survey on 2 August after returning to Bristol Bay to resurvey 23 stations in an effort to assess the availability of mature red king crab to the survey after water temperatures increased from the original sampling of those stations (Fig. 2).

For catch analysis, the EBS shelf was divided into 12 strata bounded by the 50-m, 100-m, and 200-m isobaths, a geographic stratum line separating the northwest and southeast shelf, and localized high-density strata in the regions around St. Matthew and Pribilof Islands (Fig. 2). This stratification scheme reflects the differences observed in Bering Sea groundfish distribution across the oceanographic domains, and the intention of the design was to reduce the variances of population and biomass estimates (Bakkala 1993). The purpose of high-density sampling in Strata 32, 42, 43, and 62 was to reduce variance estimates for blue king crab. Sampling density

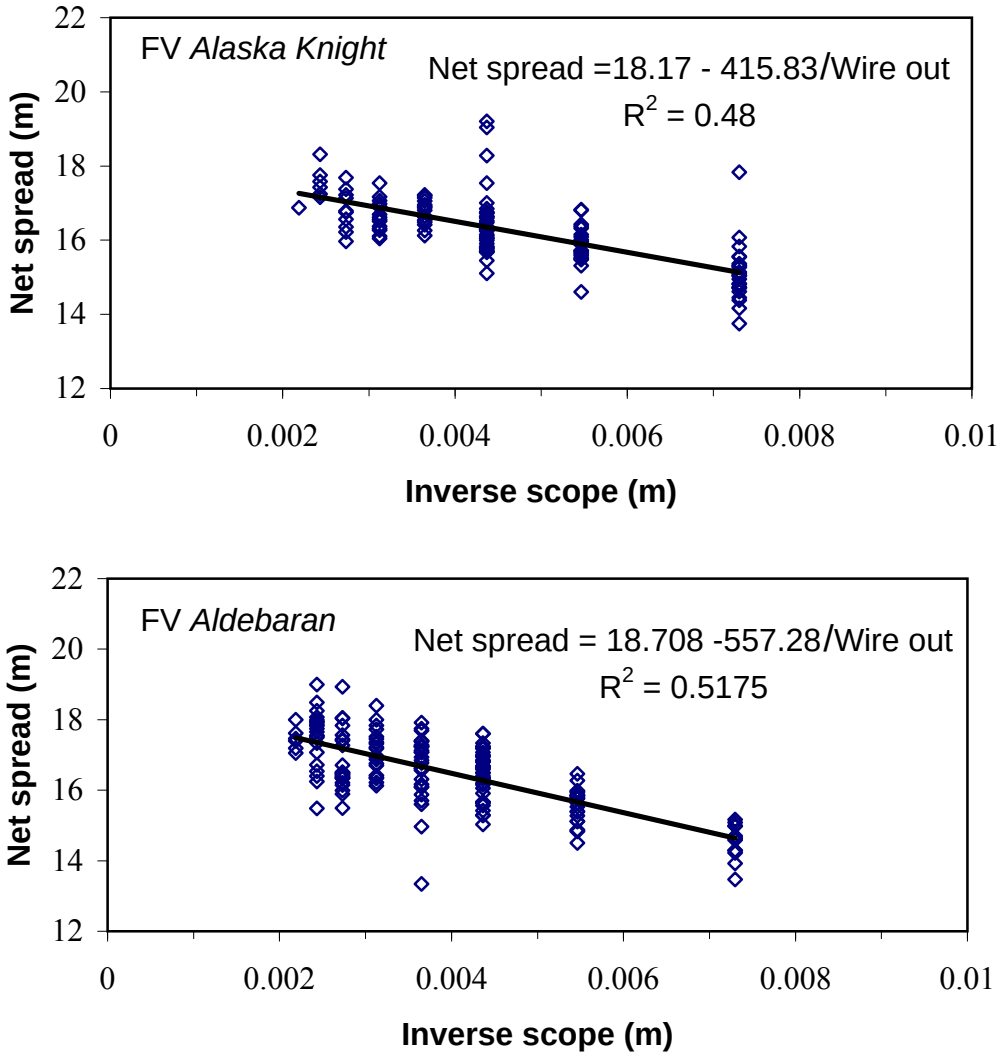

Figure 4. -- Net spread-inverse scope (wire-out) relationship for each vessel participating in the 2011 eastern Bering Sea bottom trawl survey.

ranged from one station per 775 km^2 (Stratum 42) to one per 1,496 km^2 (Stratum 82) and the sampling density for the entire EBS shelf was one station per 1,311 km^2 (Table 1).

Standard Sampling Procedures

The following section briefly summarizes the sampling procedures utilized in the EBS BT Survey. For a detailed description of sampling procedures used in RACE eastern Bering Sea assessment surveys, refer to Wakabayashi et al. (1985) and Stauffer (2004).

Samples were collected by trawling at the approximate center of each grid square (or at the intersection of grid square lines, in the case of high-density strata) for a target fishing time of 30 minutes at a speed of 1.54 m/sec (3 knots). If the seafloor appeared untrawlable on the vessel's echo sounder at a station, or if the net was damaged or impacted by underwater obstacles during a tow, an alternate site within the same grid square was trawled for a valid sample.

Catches estimated to be less than approximately 1,150 kg (2,500 lb) were entirely sorted and enumerated, while larger catches were weighed in aggregate and subsampled before sorting. After sorting subsampled catches, individual species were weighed in aggregate and counted, and these weights and numbers were expanded to the total catch. Fishes and invertebrates were identified and sorted to the lowest taxonomic level practicable. All Pacific halibut (*Hippoglossus stenolepis*), skates (Rajidae), and commercial crab species were weighed and enumerated from each catch. Additional fish or invertebrate species (e.g., large sculpins, sharks, or octopus) were also completely sorted from the catch in most cases, per the discretion of the Deck Lead.

Random sub-samples of each fish species were retained for length measurements and were representative of the sex and size composition in the catch. The greater the size range of a

Table 1. -- Stratum areas and sampling densities for the 2011 bottom trawl survey of the eastern Bering Sea shelf.

Stratum		Representative area (km^2)	Stations successfully sampled	Sampling density (km^2 / station)
EBS inner shelf				
	10	77,871	58	1,343
	20	41,027	31	1,323
EBS middle shelf				
30	31	94,526	69	1,370
	32	8,774	8	1,097
40	41	62,703	44	1,425
	42	24,011	31	775
	43	21,108	22	959
	82	17,954	12	1,496
EBS outer shelf				
	50	38,792	26	1,492
60	61	88,134	60	1,469
	62	6,429	7	918
	90	11,568	8	1,446
Total EBS		492,898	376	1,311

fish species in the sub-sample, the greater the number of that species were retained in the random subsample for length measurements by sex, up to a maximum of about 300 specimens per species. Fish lengths were collected for each commercially important groundfish species and many co-occurring species (Table 2). The sex of each fish from a sub-sample was determined and then fish from the sub-sample were measured to the nearest 1.0 centimeter (fork or total length, dependent upon species). Unless retained for biological sampling by the International Pacific Halibut Commission (IPHC), Pacific halibut were measured upon capture and immediately returned to the sea in an effort to reduce mortality; weights of all Pacific halibut were estimated using a length-weight regression provided by the IPHC.

Sagittal otoliths were collected from 10 fish species in the EBS (Table 3). Three otolith pairs per sex per centimeter interval per vessel per northwest/southeast strata group (Fig. 2), up to 12 pairs total, were collected for Pacific cod, Alaska plaice (*Pleuronectes quadrituberculatus*), arrowtooth flounder (*Atheresthes stomias*), northern rock sole, flathead sole (*Hippoglossoides elassodon*), and Greenland turbot. Five otolith pairs per sex per centimeter interval per vessel per northwest/southeast strata group, up to 20 pairs total, were collected for starry flounder (*Platichthys stellatus*) and yellowfin sole (*Limanda aspera*). Otoliths from all Pacific halibut collected aboard the *Alaska Knight* were sampled by the IPHC for population and growth analyses. Aboard the *Aldebaran,* all Pacific halibut less than 25 cm were frozen and shipped to the IPHC for processing in the laboratory.

For walleye pollock otolith sampling, the eastern Bering Sea was divided into low- and high-density strata based on historical density data and a depth contour of approximately 70 m. Otoliths were collected from all hauls in which the total number of walleye pollock was 20 or more. Walleye pollock samples for otolith collection were selected at random from fish samples

Table 2. -- Number of length measurements by species and stratum made during the 2011 eastern Bering Sea bottom trawl survey.

	Stratum								
Common name	**10**	**20**	**30**	**40**	**50**	**60**	**82**	**90**	**Total**
Alaska plaice	3,317	3,018	2,864	2,378	0	46	20	3	11,646
Alaska skate	464	703	1,105	1,236	83	801	114	100	4,606
Aleutian skate	0	0	0	0	1	0	0	0	1
Arctic cod	0	1	0	0	0	0	271	0	272
Atka mackerel	0	0	0	0	0	0	0	0	0
Bering flounder	2	14	0	1,583	0	269	1,501	599	3,968
Bering skate	0	0	0	0	119	0	0	1	120
Dover sole	0	0	0	0	5	0	0	0	5
Greenland turbot	1	1	111	1,120	1	1,474	548	465	3,721
Kamchatka flounder	7	0	395	223	577	855	24	58	2,139
Pacific cod	5,750	1,994	5,183	5,059	360	1,823	110	131	20,410
Pacific halibut	2,289	408	1,207	361	27	160	4	0	4,456
Pacific ocean perch	0	0	0	0	23	0	0	0	23
Pacific sleeper shark	0	0	0	0	0	0	0	0	0
Sakhalin sole	0	2	0	26	0	0	211	0	239
arrowtooth flounder	80	1	3,185	918	3,563	4,002	2	9	11,760
big skate	9	0	0	0	0	0	0	0	9
bigmouth sculpin	0	0	22	77	9	193	0	4	305
butter sole	132	0	0	0	0	0	0	0	132
butterfly sculpin	2	2	0	407	0	13	62	15	501
chinook salmon	0	0	0	0	0	0	0	0	0
chum salmon	3	0	0	0	2	0	0	0	5
dusky rockfish	0	0	0	0	2	0	0	0	2
flathead sole	273	7	4,913	1,692	3,599	3,933	24	94	14,535
great sculpin	135	12	191	151	0	218	5	21	733
longhead dab	847	91	0	0	0	0	0	0	938
marbled eelpout	0	0	0	210	0	0	153	15	378
mud skate	0	0	0	0	0	0	0	0	0
northern rock sole	10,262	3,253	8,914	3,933	35	243	11	1	26,652
northern rockfish	0	0	0	0	9	0	0	0	9
plain sculpin	2,133	757	0	186	0	0	0	1	3,077
prowfish	0	0	0	0	1	0	0	0	1
rex sole	10	0	0	0	507	177	0	0	694
rougheye rockfish	0	0	0	0	5	0	0	0	5
saffron cod	2	4	0	0	0	0	0	0	6
shortfin eelpout	0	0	0	108	47	720	1	78	954
southern rock sole	0	0	0	0	0	0	0	0	0
starry flounder	1,176	124	0	0	0	0	0	0	1,300
walleye pollock	1,677	563	7,494	9,686	1,696	9,216	811	1,152	32,295
warty sculpin	5	3	0	152	0	14	1	0	175
wattled eelpout	0	0	275	438	0	163	18	59	953
yellow Irish lord	1	0	125	419	1	40	0	0	586
yellowfin sole	9933	4,609	7,002	2,940	0	0	4	0	24,488
Total	38,510	15,567	42,986	33,303	10,672	24,360	3,895	2,806	172,099

prior to sex determination. Six pairs of otoliths were collected in high-density strata and four in low-density strata. In addition, if 20 or more juvenile walleye pollock (< 20-cm) were present in a sample, two additional otolith pairs were taken from a random sample of those juveniles. Individual fish weights were collected for all species for which age structures were taken. Otoliths for all groundfish were preserved in 50% glycerol-thymol solution.

Surface and near-bottom water temperatures, as well as temperature and depth profiles, were recorded at 3-second intervals at each station using a Sea-Bird SBE-39 datalogger (Sea-Bird Electronics Inc., Bellevue, WA) attached to the headrope of the trawl. Depth to bottom was obtained by adding average net height to headrope depth for each trawl sample.

Catch Data Analysis

Trawl survey catch data were used to estimate 1) relative abundance; 2) biomass; 3) population numbers, and 4) abundance by size class for fishes and invertebrates. 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 species in this analysis were grouped by family because of their limited commercial value or uncertain identification.

Mean CPUE values for each species were calculated in kilograms per hectare (1 ha = 10,000 m^2) and number of fish per hectare for each stratum; area swept (hectares) was computed as the distance towed multiplied by the mean net width (Alverson and Pereyra 1969). Mean CPUE values were calculated for individual strata and for the overall survey area. Biomass and population estimates were derived for each stratum by multiplying the stratum mean CPUE by the stratum area. Stratum totals were then summed to produce estimates for each of the strata and for the total survey area in the EBS. Contour plots (e.g., Fig. 9) of the distribution and abundance

Table 3. -- Number of fish from which age structures (otoliths) were collected by species and stratum during the 2011 eastern Bering Sea bottom trawl survey.

	Stratum								
Common name	**10**	**20**	**30**	**40**	**50**	**60**	**82**	**90**	**Total**
Alaska plaice	181	106	129	145	0	7	3	0	571
arrowtooth flounder	0	0	218	44	233	214	0	0	709
flathead sole	0	0	294	82	121	246	0	0	743
Greenland turbot	1	0	62	158	1	119	39	47	427
northern rock sole	157	58	76	55	18	26	0	0	390
Pacific cod	398	129	196	212	33	172	50	76	1,266
Pacific halibut[a]	733	223	648	126	4	93	0	0	1,827
starry flounder	196	68	6	0	0	0	0	0	270
walleye pollock	95	57	417	549	73	435	70	58	1,754
yellowfin sole	363	254	71	96	0	0	0	0	784

[a]International Pacific Halibut Commission (IPHC) manages and analyzes age structure collection.

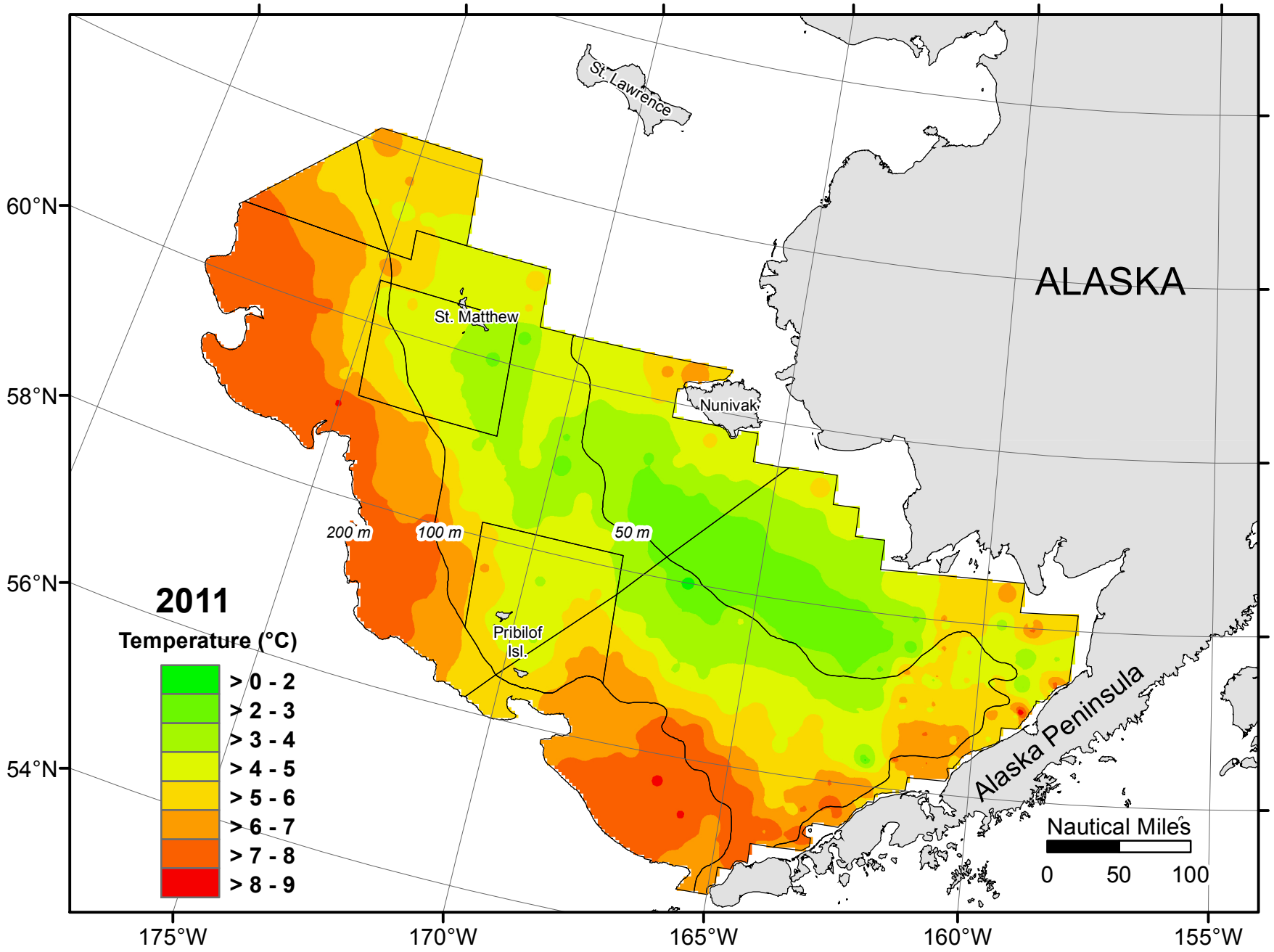

Figure 5. -- Distribution of sea surface water temperatures (°C) observed during the 2011 eastern Bering Sea bottom trawl survey.

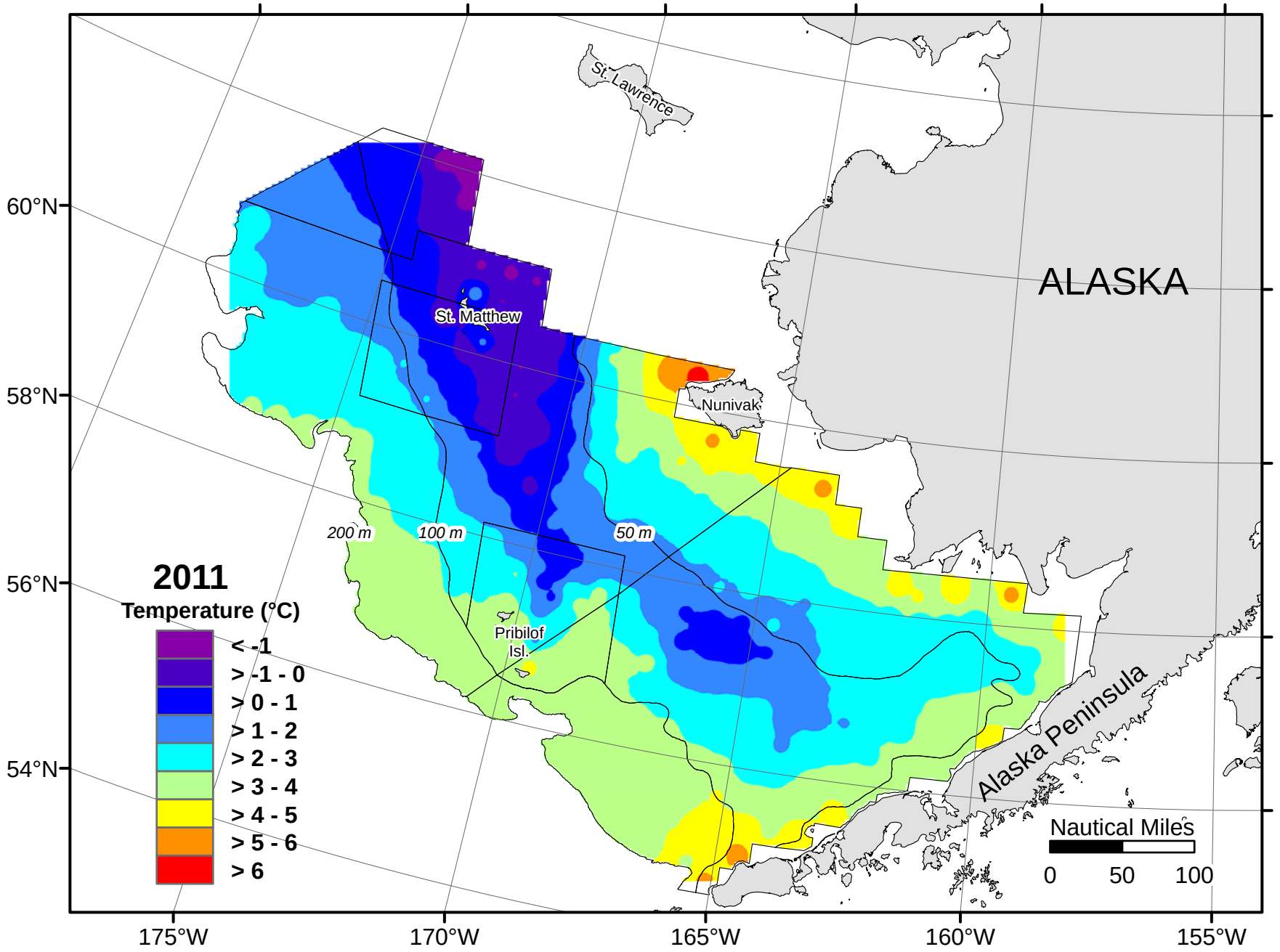

Figure 6. -- Distribution of near-bottom water temperatures (°C) observed during the 2011 eastern Bering Sea bottom trawl survey.

of selected species were derived using the inverse distance weighting method on CPUE values at each station.

For size composition estimates, the proportion of fish at each length interval (from subsamples at each station), weighted by CPUE (number of fish/ha), was expanded to the stratum population. Stratum abundance-at-length estimates were summed for the total estimated size composition for the overall survey area.

Excluding Pacific halibut, otolith samples collected during the survey were read for age estimates by staff of the Age and Growth Program of the AFSC's Resource Ecology and Fisheries Management (REFM) Division. The most current information about age, growth, and population analyses are presented in the 2011 NPFMC Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Region.

Additional Research Projects

In addition to the survey operations, numerous special research projects and collections were undertaken during the 2011 survey (Table 4). Projects conducted for the RACE Division included studies of 1) summer zooplankton biomass; 2) acoustic midwater assessment of walleye pollock; 3) *in situ* light intensity in relation to walleye pollock catchability; 4) benthic infauna density in flatfish habitats; 5) test deployments of a Spectral Irradiance Logger; 6) visual monitoring for bitter crab and black mat syndromes; and 7) Tanner crab stomach contents. The REFM Division's special study projects included collection of data on trophic interactions and feeding ecology of commercial fishes (Table 5). Projects from outside the AFSC included 1) collection of biological and oceanographic data for the Bering Sea Integrated Ecosystem Research Program (BSIERP) and the Pacific Marine Environmental Laboratory (PMEL); 2)

starry flounder antifreeze protein for Queen's University; 3) reproductive potential of snow and Tanner crabs for ADF&G; 4) blue king crab hemolymph for the University of Alaska, Southeast (UAS); and 5) male *Chionoecetes* spp. reproductive biology. Data for additional research projects were collected at sea and disseminated to the requesting principal investigator(s). To acquire the details of any special project or collection, please contact the investigator(s) designated in Table 4.

Results and Discussion

All 376 of the standard EBS survey stations were successfully sampled (Fig. 2). Haul data for successfully trawled stations used in the analyses are listed in Appendices A1 to A2 along with information about each station, such as position, tow parameters (net width, depth, distance fished, and duration of haul), time, and environmental measurements (surface and gear temperatures) for each vessel.

Ocean Conditions

Sea surface temperatures recorded during the survey ranged from 1.7° to 8.1°C (Fig. 5). In the EBS south of 60°N, surface temperatures increased from east to west across the shelf. Near-bottom water temperatures ranged from –1.6° to 6.5°C (Fig. 6) with warmer temperatures (> 3.0°C) occurring along the inner shelf from northern Bristol Bay to Nunivak Island, and on the outer shelf south of 59°N. Plots of temperature contours were generated using the inverse distance weighting method.

Average surface and near-bottom temperatures on the EBS shelf show similar interannual variability (Fig. 7). The annual EBS shelf BT survey begins in the late spring soon after the

Table 4. -- Special projects and collections undertaken during the 2011 eastern Bering Sea shelf bottom trawl survey.

Project title	Principle investigator(s)	Agency
Assessing the effect of light intensity and penetration on the distribution and behavior of walleye pollock	Stan Kotwicki	AFSC - RACE
Quantifying flatfish habitat quality in the eastern Bering Sea by infauna prey density	Cynthia Yeung and Mei-Sun Yang	AFSC - RACE
Starry flounder collection	James Orr	AFSC - RACE
Snailfish taxonomy and systematics	James Orr	AFSC - RACE
Genetic reference specimen collection	Melanie Paquin and Mike Canino	AFSC - RACE
NOAA Outreach/Fall Fishermen's Festival fish collection	Jason Conner	AFSC - RACE
Deployment testing of the Spectral Irradiance Logger	Lyle Britt	AFSC - RACE
Acoustic data collection to augment the MACE EIT survey	Taina Honkalehto and Patrick Ressler	AFSC - RACE
Summer zooplankton biomass on the eastern Bering Sea shelf	Jeff Napp and Jay Clark	PMEL - FOCI
Age structure collection	Sandra Lowe and Tom Wilderbeur	AFSC - REFM
Photos of gadiform fishes	Gerald Hoff	AFSC - RACE
Trophic interactions and feeding ecology of eastern Bering Sea shelf fishes	Kerim Aydin and Troy Buckley	AFSC - REFM
NMML food habits reference collection	Jim Thomason	AFSC - NMML

Table 4. -- Continued.

BSIERP oceanographic sampling	Ned Cokelet	PMEL
Pacific halibut data collection	Lauri Sadorus	IPHC
St. Paul Middle School fish collection for Ocean Science Enrichment	Tonia Kushin	St. Paul School
Antifreeze protein gene dosage in starry flounder	Peter Davies	Queen's University
Distribution of Bristol Bay red king crab in nearshore waters	Elizabeth Chilton	AFSC - RACE
Reproductive and growth studies of snow and Tanner crabs in the eastern Bering Sea	Laura Slater	ADF&G
Ocean acidification and red king crab reproduction	Kathy Swiney	AFSC - RACE
Chionoecetes spp. stomach contents	Robert Foy	AFSC - RACE
Photographic & genetic record of *Chionoecetes* hybrids	Dan Urban	AFSC - RACE
Pathology specimen vouchers	Frank Morado	AFSC - RACE
Ichthyophonous in eastern Bering Sea fishes	Frank Morado	AFSC - RACE
Bitter Crab Syndrome	Frank Morado	AFSC - RACE
Collection of hemolymph from blue king crabs	David Tallmon	UAS
Biomarkers for establishing male reproductive biology in *Chionoecetes* spp.	Sherry Tamone	UAS

Table 5. -- Stomach samples collected and scanned onboard during the 2011 eastern Bering Sea bottom trawl survey.

Species	Leg 1	Leg 2	Leg 3	Total
arrowtooth flounder	147	459	373	979
Pacific cod	754	578	357	1,689
Pacific halibut	296	131	39	466
walleye pollock	608	801	607	2,016
			Total	**5,150**

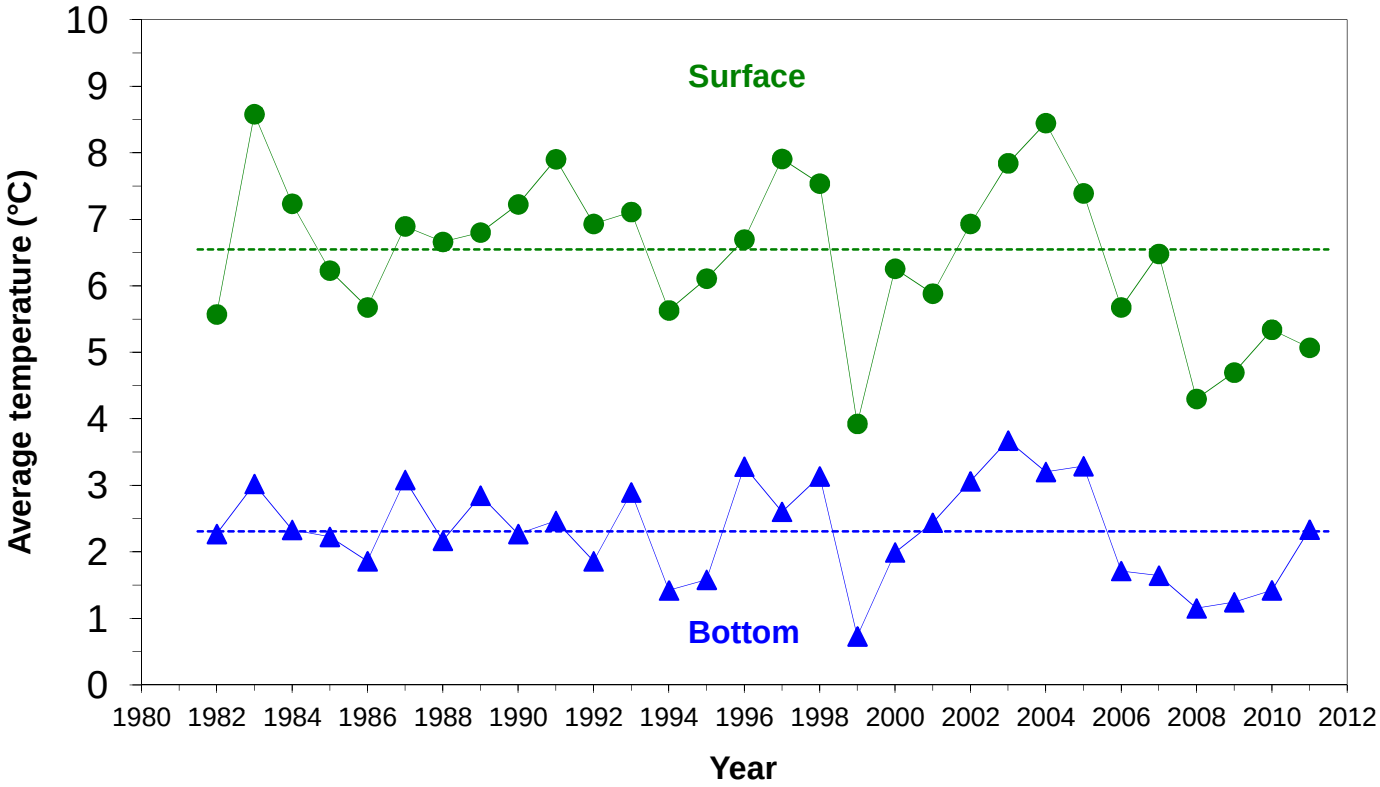

Figure 7. -- Time series of mean survey surface and bottom temperatures weighted by stratum based on expendable bathythermograph casts or digital dataloggers attached to the headrope during the eastern Bering Sea bottom trawl surveys from 1982 to 2011. The 1982-1987 means (triangles) are based on Strata 10-62 (see Fig. 2) and the 1988-2011 means also include Strata 80 and 92. The dashed lines represent the grand mean water temperatures for 1982-2011.

seasonal ice has receded and a layer of cold bottom water (≤ 2°C) persists on the middle shelf. The size of the cold pool fluctuates inter-annually and on longer time scales, and its extent on the middle shelf is determined by the extent of seasonal ice cover the preceding winter as well as by other oceanographic and meteorological conditions (Wyllie-Echeverria and Wooster 1998). Changes in the mean near-bottom temperature relative to the long-term average became more extreme starting in 1999, which was the coldest year. This was followed by a steady increase that resulted in an extended warm period lasting from 2001 to 2005 followed by an acute decrease and an extended cold period from 2006 to the present survey. The mean near-bottom temperature (2.3°C) in 2011 was the highest since 2005, though the mean surface temperature (5.1°C) remained well below the long-term mean (6.5°C) from 1982 to 2011 (Fig. 7).

Biological Summary

A total of 98 fish species representing 20 families and 60 genera were identified in the survey catches from the EBS (Appendix C1). Appendix C2 lists 240 invertebrate taxa identified in EBS survey catches, the most dominant group of which was the phylum Mollusca.

The relative abundance of the 12 most common fish species for each of the three depth domains are presented in Figure 8. These 12 species accounted for 71% (219 kg/ha) of total catch CPUE (308 kg/ha) and 98% of total fish CPUE (224 kg/ha). There were 18 different flatfish species that together comprised more than half of the total fish biomass (57%) with yellowfin sole (22%) and northern rock sole (18%) constituting the greatest proportion (Table 6). Walleye pollock and Pacific cod together comprised 36% of the total fish biomass in the EBS. Appendix B1 lists all organisms caught during the 2011 EBS shelf survey in descending order of CPUE.

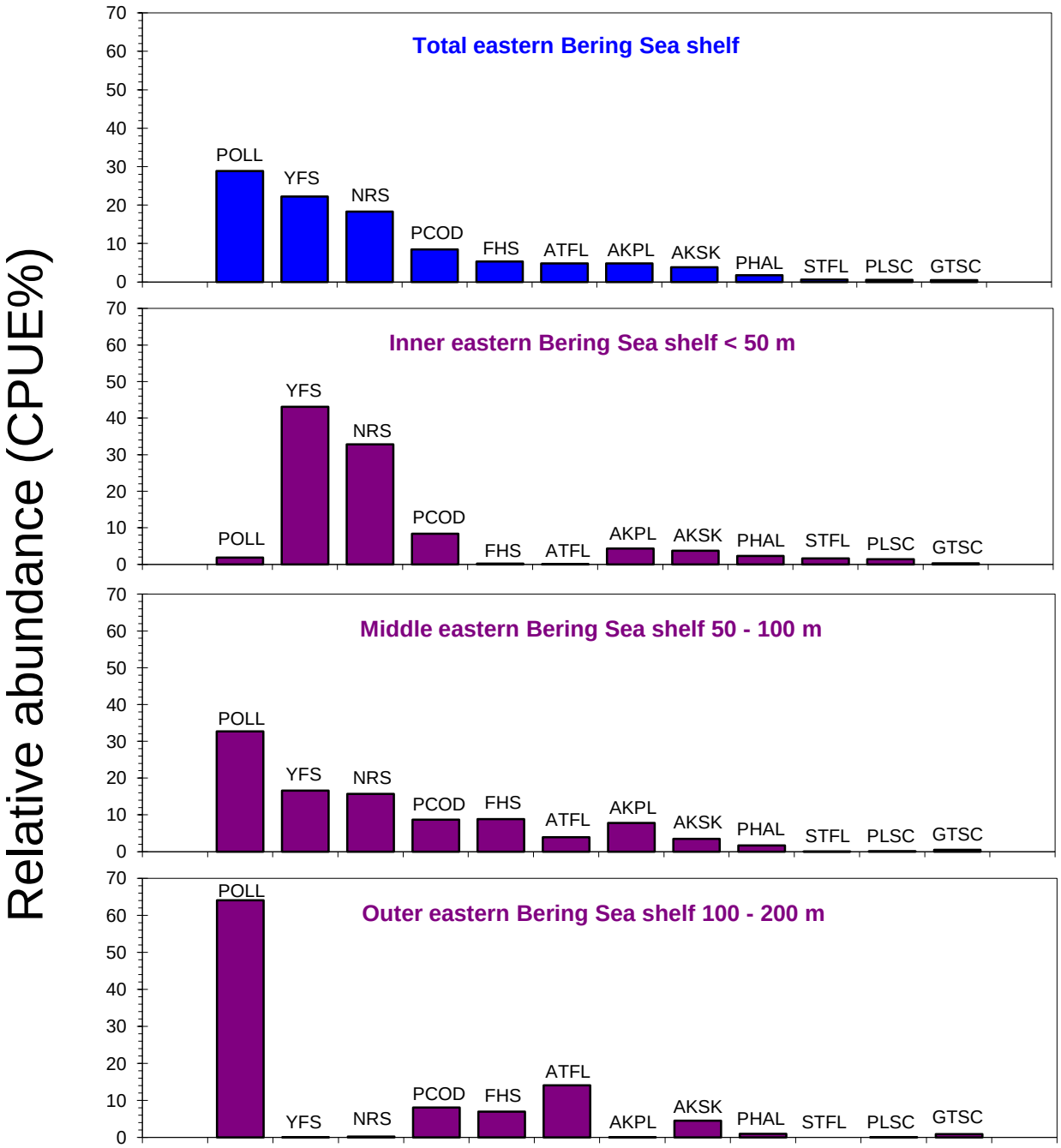

Figure 8. -- Relative abundance (%CPUE in kg/ha) of the top 12 principal groundfish species for all depths combined and by depth zone for the 2011 eastern Bering Sea bottom trawl survey. Abbreviations for groundfishes are: POLL - walleye pollock, YFS - yellowfin sole, NRS - northern rock sole, PCOD - Pacific cod, FHS - flathead sole, ATFL - arrowtooth flounder, AKPL - Alaska plaice, AKSK - Alaska skate, PHAL - Pacific halibut, STFL - starry flounder, PLSC - plain sculpin, and GTSC - great sculpin.

Table 6. -- Biomass estimates (t) for major fish species and groups taken during the 2011 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t)[a] and 95% confidence			Proportion of total animal biomass[b]	Estimated biomass by stratum (t)							
					10	20	30	40	50	60	82	90
Gadidae (cods)												
Walleye pollock	3,112,312	±	18%	0.2021	20,865	7,043	329,628	316,732	142,475	1,414,483	67	51,126
Pacific cod	911,082	±	15%	0.0592	40,031	24,163	120,024	123,137	18,631	95,303	28	8,769
Other cods	560	±	45%	0.0000	99	46	2	36	1	0	324	1
Total cods	**4,023,954**	±	**14%**	**0.2613**	**60,994**	**31,252**	**449,654**	**439,905**	**161,107**	**1,509,786**	**419**	**59,896**
Anoplopomatidae												
Sablefish	0	±	0%	0.0000	0	0	0	0	0	0	0	0
Scorpaenidae (rockfish)												
Pacific ocean perch	545	±	19%	0.0000	0	0	0	0	89	99	0	0
Other rockfish	782	±	96%	0.0001	0	0	0	0	430	31	0	0
Total rockfish	**1,327**	±	**85%**	**0.0001**	**0**	**0**	**0**	**0**	**519**	**130**	**0**	**0**
Pleuronectidae (flatfishes)												
Yellowfin sole	2,403,021	±	20%	0.1561	933,450	238,168	462,595	105,025	0	0	102	23
Rock sole	1,977,281	±	16%	0.1284	623,252	67,741	447,372	384,056	1,055	17,644	202	173
Hippoglossoides spp.	577,993	±	37%	0.0375	3,293	434	136,077	104,959	49,954	124,095	1,063	1,751
Alaska plaice	519,578	±	28%	0.0337	181,194	118,289	86,038	141,176	0	2,735	298	0
Arrowtooth flounder	522,106	±	15%	0.0339	623	0	74,598	14,479	158,197	158,410	0	548
Kamchatka flounder	46,095	±	17%	0.0030	0	0	3,868	3,673	5,504	34,206	0	2,264
Greenland turbot	26,156	±	21%	0.0017	0	0	31	742	0	9,175	22	986
Pacific halibut	186,908	±	11%	0.0121	15,011	19,936	78,463	23,218	6,617	25,002	68	206
Other flatfish	95,056	±	37%	0.0062	248,280	127,963	97,276	141,263	10,609	7,618	316	0
Total flatfish	**6,354,193**	±	**22%**	**0.4127**	**2,005,103**	**572,531**	**1,386,319**	**918,592**	**231,937**	**378,884**	**2,071**	**5,950**
Clupeidae (Pacific herring)	16,458	±	86%	0.0011	630	785	50	929	0	45	0	0
Cottidae (sculpins)	180,763	±	21%	0.0117	35,668	16,570	34,763	36,272	3,895	22,011	64	1,909
Zoarcidae (eelpouts)	41,015	±	19%	0.0027	0	5	666	2,368	195	13,535	680	1,763
Osmeridae (smelts)	11,466	±	47%	0.0007	1,387	262	250	120	899	30	29	2
Agonidae (poachers)	22,295	±	31%	0.0014	2,845	2,441	5,217	8,303	458	39	0	3
Cyclopteridae (snailfishes)	5,019	±	33%	0.0003	23	51	369	1,505	10	347	258	101
Alaska skate	410,340	±	10%	0.0266	25,193	43,876	87,933	72,429	11,881	97,512	5,154	6,930
Other skates	17,919	±	49%	0.0012	0	1	5,087	372	6,609	7,927	0	518
Other fish	10,188	±	51%	0.0007	1,385	350	972	682	1,641	1,797	1	0
Total fish	**11,094,938**	±	**9%**	**0.7206**	**2,133,229**	**668,126**	**1,971,281**	**1,481,476**	**419,150**	**2,032,044**	**8,676**	**77,072**

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

[b]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area = 15,397,775 t.

Table 7. -- Biomass estimates (t) for major invertebrate species and groups taken during the 2011 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t)[a] and 95% confidence			Proportion of total animal biomass[b]	Estimated biomass by stratum (t)							
					10	20	30	40	50	60	82	90
Crustacea												
Crabs	935,715	±	11%	0.0608	37,037	21,805	183,751	248,348	31,810	142,948	22,223	12,974
Shrimps	6,978	±	109%	0.0005	20	31	93	393	483	3,481	25	270
Other crustaceans	1,558	±	109%	0.0001	287	25	147	331	54	217	0	0
Total crustaceans	**944,251**	**±**	**11%**	**0.0613**	**37,344**	**21,860**	**183,991**	**249,071**	**32,347**	**146,646**	**22,248**	**13,244**
Mollusca												
Gastropoda (snails)	301,989	±	14%	0.0196	11,463	6,972	90,001	60,352	5,830	73,207	3,060	4,664
Pelecypoda (bivalves)	9,026	±	88%	0.0006	726	444	3,641	1,721	318	254	18	29
Squids	25	±	98%	0.0000	0	0	0	0	628	14	0	0
Octopuses	3,554	±	58%	0.0002	0	0	58	92	731	124	21	4
Other mollusks	10,360	±	35%	0.0007	200	197	1,592	3,418	22	886	640	996
Total mollusks	**324,954**	**±**	**14%**	**0.0211**	**12,389**	**7,613**	**95,292**	**65,583**	**7,530**	**74,485**	**3,739**	**5,693**
Echinodermata												
Asteroidea (starfish)	1,448,673	±	14%	0.0941	297,737	153,619	177,457	187,116	450	89,065	2,828	4,408
Ophiuroidea (brittle stars)	345,176	±	31%	0.0224	9,340	2,695	45,024	49,116	467	153,645	3,252	931
Echinoidea (sea urchin)	28,286	±	98%	0.0018	107	0	7,329	14,292	3,304	958	7	32
Holothuroidea (sea cucumbers)	22,341	±	93%	0.0015	914	0	3,176	4,561	2	0	2	0
Total echinoderms	**1,844,475**	**±**	**14%**	**0.1198**	**308,098**	**156,315**	**232,987**	**255,085**	**4,222**	**243,668**	**6,090**	**5,371**
Ascidiacea	411,598	±	36%	0.0267	76,134	25,475	170,607	180,032	1	50	2	7
Porifera (sponges)	329,266	±	98%	0.0214	973	173	142,023	2,265	243	814	0	0
Coelenterata	442,705	±	30%	0.0288	22,298	3,072	123,525	51,017	25,903	8,162	3,204	1,827
Other invertebrates	5,589	±	35%	0.0004	878	127	2,483	1,293	612	2,257	7	10
Total invertebrates	**4,302,837**	**±**	**11%**	**0.2794**	**458,114**	**214,635**	**950,909**	**804,348**	**70,858**	**476,081**	**35,290**	**26,152**

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

[b]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area = 15,397,775 t.

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

Total demersal animal biomass was estimated at 15.4 million metric tons (t). The proportion of fishes (72%; Table 6) was three times higher than invertebrates (28%; Table 7). Pleuronectids dominated the fish biomass (6.3 million t), followed by gadids (4.0 million t). Walleye pollock were the most abundant gadid (Table 6), with an estimated total biomass of 3.1 million t. Echinoderms and crustaceans were the major invertebrate taxa comprising 18% of the total animal biomass (Table 7).

Survey results for major fish species are presented in maps of geographic distribution and relative abundance, plots of total abundance-at-size, and tables with estimates of biomass and population number. The species presented include walleye pollock (Figs. 9-10 and Tables 8a, b), Pacific cod (Figs. 11-12 and Tables 9a, b), yellowfin sole (Figs. 13-14 and Tables 10a, b), grouped northern rock sole (Figs. 15-16 and Tables 11a, b), flathead sole (Figs. 17-18 and Tables 12a, b), Bering flounder (Figs. 19-20 and Tables 13a, b), Alaska plaice (Figs. 21-22 and Tables 14a, b), Greenland turbot (Figs. 23-24 and Tables 15a, b), arrowtooth flounder (Figs. 25-26 and Tables 16a, b), Kamchatka flounder (Figs. 27-28 and Tables 17a, b), and Pacific halibut (Figs. 29-30 and Tables 18a, b). Appendix D contains population estimates by sex and size class (cm) for all 11 of these fish species.

Summary of Results for Selected Major Eastern Bering Sea Fish Fauna

Walleye Pollock (*Theragra chalcogramma*)

Walleye pollock were captured at 97% of the stations sampled in the EBS. In general, catch rates were lowest in the inner and middle shelf, and highest north of 56°N and west of 170°W where bottom depths were greater than 70 m and bottom water temperatures were above 2°C (Fig. 9). The total estimated biomass of 3.11 million t (Table 8a) decreased from the 2010 estimate of 3.74 million t, and the population decreased by 11%, from 5.4 billion in 2010 to 4.8 billion in 2011 (Table 8b).

One-year-old pollock, represented by lengths ranging from 7 to 20 cm, had a modal peak of 215 million at 12 cm (Fig. 10 and Appendix D – Table 1). These juveniles were mostly encountered in Strata 20, 40, and 60, the abundance of which decreased slightly in each deeper stratum (Fig. 10). On the inner shelf of the EBS, the walleye pollock population consisted mostly of juveniles (Fig. 10). Age-2 and age-3 pollock (length range of 20-40 cm), which are generally underrepresented in survey trawl catches, were most common in Stratum 90 (Fig. 10).

Pacific Cod (*Gadus macrocephalus*)

Pacific cod were broadly distributed across the EBS shelf and were present at 98% of the sampled stations (Fig. 11). The biomass of 0.91 million t (Table 9a) represents a 4.6% increase over the 2010 estimate, but estimated population numbers decreased 5.3% to 844 million (Table 9b). The high relative proportion of biomass and abundance at several modal lengths between 40-50 cm indicate strong recruitment from the 2006 to 2008 year classes (Fig. 12).

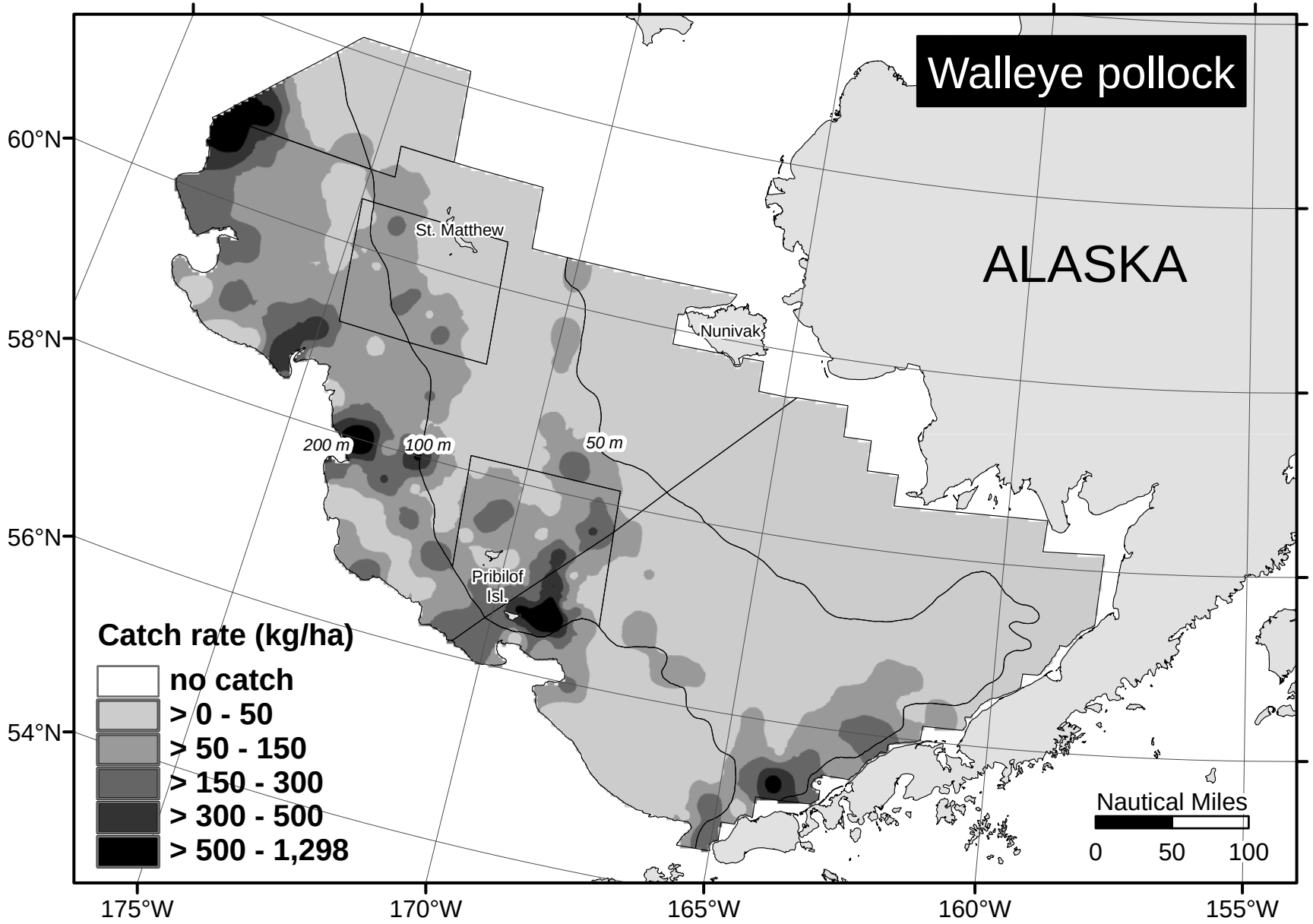

Figure 9. -- Spatial distribution and relative abundance (kg/ha) of **walleye pollock** (*Theragra chalcogramma*) for the 2011 eastern Bering Sea bottom trawl survey.

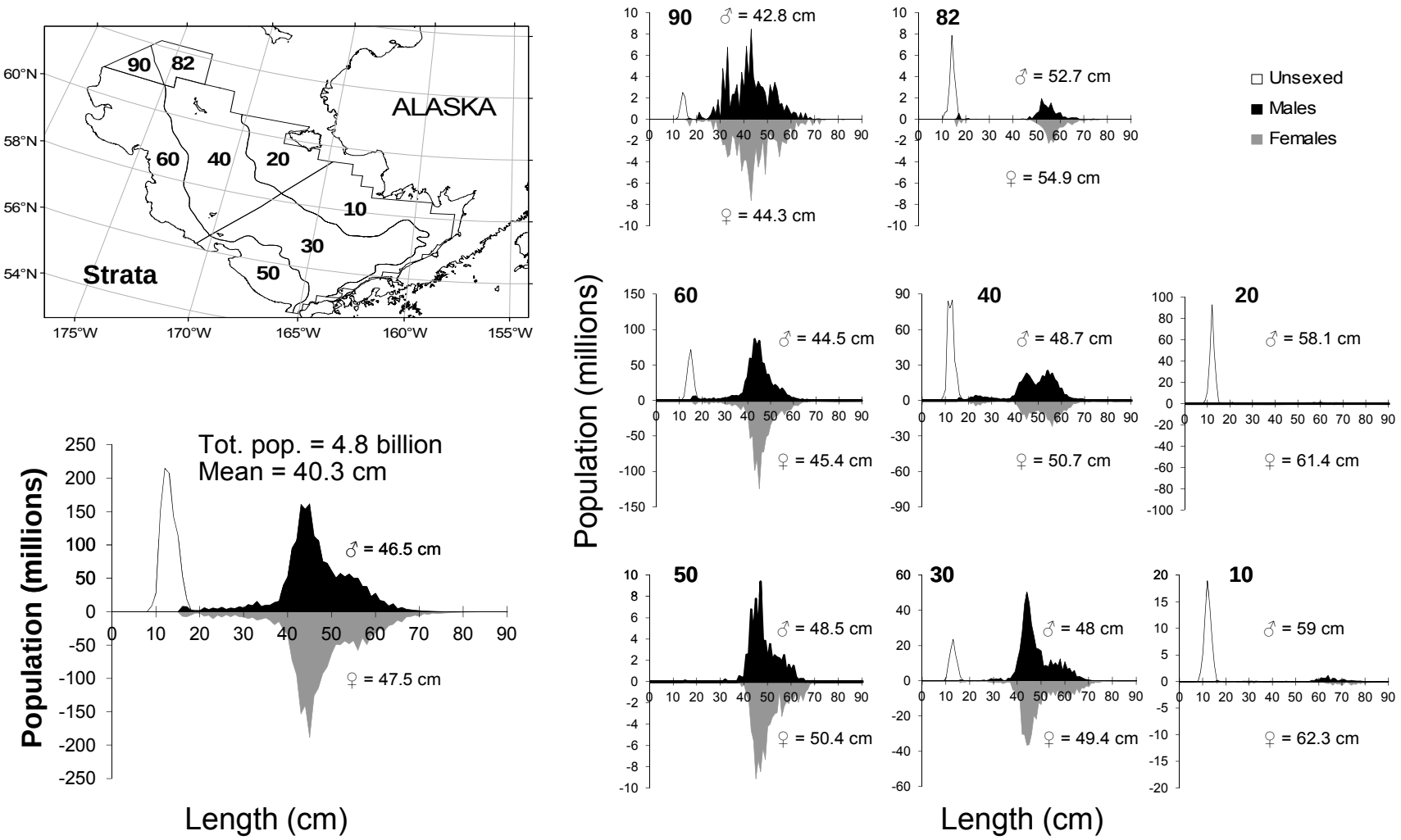

Figure 10. -- Estimated abundance at length of **walleye pollock** (*Theragra chalcogramma*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 8a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **walleye pollock** (*Theragra chalcogramma*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	5.59	1.67E+00	43,559	1.30E+04	17,351	69,767	58	56	56	54
20	6.85	2.94E+00	28,098	1.21E+04	3,457	52,739	31	28	28	26
Subtotal	6.03	1.49E+00	71,657	1.77E+04	36,230	107,085	89	84	84	80
31	51.50	1.08E+01	486,839	1.02E+05	282,000	691,678	69	68	68	68
32	347.74	1.55E+02	305,116	1.36E+05	0	637,535	8	8	8	8
41	35.60	6.81E+00	223,230	4.27E+04	136,929	309,531	44	44	44	44
42	115.86	1.67E+01	278,204	4.00E+04	196,465	359,943	31	31	31	31
43	68.07	1.55E+01	143,686	3.27E+04	75,466	211,907	22	22	22	22
82	21.09	4.46E+00	37,874	8.01E+03	20,028	55,719	12	11	11	11
Subtotal	64.39	7.99E+00	1,474,948	1.83E+05	1,095,322	1,854,574	186	184	184	184
50	39.30	1.42E+01	152,437	5.51E+04	38,990	265,883	26	25	25	25
61	141.74	2.17E+01	1,249,182	1.91E+05	863,122	1,635,242	60	58	58	58
62	54.90	6.39E+00	35,290	4.10E+03	25,245	45,335	7	7	7	7
90	111.34	7.03E+01	128,798	8.14E+04	0	321,201	8	8	8	8
Subtotal	108.04	1.48E+01	1,565,707	2.15E+05	1,136,016	1,995,397	101	98	98	98
Total	63.14	5.74E+00	3,112,312	2.83E+05	2,546,711	3,677,913	376	366	366	362

*Differences in sums of estimates and totals are due to rounding.

Table 8b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **walleye pollock** (*Theragra chalcogramma*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	11.18	2.13E+00	87,043,393	1.66E+07	53,553,302	120,533,483	58	56	56	54
20	58.12	3.21E+01	238,467,062	1.32E+08	0	507,534,179	31	28	28	26
Subtotal	27.38	1.12E+01	325,510,455	1.33E+08	59,901,717	591,119,193	89	84	84	80
31	51.88	1.05E+01	490,404,500	9.96E+07	291,194,855	689,614,145	69	68	68	68
32	528.99	2.43E+02	464,142,044	2.13E+08	0	986,243,857	8	8	8	8
41	66.20	1.47E+01	415,068,996	9.22E+07	228,721,384	601,416,608	44	44	44	44
42	180.21	2.41E+01	432,698,198	5.79E+07	314,468,170	550,928,225	31	31	31	31
43	94.05	2.35E+01	198,512,553	4.97E+07	94,841,770	302,183,335	22	22	22	22
82	29.34	7.44E+00	52,677,559	1.34E+07	22,921,548	82,433,571	12	11	11	11
Subtotal	89.64	1.15E+01	2,053,503,850	2.64E+08	1,504,979,576	2,602,028,123	186	184	184	184
50	42.36	1.54E+01	164,342,481	5.97E+07	41,341,096	287,343,866	26	25	25	25
61	224.22	3.44E+01	1,976,092,970	3.04E+08	1,362,520,460	2,589,665,480	60	58	58	58
62	189.82	5.97E+01	122,024,962	3.84E+07	28,152,430	215,897,495	7	7	7	7
90	175.55	1.22E+02	203,075,408	1.42E+08	0	537,933,887	8	8	8	8
Subtotal	170.13	2.36E+01	2,465,535,821	3.42E+08	1,780,681,340	3,150,390,302	101	98	98	98
Total	98.29	9.18E+00	4,844,550,126	4.53E+08	3,939,362,327	5,749,737,924	376	366	366	362

*Differences in sums of estimates and totals are due to rounding.

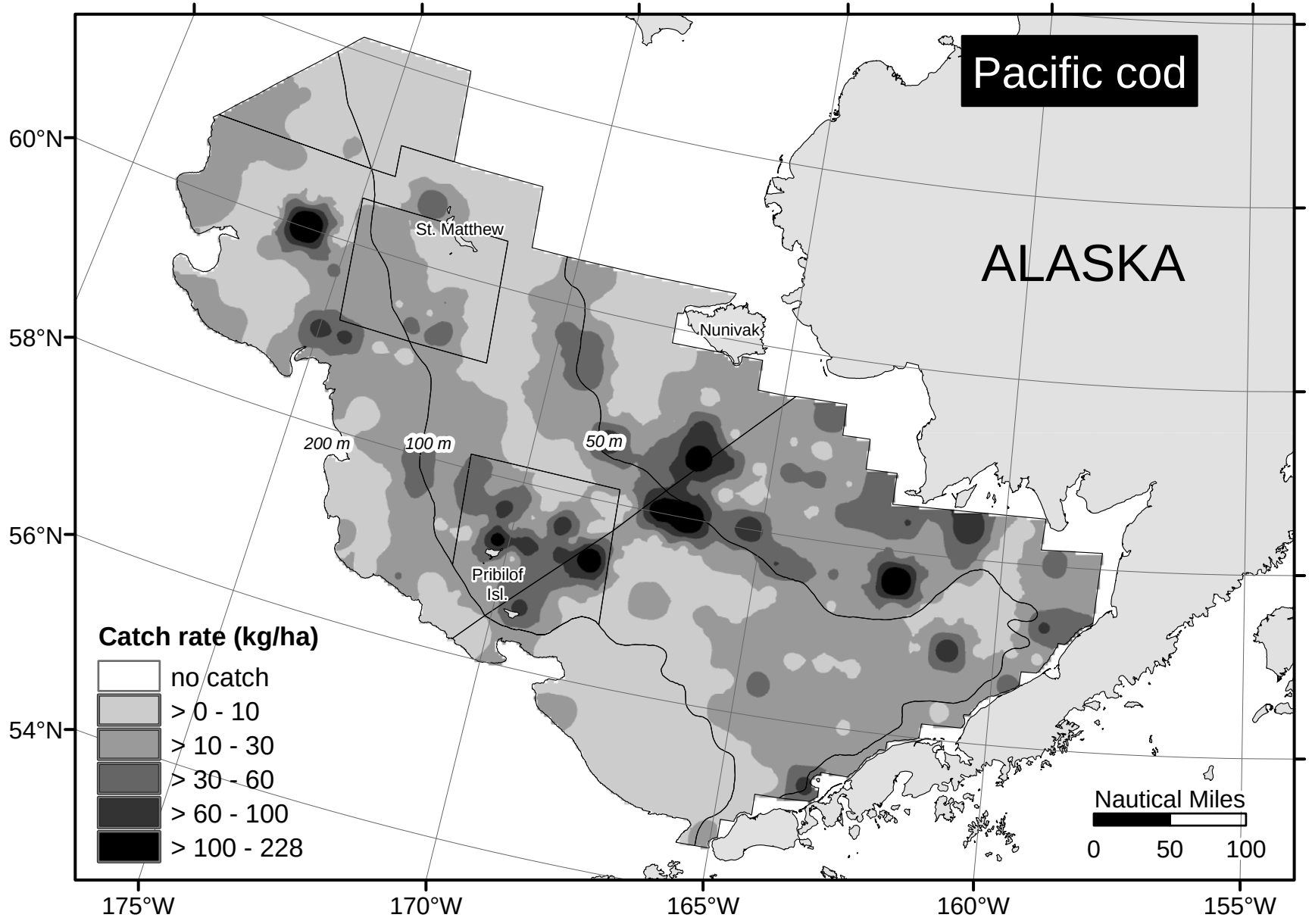

Figure 11. -- Spatial distribution and relative abundance (kg/ha) of **Pacific cod** (*Gadus macrocephalus*) for the 2011 eastern Bering Sea bottom trawl survey.

