NOAA Technical Memorandum NMFS-AFSC-352
doi:10.7289/V5/TM-AFSC-352

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

May 2017

NOAA Technical Memorandum NMFS

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This document should be cited as follows:

> Conner, J., and R. R. Lauth. 2017. Results of the 2016 eastern Bering sea continental shelf bottom trawl survey of groundfish and invertebrate resources. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-352,159 p.
>
> Document available: http://www.afsc.noaa.gov/Publications/AFSC-TM/NOAA-TM-AFSC-352.pdf.

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May 2017

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ABSTRACT

The Resource Assessment and Conservation Engineering Division of the Alaska Fisheries Science Center conducts annual bottom trawl surveys to monitor the condition of the demersal fish and crab stocks of the eastern Bering Sea continental shelf. The standard study area encompasses a major portion of the eastern Bering Sea shelf (depths between 20 and 200 m) from the Alaska Peninsula north to approximately the latitude of St. Matthew Island (60° 50' N). In 2016, two chartered trawlers, the 38-m FV *Vesteraalen* and the 43.5-m FV *Alaska Knight*, surveyed this area. Demersal populations were sampled by trawling for 30 minutes at stations centered within 37.04 × 37.04 km (20 × 20 nautical miles (nmi)) grid cells covering the survey area. At each station, the species composition of the catch was determined, and length distributions and age structure samples were collected from ecologically and commercially important species.

Three-hundred seventy-six standard survey stations were sampled successfully. A total of 94 fish taxa and 232 invertebrate taxa were identified in catches from the EBS survey. The combined estimated biomass of walleye pollock (*Gadus chalcogrammus*), Pacific cod (*Gadus macrocephalus*), yellowfin sole (*Limanda aspera*), and northern rock sole (*Lepidopsetta polyxystra*) was estimated to be 10.2 million metric tons (t), which was 82% of the total fish biomass. The biomass of invertebrates was composed primarily of echinoderms (1.6 million t) and crustaceans (0.7 million t).

Survey results presented in this report include abundance estimates for fishes and invertebrates, geographic distributions and size compositions of selected fish species, and contour plots of surface and bottom temperatures during the survey sampling period. Appendices provide station data, catch data summarized by station, taxon listings, and details of size composition for various fish species of commercial interest.

CONTENTS

INTRODUCTION

The eastern Bering Sea (EBS) continental shelf supports one of the most productive groundfish and crab fisheries in the world (Bakkala 1993). Since 1970, groundfish such as walleye pollock (*Gadus chalcogrammus*), yellowfin sole (*Limanda aspera*), and Pacific cod (*Gadus macrocephalus*) have been the primary target species among commercial catches. Although many species of groundfish are caught commercially, walleye pollock is the most abundant with catches ranging from 0.8 million to 1.5 million metric tons (t) per year for the past 30 years, the marketed products of which represent 40% of the global whitefish market (Ianelli et al. 2016).

Since 1971, the National Marine Fisheries Service's (NMFS) Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC) has conducted an annual bottom trawl survey in the EBS to determine the distribution and abundance of groundfish and crab resources. The involvement of the U.S. government in eastern Bering Sea bottom trawl (BT) surveys dates back to the 1940s when effort was engaged primarily in exploratory work for commercial fisheries resources (Zimmermann et al. 2009). Early efforts led to the development of a valuable, single-species fishery in Alaska for red king crab (*Paralithodes camtschaticus*), and continued U.S. BT surveys into the 1970s focused 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 survey of the EBS shelf was conducted in 1975 under contract from the U.S. Bureau of Land Management in response to a need for baseline data to assess the potential impact of proposed offshore oil exploration and development on fishery resources

(Pereyra et al. 1976). During this baseline survey, sampling was conducted over the EBS shelf between the 20 m and 200 m isobaths from the Alaska Peninsula north to approximately 62° N.

In subsequent years, the area coverage of the annual surveys was reduced until 1979 when the most comprehensive survey of the Bering Sea shelf was undertaken in cooperation with the Japan Fisheries Agency (Bakkala and Wakabayashi 1985). That survey encompassed the entire region sampled in the 1975 baseline study and included the continental slope waters between St. Matthew Island and St. Lawrence Island. A hydroacoustic survey was also conducted in 1979 to assess the midwater component of the walleye pollock population.

Following the 1979 survey, annual bottom trawl surveys have essentially re-sampled the stations established during the 1975 survey, with slight modifications each year. This region encompasses the major portion of economically important EBS groundfish and crab populations, except those primarily located in the deep continental slope waters. Commercial crab stocks managed by the Alaska Department of Fish and Game (ADF&G) are covered by the North Pacific Fishery Management Council's (NPFMC) fishery management plan for the commercial king and Tanner crab fisheries in the Bering Sea and Aleutian Islands Regions. Crab species of interest include Tanner crab (*Chionoecetes bairdi*), snow crab (*C. opilio*), two stocks of blue king crab (*Paralithodes platypus*), red king crab, and hair crab (*Erimacrus isenbeckii*). Detailed results from the analysis of crab data from this survey are available in Daly et al. (2016).

Beginning in 1979 and continuing triennially until 1991, the survey was extended to include bottom trawl sampling of the continental slope and in the region between St. Matthew and St. Lawrence Islands. After a hiatus from 1992 to 1999, the EBS slope survey was resumed in 2002 as an independent bottom trawl survey series conducted on a biennial basis (Hoff 2017). The survey had its broadest coverage in 2010 when it included the standard shelf area, the

continental slope, and the northern shelf which extended north to the Bering Strait (65° 20′ N) and east into Norton Sound (Hoff and Britt 2011, Lauth 2011).

The biological and oceanographic information gathered by the annual BT surveys serves to provide 1) annual fishery-independent abundance estimates and data on the population dynamics of ecologically and commercially exploited groundfish and crab stocks to the State of Alaska and to the NPFMC; 2) information on inter-annual changes to the distribution and abundance of groundfish and crab species to the fishing industry, other stakeholders and the general public; and 3) a time-series of environmental data and abundance indices for a variety of demersal macrofauna to be used for ecosystem forecast modeling in support of ecosystem-based fisheries management. This report presents information collected by the AFSC on the EBS shelf during the 2016 bottom trawl survey, which represents the thirty-fifth contribution to the time series. For results from the 2015 bottom trawl survey, refer to Conner et al. (2017).

METHODS

Survey Area and Sampling Design

The standardized EBS bottom trawl survey is based on a systematic design with a fixed sampling station at the center of each 37.04 × 37.04 km (20 × 20 nmi) grid square (Fig. 1). In waters surrounding St. Matthew Island and the Pribilof Islands, high-density "corner stations" located at the intersection of grid lines are also sampled to better assess local blue king crab concentrations (Fig. 1). The original sampling design included 356 sampling stations that were sampled annually starting in 1982. Beginning in 1987, 20 new stations comprising strata 82 and 90 (Fig. 2) were added to the survey to investigate the distribution and abundance of snow crabs

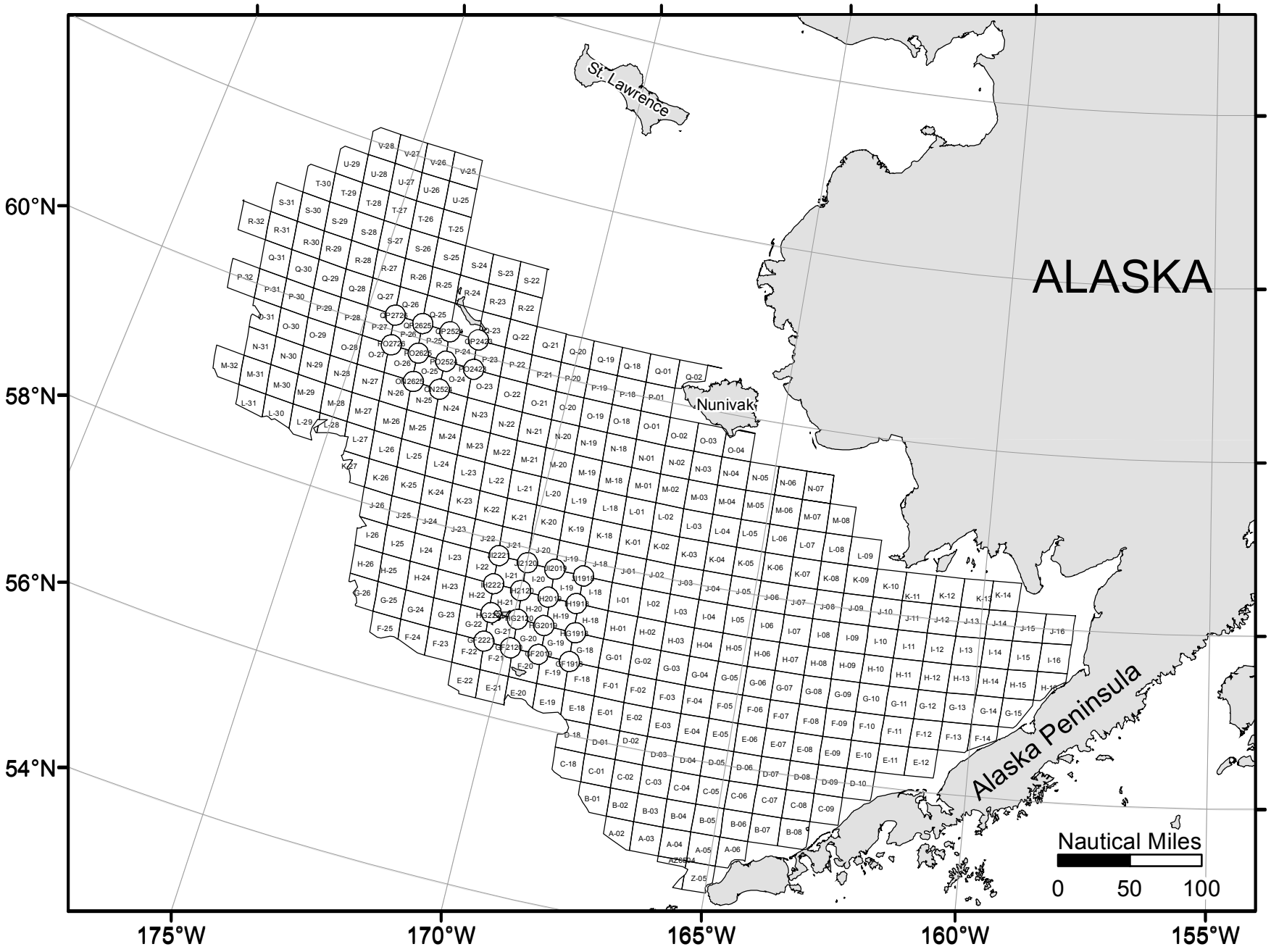

Figure 1. -- Map of the station sampling grid for the 2016 eastern Bering Sea continental shelf bottom trawl survey.

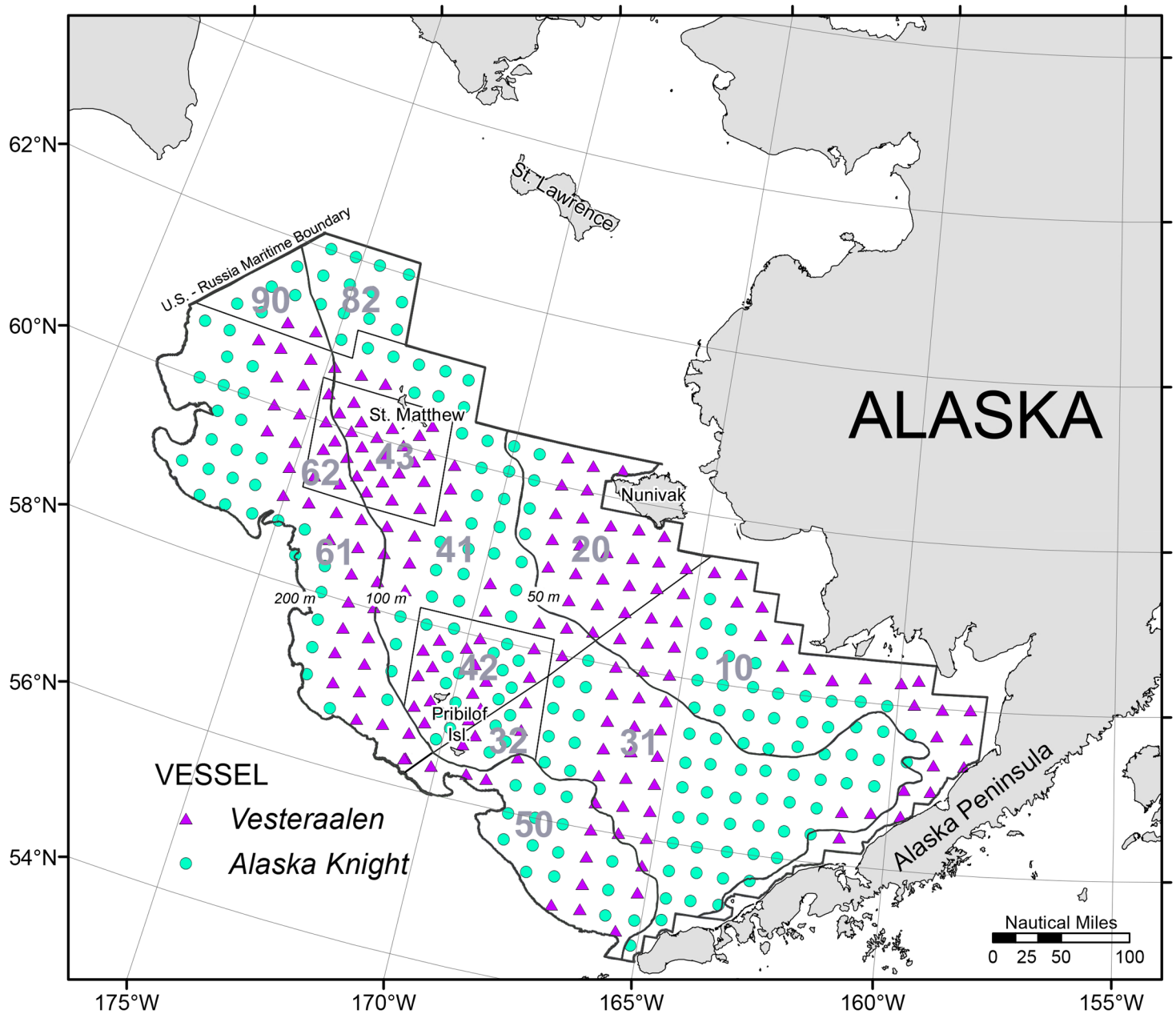

Figure 2. -- Sampled survey stations by vessel and the stratification scheme used for data analysis of the 2016 eastern Bering Sea shelf bottom trawl survey. See Table 1 for information about stratum areas and sampling densities.

and the northern distribution of walleye pollock. All results reported herein include data analyses for all 376 stations combined.

Survey Vessels and Sampling Gear

The survey was conducted aboard the chartered commercial stern-trawlers FV *Vesteraalen* and FV *Alaska Knight*. Both vessels are house-forward trawlers with stern ramps. The FV *Alaska Knight* has a length overall (LOA) of 43.5 m (143 ft) and the FV *Vesteraalen* has an LOA of 38 m (125 ft). All fishing operations were conducted in strict compliance to national and regional protocols detailed in Stauffer (2004). Both vessels were equipped with 83-112 eastern otter trawls, which have 25.3 m (83 ft) headropes and 34.1 m (112 ft) footropes (Fig. 3). These nets were attached to tail chains with 54.9 m (30 fm) paired dandylines. Each lower dandyline had a 0.61 m chain extension connected to the lower wing edge to improve bottom tending. Steel "V" doors measuring 1.8 × 2.7 m (6 × 9 ft) and weighing 816 kg (1,800 lbs) each were used for spreading the net opening while the trawl was fishing on the seafloor.

The Marport Deep Sea Technologies Inc. net mensuration system was used during the deployment of each tow to record net spread and net height. Net spread was measured as the horizontal distance between two sensors attached immediately forward of the junction of the upper breastline and the dandyline, and net height was measured from the headrope to the seafloor. Mean net spread values for estimating area swept per tow were calculated according to methods described by Lauth and Kotwicki (2014).

In 2016, the net mensuration system failed to record data for six tows on the FV *Vesteraalen* and two tows on the FV *Alaska Knight*. Area swept calculations for those tows were

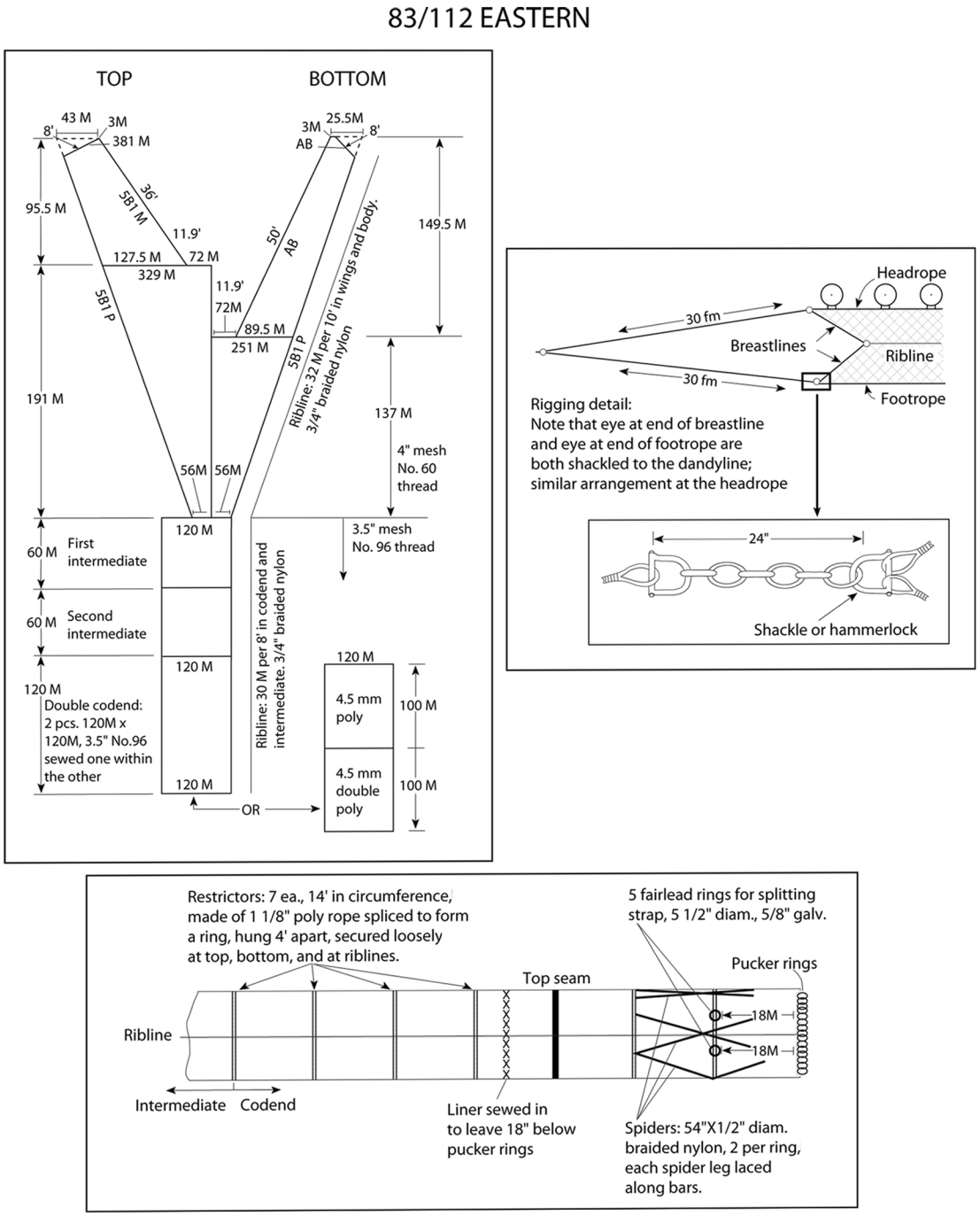

Figure 3. -- Schematic diagram of the 83-112 eastern otter trawl gear used during the 2016 eastern Bering Sea bottom trawl survey.

estimated using net spread values derived from an equation using multiple linear regression analysis for each vessel. Predictor variables used for the analysis were inverse scope (m) and net height (m) from valid tows (Rose and Walters 1990, Zar 1999). Both predictor variables for each vessel were significant ($P < 0.001$) and the resulting regression equations were as follows:

FV *Vesteraalen* (n = 177)

Net spread (m) = 19.698 – 169.507 * Inverse scope – 0.939 * Net height

FV *Alaska Knight* (n = 193)

Net spread (m) = 21.314 – 252.463 * Inverse scope – 1.268 * Net height.

Sampling Logistics and Stratification Scheme

The FV *Vesteraalen* and FV *Alaska Knight* began the standard EBS shelf survey in Dutch Harbor, Alaska, on May 26, 2016. Trawl sampling 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 throughout the duration of the survey (Smith and Bakkala 1982). The FV *Alaska Knight* and FV *Vesteraalen* completed survey operations on July 30, 2016. Both vessels were offloaded in Dutch Harbor.

For catch analysis, the EBS shelf was divided into 12 strata bounded by the 20 m, 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 the Pribilof Islands (Fig. 2). This stratification scheme reflects the differences observed in Bering Sea groundfish distribution across the oceanographic domains; the intent 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 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). For purposes of some analyses (i.e., abundance at length), the high-density strata were grouped, resulting in eight subareas: 10, 20, 30 (31+32), 40 (41+42+43), 50, 60 (61+62), 82, and 90 (Fig. 2; Table 1).

Catch Sampling Procedures

Standard sampling procedures used in RACE EBS bottom trawl surveys are described in detail by Wakabayashi et al. (1985) and Stauffer (2004). A summary of these procedures is provided below.

Samples were collected by trawling near the center of each grid square (or corner station, 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 a station was not considered trawlable due to obstructions visible on the depth sounder, the nearest trawlable site within the same grid square was used. Hauls that resulted in significant gear damage or contained debris such as discarded crab pots which caused visible changes in net mensuration were redeployed to obtain a successful sample.

Catches estimated to be less than approximately 1,150 kg (2,500 lb) were entirely sorted and enumerated, whereas larger catches were weighed in aggregate and subsampled before sorting. After sorting subsampled catches, individual species were weighed and counted in aggregate, and these weights and numbers were then expanded arithmetically to represent the total catch. Fishes and invertebrates were identified and sorted to the lowest taxonomic level practicable (Stevenson and Hoff 2009).

Table 1. -- Stratum areas and sampling densities for the 2016 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			
31	94,526	69	1,370
32	8,774	8	1,097
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
61	88,134	60	1,469
62	6,429	7	918
90	11,568	8	1,446
Total EBS	492,898	376	1,311

Catch weights and numbers by species or species-group were either estimated directly when subsampled, or estimated by extrapolating the proportion in the subsample to that of the total catch weight. All Pacific halibut (*Hippoglossus stenolepis*) and commercial crab species were weighed and enumerated from each catch sample. Additional fish and invertebrate species (e.g., large skates, Pacific cod, sculpins, sharks, and octopus) were completely sorted from the catch samples in some cases.

Random samples of selected fish species (Table 2) were further processed to obtain length measurements. The number of fish in a random length sample for a species was dependent on the size range of that species in the haul, up to a maximum of about 300 specimens. For each fish in a length sample, sex was determined and then the fork or total length was measured to the nearest 1.0 cm. 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 an IPHC length-weight regression (Courcelles 2012).

Sagittal otoliths were collected from 12 fish species (Table 2) and returned to the AFSC to be processed for age determination. Up to 20 random specimens of each Arctic cod (*Boreogadus saida*) and saffron cod (*Eleginus gracilis*) were sampled from selected catch samples in which they were present, placed in plastic bags and frozen. For the other 10 species, individual fish weights and lengths were collected from which age structures were taken. A maximum of 12 pairs of otoliths per centimeter size interval (3/sex/vessel/region) were collected for Alaska plaice (*Pleuronectes quadrituberculatus*), northern rock sole (*Lepidopsetta polyxystra*), and Greenland turbot (*Reinhardtius hippoglossoides*). A maximum of 8 pairs of otoliths per centimeter size interval (2/sex/vessel/region) were collected for Pacific cod and

Kamchatka flounder (*Atheresthes evermanni*). For yellowfin sole, a maximum of 20 pairs of otoliths for each centimeter size interval (5/sex/vessel/region) were collected. For flathead sole (*Hippoglossoides elassodon*) and arrowtooth flounder (*Atheresthes stomias*), a maximum of 3 pairs of otoliths were collected randomly from each haul. Otoliths for groundfishes were preserved in 50% glycerol-thymol solution. Pacific halibut otoliths were collected aboard the FV *Vesteraalen* by the IPHC and were dried and stored without preservative.

Sampling for walleye pollock otoliths was random within each haul. The survey area was divided into low- and high-density strata based on historical density and an isobath of approximately 70 m. Otoliths were collected from all hauls in which the total number of walleye pollock was greater than 19. Five pairs of otoliths were collected in high-density strata and three in low-density strata. Additionally, if juvenile walleye pollock (< 20 cm) were present in a sample, two additional otolith pairs were taken from a random sample of those juveniles.

In addition to the stratified collection of Pacific cod otoliths, a supplemental collection continued from 2015 (Table 3) to test the feasibility of a protocol for random sampling of otoliths for this species. For this project, stations were randomly pre-selected at which 4 to 8 random Pacific cod were sampled as a separate otolith collection.

Temperature and depth profiles were recorded using a Sea-Bird SBE-39 datalogger (Sea-Bird Electronics Inc., Bellevue, WA) attached to the headrope of the trawl. Observations were made at 3-second intervals at each station. Average bottom depth was calculated by adding the average net height to the average depth of the headrope.

Table 2. -- Biological data collected during the 2016 eastern Bering Sea shelf bottom trawl survey (* 20 random samples from selected catch samples, **stomach tally includes both arrowtooth and Kamchatka flounders).

Species	Length measurements	Age structures	Stomachs collected	Pathobiology samples
Walleye pollock	50,857	1,780	3,202	–
Pacific cod	17,525	1,634	2,138	–
Arctic cod	1,724	20*	–	–
Saffron cod	164	20*	–	–
Yellowfin sole	27,584	884	–	–
Northern rock sole	19,356	526	610	–
Flathead sole	17,738	714	–	–
Bering flounder	2,700	–	–	–
Pacific halibut	2,248	556	192	–
Alaska plaice	6,312	–	–	–
Arrowtooth flounder	15,513	775	1,739**	–
Kamchatka flounder	3,081	524	–	–
Greenland turbot	505	335	–	–
Rex sole	642	–	91	–
Longhead dab	282	–	–	–
Plain sculpin	1,967	–	–	–
Great sculpin	749	–	–	–
Warty sculpin	286	–	–	–
Yellow Irish lord	1,050	256	–	–
Starry flounder	446	–	–	–
Pacific ocean perch	239	–	–	–
Alaska skate	4,246	–	–	–
Bering skate	193	–	–	–
Misc. skates	79	–	–	–
Red king crab		–	–	–
Blue king crab		–	–	–
Opilio Tanner crab		–	–	539
Bairdi Tanner crab		–	–	321
Misc. species	1,258	–	–	–
Total	176,744	8,024	7,972	860

Catch Data Analysis

Trawl survey catch data were used to estimate biomass, population, and size structure of fish and invertebrate species. A brief description of the procedures used in the analysis of RACE Bering Sea survey data follows (for a detailed description, including variance estimators, see Wakabayashi et al. 1985). Some species were grouped by family for catch data analysis because of their limited commercial value or uncertain identification.

Mean catch per unit effort (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 each stratum and for total 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 the total survey area.

For size composition estimates, the proportion of fish at each length interval (from subsamples at each station), weighted by CPUE (no./ha), was expanded to the stratum population. Stratum abundance-at-length estimates were then summed for the total estimated size composition for the overall survey area.

Except for Pacific halibut, otolith samples collected during the survey were processed for age by staff of the Age and Growth Program of the AFSC's Resource Ecology and Fisheries Management (REFM) Division. The most current analyses of age, growth, and population dynamics are presented in the 2016 NPFMC Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Region (NPFMC 2016).

Additional Research Projects

In addition to standard survey operations, 25 research projects were undertaken during 2016 (Table 3). A solicitation for research proposals was issued on January 13, 2016. Project requests were prioritized and modified based on their potential support of AFSC goals and their expected impact on survey resources and available time. Some of the approved projects were new for 2016, while many continued multi-year observations of supplementary data.

RESULTS AND DISCUSSION

A total of 376 stations were successfully sampled in 2016 (Fig. 2). Haul data for successfully trawled stations used in the analyses are listed in Appendix A along with the relevant information about each station, such as position, tow parameters (net width, depth, distance fished, and tow duration), time, and environmental measurements (surface and near-bottom temperatures) for each vessel.

Ocean Conditions

Sea surface temperatures recorded during the survey ranged from 3.1° to 14.1° C (Fig. 4). Surface temperatures were warmest in the northwest region of the survey area and were generally higher on the middle and outer shelf. Near-bottom temperatures (measured as the temperature at the depth of the headrope while the trawl was on-bottom) ranged from -1.5° to 9.9° C (Fig. 5), with warmer near-bottom temperatures (> 3.0° C) occurring throughout a majority of the southeast extent of the survey area, ranging to approximately 90 nmi north of the

Table 3. -- Special projects and collections undertaken during the 2016 eastern Bering Sea shelf bottom trawl survey by principal investigator and agency*.

Project title	**Principal investigator**	**Agency**
Reproductive potential of female *Chionoecetes* crabs	Natura Richardson	ADF&G
Development of a direct age determination method for crustaceans in Alaskan waters	Joel Webb	ADF&G
Population genetics of Pacific sleeper sharks and salmon sharks	Cindy Tribuzio	AFSC-ABL
NMML Food Habits Reference Collection	Jim Thomason	AFSC-MML
Seasonal movements of Pacific cod from genetic stock identification in summer fisheries	Mike Canino	AFSC-RACE
Outreach fish collection	Jason Conner	AFSC-RACE
Verification of skate nurseries	Jerry Hoff	AFSC-RACE
Shelf bitter crab syndrome in the North Pacific *Chionoecetes* spp.	Pam Jensen	AFSC-RACE
The performance of tow body built for observations of pollock behavior in front of the survey bottom trawl	Stan Kotwicki	AFSC-RACE
Effects of light intensity and penetration on the distribution and behavior of walleye pollock in the eastern Bering Sea	Stan Kotwicki	AFSC-RACE
Pacific cod size at age	Robert Lauth	AFSC-RACE
Using bottom trawl survey acoustic data to augment the MACE* acoustic-trawl survey time series of walleye pollock abundance	Patrick Ressler	AFSC-RACE
Juvenile Tanner and snow crab growth studies	Cliff Ryer	AFSC-RACE
Specimens for observer training	Duane Stevenson	AFSC-RACE

Table 3. -- Continued.

Project title	Principal investigator	Agency
Proportion of female snow crab that are on an annual vs. biennial reproductive cycle	Katherine Swiney	AFSC-RACE
Long term effects of ocean acidification on red king crab under diurnal and seasonal variability in pCO^2	Katherine Swiney	AFSC-RACE
Quality of two juvenile flatfish habitats during warm and cold periods in the eastern Bering Sea	Cynthia Yeung	AFSC-RACE
Stomach collection and preservation	Troy Buckley	AFSC-REFM
Small octopus collection	Liz Conners	AFSC-REFM
Arctic and saffron cod growth	Tom Helser	AFSC-REFM
Using mini data loggers to collect conductivity, temperature, and depth on bottom trawl survey nets	Carey McGilliard	AFSC-REFM
IPHC Pacific halibut data collection and tagging on NMFS trawl surveys	Lauri Sadorus	IPHC
Molecular species identification of deepwater corals	Ewann Berntson	NWFSC
CTD data collection	Ned Cokelet	PMEL
Macro- and microevolutionary processes in populations of Pacific cod	Alexi Orlov	VNIRO

* Agency Key: ADF&G = Alaska Department of Fish and Game
AFSC = Alaska Fisheries Science Center
RACE = Resource Assessment and Conservation Engineering Division
REFM = Resource Ecology and Fisheries Management Division
IPHC = International Pacific Halibut Commission
NWFSC = Northwest Fisheries Science Center
PMEL = Pacific Marine Environmental Laboratory
VNIRO = Russian Research Institute of Fisheries and Oceanography
MACE = Midwater Assessment and Conservation Engineering Program

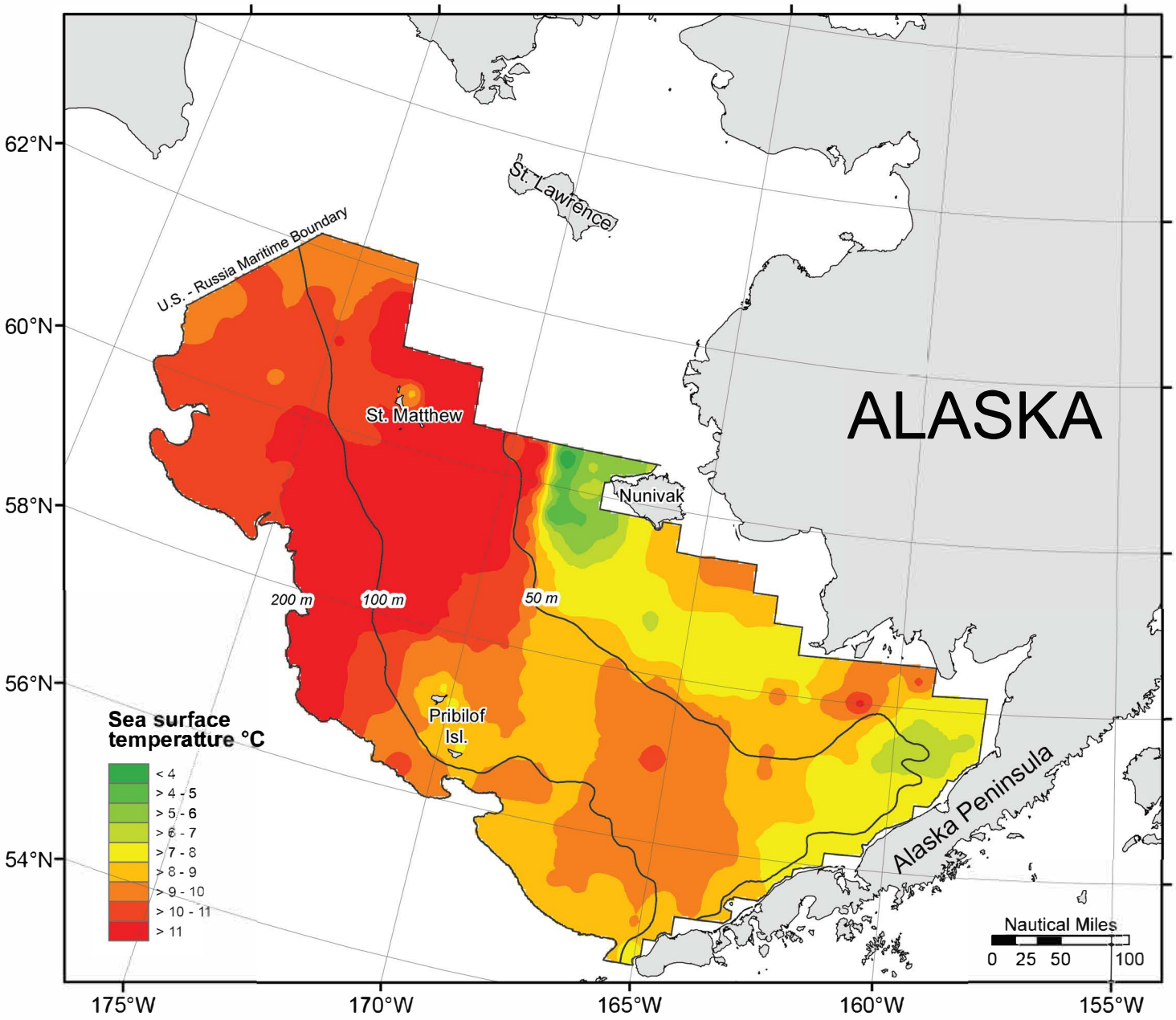

Figure 4. -- Contour map of surface temperatures from the 2016 eastern Bering Sea shelf bottom trawl survey.

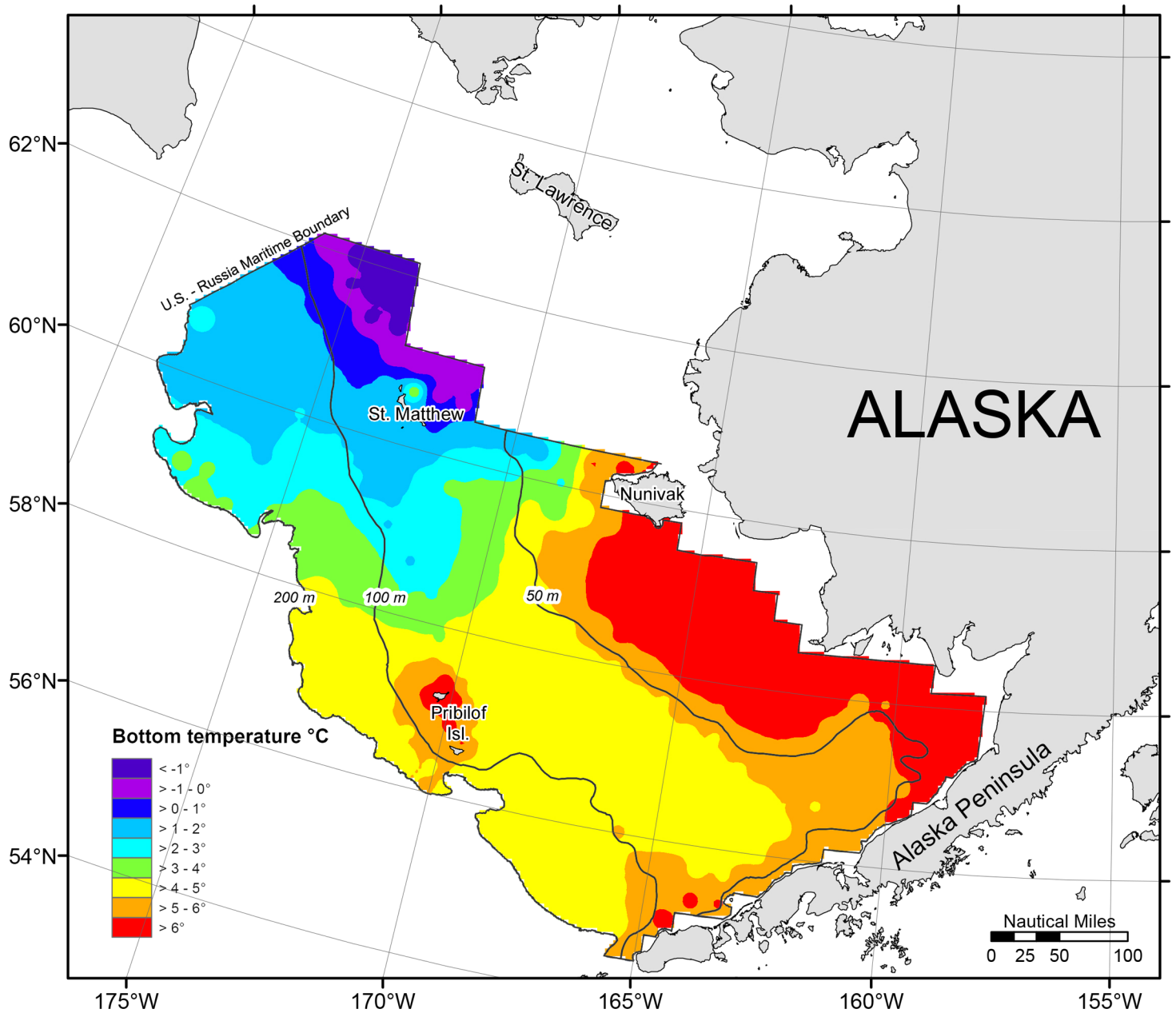

Figure 5. -- Contour map of the near-bottom temperatures from the 2016 eastern Bering Sea shelf bottom trawl survey.

Pribilof Islands and approximately 60 nmi west of Nunivak Island. The "cold pool", defined as the area where temperatures < 2°C, was the smallest in the time series and confined to the upper middle shelf (50 -100 m depth) north of latitude 58°20' N (Fig. 5).

Both surface and bottom temperature means for the 2016 eastern Bering Sea shelf were the highest on record in the 35-year bottom trawl survey time-series (Fig. 6). The 2016 mean surface temperature was 9.5°C, which was 2.3°C higher than 2015 and 3.1°C above the time-series mean (6.4°C). The mean bottom temperature was 4.5°C, which was 1.2°C higher than 2015 and 2.2°C above the time-series mean (2.4°C).

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

A total of 94 fish taxa were identified in the catches from the survey area (Appendix B Table 1). In addition, a total of 232 individual invertebrate taxa were identified throughout the 2016 BT survey (Appendix B Table 2).

Total demersal animal biomass for the standard survey area was estimated at 16.2 million t. Fish species accounted for 79% (12.9 million t; Table 4) and invertebrates 21% (3.4 million t; Table 5). The fish biomass was dominated by pleuronectids (6.0 million t) and gadids (5.9 million t; Table 4). The biomass of invertebrates was composed primarily of echinoderms (1.6 million t) and crustaceans (0.7 million t; Table 5).

Geographic distributions, population numbers, biomass estimates, and size compositions are presented in Figures 7-28 and Tables 6-16 for each of the following EBS groundfish: walleye pollock, Pacific cod, yellowfin sole, northern rock sole, flathead sole, Bering flounder, Alaska plaice, Greenland turbot, arrowtooth flounder, Kamchatka flounder, and Pacific halibut.

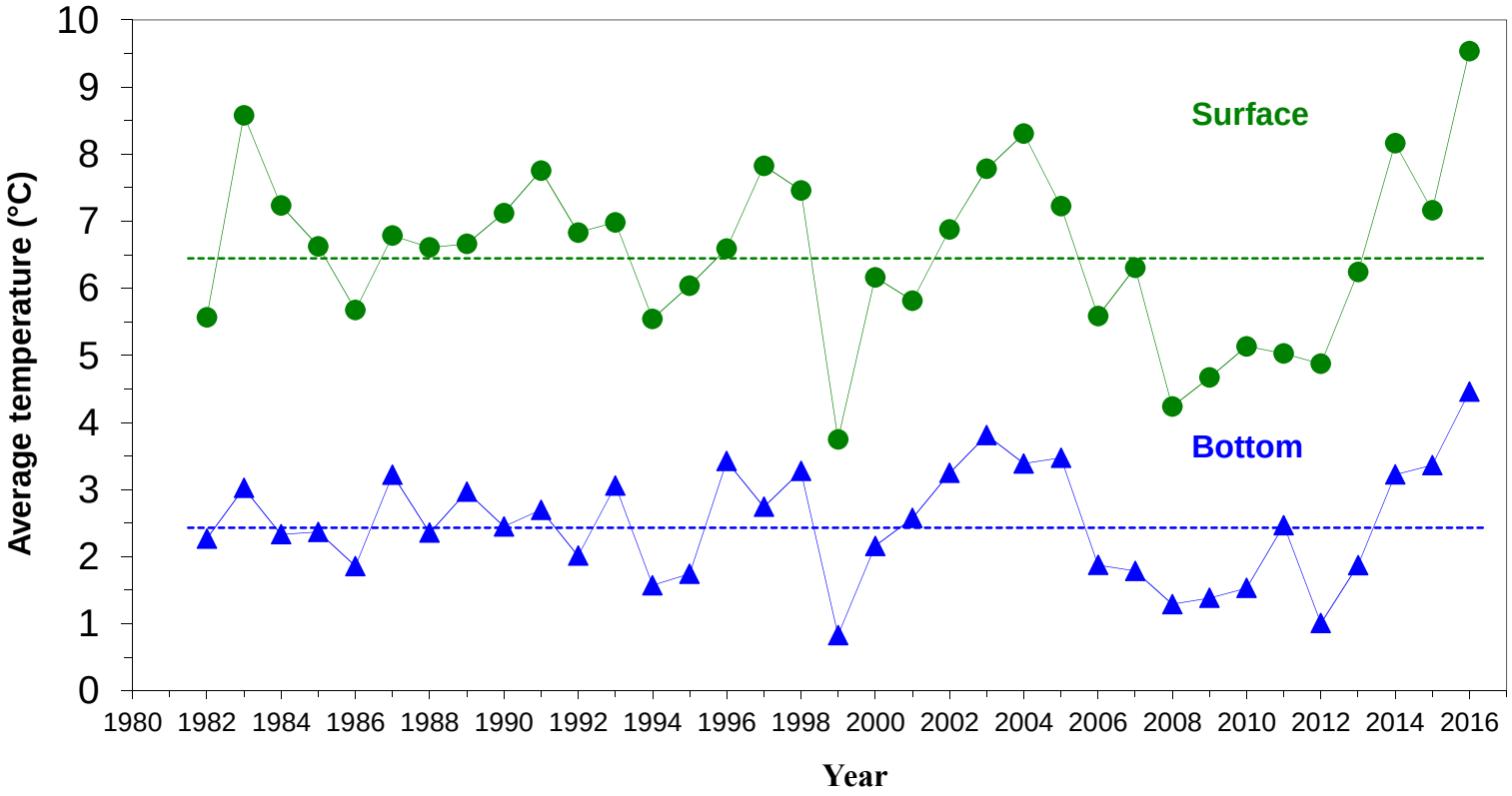

Figure 6. -- Time series of mean survey surface and near-bottom temperatures weighted by stratum based on expendable bathythermograph casts or digital dataloggers attached to the headrope during the eastern Bering Sea bottom trawl surveys from 1982 to 2016 The 1982-1987 means are based on Strata 10-62 (see Fig. 2) and the 1988-2016 means also include Strata 80 and 92. The dashed lines represent the grand mean water temperatures for 1982-2015.

Table 4. -- Biomass estimates (t) for major fish taxa collected during the 2016 eastern Bering Sea shelf bottom trawl survey. Differences in sums are due to rounding.

Taxon	Estimated total biomass (t) and variance		Estimated biomass by stratum (t)											
			10	20	31	32	41	42	43	50	61	62	82	90
Gadidae (cods)														
Walleye pollock	4,910,080	2.0E+11	493,943	433,060	875,069	19,890	827,907	240,845	417,623	50,618	1,284,028	55,448	142,418	69,232
Pacific cod	986,013	6.0E+09	143,653	79,452	157,172	17,111	276,496	42,793	82,944	19,279	114,196	11,524	25,084	16,308
Other cods	5,309	1.8E+06	1,966	68	0	0	659	0	402	0	54	157	1,639	365
Total cods	**5,901,402**	**2.1E+11**	**639,562**	**512,580**	**1,032,241**	**37,000**	**1,105,062**	**283,639**	**500,969**	**69,897**	**1,398,277**	**67,129**	**169,141**	**85,906**
Anoplopomatidae														
Sablefish	863	2.1E+05	7	0	647	0	0	0	0	209	0	0	0	0
Scorpaenidae (rockfishes)														
Pacific ocean perch	90,170	7.6E+09	0	0	24	0	0	0	0	636	89,511	0	0	0
Other rockfish	250	1.0E+04	0	0	24	0	0	0	0	178	47	0	0	0
Total rockfish	**90,420**	**7.6E+09**	**0**	**0**	**48**	**0**	**0**	**0**	**0**	**814**	**89,558**	**0**	**0**	**0**
Pleuronectidae (flatfishes)														
Yellowfin sole	2,859,811	2.7E+10	1,110,470	396,391	957,275	19,023	270,389	98,541	7,526	118	0	0	78	0
Northern rock sole	1,461,272	1.7E+10	764,734	208,183	209,467	19,964	85,808	137,841	27,501	559	6,321	295	337	262
Flathead sole	439,296	9.8E+08	14,603	58	144,032	25,365	13,359	45,908	2,720	50,248	123,352	13,823	93	5,733
Bering flounder	37,624	3.7E+07	6	175	88	0	6,807	25	2,729	0	1,852	1,149	12,466	12,326
Alaska plaice	425,217	1.7E+09	33,334	36,048	151,082	6,070	152,732	19,254	23,789	89	1,093	221	1,102	402
Arrowtooth flounder	475,264	5.3E+08	9,639	2,348	100,775	10,799	49,373	31,270	5,143	66,007	182,976	13,376	0	3,558
Kamchatka flounder	55,324	9.9E+06	292	127	4,527	1,035	7,563	3,396	5,962	4,380	24,011	1,954	22	2,055
Greenland turbot	22,429	9.0E+06	0	0	57	0	3,177	36	1,418	0	9,408	1,221	241	6,870
Pacific halibut	153,704	1.6E+08	43,222	25,920	24,125	4,233	15,616	13,404	336	7,535	17,554	1,090	31	638
Other flatfish	98,506	8.9E+08	54,571	12,459	20,564	11	94	22	19	6,026	2,799	0	1,942	0
Total flatfish	**6,028,446**	**4.9E+10**	**2,030,871**	**681,711**	**1,611,993**	**86,500**	**604,917**	**349,697**	**77,142**	**134,962**	**369,366**	**33,129**	**16,312**	**31,845**
Clupeidae (Pacific herring)	12,573	9.5E+06	7,271	1,797	153	0	308	0	477	0	236	66	68	2,199
Cottidae (sculpins)	196,084	3.0E+08	17,532	12,076	38,163	20,993	43,325	20,911	10,622	1,979	23,504	1,673	1,851	3,454
Zoarcidae (eelpouts)	50,621	7.5E+07	0	77	6,632	7	18,200	2,222	4,877	100	9,375	921	2,100	6,110
Osmeridae (smelts)	3,963	7.8E+05	862	1,312	293	1	89	0	75	1,308	4	1	18	0
Agonidae (poachers)	21,006	3.8E+06	3,407	3,429	5,936	320	6,165	1,389	149	88	92	6	12	14
Liparidae (snailfishes)	1,820	2.6E+05	0	0	0	0	260	0	189	13	125	12	1,075	145
Alaska skate	550,892	5.2E+08	73,048	86,243	99,875	4,847	86,296	21,428	11,897	40,444	98,079	9,519	7,762	11,454
Other skates	37,273	5.1E+07	4,312	37	9,359	238	83	261	2	12,984	9,998	0	0	0
Total fish	**12,905,957**	**2.7E+11**	**2,777,248**	**1,299,997**	**2,808,161**	**150,018**	**1,865,116**	**679,996**	**606,403**	**264,114**	**2,002,964**	**112,460**	**198,349**	**141,132**

Table 5. -- Biomass estimates (t) for major invertebrate taxa collected during the 2016 eastern Bering Sea shelf bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Taxon	Estimated total biomass (t) and variance		Estimated biomass by stratum (t)											
			10	20	31	32	41	42	43	50	61	62	82	90
Crustacea														
Crabs	691,394	1.6E+09	42,551	31,091	150,927	21,790	156,237	66,074	35,139	23,077	91,157	10,270	55,712	7,368
Shrimps	2,931	1.6E+09	77	17	22	2	215	58	101	129	1,992	109	44	166
Other crustaceans	1,365	2.3E+05	586	1	60	416	7	50	35	97	112	0	0	0
Total crustaceans	**695,689**	**2.4E+05**	**43,214**	**31,109**	**151,009**	**22,208**	**156,459**	**66,182**	**35,276**	**23,303**	**93,261**	**10,379**	**55,756**	**7,535**
Mollusca														
Gastropoda (snails)	415,487	8.4E+08	16,361	13,062	127,318	2,922	112,631	17,211	19,675	4,954	77,676	14,337	3,754	5,586
Pelecypoda (bivalves)	7,511	8.4E+08	1,291	1,531	1,498	65	2,027	407	371	44	227	0	47	3
Squids	48	2.5E+06	0	0	0	0	0	0	0	12	35	0	0	0
Octopuses	7,513	5.0E+02	0	0	0	0	0	1,286	164	3,389	2,591	0	17	67
Other mollusks	11,147	1.1E+07	636	606	3,652	41	2,868	1,078	243	24	1,269	54	487	189
Total mollusks	**441,706**	**2.1E+06**	**18,289**	**15,198**	**132,468**	**3,028**	**117,527**	**19,982**	**20,453**	**8,424**	**81,797**	**14,391**	**4,305**	**5,845**
Echinodermata														
Asteroidea (sea stars)	1,048,777	5.9E+09	292,719	147,184	234,163	9,816	130,149	101,134	11,164	930	93,327	12,974	4,780	10,436
Ophiuroidea (brittle stars)	458,392	3.2E+09	16,636	5,364	129,101	8,468	66,686	47,148	13,547	1,476	162,330	969	5,939	730
Echinoidea (sea urchin)	41,399	2.5E+08	134	0	20,868	88	36	7,778	948	10,372	1,053	95	3	23
Holothuroidea (sea cucumbers)	5,692	2.9E+06	1,235	0	1,310	422	0	1,417	1,272	1	34	0	0	0
Other echinoderms	458,392	3.2E+09	16,636	5,364	129,101	8,468	66,686	47,148	13,547	1,476	162,330	969	5,939	730
Total echinoderms	**1,554,260**	**9.4E+09**	**310,724**	**152,548**	**385,443**	**18,794**	**196,871**	**157,476**	**26,931**	**12,779**	**256,744**	**14,038**	**10,723**	**11,189**
Ascidiacea	290,849	1.7E+09	18,934	15,165	81,450	3,110	76,153	94,670	1,342	4	0	0	20	0
Porifera	118,843	7.4E+09	2,136	277	109,579	1,336	301	1,298	2,897	186	803	0	31	0
Cnidaria	96,183	8.3E+07	13,050	3,763	25,140	4,372	6,644	13,146	3,045	5,790	10,088	371	9,350	1,423
Other invertebrates	182,107	1.6E+08	16,949	14,677	60,670	3,143	28,471	28,000	5,956	761	18,541	3,299	525	1,114
Total invertebrates	**3,379,636**	**2.1E+10**	**16,949**	**14,677**	**60,670**	**3,143**	**28,471**	**28,000**	**5,956**	**761**	**18,541**	**3,299**	**525**	**1,114**

Estimated biomass and population numbers are given separately for each of the 12 strata used in the analysis (see Table 1) and for the total survey area. Size compositions are illustrated in histograms relating the population number per 1-cm length interval for each of the eight major grouped strata and for the total survey area. Catch per unit effort (CPUE), population, and biomass estimates and associated variances and confidence limits are listed for each species by stratum.

Appendix C details population estimates by sex and size class. A more detailed explanation of the 2016 BT survey results follows for the 11 fish species that are commercially exploited on the EBS shelf. Although not considered major commercial species individually, Bering flounder and Kamchatka flounder are included here because they are often grouped with their more common congeners, flathead sole and arrowtooth flounder, respectively.

