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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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ABSTRACT

From June to August 2017, the National Marine Fisheries Service's Alaska Fisheries Science Center's Resource Assessment and Conservation Engineering Division conducted its 36th annual eastern Bering Sea (EBS) continental shelf bottom trawl survey of groundfish and invertebrate fauna. In addition, the 2017 survey coverage was expanded to include the northern Bering Sea (NBS). It was only the second time since 2010 that the NBS survey was done. The expanded study area covered the entire Bering Sea continental shelf (hereafter referred to as the "NEBS") from 20 to 200 m bottom depth to the U.S.-Russia Maritime Boundary between the Alaska Peninsula and the Bering Strait, including Norton Sound. Two stern trawlers, the 43.5-m FV *Alaska Knight* and the 38-m FV *Vesteraalen,* were chartered to sample the NEBS. Demersal populations of fishes and invertebrates were sampled by trawling for 30 minutes at stations centered within a stratified systematic grid consisting of a total of 376 stations in the EBS and 144 stations in the NBS. At each station, species composition of the catch was determined, and length distributions and age structure samples were collected from ecologically and commercially important species. All survey stations were sampled successfully in the NEBS.

A warm stanza continued in the EBS shelf for the fourth consecutive year. Both the mean surface (7.8° C) and bottom (2.8° C) water temperatures were above long-term (1982-2016) averages of 6.5° C for the surface and 2.5° C for the bottom. In the NEBS, there was a total of 107 species of fishes representing 20 families and 65 genera, as well as 305 invertebrate taxa representing 12 phyla identified in the catches.

The distribution and relative abundance of 36 different fish species and seven invertebrate taxa are compared with side-by-side maps from both the 2010 and 2017 NEBS shelf bottom trawl surveys. For the more common fish species, there are also plots of abundance-at-

length comparing the 2010 and 2017 NEBS surveys. Tables provide estimates of bottom trawl survey biomass for most fishes and invertebrates, as well as estimates of population size for the most common fishes. Appendices provide station data, summarized catch data by station, listings of taxa, and detailed analyses of abundance and biological data of the sampled populations.

Between 2010 and 2017, there were noticeable changes in the benthic community of the NBS. Total CPUE values for many of the animals in the NBS shifted from being low in 2010 to being much higher in 2017. The total estimated animal biomass in the NBS increased from 3.0 million t in 2010 to 4.5 million t in 2017 driven primarily by increases in walleye pollock and Pacific cod. Major distributional shifts by these two species and others were likely in response to the warmer conditions resulting from diminished sea ice during the recent warm stanza that began in 2014. The dramatically different and unexpected results underscore the need for continuing NEBS surveys on a regular basis to learn more about the environmental variability and how fish and crab populations are responding to a dynamic and changing environment. Moreover, many of the design-based estimates of survey abundance currently used in Bering Sea and Aleutian Island (BSAI) stock assessments are biased because they do not account for the dynamic biological and physical process errors such as those readily apparent for pollock and Pacific cod in the NEBS surveys. Hence, new methods for model-based estimates of survey abundance that incorporate as well as propagate uncertainty in the stock assessment models are also needed.

INTRODUCTION

In 2017, the National Marine Fisheries Service's (NMFS) Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC) conducted two contiguous bottom trawl surveys on the Bering Sea continental shelf: the 2017 "Eastern Bering Sea" (EBS) survey was the 36th in an annual time series that began in 1982 (Conner and Lauth 2017), and the 2017 "Northern Bering Sea" (NBS) survey was conducted for only the second time since 2010 (Lauth 2011). Both bottom trawl surveys are mission critical to the AFSC because the results are critical to managing fisheries resources, monitoring the ecosystem, and providing a valuable data time-series for doing basic fisheries research. Fishery-independent abundance estimates and other biological and oceanographic information from Bering Sea bottom trawl surveys are used by the AFSC, North Pacific Fishery Management Council (NPFMC) and the Alaska Department of Fish and Game (ADF&G) to manage groundfish and crab stocks and to do ecosystem forecast modeling that are requirements of the Bering Sea and Aleutian Island (BSAI) Fishery Management Plan (FMP) established under the Magnuson-Stevens Fishery Conservation and Management Act.

Good management of fisheries resources and a healthy ecosystem are especially important to the Alaska Native communities as a way of life and to the tens of thousands of people who are employed by the Alaska fishing industry that generates billions of dollars for the U.S. economy.

History of Bering Sea Bottom Trawl Surveys

The Bering Sea continental shelf supports one of the most productive groundfish and crab fisheries in the world (Bakkala 1993). Groundfish such as walleye pollock (*Gadus chalcogrammus*), Pacific cod (*G. macrocephalus*) and yellowfin sole (*Limanda aspera*) 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. 2017). Commercial crab stocks include Tanner crab (*Chionoecetes bairdi*), snow crab (*C. opilio*), red king crab (*Paralithodes camtschaticus*), blue king crab (*P. platypus*), and hair crab (*Erimacrus isenbeckii*) (Lang et al. 2018).

The involvement of the U.S. government in Bering Sea bottom trawl surveys dates back to the 1940s when the work was exploratory prospecting 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. Bottom trawl surveys by the U.S. continued into the 1970s with private industry involvement to study the biology, distribution, abundance, and best fishing practices for red king crab (Zimmermann et al. 2009). The first large-scale systematic survey of the Bering Sea shelf was conducted in 1975 under contract from the U.S. Bureau of Land Management to collect baseline data for assessing the potential impact of the growth in the offshore oil industry on the development of Bering Sea groundfish and crab fishery resources (Pereyra et al. 1976). During the 1975 baseline survey, sampling was conducted over the 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 a 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 upper continental slope waters between St. Matthew and St. Lawrence islands.

Following the 1979 survey, annual bottom trawl surveys have essentially re-sampled the same areas and stations established during the 1975 survey, with slight modifications in sampling design each year. 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 in the Bering Sea slope survey from 1992 to 1999, it was resumed in 2002 as an independent bottom trawl survey series that is now conducted on a quasi-biennial basis dependent on funding (Hoff 2016).

The ongoing annual EBS shelf survey time series officially began in 1982 marked by the standardization of bottom trawl gear (Stauffer 2004), survey methods and a systematic design that included 356 stations (Bakkala 1993). Beginning in 1987, 20 new stations comprising Strata 82 and 90 (Fig. 1) were added to monitor more northerly distributions of snow crab and walleye pollock. The reason the EBS shelf region continues to be surveyed annually is because it encompasses major portions of the commercially exploited Bering Sea groundfish and crab populations that require management actions under the BSAI FMP.

The most comprehensive bottom trawl survey coverage of the Bering Sea in a single year was in 2010 when there were three surveys: 1) the continental slope (Hoff and Britt 2011), 2) the EBS shelf, and 3) the NBS (Lauth 2011; Fig. 1). The NBS survey consisted of 144 additional bottom trawl stations extending the EBS survey grid northward to the Bering Strait and the U.S.-Russia Maritime Boundary and also included all of Norton Sound and the Chirikov Basin (Fig. 1). The NBS survey was initiated by the AFSC as part of the Loss of Sea Ice (LOSI) Research Plan to study the impacts of diminished sea ice on the marine ecosystem (Hollowed et al. 2007). The objective of the LOSI Research Plan was to monitor long-term climate trends in the transition zone between the temperate waters of the eastern Bering Sea and the Arctic waters of the Chukchi

Sea where climate change can have a profound effect on physical and biological ecosystem processes (Hunt et al. 2011, Stevenson and Lauth 2012, Stabeno et al. 2012b, Stevenson and Lauth 2019).

LOSI funding of the NBS bottom trawl survey was discontinued the following year but was re-implemented 5 years later with a new budget plan for repeating the survey in 2017 and continuing it on a biennial basis (Sigler et al. 2015). With the changing environmental conditions in the EBS (see Ocean Conditions section below), it was becoming more critical to obtain an extended time series of snapshots that included both the EBS and NBS (hereafter, the combined areas will be referred to as the "NEBS") for longer-term monitoring of the demersal marine fauna in response to diminishing ice in both the Bering Sea and the Arctic Ocean.

In this document, we will compare the 2017 EBS survey results with those from the 2016 EBS survey (Conner and Lauth 2017) as well as with those from the NEBS survey conducted in 2010 (Lauth 2011). For survey results referenced from previous surveys herein, the reader should refer to the AFSC Technical Memoranda cited above.

METHODS

Survey Area and Sampling Design

The standardized annual bottom trawl survey of the EBS is based on a systematic design with 376 fixed sampling stations at the center of 37.04 × 37.04 km (20 × 20 nautical mile) grid squares (Fig. 1). In waters surrounding St. Matthew Island and the Pribilof Islands, high-density "corner stations" are sampled to better assess local blue king crab concentrations (Fig. 1). The 2017 NBS survey was a northward extension of the EBS systematic design consisting of 144 additional stations bounded by the U.S.-Russian Maritime Boundary, the Bering Strait, and Norton

Sound. To simplify the results and discussion from here forward, the terms “EBS” and “NBS” will be used to refer specifically to either the eastern or northern Bering Sea bottom trawl survey area, respectively, and “NEBS” will be used when referring to the combined EBS and NBS survey areas.

Survey Vessels and Sampling Gear

The 2017 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 specified 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 width 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 center to the seafloor. A custom-made AFSC bottom contact sensor (accelerometer) attached to the center of the footrope was used to determine tow duration based on footrope contact with the seafloor. Mean netspread values for estimating area swept for the tow duration were calculated according to the

methods described by Lauth and Kotwicki (2014).

During the EBS survey, the net mensuration system failed to record data for six tows on the FV *Vesteraalen* and nine tows on the FV *Alaska Knight*, and for the NBS survey it failed for two tows on each vessel. To estimate these missing net width values, the *mgcv* package in R (Wood 2004) was used to relate mean net width with the inverse scope (m) and mean net height (m) from valid tows based on the relationship investigated by Rose and Walters (1990):

Net width ~ Inverse scope + Height + Inverse scope * Height.

For the FV *Alaska Knight*, both predictor variables and their interaction were significant ($P < 0.001$). The resulting regression equations by survey were as follows:

EBS (n = 160)

Net width (m) = 27.372 – 1424.464 * Inverse scope – 3.659 * Net height +
451.441 * Inverse scope * Height,

NBS (n = 86)

Net width (m) = 25.421 – 853.054 * Inverse scope – 2.617 * Net height +
144.714 * Inverse scope * Height.

For the FV *Vesteraalen*, inverse scope and net height were significant ($P < 0.001$) but not their interaction term. The resulting regression equations by survey were as follows:

EBS (n = 224)

Net width (m) = 22.642 – 355.689 * Inverse scope – 1.619 * Net height

NBS (n = 54)

Net width (m) = 21.023 – 320.270 * Inverse scope – 1.312 * Net height.

These equations were subsequently used to estimate the respective net spread values for the 19 tows with missing net width values.

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 and averaged for the tow duration. Average bottom depth was calculated by adding the average net height to the average depth of the headrope.

EBS Sampling Logistics and Stratification Scheme

The FV *Vesteraalen* and FV *Alaska Knight* began the standard EBS shelf survey in Dutch Harbor, Alaska, on 3 June 2017. Trawl sampling began in eastern Bristol Bay and proceeded westward to the shelf edge (Fig. 2). The progression from east to west was established primarily in response to movements of yellowfin sole, which migrate eastward for spawning during the spring and summer months (Smith and Bakkala 1982). The FV *Alaska Knight* and FV *Vesteraalen* completed EBS survey operations on 31 July 2017 and began sampling in the NBS the following

day (see below). The FV Vesteraalen returned to Bristol Bay from 10 to 15 August 2017 where it resampled 20 EBS stations (Fig. 2). These stations had to be resampled because harvest recommendations for the red king crab fishery rely on an accurate estimate of molted females with extruded eggs. The molting and egg extrusion process was delayed due to the colder than average bottom temperatures when the stations were first sampled in June.

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 Island and the Pribilof Islands (Fig. 2). This stratification scheme reflects the differences observed in Bering Sea groundfish distribution across the oceanographic domains, and the intention of the design was to reduce the variance of population and biomass estimates (Bakkala 1993). The purpose of high-density sampling (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).

NBS Sampling Logistics and Stratification Scheme

The FV *Vesteraalen* and FV *Alaska Knight* began the standard NBS shelf survey on 1 August 2017 and completed sampling on 26 August 2017 after which both vessels returned to Dutch Harbor for offloading.

The NBS shelf was divided into three strata: one including the area north of St. Lawrence Island and Norton Sound and two others south of St. Lawrence Island separated by the 50-m isobath (Fig. 2). Sampling density was 1,367 km^2 /station for Stratum 70, 1,475 km^2 /station for Stratum 71, 1,370 km^2 /station for Stratum 81, and 1,410 km^2 /station for the total NBS (Table 1).

Catch Sampling Procedures

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

Samples were collected by trawling near the center of each grid square (or grid circle, 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 lbs) were entirely sorted and enumerated, while 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 the total catch. Fishes and invertebrates were identified and sorted to the lowest taxonomic level practicable.

Catch weights and numbers by taxon or taxonomic group were either estimated directly when subsampled, or estimated by extrapolating the proportion in the subsample to that of the entire catch weight. All Pacific halibut (*Hippoglossus stenolepis*) and commercial crab species were weighed and enumerated from each catch. Other selected species including Greenland turbot large skates, Pacific cod, sculpins, sharks, and octopus were also completely sorted from the catch in most 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 to fork length upon capture, 50% were randomly selected to receive a preopercule tag, after which the halibut were 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 in the field from 13 fish species in the EBS and 6 species in the NBS (Table 2a and 2b) and brought to the AFSC to be processed for age determination. In addition, up to 40 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 otolith extraction and age determination at the AFSC. For the other species, individual fish weights and lengths were collected for each fish from which age structures were taken. Pacific halibut otoliths were only collected aboard the FV *Vesteraalen* by the IPHC and were dried and stored without preservatives. Otoliths for all other groundfishes were preserved in 50% glycerol-thymol solution.

Depending on fish species, a length-stratified or a random sampling method was used for collecting otolith pairs in three different regions that included the southeast EBS, the northwest EBS, and the NBS. In all three regions, length-stratified samples were collected from Alaska plaice (*Pleuronectes quadrituberculatus*; 3/sex/cm/region) and yellowfin sole (5/sex/cm/region), and a random sample of up to four otolith pairs per station were collected from Pacific cod. In the two

EBS regions only, length-stratified samples were collected from northern rock sole (3/sex/cm/region), Greenland turbot (*Reinhardtius hippoglossoides*; 3 cm/sex/region), and Kamchatka flounder (*Atheresthes evermanni*; 2/cm/sex/region). Also within the two EBS regions, random collections of up to three otolith pairs per station were taken from flathead sole (*Hippoglossoides elassodon*) and arrowtooth flounder (*A. stomias*) and up to six otolith pairs were taken from both great (*Myoxocephalus polyacanthocephalus*) and plain sculpins (*M. jaok*). There was also a request to sample otolith pairs combined with a tissue sample from 90 shorthorn sculpin (*M. scorpius*) in either region of the EBS and another 86 from the NBS.

Sampling for walleye pollock otoliths was done randomly in all three regions at each station in which the total number of walleye pollock in a catch sample was greater than 19. The survey area was also divided into low- and high-density strata based on historical density and an isobath of approximately 70 m. Five pairs of otoliths were collected in the high-density stratum and three in low-density stratum. Additionally, if juvenile walleye pollock (< 20 cm) were present in a sample, one additional pair of otoliths was taken from a randomly selected juvenile.

Catch Data Analysis

Trawl survey catch data were used to derive design-based estimates of 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 see Wakabayashi et al. 1985). Some species were combined into taxon groups for catch data analysis because of their limited commercial value or uncertain identification (Stevenson and Hoff 2009).

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 over ground for the tow duration multiplied by the mean net width (Alverson and Pereyra 1969, Lauth and Kotwicki 2014). Mean CPUE values were calculated for individual strata and for the overall survey area. Design-based biomass and population estimates were derived for each stratum by multiplying the stratum mean CPUE by the stratum area. Stratum totals were then summed to produce estimates for each of the strata and for the total survey area in the EBS and NBS.

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

Except for Pacific halibut, otolith samples collected during the survey were read for age estimates by staff of the Age and Growth Program of the AFSC's Resource Ecology and Fisheries Management (REFM) Division. The most current information about age, growth, and population analyses are presented in the 2017 NPFMC Stock Assessment and Fishery Evaluation Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Region (NPFMC 2017).

Additional Research Projects

In addition to standard survey operations, 33 research projects were undertaken in the EBS (Table 3a) and 32 research projects were undertaken in the NBS during 2017 (Tables 3b). A solicitation for research proposals was issued on 13 January 2017. 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 2017, while many continued multi-year observations of supplementary data. Data for additional research projects were collected at sea and disseminated to the requesting principal investigator(s). To acquire the details about a special project or collection, please contact the investigator(s) designated in Table 3.

RESULTS AND DISCUSSION

A total of 376 EBS stations and 144 NBS stations were successfully sampled in 2017 (Fig. 2). Summarized haul and raw catch sample data for successfully trawled stations used in the analyses are listed in Appendix A by vessel along with date, time, start and end positions, mean bottom depth, tow duration, distance fished over ground, mean net width, and trawl performance.

Ocean Conditions

Sea surface temperatures recorded during the combined 2017 NEBS survey ranged from 2.1° to 14.1° C and bottom temperatures ranged from –1.6° to 13.4° C . The mean sea surface temperature for the EBS alone was 7.8° C (Fig. 4), which was 1.6° C lower than 2016 and 1.2° C

above the time-series mean (6.6° C). In the EBS south of 60° N, surface temperatures increased from east to west across the shelf, and in the NBS they were generally higher and above 10° C in Norton Sound (Fig. 5).

During the 36-year time series (1982–2017) of the annual EBS shelf bottom trawl survey, mean summer bottom temperatures were highly variable, ranging from a low of 0.8° C to a high of 4.5° C, with a grand mean for all years of 2.5° C (Fig. 4). The mean survey bottom temperature for the EBS in 2017 was 2.8° C (Fig. 4), a warmer than average year considering it was 0.3° C above the time-series mean.

During the last 16 years, 2006 – 2013 (Fig. 6a) were colder than average ("cold stanza"), and 2002 – 2005 and 2014 – 2017 (Fig. 6b) were warmer than average ("warm stanza"). The highly variable survey bottom temperatures in the EBS shelf are related to the area occupied by the summer cold pool (Fig. 7), defined by the extent of bottom temperatures below 2° C. Over the period of the 36-year time series, the areal coverage of the summer survey cold pool varied in size from 48,000 to 394,000 km^2, occupying from 10% to 80% of EBS shelf area (Fig. 7).