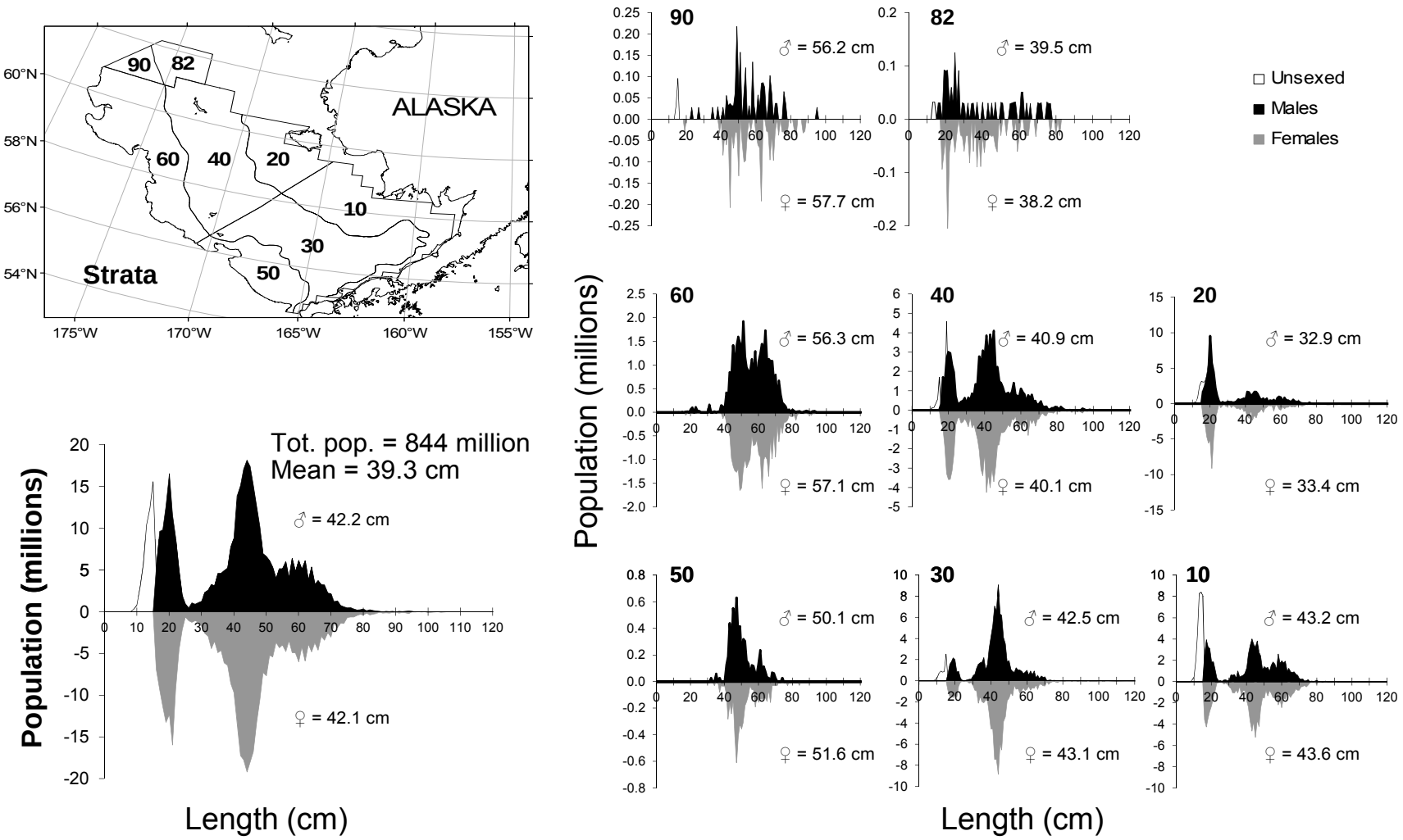

Figure 12. -- Estimated abundance at length of **Pacific cod** (*Gadus macrocephalus*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 9a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Pacific cod** (*Gadus macrocephalus*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	29.09	4.13E+00	226,506	3.22E+04	161,471	291,542	58	58	58	58
20	23.43	5.71E+00	96,113	2.34E+04	48,202	144,024	31	29	29	29
Subtotal	27.13	3.35E+00	322,619	3.98E+04	243,010	402,229	89	87	87	87
31	17.53	3.36E+00	165,682	3.18E+04	102,167	229,197	69	68	68	68
32	51.26	1.81E+01	44,977	1.59E+04	7,478	82,476	8	8	8	8
41	11.69	1.82E+00	73,300	1.14E+04	50,224	96,377	44	43	43	43
42	32.77	5.68E+00	78,678	1.36E+04	50,825	106,531	31	31	31	31
43	11.51	2.60E+00	24,295	5.49E+03	12,881	35,709	22	22	22	22
82	2.23	7.49E-01	3,998	1.34E+03	1,039	6,957	12	11	11	11
Subtotal	17.07	1.75E+00	390,930	4.01E+04	310,723	471,137	186	183	183	183
50	4.74	1.04E+00	18,406	4.05E+03	10,071	26,740	26	24	24	23
61	17.82	4.03E+00	157,016	3.55E+04	85,299	228,733	60	60	60	60
62	17.21	1.89E+00	11,066	1.22E+03	8,089	14,043	7	7	7	7
90	9.55	2.50E+00	11,045	2.90E+03	4,193	17,897	8	8	8	8
Subtotal	13.63	2.47E+00	197,532	3.59E+04	125,825	269,240	101	99	99	98
Total	18.48	1.36E+00	911,082	6.69E+04	778,582	1,043,582	376	369	369	368

*Differences in sums of estimates and totals are due to rounding.

Table 9b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **Pacific cod** (*Gadus macrocephalus*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers[a]	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	26.72	4.01E+00	208,076,337	3.13E+07	144,903,502	271,249,172	58	58	58	58
20	41.63	1.44E+01	170,815,007	5.91E+07	49,978,985	291,651,029	31	29	29	29
Subtotal	31.87	5.62E+00	378,891,344	6.68E+07	245,197,236	512,585,451	89	87	87	87
31	17.82	2.82E+00	168,465,748	2.67E+07	115,102,483	221,829,013	69	68	68	68
32	39.16	1.88E+01	34,362,484	1.65E+07	0	73,435,304	8	8	8	8
41	10.41	2.00E+00	65,247,624	1.25E+07	39,929,764	90,565,484	44	43	43	43
42	35.52	8.89E+00	85,289,025	2.14E+07	41,690,294	128,887,756	31	31	31	31
43	11.93	2.13E+00	25,171,329	4.49E+06	15,836,586	34,506,072	22	22	22	22
82	1.96	6.69E-01	3,523,110	1.20E+06	878,023	6,168,197	12	11	11	11
Subtotal	16.68	1.76E+00	382,059,321	4.02E+07	301,579,566	462,539,075	186	183	183	183
50	2.96	7.41E-01	11,474,916	2.87E+06	5,553,352	17,396,479	26	24	24	23
61	7.10	1.52E+00	62,574,640	1.34E+07	35,589,451	89,559,830	60	60	60	60
62	8.27	1.00E+00	5,317,061	6.45E+05	3,738,500	6,895,622	7	7	7	7
90	3.56	7.26E-01	4,118,755	8.40E+05	2,131,393	6,106,116	8	8	8	8
Subtotal	5.76	9.45E-01	83,485,372	1.37E+07	56,086,704	110,884,039	101	99	99	98
Total	17.13	1.61E+00	844,436,036	7.92E+07	687,584,939	1,001,287,133	376	369	369	368

*Differences in sums of estimates and totals are due to rounding.

Yellowfin Sole (*Limanda aspera*)

Yellowfin sole were distributed across the shelf to a bottom depth of 100 m, primarily within Bristol Bay (Fig. 13). Catch rates were considerably higher in Stratum 10, constituting a biomass greater than all other strata combined (Table 10a). The biomass of 2.4 million t remained about the same as in 2010 (Table 10a), while the population decreased from 10.1 billion to 9.3 billion (Table 10b).

Male yellowfin sole were more abundant than females in the inshore strata (10, 20), and the reverse was the case in the middle strata (30, 40). This pattern persists over the extent of the survey because migration patterns differ between immature and mature yellowfin sole and because males mature at an earlier age than females (by ~4 years), resulting in more male spawners than female spawners (Nichol 1998). Sexually mature yellowfin sole undergo an annual spring-summer spawning migration across the shelf into the shallow waters of Bristol Bay and southeast of Nunivak Island (Bakkala 1981), with most spawning activity occurring during the time of the survey at bottom depths < 30 m (Nichol 1995). By comparison, sexually immature individuals, which can attain ages up to 8 years for males and 11 years for females, undergo an ontogenetic migration by moving deeper as they get older (Nichol 1997). Because there are more male spawners than female spawners, more males than females migrate to the inshore waters for spawning, resulting in a higher male to female ratio. By contrast, females outnumber males in the middle strata, both because the mature males vacated this area for spawning inshore, and because larger immature females have migrated offshore with age.

Northern Rock Sole (*Lepidopsetta polyxystra*)

Northern rock sole were encountered at 84% of stations sampled and were broadly distributed across the shelf, with the highest concentrations occurring in Bristol Bay and around the Pribilof Islands (Fig. 15). The biomass decreased marginally from 2.06 million t in 2010 to 1.98 million t, but this margin did not exceed the standard error of the estimate (Table 11a). The estimated population also decreased by 17% to 7.7 billion (Table 11b). Mean length of northern rock sole increased with depth across the EBS shelf (Fig. 16). Spawning and feeding migrations for northern rock sole are poorly understood, but it is believed that some northern rock sole use tidal stream transport during nighttime hours (Nichol and Somerton 2009) to migrate from shallow summer feeding grounds to deep winter and spring spawning grounds (Fadeev 1965, Shubnikov and Lisovenko 1964).

Flathead Sole (*Hippoglossoides elassodon*)

Flathead sole and Bering flounder are members of the same genus. They are difficult to distinguish based on appearance. Consequently, the accuracy of identifications in the commercial fishery data is unknown and the two species are combined into a single stock assessment by the NPFMC (Stockhausen and Nichol 2011). In contrast, BT survey scientists are trained to make reliable field identifications for flathead sole and Bering flounder; hence, results here are presented by species. Despite belonging to the same genus and having a similar appearance, the two species have distinctly separate geographic distributions (Fig. 17; Fig 19). Flathead sole were present at 73% of the EBS stations (Fig. 17). The highest catch rates of flathead sole were within the middle shelf domain, constituting 69% of the estimated biomass, which increased from 2010 levels from 0.49 to 0.58 million t (Table 12a). The flathead sole population estimate

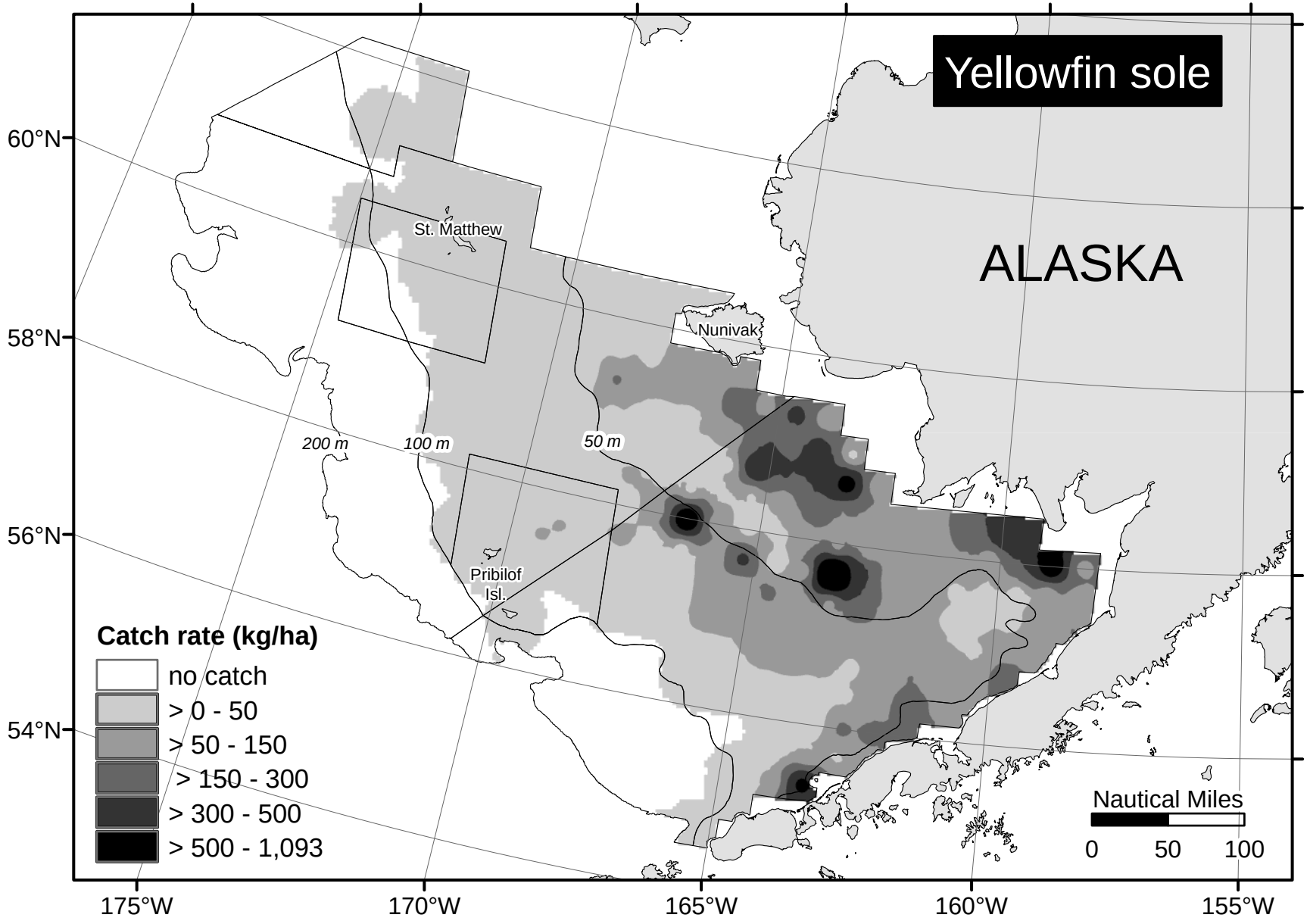

Figure 13. -- Spatial distribution and relative abundance (kg/ha) of **yellowfin sole** (*Limanda aspera*) for the 2011 eastern Bering Sea bottom trawl survey.

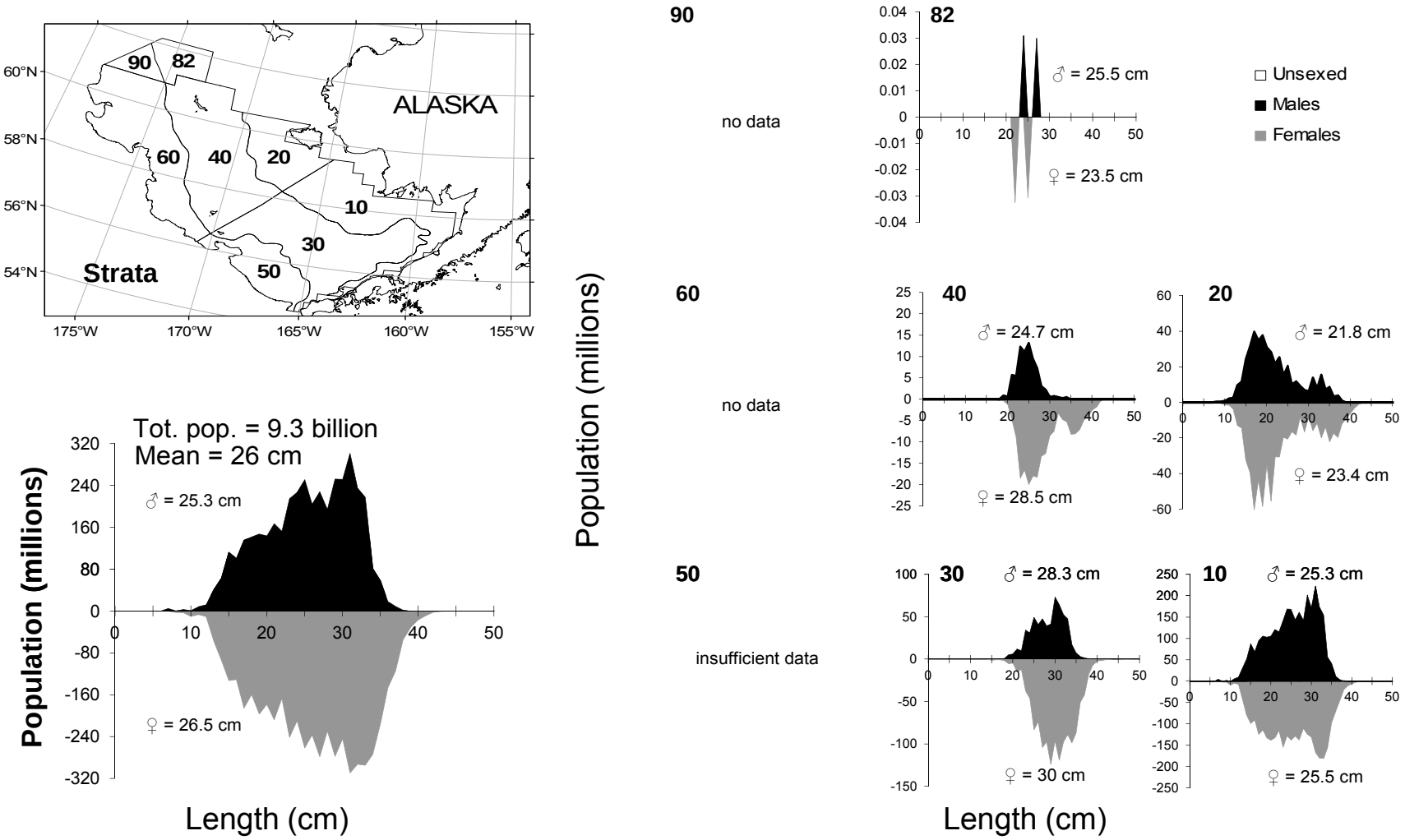

Figure 14. -- Estimated abundance at length of **yellowfin sole** (*Limanda aspera*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 10a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **yellowfin sole** (*Limanda aspera*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	184.21	2.55E+01	1,434,483	1.99E+05	1,033,009	1,835,957	58	58	58	58
20	53.89	9.58E+00	221,085	3.93E+04	140,865	301,304	31	31	31	31
Subtotal	139.24	1.70E+01	1,655,568	2.02E+05	1,250,571	2,060,564	89	89	89	89
31	70.20	1.42E+01	663,608	1.34E+05	396,049	931,167	69	60	60	60
32	0.80	5.37E-01	699	4.71E+02	0	1,814	8	3	3	3
41	7.99	2.16E+00	50,087	1.36E+04	22,675	77,500	44	35	35	35
42	13.35	3.06E+00	32,065	7.34E+03	17,050	47,080	31	25	25	25
43	0.46	2.14E-01	964	4.52E+02	20	1,908	22	11	11	11
82	0.01	5.65E-03	23	1.02E+01	1	45	12	4	4	4
Subtotal	32.63	5.88E+00	747,446	1.35E+05	478,112	1,016,781	186	138	138	138
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.00	0.00E+00	0	0.00E+00	0	0	60	0	0	0
62	0.01	1.07E-02	7	6.91E+00	0	25	7	1	1	1
90	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
Subtotal	0.00	4.77E-04	7	6.91E+00	0	21	101	1	1	1
Total	48.75	4.93E+00	2,403,021	2.43E+05	1,916,643	2,889,399	376	228	228	228

*Differences in sums of estimates and totals are due to rounding.

Table 10b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **yellowfin sole** (*Limanda aspera*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	772.24	1.23E+02	6,013,504,103	9.55E+08	4,083,397,503	7,943,610,702	58	58	58	58
20	274.60	5.76E+01	1,126,613,352	2.36E+08	644,425,553	1,608,801,152	31	31	31	31
Subtotal	600.52	8.27E+01	7,140,117,455	9.84E+08	5,172,546,837	9,107,688,073	89	89	89	89
31	201.04	3.83E+01	1,900,322,984	3.62E+08	1,175,462,739	2,625,183,228	69	60	60	60
32	2.32	1.94E+00	2,038,589	1.70E+06	0	6,067,751	8	3	3	3
41	25.31	7.02E+00	158,695,095	4.40E+07	69,682,390	247,707,801	44	35	35	35
42	46.00	1.13E+01	110,441,613	2.71E+07	55,016,006	165,867,221	31	25	25	25
43	2.24	1.06E+00	4,730,256	2.23E+06	75,933	9,384,580	22	11	11	11
82	0.07	2.95E-02	124,016	5.29E+04	7,554	240,478	12	4	4	4
Subtotal	95.01	1.60E+01	2,176,352,554	3.66E+08	1,444,128,781	2,908,576,327	186	138	138	138
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.00	0.00E+00	0	0.00E+00	0	0	60	0	0	0
62	0.03	3.00E-02	19,290	1.93E+04	0	68,883	7	1	1	1
90	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
Subtotal	0.00	1.33E-03	19,290	1.93E+04	0	57,869	101	1	1	1
Total	189.01	2.13E+01	9,316,489,299	1.05E+09	7,217,088,005	11,416,000,000	376	228	228	228

*Differences in sums of estimates and totals are due to rounding.

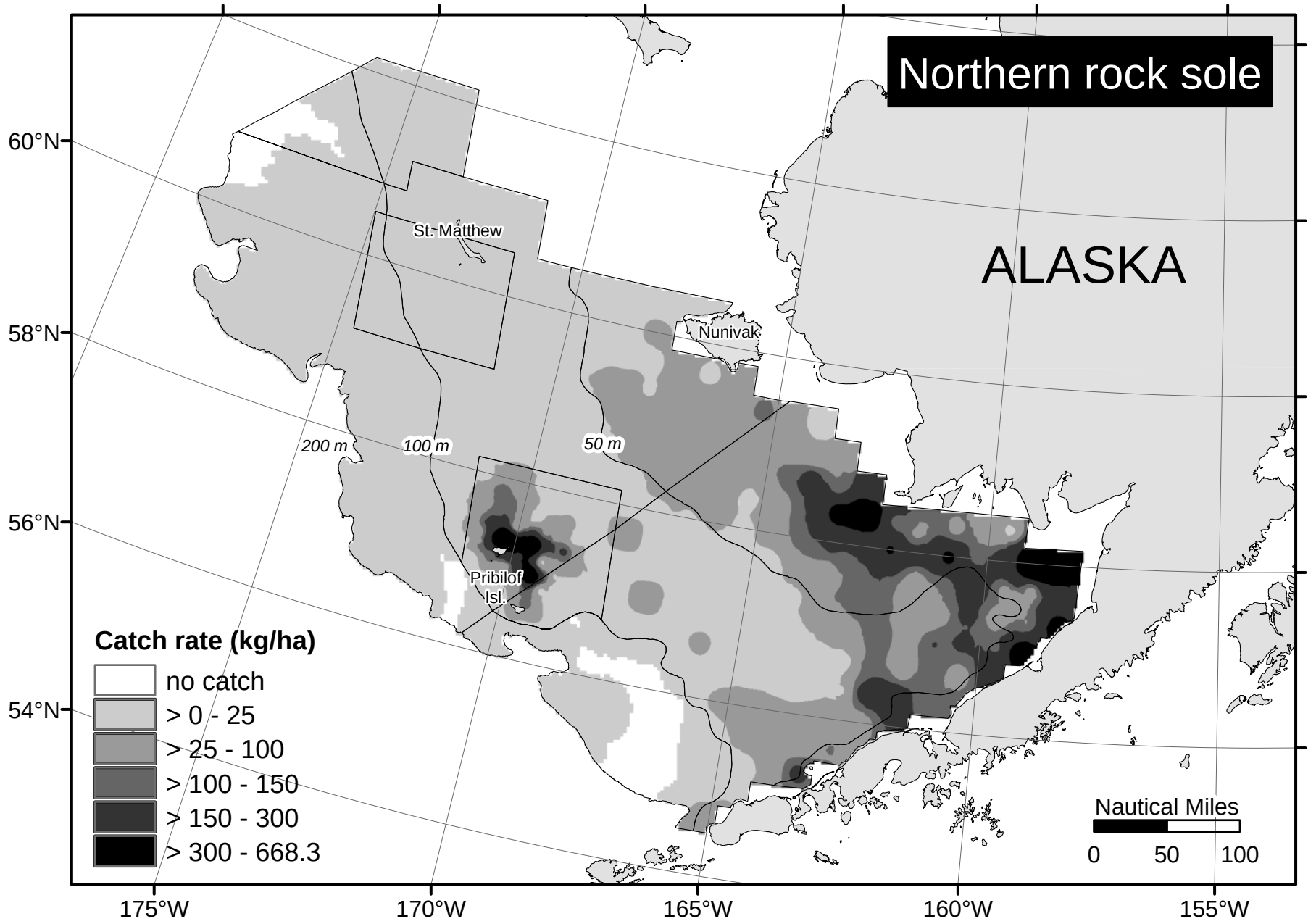

Figure 15. -- Spatial distribution and relative abundance (kg/ha) of **northern rock sole** (*Lepidopsetta polyxystra*) for the 2011 eastern Bering Sea bottom trawl survey.

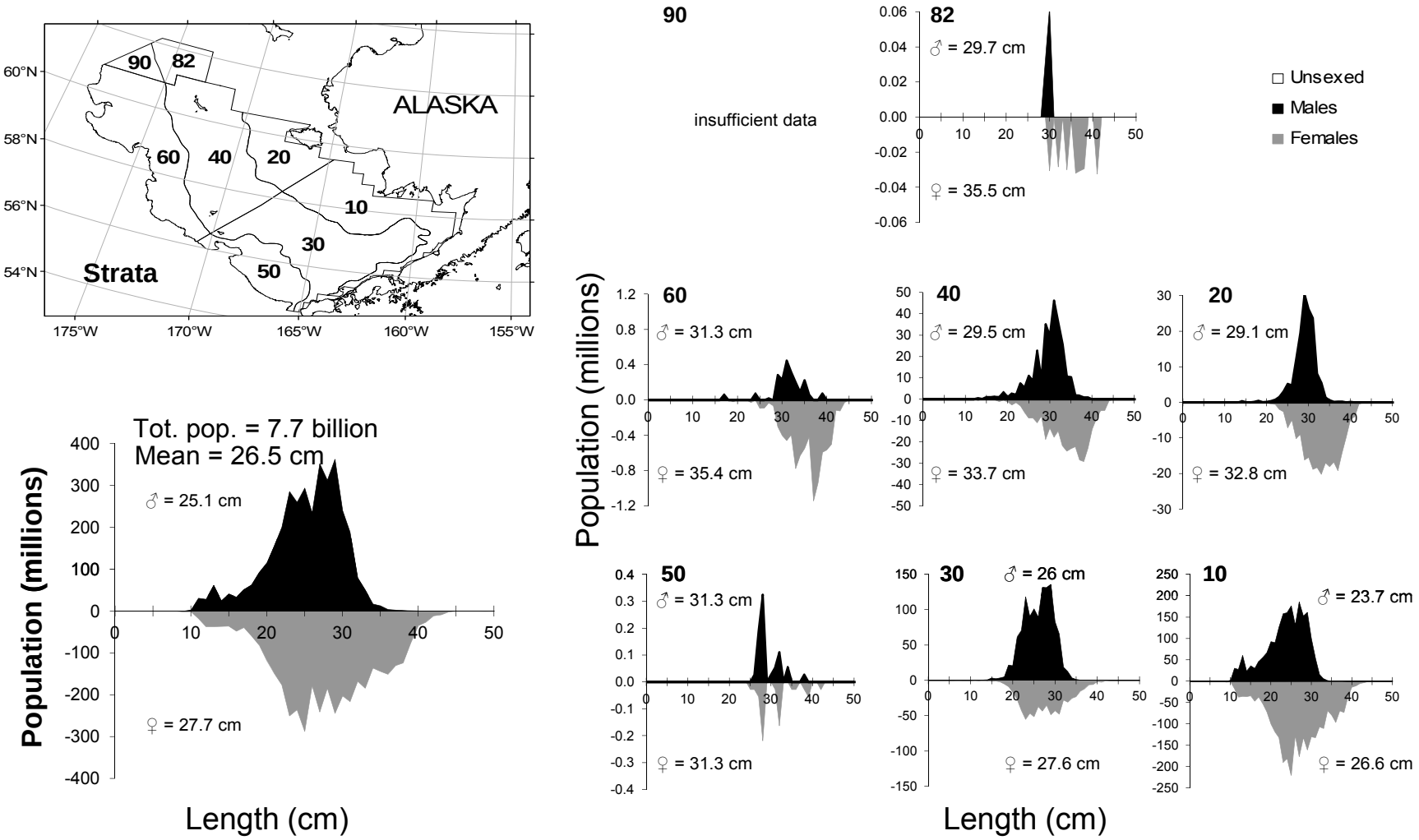

Figure 16. -- Estimated abundance at length of **northern rock sole** (*Lepidopsetta polyxystra*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 11a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **northern rock sole** (*Lepidopsetta polyxystra*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	142.93	1.70E+01	1,113,051	1.32E+05	845,741	1,380,361	58	58	58	58
20	36.61	5.24E+00	150,185	2.15E+04	106,275	194,095	31	31	31	31
Subtotal	106.25	1.13E+01	1,263,236	1.34E+05	992,416	1,534,055	89	89	89	89
31	44.72	6.86E+00	422,764	6.48E+04	293,148	552,380	69	67	67	67
32	23.82	1.49E+01	20,898	1.31E+04	0	52,902	8	6	6	6
41	2.48	6.01E-01	15,542	3.77E+03	7,927	23,156	44	41	41	40
42	100.90	2.87E+01	242,273	6.89E+04	101,679	382,868	31	29	29	29
43	2.76	6.57E-01	5,833	1.39E+03	2,938	8,728	22	20	20	20
82	0.09	2.77E-02	165	4.98E+01	55	274	12	7	7	7
Subtotal	30.88	4.17E+00	707,474	9.55E+04	516,395	898,553	186	170	170	169
50	0.14	8.09E-02	551	3.14E+02	0	1,198	26	5	5	5
61	0.56	1.80E-01	4,969	1.59E+03	1,763	8,175	60	38	38	38
62	1.59	1.03E+00	1,020	6.62E+02	0	2,641	7	6	6	6
90	0.03	1.76E-02	31	2.04E+01	0	79	8	2	2	1
Subtotal	0.45	1.21E-01	6,572	1.75E+03	3,077	10,067	101	51	51	50
Total	40.12	3.34E+00	1,977,281	1.65E+05	1,648,116	2,306,447	376	310	310	308

*Differences in sums of estimates and totals are due to rounding.

Table 11b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **northern sole** (*Lepidopsetta polyxystra*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	622.25	7.44E+01	4,845,502,580	5.79E+08	3,674,899,013	6,016,106,147	58	58	58	58
20	91.68	1.33E+01	376,142,570	5.44E+07	265,112,746	487,172,394	31	31	31	31
Subtotal	439.17	4.89E+01	5,221,645,150	5.82E+08	4,045,895,142	6,397,395,158	89	89	89	89
31	188.72	3.23E+01	1,783,906,854	3.05E+08	1,173,487,339	2,394,326,369	69	67	67	67
32	61.57	3.42E+01	54,021,143	3.00E+07	0	127,344,184	8	6	6	6
41	5.96	1.41E+00	37,347,270	8.87E+06	19,425,877	55,268,664	44	41	41	40
42	230.90	6.39E+01	554,416,373	1.54E+08	240,872,397	867,960,349	31	29	29	29
43	5.66	1.30E+00	11,956,103	2.74E+06	6,240,558	17,671,648	22	20	20	20
82	0.19	6.00E-02	337,966	1.08E+05	100,944	574,987	12	7	7	7
Subtotal	106.60	1.50E+01	2,441,985,709	3.43E+08	1,755,796,668	3,128,174,750	186	170	170	169
50	0.39	2.39E-01	1,507,863	9.26E+05	0	3,414,794	26	5	5	5
61	1.01	3.06E-01	8,861,330	2.70E+06	3,414,184	14,308,475	60	38	38	38
62	2.31	1.42E+00	1,485,004	9.15E+05	0	3,723,675	7	6	6	6
90	0.05	3.18E-02	56,205	3.68E+04	0	143,226	8	2	2	1
Subtotal	0.82	2.07E-01	11,910,401	2.99E+06	5,923,839	17,896,964	101	51	51	50
Total	155.72	1.37E+01	7,675,541,260	6.75E+08	6,324,726,663	9,026,355,858	376	310	310	308

*Differences in sums of estimates and totals are due to rounding.

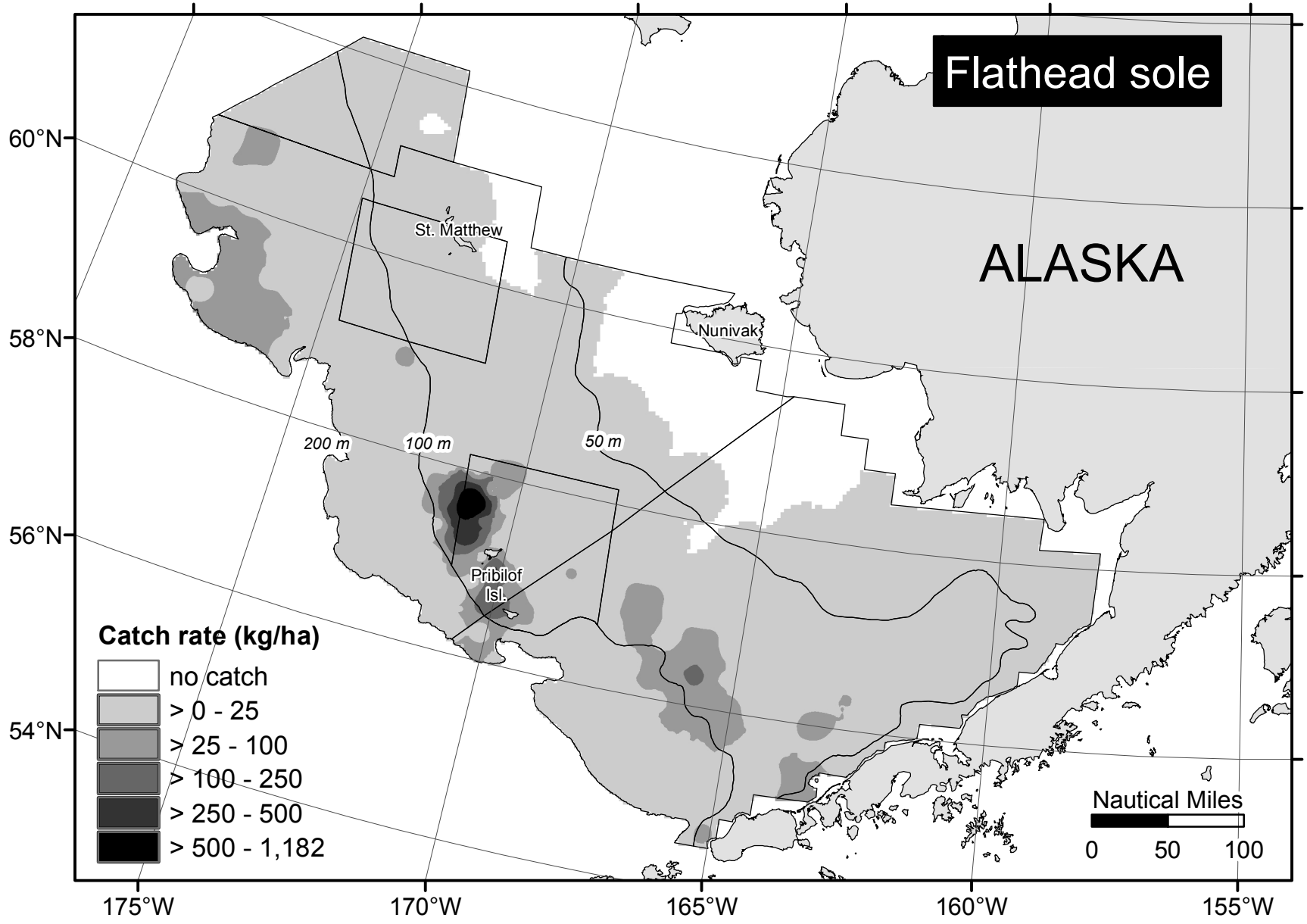

Figure 17. -- Spatial distribution and relative abundance (kg/ha) of **flathead sole** (*Hippoglossoides elassodon*) for the 2011 eastern Bering Sea bottom trawl survey.

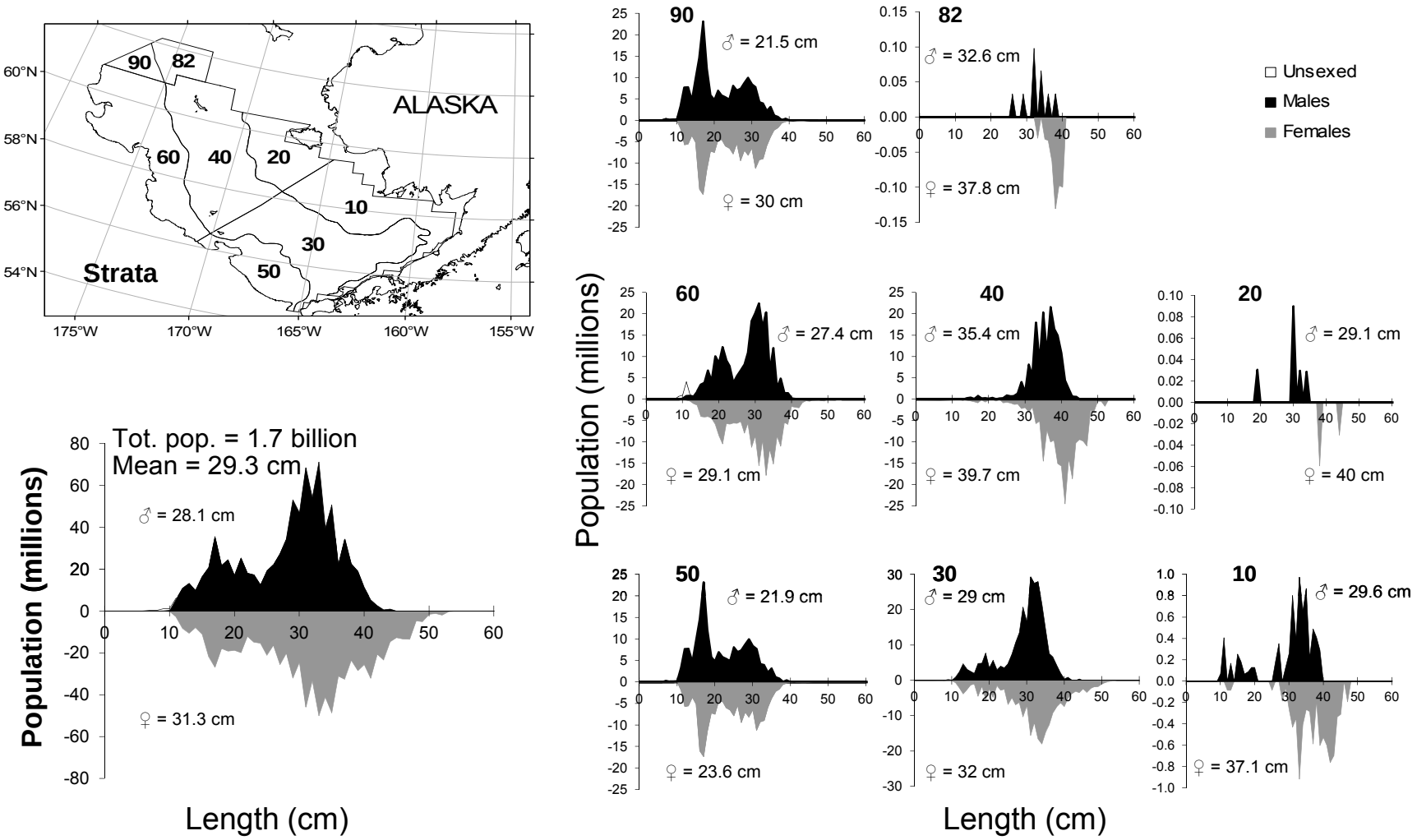

Figure 18. -- Estimated abundance at length of **flathead sole** (*Hippoglossoides elassodon*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 12a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **flathead sole** (*Hippoglossoides elassodon*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.94	2.12E-01	7,286	1.65E+03	3,946	10,626	58	26	26	24
20	0.02	1.35E-02	102	5.53E+01	0	215	31	4	4	4
Subtotal	0.62	1.39E-01	7,388	1.65E+03	4,046	10,730	89	30	30	28
31	16.37	3.11E+00	154,749	2.94E+04	96,038	213,460	69	63	63	63
32	15.96	1.03E+01	14,008	9.06E+03	0	36,179	8	7	7	7
41	3.38	2.58E+00	21,188	1.62E+04	0	53,888	44	27	27	27
42	86.38	4.15E+01	207,410	9.97E+04	3,510	411,311	31	27	27	26
43	0.87	2.90E-01	1,835	6.13E+02	560	3,111	22	14	14	13
82	0.24	1.62E-01	426	2.91E+02	0	1,067	12	6	6	5
Subtotal	17.44	4.61E+00	399,616	1.06E+05	184,018	615,214	186	144	144	141
50	13.74	1.57E+00	53,297	6.08E+03	40,766	65,828	26	26	26	26
61	13.07	2.65E+00	115,205	2.33E+04	68,044	162,367	60	60	60	60
62	2.21	6.67E-01	1,418	4.29E+02	369	2,467	7	7	7	7
90	0.92	1.85E-01	1,069	2.14E+02	562	1,576	8	8	8	8
Subtotal	11.80	1.66E+00	170,989	2.41E+04	122,748	219,230	101	101	101	101
Total	11.73	2.20E+00	577,993	1.08E+05	359,089	796,897	376	275	275	270

*Differences in sums of estimates and totals are due to rounding.

Table 12b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **flathead sole** (*Hippoglossoides elassoedon*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	2.02	5.45E-01	15,756,840	4.25E+06	7,176,346	24,337,334	58	26	26	24
20	0.07	3.35E-02	269,349	1.38E+05	0	550,731	31	4	4	4
Subtotal	1.35	3.57E-01	16,026,189	4.25E+06	7,441,190	24,611,187	89	30	30	28
31	49.83	9.68E+00	470,995,897	9.15E+07	288,073,646	653,918,148	69	63	63	63
32	32.79	1.90E+01	28,768,876	1.67E+07	0	69,665,139	8	7	7	7
41	7.07	4.90E+00	44,330,422	3.07E+07	0	106,425,577	44	27	27	27
42	130.25	5.55E+01	312,747,189	1.33E+08	40,157,309	585,337,070	31	27	27	26
43	1.95	6.30E-01	4,115,434	1.33E+06	1,347,944	6,882,924	22	14	14	13
82	0.44	2.95E-01	782,242	5.30E+05	0	1,949,773	12	6	6	5
Subtotal	37.62	7.22E+00	861,740,060	1.65E+08	523,986,241	1,199,493,880	186	144	144	141
50	104.34	1.56E+01	404,748,936	6.06E+07	279,950,260	529,547,612	26	26	26	26
61	51.48	1.07E+01	453,694,237	9.46E+07	262,599,955	644,788,518	60	60	60	60
62	8.15	1.76E+00	5,242,485	1.13E+06	2,470,548	8,014,423	7	7	7	7
90	3.58	7.33E-01	4,136,250	8.48E+05	2,130,170	6,142,331	8	8	8	8
Subtotal	59.88	7.75E+00	867,821,908	1.12E+08	643,209,472	1,092,434,344	101	101	101	101
Total	35.41	4.06E+00	1,745,588,157	2.00E+08	1,341,443,595	2,149,732,719	376	275	275	270

*Differences in sums of estimates and totals are due to rounding.

also increased in 2011 by 11% to 1.7 billion (Table 12b). The majority of larger flathead sole (30 – 50 cm) were concentrated in Stratum 40 (Fig. 18), where the highest catch rates occurred (Fig. 17).

Bering Flounder (*Hippoglossoides robustus*)

Bering flounder is an arctic species with a distribution extending north into the Chukchi Sea (Mecklenburg et al. 2007). Observations of Bering flounder on the BT survey were mostly confined to the stations where near-bottom water temperatures were ≤ 2°C (Fig. 19). The highest catch rates were in the middle shelf close to the U.S.-Russian Convention Line where bottom water temperatures were below 1°C (Figs. 6, 19). The total estimated biomass within the survey was 16,112 t (Table 13a) and the total population number was 199 million fish (Table 13b). The mean length of Bering flounder (17.5 cm) was much less than that of flathead sole (29.3 cm), and a large portion of the Bering flounder encountered on the survey were too small to reliably determine the sex (Figs. 18, 20).

Alaska Plaice (*Pleuronectes quadrituberculatus*)

Alaska plaice were distributed throughout the inner and middle shelf from Bristol Bay to the Bering Strait with the highest densities found along the 50 m isobath (Fig. 21). The distribution of Alaska plaice observed on the BT survey appeared to relate to the geographic extent of the Bering Sea cold pool (Figs. 6, 21). Alaska plaice are well-adapted to sea water temperatures near the freezing point (-1.9°C) because they are capable of synthesizing an antifreeze glycoprotein to prevent ice crystal formation in their blood (Knight et al. 1991).

Results from this year and previous AFSC trawl surveys show that females attain a maximum length about 10 cm greater than males (Fig. 22; Zhang et al. 1998). No Alaska plaice were observed in Stratum 50 (Fig. 22), and only a few, mostly larger females, were observed in the outer shelf strata (60, 90).

In 2011, the estimated biomass of Alaska plaice in the EBS was 519,578 t, and the estimated population was 910 million fish (Tables 14a, b). Biomass estimates on the EBS shelf have fluctuated between 423,000 t and 645,000 t over the past 20 years. It was evident from the extension of the 2010 survey into the NBS that a large proportion of Alaska plaice can occupy the area north of the standard annual EBS survey (Lauth 2011). Interpreting a meaningful relative trend in Alaska plaice abundance in the EBS time series is difficult without more knowledge about the variability in seasonal migratory patterns of Alaska plaice between the EBS and NBS.

Greenland Turbot (*Reinhardtius hippoglossoides*)

Greenland turbot has a circumpolar distribution and, on the Pacific side, is most abundant in the Bering Sea continental shelf and upper slope (Allen and Smith 1988). The total estimated biomass on the Bering Sea continental shelf was 26,156 t (Table 15a), where 77% of the biomass was observed on the outer shelf. The highest catch rates were observed in the northernmost section of the EBS outer shelf (Fig. 23). The estimated number of Greenland turbot was 144 million t (Table 15b) which was the highest population abundance in the 29-year time series. A majority of the Greenland turbot encountered on the survey were smaller than 50 cm (Fig. 24), in contrast with the EBS continental slope BT survey, where the majority of Greenland turbot were > 60 cm (Fig. 67 in Hoff and Britt 2011). On the EBS shelf, the average lengths for males

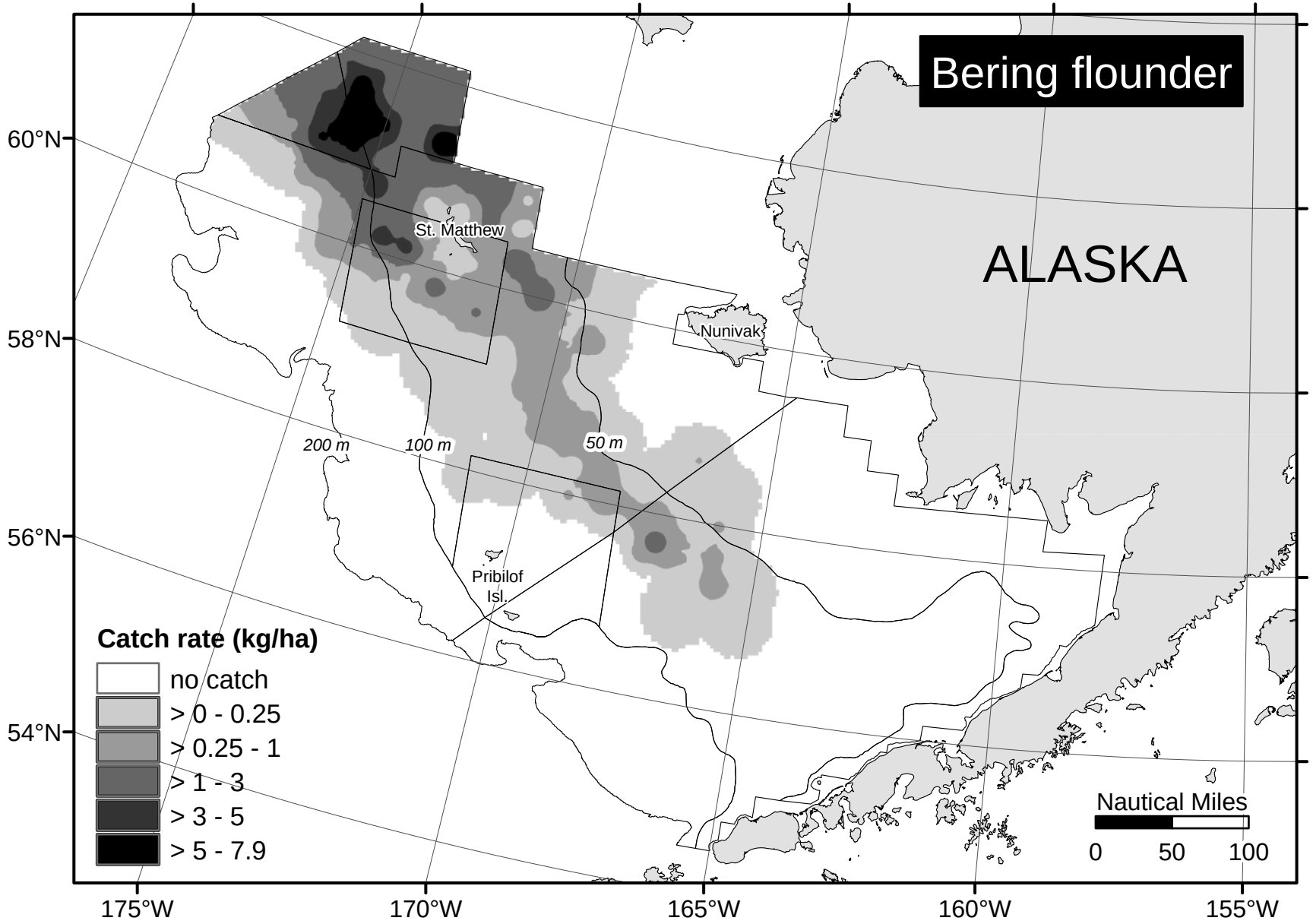

Figure 19. -- Spatial distribution and relative abundance (kg/ha) of **Bering flounder** (*Hippoglossoides robustus*) for the 2011 eastern Bering Sea bottom trawl survey.

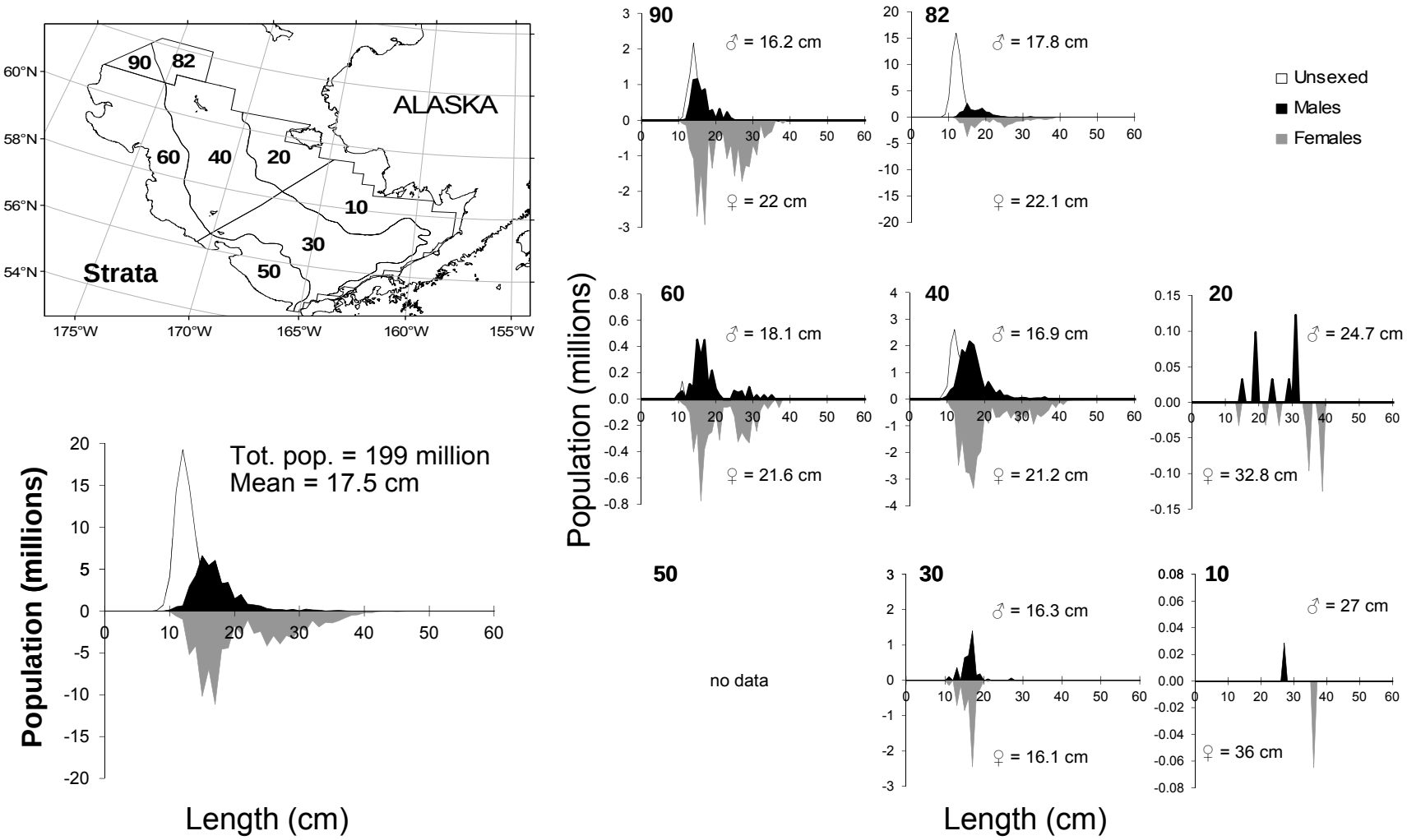

Figure 20. -- Estimated abundance at length of **Bering flounder** (*Hippoglossoides robustus*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 13a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Bering flounder** (*Hippoglossoides robustus*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.01	4.74E-03	42	3.69E+01	0	117	58	2	2	2
20	0.05	2.50E-02	208	1.03E+02	0	418	31	7	7	6
Subtotal	0.02	9.17E-03	251	1.09E+02	28	473	89	9	9	8
31	0.04	2.27E-02	419	2.14E+02	0	848	69	8	8	8
32	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
41	0.54	1.15E-01	3,404	7.24E+02	1,940	4,867	44	33	33	33
42	0.03	1.74E-02	74	4.18E+01	0	160	31	4	4	4
43	0.83	2.68E-01	1,750	5.66E+02	570	2,931	22	20	20	20
82	2.99	5.93E-01	5,366	1.06E+03	3,023	7,708	12	12	12	12
Subtotal	0.48	6.21E-02	11,013	1.42E+03	8,107	13,919	186	77	77	77
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.07	3.76E-02	658	3.31E+02	0	1,328	60	5	5	5
62	0.38	1.76E-01	245	1.13E+02	0	522	7	6	6	6
90	3.41	9.04E-01	3,945	1.05E+03	1,472	6,418	8	8	8	8
Subtotal	0.33	7.61E-02	4,848	1.10E+03	2,510	7,186	101	19	19	19
Total	0.33	3.66E-02	16,112	1.80E+03	12,467	19,757	376	105	105	104

*Differences in sums of estimates and totals are due to rounding.

Table 13b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **Bering flounder** (*Hippoglossoides robustus*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.01	9.03E-03	93,407	7.04E+04	0	235,597	58	2	2	2
20	0.17	7.49E-02	702,616	3.07E+05	73,909	1,331,322	31	7	7	6
Subtotal	0.07	2.65E-02	796,023	3.15E+05	152,010	1,440,036	89	9	9	8
31	1.06	5.72E-01	10,050,121	5.40E+06	0	20,855,068	69	8	8	8
32	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
41	6.21	1.27E+00	38,969,925	7.95E+06	22,899,183	55,040,666	44	33	33	33
42	0.71	4.71E-01	1,707,650	1.13E+06	0	4,018,933	31	4	4	4
43	6.27	1.96E+00	13,224,616	4.13E+06	4,602,398	21,846,833	22	20	20	20
82	51.13	9.05E+00	91,804,041	1.63E+07	56,033,959	127,574,124	12	12	12	12
Subtotal	6.80	8.45E-01	155,756,352	1.94E+07	116,218,250	195,294,454	186	77	77	77
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.55	3.15E-01	4,819,112	2.78E+06	0	10,438,330	60	5	5	5
62	4.21	2.71E+00	2,708,569	1.74E+06	0	6,972,093	7	6	6	6
90	30.38	7.52E+00	35,146,270	8.70E+06	14,574,779	55,717,761	8	8	8	8
Subtotal	2.94	6.41E-01	42,673,951	9.30E+06	22,965,134	62,382,768	101	19	19	19
Total	4.04	4.36E-01	199,226,326	2.15E+07	155,813,359	242,639,294	376	105	105	104

*Differences in sums of estimates and totals are due to rounding.

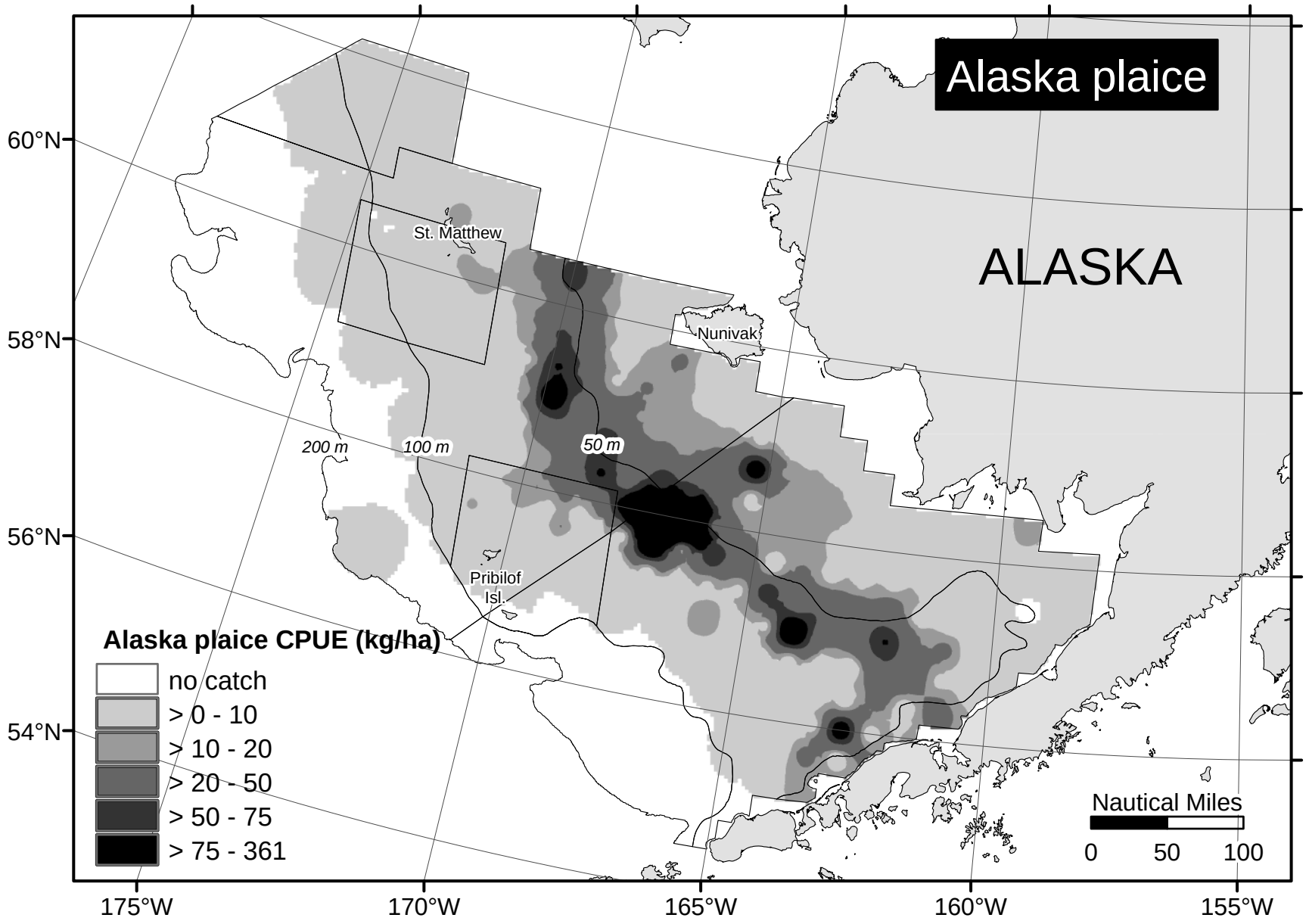

Figure 21. -- Spatial distribution and relative abundance (kg/ha) of **Alaska plaice** (*Pleuronectes quadrituberculatus*) for the 2011 eastern Bering Sea bottom trawl survey.