Summary of Commercially Exploited Groundfish Species

Walleye Pollock (*Gadus chalcogrammus*)

Walleye pollock were encountered at all but three standard survey stations (Tables 6a and 6b; Fig. 7). Pockets of high density (> 300 kg/ha) were observed in the northwest region of the shelf and along the northern coast of the Alaska Peninsula (Fig. 7). Areas of lower pollock density (< 200 kg/ha) were observed in the southeastern shelf and near the U.S. – Russia Maritime Boundary. The estimated biomass (4.9 million t; Table 6a) and population (8.5 billion; Table 6b) of walleye pollock on the eastern Bering Sea shelf decreased from the previous year from 6.4 million t and 11.0 billion (Conner et al. 2017). In 2016, average catch rates in both weight and number were highest in the northwest area of the survey in strata 41, 43, and 61 (Tables 6a and 6b). One year-old pollock, represented by the < 20 cm length mode, were most

abundant in stratum 40 and found in all strata except for the southeast middle (stratum 30) and outer (stratum 50) shelf (Fig. 8).

Pacific Cod (*Gadus macrocephalus*)

Pacific cod were observed in 100% of trawl catch samples (Tables 7a and 7b). The highest catch densities for cod were observed in the middle shelf strata around Pribilof and St. Matthew Islands with other clusters of high density on the inner shelf west of Nunivak Island and along the Alaska Peninsula (Fig. 9). The cod biomass estimate remained relatively high, but decreased marginally from 1.1 million t in 2015 to 1.0 million t. The decline in the estimated population was more marked, decreasing from 1.0 billion in 2015 to 0.7 billion. The abundance of smaller Pacific cod (< 20 cm; Fig. 10) was 28% lower (22.3 million) than 2015 (30.8 million). Estimated abundance of < 20 cm Pacific cod in both 2015 and 2016 were among the lowest in the EBS shelf time series, suggesting poor recruitment of the 2014 and 2015 year classes.

Yellowfin Sole (*Limanda aspera*)

The distribution of yellowfin sole is generally constrained to the shallower depths of the Bering Sea, and while this species has the highest mean CPUE of all flatfish species on the BT survey (58.02 kg/ha, Table 8a), it was seldom encountered in either the outer shelf strata or the northern strata (Fig. 11). Yellowfin sole catch rates were highest on the inner shelf with the highest density catches occurring in Bristol Bay and along the Alaska Peninsula. The yellowfin sole biomass estimate increased by 48% from 1.9 million t in 2015 to 2.9 million t in 2016 (Table 8a) while the population estimate increased from 6.4 billion to 8.8 billion (Table 8b). Smaller yellowfin sole (< 20 cm) were only found on the inner shelf and larger sizes (up to

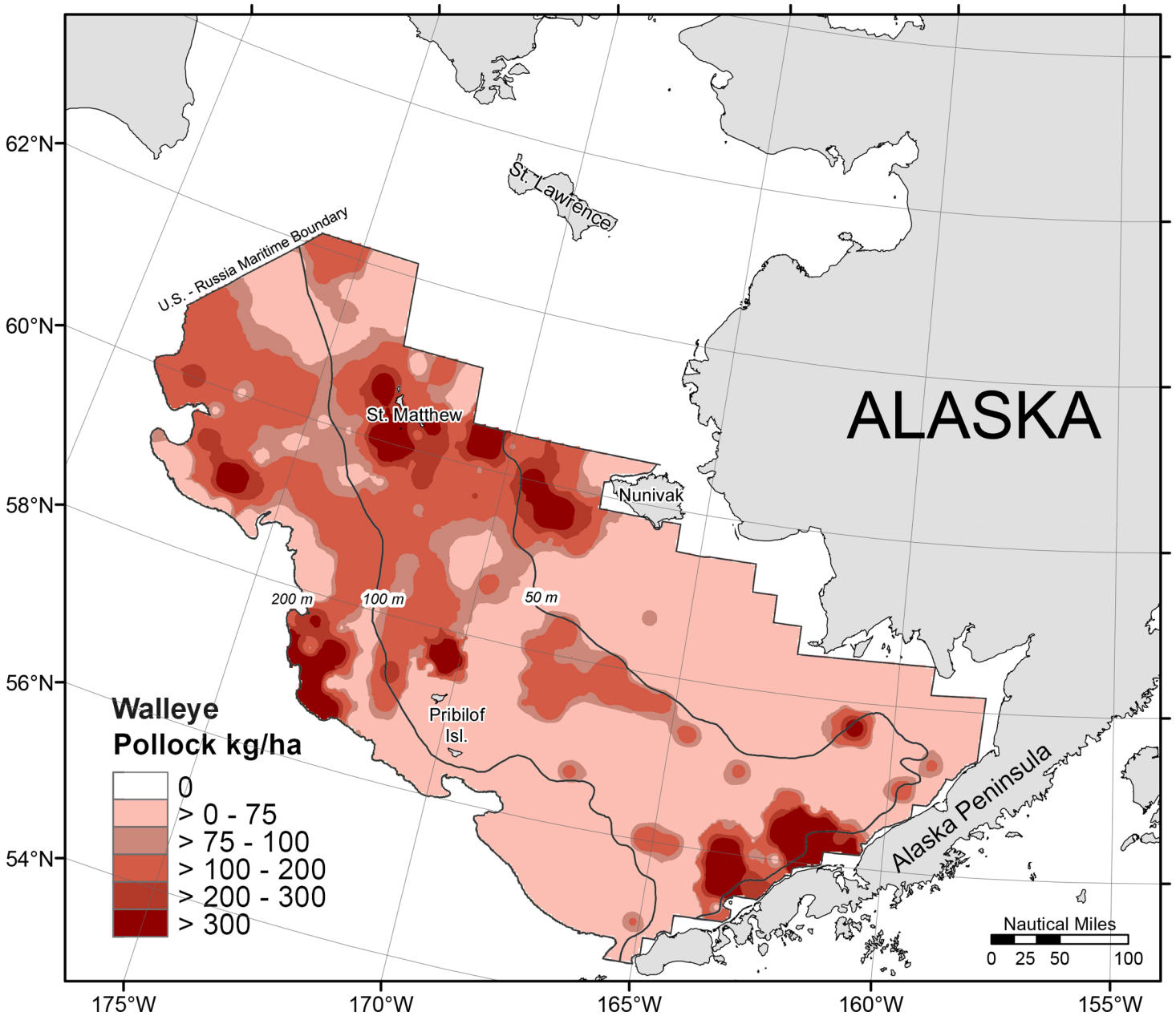

Figure 7. -- Distribution and relative abundance (kg/ha) of **walleye pollock** (*Gadus chalcogrammus*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

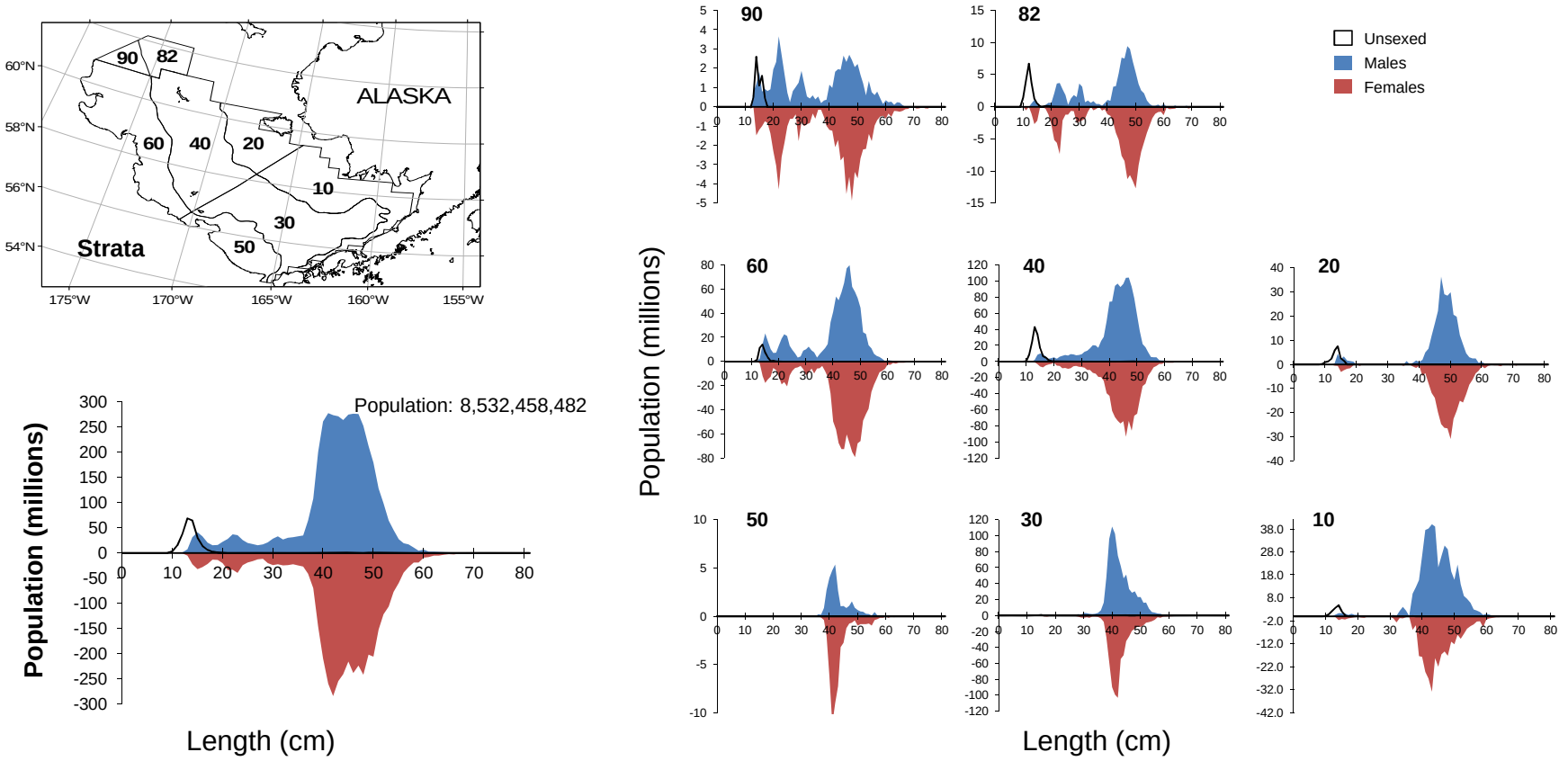

Figure 8. -- Estimated abundance-at-size of **walleye pollock** (*Gadus chalcogrammus*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 6a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **walleye pollock** (*Gadus chalcogrammus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	63.43	3.43E+01	493,943	2.67E+05	0	1,034,507	58	58	58	58
20	105.55	2.75E+01	433,060	1.13E+05	202,826	663,294	31	31	31	31
31	92.57	1.93E+01	875,069	1.82E+05	510,380	1,239,759	69	69	69	69
32	22.67	1.27E+01	19,890	1.12E+04	0	46,277	8	8	8	8
41	132.04	1.99E+01	827,907	1.25E+05	575,953	1,079,860	44	44	44	44
42	100.31	5.14E+01	240,845	1.24E+05	0	493,080	31	30	30	30
43	197.85	2.95E+01	417,623	6.22E+04	288,234	547,013	22	22	22	22
50	13.05	5.05E+00	50,618	1.96E+04	10,238	90,998	26	25	25	24
61	145.69	2.49E+01	1,284,028	2.20E+05	839,990	1,728,065	60	59	59	59
62	86.25	6.18E+00	55,448	3.97E+03	45,731	65,165	7	7	7	7
82	79.32	1.34E+01	142,418	2.40E+04	89,527	195,309	12	12	12	12
90	59.85	7.59E+00	69,232	8.78E+03	48,470	89,994	8	8	8	8
Total	99.62	9.11E+00	4,910,080	4.49E+05	4,021,004	5,799,155	376	373	373	372

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

Table 6b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **walleye pollock** (*Gadus chalcogrammus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	99.76	5.80E+01	776,832,015	4.51E+08	0	1,689,111,143	58	58	58	58
20	147.52	3.76E+01	605,211,139	1.54E+08	289,971,929	920,450,349	31	31	31	31
31	159.63	3.44E+01	1,508,905,768	3.25E+08	857,929,827	2,159,881,709	69	69	69	69
32	34.57	1.91E+01	30,330,336	1.68E+07	0	70,011,624	8	8	8	8
41	244.37	3.19E+01	1,532,297,591	2.00E+08	1,127,529,968	1,937,065,215	44	44	44	44
42	181.68	9.59E+01	436,241,322	2.30E+08	0	906,505,720	31	30	30	30
43	376.54	4.79E+01	794,780,032	1.01E+08	584,596,921	1,004,963,144	22	22	22	22
50	21.19	8.63E+00	82,213,288	3.35E+07	13,275,438	151,151,137	26	25	25	24
61	251.47	3.93E+01	2,216,296,696	3.46E+08	1,516,484,053	2,916,109,339	60	59	59	59
62	188.19	3.36E+01	120,982,598	2.16E+07	68,088,150	173,877,045	7	7	7	7
82	156.94	3.94E+01	281,762,154	7.07E+07	126,162,764	437,361,543	12	12	12	12
90	126.73	1.82E+01	146,605,538	2.11E+07	96,817,142	196,393,933	8	8	8	8
Total	173.11	1.52E+01	8,532,458,475	7.51E+08	7,045,335,736	10,019,581,215	376	373	373	372

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

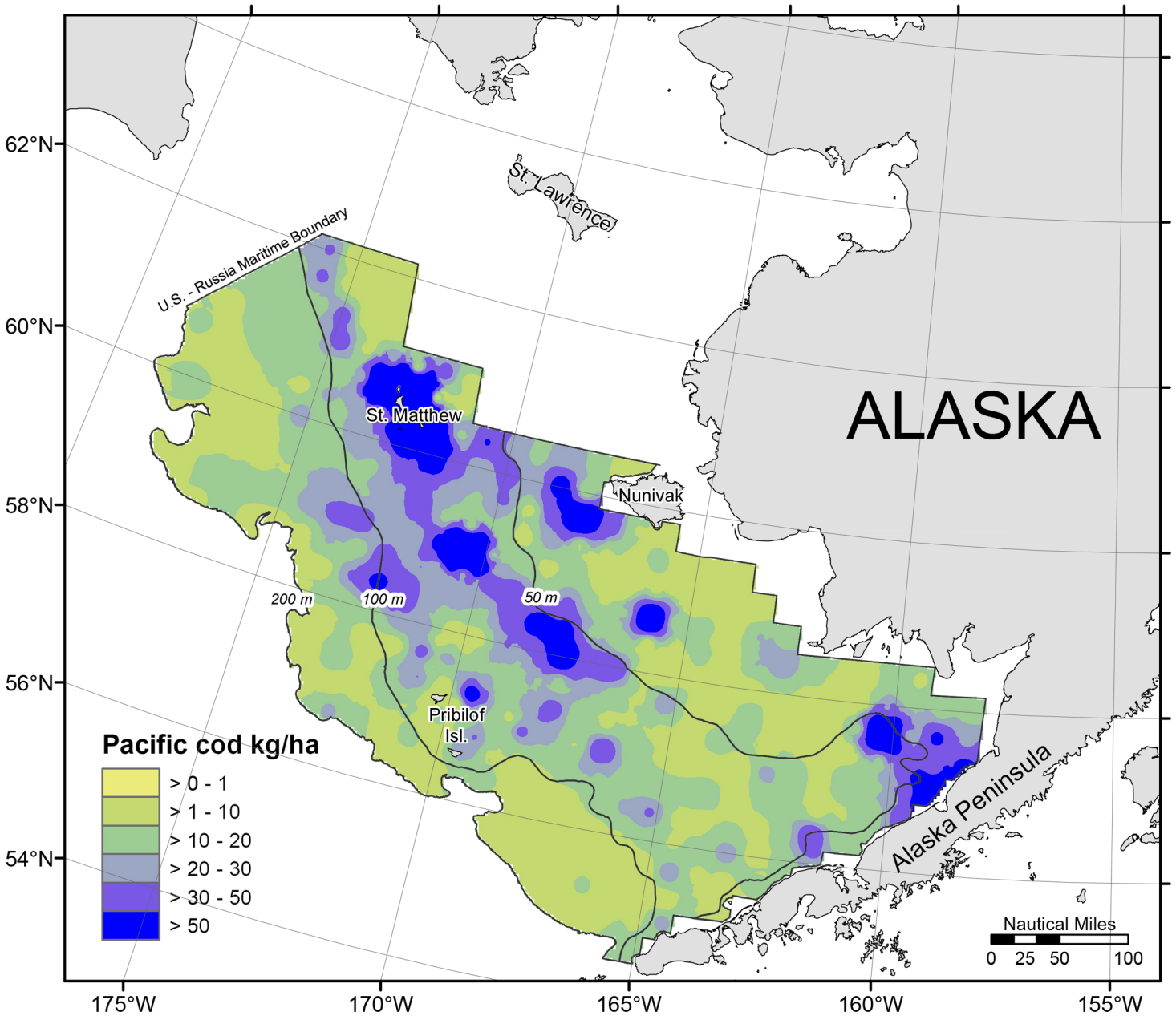

Figure 9. -- Distribution and relative abundance (kg/ha) of **Pacific cod** (*Gadus macrocephalus*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

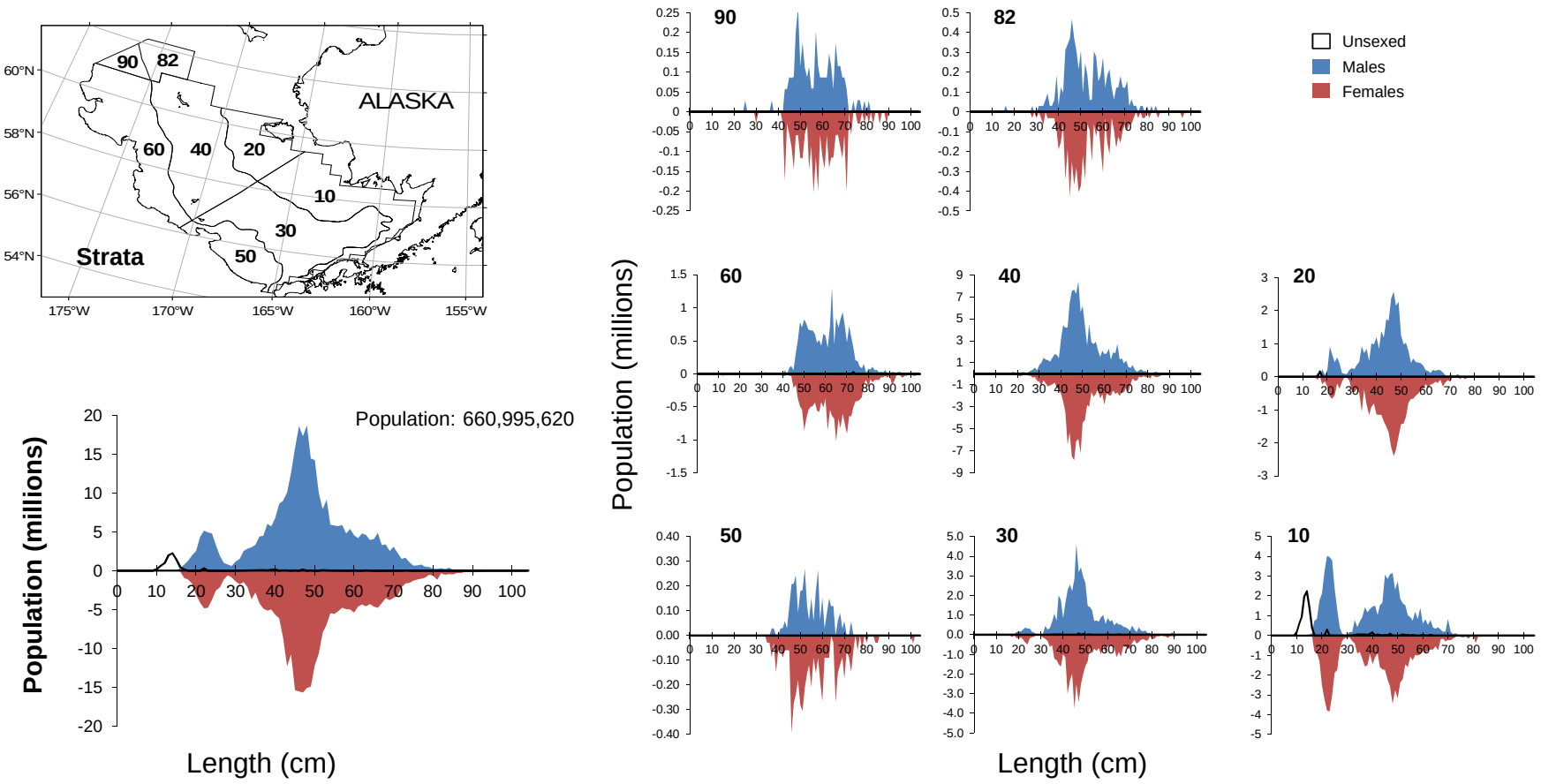

Figure 10. -- Estimated abundance-at-size of **Pacific cod** (*Gadus macrocephalus*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 7a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Pacific cod** (*Gadus macrocephalus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	18.45	3.27E+00	143,653	2.55E+04	92,185	195,121	58	58	58	58
20	19.37	3.93E+00	79,452	1.61E+04	46,508	112,397	31	31	31	31
31	16.63	2.52E+00	157,172	2.38E+04	109,581	204,762	69	69	69	69
32	19.50	3.94E+00	17,111	3.46E+03	8,939	25,283	8	8	8	8
41	44.10	1.02E+01	276,496	6.40E+04	147,203	405,789	44	44	44	44
42	17.82	2.54E+00	42,793	6.10E+03	30,346	55,241	31	31	31	31
43	39.30	5.86E+00	82,944	1.24E+04	57,197	108,690	22	22	22	22
50	4.97	8.12E-01	19,279	3.15E+03	12,789	25,768	26	26	26	26
61	12.96	1.34E+00	114,196	1.18E+04	90,337	138,055	60	60	60	60
62	17.93	1.91E+00	11,524	1.23E+03	8,527	14,522	7	7	7	7
82	13.97	4.51E+00	25,084	8.09E+03	7,280	42,887	12	12	12	12
90	14.10	1.04E+00	16,308	1.20E+03	13,462	19,155	8	8	8	8
Total	20.00	1.57E+00	986,013	7.74E+04	831,251	1,140,775	376	376	376	376

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

Table 7b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **Pacific cod** (*Gadus macrocephalus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	20.23	3.19E+00	157,530,874	2.49E+07	107,285,206	207,776,541	58	58	58	58
20	18.03	3.92E+00	73,964,671	1.61E+07	41,086,651	106,842,690	31	31	31	31
31	10.82	2.45E+00	102,244,994	2.32E+07	55,925,201	148,564,788	69	69	69	69
32	9.16	2.22E+00	8,035,639	1.95E+06	3,427,407	12,643,872	8	8	8	8
41	27.32	7.47E+00	171,294,840	4.68E+07	76,676,721	265,912,960	44	44	44	44
42	9.62	1.70E+00	23,092,029	4.08E+06	14,762,269	31,421,790	31	31	31	31
43	25.94	5.94E+00	54,751,428	1.25E+07	28,657,403	80,845,453	22	22	22	22
50	2.35	4.52E-01	9,101,493	1.75E+06	5,488,264	12,714,722	26	26	26	26
61	4.15	4.05E-01	36,555,927	3.57E+06	29,349,619	43,762,236	60	60	60	60
62	5.89	5.82E-01	3,787,429	3.74E+05	2,872,613	4,702,246	7	7	7	7
82	7.76	2.52E+00	13,928,352	4.52E+06	3,973,385	23,883,319	12	12	12	12
90	5.80	7.10E-01	6,707,941	8.21E+05	4,765,497	8,650,385	8	8	8	8
Total	13.41	1.25E+00	660,995,618	6.18E+07	537,375,477	784,615,760	376	376	376	376

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

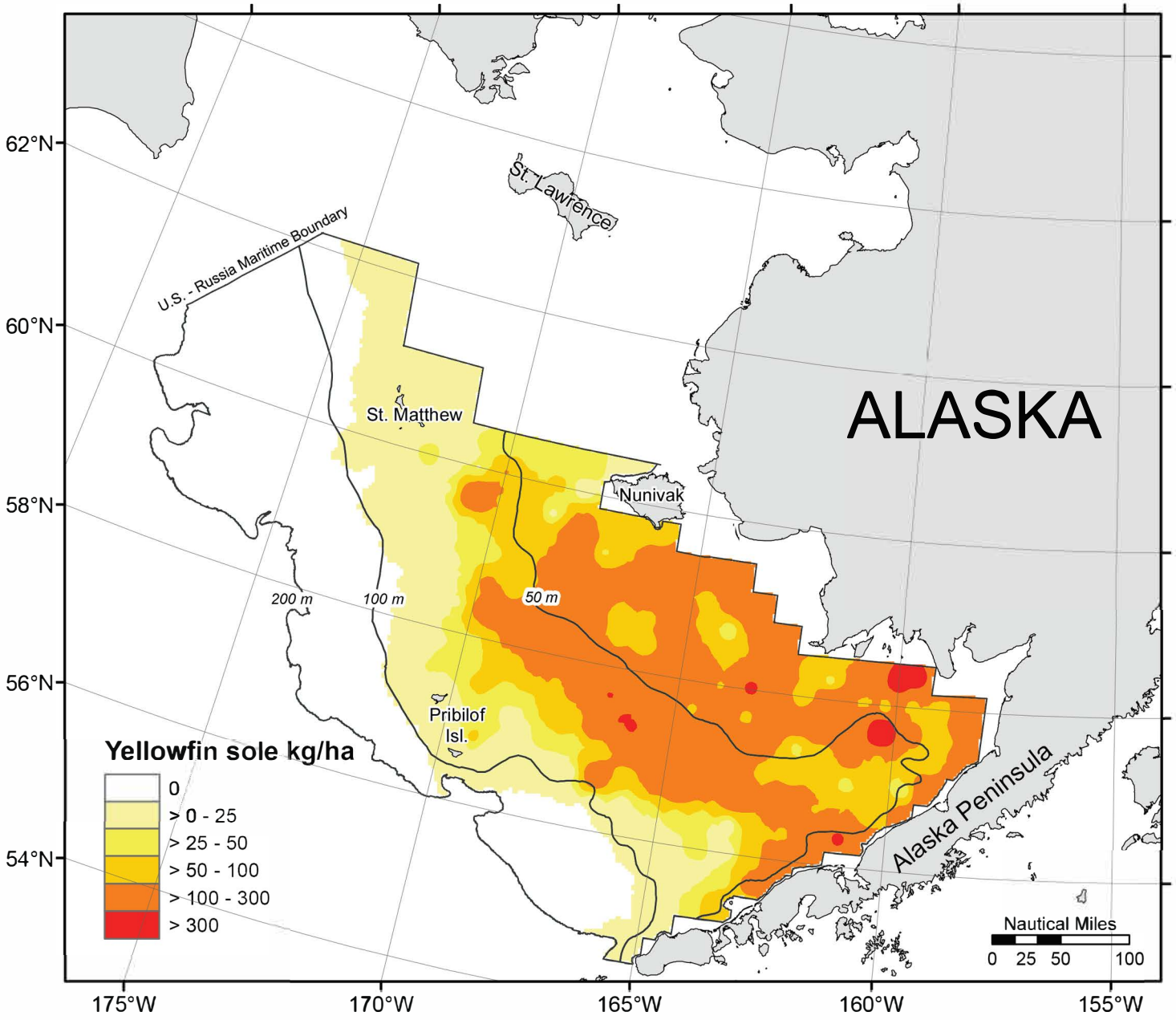

Figure 11. -- Distribution and relative abundance (kg/ha) of **yellowfin sole** (*Limanda aspera*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

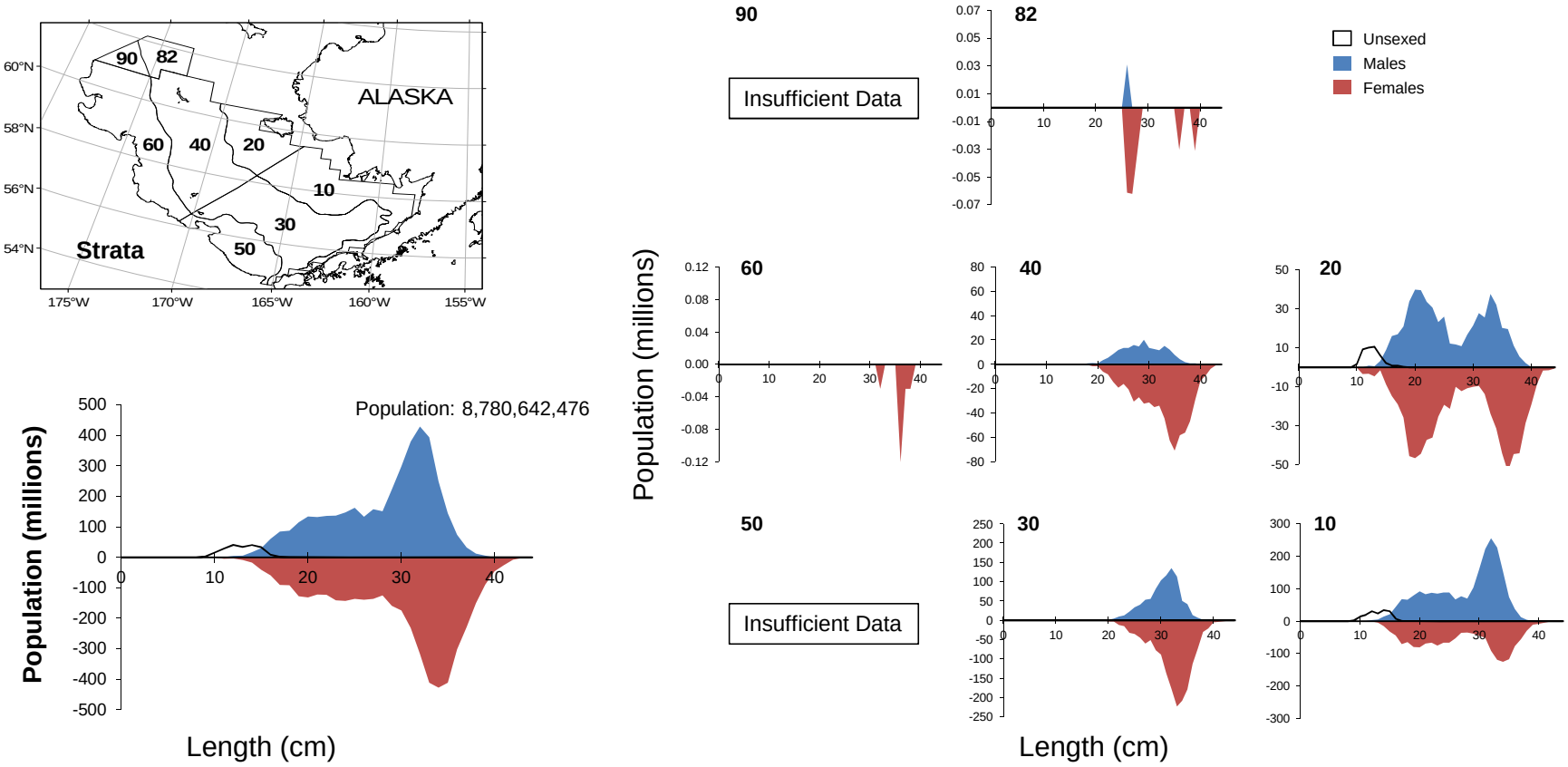

Figure 12. -- Estimated abundance-at-size of **yellowfin sole** (*Limanda aspera*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 8a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **yellowfin sole** (*Limanda aspera*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	142.60	1.08E+01	1,110,470	8.44E+04	939,834	1,281,106	58	58	58	57
20	96.62	1.18E+01	396,391	4.84E+04	297,480	495,303	31	31	31	31
31	101.27	1.23E+01	957,275	1.16E+05	724,298	1,190,253	69	66	66	66
32	21.68	6.57E+00	19,023	5.77E+03	5,385	32,661	8	8	8	8
41	43.12	9.72E+00	270,389	6.09E+04	147,244	393,533	44	35	35	35
42	41.04	9.92E+00	98,541	2.38E+04	49,908	147,174	31	27	27	27
43	3.57	2.07E+00	7,526	4.36E+03	0	16,597	22	13	13	13
50	0.03	3.05E-02	118	1.18E+02	0	362	26	1	1	1
61	0.00	0.00E+00	0	0.00E+00	0	0	60	0	0	0
62	0.00	0.00E+00	0	0.00E+00	0	0	7	0	0	0
82	0.04	2.44E-02	78	4.38E+01	0	174	12	4	4	4
90	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
Total	58.02	3.36E+00	2,859,811	1.65E+05	2,532,202	3,187,421	376	243	243	242

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

Table 8b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **yellowfin sole** (*Limanda aspera*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit Lower	95% Confidence Limit Upper	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	526.04	4.42E+01	4,096,375,171	3.44E+08	3,401,264,728	4,791,485,617	58	58	58	57
20	321.65	3.78E+01	1,319,626,123	1.55E+08	1,002,761,598	1,636,490,650	31	31	31	31
31	260.69	3.07E+01	2,464,175,943	2.90E+08	1,883,413,410	3,044,938,475	69	66	66	66
32	40.46	1.17E+01	35,497,721	1.03E+07	11,214,553	59,780,890	8	8	8	8
41	103.18	2.35E+01	646,977,733	1.47E+08	349,043,965	944,911,501	44	35	35	35
42	81.56	2.04E+01	195,843,325	4.91E+07	95,619,370	296,067,280	31	27	27	27
43	10.27	6.10E+00	21,688,107	1.29E+07	0	48,465,264	22	13	13	13
50	0.05	5.45E-02	211,294	2.11E+05	0	646,559	26	1	1	1
61	0.00	0.00E+00	0	0.00E+00	0	0	60	0	0	0
62	0.00	0.00E+00	0	0.00E+00	0	0	7	0	0	0
82	0.14	7.37E-02	247,057	1.32E+05	0	538,354	12	4	4	4
90	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
Total	178.14	1.02E+01	8,780,642,473	5.01E+08	7,788,447,062	9,772,837,889	376	243	243	242

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

44 cm) inhabited both the inner and middle shelf (Fig. 12). The higher proportion of males to females in the inner shelf of stratum 10 (Fig. 12) is typical for yellowfin sole and related to their annual spawning migration to nearshore waters during the spring and summer (Nichol 1998).

Northern Rock Sole (*Lepidopsetta polyxystra*)

Northern rock sole are distributed similarly to yellowfin sole in that both are most abundant in the shallower strata of the survey. Northern rock sole were concentrated in the shallower parts of Bristol Bay and around the Pribilof Islands (Fig. 13) and were encountered at 82% of BT stations. The northern rock sole biomass estimate remained approximately the same as the previous year (1.4 million t, Table 9a), while the population estimate increased slightly from 4.2 billion to 4.8 billion (Table 9b). Spawning and feeding migrations for northern rock sole are poorly understood, but a portion of the population migrates from relatively shallow feeding grounds in the summer to deeper spawning grounds in the winter (Shubnikov and Lisovenko 1964, Fadeev 1965, Nichol and Somerton 2009). The overall peak abundance at length occurred at approximately 30 cm for males and 35 cm for females (Fig. 14). In strata 10 and 20 there was a sizeable mode between 9 and 14 cm suggesting a strong incoming 2015 year class (Fig. 14).

Flathead Sole (*Hippoglossoides elassodon*)

Flathead sole and Bering flounder are difficult to distinguish from each other based on morphology. Consequently, the accuracy of their identification in commercial fishery data is unknown and the two species are combined into a single stock assessment by the NPFMC (McGilliard et al. 2015). In contrast, BT survey personnel are trained to make reliable field

identifications for flathead sole and Bering flounder, so results herein are presented by species. Despite belonging to the same genus and having a similar appearance, the two species have divergent geographic distributions, although they do co-occur (Figs. 15, 17). Flathead sole were present at 79% of the EBS stations; however, the highest concentrations were found in the northwest outer shelf, near the Pribilof Islands and in southeast middle shelf (Fig. 15). The flathead sole biomass estimate increased slightly from 2015, from 0.39 to 0.44 million t (Table 10a), and the population estimate increased from 1.3 to 1.6 billion (Table 10b). Flathead sole ranged in length from 3 to 55 cm with most of this size range present throughout the middle and outer shelf (Fig. 16).

Bering Flounder (*Hippoglossoides robustus*)

Bering flounder were most concentrated in the northwest corner of the survey area where bottom temperatures were below 0° C (Figs. 5, 17). Bering flounder is a species known to have a more northerly distribution, extending into the Chukchi Sea (Mecklenburg et al. 2007, Lauth 2011). The estimated biomass within the survey area was 37,624 t, an increase of 42% from 2015, which was accompanied by a 37% increase in estimated population at 252 million (Tables 11a, 11b). The majority of Bering flounder encountered in the survey inhabited strata 82 and 90, with the estimated population peaking at lengths of 18 cm and 26 cm for males and females, respectively (Fig. 18).

Alaska Plaice (*Pleuronectes quadrituberculatus*)

Alaska plaice were distributed throughout the inner and middle shelf (Fig. 19), but were most concentrated along the inner half of the middle shelf near the 50 m isobath. Alaska plaice

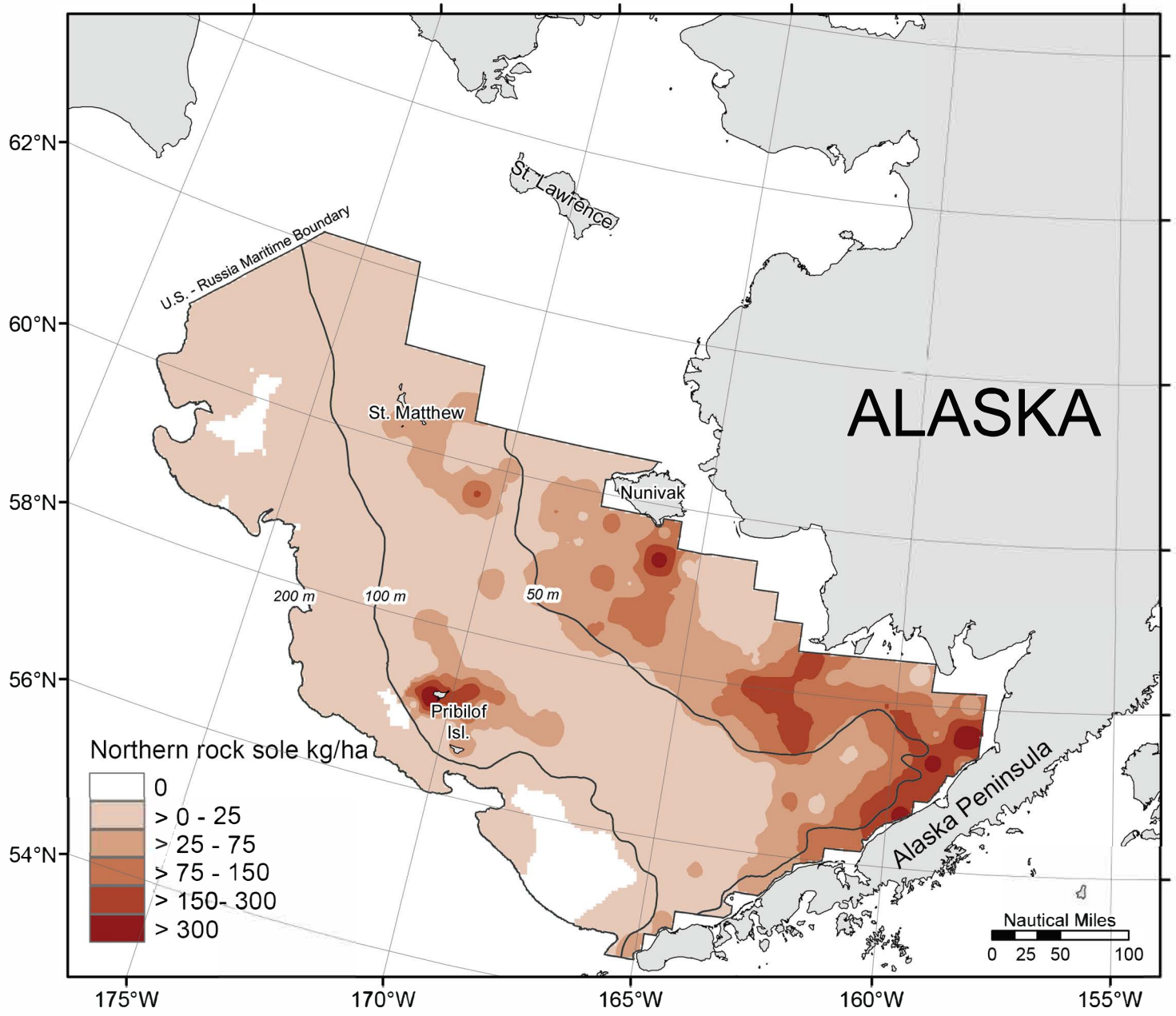

Figure 13. -- Distribution and relative abundance (kg/ha) of **northern rock sole** (*Lepidopsetta polyxystra*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

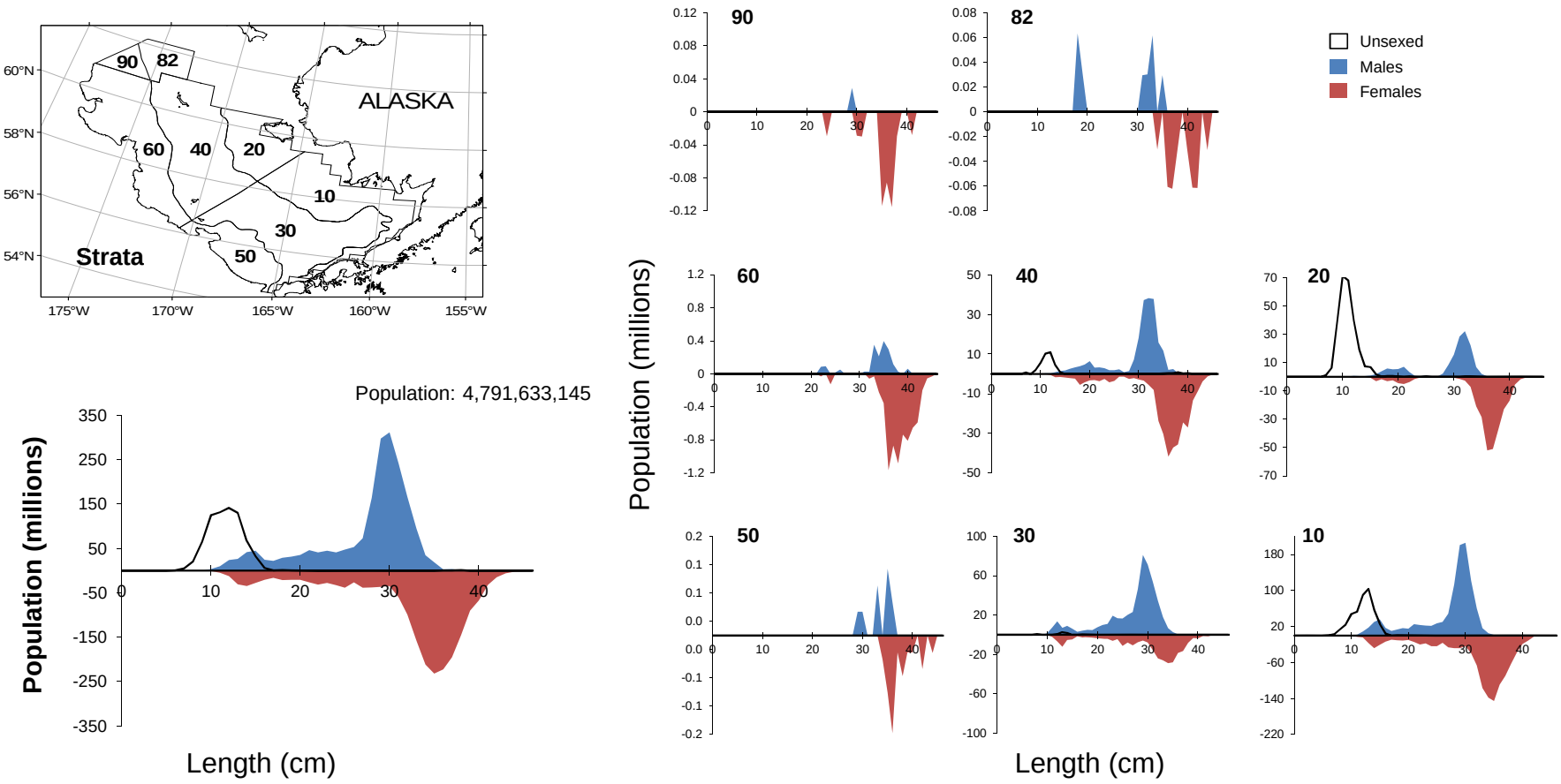

Figure 14. -- Estimated abundance-at-size of **northern rock sole** (*Lepidopsetta polyxystra*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 9a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **northern rock sole** (*Lepidopsetta polyxystra*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	98.21	1.25E+01	764,734	9.76E+04	567,413	962,056	58	58	58	57
20	50.74	1.25E+01	208,183	5.11E+04	103,763	312,603	31	31	31	31
31	22.16	4.19E+00	209,467	3.96E+04	130,348	288,587	69	67	67	65
32	22.75	7.46E+00	19,964	6.55E+03	4,484	35,443	8	7	7	7
41	13.68	3.93E+00	85,808	2.47E+04	35,960	135,655	44	42	42	42
42	57.41	2.16E+01	137,841	5.19E+04	31,800	243,881	31	29	29	29
43	13.03	4.47E+00	27,501	9.43E+03	7,882	47,120	22	19	19	19
50	0.14	8.17E-02	559	3.17E+02	0	1,211	26	4	4	4
61	0.72	1.76E-01	6,321	1.55E+03	3,180	9,463	60	30	30	30
62	0.46	1.66E-01	295	1.07E+02	33	556	7	5	5	5
82	0.19	4.80E-02	337	8.61E+01	147	526	12	10	10	10
90	0.23	5.86E-02	262	6.77E+01	102	422	8	7	7	7
Total	29.65	2.66E+00	1,461,272	1.31E+05	1,201,960	1,720,583	376	309	309	306

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

Table 9b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **northern rock sole** (*Lepidopsetta polyxystra*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit Lower	95% Confidence Limit Upper	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	347.94	3.49E+01	2,709,420,956	2.72E+08	2,160,591,557	3,258,250,356	58	58	58	57
20	171.45	2.61E+01	703,408,906	1.07E+08	484,821,355	921,996,457	31	31	31	31
31	79.80	1.66E+01	754,313,704	1.57E+08	440,577,889	1,068,049,519	69	67	67	65
32	52.05	1.78E+01	45,671,646	1.56E+07	8,788,083	82,555,209	8	7	7	7
41	34.08	8.51E+00	213,685,557	5.33E+07	105,901,488	321,469,625	44	42	42	42
42	129.46	4.48E+01	310,850,297	1.08E+08	91,179,297	530,521,298	31	29	29	29
43	20.64	6.89E+00	43,555,789	1.45E+07	13,294,236	73,817,341	22	19	19	19
50	0.24	1.42E-01	914,472	5.51E+05	0	2,049,237	26	4	4	4
61	0.95	2.31E-01	8,356,035	2.03E+06	4,247,572	12,464,497	60	30	30	30
62	0.69	2.32E-01	442,506	1.49E+05	77,313	807,698	7	5	5	5
82	0.34	8.04E-02	612,718	1.44E+05	295,091	930,346	12	10	10	10
90	0.42	1.08E-01	488,950	1.25E+05	192,870	785,029	8	7	7	7
Total	97.22	7.16E+00	4,791,721,534	3.53E+08	4,092,556,261	5,490,886,810	376	309	309	306

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

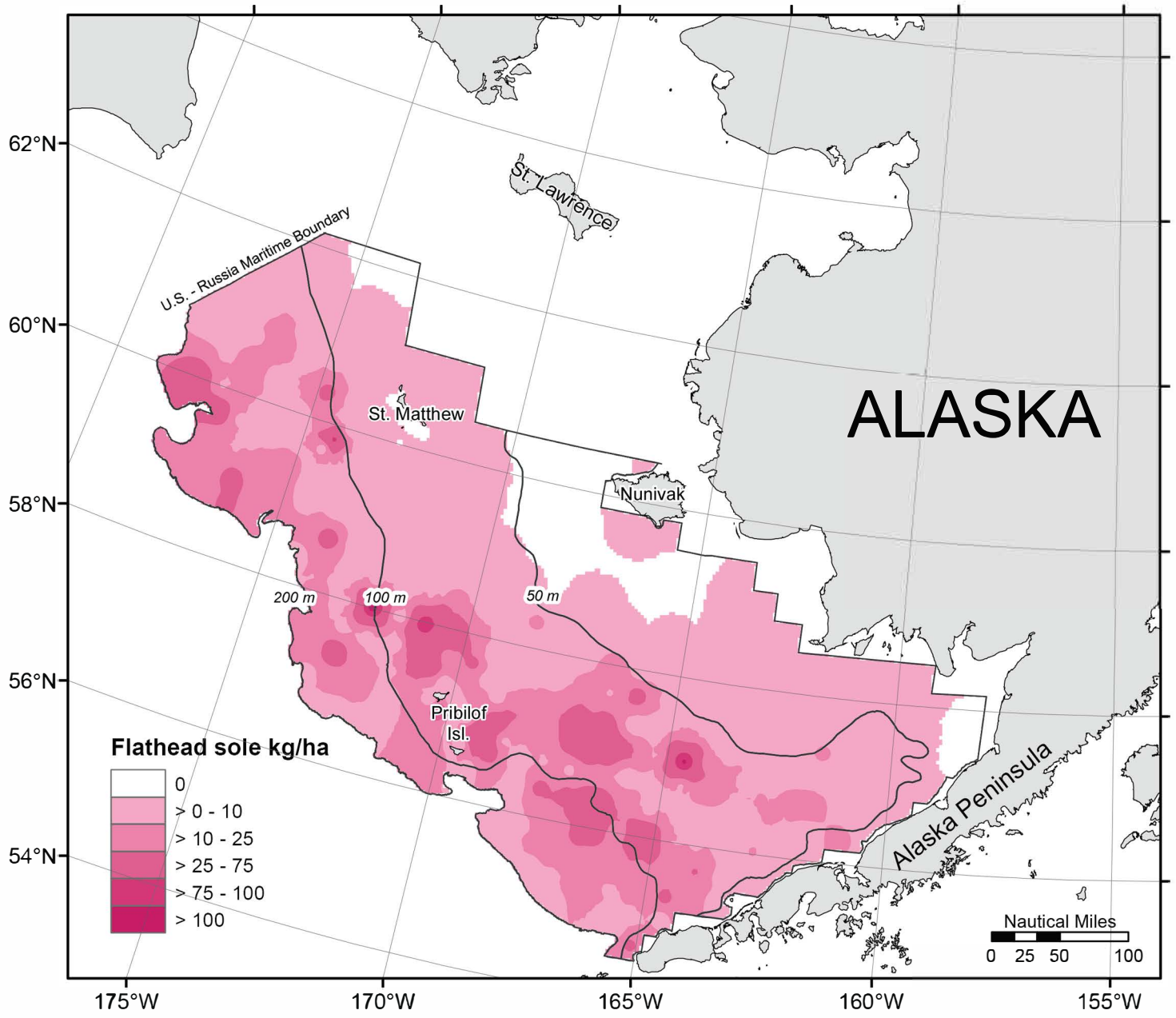

Figure 15 -- Distribution and relative abundance (kg/ha) of **flathead sole** (*Hippoglossoides elassodon*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

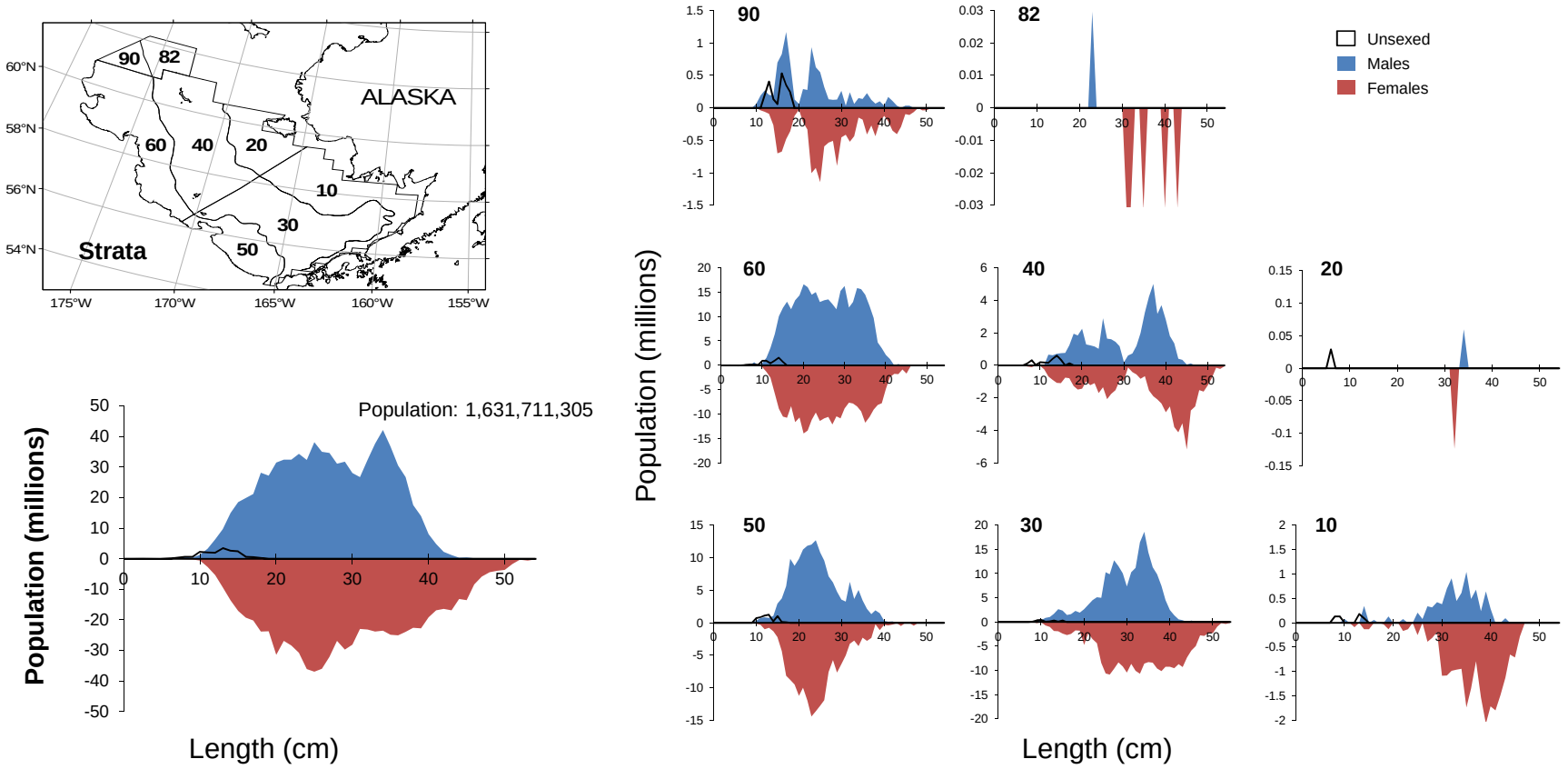

Figure 16.-- Estimated abundance-at-size of **flathead sole** (*Hippoglossoides elassodon*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 10a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **flathead sole** (*Hippoglossoides elassodon*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	1.88	3.77E-01	14,603	2.93E+03	8,675	20,531	58	40	40	40
20	0.01	1.05E-02	58	4.30E+01	0	146	31	3	3	3
31	15.24	2.04E+00	144,032	1.92E+04	105,560	182,505	69	69	69	69
32	28.91	8.50E+00	25,365	7.46E+03	7,727	43,003	8	8	8	8
41	2.13	5.58E-01	13,359	3.50E+03	6,290	20,427	44	32	32	31
42	19.12	3.90E+00	45,908	9.36E+03	26,804	65,012	31	28	28	28
43	1.29	4.99E-01	2,720	1.05E+03	528	4,912	22	15	15	15
50	12.95	1.98E+00	50,248	7.67E+03	34,451	66,045	26	26	26	26
61	14.00	2.10E+00	123,352	1.85E+04	86,010	160,693	60	60	60	60
62	21.50	1.04E+01	13,823	6.70E+03	0	30,206	7	7	7	7
82	0.05	3.58E-02	93	6.43E+01	0	235	12	3	3	3
90	4.96	1.42E+00	5,733	1.64E+03	1,860	9,606	8	8	8	8
Total	8.91	6.36E-01	439,296	3.14E+04	377,223	501,369	376	299	299	298