The size of the cold pool each summer depends on sea ice coverage from the previous winter, the timing of its retreat during the spring and early summer as well as other oceanographic and meteorological conditions (Wyllie-Echeverria and Wooster 1998). During the coldest years, sea ice extended farther south and lasted later into spring resulting in cold pools that extended farther south down the middle domain into Bristol Bay and near the Alaska Peninsula (Fig. 6a). Interannual variability in the dynamics of seasonal ice is a major environmental driver on the Bering Sea shelf (Stabeno et al. 2001, 2012a, b) that can change recruitment and migration patterns and cause major distributional shifts in groundfishes and crabs (Kotwicki and Lauth 2013, Nichol et al. 2019, Stevenson and Lauth 2019).

The 2010 and 2017 NEBS surveys provided a synoptic view of the spatial pattern of bottom temperatures across the entire NEBS shelf allowing comparisons of annual differences in demersal fauna distribution patterns and investigations of potential annual differences in fish migration pathways. The 2010 cold pool was composed of colder water that occupied 56% of the EBS shelf survey area (Fig. 7) with < 1° C bottom temperatures extending north of St. Lawrence Island into Chirikov Basin, east to Nunivak Island, and south to the Alaska Peninsula (Fig. 6a). Such a large wedge of cold water in the middle of the EBS can restrict marine fauna from moving east-west across the shelf or north-south along the inner domain.

The 2017 cold pool occupied a much smaller percentage of the EBS shelf area (34%) than in 2010 (Fig. 7) and it was punctuated by a large gap halfway down the middle domain and along the Alaska Peninsula where bottom temperatures were between 1° C and 3° C (Fig. 6b). In 2017, there were also warmer bottom temperatures along the inner domain from Bristol Bay (> 4° C) to Chirikov Basin (> 6° C) compared to 2010 when < 1° C bottom temperatures butted against the west side of Nunivak Island (Fig. 6a). Warmer bottom temperatures along the inner domain and in the gaps across the middle domain and north of the peninsula in 2017 were potential corridors for north-south and east-west movement of demersal marine fauna. Warmer bottom temperatures along most of the inner domain and around Nunivak Island from 2014 to 2016 and from 2002 to 2005 may have also increased opportunities for northward movement (Fig. 6a and 6b).

Survey Data and Specimen Collections

From the combined EBS (Tables 2a) and NBS (Table 2b) trawl surveys, a total of 207,433 individual length measurements representing 42 taxa were collected. Additional collections (see Table 3 for list of projects) included 9,952 age structures (otoliths) from 13 fish taxa, 6,926

stomach samples from 15 fish taxa, 838 fecundity and maturity (ovaries) samples from two fish taxa, 567 genetic samples from six different fish and invertebrate taxa, and 1,210 pathobiology (blood) samples from two different crab taxa.

Species Composition

A total of 107 fish species representing 20 families and 65 genera were identified from catch samples taken in the combined EBS (Appendix B1) and NBS (Appendix B2) survey areas. The EBS had a total of 86 fish species, 42 of which did not occur in the NBS (Table 4). In comparison, the NBS had 65 total fish species, 21 of which did not occur in the EBS (Table 4). Seven of the 21 species observed in the NBS during 2017 (Table 4) are only documented north of 60° N (Mecklenburg et al. 2002). Four flatfish species that were present in the EBS were absent from the NBS including arrowtooth flounder, butter sole (*Isopsetta isolepis*), rex sole (*Glyptocephalus zachirus*) and southern rock sole (Table 4). One flatfish species, the Arctic flounder (*Liopsetta glacialis*), was only present in the NBS.

A total of 305 different invertebrate taxa representing 12 phyla were identified in the combined catch samples taken from the EBS (Appendix B3) and NBS (Appendix B4). The EBS had a total of 259 taxa of which 154 were identified to the species level, and the NBS had a total of 187 taxa of which 111 were identified to the species level. The remaining 40% of invertebrate taxa in each survey area were identified to the genus level or higher. The lack of species level identifications among invertebrates was due to a variety of factors that are outlined in Stevenson and Hoff (2009).

Biomass of Major Taxa and Taxonomic Groups

The total estimated demersal animal biomass of the EBS shelf was 16.3 million metric tons (t) in both 2017 and 2016, and 15.6 million t in 2010, and consisted of about 75% fishes and 25% invertebrates by weight for all three years. For all three years the majority of fish biomass in the EBS consisted of Pleuronectids (47-54%) and gadids (40-46%), whereas the majority of invertebrate biomass consisted of sea stars (31-35%) and crustaceans (20-23%) (Tables 5 and 6).

Between 2010 and 2017, there were noticeable changes in the benthic community of the NBS (Table 7). Total CPUE values for the NBS were lower than for the EBS in 2010 but shifted to higher than the EBS in 2017 (Stevenson and Lauth 2019). The total estimated biomass in the NBS increased from 3.0 million t in 2010 to 4.5 million t in 2017 driven primarily by increases in walleye pollock (1.3 million t) and Pacific cod (254 thousand t). Other taxa that significantly increased included jellyfishes (405%), sea urchins (233%), blue king crab (199%), shorthorn sculpin (185%), and northern rock sole (162%; Table 7). Large decreases in biomass were observed for Arctic cod (-90%), tunicates (-72%), smelts (-69%), basket seastars (-45%), brittle stars (-42%), corals (-32%), snow crab (-30%), Pacific halibut (-22%), saffron cod (-17%), and red king crab (-8%). Although there were large percentage increases in biomass for many invertebrate taxa, there was relatively little change in the combined total biomass of invertebrates (-0.2 million t) compared to 2010 (Table 6a).

In general, the observed trends of a declining ratio of fish-invertebrate biomass with increasing latitude in the Bering Sea has been documented and discussed (Stevenson and Lauth 2012). In the southernmost stations, fishes typically comprise > 75% of the trawl-caught biomass, while in the northernmost stations fishes comprise < 50% of the total biomass (Stevenson and

Lauth 2012). Walleye pollock and Pacific cod are mobile species that respond to changes in the Bering Sea cold pool (Kotwicki and Lauth 2013) and the large NBS biomass increase in 2017 was likely due to the adults migrating northward in response to the warmer conditions and perhaps enabled by a smaller and less restrictive cold pool (Stevenson and Lauth 2019).

Maps of geographic distribution, plots of size composition, and estimates of mean survey CPUE (by weight and number), biomass and population numbers are presented for principal species in Figures 8-29 and Tables 8-18. Principal species include: walleye pollock, Pacific cod, yellowfin sole, northern rock sole, flathead sole, Bering flounder (*Hippoglossoides robustus*), Alaska plaice, Greenland turbot, arrowtooth flounder, Kamchatka flounder, and Pacific halibut. To highlight cold and warm year differences, contour maps of pollock and Pacific cod distributions were made for the years 2002-2017 (in a format similar to the bottom temperature plots in Fig. 6). For all principal species above, size composition plots with results from both the 2010 and 2017 EBS and NBS surveys were included for comparison. Tables with estimates of survey CPUE, biomass and population number are only presented for 2017. Appendix C contains population estimates by sex and size class for all 11 of the principal fish species.

Summary of Results for Selected Major Eastern and Northern Bering Sea Fish Fauna

The 2010 and 2017 NEBS surveys provide data that allows contrast of demersal macrofauna distributions between a cold year (2010) and a warm year (2017) for a large spatial area. Although the extended survey area is limited to two years, the contrasting snapshots show how demersal fauna respond to cold and warm stanzas and subsequent differences in cold pool size. In general, comparisons of size composition and patterns of distribution and relative abundance from the 2010 and 2017 NEBS surveys varied dramatically for many demersal fauna,

most notably for walleye pollock and Pacific cod (see below). Some of the major distributional shifts likely resulted from fish movements in response to the warmer conditions caused by lower than average winter sea ice beginning in 2014.

For design-based survey estimates of abundance to be unbiased, a major assumption is that the species are fully or at least consistently available to the survey, that the survey area encapsulates the entire stock or population, or at least a relatively constant proportion of the stock or population over time (Francis et al. 2003). The 2010 and 2017 NEBS surveys made it clear that this basic assumption was not necessarily true for the standard EBS shelf bottom trawl survey because large numbers of both walleye pollock and Pacific cod had apparently moved from the EBS into the NBS during the more recent warm stanza. Other temperature-mediated shifts, also causing disproportionate survey availability, have recently been investigated for yellowfin sole in the EBS (Nichol et al. 2019) and for northern rock sole in the NBS (Stevenson and Lauth 2019).

Varying spatial availability of demersal fauna to the standard EBS shelf bottom trawl survey is a large potential source of bias in the design-based survey estimates of abundance and variance used in BSAI stock assessments. Continued NEBS surveys will be necessary to capture the variability in biological and environmental processes inherent in the system and determine if recent observations are anomalous or if the ecosystem is trending in an entirely new direction due to climate change. It will also be necessary to develop new methods for model-based estimates of abundance that use the temporal-spatial variability and other environmental data in existing survey data sets.

Walleye Pollock (*Gadus chalcogrammus*)

Spatial patterns of pollock distribution during the summer trawl survey have varied considerably in response to cold (Fig. 8a) and warm (Fig. 8b) stanzas. During the colder years, 2006 to 2013, when the cold pool extended further down the middle domain (Fig. 6a), the highest densities of pollock were shoaled along the outer half of the EBS shelf (> 70 m) and the lowest densities of pollock were along the inner half of the shelf, as well as throughout the NBS when it was first surveyed in 2010 (Fig. 8a). Since 2014 and during the warm stanza from 2002 to 2005, pollock were more spread out across the shelf compared to cold stanza with high densities sometimes reaching into the inner domain close to Nunivak Island and up against the northern edge of the standard EBS survey area (Fig. 8b). These distribution patterns are consistent with shoreward and northward feeding migrations typical of pollock during the spring and summer (Kotwicki et al. 2005).

In 2017, pollock biomass in the EBS was concentrated in the middle domain, from the Alaska Peninsula to St. Matthew Island, with additional clusters in the outer domain to the south, west, and north of the Pribilof Islands (Fig. 8b). In the NBS, pollock biomass increased from 0.02 million t in 2010 to 1.3 million t in 2017 (Table 8b) with high concentrations of pollock straddling the 50 m depth contour adjacent to the northern edge of the standard survey area and north of St. Lawrence Island in Chirikov Basin (Fig. 8b). Since 2002, the EBS shelf survey biomass estimate for walleye pollock has varied dramatically with estimates near or below the time-series mean (4.8 million t) for all years except 2003 (8.4 million t), 2014 (7.4 million t) and 2015 (6.4 million t).

The 2017 pollock biomass estimate of 4.8 million t was equivalent to the long-term mean (Table 8a) and the total estimated abundance of EBS shelf pollock was the same as 2016

(8.5 billion; Table 8b) with a majority of the 2017 surveyed population in the 15-65 cm size range having modes at 10-15 cm and 40-45 cm (Fig. 9).

The size range and modes of NBS pollock in 2017 was nearly identical to the EBS (Fig. 9). This contrasted with the 2010 survey when the size composition of EBS pollock was very different than the NBS. The EBS size range in 2010 had a similar size range to 2017 (Fig. 9) but the NBS population of pollock were mostly very small (< 20 cm) and relatively few very large (> 70 cm) pollock. The nearly identical size compositions in 2017 strongly suggest that the NBS pollock migrated from the EBS.

The vertical availability of pollock to the survey trawl depends on environmental factors and can be affected by bottom depth, light conditions, fish size, and fish density (Kotwicki et al. 2014, Kotwicki et al. 2015). Pollock in the 20-35 cm size range representing 2-3 year-olds are generally absent or in low abundance from survey catch samples (Fig. 8) because they typically occupy a position much higher in the water column where they are unavailable to the survey trawl (Kotwicki et al. 2015).

Pacific Cod (*Gadus macrocephalus*)

Similar to walleye pollock, Pacific cod are a highly mobile, semi-pelagic fish whose spatial distribution can vary considerably with bottom temperature and their abundance (Kotwicki and Lauth 2013). During the cold stanza, Pacific cod were generally absent from the upper middle domain and shoaled along the perimeter of the cold pool where bottom temperatures were > 0° C (Fig. 10a). During the cold stanza in 2010, Pacific cod were caught at 44% of the NBS stations and densities were relatively low compared to the warm stanza in 2017 when Pacific cod were caught at 78% of the NBS stations with areas of very high density in the Chirikov Basin and just south of

St. Lawrence Island (Fig. 10b). During the first warm stanza from 2002 to 2005, the highest densities of Pacific cod were in the upper half of the EBS survey area surrounding the Pribilof and St. Matthew islands and the lowest densities were in the southeastern EBS (Fig. 10b). A similar pattern in the EBS was observed in 2017; however, 2017 was preceded by three warm years when Pacific cod abundance and biomass were relatively high and there were large aggregations in the middle and inner domains very close to the northern border between the EBS and NBS survey areas (Fig. 10b). During the latter warm stanza, higher than average bottom temperatures in the southeastern shelf created thermal corridors (between 1° and 6° C) for Pacific cod to move into the middle and inner domains where they can feed on capelin (Ciannelli and Bailey 2005). Forage fish species such as capelin, herring, and smelt were found in high density in the inner domain (see Figs. 48 to 50).

There was a dramatic change in the estimates of survey biomass and abundance-at-length that accompanied the northerly shift in Pacific cod distribution observed in the 2017 NEBS survey. In 2010, the EBS shelf biomass was 0.87 million t and consisted of a population of 896 billion Pacific cod (Table 9a and 9b) with a size composition having several strong size modes in the 15 to 70 cm range (Fig. 11). The 2010 NBS biomass was comparatively much lower at 0.03 million t and consisted of a population of 9 million cod with only small and large but no intermediate-sizes (40-60 cm; Fig. 11).

From 2010 to 2016, the estimated survey biomass and abundance of Pacific cod in the EBS shelf continued to increase reaching maximums of 1.1 million t (2014-15) and 1.1 trillion cod (2014), but then in 2017, both biomass and abundance sharply declined to 0.64 million t and 364 billion cod. This sudden decline in the EBS biomass was accompanied by an order of magnitude increase in the NBS survey biomass (0.3 million t) and abundance (133 million)

compared to 2010. Moreover, unlike 2010, the NBS population had almost an identical size composition to that of the EBS (Fig. 11). The decreasing Pacific cod abundance in the EBS with the concomitant increase of the same-sized Pacific cod in the adjacent NBS was likely a result of migration from the EBS (Stevenson and Lauth 2019). These migrations to the NBS were likely already taking place prior to 2017 given there were high densities of Pacific cod observed along the northern edge of the EBS survey area during 2014-2016. Also conceivable is that there was a migration from the EBS to the NBS during the earlier warm stanza and that the large-sized Pacific cod observed in the 2010 NBS survey were the stragglers from 2002 to 2005.

Yellowfin Sole (*Limanda aspera*)

Yellowfin sole is a target of the largest commercial flatfish fishery (Wilderbuer et al. 2018) and it has the highest biomass of all flatfish species in the NEBS (Tables 5a and 6a). The population was distributed up and down the inner and middle domain of the Bering Sea between Norton Sound and the Alaska Peninsula (Fig. 12) and shoaled more towards the inner domain during the cold year in 2010 (Fig. 12) compared to the warm year in 2017 (Fig. 12). The total estimated survey biomass in the EBS was 2.8 million t in 2017 (Table 10a), which was similar to 2016 (2.9 million t) and a 17% increase since 2010 (2.4 million t). The NBS proportion of yellowfin biomass within the NEBS was about the same in 2017 (13%) as it was in 2010 (15%). The estimated 2017 survey abundance of EBS yellowfin sole was 9.7 billion sole which was an 11% increase since 2016 (8.8 billion) and a 4% decrease since 2010 (10.1 billion). The 2010 and 2017 NEBS size compositions had prevalent size modes of yellowfin sole at 10-25 cm and 30-40 cm with a higher proportion of smaller yellowfin sole in the NBS and a higher proportion of the larger ones in the EBS (Fig. 13).

The cross-shelf distribution of yellowfin and the availability of sexually mature males and females to the summer bottom trawl survey varies from year-to-year because of temperature-mediated differences in their spring-summer spawning migration into the shallow waters (Nichol et al. 2019) where most spawning activity occurs at bottom depths < 30 m (Nichol 1995) and where the bottom trawl survey does not sample. Size segregation among spawning and non-spawning portions of the population can also affect the spatial distribution of yellowfin sole (Nichol et al. 2019) because length or age at sexual maturity differs for males and females (Nichol 1998) and sexually immature individuals undergo a gradual (multi-year) ontogenetic migration away from nearshore that differs from the annual spawning migrations of mature individuals (Nichol 1997). Interannual differences in the proportion of the yellowfin sole population that is available to the EBS survey, as well as the sex and size composition of the population that is available, can bias survey estimates. Bottom temperature and the survey start date are both used in the stock assessment model to adjust the catchability (q) parameter (Nichol et al. 2019).

Northern Rock Sole (*Lepidopsetta polyxystra*)

Spawning and feeding migrations for rock sole are poorly understood, but in general, it is believed that rock sole use active tidal stream transport during nighttime hours (Nichol and Somerton 2009) to migrate from shallow summer feeding grounds to deep winter and spring spawning grounds (Fadeev 1965, Shubnikov and Lisovenko 1964). Northern rock sole are affected by bottom temperatures < 1° C and are typically distributed more southwest during colder years (Spencer 2008; Kotwicki and Lauth 2013). In 2010 and 2017, the highest densities of northern rock sole were observed in the southeast portion of the inner domain, in the vicinity of Pribilof and St. Matthew Islands, and along the Alaska Peninsula (Fig. 14). Relatively low densities of northern

rock sole were observed where bottom temperatures were < 1° C (Fig. 6) in the middle and outer domains (Fig. 14). In 2010 when the cold pool was large and touched the western tip of Nunivak Island (Fig. 6a), the highest concentrations of rock sole were in the southwest EBS shelf (Fig. 14). In 2017 when bottom temperatures along the inner domain were much higher and there was an area halfway down the middle domain where bottom temperatures were > 1° C (Fig. 6b), there were high densities of rock sole farther north around Nunivak Island and southeast of St. Lawrence Island.

Survey estimates of northern rock sole biomass and population in the EBS have undergone a gradual decline between 2010 (2.1 million t and 9.3 billion) and 2017 (1.3 million t and 5.3 billion; Tables 11a and 11b). In contrast, biomass and population have increased in the NBS from 2010 (21 thousand t and 41 million) to 2017 (54 thousand t and 318 million; Tables 11a and 11b). This large increase in the NBS was primarily due to the presence of small 2-3 year-old northern rock sole at sizes 12-14 cm (Wilderbuer et al. 2018; Fig. 15) in the inner domain (Fig. 14). This large number of juvenile rock sole in the NBS may represent recruitment during the most recent warm stanza starting in 2014 (Stevenson and Lauth 2019). Warmer bottom temperatures during the settlement phase are correlated with more northerly spatial distributions of 2-3 year-old rock sole (Cooper and Nichol 2016), thus the warmer temperatures in the inner domain observed from 2014 to 2016 may have been favorable to settlement and recruitment into the NBS. The warmer bottom temperatures and successful recruitment of northern rock sole to the NBS may be an indication that the population is expanding northward.