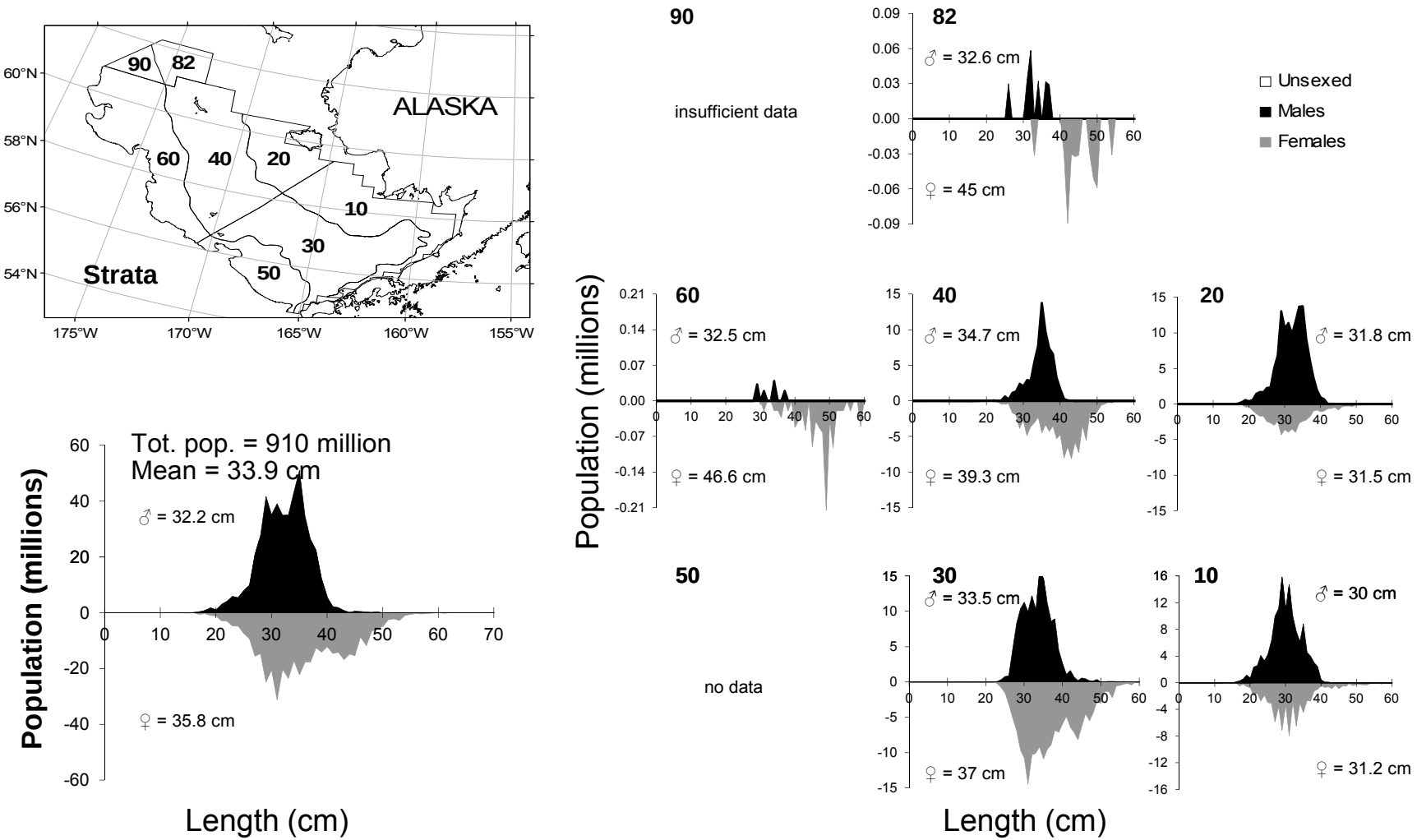

Figure 22. -- Estimated abundance at length of **Alaska plaice** (*Pleuronectes quadrituberculatus*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 14a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Alaska plaice** (*Pleuronectes quadrituberculatus*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	11.04	2.22E+00	85,996	1.73E+04	51,003	120,989	58	52	52	52
20	19.23	3.57E+00	78,897	1.46E+04	48,954	108,840	31	31	31	31
Subtotal	13.87	1.91E+00	164,893	2.27E+04	119,541	210,244	89	83	83	83
31	23.56	6.79E+00	222,663	6.42E+04	94,257	351,069	69	52	52	52
32	0.16	1.06E-01	140	9.31E+01	0	367	8	2	2	2
41	17.66	4.06E+00	110,742	2.54E+04	59,352	162,133	44	39	39	39
42	5.41	1.33E+00	12,993	3.19E+03	6,479	19,507	31	23	23	22
43	2.72	9.05E-01	5,745	1.91E+03	1,758	9,731	22	16	16	16
82	0.36	9.60E-02	644	1.72E+02	265	1,024	12	9	9	9
Subtotal	15.41	3.02E+00	352,927	6.92E+04	214,616	491,238	186	141	141	140
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.08	3.62E-02	690	3.19E+02	45	1,334	60	6	6	6
62	1.58	9.33E-01	1,019	6.00E+02	0	2,561	7	4	4	4
90	0.04	2.26E-02	50	2.61E+01	0	114	8	3	3	3
Subtotal	0.12	4.69E-02	1,758	6.80E+02	368	3,148	101	13	13	13
Total	10.54	1.48E+00	519,578	7.28E+04	374,015	665,140	376	237	237	236

*Differences in sums of estimates and totals are due to rounding.

Table 14b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **Alaska plaice** (*Pleuronectes quadrituberculatus*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	28.25	4.86E+00	219,993,444	3.78E+07	143,575,172	296,411,716	58	52	52	52
20	44.75	7.64E+00	183,600,835	3.13E+07	119,529,949	247,671,721	31	31	31	31
Subtotal	33.94	4.13E+00	403,594,279	4.91E+07	305,383,155	501,805,403	89	83	83	83
31	35.13	1.08E+01	332,033,301	1.02E+08	128,274,575	535,792,026	69	52	52	52
32	0.23	1.52E-01	202,446	1.33E+05	0	527,947	8	2	2	2
41	23.69	5.61E+00	148,539,429	3.52E+07	77,499,540	219,579,318	44	39	39	39
42	7.19	1.81E+00	17,255,779	4.35E+06	8,382,680	26,128,877	31	23	23	22
43	3.21	1.27E+00	6,777,483	2.68E+06	1,193,965	12,361,002	22	16	16	16
82	0.35	1.01E-01	630,545	1.80E+05	233,313	1,027,778	12	9	9	9
Subtotal	22.06	4.71E+00	505,438,983	1.08E+08	289,651,273	721,226,693	186	141	141	140
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.05	2.53E-02	446,208	2.23E+05	0	896,295	60	6	6	6
62	1.03	5.89E-01	664,227	3.78E+05	0	1,637,273	7	4	4	4
90	0.08	3.73E-02	88,390	4.32E+04	0	194,096	8	3	3	3
Subtotal	0.08	3.04E-02	1,198,825	4.41E+05	296,465	2,101,184	101	13	13	13
Total	18.47	2.41E+00	910,232,086	1.19E+08	673,144,466	1,147,319,706	376	237	237	236

*Differences in sums of estimates and totals are due to rounding.

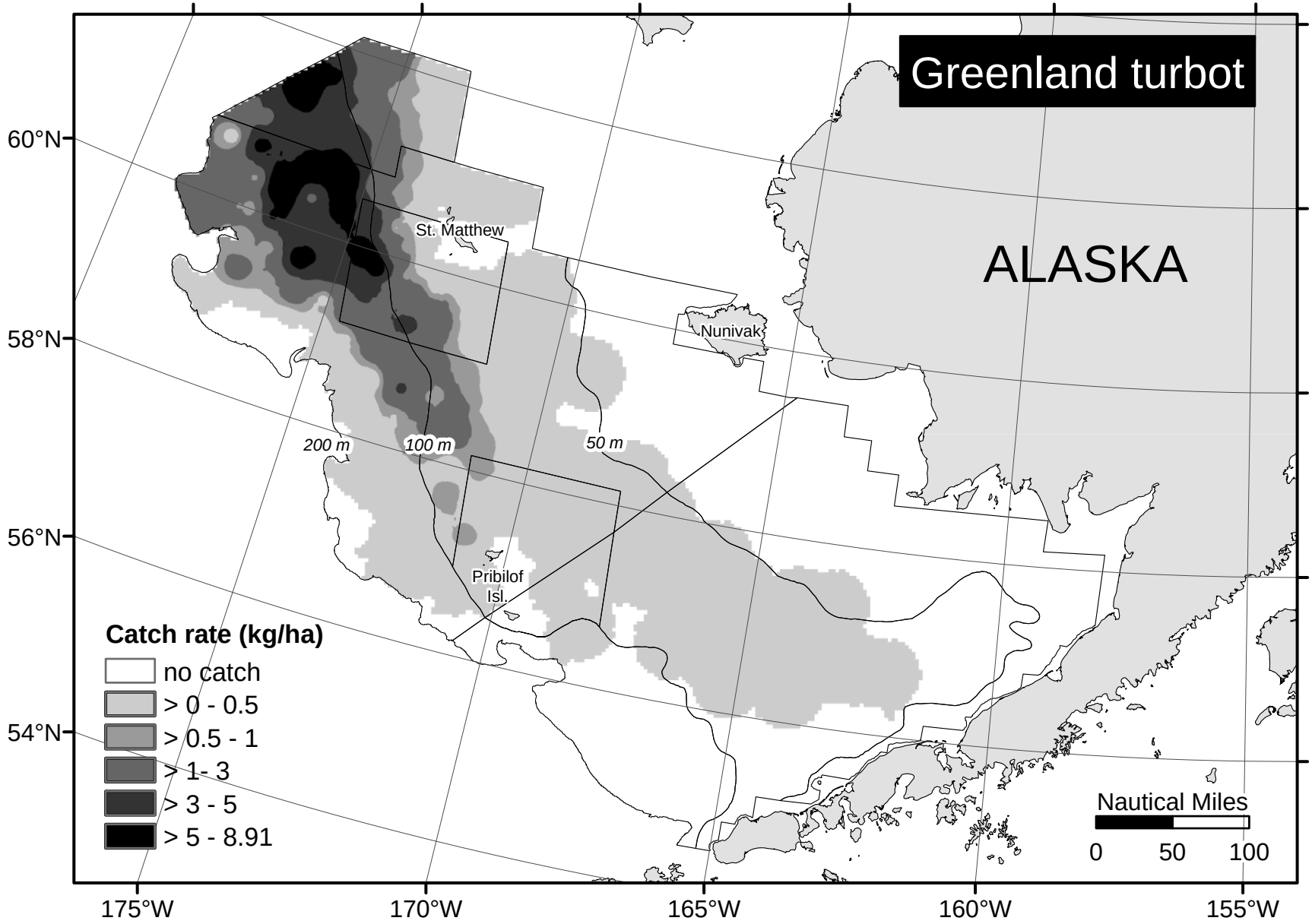

Figure 23. -- Spatial distribution and relative abundance (kg/ha) of **Greenland turbot** (*Reinhardtius hippoglossoides*) for the 2011 eastern Bering Sea bottom trawl survey.

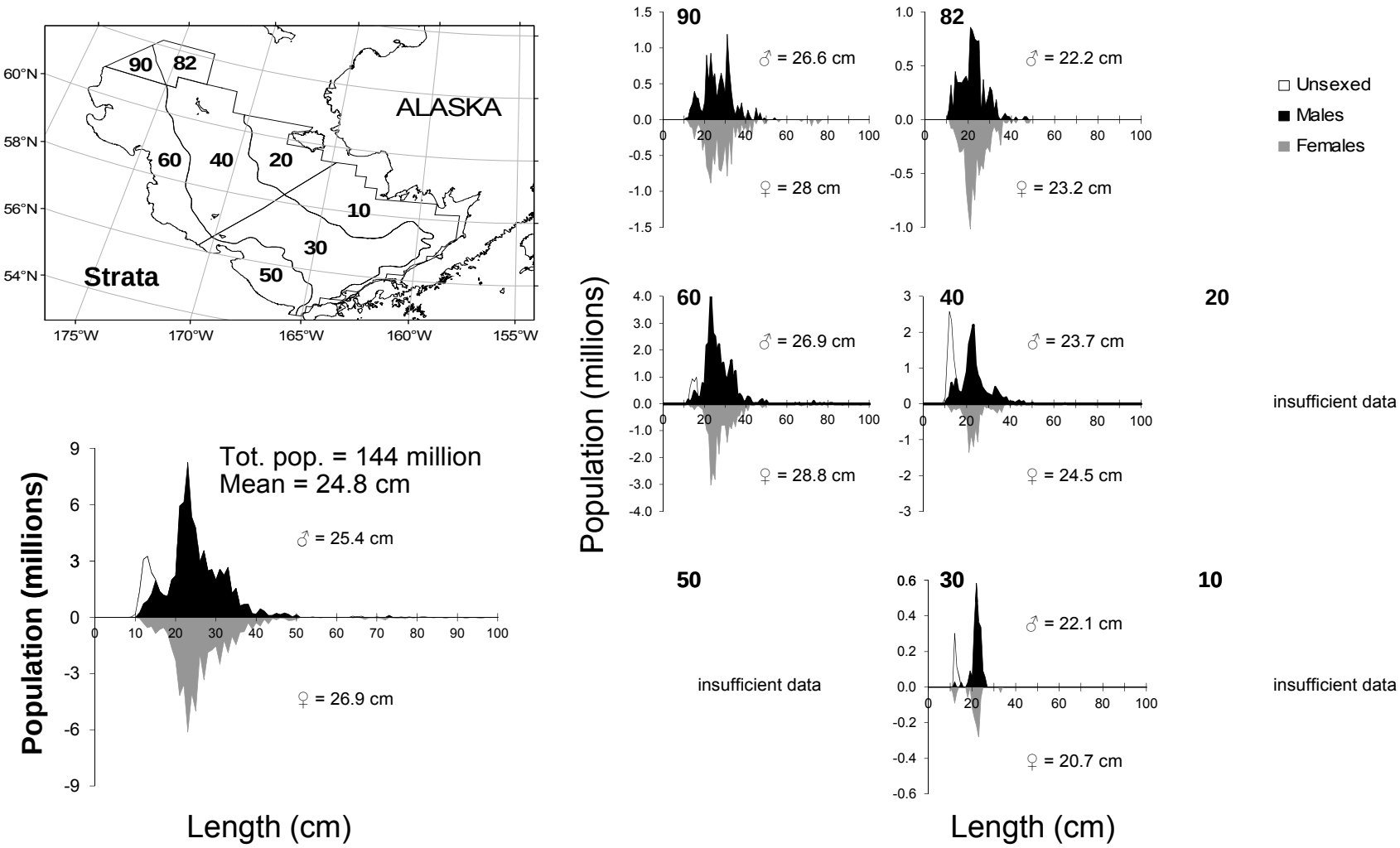

Figure 24. -- Estimated abundance at length of **Greenland turbot** (*Reinhardtius hippoglossoides*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 15a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Greenland turbot** (*Reinhardtius hippoglossoides*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.00	3.40E-04	3	2.65E+00	0	8	58	1	1	1
20	0.00	1.78E-04	1	7.30E-01	0	2	31	1	1	1
Subtotal	0.00	2.31E-04	3	2.75E+00	0	9	89	2	2	2
31	0.03	7.69E-03	240	7.27E+01	95	386	69	24	24	23
32	0.00	2.28E-03	2	2.00E+00	0	7	8	1	1	1
41	0.27	6.75E-02	1,676	4.23E+02	821	2,531	44	29	29	29
42	0.12	3.63E-02	285	8.71E+01	108	463	31	19	19	19
43	0.93	2.47E-01	1,958	5.22E+02	868	3,047	22	15	15	15
82	1.03	2.70E-01	1,849	4.85E+02	781	2,917	12	12	12	12
Subtotal	0.26	3.65E-02	6,010	8.37E+02	4,319	7,701	186	100	100	99
50	0.00	1.66E-04	1	6.43E-01	0	2	26	1	1	1
61	1.42	2.89E-01	12,554	2.54E+03	7,412	17,696	60	38	38	38
62	4.19	6.14E-01	2,695	3.95E+02	1,728	3,662	7	7	7	7
90	4.23	5.12E-01	4,892	5.92E+02	3,444	6,340	8	8	8	8
Subtotal	1.39	1.82E-01	20,142	2.64E+03	14,858	25,426	101	54	54	54
Total	0.53	5.62E-02	26,156	2.77E+03	20,613	31,699	376	156	156	155

*Differences in sums of estimates and totals are due to rounding.

Table 15b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **Greenland turbot** (*Reinhardtius hippoglossoides*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.00	3.96E-03	30,819	3.08E+04	0	93,106	58	1	1	1
20	0.01	1.42E-02	58,416	5.84E+04	0	177,700	31	1	1	1
Subtotal	0.01	5.55E-03	89,235	6.60E+04	0	221,329	89	2	2	2
31	0.38	1.15E-01	3,593,395	1.09E+06	1,414,213	5,772,577	69	24	24	23
32	0.03	2.68E-02	23,547	2.35E+04	0	79,235	8	1	1	1
41	2.77	5.90E-01	17,369,478	3.70E+06	9,891,272	24,847,684	44	29	29	29
42	1.44	3.69E-01	3,458,958	8.85E+05	1,651,566	5,266,350	31	19	19	19
43	7.00	1.79E+00	14,776,706	3.78E+06	6,882,861	22,670,550	22	15	15	15
82	10.25	2.61E+00	18,396,823	4.69E+06	8,079,035	28,714,611	12	12	12	12
Subtotal	2.52	3.15E-01	57,618,906	7.21E+06	43,051,094	72,186,718	186	100	100	99
50	0.01	8.29E-03	32,147	3.21E+04	0	98,499	26	1	1	1
61	5.62	1.28E+00	49,543,623	1.13E+07	26,705,929	72,381,318	60	38	38	38
62	20.40	3.31E+00	13,113,865	2.13E+06	7,913,525	18,314,205	7	7	7	7
90	20.06	2.79E+00	23,200,127	3.22E+06	15,315,200	31,085,054	8	8	8	8
Subtotal	5.93	8.24E-01	85,889,763	1.19E+07	62,007,135	109,772,391	101	54	54	54
Total	2.91	2.83E-01	143,597,904	1.39E+07	115,701,110	171,494,697	376	156	156	155

*Differences in sums of estimates and totals are due to rounding.

and females were similar, 25.4 cm and 26.9 cm respectively, even though the maximum size of Greenland turbot generally differs by sex being about 80 cm for males and 110 cm for females.

Sizes-at-age extrapolated from lengths of Greenland turbot observed in BT surveys (Gregg et al. 2006, Ianelli et al. 2011) are consistent with a hypothesized framework for spawning, recruitment, and ontogentic migration (Alton et al. 1988, Sohn et al. 2010). Greenland turbot spawn on the continental slope between Unimak Pass and the Pribilof Islands (Alton et al. 1988). Once hatched from eggs, the larvae and juveniles undergo a prolonged pelagic phase drifting northward in the Bering Slope Current to the vicinity of St. Matthew Island, where they settle on nursery grounds (Sohn et al. 2010). After spending 4 to 5 years on the shelf, Greenland turbot undergo an ontogenetic migration down the slope and back toward the spawning area in the south (Alton et al. 1988).

Arrowtooth Flounder (*Atheresthes stomias*)

The distribution of arrowtooth flounder was concentrated along the EBS outer shelf, continuing marginally into the middle shelf, with a small portion of the population extending into southern Bristol Bay (Fig. 25). The cross-shelf spatial distribution of arrowtooth flounder may be affected by the extent of the Bering Sea cold pool on the middle shelf. In 2010, a cold year, the highest catch rates were seaward of the 1°C isotherm, and arrowtooth flounder were absent from more than half of the stations sampled in the middle shelf (Lauth 2011). In contrast, the mean bottom water temperature in 2011 (2.3 °C) was the highest since 2005, and arrowtooth flounder were more broadly distributed across the middle shelf south of the 1°C isotherm (Fig. 25).

The 2011 estimate of total biomass was 0.52 million t (Table 16a), consisting of 0.98 billion fish (Table 16b). The overall mean length was 35.8 cm, but females (mean length =

37.6 cm) were considerably larger than males (mean length = 31.4 cm), which was consistent for each stratum in which they were observed (Fig. 26). In addition to being found on the shelf, arrowtooth flounder were broadly distributed along the EBS continental slope where lengths exceeded 30 cm and the mean length was much higher (46.8 cm; Fig. 69 in Hoff and Britt 2011). Similar to Greenland turbot, the maximum size of females (80 cm) was about 30 cm greater than males (50 cm; Fig. 26 and Hoff and Britt 2011). Another consistent pattern evident in all Alaska BT surveys was that there is a higher ratio of females to males, which may be due to males having a higher mortality rate than females (Wilderbuer et al. 2010).

Kamchatka Flounder (*Atheresthes evermanni*)

Kamchatka flounder are similar in appearance to the congeneric arrowtooth flounder (Yang 1988), and it wasn't until 1994 that field characters were established to reliably distinguish between the two species during AFSC BT surveys. The spatial distribution and depth range of the two species coincide, but Kamchatka flounder are generally concentrated at the northwest extent of the survey area while arrowtooth flounder are present throughout (Figs. 25, Fig. 27). The estimated biomass and population size of Kamchatka flounder for the survey are about one-tenth that of arrowtooth flounder; however trends in relative abundance are similar from year to year. The estimated biomass of Kamchatka flounder decreased by 21% in 2011 to 46,095 t (Table 17a) and the population decreased by 51% from 132 million to 87 million (Table 17b). The measured lengths of Kamchatka flounder on the EBS shelf ranged from 9 to 79 cm and had a mean of 33.5 cm (Fig. 28). Similar to arrowtooth flounder, the portion of the Kamchatka flounder population inhabiting the EBS slope had a greater mean length (55.2 cm; Hoff and Britt 2011) than on the shelf and females attained a greater maximum size (Fig. 28). A characteristic

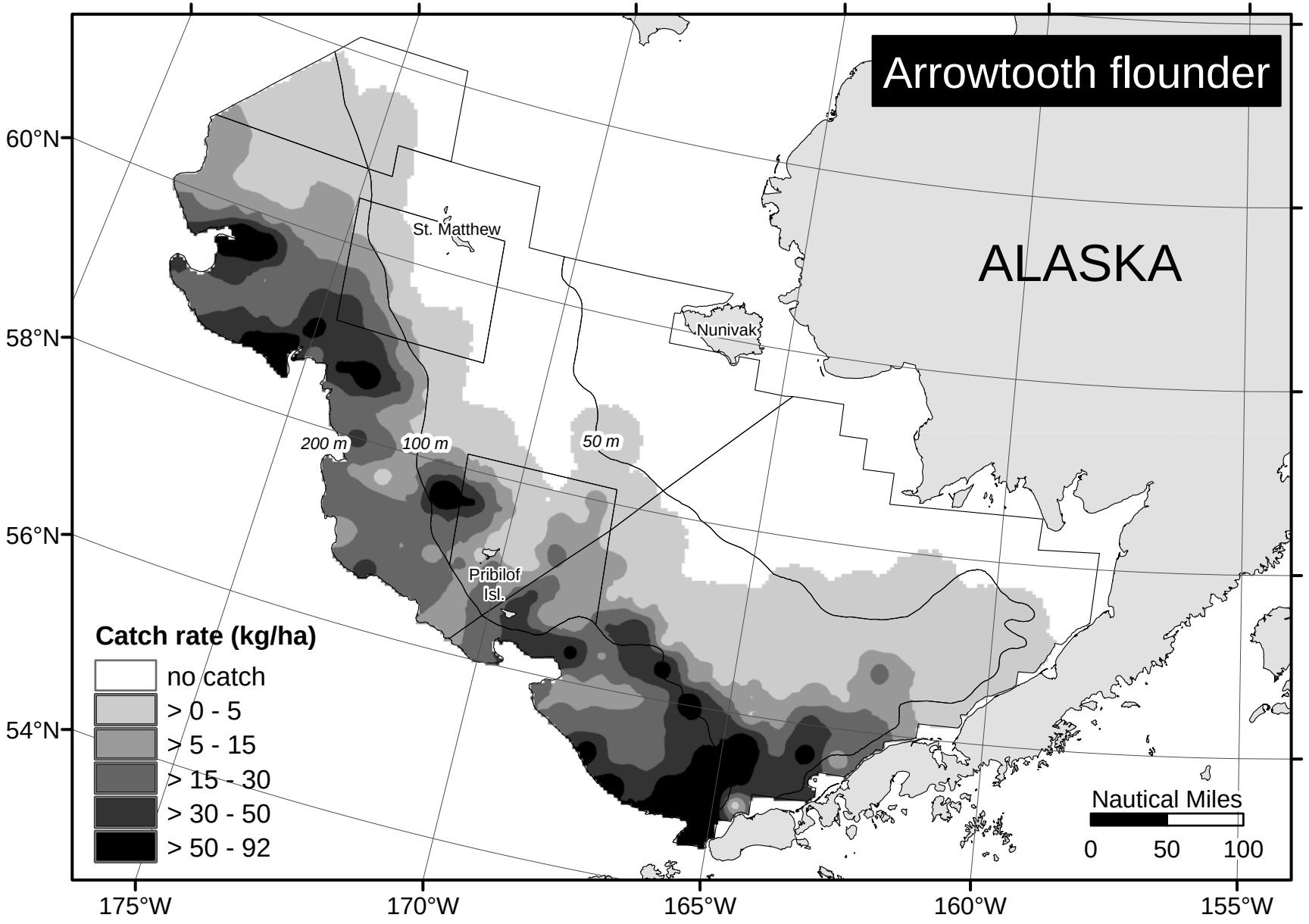

Figure 25. -- Spatial distribution and relative abundance (kg/ha) of **arrowtooth flounder** (*Atheresthes stomias*) for the 2011 eastern Bering Sea bottom trawl survey.

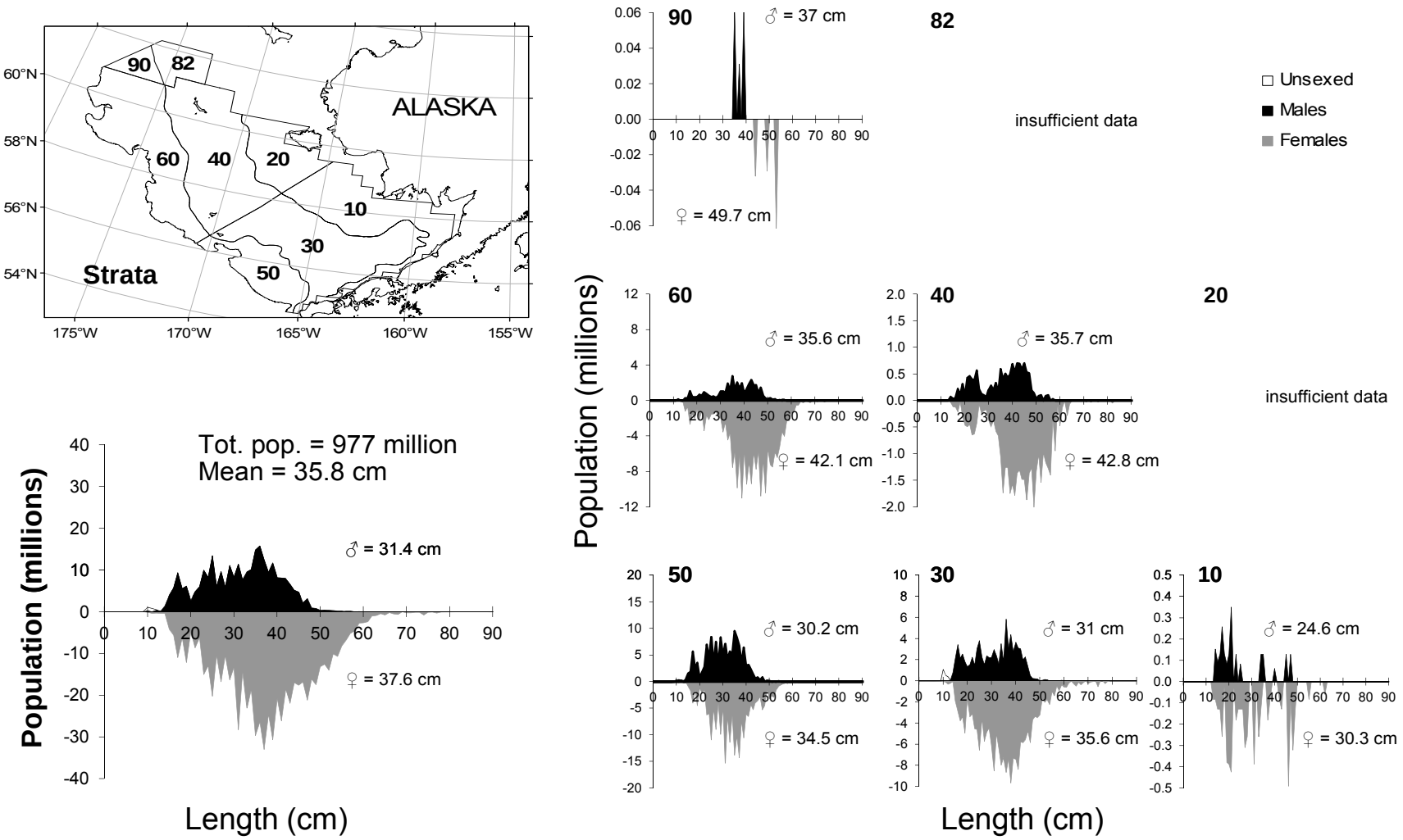

Figure 26. -- Estimated abundance at length of **arrowtooth flounder** (*Atheresthes stomias*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 16a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **arrowtooth flounder** (*Atheresthes stomias*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.32	1.78E-01	2,497	1.39E+03	0	5,301	58	9	9	8
20	0.02	1.67E-02	69	6.87E+01	0	209	31	1	1	1
Subtotal	0.22	1.17E-01	2,566	1.39E+03	0	5,373	89	10	10	9
31	12.54	2.41E+00	118,520	2.28E+04	72,918	164,122	69	57	57	57
32	17.71	4.74E+00	15,539	4.16E+03	5,703	25,375	8	8	8	8
41	2.76	1.91E+00	17,311	1.20E+04	0	41,495	44	8	8	8
42	9.73	2.10E+00	23,370	5.05E+03	13,061	33,678	31	26	26	26
43	0.49	2.74E-01	1,039	5.78E+02	0	2,245	22	5	5	5
82	0.01	9.93E-03	25	1.78E+01	0	65	12	2	2	2
Subtotal	7.67	1.16E+00	175,804	2.66E+04	122,655	228,953	186	106	106	106
50	36.24	4.99E+00	140,565	1.94E+04	100,652	180,478	26	26	26	26
61	21.94	2.59E+00	193,364	2.29E+04	147,175	239,553	60	60	60	60
62	14.93	4.56E+00	9,601	2.93E+03	2,057	17,144	7	7	7	7
90	0.18	1.12E-01	206	1.30E+02	0	512	8	3	3	3
Subtotal	23.72	2.08E+00	343,736	3.01E+04	283,524	403,947	101	96	96	96
Total	10.59	8.15E-01	522,106	4.02E+04	442,548	601,664	376	212	212	211

*Differences in sums of estimates and totals are due to rounding.

Table 16b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **arrowtooth flounder** (*Atheresthes stomias*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.97	6.38E-01	7,547,369	4.97E+06	0	17,590,646	58	9	9	8
20	0.02	2.20E-02	90,148	9.01E+04	0	274,232	31	1	1	1
Subtotal	0.64	4.18E-01	7,637,517	4.97E+06	0	17,682,447	89	10	10	9
31	27.81	6.17E+00	262,839,645	5.83E+07	146,248,197	379,431,092	69	57	57	57
32	33.39	8.49E+00	29,297,852	7.45E+06	11,684,246	46,911,459	8	8	8	8
41	2.49	1.60E+00	15,611,139	1.00E+07	0	35,852,423	44	8	8	8
42	15.48	3.28E+00	37,176,268	7.88E+06	21,086,362	53,266,174	31	26	26	26
43	0.43	2.97E-01	901,177	6.26E+05	0	2,207,869	22	5	5	5
82	0.03	2.35E-02	62,486	4.21E+04	0	155,237	12	2	2	2
Subtotal	15.10	2.63E+00	345,888,567	6.01E+07	225,611,411	466,165,724	186	106	106	106
50	94.22	1.41E+01	365,515,309	5.48E+07	252,700,296	478,330,323	26	26	26	26
61	28.04	3.26E+00	247,130,540	2.87E+07	189,121,102	305,139,977	60	60	60	60
62	16.33	5.45E+00	10,500,019	3.51E+06	1,486,939	19,513,100	7	7	7	7
90	0.24	1.60E-01	280,484	1.86E+05	0	719,511	8	3	3	3
Subtotal	43.02	4.27E+00	623,426,352	6.19E+07	499,565,726	747,286,978	101	96	96	96
Total	19.82	1.75E+00	976,952,437	8.65E+07	805,745,787	1,148,159,087	376	212	212	211

*Differences in sums of estimates and totals are due to rounding.

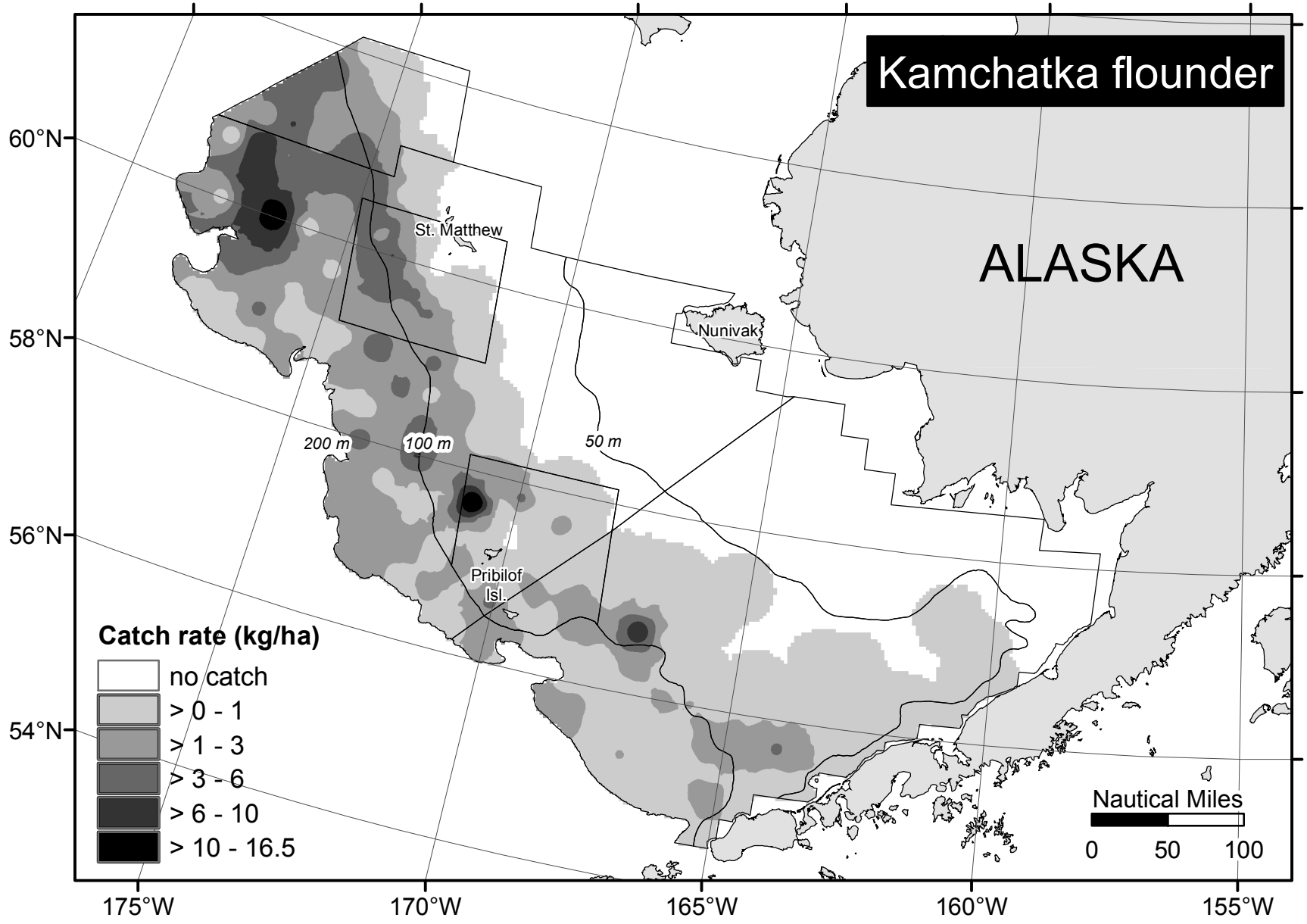

Figure 27. -- Spatial distribution and relative abundance (kg/ha) of **Kamchatka flounder** (*Atheresthes evermanni*) for the 2011 eastern Bering Sea bottom trawl survey.

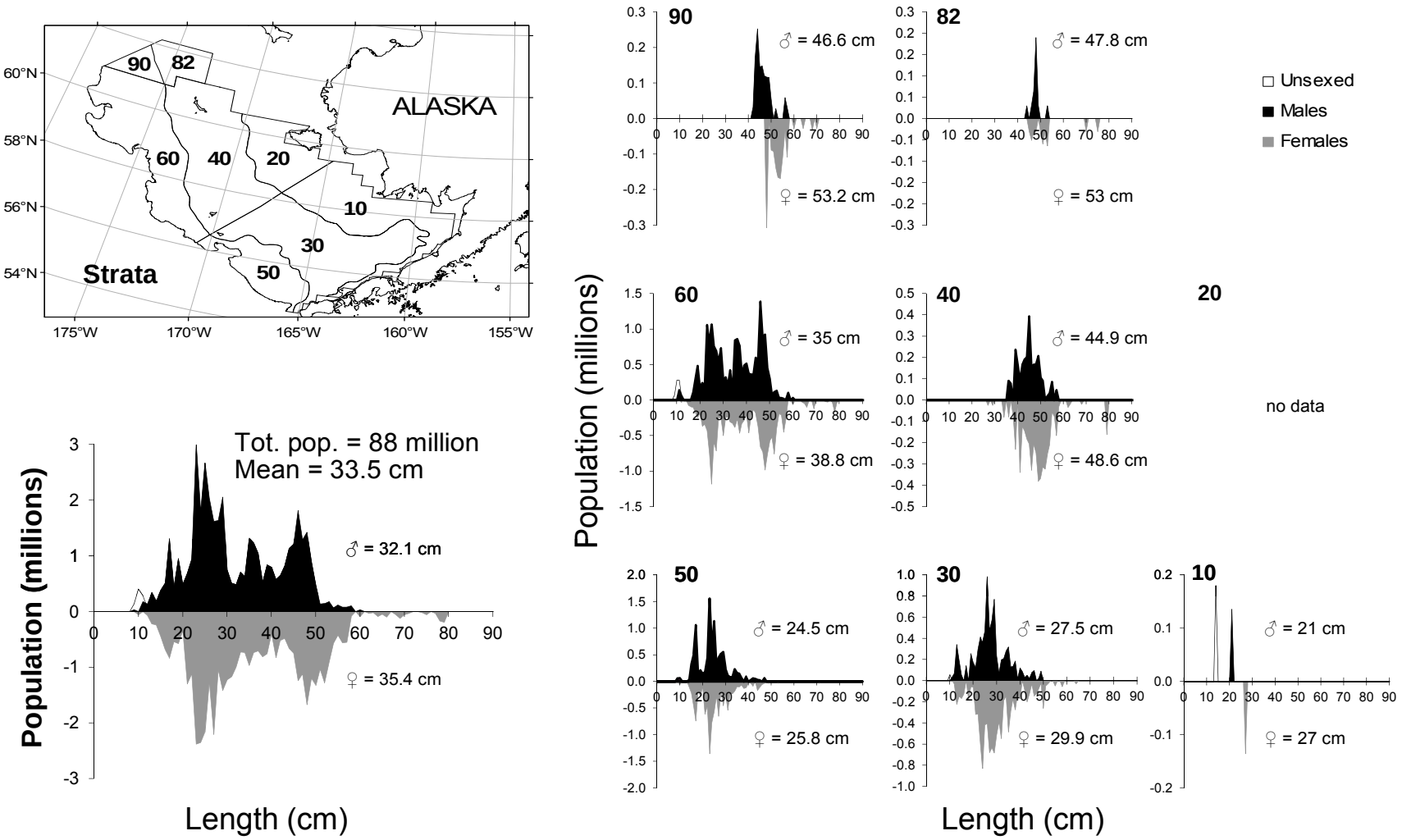

Figure 28. -- Estimated abundance at length of **Kamchatka flounder** (*Atheresthes evermanni*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 17a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Kamchatka flounder** (*Atheresthes evermanni*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit		Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
					Lower	Upper				
10	0.00	4.43E-03	37	3.45E+01	0	107	58	2	2	2
20	0.00	0.00E+00	0	0.00E+00	0	0	31	0	0	0
Subtotal	0.00	2.90E-03	37	3.45E+01	0	107	89	2	2	2
31	0.47	1.42E-01	4,460	1.34E+03	1,784	7,136	69	34	34	34
32	0.81	2.45E-01	710	2.15E+02	202	1,218	8	7	7	7
41	0.40	1.45E-01	2,482	9.10E+02	643	4,321	44	12	12	12
42	1.33	5.40E-01	3,195	1.30E+03	545	5,845	31	19	19	19
43	1.43	3.61E-01	3,021	7.63E+02	1,430	4,613	22	13	13	12
82	0.61	3.00E-01	1,088	5.38E+02	0	2,272	12	5	5	5
Subtotal	0.65	9.97E-02	14,956	2.28E+03	10,434	19,478	186	90	90	89
50	0.90	1.49E-01	3,504	5.77E+02	2,315	4,694	26	26	26	26
61	2.47	3.63E-01	21,780	3.20E+03	15,320	28,239	60	58	58	57
62	3.38	5.24E-01	2,171	3.37E+02	1,347	2,994	7	7	7	7
90	3.15	6.53E-01	3,647	7.55E+02	1,800	5,494	8	8	8	8
Subtotal	2.15	2.31E-01	31,102	3.35E+03	24,399	37,805	101	99	99	98
Total	0.94	8.23E-02	46,095	4.06E+03	38,064	54,125	376	191	191	189

*Differences in sums of estimates and totals are due to rounding.

Table 17b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **Kamchatka flounder** (*Atheresthes evermanni*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	0.06	4.16E-02	452,134	3.24E+05	0	1,106,060	58	2	2	2
20	0.00	0.00E+00	0	0.00E+00	0	0	31	0	0	0
Subtotal	0.04	2.72E-02	452,134	3.24E+05	0	1,112,855	89	2	2	2
31	1.75	4.11E-01	16,507,694	3.88E+06	8,740,424	24,274,964	69	34	34	34
32	2.48	6.73E-01	2,175,253	5.90E+05	779,285	3,571,220	8	7	7	7
41	0.37	1.27E-01	2,296,656	7.97E+05	686,320	3,906,993	44	12	12	12
42	1.08	3.20E-01	2,596,677	7.67E+05	1,027,395	4,165,959	31	19	19	19
43	1.19	3.10E-01	2,506,360	6.55E+05	1,139,598	3,873,123	22	13	13	12
82	0.43	2.13E-01	764,299	3.82E+05	0	1,604,804	12	5	5	5
Subtotal	1.17	1.81E-01	26,846,939	4.15E+06	18,628,171	35,065,706	186	90	90	89
50	5.12	1.11E+00	19,867,048	4.32E+06	10,958,569	28,775,526	26	26	26	26
61	4.06	4.41E-01	35,820,075	3.88E+06	27,969,946	43,670,203	60	58	58	57
62	2.99	3.36E-01	1,921,430	2.16E+05	1,392,456	2,450,405	7	7	7	7
90	2.26	4.40E-01	2,609,841	5.09E+05	1,364,445	3,855,237	8	8	8	8
Subtotal	4.16	4.03E-01	60,218,394	5.84E+06	48,540,257	71,896,531	101	99	99	98
Total	1.78	1.45E-01	87,517,467	7.17E+06	73,318,047	101,716,887	376	191	191	189

*Differences in sums of estimates and totals are due to rounding.

that distinguishes the two species is that the proportion of females to males in the Kamchatka flounder population is roughly equal (Fig. 28).

Pacific Halibut (*Hippoglossus stenolepis*)

Pacific halibut were present at 77% of the stations sampled, with the highest catch rates concentrated along the southeastern half of the inner shelf (Fig. 29). The estimated biomass decreased in 2011 to 186,908 t (Table 18a), with a population of 96 million fish (Table 18b). Mean length generally increased with depth, and a strong mode of younger fish (30 – 35 cm) was observed in Strata 10 and 30 (Fig. 30).

Research and management of Pacific halibut stocks is the responsibility of the IPHC and their stock assessments include all available fisheries and scientific survey data from the U.S. and Canada (Hare 2011). The AFSC BT survey provides an important estimate of Pacific halibut abundance-at-length on the EBS shelf, especially for tracking strong incoming year classes.

Survey Results of Selected Invertebrates

Invertebrates representing 9 phyla were observed during the 2011 BT survey. The echinoderm class Asteroidea, constituting the starfish, accounted for 1.4 million t of 4.3 million t of invertebrate biomass (Table 7). The purple sea star, (*Asterias amurensis*), common in the Bering and Chukchi Seas (Hamizaki et al. 2005, Feder et al. 2005), was the most abundant invertebrate taxon by weight on the survey (Appendix B1), and was encountered at 259 stations in the EBS (Appendix C2). The phylum Mollusca was the most species-rich of the invertebrates, having 100 different identified taxa (Appendix C2).

Snow crab (*Chionoecetes opilio*) was observed at 278 EBS stations (Appendix C2), and represented the second highest invertebrate mean catch rate on the 2011 BT survey (Appendix B1). Commercial crab stocks are managed by the ADF&G with federal oversight by NMFS. For more detailed information on BT survey results for commercial crab, refer to Chilton et al. (2012), and for the most recent modeling data on the status of these commercial crab stocks, refer to the annual Stock Assessment and Fishery Evaluation report prepared by the NPFMC.

Acknowledgments

Recognition and appreciation is extended to the captains and crews of the FV *Aldebaran* and FV *Alaska Knight*; without their expertise, goodwill, and sacrifice, this survey would not be possible. Great appreciation is also extended to all the scientists, researchers, contractors, interns, and volunteers who worked tirelessly aboard each vessel to complete the survey in a safe and successful manner. The survey would not have been possible without the major contributions from other AFSC groups including the Net Shed, Research Survey Support Team, Data Management Group, and the Administrative team. Finally, appreciation is extended to the reviewers of this document whose excellent comments and suggestions greatly improved it.

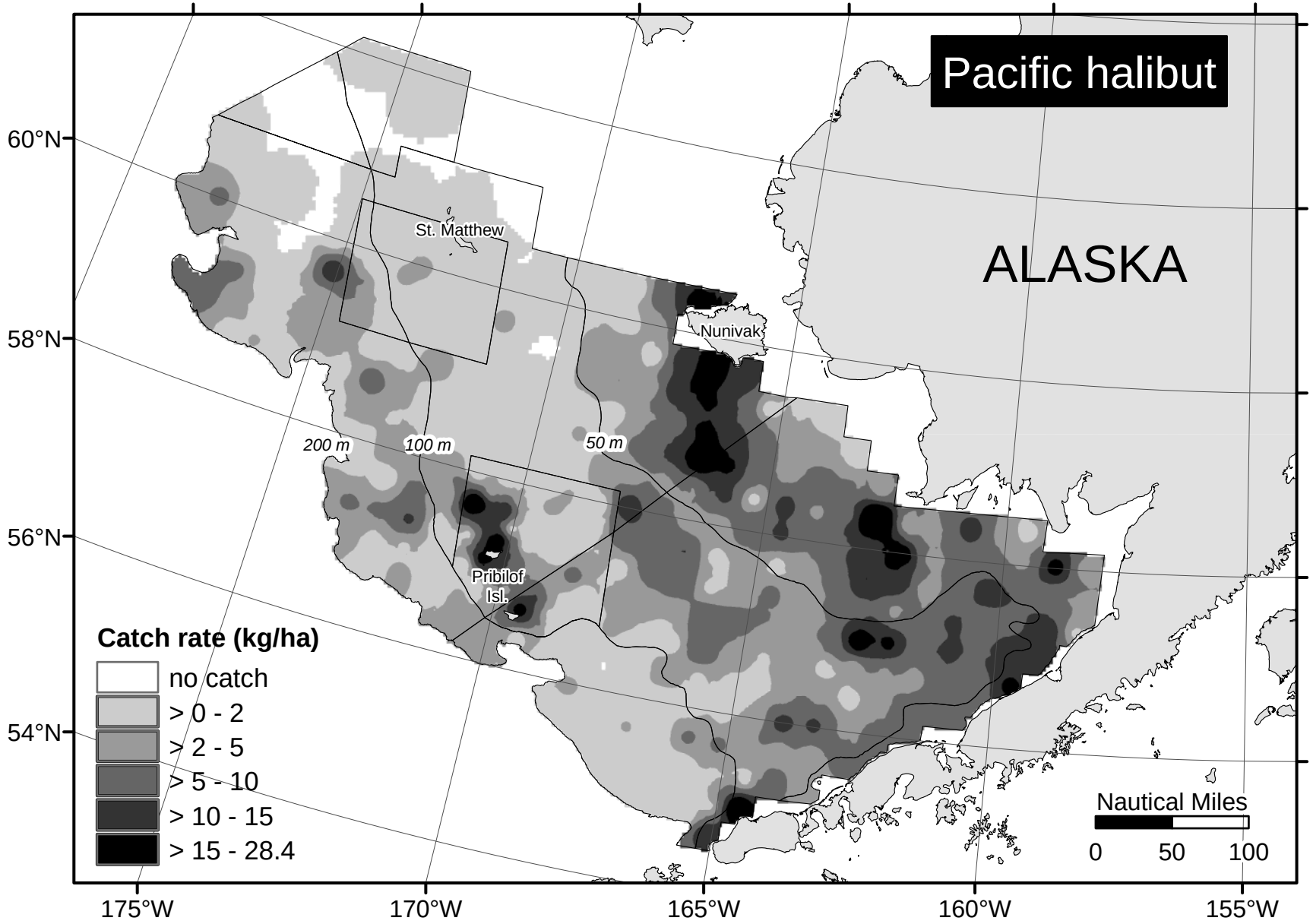

Figure 29. -- Spatial distribution and relative abundance (kg/ha) of **Pacific halibut** (*Hippoglossus stenolepis*) for the 2011 eastern Bering Sea bottom trawl survey.

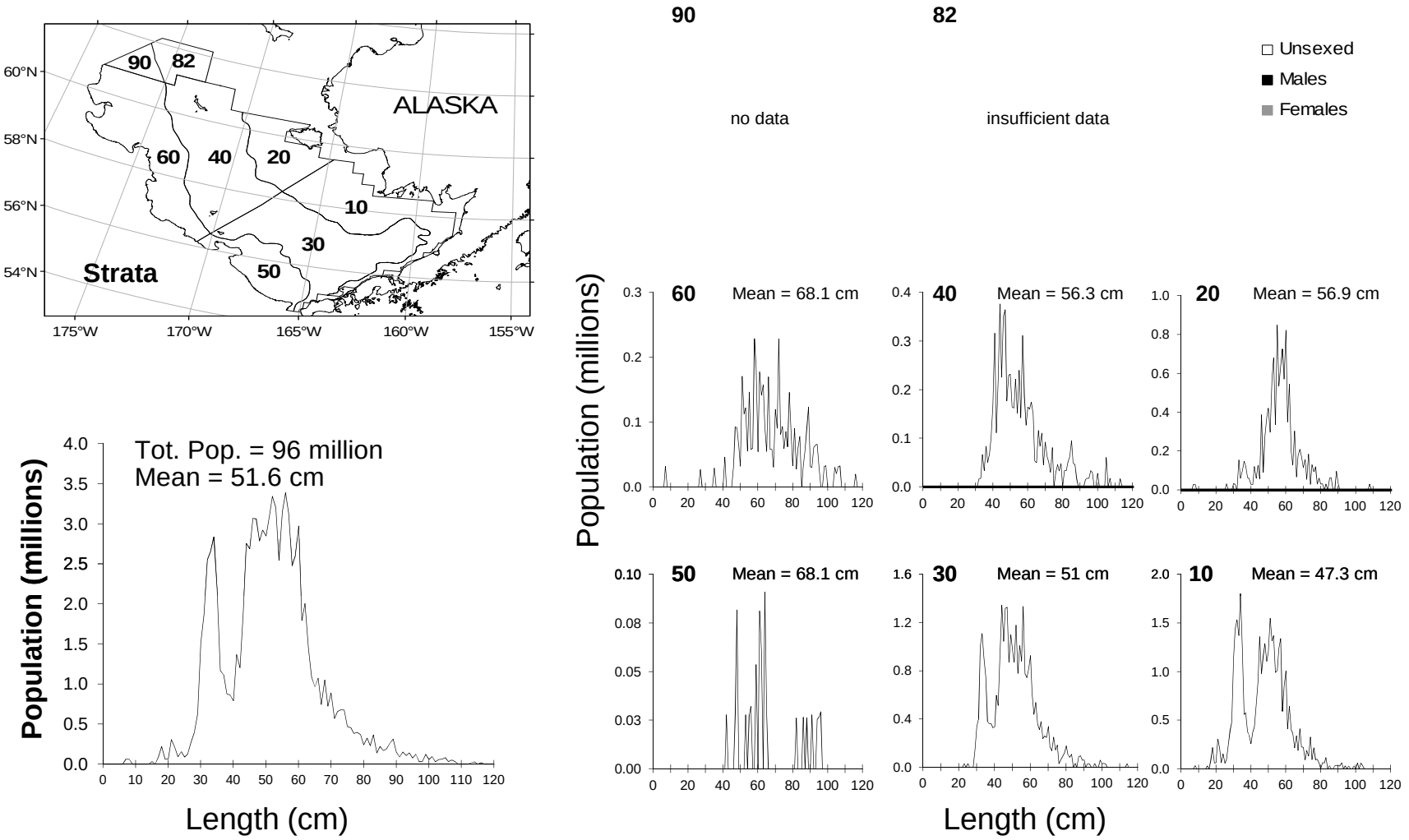

Figure 30. -- Estimated abundance at length of **Pacific halibut** (*Hippoglossus stenolepis*) by sex and stratum for the 2011 eastern Bering Sea bottom trawl survey. Mean length is given by sex for each stratum and for the total population.

Table 18a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Pacific halibut** (*Hippoglossus stenolepis*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Stand. error CPUE (kg/ha)	Estimated biomass (t)*	Stand. error of estimated biomass	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	7.43	7.18E-01	57,867	5.59E+03	46,568	69,166	58	58	58	58
20	7.08	1.12E+00	29,048	4.58E+03	19,694	38,402	31	30	30	30
Subtotal	7.31	6.08E-01	86,915	7.23E+03	72,460	101,371	89	88	88	88
31	5.55	5.38E-01	52,454	5.09E+03	42,273	62,634	69	68	68	68
32	5.19	2.15E+00	4,558	1.89E+03	86	9,029	8	6	6	6
41	1.10	3.63E-01	6,868	2.27E+03	2,270	11,465	44	23	23	23
42	4.45	1.12E+00	10,685	2.69E+03	5,183	16,187	31	24	24	24
43	0.56	2.08E-01	1,190	4.39E+02	276	2,103	22	15	15	15
82	0.12	8.95E-02	217	1.61E+02	0	571	12	3	3	3
Subtotal	3.32	2.83E-01	75,971	6.49E+03	63,118	88,824	186	139	139	139
50	0.95	2.63E-01	3,675	1.02E+03	1,568	5,781	26	14	14	14
61	2.18	3.63E-01	19,201	3.20E+03	12,738	25,664	60	41	41	41
62	1.78	8.31E-01	1,145	5.34E+02	0	2,452	7	6	6	6
90	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
Subtotal	1.66	2.35E-01	24,021	3.40E+03	17,223	30,820	101	61	61	61
Total	3.79	2.09E-01	186,908	1.03E+04	166,529	207,287	376	288	288	288

*Differences in sums of estimates and totals are due to rounding.

Table 18b. -- Mean CPUE (no./ha), estimated population number, standard error, and 95% confidence limits for **Pacific halibut** (*Hippoglossus stenolepis*) by stratum for the 2011 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Stand. error CPUE (no./ha)	Estimated population numbers*	Stand. error of estimated population	95% Confidence limit Lower	95% Confidence limit Upper	Total hauls	Hauls with catch	Hauls with numbers	Hauls with length measurements
10	5.05	5.95E-01	39,353,524	4.63E+06	29,989,560	48,717,488	58	58	58	58
20	3.02	4.18E-01	12,396,498	1.71E+06	8,897,746	15,895,250	31	30	30	30
Subtotal	4.35	4.15E-01	51,750,022	4.94E+06	41,870,045	61,629,999	89	88	88	88
31	3.18	4.38E-01	30,075,828	4.14E+06	21,790,144	38,361,511	69	68	68	68
32	2.00	7.53E-01	1,753,637	6.60E+05	191,679	3,315,595	8	6	6	6
41	0.38	1.33E-01	2,361,769	8.37E+05	670,419	4,053,119	44	23	23	23
42	1.82	6.28E-01	4,359,405	1.51E+06	1,279,301	7,439,508	31	24	24	24
43	0.21	4.37E-02	450,406	9.22E+04	258,673	642,138	22	15	15	15
82	0.09	5.82E-02	159,697	1.04E+05	0	389,549	12	3	3	3
Subtotal	1.71	1.98E-01	39,160,741	4.54E+06	30,175,312	48,146,169	186	139	139	139
50	0.20	5.43E-02	759,501	2.11E+05	324,828	1,194,173	26	14	14	14
61	0.51	7.22E-02	4,520,712	6.36E+05	3,234,833	5,806,591	60	41	41	41
62	0.27	6.37E-02	173,219	4.10E+04	72,974	273,463	7	6	6	6
90	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
Subtotal	0.38	4.63E-02	5,453,431	6.71E+05	4,110,517	6,796,346	101	61	61	61
Total	1.96	1.37E-01	96,364,194	6.74E+06	83,015,902	109,712,485	376	288	288	288

*Differences in sums of estimates and totals are due to rounding.

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Appendices

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Appendix A: Station Data, 2011 Eastern Bering Sea Trawl Survey

Appendix A contains station data by vessel for the 376 successfully completed standard survey stations. In using the tables, the following should be noted:

1. Time represents the nearest hour and minute at the start of the haul.
2. Haul numbers are not always sequential because unsatisfactory hauls were omitted.
3. All longitudes are in the Western Hemisphere and latitudes in the Northern Hemisphere. Starting and ending positions for each haul are displayed as degrees and decimal minutes.
4. Net measured codes are as follows:

   Y = Net width was measured by net mensuration gear.

   N = Net width was estimated from a function of wire out or wire out.
5. Catch weights are displayed in total kilograms

List of Tables

Appendix A Table 1. -- Haul and catch data for successfully completed tows by FV *Aldebaran* during the 2011 eastern Bering Sea bottom trawl survey.

Station	**G-15**	**H-15**	**I-15**	**K-13**	**J-13**	**I-13**	**H-13**	**G-13**	**E-11**	**F-11**	**G-11**	**H-11**	**I-11**
Start date and time	6/5/11 9:23	6/5/11 12:51	6/5/11 16:05	6/6/11 6:34	6/6/11 9:12	6/6/11 11:50	6/6/11 14:32	6/6/11 17:17	6/7/11 12:31	6/7/11 15:18	6/7/11 18:15	6/8/11 6:29	6/8/11 9:11
Haul number	3	4	5	6	7	8	9	10	13	14	15	16	17
Start latitude	5658.95	5719.62	5740.47	5817.77	5800.68	5740.83	5720.93	5700.84	5618.89	5639.84	5659.03	5719.59	5739.22
Start longitude	16051.11	16056.07	16058.93	16001.43	16146.96	16143.67	16141.86	16139.63	16222.20	16225.28	16226.25	16227.94	16229.37
End latitude	5700.37	5721.15	5741.28	5816.21	5759.14	5739.36	5719.37	5659.27	5620.46	5641.33	5700.56	5721.08	5739.99
End longitude	16052.13	16056.13	16059.00	16001.02	16145.95	16143.02	16141.57	16139.00	16222.30	16225.64	16226.07	16227.59	16229.41
Bottom depth (m)	34	49	47	41	51	55	61	65	65	90	69	57	53
Duration (h)	0.53	0.54	0.28	0.54	0.52	0.53	0.55	0.54	0.54	0.55	0.54	0.51	0.27
Distance fished (km)	2.83	2.85	1.51	2.93	3.02	2.82	2.91	2.99	2.90	2.78	2.83	2.79	1.44
Net width (m)	13.93	15.38	15.76	15.85	14.88	15.64	15.92	15.66	15.42	14.96	15.29	15.11	15.66
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	98.0	22.1		17.6				26.5	49.1	22.9	1.5	27.1	7.9
Other skates													
Sharks													
Total elasmobranch	**98.0**	**22.1**		**17.6**				**26.5**	**49.1**	**22.9**	**1.5**	**27.1**	**7.9**
Alaska plaice	0.9			12.7	8.8	1.2	6.0	3.8	2.6	163.6	92.8	26.3	20.3
Arrowtooth flounder							3.8	7.0	22.7	21.8	2.0	0.1	2.3
Flathead sole			0.4		0.4	9.3	14.5	17.4	30.3	54.6	44.1	14.9	6.7
Greenland turbot													
Pacific halibut	46.5	63.3	13.8	12.0	30.0	57.1	31.1	45.0	33.8	13.2	35.8	21.3	6.7
Rock sole	1597.9	430.8	178.7	290.5	588.3	1111.9	754.1	756.6	1050.9	246.5	285.9	124.1	84.5
Yellowfin sole	354.5	532.5	149.6	1976.1	372.9	191.7	189.3	211.7	971.9	629.3	356.9	470.1	225.8
Other flatfish	220.3	26.6	5.1	43.7	5.2	19.2		4.5	14.4	15.6			
Total flatfish	**2220.0**	**1053.1**	**347.2**	**2335.0**	**1005.2**	**1381.1**	**984.3**	**1028.6**	**2096.3**	**1090.1**	**773.3**	**642.0**	**339.5**
Walleye pollock	0.2	36.8	0.0		21.9	7.6	27.7	58.1	144.5	247.8	132.0	19.8	53.0
Pacific cod	29.2	285.2	34.7	43.0	12.6	23.5	18.8	29.8	67.6	43.6	34.8	18.9	44.6
Sablefish													
Atka mackerel													
Eelpouts													
Pacific herring	121.8			17.7									
Pacific ocean perch													
Sculpins	50.3	25.8	5.7	49.3	34.9	6.8	6.4	21.3	5.1	17.7	16.2	5.8	1.9
Other rockfish													
Other roundfish	1.7	1.4	0.7	5.4	3.6	3.7	3.1	3.4	7.3	7.4	4.7	1.6	1.7
Total roundfish	**203.2**	**349.3**	**41.2**	**115.5**	**73.1**	**41.6**	**56.0**	**112.6**	**224.5**	**316.5**	**187.7**	**46.1**	**101.2**
Blue king crab													
Red king crab	141.3	13.3	1.4	6.4	18.4	37.9	35.2	117.1	124.9	86.2	21.7	23.0	5.0
Tanner crab, bairdi								0.6	3.4	7.4	0.7	1.2	
Tanner crab, opilio								0.8		8.4	0.9		
Other crab	2.1	1.1	1.0	1.8	5.3	1.9	24.8	11.0	13.9	13.1	6.2	8.3	0.4
Shrimp					0.0			0.0		0.0		0.0	0.0
Octopus													
Squids													
Snails		0.4			2.8	6.7	22.0		16.6		0.9	7.0	0.7
Starfish	1752.7	598.2	172.4	26.8	265.2	336.6	439.2	325.6	94.3	13.9	146.0	54.0	48.0
Other invertebrates	19.5	46.0	80.7	11.7	52.1	91.6	122.8	134.1	210.7	4616.8	181.8	144.4	23.2
Total invertebrates	**1915.6**	**659.0**	**255.5**	**46.6**	**343.7**	**474.6**	**643.9**	**589.2**	**463.7**	**4745.8**	**358.3**	**237.9**	**77.3**
Miscellaneous	0.3	2.6		0.3	1.6	1.4	12.3	1.7	6.2		1.0	1.8	0.4
Total catch	**4437.0**	**2086.0**	**644.3**	**2515.0**	**1424.0**	**1908.0**	**1711.0**	**1776.0**	**2870.0**	**6230.0**	**1366.0**	**969.8**	**533.1**

Appendix A Table 1. -- Continued.