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

Table 10b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **flathead sole** (*Hippoglossoides elassodon*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	4.03	9.17E-01	31,375,849	7.14E+06	16,944,507	45,807,191	58	40	40	40
20	0.05	3.36E-02	213,245	1.38E+05	0	494,620	31	3	3	3
31	44.46	7.05E+00	420,307,971	6.67E+07	286,967,877	553,648,065	69	69	69	69
32	45.83	1.20E+01	40,214,577	1.05E+07	15,388,665	65,040,490	8	8	8	8
41	4.30	9.87E-01	26,986,306	6.19E+06	14,475,275	39,497,337	44	32	32	31
42	32.91	6.75E+00	79,025,340	1.62E+07	45,917,169	112,133,511	31	28	28	28
43	8.94	2.79E+00	18,868,558	5.88E+06	6,629,535	31,107,581	22	15	15	15
50	88.82	1.40E+01	344,573,514	5.42E+07	233,017,336	456,129,692	26	26	26	26
61	68.14	7.35E+00	600,558,459	6.48E+07	469,641,791	731,475,127	60	60	60	60
62	67.84	1.93E+01	43,610,351	1.24E+07	13,308,786	73,911,917	7	7	7	7
82	0.10	5.99E-02	185,066	1.08E+05	0	421,901	12	3	3	3
90	22.30	7.37E+00	25,792,076	8.52E+06	5,631,713	45,952,439	8	8	8	8
Total	33.10	2.25E+00	1,631,711,313	1.11E+08	1,412,147,681	1,851,274,944	376	299	299	298

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

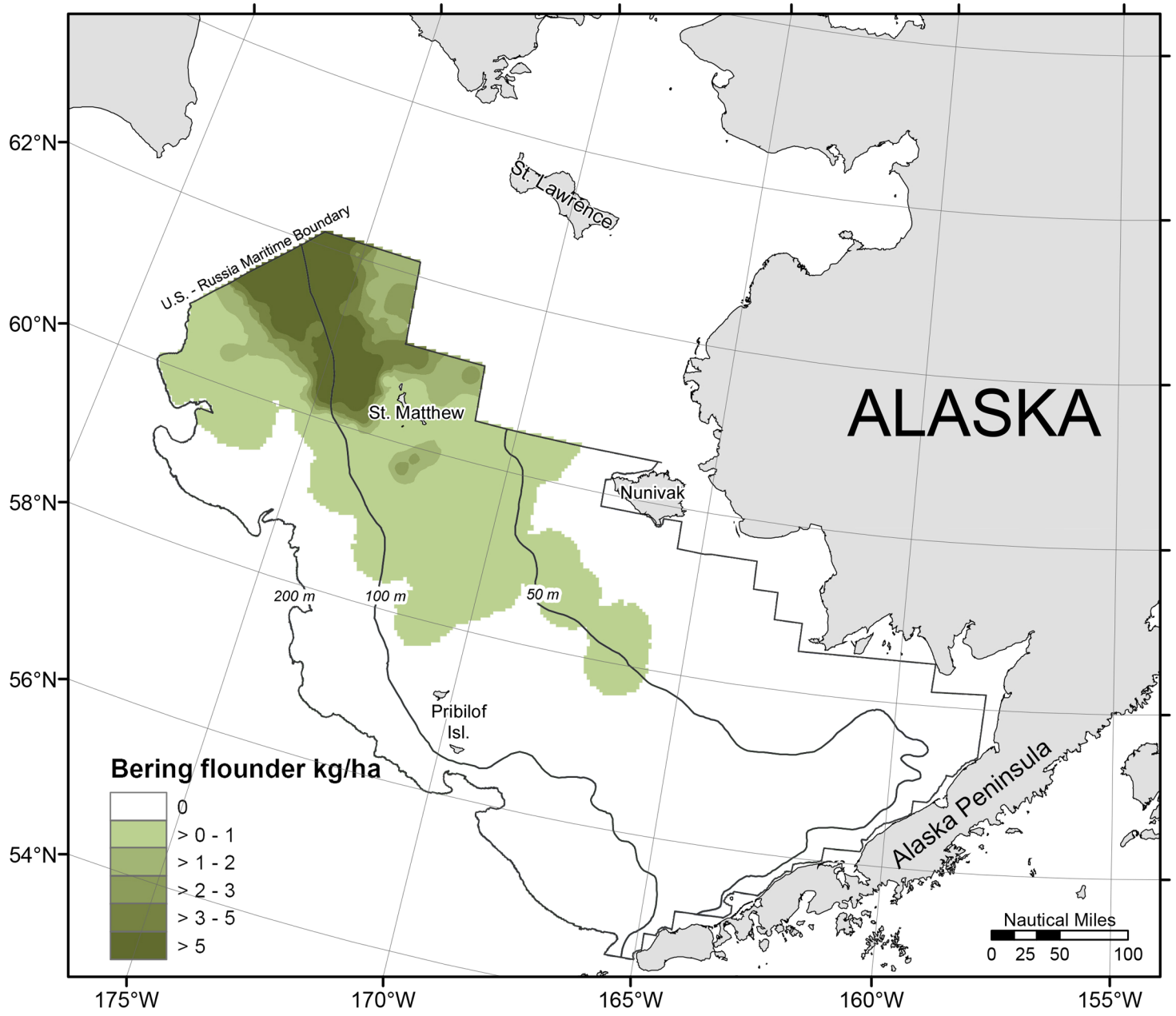

Figure 17. -- Distribution and relative abundance (kg/ha) of **Bering flounder** (*Hippoglossoides robustus*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

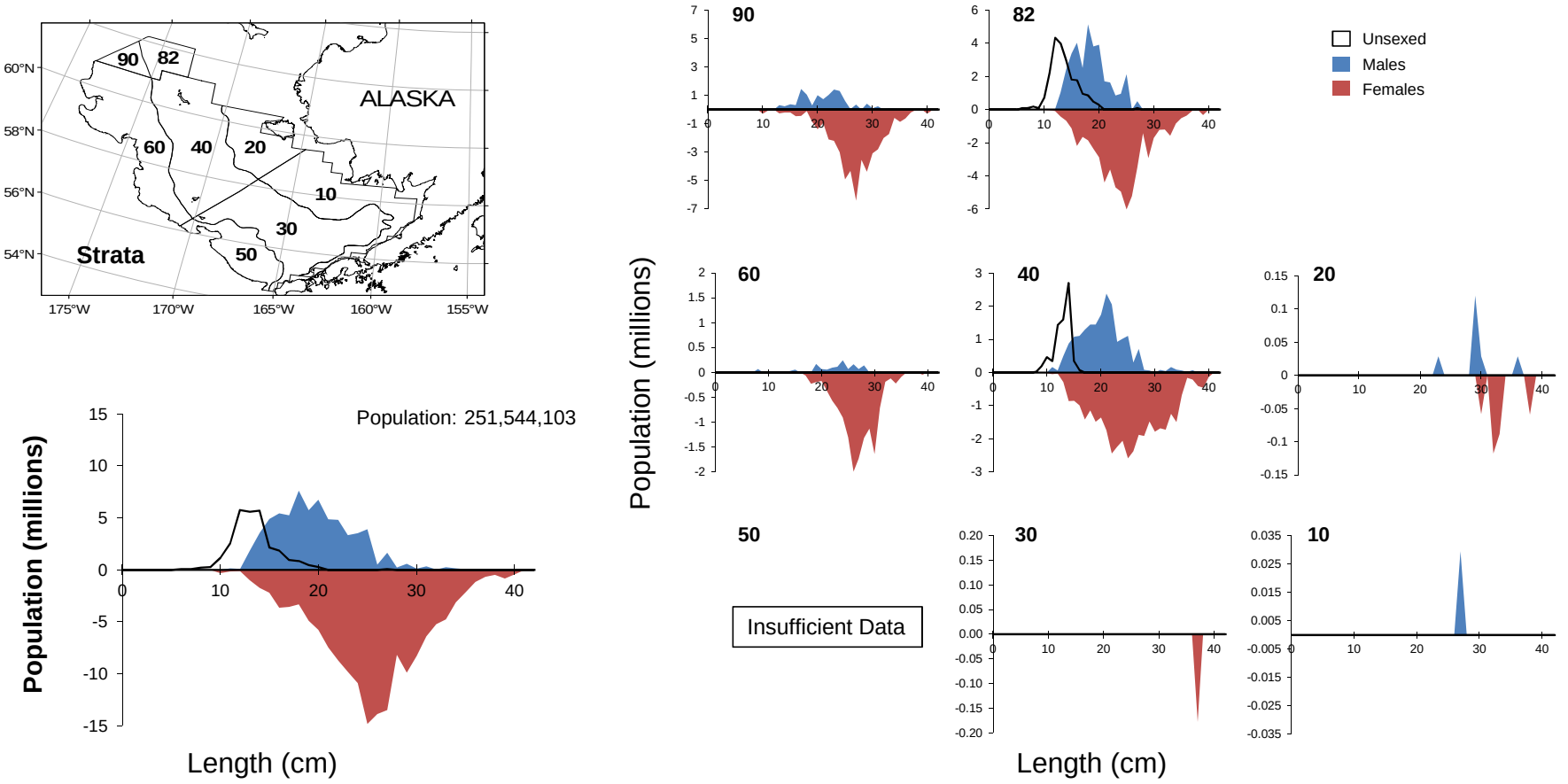

Figure 18. -- Estimated abundance-at-size of **Bering flounder** (*Hippoglossoides robustus*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 11a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Bering flounder** (*Hippoglossoides robustus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	0.00	7.43E-04	6	5.79E+00	0	17	58	1	1	1
20	0.04	2.27E-02	175	9.32E+01	0	365	31	4	4	4
31	0.01	9.33E-03	88	8.82E+01	0	265	69	1	1	1
32	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
41	1.09	4.08E-01	6,807	2.56E+03	1,635	11,978	44	30	30	30
42	0.01	1.05E-02	25	2.53E+01	0	77	31	1	1	1
43	1.29	4.72E-01	2,729	9.97E+02	655	4,802	22	21	21	21
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.21	9.51E-02	1,852	8.38E+02	159	3,546	60	11	11	11
62	1.79	1.57E+00	1,149	1.01E+03	0	3,620	7	5	5	5
82	6.94	2.32E+00	12,466	4.16E+03	3,303	21,630	12	12	12	12
90	10.66	2.82E+00	12,326	3.27E+03	4,603	20,049	8	8	8	8
Total	0.76	1.24E-01	37,624	6.11E+03	25,156	50,092	376	94	94	94

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

Table 11b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **Bering flounder** (*Hippoglossoides robustus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	0.00	3.79E-03	29,536	2.95E+04	0	89,228	58	1	1	1
20	0.13	6.88E-02	530,863	2.82E+05	0	1,106,834	31	4	4	4
31	0.02	1.88E-02	177,531	1.78E+05	0	532,594	69	1	1	1
32	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
41	7.89	2.74E+00	49,450,368	1.72E+07	14,746,954	84,153,782	44	30	30	30
42	0.06	5.78E-02	138,754	1.39E+05	0	422,090	31	1	1	1
43	6.50	2.03E+00	13,726,737	4.29E+06	4,794,704	22,658,771	22	21	21	21
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	1.02	4.94E-01	8,991,993	4.36E+06	185,508	17,798,478	60	11	11	11
62	9.49	8.02E+00	6,102,910	5.16E+06	0	18,721,248	7	5	5	5
82	62.79	1.60E+01	112,739,563	2.88E+07	49,405,860	176,073,267	12	12	12	12
90	51.57	1.16E+01	59,655,852	1.34E+07	28,037,998	91,273,706	8	8	8	8
Total	5.10	7.50E-01	251,544,107	3.70E+07	176,080,157	327,008,057	376	94	94	94

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

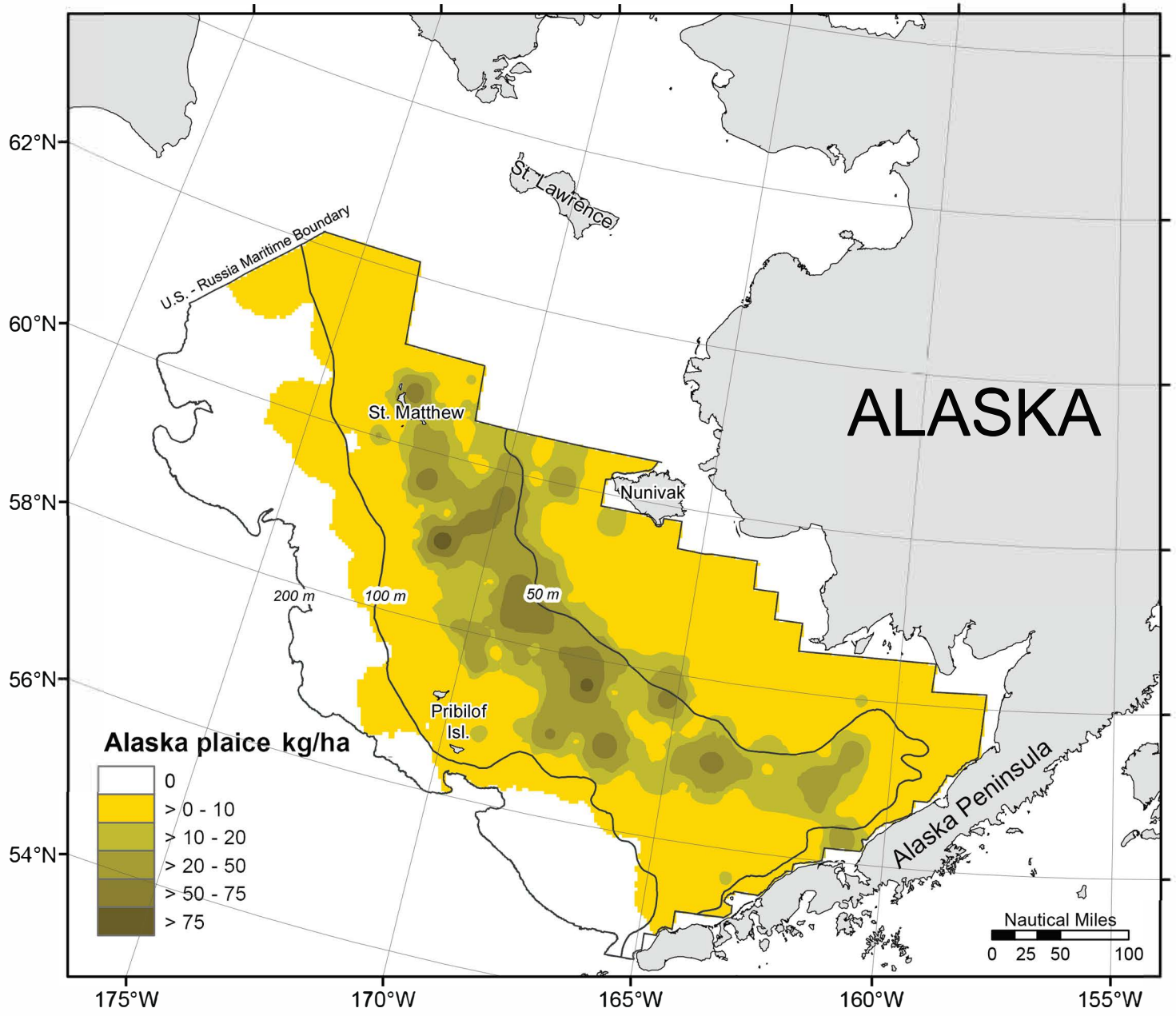

Figure 19. -- Distribution and relative abundance (kg/ha) of **Alaska plaice** (*Pleuronectes quadrituberculatus*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

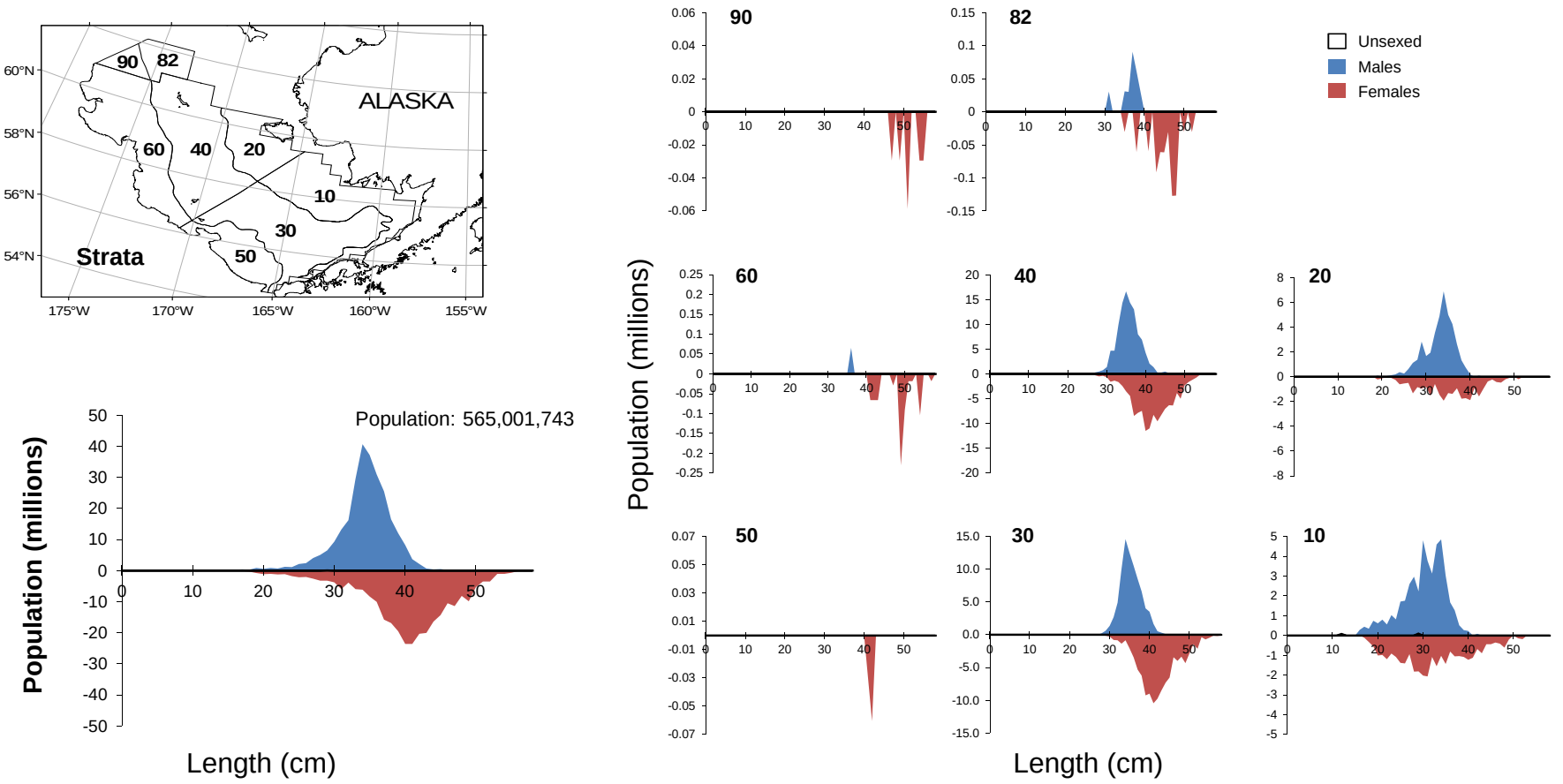

Figure 20. -- Estimated abundance-at-size of **Alaska plaice** (*Pleuronectes quadrituberculatus*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 12a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Alaska plaice** (*Pleuronectes quadrituberculatus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	4.28	7.32E-01	33,334	5.70E+03	21,812	44,856	58	53	53	53
20	8.79	1.93E+00	36,048	7.91E+03	19,897	52,200	31	31	31	31
31	15.98	2.70E+00	151,082	2.55E+04	100,054	202,111	69	61	61	61
32	6.92	2.25E+00	6,070	1.98E+03	1,398	10,741	8	8	8	8
41	24.36	4.66E+00	152,732	2.92E+04	93,707	211,757	44	39	39	38
42	8.02	1.98E+00	19,254	4.76E+03	9,539	28,969	31	24	24	24
43	11.27	3.97E+00	23,789	8.39E+03	6,345	41,233	22	16	16	16
50	0.02	2.30E-02	89	8.93E+01	0	273	26	1	1	1
61	0.12	6.58E-02	1,093	5.80E+02	0	2,265	60	5	5	5
62	0.34	3.43E-01	221	2.21E+02	0	761	7	1	1	1
82	0.61	2.72E-01	1,102	4.88E+02	29	2,176	12	11	11	11
90	0.35	3.48E-01	402	4.02E+02	0	1,353	8	1	1	1
Total	8.63	8.36E-01	425,217	4.12E+04	343,659	506,775	376	251	251	250

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

Table 12b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **Alaska plaice** (*Pleuronectes quadrituberculatus*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	10.11	1.44E+00	78,750,265	1.13E+07	56,013,396	101,487,134	58	53	53	53
20	16.18	3.20E+00	66,388,383	1.31E+07	39,550,900	93,225,866	31	31	31	31
31	19.38	3.25E+00	183,234,944	3.07E+07	121,792,569	244,677,319	69	61	61	61
32	6.03	1.92E+00	5,288,459	1.68E+06	1,306,749	9,270,169	8	8	8	8
41	29.75	5.42E+00	186,524,851	3.40E+07	117,833,953	255,215,749	44	39	39	38
42	8.57	2.13E+00	20,570,636	5.12E+06	10,120,884	31,020,389	31	24	24	24
43	10.53	3.68E+00	22,221,802	7.77E+06	6,060,758	38,382,847	22	16	16	16
50	0.02	2.33E-02	90,554	9.06E+04	0	277,097	26	1	1	1
61	0.08	4.01E-02	683,271	3.53E+05	0	1,396,843	60	5	5	5
62	0.14	1.39E-01	89,576	8.96E+04	0	308,767	7	1	1	1
82	0.55	2.31E-01	982,932	4.15E+05	68,665	1,897,199	12	11	11	11
90	0.15	1.52E-01	176,071	1.76E+05	0	592,479	8	1	1	1
Total	11.46	1.01E+00	565,001,745	4.99E+07	466,238,621	663,764,869	376	251	251	250

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

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). As with Bering flounder, Alaska plaice are distributed north of the survey boundary to the Bering Strait (Lauth 2011). Estimated biomass (0.43 million t) and population (0.57 billion) increased slightly from 2015 (Tables 12a, 12b). The median length of male Alaska plaice for all strata was 35 cm, while the median length of females was 41 cm, and overall length distributions were similar among strata 10, 20, 30, and 40 (Fig. 20).

Greenland Turbot (*Reinhardtius hippoglossoides*)

Greenland turbot are typically most abundant on the upper continental slope outside of the EBS shelf survey; although juveniles may spend several years on the continental shelf before moving to deeper water (Sohn et al. 2010). Greenland turbot were captured at 21% of survey stations, primarily in the northwest part of the middle and outer shelf (Fig. 21). They were mostly absent from strata 10, 20, 31, 32, 42 and 50 having been observed in catch samples from only two stations (Table 13a). The Greenland turbot biomass estimate decreased slightly from 25,540 t to 22,429 t from the previous year (Table 13a), and the population estimate decreased from 21.3 to 14.1 million (Table 13b). In 2010, a strong year class was observed as 12-16 cm juveniles (Lauth 2011), and this cohort has been observed in subsequent years as it has recruited to the fishery (Fig. 22). The continued decrease in estimated population since 2011 can be attributed in part to the ontogenetic movement of this year class out of the survey area and into slope waters (Alton et al. 1988). Similar to 2015, there was a small mode of 10-16 cm juveniles (unsexed) occurring in strata 82 (Fig. 22).

Arrowtooth Flounder (*Atheresthes stomias*)

Arrowtooth flounder is generally a deeper water species, and while they primarily occupy shelf waters until age 4, as individuals mature they extend their range to include slope waters (Spies et al. 2016). Thus, the shelf survey estimates are not synoptically inclusive of the entire population. As expected, the highest average catch rates of arrowtooth flounder occurred on the deeper, outer shelf (Fig. 23) comprising 67% of the total estimated biomass (Table 14a). Total estimated biomass increased by 16% and estimated population increased by 36% from 2015 to 2016 (Tables 14a, 14b). As with all previous years, the females outnumbered males, at a rate of 2.5:1, with females attaining larger average sizes (Fig. 24). This skewness in sex ratio may be attributed to sex-specific differences in natural mortality rates, but the issue requires further research (Zimmermann and Goddard 1996, Spies et al. 2016).

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 distribution of Kamchatka flounder (Fig. 25) was similar to that of arrowtooth flounder (Fig. 23), although Kamchatka flounder were less abundant. From 2015 to 2016, the Kamchatka flounder biomass estimate decreased by 8% to 55,324 t (Table 15a), while the population estimate remained effectively the same at 124 million (Table 15b). Unlike arrowtooth flounder, the Kamchatka flounder sex ratio was roughly 1:1 (Fig. 26).

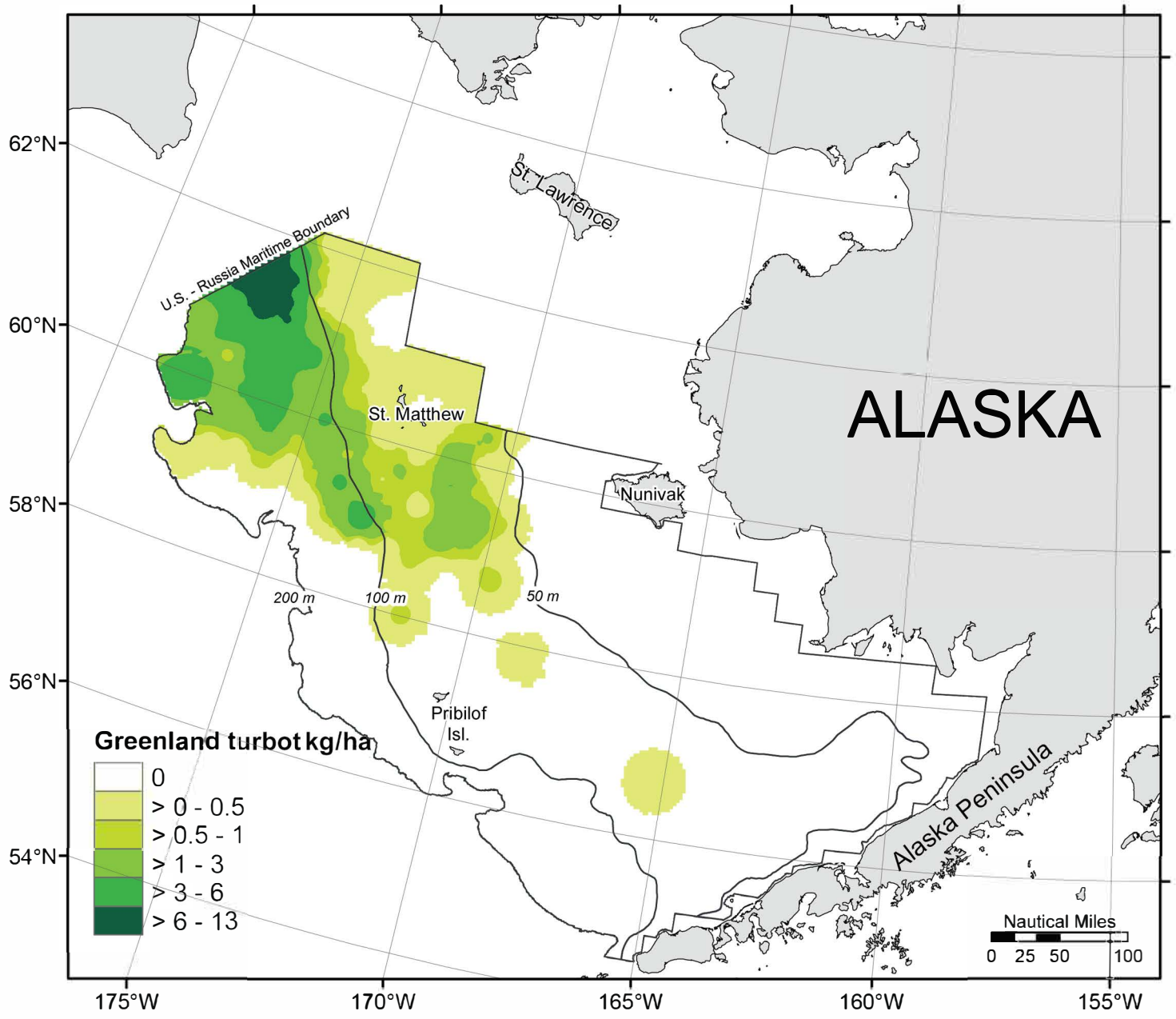

Figure 21. -- Distribution and relative abundance (kg/ha) of **Greenland turbot** (*Reinhardtius hippoglossoides*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

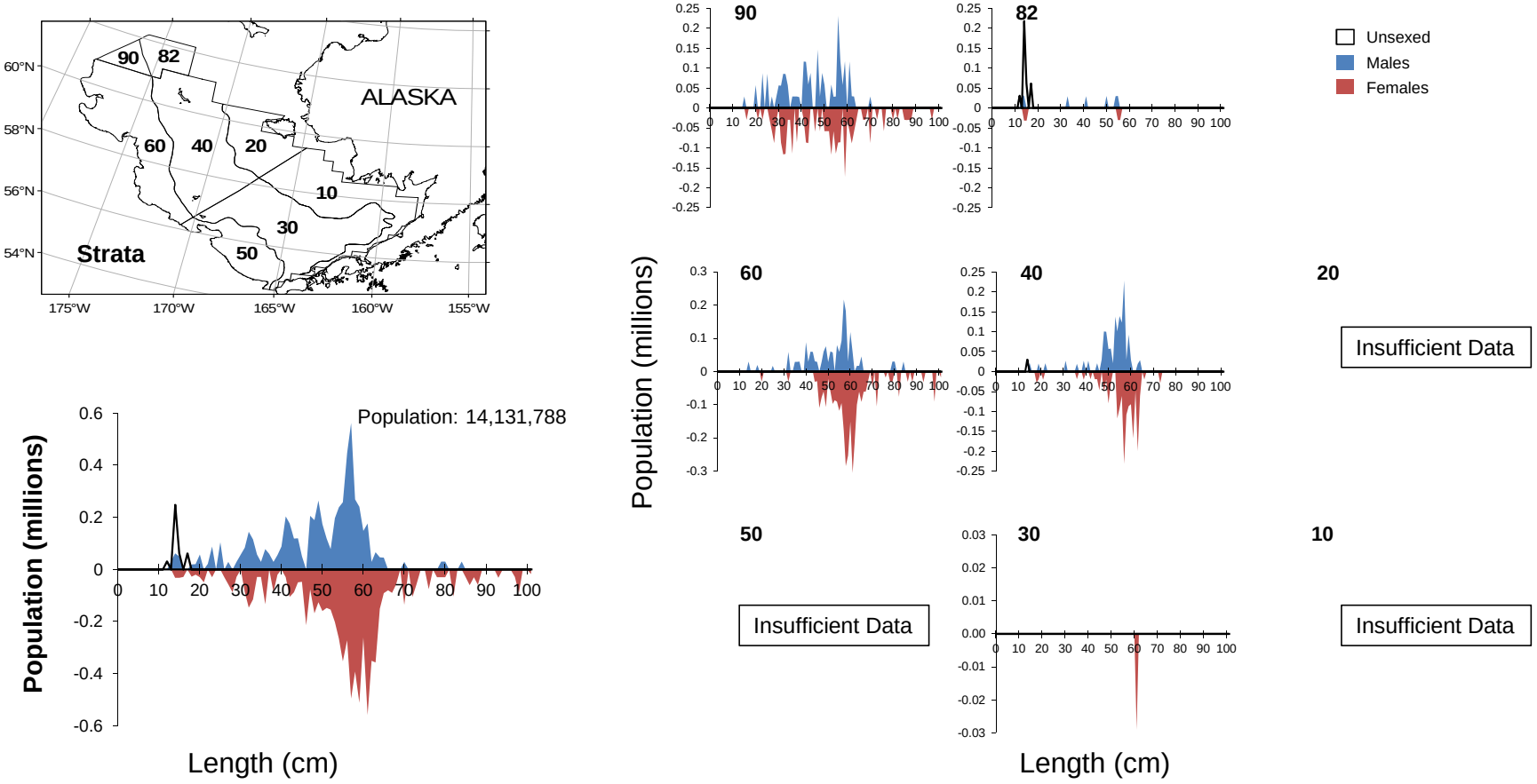

Figure 22. -- Estimated abundance-at-size of **Greenland turbot** (*Reinhardtius hippoglossoides*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 13a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Greenland turbot** (*Reinhardtius hippoglossoides*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	0.00	0.00E+00	0	0.00E+00	0	0	58	0	0	0
20	0.00	0.00E+00	0	0.00E+00	0	0	31	0	0	0
31	0.01	6.07E-03	57	5.73E+01	0	172	69	1	1	1
32	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
41	0.51	1.19E-01	3,177	7.48E+02	1,666	4,689	44	20	20	20
42	0.01	1.48E-02	36	3.56E+01	0	108	31	1	1	1
43	0.67	1.31E-01	1,418	2.76E+02	844	1,993	22	16	16	16
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	1.07	2.27E-01	9,408	2.00E+03	5,358	13,458	60	22	22	22
62	1.90	4.59E-01	1,221	2.95E+02	498	1,943	7	7	7	7
82	0.13	9.44E-02	241	1.70E+02	0	614	12	5	5	5
90	5.94	1.79E+00	6,870	2.07E+03	1,983	11,758	8	8	8	8
Total	0.46	6.10E-02	22,429	3.01E+03	16,351	28,506	376	80	80	80

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

Table 13b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **Greenland turbot** (*Reinhardtius hippoglossoides*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	0.00	0.00E+00	0	0.00E+00	0	0	58	0	0	0
20	0.00	0.00E+00	0	0.00E+00	0	0	31	0	0	0
31	0.00	3.08E-03	29,104	2.91E+04	0	87,313	69	1	1	1
32	0.00	0.00E+00	0	0.00E+00	0	0	8	0	0	0
41	0.33	7.82E-02	2,073,732	4.91E+05	1,082,247	3,065,218	44	20	20	20
42	0.01	7.13E-03	17,126	1.71E+04	0	52,097	31	1	1	1
43	0.53	1.09E-01	1,112,867	2.30E+05	633,975	1,591,759	22	16	16	16
50	0.00	0.00E+00	0	0.00E+00	0	0	26	0	0	0
61	0.51	1.12E-01	4,518,797	9.85E+05	2,528,647	6,508,947	60	22	22	22
62	1.01	2.36E-01	651,240	1.52E+05	280,003	1,022,476	7	7	7	7
82	0.39	2.14E-01	708,970	3.84E+05	0	1,553,811	12	5	5	5
90	4.34	9.69E-01	5,019,954	1.12E+06	2,370,039	7,669,868	8	8	8	8
Total	0.29	3.33E-02	14,131,789	1.64E+06	10,816,893	17,446,686	376	80	80	80

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

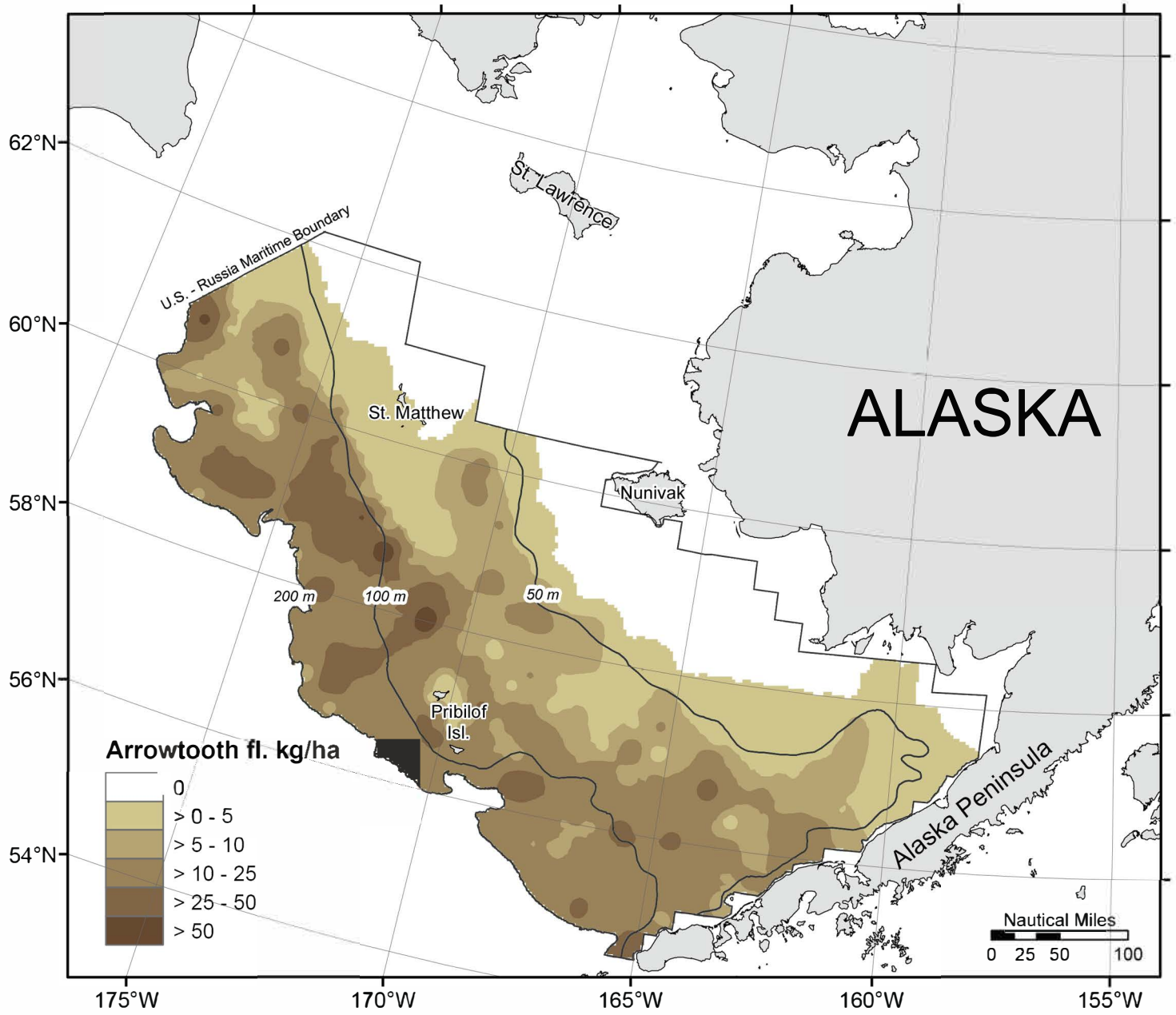

Figure 23. -- Distribution and relative abundance (kg/ha) of **arrowtooth flounder** (*Atheresthes stomias*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

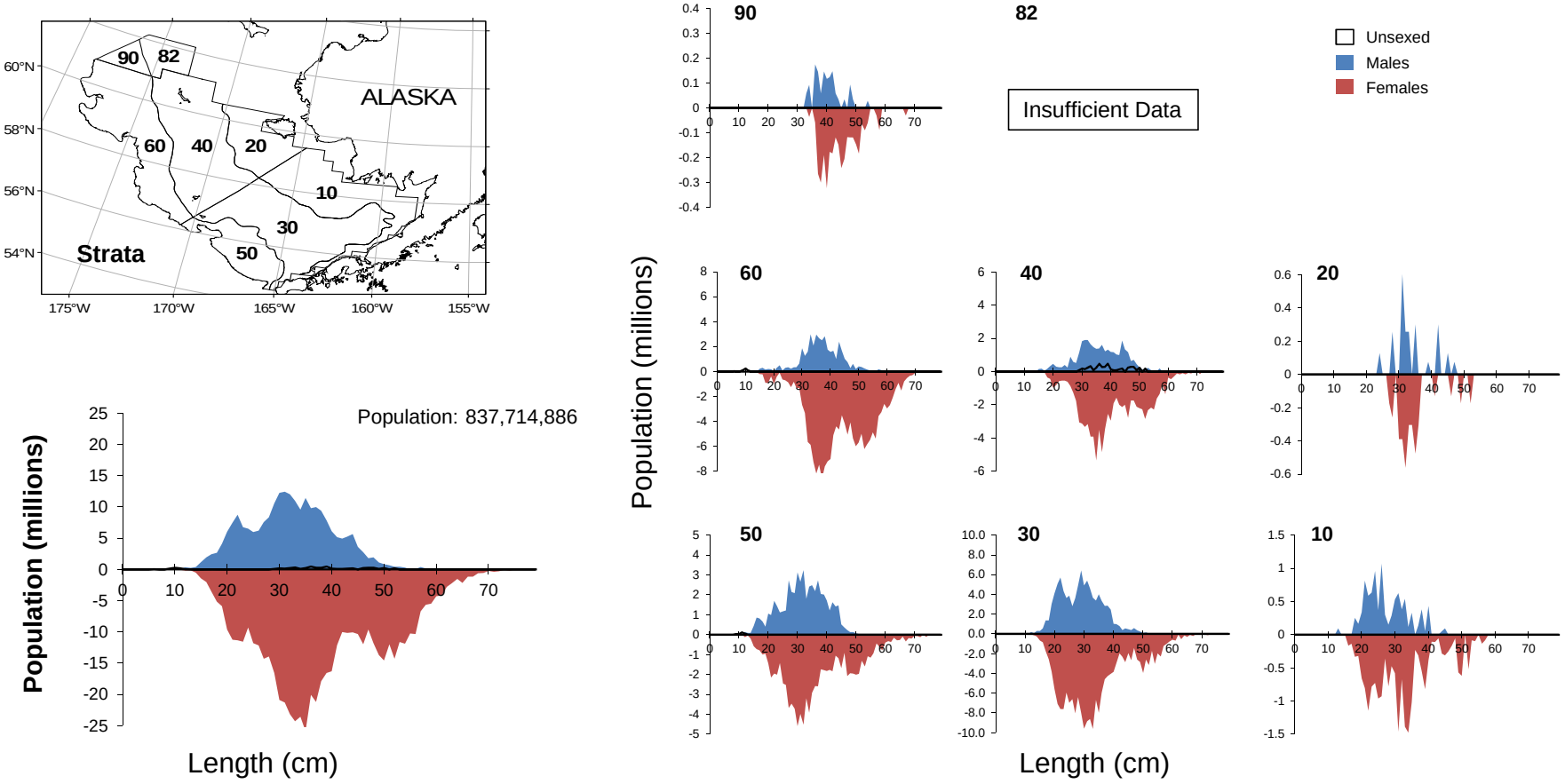

Figure 24. -- Estimated abundance-at-size of **arrowtooth flounder** (*Atheresthes stomias*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 14a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **arrowtooth flounder** (*Atheresthes stomias*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	1.24	4.01E-01	9,639	3.13E+03	3,323	15,955	58	19	19	18
20	0.57	3.77E-01	2,348	1.55E+03	0	5,510	31	3	3	3
31	10.66	1.01E+00	100,775	9.52E+03	81,741	119,809	69	69	69	69
32	12.31	1.51E+00	10,799	1.32E+03	7,670	13,929	8	8	8	8
41	7.87	1.36E+00	49,373	8.56E+03	32,084	66,663	44	34	34	34
42	13.02	2.62E+00	31,270	6.29E+03	18,424	44,116	31	31	31	31
43	2.44	9.17E-01	5,143	1.93E+03	1,118	9,167	22	15	15	15
50	17.02	1.39E+00	66,007	5.38E+03	54,934	77,080	26	26	26	26
61	20.76	1.87E+00	182,976	1.65E+04	149,589	216,362	60	60	60	60
62	20.81	3.55E+00	13,376	2.28E+03	7,793	18,959	7	7	7	7
82	0.00	0.00E+00	0	0.00E+00	0	0	12	0	0	0
90	3.08	1.43E+00	3,558	1.65E+03	0	7,469	8	6	6	6
Total	9.64	4.67E-01	475,264	2.30E+04	429,649	520,878	376	278	278	277

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

Table 14b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **arrowtooth flounder** (*Atheresthes stomias*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	3.93	1.52E+00	30,601,546	1.18E+07	6,653,140	54,549,952	58	19	19	18
20	1.50	1.05E+00	6,157,855	4.31E+06	0	14,952,318	31	3	3	3
31	27.99	3.40E+00	264,573,415	3.22E+07	200,262,069	328,884,760	69	69	69	69
32	34.89	1.04E+01	30,611,018	9.12E+06	9,033,059	52,188,977	8	8	8	8
41	11.06	1.66E+00	69,331,789	1.04E+07	48,255,190	90,408,389	44	34	34	34
42	22.72	2.91E+00	54,563,961	6.98E+06	40,315,254	68,812,667	31	31	31	31
43	2.65	1.03E+00	5,591,097	2.18E+06	1,048,226	10,133,968	22	15	15	15
50	37.42	4.62E+00	145,174,891	1.79E+07	108,233,772	182,116,010	26	26	26	26
61	23.99	2.10E+00	211,435,621	1.85E+07	174,110,834	248,760,407	60	60	60	60
62	23.40	4.13E+00	15,042,181	2.66E+06	8,537,660	21,546,702	7	7	7	7
82	0.00	0.00E+00	0	0.00E+00	0	0	12	0	0	0
90	4.00	2.11E+00	4,631,516	2.44E+06	0	10,413,668	8	6	6	6
Total	17.00	9.33E-01	837,714,889	4.60E+07	746,675,287	928,754,491	376	278	278	277

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

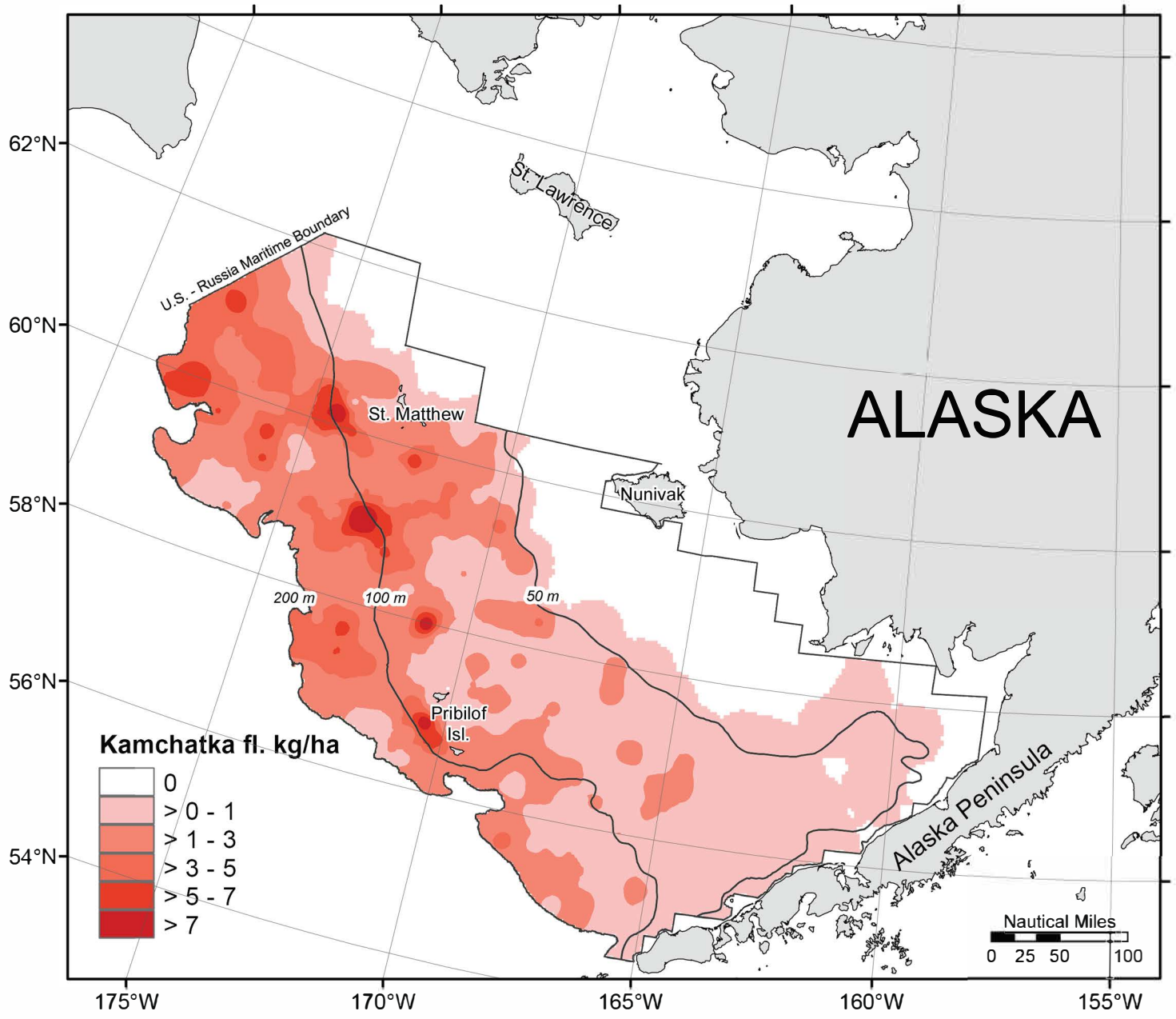

Figure 25. -- Distribution and relative abundance (kg/ha) of **Kamchatka flounder** (*Atheresthes evermanni*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

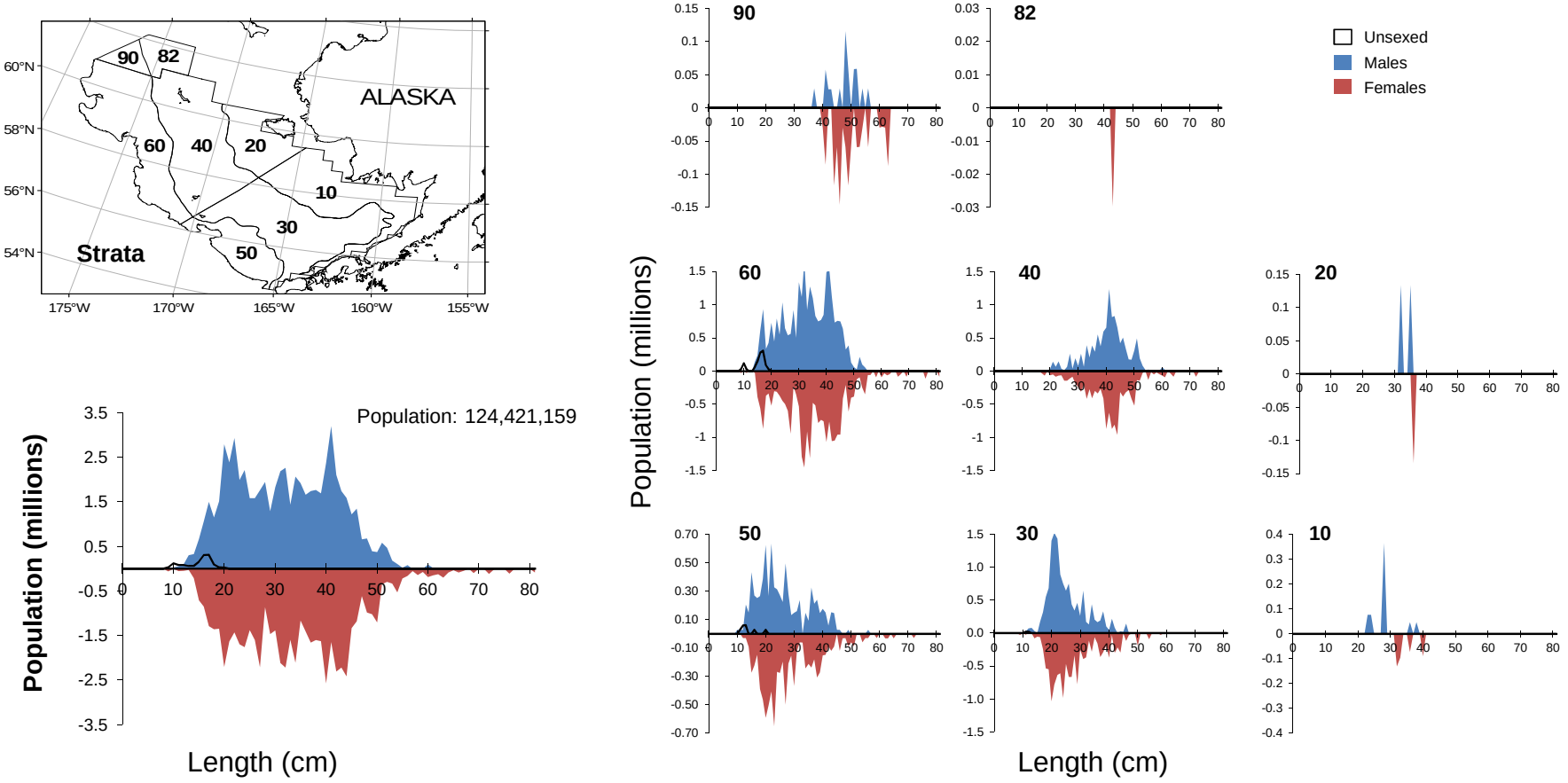

Figure 26. -- Estimated abundance-at-size of **Kamchatka flounder** (*Atheresthes evermanni*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 15a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Kamchatka flounder** (*Atheresthes evermanni*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	0.04	1.36E-02	292	1.06E+02	78	507	58	8	8	7
20	0.03	3.10E-02	127	1.27E+02	0	387	31	1	1	1
31	0.48	6.05E-02	4,527	5.72E+02	3,384	5,670	69	53	53	53
32	1.18	2.91E-01	1,035	2.55E+02	431	1,639	8	8	8	8
41	1.21	1.87E-01	7,563	1.17E+03	5,193	9,932	44	32	32	32
42	1.41	4.39E-01	3,396	1.05E+03	1,245	5,548	31	22	22	22
43	2.82	4.45E-01	5,962	9.39E+02	4,008	7,915	22	21	21	20
50	1.13	1.34E-01	4,380	5.19E+02	3,310	5,450	26	26	26	26
61	2.72	2.50E-01	24,011	2.20E+03	19,555	28,466	60	60	60	60
62	3.04	8.58E-01	1,954	5.51E+02	605	3,303	7	7	7	7
82	0.01	1.22E-02	22	2.20E+01	0	70	12	1	1	1
90	1.78	7.05E-01	2,055	8.16E+02	125	3,985	8	7	7	7
Total	1.12	6.38E-02	55,324	3.14E+03	49,098	61,550	376	246	246	244

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

Table 15b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **Kamchatka flounder** (*Atheresthes evermanni*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	0.13	5.46E-02	1,001,991	4.25E+05	142,953	1,861,029	58	8	8	7
20	0.10	9.83E-02	403,138	4.03E+05	0	1,226,346	31	1	1	1
31	2.11	2.87E-01	19,944,335	2.72E+06	14,514,299	25,374,371	69	53	53	53
32	7.44	2.23E+00	6,526,890	1.95E+06	1,906,413	11,147,367	8	8	8	8
41	1.64	2.34E-01	10,253,028	1.47E+06	7,292,058	13,213,998	44	32	32	32
42	2.61	6.62E-01	6,275,513	1.59E+06	3,029,478	9,521,548	31	22	22	22
43	3.02	4.21E-01	6,369,505	8.88E+05	4,523,106	8,215,905	22	21	21	20
50	4.40	6.09E-01	17,079,664	2.36E+06	12,214,818	21,944,510	26	26	26	26
61	5.93	5.56E-01	52,265,350	4.90E+06	42,353,687	62,177,013	60	60	60	60
62	4.15	1.10E+00	2,667,487	7.09E+05	931,645	4,403,330	7	7	7	7
82	0.02	1.65E-02	29,680	2.97E+04	0	95,007	12	1	1	1
90	1.39	5.36E-01	1,604,575	6.20E+05	137,428	3,071,722	8	7	7	7
Total	2.52	1.40E-01	124,421,158	6.89E+06	110,773,316	138,068,999	376	246	246	244

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

Pacific Halibut (*Hippoglossus stenolepis*)

Management of Pacific halibut stocks is the responsibility of the IPHC, and their stock assessments include all available fisheries and scientific survey data from both the U.S. and Canada. The AFSC EBS BT survey provides annual estimates of biomass, population, and length composition for Pacific halibut on the EBS shelf (Stewart and Martell 2015). Because only IPHC personnel can collect otoliths from Pacific halibut, which are otherwise returned to the sea after being measured as unsexed, sexed length data were only obtained on the FV *Vesteraalen*.