Flathead Sole (*Hippoglossoides elassodon*)

Flathead sole and Bering flounder are congeners and they are difficult to distinguish from each other based on morphology. Consequently, the accuracy of their identification in the commercial fishery data is unknown, thus the two species are combined into a single stock assessment by the NPFMC (McGilliard et al. 2018). In contrast, bottom trawl survey scientists are trained to make reliable field identifications for flathead sole and Bering flounder; hence, results here are presented by species. Despite belonging to the same genus and having a similar appearance, the two species have differing geographic distributions, although they do co-occur (Fig. 16; compare with Bering flounder below Fig. 18). In 2017, flathead sole were present at 76% of the EBS stations and 1% of the NBS stations and the highest catch rates were at depths below 70 m on the western half of the EBS shelf with higher densities in slightly shallower water in 2017 (Fig. 16). The estimated EBS biomass was 0.54 million t (Table 12a) and EBS population number was 2.1 billion sole (Table 12b), both increases from 2016 (0.44 million t, 1.6 billion) and 2010 (0.49 million t, 1.6 billion). A similar size range of flathead sole (10-50 cm) was observed during both NEBS surveys although there was a greater abundance of smaller flathead sole in 2017 (< 25 cm) compared to 2010 (Fig. 17).

Bering Flounder (*Hippoglossoides robustus*)

Bering flounder were most concentrated in the northwest corner of the survey area at the U.S. – Russia Maritime Boundary where bottom temperatures were below 0° C (Figs. 6, 18). Bering flounder were present at 21% of the EBS stations and 66% of the NBS stations. The total estimated biomass for the NEBS in 2017 was 48,186 t (Table 13a) and the total population number

was 363 million fish (Table 13b). More than half of the total NEBS population of Bering flounder occurred in the NBS during both 2010 (52%) and 2017 (66%), however, the percentage of total NEBS biomass decreased from 51% in 2010 to 43% in 2017 because the Bering flounder in the NBS were much smaller (18.4 cm) on average (i.e., less weight) compared to those in the EBS (26.2 cm; Table 13; Fig. 19).

Alaska Plaice (*Pleuronectes quadrituberculatus*)

Alaska plaice were distributed in a north-south band near the 50 m isobath for the entire length of the NEBS shelf (Fig. 20). Comparing the 2010 and 2017 plots of bottom temperature (Fig. 6) and distribution (Fig. 20), the highest densities of Alaska plaice in the NBS remained at < 50 m during both years but their distribution shifted farther offshore in the EBS during the warm stanza in 2017 avoiding bottom temperatures > 6° C in the inner domain. The summer distribution of > 50 m is probably not as affected by variations in the size or extent of the cold pool in the middle domain because Alaska plaice are capable of synthesizing an antifreeze glycoprotein to prevent ice crystal formation in their blood; hence, they are well-adapted to sea water temperatures near the freezing point (-1.9° C; Knight et al. 1991). Survey data show that distributional shifts of Alaska plaice related to variability in the seasonal cold pool are predominantly east-west between the inner and middle domains rather than north-south between the NBS and EBS.

In 2017, the total estimated biomass and population of Alaska plaice (Table 14a and 14b) in the NBS was 40% of the total NEBS biomass (0.82 million t) and 43% of the total NEBS population (1.2 billion fish). In 2010, Alaska plaice in the NBS comprised 38% of both the total NEBS biomass (0.80 million t) and population (1.5 billion). A large proportion of the Alaska plaice population obviously resides in the NBS where we have completed only two synoptic

surveys. In order to determine whether the NBS proportion is relatively constant over time or whether it varies to a much greater extent due to environmental variability, the AFSC will need to conduct synoptic NEBS surveys on a more regular basis. The total estimated biomass and population of Alaska plaice within the EBS have both been below long-term means of 0.51 million t and 818 million plaice since 2013. Survey estimates for 2017 were 0.49 million t (Table 14a) and 666 million plaice (Table 14b). Survey population estimates for the EBS were generally above or near the long-term mean during the cold stanza (mean 14%, sdev 11%, range -2% to 27%) and below the long-term mean during the two warm stanza periods (mean -21%, sdev 9%, range -8% to -37%).

Although the 2010 and 2017 NEBS survey biomass estimates were similar, the 2010 population estimate was 0.3 billion greater than 2017, a result of greater recruitment of smaller individuals < 30 cm (Fig. 21). The mean size of Alaska plaice was about 3 cm greater in 2017 compared to 2010, and plaice from the EBS were on average 2-3 cm longer compared to those in the NBS (Fig. 21). Alaska plaice are sexually dimorphic and females can attain a maximum length about 10 cm greater than males (Fig. 21). In addition, the size and sex composition of Alaska plaice varies by depth in the EBS (Zhang et al. 1998) with males more prevalent in the inner domain and females more prevalent in the middle and outer domains increasing in average size with depth.

Greenland Turbot (*Reinhardtius hippoglossoides*)

Greenland turbot are typically most abundant on the upper continental slope outside of the standard EBS survey area, although juveniles may spend several years on the continental shelf before moving to deeper water (Sohn et al. 2010).

Greenland turbot were caught at 18% of the EBS stations and 2% of the NBS stations and were distributed primarily in the northwest part of the middle and outer domains (Fig. 22). The 2017 Greenland turbot biomass estimates decreased slightly from 22,429 t in 2016 to 21,519 t (Table 15a), and the 2017 population estimate decreased from 14.1 million in 2016 to 10.5 million (Table 15b). In 2010, a strong year class was observed as 12-16 cm juveniles (Fig. 23), and this cohort has been observed in subsequent years as it was recruited to the fishery. The order of magnitude decrease in estimated population since 2010 can be attributed in part to the ontogenetic movement of this year class out of the survey area and into the upper continental slope waters (Alton et al. 1988).

Arrowtooth Flounder (*Atheresthes stomias*)

Arrowtooth flounder is generally a deeper water species, and while they primarily occupy the shelf waters until age 4, as individuals mature they begin to recruit to the upper continental slope waters (Spies et al. 2018). Thus, the shelf survey estimates are not synoptically inclusive of the entire population. As expected, arrowtooth flounder were absent from the NBS because they prefer deeper waters, as indicated by their distributions in the EBS where 99% of the total estimated biomass occurs in the middle and outer domains (Fig. 24; Table 16a). Arrowtooth flounder were more confined to the outer domain in 2010 when there was a large cold pool (Figs. 6a, 24). Both the total estimated biomass and population decreased by 11% from 2016 to 2017 (Tables 16a, 16b). As with all previous years, the females outnumbered males, at a rate of 2:1, with females attaining larger average sizes (Fig. 25). This skewness in sex ratio has been attributed to sex-specific differences in natural mortality rates, but the issue requires further research (Zimmermann and Goddard 1996; Spies et al. 2018).

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 bottom trawl surveys. The distribution of Kamchatka flounder (Fig. 26) was similar to that of arrowtooth flounder (Fig. 24), although Kamchatka flounder were much less abundant. From 2016 to 2017, the Kamchatka flounder biomass estimate decreased by 13% to 48,084 t (Table 17a) and the population estimate decreased by 11% to 111 million (Table 17b). Unlike arrowtooth flounder, the Kamchatka flounder sex ratio was roughly 1:1 (Fig. 27).

Pacific Halibut (*Hippoglossus stenolepis*)

Pacific halibut were widely distributed across the shelf and were collected at 53% of the stations sampled in the NEBS. The highest density catches in the EBS in both 2010 and 2017 were near the Pribilof and Nunivak islands and along the Alaska Peninsula (Fig. 28). In the NBS, Pacific halibut were found along the eastern half of the inner domain where bottom water temperatures were > 6° C (Figs. 6 and 28).

From 2016 to 2017, the Pacific halibut biomass estimate within the EBS survey area decreased from 153,704 t to 126,684 t (Table 18a) and the population estimate decreased from 66 million to 53 million (Table 18b). Compared to 2010, the Pacific halibut biomass within the NEBS decreased from 218,862 t to 144,799 t (Table 18a) and the population decreased from 115 million to 58 million (Table 18b). The size composition in 2010 was bimodal with a mean length of 54.4 cm and in 2017 there were several modes with a slightly lower mean size of 53.7 cm

(Fig. 29). The abundance-at-length data is categorized as unsexed because the gender of a majority of halibut caught were not assessed so that these animals could be returned to the sea alive.

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 United States 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).

Biomass, Abundance, Distribution and CPUE of Other Fish Taxa

Total biomass and population size during 2017 were estimated for an additional 25 fish species that were common in either the EBS and NBS or both (Tables 19, 20). For each fish taxon there is also a corresponding map showing their geographic distribution and relative abundance during both 2010 and 2017 (Figs. 30 to 54).

Spatial Distribution of Selected Invertebrates

Plots of distribution for seven major invertebrate taxa are presented in Figures 55 to 61 including the purple sea star (*Asterias amurensis*), northern neptune snail (*Neptunea heros*), jellyfishes (*Scyphozoa*), red king crab (*Paralithodes camtschaticus*), blue king crab (*P. platypus*), snow crab (*Chionoecetes opilio*), and Tanner crab (*C. bairdi*). These last four plots are the major commercial crab species in Alaska. Commercial crab stocks are managed by the ADF&G with federal oversight by NMFS. For more detailed information on bottom trawl survey results for commercial crab refer to Lang et al. (2018), and for the most recent modeling data on the status of

these commercial crab stocks, refer to the annual Stock Assessment and Fishery Evaluation report prepared by the NPFMC.

An interactive map of CPUE by species overlaid with temperature data for the 2017 EBS and NBS surveys, as well as all for other AFSC bottom trawls surveys, can be found at https://www.afsc.noaa.gov/RACE/groundfish/survey_data/default.htm. The CPUE data with associated station information that includes position, surface and bottom temperatures, and bottom depth can be downloaded from https://www.fisheries.noaa.gov/alaska/commercial-fishing/alaska-groundfish-bottom-trawl-survey-data.

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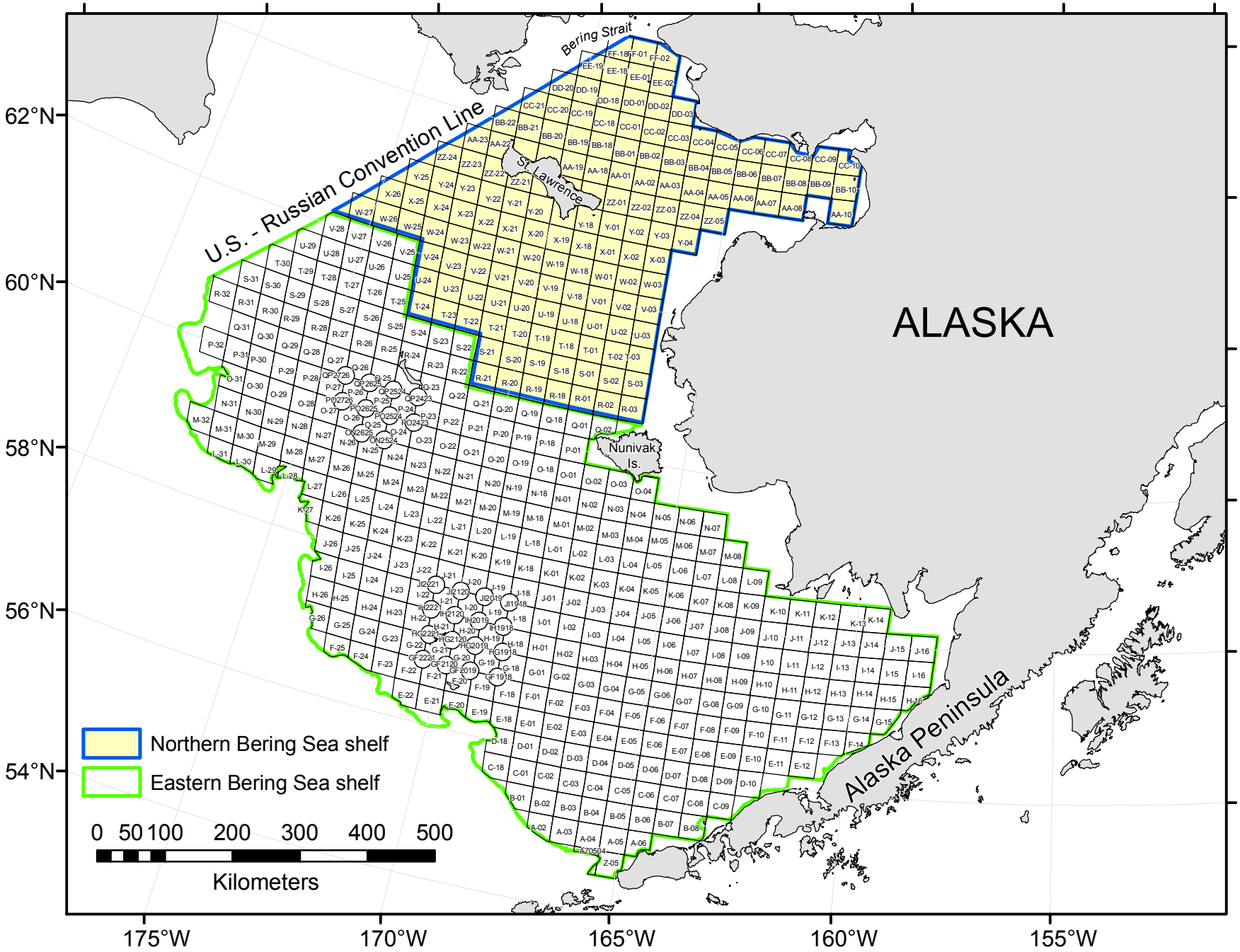

Figure 1. -- Sampling grid and station identifiers for the 2017 eastern and northern Bering Sea continental shelf bottom trawl surveys.

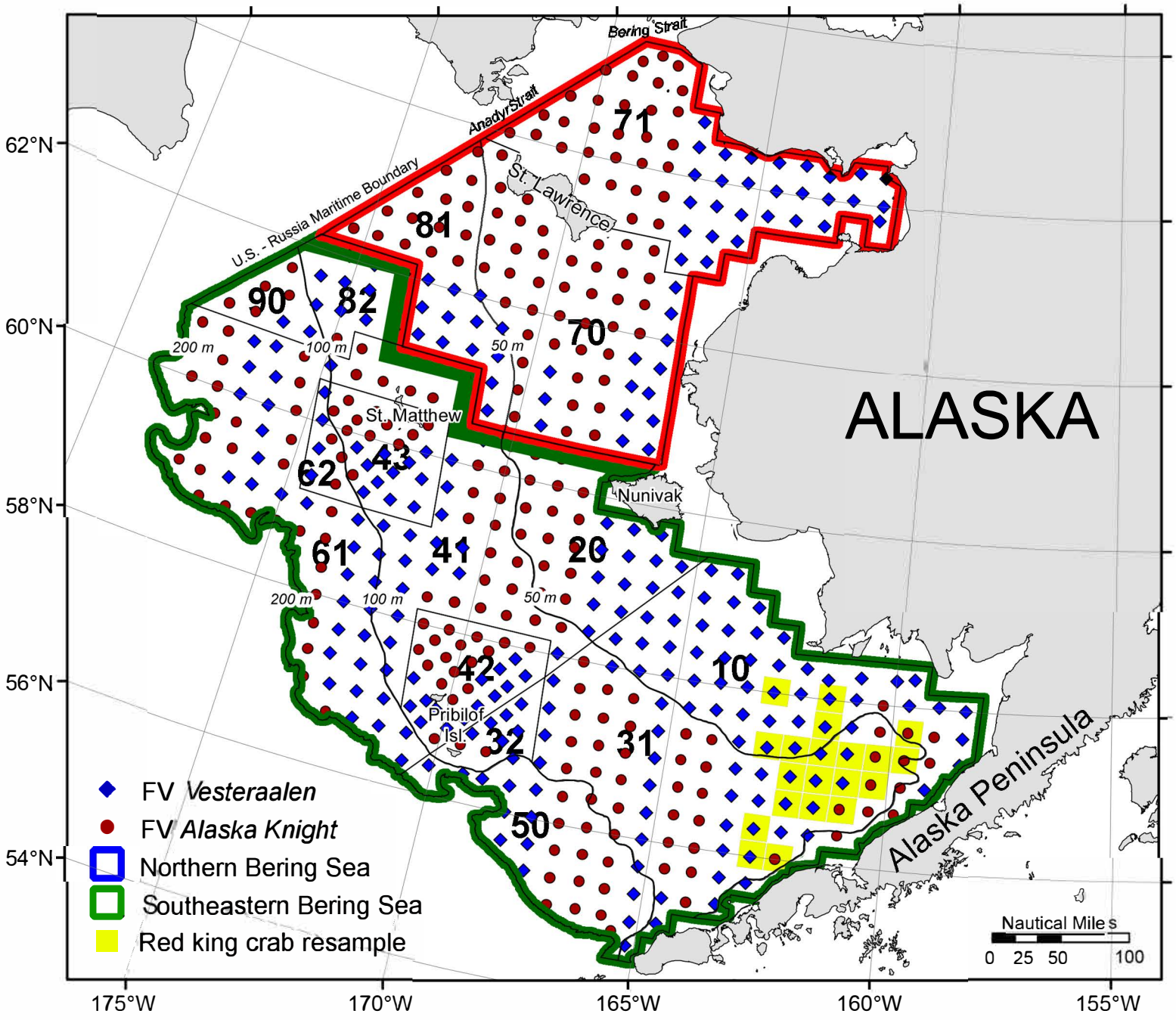

Figure 2. -- Sampled survey stations by vessel and the stratification scheme used for data analysis of the 2017 eastern and northern Bering Sea continental shelf bottom trawl surveys.