Station	**J-11**	**K-11**	**K-10**	**L-09**	**K-09**	**J-09**	**I-09**	**H-09**	**F-09**	**D-09**	**D-08**	**C-08**	**C-07**
Start date and time	6/8/11 11:35	6/8/11 13:57	6/8/11 16:20	6/9/11 6:22	6/9/11 8:31	6/9/11 10:54	6/9/11 13:22	6/9/11 16:05	6/10/11 6:30	6/10/11 11:46	6/10/11 14:25	6/10/11 17:09	6/11/11 6:27
Haul number	18	19	20	21	22	23	24	25	26	28	29	30	31
Start latitude	5758.90	5813.41	5819.11	5839.96	5820.62	5800.78	5740.80	5720.52	5640.99	5600.04	5601.11	5540.80	5540.92
Start longitude	16231.00	16226.16	16357.42	16317.60	16316.64	16314.74	16314.00	16314.54	16312.87	16312.01	16436.69	16435.87	16400.69
End latitude	5759.68	5812.78	5819.44	5839.14	5819.86	5800.07	5740.01	5719.71	5639.49	5600.11	5559.51	5539.26	5542.49
End longitude	16230.87	16226.96	16356.05	16317.75	16316.36	16314.35	16314.05	16314.40	16312.65	16309.21	16437.00	16436.06	16400.45
Bottom depth (m)	55	41	47	23	31	40	44	49	72	78	89	83	95
Duration (h)	0.26	0.26	0.29	0.30	0.27	0.26	0.29	0.28	0.52	0.54	0.56	0.54	0.54
Distance fished (km)	1.46	1.41	1.47	1.51	1.45	1.38	1.46	1.50	2.80	2.92	2.99	2.86	2.92
Net width (m)	15.53	14.64	15.66	13.47	14.30	14.64	15.66	15.66	16.27	16.09	16.34	16.10	16.42
Net measured?	Y	N	N	Y	Y	N	N	N	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	6.3	3.8	43.3	15.1	33.2	9.2		12.8		17.0	31.2	42.5	34.4
Other skates									0.1				51.1
Sharks													
Total elasmobranch	**6.3**	**3.8**	**43.3**	**15.1**	**33.2**	**9.2**		**12.8**	**0.1**	**17.0**	**31.2**	**42.5**	**85.5**
Alaska plaice	12.5	0.5	3.9	0.5	11.6	8.0	10.6	60.5	4.7	463.8	18.8	119.7	1.8
Arrowtooth flounder								0.9	15.4	142.2	175.9	278.5	138.8
Flathead sole	5.2				1.6	2.3	2.4	10.9	26.1	111.9	206.7	81.5	105.5
Greenland turbot									0.1				
Pacific halibut	9.0	8.5	4.6	4.5	59.1	25.5	34.3	22.1	12.0	20.9	52.9	13.4	15.8
Rock sole	400.6	174.3	299.1	501.6	970.3	353.3	260.9	270.5	49.1	275.1	170.1	231.9	355.4
Yellowfin sole	236.8	124.5	208.8	178.1	243.0	158.4	726.1	544.9	182.6	771.5	18.8	255.6	12.5
Other flatfish		31.8	29.0	83.9	43.2	0.9					0.9	7.3	0.9
Total flatfish	**659.0**	**339.6**	**545.4**	**768.5**	**1327.2**	**546.0**	**1031.9**	**898.9**	**263.9**	**1673.4**	**437.4**	**906.4**	**525.2**
Walleye pollock	11.3	4.1		3.2	2.1	0.4	0.1	26.5	39.0	736.9	475.4	781.7	168.6
Pacific cod	30.1	32.4	142.6	107.6	95.0	38.7	50.1	38.1	42.1	40.1	63.9	68.8	124.1
Sablefish													
Atka mackerel													
Eelpouts													0.3
Pacific herring				0.6									
Pacific ocean perch													
Sculpins	4.6	9.3	31.9	21.8	14.4	4.8	42.0	15.4	4.3	21.5	3.1	26.7	0.1
Other rockfish													
Other roundfish	5.2	1.1	3.8	1.8	4.4	1.2	0.6	2.4	2.6	11.7		6.1	0.6
Total roundfish	**51.2**	**47.0**	**178.3**	**135.0**	**115.9**	**45.1**	**92.7**	**82.4**	**88.0**	**810.2**	**542.4**	**883.3**	**293.7**
Blue king crab													
Red king crab	13.0	2.3	0.7		1.4	5.9	14.1	9.9		56.7			
Tanner crab, bairdi							0.1		89.5	8.8	26.6	23.9	25.2
Tanner crab, opilio									2.1	4.3	2.8	2.4	3.2
Other crab	2.0	1.7	7.2	4.5	12.8	2.7	1.9	2.4	16.9	0.1	49.1	8.1	212.1
Shrimp		0.0		0.0	0.0				0.0		0.0		0.0
Octopus													10.1
Squids													
Snails	2.7	0.1	4.1	0.1	4.8	1.7	1.9	9.8	16.1	4.4	47.7	63.2	178.3
Starfish	92.0	20.7	63.3	119.3	213.3	57.9	48.8	40.8	24.0	2.1	1.4	4.6	2.0
Other invertebrates	50.0	5.6	9.7	0.4	2.7	6.4	6.3	34.8	121.6	39.0	154.1	180.6	345.4
Total invertebrates	**159.7**	**30.5**	**85.0**	**124.3**	**234.9**	**74.5**	**73.2**	**97.6**	**270.2**	**115.5**	**281.7**	**282.8**	**776.3**
Miscellaneous	1.5	0.1	1.1	0.1	2.1	0.6		0.4	4.0		46.7	3.6	70.8
Total catch	**882.9**	**421.0**	**853.1**	**1043.0**	**1714.9**	**677.8**	**1200.2**	**1103.0**	**652.3**	**2728.0**	**1546.0**	**2200.0**	**1857.0**

Appendix A Table 1. -- Continued.

Station	**D-07**	**E-07**	**F-07**	**G-07**	**H-07**	**I-07**	**I-08**	**J-08**	**J-07**	**K-07**	**L-07**	**M-07**
Start date and time	6/11/11 8:55	6/11/11 11:25	6/11/11 13:54	6/11/11 16:24	6/12/11 6:24	6/12/11 8:56	6/12/11 11:36	6/12/11 14:06	6/12/11 16:37	6/13/11 6:23	6/13/11 8:47	6/13/11 11:16
Haul number	32	33	34	35	36	37	38	39	40	41	42	43
Start latitude	5559.37	5619.59	5639.70	5659.34	5719.28	5738.91	5739.53	5759.28	5759.42	5819.47	5839.29	5859.06
Start longitude	16557.75	16557.66	16558.95	16558.10	16559.81	16559.71	16435.36	16437.14	16400.99	16400.77	16559.47	16559.12
End latitude	5600.40	5621.14	5641.29	5700.89	5720.83	5740.31	5740.98	5800.82	5800.89	5820.95	5840.80	5900.60
End longitude	16557.60	16557.59	16559.07	16558.52	16559.48	16400.71	16436.30	16436.39	16400.22	16400.35	16559.28	16559.01
Bottom depth (m)	91	86	75	69	62	52	46	43	47	41	36	29
Duration (h)	0.35	0.52	0.54	0.54	0.53	0.51	0.52	0.53	0.52	0.50	0.52	0.53
Distance fished (km)	1.91	2.87	2.96	2.91	2.89	2.78	2.85	2.96	2.85	2.78	2.80	2.85
Net width (m)	15.60	16.17	15.70	16.27	15.57	15.66	15.66	15.12	15.66	14.29	14.70	14.64
Net measured?	Y	Y	Y	N	Y	N	N	Y	N	Y	Y	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	22.6	25.9	89.2	30.2	26.7	41.5	14.1	11.1	11.7	39.4	102.6	
Other skates												
Sharks												
Total elasmobranch	**22.6**	**25.9**	**89.2**	**30.2**	**26.7**	**41.5**	**14.1**	**11.1**	**11.7**	**39.4**	**102.6**	
Alaska plaice			13.5	638.1	133.8	95.9	22.5	26.5	88.7	42.8	48.2	5.5
Arrowtooth flounder	38.9	15.3	4.1		0.8							
Flathead sole	13.1	6.4	23.3	68.9	8.2			6.8	2.2			
Greenland turbot		0.1	0.5	0.1	0.2							
Pacific halibut	34.7	16.9	12.7	16.4	9.5	12.1	31.6	42.6	24.0	17.5	32.7	12.1
Rock sole	124.8	5.6	73.3	49.1	58.7	263.9	325.4	758.1	614.5	596.6	841.8	110.2
Yellowfin sole	1.4	1.8	456.7	593.4	364.3	370.3	4907.8	505.1	545.0	817.9	1308.0	1611.4
Other flatfish											3.0	8.1
Total flatfish	**199.8**	**39.7**	**560.7**	**1297.0**	**567.3**	**742.2**	**5287.4**	**1332.3**	**1272.2**	**1474.8**	**2233.8**	**1747.3**
Walleye pollock	7.6	18.3	59.7	26.0	28.6	15.6	18.1	5.6	8.6	6.7	12.9	1.1
Pacific cod	45.1	84.6	31.1	120.6	74.9	146.5	139.6	52.1	51.5	34.2	145.7	12.4
Sablefish												
Atka mackerel												
Eelpouts	0.4	1.1	11.9	0.4								
Pacific herring						0.3		0.2	0.4	9.6	1.3	
Pacific ocean perch												
Sculpins			0.0	14.8	5.5	3.2	14.1	14.3	27.5	15.8	38.4	67.1
Other rockfish												
Other roundfish	1.0	0.3	1.9	2.5	1.7	3.4	2.6	1.7	6.8	2.2	5.4	4.1
Total roundfish	**54.0**	**104.3**	**104.6**	**164.4**	**110.8**	**168.9**	**174.4**	**73.9**	**94.8**	**68.6**	**203.6**	**84.7**
Blue king crab												
Red king crab							3.3	9.2	23.4	6.9		
Tanner crab, bairdi	9.1	15.8	115.2	21.1	3.2							
Tanner crab, opilio	3.1	3.8	2.4	3.0	0.3							
Other crab	53.6	56.8	20.4	23.5	64.3	21.1	10.3	10.3	31.8	6.4	7.3	3.5
Shrimp	0.0	0.1	0.0	0.0	0.0	0.1		0.0			0.0	0.0
Octopus												
Squids												
Snails	65.2	67.1	109.4	54.6	57.8	52.0	15.7	8.2	47.8	2.0		
Starfish		21.1	112.4	67.8	112.4	281.2	251.6	121.8	283.0	154.5	473.6	205.9
Other invertebrates	1295.2	251.8	385.7	178.6	198.5	297.0	98.2	49.8	139.5	17.6	0.8	0.4
Total invertebrates	**1426.2**	**416.5**	**745.5**	**348.5**	**436.5**	**651.4**	**379.1**	**199.2**	**525.6**	**187.4**	**481.7**	**209.8**
Miscellaneous	52.3	106.5	38.7	21.0	33.6	81.0	17.0	8.8	65.5	6.8	4.2	0.2
Total catch	**1768.0**	**699.4**	**1562.0**	**1930.0**	**1183.0**	**1685.0**	**5872.0**	**1632.0**	**1972.0**	**1777.0**	**3026.0**	**2042.0**

Appendix A Table 1. -- Continued.

Station	**N-06**	**N-05**	**M-05**	**L-05**	**K-05**	**J-05**	**I-05**	**H-05**	**G-05**	**F-05**	**E-05**	**F-03**
Start date and time	6/13/11 14:32	6/14/11 6:22	6/14/11 8:52	6/14/11 11:21	6/14/11 13:49	6/14/11 16:20	6/15/11 6:28	6/15/11 8:56	6/15/11 11:22	6/15/11 14:03	6/15/11 16:36	6/16/11 6:31
Haul number	44	45	46	47	48	49	50	51	52	53	54	55
Start latitude	5919.10	5920.76	5900.94	5840.49	5820.75	5800.71	5740.27	5720.71	5700.60	5640.80	5620.70	5639.55
Start longitude	16521.31	16641.39	16642.01	16642.42	16642.27	16644.44	16644.92	16645.86	16646.49	16646.80	16647.80	16732.74
End latitude	5919.76	5919.22	5859.39	5838.96	5819.23	5759.22	5738.73	5719.16	5659.05	5639.20	5619.16	5640.83
End longitude	16518.43	16641.40	16642.02	16641.82	16641.47	16645.12	16645.61	16645.88	16645.96	16646.59	16647.89	16734.44
Bottom depth (m)	22	21	28	40	45	50	62	67	71	75	86	84
Duration (h)	0.54	0.54	0.52	0.51	0.53	0.52	0.54	0.52	0.53	0.54	0.54	0.51
Distance fished (km)	3.01	2.85	2.87	2.90	2.92	2.85	2.95	2.87	2.92	2.97	2.86	2.95
Net width (m)	14.23	14.64	14.59	15.17	15.97	15.66	16.27	16.67	16.86	16.61	16.67	17.28
Net measured?	Y	N	Y	Y	Y	N	N	Y	Y	Y	N	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates		20.5	121.1	69.7	38.6	30.6	70.7	33.8	62.6	111.1	103.0	31.1
Other skates												
Sharks												
Total elasmobranch		**20.5**	**121.1**	**69.7**	**38.6**	**30.6**	**70.7**	**33.8**	**62.6**	**111.1**	**103.0**	**31.1**
Alaska plaice	13.6	5.1	20.7	425.7	22.0	86.4	178.8	32.7	24.2	11.5	1.8	
Arrowtooth flounder								0.0	5.0	24.4	15.8	6.3
Flathead sole							0.0	4.0	11.0	10.5	73.3	9.2
Greenland turbot								0.3	0.2	0.3	0.1	0.1
Pacific halibut	8.5	3.4	28.7	32.2	4.7	42.6	14.4	12.1	32.9	18.5	7.7	
Rock sole	145.7	539.4	117.8	204.2	56.1	79.5	26.1	11.4	37.2	53.6	31.2	3.1
Yellowfin sole	1455.9	421.2	1232.2	2086.8	186.2	100.1	1605.7	269.2	355.0	210.9	2.7	
Other flatfish	18.7	34.4	12.9									
Total flatfish	**1642.4**	**1003.6**	**1412.3**	**2748.9**	**268.9**	**308.5**	**1825.0**	**325.8**	**454.5**	**319.3**	**59.2**	**9.4**
Walleye pollock	0.3	6.5	0.0	9.1	0.5	13.2	4.8	10.7	52.6	243.5	69.1	34.5
Pacific cod	102.7	114.7	103.0	24.2	11.3	405.2	89.2	18.4	46.1	116.1	28.4	0.6
Sablefish												
Atka mackerel												
Eelpouts								2.7	0.4	30.6	15.7	7.5
Pacific herring	4.2	1.2	2.6			1.0		0.6				
Pacific ocean perch												
Sculpins	47.0	42.3	41.3	33.8	1.5	9.1	4.6	1.0	10.3	3.7	2.5	0.9
Other rockfish												
Other roundfish	12.8	7.6	46.6	1.9	1.0	0.5	0.7	5.9	1.2	1.9	0.3	0.3
Total roundfish	**167.0**	**172.3**	**193.5**	**68.9**	**14.3**	**429.1**	**99.3**	**39.2**	**110.6**	**395.8**	**116.1**	**43.7**
Blue king crab												
Red king crab				1.3		1.1						
Tanner crab, bairdi			0.4		0.0		0.0	0.7	39.4	36.2	13.6	11.2
Tanner crab, opilio							0.9	1.8	5.7	2.5	6.3	9.5
Other crab		13.2	8.7	3.6	10.8	174.5	108.1	47.2	85.0	34.7	38.3	127.7
Shrimp	0.0	0.0	0.1	0.0	0.0		0.0	0.1		0.1	0.1	0.1
Octopus												0.7
Squids												
Snails	0.0	0.0		2.3	44.0	218.1	28.9	68.5	190.5	152.2	70.6	55.3
Starfish	236.3	75.8	367.6	305.8	243.4	31.3	182.6	372.7	200.8	173.2	99.6	82.3
Other invertebrates	0.2	0.6	0.1	15.6	30.1	560.6	396.6	246.6	275.7	383.7	350.3	85.4
Total invertebrates	**236.6**	**89.7**	**376.9**	**328.6**	**328.4**	**985.6**	**717.2**	**737.5**	**797.2**	**782.6**	**578.8**	**372.1**
Miscellaneous		3.9	0.2	21.8	11.3	298.3	15.8	13.7	86.1	168.7	44.2	122.7
Total catch	**2046.0**	**1290.0**	**2104.0**	**3238.0**	**661.6**	**2052.0**	**2728.0**	**1154.0**	**1522.0**	**1788.0**	**974.5**	**588.2**

Appendix A Table 1. -- Continued.

Station	**G-03**	**H-03**	**I-03**	**J-03**	**K-03**	**L-03**	**M-03**	**N-03**	**O-03**	**O-01**	**N-01**	**M-01**
Start date and time	6/16/11 9:10	6/16/11 12:00	6/16/11 14:40	6/16/11 17:15	6/17/11 6:26	6/17/11 8:54	6/17/11 11:17	6/17/11 13:42	6/17/11 16:05	6/19/11 6:22	6/19/11 9:00	6/19/11 12:58
Haul number	56	57	58	59	60	61	62	63	64	65	66	68
Start latitude	5659.67	5719.13	5739.23	5759.39	5819.48	5839.55	5859.09	5919.08	5938.76	5940.42	5920.00	5900.53
Start longitude	16732.56	16730.62	16729.00	16728.34	16726.04	16725.98	16724.88	16723.91	16721.16	16802.77	16804.70	16805.37
End latitude	5701.26	5720.45	5740.82	5800.67	5820.90	5841.14	5900.59	5920.61	5940.24	5938.89	5918.45	5859.14
End longitude	16732.22	16729.19	16728.62	16726.24	16727.32	16725.60	16724.65	16723.06	16719.57	16802.76	16804.74	16806.40
Bottom depth (m)	74	70	66	61	48	43	35	29	28	35	40	42
Duration (h)	0.55	0.52	0.52	0.54	0.53	0.54	0.51	0.52	0.52	0.52	0.51	0.50
Distance fished (km)	2.96	2.85	2.98	3.16	2.93	2.98	2.81	2.94	3.13	2.84	2.87	2.77
Net width (m)	17.38	16.50	16.80	17.61	15.87	15.84	14.99	15.08	14.67	14.98	14.64	14.64
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	56.0	42.7	15.5		43.5	30.4	70.2	90.3	40.4	34.9	80.1	106.9
Other skates												
Sharks												
Total elasmobranch	**56.0**	**42.7**	**15.5**		**43.5**	**30.4**	**70.2**	**90.3**	**40.4**	**34.9**	**80.1**	**106.9**
Alaska plaice	12.2	10.4	90.6	2031.2	247.1	94.9	61.8	22.1	4.7	45.8	87.5	78.9
Arrowtooth flounder	3.7	2.9										
Flathead sole	43.1		1.2		0.8	1.2						
Greenland turbot		0.5	0.1									
Pacific halibut	12.8	40.5	50.5	18.4	22.6	96.0	67.3	69.0	84.0	1.3	12.7	18.0
Rock sole	64.7	20.4	11.8	92.1	324.3	297.6	296.8	260.1	66.8	71.7	90.4	264.1
Yellowfin sole	88.3	84.8	53.0	4140.8	132.1	161.5	212.7	238.2	333.3	146.2	268.0	110.7
Other flatfish							0.0	11.0	18.8			
Total flatfish	**181.7**	**159.4**	**206.0**	**6282.4**	**726.1**	**650.0**	**638.6**	**600.4**	**507.6**	**265.1**	**458.6**	**471.7**
Walleye pollock	53.8	33.3	23.7	63.8	30.0	16.1	6.0	5.7	7.2	6.5	5.4	2.9
Pacific cod	49.0	12.3	29.7	1005.9	241.6	664.9	313.9	12.7	89.4		5.3	23.0
Sablefish												
Atka mackerel												
Eelpouts	21.3	1.3										
Pacific herring									2.8	3.8	0.7	
Pacific ocean perch												
Sculpins	9.7	8.4	5.0		20.0	18.3	4.1	15.6	6.2	6.2	16.2	13.4
Other rockfish												
Other roundfish	2.9	0.7	0.8	4.2	0.5	0.1	0.4	0.7	8.1	0.7	0.9	1.7
Total roundfish	**136.7**	**55.9**	**59.3**	**1074.0**	**292.1**	**699.5**	**324.4**	**34.7**	**113.7**	**17.3**	**28.6**	**41.0**
Blue king crab												
Red king crab					6.8	6.4	2.9			8.3	6.2	2.5
Tanner crab, bairdi	7.2	17.3	2.0									
Tanner crab, opilio	32.4	16.5	10.7	1.7								
Other crab	33.8	156.9	69.9	35.3	7.6	2.5	5.0	8.2	2.3	8.9	13.4	6.4
Shrimp	1.2	1.2					0.0	0.0	0.0	0.0	0.0	0.0
Octopus												
Squids												
Snails	21.8	161.1	77.0	11.4	36.9	1.0	1.3	0.0	0.0	1.0	8.5	11.7
Starfish	53.5	275.8	378.6	199.3	125.2	240.7	140.3	134.8	109.7	116.5	320.3	141.1
Other invertebrates	369.4	531.0	135.2	148.7	42.3	10.2	4.8	1.3		0.0	0.6	4.4
Total invertebrates	**519.3**	**1159.7**	**673.4**	**396.3**	**218.8**	**260.8**	**154.2**	**144.3**	**112.0**	**134.8**	**349.1**	**166.1**
Miscellaneous	7.3	180.3	20.6	27.3	4.7	0.2	0.5	0.1	1.0	0.5	1.4	1.4
Total catch	**947.3**	**1598.0**	**976.0**	**7780.0**	**1286.0**	**1642.0**	**1187.8**	**869.8**	**774.6**	**452.5**	**917.8**	**787.1**

Appendix A Table 1. -- Continued.

Station	**L-01**	**K-01**	**J-01**	**I-01**	**H-01**	**G-01**	**AZ0504**	**A-05**	**B-05**	**C-05**	**D-05**	**E-03**
Start date and time	6/19/11 15:19	6/19/11 17:40	6/20/11 6:35	6/20/11 9:04	6/20/11 12:50	6/20/11 16:36	6/24/11 6:50	6/24/11 9:42	6/24/11 12:23	6/24/11 15:08	6/24/11 17:49	6/25/11 6:55
Haul number	69	70	71	72	73	74	75	76	77	78	79	80
Start latitude	5840.64	5820.99	5800.63	5740.77	5720.75	5700.70	5450.00	5458.80	5518.85	5539.50	5559.09	5620.65
Start longitude	16807.02	16809.38	16810.96	16814.00	16815.69	16817.72	16627.22	16650.79	16650.09	16649.84	16648.95	16735.31
End latitude	5839.08	5819.37	5759.04	5739.24	5719.21	5659.30	5450.26	5500.49	5520.60	5541.05	5600.71	5619.06
End longitude	16807.35	16809.29	16811.22	16813.96	16816.03	16819.10	16630.11	16650.68	16650.12	16650.44	16649.07	16734.91
Bottom depth (m)	47	59	66	69	74	77	154	111	111	109	96	103
Duration (h)	0.53	0.55	0.53	0.52	0.51	0.54	0.60	0.57	0.59	0.54	0.56	0.55
Distance fished (km)	2.92	3.01	2.95	2.85	2.87	2.96	3.13	3.15	3.25	2.95	3.02	2.98
Net width (m)	15.77	17.24	16.63	15.03	16.27	16.67	17.49	17.56	17.19	16.97	16.87	16.70
Net measured?	Y	Y	Y	Y	N	N	N	Y	N	N	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	52.8	26.4	21.7	35.5	13.4	48.2	55.5	136.3	62.5	20.9	36.4	10.1
Other skates		0.1					46.2	10.6	0.3	8.8	14.1	5.7
Sharks												
Total elasmobranch	**52.8**	**26.5**	**21.7**	**35.5**	**13.4**	**48.2**	**101.7**	**146.9**	**62.8**	**29.7**	**50.6**	**15.8**
Alaska plaice	103.8	114.2	443.3	19.5	2.4	0.5						
Arrowtooth flounder			2.7	5.3	34.3	18.8	362.3	501.2	475.4	255.9	160.4	300.3
Flathead sole	0.4	0.8	8.1	2.6	22.8	29.0	1.0	134.7	117.4	132.6	259.5	338.9
Greenland turbot		0.0	0.6	0.1	0.4							
Pacific halibut	28.5	18.7	69.5	33.0	3.8	13.8		7.5	10.2	27.1	6.5	23.0
Rock sole	370.8	36.1	42.2	283.5	29.5	31.6		6.9	0.9	0.2	207.0	
Yellowfin sole	56.5	303.5	83.0	287.1	50.9	1.2						
Other flatfish							50.9	227.1	2.2		4.2	1.4
Total flatfish	**559.7**	**472.4**	**641.3**	**628.5**	**121.4**	**65.9**	**413.2**	**742.8**	**488.8**	**283.2**	**378.1**	**324.7**
Walleye pollock	52.4	54.6	89.2	548.1	76.7	9.2	207.7	1446.8	119.8	9.2	28.8	609.6
Pacific cod	110.3	148.7	25.8	58.4	4.6		38.2	39.8	3.5	20.3	90.5	36.3
Sablefish												
Atka mackerel												
Eelpouts			0.1		0.5	6.9				0.1		0.2
Pacific herring	0.4											
Pacific ocean perch							4.0					
Sculpins	29.7	17.3	4.8	9.6	2.3	6.9	0.3	3.1	4.1	0.3	2.2	3.1
Other rockfish							3.4					
Other roundfish	0.9	2.5	2.8	4.1	20.0	3.8	4.3	1.6	1.9	71.4	0.0	4.9
Total roundfish	**193.7**	**223.0**	**122.8**	**620.3**	**104.1**	**26.8**	**258.0**	**1491.2**	**129.3**	**101.3**	**121.5**	**654.1**
Blue king crab												
Red king crab	1.0											
Tanner crab, bairdi			0.3	44.0	63.9	35.7	71.6	24.9	25.8	70.0	17.3	13.2
Tanner crab, opilio		0.1	5.9	107.5	242.5	51.6	28.4	24.3	2.0	5.1	7.0	4.3
Other crab	15.9	67.7	77.5	37.6	124.0	60.7	9.7	35.6	28.0	35.9	235.1	117.6
Shrimp		0.0		0.1	0.6	1.3	0.2			0.0		
Octopus									21.0			
Squids												
Snails	12.7	92.5	74.4	45.3	24.2	2.0	24.8	27.4	21.8	24.6	136.7	106.9
Starfish	213.6	132.9	196.9	91.8	62.5	81.3	3.0		0.2			0.1
Other invertebrates	8.7	132.8	514.3	1752.1	136.2	111.1	62.0	24.7	12.1	177.1	490.4	516.4
Total invertebrates	**251.9**	**426.1**	**869.2**	**2078.4**	**653.9**	**343.5**	**199.7**	**136.8**	**110.8**	**312.6**	**886.5**	**758.4**
Miscellaneous	3.1	32.0	60.8	54.8	43.5	11.4	3.8	1.6	4.8	2.7	241.9	38.2
Total catch	**1061.6**	**1180.8**	**1724.0**	**3420.0**	**959.0**	**524.9**	**977.4**	**2654.0**	**913.7**	**862.1**	**1938.0**	**2130.0**

Appendix A Table 1. -- Continued.

Station	**D-03**	**C-03**	**B-03**	**A-03**	**E-01**	**D-01**	**D-02**	**D-18**	**E-18**	**E-19**	**F-19**	**F-20**
Start date and time	6/25/11 9:26	6/25/11 12:01	6/25/11 14:37	6/25/11 18:01	6/26/11 10:48	6/26/11 13:50	6/26/11 17:12	6/27/11 6:56	6/27/11 9:49	6/27/11 13:02	6/27/11 16:44	6/28/11 6:55
Haul number	81	82	83	84	85	86	87	88	89	90	91	92
Start latitude	5600.88	5541.26	5521.71	5501.23	5621.24	5600.98	5559.23	5558.65	5619.12	5620.07	5641.11	5640.11
Start longitude	16735.39	16736.48	16738.72	16740.17	16820.38	16822.87	16859.75	16946.56	16944.99	16908.63	16906.29	17030.45
End latitude	5559.31	5539.74	5520.05	5459.90	5619.63	5559.34	5600.89	5600.43	5620.82	5620.57	5640.29	5640.57
End longitude	16734.92	16736.88	16738.75	16741.70	16820.96	16823.18	16859.49	16947.09	16944.84	16905.77	16904.78	17027.66
Bottom depth (m)	124	126	132	142	128	133	134	149	154	129	100	80
Duration (h)	0.55	0.53	0.57	0.55	0.56	0.56	0.57	0.60	0.58	0.55	0.42	0.54
Distance fished (km)	2.96	2.85	3.08	2.97	3.06	3.06	3.09	3.34	3.16	3.11	2.17	2.98
Net width (m)	17.44	18.93	17.35	18.07	17.54	18.49	19.00	17.05	17.40	17.27	17.84	16.85
Net measured?	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates					20.0	18.0	0.1	19.8	9.4			50.9
Other skates		4.5	3.7	7.2	4.4			9.8	23.0	15.7		
Sharks												
Total elasmobranch		**4.5**	**3.7**	**7.2**	**24.4**	**18.0**	**0.1**	**29.6**	**32.4**	**15.7**		**50.9**
Alaska plaice												
Arrowtooth flounder	84.9	139.6	106.0	240.0	74.8	71.3	58.6	44.2	307.7	231.7	22.7	210.0
Flathead sole	82.9	131.4	99.8	100.7	86.9	68.5	118.0	9.6	4.1	55.7		420.9
Greenland turbot												
Pacific halibut				9.2			10.2	14.8		8.9	5.7	87.1
Rock sole										9.3		624.6
Yellowfin sole												7.7
Other flatfish	2.9	2.3	7.0	9.0		1.0	1.3	19.0	4.2	19.1		
Total flatfish	**87.9**	**141.9**	**112.9**	**258.2**	**74.8**	**72.2**	**70.0**	**78.0**	**311.9**	**268.9**	**28.4**	**929.4**
Walleye pollock	8.1	15.0	16.8	3.4	1.1	2.6	14.4	1038.6	350.9	366.4	5034.3	2714.8
Pacific cod	10.4	1.0		37.8	40.4		32.9	45.9	19.5	30.1	80.8	357.6
Sablefish												
Atka mackerel												
Eelpouts	0.1	0.3	0.2	0.2	0.3		0.9					
Pacific herring												
Pacific ocean perch												
Sculpins		0.4	11.2	1.0	0.9	6.5	0.0		5.8			623.6
Other rockfish				0.8	4.0							
Other roundfish	8.4	7.6	2.2	1.0	2.1	3.2	30.9		0.3		0.6	52.0
Total roundfish	**27.1**	**24.2**	**30.4**	**44.1**	**48.9**	**12.3**	**79.1**	**1084.6**	**376.5**	**396.5**	**5115.7**	**3748.1**
Blue king crab												
Red king crab												
Tanner crab, bairdi	26.2	19.8	36.0	58.9	16.4	3.3	11.2	5.7	50.1	16.5	51.1	4.5
Tanner crab, opilio	2.5	0.8	3.0		2.4	0.7	0.2	3.4	0.6	44.2	9.5	4.1
Other crab	5.3	1.0	2.0	5.9	9.5	1.5	0.6	5.6	16.8	15.6	4.4	7.9
Shrimp	0.2	0.1	0.2	0.2	0.0	0.1	0.1	0.0	1.0	0.0		
Octopus									0.0	0.0		
Squids												
Snails	8.1	1.6	2.0	3.0	12.2	4.7	2.8	3.5	2.8	16.9	4.5	18.8
Starfish	6.8	1.1	0.1		0.1	0.0	2.9	0.4	0.6	1.7		153.8
Other invertebrates	123.4	36.4	35.6	44.3	46.0	21.1	28.2	23.2	128.5	24.3	21.7	149.0
Total invertebrates	**172.4**	**60.7**	**78.9**	**112.3**	**86.7**	**31.4**	**46.1**	**41.8**	**200.4**	**119.2**	**91.3**	**338.3**
Miscellaneous	0.7	0.1	0.1	0.4	2.2	0.1	0.3	0.5	1.0	0.9	4.6	22.4
Total catch	**371.1**	**362.8**	**325.9**	**523.0**	**323.9**	**202.5**	**313.6**	**1244.0**	**926.4**	**856.8**	**5240.0**	**5510.0**

Appendix A Table 1. -- Continued.

Station	**F-21**	**E-21**	**E-20**	**E-22**	**F-22**	**GF2221**	**G-22**	**HG2221**	**H-22**	**IH2221**	**IH2120**	**I-20**
Start date and time	6/28/11 9:50	6/28/11 13:27	6/28/11 17:53	6/29/11 7:00	6/29/11 9:47	6/29/11 12:00	6/29/11 14:08	6/29/11 16:53	7/1/11 8:18	7/1/11 10:56	7/1/11 13:34	7/1/11 16:02
Haul number	93	94	95	96	97	98	99	100	102	103	104	105
Start latitude	5640.34	5620.55	5621.37	5619.58	5639.61	5649.57	5659.48	5706.19	5719.52	5729.54	5730.09	5739.48
Start longitude	17155.56	17153.21	17033.88	17118.47	17115.90	17131.93	17112.78	17133.30	17108.50	17124.18	17158.56	17020.41
End latitude	5640.04	5620.14	5621.35	5621.18	5641.24	5650.61	5701.12	5707.49	5721.08	5730.50	5730.11	5740.73
End longitude	17152.58	17156.13	17031.77	17118.59	17115.81	17129.71	17112.79	17131.70	17109.14	17126.56	17001.40	17022.12
Bottom depth (m)	95	109	135	121	113	101	95	51	83	74	68	70
Duration (h)	0.56	0.59	0.42	0.55	0.56	0.55	0.55	0.53	0.54	0.54	0.52	0.52
Distance fished (km)	3.10	3.11	2.19	2.97	3.02	2.97	3.05	2.91	2.97	2.97	2.84	2.87
Net width (m)	16.97	18.05	18.25	17.41	18.04	17.73	17.45	15.84	16.31	16.77	16.32	16.83
Net measured?	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	22.8	13.1	1.0	1.9		17.0	63.6	4.2	36.1	77.3	52.9	43.5
Other skates	5.4		3.3	10.3	0.7		0.4					
Sharks												
Total elasmobranch	**28.2**	**13.1**	**4.3**	**12.2**	**0.7**	**17.0**	**64.0**	**4.2**	**36.1**	**77.3**	**52.9**	**43.5**
Alaska plaice								2.9	7.5	21.1	30.0	7.4
Arrowtooth flounder	139.8	124.4	129.9	39.5	77.7	72.4	96.0	9.2	84.4	128.7	8.3	
Flathead sole	1341.0	51.3	1.4	34.6	16.4	15.4	349.4		2329.8	829.3	21.2	15.0
Greenland turbot						0.6	0.6		4.1			0.4
Pacific halibut	13.4	18.2	2.9	15.8	13.3			80.3	6.2	50.8	5.9	1.4
Rock sole	1.7							615.5	133.5	839.6	99.0	58.3
Yellowfin sole								16.2	2.4	3.7	37.8	64.3
Other flatfish		3.7	4.9	9.2	1.9	1.5		0.7				
Total flatfish	**154.8**	**146.2**	**137.7**	**64.5**	**92.9**	**74.5**	**96.6**	**724.9**	**238.1**	**1043.9**	**181.1**	**131.8**
Walleye pollock	1011.6	1249.4	3.5	1084.1	499.3	957.9	623.3	20.3	120.7	1227.2	411.3	506.4
Pacific cod	109.0	24.7	95.4	22.2	51.8	118.5	90.8	155.7	22.9	105.7	99.2	44.8
Sablefish												
Atka mackerel												
Eelpouts	0.1				0.6	0.2	25.9	1.2	15.1			1.3
Pacific herring												
Pacific ocean perch			3.8	1.7								
Sculpins	14.1	4.4	1.2		7.5	10.1	36.8	150.1	16.1	30.9	18.6	7.3
Other rockfish			8.4	6.2								
Other roundfish	2.1	0.2	33.9		0.6	3.0	8.4	28.1	0.6	5.5	56.7	2.7
Total roundfish	**1137.0**	**1278.6**	**146.3**	**1114.2**	**559.8**	**1089.5**	**785.2**	**355.4**	**175.4**	**1369.3**	**585.8**	**562.5**
Blue king crab												
Red king crab								80.1		3.0		
Tanner crab, bairdi	23.9	13.9	1.3	2.3	12.2	30.1	56.4	88.8	42.3	13.1	22.2	42.7
Tanner crab, opilio	2.5	4.3	2.4	0.7	12.3	4.0	12.5	0.7	111.7	52.1	82.6	95.1
Other crab	37.3	9.9	6.4	41.4	23.8	72.7	32.5	58.9	51.0	61.5	129.0	171.9
Shrimp			0.0			0.6	0.1		0.2			
Octopus				5.8	7.7	7.7	11.4					
Squids												
Snails	20.5	27.4	3.4	73.4	24.8	19.7	16.4	13.0	20.9	7.9	6.0	0.6
Starfish	7.6		0.7	0.3	11.5	204.5	197.4	207.3	4.2	42.3	128.2	102.8
Other invertebrates	148.2	28.7	8.5	319.0	263.7	20.6	17.9	4.0	5.8	78.1	422.4	34.6
Total invertebrates	**240.1**	**84.3**	**22.7**	**442.9**	**356.0**	**359.9**	**344.7**	**452.8**	**236.2**	**257.9**	**790.3**	**447.8**
Miscellaneous	19.0	3.2	2.3	11.7	4.2	15.7		2.8	14.3	2.3	30.7	59.4
Total catch	**2920.0**	**1576.8**	**314.7**	**1680.0**	**1030.0**	**1572.0**	**1640.0**	**1540.0**	**3030.0**	**3580.0**	**1662.0**	**1260.0**

Appendix A Table 1. -- Continued.

Station	**I-19**	**JI2019**	**J-19**	**K-19**	**L-19**	**M-19**	**N-19**	**O-19**	**P-19**	**P-20**	**Q-21**	**P-21**	**O-21**
Start date and time	7/2/11 6:57	7/2/11 9:30	7/2/11 12:18	7/2/11 14:51	7/2/11 17:22	7/3/11 6:50	7/3/11 9:22	7/3/11 11:56	7/3/11 14:29	7/3/11 17:06	7/4/11 6:58	7/4/11 9:35	7/4/11 12:10
Haul number	106	107	108	109	110	111	112	113	114	115	116	117	118
Start latitude	5738.56	5749.45	5759.31	5819.32	5839.69	5859.46	5919.52	5939.53	5959.47	5959.67	6020.57	6000.53	5940.65
Start longitude	17058.46	17038.49	17055.23	17052.81	17051.04	17048.79	17046.21	17043.95	17040.39	17002.81	17119.95	17122.75	17125.42
End latitude	5740.09	5750.97	5800.72	5820.87	5841.24	5900.93	5921.00	5941.08	6001.00	6000.97	6019.10	5959.02	5939.16
End longitude	17058.16	17038.25	17056.38	17052.55	17050.58	17049.50	17046.95	17043.79	17040.22	17001.15	17120.35	17122.10	17124.86
Bottom depth (m)	69	66	69	67	62	54	51	50	46	55	62	65	67
Duration (h)	0.52	0.55	0.52	0.52	0.53	0.51	0.52	0.53	0.53	0.52	0.50	0.53	0.52
Distance fished (km)	2.85	2.83	2.85	2.89	2.91	2.82	2.84	2.89	2.85	2.87	2.75	2.86	2.82
Net width (m)	16.20	16.34	16.66	16.36	16.60	15.79	15.94	16.28	15.98	16.47	16.81	17.34	17.23
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	78.2	12.1	5.3	28.2	55.3	80.0	122.4	151.0	209.9	21.6	5.5	46.9	19.9
Other skates						0.0					0.0		
Sharks													
Total elasmobranch	**78.2**	**12.1**	**5.3**	**28.2**	**55.3**	**80.0**	**122.4**	**151.0**	**209.9**	**21.6**	**5.5**	**46.9**	**19.9**
Alaska plaice	95.1	26.7	116.5	156.5	121.8	154.4	211.7	151.1	121.1	229.7	111.4	78.4	95.1
Arrowtooth flounder	68.0		3.3										
Flathead sole	16.3	2.3	3.5	0.5	6.6	1.0		1.8	0.9	2.4	3.8	7.8	2.9
Greenland turbot	0.4	0.4	1.4	0.5			0.0					0.0	0.3
Pacific halibut	4.6	12.5	10.0	1.8	10.7	6.3	16.5	15.2	8.1	1.1		3.6	
Rock sole	213.5	40.6	14.6	28.9	14.1	42.2	116.5	40.7	22.1	27.5	1.8	2.8	4.4
Yellowfin sole	275.5	62.1	40.1	74.4	107.3	161.9	63.7	84.3	64.9	199.5	5.6	16.2	6.6
Other flatfish						0.0		0.1		0.2		0.0	
Total flatfish	**657.1**	**142.3**	**185.9**	**262.1**	**253.9**	**364.7**	**408.3**	**291.5**	**216.1**	**458.0**	**118.8**	**101.1**	**106.5**
Walleye pollock	536.9	101.6	259.0	1249.1	203.7	95.4	85.0	147.5	22.1	195.8	26.5	103.8	52.8
Pacific cod	431.4	4.0	6.0	10.9	54.7	82.0	259.4	179.2	27.2	106.1	7.7	74.7	46.8
Sablefish													
Atka mackerel													
Eelpouts			2.3								23.0	9.3	4.9
Pacific herring		1.3				0.1		0.1	0.2	0.1	0.1		
Pacific ocean perch													
Sculpins	7.6	27.1	9.0	11.2	25.4	13.0	21.0	24.0	22.6	12.4	1.1	2.8	2.0
Other rockfish													
Other roundfish	2.3	4.0	6.8	2.1	13.1	13.0	2.6	1.5	4.3	6.4	1.4	1.6	2.5
Total roundfish	**978.2**	**138.0**	**283.2**	**1273.2**	**296.9**	**203.5**	**367.9**	**352.4**	**76.3**	**320.8**	**59.8**	**192.1**	**109.1**
Blue king crab													
Red king crab		3.4					0.6	0.7	2.7	3.4	2.7		
Tanner crab, bairdi	1.4	20.7	6.4	0.4		0.7							0.0
Tanner crab, opilio	27.4	30.4	17.6	2.4	1.5	0.5			0.0	0.3	46.2	4.5	24.0
Other crab	15.7	81.1	107.0	22.7	77.7	46.1	32.8	16.1	67.3	30.4	8.6	11.5	15.9
Shrimp			0.3										0.0
Octopus													
Squids													
Snails	5.1	3.2	5.5	18.5	92.4	38.0	30.4	5.1	15.1	60.4	8.9	6.3	18.0
Starfish	158.1	102.2	107.8	891.6	414.0	150.8	211.5	290.3	163.3	41.0	10.2	4.7	16.1
Other invertebrates	881.1	447.8	561.2	178.5	125.8	104.9	30.5	14.6	189.9	165.8	21.1	52.0	78.3
Total invertebrates	**1088.9**	**688.7**	**805.8**	**1114.0**	**711.6**	**341.0**	**305.8**	**326.8**	**438.3**	**301.3**	**97.6**	**79.0**	**152.3**
Miscellaneous	21.3	1.6	36.2	5.9	25.7	25.9	21.5	36.5	60.4	19.9	0.1	1.7	10.0
Total catch	**2840.0**	**985.0**	**1320.0**	**2684.0**	**1350.0**	**1016.1**	**1226.0**	**1160.0**	**1002.0**	**1124.0**	**285.7**	**428.6**	**400.8**

Appendix A Table 1. -- Continued.

Station	**N-21**	**M-21**	**L-21**	**K-21**	**J-21**	**JI2221**	**J-22**	**J-23**	**K-23**	**L-23**	**M-23**	**N-23**	**O-23**
Start date and time	7/4/11 14:46	7/5/11 6:58	7/5/11 12:56	7/6/11 7:04	7/6/11 11:29	7/6/11 13:52	7/6/11 16:17	7/7/11 7:03	7/7/11 9:41	7/7/11 12:13	7/7/11 14:47	7/7/11 17:23	7/8/11 6:58
Haul number	119	120	121	122	124	125	126	127	128	129	130	131	132
Start latitude	5920.39	5900.95	5841.05	5820.58	5800.40	5750.55	5759.89	5759.55	5819.77	5839.42	5859.51	5919.50	5939.87
Start longitude	17128.30	17131.21	17135.19	17137.66	17140.32	17124.37	17102.53	17224.30	17220.75	17217.38	17213.04	17210.06	17206.81
End latitude	5918.82	5859.49	5839.81	5819.26	5759.04	5749.39	5800.98	5801.13	5821.39	5841.03	5901.01	5921.04	5941.10
End longitude	17127.78	17130.05	17133.73	17136.15	17138.85	17122.33	17100.47	17224.25	17220.95	17217.78	17212.85	17210.31	17204.81
Bottom depth (m)	68	71	73	74	75	78	87	97	96	93	87	80	77
Duration (h)	0.53	0.53	0.52	0.54	0.55	0.55	0.53	0.54	0.54	0.56	0.52	0.54	0.54
Distance fished (km)	2.96	2.93	2.71	2.86	2.91	2.96	2.87	2.93	3.01	3.02	2.79	2.85	2.96
Net width (m)	17.60	17.19	16.69	17.39	17.24	17.25	17.75	17.37	17.52	16.97	17.09	17.22	17.13
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	7.2	28.9	32.6	23.3	40.1	38.0	31.9	102.1	59.6	45.3	37.8	30.9	15.1
Other skates		0.0	0.0										
Sharks						50.0							
Total elasmobranch	**7.2**	**28.9**	**32.6**	**23.3**	**40.1**	**88.0**	**31.9**	**102.1**	**59.6**	**45.3**	**37.8**	**30.9**	**15.1**
Alaska plaice	41.8	52.9	12.7	1.3	55.8		0.8				1.3	1.9	6.6
Arrowtooth flounder					16.6	87.6	35.7	87.5	13.9	9.6	2.3	1.7	
Flathead sole	1.8	1.9	0.8		457.8	83.2	17.8	24.0	3.6	2.5	5.1	0.9	6.3
Greenland turbot	0.5	0.5	0.6	0.3	2.3	1.6	3.2	0.8	8.5	5.8	4.4	0.6	0.5
Pacific halibut		1.2		2.3		17.8		24.5	1.4		5.4	2.4	
Rock sole	3.4	2.9		2.1	451.8	586.6	7.4	3.2	1.0	4.6	10.9	24.2	26.0
Yellowfin sole	0.5	2.6	0.5	0.2	75.7	17.9	0.7		0.2		0.2	0.2	
Other flatfish							0.0						
Total flatfish	**46.3**	**60.0**	**13.8**	**6.2**	**602.3**	**711.4**	**47.9**	**115.9**	**25.0**	**20.0**	**24.5**	**30.9**	**33.2**
Walleye pollock	18.9	23.1	29.3	7.5	275.2	635.1	198.5	281.7	168.0	150.6	267.4	106.9	106.9
Pacific cod	28.1	52.0	28.9	1.4	54.1	104.1	243.9	92.6	108.0	113.0	42.5	16.2	4.6
Sablefish													
Atka mackerel													
Eelpouts	11.8	19.4	6.0	2.4	18.3	3.6	13.7	7.6	4.2	4.9	2.3	1.5	7.8
Pacific herring													0.5
Pacific ocean perch													
Sculpins	4.6	0.1	2.8	3.8	6.5	3.3	6.3	1.4	12.0	32.6	0.7	0.2	0.9
Other rockfish													
Other roundfish	0.3	2.4	11.2	0.5	5.5	6.4	0.5	0.2	0.1	0.1	0.7	0.6	2.6
Total roundfish	**63.8**	**97.0**	**78.2**	**15.6**	**359.5**	**752.4**	**462.9**	**383.4**	**292.2**	**301.3**	**313.6**	**125.5**	**123.4**
Blue king crab												0.6	
Red king crab													
Tanner crab, bairdi		1.0	1.4	5.8	2.3	0.9	2.7	9.3	1.3	1.0	0.8	1.6	0.1
Tanner crab, opilio	59.4	88.9	41.7	64.0	98.4	10.3	53.5	74.9	63.0	122.5	111.7	38.3	30.1
Other crab	28.4	4.9	21.4	66.2	237.0	118.6	21.1	67.1	41.3	22.2	26.1	11.4	58.3
Shrimp							0.3	2.3	1.7	0.0	0.0	0.0	
Octopus								1.8					
Squids													
Snails	43.6		29.5	12.8	11.6	22.4	40.9	101.8	46.9	52.2	28.3	75.0	44.0
Starfish	28.7	38.0	35.1	105.0	139.4	584.1	51.1	21.7	95.4	48.5	35.9	51.9	25.4
Other invertebrates	50.0	11.7	137.0	124.5	107.5	138.4	20.6	24.6	28.6	51.0	43.5	91.0	73.7
Total invertebrates	**210.2**	**144.5**	**266.0**	**378.4**	**596.1**	**874.8**	**190.2**	**303.6**	**278.3**	**297.4**	**246.3**	**269.8**	**231.7**
Miscellaneous	14.5		1.0	15.8	34.1	70.1	6.3	21.0	14.1	8.8	6.9	56.2	32.5
Total catch	**343.8**	**494.9**	**392.5**	**439.3**	**2090.0**	**2580.0**	**757.2**	**950.0**	**672.8**	**675.2**	**634.1**	**514.1**	**442.2**

Appendix A Table 1. -- Continued.

Station	**P-23**	**P-22**	**Q-22**	**Q-23**	**QP2524**	**Q-25**	**QP2625**	**QP2726**	**P-26**	**PO2726**	**O-26**	**ON2625**	**N-25**
Start date and time	7/8/11 9:30	7/8/11 12:27	7/8/11 14:50	7/8/11 17:50	7/9/11 7:02	7/9/11 12:25	7/9/11 14:25	7/9/11 17:04	7/10/11 6:57	7/10/11 10:13	7/10/11 12:52	7/10/11 15:10	7/10/11 17:16
Haul number	133	134	135	136	137	139	140	141	142	143	144	145	146
Start latitude	5959.41	5959.46	6019.84	6020.73	6010.11	6020.30	6008.29	6010.64	6000.40	5950.10	5940.27	5930.52	5921.07
Start longitude	17202.66	17241.81	17239.34	17356.19	17459.60	17434.58	17414.00	17539.50	17402.63	17546.79	17406.55	17429.19	17449.81
End latitude	6000.56	6001.02	6021.20	6019.16	6011.33	6019.76	6006.79	6009.23	5958.83	5950.47	5939.48	5929.90	5919.71
End longitude	17200.57	17241.80	17237.83	17356.22	17457.51	17434.60	17413.77	17538.24	17403.14	17543.18	17409.11	17431.94	17451.35
Bottom depth (m)	66	69	66	59	59	63	88	100	97	106	104	102	101
Duration (h)	0.53	0.52	0.52	0.53	0.55	0.19	0.51	0.52	0.53	0.62	0.51	0.52	0.53
Distance fished (km)	2.89	2.90	2.88	2.92	2.99	1.00	2.80	2.86	2.96	3.46	2.81	2.86	2.93
Net width (m)	16.48	17.18	16.99	16.15	16.40	17.07	16.62	16.36	17.22	16.95	16.22	16.76	18.40
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	3.0	16.2	13.9	47.9	103.9	3.1	19.6	56.3	23.9	63.0	47.1	57.7	52.0
Other skates													0.0
Sharks													
Total elasmobranch	**3.0**	**16.2**	**13.9**	**47.9**	**103.9**	**3.1**	**19.6**	**56.3**	**23.9**	**63.0**	**47.1**	**57.7**	**52.1**
Alaska plaice	67.3	48.4	54.8	12.8	22.9	1.2			1.6		2.0		24.6
Arrowtooth flounder							9.2	17.4	40.9	71.5	63.9	19.7	44.5
Flathead sole	2.4	3.8	6.8	2.1	0.9		29.2	38.8	27.4	7.2	9.0	17.6	2.3
Greenland turbot		0.2					3.3	13.7	14.7	37.2	11.9	14.3	18.0
Pacific halibut				0.8	1.0			0.9	1.0	1.4		4.3	2.4
Rock sole	4.8	3.0	0.4	6.8	49.3	8.4	0.3		1.0		1.5	4.7	11.2
Yellowfin sole	5.4	0.4	5.4	14.5	2.8	0.3							
Other flatfish													
Total flatfish	**77.5**	**52.0**	**60.6**	**34.8**	**76.0**	**9.8**	**12.8**	**32.0**	**59.2**	**110.2**	**79.4**	**43.0**	**100.7**
Walleye pollock	1.3	6.5	0.0	2.3	5.6	0.2	484.3	640.3	283.5	283.6	335.9	979.5	505.6
Pacific cod	1.1	8.6	4.1	5.9	16.9	0.9	65.5	69.4	59.1	102.0	90.6	40.3	197.9
Sablefish													
Atka mackerel													
Eelpouts	1.4	4.0	3.4	0.8	2.3		9.5	21.5	6.9	8.1	4.1	5.8	1.7
Pacific herring	0.2		0.0					0.5					
Pacific ocean perch													
Sculpins	5.6	2.1	1.9	28.0	17.8	17.4	12.7	18.2	7.7	27.6	11.6	68.9	16.5
Other rockfish													
Other roundfish	3.1	14.3	6.1	2.9	4.8	2.0	0.2		0.7	0.9	0.8	0.1	
Total roundfish	**12.7**	**35.4**	**15.4**	**39.9**	**47.4**	**20.5**	**572.1**	**749.8**	**357.8**	**422.2**	**443.0**	**1094.7**	**721.6**
Blue king crab	0.5			7.3	21.6	2.5	0.7	7.6	18.2	21.9	9.5	32.6	1.3
Red king crab													
Tanner crab, bairdi				0.1			0.1			0.4		0.4	
Tanner crab, opilio	60.8	41.8	79.7	17.8	0.2	0.1	34.2	41.3	48.9	34.0	130.7	126.8	66.4
Other crab	63.9	31.7	8.7	293.5	9.3	6.5	9.5	9.7	5.5	85.5	26.0	31.5	31.1
Shrimp	0.1	0.0		0.2	0.0	0.1	0.0	0.1	0.3	4.0	0.1	1.0	0.2
Octopus									0.9				
Squids													
Snails	32.9	13.0	10.6	145.3	26.2	8.5	4.0	17.0	37.6	86.4	44.4	30.6	31.3
Starfish	15.6	5.8	7.8	12.2	24.1	1.4	0.8	8.7	20.5	358.1	13.9	20.6	29.4
Other invertebrates	26.7	22.4	9.1	498.7	50.7	62.0	72.8	118.2	108.0	52.6	52.5	108.3	69.1
Total invertebrates	**200.4**	**114.7**	**115.9**	**975.1**	**132.2**	**81.0**	**122.1**	**202.6**	**239.9**	**642.9**	**277.2**	**351.7**	**228.7**
Miscellaneous		1.7	1.8	150.2	0.5	0.6	1.4	0.5	0.2	14.5	7.2	15.3	14.6
Total catch	**296.0**	**223.9**	**214.5**	**1250.0**	**360.9**	**114.9**	**757.3**	**1080.0**	**708.3**	**1260.0**	**862.8**	**1580.0**	**1120.0**

Appendix A Table 1. -- Continued.

Station	**G-24**	**F-24**	**B-01**	**C-01**	**C-18**	**F-25**	**G-25**	**G-26**	**H-26**	**H-25**	**I-26**	**J-26**
Start date and time	7/11/11 7:35	7/11/11 10:12	7/14/11 8:38	7/14/11 11:20	7/14/11 14:07	7/15/11 7:30	7/15/11 10:08	7/15/11 12:54	7/15/11 15:29	7/15/11 18:02	7/16/11 7:36	7/16/11 10:06
Haul number	147	148	149	150	151	152	153	154	155	156	157	158
Start latitude	5700.68	5640.51	5519.37	5539.53	5540.30	5639.64	5659.07	5659.38	5719.66	5720.02	5740.46	5759.88
Start longitude	17358.06	17201.18	16827.43	16824.79	16949.21	17326.15	17321.04	17444.78	17440.74	17311.28	17436.38	17431.94
End latitude	5659.04	5639.00	5520.94	5541.09	5540.56	5641.18	5700.64	5700.88	5721.19	5721.59	5741.88	5801.23
End longitude	17357.89	17201.34	16826.86	16824.78	16946.37	17326.57	17320.73	17444.55	17440.50	17311.37	17435.17	17430.55
Bottom depth (m)	116	126	148	134	135	136	122	141	120	117	148	117
Duration (h)	0.56	0.52	0.56	0.53	0.55	0.53	0.54	0.51	0.51	0.53	0.52	0.53
Distance fished (km)	3.04	2.82	2.98	2.90	3.03	2.90	2.94	2.80	2.85	2.91	2.89	2.85
Net width (m)	16.51	16.36	17.62	17.99	17.34	16.25	16.34	16.40	16.34	16.39	15.48	15.49
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	17.3	20.3	0.1		8.0	9.8			8.9	8.1	11.2	41.7
Other skates			1.0		2.8	2.1		0.2	23.5	2.9	47.4	3.5
Sharks												
Total elasmobranch	**17.3**	**20.3**	**1.1**		**10.8**	**11.9**		**0.2**	**32.4**	**11.0**	**58.6**	**45.2**
Alaska plaice							1.4					
Arrowtooth flounder	85.2	85.3	307.4	88.1	102.8	176.4	82.6	52.2	110.8	135.3	72.9	168.8
Flathead sole	25.6	7.3	69.1	67.3	38.3	3.9	3.1	16.4	16.2	54.2	10.7	35.8
Greenland turbot	0.2											
Pacific halibut	8.3	14.1	2.6		3.1	1.2	4.3	15.4	25.3	25.1	8.1	
Rock sole		0.4		0.6	2.3	10.1			4.1	0.4		
Yellowfin sole												
Other flatfish	0.6	4.0	3.3	9.7	25.9	23.7	2.7	8.9	0.7	2.8	5.6	2.2
Total flatfish	**94.4**	**103.7**	**313.4**	**98.4**	**134.0**	**211.3**	**91.0**	**76.5**	**140.8**	**163.6**	**86.6**	**171.0**
Walleye pollock	56.6	1.3	129.5	36.0	1.2	1135.2	1.5	395.9		31.1	452.4	3909.5
Pacific cod	58.3	144.1	16.8	4.2	81.9	37.5	15.9	67.1	0.9	16.6	35.3	45.2
Sablefish												
Atka mackerel												
Eelpouts	0.0			0.1								
Pacific herring												
Pacific ocean perch		0.2			0.6							
Sculpins	1.2		0.5	0.4	0.5	2.8	4.5	10.8	16.4		11.6	17.2
Other rockfish					1.0							
Other roundfish	0.0	0.4	0.5	0.9			0.0	6.7	6.2	0.0	0.2	
Total roundfish	**116.1**	**146.0**	**147.3**	**41.5**	**85.2**	**1175.5**	**21.8**	**480.5**	**23.5**	**47.7**	**499.5**	**3971.9**
Blue king crab												
Red king crab												
Tanner crab, bairdi	1.1	0.4	22.8	3.2	6.6	1.0	0.5	1.9	2.8	0.5	4.8	3.9
Tanner crab, opilio	28.4		0.8	0.1	4.9		45.7	3.5		13.1	38.0	58.1
Other crab	7.9	1.8	1.4	0.3	3.9	4.2	13.2	8.7	14.5	21.1	14.0	17.3
Shrimp		0.0	0.1	0.1	0.0	0.3	0.1	0.1	1.0	0.2	2.0	1.6
Octopus		0.0									0.2	0.0
Squids		0.2									0.1	
Snails	13.6	6.0	11.9	3.5	22.9	13.4	18.1	36.7	24.0	18.1	48.9	5.9
Starfish	3.0	1.2	0.1	0.1	0.1	3.6	5.5	26.2	10.5	12.7	3.1	10.4
Other invertebrates	1040.3	392.9	10.1	10.0	55.6	321.2	161.1	355.4	1050.7	128.7	34.7	547.4
Total invertebrates	**1094.3**	**402.6**	**47.3**	**17.2**	**93.9**	**343.7**	**244.2**	**432.5**	**1103.4**	**194.3**	**145.8**	**644.6**
Miscellaneous	2.3	3.7	0.1	0.1	3.5	4.5	1.7	1.9	5.6	1.1	1.9	3.6
Total catch	**1350.0**	**683.5**	**578.3**	**224.5**	**365.8**	**1750.9**	**361.8**	**1008.0**	**1322.0**	**472.0**	**803.2**	**4872.0**

Appendix A Table 1. -- Continued.

Station	**K-26**	**L-26**	**M-26**	**N-28**	**O-28**	**P-28**	**Q-28**	**R-28**	**T-28**	**T-27**	**T-26**	**T-25**
Start date and time	7/16/11 12:44	7/16/11 15:13	7/16/11 17:44	7/17/11 7:34	7/17/11 10:14	7/17/11 13:09	7/17/11 15:45	7/17/11 18:17	7/18/11 7:29	7/18/11 10:01	7/18/11 12:26	7/18/11 15:02
Haul number	159	160	161	162	163	164	165	166	167	168	169	170
Start latitude	5819.88	5839.75	5900.03	5919.96	5939.66	5959.48	6019.75	6039.90	6119.96	6120.24	6119.99	6119.96
Start longitude	17425.62	17422.09	17416.65	17653.74	17653.77	17644.21	17637.20	17633.29	17618.78	17659.81	17539.50	17423.90
End latitude	5821.41	5841.14	5901.57	5920.23	5941.18	6001.00	6021.30	6041.39	6119.86	6120.65	6120.20	6120.34
End longitude	17425.39	17420.78	17416.06	17650.71	17653.96	17644.08	17636.68	17632.59	17622.13	17502.91	17542.88	17426.97
Bottom depth (m)	116	125	117	133	125	116	110	107	97	87	78	73
Duration (h)	0.52	0.52	0.53	0.53	0.52	0.52	0.53	0.50	0.54	0.52	0.54	0.51
Distance fished (km)	2.84	2.88	2.91	2.93	2.82	2.82	2.92	2.83	3.01	2.89	3.06	2.83
Net width (m)	16.42	16.15	16.47	16.54	15.89	15.99	16.21	16.13	17.18	16.94	16.67	16.27
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	60.1	56.7	74.2	58.6	109.5	96.1	112.3	81.6	33.2	18.8	17.8	24.5
Other skates	2.6		2.4	2.4		2.2						
Sharks												
Total elasmobranch	**62.7**	**56.7**	**76.5**	**61.0**	**109.5**	**98.4**	**112.3**	**81.6**	**33.2**	**18.8**	**17.8**	**24.5**
Alaska plaice			4.6		3.2	7.6	1.4		0.5		0.6	2.3
Arrowtooth flounder	74.2	312.8	203.5	176.4	77.4	31.4	56.3	35.3	11.4	11.6		
Flathead sole	11.2	30.4	7.9	20.5	9.2	27.2	14.5	32.3	46.3	26.8	7.9	34.4
Greenland turbot		0.1	10.5	1.5	18.0	20.3	28.1	32.0	14.8	7.2	2.9	0.4
Pacific halibut	16.0	33.3		11.1	62.1							
Rock sole	13.4	5.3	13.6	3.4	5.2	0.7	0.8	0.3	0.5	1.3	0.7	1.1
Yellowfin sole										0.2		0.1
Other flatfish				0.0	0.0						0.3	2.0
Total flatfish	**103.7**	**351.5**	**232.2**	**192.5**	**165.8**	**59.9**	**86.6**	**67.7**	**27.3**	**20.2**	**4.6**	**5.9**
Walleye pollock	742.5	531.1	155.0	689.5	215.2	150.2	145.6	128.1	84.7	160.0	73.0	88.9
Pacific cod	16.7	117.4	36.0	66.8	145.7	18.0	38.2	44.2	39.2	43.1	5.8	11.6
Sablefish												
Atka mackerel			0.7									
Eelpouts	0.6	2.1	9.2	11.6	2.9	21.9	22.6	14.8	20.2	12.1	2.9	9.0
Pacific herring									0.4	0.3	0.1	0.3
Pacific ocean perch												
Sculpins	29.5	10.6	26.8	19.4	91.9	45.4	21.4	0.7	3.8	0.1	0.2	0.6
Other rockfish												
Other roundfish	0.5		0.1	0.3	0.1	2.5	0.2	0.7	0.1	3.6	1.6	0.8
Total roundfish	**789.8**	**661.2**	**227.7**	**787.6**	**455.8**	**237.9**	**227.9**	**188.5**	**148.4**	**219.2**	**83.6**	**111.3**
Blue king crab			1.9								1.8	
Red king crab												
Tanner crab, bairdi	0.9	0.5	7.3	1.6	1.4	1.7	1.1					
Tanner crab, opilio	138.6	134.1	150.9	14.1	509.3	316.8	261.7	93.4	256.9	101.0	101.9	102.2
Other crab	17.8	49.2	88.1	73.0	46.3	0.0	24.0	1.7	0.5	0.4	2.4	1.5
Shrimp	1.3	0.3	7.5	4.2	4.1		4.2	0.1	0.2	0.1	0.1	
Octopus	0.0			0.1								
Squids												
Snails	8.8	8.0	19.8	63.0	109.0		71.9	29.7	2.3	0.9	2.6	2.9
Starfish	1.7	4.2	3.0	113.2	6.2	7.1	9.6	8.3	1.6	4.0	13.1	12.8
Other invertebrates	25.0	23.4	36.1	33.7	42.0	86.8	92.8	72.0	26.3	21.0	64.8	25.2
Total invertebrates	**194.1**	**219.6**	**314.6**	**302.8**	**718.2**	**412.4**	**465.3**	**205.2**	**287.7**	**127.3**	**186.8**	**144.6**
Miscellaneous	2.5	6.6	22.5	30.4	3.5		2.9	1.6	0.4	0.2	0.1	0.3
Total catch	**1164.0**	**1326.0**	**881.3**	**1394.8**	**1462.0**	**949.5**	**909.5**	**576.9**	**543.3**	**412.5**	**300.8**	**321.0**

Appendix A Table 1. -- Continued.