Pacific halibut were widely distributed across the shelf and were collected at 75% of survey stations, but they were most concentrated in the shallower waters of the survey (Fig. 27). Because the sex of halibut caught on the FV *Alaska Knight* is not assessed internally, to return these animals to the sea alive, half of the abundance-at-size data is categorized as unsexed, although data recorded by the IPHC sampler indicate a sex ratio of approximately 1:1 (Fig. 28). From 2015 to 2016, the Pacific halibut biomass estimate within the survey area decreased from 172,237 t to 153,704 t (Table 16a), while the population estimate increased slightly from 64.2 million to 66.0 million (Table 16b).

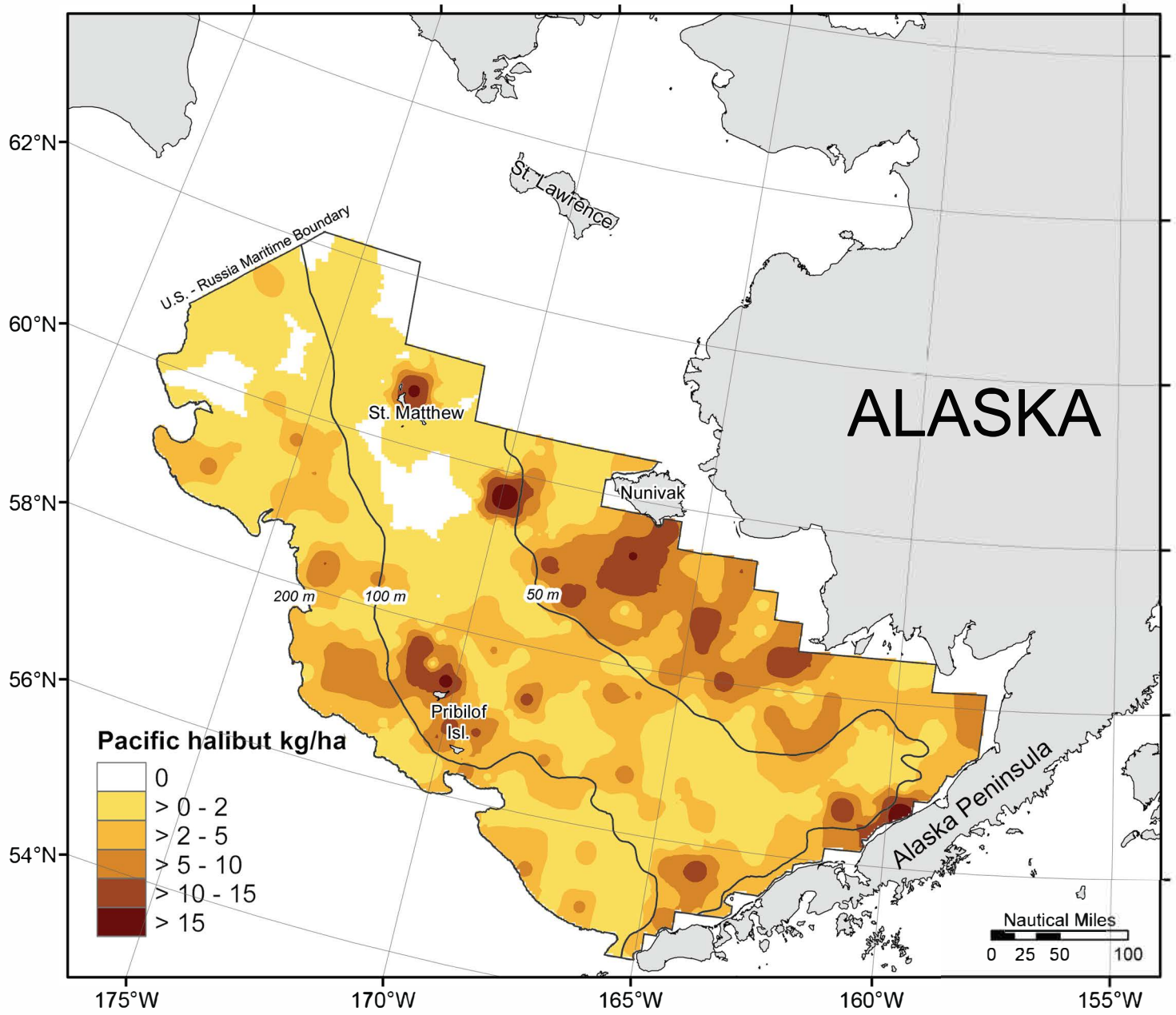

Figure 27. -- Distribution and relative abundance (kg/ha) of **Pacific halibut** (*Hippoglossus stenolepis*) during the 2016 eastern Bering Sea shelf bottom trawl survey.

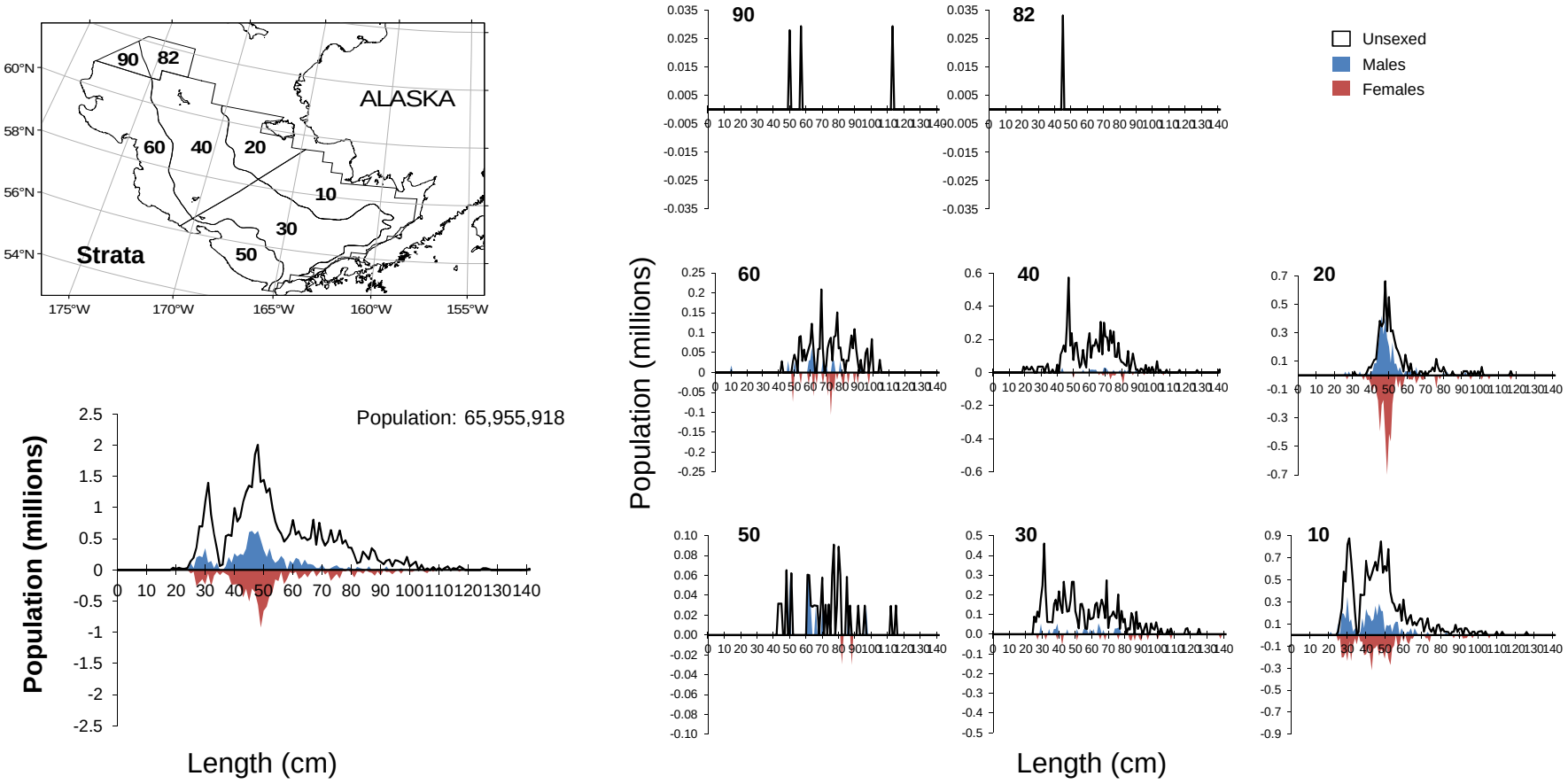

Figure 28. -- Estimated abundance-at-size of **Pacific halibut** (*Hippoglossus stenolepis*) by sex and stratum during the 2016 eastern Bering Sea shelf bottom trawl survey. Note that each graph may use a different y-axis scale.

Table 16a. -- Mean CPUE (kg/ha), estimated biomass (t), standard error, and 95% confidence limits for **Pacific halibut** (*Hippoglossus stenolepis*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (kg/ha)	Std. dev. CPUE	Estimated biomass (t)*	Std. dev. biomass	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	5.55	8.18E-01	43,222	6.37E+03	30,351	56,092	58	57	57	57
20	6.32	1.07E+00	25,920	4.38E+03	16,984	34,857	31	31	31	31
31	2.55	3.52E-01	24,125	3.33E+03	17,474	30,775	69	64	64	64
32	4.82	1.67E+00	4,233	1.46E+03	778	7,688	8	7	7	7
41	2.49	1.29E+00	15,616	8.08E+03	0	31,941	44	23	23	23
42	5.58	1.30E+00	13,404	3.12E+03	7,035	19,773	31	27	27	27
43	0.16	8.09E-02	336	1.71E+02	0	691	22	4	4	4
50	1.94	4.00E-01	7,535	1.55E+03	4,342	10,729	26	20	20	20
61	1.99	3.29E-01	17,554	2.90E+03	11,701	23,408	60	40	40	40
62	1.69	6.97E-01	1,090	4.48E+02	0	2,186	7	5	5	5
82	0.02	1.73E-02	31	3.10E+01	0	99	12	1	1	1
90	0.55	5.16E-01	638	5.97E+02	0	2,051	8	2	2	2
Total	3.12	2.56E-01	153,704	1.26E+04	128,716	178,691	376	281	281	281

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

Table 16b. -- Mean CPUE (no./ha), estimated population, standard error, and 95% confidence limits for **Pacific halibut** (*Hippoglossus stenolepis*) by stratum for the 2016 eastern Bering Sea bottom trawl survey.

Stratum	Mean CPUE (no./ha)	Std. dev. CPUE	Estimated population*	Std. dev. population	95% Confidence Limit		Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
					Lower	Upper				
10	3.68	7.66E-01	28,640,711	5.96E+06	16,588,162	40,693,260	58	57	57	57
20	3.40	7.44E-01	13,965,187	3.05E+06	7,729,450	20,200,924	31	31	31	31
31	0.92	1.74E-01	8,689,932	1.64E+06	5,400,537	11,979,327	69	64	64	64
32	0.79	2.06E-01	695,645	1.81E+05	268,668	1,122,621	8	7	7	7
41	0.78	4.44E-01	4,876,733	2.78E+06	0	10,502,442	44	23	23	23
42	1.42	3.82E-01	3,414,842	9.17E+05	1,542,676	5,287,008	31	27	27	27
43	0.04	1.80E-02	81,901	3.79E+04	2,968	160,833	22	4	4	4
50	0.40	7.31E-02	1,557,874	2.83E+05	974,011	2,141,737	26	20	20	20
61	0.42	6.26E-02	3,728,196	5.51E+05	2,613,743	4,842,649	60	40	40	40
62	0.29	1.02E-01	185,162	6.57E+04	24,404	345,920	7	5	5	5
82	0.02	1.84E-02	33,114	3.31E+04	0	105,999	12	1	1	1
90	0.07	5.30E-02	86,632	6.13E+04	0	231,588	8	2	2	2
Total	1.34	1.53E-01	65,955,929	7.52E+06	51,058,180	80,853,679	376	281	281	281

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

ACKNOWLEDGMENTS

Recognition and appreciation is extended to the captains, crew, vessel managers, and parent corporations of the FV *Vesteraalen* and FV *Alaska Knight*. Without their cooperation, expertise, goodwill, safety-mindedness, and sacrifice, this survey would not be possible. Great appreciation is also extended to all the scientists, researchers, and interns who worked tirelessly aboard each vessel to complete the survey in a safe and successful manner. We also thank the survey support team who provided us with technical and scientific equipment. Finally, we extend appreciation to the reviewers, whose excellent comments and suggestions greatly improved the manuscript.

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Appendix A: Station Data, 2016 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 *Vesteraalen* during the 2016 eastern Bering Sea shelf bottom trawl survey.

Station	**E-12**	**F-12**	**F-13**	**F-14**	**G-14**	**G-15**	**H-15**	**H-16**	**I-16**
Start date and time	05/31/16 07:08	05/31/16 11:04	05/31/16 15:08	06/01/16 07:13	06/01/16 09:52	06/01/16 13:15	06/01/16 16:00	06/02/16 07:05	06/02/16 09:29
Haul number	2	3	4	5	6	7	8	9	10
Start latitude	56.34	56.65	56.67	56.66	56.98	56.99	57.31	57.32	57.66
Start longitude	-161.01	-161.01	-160.37	-159.72	-159.68	-159.10	-159.08	-158.38	-158.37
End latitude	56.33	56.67	56.67	56.68	57.01	57.01	57.33	57.34	57.68
End longitude	-160.97	-161.01	-160.32	-159.71	-159.68	-159.10	-159.05	-158.36	-158.36
Bottom depth (m)	54	66	59	36	56	30	47	30	37
Duration (h)	0.55	0.54	0.54	0.53	0.55	0.54	0.53	0.49	0.54
Distance fished (km)	3.08	2.87	3.00	2.94	2.98	2.79	2.89	2.83	2.94
Net width (m)	16.78	17.06	16.84	14.29	16.44	15.06	15.25	14.49	14.89
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	38.26	52.57	63.84	12.21	72.46		45.19	25.12	17.34
Other skates	24.00		0.24			61.54			
Total elasmobranch	**62.3**	**52.6**	**64.1**	**12.2**	**72.5**	**61.5**	**45.2**	**25.1**	**17.3**
Alaska plaice	153.55	31.56		7.39	7.52			1.20	1.05
Arrowtooth flounder	48.62	24.03	17.10	0.82	19.54		20.28		
Kamchatka flounder									
Flathead sole	68.05	20.52	6.87	40.51	41.73				
Bering flounder									
Greenland turbot									
Pacific halibut	36.83	79.46	15.81	165.17	2.82	17.78	9.81	18.28	25.77
Rock sole	487.29	420.59	952.70	1,430.92	930.52	656.37	1,609.97	250.01	2,104.00
Yellowfin sole	1,682.03	484.59	281.37	570.98	125.65	1,061.26	302.86	610.63	455.53
Other flatfish	6.61	491.78	49.09	95.31	15.38	57.77	6.02	12.88	
Total flatfish	**2,483.0**	**1,552.5**	**1,322.9**	**2,311.1**	**1,143.2**	**1,793.2**	**1,948.9**	**893.0**	**2,586.4**
Walleye pollock	1,239.52	252.32	197.15	22.21	674.73	58.04	486.53	22.92	61.05
Pacific cod	77.74	45.68	66.69	152.70	149.59	577.40	163.58	233.09	116.81
Eelpouts									
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	11.74	18.06	7.08	7.90	22.99	14.70	15.22	1.70	2.94
Other roundfish	6.05	0.86	2.93		5.31		3.28	1.12	1.01
Total roundfish	**1,335.1**	**316.9**	**273.8**	**182.8**	**852.6**	**650.1**	**668.6**	**258.8**	**181.8**
Blue king crab									
Red king crab	5.90	60.68	1.28		1.22		0.96	0.04	
Tanner crab, bairdi	4.51	4.78	2.45		2.71	2.42	3.67		1.23
Tanner crab, opilio									
Other crab	108.54	2.64	30.07	5.67	8.26	5.41	3.34	0.77	0.36
Shrimp			0.01	0.16	0.13	0.05		0.81	0.11
Octopus									
Squids									
Snails	35.99		8.62						
Sea stars	379.53	117.02	263.84	533.51	385.18	438.36	121.44	487.89	411.00
Other invertebrates	227.22	32.86	97.86	18.56	54.27	18.90	5.85	9.55	1.80
Total invertebrates	**761.7**	**218.0**	**404.1**	**557.9**	**451.8**	**465.1**	**135.3**	**499.1**	**414.5**
Miscellaneous									
Total catch	**4,642.0**	**2,140.0**	**2,065.0**	**3,064.0**	**2,520.0**	**2,970.0**	**2,798.0**	**1,676.0**	**3,200.0**

Appendix A Table 1. -- Continued.

Station	**J-16**	**I-15**	**J-15**	**J-14**	**K-14**	**K-13**	**K-12**	**K-11**	**K-10**
Start date and time	06/02/16 13:19	06/02/16 16:36	06/03/16 07:09	06/03/16 14:16	06/03/16 17:09	06/03/16 19:16	06/04/16 09:23	06/04/16 14:50	06/04/16 18:02
Haul number	11	12	13	14	15	16	18	21	22
Start latitude	58.00	57.66	57.99	58.02	58.32	58.27	58.28	58.22	58.33
Start longitude	-158.32	-159.05	-158.97	-159.61	-159.56	-159.96	-160.79	-161.55	-162.10
End latitude	57.98	57.68	58.01	57.99	58.35	58.29	58.28	58.23	58.32
End longitude	-158.35	-159.01	-158.98	-159.63	-159.56	-159.98	-160.82	-161.55	-162.05
Bottom depth (m)	34	44	42	42	23	41	32	41	46
Duration (h)	0.54	0.54	0.54	0.55	0.55	0.52	0.28	0.27	0.54
Distance fished (km)	3.18	2.85	3.00	3.18	2.94	2.92	1.46	1.41	3.03
Net width (m)	15.11	16.22	16.20	15.90	15.26	15.21	14.70	15.83	15.66
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates		52.18		23.17		10.76	22.00	24.00	71.74
Other skates				26.52					
Total elasmobranch	**0.0**	**52.2**	**0.0**	**49.7**	**0.0**	**10.8**	**22.0**	**24.0**	**71.7**
Alaska plaice			1.37	1.64	16.45	45.01	3.44	2.27	12.96
Arrowtooth flounder									
Kamchatka flounder									
Flathead sole				4.83	1.24	0.30		0.78	4.42
Bering flounder									
Greenland turbot									
Pacific halibut	45.80	2.47	13.74	17.60	7.00	3.48	8.15	4.14	47.62
Rock sole	169.58	310.04	301.98	758.74	1.75	122.43	58.76	111.69	1,098.75
Yellowfin sole	1,112.50	348.86	335.17	349.14	1,496.25	1,763.63	272.27	87.86	372.33
Other flatfish	10.19		18.59	27.44	96.08	32.21	11.42	20.71	15.04
Total flatfish	**1,338.1**	**661.4**	**670.8**	**1,159.4**	**1,618.8**	**1,967.1**	**354.0**	**227.4**	**1,551.1**
Walleye pollock	26.68	318.08	114.95	89.89	9.68	136.26	19.49	30.70	70.28
Pacific cod	62.60	255.42	71.21	100.42	36.06	65.19	10.63	20.75	85.17
Eelpouts									
Pacific herring			0.68			1.15		0.12	1.10
Pacific ocean perch									
Other rockfish									
Sculpins	12.97	5.77	3.25	17.36	1.73	17.46	0.86	0.97	4.03
Other roundfish	2.39	0.96	0.62	1.26	4.53	4.08	0.81	0.40	4.81
Total roundfish	**104.6**	**580.2**	**190.7**	**208.9**	**52.0**	**224.1**	**31.8**	**52.9**	**165.4**
Blue king crab									
Red king crab		0.12	2.28	1.27		1.79			
Tanner crab, bairdi	3.16	0.20	0.39	2.04		0.76	2.66		1.84
Tanner crab, opilio									
Other crab	3.73	0.25	0.01	0.32			0.86	1.15	9.43
Shrimp	0.28	0.04	0.18	0.01		0.65		0.00	0.04
Octopus									
Squids									
Snails					0.03			0.01	3.10
Sea stars	196.61	23.59	61.35	87.86	15.21	74.41	32.97	22.28	94.11
Other invertebrates	13.51	6.02	8.24	4.49		0.45	3.60	1.04	21.25
Total invertebrates	**217.3**	**30.2**	**72.5**	**96.0**	**15.2**	**78.1**	**40.1**	**24.5**	**129.8**
Miscellaneous									
Total catch	**1,660.0**	**1,324.0**	**934.0**	**1,514.0**	**1,686.0**	**2,280.0**	**447.9**	**328.9**	**1,918.0**

Appendix A Table 1. -- Continued.

Station	**K-09**	**L-09**	**L-08**	**M-08**	**M-07**	**N-07**	**N-06**	**N-05**	**O-04**
Start date and time	06/05/16 07:07	06/05/16 09:59	06/05/16 12:34	06/05/16 16:16	06/06/16 08:07	06/06/16 12:02	06/06/16 14:54	06/06/16 17:38	06/07/16 07:33
Haul number	23	24	25	26	27	28	29	30	31
Start latitude	58.32	58.65	58.65	58.99	59.01	59.35	59.32	59.32	59.65
Start longitude	-162.73	-162.69	-163.33	-163.39	-163.99	-164.00	-164.64	-165.30	-165.96
End latitude	58.35	58.65	58.67	59.00	58.99	59.33	59.31	59.35	59.67
End longitude	-162.74	-162.75	-163.37	-163.34	-164.00	-164.03	-164.69	-165.32	-165.93
Bottom depth (m)	33	27	32	22	28	23	23	20	22
Duration (h)	0.54	0.55	0.53	0.54	0.54	0.55	0.55	0.57	0.54
Distance fished (km)	3.01	3.04	3.02	2.93	2.83	3.15	3.14	3.27	3.08
Net width (m)	13.48	14.82	14.88	14.95	15.37	16.01	14.42	15.83	15.78
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	29.70				12.49			16.08	62.39
Other skates									
Total elasmobranch	**29.7**	**0.0**	**0.0**	**0.0**	**12.5**	**0.0**	**0.0**	**16.1**	**62.4**
Alaska plaice	1.36	0.88	17.93	2.89	3.55	23.09	4.52	1.02	8.71
Arrowtooth flounder									
Kamchatka flounder									
Flathead sole		2.54	0.42	0.05	0.13				
Bering flounder									
Greenland turbot									
Pacific halibut	90.01	25.79	7.05	7.05	30.95	51.04	14.30	18.81	56.41
Rock sole	314.14	212.61	73.30	11.96	14.74	2.93	2.74	24.13	310.69
Yellowfin sole	749.79	760.51	570.81	894.21	728.18	971.27	792.64	845.01	345.51
Other flatfish	16.10	13.65	3.83	2.14	4.74	14.16	3.67	8.58	9.95
Total flatfish	**1,171.4**	**1,016.0**	**673.3**	**918.3**	**782.3**	**1,062.5**	**817.9**	**897.5**	**731.3**
Walleye pollock	16.71	47.55	62.77	30.18	48.23	24.25	11.32	41.64	102.09
Pacific cod	113.01	79.67	91.95	12.51	20.93	6.25	16.14	10.73	43.44
Eelpouts									
Pacific herring		0.46	2.38	0.30	5.90	0.46			3.66
Pacific ocean perch									
Other rockfish									
Sculpins	1.67		0.59	0.17	1.49	3.46	0.46	1.17	4.24
Other roundfish	0.79	2.19	2.26	25.67	4.07	43.77	10.16	0.72	33.97
Total roundfish	**132.2**	**129.9**	**159.9**	**68.8**	**80.6**	**78.2**	**38.1**	**54.3**	**187.4**
Blue king crab									
Red king crab			2.03						
Tanner crab, bairdi	1.81		2.15	0.74	0.90				
Tanner crab, opilio									
Other crab	7.01	2.14	0.40	1.46	2.89	6.02	1.81	2.33	0.83
Shrimp	0.01	0.00	0.00	0.01		0.01		0.01	0.01
Octopus									
Squids									
Snails	10.26			0.10					
Sea stars	90.28	77.22	224.12	44.57	24.48	62.87	25.28	25.14	117.73
Other invertebrates	13.36	0.79	3.28		1.34	0.42	0.61	2.64	0.38
Total invertebrates	**122.7**	**80.2**	**232.0**	**46.9**	**29.6**	**69.3**	**27.7**	**30.1**	**119.0**
Miscellaneous									
Total catch	**1,456.0**	**1,226.0**	**1,065.3**	**1,034.0**	**905.0**	**1,210.0**	**883.6**	**998.0**	**1,100.0**

Appendix A Table 1. -- Continued.

Station	**O-03**	**O-02**	**P-01**	**Q-02**	**Q-01**	**Q-18**	**P-18**	**O-18**	**O-01**
Start date and time	06/07/16 11:38	06/07/16 14:59	06/07/16 19:17	06/09/16 07:06	06/09/16 10:03	06/09/16 13:42	06/09/16 16:58	06/10/16 07:04	06/10/16 10:45
Haul number	32	33	35	36	37	38	39	40	41
Start latitude	59.67	59.66	60.02	60.34	60.32	60.35	60.01	59.66	59.68
Start longitude	-166.60	-167.27	-168.01	-167.25	-167.98	-168.65	-168.65	-168.64	-167.97
End latitude	59.66	59.68	60.00	60.33	60.34	60.33	59.99	59.68	59.66
End longitude	-166.65	-167.31	-167.98	-167.31	-167.96	-168.69	-168.66	-168.61	-167.93
Bottom depth (m)	29	31	26	30	31	37	39	39	35
Duration (h)	0.54	0.54	0.54	0.53	0.55	0.52	0.54	0.54	0.52
Distance fished (km)	2.93	2.91	2.89	3.19	3.16	2.90	3.07	3.04	2.93
Net width (m)	15.49	15.67	15.54	13.71	16.60	15.71	16.99	17.03	16.01
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	234.62	250.75	83.24	32.80	67.48	53.47	54.08	35.16	218.72
Other skates									
Total elasmobranch	**234.6**	**250.8**	**83.2**	**32.8**	**67.5**	**53.5**	**54.1**	**35.2**	**218.7**
Alaska plaice	3.59	87.33	1.39	3.27	28.50	67.13	221.06	9.44	32.93
Arrowtooth flounder									
Kamchatka flounder									
Flathead sole	0.00								
Bering flounder									
Greenland turbot									
Pacific halibut	25.03	15.28	6.28	11.28	6.05	6.39	1.90	3.88	3.92
Rock sole	128.72	419.06	144.43	6.31	38.44	60.40	141.03	396.74	101.47
Yellowfin sole	251.11	364.42	16.90	25.87	253.71	136.23	301.83	102.55	498.51
Other flatfish	18.06			2.43	11.65		0.19	1.34	
Total flatfish	**426.5**	**886.1**	**169.0**	**49.2**	**338.3**	**270.2**	**666.0**	**513.9**	**636.8**
Walleye pollock	219.28	332.02	342.27	85.26	225.58	871.27	834.60	3,797.43	1,228.65
Pacific cod	40.65	184.96	40.60	18.39	95.07	104.56	350.94	239.14	508.31
Eelpouts									
Pacific herring		0.70	0.16		2.80	2.24	0.38	10.72	
Pacific ocean perch									
Other rockfish									
Sculpins	5.70	6.12	3.98	2.40	25.35	6.16	23.15	20.64	36.80
Other roundfish	11.17	6.29	0.46	1.32	20.71	4.22	14.67	2.66	7.31
Total roundfish	**276.8**	**530.1**	**387.5**	**107.4**	**369.5**	**988.5**	**1,223.7**	**4,070.6**	**1,781.1**
Blue king crab				0.99					
Red king crab			0.31	0.40				1.13	
Tanner crab, bairdi									
Tanner crab, opilio						0.01		0.06	
Other crab	6.25	11.87	4.88	9.68	1.79	26.93	36.16	21.74	27.62
Shrimp	0.01	0.03	0.12	0.30	0.01		0.02		0.01
Octopus									
Squids									
Snails	0.01		0.39			3.80	7.94	29.92	4.54
Sea stars	36.56	96.45	36.92	24.65	41.52	79.92	203.62	43.99	405.03
Other invertebrates	0.71	0.74	2.37	0.67	0.41	17.25	36.44	8.48	8.20
Total invertebrates	**43.5**	**109.1**	**45.0**	**36.7**	**43.7**	**127.9**	**284.2**	**105.3**	**445.4**
Miscellaneous									
Total catch	**981.5**	**1,776.0**	**684.7**	**226.0**	**819.1**	**1,440.0**	**2,228.0**	**4,725.0**	**3,082.0**

Appendix A Table 1. -- Continued.

Station	**N-01**	**N-02**	**N-03**	**N-04**	**M-04**	**M-05**	**L-04**	**L-05**	**K-05**
Start date and time	06/10/16 13:41	06/10/16 16:49	06/11/16 07:03	06/11/16 10:53	06/11/16 13:50	06/11/16 16:38	06/12/16 07:56	06/12/16 10:47	06/12/16 13:31
Haul number	42	43	44	45	46	47	48	49	50
Start latitude	59.35	59.33	59.32	59.34	59.02	59.01	58.65	58.66	58.35
Start longitude	-167.91	-167.24	-166.60	-165.98	-165.92	-165.28	-165.92	-165.32	-165.28
End latitude	59.32	59.34	59.34	59.34	58.99	58.99	58.67	58.66	58.32
End longitude	-167.92	-167.28	-166.61	-165.93	-165.94	-165.32	-165.94	-165.27	-165.28
Bottom depth (m)	40	32	28	24	31	28	37	39	45
Duration (h)	0.54	0.53	0.54	0.54	0.53	0.54	0.52	0.52	0.53
Distance fished (km)	3.04	2.98	2.96	3.06	2.90	3.07	2.87	2.89	2.78
Net width (m)	16.86	15.62	15.22	15.61	16.06	16.01	14.86	15.17	16.07
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	104.10	88.86	115.06	30.56	82.55	15.87	192.24	101.80	127.58
Other skates									
Total elasmobranch	**104.1**	**88.9**	**115.1**	**30.6**	**82.6**	**15.9**	**192.2**	**101.8**	**127.6**
Alaska plaice	7.77	9.43	9.75	1.71	5.73	4.15	6.66	21.96	32.23
Arrowtooth flounder									
Kamchatka flounder									
Flathead sole									1.67
Bering flounder									
Greenland turbot									
Pacific halibut	30.23	39.58	118.42	51.76	46.52	39.92	24.61	17.15	16.50
Rock sole	125.78	197.35	220.61	1,833.35	394.60	357.71	576.32	187.35	292.42
Yellowfin sole	1,326.60	212.85	443.03	866.64	1,300.49	537.50	299.95	1,177.79	701.35
Other flatfish	28.24	15.20	82.27		38.46	16.27			
Total flatfish	**1,518.6**	**474.4**	**874.1**	**2,753.5**	**1,785.8**	**955.5**	**907.5**	**1,404.2**	**1,044.2**
Walleye pollock	738.67	100.84	103.94	87.31	74.13	11.24	407.20	103.73	102.28
Pacific cod	47.63	40.40	29.31	62.36	27.97	45.55	512.35	53.04	38.62
Eelpouts									
Pacific herring			7.66	1.12			8.72	0.42	
Pacific ocean perch									
Other rockfish									
Sculpins	15.30	5.35	7.70	4.10	8.68	4.21	36.58	2.42	10.70
Other roundfish	5.91	2.04	0.73	2.58	0.07		2.64	1.14	2.76
Total roundfish	**807.5**	**148.6**	**149.3**	**157.5**	**110.9**	**61.0**	**967.5**	**160.8**	**154.4**
Blue king crab									
Red king crab							2.85		2.16
Tanner crab, bairdi			0.31		0.19		2.85	0.52	5.72
Tanner crab, opilio	0.01								0.36
Other crab	18.98	7.64	10.56	4.82	4.82	4.99	4.75	2.62	6.46
Shrimp		0.01	0.01						
Octopus									
Squids									
Snails	1.50	0.02		0.48			2.78	0.13	1.48
Sea stars	142.81	71.46	234.07	184.27	92.02	88.33	192.35	274.74	183.78
Other invertebrates	10.48	3.40	2.58	2.94	1.78	0.27	9.16	17.20	53.92
Total invertebrates	**173.8**	**82.5**	**247.5**	**192.5**	**98.8**	**93.6**	**214.7**	**295.2**	**253.9**
Miscellaneous									
Total catch	**2,604.0**	**794.4**	**1,386.0**	**3,134.0**	**2,078.0**	**1,126.0**	**2,282.0**	**1,962.0**	**1,580.0**

Appendix A Table 1. -- Continued.

Station	**K-04**	**J-04**	**J-05**	**I-05**	**I-04**	**H-04**	**H-05**	**G-05**	**G-04**
Start date and time	06/12/16 16:36	06/13/16 07:06	06/13/16 10:16	06/13/16 13:08	06/13/16 16:12	06/14/16 07:06	06/14/16 09:52	06/14/16 12:41	06/14/16 15:33
Haul number	51	52	53	54	55	56	57	58	59
Start latitude	58.34	58.00	58.01	57.68	57.68	57.32	57.34	57.02	57.01
Start longitude	-165.90	-165.90	-165.27	-165.26	-165.87	-165.86	-165.27	-165.23	-165.84
End latitude	58.33	58.02	58.00	57.66	57.65	57.35	57.34	56.99	56.98
End longitude	-165.94	-165.90	-165.23	-165.25	-165.89	-165.87	-165.23	-165.23	-165.85
Bottom depth (m)	44	56	51	60	64	68	66	70	72
Duration (h)	0.53	0.55	0.52	0.52	0.52	0.52	0.52	0.54	0.53
Distance fished (km)	3.01	2.89	2.72	2.76	2.89	2.72	2.75	2.83	2.89
Net width (m)	15.91	14.61	14.08	15.26	15.24	14.86	14.10	15.22	15.46
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	4	0	0
Alaska skates	81.98	45.02	55.23	159.66	83.18	76.36	50.96	47.28	28.55
Other skates									2.20
Total elasmobranch	**82.0**	**45.0**	**55.2**	**159.7**	**83.2**	**76.4**	**51.0**	**47.3**	**30.8**
Alaska plaice	25.25	51.09	91.13	287.88	51.47	16.38	22.57	29.31	72.26
Arrowtooth flounder		21.43		33.25	15.90	17.90	40.85	13.01	62.31
Kamchatka flounder									
Flathead sole		8.30	9.37	39.23	140.78	14.33	8.52	41.00	120.14
Bering flounder									
Greenland turbot									
Pacific halibut	23.78		29.42	13.33	22.60	10.67	1.69		12.61
Rock sole	386.02	79.75	176.14	35.15	29.24	5.99	8.82	11.59	6.43
Yellowfin sole	241.53	637.21	732.11	594.08	1,187.96	1,282.10	498.30	638.84	675.24
Other flatfish	3.60	1.33		1.62			3.42		7.91
Total flatfish	**680.2**	**799.1**	**1,038.2**	**1,004.5**	**1,447.9**	**1,347.4**	**584.2**	**733.7**	**956.9**
Walleye pollock	15.18	110.32	10.88	510.73	674.73	97.55	235.94	98.73	31.12
Pacific cod	6.51	22.55	8.70	122.90	37.07	40.70	32.90	41.74	64.96
Eelpouts				0.64	0.85	17.52	6.57	15.08	12.11
Pacific herring	20.10	79.71		3.60					
Pacific ocean perch									
Other rockfish									
Sculpins	16.42	16.06	10.14	34.68	11.30	13.27	31.79	8.98	4.04
Other roundfish	18.84	1.39	5.57	6.63	1.64	8.19	12.58	2.05	3.88
Total roundfish	**77.0**	**230.0**	**35.3**	**679.2**	**725.6**	**177.2**	**319.8**	**166.6**	**116.1**
Blue king crab									
Red king crab	7.30	10.26	12.96	1.09			6.73	1.35	
Tanner crab, bairdi	6.98	4.19	3.15	8.34	4.74	3.36	4.36	7.50	4.22
Tanner crab, opilio				0.12		0.84			0.39
Other crab	25.62	40.52	40.31	94.12	13.69	7.81	10.13	37.80	20.85
Shrimp									
Octopus									
Squids									
Snails	11.03	19.62	41.59	144.14	64.83	21.32	75.89	148.37	76.71
Sea stars	158.49	312.57	348.01	106.38	602.19	106.86	189.24	107.12	50.26
Other invertebrates	109.39	158.70	130.29	102.45	107.84	88.86	176.75	380.25	103.82
Total invertebrates	**318.8**	**545.9**	**576.3**	**456.6**	**793.3**	**229.0**	**463.1**	**682.4**	**256.2**
Miscellaneous									
Total catch	**1,158.0**	**1,620.0**	**1,705.0**	**2,300.0**	**3,050.0**	**1,830.0**	**1,418.0**	**1,630.0**	**1,360.0**

Appendix A Table 1. -- Continued.

Station	**F-04**	**F-05**	**E-05**	**E-04**	**D-04**	**D-05**	**C-05**	**B-05**	**AZ0504**
Start date and time	06/14/16 18:13	06/15/16 07:03	06/15/16 09:49	06/15/16 12:37	06/15/16 15:27	06/16/16 07:09	06/16/16 09:49	06/16/16 12:33	06/19/16 07:51
Haul number	60	61	62	63	64	65	66	67	68
Start latitude	56.68	56.67	56.34	56.34	56.01	56.01	55.67	55.34	54.84
Start longitude	-165.84	-165.20	-165.20	-165.79	-165.79	-165.18	-165.17	-165.17	-165.49
End latitude	56.66	56.66	56.32	56.32	55.99	55.98	55.65	55.31	54.84
End longitude	-165.86	-165.23	-165.22	-165.80	-165.79	-165.17	-165.18	-165.17	-165.53
Bottom depth (m)	78	76	86	91	108	96	108	111	153
Duration (h)	0.54	0.53	0.52	0.54	0.55	0.54	0.56	0.54	0.53
Distance fished (km)	3.03	2.90	2.90	2.96	2.90	2.95	3.10	2.97	2.91
Net width (m)	15.63	16.23	16.79	16.58	17.01	16.82	17.34	17.21	17.40
Net measured?	Y	Y	Y	N	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	49.40	18.78	9.02	18.28	13.02	53.04	41.03	92.31	72.87
Other skates	4.60		5.50	1.14		3.50	6.40		119.68
Total elasmobranch	**54.0**	**18.8**	**14.5**	**19.4**	**13.0**	**56.5**	**47.4**	**92.3**	**192.6**
Alaska plaice	41.17	85.20	5.35	3.39					
Arrowtooth flounder	38.66	50.94	54.37	74.18	157.98	117.14	124.59	93.99	102.12
Kamchatka flounder									
Flathead sole	17.53	39.75	28.66	117.21	92.32	314.70	128.70	63.38	2.94
Bering flounder									
Greenland turbot		1.97							
Pacific halibut	29.96		15.21	2.78	6.11	5.89	2.84		1.32
Rock sole	23.91	26.42	5.40	9.37		33.80			3.28
Yellowfin sole	262.07	565.38	123.49	15.38		37.95			
Other flatfish	2.09	5.74	5.29	4.34	5.10	4.34	6.62	9.26	34.62
Total flatfish	**415.4**	**775.4**	**237.8**	**226.7**	**261.5**	**513.8**	**262.8**	**166.6**	**144.3**
Walleye pollock	308.82	299.86	246.32	96.13	98.62	767.29	30.20	29.86	342.64
Pacific cod	69.16	56.78	155.13	101.43	47.63	70.16	2.51	2.40	74.00
Eelpouts	0.67	20.80	0.26	0.69					
Pacific herring									
Pacific ocean perch									5.94
Other rockfish									
Sculpins	4.00	25.36	18.64		19.29	4.60	0.97	12.50	0.44
Other roundfish	0.89	0.57	0.16	2.66	32.33	4.10	4.76		3.01
Total roundfish	**383.5**	**403.4**	**420.5**	**200.9**	**197.9**	**846.1**	**38.4**	**44.8**	**426.0**
Blue king crab									
Red king crab		44.91							
Tanner crab, bairdi	12.64	22.19	42.90	12.24	25.51	50.50	35.20	10.67	6.64
Tanner crab, opilio	3.53	0.88	3.55	6.99	170.11	16.14	4.11	2.99	
Other crab	142.04	67.41	68.00	30.61	28.32	19.76	46.48	9.80	7.59
Shrimp			0.15	0.04	0.04			0.00	0.38
Octopus									
Squids									
Snails	192.93	14.92	136.20	84.23	40.86	29.02	33.46	5.25	10.76
Sea stars	34.60	346.90	75.17	5.08			0.06	0.01	1.99
Other invertebrates	414.35	309.26	59.23	15.44	9.72	20.07	31.96	5.44	72.58
Total invertebrates	**800.1**	**806.5**	**385.2**	**154.6**	**274.6**	**135.5**	**151.3**	**34.2**	**99.9**
Miscellaneous									
Total catch	**1,653.0**	**2,004.0**	**1,058.0**	**601.6**	**746.9**	**1,552.0**	**499.9**	**337.9**	**862.8**

Appendix A Table 1. -- Continued.

Station	**A-03**	**A-02**	**B-03**	**C-03**	**D-03**	**E-03**	**F-03**	**G-03**	**H-03**
Start date and time	06/19/16 12:54	06/19/16 16:36	06/20/16 10:11	06/20/16 13:04	06/20/16 15:45	06/20/16 18:26	06/21/16 07:06	06/21/16 09:44	06/21/16 12:20
Haul number	69	70	71	72	73	74	75	76	77
Start latitude	55.02	55.01	55.32	55.66	55.99	56.32	56.65	56.99	57.32
Start longitude	-166.31	-166.92	-166.35	-166.38	-166.39	-166.41	-166.44	-166.46	-166.48
End latitude	55.02	55.00	55.35	55.69	56.02	56.35	56.68	57.02	57.35
End longitude	-166.35	-166.96	-166.35	-166.38	-166.39	-166.41	-166.44	-166.46	-166.49
Bottom depth (m)	142	155	132	126	124	104	85	74	70
Duration (h)	0.51	0.52	0.52	0.52	0.51	0.48	0.52	0.52	0.51
Distance fished (km)	2.84	2.89	2.90	2.97	2.76	2.54	2.84	2.80	2.77
Net width (m)	17.97	18.10	17.67	18.02	18.14	16.46	15.83	15.92	15.38
Net measured?	Y	Y	Y	Y	Y	N	Y	Y	Y
Performance	0	0	0	0	0	4	0	0	0
Alaska skates	75.69	33.24	69.53	22.35	25.86		76.96	105.26	119.94
Other skates	7.65	38.16	2.76	1.53	2.35	4.70	0.10	8.70	2.78
Total elasmobranch	**83.3**	**71.4**	**72.3**	**23.9**	**28.2**	**4.7**	**77.1**	**114.0**	**122.7**
Alaska plaice							72.58	380.80	123.16
Arrowtooth flounder	144.80	102.67	97.72	69.00	44.58	61.08	66.48	18.95	14.43
Kamchatka flounder									
Flathead sole	56.30	20.23	111.38	114.29	211.22	192.76	60.92	300.35	124.87
Bering flounder									
Greenland turbot									
Pacific halibut	29.23	7.35	6.04	15.46	7.84	3.08	17.89	4.69	13.91
Rock sole						0.39	6.11	9.63	24.86
Yellowfin sole							825.62	278.18	1,248.99
Other flatfish	22.73	7.80	10.54	8.80	2.07	5.43	1.21	2.86	1.21
Total flatfish	**253.1**	**138.0**	**225.7**	**207.6**	**265.7**	**262.7**	**1,050.8**	**995.5**	**1,551.4**
Walleye pollock	7.97	45.84	4.02	29.90	4.56	142.57	333.30	103.44	12.60
Pacific cod	10.73	8.98	65.02	40.36	15.12	58.18	85.50	215.06	27.62
Eelpouts	0.11		0.16	0.30	0.06	0.09	3.21	1.58	5.05
Pacific herring									
Pacific ocean perch									
Other rockfish				2.74	1.08	0.74			
Sculpins		0.86	10.51	0.01	4.32	3.55	1.75	28.60	17.74
Other roundfish	0.04	0.15	0.99	3.24	9.31	3.58		7.21	2.95
Total roundfish	**18.8**	**55.8**	**80.7**	**76.5**	**34.4**	**208.7**	**423.8**	**355.9**	**65.9**
Blue king crab									
Red king crab									
Tanner crab, bairdi	54.00	23.15	22.99	11.92	24.40	30.10	20.56	7.38	1.96
Tanner crab, opilio	0.62			1.41	4.28	6.51	3.28	0.13	1.57
Other crab	1.12	2.00	0.61	0.08	1.25	9.50	103.59	75.83	69.85
Shrimp	0.02	0.12	0.02		0.00				0.29
Octopus		13.28							
Squids		0.24							
Snails	2.67	11.28	2.79	1.53	3.71	30.47	148.99	109.55	180.41
Sea stars	0.05	0.28	0.04	0.08	0.73	0.46	100.30	166.16	77.55
Other invertebrates	16.20	5.87	11.01	6.18	7.71	71.51	185.67	283.65	338.28
Total invertebrates	**74.7**	**56.2**	**37.5**	**21.2**	**42.1**	**148.6**	**562.4**	**642.7**	**669.9**
Miscellaneous									
Total catch	**429.9**	**321.5**	**416.1**	**329.2**	**370.4**	**624.7**	**2,114.0**	**2,108.0**	**2,410.0**

Appendix A Table 1. -- Continued.

Station	**I-03**	**J-03**	**K-03**	**L-03**	**M-03**	**M-02**	**M-01**	**N-18**	**M-18**
Start date and time	06/21/16 14:56	06/21/16 17:28	06/22/16 07:06	06/22/16 09:36	06/22/16 12:09	06/22/16 14:52	06/22/16 17:28	06/23/16 07:03	06/23/16 09:53
Haul number	78	79	80	81	82	83	84	85	86
Start latitude	57.65	57.99	58.33	58.66	58.99	59.00	59.00	59.34	59.01
Start longitude	-166.50	-166.52	-166.56	-166.56	-166.57	-167.21	-167.87	-168.58	-168.53
End latitude	57.68	58.01	58.36	58.68	59.01	59.00	59.00	59.32	58.98
End longitude	-166.51	-166.53	-166.55	-166.56	-166.59	-167.26	-167.92	-168.58	-168.52
Bottom depth (m)	66	61	47	42	35	40	42	42	46
Duration (h)	0.51	0.52	0.52	0.52	0.52	0.52	0.53	0.52	0.52
Distance fished (km)	2.75	2.91	2.90	2.83	2.87	2.91	2.96	2.93	2.81
Net width (m)	15.82	15.93	15.69	15.19	14.78	15.66	15.76	15.86	15.81
Net measured?	Y	Y	Y	Y	Y	Y	Y	N	N
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	100.52	109.71	104.18	100.00	194.84	85.83	67.89	29.42	77.59
Other skates								0.17	
Total elasmobranch	**100.5**	**109.7**	**104.2**	**100.0**	**194.8**	**85.8**	**67.9**	**29.6**	**77.6**
Alaska plaice	38.29	118.34	14.81	32.25	7.22	17.68	14.07	8.61	94.06
Arrowtooth flounder	16.24	11.32							
Kamchatka flounder									
Flathead sole	40.16	88.45	0.38						
Bering flounder		2.98	0.20						0.64
Greenland turbot									
Pacific halibut	28.33		30.87	5.06	78.43	47.32	35.51	8.30	54.34
Rock sole	21.08	26.80	236.76	488.61	97.51	503.15	213.90	99.05	162.79
Yellowfin sole	1,318.93	1,090.81	374.43	355.31	598.38	567.62	534.84	410.31	494.05
Other flatfish	7.21	6.52			24.81		91.88	23.48	7.16
Total flatfish	**1,470.2**	**1,345.2**	**657.4**	**881.2**	**806.3**	**1,135.8**	**890.2**	**549.8**	**813.0**
Walleye pollock	591.61	733.79	17.58	36.44	18.29	17.48	29.16	422.04	113.72
Pacific cod	69.98	217.17	50.47	76.45	5.33	16.33	66.10	120.03	26.74
Eelpouts	31.74								
Pacific herring				0.66			0.58	0.52	
Pacific ocean perch									
Other rockfish									
Sculpins	17.09	59.98	6.94	19.13	2.20	7.82	41.79	35.57	15.56
Other roundfish	10.12	15.97	1.66	7.96	0.93	0.21	3.80	4.35	4.62
Total roundfish	**720.5**	**1,026.9**	**76.6**	**140.6**	**26.8**	**41.8**	**141.4**	**582.5**	**160.6**
Blue king crab									
Red king crab		0.98	6.12	3.56		5.28		2.26	
Tanner crab, bairdi	3.84	4.45	7.55	3.19		1.72	1.23		
Tanner crab, opilio	1.39	2.65	0.18			0.38	0.30	0.04	
Other crab	28.89	80.41	11.33	9.86	0.57	11.92	9.31	6.13	23.76
Shrimp					0.01		0.01	0.01	
Octopus									
Squids									
Snails	206.23	205.29	4.85	9.22		7.53	6.08	7.22	22.04
Sea stars	150.71	421.94	245.48	340.28	198.24	293.89	277.07	64.80	479.88
Other invertebrates	235.65	272.43	120.03	62.03	3.24	21.84	16.47	17.68	59.07
Total invertebrates	**626.7**	**988.2**	**395.5**	**428.1**	**202.1**	**342.6**	**310.5**	**98.1**	**584.7**
Miscellaneous									
Total catch	**2,918.0**	**3,470.0**	**1,233.8**	**1,550.0**	**1,230.0**	**1,606.0**	**1,410.0**	**1,260.0**	**1,636.0**

Appendix A Table 1. -- Continued.