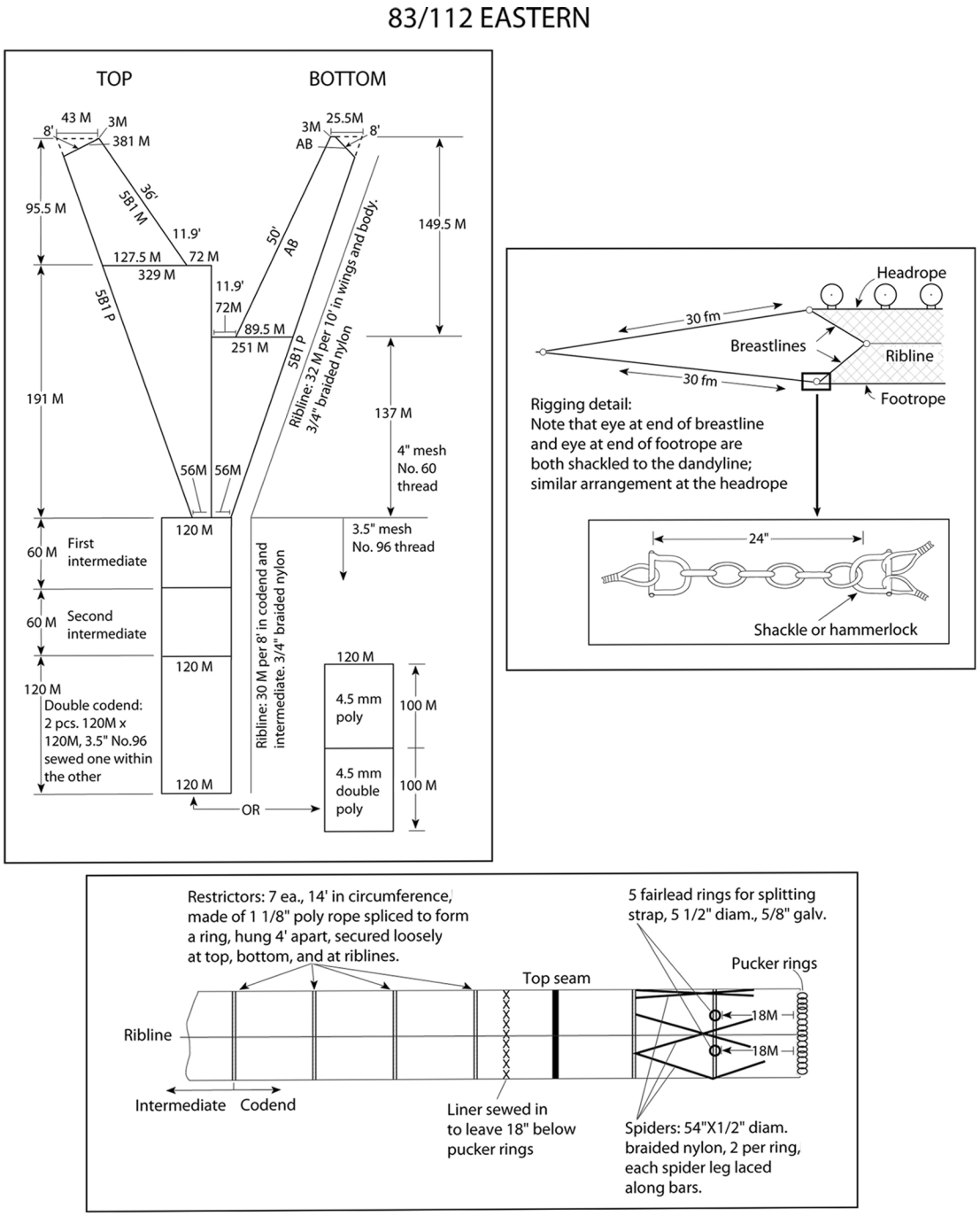

Figure 3. -- Schematic diagram of the 83-112 eastern otter trawl gear used during the 2017 eastern and northern Bering Sea bottom trawl surveys.

Table 1. -- Stratum areas and sampling densities for the 2017 bottom trawl survey of the eastern Bering Sea (EBS) shelf and the northern Bering Sea (NBS) 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
NBS shelf			
70	79,261	58	1,367
71	82,594	56	1,475
81	38,352	28	1,370
Total NBS	200,207	142	1,410
Total EBS and NBS	693,105	518	1,338

Table 2a. – Biological data collected during the 2017 eastern Bering Sea shelf bottom trawl survey.

Species	Length measurements	Age structures	Stomachs collected	Pathobiology samples
Walleye pollock	47,873	1,637	2,602	-
Pacific cod	11,043	1,396	1,734	-
Yellowfin sole	25,767	896	-	-
Northern rock sole	21,248	508	-	-
Flathead sole	18,843	705	-	-
Bering flounder	2,327	-	-	-
Pacific halibut	1,853	600	202	-
Alaska plaice	8,065	556	-	-
Arrowtooth flounder	11,437	530	1,203	-
Kamchatka flounder	2,647	462	*	-
Greenland turbot	373	234	-	-
Rex sole	969	-	-	-
Longhead dab	529	-	-	-
Plain sculpin	1,658	321	-	-
Great sculpin	813	201	-	-
Shorthorn sculpin	319	90	-	-
Yellow Irish lord	819	-	-	-
Starry flounder	943	-	-	-
Pacific ocean perch	366	-	-	-
Alaska skate	4,243	-	-	-
Bering skate	270	-	-	-
Red king crab	1,740	-	-	-
Blue king crab	77	-	-	-
Opilio Tanner crab	26,927	-	-	610
Bairdi Tanner crab	10,955	-	-	514
Miscellaneous	3,271	-	-	-
Total	**205,375**	**8,136**	**5,741**	**1,124**

* Stomach samples collected for arrowtooth flounder and Kamchatka flounder were combined.

Table 2b. – Biological data collected during the 2017 northern Bering Sea shelf bottom trawl survey.

Species	Length measurements	Age structures	Stomachs collected	Pathobiology samples
Walleye pollock	14,621	475	-	-
Pacific cod	3,871	368	-	-
Yellowfin sole	10,227	541	20	-
Northern rock sole	2,956	-	-	-
Flathead sole	4	-	-	-
Bering flounder	3,218	-	-	-
Pacific halibut	162	19	-	-
Alaska plaice	6,467	338	321	-
Arrowtooth flounder	-	-	-	-
Kamchatka flounder	1	-	-	-
Greenland turbot	2	-	-	-
Rex sole	-	-	-	-
Longhead dab	431	-	-	-
Plain sculpin	1,517	-	177	-
Great sculpin	80	-	43	-
Shorthorn sculpin	1,421	75	83	-
Yellow Irish lord	-	-	-	-
Starry flounder	662	-	5	-
Pacific ocean perch	-	-	-	-
Alaska skate	590	-	84	-
Bering skate	-	-	-	-
Red king crab	157	-	-	-
Blue king crab	248	-	-	-
Opilio Tanner crab	15,826	-	-	86
Bairdi Tanner crab	5	-	-	-
Miscellaneous	9,562	-	452	-
Total	**72,028**	**1,816**	**1,185**	**86**

Table 3a. -- Special projects and collections undertaken during the 2017 eastern Bering Sea shelf bottom trawl survey by principal investigator and agency.

Project title	**Principal investigator**	**Agency***
Reproductive potential of female *Chionoecetes* crabs	Laura Slater	ADF&G
Genetics of mating dynamics in EBS snow crab	Laura Slater	ADF&G
Live collection of mature female Tanner and snow crabs	Clifford Ryer	AFSC - RACE
Juvenile flatfish habitat in the northern Bering Sea	Cynthia Yeung	AFSC - RACE
EBS shelf flatfish genetics	Duane Stevenson	AFSC - RACE
Bering skate egg case/embryos	Gerald Hoff	AFSC - RACE
Outreach biological collection	Jason Conner	AFSC - RACE
Pacific halibut genetic sample collection for genetic population structure studies	Liz Perkins	AFSC - RACE
Bitter crab syndrome in eastern Bering Sea *Chionoecetes* spp.	Pam Jensen	AFSC - RACE
Proportion of female snow crab on an annual vs. biennial reproductive cycle	Robert Foy	AFSC - RACE
Spatial variance in shell structure of snow crab	Robert Foy	AFSC - RACE
Tanner crab chela height measurements	Robert Foy	AFSC - RACE
Assessing the effect of light intensity and light penetration on the distribution and behavior of walleye pollock (*Gadus chalcogrammus*) in the eastern Bering Sea	Stan Kotwicki	AFSC - RACE
Experimental estimation of catchability of the combined bottom trawl and acoustic survey for walleye pollock (*Gadus chalcogrammus*) in the eastern Bering Sea.	Stan Kotwicki	AFSC - RACE
MACE acoustic-trawl survey time series of walleye pollock abundance (“AVO”, Acoustic Vessels of Opportunity)	Taina Honkalehto/Sarah Stienessen/Patrick Ressler	AFSC - RACE
Plain and great sculpin otolith collections	Ingrid Spies	AFSC - REFM

Table 3a. -- Continued.

Project title	Principal investigator	Agency*
Reproductive potential of female *Chionoecetes* crabs	Laura Slater	ADF&G
Warty sculpin genetics samples	Ingrid Spies	AFSC - REFM
Walleye pollock fin clips for genetics	James Ianelli	AFSC - REFM
Arctic and saffron cod growth	Thomas Helser	AFSC - REFM
Flatfish maturity EBS Shelf	Todd TenBrink	AFSC - REFM
Stomach collection and preservation	Troy Buckley	AFSC - REFM
Shark population genetics and age structure sampling	Cindy Tribuzio	AFSC - ABL
Observer training specimens, EBS Shelf	Duane Stevenson	AFSC - FMA
IPHC Pacific halibut data collection and tagging on NMFS trawl surveys	Lauri Sadorus	IPHC
Molecular species identification of deepwater corals	Ewann Berntson	NWFSC
NWFSC forensic voucher collection - sea cucumbers	Piper Schwenke	NWFSC
NWFSC forensic voucher collection - marine fishes	Piper Schwenke	NWFSC
Phylogeography of *Metridium*	Marymegan Daly	Ohio State Univ.
CTD data collection	Ned Cokelet	PMEL
Bering Sea Pribilof Islands Science Education/ Seabird Youth Network	Lauren Divine	St. Paul Island
Investigation of plastic marine debris ingestion in Bering Sea organisms and plastic-associated chemical contamination in Bering Sea food webs	Veronica Padula	University of Alaska Fairbanks

*AFSC-Alaska Fisheries Science Center; ADF&G - Alaska Department of Fish & Game; FMA-Fisheries Monitoring & Assessment Division; IPHC-International Pacific Halibut Commission; NWFSC-Northwest Fisheries Science Center; PMEL-Pacific Marine Environmental Laboratory; RACE-Resource Assessment & Conservation Engineering Division; REFM-Resource Ecology & Fisheries Management Division; ABL-Auke Bay Laboratories.

Table 3b. -- Special projects and collections undertaken during the 2017 northern Bering Sea shelf bottom trawl survey by principal investigator and agency.

Project title	Principal investigator	Agency*
Outreach biological collection	Jason Conner	AFSC - RACE
Proportion of female snow crab on an annual vs. biennial reproductive cycle	Robert Foy	AFSC - RACE
Spatial variance in shell structure of snow crab	Robert Foy	AFSC - RACE
Sponge collection	Gerald Hoff	AFSC - RACE
Bitter crab syndrome in northern Bering Sea snow crab, *Chionoecetes opilio*	Pam Jensen	AFSC - RACE
Assessing the effect of light intensity and light penetration on the distribution and behavior of walleye pollock (*Gadus chalcogrammus*) in the eastern Bering Sea	Stan Kotwicki	AFSC - RACE
Random Pacific cod otolith collection	Robert Lauth	AFSC - RACE
Pacific halibut genetic sample collection for genetic population structure studies	Liz Perkins	AFSC - RACE
Live collection of mature female Tanner and snow crabs	Clifford Ryer	AFSC - RACE
Water and fish samples from the northern Bering Sea	Gay Sheffield	AFSC - RACE
Northern Bering Sea flatfish genetics	Duane Stevenson	AFSC - RACE
Juvenile flatfish habitat in the northern Bering Sea	Cynthia Yeung	AFSC - RACE
Arctic and saffron cod growth	Thomas Helser	AFSC - REFM
Walleye pollock fin clips for genetics	James Ianelli	AFSC - REFM
Warty sculpin genetics samples	Ingrid Spies	AFSC - REFM
Northern Bering Sea Pacific cod fin clips for genetics	Ingrid Spies	AFSC - REFM
Flatfish maturity - northern Bering Sea	Todd TenBrink	AFSC - REFM

Table 3b. -- Continued.

Project title	Principal investigator	Agency*
Outreach biological collection	Jason Conner	AFSC - RACE
Yellowfin sole and Alaska plaice otolith collection	Tom Wilderbuer	AFSC - REFM
Stomach collection and preservation	Troy Buckley	AFSC - REFM
Shark population genetics and age structure sampling	Cindy Tribuzio	AFSC - ABL
Observer training specimens, northern Bering Sea	Duane Stevenson	AFSC - FMA
IPHC Pacific halibut data collection and tagging on NMFS trawl surveys	Lauri Sadorus	IPHC
Molecular species identification of deepwater corals	Ewann Berntson	NWFSC
NWFSC forensic voucher collection - sea cucumbers	Piper Schwenke	NWFSC
NWFSC forensic voucher collection - marine fishes	Piper Schwenke	NWFSC
Phylogeography of *Metridium*	Marymegan Daly	Ohio State Univ.
CTD data collection	Ned Cokelet	PMEL
Bering Sea Pribilof Islands Science Education/ Seabird Youth Network	Lauren Divine	St. Paul Island
Northern Bering Sea water sample, bivalve and fish collections	Gay Sheffield	Alaska Sea Grant
Investigation of plastic marine debris ingestion in Bering Sea organisms and plastic-associated chemical contamination in Bering Sea food webs	Veronica Padula	University of Alaska Fairbanks

*AFSC-Alaska Fisheries Science Center; ADF&G - Alaska Department of Fish & Game; FMA-Fisheries Monitoring & Assessment Division; IPHC-International Pacific Halibut Commission; NWFSC-Northwest Fisheries Science Center; PMEL-Pacific Marine Environmental Laboratory; RACE-Resource Assessment & Conservation Engineering Division; REFM-Resource Ecology & Fisheries Management Division; ABL-Auke Bay Laboratory.

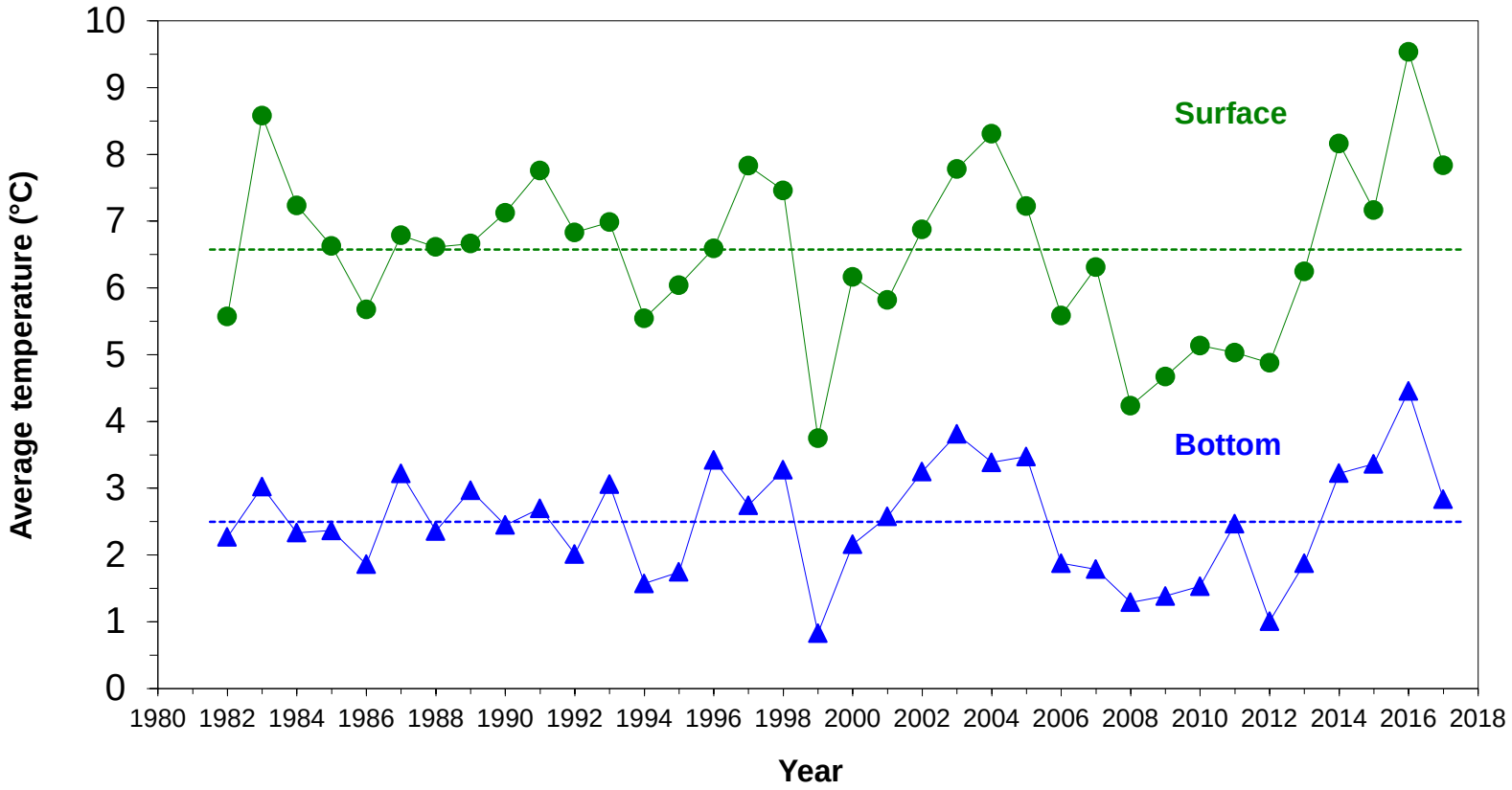

Figure 4. -- Time series of mean survey surface and near-bottom temperatures weighted by stratum based on expendable bathythermograph casts or digital dataloggers attached to the headrope during the eastern Bering Sea bottom trawl surveys from 1982 to 2017. The 1982-1987 means (triangles) are based on Strata 10-62 (see Fig. 2) and the 1988-2017 means also include Strata 80 and 92. The dashed lines represent the grand mean water temperatures for 1982-2017.