Station	**U-25**	**V-25**	**V-26**	**U-26**	**U-27**	**V-27**	**V-28**	**U-28**	**U-29**	**T-29**	**T-30**	**S-30**
Start date and time	7/19/11 7:28	7/19/11 10:02	7/19/11 12:51	7/19/11 15:44	7/19/11 18:21	7/20/11 7:26	7/20/11 9:53	7/20/11 12:19	7/20/11 14:48	7/20/11 17:46	7/21/11 7:28	7/21/11 10:00
Haul number	171	172	173	174	175	176	177	178	179	180	181	182
Start latitude	6139.31	6159.25	6200.43	6140.58	6140.74	6159.07	6200.23	6140.45	6140.17	6119.97	6121.24	6101.19
Start longitude	17420.14	17415.17	17531.75	17534.06	17657.29	17649.35	17610.83	17612.75	17733.92	17740.46	17702.35	17701.11
End latitude	6140.83	6200.83	6200.80	6138.97	6141.14	6200.63	6159.89	6138.90	6140.46	6120.25	6119.57	6059.65
End longitude	17420.46	17414.99	17528.55	17533.92	17654.15	17649.41	17609.13	17612.05	17730.74	17743.59	17701.85	17700.86
Bottom depth (m)	70	63	73	77	87	81	92	96	105	106	116	121
Duration (h)	0.51	0.54	0.55	0.54	0.52	0.53	0.29	0.54	0.52	0.52	0.56	0.53
Distance fished (km)	2.85	2.93	2.89	2.98	2.89	2.90	1.62	2.95	2.88	2.86	3.12	2.87
Net width (m)	16.95	17.00	17.92	17.69	17.41	16.67	18.00	16.97	17.83	17.32	16.50	16.71
Net measured?	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	30.3	20.0	36.7	20.8	22.4	27.0	33.9	22.7	26.8	32.7	24.2	13.1
Other skates												2.1
Sharks												
Total elasmobranch	**30.3**	**20.0**	**36.7**	**20.8**	**22.4**	**27.0**	**33.9**	**22.7**	**26.8**	**32.7**	**24.2**	**15.2**
Alaska plaice	2.6	5.3	1.8	1.5		3.5	1.6			0.4		
Arrowtooth flounder					1.2		1.0	7.3	24.7	8.8	20.5	29.5
Flathead sole	7.1	9.5	8.8	7.3	10.6	12.6	6.2	31.9	11.9	23.2	11.1	9.9
Greenland turbot	1.0	0.0	0.6	2.3	4.4	7.8	6.8	11.8	27.5	17.9	36.5	18.2
Pacific halibut			0.6	1.4			3.1					
Rock sole		0.4		0.4	0.6				0.6			
Yellowfin sole	0.2	0.3										
Other flatfish	0.9	12.4	0.1	0.2								
Total flatfish	**4.6**	**18.4**	**3.1**	**5.9**	**6.2**	**11.3**	**12.5**	**19.1**	**52.7**	**27.2**	**57.0**	**47.7**
Walleye pollock	0.1		0.0	86.5	166.3	117.1	86.3	200.8	234.3	100.4	130.3	303.2
Pacific cod	0.6	0.0		1.1	27.8	9.7	6.9	9.2	20.4	24.4	55.9	29.5
Sablefish												
Atka mackerel												
Eelpouts	2.9	17.3	12.8	3.4	0.9	4.0	2.0	43.2	7.7	8.3	42.6	18.7
Pacific herring					3.7	3.7	4.6		0.6			
Pacific ocean perch												
Sculpins	3.7	1.7	0.6		0.1	0.6		0.1	7.7	8.4	14.3	18.1
Other rockfish												
Other roundfish	6.8	6.5	6.6	1.5	0.9	2.2	1.6	0.3	0.4	0.5	1.1	1.0
Total roundfish	**14.1**	**25.5**	**20.0**	**92.5**	**199.8**	**137.3**	**101.4**	**253.5**	**271.0**	**142.1**	**244.1**	**370.5**
Blue king crab						1.0						
Red king crab												
Tanner crab, bairdi												
Tanner crab, opilio	113.2	123.1	66.9	66.4	92.1	114.8	63.5	243.1	156.8	145.8	627.7	541.0
Other crab	2.2	6.4	0.9	1.0	1.9	3.3	0.5	0.9	0.7	1.4	18.8	3.9
Shrimp		0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.8	3.1
Octopus		0.2	0.3	0.1								15.2
Squids												
Snails	7.1	74.9	6.3	3.6	8.4	11.9	2.0	1.2	1.0	1.7	82.7	34.1
Starfish	26.9	10.8	22.9	14.6	9.8	23.9	5.9	7.3	0.4	0.8	9.4	13.4
Other invertebrates	30.4	38.9	20.6	29.0	12.3	11.0	29.3	17.9	31.9	51.6	85.9	36.6
Total invertebrates	**179.9**	**254.4**	**117.9**	**114.8**	**124.5**	**166.0**	**101.3**	**270.6**	**190.8**	**201.3**	**825.3**	**647.3**
Miscellaneous	0.0	10.0	0.1	1.0	0.1	0.4	0.2	0.1	0.0	0.0	2.3	2.4
Total catch	**236.1**	**337.8**	**186.7**	**242.3**	**363.7**	**354.5**	**255.5**	**597.8**	**553.3**	**426.4**	**1164.0**	**1093.0**

Appendix A Table 1. -- Continued.

Station	**S-31**	**R-31**	**R-32**	**Q-31**	**P-32**	**P-31**	**O-31**	**N-31**	**M-32**	**M-31**	**L-31**	**L-30**
Start date and time	7/21/11 12:30	7/21/11 15:23	7/21/11 18:06	7/22/11 7:29	7/22/11 10:47	7/22/11 13:43	7/22/11 16:50	7/23/11 7:45	7/23/11 11:04	7/23/11 14:03	7/23/11 16:35	7/23/11 19:30
Haul number	183	184	185	186	187	188	189	190	191	192	193	194
Start latitude	6100.19	6040.67	6040.23	6020.35	6000.87	6000.37	5940.85	5920.14	5900.73	5900.49	5840.56	5840.37
Start longitude	17824.22	17829.67	17950.70	17837.47	17805.36	17846.16	17850.53	17856.86	17824.55	17703.06	17709.59	17746.53
End latitude	6100.21	6039.11	6040.33	6019.49	5959.52	6000.49	5939.27	5918.92	5859.12	5858.87	5838.92	5838.84
End longitude	17821.75	17829.47	17947.40	17834.43	17806.95	17849.40	17850.80	17854.51	17824.90	17703.00	17709.74	17747.63
Bottom depth (m)	134	146	160	146	141	137	172	149	135	137	137	141
Duration (h)	0.40	0.54	0.54	0.58	0.53	0.55	0.54	0.58	0.55	0.53	0.55	0.55
Distance fished (km)	2.23	2.92	3.03	3.22	2.91	3.03	2.93	3.20	3.02	3.00	3.05	3.05
Net width (m)	17.35	17.07	17.49	17.49	16.72	17.50	17.49	17.49	17.35	17.86	17.94	17.83
Net measured?	N	Y	N	N	Y	Y	N	N	N	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	36.8	149.5	105.8	44.3	57.9	26.8	72.3	43.1	58.7	22.9	4.9	8.1
Other skates		2.0	8.1		2.3	2.2	2.5	4.5	11.6	4.6	4.9	2.0
Sharks												
Total elasmobranch	**36.8**	**151.5**	**113.9**	**44.3**	**60.2**	**29.1**	**74.8**	**47.6**	**70.3**	**27.5**	**9.8**	**10.1**
Alaska plaice												
Arrowtooth flounder	5.5	69.8	76.5	57.5	36.3	88.2	452.6	243.2	116.0	141.5	212.9	305.3
Flathead sole	5.5	448.1	8.6	34.9	110.5	85.8	428.9	300.6	107.3	142.6	203.0	154.6
Greenland turbot	10.1	27.6	0.7	4.7	8.2	3.5	2.9	7.9				
Pacific halibut			2.5		28.8		2.6	32.1	43.7	19.7	6.7	11.2
Rock sole						0.4	1.6	1.0	0.5	8.4	2.5	
Yellowfin sole												
Other flatfish								0.0	3.4		14.4	13.7
Total flatfish	**15.6**	**97.4**	**79.6**	**62.2**	**73.3**	**92.1**	**459.8**	**284.3**	**163.6**	**169.6**	**236.6**	**330.2**
Walleye pollock	2325.8	1365.1	3621.4	666.8	954.6	265.3	1358.3	802.0	15.8	1272.7	9.9	
Pacific cod	100.0	51.3	69.2	50.9	91.9	13.0	25.2	34.2	55.9	39.9	154.9	14.2
Sablefish												
Atka mackerel												
Eelpouts	13.9	42.2	2.1	24.8	4.7	20.8	6.6	4.7				
Pacific herring												
Pacific ocean perch								0.3			0.1	
Sculpins	21.4	22.1	11.0	55.9	20.0	24.4	10.2	1.3	3.6	8.6	0.0	6.4
Other rockfish												
Other roundfish	3.7	0.4		0.5	0.4	0.8		1.3	0.2		11.4	2.9
Total roundfish	**2464.8**	**1481.0**	**3703.8**	**799.0**	**1071.5**	**324.4**	**1400.3**	**843.8**	**75.5**	**1321.2**	**176.3**	**23.5**
Blue king crab												
Red king crab												
Tanner crab, bairdi					1.5	1.1	0.9	4.1	7.5	4.8	0.2	0.5
Tanner crab, opilio	140.1	260.5	279.4	180.4	21.2	57.4	5.7	1.3	0.2	0.2		0.0
Other crab	0.5	2.7	1.3	4.7	2.7	11.9	24.0	21.5	22.5	26.5	31.2	40.6
Shrimp	2.6	5.4		8.5	13.7	9.7	7.8	0.4	0.1	0.0	0.0	0.0
Octopus	3.7				0.0				0.1	0.2	12.7	0.1
Squids								0.1				
Snails	20.6	56.9	1.2	10.1	13.1	30.4	50.2	27.8	20.3	20.0	15.0	10.9
Starfish	11.2	3.6		31.2	17.4	21.0	3.7	3.9	1.5	1.6	0.4	0.7
Other invertebrates	6.1	6.8	0.2	661.6	338.6	32.7	10.3	19.3	46.3	35.9	8.5	7.6
Total invertebrates	**184.8**	**335.8**	**282.1**	**896.5**	**408.4**	**164.2**	**102.6**	**78.3**	**98.5**	**89.2**	**68.1**	**60.4**
Miscellaneous	2.5	2.2		3.0	4.1	0.3	3.6	1.4	5.0	5.9	8.6	6.7
Total catch	**2710.0**	**2516.0**	**4188.0**	**1840.0**	**1728.0**	**695.9**	**2470.0**	**1556.0**	**520.1**	**1756.0**	**702.2**	**585.4**

Appendix A Table 1. -- Continued.

Station	**M-30**	**M-29**	**L-29**	**L-28**	**M-28**	**M-27**	**L-27**	**K-27**
Start date and time	7/24/11 7:30	7/24/11 9:59	7/24/11 12:53	7/24/11 16:07	7/25/11 7:35	7/25/11 10:06	7/25/11 12:49	7/25/11 15:31
Haul number	195	196	197	198	199	200	201	202
Start latitude	5859.96	5859.97	5840.59	5843.25	5900.23	5859.91	5840.71	5820.74
Start longitude	17740.14	17615.00	17625.87	17506.92	17659.07	17536.33	17543.26	17542.08
End latitude	5859.76	5859.84	5839.07	5843.39	5900.06	5859.87	5839.12	5819.15
End longitude	17743.27	17618.15	17626.78	17503.76	17502.19	17539.22	17543.34	17542.37
Bottom depth (m)	134	133	135	159	129	126	156	159
Duration (h)	0.56	0.56	0.54	0.57	0.54	0.52	0.55	0.53
Distance fished (km)	3.03	3.03	2.96	3.08	3.02	2.79	2.96	2.95
Net width (m)	17.65	17.75	17.93	17.99	17.54	16.45	17.46	17.20
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0
Alaska skates	49.8	7.840	11.590		26.300	56.840	8.840	
Other skates	6.5	3.82	10.77	22.29	2.40	2.25	6.88	8.65
Sharks								
Total elasmobranch	**56.2**	**11.66**	**22.36**	**22.29**	**28.70**	**59.09**	**15.72**	**8.65**
Alaska plaice								
Arrowtooth flounder	163.6	86.95	481.85	111.56	314.30	152.76	278.21	80.08
Flathead sole	479.8	132.56	83.79	1.13	127.65	11.51	6.96	85.80
Greenland turbot						1.78	0.20	
Pacific halibut	8.5	10.64	6.68	9.91	23.14	12.65	6.38	2.54
Rock sole	2.3			0.49	6.16	1.63	0.76	2.86
Yellowfin sole								
Other flatfish			17.98	7.25			2.22	4.36
Total flatfish	**174.4**	**97.58**	**506.51**	**129.21**	**343.60**	**168.82**	**287.77**	**89.84**
Walleye pollock	769.5	1,378.580	2,518.970	314.664	2,192.776	479.187	392.790	2.520
Pacific cod	33.8	18.20	111.63	123.44	383.07	302.64	60.04	69.28
Sablefish								
Atka mackerel								
Eelpouts	12.0					0.08		
Pacific herring								
Pacific ocean perch								6.08
Sculpins	0.4	1.20	4.31	0.98	10.18	15.63	6.66	17.36
Other rockfish								
Other roundfish	0.0		9.83	1.94	3.64	1.94	2.50	8.12
Total roundfish	**815.7**	**1,397.98**	**2,644.74**	**441.03**	**2,589.67**	**799.48**	**461.99**	**103.35**
Blue king crab								
Red king crab								
Tanner crab, bairdi	8.6	12.54	0.68	1.47	2.28	0.83	17.76	4.36
Tanner crab, opilio	1.2	1.34		0.04	35.55	144.81	88.16	0.15
Other crab	3.0	5.98	75.71	30.98	167.33	171.20	22.07	18.10
Shrimp	0.3			0.53		1.65	0.19	6.75
Octopus	2.0			0.04		0.02		0.01
Squids	0.1							0.34
Snails	83.9	6.85	35.62	8.90	76.67	52.74	8.10	8.30
Starfish	7.0	12.68		1.87	8.29	14.70	2.33	2.50
Other invertebrates	36.4	20.46	10.24	6.63	13.44	133.03	25.09	33.26
Total invertebrates	**142.4**	**59.85**	**122.26**	**50.46**	**303.55**	**518.98**	**163.69**	**73.77**
Miscellaneous	1.5	2.367	4.343	5.693	34.837	48.118	2.263	2.232
Total catch	**1670.0**	**1,702.001**	**3,383.999**	**649.805**	**3,428.002**	**1,605.999**	**938.380**	**363.644**

Appendix A Table 2. -- Haul and catch data for successfully completed tows by FV *Alaska Knight* during the 2011 eastern Bering Sea bottom trawl survey.

Station	**H-16**	**I-16**	**J-16**	**J-15**	**K-14**	**J-14**	**I-14**	**H-14**	**G-14**	**F-14**	**F-13**
Start date and time	6/5/11 9:19	6/5/11 12:09	6/5/11 14:40	6/5/11 17:27	6/6/11 6:30	6/6/11 9:08	6/6/11 11:40	6/6/11 14:15	6/6/11 16:46	6/7/11 6:36	6/7/11 9:27
Haul number	3	4	5	6	7	8	9	10	11	12	13
Start latitude	5718.90	5739.93	5800.36	5800.59	5821.12	5800.88	5740.40	5720.49	5700.82	5641.55	5639.90
Start longitude	15933.95	15938.37	15940.91	15902.99	16026.44	16023.46	16022.81	16019.93	16019.43	16018.36	16137.95
End latitude	5720.15	5741.46	5801.88	5759.39	5819.65	5759.32	5739.40	5719.05	5659.53	5641.05	5639.03
End longitude	15935.49	15937.91	15940.85	15901.31	16027.32	16023.16	16020.71	16019.29	16018.09	16016.40	16135.69
Bottom depth (m)	32	36	35	42	26	42	49	56	55	38	58
Duration (h)	0.51	0.53	0.50	0.50	0.52	0.52	0.51	0.50	0.50	0.40	0.52
Distance fished (km)	2.78	2.89	2.83	2.77	2.86	2.91	2.80	2.74	2.75	2.22	2.83
Net width (m)	15.14	15.55	15.32	15.14	14.96	15.90	16.42	15.97	16.15	15.30	16.28
Net measured?	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	222.72	47.50	13.50	41.40		15.30	8.50	11.50	20.00	88.90	52.30
Other skates											
Sharks											
Total elasmobranch	**222.7**	**47.5**	**13.5**	**41.4**		**15.3**	**8.5**	**11.5**	**20.0**	**88.9**	**52.3**
Alaska plaice	0.7	0.4		8.7	76.0	5.9			0.5	0.6	
Arrowtooth flounder								0.0	0.0	0.3	11.3
Flathead sole	1.0			12.9			0.0	2.2	11.6	10.9	5.3
Greenland turbot											
Pacific halibut	5.9	20.0	13.1	72.7	3.8	20.8	45.5	39.8	63.4	54.2	25.0
Rock sole	1,427.1	1,267.2	1,486.0	2,812.2	39.9	1,120.0	433.1	257.0	610.0	865.4	296.0
Yellowfin sole	635.8	382.3	519.6	2,990.8	2,079.4	1,371.7	123.5	141.5	602.5	947.5	264.4
Other flatfish	70.1	40.6	16.6	15.1	201.0	340.6	50.9	7.1	20.0	88.0	8.9
Total flatfish	**2,139.6**	**1,710.5**	**2,035.3**	**5,899.6**	**2,400.1**	**2,859.0**	**653.0**	**445.4**	**1,296.4**	**1,956.0**	**605.6**
Walleye pollock	8.9	0.0	0.0	6.3	0.0	0.0	2.8	0.0	75.6	10.8	76.2
Pacific cod	179.0	102.1	67.3	172.3	37.1	47.9	45.2	24.9	40.4	126.3	75.3
Sablefish											
Atka mackerel											
Eelpouts											
Pacific herring	103.6	3.1		41.8	9.1	4.5				118.5	
Pacific ocean perch											
Sculpins	27.8	33.8	43.8	88.3	55.5	43.0	14.9	2.2	19.3	8.7	6.9
Other rockfish											
Other roundfish	1.2	2.0	1.7	3.1	3.0	4.7	3.0	2.1	3.1	2.5	5.0
Total roundfish	**320.5**	**141.0**	**112.8**	**311.8**	**104.7**	**100.2**	**65.9**	**29.3**	**138.4**	**266.7**	**163.3**
Blue king crab											
Red king crab						16.6	23.2	67.5	21.9	1.1	91.5
Tanner crab, bairdi											3.3
Tanner crab, opilio											1.2
Other crab	2.6	0.6	5.3	0.1	1.1	0.8	2.3	3.1	29.9	1.0	16.7
Shrimp		0.0			0.0		0.0		0.0		0.0
Octopus											
Squids											
Snails			0.2	0.3			1.4	0.3	3.4		5.6
Starfish	121.0	488.0	265.8	73.2	90.8	183.8	345.9	294.8	437.2	117.5	155.7
Other invertebrates	10.3	19.9	14.2	4.0	5.2	30.2	133.6	111.1	163.1	125.6	114.0
Total invertebrates	**133.8**	**508.5**	**285.5**	**77.6**	**97.1**	**231.4**	**506.4**	**476.8**	**655.6**	**245.3**	**388.0**
Miscellaneous	0.4	0.5	1.9		0.1	0.2	0.2	1.5	4.1	0.2	5.6
Total catch	**2,818.0**	**2,408.0**	**2,449.0**	**6,343.3**	**2,602.0**	**3,206.0**	**1,234.0**	**966.7**	**2,126.0**	**2,568.0**	**1,220.0**

Appendix A Table 2. -- Continued.

Station	**E-12**	**F-12**	**G-12**	**H-12**	**I-12**	**J-12**	**K-12**	**J-10**	**I-10**	**H-10**	**G-10**	**G-09**	**F-10**
Start date and time	6/7/11 14:54	6/7/11 17:28	6/8/11 6:27	6/8/11 9:07	6/8/11 11:44	6/8/11 14:20	6/8/11 16:59	6/9/11 6:21	6/9/11 8:47	6/9/11 11:03	6/9/11 13:41	6/9/11 16:20	6/10/11 6:27
Haul number	15	16	17	18	19	20	21	22	23	24	25	26	27
Start latitude	5619.67	5639.51	5659.31	5719.22	5739.50	5759.36	5819.22	5759.95	5739.98	5721.65	5700.99	5659.49	5640.42
Start longitude	16100.46	16100.77	16102.56	16103.05	16106.83	16109.32	16115.00	16353.67	16352.22	16352.56	16350.92	16313.38	16349.18
End latitude	5620.94	5640.95	5700.49	5720.60	5740.62	5800.74	5819.40	5758.49	5738.44	5720.58	5659.73	5700.87	5639.01
End longitude	16101.80	16101.29	16104.23	16103.78	16105.09	16108.11	16111.99	16354.06	16351.77	16350.65	16349.53	16312.31	16348.51
Bottom depth (m)	53	67	67	61	56	45	23	37	46	51	60	61	71
Duration (h)	0.50	0.50	0.51	0.49	0.50	0.53	0.53	0.51	0.52	0.51	0.51	0.52	0.49
Distance fished (km)	2.74	2.72	2.77	2.67	2.72	2.85	2.97	2.75	2.90	2.77	2.74	2.76	2.70
Net width (m)	15.64	16.11	16.73	17.54	16.83	15.90	15.14	15.27	15.96	15.72	16.28	16.48	15.81
Net measured?	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	246.30	8.60	8.60		5.50	4.30	9.50	35.30	70.40	35.60	30.40	33.80	27.30
Other skates													
Sharks													
Total elasmobranch	**246.3**	**8.6**	**8.6**		**5.5**	**4.3**	**9.5**	**35.3**	**70.4**	**35.6**	**30.4**	**33.8**	**27.3**
Alaska plaice	127.6	30.2	111.0	14.0	27.7	21.3	3.7	25.0	24.1	147.1	341.9	158.6	187.1
Arrowtooth flounder	13.4	2.5	9.5	7.0						1.3	7.0	8.2	78.2
Flathead sole	15.7	18.6	30.0	20.9	19.0	22.5		3.6	7.5	19.7	39.6	25.6	87.6
Greenland turbot													0.1
Pacific halibut	32.2	39.5	50.1	50.3	35.7	33.9	52.8	78.2	60.6	18.3	70.9	84.1	18.7
Rock sole	497.5	528.0	701.4	272.5	483.5	1,478.3	380.5	1,302.3	689.4	514.2	650.3	289.6	523.7
Yellowfin sole	623.5	397.7	239.5	158.6	188.6	668.9	1,009.6	511.6	291.4	504.1	423.0	323.2	418.3
Other flatfish	11.0	8.9	13.8	2.3		176.0	184.4	50.0					
Total flatfish	**1,305.2**	**1,006.8**	**1,125.4**	**504.7**	**735.6**	**2,378.4**	**1,631.1**	**1,967.1**	**1,065.5**	**1,185.0**	**1,493.1**	**863.7**	**1,226.0**
Walleye pollock	282.1	106.8	29.3	41.7	166.8	30.3	0.0	3.5	10.0	20.0	153.7	114.9	295.4
Pacific cod	35.9	81.3	416.0	32.2	30.6	186.2	430.5	70.3	926.0	41.0	111.3	66.1	48.1
Sablefish													
Atka mackerel													
Eelpouts													
Pacific herring													
Pacific ocean perch													
Sculpins	17.2	26.3	7.4	0.1	11.2	16.3	31.8	14.3	18.8	14.7	17.9	12.2	33.6
Other rockfish													
Other roundfish	9.4	5.4	4.2	2.7	4.5	8.9	2.3	4.8	2.1	5.2	3.7	1.7	6.2
Total roundfish	**344.6**	**219.8**	**457.0**	**76.7**	**213.1**	**241.7**	**464.6**	**92.9**	**956.9**	**80.9**	**286.5**	**194.9**	**383.3**
Blue king crab													
Red king crab	40.2	134.2	42.2	8.6	15.7	81.8		16.0	11.8	6.3	2.1	4.2	4.9
Tanner crab, bairdi	4.8	17.2	8.5							0.3	3.1	2.8	5.5
Tanner crab, opilio											2.6	2.7	3.4
Other crab	23.9	5.4	9.5	2.6	2.5	2.0	1.0	3.1	0.5	3.4	3.6	6.7	3.1
Shrimp				0.0	0.0	0.0		0.0	0.0	0.0		0.0	
Octopus													
Squids													
Snails	7.8	0.9	1.3		12.8	1.7		5.1	0.7	3.8		6.7	
Starfish	165.6	132.2	58.2	233.8	35.9	65.8	128.9	241.8	230.5	608.5	250.6	74.9	135.6
Other invertebrates	320.6	462.0	167.0	223.6	52.8	49.7	2.7	42.2	48.0	26.2	139.4	8.5	882.8
Total invertebrates	**562.9**	**751.9**	**286.7**	**468.7**	**119.7**	**201.1**	**132.6**	**308.2**	**291.5**	**648.4**	**401.5**	**106.5**	**1,035.3**
Miscellaneous	16.3	0.3	0.4	1.4	5.2		0.2	0.9	0.1	2.4	0.8	1.5	1.4
Total catch	**2,491.0**	**2,006.0**	**1,908.0**	**1,072.3**	**1,098.0**	**2,848.0**	**2,238.0**	**2,408.0**	**2,392.0**	**1,972.0**	**2,252.0**	**1,226.0**	**2,761.0**

Appendix A Table 2. -- Continued.

Station	**E-10**	**D-10**	**C-09**	**B-08**	**B-07**	**E-09**	**E-08**	**F-08**	**G-08**	**H-08**	**K-08**	**L-08**
Start date and time	6/10/11 9:03	6/10/11 11:37	6/10/11 16:32	6/11/11 9:23	6/11/11 16:57	6/12/11 6:35	6/12/11 9:25	6/12/11 12:06	6/12/11 14:45	6/12/11 17:14	6/13/11 6:25	6/13/11 8:46
Haul number	28	29	31	33	36	37	38	39	40	41	42	43
Start latitude	5620.48	5600.61	5540.26	5520.66	5520.07	5619.88	5619.36	5639.36	5659.39	5719.57	5819.78	5839.25
Start longitude	16349.24	16345.85	16310.99	16434.88	16558.22	16312.21	16435.46	16438.16	16436.47	16437.56	16438.13	16438.32
End latitude	5619.25	5559.75	5539.85	5519.59	5520.82	5621.23	5620.69	5640.80	5700.84	5721.06	5821.15	5840.68
End longitude	16347.58	16343.74	16308.52	16433.23	16559.42	16311.69	16434.62	16437.64	16436.39	16437.65	16438.70	16438.44
Bottom depth (m)	75	71	53	52	78	79	84	74	65	53	38	32
Duration (h)	0.51	0.50	0.49	0.48	0.35	0.47	0.49	0.50	0.49	0.51	0.49	0.49
Distance fished (km)	2.86	2.73	2.70	2.64	1.90	2.56	2.62	2.72	2.69	2.78	2.61	2.65
Net width (m)	16.33	16.76	14.61	16.01	16.65	16.12	16.26	16.65	16.04	15.68	15.36	15.04
Net measured?	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	3	0	0	0	0
Alaska skates	32.00	61.60	43.84	37.50	3.50	1.10	10.00	2.80	24.70	30.00	46.30	32.40
Other skates				108.70					0.09			
Sharks												
Total elasmobranch	**32.0**	**61.6**	**43.8**	**146.2**	**3.5**	**1.1**	**10.0**	**2.8**	**24.8**	**30.0**	**46.3**	**32.4**
Alaska plaice	119.3	12.8		84.4		6.8	2.6	0.2	118.9	192.5	46.4	38.8
Arrowtooth flounder	67.4	98.2	35.1	173.9	105.2	17.9	30.7	12.7	7.5			
Flathead sole	47.3	65.4	17.1	402.2	20.3	109.9	10.8	17.3	61.6	9.2		
Greenland turbot								0.1	0.3	0.1		
Pacific halibut	19.2	27.3	24.1	11.6	23.0	3.8	19.8	6.4	24.6	23.7	33.5	20.9
Rock sole	1,073.6	357.7	401.7	721.7	99.8	67.1	50.2	46.3	115.7	425.8	1,363.3	407.1
Yellowfin sole	356.2	776.8	171.4	2,337.5	236.7	182.1	7.0	305.1	521.3	516.4	586.3	2,389.3
Other flatfish		10.9	5.9	7.8				0.0			6.6	32.5
Total flatfish	**1,635.6**	**1,283.7**	**638.1**	**3,336.9**	**464.8**	**277.8**	**110.4**	**370.8**	**788.3**	**1,158.5**	**2,036.1**	**2,888.6**
Walleye pollock	318.6	1,312.4	247.0	1,146.6	1,853.3	433.7	77.0	121.7	63.0	53.1	4.6	0.0
Pacific cod	52.1	78.1	97.9	292.5	16.8	53.8	124.3	38.3	56.3	39.6	157.2	35.4
Sablefish												
Atka mackerel												
Eelpouts								0.8				
Pacific herring												
Pacific ocean perch												
Sculpins	29.1	15.0	6.6	3.5	9.1		2.2	4.4	5.0	59.3	21.3	74.9
Other rockfish												
Other roundfish	8.0	6.6	6.3	17.7	0.5	0.8	0.6	0.3	2.8	0.8	1.9	0.8
Total roundfish	**407.8**	**1,412.1**	**357.8**	**1,460.3**	**1,879.7**	**488.3**	**204.1**	**165.6**	**127.1**	**152.8**	**184.9**	**111.1**
Blue king crab												
Red king crab	33.3	80.8	26.0	34.8						6.3	7.2	
Tanner crab, bairdi	7.8	11.1	1.8	3.8	2.1	1.1	15.2	6.5	3.4	0.3		
Tanner crab, opilio	4.0					1.0	1.1	1.2	0.6			
Other crab	5.7	2.5	2.3	2.4	0.5	2.5	8.3	4.3	7.1	7.5	3.2	1.3
Shrimp								0.0				
Octopus												
Squids												
Snails	15.8	1.7	10.0	12.0	8.5	3.0	20.2	28.0	79.8	17.0	0.5	0.1
Starfish	36.5	5.2	60.5	284.9	1.1	1.8	28.2	10.2	14.1	32.9	129.0	114.0
Other invertebrates	995.7	165.9	1,698.3	309.0	57.5	209.7	1,161.5	461.3	154.5	137.8	8.7	4.6
Total invertebrates	**1,098.8**	**267.1**	**1,798.8**	**646.9**	**69.7**	**219.1**	**1,234.6**	**511.5**	**259.4**	**201.9**	**148.6**	**119.9**
Miscellaneous	2.4	0.1	0.3	11.6			18.2	3.9	8.8	3.6	0.1	
Total catch	**3,224.0**	**3,090.0**	**2,856.0**	**6,004.0**	**2,438.0**	**1,096.2**	**1,588.0**	**1,071.9**	**1,270.0**	**1,556.0**	**2,416.0**	**3,152.0**

Appendix A Table 2. -- Continued.

Station	**M-08**	**N-07**	**M-06**	**L-06**	**K-06**	**J-06**	**I-06**	**H-06**	**G-06**	**F-06**	**E-06**	**D-06**
Start date and time	6/13/11 11:18	6/13/11 14:30	6/14/11 6:31	6/14/11 9:07	6/14/11 11:31	6/14/11 13:55	6/14/11 16:27	6/15/11 6:26	6/15/11 9:03	6/15/11 11:28	6/15/11 14:00	6/15/11 16:34
Haul number	44	45	46	47	48	49	50	51	52	53	54	55
Start latitude	5858.88	5918.70	5901.20	5841.07	5820.73	5800.95	5740.88	5721.86	5700.57	5640.65	5620.32	5600.43
Start longitude	16439.71	16400.44	16520.22	16521.07	16521.73	16523.50	16523.28	16521.56	16524.05	16524.73	16525.22	16525.14
End latitude	5859.99	5919.94	5859.75	5839.62	5819.28	5759.54	5739.51	5720.50	5659.16	5639.20	5619.01	5559.18
End longitude	16437.74	16558.96	16520.90	16521.08	16521.18	16522.77	16522.89	16522.24	16523.70	16524.26	16524.17	16523.85
Bottom depth (m)	22	22	28	37	44	44	52	66	70	75	86	92
Duration (h)	0.51	0.50	0.51	0.49	0.50	0.50	0.47	0.48	0.48	0.50	0.49	0.49
Distance fished (km)	2.80	2.71	2.77	2.68	2.74	2.71	2.56	2.61	2.64	2.73	2.66	2.67
Net width (m)	15.14	14.74	15.04	14.82	16.08	16.32	16.09	15.71	15.69	16.65	16.88	17.06
Net measured?	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates				42.00	19.80	16.40		30.80	84.80	57.20	29.00	19.50
Other skates												
Sharks												
Total elasmobranch				**42.0**	**19.8**	**16.4**		**30.8**	**84.8**	**57.2**	**29.0**	**19.5**
Alaska plaice	1.4	4.8	9.4	71.3	63.9	75.1	6.3	273.6	24.5	13.0		0.9
Arrowtooth flounder									0.9	2.7	27.5	23.1
Flathead sole							1.7	0.2	17.8	66.0	13.9	95.4
Greenland turbot										0.2		
Pacific halibut	2.1	5.3	12.9	13.1	51.6	47.2	3.9	24.9	20.5	8.5	4.3	11.4
Rock sole	196.8	40.9	253.4	428.3	283.4	311.1	17.3	17.7	20.7	70.3	14.0	356.9
Yellowfin sole	121.2	284.8	1,038.5	1,214.7	291.5	160.0	33.6	705.5	384.6	366.7	1.4	
Other flatfish	35.2	15.2	9.0									
Total flatfish	**356.7**	**351.0**	**1,323.3**	**1,727.5**	**690.4**	**593.4**	**61.1**	**1,021.7**	**451.2**	**461.4**	**47.1**	**392.3**
Walleye pollock	0.1	0.4	6.9	10.6	11.1	0.4	59.3	11.9	29.1	32.3	31.6	323.5
Pacific cod	84.5	180.5	37.9	147.7	45.2	78.1	252.1	24.7	61.7	116.6	179.6	81.5
Sablefish												
Atka mackerel												
Eelpouts									3.5	20.6	1.5	1.0
Pacific herring	0.0		0.6	0.5			0.7	0.3				
Pacific ocean perch												
Sculpins	11.2	13.2	38.0	25.9	12.5	12.7	2.7	2.6	7.0	5.7		
Other rockfish												
Other roundfish	4.1	14.0	4.0	2.6	4.7	0.9	0.1	0.3	1.4	0.7	0.3	1.1
Total roundfish	**99.9**	**208.2**	**87.4**	**187.2**	**73.5**	**92.1**	**314.9**	**39.8**	**102.7**	**175.8**	**213.0**	**407.1**
Blue king crab												
Red king crab			0.6		1.7							
Tanner crab, bairdi								0.4	0.5	15.7	4.4	6.3
Tanner crab, opilio								0.8	2.1	3.2	1.6	1.5
Other crab	0.5	0.1	4.3	13.7	14.7	19.4	1.5	93.9	22.0	44.0	18.9	51.4
Shrimp		0.0				0.0		0.0	0.1	0.1	0.0	0.0
Octopus												
Squids												
Snails					12.8	26.1	1.4	58.4	69.6	104.9	66.2	36.3
Starfish	17.8	136.6	25.7	219.6	80.3	73.2	4.3	229.4	52.1	16.7	197.1	10.7
Other invertebrates		0.0		0.4	38.3	57.2	158.5	268.0	160.6	352.7	109.3	176.6
Total invertebrates	**18.3**	**136.7**	**30.6**	**233.7**	**147.7**	**175.9**	**165.7**	**651.0**	**307.0**	**537.3**	**397.6**	**282.8**
Miscellaneous	0.2	0.1	0.7	3.6	12.3	28.6	1.1	58.5	7.1	140.3	67.8	80.9
Total catch	**475.1**	**696.0**	**1,442.0**	**2,194.0**	**943.7**	**906.5**	**544.5**	**1,802.0**	**970.5**	**1,438.0**	**768.3**	**1,278.0**

Appendix A Table 2. -- Continued.

Station	**F-04**	**G-04**	**H-04**	**I-04**	**J-04**	**K-04**	**L-04**	**M-04**	**N-04**	**O-04**	**O-02**	**N-02**
Start date and time	6/16/11 6:39	6/16/11 9:15	6/16/11 12:14	6/16/11 15:10	6/16/11 18:06	6/17/11 6:29	6/17/11 9:02	6/17/11 11:30	6/17/11 13:59	6/17/11 16:20	6/19/11 6:20	6/19/11 8:43
Haul number	56	57	58	59	60	61	62	63	64	65	66	67
Start latitude	5638.26	5658.37	5719.20	5739.48	5759.76	5819.45	5839.39	5859.42	5919.28	5936.54	5940.51	5920.87
Start longitude	16611.90	16609.30	16608.51	16608.21	16605.34	16605.78	16605.10	16604.91	16603.77	16604.50	16843.17	16844.55
End latitude	5639.04	5659.75	5720.45	5740.45	5801.17	5820.61	5840.62	5900.62	5920.30	5937.67	5939.00	5919.44
End longitude	16609.75	16608.78	16607.18	16606.21	16605.86	16603.98	16603.76	16603.45	16601.68	16602.79	16843.29	16844.21
Bottom depth (m)	79	73	68	64	55	44	37	31	25	27	31	32
Duration (h)	0.49	0.48	0.49	0.49	0.49	0.51	0.49	0.49	0.50	0.48	0.52	0.50
Distance fished (km)	2.64	2.62	2.68	2.69	2.67	2.79	2.62	2.64	2.76	2.65	2.81	2.69
Net width (m)	16.48	16.36	16.37	16.15	15.53	16.81	14.71	15.56	14.45	14.17	15.14	15.14
Net measured?	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	40.50	44.40	44.20	41.60	17.80	36.30	48.60	37.70	62.20	6.07	84.30	105.70
Other skates												
Sharks												
Total elasmobranch	**40.5**	**44.4**	**44.2**	**41.6**	**17.8**	**36.3**	**48.6**	**37.7**	**62.2**	**6.1**	**84.3**	**105.7**
Alaska plaice	28.2	85.2	30.5	279.2	154.2	109.7	141.2	46.0	8.9	5.7	95.4	71.8
Arrowtooth flounder	7.9	7.7										
Flathead sole	415.2	20.6	2.6	1.2	1.1	0.2						
Greenland turbot	0.3	0.9		0.5								
Pacific halibut	39.9	38.4	5.8	5.0	11.9	52.1	60.5	48.5	39.5	43.6	54.4	59.8
Rock sole	152.8	28.1	17.7	21.7	119.4	280.6	295.5	247.5	110.2	167.0	192.8	150.6
Yellowfin sole	7.9	377.5	325.2	441.2	361.1	221.8	54.9	323.8	1,081.3	465.9	349.5	267.6
Other flatfish								5.7	13.5	49.7	24.6	
Total flatfish	**237.0**	**537.8**	**379.2**	**747.5**	**646.6**	**664.2**	**552.1**	**671.6**	**1,253.4**	**731.9**	**716.7**	**549.8**
Walleye pollock	153.1	59.9	8.8	4.3	17.2	2.5	0.0	6.2	0.0	0.0	1.8	9.0
Pacific cod	26.4	51.6	22.6	61.1	184.9	17.9	257.5	28.2	77.1	95.0	15.8	116.7
Sablefish												
Atka mackerel												
Eelpouts	19.1	26.3	1.2									
Pacific herring									0.5		0.1	
Pacific ocean perch												
Sculpins	2.0	4.2	1.2	1.4	9.0	13.3	17.1	9.9	22.0	35.6	33.4	11.2
Other rockfish												
Other roundfish	1.4	2.0	0.2	0.5	8.8	1.4	0.6	11.9	1.2	3.9	11.6	3.1
Total roundfish	**202.0**	**144.0**	**34.0**	**67.3**	**219.9**	**35.0**	**275.2**	**56.3**	**100.8**	**134.4**	**62.7**	**140.0**
Blue king crab												
Red king crab						3.9	8.5	1.0			0.8	6.5
Tanner crab, bairdi	14.7	43.3	0.1	0.1								
Tanner crab, opilio	11.3	55.1	10.3	1.3								
Other crab	59.1	32.6	53.9	92.4	74.6	14.0	3.0	1.3	1.4	0.1	7.2	9.0
Shrimp		0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0
Octopus												
Squids												
Snails	75.3	76.8	59.7	48.1	16.3	22.8	1.1				0.1	0.2
Starfish	52.6	62.9	127.9	222.8	76.6	223.0	80.3	111.2	43.9	210.6	113.3	147.2
Other invertebrates	88.4	140.3	154.2	47.6	170.6	29.4	4.8	0.5	0.1	1.8	0.2	0.2
Total invertebrates	**301.3**	**411.0**	**406.1**	**412.2**	**338.1**	**293.1**	**97.6**	**114.0**	**45.4**	**212.5**	**121.6**	**163.1**
Miscellaneous	77.0	26.4	28.6	130.2	36.5	3.6	0.7	0.2	0.1	0.3	0.2	1.0
Total catch	**1,273.0**	**1,184.3**	**894.7**	**1,400.0**	**1,260.0**	**1,032.4**	**974.1**	**879.8**	**1,462.0**	**1,085.2**	**985.4**	**959.6**

Appendix A Table 2. -- Continued.

Station	**M-02**	**L-02**	**K-02**	**J-02**	**I-02**	**H-02**	**G-02**	**Z-05**	**A-06**	**B-06**	**C-06**	**E-04**
Start date and time	6/19/11 11:13	6/19/11 13:35	6/19/11 16:01	6/20/11 6:33	6/20/11 9:12	6/20/11 12:06	6/20/11 14:37	6/24/11 6:40	6/24/11 10:01	6/24/11 12:25	6/24/11 15:11	6/25/11 6:40
Haul number	68	69	70	71	72	73	74	75	76	77	78	79
Start latitude	5900.81	5841.25	5820.73	5801.62	5741.29	5720.81	5700.83	5439.83	5500.82	5520.00	5539.83	5619.96
Start longitude	16846.32	16846.43	16847.94	16849.32	16852.49	16852.68	16854.84	16650.85	16524.02	16526.24	16524.84	16611.96
End latitude	5859.35	5839.75	5819.34	5800.14	5739.81	5719.44	5659.34	5441.35	5502.20	5521.33	5541.31	5618.41
End longitude	16846.65	16847.08	16848.96	16849.83	16852.54	16851.80	16855.30	16650.92	16525.10	16527.52	16524.61	16611.83
Bottom depth (m)	40	44	51	63	67	71	73	82	63	101	96	92
Duration (h)	0.50	0.52	0.51	0.52	0.50	0.50	0.51	0.51	0.51	0.50	0.51	0.52
Distance fished (km)	2.73	2.86	2.79	2.80	2.73	2.71	2.80	2.81	2.81	2.82	2.75	2.88
Net width (m)	15.14	15.48	15.59	16.52	16.30	16.64	15.76	16.65	16.36	16.87	16.27	16.62
Net measured?	N	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	60.60	51.20	37.60	29.20	23.60	10.20	82.20	201.63		62.80	40.20	7.43
Other skates								17.77			2.20	2.40
Sharks												
Total elasmobranch	**60.6**	**51.2**	**37.6**	**29.2**	**23.6**	**10.2**	**82.2**	**219.4**		**62.8**	**42.4**	**9.8**
Alaska plaice	46.8	97.9	294.7	928.9	733.6	4.7					1.9	
Arrowtooth flounder					9.2	6.6	12.7	295.2	7.2	275.5	350.3	52.4
Flathead sole			0.1	1.6	13.7	10.4	394.2	135.4		47.2	100.0	556.2
Greenland turbot				0.1	2.0	0.3						
Pacific halibut	24.9	45.8	17.6	29.7	34.2	28.1	12.0	65.5	107.3	3.3	21.7	6.7
Rock sole	185.8	252.7	245.3	61.6	28.8	55.1	297.8	429.8	107.9	0.8	251.7	100.8
Yellowfin sole	84.1	53.2	199.3	472.4	63.7	63.0	144.7	2.6	6.5	1.4		1.4
Other flatfish			0.1		1.3			35.2		22.1	3.4	
Total flatfish	**341.6**	**449.6**	**757.0**	**1,492.7**	**872.8**	**158.0**	**467.1**	**828.3**	**228.9**	**303.1**	**629.0**	**161.3**
Walleye pollock	1.4	13.3	8.8	125.5	32.3	240.0	206.0	881.5	13.1	791.1	430.4	285.3
Pacific cod	40.8	195.1	236.3	586.0	15.3	33.9	112.9	60.2	29.4	14.5	43.4	44.7
Sablefish												
Atka mackerel												
Eelpouts					2.2	5.0	2.9					6.8
Pacific herring				1.0					0.3			
Pacific ocean perch												
Sculpins	15.8	12.6	9.1	1.9	6.4	5.6	26.6	3.6	19.7		0.2	9.6
Other rockfish												
Other roundfish	4.5	2.1	1.4	17.6	4.8	3.6	12.3	23.1	64.2	12.0	6.0	0.9
Total roundfish	**62.4**	**223.1**	**255.6**	**732.0**	**61.0**	**288.2**	**360.8**	**968.4**	**126.7**	**817.6**	**480.1**	**347.3**
Blue king crab					0.1							
Red king crab	4.7	1.9									2.4	
Tanner crab, bairdi				1.1	8.6	39.7	5.4	0.3		123.7	11.6	13.4
Tanner crab, opilio			0.4	1.2	130.7	34.2	2.1			19.1	5.6	3.4
Other crab	6.1	7.2	16.6	160.6	195.3	82.5	158.3	0.1	2.1	80.0	80.4	8.1
Shrimp	0.0	0.0				0.0				0.2		0.1
Octopus										15.8		0.8
Squids												
Snails	5.2	16.3	23.9	138.2	190.3	79.6	301.4	3.8	8.4	90.6	43.0	224.2
Starfish	229.0	267.9	224.0	261.2	81.9	74.5	357.2	0.6	5.2	2.3		0.0
Other invertebrates	10.8	12.7	63.0	326.2	115.7	1,161.8	223.7	27.7	176.3	68.3	674.6	243.3
Total invertebrates	**255.7**	**306.0**	**328.0**	**888.4**	**722.6**	**1,472.4**	**1,048.2**	**32.5**	**192.1**	**400.0**	**817.6**	**493.4**
Miscellaneous	1.6	2.8	29.8	84.1	40.4	80.9	93.6	2.1	0.7	37.3	39.0	
Total catch	**721.9**	**1,032.7**	**1,408.0**	**3,228.0**	**1,734.0**	**2,020.0**	**2,446.0**	**2,186.0**	**548.4**	**1,668.0**	**2,108.0**	**1,568.0**

Appendix A Table 2. -- Continued.

Station	**D-04**	**C-04**	**B-04**	**A-04**	**F-02**	**F-01**	**E-02**	**F-18**	**GF1918**	**G-18**	**HG1918**	**H-18**
Start date and time	6/25/11 9:10	6/25/11 11:46	6/25/11 14:20	6/25/11 17:02	6/26/11 15:29	6/26/11 18:38	6/26/11 22:15	6/27/11 9:11	6/27/11 11:31	6/27/11 13:31	6/27/11 15:42	6/28/11 6:43
Haul number	80	81	82	83	84	85	86	87	88	89	90	91
Start latitude	5601.28	5540.74	5521.28	5500.66	5641.09	5640.39	5620.92	5638.97	5649.26	5658.77	5709.50	5720.27
Start longitude	16613.03	16612.37	16612.60	16613.66	16855.70	16821.53	16856.94	16942.59	16922.38	16939.07	16922.77	16938.63
End latitude	5559.82	5539.41	5519.81	5459.21	5639.68	5638.96	5619.55	5640.33	5650.76	5700.24	5710.87	5719.52
End longitude	16612.77	16611.24	16612.94	16614.49	16856.61	16820.84	16858.16	16941.52	16922.80	16939.88	16924.21	16936.20
Bottom depth (m)	106	117	120	130	95	103	113	106	96	81	76	74
Duration (h)	0.50	0.51	0.50	0.51	0.51	0.50	0.52	0.51	0.52	0.51	0.53	0.52
Distance fished (km)	2.71	2.74	2.75	2.83	2.78	2.76	2.85	2.75	2.81	2.85	2.93	2.81
Net width (m)	16.51	17.69	17.04	17.16	17.54	16.87	17.38	16.87	16.87	16.65	17.19	16.65
Net measured?	Y	Y	N	Y	Y	N	Y	N	N	N	Y	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	9.10	20.06		62.60	21.50	16.90		6.00	2.53	2.32	1.85	35.00
Other skates	4.30	4.66	1.30	0.03	2.38	2.25	5.70	0.05				
Sharks												
Total elasmobranch	**13.4**	**24.7**	**1.3**	**62.6**	**23.9**	**19.2**	**5.7**	**6.0**	**2.5**	**2.3**	**1.9**	**35.0**
Alaska plaice											3.7	2.5
Arrowtooth flounder	303.9	197.1	184.7	450.2	275.1	153.9	193.5	48.8	73.6	67.3	51.8	25.7
Flathead sole	357.5	113.8	71.9	74.5	195.8	24.4	92.1	1.7	9.7	24.5	154.5	7.8
Greenland turbot								0.0				
Pacific halibut	3.9	27.0			8.8	11.0		1.9			37.2	12.8
Rock sole					17.0	0.6				11.6	158.7	27.9
Yellowfin sole											2.7	20.2
Other flatfish	4.8	5.1	4.7	12.0	0.7	0.4	5.0	4.6				
Total flatfish	**312.6**	**229.2**	**189.4**	**462.2**	**301.7**	**165.9**	**198.5**	**55.3**	**73.6**	**78.9**	**254.1**	**89.0**
Walleye pollock		12.4	38.1	1.6	561.0	164.0	26.5	423.2	327.3	128.6	143.2	379.7
Pacific cod	21.1	2.5	4.7	10.8	4.9	23.7	38.3	19.9	9.3	60.6	314.3	764.7
Sablefish												
Atka mackerel												
Eelpouts		0.5	0.1		0.7	0.4	0.1		0.6			
Pacific herring												
Pacific ocean perch								0.6				
Sculpins	6.7	0.1	0.2		23.0	21.4	4.2	5.7	2.1	0.1	9.1	0.3
Other rockfish												
Other roundfish	4.1	24.2	3.9	6.1	0.8	2.4	4.0	2.1	1.5	1.0	7.5	4.3
Total roundfish	**32.0**	**39.6**	**46.9**	**18.6**	**590.4**	**212.0**	**73.1**	**451.5**	**340.7**	**190.3**	**474.1**	**1,149.1**
Blue king crab												1.3
Red king crab												
Tanner crab, bairdi	34.7	22.5	13.7	19.7	6.6	2.6	27.9	11.4	12.2	28.1	3.3	1.8
Tanner crab, opilio	3.5	1.4	2.9	0.9	4.4	9.9	5.4	33.4	23.5	6.1	8.1	6.8
Other crab	57.0	4.0	2.9	6.1	71.2	34.4	9.2	31.6	33.7	19.5	16.4	45.3
Shrimp	0.1	0.1	0.1	0.4	0.0	0.3	0.1	0.0	0.0	0.0	0.0	
Octopus												
Squids												
Snails	18.9	3.8	2.3	12.3	80.0	25.4	20.8	25.1	5.8	0.4	0.4	0.5
Starfish							0.0		31.4	26.9	108.6	47.1
Other invertebrates	242.5	57.1	33.8	54.2	124.5	183.0	160.0	82.5	16.6	32.6	38.5	147.6
Total invertebrates	**356.6**	**88.8**	**55.7**	**93.6**	**286.8**	**255.6**	**223.4**	**184.0**	**123.2**	**113.6**	**175.3**	**250.4**
Miscellaneous	8.0	1.6	0.4	1.1	103.4	28.0	3.3	21.6	14.8	7.7	2.5	20.6
Total catch	**1,080.0**	**497.8**	**365.7**	**712.6**	**1,502.0**	**705.1**	**596.1**	**720.2**	**564.6**	**417.3**	**1,062.4**	**1,552.0**

Appendix A Table 2. -- Continued.

Station	**H-19**	**HG2019**	**G-19**	**GF2019**	**HG2120**	**G-20**	**GF2120**	**G-21**	**H-21**	**H-20**	**IH2019**	**IH1918**	**I-18**
Start date and time	6/28/11 9:29	6/28/11 13:08	6/28/11 15:42	6/28/11 18:24	6/29/11 6:50	6/29/11 9:42	6/29/11 12:18	6/29/11 14:41	7/1/11 7:10	7/1/11 9:40	7/1/11 11:59	7/1/11 14:51	7/1/11 17:26
Haul number	92	93	94	95	96	97	98	99	100	101	102	103	104
Start latitude	5720.07	5709.94	5700.10	5649.89	5710.39	5659.47	5649.97	5700.30	5719.77	5720.01	5730.45	5729.98	5740.20
Start longitude	16902.46	17039.10	16904.32	17045.49	17007.73	17028.53	17010.01	17151.82	17145.77	17021.82	17035.85	16913.47	16934.25
End latitude	5719.75	5709.23	5660.00	5649.59	5709.51	5659.90	5650.28	5700.17	5720.71	5719.48	5729.68	5730.09	5740.36
End longitude	17059.78	17041.45	16901.58	17042.81	17005.44	17025.83	17007.34	17149.09	17147.85	17024.43	17038.20	16916.18	16937.02
Bottom depth (m)	70	71	79	81	50	60	71	68	56	61	69	71	70
Duration (h)	0.50	0.50	0.52	0.51	0.51	0.51	0.51	0.52	0.50	0.52	0.51	0.50	0.50
Distance fished (km)	2.77	2.73	2.80	2.80	2.84	2.86	2.79	2.79	2.73	2.81	2.77	2.73	2.78
Net width (m)	16.36	16.05	16.65	16.65	16.37	17.00	16.74	16.64	15.90	16.36	16.00	15.11	15.83
Net measured?	N	Y	N	N	Y	Y	Y	Y	N	N	Y	Y	Y
Performance	4	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	180.60	5.00	0.88	8.74	0.98	11.60		53.20	19.32	41.70	15.20	1.10	18.84
Other skates	2.20												
Sharks													
Total elasmobranch	**182.8**	**5.0**	**0.9**	**8.7**	**1.0**	**11.6**		**53.2**	**19.3**	**41.7**	**15.2**	**1.1**	**18.8**
Alaska plaice	15.4	2.4				3.8		6.1		20.2	10.1		19.3
Arrowtooth flounder	103.1	15.1	84.1	172.0		38.4	37.5	141.3	4.6	15.6	8.1	33.0	26.9
Flathead sole	19.7	8.1	6.2	14.1		5.3	364.4	1,263.9		21.4	21.9	3.8	11.2
Greenland turbot	0.1		0.1								0.1	0.3	0.2
Pacific halibut		13.8	11.0	47.8	46.4	24.1	21.5	45.2	84.0	5.1	2.6	2.6	4.6
Rock sole	757.2	26.5	99.0	23.4	1,314.0	2,408.2	159.9	223.9	2,636.6	2,311.5	361.2	15.3	22.9
Yellowfin sole	128.4	10.8			2.2	153.2		68.2		106.3	259.4	18.4	194.7
Other flatfish													
Total flatfish	**1,004.0**	**68.6**	**194.2**	**243.2**	**1,362.6**	**2,627.7**	**218.8**	**484.9**	**2,725.2**	**2,458.7**	**641.4**	**69.7**	**268.5**
Walleye pollock	1,774.8	862.0	2,364.9	1,051.6	8.7	639.6	726.4	262.7	392.0	433.5	108.9	414.1	1,427.1
Pacific cod	318.7	132.2	153.3	208.3	28.7	181.5	192.4	59.5	553.8	444.2	94.9	94.9	18.4
Sablefish													
Atka mackerel													
Eelpouts								1.3			0.2		
Pacific herring													
Pacific ocean perch													
Sculpins	193.3	9.8	5.5	8.4	53.0	52.5	74.1	84.0	118.3	39.5	12.6	0.5	0.1
Other rockfish													
Other roundfish	8.6	4.4	6.2	6.4	32.0	81.3	3.1	163.5	1.2	1.8	5.5	1.0	8.6
Total roundfish	**2,295.4**	**1,008.4**	**2,529.9**	**1,274.7**	**122.5**	**954.9**	**996.0**	**571.0**	**1,065.3**	**919.0**	**222.0**	**510.5**	**1,454.2**
Blue king crab	19.7			2.6			1.7	0.1					
Red king crab	3.7				19.8			131.3					3.5
Tanner crab, bairdi	11.2	11.3	4.2	5.8	57.8	27.0	30.1	413.4	0.4	5.2	40.2	16.4	11.6
Tanner crab, opilio	2.7	12.0	15.2	15.1	0.5	3.3	2.1	3.3		38.7	23.4	50.2	189.8
Other crab	84.6	116.3	40.6	58.7	84.2	16.0	2.9	43.9	2.1	6.1	67.0	21.8	363.4
Shrimp			0.0	0.0							0.2	0.0	
Octopus													
Squids													
Snails	136.5	13.3	6.0	26.9	1.2	22.0	5.0	14.6			0.2	0.0	6.3
Starfish	36.5	154.2	37.7	1.2	280.0	477.3	226.7	147.2	550.5	419.6	186.3	12.7	76.6
Other invertebrates	1,568.2	47.6	3.0	33.4	587.6	61.3	5.9	168.7	26.7	18.3	282.3	544.5	908.6
Total invertebrates	**1,863.2**	**354.7**	**106.7**	**143.7**	**1,031.0**	**606.8**	**274.5**	**922.5**	**579.7**	**487.8**	**599.5**	**645.5**	**1,559.8**
Miscellaneous	164.8	175.1	32.1	63.5	0.9	25.6	2.2	58.5	0.6	1.4		39.4	227.4
Total catch	**5,530.0**	**1,620.0**	**2,870.0**	**1,748.0**	**2,518.0**	**4,232.0**	**1,856.0**	**3,354.0**	**4,390.0**	**3,930.0**	**1,500.0**	**1,270.0**	**3,540.0**

Appendix A Table 2. -- Continued.