Station	**L-18**	**L-01**	**L-02**	**K-02**	**K-01**	**K-18**	**J-01**	**J-18**	**I-18**
Start date and time	06/23/16 12:38	06/23/16 15:30	06/24/16 07:14	06/24/16 10:17	06/24/16 13:30	06/24/16 17:34	06/25/16 07:07	06/25/16 10:28	06/25/16 13:48
Haul number	87	88	89	90	91	92	93	94	95
Start latitude	58.68	58.67	58.69	58.35	58.33	58.32	57.99	58.01	57.66
Start longitude	-168.50	-167.89	-167.22	-167.20	-167.81	-168.46	-167.78	-168.44	-168.40
End latitude	58.66	58.67	58.66	58.32	58.33	58.34	58.01	57.99	57.68
End longitude	-168.49	-167.84	-167.23	-167.20	-167.86	-168.49	-167.82	-168.43	-168.40
Bottom depth (m)	54	46	43	52	60	65	67	70	71
Duration (h)	0.51	0.52	0.52	0.52	0.53	0.53	0.52	0.52	0.53
Distance fished (km)	2.79	2.83	2.77	2.72	2.91	2.87	2.90	2.82	2.89
Net width (m)	15.99	15.48	15.91	15.70	16.24	16.42	16.02	15.56	16.23
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	52.62	101.70	72.64	49.86	85.12	134.80	149.83	73.35	51.34
Other skates									
Total elasmobranch	**52.6**	**101.7**	**72.6**	**49.9**	**85.1**	**134.8**	**149.8**	**73.4**	**51.3**
Alaska plaice	174.67	39.78	25.08	72.07	128.44	394.72	249.53	75.90	77.16
Arrowtooth flounder	34.50			38.64	40.40	69.30	24.57	26.91	48.21
Kamchatka flounder									
Flathead sole			0.64	1.26	5.70	54.71	25.38	24.29	15.45
Bering flounder		0.90							
Greenland turbot									
Pacific halibut	14.06	60.67	36.47	24.97	6.04		22.10	10.64	17.37
Rock sole	237.28	131.35	200.67	356.21	127.40	20.55	7.63	68.36	60.62
Yellowfin sole	471.01	776.51	515.45	540.54	958.64	707.93	1,029.85	1,306.65	448.05
Other flatfish		24.80	9.41	4.10		15.17	2.06		
Total flatfish	**931.5**	**1,034.0**	**787.7**	**1,037.8**	**1,266.6**	**1,262.4**	**1,361.1**	**1,512.7**	**666.9**
Walleye pollock	283.81	160.74	52.73	208.14	732.73	318.07	422.49	589.18	604.21
Pacific cod	67.96	138.51	43.77	78.26	263.94	321.73	384.88	153.84	95.78
Eelpouts		2.56				8.23	10.56	1.66	
Pacific herring		24.84	5.32						
Pacific ocean perch									
Other rockfish									
Sculpins	11.02	27.16	12.64	4.80	42.20	46.72	16.59	17.81	10.26
Other roundfish	12.29	8.35	5.42	2.63	6.01	8.23	5.63	5.26	6.89
Total roundfish	**375.1**	**362.2**	**119.9**	**293.8**	**1,044.9**	**703.0**	**840.2**	**767.7**	**717.1**
Blue king crab									0.52
Red king crab	4.07	5.81	4.72	5.00		1.24			
Tanner crab, bairdi	1.61	4.32	4.34	2.28	6.86	9.16	1.12	12.51	9.89
Tanner crab, opilio	0.03	0.67	0.60	0.77	1.76	8.18	11.68	8.92	3.48
Other crab	42.83	10.50	11.86	8.26	67.49	62.90	74.42	142.60	98.34
Shrimp			0.01						
Octopus									
Squids									
Snails	29.48	4.10	10.82	1.40	215.39	241.34	127.94	410.20	27.32
Sea stars	273.59	56.35	231.48	345.10	1,124.63	681.86	461.41	182.88	103.44
Other invertebrates	179.17	20.38	35.92	115.72	561.26	427.16	682.34	1,779.06	1,241.67
Total invertebrates	**530.8**	**102.1**	**299.8**	**478.5**	**1,977.4**	**1,431.8**	**1,358.9**	**2,536.2**	**1,484.7**
Miscellaneous									
Total catch	**1,890.0**	**1,600.0**	**1,280.0**	**1,860.0**	**4,374.0**	**3,532.0**	**3,710.0**	**4,890.0**	**2,920.0**

Appendix A Table 1. -- Continued.

Station	**H-18**	**G-18**	**F-18**	**E-19**	**E-20**	**F-20**	**GF2019**	**G-20**	**HG2019**
Start date and time	06/25/16 16:40	06/26/16 07:05	06/26/16 09:53	06/26/16 13:39	06/26/16 16:01	06/27/16 07:06	06/27/16 09:29	06/27/16 11:48	06/27/16 14:20
Haul number	96	97	98	99	100	101	102	103	104
Start latitude	57.35	57.01	56.67	56.33	56.34	56.68	56.82	56.99	57.15
Start longitude	-168.37	-168.33	-168.28	-168.85	-169.30	-169.53	-169.30	-169.53	-169.32
End latitude	57.32	56.98	56.65	56.33	56.34	56.68	56.84	57.00	57.18
End longitude	-168.37	-168.34	-168.28	-168.90	-169.35	-169.49	-169.30	-169.57	-169.31
Bottom depth (m)	74	81	107	129	137	80	80	61	73
Duration (h)	0.53	0.53	0.54	0.53	0.53	0.53	0.51	0.52	0.54
Distance fished (km)	2.85	2.88	2.90	2.97	2.87	2.81	2.83	2.85	2.85
Net width (m)	16.45	16.54	17.03	17.02	17.57	16.00	15.80	15.95	16.53
Net measured?	N	Y	Y	Y	Y	Y	Y	Y	N
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	13.96	18.74	48.00		2.14	63.23	47.77	0.42	66.61
Other skates			18.79	67.64	42.22		5.87		
Total elasmobranch	**14.0**	**18.7**	**66.8**	**67.6**	**44.4**	**63.2**	**53.6**	**0.4**	**66.6**
Alaska plaice	2.00	74.28	2.96			8.08	74.07		22.63
Arrowtooth flounder	45.59	78.63	40.03	103.52	74.91	54.28	86.61	18.64	143.24
Kamchatka flounder									
Flathead sole	83.12	88.74	24.39	73.02	0.83	7.67	343.10	5.43	94.86
Bering flounder									
Greenland turbot									
Pacific halibut	58.03		18.35	9.28	31.01	7.42	51.41	21.41	8.84
Rock sole	40.14	154.61		9.21		273.88	54.96	478.28	134.76
Yellowfin sole	120.29	83.03	3.92			63.16	267.29	123.90	225.57
Other flatfish	0.49	9.15	6.29	8.31	8.64	8.26	7.88	1.79	3.91
Total flatfish	**349.7**	**488.4**	**95.9**	**203.3**	**115.4**	**422.7**	**885.3**	**649.5**	**633.8**
Walleye pollock	496.03	88.04	30.45	39.11	4.31	5.41	26.96	5.28	37.23
Pacific cod	105.90	163.72	38.56	63.52	49.81	133.75	138.56	71.71	110.78
Eelpouts			0.18						
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	84.74	31.88	7.12		1.63	290.08	338.32	24.56	138.89
Other roundfish	5.54	0.44	0.96	0.48	6.36	3.47		3.98	1.52
Total roundfish	**692.2**	**284.1**	**77.3**	**103.1**	**62.1**	**432.7**	**503.8**	**105.5**	**288.4**
Blue king crab							3.81		
Red king crab								63.98	9.93
Tanner crab, bairdi	18.76	71.47	20.14	18.49	0.05	49.59	28.32	23.08	70.58
Tanner crab, opilio	1.90	26.34	18.50	75.84	0.18		0.59	0.81	28.83
Other crab	72.57	16.68	30.76	7.34	45.02	67.36	52.47	58.72	94.11
Shrimp		0.03		0.03	0.13				
Octopus					101.65				
Squids					0.02				
Snails		0.11	28.18	21.85	5.07	65.20	33.64	16.41	10.48
Sea stars	62.24	35.39	4.00	1.44	3.04	21.49	116.57	101.53	62.68
Other invertebrates	328.72	33.27	6.48	15.25	25.40	61.68	241.80	50.07	454.56
Total invertebrates	**484.2**	**183.3**	**108.1**	**140.2**	**180.6**	**265.3**	**477.2**	**314.6**	**731.2**
Miscellaneous									
Total catch	**1,540.0**	**974.5**	**348.1**	**514.3**	**402.4**	**1,184.0**	**1,920.0**	**1,070.0**	**1,720.0**

Appendix A Table 1. -- Continued.

Station	**H-20**	**IH2019**	**I-20**	**JI2120**	**JI2221**	**I-22**	**IH2221**	**H-22**	**F-22**
Start date and time	06/27/16 16:47	06/28/16 07:08	06/28/16 09:47	06/28/16 12:29	06/28/16 15:32	06/29/16 07:26	06/29/16 10:34	06/29/16 12:58	07/01/16 07:10
Haul number	105	106	107	108	109	110	111	112	113
Start latitude	57.32	57.49	57.66	57.83	57.84	57.68	57.51	57.36	56.66
Start longitude	-169.58	-169.35	-169.67	-169.96	-170.60	-170.91	-170.60	-170.86	-170.74
End latitude	57.34	57.51	57.68	57.85	57.82	57.66	57.50	57.34	56.68
End longitude	-169.59	-169.39	-169.65	-169.99	-170.62	-170.88	-170.56	-170.86	-170.74
Bottom depth (m)	63	70	70	72	78	85	74	84	114
Duration (h)	0.52	0.53	0.53	0.53	0.53	0.45	0.54	0.51	0.52
Distance fished (km)	2.80	2.90	2.89	2.86	2.90	2.36	2.89	2.77	2.90
Net width (m)	15.60	16.73	16.49	16.82	17.17	17.57	17.18	17.48	17.06
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	3	0	0	0
Alaska skates	18.44	36.40	143.14	44.45	72.52	70.44	18.01	68.19	65.84
Other skates									2.04
Total elasmobranch	**18.4**	**36.4**	**143.1**	**44.5**	**72.5**	**70.4**	**18.0**	**68.2**	**67.9**
Alaska plaice	11.78	12.04	215.95	101.29	30.39	13.34	6.30	5.42	
Arrowtooth flounder	47.23	50.58	60.48	27.42	49.80	60.64	52.87	72.15	91.33
Kamchatka flounder									
Flathead sole	65.73	29.53	134.34	135.68	289.87	238.33	221.62	123.56	59.89
Bering flounder									
Greenland turbot									
Pacific halibut	9.83	6.11			2.51	89.33	3.35	81.21	7.50
Rock sole	954.18	208.60	50.89	29.60	136.68	88.17	53.34	30.26	
Yellowfin sole	209.49	335.61	188.75	143.70	52.76	25.37	144.13	7.36	
Other flatfish	5.45	2.79	11.58	1.94	0.67	4.79	0.51	3.62	10.31
Total flatfish	**1,303.7**	**645.3**	**662.0**	**439.6**	**562.7**	**520.0**	**482.1**	**323.6**	**169.0**
Walleye pollock	105.33	110.66	141.17	190.02	1,022.49	358.33	10.39	222.79	269.38
Pacific cod	322.03	107.70	79.59	37.56	30.70	149.32	47.64	146.70	72.10
Eelpouts				1.52	3.36	2.59	0.01	0.19	0.21
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	8.59	65.27	8.59	5.71	10.71	36.76	54.82	109.44	9.25
Other roundfish	8.32	2.37	0.79	0.59	0.48	0.15	0.19	0.09	0.55
Total roundfish	**444.3**	**286.0**	**230.1**	**235.4**	**1,067.7**	**547.1**	**113.1**	**479.2**	**351.5**
Blue king crab	1.44	1.96	0.93						
Red king crab	69.81								
Tanner crab, bairdi	4.68	36.52	29.20	2.99	5.28	18.75	72.56	65.02	20.00
Tanner crab, opilio	2.39	1.96	27.21	65.06	2.23	5.94	0.47	34.33	0.44
Other crab	5.78	83.96	162.73	74.81	111.58	16.31	47.52	25.40	14.71
Shrimp						0.12			0.08
Octopus									
Squids									0.02
Snails		1.58	5.24	7.14	122.10	66.67	57.99	18.48	14.65
Sea stars	70.11	150.98	122.72	223.91	224.17	35.07	51.02	16.45	1.06
Other invertebrates	9.39	734.39	586.69	456.64	271.71	49.60	160.30	6.15	24.32
Total invertebrates	**163.6**	**1,011.3**	**934.7**	**830.5**	**737.1**	**192.5**	**389.9**	**165.8**	**75.3**
Miscellaneous									
Total catch	**1,930.0**	**1,979.0**	**1,970.0**	**1,550.0**	**2,440.0**	**1,330.0**	**1,003.1**	**1,036.8**	**663.7**

Appendix A Table 1. -- Continued.

Station	**GF2221**	**G-22**	**HG2221**	**J-20**	**K-20**	**L-20**	**F-23**	**E-22**	**E-21**
Start date and time	07/01/16 09:34	07/01/16 12:06	07/01/16 14:48	07/02/16 07:18	07/02/16 10:04	07/02/16 12:44	07/05/16 07:15	07/05/16 11:33	07/05/16 14:40
Haul number	114	115	116	117	118	119	120	121	122
Start latitude	56.83	56.99	57.10	57.98	58.32	58.65	56.68	56.34	56.34
Start longitude	-170.47	-170.78	-170.46	-169.70	-169.73	-169.78	-171.35	-170.71	-170.09
End latitude	56.84	57.01	57.13	58.01	58.34	58.68	56.66	56.33	56.33
End longitude	-170.50	-170.79	-170.47	-169.70	-169.73	-169.79	-171.35	-170.66	-170.05
Bottom depth (m)	101	95	50	71	69	66	120	121	109
Duration (h)	0.52	0.53	0.51	0.53	0.50	0.51	0.52	0.51	0.50
Distance fished (km)	2.88	2.90	2.86	2.83	2.80	2.90	2.78	2.86	2.70
Net width (m)	17.47	17.00	15.11	16.47	15.54	16.13	17.40	17.59	17.55
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	71.11	79.96		29.55	30.74	50.74	62.20	36.15	47.90
Other skates	2.29							3.76	7.62
Total elasmobranch	**73.4**	**80.0**	**0.0**	**29.6**	**30.7**	**50.7**	**62.2**	**39.9**	**55.5**
Alaska plaice		1.51		110.81	62.92	41.78			
Arrowtooth flounder	150.51	117.77	12.92	32.41	27.31	61.77	52.67	57.82	69.48
Kamchatka flounder									
Flathead sole	99.31	67.99		85.30	20.89	14.52	32.00	60.25	86.57
Bering flounder						3.17			
Greenland turbot						4.21			
Pacific halibut	10.19	14.88	38.39	19.65	14.58	3.92	8.44	2.41	
Rock sole			2,765.62	62.89	96.20	184.68		0.57	
Yellowfin sole			20.33	228.13	615.53	529.73			
Other flatfish	44.96	23.64			6.51		6.94	27.41	19.61
Total flatfish	**305.0**	**225.8**	**2,837.3**	**539.2**	**843.9**	**843.8**	**100.0**	**148.5**	**175.7**
Walleye pollock	165.78	81.75	0.26	276.43	287.19	556.85	342.91	19.64	8.13
Pacific cod	29.70	53.78	6.02	32.44	83.22	160.88	6.76	30.30	20.40
Eelpouts	0.90	0.70		3.09	16.64	5.96			
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	11.45	21.09	29.43	5.75	2.42	56.76	0.07	15.69	1.87
Other roundfish	5.89	0.66	1.54	1.40	1.33	8.76	0.17		0.10
Total roundfish	**213.7**	**158.0**	**37.3**	**319.1**	**390.8**	**789.2**	**349.9**	**65.6**	**30.5**
Blue king crab									
Red king crab									
Tanner crab, bairdi	53.47	53.37	3.28	17.05	1.38	1.47	2.61	0.63	14.27
Tanner crab, opilio	0.81	0.47		35.39	4.04	2.04	141.86	0.16	0.12
Other crab	49.00	30.65	70.52	76.96	30.80	18.05	22.74	20.94	0.21
Shrimp	0.50	0.07					0.03	0.02	
Octopus			44.28				15.41	12.48	
Squids									
Snails	33.50	22.69	21.27	11.52	27.41	36.65	6.21	15.77	11.51
Sea stars	0.53	0.67	1,716.50	91.75	36.84	138.76	0.42	0.07	0.17
Other invertebrates	20.65	11.75	35.64	351.50	284.07	133.31	224.04	45.55	8.27
Total invertebrates	**158.5**	**119.7**	**1,891.5**	**584.2**	**384.5**	**330.3**	**413.3**	**95.6**	**34.6**
Miscellaneous									
Total catch	**750.5**	**583.4**	**4,766.0**	**1,472.0**	**1,650.0**	**2,014.0**	**925.5**	**349.6**	**296.2**

Appendix A Table 1. -- Continued.

Station	**F-24**	**G-24**	**H-24**	**I-24**	**K-23**	**L-23**	**M-23**	**N-23**	**O-23**
Start date and time	07/10/16 07:06	07/10/16 10:28	07/10/16 13:23	07/10/16 16:05	07/11/16 07:12	07/11/16 09:53	07/11/16 12:29	07/11/16 15:11	07/11/16 17:49
Haul number	123	124	125	126	127	128	129	130	131
Start latitude	56.66	56.99	57.33	57.65	58.32	58.65	58.98	59.32	59.65
Start longitude	-171.95	-172.04	-172.10	-172.18	-171.65	-171.72	-171.78	-171.82	-171.90
End latitude	56.67	57.01	57.35	57.67	58.34	58.68	59.01	59.35	59.68
End longitude	-171.98	-172.02	-172.10	-172.18	-171.65	-171.72	-171.78	-171.82	-171.91
Bottom depth (m)	127	117	110	109	96	93	87	80	78
Duration (h)	0.52	0.50	0.51	0.36	0.52	0.51	0.53	0.51	0.51
Distance fished (km)	2.87	2.72	2.78	1.96	2.84	2.83	2.83	2.83	2.85
Net width (m)	17.46	16.93	16.67	16.78	17.30	17.41	17.56	16.98	16.93
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	1	0	0	0	0	0
Alaska skates	17.44		38.92	15.13	92.98	56.68	19.08	59.73	39.26
Other skates	21.10	8.82	6.82	2.32	0.10				
Total elasmobranch	**38.5**	**8.8**	**45.7**	**17.5**	**93.1**	**56.7**	**19.1**	**59.7**	**39.3**
Alaska plaice					14.11	3.37	28.70	44.44	363.11
Arrowtooth flounder	71.67	78.01	151.88	62.46	121.91	45.16	5.29	17.80	10.08
Kamchatka flounder									
Flathead sole	34.08	61.82	60.72	15.97	1.07	0.80	1.13	1.09	10.46
Bering flounder							1.14		1.74
Greenland turbot						3.32	4.72		3.06
Pacific halibut	11.46	29.06	36.32	4.93	10.53	8.22			
Rock sole	2.64		2.67	4.34	1.41	1.69	3.70	27.18	125.95
Yellowfin sole							2.64	16.47	22.47
Other flatfish	6.17	7.74	19.70	5.26	3.53	16.35	7.50	16.22	6.50
Total flatfish	**126.0**	**176.6**	**271.3**	**93.0**	**152.6**	**78.9**	**54.8**	**123.2**	**543.4**
Walleye pollock	205.19	182.59	80.73	113.33	361.57	396.54	706.54	444.05	1,110.05
Pacific cod	89.20	27.72	37.82	10.71	214.27	140.88	102.18	188.34	154.20
Eelpouts				0.25	14.05	17.66	2.10	2.78	15.39
Pacific herring						0.15			
Pacific ocean perch	0.33	0.36							
Other rockfish									
Sculpins	2.15	4.02	6.93	25.00	19.81	26.40	4.35	0.01	30.72
Other roundfish	0.00	4.90	0.32	1.33	0.06	0.60	0.15	0.28	0.71
Total roundfish	**296.9**	**219.6**	**125.8**	**150.6**	**609.8**	**582.2**	**815.3**	**635.5**	**1,311.1**
Blue king crab									
Red king crab									
Tanner crab, bairdi	25.87	0.81	0.27	0.01	1.77	0.34	0.56	0.91	0.12
Tanner crab, opilio		41.40	68.97	53.92	3.75	4.19	7.98	58.93	15.98
Other crab	3.58	3.76	14.75	15.61	39.53	20.02	14.60	44.49	49.22
Shrimp	0.18	0.10	0.08	0.08	0.50				
Octopus									
Squids	0.04								
Snails	7.06	4.36	13.51	15.80	142.40	79.83	48.07	40.34	41.84
Sea stars	13.08	0.95	1.72	2.89	85.04	34.84	39.23	34.81	4.85
Other invertebrates	447.61	606.94	128.25	23.48	53.53	83.34	42.79	84.14	38.29
Total invertebrates	**497.4**	**658.3**	**227.5**	**111.8**	**326.5**	**222.6**	**153.2**	**263.6**	**150.3**
Miscellaneous									
Total catch	**958.8**	**1,063.3**	**670.4**	**372.8**	**1,181.9**	**940.4**	**1,042.5**	**1,082.0**	**2,044.0**

Appendix A Table 1. -- Continued.

Station	**N-22**	**O-22**	**P-22**	**P-23**	**Q-23**	**QP2423**	**P-24**	**PO2423**	**O-24**
Start date and time	07/12/16 07:06	07/12/16 09:46	07/12/16 12:04	07/12/16 14:57	07/12/16 17:39	07/13/16 07:08	07/13/16 09:42	07/13/16 11:59	07/13/16 14:17
Haul number	132	133	134	135	136	137	138	139	140
Start latitude	59.31	59.65	59.93	59.98	60.32	60.18	60.00	59.85	59.67
Start longitude	-171.19	-171.24	-171.30	-171.94	-172.06	-172.31	-172.62	-172.26	-172.53
End latitude	59.34	59.67	59.96	60.00	60.35	60.16	59.98	59.82	59.67
End longitude	-171.19	-171.25	-171.30	-171.94	-172.05	-172.35	-172.59	-172.24	-172.58
Bottom depth (m)	75	73	70	68	59	58	67	76	85
Duration (h)	0.52	0.50	0.50	0.51	0.53	0.52	0.52	0.52	0.51
Distance fished (km)	2.82	2.78	2.81	2.76	2.79	2.79	2.83	2.95	2.84
Net width (m)	16.94	16.14	17.19	17.25	16.26	16.36	16.22	16.51	17.38
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	59.17	25.41	33.62	20.00	14.27	27.72	5.18	35.56	16.10
Other skates		0.50							
Total elasmobranch	**59.2**	**25.9**	**33.6**	**20.0**	**14.3**	**27.7**	**5.2**	**35.6**	**16.1**
Alaska plaice	33.34	113.60	53.52	214.34	80.85	115.47	52.72	127.65	12.62
Arrowtooth flounder	22.71	41.26	42.96					6.29	
Kamchatka flounder									
Flathead sole	0.69		0.09					3.35	12.06
Bering flounder	1.54	0.25	0.37	6.17	2.13	1.86	0.60	10.78	11.84
Greenland turbot	6.93	13.58	13.29	1.64			2.06	1.78	6.09
Pacific halibut					4.49		4.49		
Rock sole	20.66	198.39	61.08	188.50	171.08	247.84	23.75	188.98	2.34
Yellowfin sole	35.71	93.91	26.65	214.31	8.37	56.82	2.74	26.30	1.53
Other flatfish	14.87	15.33	7.78	14.37	9.43	9.37	9.37	32.31	7.34
Total flatfish	**136.4**	**476.3**	**205.7**	**639.3**	**276.3**	**431.4**	**95.7**	**397.4**	**53.8**
Walleye pollock	509.79	497.07	605.10	1,384.45	1,736.65	674.22	2,597.87	930.88	724.79
Pacific cod	83.72	114.90	191.28	540.67	481.75	266.64	341.38	213.70	153.52
Eelpouts	33.40	6.12		25.97		6.63	2.05	23.71	11.15
Pacific herring	0.19		0.59	2.86				7.02	2.48
Pacific ocean perch									
Other rockfish									
Sculpins	5.77	5.92	7.73	7.74	46.50	27.06		0.13	18.13
Other roundfish	0.65	20.17	0.70	0.28	1.94	4.79	0.74	0.31	1.91
Total roundfish	**633.5**	**644.2**	**805.4**	**1,962.0**	**2,266.8**	**979.3**	**2,942.0**	**1,175.7**	**912.0**
Blue king crab					3.58	53.33	9.92		
Red king crab									
Tanner crab, bairdi					0.07				
Tanner crab, opilio	42.15	28.36	1.51	0.30	8.10	0.03	1.80	4.51	
Other crab	21.82	64.26	8.07	77.59	466.43	53.14	21.23	108.37	51.64
Shrimp						0.05			
Octopus									
Squids									
Snails	17.82	20.53	6.48	60.47	101.69	57.65	24.95	28.25	31.47
Sea stars	7.58	14.05	3.21	8.52	17.19	105.25	7.07	18.03	22.13
Other invertebrates	17.67	90.40	5.98	61.83	489.69	26.13	27.10	34.10	42.87
Total invertebrates	**107.0**	**217.6**	**25.2**	**208.7**	**1,086.8**	**295.6**	**92.1**	**193.3**	**148.1**
Miscellaneous									
Total catch	**936.2**	**1,364.0**	**1,070.0**	**2,830.0**	**3,644.2**	**1,734.0**	**3,135.0**	**1,802.0**	**1,130.0**

Appendix A Table 1. -- Continued.

Station	**ON2524**	**ON2625**	**O-25**	**PO2524**	**QP2524**	**Q-25**	**QP2625**	**P-25**	**PO2625**
Start date and time	07/13/16 16:39	07/14/16 07:07	07/14/16 09:30	07/14/16 11:43	07/14/16 14:18	07/14/16 17:27	07/15/16 07:10	07/15/16 09:42	07/15/16 12:50
Haul number	141	142	143	144	145	146	147	148	149
Start latitude	59.51	59.49	59.66	59.82	60.16	60.30	60.13	60.01	59.84
Start longitude	-172.86	-173.48	-173.26	-172.96	-172.99	-173.38	-173.77	-173.29	-173.57
End latitude	59.49	59.51	59.68	59.83	60.19	60.28	60.11	60.00	59.82
End longitude	-172.90	-173.52	-173.22	-172.92	-173.02	-173.38	-173.78	-173.25	-173.60
Bottom depth (m)	94	102	95	81	60	63	89	75	95
Duration (h)	0.53	0.52	0.52	0.49	0.52	0.33	0.52	0.53	0.52
Distance fished (km)	2.88	2.92	2.85	2.69	2.88	1.85	2.88	2.82	2.85
Net width (m)	17.52	17.19	16.96	16.48	16.76	17.06	17.31	15.47	16.83
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	4	0	4	0
Alaska skates	54.74	67.59	23.46	7.00	15.42	10.00	30.32	5.76	11.61
Other skates									
Total elasmobranch	**54.7**	**67.6**	**23.5**	**7.0**	**15.4**	**10.0**	**30.3**	**5.8**	**11.6**
Alaska plaice		1.23		9.79	10.05	17.52		96.86	
Arrowtooth flounder	2.86	90.13	4.80	8.49	4.06			9.67	5.88
Kamchatka flounder									
Flathead sole	1.92	9.19	3.04				10.14	3.33	0.71
Bering flounder	0.96	0.42	1.56	2.74	0.39	1.61	21.48	3.30	1.39
Greenland turbot	2.39	10.41	2.66	2.37			5.49		6.38
Pacific halibut		1.40							
Rock sole	0.41	4.70			332.29	14.12	0.65	10.35	
Yellowfin sole					13.67	3.67		2.63	0.34
Other flatfish	10.79	12.29	13.28	12.65	6.06		5.58	10.58	18.06
Total flatfish	**19.3**	**129.8**	**25.3**	**36.0**	**366.5**	**36.9**	**43.3**	**136.7**	**32.8**
Walleye pollock	340.30	268.27	379.51	1,569.68	1,441.12	941.83	391.59	1,769.68	472.80
Pacific cod	146.86	92.68	66.92	107.44	299.96	86.78	122.67	123.62	142.86
Eelpouts	7.87	14.66	11.34	0.77	0.35	3.57	6.40	3.13	6.06
Pacific herring	4.06		5.26		0.60				0.54
Pacific ocean perch									
Other rockfish									
Sculpins	14.53	19.69	19.32		95.76	8.67	9.36	92.33	11.82
Other roundfish	1.44	0.18	1.53	0.03	1.04	1.07	9.65	3.15	0.67
Total roundfish	**515.1**	**395.5**	**483.9**	**1,677.9**	**1,838.8**	**1,041.9**	**539.7**	**1,991.9**	**634.7**
Blue king crab			2.31	2.31	3.74	9.41		10.84	
Red king crab									
Tanner crab, bairdi					0.22				
Tanner crab, opilio	13.48	1.20	6.41	16.95	21.07	0.17	76.54	7.55	199.86
Other crab	34.11	23.04	10.97	48.01	19.49	17.96	4.33	30.69	4.10
Shrimp	0.02	3.04	0.16		0.04			0.23	0.14
Octopus	0.16	2.57	1.16						
Squids									
Snails	48.41	50.18	65.34	20.74	97.99	58.23	3.12	42.34	75.99
Sea stars	28.22	15.72	14.66	27.74	27.07	9.02	0.80	9.37	14.98
Other invertebrates	17.71	28.29	20.62	35.30	26.62	41.37	15.72	228.81	19.94
Total invertebrates	**142.1**	**124.0**	**121.6**	**151.0**	**196.2**	**136.2**	**100.5**	**329.8**	**315.0**
Miscellaneous									
Total catch	**731.2**	**716.9**	**654.3**	**1,872.0**	**2,417.0**	**1,225.0**	**713.8**	**2,464.2**	**994.1**

Appendix A Table 1. -- Continued.

Station	**O-26**	**PO2726**	**P-26**	**QP2726**	**Q-26**	**R-25**	**R-26**	**R-27**	**R-28**
Start date and time	07/15/16 15:30	07/15/16 17:54	07/16/16 07:07	07/16/16 09:34	07/16/16 11:57	07/16/16 15:15	07/16/16 18:08	07/17/16 12:38	07/17/16 15:56
Haul number	150	151	152	153	154	155	156	157	158
Start latitude	59.67	59.82	59.99	60.16	60.33	60.65	60.67	60.67	60.67
Start longitude	-173.84	-174.24	-173.93	-174.35	-174.08	-173.47	-174.10	-174.79	-175.43
End latitude	59.68	59.84	60.01	60.18	60.34	60.68	60.67	60.67	60.67
End longitude	-173.88	-174.24	-173.95	-174.37	-174.04	-173.46	-174.16	-174.84	-175.48
Bottom depth (m)	104	108	97	100	90	65	87	97	107
Duration (h)	0.51	0.49	0.53	0.49	0.49	0.52	0.52	0.53	0.52
Distance fished (km)	2.80	2.71	2.86	2.68	2.70	2.86	2.79	2.90	2.82
Net width (m)	16.71	15.25	16.55	16.98	17.17	16.89	16.48	17.81	17.27
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	62.86	135.70	63.20	25.76	12.08		8.65	22.53	22.94
Other skates									
Total elasmobranch	**62.9**	**135.7**	**63.2**	**25.8**	**12.1**	**0.0**	**8.7**	**22.5**	**22.9**
Alaska plaice				3.72	4.20	31.83	3.92		
Arrowtooth flounder	81.78	110.58	5.67	50.00	2.96		1.90	0.87	8.78
Kamchatka flounder									
Flathead sole	37.31	332.08	2.54	44.88	26.99		8.28	47.36	19.88
Bering flounder	1.91	2.99	1.82	14.57	45.54	1.63	73.05	40.13	24.24
Greenland turbot	4.16	4.74	8.68	6.06	2.77	0.91	2.83	8.10	21.32
Pacific halibut	4.90	12.04			5.80			6.28	
Rock sole	4.55		1.18	3.65	1.24	18.41	8.65	0.72	0.42
Yellowfin sole						1.49			
Other flatfish	11.73	9.06	28.21	41.96	3.00	10.68	10.19	5.76	9.16
Total flatfish	**146.3**	**471.5**	**48.1**	**164.8**	**92.5**	**64.9**	**108.8**	**109.2**	**83.8**
Walleye pollock	377.36	416.15	342.83	387.37	752.52	2,010.92	674.57	490.31	322.77
Pacific cod	82.62	52.86	123.60	69.54	103.71	996.10	96.92	68.64	77.78
Eelpouts	7.73	7.64	17.26	11.47	39.33		4.13	5.87	7.70
Pacific herring		2.17		1.04					3.72
Pacific ocean perch									
Other rockfish									
Sculpins	2.00	0.63	19.60	10.15	20.02	69.99	11.67	5.48	5.63
Other roundfish	0.19	0.21	1.84	2.98	4.80	1.42	2.44	18.70	0.84
Total roundfish	**469.9**	**479.7**	**505.1**	**482.5**	**920.4**	**3,078.4**	**789.7**	**589.0**	**418.4**
Blue king crab	3.26	3.98	12.24	2.17					
Red king crab									
Tanner crab, bairdi	0.17	0.33						0.56	
Tanner crab, opilio	7.05	10.01	1.58	2.27	36.76	60.43	198.72	26.22	22.83
Other crab	141.40	40.21	1.71	5.24	0.77	31.65	0.64	3.11	0.06
Shrimp	0.18	1.71	0.20	1.13	0.01			0.02	1.85
Octopus			1.22		0.06				1.14
Squids									
Snails	180.82	146.46	13.10	24.35	2.90	31.66	1.65	3.67	11.07
Sea stars	114.08	197.09	27.49	100.55	3.57	6.99	2.03	1.20	80.97
Other invertebrates	87.94	25.34	44.36	34.78	8.63	20.48	0.99	3.56	11.53
Total invertebrates	**534.9**	**425.1**	**101.9**	**170.5**	**52.7**	**151.2**	**204.0**	**38.3**	**129.5**
Miscellaneous									
Total catch	**1,214.0**	**1,512.0**	**718.3**	**843.6**	**1,077.7**	**3,294.6**	**1,111.2**	**759.1**	**654.6**

Appendix A Table 1. -- Continued.

Station	**S-28**	**S-29**	**R-30**	**R-29**	**Q-29**	**Q-28**	**Q-27**	**P-27**	**P-28**
Start date and time	07/18/16 07:07	07/18/16 11:08	07/18/16 15:33	07/18/16 18:14	07/19/16 07:21	07/19/16 10:03	07/19/16 12:45	07/19/16 15:44	07/20/16 07:25
Haul number	159	160	161	162	163	164	165	166	167
Start latitude	61.00	61.00	60.68	60.68	60.33	60.34	60.33	60.00	60.00
Start longitude	-175.51	-176.27	-176.81	-176.21	-176.08	-175.40	-174.74	-174.59	-175.25
End latitude	61.00	61.00	60.66	60.67	60.34	60.34	60.32	60.00	60.00
End longitude	-175.57	-176.32	-176.80	-176.16	-176.03	-175.35	-174.70	-174.64	-175.31
Bottom depth (m)	103	112	129	119	123	111	102	108	118
Duration (h)	0.52	0.52	0.53	0.51	0.52	0.53	0.52	0.55	0.52
Distance fished (km)	2.85	2.87	2.84	2.88	2.90	2.95	2.81	3.03	2.90
Net width (m)	17.23	17.92	17.80	17.29	16.71	16.53	16.46	17.01	17.04
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	80.90	36.96	80.87	104.77	50.24	82.21	38.44	42.04	91.56
Other skates			4.32						2.37
Total elasmobranch	**80.9**	**37.0**	**85.2**	**104.8**	**50.2**	**82.2**	**38.4**	**42.0**	**93.9**
Alaska plaice									16.25
Arrowtooth flounder	1.07	60.42	54.02	150.86	91.48	46.51	20.21	68.04	150.29
Kamchatka flounder									
Flathead sole	4.44	58.30	42.77	93.30	23.19	49.94	146.60	60.52	21.71
Bering flounder	15.16	65.96	5.87	11.32		3.26	51.84	0.82	
Greenland turbot	8.18	31.39	17.56	19.65	21.91	9.78	5.83	18.90	5.85
Pacific halibut			4.90					3.92	2.93
Rock sole	0.60	0.71	1.68	1.80				2.06	1.98
Yellowfin sole									
Other flatfish	1.95	10.05	19.39	19.42	21.45	12.24	28.33	33.22	18.88
Total flatfish	**31.4**	**226.8**	**146.2**	**296.4**	**158.0**	**121.7**	**252.8**	**187.5**	**217.9**
Walleye pollock	153.67	265.89	476.10	477.71	708.37	726.66	389.57	345.56	625.21
Pacific cod	84.91	68.84	64.62	82.92	55.03	35.02	102.41	54.06	125.82
Eelpouts	109.10	15.59	19.20	25.43	9.16	17.01	16.09	1.25	7.23
Pacific herring	5.88	21.74	0.90		0.91	0.79		1.00	
Pacific ocean perch				0.02					
Other rockfish									
Sculpins	21.04	12.51	5.60	3.59	18.69	28.26	14.73	46.47	30.58
Other roundfish	8.51	1.45	0.32	0.75	0.21	0.66	8.11	0.15	0.18
Total roundfish	**383.1**	**386.0**	**566.8**	**590.4**	**792.4**	**808.4**	**530.9**	**448.5**	**789.0**
Blue king crab							2.25	1.35	
Red king crab									
Tanner crab, bairdi									
Tanner crab, opilio	71.60	18.75	3.97	7.42	8.82	19.22	15.47	13.79	22.79
Other crab	0.71	2.16	5.71	35.20	8.75	25.69	22.82	49.69	13.08
Shrimp	0.27	3.11	0.54	1.66	1.97	0.93		0.41	2.28
Octopus									
Squids									
Snails	1.38	12.15	36.42	98.32	22.92	87.05	79.13	68.38	35.70
Sea stars	28.89	28.94	87.61	52.42	19.34	34.61	180.75	122.61	4.81
Other invertebrates	15.10	8.04	7.89	15.45	27.56	16.14	13.43	13.30	4.53
Total invertebrates	**117.9**	**73.1**	**142.1**	**210.5**	**89.4**	**183.6**	**313.8**	**269.5**	**83.2**
Miscellaneous									
Total catch	**613.4**	**722.9**	**940.3**	**1,202.0**	**1,090.0**	**1,196.0**	**1,136.0**	**947.5**	**1,184.0**

Appendix A Table 1. -- Continued.

Station	**P-29**	**O-29**	**O-28**	**O-27**	**N-28**	**M-28**	**M-27**	**L-26**	**M-26**
Start date and time	07/20/16 10:13	07/20/16 12:59	07/20/16 16:15	07/21/16 07:33	07/21/16 12:41	07/22/16 07:32	07/22/16 10:16	07/22/16 14:13	07/22/16 17:00
Haul number	168	169	170	171	172	173	174	175	176
Start latitude	60.01	59.68	59.65	59.68	59.34	59.00	59.01	58.66	58.99
Start longitude	-175.91	-175.88	-175.14	-174.45	-175.09	-175.02	-174.38	-173.67	-173.70
End latitude	59.99	59.65	59.67	59.66	59.32	59.02	59.00	58.67	59.01
End longitude	-175.93	-175.86	-175.10	-174.48	-175.13	-174.98	-174.34	-173.63	-173.74
Bottom depth (m)	129	137	125	115	133	130	127	126	117
Duration (h)	0.34	0.53	0.52	0.53	0.54	0.54	0.52	0.52	0.53
Distance fished (km)	1.88	2.82	2.88	2.89	2.89	2.98	2.89	2.78	2.85
Net width (m)	17.03	17.13	16.96	17.74	17.71	17.11	17.01	16.07	17.55
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	69.02	58.10	101.46	48.62	58.36	21.92	138.41	69.79	92.13
Other skates						9.66		7.01	
Total elasmobranch	**69.0**	**58.1**	**101.5**	**48.6**	**58.4**	**31.6**	**138.4**	**76.8**	**92.1**
Alaska plaice				12.32					
Arrowtooth flounder	12.76	15.14	99.64	139.96	104.20	119.58	200.33	193.94	197.04
Kamchatka flounder									
Flathead sole	23.26	21.83	43.84	17.17	75.98	61.70	24.23	153.16	30.33
Bering flounder									
Greenland turbot	18.88	15.06	4.53	9.32					8.57
Pacific halibut	10.77		28.73	10.33		17.84	12.27	5.02	17.08
Rock sole			10.28	2.62		1.88		19.76	4.29
Yellowfin sole									
Other flatfish	6.89	27.22	0.41	6.68	4.23	15.12	16.28	21.13	12.54
Total flatfish	**72.6**	**79.2**	**187.4**	**198.4**	**184.4**	**216.1**	**253.1**	**393.0**	**269.9**
Walleye pollock	532.90	439.13	299.24	413.10	654.99	447.91	690.71	511.21	834.66
Pacific cod	22.24	17.06	84.51	87.44	48.69	66.10	129.78	91.89	174.84
Eelpouts	9.78	23.67	0.89	2.01	3.62	8.60	2.53		2.35
Pacific herring			0.38						
Pacific ocean perch									
Other rockfish									
Sculpins	1.23	34.25	37.51	3.58	7.45	20.77	17.61	1.66	3.52
Other roundfish	0.11	0.75	0.09	0.33	6.24	0.09	1.34		0.49
Total roundfish	**566.3**	**514.9**	**422.6**	**506.5**	**721.0**	**543.5**	**842.0**	**604.8**	**1,015.9**
Blue king crab									
Red king crab									
Tanner crab, bairdi						3.29	2.22	2.74	0.06
Tanner crab, opilio	23.43	7.87	83.82	60.81	1.43	0.30	39.32	51.14	30.80
Other crab	34.32	5.12	11.06	20.15	46.07	16.43	95.92	22.83	136.10
Shrimp	2.03	1.60	0.08	1.09	6.46	0.23	0.27	0.06	0.28
Octopus			0.02		0.11	1.75			
Squids						0.16			
Snails	19.94	35.65	130.44	38.42	61.37	26.66	63.64	17.44	76.81
Sea stars	166.62	258.93	6.98	28.48	146.15	3.63	9.51	4.90	2.37
Other invertebrates	9.60	17.62	10.39	1.59	34.65	10.29	93.63	10.32	59.73
Total invertebrates	**255.9**	**326.8**	**242.8**	**150.5**	**296.2**	**62.7**	**304.5**	**109.4**	**306.2**
Miscellaneous									
Total catch	**963.8**	**979.0**	**954.3**	**904.0**	**1,260.0**	**853.9**	**1,538.0**	**1,184.0**	**1,684.0**

Appendix A Table 1. -- Continued.

Station	**N-27**	**N-26**	**N-25**	**N-24**	**M-25**	**M-24**	**L-24**	**L-25**	**K-25**
Start date and time	07/23/16 07:20	07/23/16 10:03	07/23/16 12:44	07/23/16 15:27	07/24/16 07:27	07/24/16 10:06	07/24/16 12:58	07/24/16 15:42	07/25/16 07:45
Haul number	177	178	179	180	181	182	183	184	185
Start latitude	59.33	59.33	59.34	59.33	59.00	59.00	58.68	58.66	58.33
Start longitude	-174.46	-173.82	-173.17	-172.52	-173.09	-172.46	-172.35	-172.98	-172.96
End latitude	59.33	59.34	59.34	59.33	58.99	59.00	58.66	58.66	58.34
End longitude	-174.41	-173.77	-173.11	-172.47	-173.04	-172.41	-172.38	-173.03	-172.91
Bottom depth (m)	121	111	100	87	107	98	102	112	109
Duration (h)	0.52	0.54	0.53	0.52	0.52	0.53	0.52	0.53	0.53
Distance fished (km)	2.92	2.94	2.97	2.87	2.83	2.94	2.83	2.98	2.95
Net width (m)	17.53	17.84	17.24	16.95	17.15	16.94	17.09	17.63	16.67
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	125.04	36.70	24.82	24.03	84.21	69.61	192.97	87.28	91.20
Other skates				0.08		0.02			
Total elasmobranch	**125.0**	**36.7**	**24.8**	**24.1**	**84.2**	**69.6**	**193.0**	**87.3**	**91.2**
Alaska plaice				5.08	5.88		4.41		
Arrowtooth flounder	147.14	145.80	31.88	8.52	247.93	29.03	340.88	143.92	112.61
Kamchatka flounder									
Flathead sole	29.11	51.49	3.42	0.77	5.15	3.19	14.49	6.54	6.57
Bering flounder		0.17	1.43	1.60		0.05	1.20		
Greenland turbot	4.79	18.80	5.32	4.35	28.66	4.20			
Pacific halibut	26.22				4.90				13.60
Rock sole	5.64	1.16	1.14	1.74	4.20	0.65		24.68	23.19
Yellowfin sole				0.63					
Other flatfish	5.25	8.90	15.68	12.91	58.47	26.14	25.24	13.79	7.00
Total flatfish	**218.1**	**226.3**	**58.9**	**35.6**	**355.2**	**63.3**	**386.2**	**188.9**	**163.0**
Walleye pollock	588.94	396.40	547.13	701.67	694.13	579.11	618.05	597.55	963.73
Pacific cod	106.54	128.84	98.34	120.42	193.72	115.97	172.48	60.22	151.95
Eelpouts	8.27	4.22	4.12	27.64	1.95	25.48	8.99	3.08	2.33
Pacific herring			0.36						
Pacific ocean perch									
Other rockfish									
Sculpins	15.05	9.48	16.66	48.60	0.05	56.25	27.09	31.73	13.84
Other roundfish		0.15	0.04	0.52	0.15	0.51	0.19	0.05	0.15
Total roundfish	**718.8**	**539.1**	**666.7**	**898.8**	**890.0**	**777.3**	**826.8**	**692.6**	**1,132.0**
Blue king crab		1.92							
Red king crab									
Tanner crab, bairdi	2.20	1.73	0.36	0.43	1.94	0.73	0.30	0.58	1.19
Tanner crab, opilio	0.12	15.24	4.47	5.90	4.21	0.80	1.62	13.94	26.28
Other crab	92.17	36.51	17.03	21.20	14.04	20.42	34.86	92.82	24.42
Shrimp	0.65	1.67	0.06	0.02	1.05	0.19	7.41		
Octopus			0.93	2.30					
Squids									
Snails	154.27	75.81	49.61	17.31	25.43	37.32	45.37	124.28	5.18
Sea stars	2.33	2.12	8.21	36.77	4.39	57.24	9.53	10.38	0.01
Other invertebrates	80.28	27.63	24.89	46.90	19.58	76.94	104.94	64.17	6.76
Total invertebrates	**332.0**	**162.6**	**105.6**	**130.8**	**70.6**	**193.6**	**204.0**	**306.2**	**63.8**
Miscellaneous									
Total catch	**1,394.0**	**964.7**	**855.9**	**1,089.4**	**1,400.0**	**1,103.8**	**1,610.0**	**1,275.0**	**1,450.0**

Appendix A Table 1. -- Continued.

Station	**K-24**	**J-24**	**J-25**	**I-25**	**H-25**	**G-25**
Start date and time	07/25/16 10:26	07/25/16 13:59	07/25/16 16:49	07/26/16 07:46	07/26/16 10:19	07/26/16 13:13
Haul number	186	187	188	189	190	191
Start latitude	58.34	58.02	57.99	57.68	57.36	57.01
Start longitude	-172.32	-172.24	-172.84	-172.79	-172.81	-172.67
End latitude	58.34	57.99	58.00	57.65	57.33	56.99
End longitude	-172.27	-172.25	-172.89	-172.79	-172.81	-172.63
Bottom depth (m)	103	105	109	119	117	122
Duration (h)	0.53	0.52	0.52	0.53	0.53	0.52
Distance fished (km)	2.90	2.86	2.91	2.92	2.95	2.78
Net width (m)	17.29	16.86	16.95	17.25	16.44	16.74
Net measured?	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0
Alaska skates	102.22	71.40	99.16	72.30	36.22	7.47
Other skates				3.30	30.44	13.30
Total elasmobranch	**102.2**	**71.4**	**99.2**	75.6	66.7	20.8
Alaska plaice	8.70					
Arrowtooth flounder	113.38	92.29	57.23	**78.16**	**142.25**	**226.56**
Kamchatka flounder						
Flathead sole	21.27	531.15	34.20	35.43	194.19	82.86
Bering flounder						
Greenland turbot						
Pacific halibut	29.85	6.80	7.07	8.84	28.98	37.22
Rock sole	8.36	3.30	11.24			2.01
Yellowfin sole						
Other flatfish	14.40	8.57	13.37	28.21	24.53	15.25
Total flatfish	**196.0**	**642.1**	**123.1**	150.6	389.9	363.9
Walleye pollock	762.49	299.64	674.75	353.58	2,724.62	3.01
Pacific cod	291.87	77.18	63.48	53.40	86.02	27.85
Eelpouts	1.41	2.42	0.50	0.75	0.10	
Pacific herring			0.40			
Pacific ocean perch						
Other rockfish						
Sculpins	82.14	42.92	6.57	7.26	29.93	2.39
Other roundfish	0.52	0.07				0.04
Total roundfish	**1,138.4**	**422.2**	**745.7**	415.0	2,840.7	33.3
Blue king crab						
Red king crab						
Tanner crab, bairdi	1.75	1.13	0.20	0.07	0.47	0.50
Tanner crab, opilio	269.78	2.84	63.37	60.47	25.12	1.00
Other crab	102.94	99.65	35.22	10.47	22.18	8.26
Shrimp	1.49	0.17	0.09	0.27	0.11	0.04
Octopus						21.48
Squids						
Snails	474.88	203.42	37.39	17.96	106.11	22.07
Sea stars	3.42	11.21	3.27	0.95	18.92	1.30
Other invertebrates	108.14	164.85	31.74	7.55	149.82	445.84
Total invertebrates	**962.4**	**483.3**	**171.3**	97.7	322.7	500.5
Miscellaneous						
Total catch	**2,399.0**	**1,619.0**	**1,139.2**	739.0	3,620.0	918.4

Appendix A Table 2. -- Haul and catch data for successfully completed tows by FV *Alaska Knight* during the 2016 eastern Bering Sea bottom trawl survey.

Station	**D-10**	**E-10**	**E-11**	**F-11**	**G-11**	**G-12**	**G-13**	**H-13**	**H-14**
Start date and time	05/31/16 07:11	05/31/16 10:27	05/31/16 13:35	05/31/16 17:08	06/01/16 07:07	06/01/16 09:59	06/01/16 12:40	06/01/16 15:33	06/02/16 07:04
Haul number	2	3	4	5	6	7	8	9	10
Start latitude	56.00	56.33	56.33	56.65	57.00	57.00	57.00	57.32	57.32
Start longitude	-162.31	-162.22	-161.63	-161.57	-161.55	-160.97	-160.35	-160.30	-159.67
End latitude	55.99	56.33	56.33	56.68	57.00	57.00	56.99	57.35	57.35
End longitude	-162.26	-162.17	-161.59	-161.56	-161.50	-160.92	-160.31	-160.30	-159.66
Bottom depth (m)	73	77	63	90	69	66	62	61	57
Duration (h)	0.55	0.53	0.53	0.54	0.52	0.52	0.52	0.53	0.54
Distance fished (km)	3.05	2.91	2.98	3.04	2.93	2.86	2.84	2.95	3.04
Net width (m)	16.77	17.23	16.48	15.79	16.72	16.28	15.67	15.71	16.14
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	5	0	0	0	0	0
Alaska skates	57.70	51.80	195.20	33.47	56.30	43.80	51.32	74.80	64.20
Other skates									
Total elasmobranch	**57.7**	**51.8**	**195.2**	**33.5**	**56.3**	**43.8**	**51.3**	**74.8**	**64.2**
Alaska plaice	18.87	22.57		111.11	154.98	81.69	1.71	7.74	1.50
Arrowtooth flounder	54.17	61.88	86.55	34.63	33.30	28.28	13.09	12.84	16.45
Kamchatka flounder									
Flathead sole	43.14	48.78	27.74	74.57	32.60	21.93	17.85	17.26	17.28
Bering flounder									
Greenland turbot									
Pacific halibut	16.30	12.70	13.11	1.08	10.41	3.82	1.03	9.02	7.76
Rock sole	344.08	293.38	486.71	25.76	133.68	151.39	546.69	236.76	629.32
Yellowfin sole	768.00	449.90	758.96	454.20	350.53	184.34	293.91	333.76	346.85
Other flatfish	21.18	4.08	12.97	2.25	2.71	31.55	8.25	7.11	21.27
Total flatfish	**1,265.7**	**893.3**	**1,386.0**	**703.6**	**718.2**	**503.0**	**882.5**	**624.5**	**1,040.4**
Walleye pollock	313.17	3,093.95	9,789.37	106.37	193.50	130.23	314.37	8.41	172.72
Pacific cod	54.30	83.50	240.14	15.99	36.04	86.13	85.86	72.50	217.05
Eelpouts									
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	4.23	15.80	52.65	0.02	15.30	22.75	4.29	20.36	14.96
Other roundfish	2.28	2.24		0.05	2.90	2.30	1.73	7.98	4.52
Total roundfish	**374.0**	**3,195.5**	**10,082.2**	**122.4**	**247.7**	**241.4**	**406.3**	**109.3**	**409.3**
Blue king crab									
Red king crab	20.38	39.78	17.42	65.36	171.28	76.86	13.24	19.20	1.52
Tanner crab, bairdi	10.70	17.56	8.56	38.13	8.66	6.14	3.54	4.82	5.02
Tanner crab, opilio									
Other crab	3.44	5.40	7.68	53.95	2.57	7.79	7.29	29.65	3.79
Shrimp									
Octopus									
Squids									
Snails	2.59	6.44	2.31	7.14		0.93		7.10	0.78
Sea stars	105.98	45.14	19.26	9.02	145.89	63.20	76.95	180.61	465.82
Other invertebrates	49.49	171.12	18.36	3,020.91	39.35	66.88	34.87	104.08	53.19
Total invertebrates	**192.6**	**285.4**	**73.6**	**3,194.5**	**367.8**	**221.8**	**135.9**	**345.5**	**530.1**
Miscellaneous									
Total catch	**1,890.0**	**4,426.0**	**11,737.0**	**4,054.0**	**1,390.0**	**1,010.0**	**1,476.0**	**1,154.0**	**2,044.0**

Appendix A Table 2. -- Continued.