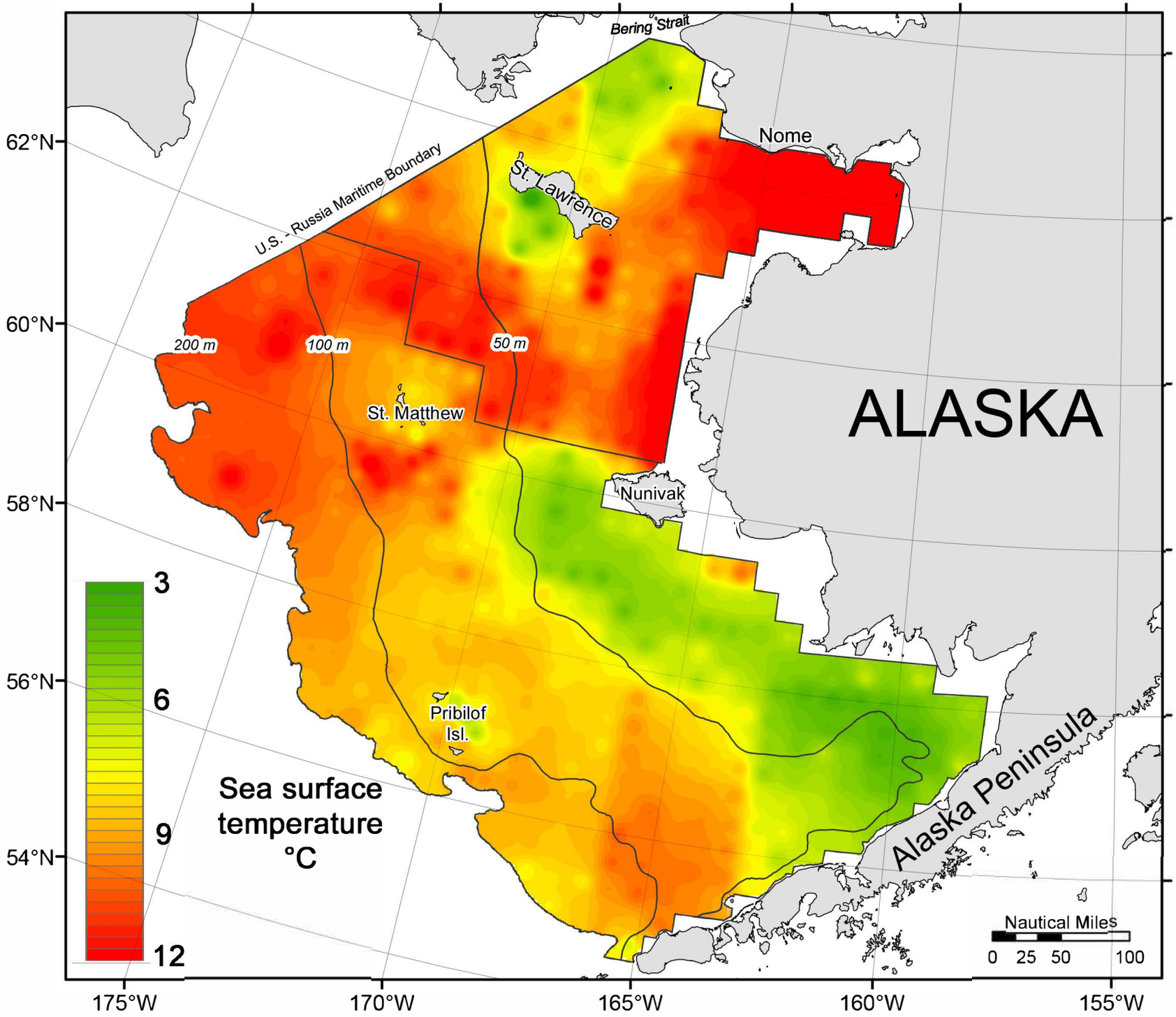

Figure 5. -- Contour map of surface temperatures from the 2017 eastern and northern Bering Sea shelf bottom trawl surveys.

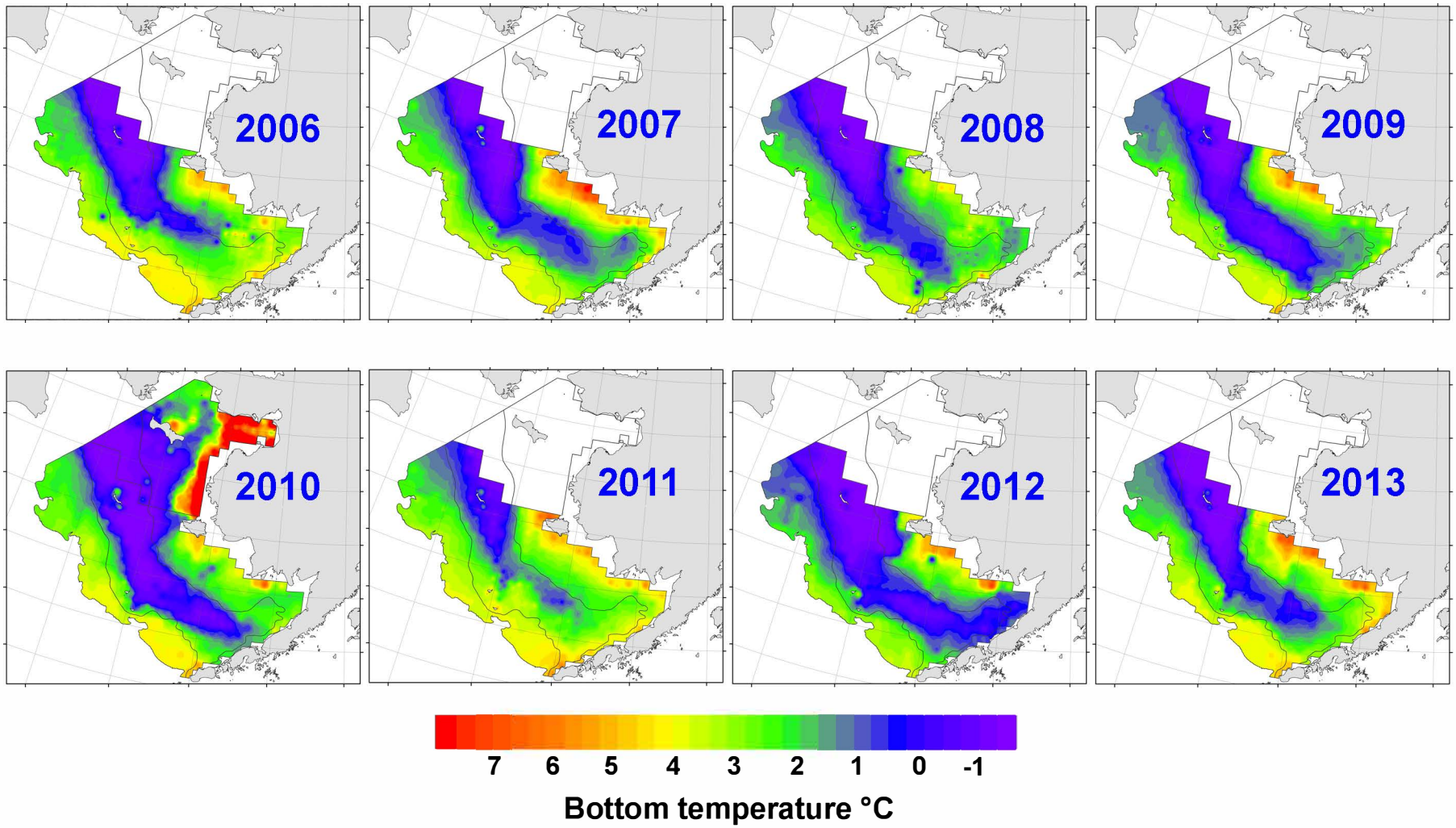

Figure 6a. -- Contour maps of the near-bottom temperatures from the 2006-2013 Bering Sea shelf bottom trawl surveys, years when the survey mean bottom temperature was lower than the long-term mean.

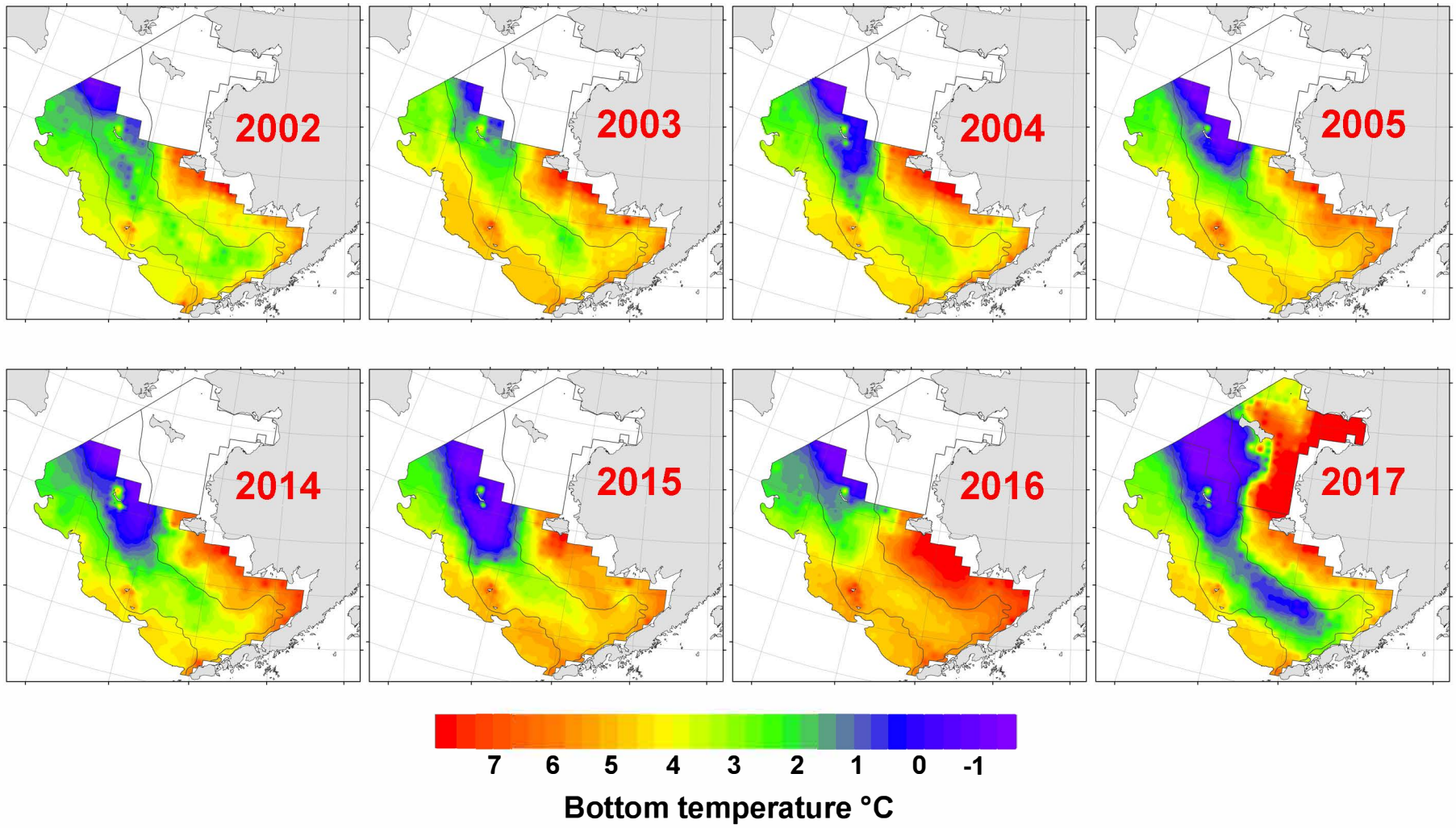

Figure 6b. -- Contour maps of the near-bottom temperatures from the 2002-2005 and 2014-2017 Bering Sea shelf bottom trawl surveys, which were years when the survey mean bottom temperature was higher than the long-term mean.

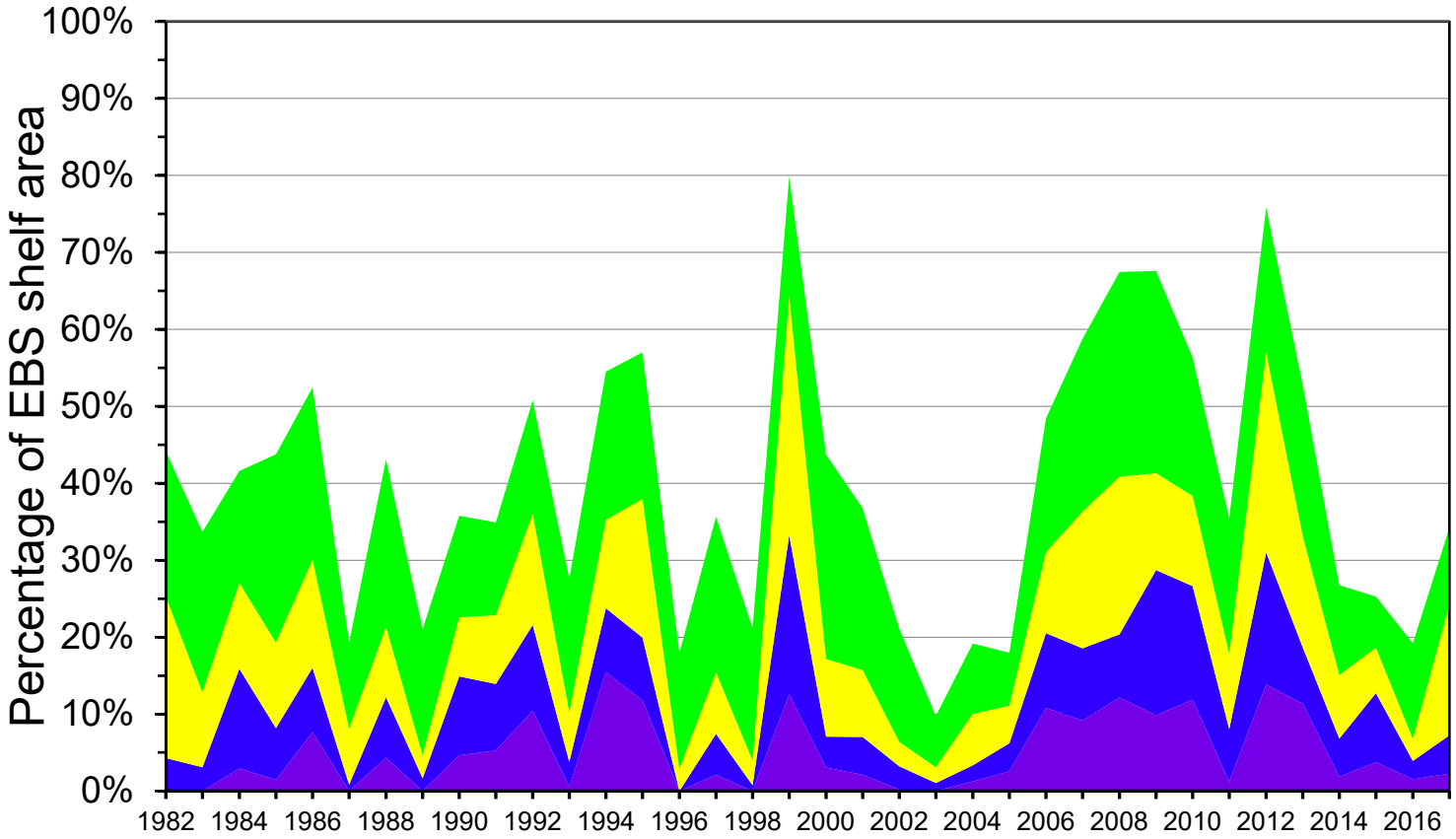

Figure 7. -- Percentage of the EBS (eastern Bering Sea) shelf bottom area that is occupied by the cold pool in one degree Celsius increments. Purple is the percentage area < -1° C, blue is the percentage area < 0° C, yellow is the percentage area < 1° C, and green is the percentage area < 2° C.

Table 4. -- List of fish taxa from survey catches exclusive to the EBS (eastern Bering Sea) and NBS (northern Bering Sea). Taxa in bold only documented north of 60° N latitude.

Present in EBS but absent in NBS	
Common name	**Scientific name**
Pacific sleeper shark	*Somniosus pacificus*
big skate	*Beringraja binoculata*
Bering skate	*Bathyraja interrupta*
mud skate	*Bathyraja taranetzi*
Aleutian skate	*Bathyraja aleutica*
whitebrow skate	*Bathyraja minispinosa*
arrowtooth flounder	*Atheresthes stomias*
rex sole	*Glyptocephalus zachirus*
southern rock sole	*Lepidopsetta bilineata*
butter sole	*Isopsetta isolepis*
longnose poacher	*Leptagonus leptorhynchus*
sawback poacher	*Leptagonus frenatus*
Atlantic poacher	*Leptagonus decagonus*
gray starsnout	*Bathyagonus alascanus*
Aleutian alligatorfish	*Aspidophoroides monopterygius*
sablefish	*Anoplopoma fimbria*
searcher	*Bathymaster signatus*
northern sculpin	*Icelinus borealis*
purplegray sculpin	*Gymnocanthus detrisus*
hookhorn sculpin	*Artediellus pacificus*
darkfin sculpin	*Malacocottus zonurus*
red Irish lord	*Hemilepidotus hemilepidotus*
yellow Irish lord	*Hemilepidotus jordani*
scissortail sculpin	*Triglops forficata*
spectacled sculpin	*Triglops scepticus*
roughspine sculpin	*Triglops macellus*
Pacific staghorn sculpin	*Leptocottus armatus*
spinyhead sculpin	*Dasycottus setiger*
bigmouth sculpin	*Hemitripterus bolini*
thorny sculpin	*Icelus spiniger*
Atka mackerel	*Pleurogrammus monopterygius*
kelp greenling	*Hexagrammos decagrammus*
smooth lumpsucker	*Aptocyclus ventricosus*
blotched snailfish	*Crystallichthys cyclospilus*
snake prickleback	*Lumpenus sagitta*
whitebarred prickleback	*Poroclinus rothrocki*
prowfish	*Zaprora silenus*
Bering eelpout	*Lycodes beringi*
rougheye rockfish	*Sebastes aleutianus*
Pacific ocean perch	*Sebastes alutus*
dusky rockfish	*Sebastes variabilis*
northern rockfish	*Sebastes polyspinis*

Present in NBS but absent in EBS	
Common name	**Scientific name**
Arctic flounder	*Liopsetta glacialis*
tubenose poacher	*Pallasina barbata*
veteran poacher	***Podothecus veternus***
Arctic alligatorfish	*Ulcina olrikii*
fourhorn poacher	*Hypsagonus quadricornis*
Arctic staghorn sculpin	***Gymnocanthus tricuspis***
hamecon	***Artediellus scaber***
belligerent sculpin	*Megalocottus platycephalus*
fourhorn sculpin	*Myoxocephalus quadricornis*
leister sculpin	*Enophrys lucasi*
antlered sculpin	*Enophrys diceraus*
crested sculpin	*Blepsias bilobus*
eyeshade sculpin	*Nautichthys pribilovius*
smoothcheek sculpin	*Eurymen gyrinus*
pimpled lumpsucker	*Eumicrotremus andriashevi*
kelp snailfish	***Liparis tunicatus***
festive snailfish	***Liparis marmoratus***
Arctic shanny	*Stichaeus punctatus*
pighead prickleback	*Acantholumpenus mackayi*
saddled eelpout	***Lycodes mucosus***
polar eelpout	***Lycodes turneri***