Station	**JI1918**	**J-18**	**K-18**	**L-18**	**M-18**	**N-18**	**O-18**	**P-18**	**P-01**	**Q-02**	**Q-01**	**Q-18**	**Q-19**
Start date and time	7/2/11 7:10	7/2/11 10:16	7/2/11 12:54	7/2/11 15:28	7/2/11 17:52	7/3/11 6:56	7/3/11 9:20	7/3/11 11:52	7/3/11 14:38	7/3/11 18:20	7/4/11 6:50	7/4/11 9:24	7/4/11 12:08
Haul number	105	106	107	108	109	110	111	112	113	114	115	116	117
Start latitude	5748.84	5758.75	5818.49	5839.06	5858.59	5919.52	5938.53	5958.91	6001.32	6019.98	6019.82	6020.49	6020.39
Start longitude	16916.82	16935.03	16932.76	16931.60	16929.78	16926.24	16924.60	16920.82	16959.16	16842.80	16803.66	16921.45	17042.84
End latitude	5750.16	5759.93	5819.90	5840.45	5900.00	5920.83	5939.97	6000.39	6000.08	6020.33	6020.07	6019.70	6019.18
End longitude	16915.55	16933.30	16931.80	16930.37	16928.73	16924.88	16923.89	16920.99	16800.96	16845.83	16800.66	16918.93	17040.92
Bottom depth (m)	71	69	65	53	47	42	39	39	26	33	32	36	43
Duration (h)	0.51	0.51	0.51	0.51	0.51	0.50	0.50	0.50	0.52	0.52	0.51	0.51	0.52
Distance fished (km)	2.76	2.78	2.79	2.84	2.82	2.75	2.75	2.77	2.85	2.88	2.82	2.77	2.86
Net width (m)	15.79	15.91	16.36	15.50	15.31	15.09	15.14	14.38	14.72	17.83	15.14	15.14	15.90
Net measured?	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	N	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	10.97	3.60	26.10	31.86	106.50	207.40	128.40	129.90	73.60	37.30	22.40	26.70	184.50
Other skates													
Sharks													
Total elasmobranch	**11.0**	**3.6**	**26.1**	**31.9**	**106.5**	**207.4**	**128.4**	**129.9**	**73.6**	**37.3**	**22.4**	**26.7**	**184.5**
Alaska plaice	9.8	97.1	354.1	306.3	168.6	34.6	11.8	16.3	11.4	5.2	13.1	11.2	92.3
Arrowtooth flounder	10.1	35.4		2.3									
Flathead sole	2.0	2.5	16.2	0.8	0.9								0.1
Greenland turbot	0.2	0.1											
Pacific halibut	6.5		17.0	6.4	3.0	20.8	19.5	1.4	18.0	88.6	41.5		5.0
Rock sole	35.9	101.0	19.1	71.2	142.8	255.9	55.7	51.6	166.3	1.5	18.3	23.8	36.5
Yellowfin sole	31.0	140.3	167.8	237.1	183.2	659.5	159.8	176.7	88.1	56.1	121.2	178.6	99.0
Other flatfish									11.0	7.9	3.4	2.0	
Total flatfish	**93.5**	**374.0**	**558.0**	**623.2**	**497.6**	**970.8**	**246.8**	**246.0**	**294.8**	**159.3**	**197.5**	**215.6**	**232.8**
Walleye pollock	493.5	711.8	480.9	123.7	19.1			2.2	3.6	0.1	3.2		20.3
Pacific cod	110.0	33.3	64.6	389.3	25.9	20.4		0.0	3.9	9.4	0.2	0.2	55.4
Sablefish													
Atka mackerel													
Eelpouts	0.4												
Pacific herring			0.7			0.0	0.2	0.0	0.1	0.7	1.2	0.1	0.3
Pacific ocean perch													
Sculpins	0.1	3.5	27.1	24.2	25.1	4.5	3.5	0.1	15.2	15.6	10.8	5.4	5.3
Other rockfish													
Other roundfish	1.2	11.8	3.3	18.7	18.1	1.3	0.4	0.7	1.9	8.1	2.6	0.8	1.0
Total roundfish	**605.2**	**760.3**	**576.6**	**555.9**	**88.2**	**26.1**	**4.1**	**3.1**	**24.7**	**33.8**	**17.9**	**6.5**	**82.3**
Blue king crab													
Red king crab				5.9	6.0	1.5	6.5	5.1				4.2	3.3
Tanner crab, bairdi	11.9	1.1			0.2								
Tanner crab, opilio	166.0	18.5	0.9		0.5								0.0
Other crab	250.3	242.3	62.0	80.1	9.8	17.3	27.8	43.8	4.4	0.1	0.7	30.9	109.3
Shrimp		0.0			0.0	0.0	0.0	0.0	0.0	4.0	0.1	0.0	0.0
Octopus													
Squids													
Snails	21.4	171.0	67.1	103.6	48.0	27.0	19.1	7.1	0.2			14.9	14.9
Starfish	144.9	121.9	569.1	229.1	184.7	37.9	130.8	268.8	171.4	34.0	22.3	187.2	152.0
Other invertebrates	478.0	744.2	56.3	45.9	5.9	2.7	0.8	1.1	0.0	0.6	4.6	2.8	26.1
Total invertebrates	**1,072.5**	**1,299.0**	**755.3**	**464.6**	**255.1**	**86.4**	**185.1**	**326.0**	**176.1**	**38.7**	**27.7**	**240.0**	**305.6**
Miscellaneous	85.8	190.6	47.9	103.7	3.6	2.7	7.7		0.4	0.1			116.7
Total catch	**1,870.0**	**2,630.0**	**1,980.0**	**1,780.0**	**951.9**	**1,293.4**	**572.0**	**705.0**	**569.5**	**269.2**	**265.6**	**488.7**	**922.0**

Appendix A Table 2. -- Continued.

Station	**Q-20**	**O-20**	**N-20**	**M-20**	**L-20**	**K-20**	**J-20**	**JI2120**	**I-21**	**I-22**	**I-23**	**K-22**	**L-22**
Start date and time	7/4/11 15:07	7/5/11 7:04	7/6/11 10:41	7/6/11 13:54	7/6/11 16:30	7/6/11 19:03	7/7/11 7:04	7/7/11 9:57	7/7/11 12:28	7/7/11 15:16	7/7/11 18:08	7/8/11 7:02	7/8/11 9:31
Haul number	118	119	120	121	122	123	124	125	126	127	128	129	130
Start latitude	6020.45	5941.44	5920.89	5900.79	5840.86	5820.83	5800.46	5750.31	5740.39	5739.92	5740.10	5819.47	5839.35
Start longitude	17001.87	17004.98	17008.70	17011.52	17013.55	17016.03	17018.87	17002.96	17144.14	17107.21	17230.20	17259.48	17256.29
End latitude	6019.30	5940.19	5919.77	5859.33	5839.43	5819.50	5759.57	5749.23	5739.19	5740.01	5740.13	5820.88	5840.66
End longitude	17159.91	17003.36	17006.73	17010.67	17012.67	17014.80	17016.65	17001.05	17142.63	17104.44	17227.43	17258.75	17254.85
Bottom depth (m)	51	56	60	63	67	69	70	72	72	85	98	83	82
Duration (h)	0.51	0.52	0.51	0.51	0.51	0.51	0.51	0.50	0.49	0.50	0.51	0.51	0.50
Distance fished (km)	2.80	2.77	2.81	2.82	2.79	2.74	2.76	2.75	2.69	2.78	2.78	2.70	2.81
Net width (m)	15.90	16.36	16.36	16.36	16.60	16.85	16.35	15.70	16.36	16.65	16.98	16.91	16.96
Net measured?	N	N	N	N	Y	Y	Y	Y	N	N	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	34.40	37.80	62.50	55.90	59.30	31.20	9.75	60.10	26.00	82.08	75.10	44.63	33.68
Other skates													
Sharks													
Total elasmobranch	**34.4**	**37.8**	**62.5**	**55.9**	**59.3**	**31.2**	**9.8**	**60.1**	**26.0**	**82.1**	**75.1**	**44.6**	**33.7**
Alaska plaice	289.9	232.9	349.4	515.2	198.0	69.9	91.0	61.1	17.7	53.1	2.3	1.1	8.9
Arrowtooth flounder								26.2	67.7	322.6	384.4	1.3	2.8
Flathead sole	4.4	1.2	2.0	1.9	10.3	1.4	1.7		92.9	5,500.5	536.9	2.2	6.4
Greenland turbot			0.0			0.4	0.5	0.2	1.1		3.9	3.1	1.8
Pacific halibut	0.5			6.3	3.3			9.2	64.2	102.8	11.3	2.3	5.1
Rock sole	31.3	45.5	5.3	8.5	29.0	12.6	1.0	253.0	556.8	220.8	0.6	2.4	9.0
Yellowfin sole	49.0	130.9	51.7	142.1	125.7	20.4	7.5	49.4	121.7			0.2	0.4
Other flatfish													
Total flatfish	**370.7**	**409.3**	**406.4**	**672.2**	**356.0**	**103.3**	**100.0**	**399.0**	**829.3**	**699.3**	**402.5**	**10.4**	**27.9**
Walleye pollock	375.9	385.0	263.0	181.1	331.1	171.1	81.9	169.2	1,043.2	382.8	68.4	99.8	216.4
Pacific cod	97.8	164.8	131.2	95.5	66.1	30.9	9.9	222.8	351.3	244.8	122.2	100.2	90.1
Sablefish													
Atka mackerel													
Eelpouts			1.4		4.1	2.5	7.7	3.5		19.4	20.7	6.3	2.2
Pacific herring	0.1		0.0										
Pacific ocean perch													
Sculpins	29.9	13.9	6.4	3.7	17.8	6.7	12.2	7.1	4.5	32.5	57.9	0.1	0.0
Other rockfish													
Other roundfish	3.7	3.4	1.8	0.7	4.5	0.7	30.0	0.8	24.8	2.9	4.8	1.9	2.6
Total roundfish	**507.4**	**567.1**	**403.9**	**280.9**	**423.7**	**211.9**	**141.7**	**403.4**	**1,423.8**	**682.5**	**273.9**	**208.2**	**311.3**
Blue king crab													
Red king crab	2.5			4.8									
Tanner crab, bairdi				0.4	0.7	3.2	35.1	13.9	8.9	1.8	1.3	6.9	0.5
Tanner crab, opilio	49.4	0.3	0.1	2.8	4.4	37.7	178.8	43.9	16.8	41.1	217.6	180.7	64.9
Other crab	61.7	45.3	31.4	64.9	28.4	57.0	305.0	245.9	76.1	7.1	47.0	38.6	16.9
Shrimp			0.0		0.0	0.0	0.3				0.6	0.0	0.0
Octopus									0.1				
Squids													
Snails	42.5	184.1	28.4	170.2	70.7	24.7	83.2	23.7	69.6	11.5	80.9	65.7	27.5
Starfish	50.3	94.4	92.8	417.3	222.2	47.6	65.9	88.8	227.0		95.5	42.8	65.5
Other invertebrates	21.0	10.3	9.3	119.1	169.1	199.4	532.2	211.7	878.5	33.5	19.8	33.6	57.1
Total invertebrates	**227.3**	**334.4**	**162.1**	**779.5**	**495.5**	**369.5**	**1,200.6**	**627.8**	**1,277.2**	**95.1**	**462.6**	**368.4**	**232.4**
Miscellaneous	39.3	20.2	14.9	109.6	25.1	24.0	146.3	129.8	320.9	27.6	8.9	18.2	9.9
Total catch	**1,183.4**	**1,370.0**	**1,051.8**	**1,900.0**	**1,370.0**	**741.3**	**1,600.0**	**1,620.0**	**3,970.0**	**7,087.0**	**1,760.0**	**651.9**	**621.6**

Appendix A Table 2. -- Continued.

Station	**M-22**	**N-22**	**O-22**	**PO2423**	**QP2423**	**P-24**	**PO2524**	**P-25**	**PO2625**	**O-25**	**O-24**	**ON2524**	**N-24**
Start date and time	7/8/11 12:23	7/8/11 14:45	7/8/11 17:22	7/9/11 7:01	7/9/11 9:34	7/9/11 11:45	7/9/11 14:01	7/9/11 16:07	7/9/11 18:11	7/10/11 7:02	7/10/11 9:49	7/10/11 11:55	7/10/11 14:08
Haul number	131	132	133	134	135	136	137	138	139	140	141	142	143
Start latitude	5859.46	5918.80	5939.73	5949.63	6009.26	5959.81	5948.88	6000.06	5950.63	5941.14	5940.39	5930.57	5920.36
Start longitude	17253.33	17248.98	17244.61	17345.14	17341.59	17323.10	17307.04	17445.18	17425.35	17445.31	17324.92	17310.05	17329.72
End latitude	5900.96	5920.29	5940.99	5951.15	6010.17	5959.15	5950.17	6000.40	5949.45	5939.69	5939.74	5929.28	5918.98
End longitude	17252.91	17249.74	17246.36	17344.87	17339.20	17325.78	17305.56	17443.25	17427.24	17444.66	17327.45	17308.48	17330.45
Bottom depth (m)	77	75	72	75	57	67	80	75	94	94	84	93	87
Duration (h)	0.51	0.52	0.52	0.51	0.51	0.50	0.50	0.35	0.51	0.51	0.49	0.52	0.48
Distance fished (km)	2.82	2.86	2.87	2.84	2.80	2.79	2.76	1.93	2.82	2.77	2.67	2.83	2.66
Net width (m)	17.22	16.65	16.65	17.14	16.36	16.36	17.06	16.65	16.89	17.17	16.42	16.69	16.65
Net measured?	Y	N	N	Y	N	N	Y	N	Y	Y	Y	Y	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	11.92	2.55	3.30	12.37	15.70	7.78	16.80	4.50	16.24	11.04	10.72	30.56	9.86
Other skates			0.02										
Sharks													
Total elasmobranch	**11.9**	**2.6**	**3.3**	**12.4**	**15.7**	**7.8**	**16.8**	**4.5**	**16.2**	**11.0**	**10.7**	**30.6**	**9.9**
Alaska plaice	4.5	0.9	14.0	20.1	65.8	31.1	0.7	13.7			1.9	1.1	3.1
Arrowtooth flounder				3.2					14.0	15.8	3.1	15.5	7.8
Flathead sole	0.8	0.3	1.9	10.4	0.8	1.1	10.5	4.6	1.7	1.8	2.0	0.5	0.0
Greenland turbot	0.3	1.1	0.7	0.5			0.9		4.4	8.0	4.6	8.9	4.5
Pacific halibut			14.6	6.7				11.3	15.6	3.1	1.2	0.7	1.3
Rock sole	0.6	2.1	3.5	39.7	33.2	14.2	4.4	22.8	2.3	1.8	5.7	2.3	3.6
Yellowfin sole	0.5		0.2	1.8	17.3	2.2	0.4	1.0			0.2		
Other flatfish		0.0			0.1	0.0		0.1					0.1
Total flatfish	**5.9**	**4.1**	**32.9**	**71.9**	**116.4**	**47.4**	**6.3**	**48.9**	**36.2**	**28.7**	**16.5**	**28.4**	**20.4**
Walleye pollock	37.3	86.9	48.0	46.8	0.1	5.3	27.2	116.6	419.6	838.1	533.5	185.0	836.2
Pacific cod	5.5	10.3	0.9	53.3	0.3	0.6	27.4	33.6	72.7	86.7	134.7	36.0	198.9
Sablefish													
Atka mackerel													
Eelpouts	2.0	4.5	0.3	6.8	0.2	0.3	3.9	0.8	2.0	4.4	4.9	1.2	0.2
Pacific herring				1.6			0.4		3.1		0.1	0.2	0.2
Pacific ocean perch													
Sculpins	0.1	0.2	0.4	0.9	5.2	13.3	0.2	7.2	9.7	13.7	11.2	8.2	23.0
Other rockfish													
Other roundfish	0.5	3.9	6.5	2.3	0.9	1.4	1.0	0.3	0.5	2.3	0.5	0.7	
Total roundfish	**45.4**	**105.9**	**56.0**	**111.6**	**6.7**	**20.8**	**60.2**	**158.4**	**507.7**	**945.2**	**684.9**	**231.2**	**1,058.5**
Blue king crab					16.9		1.5	2.9	9.8	17.3		13.3	
Red king crab													
Tanner crab, bairdi	0.3	0.5	0.1	0.1	0.2		0.2	0.1	0.2	0.8			0.2
Tanner crab, opilio	60.6	70.9	49.7	29.9	9.5	2.5	18.1	4.2	25.5	40.5	0.8	6.2	14.9
Other crab	9.5	23.7	34.7	89.3	28.3	20.1	25.9	8.8	5.5	12.2	16.6	5.2	11.0
Shrimp		0.0	0.0		0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
Octopus													
Squids													
Snails	65.5	32.3	28.1	26.5	11.0	11.0	19.7	11.6	28.5	34.4	9.3	21.1	10.0
Starfish	74.5	13.3	15.9	10.7	20.6	6.7	5.1	2.8	7.6	10.2	9.2	18.1	13.7
Other invertebrates	65.2	21.0	25.9	30.0	1.6	14.9	102.0	244.0	70.4	109.3	103.5	97.7	94.3
Total invertebrates	**275.6**	**161.7**	**154.4**	**186.5**	**88.2**	**55.3**	**172.3**	**274.3**	**147.7**	**224.8**	**139.3**	**161.6**	**144.2**
Miscellaneous	36.7	32.7	27.2	20.4	5.8	3.9	17.1	5.4	3.8	18.4	11.1	4.7	7.0
Total catch	**376.3**	**307.2**	**275.7**	**413.2**	**233.6**	**136.3**	**283.3**	**496.1**	**713.3**	**1,230.0**	**864.6**	**456.9**	**1,240.0**

Appendix A Table 2. -- Continued.

Station	**M-24**	**H-23**	**G-23**	**F-23**	**A-02**	**B-02**	**C-02**	**H-24**	**I-24**	**I-25**	**J-25**	**J-24**
Start date and time	7/10/11 16:57	7/11/11 7:11	7/11/11 9:41	7/11/11 12:09	7/14/11 7:30	7/14/11 10:45	7/14/11 13:19	7/15/11 9:14	7/15/11 12:00	7/15/11 14:38	7/15/11 17:21	7/15/11 19:52
Haul number	144	145	146	147	148	149	150	151	152	153	154	155
Start latitude	5900.51	5720.31	5700.54	5641.03	5459.81	5520.07	5539.78	5719.16	5739.45	5739.61	5759.88	5800.08
Start longitude	17334.08	17231.88	17236.45	17237.94	16704.05	16701.97	16701.29	17355.29	17351.30	17312.78	17307.01	17344.31
End latitude	5859.04	5718.84	5659.28	5639.65	5501.08	5521.45	5541.23	5720.31	5740.42	5740.70	5800.50	5800.09
End longitude	17334.07	17231.87	17235.95	17237.89	16702.91	16701.30	16700.71	17353.52	17349.29	17310.91	17309.65	17347.09
Bottom depth (m)	98	101	108	118	155	138	134	108	107	118	108	105
Duration (h)	0.50	0.50	0.45	0.48	0.49	0.49	0.50	0.52	0.49	0.51	0.51	0.50
Distance fished (km)	2.74	2.74	2.39	2.57	2.66	2.66	2.77	2.78	2.70	2.75	2.87	2.74
Net width (m)	16.87	16.38	16.55	16.36	16.87	17.25	18.31	16.75	16.91	16.22	15.97	16.05
Net measured?	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	35.80	43.88	57.08	18.70	0.29			26.50	52.20	70.20	46.40	41.60
Other skates					10.06	2.34	1.20				3.40	
Sharks												
Total elasmobranch	**35.8**	**43.9**	**57.1**	**18.7**	**10.3**	**2.3**	**1.2**	**26.5**	**52.2**	**70.2**	**49.8**	**41.6**
Alaska plaice	1.7											
Arrowtooth flounder	19.5	103.7	54.7	102.1	261.1	106.4	100.9	98.1	52.2	9.0	96.0	60.6
Flathead sole	13.3	32.2	4.4	4.5	52.1	108.5	108.6	41.9	3.0	11.1	10.3	6.4
Greenland turbot	6.1	1.5	0.7					0.3	0.4	0.2	1.9	2.5
Pacific halibut	22.2			3.4		2.6	10.9	49.9	25.8		18.4	9.6
Rock sole	1.7	0.5						1.2	0.4		6.0	
Yellowfin sole												
Other flatfish				3.6	10.6	5.1	2.8					
Total flatfish	**51.2**	**105.7**	**55.4**	**109.1**	**271.7**	**114.2**	**114.6**	**149.5**	**78.8**	**9.2**	**122.3**	**72.7**
Walleye pollock	443.2	85.6	1,102.8	107.8		49.0	6.9	947.6	143.1	1,417.2	308.4	2,307.4
Pacific cod	71.1	38.2	89.5	12.8	5.8	3.9	16.1	108.3	160.8	31.8	70.1	228.0
Sablefish												
Atka mackerel												
Eelpouts	1.4	8.9	0.7	0.2		0.4	0.8	1.6	1.8		2.6	0.2
Pacific herring												
Pacific ocean perch				0.5								
Sculpins	20.5	23.1	8.3		3.2	0.6	3.6	13.3	11.7	3.1	19.9	24.7
Other rockfish				1.1								
Other roundfish	0.1	8.5	3.6		0.6	2.3	5.3	1.6	8.3	2.6	0.1	
Total roundfish	**536.3**	**164.3**	**1,204.9**	**122.4**	**9.7**	**56.2**	**32.7**	**1,072.4**	**325.7**	**1,454.7**	**401.0**	**2,560.3**
Blue king crab												
Red king crab												
Tanner crab, bairdi	0.0	2.2	2.5	5.3	44.0	20.6	6.8	1.2	0.9	0.4	1.5	1.8
Tanner crab, opilio	38.9	45.4	34.3	48.8	1.7	0.6	3.2	50.9	99.8	178.2	69.3	132.1
Other crab	3.3	50.5	22.3	12.1	4.1		0.8	41.9	28.2	18.5	47.9	8.8
Shrimp	0.1	5.9		0.0	2.3	2.4	0.5	0.1	0.1	0.0	0.3	0.3
Octopus		6.1						3.7				
Squids												
Snails	5.8	31.0	6.9	4.5	11.8	1.2	0.6	22.1	24.1	17.5	8.4	16.6
Starfish	8.8	20.0	0.1	0.3	0.0		0.2	0.7	2.2	18.4	7.7	43.0
Other invertebrates	113.9	5.4	3.6	105.6	0.4	6.9	5.9	25.4	48.4	16.1	17.0	52.5
Total invertebrates	**170.8**	**166.4**	**69.7**	**176.6**	**64.3**	**31.6**	**17.9**	**145.9**	**203.8**	**248.9**	**152.1**	**255.0**
Miscellaneous	6.2	9.3	8.4	0.5	0.7		0.0	13.8	9.7	5.9		3.9
Total catch	**813.5**	**521.8**	**1,400.0**	**431.8**	**408.9**	**312.8**	**275.0**	**1,450.0**	**673.2**	**1,800.0**	**735.5**	**2,940.0**

Appendix A Table 2. -- Continued.

Station	**K-25**	**K-24**	**L-24**	**L-25**	**M-25**	**N-26**	**N-27**	**O-27**	**P-27**	**Q-27**	**Q-26**	**R-26**
Start date and time	7/16/11 7:26	7/16/11 10:04	7/16/11 13:40	7/16/11 16:09	7/16/11 18:43	7/17/11 7:20	7/17/11 10:14	7/17/11 12:46	7/17/11 15:18	7/17/11 17:53	7/18/11 7:16	7/18/11 9:50
Haul number	156	157	158	159	160	161	162	163	164	165	166	167
Start latitude	5820.07	5819.66	5839.91	5839.35	5859.77	5919.45	5919.58	5939.03	5959.13	6018.87	6019.41	6039.80
Start longitude	17302.83	17341.95	17338.82	17301.04	17455.59	17412.81	17533.63	17533.43	17524.93	17518.44	17555.50	17552.65
End latitude	5820.21	5821.05	5840.05	5840.38	5901.09	5920.84	5921.04	5940.48	6000.62	6020.29	6020.91	6041.26
End longitude	17305.67	17343.09	17335.99	17458.88	17454.27	17411.76	17533.60	17532.86	17524.25	17517.35	17556.28	17552.24
Bottom depth (m)	109	102	101	111	106	110	120	114	107	100	91	86
Duration (h)	0.51	0.52	0.50	0.51	0.50	0.52	0.50	0.50	0.51	0.51	0.52	0.50
Distance fished (km)	2.79	2.81	2.76	2.85	2.76	2.77	2.70	2.75	2.84	2.82	2.88	2.73
Net width (m)	17.04	16.87	16.11	17.13	16.31	17.04	16.57	17.04	17.04	16.87	16.87	16.64
Net measured?	N	N	Y	Y	Y	N	Y	N	N	N	N	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	83.40	82.50	45.80	110.40	47.30	34.40	70.20	67.40	80.70	33.10	20.30	33.50
Other skates				3.30	3.02							
Sharks												
Total elasmobranch	**83.4**	**82.5**	**45.8**	**113.7**	**50.3**	**34.4**	**70.2**	**67.4**	**80.7**	**33.1**	**20.3**	**33.5**
Alaska plaice		3.6				28.1		20.0	2.0			0.7
Arrowtooth flounder	46.0	30.7	19.6	167.1	60.5	95.7	178.7	105.7	61.8	30.2	15.4	2.2
Flathead sole	1.8	0.4	109.7	5.2	153.4	6.6	3.1	24.0	9.6	27.2	15.6	25.8
Greenland turbot	2.2	5.2	3.9	15.8	7.3	14.0	13.0	16.6	31.2	21.5	2.2	2.8
Pacific halibut	8.2	8.8		18.6	1.4	8.6	20.1	24.4	2.6	0.7	1.5	1.5
Rock sole	2.0	46.7	3.7	9.3	0.7	35.6	2.2	10.1	2.3	0.5		
Yellowfin sole										0.4		
Other flatfish							0.0					
Total flatfish	**58.4**	**95.0**	**27.2**	**210.8**	**69.8**	**182.0**	**214.0**	**176.8**	**99.9**	**53.2**	**19.1**	**7.2**
Walleye pollock	435.3	186.1	714.0	282.3	622.7	291.3	285.2	308.6	231.6	109.3	923.1	422.8
Pacific cod	61.2	79.4	73.5	134.1	29.7	93.0	62.0	120.1	57.2	58.0	66.1	29.1
Sablefish												
Atka mackerel												
Eelpouts	8.7	8.2	1.8	1.3	4.1	9.4	1.9	14.0	11.8	7.8	24.7	12.2
Pacific herring												
Pacific ocean perch												
Sculpins	3.1	357.8	6.5	52.6	20.6	46.3	29.6	52.9	41.7	14.6	4.7	0.3
Other rockfish												
Other roundfish		2.3	0.2	0.4	0.4	0.4	0.6	0.1	4.2	0.1	1.1	0.1
Total roundfish	**508.3**	**633.7**	**796.0**	**470.7**	**677.4**	**440.4**	**379.3**	**495.7**	**346.5**	**189.9**	**1,019.7**	**464.5**
Blue king crab					18.3		1.1	2.2	14.0		6.8	1.9
Red king crab												
Tanner crab, bairdi	3.4	7.1	0.5	3.3	4.5	5.4	1.5	0.1	0.1	0.1	0.2	
Tanner crab, opilio	99.1	543.5	62.4	49.5	51.2	231.4	76.7	86.9	100.5	108.0	32.5	81.7
Other crab	51.1	45.5	58.1	58.7	48.6	66.7	96.4	45.7	18.0	3.4	1.5	0.3
Shrimp	1.6	1.2	0.7	0.2	3.5	1.7	0.3	5.6	3.5	0.1	0.0	0.0
Octopus				2.0			0.1	0.0				
Squids												
Snails	37.3	261.2	35.1	44.6	37.4	46.0	23.8	47.5	51.9	7.6	0.1	0.7
Starfish	8.1	157.0	5.0	9.3	7.3	5.4	3.0	14.9	21.2	9.7	2.7	0.1
Other invertebrates	61.3	40.8	135.0	63.4	78.8	36.2	95.1	38.3	52.5	84.1	130.0	74.3
Total invertebrates	**262.1**	**1,056.2**	**296.8**	**231.1**	**249.6**	**392.8**	**298.0**	**241.2**	**261.7**	**212.9**	**173.9**	**159.1**
Miscellaneous	27.0	72.2	44.5	18.2	19.5	22.1	60.4	10.2	8.6	1.8	0.1	
Total catch	**941.0**	**1,940.0**	**1,320.0**	**1,049.6**	**1,220.0**	**1,078.3**	**1,025.0**	**1,015.2**	**807.1**	**518.1**	**1,248.8**	**690.1**

Appendix A Table 2. -- Continued.

Station	**R-25**	**S-25**	**S-24**	**R-24**	**R-23**	**R-22**	**S-22**	**S-23**	**S-26**	**R-27**	**S-27**	**S-28**
Start date and time	7/18/11 12:30	7/18/11 15:00	7/18/11 17:37	7/20/11 7:09	7/20/11 9:39	7/20/11 12:12	7/20/11 14:48	7/20/11 17:18	7/21/11 7:25	7/21/11 10:33	7/21/11 13:10	7/21/11 15:47
Haul number	168	169	170	171	172	173	174	175	176	177	178	179
Start latitude	6039.67	6059.68	6100.05	6040.25	6040.10	6040.01	6059.34	6059.92	6100.60	6040.40	6058.92	6059.94
Start longitude	17431.74	17430.82	17309.00	17313.54	17352.05	17233.50	17232.39	17352.68	17549.51	17512.25	17508.53	17629.07
End latitude	6041.10	6100.79	6059.94	6040.07	6039.48	6040.31	6100.38	6059.85	6059.30	6039.32	6100.33	6059.90
End longitude	17432.28	17428.88	17311.92	17316.59	17354.88	17236.49	17230.24	17349.60	17548.01	17510.17	17507.50	17626.11
Bottom depth (m)	66	75	66	45	61	63	60	64	83	97	92	102
Duration (h)	0.51	0.50	0.49	0.51	0.51	0.51	0.51	0.51	0.50	0.50	0.51	0.49
Distance fished (km)	2.70	2.71	2.66	2.81	2.83	2.80	2.74	2.79	2.77	2.77	2.78	2.67
Net width (m)	16.24	16.81	18.28	15.90	16.29	19.04	19.21	16.36	16.54	16.87	16.87	16.87
Net measured?	Y	Y	Y	N	Y	Y	Y	N	Y	N	N	N
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	7.60	16.60	16.80	118.20	4.90	15.90	20.10	24.60	11.70	7.40	39.60	30.70
Other skates								0.12				
Sharks												
Total elasmobranch	**7.6**	**16.6**	**16.8**	**118.2**	**4.9**	**15.9**	**20.1**	**24.7**	**11.7**	**7.4**	**39.6**	**30.7**
Alaska plaice	22.7	4.8	0.7	61.6	29.2	25.2	22.2	10.6	6.3		0.7	
Arrowtooth flounder									2.3	25.3	14.3	19.2
Flathead sole		7.0	5.5	1.2	5.4	0.2	1.0	8.5	9.6	37.2	21.4	27.4
Greenland turbot			0.3					0.2	3.4	7.8	10.8	20.8
Pacific halibut				2.1						0.7		
Rock sole	29.7	4.8	2.0	92.8	0.8		0.9	1.5	2.7	0.9	0.9	
Yellowfin sole	0.8	0.4	0.6	38.9	4.6	1.0	5.3	3.9				
Other flatfish	0.0	0.0	0.1		0.1		0.0	0.0				
Total flatfish	**53.2**	**10.1**	**3.7**	**195.4**	**34.7**	**26.2**	**28.4**	**16.2**	**14.7**	**34.7**	**26.7**	**40.0**
Walleye pollock	204.3	160.9	52.8	59.7	5.1	12.6	17.1	2.0	217.9	273.0	203.9	368.9
Pacific cod	261.8	11.3	3.1	54.6		8.4	0.1	0.3	8.2	24.1	10.3	50.9
Sablefish												
Atka mackerel												
Eelpouts		1.4	4.3	0.3	0.7	1.5	10.6	4.8	8.3	27.1	3.3	17.2
Pacific herring					0.0				2.5		0.1	
Pacific ocean perch												
Sculpins	25.6	1.5	1.8	27.0	2.0	0.2	2.0	15.7	10.3	0.1	5.9	1.2
Other rockfish												
Other roundfish	0.5	0.1	3.8	0.2	1.6	7.9	5.5	5.0	0.3	0.4	3.9	1.7
Total roundfish	**492.2**	**175.3**	**65.8**	**141.8**	**9.4**	**30.6**	**35.3**	**27.8**	**247.4**	**324.7**	**227.4**	**439.9**
Blue king crab	2.7			186.3						2.0		
Red king crab												
Tanner crab, bairdi				0.2								
Tanner crab, opilio	0.6	42.6	36.1	12.0	34.8	87.4	91.1	34.0	79.0	63.3	64.4	103.9
Other crab	5.7	1.9	1.8	35.3	3.8	5.1	3.0	5.6	0.5	1.4	0.5	1.9
Shrimp	0.0		0.0		0.0			0.0		0.0	0.0	0.0
Octopus												
Squids												
Snails	10.1	0.8	6.8	147.4	4.6	4.8	3.2	2.4	2.2	1.8	2.0	7.9
Starfish	6.6	11.7	6.3	26.6	60.7	10.9	3.3	144.4	19.8	0.5	1.3	4.2
Other invertebrates	143.4	28.8	45.0	20.9	8.4	2.7	19.2	7.0	75.1	89.2	91.6	26.5
Total invertebrates	**169.0**	**85.8**	**96.0**	**428.8**	**112.2**	**110.9**	**119.8**	**193.5**	**176.5**	**158.2**	**159.8**	**144.4**
Miscellaneous	0.3		0.1	2.6	2.3	0.1		0.5	0.0	0.2	0.1	0.6
Total catch	**722.3**	**294.7**	**187.9**	**888.0**	**168.9**	**183.9**	**204.7**	**271.2**	**460.0**	**562.4**	**475.0**	**683.0**

Appendix A Table 2. -- Continued.

Station	**S-29**	**R-29**	**R-30**	**Q-30**	**Q-29**	**P-29**	**P-30**	**O-30**	**O-29**	**N-29**	**N-30**	**P-25**
Start date and time	7/21/11 18:29	7/22/11 7:32	7/22/11 10:27	7/22/11 13:14	7/22/11 16:05	7/22/11 18:54	7/23/11 7:51	7/23/11 10:37	7/23/11 13:31	7/23/11 16:16	7/23/11 19:11	7/24/10 19:51
Haul number	180	181	182	183	184	185	186	187	188	189	190	194
Start latitude	6059.96	6039.98	6040.56	6020.65	6019.92	6001.32	6000.97	5940.66	5939.83	5920.01	5919.41	5959.92
Start longitude	17743.32	17749.95	17711.14	17714.99	17756.49	17602.90	17716.87	17724.27	17607.45	17615.30	17738.39	17446.00
End latitude	6059.95	6040.02	6039.40	6019.48	6019.02	6000.19	5959.54	5940.03	5939.00	5918.53	5920.44	5959.86
End longitude	17740.35	17746.95	17713.03	17716.69	17758.75	17604.97	17716.78	17726.91	17609.88	17615.24	17736.37	17444.77
Bottom depth (m)	112	118	129	137	122	129	141	135	137	136	136	75
Duration (h)	0.49	0.50	0.51	0.50	0.50	0.51	0.49	0.50	0.49	0.50	0.51	0.24
Distance fished (km)	2.69	2.75	2.75	2.69	2.67	2.84	2.66	2.75	2.76	2.75	2.71	1.15
Net width (m)	17.22	16.79	17.16	17.16	17.04	17.16	17.58	17.76	17.16	17.43	17.16	17.44
Net measured?	Y	Y	N	N	N	N	Y	Y	N	Y	N	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	2
Alaska skates	48.20	31.90	51.60	37.90	23.30	80.90	57.72	50.80	80.90	41.30	60.00	1.25
Other skates									2.92	0.01		
Sharks												
Total elasmobranch	**48.2**	**31.9**	**51.6**	**37.9**	**23.3**	**80.9**	**57.7**	**50.8**	**83.8**	**41.3**	**60.0**	**1.3**
Alaska plaice	0.8											16.5
Arrowtooth flounder	9.5	39.9	23.4	31.9	36.2	30.8	105.1	369.1	120.8	96.7	74.7	
Flathead sole	32.4	23.2	1.0	9.6	15.2	7.0	43.2	103.7	21.7	33.8	66.7	3.3
Greenland turbot	18.0	30.9	22.4	41.2	12.4	17.7	24.3	3.7	29.1	10.0	2.7	0.1
Pacific halibut				1.1						9.4		0.9
Rock sole			0.1		0.9		2.9	0.5	0.7		0.8	27.1
Yellowfin sole												
Other flatfish												0.1
Total flatfish	**28.3**	**70.8**	**45.9**	**74.2**	**49.5**	**48.5**	**132.3**	**373.3**	**150.6**	**116.1**	**78.3**	**44.6**
Walleye pollock	173.8	269.5	463.3	606.0	259.7	591.7	250.9	660.9	236.0	310.5	344.7	15.8
Pacific cod	26.9	41.6	67.0	25.0	7.5	1,116.6	2.6	71.2	59.6	11.0	7.3	3.8
Sablefish												
Atka mackerel												
Eelpouts	31.7	24.9	21.1	28.7	28.5	6.2	20.9	28.8	46.8	29.3	21.3	
Pacific herring		0.2										
Pacific ocean perch												
Sculpins	5.8	24.7	13.0	24.7	40.8	17.2	24.4	29.0	24.4	11.6	11.8	1.2
Other rockfish												
Other roundfish	1.2	1.3	0.4	0.9	2.9	0.2	1.2	0.1	3.3	2.4	0.7	0.8
Total roundfish	**239.4**	**362.2**	**564.8**	**685.3**	**339.3**	**1,731.8**	**300.1**	**790.0**	**370.1**	**364.9**	**385.7**	**21.4**
Blue king crab												1.8
Red king crab												
Tanner crab, bairdi		0.1		0.2	0.3	5.3	5.8	6.9	0.9	13.0	1.0	0.0
Tanner crab, opilio	314.6	462.6	595.6	138.1	336.3	215.1	679.7	23.4	92.2	2.7	0.3	1.4
Other crab	3.6	17.5	1.0	26.3	17.1	9.4	17.9	35.3	14.6	12.0	0.8	21.8
Shrimp	0.0	1.2	7.7	2.2	5.2	1.1	13.3	23.5	8.3	23.2	5.2	0.1
Octopus	0.6	1.1	0.8							0.0		
Squids	0.0											
Snails	16.2	74.5	1.8	41.1	52.8	14.5	24.2	55.1	34.2	25.7	23.1	16.9
Starfish	5.3	16.3	8.9	7.0	13.7	19.8	10.9	199.0	51.1	137.3	232.8	2.8
Other invertebrates	43.6	50.2	20.7	3.0	55.0	11.7	14.2	13.0	40.7	26.7	13.9	194.6
Total invertebrates	**384.0**	**623.5**	**636.5**	**217.8**	**480.5**	**276.9**	**766.0**	**356.1**	**241.9**	**240.7**	**277.0**	**239.5**
Miscellaneous	3.9	8.4	0.2	5.7	18.3	5.0	10.8	16.1	3.5	6.7	3.8	8.3
Total catch	**736.2**	**1,120.0**	**1,300.0**	**1,030.4**	**926.1**	**2,150.0**	**1,310.0**	**1,690.0**	**871.6**	**803.4**	**871.4**	**318.4**

Appendix A Table 2. -- Continued.

Station	**PO2524**	**PO2625**	**QP2625**	**Q-25**	**R-26**	**Q-26**	**QP2726**	**P-26**	**PO2726**	**P-27**	**Q-31**	**Q-30**
Start date and time	7/25/10 7:18	7/25/10 10:04	7/25/10 12:54	7/25/10 15:21	7/25/10 18:48	7/26/10 7:29	7/26/10 9:33	7/26/10 11:53	7/26/10 14:02	7/26/10 16:14	7/27/10 7:43	7/27/10 10:32
Haul number	195	196	197	198	199	200	201	202	203	204	205	206
Start latitude	5950.40	5949.83	6007.05	6017.29	6039.50	6020.29	6011.16	6000.74	5949.99	5959.18	6020.37	6019.96
Start longitude	17306.05	17426.64	17413.78	17437.06	17552.35	17556.67	17539.17	17402.37	17547.93	17525.39	17834.74	17715.82
End latitude	5949.41	5949.86	6008.47	6018.02	6040.84	6019.38	6009.71	5959.24	5950.06	6000.22	6019.88	6019.93
End longitude	17303.82	17423.65	17414.51	17437.17	17551.30	17554.29	17538.85	17402.46	17545.04	17523.21	17837.45	17718.75
Bottom depth (m)	80	94	87	63	86	90	100	97	106	108	147	137
Duration (h)	0.51	0.51	0.51	0.25	0.50	0.51	0.50	0.50	0.50	0.52	0.48	0.49
Distance fished (km)	2.78	2.80	2.72	1.35	2.66	2.76	2.70	2.78	2.72	2.81	2.66	2.71
Net width (m)	17.74	17.96	17.67	17.53	17.19	19.41	18.34	18.02	17.78	17.26	18.04	18.04
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Performance	0	0	0	1	0	0	0	0	0	0	0	0
Alaska skates	14.29	11.64	15.82	5.67	20.81	1.52	34.88	3.56	88.09	56.29	65.02	75.50
Other skates												
Sharks												
Total elasmobranch	**14.3**	**11.6**	**15.8**	**5.7**	**20.8**	**1.5**	**34.9**	**3.6**	**88.1**	**56.3**	**65.0**	**75.5**
Alaska plaice				17.4								
Arrowtooth flounder		23.4	4.2				25.8	21.7	42.9	18.7	112.7	208.8
Flathead sole	11.7	0.3	38.8		10.8	3.7	70.5	0.1	3.9		13.8	26.9
Greenland turbot	0.9	0.9	10.5		1.3	0.5	4.3	3.6	20.1	3.8	76.8	28.8
Pacific halibut		1.2	88.2			0.9	1.4	0.9	2.4	12.7		
Rock sole	16.0	2.8	6.9	19.4	2.7	2.5	1.8		4.2			0.3
Yellowfin sole				3.0	0.5							
Other flatfish												
Total flatfish	**16.9**	**28.3**	**109.8**	**39.9**	**4.5**	**3.8**	**33.3**	**26.1**	**69.6**	**35.2**	**189.5**	**237.9**
Walleye pollock	135.9	1,655.4	2,811.6	72.0	270.7	441.4	761.9	1,603.8	458.1	2,498.0	1,130.8	354.9
Pacific cod	30.2	55.9	49.5	67.6	14.4	57.8	17.0	92.9	42.4	43.4	35.5	15.8
Sablefish												
Atka mackerel												
Eelpouts	8.8	0.6		0.3	2.4	10.0	19.8	2.0	14.0	3.3	17.0	29.3
Pacific herring												
Pacific ocean perch												
Sculpins	0.4	26.3	24.6	38.1	2.3	0.9	3.1	4.0	18.7	13.3	14.4	15.7
Other rockfish												
Other roundfish	1.5	2.6	1.0	1.0	2.3	1.8	1.1	0.1	0.5	0.1	0.6	0.5
Total roundfish	**176.9**	**1,740.8**	**2,886.7**	**178.9**	**292.2**	**511.9**	**802.9**	**1,702.8**	**533.8**	**2,558.1**	**1,198.2**	**416.2**
Blue king crab	1.9	5.6	17.2	5.3		1.7	19.8	51.0	1.0	5.9		
Red king crab												
Tanner crab, bairdi	0.3	0.1		0.1			0.3	0.2	0.5	0.1	0.0	1.8
Tanner crab, opilio	7.5	21.1	4.7	1.3	146.5	264.2	61.3	10.6	33.7	21.9	62.0	100.7
Other crab	68.1	9.6	1.5	27.4	0.3	2.8	10.8	1.0	57.9	61.0	1.2	26.2
Shrimp	0.0	0.0		0.2		0.1	0.3	0.1	13.5	2.1	12.8	6.3
Octopus	3.4	1.2							0.0		1.0	0.0
Squids												
Snails	27.1	31.0	0.5	47.3	0.1	0.4	17.7	1.8	54.0	101.9	2.9	102.4
Starfish	9.8	14.7	6.8	4.4	1.1	2.9	10.8	1.2	133.3	77.4	16.9	105.3
Other invertebrates	48.3	36.6	25.9	93.6	15.2	17.5	30.7	13.4	28.5	15.6	673.3	7.3
Total invertebrates	**166.4**	**119.8**	**56.6**	**179.6**	**163.2**	**289.5**	**151.7**	**79.2**	**322.5**	**285.9**	**770.2**	**350.0**
Miscellaneous	30.6	5.1	0.3	8.9	0.0	0.3	0.8	0.2	16.4	14.5	1.3	10.9
Total catch	**416.7**	**1,906.0**	**3,108.0**	**413.0**	**491.5**	**810.7**	**1,094.1**	**1,812.0**	**1,034.2**	**2,950.0**	**2,238.0**	**1,117.3**

Appendix A Table 2. -- Continued.

Station	**P-30**	**P-31**	**P-32**	**R-32**	**R-31**	**S-31**	**S-30**	**T-30**	**R-30**	**R-29**	**S-29**	**S-28**
Start date and time	7/27/10 13:25	7/27/10 15:45	7/27/10 18:30	7/28/10 7:55	7/28/10 10:46	7/28/10 13:36	7/28/10 16:27	7/28/10 19:21	7/29/10 7:48	7/29/10 10:23	7/29/10 13:10	7/29/10 16:04
Haul number	207	208	209	210	211	212	213	214	215	216	217	218
Start latitude	6000.70	5959.80	5959.91	6039.88	6040.09	6058.80	6059.92	6119.29	6040.18	6040.02	6058.89	6059.72
Start longitude	17717.12	17848.80	17806.02	17946.36	17828.05	17822.55	17700.12	17702.31	17709.76	17746.70	17743.02	17624.39
End latitude	5959.25	5959.77	5959.95	6039.99	6040.04	6100.25	6059.80	6120.74	6040.08	6040.00	6100.38	6059.52
End longitude	17717.05	17845.93	17803.24	17949.38	17831.09	17822.20	17703.06	17702.30	17712.77	17749.72	17743.11	17627.37
Bottom depth (m)	141	135	141	162	147	132	122	117	129	118	111	102
Duration (h)	0.49	0.50	0.48	0.50	0.51	0.50	0.49	0.50	0.50	0.50	0.50	0.50
Distance fished (km)	2.68	2.68	2.60	2.77	2.79	2.71	2.67	2.68	2.75	2.77	2.75	2.73
Net width (m)	17.57	17.36	17.01	18.18	18.18	18.04	17.87	17.87	18.04	17.44	16.76	16.79
Net measured?	Y	Y	Y	N	N	N	N	N	N	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	88.83	42.40	1.68	45.73	116.35	113.13	69.40	14.95	40.10	38.06	28.14	32.640
Other skates			3.99	16.26	1.57	4.34		12.54	4.91			4.94
Sharks												
Total elasmobranch	**88.8**	**42.4**	**5.7**	**62.0**	**117.9**	**117.5**	**69.4**	**27.5**	**45.0**	**38.1**	**28.1**	**37.6**
Alaska plaice												
Arrowtooth flounder	162.3	38.4	30.2	292.0	60.5	79.2	74.7	71.2	129.0	45.2	26.9	28.6
Flathead sole	56.6	91.6	131.9	30.1	1.4	1.5	1.8	1.9	2.6	4.5	7.4	9.4
Greenland turbot	23.1	21.1	25.8	11.8	25.3	19.7	16.7	20.1	23.2	13.8	26.9	10.8
Pacific halibut			24.3	7.3								
Rock sole			6.9							0.5		0.8
Yellowfin sole												
Other flatfish												
Total flatfish	**185.4**	**59.5**	**87.2**	**311.1**	**85.8**	**98.9**	**91.4**	**91.3**	**152.2**	**59.5**	**53.8**	**40.2**
Walleye pollock	1,621.7	1,607.8	779.7	1,486.1	766.9	516.5	638.7	259.2	465.5	226.9	299.1	833.3
Pacific cod	77.2	441.1	22.1	19.7	9.6	14.6	26.6	77.3	19.4	8.1	45.9	31.1
Sablefish												
Atka mackerel												
Eelpouts	14.4	18.6	4.6	1.9	48.5	45.8	16.2	43.0	14.1	29.7	22.1	6.7
Pacific herring												
Pacific ocean perch												
Sculpins	44.5	35.2	22.6	10.8	7.8	14.6	3.3	5.2	8.2	26.4	6.8	3.8
Other rockfish												
Other roundfish	1.5		1.2	0.4	2.7	1.6	1.7	3.0	3.6	2.0	0.8	2.0
Total roundfish	**1,759.4**	**2,102.7**	**830.2**	**1,518.8**	**835.4**	**593.1**	**686.5**	**387.7**	**510.8**	**293.1**	**374.7**	**877.0**
Blue king crab										0.7	1.8	
Red king crab												
Tanner crab, bairdi	0.8	0.5	1.5	2.6	0.1	0.3			0.1			
Tanner crab, opilio	77.1	24.4	2.8	41.9	73.2	145.5	439.4	888.7	135.3	263.3	607.5	189.5
Other crab	19.6	89.7	0.8	7.8	3.4	3.2	6.5	5.4	1.6	16.7	8.7	1.1
Shrimp	3.2	4.9	18.3	2.7	53.8	13.3	2.8	0.5	21.6	3.0	0.0	0.8
Octopus	0.2				1.1				0.1			
Squids			0.6									
Snails	53.9	104.5	3.7	14.0	13.1	21.5	23.1	40.5	13.2	40.7	14.1	17.7
Starfish	147.7	220.0	30.1	6.2	9.7	12.2	20.2	30.6	66.1	11.7	4.8	7.3
Other invertebrates	15.2	70.5	349.9	5.1	25.9	11.8	15.0	20.4	21.0	35.2	29.5	46.4
Total invertebrates	**317.7**	**514.5**	**407.7**	**80.4**	**180.4**	**207.8**	**507.1**	**986.2**	**258.9**	**371.3**	**666.3**	**262.7**
Miscellaneous	8.0	7.3	1.3	5.6	2.8	3.1	1.8	1.5	1.9	8.6	1.6	0.3
Total catch	**2,416.0**	**2,818.0**	**1,464.0**	**2,008.0**	**1,223.7**	**1,021.7**	**1,358.0**	**1,496.0**	**971.5**	**775.1**	**1,132.0**	**1,227.2**

Appendix A Table 2. -- Continued.

Station	**R-28**	**P-28**	**P-29**	**Q-29**	**Q-28**	**Q-27**	**N-23**	**O-23**	**P-23**	**R-23**	**S-23**	**S-24**
Start date and time	7/29/10 18:55	7/30/10 7:41	7/30/10 10:20	7/30/10 13:07	7/30/10 15:44	7/30/10 18:23	7/31/10 7:39	7/31/10 10:21	7/31/10 13:00	8/1/10 7:28	8/1/10 10:01	8/1/10 12:28
Haul number	219	220	221	222	223	224	225	226	227	228	229	230
Start latitude	6040.02	6000.03	5959.70	6019.46	6020.06	6019.67	5919.17	5939.31	5958.45	6039.05	6058.43	6059.99
Start longitude	17634.16	17646.55	17606.01	17758.42	17634.98	17515.43	17209.88	17207.76	17204.01	17353.37	17350.73	17312.87
End latitude	6038.73	5959.84	6000.68	6020.90	6019.83	6019.50	5920.66	5940.72	5959.88	6040.50	6059.41	6100.09
End longitude	17635.36	17643.64	17602.95	17758.54	17637.88	17518.31	17209.77	17206.85	17203.51	17352.48	17350.12	17309.89
Bottom depth (m)	106	117	129	121	112	103	80	78	67	61	64	67
Duration (h)	0.48	0.50	0.63	0.49	0.50	0.50	0.51	0.51	0.50	0.51	0.34	0.50
Distance fished (km)	2.63	2.74	3.39	2.67	2.71	2.68	2.76	2.74	2.70	2.79	1.91	2.71
Net width (m)	16.43	17.53	17.22	17.27	16.56	16.59	17.28	17.36	16.59	19.72	16.99	20.20
Net measured?	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	67.040	66.580	90.320	75.020	97.790	48.170	15.500	7.280	9.960	40.740	12.720	11.320
Other skates	5.15			2.30	2.78							
Sharks												
Total elasmobranch	**72.2**	**66.6**	**90.3**	**77.3**	**100.6**	**48.2**	**15.5**	**7.3**	**10.0**	**40.7**	**12.7**	**11.3**
Alaska plaice						1.4	4.9	4.5	56.6	35.1	28.9	19.1
Arrowtooth flounder	26.1	106.7	65.0	104.6	75.7	72.6						
Flathead sole	4.0	2.6	4.7	18.2	682.1	29.6		11.0		4.7	3.7	7.1
Greenland turbot	74.9	7.3	3.6	11.9	17.7	5.2	0.8	1.5		0.0		0.1
Pacific halibut			2.5	23.6	6.3	6.0	6.6	5.1				
Rock sole		3.8		0.3		4.8	8.4	1.4	0.7	2.8	1.9	1.3
Yellowfin sole							0.6	0.2	2.8	12.1	2.0	
Other flatfish									0.0			
Total flatfish	**101.0**	**117.8**	**71.2**	**140.4**	**99.7**	**90.0**	**21.3**	**12.6**	**60.0**	**50.0**	**32.8**	**20.4**
Walleye pollock	1,178.1	1,474.3	747.5	537.3	687.2	1,740.5	482.2	102.2	6.0	45.4	0.1	45.5
Pacific cod	21.9	114.0	37.4	41.8	78.8	49.6	97.1	14.7	0.1	32.7		22.8
Sablefish												
Atka mackerel												
Eelpouts	6.7	12.1	29.2	37.0	104.5	9.4	2.2	5.4	0.5	0.4		0.8
Pacific herring												
Pacific ocean perch												
Sculpins	15.7	45.5	14.9	16.9	28.7	20.0	3.4	0.1	5.0	3.3	0.1	0.1
Other rockfish												
Other roundfish	1.1	1.0	1.1	1.7	3.2	0.7	0.5	524.8	1.5	3.2	2.8	2.7
Total roundfish	**1,223.4**	**1,646.9**	**830.2**	**634.6**	**902.4**	**1,820.1**	**585.5**	**647.2**	**13.2**	**84.9**	**3.0**	**72.0**
Blue king crab		2.3			2.4							
Red king crab												
Tanner crab, bairdi	0.0	0.3	7.7	3.6	2.1				1.5			
Tanner crab, opilio	52.7	54.7	81.5	85.6	127.7	85.3	132.6	134.1	196.7	253.3	57.4	122.3
Other crab	13.6	71.9	88.2	7.6	31.1	6.4	5.4	62.9	48.3	2.4	2.5	2.0
Shrimp	0.2	0.2	4.4	1.2	10.2	0.1			0.1		0.1	0.0
Octopus			1.2					3.8				
Squids												
Snails	294.0	122.7	217.6	15.4	62.5	6.8	53.5	5.6	29.4	8.9	3.8	10.3
Starfish	29.1	15.0	324.9	45.1	51.3	37.9	26.9	15.8	10.3	81.0	116.6	10.6
Other invertebrates	83.7	24.7	19.8	20.4	49.0	40.5	70.8	53.8	13.9	13.6	16.4	26.7
Total invertebrates	**473.3**	**291.8**	**745.4**	**178.8**	**336.4**	**176.9**	**289.1**	**275.9**	**300.2**	**359.2**	**196.9**	**171.9**
Miscellaneous	4.1	12.3	42.2	3.3	14.9	1.1	28.6	41.0	16.0	0.3	0.9	0.1
Total catch	**1,878.0**	**2,138.0**	**1,784.0**	**1,052.6**	**2,136.0**	**2,166.0**	**940.0**	**994.9**	**399.4**	**539.8**	**250.0**	**282.8**

Appendix A Table 2. -- Continued.

Station	**R-24**	**R-25**	**S-25**	**S-26**	**S-27**	**R-27**	**T-26**	**T-27**	**T-28**	**T-29**	**U-29**	**U-27**	**U-28**
Start date and time	8/1/10 15:11	8/1/10 18:17	8/2/10 7:30	8/2/10 10:14	8/2/10 13:05	8/2/10 16:00	8/3/10 7:38	8/3/10 10:17	8/3/10 12:54	8/3/10 15:34	8/3/10 18:18	8/4/10 7:43	8/4/10 10:31
Haul number	231	232	233	234	235	236	237	238	239	240	241	242	243
Start latitude	6041.56	6041.09	6059.81	6100.36	6100.63	6040.65	6120.24	6120.28	6120.37	6119.10	6139.08	6140.30	6139.12
Start longitude	17312.11	17432.99	17432.06	17550.32	17508.54	17510.58	17542.64	17502.98	17622.62	17743.02	17731.90	17656.32	17613.85
End latitude	6040.08	6039.81	6059.54	6059.59	6059.65	6039.19	6119.88	6119.93	6120.07	6120.28	6140.52	6139.74	6140.50
End longitude	17312.60	17431.43	17428.95	17547.65	17506.17	17511.27	17539.59	17659.98	17619.58	17741.05	17732.30	17653.40	17612.79
Bottom depth (m)	45	66	74	84	92	98	78	86	97	106	105	85	95
Duration (h)	0.52	0.51	0.52	0.51	0.51	0.51	0.52	0.51	0.51	0.52	0.49	0.51	0.51
Distance fished (km)	2.79	2.77	2.87	2.80	2.81	2.77	2.82	2.77	2.78	2.81	2.69	2.79	2.73
Net width (m)	16.27	16.83	18.54	18.24	17.65	17.81	17.47	17.79	18.21	18.44	19.06	18.05	18.07
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	68.980	21.860	4.370	24.000	16.020	29.920	2.600	6.100	9.370	50.660	7.710	2.790	
Other skates								0.02		15.74			
Sharks													
Total elasmobranch	**69.0**	**21.9**	**4.4**	**24.0**	**16.0**	**29.9**	**2.6**	**6.1**	**9.4**	**66.4**	**7.7**	**2.8**	
Alaska plaice	322.3	217.4	2.6		2.5	7.0	1.9						
Arrowtooth flounder					0.0	50.3			13.5	33.2	28.5		
Flathead sole		5.4	6.1	9.7	8.7	51.6	6.2	5.3	15.8	23.6	6.2	3.6	27.8
Greenland turbot		0.2	0.1	0.9	4.1	10.8	1.1	2.0	13.5	31.0	28.8	2.1	9.7
Pacific halibut	22.5									3.7			
Rock sole	197.1	20.5		0.9	0.4	0.5		0.9	0.5	0.5		0.5	1.2
Yellowfin sole	6.0	4.9	0.2	0.5			0.2						
Other flatfish	0.1	0.5		0.0									
Total flatfish	**547.9**	**243.5**	**2.9**	**2.3**	**7.0**	**68.6**	**3.2**	**2.9**	**27.5**	**68.4**	**57.3**	**2.5**	**10.8**
Walleye pollock		18.0	0.0	104.1	132.5	669.5	0.1	258.1	689.8	474.3	295.2	609.5	1,022.7
Pacific cod	81.7	328.3		0.1	18.0	63.9	0.1	14.6	8.1	13.0	15.7	3.7	72.4
Sablefish													
Atka mackerel													
Eelpouts			0.9	0.9	3.0	13.7	1.6	3.0	2.2	5.4	2.6	5.0	43.3
Pacific herring								4.0	0.2				0.8
Pacific ocean perch													
Sculpins	41.8	86.7	2.0	1.3	4.3	51.4	1.1	2.1	0.3	9.2	2.6	0.9	2.4
Other rockfish													
Other roundfish		0.0	1.0	1.7	0.5	2.0	5.9	0.8	4.0	1.5	2.9	6.4	0.5
Total roundfish	**123.5**	**433.0**	**3.9**	**108.1**	**158.4**	**800.6**	**8.7**	**282.5**	**704.5**	**503.4**	**318.9**	**625.5**	**1,142.0**
Blue king crab	188.5	1.9	0.9	1.4		1.2		1.6				1.2	
Red king crab													
Tanner crab, bairdi						0.5			0.1				
Tanner crab, opilio	0.2	14.2	129.1	76.3	196.8	524.3	205.2	150.6	166.6	298.1	153.3	157.7	339.4
Other crab	244.4	45.0	2.7	1.3	0.4	1.3	1.8	0.6	1.0	2.3	2.4	2.0	3.0
Shrimp		0.2	0.1	0.2	0.2	0.1	0.5	0.1	0.6	1.0	0.3	0.4	0.0
Octopus													
Squids													
Snails	230.4	96.4	1.6	0.8	4.4	3.0	2.4	1.2	6.6	2.5	4.4	6.2	0.4
Starfish	26.1	18.9	11.6	13.8	2.6	3.3	15.6	5.1	3.9	0.8	0.5	7.9	5.6
Other invertebrates	1.9	97.1	32.0	46.6	52.0	13.3	106.9	27.9	35.9	33.0	37.8	44.4	32.7
Total invertebrates	**691.6**	**273.9**	**178.1**	**140.3**	**256.4**	**547.0**	**332.3**	**187.1**	**214.7**	**337.7**	**198.7**	**219.8**	**381.2**
Miscellaneous	22.0	3.6	0.3	0.2	0.1	0.4	0.5	0.3	1.2	0.7	0.8		0.1
Total catch	**1,454.0**	**981.2**	**195.7**	**284.6**	**446.6**	**1,498.0**	**353.5**	**484.3**	**973.1**	**1,000.2**	**589.7**	**854.2**	**1,562.0**

Appendix A Table 2. -- Continued.

Station	**V-28**	**V-27**	**W-27**	**W-25**	**W-26**	**X-26**	**X-25**	**Y-25**	**Y-24**	**ZZ-24**	**ZZ-23**	**Y-23**	**X-23**
Start date and time	8/4/10 13:18	8/4/10 16:08	8/4/10 18:44	8/5/10 7:34	8/5/10 10:16	8/5/10 13:11	8/5/10 16:01	8/5/10 18:38	8/6/10 7:26	8/6/10 10:43	8/6/10 13:33	8/6/10 16:11	8/6/10 18:52
Haul number	244	245	1	2	3	4	5	6	7	8	9	10	11
Start latitude	6159.42	6159.07	6218.75	6219.55	6219.44	6239.31	6240.02	6258.82	6258.87	6320.18	6320.48	6301.02	6240.90
Start longitude	17609.13	17648.90	17643.77	17410.84	17527.85	17521.89	17403.81	17400.35	17446.09	17433.63	17318.79	17323.46	17332.67
End latitude	6200.82	6200.40	6220.23	6220.37	6220.17	6240.75	6240.02	6300.26	6300.90	6320.10	6318.99	6259.50	6239.42
End longitude	17610.43	17650.31	17643.36	17408.17	17525.07	17521.81	17406.98	17559.59	17446.02	17436.88	17318.34	17323.64	17332.67
Bottom depth (m)	92	81	78	63	70	73	69	74	68	70	63	60	53
Duration (h)	0.51	0.51	0.51	0.51	0.50	0.50	0.50	0.51	0.69	0.50	0.51	0.51	0.50
Distance fished (km)	2.82	2.77	2.75	2.77	2.77	2.68	2.71	2.75	3.76	2.73	2.77	2.83	2.73
Net width (m)	18.82	17.97	17.46	17.08	17.25	18.84	18.44	19.42	19.67	17.01	17.56	18.53	16.82
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates	1.356	4.980	14.390	26.020	15.080	6.650	1.170	16.090	22.180		40.140		17.110
Other skates													
Sharks													
Total elasmobranch	**1.4**	**5.0**	**14.4**	**26.0**	**15.1**	**6.7**	**1.2**	**16.1**	**22.2**		**40.1**		**17.1**
Alaska plaice				5.4						1.4	105.3	0.5	59.6
Arrowtooth flounder													
Flathead sole	11.0	8.5	8.4	13.1	10.8	12.6	0.8	1.5	7.2	54.6	40.5	1.7	6.4
Greenland turbot	5.5	3.0	1.2	0.3	0.9	1.0				0.3	0.0		
Pacific halibut									2.0		1.9		
Rock sole		0.4		0.9									
Yellowfin sole										0.1	4.1	0.2	2.9
Other flatfish				0.1	0.1			0.2		0.2	0.6	0.3	0.4
Total flatfish	**5.5**	**3.4**	**1.2**	**6.7**	**1.0**	**1.0**		**0.2**	**2.0**	**2.0**	**111.9**	**1.0**	**62.8**
Walleye pollock	227.3	0.8	0.0	0.2	0.9					2.6	0.0		2.7
Pacific cod	3.5	0.2	0.3	5.0						1.2	13.9	3.8	
Sablefish													
Atka mackerel													
Eelpouts	2.2	0.6	1.9	30.8	24.1	5.0	3.3	7.6	11.8	5.1		6.6	19.3
Pacific herring											0.7		0.2
Pacific ocean perch													
Sculpins	0.2	1.1	0.7	5.9	1.5	0.3	1.6	2.6	5.9	3.6	1.8	4.5	0.4
Other rockfish													
Other roundfish	4.9	10.8	18.7	12.3	45.7	14.2	203.3	42.5	505.3	9.3	10.8	7.0	10.7
Total roundfish	**238.1**	**13.5**	**21.5**	**54.2**	**72.2**	**19.6**	**208.2**	**52.7**	**523.0**	**21.8**	**27.2**	**22.0**	**33.4**
Blue king crab								0.5		0.5			
Red king crab													
Tanner crab, bairdi													
Tanner crab, opilio	168.6	205.8	174.2	250.2	434.0	780.4	524.6	466.5	875.9	278.9	184.8	196.3	91.1
Other crab	0.9	2.6	0.4	5.2	0.2	0.5	2.4	0.9	4.5	1.6	10.4	2.3	26.3
Shrimp	0.3	0.3	1.2	7.9	2.6	0.3	0.8	1.7	3.6	3.2	0.6	0.4	0.9
Octopus		0.2	1.5	0.5	1.3	1.8		0.9					
Squids													
Snails	4.3	6.1	9.2	14.6	10.1	5.2	17.6	10.1	15.3	8.4	34.9	4.6	92.2
Starfish	7.1	19.2	11.0	27.1	32.3	1.6	0.4	0.1	0.5	3.6	36.1	8.3	22.6
Other invertebrates	22.6	21.9	31.3	86.8	49.8	6.5	8.3	10.9	4.9	12.6	15.8	6.5	16.5
Total invertebrates	**203.9**	**256.1**	**228.7**	**392.3**	**530.3**	**796.3**	**554.1**	**491.7**	**904.8**	**308.8**	**282.6**	**218.4**	**249.7**
Miscellaneous	0.8	0.5	0.2		0.3		0.5		0.2		0.4		1.8
Total catch	**460.6**	**287.1**	**274.5**	**492.2**	**629.7**	**836.1**	**764.8**	**562.2**	**1,459.3**	**387.2**	**502.8**	**243.1**	**371.1**

Appendix A Table 2. -- Continued.