Station	**I-14**	**I-13**	**J-13**	**J-12**	**I-12**	**H-12**	**H-11**	**I-11**	**J-11**
Start date and time	06/02/16 09:38	06/02/16 12:23	06/02/16 15:16	06/02/16 17:45	06/03/16 07:05	06/03/16 09:46	06/03/16 12:47	06/03/16 15:28	06/03/16 18:01
Haul number	11	12	13	14	15	16	17	18	19
Start latitude	57.66	57.67	57.98	58.00	57.69	57.35	57.32	57.65	57.97
Start longitude	-159.64	-160.27	-160.23	-160.84	-160.88	-160.93	-161.53	-161.51	-161.51
End latitude	57.68	57.66	58.00	58.00	57.66	57.32	57.34	57.67	57.98
End longitude	-159.64	-160.32	-160.23	-160.88	-160.88	-160.93	-161.55	-161.52	-161.54
Bottom depth (m)	51	55	50	44	57	64	55	52	53
Duration (h)	0.53	0.55	0.53	0.47	0.54	0.53	0.54	0.52	0.52
Distance fished (km)	2.94	3.12	2.87	2.58	3.03	2.92	3.01	2.88	2.89
Net width (m)	14.72	14.94	14.89	14.80	16.23	15.39	16.20	16.02	15.68
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	50.10	35.80	21.46	36.60	14.90	128.56	31.16	47.31	39.20
Other skates									
Total elasmobranch	**50.1**	**35.8**	**21.5**	**36.6**	**14.9**	**128.6**	**31.2**	**47.3**	**39.2**
Alaska plaice	3.62	9.76	21.71	42.21	35.49	146.07	38.63	22.78	36.30
Arrowtooth flounder	10.46	13.02	2.32		34.83	37.31	23.21	0.89	
Kamchatka flounder									
Flathead sole	19.76	5.08	4.47	21.63	10.16	37.07	53.77	18.98	19.31
Bering flounder									
Greenland turbot									
Pacific halibut	10.62	8.73	20.92	10.89	9.37	8.35	24.41	31.65	27.20
Rock sole	714.18	654.76	645.03	531.48	197.28	91.93	133.93	438.79	657.20
Yellowfin sole	590.27	2,846.46	274.36	378.39	532.92	681.57	311.38	961.09	1,061.52
Other flatfish	226.41		7.98	715.65	1.82	0.90		2.09	41.45
Total flatfish	**1,575.3**	**3,537.8**	**976.8**	**1,700.3**	**821.9**	**1,003.2**	**585.3**	**1,476.3**	**1,843.0**
Walleye pollock	169.90	7.04	93.28	55.32	2,035.17	31.21	122.42	391.65	128.20
Pacific cod	87.60	776.73	121.20	24.90	74.75	37.72	32.01	28.90	31.00
Eelpouts									
Pacific herring									0.50
Pacific ocean perch									
Other rockfish									
Sculpins	24.24	17.52	14.94	15.51	35.30	59.05	35.91	23.85	3.33
Other roundfish	2.98	2.37	3.93	2.80	7.72	4.54	2.66	1.37	2.08
Total roundfish	**284.7**	**803.7**	**233.3**	**98.5**	**2,152.9**	**132.5**	**193.0**	**445.8**	**165.1**
Blue king crab									
Red king crab	4.04	17.02	48.14	24.00	37.10	101.12	78.14	51.70	69.96
Tanner crab, bairdi	2.58	4.70	2.02	8.24	0.72	6.12	3.48	3.12	4.70
Tanner crab, opilio									
Other crab	2.20	1.12	8.19	1.92	9.31	14.89	3.31	5.81	8.33
Shrimp									
Octopus									
Squids									
Snails	1.84		4.27	0.76	7.36	16.26	1.82	11.36	15.32
Sea stars	192.50	75.38	80.19	60.13	62.28	29.99	214.27	52.33	412.68
Other invertebrates	22.72	4.51	5.63	1.56	31.52	179.34	79.49	118.34	21.74
Total invertebrates	**225.9**	**102.7**	**148.4**	**96.6**	**148.3**	**347.7**	**380.5**	**242.7**	**532.7**
Miscellaneous									
Total catch	**2,136.0**	**4,480.0**	**1,380.0**	**1,932.0**	**3,138.0**	**1,612.0**	**1,190.0**	**2,212.0**	**2,580.0**

Appendix A Table 2. -- Continued.

Station	**J-10**	**I-10**	**H-10**	**G-10**	**F-10**	**F-09**	**E-09**	**D-09**	**C-09**
Start date and time	06/04/16 07:05	06/04/16 09:37	06/04/16 12:01	06/04/16 14:33	06/04/16 17:04	06/05/16 07:08	06/05/16 09:40	06/05/16 12:16	06/05/16 14:43
Haul number	20	21	22	23	24	25	26	27	28
Start latitude	57.99	57.67	57.37	57.02	56.69	56.69	56.36	56.01	55.68
Start longitude	-162.11	-162.12	-162.15	-162.17	-162.18	-162.79	-162.80	-162.81	-162.82
End latitude	57.96	57.65	57.34	57.00	56.66	56.67	56.33	55.99	55.65
End longitude	-162.12	-162.12	-162.15	-162.19	-162.19	-162.78	-162.80	-162.83	-162.83
Bottom depth (m)	38	48	51	58	69	72	79	77	51
Duration (h)	0.52	0.53	0.53	0.54	0.52	0.51	0.53	0.54	0.52
Distance fished (km)	2.88	2.95	2.95	3.08	2.92	2.90	2.99	3.11	2.99
Net width (m)	14.24	15.25	15.76	15.97	15.72	15.76	16.63	16.43	15.09
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	19.00	23.10	40.40	17.10	18.42	35.80	18.50	22.80	16.56
Other skates							0.01		
Total elasmobranch	**19.0**	**23.1**	**40.4**	**17.1**	**18.4**	**35.8**	**18.5**	**22.8**	**16.6**
Alaska plaice	13.76	15.16	25.72	97.70	67.22	76.58	19.20	49.84	38.01
Arrowtooth flounder		5.48	15.86	23.57	35.53	52.78	45.25	41.77	47.40
Kamchatka flounder									
Flathead sole	7.00	26.09	34.37	36.32	53.25	46.74	49.47	52.45	14.97
Bering flounder									
Greenland turbot									
Pacific halibut	2.65	16.45	33.94	22.32	8.32	2.93	0.75	4.95	10.46
Rock sole	335.95	818.59	936.00	266.02	419.94	12.52	73.29	114.27	201.41
Yellowfin sole	244.59	665.45	202.55	250.27	1,348.28	510.00	436.11	415.78	516.88
Other flatfish	32.40		2.29	0.57	3.81	0.78	0.32	5.56	48.06
Total flatfish	**636.3**	**1,547.2**	**1,250.7**	**696.8**	**1,936.3**	**702.3**	**624.4**	**684.6**	**877.2**
Walleye pollock	48.24	45.18	42.43	84.19	853.71	81.58	29.90	414.95	914.06
Pacific cod	22.30	17.10	44.41	69.02	65.04	67.70	27.10	29.70	54.88
Eelpouts									
Pacific herring	0.19								1.21
Pacific ocean perch									
Other rockfish									
Sculpins	2.40	15.91	21.80	30.63	149.71	20.44	4.66	27.40	
Other roundfish	2.47	2.29	4.43	1.65	0.45	0.26	0.23	1.17	3.40
Total roundfish	**75.6**	**80.5**	**113.1**	**185.5**	**1,068.9**	**170.0**	**61.9**	**473.2**	**973.5**
Blue king crab									
Red king crab	30.44	38.70	35.70	46.72	217.76	63.80	26.64	160.38	10.04
Tanner crab, bairdi	1.99	0.66	2.34	2.41	8.10	8.86	17.94	17.02	94.70
Tanner crab, opilio			0.00						
Other crab	18.60	11.18	7.35	1.98	0.70	10.65	3.08	2.57	11.38
Shrimp							0.01		0.01
Octopus									
Squids									
Snails	25.15	13.06	12.78			13.27	7.03		11.29
Sea stars	251.58	321.80	195.98	138.33	179.04	199.67	52.46	16.19	132.26
Other invertebrates	21.30	15.81	29.67	67.41	330.73	45.66	64.56	147.22	49.05
Total invertebrates	**349.1**	**401.2**	**283.8**	**256.9**	**736.3**	**341.9**	**171.7**	**343.4**	**308.7**
Miscellaneous									
Total catch	**1,080.0**	**2,052.0**	**1,688.0**	**1,156.2**	**3,760.0**	**1,250.0**	**876.5**	**1,524.0**	**2,176.0**

Appendix A Table 2. -- Continued.

Station	**B-08**	**C-08**	**D-08**	**E-08**	**F-08**	**G-08**	**G-09**	**H-09**	**H-08**
Start date and time	06/06/16 07:11	06/06/16 09:38	06/06/16 12:13	06/06/16 16:19	06/07/16 07:11	06/07/16 09:59	06/07/16 12:27	06/07/16 14:54	06/07/16 17:12
Haul number	29	30	31	33	34	35	36	37	38
Start latitude	55.34	55.67	56.00	56.33	56.66	57.01	57.03	57.30	57.33
Start longitude	-163.41	-163.40	-163.40	-163.42	-163.38	-163.35	-162.80	-162.80	-163.37
End latitude	55.36	55.69	56.02	56.31	56.69	57.01	57.06	57.30	57.35
End longitude	-163.39	-163.39	-163.40	-163.42	-163.38	-163.30	-162.79	-162.84	-163.37
Bottom depth (m)	55	82	89	84	75	67	61	50	52
Duration (h)	0.51	0.51	0.53	0.52	0.53	0.51	0.52	0.51	0.51
Distance fished (km)	2.78	2.77	2.97	2.89	2.97	2.85	2.89	2.94	2.84
Net width (m)	15.68	16.66	16.90	14.99	16.98	16.19	16.39	15.92	15.56
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	10.60	51.80	9.28	12.00	66.66	40.50	41.60	17.50	21.30
Other skates	8.78			0.01	2.50			0.20	
Total elasmobranch	**19.4**	**51.8**	**24.0**	**12.0**	**69.2**	**40.5**	**41.6**	**17.7**	**21.3**
Alaska plaice	39.95	51.05		9.60	31.33	135.47	38.70	70.98	32.72
Arrowtooth flounder	30.29	45.19	63.80	14.46	57.80	26.08	19.42	12.75	9.49
Kamchatka flounder									
Flathead sole	19.32	29.00	32.63	29.95	49.53	47.85	12.00	15.70	8.87
Bering flounder									
Greenland turbot									
Pacific halibut	11.97	20.31	12.95		6.11	2.51	10.97	18.28	1.41
Rock sole	27.59	32.15	15.10	9.30	11.45	12.38	24.88	505.43	198.98
Yellowfin sole	387.10	158.05	46.56	58.56	835.56	688.24	352.60	560.69	829.93
Other flatfish	11.57	0.32	0.80	0.26	0.42		0.51	0.71	1.50
Total flatfish	**527.8**	**336.1**	**171.8**	**122.1**	**992.2**	**912.5**	**459.1**	**1,184.5**	**1,082.9**
Walleye pollock	275.60	4,449.24	3,553.19	343.38	278.61	523.87	253.10	60.45	71.41
Pacific cod	16.90	30.20	134.18	45.30	11.60	16.90	114.50	30.49	48.61
Eelpouts					2.28				
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	5.32	6.40	2.69	14.30	19.20	34.18	19.39	32.00	20.78
Other roundfish	5.90	0.76	0.34	0.40	1.05	3.47	2.26	4.46	2.12
Total roundfish	**303.7**	**4,486.6**	**3,690.4**	**403.4**	**312.7**	**578.4**	**389.3**	**127.4**	**142.9**
Blue king crab									
Red king crab	79.88	7.06	17.52	10.52	25.46	23.00	11.34	13.32	13.48
Tanner crab, bairdi	9.71	5.54	6.29	21.24	14.06	6.28	1.41	1.32	2.48
Tanner crab, opilio			0.46						
Other crab	29.80	2.06	1.98	2.53	64.21	12.54	3.38	3.80	7.20
Shrimp				0.01			0.00		
Octopus									
Squids									
Snails	20.73	15.24	2.33	5.97	102.04	14.41	1.69	30.21	20.75
Sea stars	23.86	16.63		3.43	163.70	229.60	116.13	70.64	19.18
Other invertebrates	135.15	1.00	5.20	177.51	142.42	80.72	56.52	51.07	37.79
Total invertebrates	**299.1**	**47.5**	**33.8**	**221.2**	**511.9**	**366.6**	**190.5**	**170.4**	**100.9**
Miscellaneous									
Total catch	**1,150.0**	**4,922.0**	**3,920.0**	**758.7**	**1,886.0**	**1,898.0**	**1,080.4**	**1,500.0**	**1,348.0**

Appendix A Table 2. -- Continued.

Station	**I-08**	**I-09**	**J-09**	**J-08**	**K-08**	**M-06**	**L-06**	**L-07**	**K-07**
Start date and time	06/08/16 07:07	06/08/16 09:38	06/08/16 11:54	06/08/16 14:33	06/08/16 16:53	06/10/16 07:05	06/10/16 09:26	06/10/16 12:01	06/10/16 14:38
Haul number	39	40	41	42	43	44	45	46	47
Start latitude	57.67	57.67	57.98	58.01	58.30	58.99	58.69	58.66	58.35
Start longitude	-163.35	-162.77	-162.75	-163.34	-163.35	-164.64	-164.63	-164.03	-164.00
End latitude	57.67	57.68	58.00	58.04	58.33	58.96	58.67	58.64	58.32
End longitude	-163.30	-162.72	-162.75	-163.34	-163.36	-164.64	-164.61	-164.00	-163.99
Bottom depth (m)	47	45	43	44	37	28	37	36	43
Duration (h)	0.51	0.51	0.53	0.52	0.51	0.53	0.51	0.50	0.52
Distance fished (km)	2.81	2.91	2.95	2.81	2.85	2.96	2.81	2.78	2.92
Net width (m)	15.11	15.02	15.45	15.25	13.50	15.01	15.68	15.47	16.45
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	68.70	19.30	53.70	34.96	18.20		67.80		7.44
Other skates					29.02				
Total elasmobranch	**68.7**	**19.3**	**53.7**	**35.0**	**47.2**	**0.0**	**67.8**	**0.0**	**7.4**
Alaska plaice	22.44	1.85	10.47	23.50	4.72	3.68	3.80	0.27	14.10
Arrowtooth flounder	7.05	1.49							
Kamchatka flounder									
Flathead sole	26.41	21.97	7.43	5.32	0.37			0.05	0.52
Bering flounder									
Greenland turbot									
Pacific halibut	4.53	31.98	6.55	24.94	23.39	13.43	91.70	20.65	15.03
Rock sole	394.44	642.61	1,157.46	911.50	69.99	7.30	100.91	10.30	187.26
Yellowfin sole	347.66	770.05	733.04	1,449.13	426.51	347.72	329.49	130.95	352.40
Other flatfish		8.20	27.66		9.02	0.03			
Total flatfish	**802.5**	**1,478.2**	**1,942.6**	**2,414.4**	**534.0**	**372.2**	**525.9**	**162.2**	**569.3**
Walleye pollock	138.62	76.22	95.11	40.77	111.80	28.40	94.01	158.87	46.34
Pacific cod	71.43	28.27	44.03	19.14	77.45	4.42	54.25	22.70	12.22
Eelpouts									
Pacific herring	1.87	0.22	2.15	7.57	17.93	3.86	12.86	23.71	3.22
Pacific ocean perch									
Other rockfish									
Sculpins	5.12	1.15	6.17	3.78	0.53	0.03	2.58		2.90
Other roundfish	2.31	1.87	1.54	1.06	1.11	0.71	0.35	0.05	0.89
Total roundfish	**219.3**	**107.7**	**149.0**	**72.3**	**208.8**	**37.4**	**164.0**	**205.3**	**65.6**
Blue king crab									
Red king crab	10.60	14.52	7.08	8.18					2.04
Tanner crab, bairdi	1.74	0.78	0.88	2.58	2.94	1.62			1.68
Tanner crab, opilio	0.00								
Other crab	21.00	10.34	2.36	12.00	1.37	5.76	3.94	0.01	1.86
Shrimp						0.00			
Octopus									
Squids									
Snails	7.38	20.55	2.11	3.01	1.19		0.14		0.63
Sea stars	26.47	84.66	161.59	107.29	62.04	124.28	126.12	26.46	58.39
Other invertebrates	48.22	9.97	4.69	23.28	4.44	0.97	2.44	1.07	13.14
Total invertebrates	**115.4**	**140.8**	**178.7**	**156.3**	**72.0**	**132.6**	**132.6**	**27.5**	**77.7**
Miscellaneous									
Total catch	**1,206.0**	**1,746.0**	**2,324.0**	**2,678.0**	**862.0**	**542.2**	**890.4**	**395.1**	**720.1**

Appendix A Table 2. -- Continued.

Station	**K-06**	**J-06**	**J-07**	**I-07**	**I-06**	**H-06**	**H-07**	**G-07**	**G-06**
Start date and time	06/10/16 17:18	06/11/16 07:07	06/11/16 09:39	06/11/16 12:05	06/11/16 14:29	06/11/16 17:05	06/12/16 07:06	06/12/16 09:26	06/12/16 11:52
Haul number	48	49	50	51	52	53	54	55	56
Start latitude	58.33	58.00	57.99	57.68	57.66	57.34	57.33	57.02	56.99
Start longitude	-164.62	-164.62	-164.03	-164.02	-164.59	-164.61	-164.00	-164.04	-164.59
End latitude	58.33	57.99	57.96	57.66	57.65	57.32	57.31	56.99	56.96
End longitude	-164.67	-164.58	-164.01	-164.04	-164.64	-164.58	-163.99	-164.05	-164.60
Bottom depth (m)	45	45	47	52	55	66	62	68	70
Duration (h)	0.51	0.51	0.51	0.51	0.50	0.51	0.51	0.50	0.50
Distance fished (km)	2.89	2.80	2.77	2.79	2.79	2.90	2.80	2.80	2.77
Net width (m)	16.19	15.49	15.94	15.79	15.77	16.19	16.27	15.75	15.80
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	31.44	57.36	32.28	138.64	84.94	64.64	74.70	8.74	7.74
Other skates									
Total elasmobranch	**31.4**	**57.4**	**32.3**	**138.6**	**84.9**	**64.6**	**74.7**	**8.7**	**7.7**
Alaska plaice	40.28	15.54	17.40	41.03	26.39	32.25	90.40	305.61	196.05
Arrowtooth flounder				2.52	7.98	28.54	12.36	72.82	37.65
Kamchatka flounder									
Flathead sole		2.59	0.02	2.17	6.39	52.34	6.76	61.10	450.79
Bering flounder									
Greenland turbot									
Pacific halibut	49.47	16.65	58.66	17.32	2.93	1.15	4.29	3.40	4.10
Rock sole	255.76	274.53	310.66	387.51	181.04	33.94	10.36	12.20	7.16
Yellowfin sole	585.49	1,114.48	414.36	695.06	395.87	853.00	503.88	593.13	456.82
Other flatfish						2.88		0.59	5.55
Total flatfish	**931.0**	**1,423.8**	**801.1**	**1,145.6**	**620.6**	**1,004.1**	**628.1**	**1,048.8**	**1,158.1**
Walleye pollock	83.05	85.24	27.54	37.23	75.22	596.19	232.94	195.71	27.76
Pacific cod	59.10	35.48	16.60	18.32	28.54	12.10	69.03	27.46	20.80
Eelpouts						4.97	2.67	4.29	6.64
Pacific herring	2.43			30.86	3.44	0.88			
Pacific ocean perch									
Other rockfish									
Sculpins	5.26	6.66	5.92	16.88	35.68	37.00	32.78	20.60	33.46
Other roundfish	2.21	3.24	3.01	3.41	6.68	5.46	2.10	5.45	3.18
Total roundfish	**152.1**	**130.6**	**53.1**	**106.7**	**149.6**	**656.6**	**339.5**	**253.5**	**91.8**
Blue king crab									
Red king crab		2.82		6.02	7.16	0.98	4.46	11.48	
Tanner crab, bairdi	6.38	2.86	3.72	2.14	2.30	3.54	1.72	7.56	13.20
Tanner crab, opilio							0.01		
Other crab	7.98	62.73	25.98	90.61	54.90	51.00	17.21	26.48	12.53
Shrimp							0.00		
Octopus									
Squids									
Snails	0.98	115.43	10.40	93.37	19.97	171.91	24.95	76.03	140.30
Sea stars	303.20	99.70	129.42	157.44	172.65	392.72	491.74	274.39	130.98
Other invertebrates	56.97	84.69	57.31	155.48	443.93	514.52	67.62	252.96	103.31
Total invertebrates	**375.5**	**368.2**	**226.8**	**505.1**	**700.9**	**1,134.7**	**607.7**	**648.9**	**400.3**
Miscellaneous									
Total catch	**1,490.0**	**1,980.0**	**1,113.3**	**1,896.0**	**1,556.0**	**2,860.0**	**1,650.0**	**1,960.0**	**1,658.0**

Appendix A Table 2. -- Continued.

Station	**F-06**	**F-07**	**E-07**	**E-06**	**D-06**	**D-07**	**C-06**	**C-07**	**B-07**
Start date and time	06/12/16 14:14	06/13/16 07:25	06/13/16 09:53	06/13/16 12:17	06/13/16 14:51	06/13/16 17:15	06/14/16 07:09	06/14/16 10:06	06/15/16 07:06
Haul number	57	58	59	60	61	62	63	64	69
Start latitude	56.69	56.67	56.34	56.32	56.01	55.99	55.66	55.69	55.34
Start longitude	-164.58	-164.02	-164.03	-164.56	-164.58	-164.06	-164.58	-163.99	-164.02
End latitude	56.67	56.65	56.32	56.30	55.98	55.98	55.64	55.71	55.34
End longitude	-164.55	-164.03	-164.05	-164.57	-164.58	-164.02	-164.56	-163.99	-164.07
Bottom depth (m)	75	75	86	87	93	91	97	94	80
Duration (h)	0.50	0.51	0.51	0.51	0.51	0.52	0.46	0.50	0.51
Distance fished (km)	2.78	2.86	2.82	2.80	2.80	2.88	2.55	2.82	2.82
Net width (m)	16.81	16.84	16.93	16.68	17.13	16.79	16.59	16.47	16.60
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	1	0	0	0	0	0	0	0
Alaska skates	22.76	21.70	6.42	33.92	39.20	22.60	67.65	116.38	29.08
Other skates	7.90	8.56	2.08	4.62	5.62		14.33	4.17	29.14
Total elasmobranch	**30.7**	**30.3**	**8.5**	**38.5**	**44.8**	**22.6**	**82.0**	**120.6**	**58.2**
Alaska plaice	40.20	99.06	9.71	20.13	5.63	27.88	1.51	1.68	1.74
Arrowtooth flounder	59.41	162.46	55.84	47.79	144.43	61.72	52.18	94.90	96.39
Kamchatka flounder									
Flathead sole	39.03	78.86	25.97	29.52	47.03	44.32	77.02	119.61	71.30
Bering flounder									
Greenland turbot									
Pacific halibut	11.26	4.90	18.25	6.69		4.97	34.53	66.71	26.06
Rock sole	7.73	55.40	43.02	56.68	34.21	119.40	81.17	127.66	84.32
Yellowfin sole	821.29	524.96	136.70	159.76	74.41	169.91	14.18	64.06	163.28
Other flatfish	7.72	0.80	2.77	3.66	0.91	3.66	4.62	9.53	3.83
Total flatfish	**986.6**	**926.4**	**292.3**	**324.2**	**306.6**	**431.8**	**265.2**	**484.2**	**446.9**
Walleye pollock	274.91	304.68	253.31	57.31	604.64	221.22	288.56	3.06	37.60
Pacific cod	64.74	83.24	32.00	32.70	42.56	65.40	115.44	35.66	53.36
Eelpouts	17.23	4.52	0.98						
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	17.64	10.30		0.26	1.40	10.94	10.87	4.26	10.88
Other roundfish	1.71	2.38	0.11	0.41	28.38	0.18	4.67	5.18	14.05
Total roundfish	**376.2**	**405.1**	**286.4**	**90.7**	**677.0**	**297.7**	**419.5**	**48.2**	**115.9**
Blue king crab									
Red king crab		11.08	22.70		4.58	5.66		8.50	
Tanner crab, bairdi	8.88	10.28	33.37	23.38	46.94	23.07	12.65	18.41	0.90
Tanner crab, opilio		1.50	1.42	5.06	1.90	0.78	0.71	0.91	
Other crab	87.47	68.58	96.34	72.67	118.67	77.16	61.31	49.36	2.69
Shrimp			0.03	0.03		0.01		0.00	0.00
Octopus									
Squids									
Snails	436.75	166.15	79.10	93.81	65.98	74.17	71.15	123.94	7.01
Sea stars	24.59	38.07	23.36	173.24		8.37	12.62	8.89	1.22
Other invertebrates	242.78	68.53	186.53	138.36	83.50	108.60	66.82	24.82	181.56
Total invertebrates	**800.5**	**364.2**	**442.8**	**506.6**	**321.6**	**297.8**	**225.3**	**234.8**	**193.4**
Miscellaneous									
Total catch	**2,194.0**	**1,726.0**	**1,030.0**	**960.0**	**1,350.0**	**1,050.0**	**992.0**	**887.7**	**814.4**

Appendix A Table 2. -- Continued.

Station	**B-06**	**A-06**	**A-05**	**Z-05**	**A-04**	**B-04**	**C-04**	**B-01**	**B-02**
Start date and time	06/15/16 09:31	06/15/16 11:36	06/15/16 14:12	06/15/16 16:54	06/19/16 07:41	06/19/16 10:31	06/19/16 13:25	06/22/16 07:59	06/22/16 10:49
Haul number	70	71	72	73	74	75	76	77	78
Start latitude	55.32	55.06	55.00	54.69	54.99	55.31	55.66	55.34	55.35
Start longitude	-164.54	-164.57	-165.13	-165.12	-165.75	-165.79	-165.81	-167.57	-166.97
End latitude	55.30	55.04	54.99	54.67	55.02	55.33	55.68	55.35	55.35
End longitude	-164.56	-164.59	-165.17	-165.14	-165.77	-165.79	-165.81	-167.54	-166.93
Bottom depth (m)	102	64	111	83	130	121	117	149	139
Duration (h)	0.50	0.52	0.50	0.49	0.52	0.50	0.50	0.50	0.50
Distance fished (km)	2.75	2.86	2.80	2.82	2.81	2.82	2.79	2.75	2.75
Net width (m)	16.71	15.49	16.31	15.44	16.23	18.04	18.38	18.26	18.32
Net measured?	Y	Y	Y	Y	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	71.66		149.18	66.16	127.80	84.30	36.86	20.02	13.60
Other skates	4.98	169.20		1.76			2.58	43.31	1.39
Total elasmobranch	**76.6**	**169.2**	**149.2**	**67.9**	**127.8**	**84.3**	**39.4**	**63.3**	**15.0**
Alaska plaice	4.58								
Arrowtooth flounder	87.59	33.94	46.96	204.65	56.34	119.80	101.07	72.88	68.64
Kamchatka flounder									
Flathead sole	131.22	25.31	42.02	121.70	34.97	46.90	71.70	16.86	40.74
Bering flounder									
Greenland turbot									
Pacific halibut	12.20	31.71	3.71	11.14		6.04		27.91	
Rock sole	9.44	147.63	4.76	207.56					
Yellowfin sole	14.80	61.65		5.66					
Other flatfish	36.58	39.82	71.09	8.72	10.02	6.10	6.97	14.14	13.41
Total flatfish	**296.4**	**340.1**	**168.5**	**559.4**	**101.3**	**178.8**	**179.7**	**131.8**	**122.8**
Walleye pollock	95.85	188.96	484.36	97.10	61.50	68.79	2.76	18.68	1.78
Pacific cod	16.12	105.30	34.60	46.84	34.10	4.72	5.42	11.46	8.30
Eelpouts	0.11								
Pacific herring									
Pacific ocean perch				0.76					
Other rockfish						1.13			
Sculpins	15.62	0.62	1.05	1.27		3.06	0.01	0.08	9.33
Other roundfish	13.61	0.35	0.14	0.63		4.25	4.78	1.41	0.52
Total roundfish	**141.3**	**295.2**	**520.1**	**146.6**	**95.6**	**81.9**	**13.0**	**31.6**	**19.9**
Blue king crab									
Red king crab									
Tanner crab, bairdi	17.02	0.00	7.64	0.44	4.46	9.56	14.21	20.08	10.94
Tanner crab, opilio	20.89	0.42	0.41				0.94	1.63	0.81
Other crab	29.06	0.50	2.35	1.28	0.40	1.89	1.52	2.30	0.08
Shrimp	0.00				0.01		0.00	0.45	0.02
Octopus									
Squids									
Snails	28.21	14.01	6.67	12.54	2.31	0.24	0.31	8.67	0.69
Sea stars	1.20	0.15	0.12					0.06	0.02
Other invertebrates	37.22	448.43	50.95	71.80	9.41	5.07	7.28	18.01	2.94
Total invertebrates	**133.6**	**463.5**	**68.1**	**86.1**	**16.6**	**16.8**	**24.3**	**51.2**	**15.5**
Miscellaneous									
Total catch	**648.0**	**1,268.0**	**906.0**	**860.0**	**341.3**	**361.8**	**256.4**	**277.9**	**173.2**

Appendix A Table 2. -- Continued.

Station	**C-02**	**D-02**	**C-01**	**C-18**	**D-18**	**D-01**	**E-02**	**F-02**	**G-02**
Start date and time	06/22/16 13:27	06/22/16 16:16	06/23/16 07:28	06/23/16 10:38	06/23/16 13:23	06/23/16 16:28	06/24/16 07:12	06/24/16 11:03	06/24/16 13:59
Haul number	79	80	81	82	83	84	85	86	87
Start latitude	55.65	55.99	55.67	55.66	55.98	56.00	56.32	56.64	56.99
Start longitude	-166.99	-167.01	-167.56	-168.19	-168.22	-167.63	-167.05	-167.07	-167.10
End latitude	55.67	56.01	55.67	55.69	56.01	56.02	56.34	56.67	57.01
End longitude	-166.99	-167.01	-167.61	-168.19	-168.24	-167.61	-167.01	-167.05	-167.10
Bottom depth (m)	135	134	136	136	150	132	114	96	74
Duration (h)	0.49	0.51	0.51	0.49	0.51	0.50	0.49	0.51	0.51
Distance fished (km)	2.72	2.85	2.77	2.68	2.75	2.82	2.71	2.82	2.76
Net width (m)	18.38	18.40	18.19	18.12	17.75	18.37	18.08	17.86	16.46
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	20.18	8.88	31.50	23.91	95.06	22.86	12.64	24.34	71.72
Other skates	2.18	2.90	0.54	1.43	25.82	0.02		0.02	
Total elasmobranch	**22.4**	**11.8**	**32.0**	**25.3**	**120.9**	**22.9**	**12.6**	**24.4**	**71.7**
Alaska plaice								3.08	39.61
Arrowtooth flounder	43.49	51.44	49.64	71.48	92.99	98.35	79.21	53.20	28.89
Kamchatka flounder									
Flathead sole	99.77	113.84	56.23	40.18	25.98	53.22	136.30	41.30	186.91
Bering flounder									
Greenland turbot									
Pacific halibut	3.74	2.93	23.70	12.67	2.51		21.94	5.11	1.23
Rock sole				1.13				0.46	29.98
Yellowfin sole								41.56	171.17
Other flatfish	6.67	5.72	9.31	19.28	18.06	5.36	5.57	8.24	
Total flatfish	**153.7**	**173.9**	**138.9**	**144.7**	**139.5**	**156.9**	**243.0**	**153.0**	**457.8**
Walleye pollock	2.36	340.76	5.04	79.16	43.76		8.68	579.28	104.95
Pacific cod	2.12	30.18	2.00	37.12	11.10	33.50	16.28	96.90	43.40
Eelpouts	1.10	0.41				0.14	0.57	0.46	
Pacific herring								0.35	
Pacific ocean perch					10.34	5.02			
Other rockfish					1.04	0.18			
Sculpins	0.10		0.09	0.02	1.42	5.62	2.60	2.57	23.50
Other roundfish	5.99	13.50	3.22	8.86	4.74	11.67	8.54	0.43	4.64
Total roundfish	**11.7**	**384.9**	**10.4**	**125.2**	**72.4**	**56.1**	**36.7**	**680.0**	**176.5**
Blue king crab									
Red king crab									
Tanner crab, bairdi	2.51	5.21	3.14	5.63	8.93	1.44	26.68	12.90	8.73
Tanner crab, opilio		5.32	0.05		17.24	6.30	40.56	2.45	1.61
Other crab	0.23	0.24	0.06	0.91	5.68	0.18	9.47	30.22	50.87
Shrimp	0.11	0.04	0.03	0.02	0.09	0.04	0.01	0.06	
Octopus					0.03				
Squids					0.02				
Snails	0.54	1.98	2.31	3.95	4.79	1.56	16.78	64.88	144.75
Sea stars	0.14	0.32	0.02	0.03	0.35	0.15	0.04	4.44	33.47
Other invertebrates	7.39	2.53	16.42	30.05	4.37	6.15	15.35	17.54	354.57
Total invertebrates	**10.9**	**15.6**	**22.0**	**40.6**	**41.5**	**15.8**	**108.9**	**132.5**	**594.0**
Miscellaneous									
Total catch	**198.6**	**586.2**	**203.3**	**335.8**	**374.3**	**251.8**	**401.2**	**989.8**	**1,300.0**

Appendix A Table 2. -- Continued.

Station	**H-02**	**J-02**	**I-02**	**I-01**	**H-01**	**G-01**	**F-01**	**E-01**	**E-18**
Start date and time	06/24/16 16:57	06/25/16 07:09	06/25/16 09:56	06/25/16 13:08	06/25/16 15:45	06/26/16 07:08	06/26/16 09:37	06/26/16 12:12	06/26/16 14:51
Haul number	88	89	90	91	92	93	94	95	96
Start latitude	57.32	57.99	57.67	57.67	57.34	57.00	56.68	56.35	56.33
Start longitude	-167.14	-167.17	-167.11	-167.73	-167.74	-167.70	-167.67	-167.66	-168.19
End latitude	57.34	57.97	57.67	57.65	57.32	56.98	56.66	56.33	56.34
End longitude	-167.15	-167.17	-167.15	-167.76	-167.73	-167.71	-167.66	-167.65	-168.23
Bottom depth (m)	70	64	68	69	73	78	101	129	151
Duration (h)	0.50	0.51	0.50	0.50	0.50	0.51	0.51	0.52	0.51
Distance fished (km)	2.72	2.72	2.74	2.76	2.73	2.80	2.77	2.78	2.76
Net width (m)	16.22	16.36	16.26	15.33	16.14	16.41	17.37	17.90	17.07
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	20.24	124.34	65.12	27.40	30.86	69.50	39.04	61.02	129.82
Other skates	0.03				2.48		2.16	34.20	14.80
Total elasmobranch	**20.3**	**124.3**	**65.1**	**27.4**	**33.3**	**69.5**	**41.2**	**95.2**	**144.6**
Alaska plaice	127.67	332.04	507.34	113.07	127.43	252.66	18.46		
Arrowtooth flounder	23.96	33.45	15.35	20.77	17.79	56.33	109.66	128.60	187.11
Kamchatka flounder									
Flathead sole	130.25	23.15	66.94	16.61	95.52	81.58	44.82	146.64	1.48
Bering flounder									
Greenland turbot									
Pacific halibut	3.24	11.65	7.92	16.69	1.59	5.11	26.57	20.14	2.61
Rock sole	60.64	84.05	75.37	94.59	107.54	235.53	5.34		
Yellowfin sole	362.22	959.85	656.97	395.57	315.35	201.23	31.18		
Other flatfish	1.07	1.35	1.59	2.03	5.08	4.85	6.20	8.44	3.07
Total flatfish	**709.0**	**1,445.5**	**1,331.5**	**659.3**	**670.3**	**837.3**	**242.2**	**303.8**	**194.3**
Walleye pollock	160.77	398.67	454.09	657.95	637.27	57.12	171.18	1.64	0.60
Pacific cod	50.22	188.80	101.34	61.79	166.88	98.74	48.30	15.70	9.84
Eelpouts	5.77	6.62	38.86	1.54		0.40		0.37	
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	15.93	8.31	27.55	13.58	4.68	57.28	22.12	4.20	
Other roundfish	3.19	7.79	4.12	7.87	5.99	8.86	1.32	5.83	1.19
Total roundfish	**235.9**	**610.2**	**626.0**	**742.7**	**814.8**	**222.4**	**242.9**	**27.7**	**11.6**
Blue king crab									
Red king crab									
Tanner crab, bairdi	4.25	19.48	8.08	5.92	1.67	18.12	22.36	4.62	43.40
Tanner crab, opilio	0.86	1.72	1.80	4.32	1.64	5.88	22.10	9.96	58.26
Other crab	50.87	31.78	12.97	75.31	149.54	18.45	26.68	3.45	13.06
Shrimp					0.02	0.01	0.01	0.00	2.63
Octopus									0.07
Squids									0.13
Snails	82.70	56.37	38.48	119.13	47.39	7.95	17.78	8.94	0.86
Sea stars	79.66	582.50	171.81	105.19	108.77	54.69	13.75	14.87	3.00
Other invertebrates	516.49	168.09	426.30	1,116.66	542.50	193.71	7.45	10.28	242.87
Total invertebrates	**734.8**	**859.9**	**659.4**	**1,426.5**	**851.5**	**298.8**	**110.1**	**52.1**	**364.3**
Miscellaneous									
Total catch	**1,700.0**	**3,040.0**	**2,682.0**	**2,856.0**	**2,370.0**	**1,428.0**	**636.5**	**478.9**	**714.8**

Appendix A Table 2. -- Continued.

Station	**F-19**	**GF1918**	**G-19**	**HG1918**	**H-19**	**IH1918**	**I-19**	**JI1918**	**JI2019**
Start date and time	06/27/16 07:07	06/27/16 09:51	06/27/16 12:39	06/27/16 15:16	06/27/16 17:48	06/28/16 07:10	06/28/16 09:32	06/28/16 11:52	06/28/16 14:32
Haul number	97	98	99	100	101	102	103	104	105
Start latitude	56.66	56.83	56.99	57.15	57.31	57.48	57.66	57.82	57.84
Start longitude	-168.91	-168.61	-168.91	-168.65	-168.97	-168.74	-169.04	-168.72	-169.32
End latitude	56.68	56.84	57.00	57.17	57.33	57.51	57.69	57.84	57.83
End longitude	-168.87	-168.64	-168.95	-168.61	-168.99	-168.76	-169.05	-168.74	-169.37
Bottom depth (m)	101	97	80	77	70	71	69	71	66
Duration (h)	0.50	0.51	0.52	0.52	0.50	0.50	0.51	0.50	0.50
Distance fished (km)	2.75	2.81	2.82	2.86	2.76	2.72	2.81	2.79	2.77
Net width (m)	16.19	16.82	16.67	16.61	15.74	15.01	15.56	16.19	16.08
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	11.08		7.92	39.84	25.82	34.38	22.28	43.60	0.33
Other skates	3.82								
Total elasmobranch	**14.9**	**0.0**	**7.9**	**44.7**	**25.8**	**34.4**	**22.3**	**43.6**	**0.3**
Alaska plaice	6.96	14.16	39.47	38.10	11.17	11.23	46.48	106.22	15.47
Arrowtooth flounder	44.57	41.20	33.08	71.52	33.13	15.38	32.26	35.64	8.96
Kamchatka flounder									
Flathead sole	169.70	34.82	208.18	126.94	24.19	37.32	7.18	0.06	7.99
Bering flounder									
Greenland turbot								2.08	
Pacific halibut	18.49	9.31	25.63	7.07		9.83	7.92	3.57	23.96
Rock sole		3.40	141.70	175.86	452.05	20.11	27.63	22.59	11.02
Yellowfin sole	5.46	21.12	157.87	81.96	120.44	171.39	269.35	280.50	252.67
Other flatfish	8.89	6.54	1.70	0.84	12.80	1.01	2.37	7.00	2.31
Total flatfish	**254.1**	**130.5**	**607.6**	**502.3**	**653.8**	**266.3**	**393.2**	**457.6**	**322.4**
Walleye pollock	42.92	181.20	7.17	1.05	7.85	81.65	208.99	128.18	98.59
Pacific cod	39.74	50.58	53.82	34.66	81.98	62.58	74.38	88.76	94.04
Eelpouts	0.24			0.03				0.06	
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	0.23	3.28	82.42	39.24	261.26	23.42	14.07	6.98	4.22
Other roundfish	2.59	0.27	0.61	0.54	2.42	1.08	4.24	6.87	11.46
Total roundfish	**85.7**	**235.3**	**144.0**	**75.5**	**353.5**	**168.7**	**301.7**	**230.8**	**208.3**
Blue king crab			1.98	1.68	15.28				0.97
Red king crab									
Tanner crab, bairdi	71.66	69.24	30.92	27.33	73.23	10.42	5.28	35.33	14.46
Tanner crab, opilio	70.52	135.72	14.53	1.41	0.41	12.69	17.36	46.84	365.40
Other crab	34.54	21.50	10.43	16.30	30.50	33.69	16.24	13.59	160.32
Shrimp	0.01	0.01	0.02	0.01	0.02			0.02	
Octopus									
Squids									
Snails	10.71	8.11	4.10		11.15				16.69
Sea stars	3.88	32.94	81.77	60.34	26.81	111.65	157.65	199.06	151.79
Other invertebrates	6.58	11.07	67.44	152.87	781.49	736.17	1,032.32	667.08	313.35
Total invertebrates	**197.9**	**278.6**	**211.2**	**259.9**	**938.9**	**904.6**	**1,228.9**	**961.9**	**1,023.0**
Miscellaneous									
Total catch	**552.6**	**644.5**	**970.8**	**882.4**	**1,972.0**	**1,374.0**	**1,946.0**	**1,694.0**	**1,554.0**

Appendix A Table 2. -- Continued.

Station	**I-21**	**IH2120**	**H-21**	**F-21**	**GF2120**	**G-21**	**HG2120**	**J-19**	**K-19**
Start date and time	06/29/16 07:08	06/29/16 10:07	06/29/16 13:01	07/01/16 07:08	07/01/16 09:18	07/01/16 11:21	07/01/16 14:07	07/02/16 07:01	07/02/16 09:33
Haul number	106	107	108	109	110	111	112	113	114
Start latitude	57.67	57.50	57.35	56.66	56.83	57.00	57.15	57.98	58.32
Start longitude	-170.33	-169.97	-170.21	-170.13	-169.88	-170.20	-169.90	-169.07	-169.11
End latitude	57.66	57.50	57.33	56.68	56.83	57.01	57.18	58.01	58.34
End longitude	-170.29	-170.02	-170.23	-170.11	-169.93	-170.16	-169.89	-169.07	-169.12
Bottom depth (m)	73	68	57	97	73	69	49	70	68
Duration (h)	0.35	0.51	0.52	0.50	0.52	0.51	0.52	0.50	0.49
Distance fished (km)	1.92	2.80	2.81	2.77	2.96	2.78	2.88	2.73	2.72
Net width (m)	16.72	15.92	16.40	16.71	16.99	15.37	14.98	15.28	14.89
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	24.00	1.32		47.34		8.66		42.72	42.24
Other skates				13.50					
Total elasmobranch	**24.0**	**1.3**	**0.0**	**60.8**	**0.0**	**8.7**	**0.0**	**42.7**	**42.2**
Alaska plaice		12.49			1.53		4.07	105.52	363.60
Arrowtooth flounder	54.20	49.53	1.88	155.93	11.74	42.12	3.18	25.85	44.13
Kamchatka flounder									
Flathead sole	51.40	92.33		64.55	3.86	187.71		8.55	35.79
Bering flounder									
Greenland turbot									
Pacific halibut	29.91	21.77	153.80	46.83	67.40	22.26	23.29	13.12	4.90
Rock sole	178.76	135.13	536.20	0.88	52.65	85.50	783.93	31.50	84.85
Yellowfin sole	139.07	169.04			0.68	80.94	17.33	444.23	713.71
Other flatfish				29.89	0.17	2.88			9.38
Total flatfish	**453.3**	**480.3**	**691.9**	**298.1**	**138.0**	**421.4**	**831.8**	**628.8**	**1,256.4**
Walleye pollock	5,175.06	659.13	0.64	220.72	0.49	203.04		91.97	238.63
Pacific cod	75.56	93.74	11.22	28.20	39.00	67.79	7.40	128.26	167.96
Eelpouts				0.78	0.09			5.49	35.92
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	24.44	90.34	7.92	38.85	22.72	83.52	5.10	15.00	88.99
Other roundfish	0.19	2.39	0.32	2.20	0.23	1.45	14.13	10.45	30.49
Total roundfish	**5,275.2**	**845.6**	**20.1**	**290.7**	**62.5**	**355.8**	**26.6**	**251.2**	**562.0**
Blue king crab		7.06				1.32			
Red king crab	1.65	183.46				44.15			
Tanner crab, bairdi	3.05	61.23	1.10	108.84	9.87	84.66	4.22	12.02	43.12
Tanner crab, opilio	0.47	8.35						20.31	5.48
Other crab	9.36	78.35	1.79	15.86	6.75	82.33	15.68	30.32	30.45
Shrimp				0.01		0.05	0.00	0.07	
Octopus							27.56		
Squids									
Snails	5.23	8.48		14.50	7.34	56.93	11.24	15.77	145.75
Sea stars	77.85	103.83	221.04	1.67	5.92	37.92	970.68	213.98	75.58
Other invertebrates	89.79	162.04	21.54	2.62	23.57	95.20	62.20	488.87	521.02
Total invertebrates	**187.4**	**612.8**	**245.5**	**143.5**	**53.5**	**402.6**	**1,091.6**	**781.3**	**821.4**
Miscellaneous									
Total catch	**5,940.0**	**1,940.0**	**957.4**	**793.2**	**254.0**	**1,188.4**	**1,950.0**	**1,704.0**	**2,682.0**

Appendix A Table 2. -- Continued.

Station	**L-19**	**M-19**	**N-19**	**O-19**	**P-19**	**Q-19**	**Q-20**	**P-20**	**O-20**
Start date and time	07/02/16 12:03	07/02/16 14:35	07/03/16 07:03	07/03/16 09:23	07/03/16 11:54	07/03/16 14:23	07/03/16 16:49	07/04/16 07:05	07/04/16 09:36
Haul number	115	116	117	118	119	120	121	122	123
Start latitude	58.65	58.99	59.33	59.64	59.98	60.31	60.33	60.02	59.68
Start longitude	-169.14	-169.17	-169.24	-169.27	-169.32	-169.34	-169.99	-169.97	-169.92
End latitude	58.67	59.02	59.36	59.67	60.01	60.34	60.34	60.00	59.66
End longitude	-169.15	-169.18	-169.24	-169.27	-169.33	-169.35	-170.04	-169.96	-169.92
Bottom depth (m)	62	54	51	48	46	43	52	55	57
Duration (h)	0.51	0.51	0.51	0.51	0.52	0.52	0.51	0.51	0.52
Distance fished (km)	2.81	2.83	2.79	2.77	2.82	2.83	2.83	2.81	2.84
Net width (m)	15.27	15.79	15.43	15.64	15.63	15.81	16.13	16.38	16.84
Net measured?	Y	N	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	94.88	93.64	126.52	169.34	99.90	115.88	86.66	79.56	94.08
Other skates							1.09		
Total elasmobranch	**94.9**	**93.6**	**126.5**	**169.3**	**99.9**	**115.9**	**87.8**	**79.6**	**94.1**
Alaska plaice	335.85	146.50	79.56	64.34	24.39	22.91	76.54	163.01	329.07
Arrowtooth flounder	36.98	25.32	4.15					9.75	24.53
Kamchatka flounder									
Flathead sole	3.61								
Bering flounder						2.05	2.34	1.46	0.10
Greenland turbot									
Pacific halibut	4.29	13.19	6.77	29.22	33.77	8.35	5.11		238.99
Rock sole	60.68	102.62	36.44	26.25	51.70	63.76	75.26	166.05	87.35
Yellowfin sole	345.63	298.49	395.25	416.10	223.31	121.21	163.82	467.91	457.61
Other flatfish	1.02	8.62	26.97		3.65	4.58			4.34
Total flatfish	**788.0**	**594.7**	**549.1**	**535.9**	**336.8**	**222.9**	**323.1**	**808.2**	**1,142.0**
Walleye pollock	315.10	406.78	550.66	1,160.67	1,925.12	871.31	396.76	747.73	586.29
Pacific cod	164.94	67.05	24.17	30.54	97.97	68.40	119.12	177.69	151.72
Eelpouts								1.28	
Pacific herring				0.83			0.40	0.48	0.54
Pacific ocean perch									
Other rockfish									
Sculpins	19.68	20.62	8.07	17.70	25.85	9.78	7.48	11.36	9.01
Other roundfish	9.12	15.37	5.05	4.36	6.51	8.19	7.05	16.47	15.93
Total roundfish	**508.8**	**509.8**	**587.9**	**1,214.1**	**2,055.4**	**957.7**	**530.8**	**955.0**	**763.5**
Blue king crab		0.82							
Red king crab					1.71	2.29			
Tanner crab, bairdi	5.10	0.52							
Tanner crab, opilio	0.03		0.05		0.09		0.28	0.19	0.25
Other crab	41.32	92.16	252.44	141.66	77.45	144.86	40.54	98.76	79.28
Shrimp						0.01			
Octopus									
Squids									
Snails	148.84	29.67	108.51	69.55	58.76	47.49	29.47	312.09	238.85
Sea stars	171.02	245.58	157.06	173.19	222.43	59.09	34.21	60.78	39.04
Other invertebrates	541.92	285.04	374.36	154.25	97.40	79.85	22.29	273.43	85.02
Total invertebrates	**908.2**	**653.8**	**892.4**	**538.6**	**457.8**	**333.6**	**126.8**	**745.3**	**442.4**
Miscellaneous									
Total catch	**2,300.0**	**1,852.0**	**2,156.0**	**2,458.0**	**2,950.0**	**1,630.0**	**1,068.4**	**2,588.0**	**2,442.0**

Appendix A Table 2. -- Continued.

Station	**N-20**	**M-20**	**M-21**	**L-21**	**K-21**	**J-21**	**G-23**	**H-23**	**I-23**
Start date and time	07/04/16 12:05	07/04/16 14:32	07/04/16 16:56	07/05/16 07:02	07/05/16 09:37	07/05/16 12:07	07/10/16 07:37	07/10/16 11:11	07/10/16 13:57
Haul number	124	125	126	127	128	129	130	131	132
Start latitude	59.34	59.02	59.00	58.69	58.35	58.01	56.98	57.32	57.66
Start longitude	-169.87	-169.85	-170.46	-170.43	-170.38	-170.34	-171.38	-171.47	-171.53
End latitude	59.32	59.00	58.99	58.66	58.33	57.99	57.01	57.35	57.68
End longitude	-169.87	-169.87	-170.50	-170.43	-170.37	-170.35	-171.38	-171.46	-171.53
Bottom depth (m)	60	63	71	74	75	74	110	102	100
Duration (h)	0.51	0.51	0.49	0.50	0.51	0.51	0.51	0.51	0.51
Distance fished (km)	2.86	2.84	2.75	2.74	2.86	2.84	2.84	2.85	2.80
Net width (m)	16.17	16.01	16.15	16.88	16.80	16.53	17.74	17.97	17.45
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	138.32	28.12	43.78	60.66	40.32	26.92	41.52	142.04	172.36
Other skates							2.78	2.12	
Total elasmobranch	**138.3**	**28.1**	**43.8**	**60.7**	**40.3**	**26.9**	**44.3**	**144.2**	**172.4**
Alaska plaice	228.83	184.38	106.35	58.22	64.40	107.30	1.46		
Arrowtooth flounder	48.49	27.44	24.41	30.06	57.40	57.20	89.40	112.40	135.98
Kamchatka flounder									
Flathead sole		9.38		7.58	74.15	188.84	23.33	46.72	12.13
Bering flounder	4.64	2.59	1.38	0.75	0.91				
Greenland turbot	3.02		4.54						
Pacific halibut	0.64	3.08	4.49	7.81		18.48	40.23	10.76	4.49
Rock sole	54.78	41.23	32.35	36.92	38.50	101.76			1.93
Yellowfin sole	265.15	177.30	132.73	114.76	98.93	153.44			
Other flatfish	16.58	3.57	1.38	4.82	1.68	3.43	8.00	8.49	6.36
Total flatfish	**622.1**	**449.0**	**307.6**	**260.9**	**336.0**	**630.4**	**162.4**	**178.4**	**160.9**
Walleye pollock	345.49	286.37	230.06	132.32	489.06	435.13	703.19	1,381.59	779.17
Pacific cod	84.99	79.34	1,124.93	121.32	106.98	26.12	58.62	100.98	17.98
Eelpouts	5.03	8.98	22.76	9.15	8.08	6.31	0.14	0.89	9.17
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins	15.59	44.22	537.20	20.94	3.62	18.42	0.03	53.68	36.26
Other roundfish	20.06	8.03	1.66	0.80	3.76	8.31	6.60	3.44	0.19
Total roundfish	**471.2**	**426.9**	**1,916.6**	**284.5**	**611.5**	**494.3**	**768.6**	**1,540.6**	**842.8**
Blue king crab									
Red king crab		4.40							
Tanner crab, bairdi		0.87	0.35	0.09	1.69	3.24	9.02	83.62	61.80
Tanner crab, opilio		0.69	20.18	18.10	15.62	41.18	102.22	17.64	8.93
Other crab	54.93	88.84	87.26	30.84	34.44	178.08	21.10	22.81	147.03
Shrimp	0.01	0.00				0.11	0.07	2.30	0.29
Octopus									
Squids									
Snails	142.53	101.44	145.49	50.68	16.62	21.03	11.80	28.10	284.29
Sea stars	27.76	88.84	15.18	31.55	111.99	152.23	0.99	12.20	11.31
Other invertebrates	157.17	130.89	63.52	66.18	177.85	378.48	38.01	18.24	120.33
Total invertebrates	**382.4**	**416.0**	**332.0**	**197.4**	**358.2**	**774.3**	**183.2**	**184.9**	**634.0**
Miscellaneous									
Total catch	**1,614.0**	**1,320.0**	**2,600.0**	**803.5**	**1,346.0**	**1,926.0**	**1,158.5**	**2,048.0**	**1,810.0**

Appendix A Table 2. -- Continued.