Table 5a. -- Biomass estimates (t) for major fish species and groups taken during the 2017 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t) and 95% confidence			Proportion of total animal biomass[a]	Estimated biomass by stratum (t)							
					10	20	30	40	50	60	82	90
Raidae (skates)												
Alaska skate	544,657	±	14%	0.0334	112,645	91,496	76,505	98,884	45,892	90,249	9,965	19,020
Other skates	66,326	±	66%	0.0041	2,531	2	13,069	1,715	17,384	30,994	5	625
Total skates	610,982	±	14%	0.0375	**115,176**	**91,499**	**89,574**	**100,599**	**63,276**	**121,243**	**9,970**	**19,645**
Pleuronectidae (flatfishes)												
Yellowfin sole	2,787,688	±	17%	0.1710	1,239,184	371,946	813,227	362,508	643	15	142	23
Northern rock sole	1,331,780	±	15%	0.0817	724,700	132,190	229,169	233,883	1,108	8,728	1,444	560
Flathead sole	538,018	±	16%	0.0330	11,375	20	203,355	96,580	57,602	162,359	522	6,205
Bering flounder	27,404	±	34%	0.0017	0	197	28	8,055	0	995	8,258	9,871
Alaska plaice	491,050	±	21%	0.0301	84,531	67,005	132,593	203,865	307	1,944	750	54
Arrowtooth flounder	424,194	±	13%	0.0260	2,900	75	103,923	59,709	98,679	148,330	22	10,555
Kamchatka flounder	48,084	±	12%	0.0030	0	0	5,231	14,849	6,418	16,941	385	4,259
Greenland turbot	21,519	±	25%	0.0013	0	0	0	7,779	0	6,170	2,434	5,136
Pacific halibut	126,684	±	13%	0.0078	36,772	23,544	24,596	18,447	7,445	15,275	0	605
Other flatfish	221,301	±	62%	0.0136	185,690	4,981	19,049	95	6,733	3,715	1,039	0
Total flatfish	**6,017,722**	±	**10%**	**0.3692**	**2,285,152**	**599,958**	**1,531,172**	**1,005,771**	**178,933**	**364,472**	**14,995**	**37,268**
Gadidae (cods)												
Walleye pollock	4,814,373	±	15%	0.2954	320,149	118,327	1,715,067	1,206,756	254,639	1,073,561	37,149	88,724
Pacific cod	643,953	±	15%	0.0395	133,461	52,150	80,720	194,211	23,351	114,368	9,387	36,306
Other cods	4,934	±	76%	0.0003	805	765	1	349	0	0	3,003	12
Total cods	**5,463,259**	±	**13%**	**0.3352**	**454,414**	**171,241**	**1,795,788**	**1,401,316**	**277,990**	**1,187,929**	**49,539**	**125,042**
Agonidae (poachers)	14,714	±	18%	0.0009	5,762	4,997	1,223	2,403	174	125	8	22
Cottidae (sculpins)	171,777	±	15%	0.0105	22,699	12,766	48,343	55,771	1,810	25,438	1,518	3,434
Hexagrammidae (greenlings)	1,452	±	94%	0.0001	115	712	70	0	122	411	22	0
Cyclopteridae (lumpsuckers)	186	±	196%	<0.0001	0	0	0	0	0	186	0	0
Liparidae (snailfishes)	1,583		54%	0.0001	0	0	0	735	15	248	457	128
Osmeridae (smelts)	1,963	±	67%	0.0001	684	700	128	13	438	0	0	0
Sichaeidae (blennies)	70		133%	0.0000	3	2	2	49	0	12	1	2
Zoarcidae (eelpouts)	46,017	±	22%	0.0028	0	0	1,951	14,444	99	19,717	1,926	7,881
Scorpaenidae (rockfish)												
Pacific ocean perch	33,808	±	21%	0.0021	0	0	21	0	669	33,117	0	0
Other rockfish	1,086	±	130%	0.0001	0	0	126	0	239	720	0	0
Total rockfish	**34,894**	±	**142%**	**0.0021**	**0**	**0**	**148**	**0**	**908**	**33,838**	**0**	**0**
Other fish	65,883	±	52%	0.0040	13,641	27,795	4,669	10,738	2,750	1,855	3,994	441
Total fish	**12,430,504**	±	**62%**	**0.7626**	**2,897,647**	**909,670**	**3,473,068**	**2,591,839**	**526,516**	**1,755,472**	**82,429**	**193,862**

[a]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area = 16,299,311 t.

Table 5b. -- Biomass estimates (t) for major invertebrate species and groups taken during the 2017 eastern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t) and 95% confidence			Proportion of total animal biomass[a]	Estimated biomass by stratum (t)							
					10	20	30	40	50	60	82	90
Crustacea												
Crabs	874,148	±	12%	0.0536	44,759	32,598	171,245	395,319	22,659	96,496	66,922	44,151
Shrimps	4,977	±	73%	0.0003	120	6	38	1,573	102	2,680	15	442
Other crustaceans	2,162	±	73%	0.0001	1,192	171	98	592	104	6	0	0
Total crustaceans	**881,287**	**±**	**12%**	**0.0541**	**46,071**	**32,775**	**171,381**	**397,484**	**22,864**	**99,182**	**66,937**	**44,593**
Mollusca												
Gastropoda (snails)	572,465	±	18%	0.0351	17,218	6,688	229,224	180,523	7,624	117,760	4,448	8,980
Pelecypoda (bivalves)	10,556	±	32%	0.0006	1,371	672	3,805	4,264	131	227	29	58
Squids	53	±	75%	<0.0001	0	0	0	0	20	33	0	0
Octopuses	4,040	±	49%	0.0002	358	0	12	297	932	1,409	14	1,019
Other mollusks	<1	±	198%	0.0000	0	0	0	0	0	0	0	0
Total mollusks	**587,115**	**±**	**17%**	**0.0360**	**18,947**	**7,359**	**233,040**	**185,084**	**8,707**	**119,429**	**4,491**	**10,057**
Echinodermata												
Asteroidea (sea stars)	1,284,720	±	12%	0.0788	432,252	138,852	323,825	209,211	427	146,117	4,107	29,928
Ophiuroidea (brittle stars)	420,292	±	27%	0.0258	15,627	3,357	118,828	101,739	777	174,758	4,066	1,140
Echinoidea (sea urchin)	43,186	±	87%	0.0026	111	0	21,357	13,226	6,975	1,440	0	76
Holothuroidea (sea cucumbers)	6,694	±	64%	0.0004	1,509	0	2,177	2,989	18	1	0	0
Total echinoderms	**1,754,891**	**±**	**10%**	**0.1077**	**449,499**	**142,209**	**466,188**	**327,166**	**8,197**	**322,316**	**8,173**	**31,144**
Ascidiacea	377,071	±	46%	0.0231	20,778	6,265	94,164	255,857	1	5	0	0
Porifera (sponges)	142,846	±	109%	0.0088	2,361	628	137,259	1,454	292	846	6	0
Coelenterata	110,699	±	21%	0.0068	16,104	1,748	37,121	27,592	12,567	9,273	5,574	720
Other invertebrates	14,897	±	72%	0.0009	2,420	27	902	6,654	761	4,048	25	60
Total invertebrates	**3,868,690**	**±**	**9%**	**0.2374**	**556,180**	**191,012**	**1,140,054**	**1,201,292**	**53,389**	**555,100**	**85,207**	**86,573**

[a]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area = 16,299,311 t.

Table 6a. -- Biomass estimates (t) for major fish species and groups taken during the 2017 northern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t) and 95% confidence			Proportion of total animal biomass[a]	Estimated biomass by stratum (t) 70	71	81
Raidae (skates)							
Alaska skate	81,295	±	29%	0.0181	66,439	10,049	4,808
Other skates	57	±	72%	0.0000	28	3	26
Total skates	81,352	±	29%	0.0284	**66,467**	**10,052**	**4,834**
Pleuronectidae (flatfishes)							
Yellowfin sole	426,117	±	23%	0.1487	330,240	55,214	40,664
Northern rock sole	53,949	±	34%	0.0188	45,248	7,989	712
Flathead sole	76	±	144%	<0.0001	76	0	0
Bering flounder	20,782	±	43%	0.0073	3,276	2,192	15,313
Alaska plaice	324,264	±	33%	0.1132	237,668	64,784	21,812
Arrowtooth flounder	0	±	0%	<0.0001	0	0	0
Kamchatka flounder	91	±	198%	<0.0001	91	0	0
Greenland turbot	58	±	154%	<0.0001	43	0	16
Pacific halibut	18,115	±	38%	0.0063	11,186	6,930	0
Other flatfish	40,207	±	39%	0.0140	6,618	28,369	5,219
Total flatfish	**883,660**	±	**19%**	**0.3085**	**634,446**	**165,478**	**83,736**
Gadidae (cods)							
Walleye pollock	1,315,374	±	30%	0.4592	450,424	689,943	175,007
Pacific cod	283,479	±	25%	0.0990	128,494	147,817	7,168
Other cods	80,481	±	27%	0.0281	25,759	51,184	3,538
Total cods	**1,679,334**	±	**24%**	**0.5862**	**604,677**	**888,944**	**185,713**
Agonidae (poachers)	1,983	±	59%	0.0007	1,378	593	12
Cottidae (sculpins)	158,393	±	46%	0.0553	18,576	137,880	1,937
Hexagrammidae (greenlings)	355	±	90%	0.0001	67	287	0
Cyclopteridae (lumpsuckers)	2	±	198%	<0.0001	0	2	0
Liparidae (snailfishes)	4,936		50%	0.0017	967	2,461	1,509
Osmeridae (smelts)	5,242	±	38%	0.0018	2,049	3,162	31
Sichaeidae (blennies)	3,694		59%	0.0013	31	3,662	1
Zoarcidae (eelpouts)	10,158	±	64%	0.0035	219	7,209	2,730
Scorpaenidae (rockfish)							
Pacific ocean perch	0	±	0%	0.0000	0	0	0
Other rockfish	0	±	0%	0.0000	0	0	0
Total rockfish	**0**	±	**0%**	0.0000	**0**	**0**	**0**
Other fish	35,559	±	93%	0.0124	22,743	3,777	9,039
Total fish	**2,864,669**	**±**	**17%**	**0.6393**	**1,351,620**	**1,223,505**	**289,543**

[a]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area = 4,480,737 t.

Table 6b. -- Biomass estimates (t) for major invertebrate species and groups taken during the 2017 northern Bering Sea bottom trawl survey.

Taxon	Estimated total biomass (t) and 95% confidence			Proportion of total animal biomass[a]	Estimated biomass by stratum (t)		
					70	71	81
Crustacea							
Crabs	435,803	±	23%	0.0973	142,664	165,811	127,328
Shrimps	4,556	±	41%	0.0028	317	3,943	296
Other crustaceans	96,044	±	24%	0.0594	1,103	7,542	1
Total crustaceans	**449,006**	**±**	**23%**	**0.2779**	**144,085**	**177,296**	**127,625**
Mollusca							
Gastropoda (snails)	255,261	±	26%	0.1580	78,472	137,295	39,493
Pelecypoda (bivalves)	5,373	±	37%	0.0033	1,740	3,516	117
Squids	0	±	0%	0.0000	0	0	0
Octopuses	61	±	95%	<0.0001	2	0	59
Other mollusks	1,439	±	131%	0.0009	50	1,390	0
Total mollusks	**262,134**	**±**	**25%**	**0.1622**	**80,264**	**142,201**	**39,670**
Echinodermata							
Asteroidea (sea stars)	457,365	±	22%	0.2830	111,191	334,961	11,212
Ophiuroidea (brittle stars)	41,478	±	53%	0.0257	5,289	30,213	5,975
Echinoidea (sea urchin)	172,765	±	103%	0.1069	395	172,360	11
Holothuroidea (sea cucumbers)	3,424	±	116%	0.0021	54	3,149	221
Total echinoderms	**675,032**	**±**	**28%**	**0.4177**	**116,929**	**540,684**	**17,419**
Ascidiacea	102,319	±	45%	0.0633	18,291	77,909	6,120
Porifera (sponges)	23,505	±	85%	0.0145	1,200	22,295	10
Coelenterata	96,044	±	24%	0.0594	31,681	56,738	7,625
Other invertebrates	8,028	±	105%	0.0050	233	7,674	121
Total invertebrates	**1,615,959**	**±**	**17%**	**0.3607**	**392,683**	**1,024,796**	**198,589**

[a]Proportion of total estimated biomass, fish and invertebrates combined, for the total survey area = 4,480,737 t.

Table 7. -- Total estimated biomass in metric tons (t) and the percent change from the 2010 and 2017 NBS (northern Bering Sea) bottom trawl surveys for invertebrate and fish taxa captured in greater than 50 trawl samples from both years combined.

Invertebrate taxon	Biomass (t)		% change
	2010	2017	
jellyfishes	12,865	65,712	411%
green sea urchin	51,543	172,765	235%
blue king crab	2,022	5,918	193%
bryozoans	2,799	7,634	173%
other worms	2,878	7,788	171%
sea anenomes	9,625	21,842	127%
clams	2,599	5,373	107%
other snails	42,440	76,344	80%
barnacles	4,918	8,602	75%
neptune whelk	114,978	178,917	56%
hermit crabs	135,166	162,911	21%
all shrimps	3,830	4,556	19%
purple-orange sea star	301,421	353,771	17%
segmented worms	126	131	4%
other crabs	198,065	196,824	(1%)
other sea stars	106,474	103,594	(3%)
red king crab	2,540	2,275	(10%)
snow crab	319,717	230,785	(28%)
corals	12,612	8,491	(33%)
brittle stars	71,522	41,478	(42%)
basket starfish	70,559	40,622	(42%)
tunicates	367,740	102,319	(72%)

Fish taxon	Biomass (t)		% change
	2010	2017	
walleye pollock	21,124	1,315,374	6,127%
Pacific cod	29,091	283,479	874%
poachers	416	1,983	377%
shorthorn sculpin	38,172	108,753	185%
other flatfishes	3,478	8,905	156%
northern rock sole	21,245	53,949	154%
sticklebacks/blennies	1,616	3,694	129%
starry flounder	15,961	31,527	98%
Bering flounder	12,354	20,782	68%
Pacific herring	22,987	34,771	51%
snailfishes	3,303	4,936	49%
plain sculpin	28,292	36,605	29%
Alaska plaice	303,195	324,264	7%
Alaska skate	76,934	81,295	6%
other sculpins	10,541	10,622	1%
yellowfin sole	427,591	426,117	(0%)
eelpouts	11,084	10,158	(8%)
saffron cod	90,839	76,341	(16%)
Pacific halibut	23,237	18,115	(22%)
smelts	16,490	5,242	(68%)
Arctic cod	37,861	4,140	(89%)

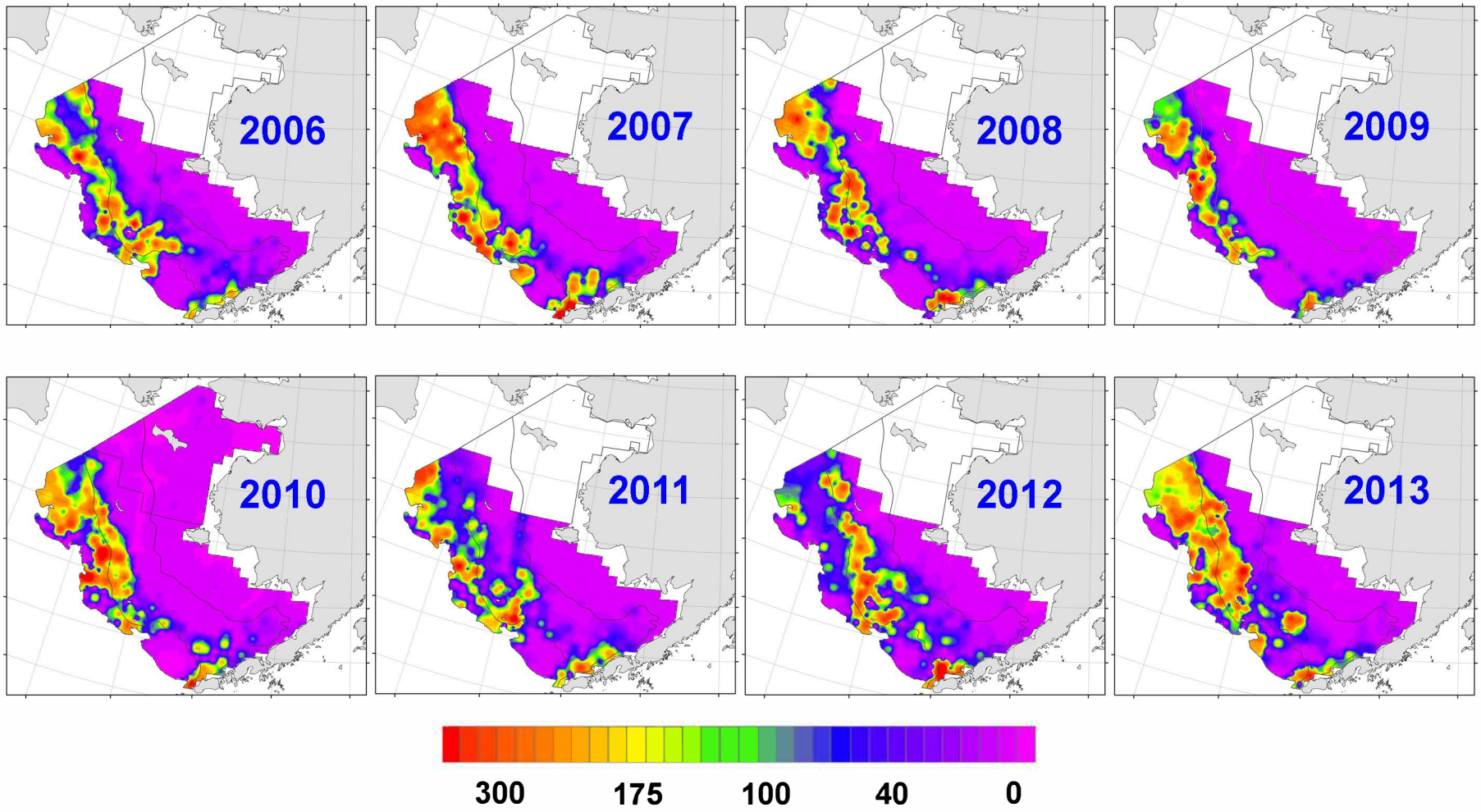

Figure 8a. -- Contour maps of **walleye pollock** (*Gadus chalcogrammus*) distribution and relative abundance (kg/ha) from the 2006-2013 Bering Sea shelf bottom trawl surveys, which were years when the survey mean bottom temperature was lower than the long-term mean.