Station	**X-24**	**W-24**	**V-24**	**U-24**	**T-24**	**U-23**	**T-23**
Start date and time	8/7/10 7:33	8/7/10 10:15	8/7/10 12:48	8/7/10 15:27	8/7/10 18:17	8/8/10 7:46	8/8/10 11:18
Haul number	12	13	14	15	16	17	18
Start latitude	6240.87	6220.50	6200.85	6140.89	6120.89	6140.51	6119.82
Start longitude	17449.25	17450.85	17457.34	17455.19	17305.06	17343.89	17352.56
End latitude	6239.43	6218.95	6159.35	6139.45	6119.58	6139.74	6119.83
End longitude	17448.72	17450.97	17457.59	17454.58	17306.43	17341.19	17349.42
Bottom depth (m)	63	58	58	65	68	60	61
Duration (h)	0.51	0.52	0.52	0.50	0.50	0.51	0.51
Distance fished (km)	2.72	2.87	2.79	2.71	2.71	2.78	2.81
Net width (m)	20.21	17.43	16.76	20.52	20.03	18.85	19.79
Net measured?	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0
Alaska skates	8.550	25.210	7.560	2.360	9.040	12.470	8.550
Other skates							
Sharks							
Total elasmobranch	**8.6**	**25.2**	**7.6**	**2.4**	**9.0**	**12.5**	**8.6**
Alaska plaice		2.5	9.0	2.6	3.5	14.4	7.2
Arrowtooth flounder							
Flathead sole	0.7	7.2	12.2	5.0	5.8	2.2	1.8
Greenland turbot	0.0	0.2	0.1	0.1	0.2	0.0	0.0
Pacific halibut							1.6
Rock sole	0.9			0.7	0.3	1.0	0.8
Yellowfin sole	0.2		0.9	0.8	0.4	4.2	3.6
Other flatfish	0.1	0.1	10.1				
Total flatfish	**1.2**	**2.7**	**20.0**	**4.1**	**4.5**	**19.6**	**13.2**
Walleye pollock			2.4	0.2	7.4	0.0	2.8
Pacific cod					0.1		
Sablefish							
Atka mackerel							
Eelpouts	6.2	8.6	21.0	7.6	11.7	11.3	1.8
Pacific herring	0.2	0.0					
Pacific ocean perch							
Sculpins	0.6	0.9	2.7	1.1	0.3	1.3	0.5
Other rockfish							
Other roundfish	83.3	20.2	10.6	2.8	2.2	47.3	30.2
Total roundfish	**90.3**	**29.7**	**36.8**	**11.7**	**21.7**	**59.9**	**35.3**
Blue king crab							
Red king crab							
Tanner crab, bairdi							
Tanner crab, opilio	306.1	133.3	197.0	213.5	113.5	175.0	117.3
Other crab	0.6	9.7	15.0	4.4	1.9	5.2	5.4
Shrimp	0.1	0.6	0.1	0.1	0.0	0.0	0.1
Octopus		0.2					
Squids							
Snails	6.3	78.9	143.2	6.7	2.3	12.3	23.6
Starfish	4.1	15.4	5.5	49.6	34.4	26.3	55.5
Other invertebrates	9.4	31.1	62.9	42.4	37.6	7.4	10.8
Total invertebrates	**326.6**	**269.2**	**423.6**	**316.7**	**189.7**	**226.2**	**212.7**
Miscellaneous		14.2	1.5		0.0	0.3	0.6
Total catch	**427.4**	**348.1**	**501.7**	**339.8**	**230.8**	**320.7**	**272.1**

Appendix B: Rank Order of Relative Abundance of Fishes and Invertebrates

Appendix B ranks all fishes and invertebrates identified during the 2011 eastern Bering Sea bottom trawl survey by descending weighted CPUE (kg/ha).

Appendix B Table 1. -- Rank of fish and invertebrate taxa by weighted total CPUE (kg/ha) from the 2011 eastern Bering Sea bottom trawl survey.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
1	21740	62.9140	58.9694	47.8629	77.9652	0.2045	0.2045	*Theragra chalcogramma*
2	10210	48.4873	9.1223	42.5675	54.4071	0.1576	0.3622	*Limanda aspera*
3	10261	39.8973	3.9789	35.9877	43.8070	0.1297	0.4919	*Lepidopsetta* sp.
4	81742	19.1000	0.9580	17.1816	21.0184	0.0621	0.5540	*Asterias amurensis*
5	21720	18.3956	0.8649	16.5728	20.2184	0.0598	0.6138	*Pleuronectes quadrituberculatus*
6	10130	11.6638	1.0527	9.6528	13.6748	0.0379	0.6517	*Gadus macrocephalus*
7	10110	10.5349	0.3742	9.3360	11.7338	0.0342	0.6859	*Atheresthes stomias*
8	10285	10.4858	0.6201	8.9424	12.0292	0.0341	0.7200	*Hippoglossoides elassodon*
9	68580	9.6371	2.1426	6.7681	12.5060	0.0313	0.7514	*Bathyraja parmifera*
10	471	8.3108	0.1162	7.6427	8.9789	0.0270	0.7784	*Chionoecetes opilio*
11	91000	6.6256	2.4531	3.5558	9.6954	0.0215	0.7999	*Gorgonocephalus eucnemis*
12	40504	6.3652	0.6559	4.7779	7.9526	0.0207	0.8206	*Styela rustica*
13	83020	6.3625	0.3258	5.2437	7.4813	0.0207	0.8413	*Hippoglossus stenolepis*
14	99994	3.8234	0.0511	3.3802	4.2666	0.0124	0.8537	*Chrysaora melanaster*
15	10120	3.7720	0.0234	3.4721	4.0720	0.0123	0.8660	empty gastropod shells
16	69086	3.1901	0.0312	2.8437	3.5365	0.0104	0.8764	*Halocynthia aurantium*
17	98205	2.7999	0.2489	1.8220	3.7777	0.0091	0.8855	Porifera
18	98082	2.6277	0.0891	2.0425	3.2129	0.0085	0.8940	*Pagurus trigonocheirus*
19	43090	1.5915	0.0677	1.0815	2.1015	0.0052	0.8992	*Platichthys stellatus*
20	98105	1.5795	0.0278	1.2530	1.9061	0.0051	0.9043	*Ctenodiscus crispatus*
21	68560	1.5707	0.0120	1.3561	1.7853	0.0051	0.9094	*Paralithodes camtschaticus*
22	71884	1.4503	0.0276	1.1250	1.7757	0.0047	0.9141	*Boltenia ovifera*
23	10220	1.2911	0.0383	0.9076	1.6746	0.0042	0.9183	*Chionoecetes bairdi*
24	21371	1.1967	0.0057	1.0493	1.3440	0.0039	0.9222	*Pagurus aleuticus*
25	69322	1.1561	0.0129	0.9332	1.3791	0.0038	0.9260	*Neptunea pribiloffensis*
26	69060	1.1181	0.0069	0.9557	1.2805	0.0036	0.9296	*Atheresthes evermanni*
27	71820	1.1153	0.0142	0.8816	1.3491	0.0036	0.9332	*Neptunea heros*
28	21370	1.0938	0.0113	0.8855	1.3021	0.0036	0.9368	*Myoxocephalus jaok*
29	80590	0.9651	0.0081	0.7886	1.1416	0.0031	0.9399	*Myoxocephalus polyacanthocephalus*
30	10112	0.9334	0.0070	0.7697	1.0970	0.0030	0.9430	*Leptasterias polaris*
31	98200	0.8452	0.0188	0.5763	1.1142	0.0027	0.9457	*Pagurus capillatus*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
32	71882	0.7958	0.0075	0.6261	0.9655	0.0026	0.9483	*Liponema brevicornis*
33	71870	0.7908	0.0036	0.6726	0.9090	0.0026	0.9509	*Neptunea ventricosa*
34	81780	0.6404	0.0150	0.4007	0.8802	0.0021	0.9530	*Hyas coarctatus*
35	21420	0.6385	0.0020	0.5502	0.7267	0.0021	0.9550	*Neptunea lyrata*
36	72500	0.5856	0.0036	0.4674	0.7038	0.0019	0.9569	*Metridium farcimen*
37	10115	0.5334	0.0041	0.4074	0.6593	0.0017	0.9587	*Hemilepidotus jordani*
38	68577	0.4439	0.0021	0.3545	0.5334	0.0014	0.9601	*Aplidium* sp.
39	43021	0.4401	0.0076	0.2694	0.6108	0.0014	0.9615	*Pyrulofusus deformis*
40	20040	0.4401	0.0012	0.3717	0.5084	0.0014	0.9630	*Hemitripterus bolini*
41	21347	0.4078	0.0134	0.1808	0.6349	0.0013	0.9643	*Strongylocentrotus droebachiensis*
42	82511	0.4019	0.0155	0.1577	0.6460	0.0013	0.9656	*Fusitriton oregonensis*
43	85201	0.3996	0.0100	0.2037	0.5954	0.0013	0.9669	*Podothecus accipenserinus*
44	24191	0.3914	0.0067	0.2309	0.5518	0.0013	0.9682	*Glyptocephalus zachirus*
45	71753	0.3780	0.0045	0.2470	0.5090	0.0012	0.9694	*Pagurus rathbuni*
46	10200	0.3738	0.0217	0.0850	0.6626	0.0012	0.9706	*Ophiura sarsi*
47	69095	0.3511	0.0017	0.2699	0.4323	0.0011	0.9718	*Lycodes brevipes*
48	98310	0.3507	0.0022	0.2590	0.4425	0.0011	0.9729	*Volutopsius* sp.
49	83000	0.3491	0.0060	0.1973	0.5009	0.0011	0.9740	*Metridium* sp.
50	10140	0.3414	0.0118	0.1286	0.5541	0.0011	0.9752	*Bathyraja interrupta*
51	21110	0.3336	0.0083	0.1547	0.5125	0.0011	0.9762	*Pagurus confragosus*
52	24185	0.2911	0.0009	0.2332	0.3491	0.0009	0.9772	*Reinhardtius hippoglossoides*
53	69090	0.2866	0.0009	0.2262	0.3469	0.0009	0.9781	*Halocynthia* sp.
54	83320	0.2660	0.0029	0.1611	0.3709	0.0009	0.9790	empty bivalve shells
55	69323	0.2335	0.0032	0.1232	0.3438	0.0008	0.9797	*Lethasterias nanimensis*
56	80200	0.2324	0.0004	0.1933	0.2714	0.0008	0.9805	*Pagurus ochotensis*
57	69070	0.2274	0.0003	0.1911	0.2637	0.0007	0.9812	*Paralithodes platypus*
58	69120	0.2089	0.0006	0.1604	0.2573	0.0007	0.9819	*Evasterias echinosoma*
59	10211	0.2088	0.0061	0.0553	0.3623	0.0007	0.9826	*Pagurus brandti*
60	71001	0.2036	0.0004	0.1631	0.2440	0.0007	0.9833	*Myoxocephalus verrucosus*
61	435	0.1976	0.0013	0.1260	0.2692	0.0006	0.9839	*Pyrulofusus melonis*
62	68590	0.1761	0.0003	0.1413	0.2108	0.0006	0.9845	gastropod eggs
63	72755	0.1711	0.0003	0.1347	0.2075	0.0006	0.9850	compound ascidian unident.

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
64	99999	0.1675	0.0034	0.0540	0.2810	0.0005	0.9856	*Cucumaria fallax*
65	24184	0.1555	0.0049	0.0184	0.2925	0.0005	0.9861	*Leptasterias arctica*
66	82510	0.1499	0.0083	0.0000	0.3288	0.0005	0.9866	*Limanda proboscidea*
67	43010	0.1450	0.0019	0.0592	0.2307	0.0005	0.9870	*Strongylocentrotus* sp.
68	99993	0.1357	0.0001	0.1158	0.1556	0.0004	0.9875	*Raja binoculata*
69	71756	0.1346	0.0004	0.0946	0.1746	0.0004	0.9879	*Pandalus eous*
70	23041	0.1336	0.0006	0.0842	0.1829	0.0004	0.9883	*Buccinum angulosum*
71	66031	0.1307	0.0003	0.0982	0.1632	0.0004	0.9888	*Buccinum polare*
72	21368	0.1306	0.0003	0.0946	0.1666	0.0004	0.9892	*Chionoecetes hybrid*
73	80020	0.1279	0.0007	0.0780	0.1779	0.0004	0.9896	*Labidochirus splendescens*
74	80594	0.1138	0.0001	0.0906	0.1370	0.0004	0.9900	*Pagurus* sp.
75	74120	0.1134	0.0015	0.0377	0.1891	0.0004	0.9904	*Erimacrus isenbeckii*
76	41500	0.1134	0.0030	0.0068	0.2201	0.0004	0.9907	*Neptunea* sp.
77	420	0.1062	0.0014	0.0341	0.1782	0.0003	0.9911	*Buccinum scalariforme*
78	98300	0.0988	0.0004	0.0600	0.1377	0.0003	0.9914	*Lycodes palearis*
79	23010	0.0980	0.0010	0.0345	0.1614	0.0003	0.9917	*Bathymaster signatus*
80	71763	0.0965	0.0004	0.0551	0.1378	0.0003	0.9920	unsorted catch and debris
81	72743	0.0957	0.0003	0.0597	0.1318	0.0003	0.9923	*Patinopecten caurinus*
82	69400	0.0897	0.0002	0.0621	0.1173	0.0003	0.9926	*Hyas lyratus*
83	69061	0.0885	0.0001	0.0673	0.1096	0.0003	0.9929	*Alcyonidium pedunculatum*
84	68578	0.0845	<0.0001	0.0666	0.1023	0.0003	0.9932	*Psolus fabricii*
85	72751	0.0822	0.0002	0.0546	0.1097	0.0003	0.9935	*Elassochirus cavimanus*
86	20322	0.0743	0.0004	0.0337	0.1148	0.0002	0.9937	*Clupea pallasi*
87	72752	0.0692	0.0008	0.0140	0.1244	0.0002	0.9939	*Volutopsius fragilis*
88	22205	0.0685	<0.0001	0.0493	0.0877	0.0002	0.9941	*Clinopegma* (=*Neptunea*) *magna*
89	20720	0.0684	0.0010	0.0070	0.1298	0.0002	0.9944	*Bathyraja aleutica*
90	43042	0.0639	0.0001	0.0407	0.0870	0.0002	0.9946	Actiniaria
91	69035	0.0596	0.0001	0.0385	0.0806	0.0002	0.9948	*Echinarachnius parma*
92	78403	0.0574	0.0004	0.0181	0.0967	0.0002	0.9949	*Liparis gibbus*
93	472	0.0510	0.0002	0.0219	0.0800	0.0002	0.9951	*Mallotus villosus*
94	71772	0.0504	<0.0001	0.0311	0.0698	0.0002	0.9953	*Gymnocanthus galeatus*
95	85219	0.0497	0.0005	0.0076	0.0919	0.0002	0.9954	*Aphrodita negligens*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
96	99997	0.0466	0.0003	0.0138	0.0794	0.0002	0.9956	*Buccinum plectrum*
97	43000	0.0441	<0.0001	0.0319	0.0564	0.0001	0.9957	*Neptunea* sp.
98	71750	0.0432	0.0008	0.0000	0.0996	0.0001	0.9959	*Dasycottus setiger*
99	21316	0.0424	0.0002	0.0181	0.0667	0.0001	0.9960	*Beringius* sp.
100	21348	0.0399	<0.0001	0.0244	0.0555	0.0001	0.9961	*Anarhichas orientalis*
101	42012	0.0398	0.0002	0.0119	0.0676	0.0001	0.9963	*Pteraster obscurus*
102	69121	0.0389	<0.0001	0.0268	0.0510	0.0001	0.9964	*Urticina crassicornis*
103	23235	0.0371	<0.0001	0.0211	0.0530	0.0001	0.9965	*Stomphia coccinea*
104	71761	0.0367	<0.0001	0.0186	0.0548	0.0001	0.9966	Pennatulacea
105	42003	0.0359	0.0012	0.0000	0.1046	0.0001	0.9968	*Gymnocanthus pistilliger*
106	71891	0.0357	0.0002	0.0082	0.0631	0.0001	0.9969	*Icelus spiniger*
107	71886	0.0344	0.0002	0.0064	0.0624	0.0001	0.9970	*Lycodes raridens*
108	81355	0.0340	<0.0001	0.0184	0.0495	0.0001	0.9971	*Mactromeris polynyma*
109	43032	0.0321	0.0002	0.0013	0.0629	0.0001	0.9972	*Thaleichthys pacificus*
110	21390	0.0314	<0.0001	0.0236	0.0391	0.0001	0.9973	Bryozoa unident.
111	71835	0.0304	<0.0001	0.0121	0.0488	<0.0001	0.9974	*Telmessus cheiragonus*
112	50192	0.0301	<0.0001	0.0160	0.0441	<0.0001	0.9975	*Plicifusus* sp.
113	21438	0.0281	<0.0001	0.0182	0.0381	<0.0001	0.9976	*Gersemia rubiformis*
114	65203	0.0279	<0.0001	0.0119	0.0438	<0.0001	0.9977	*Beringius beringii*
115	41201	0.0270	<0.0001	0.0200	0.0341	<0.0001	0.9978	*Octopus dofleini*
116	95030	0.0259	<0.0001	0.0159	0.0360	<0.0001	0.9979	*Hemilepidotus papilio*
117	81870	0.0235	<0.0001	0.0070	0.0399	<0.0001	0.9979	*Buccinum* sp.
118	22236	0.0229	0.0001	0.0000	0.0462	<0.0001	0.9980	Scyphozoa
119	95000	0.0211	<0.0001	0.0035	0.0388	<0.0001	0.9981	*Careproctus rastrinus*
120	21314	0.0194	<0.0001	0.0117	0.0271	<0.0001	0.9981	tube worm unident.
121	82740	0.0190	<0.0001	0.0080	0.0300	<0.0001	0.9982	*Oncorhynchus tshawytscha*
122	91015	0.0182	<0.0001	0.0035	0.0329	<0.0001	0.9983	*Berryteuthis magister*
123	69080	0.0181	<0.0001	0.0085	0.0277	<0.0001	0.9983	*Aforia circinata*
124	41221	0.0178	0.0001	0.0000	0.0407	<0.0001	0.9984	*Serripes notabilis*
125	71769	0.0177	<0.0001	0.0090	0.0263	<0.0001	0.9984	*Oncorhynchus keta*
126	68781	0.0163	<0.0001	0.0049	0.0276	<0.0001	0.9985	*Leptagonus frenatus*
127	10262	0.0162	<0.0001	0.0066	0.0257	<0.0001	0.9985	hydroid unident.

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
128	43030	0.0158	<0.0001	0.0101	0.0215	<0.0001	0.9986	*Plicifusus kroyeri*
129	320	0.0153	<0.0001	0.0015	0.0291	<0.0001	0.9986	*Triglops pingeli*
130	71800	0.0144	0.0001	0.0000	0.0359	<0.0001	0.9987	Thaliacea unident.
131	56311	0.0136	<0.0001	0.0098	0.0173	<0.0001	0.9987	*Dipsacaster borealis*
132	75111	0.0134	<0.0001	0.0093	0.0175	<0.0001	0.9988	*Musculus discors*
133	21354	0.0131	<0.0001	0.0024	0.0238	<0.0001	0.9988	*Isopsetta isolepis*
134	72063	0.0129	<0.0001	0.0039	0.0219	<0.0001	0.9989	*Gersemia* sp.
135	21725	0.0121	<0.0001	0.0007	0.0235	<0.0001	0.9989	*Balanus* sp.
136	30420	0.0120	<0.0001	0.0000	0.0283	<0.0001	0.9989	*Serripes groenlandicus*
137	10212	0.0118	0.0004	0.0000	0.0520	<0.0001	0.9990	*Trichodon trichodon*
138	71764	0.0116	<0.0001	0.0074	0.0157	<0.0001	0.9990	*Eunoe nodosa*
139	30060	0.0110	<0.0001	0.0013	0.0206	<0.0001	0.9990	*Microstomus pacificus*
140	75284	0.0095	<0.0001	0.0041	0.0149	<0.0001	0.9991	*Modiolus modiolus*
141	78010	0.0093	0.0016	0.0000	0.0871	<0.0001	0.9991	*Boreogadus saida*
142	75287	0.0089	<0.0001	0.0023	0.0156	<0.0001	0.9991	*Aphrodita* sp.
143	10270	0.0088	<0.0001	0.0031	0.0145	<0.0001	0.9992	*Balanus evermanni*
144	10180	0.0082	0.0001	0.0000	0.0279	<0.0001	0.9992	*Volutopsius stefanssoni*
145	75285	0.0079	<0.0001	0.0039	0.0120	<0.0001	0.9992	*Neptunea borealis*
146	74104	0.0076	<0.0001	0.0026	0.0126	<0.0001	0.9992	*Diplopteraster multipes*
147	20006	0.0075	<0.0001	0.0045	0.0106	<0.0001	0.9993	*Pandalus goniurus*
148	95070	0.0074	<0.0001	0.0042	0.0106	<0.0001	0.9993	*Oregonia gracilis*
149	81095	0.0071	<0.0001	0.0051	0.0092	<0.0001	0.9993	*Occella dodecaedron*
150	43082	0.0068	<0.0001	0.0036	0.0099	<0.0001	0.9993	*Crossaster papposus*
151	71774	0.0062	<0.0001	0.0027	0.0097	<0.0001	0.9994	*Bathyraja interrupta*
152	71537	0.0062	<0.0001	0.0000	0.0161	<0.0001	0.9994	*Cryptonatica* (=*Natica*) *russa*
153	74983	0.0062	<0.0001	0.0039	0.0084	<0.0001	0.9994	*Clinocardium ciliatum*
154	40011	0.0054	<0.0001	0.0000	0.0123	<0.0001	0.9994	*Tellina lutea*
155	24001	0.0052	<0.0001	0.0000	0.0188	<0.0001	0.9994	*Aurelia* sp.
156	71511	0.0051	<0.0001	0.0023	0.0079	<0.0001	0.9994	*Pododesmus macrochisma*
157	78012	0.0051	<0.0001	0.0011	0.0091	<0.0001	0.9995	*Rhamphostomella costata*
158	56312	0.0050	<0.0001	0.0035	0.0065	<0.0001	0.9995	Actinostolidae
159	66502	0.0048	<0.0001	0.0002	0.0095	<0.0001	0.9995	*Flustra serrulata*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
160	22175	0.0045	<0.0001	0.0009	0.0080	<0.0001	0.9995	Thoracica
161	71759	0.0044	<0.0001	0.0028	0.0060	<0.0001	0.9995	*Triglops scepticus*
162	40511	0.0044	<0.0001	0.0027	0.0060	<0.0001	0.9995	*Solaster* sp.
163	71747	0.0042	<0.0001	0.0012	0.0072	<0.0001	0.9996	*Bathyraja maculata*
164	71524	0.0041	<0.0001	0.0029	0.0054	<0.0001	0.9996	*Benthoctopus leioderma*
165	71890	0.0038	<0.0001	0.0007	0.0070	<0.0001	0.9996	*Sebastes alutus*
166	455	0.0038	<0.0001	0.0011	0.0065	<0.0001	0.9996	*Halipteris willemoesi*
167	43100	0.0038	<0.0001	0.0019	0.0057	<0.0001	0.9996	Ascidian unident.
168	50010	0.0037	<0.0001	0.0000	0.0073	<0.0001	0.9996	*Sebastes polyspinis*
169	81360	0.0036	<0.0001	0.0020	0.0052	<0.0001	0.9996	Nudibranchia unident.
170	71580	0.0034	<0.0001	0.0000	0.0069	<0.0001	0.9996	*Suberites* sp.
171	74562	0.0033	<0.0001	0.0019	0.0047	<0.0001	0.9996	*Sebastes melanostictus*
172	71721	0.0030	<0.0001	0.0022	0.0038	<0.0001	0.9997	*Pteraster* sp.
173	98000	0.0030	<0.0001	0.0016	0.0044	<0.0001	0.9997	*Stomphia* sp.
174	80540	0.0029	<0.0001	0.0010	0.0048	<0.0001	0.9997	*Tritonia* sp.
175	65201	0.0028	<0.0001	0.0014	0.0043	<0.0001	0.9997	*Henricia* sp.
176	66570	0.0028	<0.0001	0.0020	0.0037	<0.0001	0.9997	*Chlamys* sp.
177	30051	0.0027	<0.0001	0.0000	0.0084	<0.0001	0.9997	*Pleurogrammus monopterygius*
178	71030	0.0026	<0.0001	0.0000	0.0064	<0.0001	0.9997	*Urticina* sp.
179	74065	0.0025	<0.0001	0.0003	0.0048	<0.0001	0.9997	*Sebastes variabilis*
180	68510	0.0025	<0.0001	0.0019	0.0032	<0.0001	0.9997	*Leptasterias groenlandica*
181	22210	0.0025	<0.0001	0.0000	0.0142	<0.0001	0.9997	*Crangon* sp.
182	95036	0.0025	<0.0001	0.0007	0.0042	<0.0001	0.9997	*Arctomelon stearnsii*
183	75205	0.0024	<0.0001	0.0016	0.0032	<0.0001	0.9998	Virgularidae
184	50161	0.0024	<0.0001	0.0010	0.0038	<0.0001	0.9998	*Colus* sp.
185	21441	0.0024	<0.0001	0.0017	0.0031	<0.0001	0.9998	*Ophiura* sp.
186	71010	0.0024	<0.0001	0.0000	0.0103	<0.0001	0.9998	*Hemilepidotus hemilepidotus*
187	81315	0.0023	<0.0001	0.0006	0.0040	<0.0001	0.9998	*Eunoe depressa*
188	40500	0.0023	<0.0001	0.0011	0.0035	<0.0001	0.9998	*Eleginus gracilis*
189	66045	0.0019	<0.0001	0.0013	0.0025	<0.0001	0.9998	*Mytilus* sp.
190	23220	0.0019	<0.0001	0.0001	0.0037	<0.0001	0.9998	*Lithodes aequispinus*
191	74980	0.0019	<0.0001	0.0012	0.0026	<0.0001	0.9998	*Tritonia diomedea*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
192	68520	0.0018	<0.0001	0.0011	0.0025	<0.0001	0.9998	*Beringius frielei*
193	72790	0.0018	<0.0001	0.0000	0.0045	<0.0001	0.9998	*Hiatella arctica*
194	1	0.0017	<0.0001	0.0001	0.0033	<0.0001	0.9998	*Pseudarchaster parelii*
195	21355	0.0017	<0.0001	0.0013	0.0021	<0.0001	0.9998	*Triglops forficata*
196	99998	0.0017	<0.0001	0.0000	0.0036	<0.0001	0.9998	*Buccinum oedematum*
197	401	0.0017	<0.0001	0.0005	0.0029	<0.0001	0.9998	*Euspira* (=*Polinices*) *pallidus*
198	20061	0.0016	<0.0001	0.0008	0.0024	<0.0001	0.9998	*Squalus acanthias*
199	80660	0.0016	<0.0001	0.0009	0.0023	<0.0001	0.9999	*Argis* sp.
200	72747	0.0016	<0.0001	0.0008	0.0024	<0.0001	0.9999	*Polymastia* sp.
201	71710	0.0015	<0.0001	0.0010	0.0020	<0.0001	0.9999	*Triglops macellus*
202	22226	0.0013	<0.0001	0.0000	0.0033	<0.0001	0.9999	Serpulidae
203	85210	0.0013	<0.0001	0.0002	0.0023	<0.0001	0.9999	Naticidae eggs
204	22258	0.0013	<0.0001	0.0000	0.0027	<0.0001	0.9999	*Hexagrammos decagrammus*
205	74060	0.0012	<0.0001	0.0005	0.0019	<0.0001	0.9999	*Icelus spatula*
206	474	0.0012	<0.0001	0.0004	0.0020	<0.0001	0.9999	Shipworm unident.
207	21356	0.0011	<0.0001	0.0000	0.0032	<0.0001	0.9999	*Limanda sakhalinensis*
208	40515	0.0011	<0.0001	0.0001	0.0022	<0.0001	0.9999	*Mycale loveni*
209	30152	0.0011	<0.0001	0.0000	0.0039	<0.0001	0.9999	*Chlamys rubida*
210	81068	0.0011	<0.0001	0.0001	0.0021	<0.0001	0.9999	*Hemithiris psittacea*
211	22201	0.0011	<0.0001	0.0000	0.0060	<0.0001	0.9999	*Pandalus* sp.
212	72740	0.0010	<0.0001	0.0005	0.0014	<0.0001	0.9999	*Clinocardium* sp.
213	80110	0.0009	<0.0001	0.0005	0.0013	<0.0001	0.9999	*Halichondria panicea*
214	21333	0.0009	<0.0001	0.0005	0.0013	<0.0001	0.9999	*Cribrinopsis fernaldi*
215	43040	0.0009	<0.0001	0.0006	0.0012	<0.0001	0.9999	*Pentamera lissoplaca*
216	71771	0.0009	<0.0001	0.0002	0.0016	<0.0001	0.9999	*Leptasterias katharinae*
217	74311	0.0009	<0.0001	0.0004	0.0013	<0.0001	0.9999	*Pagurus cornutus*
218	71018	0.0009	<0.0001	0.0002	0.0015	<0.0001	0.9999	Gastropod unident.
219	69085	0.0008	<0.0001	0.0000	0.0016	<0.0001	0.9999	*Bathyraja parmifera*
220	95035	0.0008	<0.0001	0.0000	0.0015	<0.0001	0.9999	*Macoma* sp.
221	10221	0.0008	<0.0001	0.0000	0.0015	<0.0001	0.9999	*Pandalus jordani*
222	69110	0.0008	<0.0001	0.0004	0.0012	<0.0001	0.9999	*Hexagrammos stelleri*
223	69042	0.0007	<0.0001	0.0003	0.0011	<0.0001	0.9999	*Careproctus phasma*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
224	74000	0.0007	<0.0001	0.0003	0.0011	<0.0001	0.9999	*Leptasterias* sp.
225	75240	0.0007	<0.0001	0.0002	0.0012	<0.0001	0.9999	*Buccinum glaciale*
226	42000	0.0007	<0.0001	0.0000	0.0014	<0.0001	0.9999	*Zaprora silenus*
227	71025	0.0007	<0.0001	0.0002	0.0012	<0.0001	0.9999	*Gymnocanthus detrisus*
228	71640	0.0007	<0.0001	0.0000	0.0013	<0.0001	0.9999	*Allocentrotus fragilis*
229	81829	0.0006	<0.0001	0.0004	0.0009	<0.0001	0.9999	fish eggs unident.
230	74080	0.0006	<0.0001	0.0001	0.0011	<0.0001	0.9999	*Aphrocallistes vastus*
231	71787	0.0006	<0.0001	0.0000	0.0012	<0.0001	1.0000	*Cancer oregonensis*
232	71589	0.0006	<0.0001	0.0002	0.0010	<0.0001	1.0000	*Lumpenus maculatus*
233	65100	0.0005	<0.0001	0.0000	0.0013	<0.0001	1.0000	brachiopod unident.
234	23805	0.0005	<0.0001	0.0001	0.0009	<0.0001	1.0000	*Beringius stimpsoni*
235	68040	0.0005	<0.0001	0.0003	0.0007	<0.0001	1.0000	skate egg case unident.
236	20050	0.0005	<0.0001	0.0004	0.0006	<0.0001	1.0000	*Platichthys stellatus*
237	21932	0.0005	<0.0001	0.0000	0.0009	<0.0001	1.0000	*Colus spitzbergensis*
238	79020	0.0005	<0.0001	0.0002	0.0008	<0.0001	1.0000	*Natica* sp.
239	22206	0.0005	<0.0001	0.0002	0.0007	<0.0001	1.0000	*Siliqua alta*
240	83400	0.0005	<0.0001	0.0000	0.0009	<0.0001	1.0000	*Rossia pacifica*
241	81092	0.0005	<0.0001	0.0000	0.0009	<0.0001	1.0000	*Lampetra tridentata*
242	21921	0.0004	<0.0001	0.0000	0.0009	<0.0001	1.0000	*Eucratea loricata*
243	81060	0.0004	<0.0001	0.0000	0.0007	<0.0001	1.0000	*Pyrulofusus* sp.
244	71770	0.0004	<0.0001	0.0000	0.0007	<0.0001	1.0000	*Rhabdocalyptus* sp.
245	21329	0.0004	<0.0001	0.0002	0.0005	<0.0001	1.0000	*Lebbeus groenlandicus*
246	81741	0.0003	<0.0001	0.0000	0.0007	<0.0001	1.0000	*Neoesperiopsis digitata*
247	21341	0.0003	<0.0001	0.0000	0.0007	<0.0001	1.0000	*Euspira* (=*Polinices*) sp.
248	71681	0.0003	<0.0001	0.0000	0.0006	<0.0001	1.0000	*Ceramaster japonicus*
249	75600	0.0003	<0.0001	0.0001	0.0005	<0.0001	1.0000	*Natica clausa*
250	66019	0.0003	<0.0001	0.0000	0.0006	<0.0001	1.0000	*Cyanea capillata*
251	22183	0.0003	<0.0001	0.0002	0.0004	<0.0001	1.0000	Holothuroidea unident.
252	71026	0.0003	<0.0001	0.0000	0.0007	<0.0001	1.0000	*Aptocyclus ventricosus*
253	75267	0.0003	<0.0001	0.0001	0.0004	<0.0001	1.0000	*Pteraster tesselatus*
254	22219	0.0002	<0.0001	0.0000	0.0014	<0.0001	1.0000	worm unident.
255	71760	0.0002	<0.0001	0.0000	0.0005	<0.0001	1.0000	*Ceramaster* sp.

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
256	94500	0.0002	<0.0001	0.0000	0.0007	<0.0001	1.0000	*Aspidophoroides bartoni*
257	72059	0.0002	<0.0001	0.0000	0.0004	<0.0001	1.0000	*Trichotropis bicarinata*
258	98070	0.0002	<0.0001	0.0000	0.0004	<0.0001	1.0000	*Colus hypolispus*
259	20202	0.0002	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Boreotrophon* sp.
260	72758	0.0002	<0.0001	0.0000	0.0004	<0.0001	1.0000	*Pteraster militaris*
261	75286	0.0002	<0.0001	0.0000	0.0004	<0.0001	1.0000	*Tochuina tetraquetra*
262	43045	0.0002	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Ceramaster patagonicus*
263	81310	0.0002	<0.0001	0.0000	0.0004	<0.0001	1.0000	*Elassochirus tenuimanus*
264	21735	0.0001	<0.0001	0.0000	0.0004	<0.0001	1.0000	*Cyclocardia* sp.
265	85000	0.0001	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Crangon communis*
266	436	0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Crossaster borealis*
267	72401	0.0001	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Serripes* sp.
268	74435	0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Benthoctopus* sp.
269	81318	0.0001	<0.0001	0.0000	0.0004	<0.0001	1.0000	*Crystallichthys cyclospilus*
270	71731	0.0001	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Artediellus pacificus*
271	21311	0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	Polychaeta
272	23850	0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Leptychaster anomalus*
273	23808	0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Aequorea* sp.
274	60100	0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Evasterias troschelii*
275	72420	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Henricia* sp.
276	40010	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Serripes laperousii*
277	80729	<0.0001	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Blepsias bilobus*
278	20002	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Ophiopholis aculeata*
279	71250	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Aplidium californicum*
280	71915	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	Lamellaridae unident.
281	71730	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Ammodytes hexapterus*
282	40506	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Cryptonatica* (=*Natica*) *aleutica*
283	83310	<0.0001	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Leptychaster* sp.
284	22190	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	Bivalvia unident.
285	66179	<0.0001	<0.0001	0.0000	0.0003	<0.0001	1.0000	*Yoldia* sp.
286	24188	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Bonneviella* sp.
287	23055	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Crepidula grandis*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
288	70100	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Nemertea
289	62000	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Psolus japonicus*
290	57409	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Urticina lofotensis*
291	23803	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Malacocottus zonurus*
292	80595	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Hyas* sp.
293	71722	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Spirontocaris lamellicornis*
294	75241	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Volutopsius castaneus*
295	94000	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Henricia tumida*
296	59111	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Beringius* sp.
297	66203	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Eualus macilentus*
298	21592	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Solariella obscura*
299	85169	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Amphipoda
300	56310	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Eumicrotremus birulai*
301	74561	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	Sipuncula
302	66050	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Eunoe* sp.
303	23809	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Velutina plicatilis*
304	74106	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	Polychaete tubes
305	66033	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Molpadia intermedia*
306	75264	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Pedicellaster magister*
307	72402	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Argis levior*
308	74655	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Anisodoris nobilis*
309	80000	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Osmerus mordax*
310	20007	<0.0001	<0.0001	0.0000	0.0002	<0.0001	1.0000	*Bathyphelia australis*
311	66580	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Tethya* sp.
312	80230	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Asteronyx loveni*
313	24189	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Archidoris odhneri*
314	74654	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Ophiacantha cataleimmoida*
315	74436	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Pandalus hypsinotus*
316	24186	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Bathyagonus infraspinatus*
317	74414	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Eualus* sp.
318	66530	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Aphroditidae
319	54030	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Bathyagonus alascanus*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
320	71525	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Polyplacophora unident.
321	21388	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	*Trichocottus brashnikovi*
322	75243	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Ulcina olriki*
323	71526	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Bathymasteridae
324	71350	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Podothecus veternus*
325	83360	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Leptychaster arcticus*
326	20005	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Echiura
327	10129	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Atheresthes* sp.
328	22176	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Leptagonus leptorhynchus*
329	21446	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Lumpenus fabricii*
330	66030	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Tachyrhynchus* sp.
331	22177	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Cucumaria* sp.
332	64000	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Eualus barbatus*
333	79210	<0.0001	<0.0001	0.0000	0.0001	<0.0001	1.0000	Isopoda
334	66613	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Octopus* sp.
335	66193	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Gymnelus* sp.
336	66020	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Mysidacea
337	20000	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Triglops metopias*
338	72305	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Gymnelus viridis*
339	24192	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Tachyrhynchus erosus*
340	69328	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Poroclinus rothrocki*
341	21352	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Colus halli*
342	71008	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Eualus suckleyi*
343	85180	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Bathyraja taranetzi*
344	23801	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	Ophiuroid unident.
345	66150	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	fish unident.
346	50001	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Heptacarpus flexus*
347	62025	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Pteraster temnochiton*
348	66170	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Tellina* sp.
349	20035	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Argis ovifer*
350	23807	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Lyopsetta exilis*
351	66200	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Colus herendeenii*

Appendix B Table 1. -- Continued.

Rank	Species code	Mean CPUE (kg/ha)	Standard error	95% Confidence limits		Proportion	Cumulative proportion	Scientific name
352	74420	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Eumesogrammus praecisus*
353	71634	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Nautichthys oculofasciatus*
354	66174	<0.0001	<0.0001	0.0000	<0.0001	<0.0001	1.0000	*Ophiopholis longispina*

Appendix C: List of Species Encountered

Appendix C lists all fish and invertebrate species taken during the AFSC's 2011 eastern Bering Sea bottom trawl survey.

List of Tables

Appendix C Table 1. -- Fish species encountered during the 2011 EBS (eastern Bering Sea) bottom trawl survey.

Family / Subfamily	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Agonidae	*Aspidophoroides bartoni*	Aleutian alligatorfish	43	51	159	81	55.98477	60.33910
	Bathyagonus alascanus	gray starsnout	1	117	117	117	57.33370	57.33370
	Leptagonus decagonus	Atlantic poacher	2	78	112	95	60.99932	61.33322
	Leptagonus frenatus	sawback poacher	58	74	159	106	54.83325	61.98458
	Leptagonus leptorhynchus	longnose poacher	2	71	75	73	56.67992	57.16568
	Occella dodecaedron	Bering poacher	21	23	53	37	57.65360	60.34158
	Percis japonicus	dragon poacher	1	141	141	141	58.67288	58.67288
	Podothecus accipenserinus	sturgeon poacher	258	21	117	63	54.66390	61.33322
Ammodytidae	*Ammodytes hexapterus*	Pacific sand lance	16	22	51	34	56.36347	60.33297
Anarhichadidae	*Anarhichas orientalis*	Bering wolffish	11	23	82	43	54.66390	60.33297
Bathymasteridae	*Bathymaster signatus*	searcher	40	78	159	120	54.83325	59.33572
Clupeidae	*Clupea pallasi*	Pacific herring	77	21	118	53	55.01368	62.00382
Cottidae	*Artediellus pacificus*	hookhorn sculpin	12	66	111	78	56.68312	58.65575
	Dasycottus setiger	spinyhead sculpin	51	77	172	120	54.83325	60.67788
	Enophrys diceraus	antlered sculpin	1	70	70	70	61.65513	61.65513
	Gymnocanthus detrisus	purplegray sculpin	3	72	110	85	56.68312	60.32910
	Gymnocanthus galeatus	armorhead sculpin	12	50	122	79	54.66390	60.33193
	Gymnocanthus pistilliger	threaded sculpin	38	21	51	33	56.74778	59.67518
	Hemilepidotus jordani	yellow Irish lord	68	28	137	88	55.01368	60.32345
	Hemilepidotus papilio	butterfly sculpin	75	39	121	76	56.67365	62.00717
	Hemitripterus bolini	bigmouth sculpin	104	51	172	111	55.31415	61.01988
	Icelinus borealis	northern sculpin	2	69	70	70	58.00772	58.34717
	Icelus sp.		2	56	100	78	57.65833	60.31453
	Icelus spatula	spatulate sculpin	49	57	107	76	56.34507	61.98458

Appendix C Table 1. -- Continued.

Family / Subfamily	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Cottidae (continued)	*Icelus spiniger*	thorny sculpin	87	67	172	114	54.99685	61.35393
	Leptocottus armatus	Pacific staghorn sculpin	1	28	28	28	55.12922	55.12922
	Malacocottus zonurus	darkfin sculpin	3	134	141	137	55.98717	60.01442
	Myoxocephalus jaok	plain sculpin	144	21	105	48	55.12922	61.66942
	Myoxocephalus polyacanthocephalus	great sculpin	180	23	160	76	54.66390	61.66942
	Myoxocephalus verrucosus	warty sculpin	68	45	114	71	56.67992	61.98458
	Triglops forficata	scissortail sculpin	1	154	154	154	54.83325	54.83325
	Triglops macellus	roughspine sculpin	3	95	135	114	54.97993	55.68208
	Triglops pingeli	ribbed sculpin	40	21	77	49	55.01368	60.34553
	Triglops scepticus	spectacled sculpin	9	135	159	150	54.83325	58.72077
Cyclopteridae	*Aptocyclus ventricosus*	smooth lumpsucker	3	98	134	112	55.66293	57.66838
	Eumicrotremus andriashevi	pimpled lumpsucker	1	63	63	63	60.33838	60.33838
	Eumicrotremus birulai	round lumpsucker	5	74	113	97	56.66017	58.34298
	Eumicrotremus phrynoides	toad lumpsucker	2	77	95	86	56.67228	58.99095
	Eumicrotremus sp.	spiny lumpsuckers	2	97	110	104	60.00668	60.32910
Gadidae	*Boreogadus saida*	Arctic cod	48	33	97	73	57.32132	62.00717
	Eleginus gracilis	saffron cod	3	22	33	28	59.02007	60.33297
	Gadus macrocephalus	Pacific cod	397	21	172	79	54.66390	62.00382
	Theragra chalcogramma	walleye pollock	383	21	172	80	54.66390	62.00717
Hexagrammidae	*Hexagrammos stelleri*	whitespotted greenling	6	21	35	26	56.74778	60.33297
	Pleurogrammus monopterygius	Atka mackerel	1	117	117	117	59.00053	59.00053
Liparidae	*Careproctus phasma*	monster snailfish	21	70	137	97	58.99095	62.00717
	Careproctus rastrinus	salmon snailfish	49	66	146	107	58.68420	62.00717
	Careproctus sp.		2	77	107	92	58.99095	59.98543
	Careproctus sp. cf. *rastrinus* (Orr et al.)		13	60	129	93	59.84388	61.01002
	Crystallichthys cyclospilus	blotched snailfish	3	111	159	142	58.65575	58.72077
	Liparis bristolense	Bristol snailfish	1	45	45	45	58.34583	58.34583
	Liparis gibbus	variegated snailfish	51	38	122	68	56.69258	62.00717
	Liparis ochotensis	Okhotsk snailfish	1	87	87	87	61.33727	61.33727

Appendix C Table 1. -- Continued.

Family / Subfamily	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Liparidae (continued)	*Liparis* sp.		1	70	70	70	61.65513	61.65513
	Liparis tunicatus	kelp snailfish	2	40	43	42	57.98797	58.67485
Osmeridae	*Mallotus villosus*	capelin	143	21	105	51	55.12922	62.00717
	Osmerus mordax	rainbow smelt	1	22	22	22	59.31163	59.31163
	Thaleichthys pacificus	eulachon	38	26	155	101	54.99685	57.65380
Pleuronectidae	*Atheresthes evermanni*	Kamchatka flounder	197	51	172	104	54.66390	62.00382
	Atheresthes stomias	arrowtooth flounder	233	28	172	96	54.66390	61.33727
	Glyptocephalus zachirus	rex sole	73	36	159	113	54.66390	59.66108
	Hippoglossoides elassodon	flathead sole	300	23	172	89	54.66390	62.00717
	Hippoglossoides robustus	Bering flounder	105	43	134	79	56.99457	62.00717
	Hippoglossus stenolepis	Pacific halibut	309	21	172	74	54.66390	62.00717
	Isopsetta isolepis	butter sole	12	23	82	47	54.66390	57.10317
	Lepidopsetta bilineata	southern rock sole	4	53	82	69	54.66390	55.67108
	Lepidopsetta polyxystra	northern rock sole	339	21	172	71	54.66390	61.98755
	Limanda aspera	yellowfin sole	257	21	101	58	54.66390	61.98755
	Limanda proboscidea	longhead dab	37	21	51	32	55.44062	60.33297
	Limanda sakhalinensis	Sakhalin sole	23	50	87	67	57.99818	62.00717
	Microstomus pacificus	Dover sole	2	111	129	120	54.97993	56.33448
	Platichthys stellatus	starry flounder	69	21	82	41	54.66390	60.34158
	Platichthys stellatus X Pleuronectes quadrituberculatus	Hybrid starry flounder X Alaska plaice	1	67	67	67	57.68810	57.68810
	Pleuronectes quadrituberculatus	Alaska plaice	255	21	125	62	55.12922	62.00717
	Reinhardtius hippoglossoides	Greenland turbot	156	51	172	93	56.32658	62.00717
Rajidae	*Bathyraja aleutica*	Aleutian skate	6	120	172	148	56.33448	59.68087
	Bathyraja interrupta	Bering skate	63	70	160	126	54.66390	61.01988
	Bathyraja interrupta egg case		5	120	159	143	54.83325	58.34560
	Bathyraja parmifera	Alaska skate	364	21	172	79	54.66390	62.00717
	Bathyraja parmifera egg case	Alaska skate egg case	21	54	155	97	54.83325	60.99860
	Bathyraja taranetzi	mud skate	2	106	137	122	58.99615	59.66385

Appendix C Table 1. -- Continued.

Family / Subfamily	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Rajidae (Continued)	*Raja binoculata*	big skate	7	23	95	49	54.66390	55.81243
		skate egg case unident.	6	116	148	126	56.66060	59.00053
Salmonidae	*Oncorhynchus keta*	chum salmon	10	31	141	99	55.01098	58.67650
	Oncorhynchus tshawytscha	chinook salmon	1	106	106	106	56.02132	56.02132
Scorpaenidae	*Sebastes aleutianus*	rougheye rockfish	2	128	142	135	55.02057	56.35408
	Sebastes alutus	Pacific ocean perch	10	106	159	134	54.83325	59.33572
	Sebastes polyspinis	northern rockfish	5	118	154	133	54.83325	56.68383
	Sebastes variabilis	dusky rockfish	1	154	154	154	54.83325	54.83325
Somniosidae	*Somniosus pacificus*	Pacific sleeper shark	1	78	78	78	57.84250	57.84250
Stichaeidae	*Acantholumpenus mackayi*	pighead prickleback	1	33	33	33	60.33297	60.33297
	Eumesogrammus praecisus	fourline snakeblenny	1	80	80	80	59.81472	59.81472
	Lumpenus fabricii	slender eelblenny	2	28	45	37	58.34583	59.02007
	Lumpenus maculatus	daubed shanny	39	26	146	102	54.97993	61.98458
	Lumpenus sagitta	snake prickleback	5	26	36	29	55.12922	59.01570
	Lumpenus sp.		1	70	70	70	61.65513	61.65513
	Poroclinus rothrocki	whitebarred prickleback	3	109	117	112	55.31415	55.67905
Trichodontidae	*Trichodon trichodon*	Pacific sandfish	3	21	38	28	56.69258	59.34593
Zaproridae	*Zaprora silenus*	prowfish	3	92	159	129	56.35610	60.98208
Zoarcidae	*Gymnelus viridis*	fish doctor	1	84	84	84	56.65923	56.65923
	Lycodes brevipes	shortfin eelpout	102	51	172	111	55.02057	61.67417
	Lycodes mucosus	saddled eelpout	1	75	75	75	59.31335	59.31335
	Lycodes palearis	wattled eelpout	141	45	160	90	55.68208	62.00717
	Lycodes polaris	Canadian eelpout	1	67	67	67	59.67753	59.67753
	Lycodes raridens	marbled eelpout	42	59	116	76	57.66525	62.00717
	Lycodes turneri	polar eelpout	1	63	63	63	60.66677	60.66677
other		fish eggs unident.	2	40	74	56.995	59.33330	59.33528

Appendix C Table 2. -- Invertebrate species encountered during the 2011 eastern and northern Bering Sea bottom trawl survey.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Annelida	*Aphrodita* sp.		6	95	136	113	55.66385	59.33345
	Aphrodita negligens		15	103	172	135	55.65877	60.00621
	Cheilonereis cyclurus		1	47	47	47	57.99025	57.99025
	Eunoe sp.		2	70	136	103	56.66060	57.33457
	Eunoe nodosa	giant scale worm	82	42	159	90	56.31868	62.00717
	Eunoe depressa	depressed scale worm	61	36	159	87	55.02057	60.34158
		worm unident.	1	95	95	95	56.67228	56.67228
		tube worm unident.	6	117	149	130	55.67173	57.33370
	Serpulidae	serpulid worm	1	138	138	138	55.33447	55.33447
	Polynoidae	scale worm unident.	1	87	87	87	59.33277	59.33277
	Sabellidae	sabellid unident.	1	33	33	33	65.00470	65.00470
Arthropoda	Amphipoda	amphipod unident.	9	39	80	62	57.16568	60.34083
	Argis dentata	Arctic argid	4	76	101	86	57.15838	58.65578
	Argis levior	Nelson's argid	1	57	57	57	60.15425	60.15425
	Argis sp.		71	27	149	88	55.01098	62.00717
	Balanus evermanni	giant barnacle	13	40	159	57	56.68312	60.33838
	Balanus sp.		11	23	74	44	55.07850	58.98475
	Cancer oregonensis	Oregon rock crab	15	28	103	82	55.07850	56.65852
	Chionoecetes bairdi	Tanner crab	252	25	172	92	54.66390	60.67078
	Chionoecetes hybrid	hybrid tanner crab	168	42	172	94	54.99685	61.33322
	Chionoecetes opilio	snow crab	278	43	172	93	54.83325	62.00717
	Chorilia longipes	longhorned decorator crab	14	34	86	64	55.68005	58.31845
	Crangon dalli	ridged crangon	1	57	57	57	57.32657	57.32657
	Crangon sp.		141	21	159	82	55.01098	62.00382
	Cryptolithodes typicus	butterfly crab	1	63	63	63	55.01368	55.01368
	Elassochirus cavimanus	purple hermit	24	65	172	124	54.83325	59.68087
	Elassochirus tenuimanus	widehand hermit crab	6	28	78	56	55.01368	56.66497
	Erimacrus isenbeckii	horsehair crab	94	26	101	60	55.33327	60.9986

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Arthropoda (Continued)	*Eualus fabricii*	Arctic eualid	1	57	57	57	60.15425	60.15425
	Eualus macilentus	Greenland shrimp	6	63	97	87	61.33263	62.00382
	Eualus sp.		2	33	105	69	60.33297	61.66942
	Eualus suckleyi	shortscale eualid	1	63	63	63	60.33838	60.33838
	Hippolytidae	hippolytid shrimp unident.	1	67	67	67	59.99683	59.99683
	Hyas coarctatus	circumboreal toad crab	204	29	146	71	56.00712	62.00717
	Hyas lyratus	Pacific lyre crab	145	28	159	87	54.83325	60.66500
	Isopoda	isopod unident.	6	65	134	92	55.66293	57.66997
	Labidochirus splendescens	splendid hermit	151	26	159	72	54.83325	61.98458
	Lebbeus groenlandicus	spiny lebbeid	2	63	88	76	60.13817	60.33838
	Lebbeus sp.		1	80	80	80	59.81472	59.81472
	Mysida	opossum shrimps	2	32	33	33	60.33038	60.33297
	Oregonia gracilis	graceful decorator crab	35	23	154	62	54.66390	60.33297
	Pagurus aleuticus	Aleutian hermit	131	28	159	105	54.83325	60.33193
	Pagurus brandti	sponge hermit	5	55	149	83	55.97748	60.3307
	Pagurus capillatus	hairy hermit crab	94	26	154	78	55.07850	60.34158
	Pagurus confragosus	knobbyhand hermit	97	65	172	107	54.83325	59.68087
	Pagurus cornutus		9	72	155	111	54.99685	57.67315
	Pagurus kennerlyi	bluespine hermit	1	63	63	63	55.01368	55.01368
	Pagurus ochotensis	Alaskan hermit	102	21	95	44	54.66390	60.34158
	Pagurus rathbuni	longfinger hermit	113	45	172	96	56.34507	62.00717
	Pagurus sp.		16	63	120	106	54.97993	59.3264
	Pagurus trigonocheirus	fuzzy hermit crab	248	27	172	80	55.07850	61.98755
	Pandalidae	pandalid shrimp unident.	2	70	74	72	56.99457	57.31877
	Pandalus eous (=*borealis*)	Alaskan pink (=northern) shrimp	122	61	172	114	54.83325	61.35393
	Pandalus goniurus	humpy shrimp	72	32	137	78	55.98950	62.00717
	Pandalus hypsinotus	coonstripe shrimp	1	33	33	33	60.33297	60.33297
	Pandalus jordani	ocean shrimp	2	76	120	98	55.35460	57.15838
	Pandalus sp.		1	76	76	76	57.15838	57.15838

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Arthropoda (Continued)	*Pandalus tridens*	yellowleg pandalid	2	120	148	134	57.32765	57.67438
	Paralithodes camtschaticus	red king crab	117	25	96	53	55.02358	60.34275
	Paralithodes platypus	blue king crab	36	45	120	85	56.83158	61.98458
	Rocinella angusta		1	120	120	120	55.35460	55.35460
	Telmessus cheiragonus	helmet crab	21	21	44	32	56.98247	59.67518
	Thoracica	barnacle unident.	4	129	154	147	54.83325	56.33448
Cnidaria	Actiniaria	sea anemone unident.	86	33	172	98	54.97993	61.98755
	Actinostolidae		8	78	148	119	57.67438	62.00382
	Aequorea sp.		1	117	117	117	57.33370	57.33370
	Aurelia sp.		26	27	86	47	56.32658	59.67518
	Bathyphelia australis	hot dog sea anemone	1	136	136	136	56.66060	56.66060
	Chrysaora fuscescens	sea nettle	1	75	75	75	60.99472	60.99472
	Chrysaora melanaster		270	23	159	79	54.66390	62.00717
	Cribrinopsis fernaldi	chevron-tentacled anemone	19	65	155	98	54.99685	60.33193
	Gersemia rubiformis		27	46	121	74	57.50143	62.00717
	Gersemia sp.	sea raspberry	67	26	85	53	56.32783	60.98898
	Gorgonacea	gorgonian coral unident.	1	86	86	86	56.34507	56.34507
	Halipteris willemoesi		7	95	155	119	54.99685	57.99795
	Hydrozoa		2	34	74	54	56.98247	57.34577
	Liponema brevicornis	tentacle-shedding anemone	56	23	172	111	54.83325	59.68087
	Metridium farcimen (=*Metridium gigantei*	gigantic anemone	73	23	148	62	54.66390	60.34158
	Metridium sp.		18	46	154	96	54.83325	59.99110
	Pennatulacea	sea pen or sea whip unident.	1	122	122	122	56.98447	56.98447
	Scyphozoa	jellyfish unident.	24	21	146	88	56.01468	61.33268
	Stomphia coccinea	swimming anemone	40	64	160	110	55.67173	62.00717
	Stomphia sp.		21	57	172	104	55.68208	60.15425
	Urticina crassicornis	mottled anemone	18	28	90	60	55.01368	58.29613
	Urticina sp.		11	57	114	86	57.16568	60.15425
	Virgulariidae	sea whip unident.	8	96	141	122	54.97993	60.01442

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Cnidaria (Continued)		hydroid unident.	25	32	100	51	55.01368	60.34553
Echinodermata	*Asterias amurensis*	purple-orange sea star	259	21	154	64	54.66390	60.9986
	Asterias sp.		1	74	74	74	57.33775	57.33775
	Asteroidea	sea star unident.	1	63	63	63	55.01368	55.01368
	Bathyplotes sp.		1	86	86	86	56.33873	56.33873
	Ceramaster japonicus	red bat star	1	154	154	154	54.83325	54.83325
	Crossaster borealis	grooved sea star	1	75	75	75	60.00093	60.00093
	Crossaster papposus	rose sea star	26	45	159	83	54.83325	60.99472
	Ctenodiscus crispatus	common mud star	71	74	172	119	54.83325	61.67417
	Cucumaria fallax	sea football	26	28	95	69	55.07850	57.98975
	Diplopteraster multipes	pincushion sea star	6	136	159	147	56.66060	58.72077
	Dipsacaster borealis	northern sea star	4	120	159	139	56.66060	58.3456
	Echinarachnius parma	parma sand dollar	26	21	129	70	54.66390	61.01002
	Evasterias echinosoma	giant sea star	23	30	159	63	55.81243	58.3456
	Gorgonocephalus eucnemis	basketstar	237	31	172	84	54.97993	62.00717
	Henricia sp.		38	45	159	104	54.83325	60.66113
	Holothuroidea	sea cucumber unident.	3	59	133	91	56.01628	58.34978
	Leptasterias arctica		87	31	108	69	56.63770	62.00717
	Leptasterias groenlandica		22	67	148	97	57.00997	61.65513
	Leptasterias polaris		139	44	172	94	56.33873	62.00717
	Leptasterias sp.		2	64	66	65	57.36428	60.9986
	Leptychaster anomalus		15	92	172	129	55.33327	59.68087
	Lethasterias nanimensis	blackspined sea star	71	50	156	83	55.33452	60.34553
	Ophiopholis aculeata	ubiquitous brittle star	4	71	137	117	56.83288	59.0122
	Ophiopholis sp.		1	71	71	71	57.49970	57.4997
	Ophiura sarsi	notched brittlestar	55	63	172	86	56.32270	62.00717
	Ophiura sp.		1	154	154	154	54.83325	54.83325
	Ophiuroidea	brittlestar unident.	40	59	98	76	56.32658	60.98208
	Pedicellaster magister	majestic sea star	1	159	159	159	58.34560	58.3456

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Echinodermata (Continued)	*Pentamera lissoplaca*	crescent sea cucumber	1	69	69	69	56.98388	56.98388
	Pseudarchaster parelii	scarlet sea star	14	111	159	133	54.83325	59.00053
	Psolus fabricii	brownscaled sea cucumber	3	59	63	60	60.16853	60.34553
	Psolus sp.		2	50	75	63	57.17317	60.00093
	Pteraster obscurus	obscure sea star	70	62	156	101	55.68208	62.00717
	Pteraster sp.		2	135	146	141	56.35610	60.3391
	Pteraster sp. D (Clark)		1	135	135	135	56.35610	56.3561
	Pteraster tesselatus		4	63	154	111	54.83325	57.67438
	Solaster sp.		1	156	156	156	58.67853	58.67853
	Solaster sp. C (Clark)	beautiful sun star	1	63	63	63	60.33838	60.33838
	Strongylocentrotus droebachiensis	green sea urchin	31	41	154	93	54.83325	60.33838
	Strongylocentrotus sp.		86	26	159	98	55.01368	61.98458
Ectoprocta	*Alcyonidium pedunculatum*		5	45	66	59	60.15425	61.00075
	Bryozoa	bryozoan unident.	59	23	149	65	55.01368	62.00382
	Flustra serrulata	leafy bryozoan	46	39	86	57	56.34507	60.34083
	Flustrellidra corniculata		1	50	50	50	57.17317	57.17317
	Rhamphostomella costata	ribbed bryozoan	18	25	95	65	55.01368	58.6565
Mollusca	*Aforia circinata*	keeled aforia	53	86	172	123	54.83325	61.35393
	Aforia sp.		1	110	110	110	59.32415	59.32415
	Arctomelon stearnsii	Alaska volute	2	154	159	157	54.83325	58.3456
	Astarte sp.		1	26	26	26	57.14832	57.14832
	Benthoctopus leioderma	smoothskin octopus	12	63	154	104	56.31868	62.00717
	Beringius beringii		49	44	141	102	55.01098	61.35393
	Beringius frielei		4	110	135	117	56.35610	60.99932
	Beringius kennicottii		1	82	82	82	58.65578	58.65578
	Beringius rotundus	rotund whelk	2	121	124	123	56.01468	56.32633
	Beringius sp.		20	36	172	110	54.83325	60.34158
	Beringius stimpsoni		5	55	113	75	56.66017	60.34553
	Berryteuthis magister	magistrate armhook squid	1	112	112	112	60.99932	60.99932

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (Continued)	Bivalvia	bivalve unident.	4	25	81	60	56.74778	61.98458
	Boreotrophon alaskanus	Alaskan trophon	1	86	86	86	56.32658	56.32658
	Boreotrophon beringi	Bering trophon	1	68	68	68	57.50143	57.50143
	Boreotrophon sp.		2	71	75	73	56.67992	57.16568
	Buccinum angulosum	angular whelk	97	54	146	89	56.34507	62.00382
	Buccinum glaciale	glacial whelk	1	63	63	63	60.33838	60.33838
	Buccinum oedematum	swollen whelk	8	67	134	98	55.31415	61.33727
	Buccinum plectrum	sinuous whelk	62	37	159	92	55.66385	60.99932
	Buccinum polare	polar whelk	90	40	141	75	56.67992	62.00717
	Buccinum scalariforme	ladder whelk	99	48	172	99	54.83325	62.00717
	Buccinum sp.		8	44	141	82	56.98960	61.33727
	Chlamys rubida	reddish scallop	1	135	135	135	56.35610	56.3561
	Chlamys sp.		5	59	84	69	55.01368	60.34553
	Clinocardium ciliatum	hairy cockle	22	66	137	84	54.66390	62.00382
	Clinocardium sp.		13	61	137	83	57.32003	61.67417
	Clinopegma magnum	helmet whelk	53	65	141	94	56.34507	62.00382
	Colus aphelus	oblique whelk	4	95	120	109	55.35460	56.68483
	Colus halli	shrew whelk	2	92	146	119	60.67788	62.00382
	Colus herendeenii	thin-ribbed whelk	17	66	172	116	56.32658	59.68087
	Colus hypolispus		1	67	67	67	59.67753	59.67753
	Colus sp.		18	22	154	88	54.97993	61.33322
	Cranopsis major	great puncturella	1	135	135	135	56.35610	56.3561
	Crepidula grandis	great slippersnail	5	44	72	61	56.68312	58.34548
	Crepidula sp.	slipper shell	2	71	74	73	57.16568	57.34577
	Cryptonatica (=*Natica*) *russa*	rusty moonsnail	14	63	116	86	60.66500	62.00717
	Cryptonatica affinis	Arctic moonsnail	1	51	51	51	57.36083	57.36083
	Cryptonatica sp.		24	60	118	82	57.66838	61.01002
	Cyclocardia crassidens	thick carditid	1	75	75	75	60.00093	60.00093
	Cyclocardia crebricostata	many-rib cyclocardia	3	23	47	32	58.31845	59.60897

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (Continued)	*Dendronotus* sp.		14	57	137	102	58.99095	60.99932
	Dorididae	dorid nudibranch unident.	4	57	94	73	59.66222	60.15425
	Euspira pallida	pale moonsnail	18	66	106	81	56.67228	62.00717
	Fusitriton oregonensis	Oregon triton	99	52	172	110	54.66390	61.01988
	gastropod eggs	snail eggs	186	23	172	82	54.97993	62.00717
	Hiatella arctica	Arctic hiatella	13	28	95	64	55.07850	58.6842
	Macoma nasuta	bent-nose macoma	2	47	70	59	58.67738	61.65513
	Macoma sp.		3	36	74	57	57.32132	60.34158
	Macoma yoldiaformis		1	103	103	103	56.34420	56.3442
	Mactromeris polynyma	Arctic surfclam	38	21	77	51	55.67108	59.34593
	Modiolus modiolus	northern horsemussel	5	63	89	73	56.01857	60.99472
	Musculus discors	discordant mussel	11	40	73	61	57.31877	59.67753
	Musculus niger	black mussel	1	73	73	73	62.00717	62.00717
	Mytilus edulis	blue mussel	3	43	83	58	57.32527	57.98797
	Mytilus sp.		4	23	37	31	57.99923	59.60897
	Natica sp.		1	141	141	141	56.98960	56.9896
	Naticidae eggs	moonsnail eggs unid.	22	21	89	57	56.01857	61.01002
	Neptunea borealis		62	39	141	74	56.97280	62.00717
	Neptunea heros		123	26	100	62	56.01022	62.00717
	Neptunea lyrata	lyre whelk	135	51	172	102	54.83325	61.66942
	Neptunea pribiloffensis	Pribilof whelk	125	65	172	114	54.97993	61.35393
	Neptunea sp.		9	36	67	50	57.65380	60.34158
	Neptunea sp. D (Clark & McLean)		1	52	52	52	57.68125	57.68125
	Neptunea ventricosa	fat whelk	141	26	113	63	54.66390	60.66113
	Nuculana pernula	northern nutclam	4	74	97	88	57.32527	61.67417
	Nuculana sp.		1	95	95	95	56.68483	56.68483
	Nudibranchia	nudibranch unident.	18	59	159	97	56.35610	62.00382
	Octopodidae	octopus unident.	1	121	121	121	61.01988	61.01988
	Octopus (=*Enteroctopus*) *dofleini*	giant octopus	30	72	159	121	55.31415	61.00323

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (Continued)	*Onchidiopsis* sp. B (Clark & McLean)		3	62	74	70	58.34298	58.6842
	Patinopecten caurinus	weathervane scallop	19	91	148	112	55.01098	57.67438
	Plicifusus kroyeri		65	59	159	103	55.97748	61.35393
	Plicifusus sp.		4	77	108	99	57.01173	60.665
	Pododesmus macrochisma	Alaska falsejingle	4	27	88	60	55.01368	60.33838
	Polyplacophora	chiton unident.	3	63	70	67	57.33457	60.33838
	Pyrulofusus deformis	warped whelk	40	44	159	90	54.83325	60.34553
	Pyrulofusus melonis		20	95	154	127	55.01098	60.0162
	Pyrulofusus sp.		4	101	136	125	55.67173	60.02193
	Rossia pacifica	eastern Pacific bobtail	5	126	159	143	56.67518	59.33572
	Serripes groenlandicus	Greenland cockle	19	40	137	96	55.66293	61.35393
	Serripes laperousii	broad cockle	1	49	49	49	57.34195	57.34195
	Serripes notabilis	oblique smoothcockle	20	51	149	102	55.97748	61.67633
	Serripes sp.		17	23	137	55	57.01383	60.67078
	Siliqua alta	Alaska razor	13	21	47	31	58.01307	59.67518
	Siliqua sp.		1	26	26	26	60.02205	60.02205
	Tachyrhynchus erosus	eroded turretsnail	1	28	28	28	59.64605	59.64605
	Tellina lutea	Alaska great-tellin	25	22	61	40	56.36347	59.67365
	Trichotropis bicarinata	two-keel hairysnail	1	88	88	88	60.13817	60.13817
	Tritonia diomedea	rosy tritonia	12	43	106	72	57.64262	62.00717
	Tritonia festiva	festive Tritonia	8	57	129	91	59.84388	61.01002
	Tritonia sp.		6	60	87	73	56.65923	61.33727
	Volutopsius castaneus	volute whelk	1	86	86	86	56.34507	56.34507
	Volutopsius filosus	threaded whelk	8	68	149	108	55.97748	57.50143
	Volutopsius fragilis	fragile whelk	29	35	135	73	56.00712	60.00668
	Volutopsius middendorffii	tulip whelk	9	71	149	121	56.67518	60.01442
	Volutopsius sp.		25	45	156	115	56.66060	61.35393
	Volutopsius stefanssoni	shouldered whelk	18	62	141	88	56.34507	60.99893
	Yoldia hyperborea	northern yoldia	1	96	96	96	61.67417	61.67417

Appendix C Table 2. -- Continued.