Station	**J-23**	**J-22**	**K-22**	**L-22**	**M-22**	**N-21**	**O-21**	**P-21**	**Q-21**
Start date and time	07/10/16 16:41	07/11/16 07:36	07/11/16 10:52	07/11/16 13:32	07/11/16 16:46	07/12/16 07:32	07/12/16 10:30	07/12/16 13:26	07/12/16 16:26
Haul number	133	134	135	136	137	138	139	140	141
Start latitude	57.99	57.98	58.32	58.65	58.99	59.30	59.65	59.98	60.32
Start longitude	-171.59	-170.98	-171.01	-171.08	-171.15	-170.54	-170.58	-170.64	-170.65
End latitude	58.02	58.00	58.35	58.67	58.99	59.32	59.67	60.01	60.34
End longitude	-171.60	-170.97	-171.01	-171.07	-171.10	-170.53	-170.59	-170.63	-170.67
Bottom depth (m)	98	87	84	83	78	68	67	65	62
Duration (h)	0.51	0.51	0.51	0.50	0.51	0.50	0.50	0.50	0.51
Distance fished (km)	2.82	2.77	2.83	2.76	2.81	2.75	2.71	2.78	2.80
Net width (m)	17.68	16.12	17.11	17.13	17.32	15.80	16.50	16.92	17.10
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	115.04	145.20	163.70	71.46	58.58	60.40	104.18	82.54	53.26
Other skates							0.16		
Total elasmobranch	**115.0**	**145.2**	**163.7**	**71.5**	**58.6**	**60.4**	**104.3**	**82.5**	**53.3**
Alaska plaice	26.38	33.20	44.29	49.46	655.46	304.30	95.87	32.33	81.73
Arrowtooth flounder	122.09	343.98	212.22	27.23	14.86	32.69	54.85	57.40	11.38
Kamchatka flounder									
Flathead sole	10.76	407.34	44.01		1.08	1.48	2.40	3.66	
Bering flounder		1.46		1.26	0.96	1.42	2.49	2.52	3.14
Greenland turbot	3.92				7.78	11.28	3.52	0.92	5.26
Pacific halibut	6.04							5.11	1.01
Rock sole	2.44	242.18	7.57	7.90	22.47	12.80	708.80	20.47	111.61
Yellowfin sole		99.90	52.96	11.40	56.24	157.16	930.23	112.48	140.40
Other flatfish	5.04	38.74	7.49		3.71	5.67	3.23	9.18	5.94
Total flatfish	**176.7**	**1,166.8**	**368.5**	**97.2**	**762.6**	**526.8**	**1,801.4**	**244.1**	**360.5**
Walleye pollock	624.97	799.56	837.54	638.55	411.60	396.31	914.46	432.92	4,164.83
Pacific cod	147.86	103.86	102.80	104.24	295.10	51.68	86.04	93.42	246.67
Eelpouts	258.13	101.83	21.55	6.09	6.65	11.65	17.58	2.46	0.94
Pacific herring						1.93		5.94	
Pacific ocean perch									
Other rockfish									
Sculpins	58.00	38.48	19.24		5.02	26.26	8.56	9.80	6.96
Other roundfish	0.32	0.31	0.11	1.43	0.53	9.38	13.99	4.40	1.73
Total roundfish	**1,089.3**	**1,044.0**	**981.2**	**750.3**	**718.9**	**497.2**	**1,040.6**	**548.9**	**4,421.1**
Blue king crab									
Red king crab									
Tanner crab, bairdi	11.52	9.39	1.43	1.08	0.32	0.31	0.19		
Tanner crab, opilio	148.06	5.75	41.06	459.61	44.73	26.64	77.93	64.44	7.47
Other crab	99.19	18.71	28.89	5.39	32.46	51.27	9.73	17.77	4.13
Shrimp	4.07	2.43							
Octopus									
Squids									
Snails	661.55	63.16	148.87	19.97	68.68	72.62	2.90	23.32	34.91
Sea stars	80.75	182.64	143.60	31.41	33.58	22.55	15.12	6.47	3.09
Other invertebrates	103.87	181.89	82.69	37.53	100.20	242.20	147.78	45.45	5.54
Total invertebrates	**1,109.0**	**464.0**	**446.5**	**555.0**	**280.0**	**415.6**	**253.6**	**157.4**	**55.1**
Miscellaneous									
Total catch	**2,490.0**	**2,820.0**	**1,960.0**	**1,474.0**	**1,820.0**	**1,500.0**	**3,200.0**	**1,033.0**	**4,890.0**

Appendix A Table 2. -- Continued.

Station	**Q-22**	**R-22**	**S-22**	**S-23**	**R-23**	**R-24**	**S-24**	**S-25**	**T-25**
Start date and time	07/13/16 07:35	07/13/16 10:12	07/13/16 12:46	07/13/16 15:26	07/13/16 18:09	07/14/16 07:39	07/14/16 10:24	07/14/16 12:54	07/14/16 15:24
Haul number	142	143	144	145	146	147	148	149	150
Start latitude	60.33	60.64	60.97	61.00	60.68	60.64	60.98	60.99	61.32
Start longitude	-171.31	-171.43	-171.49	-172.11	-172.12	-172.72	-172.80	-173.47	-173.58
End latitude	60.33	60.66	60.99	61.01	60.66	60.67	61.01	61.01	61.34
End longitude	-171.36	-171.44	-171.50	-172.16	-172.11	-172.75	-172.82	-173.51	-173.58
Bottom depth (m)	67	63	60	64	61	45	67	75	74
Duration (h)	0.51	0.50	0.51	0.50	0.51	0.53	0.50	0.52	0.52
Distance fished (km)	2.80	2.77	2.78	2.77	2.78	2.98	2.76	2.86	2.82
Net width (m)	16.95	17.65	18.38	17.05	16.90	15.76	18.79	17.31	17.23
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	27.98	39.02	3.76	5.24	5.52	153.22	10.20	14.66	9.38
Other skates									
Total elasmobranch	**28.0**	**39.0**	**3.8**	**5.2**	**5.5**	**153.2**	**10.2**	**14.7**	**9.4**
Alaska plaice	31.23	50.97	53.46	5.26	20.82	325.31	6.42		0.68
Arrowtooth flounder									
Kamchatka flounder									
Flathead sole	0.04	1.80	4.34		0.64			1.04	
Bering flounder	2.70	1.80	11.42	7.82	7.87		17.89	21.59	7.95
Greenland turbot	2.76			0.01					
Pacific halibut				1.40		136.63			
Rock sole	49.06	284.85	36.96	0.46	1.30	37.69	0.69		0.74
Yellowfin sole	14.78	6.04	39.66	3.08	1.48	26.85	0.18	1.63	0.29
Other flatfish	2.22		0.17	0.11	0.15	0.16	0.03	2.63	0.97
Total flatfish	**102.8**	**345.5**	**146.0**	**18.1**	**32.3**	**526.6**	**25.2**	**26.9**	**10.6**
Walleye pollock	662.25	160.53	236.47	676.73	368.93	636.11	230.28	825.43	319.68
Pacific cod	81.96	32.70	37.10	176.20	16.06	1,717.04	38.96	131.24	25.64
Eelpouts	1.87	6.88	2.81	2.18	0.29		19.02	0.23	
Pacific herring									
Pacific ocean perch									
Other rockfish									
Sculpins		0.32	1.17	2.46	1.77	4.22	0.96	1.96	1.40
Other roundfish	0.44	0.80	0.40	0.80	0.30	0.29	5.99	0.51	2.96
Total roundfish	**746.5**	**201.2**	**277.9**	**858.4**	**387.3**	**2,357.7**	**295.2**	**959.4**	**349.7**
Blue king crab						22.72			
Red king crab									
Tanner crab, bairdi	0.35								
Tanner crab, opilio	420.64	624.94	342.76	87.52	72.64	0.01	169.94	140.92	151.56
Other crab	2.54	1.88	4.57	3.41	1.73	32.02	3.08	1.63	1.48
Shrimp			0.03	0.04			0.13		
Octopus									
Squids									
Snails	11.06	0.41	9.54	2.98	4.85	66.21	3.94	1.49	4.78
Sea stars	3.04	4.37	4.22	151.69	67.74	68.17	21.27	24.24	18.24
Other invertebrates	5.09	2.70	14.37	7.53	1.91	13.35	14.97	10.80	49.75
Total invertebrates	**442.7**	**634.3**	**375.5**	**253.2**	**148.9**	**202.5**	**213.3**	**179.1**	**225.8**
Miscellaneous									
Total catch	**1,320.0**	**1,220.0**	**803.2**	**1,134.9**	**574.0**	**3,240.0**	**543.9**	**1,180.0**	**595.5**

Appendix A Table 2. -- Continued.

Station	**U-25**	**V-25**	**V-26**	**V-27**	**V-28**	**U-29**	**U-28**	**U-27**	**U-26**
Start date and time	07/14/16 18:03	07/15/16 07:35	07/15/16 10:47	07/15/16 14:06	07/15/16 16:38	07/16/16 07:39	07/16/16 10:11	07/16/16 12:54	07/16/16 15:13
Haul number	151	152	153	154	155	156	157	158	159
Start latitude	61.65	62.00	62.00	62.00	62.00	61.67	61.67	61.66	61.67
Start longitude	-173.66	-173.70	-174.49	-175.15	-175.82	-176.50	-175.80	-175.08	-174.47
End latitude	61.68	62.00	62.00	62.00	62.00	61.67	61.67	61.67	61.66
End longitude	-173.66	-173.75	-174.54	-175.20	-175.86	-176.44	-175.74	-175.03	-174.42
Bottom depth (m)	71	63	74	81	92	106	96	85	77
Duration (h)	0.51	0.52	0.51	0.51	0.46	0.50	0.51	0.50	0.51
Distance fished (km)	2.78	2.85	2.82	2.79	2.54	2.78	2.78	2.69	2.78
Net width (m)	17.26	17.36	17.13	17.66	18.58	17.95	17.45	16.79	17.88
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	24.48	34.88	17.06	21.24	30.26	29.32	21.58	8.82	14.04
Other skates									
Total elasmobranch	**24.5**	**34.9**	**17.1**	**21.2**	**30.3**	**29.3**	**21.6**	**8.8**	**14.0**
Alaska plaice	1.30	16.98	0.44	0.98	3.71		1.22	4.70	3.24
Arrowtooth flounder									
Kamchatka flounder									
Flathead sole						5.74	1.94		
Bering flounder	14.42	7.16	7.84	13.82	86.57	43.40	114.30	27.90	6.24
Greenland turbot			0.02		0.06	26.68	2.64	0.02	
Pacific halibut								0.94	
Rock sole	0.86	1.78	0.60		0.08	2.22	2.82		0.94
Yellowfin sole	1.30	0.74	0.18						
Other flatfish	3.90	12.60	18.28	13.04		3.06	0.05	0.77	4.55
Total flatfish	**21.8**	**39.3**	**27.4**	**27.8**	**90.4**	**81.1**	**123.0**	**34.3**	**15.0**
Walleye pollock	187.85	246.04	92.87	875.37	713.59	281.28	538.90	298.90	319.27
Pacific cod	18.88	33.42	20.42	1.24	149.09	71.70	158.91	26.18	10.24
Eelpouts	0.05	12.66	1.21	0.05		9.89	11.77	2.73	0.84
Pacific herring					1.16	21.82		0.43	
Pacific ocean perch									
Other rockfish									
Sculpins	2.27	1.24	3.84	7.82	2.00	14.51	5.67	6.86	14.88
Other roundfish	12.56	1.65	28.93	12.13	3.02	0.62	4.36	3.99	7.97
Total roundfish	**221.6**	**295.0**	**147.3**	**896.6**	**868.9**	**399.8**	**719.6**	**339.1**	**353.2**
Blue king crab									
Red king crab									
Tanner crab, bairdi									
Tanner crab, opilio	141.72	168.16	509.32	34.04	25.98	18.14	33.82	127.24	133.64
Other crab	2.09	8.69	1.88	4.50	0.85	1.14	3.94	2.10	1.29
Shrimp	0.03	0.83	0.04	0.04	0.14	0.04	0.31	0.03	
Octopus			0.54						
Squids									
Snails	7.66	34.21	26.15	12.19	8.71	4.04	8.04	6.40	20.07
Sea stars	29.32	13.12	19.15	14.23	11.11	13.00	21.53	3.82	9.02
Other invertebrates	24.44	103.59	52.19	54.49	37.69	17.35	49.54	18.54	27.49
Total invertebrates	**205.2**	**328.6**	**609.3**	**119.5**	**84.5**	**53.7**	**117.2**	**158.1**	**191.5**
Miscellaneous									
Total catch	**473.1**	**697.8**	**801.0**	**1,065.2**	**1,074.0**	**564.0**	**981.3**	**540.3**	**573.7**

Appendix A Table 2. -- Continued.

Station	**T-26**	**S-26**	**S-27**	**T-27**	**T-28**	**T-29**	**T-30**	**S-30**	**S-31**
Start date and time	07/16/16 17:59	07/17/16 07:35	07/17/16 10:20	07/17/16 12:59	07/17/16 15:36	07/19/16 07:36	07/19/16 10:15	07/19/16 13:24	07/19/16 16:10
Haul number	160	161	162	163	164	165	166	167	168
Start latitude	61.34	61.00	61.00	61.31	61.33	61.33	61.33	61.00	61.00
Start longitude	-174.33	-174.15	-174.85	-174.99	-175.62	-176.30	-176.94	-176.96	-177.61
End latitude	61.32	61.00	61.00	61.33	61.31	61.33	61.33	60.99	61.00
End longitude	-174.32	-174.20	-174.90	-175.03	-175.66	-176.35	-176.99	-177.01	-177.66
Bottom depth (m)	79	83	92	88	97	107	116	121	135
Duration (h)	0.50	0.51	0.51	0.50	0.52	0.52	0.51	0.49	0.50
Distance fished (km)	2.78	2.84	2.84	2.76	2.90	2.80	2.74	2.71	2.79
Net width (m)	17.24	17.35	17.73	17.56	17.85	18.02	18.01	18.00	17.67
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	36.74	19.88	19.60	13.38	23.98	53.66	62.00	73.40	33.10
Other skates									
Total elasmobranch	**36.7**	**19.9**	**19.6**	**13.4**	**24.0**	**53.7**	**62.0**	**73.4**	**33.1**
Alaska plaice		2.24	1.12	1.36			13.70		
Arrowtooth flounder						4.60	13.94	27.90	15.50
Kamchatka flounder									
Flathead sole	0.98	0.52	0.10		3.06	27.36	37.78	41.62	19.78
Bering flounder	9.50	14.68	89.68	18.12	67.07	105.36	108.98	15.02	7.80
Greenland turbot			5.28		1.44	27.66	84.48	33.08	23.10
Pacific halibut		3.92			1.32		20.49		
Rock sole	0.62	0.88	1.40	1.16	2.26	1.48	1.46	0.40	
Yellowfin sole									
Other flatfish	9.04		0.74	0.04		2.22	13.60	9.50	30.00
Total flatfish	**20.1**	**22.2**	**98.3**	**20.7**	**75.1**	**168.7**	**294.4**	**127.5**	**96.2**
Walleye pollock	353.29	381.51	237.99	420.71	383.22	201.30	297.34	310.30	498.76
Pacific cod	0.60	38.64	193.51	177.26	84.64	60.42	76.34	76.60	40.10
Eelpouts	3.03	2.22	34.42	2.68	1.73	6.01	25.86	16.90	23.32
Pacific herring		0.20	0.56		0.48	2.66	4.60	18.40	0.34
Pacific ocean perch									
Other rockfish									
Sculpins	2.69	8.94	5.34	6.10	9.79	14.22	20.14	25.46	1.14
Other roundfish	5.96	1.07	1.13	4.13	3.80	0.69	1.45	0.85	0.88
Total roundfish	**365.6**	**432.6**	**473.0**	**610.9**	**483.6**	**285.3**	**425.7**	**448.5**	**564.5**
Blue king crab					2.46			0.70	
Red king crab									
Tanner crab, bairdi									
Tanner crab, opilio	168.64	168.12	122.44	157.18	23.94	8.76	25.96	44.79	2.88
Other crab	1.57	0.20	0.38	0.18	0.26	0.12	4.37	22.39	3.37
Shrimp				0.02	0.01	0.07	0.95	0.25	1.08
Octopus						1.01		1.29	
Squids									
Snails	7.06		1.29	1.04	4.95	3.16	36.19	55.85	79.14
Sea stars	8.42	7.67	3.67	3.14	8.19	10.23	53.37	77.96	135.83
Other invertebrates	79.00	11.55	1.93	17.42	7.03	6.74	7.08	18.76	32.86
Total invertebrates	**264.7**	**187.5**	**129.7**	**179.0**	**46.8**	**30.1**	**127.9**	**222.0**	**255.2**
Miscellaneous									
Total catch	**687.1**	**662.2**	**720.6**	**823.9**	**629.6**	**537.7**	**910.1**	**871.4**	**949.0**

Appendix A Table 2. -- Continued.

Station	**R-32**	**R-31**	**Q-31**	**P-31**	**P-32**	**Q-30**	**P-30**	**O-30**	**O-31**
Start date and time	07/20/16 07:42	07/20/16 10:19	07/20/16 13:10	07/20/16 16:00	07/20/16 18:51	07/21/16 07:41	07/21/16 10:38	07/21/16 13:36	07/21/16 16:41
Haul number	169	170	171	172	173	174	175	176	177
Start latitude	60.67	60.67	60.36	60.02	60.00	60.35	60.01	59.69	59.70
Start longitude	-178.22	-177.55	-177.39	-177.23	-177.85	-176.72	-176.71	-176.55	-177.15
End latitude	60.67	60.67	60.33	59.99	60.01	60.33	59.99	59.67	59.68
End longitude	-178.17	-177.50	-177.37	-177.21	-177.90	-176.71	-176.73	-176.53	-177.15
Bottom depth (m)	162	148	149	137	141	137	142	136	163
Duration (h)	0.48	0.50	0.50	0.49	0.49	0.50	0.52	0.50	0.50
Distance fished (km)	2.67	2.76	2.76	2.74	2.67	2.61	2.88	2.70	2.67
Net width (m)	18.28	18.08	18.06	17.74	17.13	17.85	17.93	17.89	18.23
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	6
Alaska skates	62.90	37.00	7.60	40.20	32.60	61.30	21.70	18.50	59.60
Other skates						2.40		6.60	11.00
Total elasmobranch	**62.9**	**37.0**	**7.6**	**40.2**	**32.6**	**63.7**	**21.7**	**25.1**	**70.6**
Alaska plaice									
Arrowtooth flounder	261.50	19.00	34.28	32.28	21.67	26.14	17.30	16.26	134.80
Kamchatka flounder									
Flathead sole	34.62	6.30	41.69	40.82	190.25	93.45	70.80	33.02	233.78
Bering flounder		2.10	6.19	0.23		4.36	2.40	0.81	
Greenland turbot	6.70	26.60	2.70	8.70	22.60	18.00	17.10	9.40	12.10
Pacific halibut	3.24								
Rock sole	1.60	0.48		1.74	0.39				
Yellowfin sole									
Other flatfish	15.70	14.40	10.56	16.99	28.90	12.09	14.50	10.05	25.50
Total flatfish	**323.4**	**68.9**	**95.4**	**100.8**	**263.8**	**154.0**	**122.1**	**69.5**	**406.2**
Walleye pollock	669.88	590.60	707.67	865.16	1,007.67	474.72	339.20	948.84	323.50
Pacific cod	56.20	32.40	5.90	47.90	55.66	40.20	27.80	35.30	43.00
Eelpouts	5.90	12.04	23.79	7.29	5.04	26.70	20.02	4.37	0.89
Pacific herring								0.46	0.26
Pacific ocean perch									
Other rockfish									
Sculpins	3.53	7.93	7.58	11.86	23.92	11.14	3.18	40.07	9.12
Other roundfish	0.06	1.51	0.06	0.48	0.25	0.24	0.05	0.74	0.18
Total roundfish	**735.6**	**644.5**	**745.0**	**932.7**	**1,092.5**	**553.0**	**390.2**	**1,029.8**	**377.0**
Blue king crab									
Red king crab									
Tanner crab, bairdi									0.20
Tanner crab, opilio	1.00	0.59	0.42	0.01	1.04	2.48	3.60		1.80
Other crab	12.23		0.03	7.74		57.53	7.39		23.23
Shrimp		1.86	2.43	2.56	0.42	7.06	4.01	1.48	
Octopus		1.64		1.86	2.82	2.07	1.81	0.06	
Squids					0.08				
Snails	24.45	19.55	49.05	160.36	21.39	96.35	31.90	37.36	13.26
Sea stars	3.85	105.54	202.46	398.17	75.72	226.91	316.10	275.61	3.57
Other invertebrates	8.99	9.07	117.59	75.67	459.57	36.88	2.06	31.09	10.79
Total invertebrates	**50.5**	**138.2**	**372.0**	**646.4**	**561.0**	**429.3**	**366.9**	**345.6**	**52.8**
Miscellaneous									
Total catch	**1,172.3**	**888.6**	**1,220.0**	**1,720.0**	**1,950.0**	**1,200.0**	**900.9**	**1,470.0**	**906.6**

Appendix A Table 2. -- Continued.

Station	**N-31**	**N-30**	**N-29**	**M-29**	**M-30**	**M-31**	**M-32**	**L-31**	**L-30**
Start date and time	07/22/16 07:41	07/22/16 10:23	07/22/16 12:52	07/22/16 15:40	07/23/16 07:54	07/23/16 10:59	07/23/16 14:02	07/23/16 17:48	07/24/16 07:52
Haul number	178	179	180	181	182	183	184	185	186
Start latitude	59.35	59.33	59.33	59.00	59.00	59.00	58.99	58.67	58.66
Start longitude	-177.06	-176.41	-175.78	-175.73	-176.28	-176.89	-177.54	-176.88	-176.24
End latitude	59.33	59.33	59.33	58.99	59.00	59.00	58.97	58.66	58.67
End longitude	-177.04	-176.36	-175.74	-175.76	-176.33	-176.94	-177.58	-176.83	-176.19
Bottom depth (m)	150	137	137	134	135	137	134	137	141
Duration (h)	0.50	0.51	0.50	0.51	0.51	0.50	0.51	0.49	0.49
Distance fished (km)	2.77	2.78	2.71	2.79	2.80	2.74	2.80	2.75	2.66
Net width (m)	18.11	17.66	17.52	18.16	18.30	18.21	18.26	18.26	17.78
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates	100.32	56.14	29.74	39.28	33.70	36.90	14.10	26.00	8.40
Other skates	7.36		2.12	2.93			3.70		2.24
Total elasmobranch	**107.7**	**56.1**	**31.9**	**42.2**	**33.7**	**36.9**	**17.8**	**26.0**	**92.6**
Alaska plaice									
Arrowtooth flounder	115.12	110.90	72.52	183.23	228.08	147.24	61.60	40.20	80.46
Kamchatka flounder									
Flathead sole	53.37	47.21	55.06	104.54	160.77	86.10	125.10	70.60	130.68
Bering flounder									
Greenland turbot	1.84		4.66						
Pacific halibut	4.10	10.90			1.90	32.64	12.53	1.90	2.51
Rock sole				2.26		8.40	13.70		
Yellowfin sole									
Other flatfish	5.78	11.08	24.70	5.42	3.08	4.05	10.20	4.80	15.96
Total flatfish	**180.2**	**180.1**	**156.9**	**295.5**	**393.8**	**278.4**	**223.1**	**117.5**	**229.6**
Walleye pollock	1,307.60	577.76	290.80	1,384.27	3,392.06	709.60		3.70	16.82
Pacific cod	23.08	41.99	30.70	97.68	77.60	98.00	16.30	40.40	55.08
Eelpouts	1.46	13.81	25.38		1.46				
Pacific herring									
Pacific ocean perch									0.03
Other rockfish									
Sculpins	3.32	14.37	29.39	3.56	3.31		0.03	4.24	
Other roundfish		0.87	5.85			0.05	0.13	0.07	0.06
Total roundfish	**1,335.5**	**648.8**	**382.1**	**1,485.5**	**3,474.4**	**807.7**	**16.5**	**48.4**	**72.0**
Blue king crab									
Red king crab									
Tanner crab, bairdi	1.42	0.06	1.30	0.25	0.27	0.67	0.19	0.79	0.25
Tanner crab, opilio	2.21	0.18			0.01				
Other crab	21.42	3.07	7.16	6.77	0.42	5.37	7.57	7.80	22.40
Shrimp		1.51	2.83	0.11	0.09			0.01	
Octopus			1.16				0.28	2.42	
Squids									0.05
Snails	25.07	39.20	34.00	15.30	18.66	8.95	9.33	2.62	6.77
Sea stars	6.83	207.33	175.45	16.19	1.39	0.07		0.26	0.71
Other invertebrates	49.70	23.63	41.81	18.20	17.20	14.97	21.16	6.86	9.69
Total invertebrates	**106.7**	**275.0**	**263.7**	**56.8**	**38.0**	**30.0**	**38.5**	**20.8**	**39.9**
Miscellaneous									
Total catch	**1,730.0**	**1,160.0**	**834.6**	**1,880.0**	**3,940.0**	**1,153.0**	**295.9**	**212.7**	**434.1**

Appendix A Table 2. -- Continued.

Station	**L-29**	**L-28**	**L-27**	**K-27**	**K-26**	**J-26**	**I-26**	**H-26**	**G-26**
Start date and time	07/24/16 10:31	07/24/16 13:29	07/24/16 16:11	07/25/16 07:58	07/25/16 10:59	07/25/16 13:31	07/25/16 16:09	07/25/16 18:40	07/26/16 08:08
Haul number	187	188	189	190	191	192	193	194	195
Start latitude	58.67	58.69	58.68	58.35	58.33	58.01	57.68	57.34	57.01
Start longitude	-175.58	-174.94	-174.29	-174.32	-173.59	-173.50	-173.39	-173.33	-173.28
End latitude	58.67	58.69	58.66	58.33	58.32	57.99	57.66	57.32	56.99
End longitude	-175.53	-174.89	-174.27	-174.31	-173.55	-173.49	-173.38	-173.33	-173.25
Bottom depth (m)	136	194	157	169	116	118	146	121	143
Duration (h)	0.50	0.49	0.51	0.50	0.50	0.50	0.51	0.48	0.50
Distance fished (km)	2.72	2.75	2.80	2.72	2.76	2.74	2.75	2.60	2.74
Net width (m)	17.62	17.62	18.05	17.39	17.47	17.30	17.57	17.11	17.53
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0
Alaska skates		19.30	0.36		111.78	62.26	71.00	54.30	10.64
Other skates	9.52	24.17	29.43	45.64	0.07	3.10	1.27	5.33	30.64
Total elasmobranch	**9.5**	**43.5**	**29.8**	45.6	111.8	65.4	72.3	59.6	41.3
Alaska plaice									
Arrowtooth flounder	67.18	116.17	115.04	**32.51**	**100.32**	**159.51**	**72.35**	**69.24**	**23.05**
Kamchatka flounder									
Flathead sole	86.32	65.42	73.12	10.23	60.74	52.79	60.43	81.66	8.39
Bering flounder									
Greenland turbot									
Pacific halibut	3.40	10.67			48.96	23.52	5.11	19.03	4.33
Rock sole					31.32	5.92		10.05	
Yellowfin sole									
Other flatfish	6.62	21.88	14.30	23.19	7.20	11.09	14.91	18.44	15.25
Total flatfish	**163.5**	**214.1**	**202.5**	65.9	248.5	252.8	152.8	198.4	51.0
Walleye pollock	327.70	74.65	205.52	263.03	15.26	132.34	1,601.27	392.62	6,071.74
Pacific cod	23.52	26.06	37.10	33.00	22.64	57.86	16.22	30.68	27.54
Eelpouts	0.02								
Pacific herring									
Pacific ocean perch		24.06	3.60	2,812.20			39.56		
Other rockfish							1.56		
Sculpins	2.16	7.45	29.22	16.54	0.30	10.00	5.14		
Other roundfish	0.19	7.30	6.10	10.10	0.04	0.16	2.76	0.06	3.92
Total roundfish	**353.6**	**139.5**	**281.5**	3,134.9	38.2	200.4	1,666.5	423.4	6,103.2
Blue king crab									
Red king crab									
Tanner crab, bairdi	145.28	9.70	4.40	0.69	0.29	0.09	0.93	2.25	0.09
Tanner crab, opilio	31.86	1.51	0.01		70.86	98.36			
Other crab	17.13	5.22	0.01	4.63	22.18	11.48	4.81	15.74	3.07
Shrimp		9.09					0.19	0.05	
Octopus		3.48			4.56		0.10	0.22	
Squids		0.66	0.04	0.12					
Snails	3.37	4.54		4.15	24.29	23.76	10.48	32.15	5.14
Sea stars	0.02	4.00	0.26	0.86	7.25	18.98		1.15	6.06
Other invertebrates	5.87	8.17	6.75	3.10	3.34	968.79	1.91	837.04	11.14
Total invertebrates	**203.5**	**46.4**	**11.5**	13.6	132.8	1,121.5	18.4	888.6	25.5
Miscellaneous									
Total catch	**730.1**	**443.5**	**525.2**	3,260.0	531.4	1,640.0	1,910.0	1,570.0	6,221.0

Appendix A Table 2. -- Continued.

Station	**F-25**
Start date and time	07/26/16 11:48
Haul number	196
Start latitude	56.69
Start longitude	-172.58
End latitude	56.67
End longitude	-172.57
Bottom depth (m)	135
Duration (h)	0.49
Distance fished (km)	2.73
Net width (m)	17.19
Net measured?	Y
Performance	0
Alaska skates	43.24
Other skates	21.90
Total elasmobranch	65.1
Alaska plaice	
Arrowtooth flounder	**34.35**
Kamchatka flounder	
Flathead sole	10.69
Bering flounder	
Greenland turbot	
Pacific halibut	9.19
Rock sole	2.53
Yellowfin sole	
Other flatfish	8.88
Total flatfish	65.6
Walleye pollock	2,331.46
Pacific cod	102.96
Eelpouts	
Pacific herring	
Pacific ocean perch	
Other rockfish	
Sculpins	0.10
Other roundfish	
Total roundfish	2,434.5
Blue king crab	
Red king crab	
Tanner crab, bairdi	0.53
Tanner crab, opilio	
Other crab	15.51
Shrimp	
Octopus	9.83
Squids	
Snails	23.08
Sea stars	
Other invertebrates	435.74
Total invertebrates	484.7
Miscellaneous	
Total catch	3,050.0

Appendix B: List of Species Encountered

Appendix C lists all fish and invertebrate taxa taken during the AFSC's 2016 eastern Bering Sea shelf bottom trawl survey. Please see Stevenson and Hoff (2009) for species identification confidence for fish and invertebrate taxa.

List of Tables

Appendix B Table 1. -- Fish taxa encountered during the 2016 eastern Bering Sea bottom trawl survey, listed alphabetically by family.

Family	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Agonidae	*Anoplagonus inermis*	smooth alligatorfish	1	41	41	41	58.268	58.268
	Aspidophoroides bartoni	Aleutian alligatorfish	19	45	90	65	56.653	58.350
	Bathyagonus infraspinatus	spinycheek starsnout	1	90	90	90	56.653	56.653
	Leptagonus frenatus	sawback poacher	106	50	194	100	54.837	61.668
	Leptagonus leptorhynchus	longnose poacher	2	69	92	81	56.996	62.003
	Leptagonus sp.		1	155	155	155	55.009	55.009
	Occella dodecaedron	Bering poacher	6	22	41	34	58.268	60.316
	Podothecus accipenserinus	sturgeon poacher	216	20	120	61	54.691	61.666
	Podothecus veternus	veteran poacher	1	47	47	47	57.308	57.308
Ammodytidae	*Ammodytes hexapterus*	Arctic sand lance	8	20	64	48	55.058	60.020
	Ammodytes sp.	sand lance unid.	1	87	87	87	59.330	59.330
Anarhichadidae	*Anarhichas orientalis*	Bering wolffish	5	23	80	47	55.337	60.316
Anoplopomatidae	*Anoplopoma fimbria*	sablefish	9	30	153	116	54.837	57.321
Bathymasteridae	*Bathymaster signatus*	searcher	41	70	194	120	54.837	60.016
Clupeidae	*Clupea pallasii*	Pacific herring	85	22	163	68	55.679	62.003
Cottidae	*Artediellus pacificus*	hookhorn sculpin	2	69	71	70	57.660	57.817
	Dasycottus setiger	spinyhead sculpin	31	95	194	122	55.009	60.668
	Gymnocanthus detrisus	purplegray sculpin	3	66	111	80	57.344	60.010
	Gymnocanthus galeatus	armorhead sculpin	3	61	80	74	56.676	56.992
	Gymnocanthus pistilliger	threaded sculpin	11	22	111	56	58.004	62.003
	Hemilepidotus jordani	yellow Irish lord	87	43	153	83	54.691	61.000
	Hemilepidotus papilio	butterfly sculpin	27	59	112	79	60.010	62.003
	Hemitripterus bolini	bigmouth sculpin	108	61	163	108	55.009	61.334
	Hemitripterus bolini eggs	bigmouth sculpin eggs	1	150	150	150	55.982	55.982
	Icelinus borealis	northern sculpin	1	61	61	61	60.684	60.684
	Icelus sp.		1	60	60	60	60.163	60.163
	Icelus spatula	spatulate sculpin	33	68	163	105	56.653	61.668
	Icelus spiniger	thorny sculpin	64	66	155	117	55.009	61.000
	Malacocottus zonurus	darkfin sculpin	3	150	194	171	55.982	58.686
	Myoxocephalus jaok	plain sculpin	141	20	78	52	56.337	60.966

Appendix B Table 1. -- Continued.

Family	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Cottidae (Continued)	*Myoxocephalus polyacanthocephalus*	great sculpin	185	32	162	79	55.320	62.003
	Myoxocephalus scorpius	shorthorn (=warty) sculpin	57	37	103	66	56.990	61.999
	Triglops macellus	roughspine sculpin	5	94	150	120	54.998	56.661
	Triglops pingeli	ribbed sculpin	11	20	80	61	56.676	60.324
	Triglops scepticus	spectacled sculpin	13	120	194	144	54.837	59.703
Gadidae	*Boreogadus saida*	Arctic cod	70	28	148	86	58.652	62.003
	Eleginus gracilis	saffron cod	14	22	45	33	58.305	60.337
	Gadus chalcogrammus	walleye pollock	373	20	194	81	54.691	62.003
	Gadus macrocephalus	Pacific cod	376	20	194	82	54.691	62.003
Hexagrammidae	*Hexagrammos decagrammus*	kelp greenling	1	73	73	73	59.650	59.650
	Hexagrammos stelleri	whitespotted greenling	4	22	23	23	58.994	59.650
	Pleurogrammus monopterygius	Atka mackerel	1	51	51	51	55.679	55.679
Liparidae	*Careproctus phasma*	monster snailfish	42	64	148	102	57.655	62.003
	Careproctus rastrinus	salmon snailfish	15	88	163	142	55.009	61.666
	Careproctus scottae	peachskin snailfish	17	87	137	107	58.652	61.000
	Crystallichthys cyclospilus	blotched snailfish	2	83	153	118	54.837	58.650
	Liparis gibbus	variegated snailfish	15	58	133	78	59.340	61.999
Osmeridae	*Mallotus villosus*	capelin	107	20	137	56	55.661	62.000
	Osmerus mordax	rainbow smelt	8	20	36	28	58.319	59.350
	Thaleichthys pacificus	eulachon	39	41	151	103	55.015	59.678
Pleuronectidae	*Atheresthes evermanni*	Kamchatka flounder	246	44	194	98	54.837	61.668
	Atheresthes stomias	arrowtooth flounder	278	36	194	93	54.691	61.334
	Glyptocephalus zachirus	rex sole	72	52	194	116	54.691	59.703
	Hippoglossoides elassodon	flathead sole	299	22	194	90	54.691	61.668
	Hippoglossoides robustus	Bering flounder	94	43	149	86	57.980	62.003
	Hippoglossoides sp.		1	85	85	85	59.671	59.671
	Hippoglossus stenolepis	Pacific halibut	281	20	194	77	54.691	61.665
	Isopsetta isolepis	butter sole	5	51	83	63	54.691	57.321
	Lepidopsetta bilineata	southern rock sole	2	64	80	72	55.058	55.337
	Lepidopsetta polyxystra	northern rock sole	309	20	162	72	54.691	62.003

Appendix B Table 1. -- Continued.

Family	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Pleuronectidae (Continued)	*Limanda aspera*	yellowfin sole	243	20	107	61	54.691	62.000
	Limanda proboscidea	longhead dab	19	22	44	34	57.990	60.316
	Limanda sakhalinensis	Sakhalin sole	19	45	119	79	60.010	62.003
	Microstomus pacificus	Dover sole	2	75	77	76	56.658	57.152
	Parophrys vetulus	English sole	1	83	83	83	54.691	54.691
	Platichthys stellatus	starry flounder	59	20	73	45	55.058	60.337
	PlatichthysXPleuronectes hybrid	hybrid starry plaice	1	64	64	64	57.349	57.349
	Pleuronectes quadrituberculatus	Alaska plaice	251	20	118	64	55.320	62.003
	Reinhardtius hippoglossoides	Greenland turbot	80	60	163	102	56.675	62.003
Rajidae	*Bathyraja aleutica*	Aleutian skate	23	97	194	136	54.837	58.686
	Bathyraja aleutica egg case	Aleutian skate egg case	2	85	104	95	56.324	56.653
	Bathyraja interrupta	Bering skate	72	70	194	118	54.691	60.683
	Bathyraja interrupta egg case		17	70	194	135	54.837	58.686
	Bathyraja maculata	whiteblotched skate	1	129	129	129	56.332	56.332
	Bathyraja minispinosa	whitebrow skate	1	143	143	143	57.012	57.012
	Bathyraja parmifera	Alaska skate	353	20	194	83	54.691	62.003
	Bathyraja parmifera egg case	Alaska skate egg case	22	42	194	103	55.015	60.334
	Bathyraja taranetzi	mud skate	4	137	153	141	54.837	60.351
	Raja binoculata	big skate	7	30	80	51	55.058	58.305
		skate egg case unid.	6	73	150	99	55.982	59.650
Salmonidae	*Oncorhynchus keta*	chum salmon	18	54	150	109	55.306	59.340
	Oncorhynchus tshawytscha	chinook salmon	5	35	114	79	56.322	59.677
	Salvelinus malma	Dolly Varden	1	22	22	22	58.994	58.994
Scorpaenidae	*Sebastes alutus*	Pacific ocean perch	12	83	194	138	54.691	60.678
	Sebastes melanostictus	blackspotted rockfish	3	124	132	129	55.661	56.001
	Sebastes polyspinis	northern rockfish	4	104	150	122	55.306	57.681
	Sebastes variabilis	dusky rockfish	1	146	146	146	57.681	57.681
Somniosidae	*Somniosus pacificus*	Pacific sleeper shark	3	77	141	102	55.996	58.663
Stichaeidae	*Acantholumpenus mackayi*	pighead prickleback	1	23	23	23	59.350	59.350
	Lumpenus fabricii	slender eelblenny	9	23	125	66	56.990	59.668
	Lumpenus maculatus	daubed shanny	36	63	143	107	56.657	61.999

Appendix B Table 1. -- Continued.

Family	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Stichaeidae	*Lumpenus medius*	stout eelblenny	1	60	60	60	60.966	60.966
(Continued)	*Poroclinus rothrocki*	whitebarred prickleback	3	108	136	119	55.666	57.344
Trichodontidae	*Trichodon trichodon*	Pacific sandfish	2	34	37	36	57.655	58.004
Zaproridae	*Zaprora silenus*	prowfish	4	141	194	165	58.350	58.686
Zoarcidae	*Lycodes brevipes*	shortfin eelpout	87	73	163	116	55.015	61.668
	Lycodes palearis	wattled eelpout	140	55	162	88	55.320	61.999
	Lycodes raridens	marbled eelpout	24	58	116	82	59.314	62.003
	Lycodes turneri	polar eelpout	1	46	46	46	58.666	58.666
Other		fish eggs unid.	1	74	74	74	61.999	61.999

Appendix B Table 2. -- Invertebrate taxa encountered during the 2016 eastern Bering Sea bottom trawl survey, listed alphabetically by Phylum.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Annelida	Annelida	worm unid.	2	30	136	83	55.666	56.989
	Aphrodita negligens		19	104	194	132	56.324	61.000
	Aphroditidae	sea mouse unid.	5	93	136	104	54.998	59.003
	Eunoe depressa	depressed scale worm	72	23	151	77	55.336	60.683
	Eunoe nodosa	giant scale worm	82	49	136	83	55.991	62.003
	Eunoe senta	thorny scaleworm	1	75	75	75	59.314	59.314
	Eunoe sp.		3	87	107	96	55.689	59.330
	Hirudinea	leech unid.	7	68	101	78	56.661	58.014
	Nephtyidae	cat worm unid.	1	58	58	58	57.024	57.024
	Nereididae		1	52	52	52	58.348	58.348
	Notostomum cyclostomum	striped sea leech	1	63	63	63	60.639	60.639
	Polychaeta	polychaete worm unid.	10	30	151	53	56.332	60.015
	Sabellidae	sabellid unid.	1	61	61	61	57.030	57.030
	Serpula sp.		2	117	122	120	57.009	57.361
	Serpulidae	serpulid worm	4	110	137	126	56.694	58.666
		tube worm unid.	9	70	151	119	55.339	57.310
Arthropoda	*Argis lar*	kuro argid	7	60	142	115	55.321	61.666
	Argis sp.		27	30	149	98	55.336	62.000
	Balanus rostratus	beaked barnacle	1	45	45	45	58.331	58.331
	Balanus sp.		13	30	150	61	55.982	58.350
	Cancer oregonensis	Oregon rock crab	35	28	102	59	55.058	59.318
	Chionoecetes bairdi	Tanner crab	269	22	194	83	54.691	60.667
	Chionoecetes hybrid	hybrid Tanner crab	102	37	194	88	54.994	60.639
	Chionoecetes opilio	snow crab	241	37	194	92	54.998	62.003
	Chirona evermanni	giant barnacle	9	39	169	110	56.332	58.660
	Crangon communis	twospine crangon	3	101	155	128	55.009	56.826
	Crangon dalli	ridged crangon	3	35	43	40	58.689	59.343
	Crangon sp.		79	20	194	90	55.336	62.003
	Elassochirus cavimanus	purple hermit	19	73	194	124	54.837	59.703

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Arthropoda (Continued)	*Elassochirus tenuimanus*	widehand hermit crab	7	49	80	59	55.058	57.150
	Erimacrus isenbeckii	horsehair crab	40	35	137	60	56.337	60.347
	Eualus barbatus	barbed eualid	1	117	117	117	56.990	56.990
	Eualus sp.		2	69	74	72	56.996	61.999
	Eualus suckleyi	shortscale eualid	2	85	96	91	61.665	61.666
	Gammaridae	gammarid amphipod unid.	2	51	55	53	57.663	59.332
	Hyas coarctatus	circumboreal toad crab	213	26	151	68	55.991	62.003
	Hyas lyratus	Pacific lyre crab	120	28	194	91	54.691	60.683
	Isopoda	isopod unid.	2	134	136	135	55.664	55.989
	Labidochirus splendescens	splendid hermit	172	22	194	74	54.837	62.003
	Lebbeus groenlandicus	spiny lebbeid	1	56	56	56	56.982	56.982
	Lithodes aequispinus	golden king crab	2	169	194	182	58.350	58.686
	Oregonia gracilis	graceful decorator crab	35	27	153	59	54.837	60.347
	Pagurus aleuticus	Aleutian hermit	127	49	155	104	54.837	60.344
	Pagurus brandti	sponge hermit	4	49	97	72	56.661	58.014
	Pagurus capillatus	hairy hermit crab	185	22	162	74	54.691	60.668
	Pagurus confragosus	knobbyhand hermit	100	55	194	109	54.691	59.703
	Pagurus ochotensis	Alaskan hermit	105	20	90	47	54.691	60.347
	Pagurus rathbuni	longfinger hermit	119	45	163	98	56.321	62.003
	Pagurus sp.		7	40	117	77	54.691	59.002
	Pagurus trigonocheirus	fuzzy hermit crab	181	38	194	86	55.982	62.000
	Pandalus eous	Alaskan pink shrimp	107	62	194	116	54.837	61.334
	Pandalus goniurus	humpy shrimp	18	30	119	83	58.014	62.003
	Pandalus jordani	ocean shrimp	1	127	127	127	56.657	56.657
	Pandalus sp.		2	70	75	73	57.985	60.010
	Pandalus tridens	yellowleg pandalid	1	70	70	70	57.310	57.310
	Paralithodes camtschaticus	red king crab	94	26	94	57	55.337	60.337
	Paralithodes platypus	blue king crab	31	30	121	78	56.818	61.329
	Rocinella angustata	sea cockroach	1	111	111	111	55.339	55.339

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Arthropoda (Continued)	*Telmessus cheiragonus*	helmet crab	21	22	63	37	56.989	60.639
	Thoracica	barnacle unid.	8	47	103	69	57.369	60.300
Bryozoa	*Alcyonidium disciforme*	disc bryozoan	1	58	58	58	60.176	60.176
	Alcyonidium pedunculatum		7	74	130	100	54.994	61.999
	Bryozoa	bryozoan unid.	43	39	136	69	55.664	60.334
	Flustra serrulata	leafy bryozoan	7	32	77	52	56.986	61.999
Cnidaria	Actiniaria	sea anemone unid.	32	30	151	83	55.339	59.334
	Actinostolidae		12	68	137	106	56.657	60.328
	Aequorea sp.		48	70	157	117	54.691	61.003
	Atolla sp.		1	80	80	80	56.986	56.986
	Aurelia labiata		1	68	68	68	59.300	59.300
	Aurelia sp.		9	83	141	117	54.691	60.003
	Chrysaora melanaster		172	32	155	78	54.691	62.003
	Chrysaora sp.	chrysaora jellyfish	11	30	91	48	56.337	58.020
	Cribrinopsis fernaldi	chevron-tentacled anemone	14	63	194	108	57.324	62.000
	Cribrinopsis sp.		5	93	130	103	58.317	60.157
	Cyanea capillata	lion's mane	15	70	129	89	56.332	60.683
	Cyanea sp.		5	114	149	131	55.336	56.322
	Gersemia rubiformis		18	30	90	69	56.337	60.347
	Gersemia sp.	sea raspberry	87	29	96	61	56.986	62.003
	Halipteris willemoesi		4	110	141	127	56.694	60.003
	Hydroidolina	hydroid unid.	18	28	151	78	56.332	60.312
	Liponema brevicorne	tentacle-shedding anemone	39	95	163	126	54.994	60.668
	Metridium farcimen	gigantic anemone	4	87	122	108	56.981	57.980
	Metridium sp.		85	26	132	62	54.691	60.347
	Pennatulacea	sea pen or sea whip unid.	1	122	122	122	57.009	57.009
	Phacellophora camtschatica	egg yolk jelly	4	109	137	129	55.666	56.339
	Scyphozoa	jellyfish unid.	69	52	155	98	54.691	60.668
	Stomphia coccinea	swimming anemone	51	61	155	107	55.009	62.003

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Cnidaria (Continued)	*Stomphia* sp.		45	62	141	100	54.998	60.010
	Urticina crassicornis	mottled anemone	14	23	108	65	55.320	60.163
	Urticina lofotensis	spotted red anemone	5	63	108	85	60.001	60.651
	Urticina sp.		23	58	163	105	56.694	62.000
	Virgulariidae	sea whip unid.	14	94	150	118	54.998	57.328
Ctenophora	Ctenophora	comb jelly unid.	2	109	127	118	56.657	57.649
Echinodermata	*Allocentrotus fragilis*	orange-pink sea urchin	1	194	194	194	58.686	58.686
	Asterias amurensis	purple-orange sea star	249	20	151	65	54.998	61.001
	Ceramaster japonicus	red bat star	2	153	155	154	54.837	55.009
	Ceramaster sp.		1	132	132	132	55.321	55.321
	Cheiraster dawsoni	fragile sea star	1	137	137	137	56.339	56.339
	Crossaster borealis	grooved sea star	1	116	116	116	58.330	58.330
	Crossaster papposus	rose sea star	33	41	153	81	54.837	60.984
	Ctenodiscus crispatus	common mud star	66	78	163	120	54.998	61.668
	Cucumaria fallax	sea football	22	48	90	67	56.321	57.687
	Cucumaria sp.		2	30	56	43	56.982	56.989
	Diplopteraster multipes	pincushion sea star	4	127	194	148	56.657	58.686
	Dipsacaster borealis	northern sea star	4	116	194	153	57.012	58.686
	Echinarachnius parma	parma sand dollar	12	58	130	81	54.691	61.001
	Evasterias echinosoma	giant sea star	25	30	114	66	56.012	57.492
	Evasterias troschelii	mottled sea star	1	50	50	50	57.103	57.103
	Gorgonocephalus eucnemis	basketstar	239	28	163	83	54.691	62.000
	Henricia sp.		34	59	194	112	54.837	60.324
	Holothuroidea	sea cucumber unid.	2	70	70	70	57.322	58.010
	Leptasterias arctica		98	43	157	73	55.058	62.003
	Leptasterias groenlandica		1	87	87	87	58.984	58.984
	Leptasterias polaris		137	30	163	93	56.341	62.003
	Leptychaster anomalus		17	87	132	110	54.998	59.511
	Leptychaster sp.		1	153	153	153	54.837	54.837

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Echinodermata (Continued)	*Lethasterias nanimensis*	blackspined sea star	92	57	153	87	54.837	60.357
	Mediaster sp.		2	116	169	143	58.330	58.350
	Ophiopholis longispina		1	127	127	127	56.657	56.657
	Ophiopholis sp.		4	69	151	112	56.332	59.006
	Ophiura sarsi	notched brittlestar	101	60	153	79	54.837	62.003
	Ophiuroidea	brittlestar unid.	1	70	70	70	57.492	57.492
	Pseudarchaster alascensis		5	116	194	155	58.330	58.686
	Pseudarchaster parelii	scarlet sea star	5	114	155	132	55.009	56.339
	Psolus sp.		3	59	75	67	60.000	60.324
	Pteraster militaris	wrinkled star	1	194	194	194	58.686	58.686
	Pteraster obscurus	obscure sea star	56	64	162	104	55.689	61.999
	Pteraster sp.		4	64	153	125	54.837	60.994
	Pteraster tesselatus		3	80	153	123	54.837	56.676
	Solaster sp.		3	63	153	118	54.837	60.300
	Strongylocentrotus droebachiensis	green sea urchin	60	30	194	102	54.837	61.665
	Strongylocentrotus sp.		37	59	150	124	55.664	60.683
	Synallactes challengeri		2	153	194	174	54.837	58.686
Echiura	Echiura	echiuroid worm unid.	2	69	69	69	56.689	58.318
Mollusca	*Aforia circinata*	keeled aforia	39	85	163	122	55.009	60.995
	Arctomelon sp.		1	194	194	194	58.686	58.686
	Arctomelon stearnsii	Alaska volute	1	153	153	153	54.837	54.837
	Benthoctopus leioderma	smoothskin octopus	10	87	142	118	59.330	60.668
	Beringius beringii		27	59	162	110	56.981	61.334
	Beringius frielei		6	85	155	128	55.009	59.349
	Beringius sp.		23	47	169	109	55.015	60.344
	Berryteuthis magister	magistrate armhook squid	1	155	155	155	55.009	55.009
	Bivalvia	bivalve unid.	1	90	90	90	56.653	56.653
	Boreotrophon alaskanus	Alaskan trophon	1	100	100	100	57.655	57.655
	Buccinum angulosum	angular whelk	85	46	149	92	56.653	62.003

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (Continued)	*Buccinum oedematum*	swollen whelk	10	67	149	113	58.323	60.357
	Buccinum plectrum	sinuous whelk	5	35	129	62	58.305	60.683
	Buccinum polare	polar whelk	73	39	118	75	56.653	62.003
	Buccinum scalariforme	ladder whelk	140	46	163	97	54.837	62.003
	Buccinum sp.		19	43	101	72	55.058	60.651
	Buccinum sp. eggs		1	102	102	102	57.324	57.324
	Chlamys sp.		4	59	137	76	55.058	60.324
	Clinocardium ciliatum	hairy cockle	19	68	134	90	58.652	61.668
	Clinocardium sp.		25	43	96	72	55.996	60.000
	Clinopegma magnum	helmet whelk	46	65	137	97	56.343	61.334
	Colus halli	shrew whelk	3	70	95	86	58.652	59.934
	Colus herendeenii	thin-ribbed whelk	7	51	126	90	56.990	59.332
	Colus hypolispus		1	126	126	126	58.657	58.657
	Colus sp.		30	46	162	103	54.994	62.003
	Crepidula grandis	great slippersnail	6	45	87	64	56.321	58.350
	Cryptonatica aleutica	Aleutian moonsnail	3	72	91	80	56.343	57.010
	Cryptonatica russa	rusty moonsnail	34	39	137	85	56.332	62.003
	Cryptonatica sp.		8	61	97	77	58.650	62.003
	Dendronotus sp.		3	107	137	126	58.990	61.332
	Doridiidae	dorid nudibranch unid.	1	87	87	87	60.667	60.667
	Enteroctopus dofleini	giant octopus	22	49	194	127	55.009	60.014
	Euspira pallida	pale moonsnail	11	61	98	81	56.321	60.667
	Fusitriton oregonensis	Oregon triton	101	55	194	111	54.691	59.703
	Fusitriton oregonensis eggs		1	102	102	102	57.324	57.324
	gastropod eggs	snail eggs	193	23	162	77	54.691	62.003
	Halichondria sp.		1	75	75	75	60.010	60.010
	Hiatella arctica	Arctic hiatella	5	32	84	70	57.660	59.848
	Latrunculia oparinae	green papillate sponge	1	63	63	63	62.000	62.000
	Macoma nasuta	bent-nose macoma	3	39	104	62	56.324	58.660

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (Continued)	*Macoma* sp.		10	28	89	54	56.692	60.133
	Mactromeris polynyma	Arctic surfclam	38	24	79	48	55.679	59.337
	Margarites costalis	boreal rosy margarite	1	68	68	68	59.978	59.978
	Modiolus modiolus	northern horsemussel	4	61	90	75	56.000	60.994
	Musculus discors	discordant mussel	20	32	71	52	57.339	60.347
	Mycale loveni	tree sponge	2	157	194	176	58.680	58.686
	Mytilus edulis	blue mussel	8	30	69	55	56.647	58.660
	Natica sp.		3	71	83	76	58.650	61.999
	Naticidae eggs	moonsnail eggs unid.	20	60	141	82	58.663	62.003
	Neptunea borealis		50	37	112	69	57.010	62.003
	Neptunea heros		121	35	96	61	56.332	62.000
	Neptunea lyrata	lyre whelk	114	49	163	103	54.691	61.668
	Neptunea pribiloffensis	Pribilof whelk	138	67	169	112	54.994	61.334
	Neptunea sp.		22	43	121	76	55.306	60.334
	Neptunea sp. D (Clark and McLean)		1	60	60	60	60.163	60.163
	Neptunea ventricosa	fat whelk	140	22	153	63	54.837	62.000
	Nudibranchia	nudibranch unid.	18	37	121	71	54.998	60.347
	Octopodidae	octopus unid.	1	150	150	150	55.982	55.982
	Panopea abrupta	Pacific geoduck	1	77	77	77	57.152	57.152
	Patinopecten caurinus	weathervane scallop	6	102	153	117	54.837	57.361
	Plicifusus kroyeri		47	63	162	109	54.837	61.334
	Plicifusus sp.		6	59	137	105	56.644	60.324
	Pododesmus macrochisma	Alaska falsejingle	3	59	70	64	56.670	60.300
	Pododesmus sp.		1	70	70	70	57.310	57.310
	Pyrulofusus deformis	warped whelk	40	59	169	98	55.320	60.324
	Pyrulofusus melonis		30	66	151	118	54.994	60.357
	Pyrulofusus sp.		2	127	162	145	56.657	60.668

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca	*Rossia pacifica*	eastern Pacific bobtail	11	114	194	143	55.982	60.003
	Sasakiopus salebrosus	pygmy benthoctopus	5	74	148	117	60.016	61.999
	Serripes groenlandicus	Greenland cockle	5	54	149	90	57.344	60.357
	Serripes notabilis	oblique smoothcockle	39	24	122	63	56.337	60.994
	Serripes sp.		24	36	136	77	55.664	62.000
	Siliqua alta	Alaska razor	6	22	39	30	59.318	60.337
	Siliqua patula	Pacific razor	2	32	32	32	58.285	58.653
	Siliqua sp.		3	28	43	36	57.976	58.990
	Tachyrhynchus erosus	eroded turretsnail	3	45	51	48	55.679	58.350
	Tellina lutea	Alaska great-tellin	12	23	54	40	56.337	60.316
	Tochuina tetraquetra	giant orange tochui	1	95	95	95	59.658	59.658
	Tritonia diomedea	rosy tritonia	7	77	122	96	56.990	61.665
	Tritonia festiva	festive tritonia	18	60	119	84	59.658	61.666
	Tritonia sp.		20	65	119	82	57.817	60.678
	Volutopsius fragilis	fragile whelk	11	49	122	93	56.986	57.677
	Volutopsius sp.		46	60	149	97	55.990	60.995
	Volutopsius stefanssoni	shouldered whelk	3	60	70	65	57.310	60.163
	Yoldia hyperborea	northern yoldia	1	63	63	63	57.315	57.315
	Yoldia sp.		17	55	96	67	56.359	61.666
		cockle unid.	2	37	37	37	58.305	58.693
Nemertea		nemertean worm unid.	2	70	132	101	56.001	57.015
Porifera	Porifera	sponge unid.	105	28	194	76	54.691	60.347
	Suberites montalbidus	stinky sponge	4	69	90	80	56.331	56.689
Sipuncula	Sipuncula	peanut worm unid.	5	28	104	67	56.324	62.000
Tunicata	*Aplidium* sp.		8	45	77	57	57.323	61.665
	Ascidiacea	tunicate unid.	2	49	57	53	57.150	57.350
	Boltenia ovifera	sea onion	106	26	129	55	56.332	60.645
	Boltenia sp.		3	37	56	46	56.337	58.693

Appendix B Table 2. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Tunicata (Continued)	*Halocynthia aurantium*	sea peach	43	51	75	68	56.658	60.966
	Halocynthia hispidus	hairy tunicate	3	68	83	76	58.650	59.300
	Halocynthia igaboja	bristly tunicate	1	68	68	68	59.300	59.300
	Halocynthia sp.	sea peach unid.	1	63	63	63	62.000	62.000
	Styela rustica	sea potato	100	32	94	60	56.675	60.966
	Thaliacea	salp unid.	1	142	142	142	55.015	55.015
		compound ascidian unid.	28	26	74	57	56.337	60.337
Other			17	29	150	113	56.657	61.001
		invertebrate unid.	1	74	74	74	57.347	57.347
		empty barnacle shells	10	24	137	60	56.339	59.337
		empty bivalve shells	290	20	162	76	54.998	62.003
		empty gastropod shells	340	22	194	83	54.691	62.003

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

Appendix C 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 2016 eastern Bering Sea bottom trawl survey.