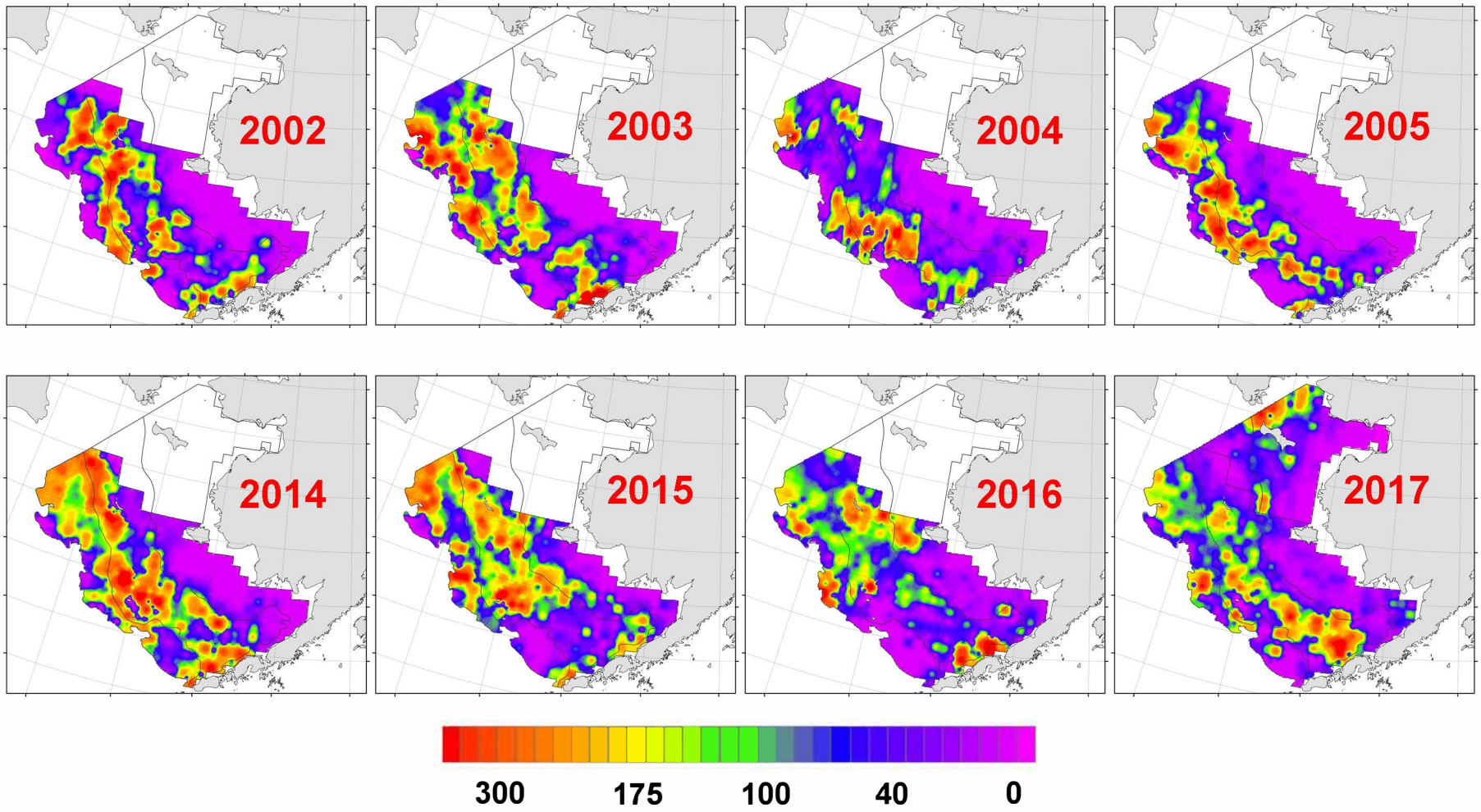

Figure 8b. -- Contour maps of **walleye pollock** (*Gadus chalcogrammus*) distribution and relative abundance (kg/ha) from the 2002-2005 and 2014-2017 Bering Sea shelf bottom trawl surveys, which were years when the survey mean bottom temperature was higher than the long-term mean.

Table 8a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **walleye pollock** (*Gadus chalcogrammus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	41.11	9.52	320,149	7.42e+04	171,664	468,633	58	58	58	52
20	28.84	4.73	118,327	1.94e+04	78,705	157,949	31	31	31	30
31	177.23	30.19	1,675,240	2.85e+05	1,105,714	2,244,767	69	69	69	67
32	45.39	12.52	39,827	1.10e+04	13,859	65,795	8	8	8	8
41	79.60	9.08	499,147	5.69e+04	384,378	613,916	44	44	44	44
42	160.50	28.61	385,387	6.87e+04	245,101	525,674	31	27	27	27
43	152.66	16.11	322,222	3.40e+04	251,522	392,921	22	22	22	22
50	65.64	23.26	254,639	9.02e+04	68,804	440,474	26	26	26	26
61	114.25	17.51	1,006,905	1.54e+05	698,107	1,315,704	60	60	60	60
62	103.69	12.55	66,656	8.07e+03	46,921	86,391	7	7	7	7
82	20.69	5.22	37,149	9.37e+03	16,531	57,767	12	12	12	12
90	76.70	21.74	88,724	2.52e+04	29,244	148,204	8	8	8	8
Total	**97.67**	**7.30**	**4,814,373**	**3.60e+05**	**4,105,271**	**5,523,475**	**376**	**372**	**372**	**363**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	56.83	11.52	450,424	9.13e+04	267,727	633,122	60	60	60	60
71	83.53	20.69	689,943	1.71e+05	347,771	1,032,115	58	50	50	50
81	45.63	9.70	175,007	3.72e+04	98,412	251,602	26	26	26	26
Total	**65.70**	**9.85**	**1,315,374**	**1.97e+05**	**924,022**	**1,706,726**	**144**	**136**	**136**	**136**

Table 8b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95%lower (LCL) and upper (UCL) confidence limits for **walleye pollock** (*Gadus chalcogrammus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	53.20	12.80	414,242	9.96e+04	214,716	613,769	58	58	58	52
20	48.60	9.04	199,385	3.71e+04	123,613	275,157	31	31	31	30
31	293.87	51.25	2,777,868	4.84e+05	1,811,153	3,744,582	69	69	69	67
32	79.08	22.03	69,389	1.93e+04	23,673	115,105	8	8	8	8
41	180.62	23.73	1,132,564	1.49e+05	832,483	1,432,645	44	44	44	44
42	316.88	54.25	760,857	1.30e+05	494,847	1,026,866	31	27	27	27
43	362.66	39.26	765,484	8.29e+04	593,146	937,822	22	22	22	22
50	91.00	33.97	353,013	1.32e+05	81,591	624,434	26	26	26	26
61	174.64	30.28	1,539,153	2.67e+05	1,005,143	2,073,163	60	60	60	60
62	221.42	38.42	142,344	2.47e+04	81,914	202,775	7	7	7	7
82	100.76	32.10	180,899	5.76e+04	54,070	307,728	12	12	12	12
90	127.85	23.54	147,895	2.72e+04	83,510	212,281	8	8	8	8
Total	**172.11**	**12.60**	**8,483,092**	**6.21e+05**	**7,259,471**	**9,706,714**	**376**	**372**	**372**	**363**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	105.69	18.97	837,748	1.50e+05	536,903	1,138,594	60	60	60	60
71	90.25	24.93	745,386	2.06e+05	332,999	1,157,772	58	50	50	50
81	64.80	12.83	248,517	4.92e+04	147,153	349,880	26	26	26	26
Total	**91.49**	**12.97**	**1,831,650**	**2.60e+05**	**1,317,532**	**2,345,769**	**144**	**136**	**136**	**136**

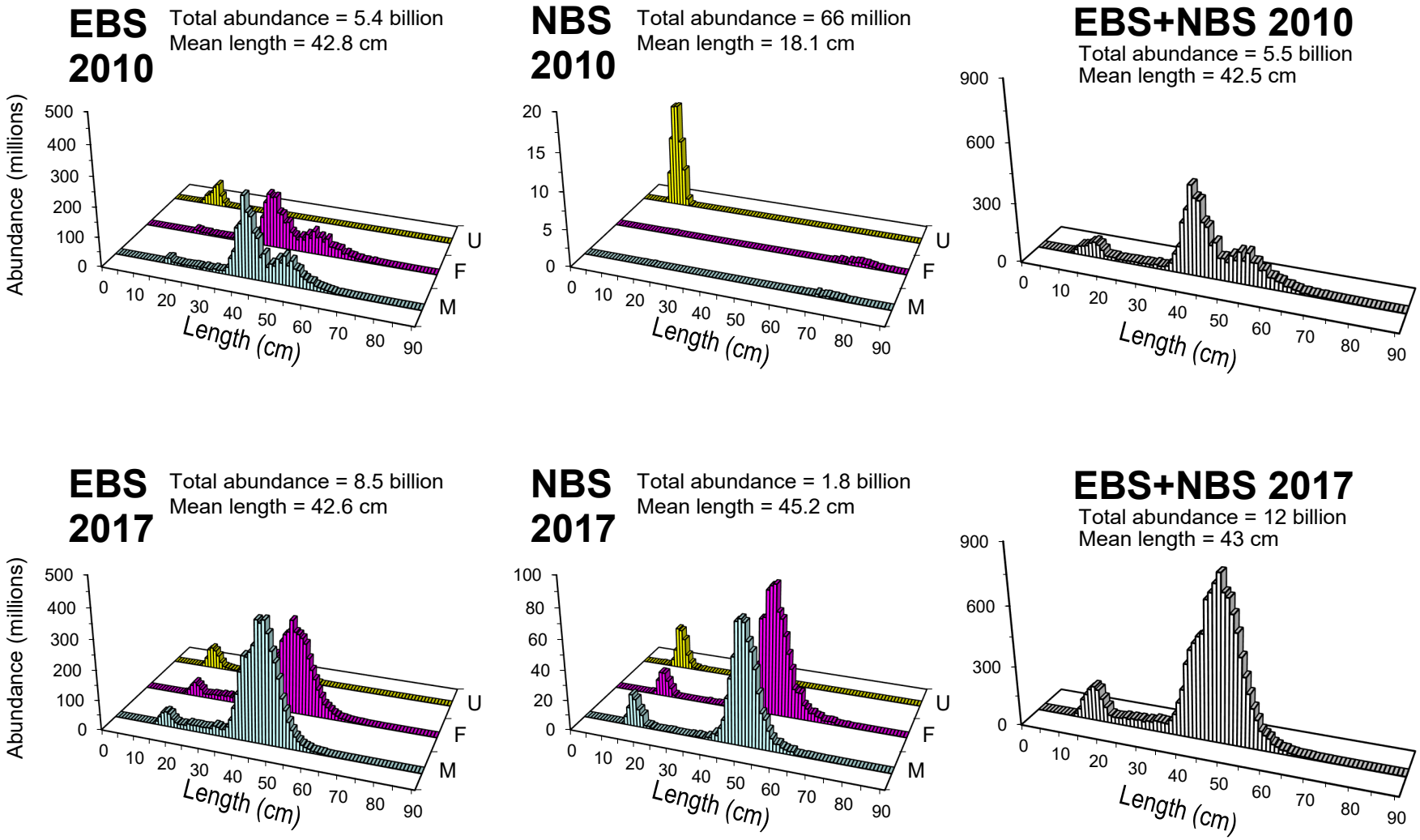

Figure 9. -- Total abundance-at-length and mean length of **walleye pollock** (*Gadus chalcogrammus*) by sex (M = male, F = female, U = unsexed) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

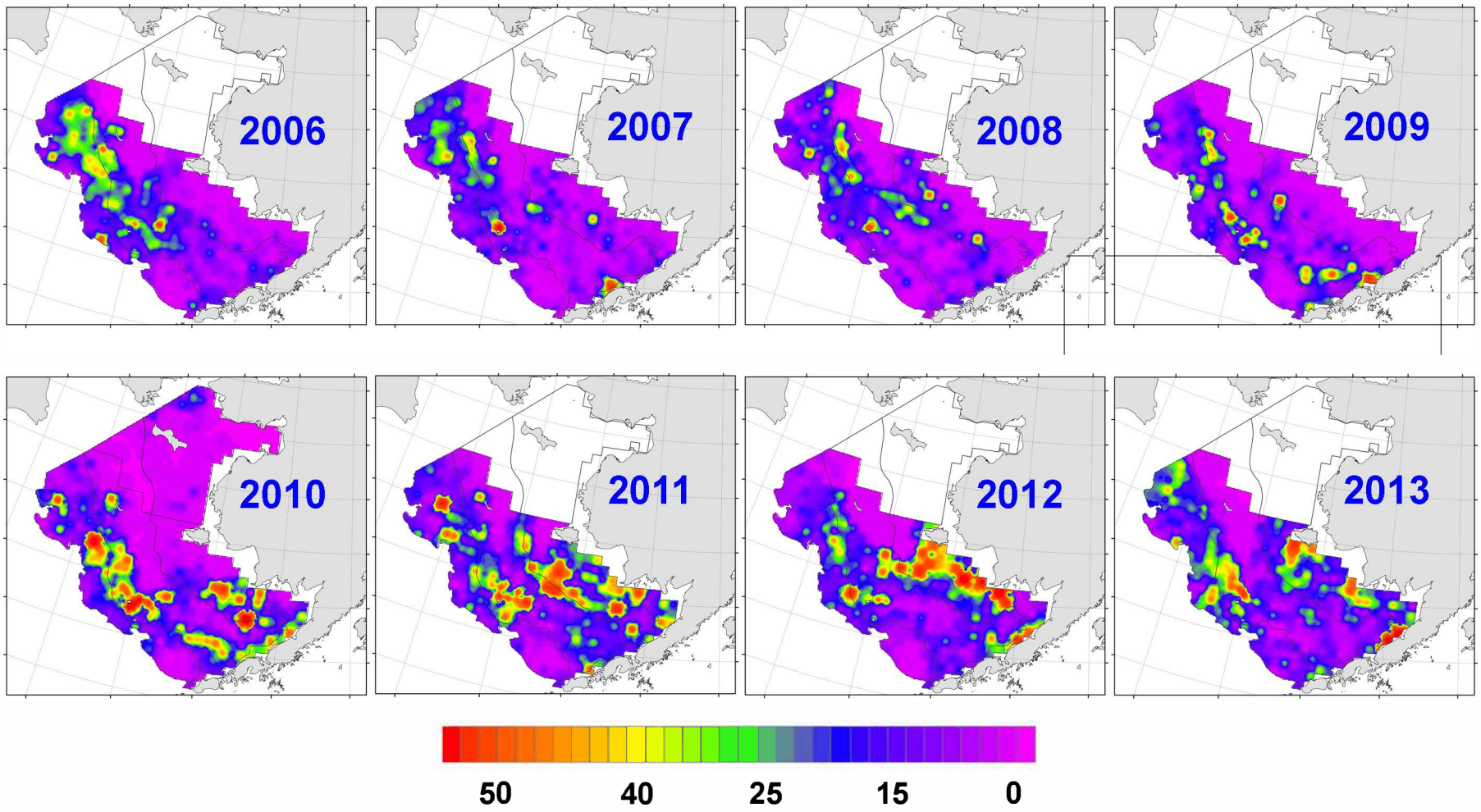

Figure 10a. -- Contour maps of **Pacific cod** (*Gadus macrocephalus*) distribution and relative abundance (kg/ha) from the 2006-2013 Bering Sea shelf bottom trawl surveys, which were years when the survey mean bottom temperature was lower than the long-term mean.

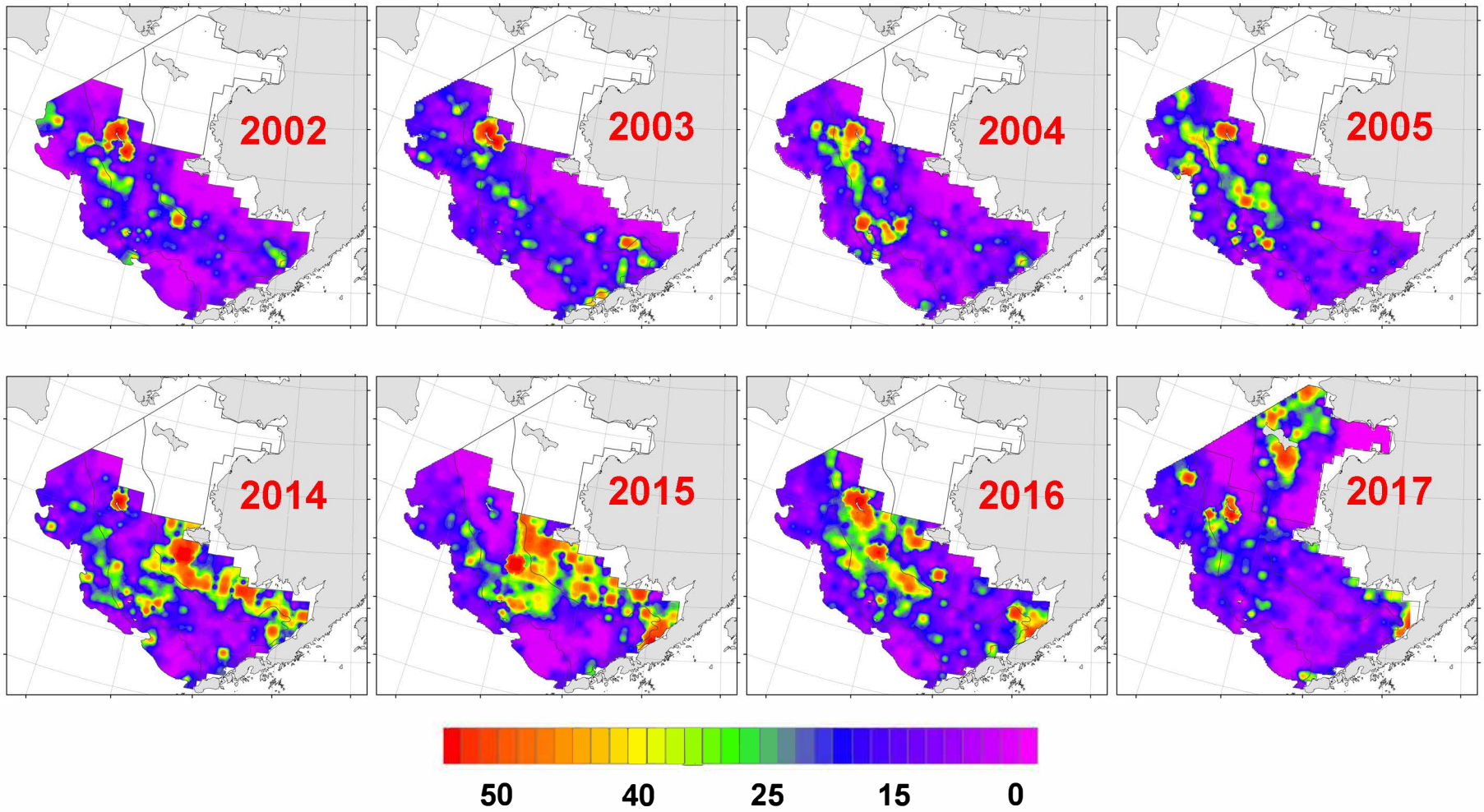

Figure 10b. -- Contour maps of **Pacific cod** (*Gadus macrocephalus*) distribution and relative abundance (kg/ha) from the 2002-2005 and 2014-2017 Bering Sea shelf bottom trawl surveys, which were years when the survey mean bottom temperature was higher than the long-term mean.