Grouping	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (Continued)	*Yoldia* sp.		3	71	83	76	56.83288	57.4924
		nudibranch eggs	1	57	57	57	60.15425	60.15425
Other		empty bivalve shells	240	21	159	77	54.97993	62.00717
		empty gastropod shells	307	21	172	84	54.66390	62.00717
		unsorted catch and debris	28	21	137	61	54.69668	60.34553
		unsorted shab	2	71	116	94	59.01590	59.99135
Porifera	Porifera	sponge unident.	112	23	172	81	54.83325	60.34553
	Suberites sp.		2	52	83	68	55.34425	55.68005
Sipuncula		peanut worm unid.	3	61	138	101	55.33447	61.66942
Tunicata	*Aplidium* sp. A (Clark 2006)	sea glob	69	26	156	59	56.01022	59.99683
	Ascidiacea	tunicate unident.	14	34	126	61	56.65852	60.33838
	Boltenia ovifera		114	23	88	56	55.01368	60.34553
	Halocynthia aurantium	sea peach	30	35	75	65	55.01368	60.34275
	Halocynthia sp.	sea peach unident.	12	60	72	68	57.49970	60.98898
	Styela rustica	sea potato	84	31	87	60	56.67992	60.98898
	Thaliacea	salp unident.	1	61	61	61	57.32028	57.32028
		compound ascidian unident.	28	26	137	67	56.66855	61.67633
Other	Polychaete tubes	polychete	13	28	135	82	55.07850	59.6777

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

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

List of Tables

Population estimates by sex and size group from the 2011 eastern Bering Sea bottom trawl survey.

Appendix D Table 1. -- Population estimates by sex and size for **walleye pollock** (*Theragra chalcogramma*) from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
70	0	0	80,403	80,403	0.0000	0.0000
80	0	0	542,869	542,869	0.0001	0.0001
90	0	0	8,633,966	8,633,966	0.0018	0.0019
100	0	0	27,763,657	27,763,657	0.0057	0.0076
110	0	0	151,716,429	151,716,429	0.0313	0.0390
120	0	0	215,000,114	215,000,114	0.0444	0.0833
130	0	0	207,838,967	207,838,967	0.0429	0.1262
140	0	0	142,789,610	142,789,610	0.0295	0.1557
150	0	0	114,802,525	114,802,525	0.0237	0.1794
160	8,151,661	6,645,633	53,720,192	68,517,486	0.0141	0.1936
170	7,857,492	7,425,289	19,574,360	34,857,140	0.0072	0.2007
180	2,935,330	4,580,607	2,610,502	10,126,439	0.0021	0.2028
190	998,591	1,792,121	2,398,431	5,189,142	0.0011	0.2039
200	1,983,206	2,369,411	2,007,200	6,359,817	0.0013	0.2052
210	6,448,611	6,640,281	1,456,958	14,545,850	0.0030	0.2082
220	3,381,461	5,041,757	342,621	8,765,839	0.0018	0.2100
230	6,083,573	10,417,877	1,016,038	17,517,489	0.0036	0.2137
240	4,414,097	5,028,585	159,885	9,602,567	0.0020	0.2156
250	6,931,793	7,685,592	230,007	14,847,392	0.0031	0.2187
260	3,791,393	4,257,749	66,987	8,116,130	0.0017	0.2204
270	5,923,077	7,492,034	0	13,415,111	0.0028	0.2231
280	5,243,090	4,259,258	0	9,502,349	0.0020	0.2251
290	7,788,536	7,494,988	0	15,283,524	0.0032	0.2283
300	5,902,203	7,837,942	0	13,740,145	0.0028	0.2311
310	11,020,445	10,265,979	0	21,286,424	0.0044	0.2355
320	9,380,509	8,242,638	0	17,623,147	0.0036	0.2391
330	15,699,231	12,577,848	0	28,277,079	0.0058	0.2450
340	8,174,554	10,847,130	0	19,021,684	0.0039	0.2489
350	10,373,214	9,176,853	0	19,550,067	0.0040	0.2529
360	10,208,932	13,039,110	230,166	23,478,207	0.0048	0.2578
370	14,093,935	19,232,441	0	33,326,376	0.0069	0.2647
380	16,180,981	14,560,168	0	30,741,149	0.0063	0.2710
390	39,988,198	26,762,538	0	66,750,736	0.0138	0.2848
400	52,000,141	34,774,548	57,898	86,832,586	0.0179	0.3027
410	95,301,359	73,168,934	0	168,470,292	0.0348	0.3375
420	106,458,798	94,321,166	0	200,779,965	0.0414	0.3789
430	161,274,200	153,447,508	173,694	314,895,401	0.0650	0.4439
440	153,681,071	139,994,800	57,898	293,733,770	0.0606	0.5046
450	161,851,286	188,138,967	144,745	350,134,999	0.0723	0.5768
460	113,835,636	125,403,694	57,898	239,297,228	0.0494	0.6262
470	107,086,896	114,737,215	86,847	221,910,958	0.0458	0.6720
480	75,365,922	92,370,900	57,898	167,794,720	0.0346	0.7067
490	72,702,739	82,320,411	144,745	155,167,895	0.0320	0.7387
500	61,206,596	62,290,774	0	123,497,369	0.0255	0.7642
510	50,714,708	48,698,450	0	99,413,158	0.0205	0.7847
520	57,623,423	49,389,088	0	107,012,511	0.0221	0.8068

Appendix D Table 1. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
520	57,623,423	49,389,088	0	107,012,511	0.0221	0.8068
530	52,369,279	43,487,861	86,847	95,943,987	0.0198	0.8266
540	56,593,218	47,817,491	86,847	104,497,556	0.0216	0.8482
550	50,297,579	43,062,101	57,898	93,417,577	0.0193	0.8675
560	50,665,405	57,764,348	0	108,429,754	0.0224	0.8898
570	38,167,988	38,949,319	86,847	77,204,154	0.0159	0.9058
580	37,845,093	49,257,013	0	87,102,106	0.0180	0.9237
590	23,032,150	36,041,237	0	59,073,386	0.0122	0.9359
600	27,753,736	31,454,730	0	59,208,467	0.0122	0.9482
610	17,245,239	25,713,324	0	42,958,562	0.0089	0.9570
620	15,769,165	29,222,254	0	44,991,419	0.0093	0.9663
630	9,230,987	20,762,131	57,898	30,051,016	0.0062	0.9725
640	12,139,846	18,756,309	0	30,896,155	0.0064	0.9789
650	4,890,339	12,511,038	0	17,401,378	0.0036	0.9825
660	6,639,343	15,491,627	0	22,130,970	0.0046	0.9871
670	3,888,140	8,023,328	0	11,911,468	0.0025	0.9895
680	3,143,453	7,092,507	0	10,235,960	0.0021	0.9916
690	2,242,339	5,280,621	0	7,522,960	0.0016	0.9932
700	1,548,795	6,733,097	0	8,281,891	0.0017	0.9949
710	1,576,089	2,831,589	0	4,407,678	0.0009	0.9958
720	1,046,564	3,966,842	0	5,013,406	0.0010	0.9968
730	361,275	2,103,341	0	2,464,616	0.0005	0.9973
740	532,028	2,694,727	0	3,226,754	0.0007	0.9980
750	458,823	1,888,524	0	2,347,348	0.0005	0.9985
760	273,720	1,517,364	0	1,791,084	0.0004	0.9989
770	254,497	1,068,390	0	1,322,887	0.0003	0.9991
780	219,052	1,070,314	0	1,289,367	0.0003	0.9994
790	124,436	648,965	0	773,401	0.0002	0.9996
800	61,264	644,558	0	705,823	0.0001	0.9997
810	150,063	207,785	0	357,848	0.0001	0.9998
820	18,899	363,485	0	382,384	0.0001	0.9999
830	0	154,525	0	154,525	0.0000	0.9999
840	0	29,272	0	88,373	0.0000	0.9999
850	0	88,373	0	0	0.0000	0.9999
Total	**1,900,595,690**	**1,989,428,675**	**954,199,956**	**4,844,550,126**	**1.0000**	**1.0000**

Appendix D Table 2. -- Population estimates by sex and size for **Pacific cod** (*Gadus macrocephalus*) from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
40	0	0	0	0	0.0000	0.0000
60	0	0	0	0	0.0000	0.0000
70	0	0	0	0	0.0000	0.0000
80	0	0	0	0	0.0000	0.0000
90	0	0	302,719	302,719	0.0004	0.0004
100	0	0	788,733	788,733	0.0009	0.0013
110	0	0	3,050,220	3,050,220	0.0036	0.0049
120	0	0	5,736,116	5,736,116	0.0068	0.0117
130	0	0	10,416,560	10,416,560	0.0123	0.0240
140	0	0	12,440,959	12,440,959	0.0147	0.0388
150	0	0	15,608,138	15,608,138	0.0185	0.0572
160	5,192,830	6,877,368	4,616,805	16,687,003	0.0198	0.0770
170	9,618,034	9,320,249	5,210,145	24,148,428	0.0286	0.1056
180	9,855,985	11,389,739	4,159,085	25,404,809	0.0301	0.1357
190	12,640,729	13,249,127	10,788,434	36,678,290	0.0434	0.1791
200	16,569,831	12,297,779	7,018,846	35,886,457	0.0425	0.2216
210	11,618,505	15,961,464	7,040,360	34,620,329	0.0410	0.2626
220	8,928,099	9,240,316	3,532,622	21,701,037	0.0257	0.2883
230	5,002,071	4,538,720	2,117,020	11,657,810	0.0138	0.3021
240	1,993,766	2,157,741	350,777	4,502,284	0.0053	0.3075
250	959,602	617,071	0	1,576,673	0.0019	0.3093
260	472,400	1,070,020	0	1,542,420	0.0018	0.3112
270	1,076,301	1,243,461	0	2,319,762	0.0027	0.3139
280	920,865	1,061,018	0	1,981,882	0.0023	0.3162
290	1,108,356	1,229,697	0	2,338,052	0.0028	0.3190
300	1,267,430	1,739,502	0	3,006,932	0.0036	0.3226
310	2,331,212	2,596,605	0	4,927,817	0.0058	0.3284
320	2,588,276	2,940,932	32,178	5,561,387	0.0066	0.3350
330	3,261,526	4,404,299	0	7,665,825	0.0091	0.3441
340	3,115,269	3,526,516	0	6,641,785	0.0079	0.3519
350	4,579,902	4,895,617	0	9,475,519	0.0112	0.3632
360	4,604,863	4,627,498	0	9,232,361	0.0109	0.3741
370	4,951,797	6,145,743	0	11,097,541	0.0131	0.3872
380	5,229,327	6,414,042	0	11,643,369	0.0138	0.4010
390	7,767,058	8,612,607	0	16,379,664	0.0194	0.4204
400	8,833,419	9,679,933	0	18,513,351	0.0219	0.4423
410	13,947,964	13,368,909	0	27,316,873	0.0323	0.4747
420	15,122,412	17,240,500	0	32,362,913	0.0383	0.5130
430	17,099,305	17,746,358	0	34,845,664	0.0413	0.5543
440	18,190,652	19,214,297	0	37,404,949	0.0443	0.5986
450	17,429,493	18,015,886	52,735	35,498,113	0.0420	0.6406
460	15,169,315	16,769,526	20,556	31,959,398	0.0378	0.6785
470	12,562,257	13,173,101	20,556	25,755,915	0.0305	0.7090
480	10,223,446	10,524,751	20,556	20,768,753	0.0246	0.7336
490	6,948,558	7,260,017	41,113	14,249,688	0.0169	0.7504
500	6,649,846	7,662,178	41,113	14,353,137	0.0170	0.7674
510	6,128,118	5,221,322	41,113	11,390,553	0.0135	0.7809

Appendix D Table 2. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
520	5,345,706	5,400,344	0	10,746,049	0.0127	0.7936
530	3,969,813	3,656,449	20,556	7,646,818	0.0091	0.8027
540	5,166,049	4,298,208	20,556	9,484,813	0.0112	0.8139
550	5,158,177	3,970,216	20,556	9,148,950	0.0108	0.8248
560	6,003,904	4,762,121	0	10,766,025	0.0127	0.8375
570	4,040,603	3,471,924	20,556	7,533,083	0.0089	0.8464
580	6,399,936	4,902,418	0	11,302,354	0.0134	0.8598
590	4,824,614	4,946,033	41,113	9,811,759	0.0116	0.8714
600	6,166,168	6,000,993	41,113	12,208,274	0.0145	0.8859
610	5,087,747	4,221,347	41,113	9,350,206	0.0111	0.8970
620	6,130,559	5,880,894	0	12,011,454	0.0142	0.9112
630	3,802,442	3,896,500	20,556	7,719,498	0.0091	0.9203
640	5,364,572	4,797,855	32,178	10,194,605	0.0121	0.9324
650	3,288,787	3,747,090	0	7,035,877	0.0083	0.9407
660	3,728,378	4,595,072	0	8,323,450	0.0099	0.9506
670	3,236,884	2,936,036	20,556	6,193,476	0.0073	0.9579
680	3,207,195	3,417,761	0	6,624,956	0.0078	0.9658
690	2,234,380	2,506,875	20,556	4,761,811	0.0056	0.9714
700	2,165,974	3,022,227	20,556	5,208,758	0.0062	0.9776
710	1,226,110	1,336,537	0	2,562,646	0.0030	0.9806
720	1,312,422	1,892,982	0	3,205,405	0.0038	0.9844
730	742,164	1,341,689	20,556	2,104,409	0.0025	0.9869
740	605,030	1,405,812	20,556	2,031,399	0.0024	0.9893
750	467,424	676,597	0	1,144,021	0.0014	0.9907
760	505,433	619,998	0	1,125,431	0.0013	0.9920
770	339,941	632,200	0	972,142	0.0012	0.9932
780	225,141	429,289	0	654,430	0.0008	0.9939
790	237,085	304,460	32,178	573,723	0.0007	0.9946
800	360,821	387,460	0	748,281	0.0009	0.9955
810	119,500	149,967	0	269,467	0.0003	0.9958
820	266,671	370,708	0	637,379	0.0008	0.9966
830	151,476	286,931	0	438,407	0.0005	0.9971
840	87,991	204,374	0	292,365	0.0003	0.9974
850	60,831	49,990	0	110,821	0.0001	0.9976
860	0	149,718	0	149,718	0.0002	0.9977
870	67,309	135,256	0	202,565	0.0002	0.9980
880	33,283	169,505	0	202,788	0.0002	0.9982
890	56,407	89,768	0	146,175	0.0002	0.9984
900	0	57,849	0	57,849	0.0001	0.9985
910	60,357	153,747	0	214,104	0.0003	0.9987
920	26,280	107,850	0	134,130	0.0002	0.9989
930	58,367	121,976	0	180,343	0.0002	0.9991
940	89,735	207,767	0	297,501	0.0004	0.9994
950	75,730	15,952	0	91,682	0.0001	0.9996
960	0	28,238	0	28,238	0.0000	0.9996
970	0	0	0	0	0.0000	0.9996
980	31,459	17,785	0	49,244	0.0001	0.9996
990	0	0	0	0	0.0000	0.9996
1000	0	95,093	0	95,093	0.0001	0.9998
1010	0	63,108	0	63,108	0.0001	0.9998
1020	0	45,126	0	45,126	0.0001	0.9999
1040	0	67,556	0	67,556	0.0001	1.0000
1050	0	28,082	0	28,082	0.0000	1.0000
1080	0	0	0	0	0.0000	1.0000
Total	**366,487,676**	**384,107,641**	**93,840,719**	**844,436,036**	**1.0000**	**1.0000**

Appendix D Table 3. -- Population estimates by sex and size for **yellowfin sole** (*Limanda aspera*) from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	85,318	0	85,318	0.0000	0.0000
70	4,825,698	85,318	0	4,911,016	0.0005	0.0005
80	532,348	2,412,849	0	2,945,197	0.0003	0.0009
90	2,863,578	2,820,588	0	5,684,166	0.0006	0.0015
100	874,696	10,179,057	0	11,053,753	0.0012	0.0026
110	8,317,403	6,529,002	0	14,846,406	0.0016	0.0042
120	12,008,860	10,605,470	0	22,614,330	0.0024	0.0067
130	41,268,081	56,966,627	0	98,234,708	0.0105	0.0172
140	63,240,074	93,779,894	0	157,019,968	0.0169	0.0341
150	112,674,906	132,997,880	1,918,576	247,591,363	0.0266	0.0606
160	100,627,415	130,728,390	2,558,101	233,913,907	0.0251	0.0858
170	135,734,872	185,450,662	5,755,728	326,941,261	0.0351	0.1208
180	141,678,435	159,580,595	2,558,101	303,817,131	0.0326	0.1535
190	147,497,631	196,660,323	1,279,051	345,437,005	0.0371	0.1905
200	143,656,564	178,802,894	3,197,627	325,657,084	0.0350	0.2255
210	167,144,464	207,810,255	1,279,051	376,233,770	0.0404	0.2659
220	152,488,531	166,945,066	1,279,051	320,712,647	0.0344	0.3003
230	214,787,134	241,264,160	0	456,051,293	0.0490	0.3492
240	227,199,001	209,654,397	3,837,152	440,690,550	0.0473	0.3965
250	251,480,927	261,860,225	639,525	513,980,678	0.0552	0.4517
260	204,348,130	236,810,510	1,279,051	442,437,690	0.0475	0.4992
270	228,255,181	278,364,558	0	506,619,739	0.0544	0.5536
280	194,270,950	229,412,381	1,918,576	425,601,908	0.0457	0.5993
290	252,325,457	277,737,562	2,558,101	532,621,120	0.0572	0.6564
300	252,132,339	243,750,928	2,558,101	498,441,369	0.0535	0.7099
310	301,661,568	309,375,529	3,837,152	614,874,249	0.0660	0.7759
320	234,942,849	292,548,519	3,197,627	530,688,995	0.0570	0.8329
330	217,710,712	294,613,610	3,837,152	516,161,474	0.0554	0.8883
340	81,349,529	273,145,357	5,116,203	359,611,088	0.0386	0.9269
350	58,089,958	214,907,492	1,918,576	274,916,026	0.0295	0.9564
360	18,190,081	146,771,989	1,918,576	166,880,646	0.0179	0.9743
370	9,279,613	114,496,056	0	123,775,669	0.0133	0.9876
380	1,508,660	54,327,318	1,279,051	57,115,029	0.0061	0.9937
390	100,707	30,549,717	0	30,650,424	0.0033	0.9970
400	0	16,405,899	0	16,405,899	0.0018	0.9988
410	0	8,723,925	0	8,723,925	0.0009	0.9997
420	0	1,871,580	0	1,871,580	0.0002	0.9999
430	65,587	405,841	0	471,428	0.0001	1.0000
440	0	199,488	0	199,488	0.0000	1.0000
Total	**3,983,131,942**	**5,279,637,229**	**53,720,128**	**9,316,489,299**	**1.0000**	**1.0000**

Appendix D Table 4. -- Population estimates by sex and size for **northern rock sole** (*Lepidopsetta polyxystra*) from the 2011 eastern Bering Sea bottom trawl surve

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	80,200	0	80,200	0.0000	0.0000
70	0	0	678,900	678,900	0.0001	0.0001
80	0	80,200	0	80,200	0.0000	0.0001
90	74,202	1,846,726	0	1,920,928	0.0003	0.0004
100	2,229,014	1,497,445	0	3,726,459	0.0005	0.0008
110	30,535,435	17,985,704	0	48,521,139	0.0063	0.0072
120	28,125,367	37,242,493	0	65,367,860	0.0085	0.0157
130	61,403,828	36,809,352	0	98,213,180	0.0128	0.0285
140	24,936,196	36,572,572	0	61,508,768	0.0080	0.0365
150	40,826,406	35,819,920	0	76,646,326	0.0100	0.0465
160	33,200,488	47,721,963	0	80,922,451	0.0105	0.0570
170	51,769,480	39,105,799	0	90,875,280	0.0118	0.0689
180	62,333,367	59,129,956	0	121,463,323	0.0158	0.0847
190	91,880,886	81,114,072	0	172,994,958	0.0225	0.1072
200	114,412,843	118,467,200	0	232,880,043	0.0303	0.1376
210	155,083,052	148,669,637	0	303,752,689	0.0396	0.1771
220	200,329,785	176,486,881	0	376,816,666	0.0491	0.2262
230	285,578,034	250,477,857	0	536,055,891	0.0698	0.2961
240	259,964,970	236,028,877	0	495,993,847	0.0646	0.3607
250	294,031,666	287,530,188	0	581,561,855	0.0758	0.4365
260	234,738,477	177,753,665	33,622	412,525,765	0.0537	0.4902
270	352,334,735	241,004,243	0	593,338,978	0.0773	0.5675
280	312,824,626	184,083,991	0	496,908,617	0.0647	0.6322
290	363,063,458	244,538,578	33,622	607,635,659	0.0792	0.7114
300	240,123,409	202,428,052	0	442,551,462	0.0577	0.7691
310	189,332,678	216,628,313	67,245	406,028,235	0.0529	0.8220
320	79,475,224	168,118,288	67,245	247,660,757	0.0323	0.8542
330	49,706,992	184,081,395	369,847	234,158,234	0.0305	0.8847
340	17,070,846	135,936,654	100,867	153,108,368	0.0199	0.9047
350	12,623,779	144,144,419	168,112	156,936,310	0.0204	0.9251
360	3,611,635	151,108,137	403,469	155,123,242	0.0202	0.9453
370	2,330,498	130,104,428	302,602	132,737,528	0.0173	0.9626
380	1,320,693	123,660,258	201,735	125,182,686	0.0163	0.9789
390	1,020,561	76,099,933	403,469	77,523,964	0.0101	0.9890
400	171,747	34,615,095	33,622	34,820,465	0.0045	0.9936
410	0	26,577,424	33,622	26,611,047	0.0035	0.9971
420	0	11,408,403	0	11,408,403	0.0015	0.9985
430	0	8,740,642	29,734	8,770,376	0.0011	0.9997
440	0	1,899,313	0	1,899,313	0.0002	0.9999
450	0	34,283	0	34,283	0.0000	0.9999
460	0	30,931	0	30,931	0.0000	0.9999
470	0	0	0	0	0.0000	0.9999
480	0	0	0	0	0.0000	0.9999
490	0	485,674	0	485,674	0.0001	1.0000
Total	**3,596,464,379**	**4,076,149,164**	**2,927,717**	**7,675,541,260**	**1.0000**	**1.0000**

Appendix D Table 5. -- Population estimates by sex and size for **flathead sole** (*Hippoglossoides elassodon*) from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	0	114,299	114,299	0.0001	0.0001
70	0	0	359,893	359,893	0.0002	0.0003
80	0	0	323,995	323,995	0.0002	0.0005
90	127,419	52,224	1,096,543	1,276,186	0.0007	0.0012
100	373,852	192,918	1,283,870	1,850,640	0.0011	0.0022
110	5,577,568	2,766,850	6,184,356	14,528,774	0.0083	0.0106
120	11,002,304	8,362,864	6,656,764	26,021,932	0.0149	0.0255
130	13,274,636	10,603,334	4,468,149	28,346,119	0.0162	0.0417
140	9,863,002	7,793,838	1,865,156	19,521,995	0.0112	0.0529
150	16,448,485	10,945,077	2,360,744	29,754,307	0.0170	0.0699
160	20,765,860	21,807,543	4,302,869	46,876,272	0.0269	0.0968
170	35,675,398	26,885,459	4,790,419	67,351,275	0.0386	0.1354
180	21,774,807	17,815,767	2,576,496	42,167,071	0.0242	0.1595
190	24,588,952	19,167,535	122,991	43,879,477	0.0251	0.1847
200	17,006,473	18,722,986	166,206	35,895,665	0.0206	0.2052
210	25,386,606	19,826,911	0	45,213,517	0.0259	0.2311
220	18,157,347	12,058,888	0	30,216,235	0.0173	0.2485
230	17,383,215	14,871,316	0	32,254,530	0.0185	0.2669
240	12,500,133	15,374,238	0	27,874,370	0.0160	0.2829
250	19,227,534	21,176,640	0	40,404,174	0.0231	0.3060
260	22,124,599	16,297,584	0	38,422,182	0.0220	0.3281
270	27,385,216	25,547,248	0	52,932,464	0.0303	0.3584
280	34,508,771	20,235,382	0	54,744,153	0.0314	0.3897
290	53,240,890	32,030,608	0	85,271,498	0.0488	0.4386
300	47,074,326	24,453,130	0	71,527,456	0.0410	0.4796
310	68,580,949	45,843,916	0	114,424,865	0.0656	0.5451
320	54,286,453	33,192,662	0	87,479,116	0.0501	0.5952
330	71,299,090	50,069,838	0	121,368,928	0.0695	0.6648
340	39,658,373	41,229,062	0	80,887,435	0.0463	0.7111
350	50,789,374	48,661,886	0	99,451,259	0.0570	0.7681
360	22,124,222	31,086,618	0	53,210,839	0.0305	0.7986
370	34,392,821	32,551,437	0	66,944,257	0.0384	0.8369
380	22,612,290	23,443,122	0	46,055,413	0.0264	0.8633
390	19,089,402	28,393,386	0	47,482,788	0.0272	0.8905
400	11,446,204	25,549,773	0	36,995,977	0.0212	0.9117
410	5,350,510	32,115,595	0	37,466,105	0.0215	0.9331
420	2,597,946	20,587,464	0	23,185,410	0.0133	0.9464
430	611,888	23,372,595	0	23,984,483	0.0137	0.9602
440	1,001,938	14,562,178	0	15,564,117	0.0089	0.9691
450	0	12,650,143	0	12,650,143	0.0072	0.9763
460	0	13,372,237	0	13,372,237	0.0077	0.9840
470	0	13,500,168	0	13,500,168	0.0077	0.9917
480	0	4,612,469	0	4,612,469	0.0026	0.9944
490	0	5,000,551	0	5,000,551	0.0029	0.9972
500	0	1,516,881	0	1,516,881	0.0009	0.9981
510	0	1,124,236	0	1,124,236	0.0006	0.9987

Appendix D Table 5. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
520	0	1,862,638	0	1,862,638	0.0011	0.9998
530	80,637	205,965	0	286,602	0.0002	1.0000
540	0	32,762	0	32,762	0.0000	1.0000
Total	**857,389,488**	**851,525,921**	**36,672,749**	**1,745,588,157**	**1.0000**	**1.0000**

Appendix D Table 6. -- Population estimates by sex and size for **Bering flounder** (*Hippoglossoide robustus*) from the 2011 eastern Bering Sea bottom trawl surv

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
80	0	0	85,760	85,760	0.0004	0.0004
90	27,378	0	729,468	756,846	0.0038	0.0042
100	150,663	56,152	4,167,504	4,374,319	0.0220	0.0262
110	520,432	591,737	14,373,598	15,485,768	0.0777	0.1039
120	664,079	984,815	19,316,889	20,965,783	0.1052	0.2092
130	2,992,818	5,209,580	14,970,945	23,173,343	0.1163	0.3255
140	4,236,462	4,155,044	8,985,320	17,376,826	0.0872	0.4127
150	6,631,018	10,189,601	3,715,979	20,536,598	0.1031	0.5158
160	5,461,232	6,923,448	1,313,400	13,698,081	0.0688	0.5845
170	6,079,802	11,160,772	529,359	17,769,932	0.0892	0.6737
180	3,310,516	4,558,131	110,672	7,979,319	0.0401	0.7138
190	3,413,649	4,410,437	0	7,824,086	0.0393	0.7530
200	1,523,031	1,757,749	28,202	3,308,983	0.0166	0.7697
210	1,971,092	2,692,964	0	4,664,057	0.0234	0.7931
220	844,805	1,079,646	28,202	1,952,653	0.0098	0.8029
230	752,504	2,665,776	0	3,418,280	0.0172	0.8200
240	624,509	2,428,802	0	3,053,311	0.0153	0.8354
250	324,485	4,187,196	0	4,511,681	0.0226	0.8580
260	211,108	2,938,239	0	3,149,347	0.0158	0.8738
270	229,795	3,920,327	0	4,150,122	0.0208	0.8946
280	130,240	2,936,733	0	3,066,973	0.0154	0.9100
290	204,387	3,251,246	0	3,455,633	0.0173	0.9274
300	52,682	2,015,838	0	2,068,521	0.0104	0.9378
310	260,117	2,334,893	0	2,595,010	0.0130	0.9508
320	157,057	1,104,596	0	1,261,653	0.0063	0.9571
330	117,574	1,887,875	0	2,005,450	0.0101	0.9672
340	28,774	1,353,049	0	1,381,823	0.0069	0.9741
350	60,251	1,427,868	0	1,488,118	0.0075	0.9816
360	102,186	1,158,047	0	1,260,233	0.0063	0.9879
370	58,668	828,238	0	886,907	0.0045	0.9924
380	0	504,077	0	504,077	0.0025	0.9949
390	0	431,563	0	431,563	0.0022	0.9971
400	0	173,560	0	173,560	0.0009	0.9979
410	0	205,467	0	205,467	0.0010	0.9990
420	0	58,553	0	58,553	0.0003	0.9993
430	0	30,869	0	30,869	0.0002	0.9994
440	0	28,774	0	28,774	0.0001	0.9996
450	0	58,668	0	58,668	0.0003	0.9999
460	0	29,380	0	29,380	0.0001	1.0000
Total	**41,141,317**	**89,729,711**	**68,355,298**	**199,226,326**	**1.0000**	**1.0000**

Appendix D Table 7. -- Population estimates by sex and size for **Alaska plaice** (*Pleuronectes quadrituberculatus)* from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
130	33,622	33,622	0	67,245	0.0001	0.0001
140	33,622	0	0	33,622	0.0000	0.0001
150	0	48,402	0	48,402	0.0001	0.0002
160	185,973	33,622	0	219,596	0.0002	0.0004
170	386,837	605,342	0	992,179	0.0011	0.0015
180	871,166	275,285	0	1,146,450	0.0013	0.0028
190	1,756,567	961,157	0	2,717,724	0.0030	0.0057
200	1,109,226	1,122,990	0	2,232,216	0.0025	0.0082
210	2,995,378	2,820,567	34,232	5,850,176	0.0064	0.0146
220	4,132,897	3,011,601	102,696	7,247,194	0.0080	0.0226
230	5,882,361	4,694,176	68,464	10,645,000	0.0117	0.0343
240	5,389,113	4,760,905	34,232	10,184,251	0.0112	0.0455
250	7,967,303	7,420,820	205,392	15,593,514	0.0171	0.0626
260	9,817,840	9,315,351	445,016	19,578,206	0.0215	0.0841
270	20,913,052	15,608,511	787,335	37,308,898	0.0410	0.1251
280	27,666,848	14,744,005	821,567	43,232,420	0.0475	0.1726
290	41,713,753	24,836,433	958,495	67,508,681	0.0742	0.2468
300	35,173,512	20,438,000	890,031	56,501,543	0.0621	0.3088
310	39,098,482	31,202,725	992,727	71,293,934	0.0783	0.3872
320	34,948,806	20,298,905	787,335	56,035,046	0.0616	0.4487
330	35,088,906	23,596,078	616,175	59,301,160	0.0651	0.5139
340	43,305,119	17,176,028	376,552	60,857,698	0.0669	0.5807
350	51,053,489	22,203,931	616,175	73,873,595	0.0812	0.6619
360	34,834,888	17,749,089	445,016	53,028,993	0.0583	0.7201
370	26,303,898	17,633,350	273,856	44,211,103	0.0486	0.7687
380	22,427,628	12,570,977	34,232	35,032,838	0.0385	0.8072
390	12,153,311	14,187,500	68,464	26,409,275	0.0290	0.8362
400	5,627,240	12,155,891	0	17,783,131	0.0195	0.8558
410	2,222,613	14,597,405	0	16,820,018	0.0185	0.8742
420	1,887,138	14,105,476	0	15,992,614	0.0176	0.8918
430	853,522	16,772,286	0	17,625,808	0.0194	0.9112
440	219,500	14,817,076	0	15,036,576	0.0165	0.9277
450	570,021	15,367,381	0	15,937,402	0.0175	0.9452
460	462,918	8,708,877	0	9,171,795	0.0101	0.9553
470	263,691	11,817,150	0	12,080,841	0.0133	0.9685
480	183,154	6,652,619	34,232	6,870,005	0.0075	0.9761
490	371,596	5,654,254	0	6,025,850	0.0066	0.9827
500	0	4,950,999	0	4,950,999	0.0054	0.9882
510	43,293	2,480,437	0	2,523,730	0.0028	0.9909
520	96,569	2,142,354	0	2,238,923	0.0025	0.9934
530	89,229	2,729,527	0	2,818,756	0.0031	0.9965
540	96,569	974,130	0	1,070,699	0.0012	0.9977
550	43,293	555,321	0	598,614	0.0007	0.9983
560	89,229	285,462	0	374,691	0.0004	0.9987
570	0	373,218	0	373,218	0.0004	0.9991
580	0	398,744	0	398,744	0.0004	0.9996

Appendix D Table 7. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
590	0	113,169	0	113,169	0.0001	0.9997
600	0	31,119	0	31,119	0.0000	0.9997
610	0	211,777	0	211,777	0.0002	1.0000
Total	**478,363,174**	**423,276,690**	**8,592,223**	**910,232,086**	**1.0000**	**1.0000**

Appendix D Table 8. -- Population estimates by sex and size for **Greenland turbot** (*Reinhardtius hippoglossoides)* from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
90	0	0	29,044	29,044	0.0002	0.0002
100	0	0	177,485	177,485	0.0012	0.0014
110	254,041	62,720	1,387,100	1,703,861	0.0119	0.0133
120	742,890	320,345	3,098,961	4,162,196	0.0290	0.0423
130	890,301	555,772	3,260,456	4,706,529	0.0328	0.0751
140	1,256,860	476,616	2,391,763	4,125,239	0.0287	0.1038
150	1,957,072	859,245	2,033,032	4,849,349	0.0338	0.1376
160	1,399,399	652,862	1,384,794	3,437,056	0.0239	0.1615
170	1,188,626	544,940	467,091	2,200,657	0.0153	0.1768
180	1,131,376	870,773	166,607	2,168,757	0.0151	0.1919
190	2,006,056	1,642,408	604,657	4,253,122	0.0296	0.2215
200	2,243,865	2,306,649	211,798	4,762,312	0.0332	0.2547
210	5,960,245	4,178,798	77,158	10,216,201	0.0711	0.3259
220	6,154,748	3,583,818	234,872	9,973,438	0.0695	0.3953
230	8,273,266	6,121,334	91,573	14,486,172	0.1009	0.4962
240	5,369,125	4,054,654	136,583	9,560,361	0.0666	0.5628
250	4,778,331	5,009,717	148,651	9,936,700	0.0692	0.6320
260	2,925,976	1,908,918	0	4,834,894	0.0337	0.6656
270	3,568,298	3,339,795	148,651	7,056,744	0.0491	0.7148
280	2,485,770	1,867,251	0	4,353,022	0.0303	0.7451
290	2,558,406	1,742,327	0	4,300,733	0.0299	0.7750
300	1,991,190	1,523,823	0	3,515,014	0.0245	0.7995
310	2,579,152	2,503,127	0	5,082,280	0.0354	0.8349
320	2,256,491	1,224,984	0	3,481,476	0.0242	0.8592
330	2,677,965	1,886,878	0	4,564,843	0.0318	0.8909
340	1,279,938	1,006,725	0	2,286,663	0.0159	0.9069
350	1,559,988	1,459,480	0	3,019,468	0.0210	0.9279
360	630,311	786,852	0	1,417,163	0.0099	0.9378
370	713,658	757,562	0	1,471,221	0.0102	0.9480
380	717,243	290,414	0	1,007,657	0.0070	0.9550
390	215,004	628,678	0	843,682	0.0059	0.9609
400	178,902	281,527	0	460,428	0.0032	0.9641
410	472,541	472,225	0	944,766	0.0066	0.9707
420	340,148	109,942	0	450,090	0.0031	0.9738
430	107,634	343,506	0	451,140	0.0031	0.9770
440	115,978	62,925	0	178,902	0.0012	0.9782
450	228,862	126,031	0	354,893	0.0025	0.9807
460	152,070	27,754	0	179,824	0.0013	0.9819
470	245,997	63,001	0	308,998	0.0022	0.9841
480	174,551	171,796	0	346,347	0.0024	0.9865
490	28,202	154,962	0	183,164	0.0013	0.9878
500	154,334	79,015	0	233,348	0.0016	0.9894
510	0	0	0	0	0.0000	0.9894
520	0	0	0	0	0.0000	0.9894
530	0	0	0	0	0.0000	0.9894
540	29,151	0	0	29,151	0.0002	0.9896

Appendix D Table 8. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
550	0	0	0	0	0.0000	0.9896
560	0	31,189	0	31,189	0.0002	0.9898
570	0	0	0	0	0.0000	0.9898
580	0	0	0	0	0.0000	0.9898
590	0	0	0	0	0.0000	0.9898
600	0	31,847	0	31,847	0.0002	0.9900
610	0	0	0	0	0.0000	0.9900
620	0	0	0	0	0.0000	0.9900
630	0	0	0	0	0.0000	0.9900
640	0	26,784	74,326	101,109	0.0007	0.9907
650	48,653	0	0	48,653	0.0003	0.9911
660	0	32,189	74,326	106,514	0.0007	0.9918
670	0	107,590	0	107,590	0.0007	0.9926
680	0	31,847	0	31,847	0.0002	0.9928
690	0	26,784	0	26,784	0.0002	0.9930
700	26,784	30,953	0	57,736	0.0004	0.9934
710	0	63,228	0	63,228	0.0004	0.9938
720	0	139,768	0	139,768	0.0010	0.9948
730	112,396	19,469	0	131,865	0.0009	0.9957
740	0	31,039	0	31,039	0.0002	0.9959
750	0	59,391	0	59,391	0.0004	0.9963
760	34,981	27,818	0	62,798	0.0004	0.9968
770	0	63,694	0	63,694	0.0004	0.9972
780	31,039	0	0	31,039	0.0002	0.9974
790	0	42,798	0	42,798	0.0003	0.9977
800	0	0	0	0	0.0000	0.9977
810	31,039	0	0	31,039	0.0002	0.9980
820	30,684	0	0	30,684	0.0002	0.9982
830	0	0	0	0	0.0000	0.9982
840	0	30,197	0	30,197	0.0002	0.9984
850	0	0	0	0	0.0000	0.9984
860	0	0	0	0	0.0000	0.9984
870	0	61,764	0	61,764	0.0004	0.9988
880	0	0	0	0	0.0000	0.9988
890	0	0	0	0	0.0000	0.9988
900	0	0	0	0	0.0000	0.9988
910	0	0	0	0	0.0000	0.9988
920	0	49,083	0	49,083	0.0003	0.9992
930	0	19,290	0	19,290	0.0001	0.9993
940	0	0	0	0	0.0000	0.9993
950	0	30,128	0	30,128	0.0002	0.9995
960	0	52,403	0	52,403	0.0004	0.9999
970	0	0	0	0	0.0000	0.9999
980	0	20,036	0	20,036	0.0001	1.0000
Total	**72,309,539**	**55,089,439**	**16,198,926**	**143,597,904**	**1.0000**	**1.0000**

Appendix D Table 9. -- Population estimates by sex and size for **arrowtooth flounder** (*Atheresthes stomias)* from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
90	0	0	84,574	84,574	0.0001	0.0001
100	271,641	94,456	1,086,227	1,452,324	0.0015	0.0016
110	0	380,123	812,485	1,192,608	0.0012	0.0028
120	363,394	313,646	512,916	1,189,957	0.0012	0.0040
130	165,582	396,743	0	562,325	0.0006	0.0046
140	1,410,507	400,411	27,804	1,838,721	0.0019	0.0065
150	4,018,213	4,235,562	108,302	8,362,076	0.0086	0.0150
160	5,698,883	5,535,372	188,799	11,423,053	0.0117	0.0267
170	9,364,559	10,971,456	160,995	20,497,011	0.0210	0.0477
180	5,529,391	6,231,921	30,504	11,791,816	0.0121	0.0598
190	6,156,954	12,159,615	0	18,316,569	0.0187	0.0785
200	2,711,265	4,672,491	0	7,383,756	0.0076	0.0861
210	4,795,680	8,637,891	0	13,433,571	0.0138	0.0998
220	6,012,272	6,206,709	0	12,218,980	0.0125	0.1123
230	9,969,973	15,031,416	0	25,001,389	0.0256	0.1379
240	8,302,389	12,995,475	0	21,297,864	0.0218	0.1597
250	13,435,711	20,230,990	203,296	33,869,997	0.0347	0.1944
260	6,105,387	10,425,450	0	16,530,837	0.0169	0.2113
270	9,646,282	16,782,511	0	26,428,792	0.0271	0.2384
280	5,905,290	10,508,706	0	16,413,996	0.0168	0.2552
290	11,111,444	16,334,310	0	27,445,754	0.0281	0.2833
300	8,269,698	13,293,284	0	21,562,983	0.0221	0.3053
310	11,420,962	28,288,524	0	39,709,486	0.0406	0.3460
320	7,637,344	14,351,984	203,296	22,192,624	0.0227	0.3687
330	9,562,371	23,094,505	406,593	33,063,469	0.0338	0.4025
340	10,147,081	18,627,153	0	28,774,233	0.0295	0.4320
350	14,839,768	29,675,194	508,241	45,023,203	0.0461	0.4781
360	15,776,111	26,416,042	0	42,192,153	0.0432	0.5213
370	12,513,753	33,020,969	203,296	45,738,019	0.0468	0.5681
380	9,439,872	24,549,339	304,944	34,294,156	0.0351	0.6032
390	11,725,384	30,692,788	203,296	42,621,468	0.0436	0.6468
400	8,194,461	20,755,669	203,296	29,153,426	0.0298	0.6767
410	8,103,407	26,149,679	101,648	34,354,734	0.0352	0.7118
420	7,966,994	18,477,307	0	26,444,301	0.0271	0.7389
430	6,572,163	21,942,769	101,648	28,616,580	0.0293	0.7682
440	5,141,380	16,958,149	101,648	22,201,177	0.0227	0.7909
450	4,746,556	17,588,004	203,296	22,537,856	0.0231	0.8140
460	2,199,392	16,770,795	0	18,970,187	0.0194	0.8334
470	3,179,741	21,197,888	203,296	24,580,925	0.0252	0.8586
480	974,111	16,148,752	101,648	17,224,511	0.0176	0.8762
490	810,222	17,491,481	101,648	18,403,351	0.0188	0.8950
500	387,260	13,149,482	203,296	13,740,037	0.0141	0.9091
510	423,888	12,552,289	304,944	13,281,121	0.0136	0.9227
520	395,458	13,999,103	101,648	14,496,209	0.0148	0.9375
530	282,836	10,153,627	0	10,436,464	0.0107	0.9482
540	217,716	10,720,317	0	10,938,034	0.0112	0.9594

Appendix D Table 9. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
550	181,752	8,197,273	0	8,379,024	0.0086	0.9680
560	0	6,739,856	203,296	6,943,153	0.0071	0.9751
570	81,016	5,134,712	203,296	5,419,025	0.0055	0.9806
580	0	4,508,895	0	4,508,895	0.0046	0.9852
590	54,943	2,720,912	0	2,775,855	0.0028	0.9881
600	0	2,640,994	0	2,640,994	0.0027	0.9908
610	0	2,398,470	0	2,398,470	0.0025	0.9932
620	0	976,823	0	976,823	0.0010	0.9942
630	0	866,706	0	866,706	0.0009	0.9951
640	0	465,969	0	465,969	0.0005	0.9956
650	0	747,739	0	747,739	0.0008	0.9964
660	0	190,329	0	190,329	0.0002	0.9966
670	0	526,780	0	526,780	0.0005	0.9971
680	0	644,373	0	644,373	0.0007	0.9978
690	0	0	0	0	0.0000	0.9978
700	0	240,681	0	240,681	0.0002	0.9980
710	0	269,445	0	269,445	0.0003	0.9983
720	0	138,020	0	138,020	0.0001	0.9984
730	0	123,248	0	123,248	0.0001	0.9986
740	0	790,777	0	790,777	0.0008	0.9994
750	0	97,871	0	97,871	0.0001	0.9995
760	0	68,779	0	68,779	0.0001	0.9995
770	0	303,098	0	303,098	0.0003	0.9998
780	0	54,943	0	54,943	0.0001	0.9999
790	0	0	0	0	0.0000	0.9999
800	0	46,979	0	46,979	0.0000	1.0000
810	0	0	0	0	0.0000	1.0000
820	0	47,779	0	47,779	0.0000	1.0000
Total	**272,220,457**	**697,551,799**	**7,180,181**	**976,952,437**	**1.0000**	**1.0000**

Appendix D Table 10. -- Population estimates by sex and size for **Kamchatka flounder** (*Atheresthes evermanni*) from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
90	31,896	0	133,506	165,402	0.0019	0.0019
100	0	56,917	405,360	462,277	0.0053	0.0072
110	177,326	0	283,700	461,025	0.0053	0.0124
120	136,283	67,875	70,925	275,084	0.0031	0.0156
130	342,618	223,037	0	565,655	0.0065	0.0220
140	193,927	242,261	209,615	645,803	0.0074	0.0294
150	385,152	449,566	29,382	864,100	0.0099	0.0393
160	512,411	687,047	0	1,199,458	0.0137	0.0530
170	1,312,311	839,983	0	2,152,294	0.0246	0.0776
180	434,474	543,095	0	977,569	0.0112	0.0888
190	952,757	573,799	0	1,526,556	0.0174	0.1062
200	487,332	342,880	0	830,211	0.0095	0.1157
210	685,904	1,300,356	0	1,986,260	0.0227	0.1384
220	941,299	1,119,347	0	2,060,646	0.0235	0.1619
230	3,030,359	2,381,993	0	5,412,353	0.0618	0.2238
240	1,808,242	2,351,708	0	4,159,950	0.0475	0.2713
250	2,668,595	2,168,041	0	4,836,636	0.0553	0.3266
260	2,034,608	1,269,994	0	3,304,602	0.0378	0.3643
270	1,621,445	2,209,313	0	3,830,758	0.0438	0.4081
280	1,636,830	1,046,890	0	2,683,720	0.0307	0.4388
290	2,058,528	1,419,037	0	3,477,565	0.0397	0.4785
300	749,975	1,224,580	0	1,974,555	0.0226	0.5011
310	508,870	1,172,050	0	1,680,920	0.0192	0.5203
320	484,657	996,261	0	1,480,918	0.0169	0.5372
330	710,639	724,389	0	1,435,029	0.0164	0.5536
340	626,449	735,886	0	1,362,335	0.0156	0.5692
350	1,319,805	967,523	0	2,287,328	0.0261	0.5953
360	1,232,292	735,616	0	1,967,908	0.0225	0.6178
370	1,047,364	705,124	0	1,752,489	0.0200	0.6378
380	529,366	813,448	0	1,342,814	0.0153	0.6532
390	839,613	758,975	0	1,598,589	0.0183	0.6714
400	798,311	401,364	0	1,199,675	0.0137	0.6851
410	575,048	829,525	0	1,404,573	0.0160	0.7012
420	652,621	517,546	0	1,170,167	0.0134	0.7145
430	820,040	479,157	0	1,299,197	0.0148	0.7294
440	1,137,643	660,808	0	1,798,450	0.0205	0.7499

Appendix D Table 10. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
450	1,208,677	744,852	0	1,953,530	0.0223	0.7723
460	1,817,121	1,240,920	0	3,058,040	0.0349	0.8072
470	1,287,732	1,119,737	0	2,407,468	0.0275	0.8347
480	1,425,525	1,674,857	0	3,100,382	0.0354	0.8701
490	893,631	1,198,640	0	2,092,271	0.0239	0.8940
500	464,460	1,327,620	0	1,792,080	0.0205	0.9145
510	137,964	1,035,053	0	1,173,017	0.0134	0.9279
520	143,866	1,283,150	0	1,427,016	0.0163	0.9442
530	181,339	916,694	0	1,098,033	0.0125	0.9568
540	64,645	568,997	0	633,642	0.0072	0.9640
550	117,448	422,795	0	540,243	0.0062	0.9702
560	78,680	560,789	0	639,469	0.0073	0.9775
570	79,793	551,769	0	631,562	0.0072	0.9847
580	103,452	86,834	0	190,286	0.0022	0.9869
590	0	0	0	0	0.0000	0.9869
600	31,994	92,318	0	124,312	0.0014	0.9883
610	0	0	0	0	0.0000	0.9883
620	0	34,199	0	34,199	0.0004	0.9887
630	0	19,896	0	19,896	0.0002	0.9889
640	0	87,890	0	87,890	0.0010	0.9899
650	0	46,201	0	46,201	0.0005	0.9905
660	0	99,631	0	99,631	0.0011	0.9916
670	0	0	0	0	0.0000	0.9916
680	0	51,973	0	51,973	0.0006	0.9922
690	0	121,877	0	121,877	0.0014	0.9936
700	0	58,566	0	58,566	0.0007	0.9943
710	0	32,147	0	32,147	0.0004	0.9946
720	0	0	0	0	0.0000	0.9946
730	0	0	0	0	0.0000	0.9946
740	0	20,125	0	20,125	0.0002	0.9948
750	0	58,445	0	58,445	0.0007	0.9955
760	0	0	0	0	0.0000	0.9955
770	0	31,182	0	31,182	0.0004	0.9959
780	0	167,952	0	167,952	0.0019	0.9978
790	0	193,161	0	193,161	0.0022	1.0000
Total	**41,521,315**	**44,863,663**	**1,132,488**	**87,517,467**	**1.0000**	**1.0000**

Appendix D Table 11. -- Population estimates by sex and size for **Pacific halibut** (*Hippoglossus stenolepis)* from the 2011 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
70	0	0	61,032	61,032	0.0006	0.0006
80	0	0	61,591	61,591	0.0006	0.0013
150	0	0	30,965	30,965	0.0003	0.0016
170	0	0	92,896	92,896	0.0010	0.0026
180	0	0	219,818	219,818	0.0023	0.0048
190	0	0	61,931	61,931	0.0006	0.0055
200	0	0	62,389	62,389	0.0006	0.0061
210	0	0	306,443	306,443	0.0032	0.0093
220	0	0	209,115	209,115	0.0022	0.0115
230	0	0	92,545	92,545	0.0010	0.0124
240	0	0	154,279	154,279	0.0016	0.0140
250	0	0	87,984	87,984	0.0009	0.0150
260	0	0	126,675	126,675	0.0013	0.0163
270	0	0	276,963	276,963	0.0029	0.0191
280	0	0	390,336	390,336	0.0041	0.0232
290	0	0	631,104	631,104	0.0065	0.0297
300	0	0	1,521,077	1,521,077	0.0158	0.0455
310	0	0	1,866,212	1,866,212	0.0194	0.0649
320	0	0	2,552,443	2,552,443	0.0265	0.0914
330	0	0	2,653,962	2,653,962	0.0275	0.1189
340	0	0	2,836,043	2,836,043	0.0294	0.1484
350	0	0	2,168,637	2,168,637	0.0225	0.1709
360	0	0	1,170,560	1,170,560	0.0121	0.1830
370	0	0	1,113,801	1,113,801	0.0116	0.1946
380	0	0	874,882	874,882	0.0091	0.2036
390	0	0	861,745	861,745	0.0089	0.2126
400	0	0	791,509	791,509	0.0082	0.2208
410	0	0	1,369,160	1,369,160	0.0142	0.2350
420	0	0	1,203,379	1,203,379	0.0125	0.2475
430	0	0	1,879,611	1,879,611	0.0195	0.2670
440	0	0	2,756,245	2,756,245	0.0286	0.2956
450	0	0	2,687,806	2,687,806	0.0279	0.3235
460	0	0	3,071,197	3,071,197	0.0319	0.3554
470	0	0	3,061,932	3,061,932	0.0318	0.3871
480	0	0	2,786,446	2,786,446	0.0289	0.4161
490	0	0	2,923,648	2,923,648	0.0303	0.4464
500	0	0	2,848,700	2,848,700	0.0296	0.4760
510	0	0	3,084,266	3,084,266	0.0320	0.5080
520	0	0	3,345,202	3,345,202	0.0347	0.5427
530	0	0	3,202,970	3,202,970	0.0332	0.5759
540	0	0	2,544,630	2,544,630	0.0264	0.6023
550	0	0	3,153,967	3,153,967	0.0327	0.6351
560	0	0	3,390,681	3,390,681	0.0352	0.6702
570	0	0	3,127,871	3,127,871	0.0325	0.7027
580	0	0	2,476,877	2,476,877	0.0257	0.7284
590	0	0	2,598,615	2,598,615	0.0270	0.7554

Appendix D Table 11. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
600	0	0	2,975,740	2,975,740	0.0309	0.7862
610	0	0	1,792,597	1,792,597	0.0186	0.8048
620	0	0	2,005,791	2,005,791	0.0208	0.8257
630	0	0	1,446,961	1,446,961	0.0150	0.8407
640	0	0	1,087,388	1,087,388	0.0113	0.8520
650	0	0	964,035	964,035	0.0100	0.8620
660	0	0	1,072,659	1,072,659	0.0111	0.8731
670	0	0	745,358	745,358	0.0077	0.8808
680	0	0	1,051,339	1,051,339	0.0109	0.8917
690	0	0	723,390	723,390	0.0075	0.8992
700	0	0	888,962	888,962	0.0092	0.9085
710	0	0	569,971	569,971	0.0059	0.9144
720	0	0	659,843	659,843	0.0068	0.9212
730	0	0	678,396	678,396	0.0070	0.9283
740	0	0	675,121	675,121	0.0070	0.9353
750	0	0	468,743	468,743	0.0049	0.9401
760	0	0	456,809	456,809	0.0047	0.9449
770	0	0	382,517	382,517	0.0040	0.9489
780	0	0	397,263	397,263	0.0041	0.9530
790	0	0	369,707	369,707	0.0038	0.9568
800	0	0	240,568	240,568	0.0025	0.9593
810	0	0	325,219	325,219	0.0034	0.9627
820	0	0	229,246	229,246	0.0024	0.9651
830	0	0	364,742	364,742	0.0038	0.9689
840	0	0	139,697	139,697	0.0014	0.9703
850	0	0	218,952	218,952	0.0023	0.9726
860	0	0	170,163	170,163	0.0018	0.9743
870	0	0	189,590	189,590	0.0020	0.9763
880	0	0	258,443	258,443	0.0027	0.9790
890	0	0	312,946	312,946	0.0032	0.9822
900	0	0	152,354	152,354	0.0016	0.9838
910	0	0	88,153	88,153	0.0009	0.9847
920	0	0	151,856	151,856	0.0016	0.9863
930	0	0	107,457	107,457	0.0011	0.9874
940	0	0	138,928	138,928	0.0014	0.9889
950	0	0	74,998	74,998	0.0008	0.9896
960	0	0	123,399	123,399	0.0013	0.9909
970	0	0	29,914	29,914	0.0003	0.9912
980	0	0	31,498	31,498	0.0003	0.9916
990	0	0	122,179	122,179	0.0013	0.9928
1000	0	0	57,807	57,807	0.0006	0.9934
1010	0	0	93,068	93,068	0.0010	0.9944
1020	0	0	27,854	27,854	0.0003	0.9947
1030	0	0	58,751	58,751	0.0006	0.9953
1040	0	0	60,384	60,384	0.0006	0.9959
1050	0	0	81,244	81,244	0.0008	0.9968
1060	0	0	31,505	31,505	0.0003	0.9971

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