Appendix C Table 1. -- Population estimates by sex and size for **walleye pollock** (*Gadus chalcogrammus*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
90	0	0	191,820	191,820	<0.0001	<0.0001
100	0	0	3,576,716	3,576,716	0.0004	0.0004
110	105,288	534,247	15,184,231	15,823,767	0.0019	0.0023
120	888,429	406,201	37,960,461	39,255,091	0.0046	0.0069
130	7,403,973	5,154,965	69,010,398	81,569,337	0.0096	0.0165
140	31,240,129	22,236,477	64,561,857	118,038,463	0.0138	0.0303
150	40,912,269	32,377,264	30,839,465	104,128,998	0.0122	0.0425
160	33,060,796	28,178,182	13,796,659	75,035,637	0.0088	0.0513
170	20,328,589	21,898,716	6,145,206	48,372,511	0.0057	0.0570
180	15,391,437	13,103,704	2,559,508	31,054,649	0.0036	0.0606
190	15,846,926	14,010,877	1,031,121	30,888,925	0.0036	0.0642
200	22,266,107	19,855,199	435,564	42,556,871	0.0050	0.0692
210	27,727,489	33,846,187	160,668	61,734,343	0.0072	0.0764
220	37,178,713	33,535,888	38,549	70,753,150	0.0083	0.0847
230	35,489,390	39,455,246	166,573	75,111,209	0.0088	0.0935
240	25,646,247	23,908,172	140,508	49,694,927	0.0058	0.0994
250	20,128,612	19,168,883	157,475	39,454,970	0.0046	0.1040
260	17,354,978	16,093,630	38,549	33,487,157	0.0039	0.1079
270	15,094,777	12,523,884	77,098	27,695,759	0.0032	0.1112
280	17,129,178	11,626,626	77,098	28,832,902	0.0034	0.1145
290	20,786,082	19,850,065	19,275	40,655,421	0.0048	0.1193
300	28,634,467	24,152,691	281,757	53,068,915	0.0062	0.1255
310	32,817,127	22,536,223	19,275	55,372,625	0.0065	0.1320
320	26,688,963	24,955,511	0	51,644,474	0.0061	0.1381
330	30,024,072	23,902,823	0	53,926,895	0.0063	0.1444
340	31,306,772	22,480,790	0	53,787,562	0.0063	0.1507
350	33,070,109	24,601,811	0	57,671,920	0.0068	0.1574
360	34,894,993	27,113,382	0	62,008,375	0.0073	0.1647
370	64,303,349	41,472,767	106,453	105,882,569	0.0124	0.1771
380	107,654,375	69,970,565	0	177,624,941	0.0208	0.1979
390	199,377,214	146,982,323	0	346,359,537	0.0406	0.2385
400	261,852,484	209,650,501	372,401	471,875,386	0.0553	0.2938
410	279,126,372	260,306,346	372,401	539,805,119	0.0633	0.3571
420	271,284,994	284,538,739	248,267	556,072,000	0.0652	0.4223
430	270,662,843	255,463,514	496,534	526,622,892	0.0617	0.4840
440	263,512,395	241,134,152	372,401	505,018,947	0.0592	0.5432
450	272,959,179	215,463,616	620,668	489,043,462	0.0573	0.6005
460	274,458,191	238,594,740	124,134	513,177,064	0.0601	0.6606
470	275,034,660	223,851,021	248,267	499,133,949	0.0585	0.7191
480	252,583,678	241,960,067	0	494,543,746	0.0580	0.7771
490	213,015,632	202,377,895	615,086	416,008,613	0.0488	0.8259
500	178,503,244	205,843,923	248,267	384,595,434	0.0451	0.8709
510	127,540,143	152,063,615	248,267	279,852,025	0.0328	0.9037
520	97,332,672	122,056,737	0	219,389,409	0.0257	0.9294
530	64,619,114	105,997,618	0	170,616,732	0.0200	0.9494
540	45,861,797	76,903,075	0	122,764,872	0.0144	0.9638

Appendix C Table 1. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
550	27,835,991	59,083,477	0	86,919,468	0.0102	0.9740
560	19,700,964	38,926,914	0	58,627,879	0.0069	0.9809
570	17,238,651	27,914,432	0	45,153,083	0.0053	0.9862
580	10,661,695	19,220,659	0	29,882,355	0.0035	0.9897
590	4,405,258	18,916,629	0	23,321,887	0.0027	0.9924
600	6,168,715	9,245,481	0	15,414,196	0.0018	0.9942
610	2,762,139	8,303,164	0	11,065,302	0.0013	0.9955
620	2,728,880	5,173,415	0	7,902,296	0.0009	0.9964
630	2,964,346	4,963,263	0	7,927,609	0.0009	0.9974
640	1,900,612	3,323,507	0	5,224,118	0.0006	0.9980
650	1,048,942	2,319,770	0	3,368,712	0.0004	0.9984
660	1,041,603	2,726,475	0	3,768,077	0.0004	0.9988
670	625,475	1,266,444	0	1,891,919	0.0002	0.9990
680	797,777	478,820	0	1,276,597	0.0001	0.9992
690	518,001	1,309,839	0	1,827,840	0.0002	0.9994
700	462,816	671,176	0	1,133,992	0.0001	0.9995
710	425,673	1,521,852	0	1,947,525	0.0002	0.9998
720	118,652	529,366	0	648,018	0.0001	0.9998
730	0	317,314	0	317,314	<0.0001	0.9999
740	50,098	383,021	0	433,119	0.0001	0.9999
750	28,864	189,802	0	218,666	<0.0001	1.0000
760	59,407	112,397	0	171,804	<0.0001	1.0000
770	0	107,277	0	107,277	<0.0001	1.0000
780	0	79,242	0	79,242	<0.0001	1.0000
790	0	0	0	0	0.0000	1.0000
800	0	0	0	0	0.0000	1.0000
810	0	50,098	0	50,098	<0.0001	1.0000
Total	**4,242,642,807**	**4,039,272,692**	**250,542,977**	**8,532,458,479**	**1.0000**	**1.0000**

Appendix C Table 2. -- Population estimates by sex and size for **Pacific cod** (*Gadus macrocephalus*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
80	29,389	0	0	29,389	<0.0001	<0.0001
100	0	0	197,053	197,053	0.0003	0.0003
110	0	0	624,002	624,002	0.0009	0.0013
120	0	30,159	963,712	993,871	0.0015	0.0028
130	0	30,474	1,992,393	2,022,866	0.0031	0.0058
140	30,474	0	2,244,559	2,275,032	0.0034	0.0093
150	58,452	0	1,442,904	1,501,355	0.0023	0.0116
160	308,230	131,327	426,949	866,506	0.0013	0.0129
170	809,021	971,062	169,536	1,949,619	0.0029	0.0158
180	1,316,115	1,140,465	0	2,456,580	0.0037	0.0195
190	2,004,858	1,697,597	0	3,702,455	0.0056	0.0251
200	2,547,319	3,116,185	0	5,663,504	0.0086	0.0337
210	4,361,535	4,140,927	0	8,502,462	0.0129	0.0466
220	5,164,168	4,841,844	308,496	10,314,507	0.0156	0.0622
230	4,930,746	4,797,118	0	9,727,863	0.0147	0.0769
240	4,796,714	3,746,448	0	8,543,163	0.0129	0.0898
250	3,216,474	2,564,399	0	5,780,872	0.0087	0.0985
260	1,907,417	2,169,949	0	4,077,365	0.0062	0.1047
270	1,000,520	1,154,547	0	2,155,067	0.0033	0.1080
280	802,941	576,594	0	1,379,534	0.0021	0.1101
290	620,700	874,330	0	1,495,030	0.0023	0.1123
300	1,197,508	1,394,497	0	2,592,005	0.0039	0.1162
310	1,531,280	1,752,875	0	3,284,155	0.0050	0.1212
320	2,527,061	1,456,725	0	3,983,786	0.0060	0.1272
330	2,832,204	2,131,211	31,057	4,994,472	0.0076	0.1348
340	3,025,141	3,690,099	62,114	6,777,354	0.0103	0.1450
350	3,334,298	2,829,827	62,114	6,226,239	0.0094	0.1545
360	4,375,591	4,209,756	62,114	8,647,461	0.0131	0.1675
370	4,497,959	4,903,894	62,114	9,463,966	0.0143	0.1819
380	6,046,593	5,159,042	31,057	11,236,692	0.0170	0.1989
390	5,707,535	4,999,559	116,525	10,823,620	0.0164	0.2152
400	6,796,475	5,671,924	155,284	12,623,684	0.0191	0.2343
410	8,609,576	6,118,560	0	14,728,136	0.0223	0.2566
420	9,012,548	8,672,287	62,114	17,746,949	0.0268	0.2834
430	10,066,548	12,303,142	31,057	22,400,747	0.0339	0.3173
440	12,602,735	10,781,191	0	23,383,926	0.0354	0.3527
450	15,785,220	15,406,497	31,057	31,222,774	0.0472	0.3999
460	18,625,326	15,536,434	0	34,161,760	0.0517	0.4516
470	17,310,018	15,686,268	163,234	33,159,520	0.0502	0.5018
480	18,679,383	15,097,708	0	33,777,091	0.0511	0.5528
490	14,345,551	14,935,371	46,709	29,327,631	0.0444	0.5972
500	14,246,882	12,210,610	0	26,457,492	0.0400	0.6372
510	9,999,324	10,662,364	0	20,661,688	0.0313	0.6685
520	7,939,904	7,984,628	85,468	16,010,000	0.0242	0.6927
530	9,153,729	6,912,197	31,057	16,096,983	0.0243	0.7170
540	5,925,767	5,466,042	31,057	11,422,866	0.0173	0.7343

Appendix C Table 2. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
550	5,797,046	5,592,299	0	11,389,345	0.0172	0.7516
560	5,730,226	5,206,264	31,057	10,967,547	0.0166	0.7681
570	5,896,622	4,794,146	0	10,690,768	0.0162	0.7843
580	4,801,043	4,977,541	0	9,778,584	0.0148	0.7991
590	5,364,401	4,998,718	0	10,363,119	0.0157	0.8148
600	4,556,785	5,381,396	54,411	9,992,592	0.0151	0.8299
610	4,173,854	4,634,271	0	8,808,125	0.0133	0.8432
620	4,792,012	4,345,272	0	9,137,284	0.0138	0.8570
630	4,595,295	4,602,121	31,057	9,228,473	0.0140	0.8710
640	3,957,561	4,320,705	0	8,278,266	0.0125	0.8835
650	4,060,892	4,639,638	23,354	8,723,884	0.0132	0.8967
660	4,873,792	4,793,546	0	9,667,339	0.0146	0.9113
670	3,304,490	4,202,196	0	7,506,686	0.0114	0.9227
680	3,383,649	3,557,217	0	6,940,866	0.0105	0.9332
690	2,518,114	3,806,057	0	6,324,171	0.0096	0.9428
700	3,065,481	3,493,366	23,354	6,582,202	0.0100	0.9527
710	2,297,871	3,246,187	0	5,544,058	0.0084	0.9611
720	1,530,242	2,108,903	0	3,639,145	0.0055	0.9666
730	1,671,709	1,660,046	30,400	3,362,154	0.0051	0.9717
740	1,088,095	1,564,845	0	2,652,940	0.0040	0.9757
750	638,173	1,294,794	0	1,932,967	0.0029	0.9786
760	662,582	1,137,208	0	1,799,790	0.0027	0.9813
770	800,114	1,042,762	0	1,842,876	0.0028	0.9841
780	500,069	887,140	23,354	1,410,563	0.0021	0.9863
790	469,254	522,855	0	992,109	0.0015	0.9878
800	255,071	681,694	0	936,764	0.0014	0.9892
810	227,922	1,164,512	0	1,392,434	0.0021	0.9913
820	302,430	327,737	0	630,166	0.0010	0.9922
830	223,332	504,769	0	728,102	0.0011	0.9933
840	374,089	455,560	0	829,649	0.0013	0.9946
850	144,453	490,056	0	634,510	0.0010	0.9956
860	94,602	298,540	0	393,142	0.0006	0.9962
870	29,488	306,709	0	336,197	0.0005	0.9967
880	121,304	162,804	0	284,107	0.0004	0.9971
890	126,785	190,001	0	316,787	0.0005	0.9976
900	0	193,116	0	193,116	0.0003	0.9979
910	29,208	199,794	0	229,002	0.0003	0.9982
920	30,296	152,254	0	182,551	0.0003	0.9985
930	0	128,689	0	128,689	0.0002	0.9987
940	32,180	27,129	0	59,309	0.0001	0.9988
950	30,537	79,972	0	110,509	0.0002	0.9989
960	0	89,459	0	89,459	0.0001	0.9991
970	22,940	61,196	0	84,136	0.0001	0.9992
980	0	78,724	0	78,724	0.0001	0.9993
1000	0	54,689	0	54,689	0.0001	0.9994
1010	0	106,055	0	106,055	0.0002	0.9996
1020	0	58,525	0	58,525	0.0001	0.9997

Appendix C Table 2. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
1030	0	37,921	0	37,921	0.0001	0.9997
1040	0	76,127	0	76,127	0.0001	0.9998
1030	0	37,921	0	37,921	0.0001	0.9999
1040	0	76,128	0	76,128	0.0001	1.0000
Total	**330,653,238**	**320,805,707**	**9,650,723**	**661,109,664**	**1.0000**	**1.0000**

Appendix C Table 3. -- Population estimates by sex and size for **yellowfin sole** (*Limanda aspera*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
90	0	125,929	2,558,527	2,684,456	0.0003	0.0003
100	197,305	444,459	15,775,018	16,416,782	0.0019	0.0022
110	449,394	4,608,117	29,023,624	34,081,135	0.0039	0.0061
120	4,524,448	4,266,588	40,717,340	49,508,376	0.0056	0.0117
130	5,774,989	8,947,321	34,197,904	48,920,214	0.0056	0.0173
140	17,285,860	17,425,770	40,383,109	75,094,739	0.0086	0.0258
150	30,030,172	41,022,685	33,052,667	104,105,523	0.0119	0.0377
160	60,737,827	59,062,914	8,527,071	128,327,811	0.0146	0.0523
170	85,049,152	90,343,307	1,503,919	176,896,378	0.0201	0.0724
180	88,083,383	91,651,074	361,436	180,095,893	0.0205	0.0929
190	115,724,858	128,095,946	0	243,820,804	0.0278	0.1207
200	134,594,373	131,291,401	0	265,885,774	0.0303	0.1510
210	132,041,208	122,156,308	0	254,197,516	0.0289	0.1799
220	136,400,959	123,326,969	0	259,727,928	0.0296	0.2095
230	137,282,927	140,704,185	0	277,987,113	0.0317	0.2412
240	147,159,553	142,404,664	0	289,564,217	0.0330	0.2742
250	162,532,651	136,738,681	0	299,271,332	0.0341	0.3082
260	133,498,305	139,716,029	0	273,214,333	0.0311	0.3394
270	158,090,012	136,538,772	0	294,628,784	0.0336	0.3729
280	150,852,072	125,050,924	0	275,902,996	0.0314	0.4043
290	222,691,503	158,864,056	0	381,555,560	0.0435	0.4478
300	299,335,194	174,749,221	0	474,084,415	0.0540	0.5018
310	379,121,881	231,747,435	0	610,869,316	0.0696	0.5714
320	429,545,904	317,232,726	0	746,778,630	0.0850	0.6564
330	393,123,167	411,078,854	0	804,202,021	0.0916	0.7480
340	249,032,202	427,324,981	0	676,357,182	0.0770	0.8250
350	144,567,067	411,124,959	0	555,692,026	0.0633	0.8883
360	74,510,688	301,479,180	0	375,989,868	0.0428	0.9311
370	32,528,979	228,967,267	0	261,496,246	0.0298	0.9609
380	12,702,838	150,754,538	0	163,457,376	0.0186	0.9795
390	5,887,486	89,293,331	0	95,180,817	0.0108	0.9904
400	320,634	46,018,117	0	46,338,751	0.0053	0.9956
410	0	26,018,615	0	26,018,615	0.0030	0.9986
420	144,887	8,110,880	0	8,255,767	0.0009	0.9995
430	0	2,507,620	0	2,507,620	0.0003	0.9998
440	0	1,526,158	0	1,526,158	0.0002	1.0000
Total	**3,943,821,878**	**4,630,719,981**	**206,100,615**	**8,780,642,472**	**1.0000**	**1.0000**

Appendix C Table 4. -- Population estimates by sex and size for **northern rock sole** (*Lepidopsetta polxysytra*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
50	0	0	175,987	175,987	<0.0001	<0.0001
60	0	0	739,618	739,618	0.0002	0.0002
70	30,484	30,484	5,383,832	5,444,800	0.0011	0.0013
80	827,297	56,838	21,100,981	21,985,116	0.0046	0.0059
90	30,484	193,219	65,459,295	65,682,998	0.0137	0.0196
100	3,487,895	530,898	125,512,057	129,530,851	0.0270	0.0467
110	10,217,769	4,948,565	132,204,882	147,371,215	0.0308	0.0774
120	23,789,506	12,050,869	142,521,237	178,361,612	0.0372	0.1146
130	26,576,706	31,000,085	131,543,946	189,120,736	0.0395	0.1541
140	40,664,427	34,798,521	67,994,347	143,457,295	0.0299	0.1840
150	45,489,970	28,034,787	32,948,471	106,473,228	0.0222	0.2063
160	24,854,467	20,625,867	6,161,884	51,642,218	0.0108	0.2170
170	21,822,766	15,486,785	681,619	37,991,170	0.0079	0.2250
180	27,353,741	21,444,853	1,584,112	50,382,706	0.0105	0.2355
190	30,088,090	20,480,685	599,451	51,168,225	0.0107	0.2462
200	35,284,088	20,813,339	342,543	56,439,971	0.0118	0.2579
210	46,155,052	26,565,545	85,636	72,806,233	0.0152	0.2731
220	40,759,326	30,975,645	256,908	71,991,878	0.0150	0.2882
230	43,268,031	27,206,516	171,272	70,645,818	0.0147	0.3029
240	39,577,341	32,923,101	0	72,500,442	0.0151	0.3180
250	45,035,327	38,451,227	264,560	83,751,113	0.0175	0.3355
260	53,319,229	26,207,415	0	79,526,643	0.0166	0.3521
270	71,215,727	38,418,717	0	109,634,444	0.0229	0.3750
280	161,447,001	38,030,877	0	199,477,877	0.0416	0.4166
290	298,455,225	36,519,694	0	334,974,919	0.0699	0.4865
300	311,291,253	34,990,055	171,272	346,452,581	0.0723	0.5588
310	242,399,992	60,023,910	0	302,423,901	0.0631	0.6219
320	165,736,344	99,334,481	256,908	265,327,732	0.0554	0.6773
330	95,359,628	158,212,850	256,908	253,829,386	0.0530	0.7303
340	35,091,737	212,254,502	279,844	247,626,083	0.0517	0.7820
350	19,057,253	233,873,839	302,781	253,233,872	0.0528	0.8348
360	3,268,932	223,858,296	525,569	227,652,797	0.0475	0.8823
370	3,352,874	195,900,125	541,568	199,794,566	0.0417	0.9240
380	1,154,286	146,219,189	1,093,595	148,467,069	0.0310	0.9550
390	913,366	90,081,972	414,770	91,410,108	0.0191	0.9741
400	64,309	67,100,878	446,871	67,612,059	0.0141	0.9882
410	0	32,040,216	319,494	32,359,709	0.0068	0.9950
420	0	14,775,374	63,994	14,839,368	0.0031	0.9981
430	0	5,653,683	0	5,653,683	0.0012	0.9992
440	0	1,820,210	0	1,820,210	0.0004	0.9996
450	0	1,769,693	0	1,769,693	0.0004	1.0000
460	0	83,209	0	83,209	<0.0001	1.0000
Total	**1,967,439,923**	**2,083,787,014**	**740,406,212**	**4,791,633,139**	**1.0000**	**1.0000**

Appendix C Table 5. -- Population estimates by sex and size for **flathead sole** (*Hippoglossoides elassodon*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	0	118,236	118,236	0.0001	0.0001
70	73,016	80,013	319,705	472,733	0.0003	0.0004
80	646,454	109,923	662,435	1,418,812	0.0009	0.0012
90	409,723	232,538	627,034	1,269,296	0.0008	0.0020
100	1,366,062	569,560	2,281,620	4,217,242	0.0026	0.0046
110	3,350,362	2,649,643	2,045,172	8,045,177	0.0049	0.0095
120	6,350,350	5,316,475	2,013,444	13,680,269	0.0084	0.0179
130	9,701,158	9,382,934	3,503,154	22,587,245	0.0138	0.0318
140	15,076,112	13,618,077	2,686,046	31,380,235	0.0192	0.0510
150	18,577,755	17,041,698	2,451,184	38,070,636	0.0233	0.0743
160	19,924,333	19,246,691	664,557	39,835,581	0.0244	0.0987
170	21,179,547	20,185,217	553,557	41,918,321	0.0257	0.1244
180	28,146,431	23,783,088	237,443	52,166,962	0.0320	0.1564
190	27,233,837	23,735,343	0	50,969,180	0.0312	0.1876
200	31,526,038	31,436,253	0	62,962,291	0.0386	0.2262
210	32,473,488	26,898,331	0	59,371,820	0.0364	0.2626
220	32,455,611	28,337,702	0	60,793,313	0.0373	0.2999
230	34,354,857	30,741,766	0	65,096,623	0.0399	0.3398
240	32,402,735	36,092,833	0	68,495,567	0.0420	0.3817
250	38,072,274	37,006,190	0	75,078,465	0.0460	0.4277
260	35,020,560	36,010,818	0	71,031,377	0.0435	0.4713
270	34,687,173	31,991,811	0	66,678,984	0.0409	0.5121
280	31,175,416	26,787,759	0	57,963,175	0.0355	0.5477
290	31,837,204	29,754,008	0	61,591,212	0.0377	0.5854
300	28,120,039	28,152,050	0	56,272,089	0.0345	0.6199
310	26,800,674	22,947,817	0	49,748,491	0.0305	0.6504
320	32,421,115	23,200,646	0	55,621,760	0.0341	0.6845
330	37,736,348	23,832,362	0	61,568,709	0.0377	0.7222
340	42,180,529	23,518,345	0	65,698,874	0.0403	0.7625
350	36,703,676	24,943,158	0	61,646,834	0.0378	0.8002
360	30,589,600	25,042,949	0	55,632,549	0.0341	0.8343
370	26,778,510	23,950,306	0	50,728,816	0.0311	0.8654
380	17,595,907	22,516,135	0	40,112,041	0.0246	0.8900
390	13,994,089	22,779,441	0	36,773,530	0.0225	0.9125
400	8,051,402	19,172,290	0	27,223,692	0.0167	0.9292
410	4,853,674	16,893,479	0	21,747,153	0.0133	0.9426
420	2,247,166	16,412,413	0	18,659,579	0.0114	0.9540
430	1,220,948	16,915,782	0	18,136,730	0.0111	0.9651
440	364,173	13,189,046	0	13,553,220	0.0083	0.9734
450	416,238	13,512,467	0	13,928,704	0.0085	0.9820
460	159,503	8,407,610	0	8,567,114	0.0053	0.9872
470	51,819	5,799,602	0	5,851,421	0.0036	0.9908
480	132,603	4,404,800	0	4,537,403	0.0028	0.9936
490	0	3,904,381	0	3,904,381	0.0024	0.9960
500	58,052	3,604,779	0	3,662,831	0.0022	0.9982
510	0	1,734,022	0	1,734,022	0.0011	0.9993

Appendix C Table 5. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
520	0	346,517	0	346,517	0.0002	0.9995
530	0	613,410	0	613,410	0.0004	0.9999
540	0	228,689	0	228,689	0.0001	1.0000
Total	**796,516,561**	**817,031,167**	**18,163,587**	**1,631,711,311**	**1.0000**	**1.0000**

Appendix C Table 6. -- Population estimates by sex and size for **Bering flounder** (*Hippoglossoides robustus*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	0	93,244	93,244	0.0004	0.0004
70	0	0	94,569	94,569	0.0004	0.0007
80	71,648	0	214,404	286,052	0.0011	0.0019
90	0	0	280,612	280,612	0.0011	0.0030
100	0	308,774	1,164,473	1,473,247	0.0059	0.0089
110	168,941	150,865	2,557,579	2,877,385	0.0114	0.0203
120	91,594	118,352	5,773,366	5,983,312	0.0238	0.0441
130	1,840,895	979,223	5,590,468	8,410,586	0.0334	0.0775
140	3,577,662	1,733,350	5,709,920	11,020,932	0.0438	0.1213
150	4,899,767	2,187,503	2,152,891	9,240,161	0.0367	0.1581
160	5,451,992	3,639,100	1,854,082	10,945,175	0.0435	0.2016
170	5,252,722	3,558,511	957,003	9,768,235	0.0388	0.2404
180	7,636,453	3,316,921	858,104	11,811,478	0.0470	0.2874
190	5,748,772	4,889,499	472,846	11,111,117	0.0442	0.3315
200	6,748,157	5,774,251	283,708	12,806,115	0.0509	0.3824
210	4,884,279	7,449,472	0	12,333,751	0.0490	0.4315
220	4,832,032	8,712,401	0	13,544,433	0.0538	0.4853
230	3,344,817	9,815,320	0	13,160,137	0.0523	0.5376
240	3,543,227	10,890,016	0	14,433,243	0.0574	0.5950
250	3,922,160	14,819,058	0	18,741,218	0.0745	0.6695
260	498,670	13,882,846	0	14,381,516	0.0572	0.7267
270	1,668,238	13,498,975	94,569	15,261,783	0.0607	0.7874
280	227,298	8,171,525	0	8,398,822	0.0334	0.8208
290	599,039	9,898,423	0	10,497,462	0.0417	0.8625
300	123,039	8,273,161	0	8,396,200	0.0334	0.8959
310	351,696	6,399,475	0	6,751,172	0.0268	0.9227
320	49,214	5,227,840	0	5,277,054	0.0210	0.9437
330	264,007	4,745,229	0	5,009,236	0.0199	0.9636
340	162,405	3,120,614	0	3,283,019	0.0131	0.9767
350	61,977	2,128,783	0	2,190,760	0.0087	0.9854
360	48,296	1,144,029	0	1,192,325	0.0047	0.9901
370	68,673	659,724	0	728,397	0.0029	0.9930
380	0	465,525	0	465,525	0.0019	0.9948
390	0	831,129	0	831,129	0.0033	0.9982
400	0	421,460	0	421,460	0.0017	0.9998
410	0	0	0	0	0.0000	0.9998
420	0	43,246	0	43,246	0.0002	1.0000
Total	**66,137,670**	**157,254,600**	**28,151,838**	**251,544,108**	**1.0000**	**1.0000**

Appendix C Table 7. -- Population estimates by sex and size for **Alaska plaice** (*Pleuronectes quadritubercula*tus) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
90	0	82,504	0	82,504	0.0001	0.0001
120	0	0	89,531	89,531	0.0002	0.0003
160	297,833	0	0	297,833	0.0005	0.0008
170	450,362	105,180	0	555,543	0.0010	0.0018
180	345,182	315,541	0	660,723	0.0012	0.0030
190	849,612	761,070	0	1,610,681	0.0029	0.0058
200	646,257	1,120,155	0	1,766,412	0.0031	0.0090
210	862,104	1,008,701	0	1,870,805	0.0033	0.0123
220	705,559	1,251,012	0	1,956,570	0.0035	0.0157
230	1,239,387	1,161,474	0	2,400,861	0.0042	0.0200
240	1,197,769	1,796,881	0	2,994,650	0.0053	0.0253
250	2,152,686	2,079,750	0	4,232,436	0.0075	0.0328
260	2,440,957	2,064,973	0	4,505,930	0.0080	0.0408
270	4,053,256	2,537,613	0	6,590,869	0.0117	0.0524
280	5,109,189	3,208,295	0	8,317,484	0.0147	0.0671
290	6,486,781	3,220,449	105,180	9,812,411	0.0174	0.0845
300	9,297,892	3,765,383	0	13,063,275	0.0231	0.1076
310	13,209,407	5,965,479	0	19,174,886	0.0339	0.1416
320	16,268,899	3,857,981	0	20,126,879	0.0356	0.1772
330	29,544,757	5,933,902	0	35,478,659	0.0628	0.2400
340	40,735,259	6,155,072	0	46,890,331	0.0830	0.3230
350	37,275,297	8,260,333	0	45,535,630	0.0806	0.4036
360	30,950,444	10,043,227	0	40,993,671	0.0726	0.4761
370	25,539,217	15,733,854	0	41,273,071	0.0730	0.5492
380	16,571,761	16,854,619	0	33,426,380	0.0592	0.6083
390	12,035,116	19,466,098	0	31,501,214	0.0558	0.6641
400	8,291,311	23,540,334	0	31,831,645	0.0563	0.7204
410	3,726,198	23,591,779	0	27,317,977	0.0484	0.7688
420	2,114,792	20,351,222	0	22,466,014	0.0398	0.8085
430	678,869	20,059,595	0	20,738,464	0.0367	0.8452
440	442,334	16,374,094	0	16,816,428	0.0298	0.8750
450	486,012	14,296,803	0	14,782,815	0.0262	0.9012
460	211,897	10,528,774	0	10,740,672	0.0190	0.9202
470	0	11,396,541	0	11,396,541	0.0202	0.9404
480	0	8,093,107	0	8,093,107	0.0143	0.9547
490	33,366	9,861,040	0	9,894,406	0.0175	0.9722
500	150,168	5,312,245	0	5,462,413	0.0097	0.9819
510	150,168	3,446,302	0	3,596,470	0.0064	0.9882
520	0	3,516,165	0	3,516,165	0.0062	0.9944
530	0	1,025,977	0	1,025,977	0.0018	0.9963
540	0	1,029,672	0	1,029,672	0.0018	0.9981
550	0	665,215	0	665,215	0.0012	0.9993
560	0	120,140	0	120,140	0.0002	0.9995
570	0	207,408	0	207,408	0.0004	0.9998
580	0	90,977	0	90,977	0.0002	1.0000
Total	**274,550,098**	**290,256,936**	**194,711**	**565,001,745**	**1.0000**	**1.0000**

Appendix C Table 8. -- Population estimates by sex and size for **Greenland turbot** (*Reinhardtius hippoglossoides*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
120	0	0	30,827	30,827	0.0022	0.0022
130	31,650	0	0	31,650	0.0022	0.0044
140	61,817	31,650	248,385	341,852	0.0242	0.0286
150	50,187	31,650	61,653	143,490	0.0102	0.0388
160	0	28,977	0	28,977	0.0021	0.0408
170	0	0	61,653	61,653	0.0044	0.0452
180	19,830	27,622	0	47,451	0.0034	0.0485
190	20,252	19,822	0	40,074	0.0028	0.0514
200	57,955	30,159	0	88,114	0.0062	0.0576
210	0	49,311	0	49,311	0.0035	0.0611
220	21,087	0	0	21,087	0.0015	0.0626
230	87,635	29,345	0	116,980	0.0083	0.0709
250	104,061	0	0	104,061	0.0074	0.0782
260	0	29,345	0	29,345	0.0021	0.0803
270	28,977	57,148	0	86,125	0.0061	0.0864
280	0	87,668	0	87,668	0.0062	0.0926
290	29,504	28,977	0	58,481	0.0041	0.0967
300	57,148	0	0	57,148	0.0040	0.1008
310	83,964	86,582	0	170,546	0.0121	0.1129
320	145,164	146,081	0	291,245	0.0206	0.1335
330	115,367	114,823	0	230,190	0.0163	0.1498
340	57,148	28,977	0	86,125	0.0061	0.1558
350	29,506	28,977	0	58,483	0.0041	0.1600
360	78,304	133,299	0	211,603	0.0150	0.1750
370	59,504	0	0	59,504	0.0042	0.1792
380	28,977	86,233	0	115,210	0.0082	0.1873
390	55,563	20,252	0	75,816	0.0054	0.1927
400	88,119	0	0	88,119	0.0062	0.1989
410	203,788	29,504	0	233,291	0.0165	0.2154
420	176,304	105,388	0	281,692	0.0199	0.2354
430	118,117	87,653	0	205,771	0.0146	0.2499
440	119,766	49,404	0	169,170	0.0120	0.2619
450	50,553	47,564	0	98,117	0.0069	0.2688
460	0	214,642	0	214,642	0.0152	0.2840
470	205,896	77,065	0	282,961	0.0200	0.3041
480	189,762	168,463	0	358,225	0.0253	0.3294
490	264,919	126,117	0	391,036	0.0277	0.3571
500	174,314	159,137	0	333,451	0.0236	0.3807
510	119,164	148,163	0	267,327	0.0189	0.3996
520	78,631	154,631	0	233,262	0.0165	0.4161
530	197,077	202,240	0	399,317	0.0283	0.4443
540	238,177	265,041	0	503,218	0.0356	0.4800
550	258,885	353,036	0	611,921	0.0433	0.5233
560	447,283	271,684	0	718,967	0.0509	0.5741
570	562,747	495,453	0	1,058,201	0.0749	0.6490
580	269,647	392,351	0	661,998	0.0468	0.6959

Appendix C Table 8. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
590	240,711	511,987	0	752,697	0.0533	0.7491
600	148,437	261,441	0	409,878	0.0290	0.7781
610	175,946	559,121	0	735,068	0.0520	0.8301
620	29,680	350,917	0	380,597	0.0269	0.8571
630	66,285	357,219	0	423,505	0.0300	0.8870
640	46,427	150,604	0	197,031	0.0139	0.9010
650	45,907	90,969	0	136,876	0.0097	0.9107
660	0	79,967	0	79,967	0.0057	0.9163
670	0	89,595	0	89,595	0.0063	0.9227
680	0	58,689	0	58,689	0.0042	0.9268
700	29,345	135,135	0	164,480	0.0116	0.9385
720	0	104,879	0	104,879	0.0074	0.9459
730	0	57,175	0	57,175	0.0040	0.9499
760	0	75,313	0	75,313	0.0053	0.9553
780	0	30,186	0	30,186	0.0021	0.9574
790	30,426	30,282	0	60,707	0.0043	0.9617
800	30,284	29,680	0	59,965	0.0042	0.9659
820	0	104,237	0	104,237	0.0074	0.9733
840	30,342	0	0	30,342	0.0021	0.9755
850	0	29,345	0	29,345	0.0021	0.9775
860	0	60,022	0	60,022	0.0042	0.9818
870	0	29,345	0	29,345	0.0021	0.9839
880	0	59,504	0	59,504	0.0042	0.9881
930	0	32,180	0	32,180	0.0023	0.9903
970	0	28,977	0	28,977	0.0021	0.9924
980	0	90,036	0	90,036	0.0064	0.9988
1010	0	17,490	0	17,490	0.0012	1.0000
Total	**5,860,539**	**7,868,729**	**402,518**	**14,131,788**	**1.0000**	**1.0000**

Appendix C Table 9. -- Population estimates by sex and size for **arrowtooth flounder** (*Atheresthes stomias*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	0	41,631	41,631	<0.0001	<0.0001
80	0	0	29,356	29,356	<0.0001	0.0001
90	0	0	158,488	158,488	0.0002	0.0003
100	102,769	0	302,037	404,806	0.0005	0.0008
110	61,117	47,294	208,290	316,702	0.0004	0.0011
120	354,537	194,849	60,937	610,323	0.0007	0.0019
130	271,586	136,812	0	408,398	0.0005	0.0024
140	398,774	513,392	0	912,166	0.0011	0.0034
150	1,160,753	1,426,103	30,565	2,617,421	0.0031	0.0066
160	1,926,739	2,049,459	0	3,976,198	0.0047	0.0113
170	2,426,972	3,595,509	0	6,022,481	0.0072	0.0185
180	2,612,779	5,178,676	0	7,791,455	0.0093	0.0278
190	4,141,097	5,799,387	0	9,940,484	0.0119	0.0397
200	5,891,610	9,372,416	0	15,264,026	0.0182	0.0579
210	7,584,784	11,326,184	0	18,910,969	0.0226	0.0805
220	8,654,132	11,181,356	0	19,835,487	0.0237	0.1041
230	6,837,108	11,446,962	0	18,284,069	0.0218	0.1260
240	6,556,339	9,189,468	0	15,745,807	0.0188	0.1448
250	5,843,740	11,909,347	0	17,753,087	0.0212	0.1660
260	6,245,275	12,239,088	0	18,484,363	0.0221	0.1880
270	7,608,382	14,331,075	0	21,939,457	0.0262	0.2142
280	8,353,057	13,837,481	0	22,190,538	0.0265	0.2407
290	10,536,225	16,519,337	91,262	27,146,824	0.0324	0.2731
300	12,333,736	20,965,655	182,523	33,481,914	0.0400	0.3131
310	12,522,212	21,247,479	146,984	33,916,675	0.0405	0.3536
320	11,973,291	23,124,340	238,246	35,335,876	0.0422	0.3957
330	11,034,609	24,425,643	329,508	35,789,760	0.0427	0.4385
340	9,574,289	23,707,677	91,262	33,373,228	0.0398	0.4783
350	11,404,719	26,007,132	238,246	37,650,097	0.0449	0.5232
360	9,806,327	20,090,967	476,492	30,373,786	0.0363	0.5595
370	9,992,444	21,228,287	273,785	31,494,516	0.0376	0.5971
380	9,459,967	17,851,377	293,968	27,605,312	0.0330	0.6301
390	7,837,977	16,643,347	476,492	24,957,816	0.0298	0.6598
400	6,150,998	16,352,816	146,984	22,650,798	0.0270	0.6869
410	5,166,449	12,140,459	91,262	17,398,169	0.0208	0.7077
420	4,952,255	10,031,453	91,262	15,074,970	0.0180	0.7256
430	5,277,549	10,147,145	146,984	15,571,678	0.0186	0.7442
440	5,683,197	10,001,424	182,523	15,867,144	0.0189	0.7632
450	3,645,013	10,348,053	0	13,993,067	0.0167	0.7799
460	2,739,744	11,996,826	238,246	14,974,816	0.0179	0.7978
470	1,824,251	9,619,141	293,968	11,737,361	0.0140	0.8118
480	1,924,402	11,786,356	293,968	14,004,725	0.0167	0.8285
490	1,104,876	13,672,785	91,262	14,868,922	0.0177	0.8462
500	865,365	14,642,574	238,246	15,746,185	0.0188	0.8650
510	686,662	11,991,758	0	12,678,420	0.0151	0.8802
520	436,829	14,327,631	182,523	14,946,983	0.0178	0.8980

Appendix C Table 9. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
530	461,637	11,605,892	0	12,067,529	0.0144	0.9124
540	291,541	11,899,665	0	12,191,207	0.0146	0.9270
550	30,335	10,257,682	0	10,288,016	0.0123	0.9392
560	63,072	10,355,762	0	10,418,834	0.0124	0.9517
570	401,687	6,694,036	0	7,095,723	0.0085	0.9602
580	180,311	5,630,270	0	5,810,581	0.0069	0.9671
590	55,314	5,455,532	0	5,510,846	0.0066	0.9737
600	63,180	4,265,918	0	4,329,098	0.0052	0.9788
610	0	4,129,328	0	4,129,328	0.0049	0.9838
620	0	2,803,401	0	2,803,401	0.0033	0.9871
630	30,699	2,204,253	0	2,234,952	0.0027	0.9898
640	55,314	1,493,741	0	1,549,055	0.0018	0.9916
650	0	2,167,082	0	2,167,082	0.0026	0.9942
660	0	1,138,434	0	1,138,434	0.0014	0.9956
670	0	1,142,743	0	1,142,743	0.0014	0.9969
680	79,269	597,967	0	677,237	0.0008	0.9978
690	0	540,766	0	540,766	0.0006	0.9984
700	0	239,374	0	239,374	0.0003	0.9987
710	0	360,065	0	360,065	0.0004	0.9991
720	0	282,831	0	282,831	0.0003	0.9994
730	0	76,436	0	76,436	0.0001	0.9995
740	0	200,273	0	200,273	0.0002	0.9998
770	0	72,072	0	72,072	0.0001	0.9999
780	0	16,155	0	16,155	<0.0001	0.9999
790	0	96,095	0	96,095	0.0001	1.0000
Total	**235,677,295**	**596,370,293**	**5,667,300**	**837,714,887**	**1.0000**	**1.0000**

Appendix C Table 10. -- Population estimates by sex and size for **Kamchatka flounder** (*Atheresthes evermanni*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
90	0	56,431	31,585	88,016	0.0007	0.0007
100	29,288	0	121,614	150,902	0.0012	0.0019
110	52,643	52,823	83,586	189,052	0.0015	0.0034
120	101,672	44,692	82,001	228,365	0.0018	0.0053
130	302,204	29,288	61,853	393,345	0.0032	0.0084
140	326,333	214,361	62,037	602,731	0.0048	0.0133
150	668,778	710,009	155,093	1,533,880	0.0123	0.0256
160	1,062,860	847,583	308,309	2,218,752	0.0178	0.0434
170	1,503,296	1,289,417	310,186	3,102,899	0.0249	0.0684
180	1,152,205	1,360,213	93,056	2,605,474	0.0209	0.0893
190	1,514,985	1,345,954	31,019	2,891,958	0.0232	0.1126
200	2,791,413	2,206,802	29,142	5,027,357	0.0404	0.1530
210	2,382,929	1,634,459	0	4,017,388	0.0323	0.1853
220	2,933,590	1,430,505	0	4,364,095	0.0351	0.2203
230	1,993,612	1,694,379	0	3,687,991	0.0296	0.2500
240	2,216,337	1,757,795	0	3,974,132	0.0319	0.2819
250	1,581,182	1,379,080	0	2,960,262	0.0238	0.3057
260	1,586,579	1,598,652	0	3,185,231	0.0256	0.3313
270	1,760,284	2,212,196	0	3,972,480	0.0319	0.3632
280	1,948,155	858,843	0	2,806,998	0.0226	0.3858
290	1,288,154	1,464,659	0	2,752,813	0.0221	0.4079
300	1,831,927	1,384,550	0	3,216,477	0.0259	0.4338
310	2,186,170	2,115,841	0	4,302,011	0.0346	0.4683
320	2,267,819	2,217,389	0	4,485,208	0.0360	0.5044
330	1,439,589	1,593,086	0	3,032,675	0.0244	0.5288
340	2,067,600	2,106,122	0	4,173,722	0.0335	0.5623
350	1,919,922	1,160,465	0	3,080,387	0.0248	0.5871
360	1,662,503	1,406,669	0	3,069,172	0.0247	0.6117
370	1,743,500	1,659,409	0	3,402,910	0.0273	0.6391
380	1,768,144	1,597,213	0	3,365,357	0.0270	0.6661
390	1,692,539	1,625,270	0	3,317,808	0.0267	0.6928
400	2,372,843	2,576,015	0	4,948,858	0.0398	0.7326
410	3,197,533	1,646,288	0	4,843,821	0.0389	0.7715
420	2,108,503	2,306,897	0	4,415,400	0.0355	0.8070
430	1,744,734	2,215,035	0	3,959,769	0.0318	0.8388
440	1,592,769	2,416,951	0	4,009,721	0.0322	0.8711
450	1,221,923	1,329,949	0	2,551,871	0.0205	0.8916
460	1,348,836	1,178,556	0	2,527,392	0.0203	0.9119
470	660,517	616,180	0	1,276,697	0.0103	0.9221
480	680,921	982,311	0	1,663,232	0.0134	0.9355
490	392,547	1,019,068	0	1,411,615	0.0113	0.9469
500	374,455	1,206,864	0	1,581,319	0.0127	0.9596
510	583,240	347,090	0	930,329	0.0075	0.9670
520	470,240	294,402	0	764,642	0.0061	0.9732
530	185,201	334,360	0	519,561	0.0042	0.9774
540	108,349	527,954	0	636,303	0.0051	0.9825

Appendix C Table 10. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
550	21,294	218,601	0	239,895	0.0019	0.9844
560	78,422	162,631	0	241,053	0.0019	0.9863
570	0	51,258	0	51,258	0.0004	0.9868
580	0	139,827	0	139,827	0.0011	0.9879
590	0	72,829	0	72,829	0.0006	0.9885
600	90,761	186,161	0	276,922	0.0022	0.9907
610	18,915	150,463	0	169,378	0.0014	0.9920
620	0	121,480	0	121,480	0.0010	0.9930
630	0	201,024	0	201,024	0.0016	0.9946
640	0	83,641	0	83,641	0.0007	0.9953
650	0	30,752	0	30,752	0.0002	0.9956
660	0	82,080	0	82,080	0.0007	0.9962
670	0	45,907	0	45,907	0.0004	0.9966
690	0	100,024	0	100,024	0.0008	0.9974
720	0	113,414	0	113,414	0.0009	0.9983
730	0	15,690	0	15,690	0.0001	0.9984
760	0	112,322	0	112,322	0.0009	0.9993
810	0	83,282	0	83,282	0.0007	1.0000
Total	**63,028,215**	**60,023,461**	**1,369,481**	**124,421,156**	**1.0000**	**1.0000**

Appendix C Table 11. -- Population estimates by sex and size for **Pacific halibut** (*Hippoglossus stenolepis*) from the 2016 eastern Bering Sea shelf bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
100	17,797	0	0	17,797	0.0003	0.0003
190	0	0	35,850	35,850	0.0005	0.0008
200	0	0	17,925	17,925	0.0003	0.0011
210	30,672	0	35,850	66,521	0.0010	0.0021
220	0	0	17,925	17,925	0.0003	0.0024
230	0	0	17,925	17,925	0.0003	0.0026
240	0	0	35,850	35,850	0.0005	0.0032
250	105,917	55,888	139,844	301,649	0.0046	0.0078
260	28,407	27,944	194,674	251,025	0.0038	0.0116
270	199,600	260,032	359,604	819,236	0.0124	0.0240
280	224,935	199,256	699,247	1,123,438	0.0170	0.0410
290	202,753	147,706	698,555	1,049,015	0.0159	0.0569
300	346,670	235,505	1,104,123	1,686,298	0.0256	0.0825
310	115,866	55,888	1,398,997	1,570,750	0.0238	0.1063
320	143,713	262,290	893,663	1,299,666	0.0197	0.1260
330	30,672	90,553	579,427	700,651	0.0106	0.1366
340	118,178	30,672	333,671	482,520	0.0073	0.1439
350	0	84,507	62,954	147,461	0.0022	0.1462
360	0	31,237	91,085	122,322	0.0019	0.1480
370	56,973	58,516	538,466	653,955	0.0099	0.1580
380	208,132	92,739	565,538	866,410	0.0131	0.1711
390	118,133	237,884	545,172	901,190	0.0137	0.1848
400	265,305	234,224	993,738	1,493,267	0.0226	0.2074
410	215,592	229,995	776,274	1,221,861	0.0185	0.2259
420	259,624	283,102	852,345	1,395,071	0.0212	0.2471
430	241,462	439,690	1,094,302	1,775,453	0.0269	0.2740
440	339,284	301,291	1,252,116	1,892,690	0.0287	0.3027
450	610,044	508,119	1,353,315	2,471,477	0.0375	0.3402
460	627,008	298,362	1,328,425	2,253,795	0.0342	0.3743
470	573,817	357,685	1,847,354	2,778,855	0.0421	0.4165
480	627,024	561,292	2,007,273	3,195,589	0.0485	0.4649
490	481,905	924,025	1,411,046	2,816,976	0.0427	0.5076
500	325,266	656,984	1,443,662	2,425,912	0.0368	0.5444
510	209,400	587,994	1,242,859	2,040,254	0.0309	0.5753
520	350,713	413,840	1,307,477	2,072,029	0.0314	0.6067
530	180,261	354,466	988,882	1,523,610	0.0231	0.6298
540	110,443	151,335	774,110	1,035,888	0.0157	0.6456
550	153,103	180,134	647,848	981,085	0.0149	0.6604
560	224,750	29,366	581,201	835,317	0.0127	0.6731
570	172,606	227,191	456,613	856,410	0.0130	0.6861
580	0	142,993	509,874	652,867	0.0099	0.6960
590	147,288	31,885	586,348	765,521	0.0116	0.7076
600	103,193	61,552	799,671	964,416	0.0146	0.7222
610	196,430	27,234	568,649	792,313	0.0120	0.7342
620	171,123	145,007	620,622	936,752	0.0142	0.7484
630	71,257	113,537	503,714	688,508	0.0104	0.7589

Appendix C Table 11. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
640	166,860	58,092	523,321	748,273	0.0113	0.7702
650	93,857	118,256	479,363	691,476	0.0105	0.7807
660	91,945	47,009	509,048	648,002	0.0098	0.7905
670	80,206	0	806,709	886,915	0.0134	0.8040
680	31,585	104,908	406,103	542,595	0.0082	0.8122
690	30,640	45,626	756,194	832,459	0.0126	0.8248
700	90,247	0	501,667	591,913	0.0090	0.8338
710	17,638	76,118	392,339	486,094	0.0074	0.8412
720	0	30,831	456,492	487,324	0.0074	0.8485
730	28,329	175,617	639,821	843,768	0.0128	0.8613
740	59,957	113,412	446,030	619,400	0.0094	0.8707
750	77,807	64,133	477,980	619,919	0.0094	0.8801
760	33,867	135,698	634,749	804,314	0.0122	0.8923
770	32,131	17,971	422,498	472,600	0.0072	0.8995
780	0	25,558	475,884	501,442	0.0076	0.9071
790	47,023	0	361,834	408,857	0.0062	0.9133
800	28,341	48,039	357,398	433,778	0.0066	0.9199
810	0	120,788	240,068	360,856	0.0055	0.9253
820	47,798	29,576	109,141	186,514	0.0028	0.9282
830	29,536	28,102	125,583	183,221	0.0028	0.9309
840	15,998	61,237	295,556	372,792	0.0057	0.9366
850	0	0	234,384	234,384	0.0036	0.9401
860	55,820	31,147	171,159	258,126	0.0039	0.9441
870	0	46,534	349,608	396,141	0.0060	0.9501
880	0	90,641	295,953	386,594	0.0059	0.9559
890	18,677	23,424	161,042	203,143	0.0031	0.9590
900	0	89,087	131,854	220,942	0.0033	0.9624
910	0	0	90,395	90,395	0.0014	0.9637
920	58,032	31,483	148,856	238,371	0.0036	0.9673
930	0	26,622	166,979	193,602	0.0029	0.9703
940	0	70,920	58,851	129,771	0.0020	0.9722
950	0	29,366	155,060	184,427	0.0028	0.9750
960	0	0	145,781	145,781	0.0022	0.9773
970	29,247	58,625	121,243	209,115	0.0032	0.9804
980	0	0	85,217	85,217	0.0013	0.9817
990	0	0	208,734	208,734	0.0032	0.9849
1000	0	27,967	56,875	84,841	0.0013	0.9862
1010	0	29,847	92,941	122,788	0.0019	0.9880
1020	0	0	132,080	132,080	0.0020	0.9900
1040	0	0	81,575	81,575	0.0012	0.9913
1050	0	28,341	0	28,341	0.0004	0.9917
1060	0	51,753	24,518	76,272	0.0012	0.9929
1080	0	27,967	46,297	74,263	0.0011	0.9940
1100	0	0	30,458	30,458	0.0005	0.9944
1120	0	0	29,247	29,247	0.0004	0.9949
1130	0	0	58,204	58,204	0.0009	0.9958
1150	0	0	29,773	29,773	0.0005	0.9962

Appendix C Table 11. -- Continued. -

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
1160	0	0	15,998	15,998	0.0002	0.9965
1170	0	29,366	58,584	87,951	0.0013	0.9978
1180	0	0	31,454	31,454	0.0005	0.9983
1250	0	0	27,967	27,967	0.0004	0.9987
1260	0	0	28,662	28,662	0.0004	0.9991
1270	0	0	15,403	15,403	0.0002	0.9994
1380	0	23,424	0	23,424	0.0004	0.9997
1410	0	0	18,677	18,677	0.0003	1.0000
Total	**9,770,857**	**11,149,405**	**45,035,670**	**65,955,928**	**1.0000**	**1.0000**

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