Table 9a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Pacific cod** (*Gadus macrocephalus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	17.14	3.56	133,461	2.77e+04	78,013	188,908	58	58	58	56
20	12.71	1.87	52,150	7.68e+03	36,470	67,830	31	31	31	31
31	6.76	0.66	63,939	6.25e+03	51,458	76,420	69	69	69	69
32	19.13	5.05	16,781	4.43e+03	6,307	27,255	8	8	8	8
41	13.86	2.02	86,885	1.26e+04	61,387	112,382	44	44	44	44
42	10.10	1.12	24,246	2.69e+03	18,747	29,746	31	30	30	30
43	39.36	14.70	83,081	3.10e+04	18,541	147,620	22	22	22	22
50	6.02	1.95	23,351	7.56e+03	7,781	38,921	26	24	24	24
61	11.94	0.93	105,245	8.23e+03	88,772	121,718	60	60	60	60
62	14.19	2.27	9,123	1.46e+03	5,546	12,700	7	7	7	7
82	5.23	1.74	9,387	3.13e+03	2,492	16,283	12	10	10	10
90	31.38	16.08	36,306	1.86e+04	0	80,297	8	8	8	8
Total	**13.06**	**1.01**	**643,953**	**5.00e+04**	**542,913**	**744,992**	**376**	**371**	**371**	**369**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	16.21	3.44	128,494	2.73e+04	73,957	183,030	60	52	52	51
71	17.90	2.82	147,817	2.33e+04	101,172	194,461	58	41	41	41
81	1.87	0.61	7,168	2.32e+03	2,387	11,949	26	20	20	20
Total	**14.16**	**1.79**	**283,479**	**3.59e+04**	**212,335**	**354,622**	**144**	**113**	**113**	**112**

Table 9b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Pacific cod** (*Gadus macrocephalus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	15.44	2.53	120,196	1.97e+04	80,746	159,646	58	58	58	56
20	10.12	1.22	41,528	5.01e+03	31,301	51,755	31	31	31	31
31	3.57	0.55	33,748	5.15e+03	23,464	44,032	69	69	69	69
32	7.44	1.69	6,526	1.49e+03	3,014	10,038	8	8	8	8
41	7.63	1.91	47,848	1.20e+04	23,681	72,015	44	44	44	44
42	4.95	1.03	11,887	2.47e+03	6,847	16,926	31	30	30	30
43	20.83	9.26	43,967	1.95e+04	3,335	84,599	22	22	22	22
50	1.92	0.44	7,452	1.69e+03	3,969	10,936	26	24	24	24
61	3.49	0.26	30,769	2.29e+03	26,191	35,347	60	60	60	60
62	4.31	0.90	2,773	5.80e+02	1,353	4,193	7	7	7	7
82	2.78	0.97	4,995	1.74e+03	1,165	8,824	12	10	10	10
90	10.75	6.44	12,441	7.45e+03	0	30,047	8	8	8	8
Total	**7.39**	**0.65**	**364,129**	**3.23e+04**	**299,692**	**428,565**	**376**	**371**	**371**	**369**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	8.13	1.52	64,403	1.20e+04	40,360	88,446	60	52	52	51
71	7.87	1.37	65,010	1.13e+04	42,389	87,631	58	41	41	41
81	1.05	0.25	4,043	9.61e+02	2,065	6,022	26	20	20	20
Total	**6.67**	**0.83**	**133,457**	**1.65e+04**	**100,747**	**166,166**	**144**	**113**	**113**	**112**

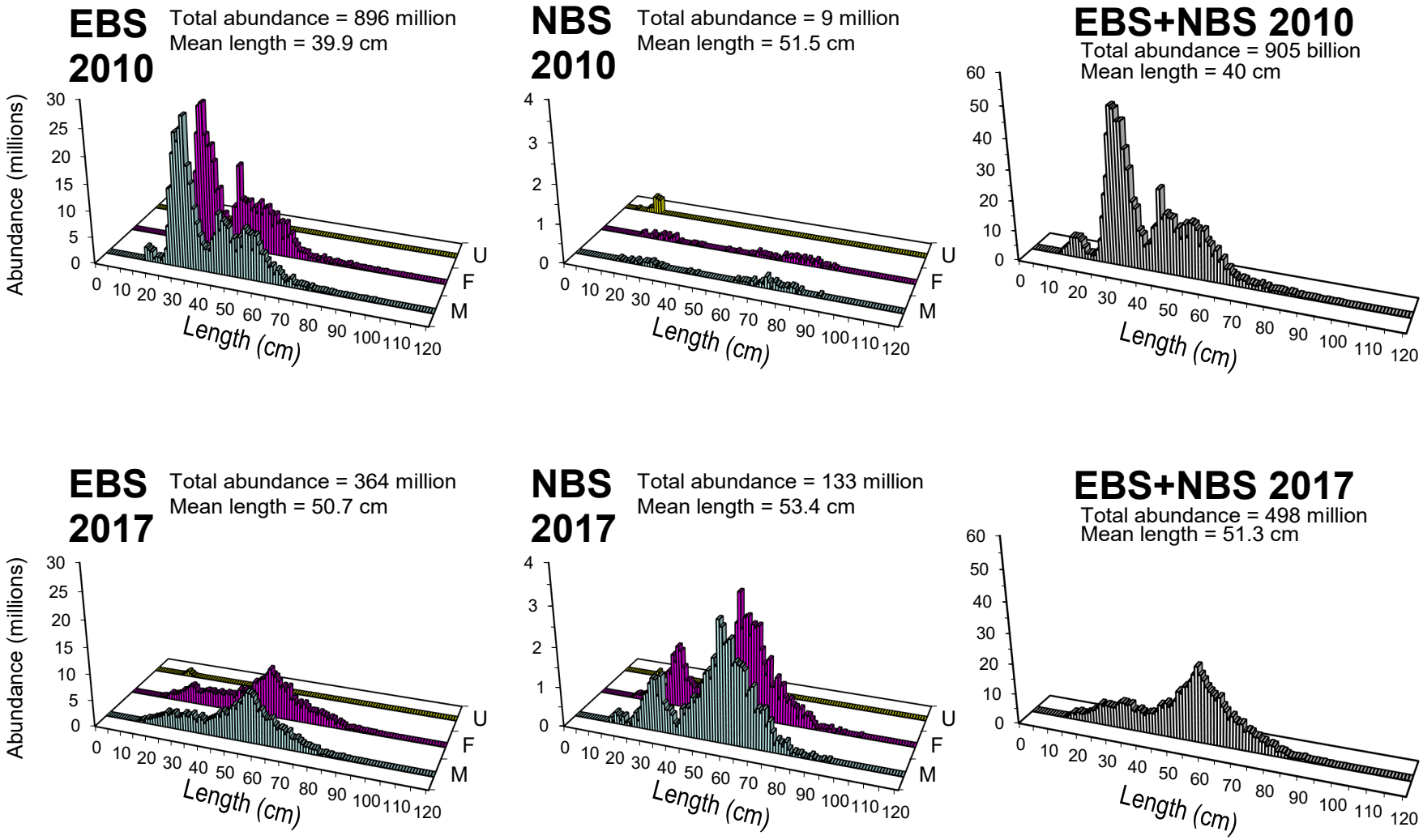

Figure 10. -- Total abundance-at-length and mean length of **Pacific cod** (*Gadus macrocephalus*) by sex (M = male, F = female, U = unsexed) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

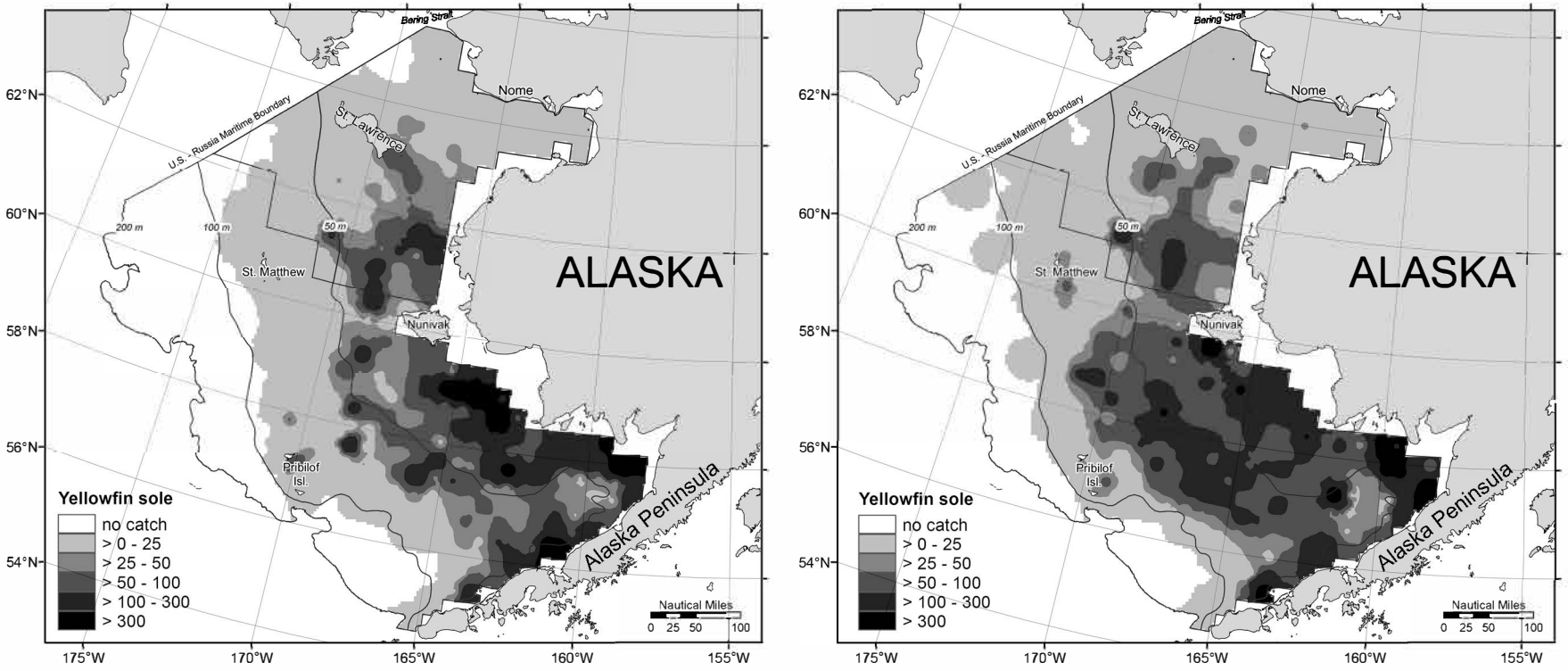

Figure 12. -- Distribution and relative survey abundance (kg/ha) of **yellowfin sole** (*Limanda aspera*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

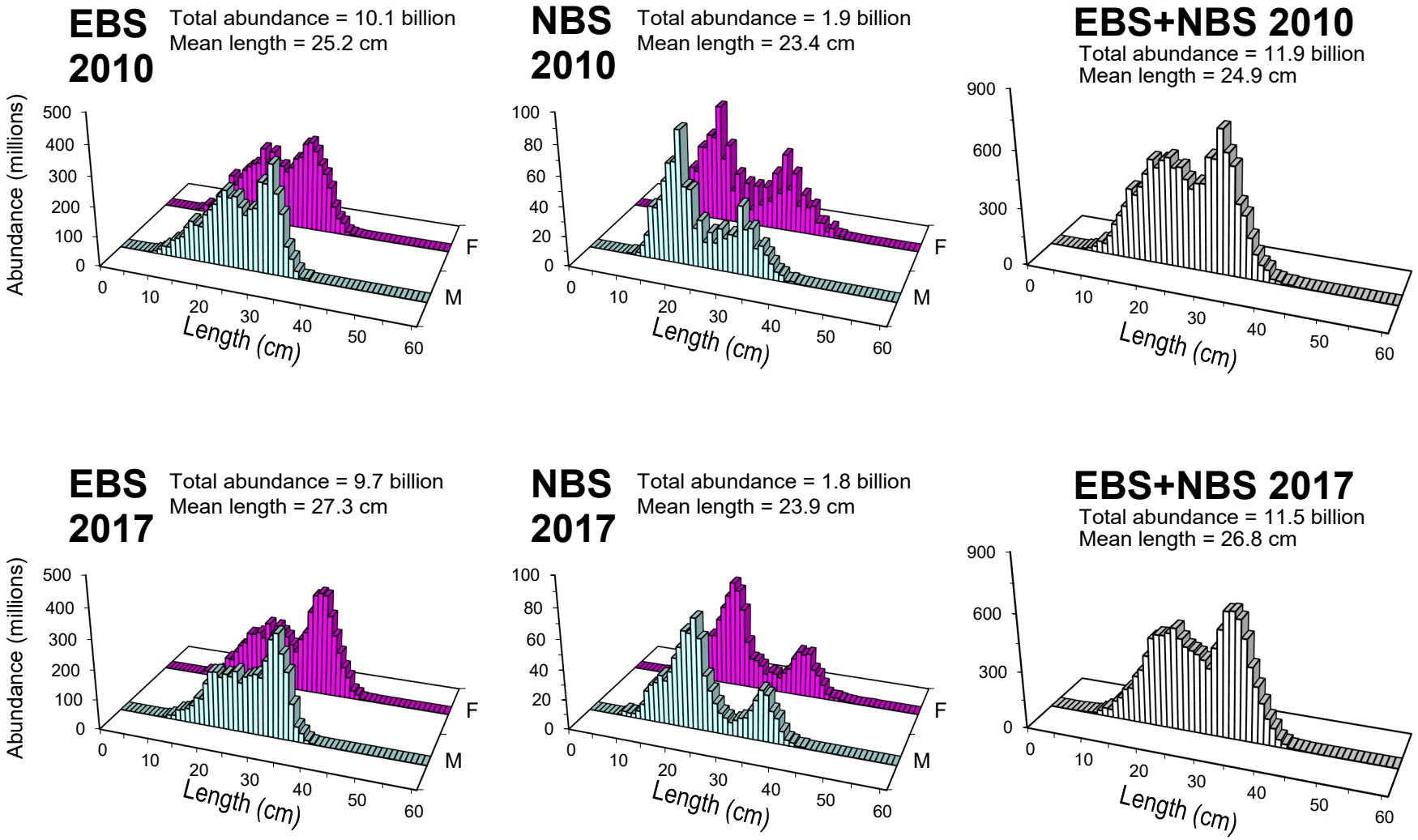

Figure 13. -- Total abundance-at-length and mean length of **yellowfin sole** (*Limanda aspera*) by sex (M = male, F = female) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 10a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **yellowfin sole** (*Limanda aspera*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	159.13	23.40	1,239,184	1.82e+05	874,282	1,604,086	58	58	58	57
20	90.66	22.25	371,946	9.13e+04	185,505	558,387	31	31	31	31
31	83.50	11.95	789,329	1.13e+05	563,999	1,014,659	69	67	67	67
32	27.24	7.25	23,898	6.36e+03	8,858	38,938	8	8	8	8
41	41.02	9.43	257,226	5.92e+04	137,926	376,526	44	41	41	41
42	34.93	6.78	83,874	1.63e+04	50,636	117,112	31	27	27	27
43	10.14	3.66	21,408	7.73e+03	5,323	37,493	22	17	17	17
50	0.17	0.12	643	4.48e+02	0	1,564	26	2	2	2
61	0.00	0.00	15	1.05e+01	0	36	60	2	2	2
62	0.00	0.00	0	0.00e+00	0	0	7	0	0	0
82	0.08	0.03	142	5.41e+01	23	261	12	6	6	6
90	0.02	0.02	23	2.32e+01	0	78	8	1	1	0
Total	**56.56**	**4.89**	**2,787,688**	**2.41e+05**	**2,311,078**	**3,264,298**	**376**	**260**	**260**	**258**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	41.66	4.61	330,240	3.66e+04	257,069	403,411	60	60	60	60
71	6.68	1.25	55,214	1.04e+04	34,461	75,967	58	54	54	53
81	10.60	8.43	40,664	3.23e+04	0	107,271	26	18	18	18
Total	**21.28**	**2.49**	**426,117**	**4.99e+04**	**326,247**	**525,987**	**144**	**132**	**132**	**131**

Table 10b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **yellowfin sole** (*Limanda aspera*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	609.90	98.94	4,749,399	7.70e+05	3,206,525	6,292,273	58	58	58	57
20	445.54	184.91	1,827,901	7.59e+05	278,542	3,377,260	31	31	31	31
31	235.09	35.44	2,222,184	3.35e+05	1,553,709	2,890,658	69	67	67	67
32	51.36	12.35	45,062	1.08e+04	19,439	70,684	8	8	8	8
41	100.95	25.26	632,985	1.58e+05	313,583	952,387	44	41	41	41
42	76.88	16.18	184,589	3.88e+04	105,252	263,927	31	27	27	27
43	30.80	11.54	65,021	2.44e+04	14,378	115,663	22	17	17	17
50	0.31	0.21	1,183	8.20e+02	0	2,872	26	2	2	2
61	0.01	0.00	58	4.08e+01	0	140	60	2	2	2
62	0.00	0.00	0	0.00e+00	0	0	7	0	0	0
82	0.24	0.09	440	1.61e+02	85	794	12	6	6	6
90	0.05	0.05	59	5.89e+01	0	198	8	1	1	0
Total	**197.38**	**23.21**	**9,728,881**	**1.14e+06**	**7,449,685**	**12,008,077**	**376**	**260**	**260**	**258**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	173.01	26.93	1,371,271	2.13e+05	944,088	1,798,454	60	60	60	60
71	38.00	7.64	313,860	6.31e+04	187,438	440,282	58	54	54	53
81	20.16	15.96	77,312	6.12e+04	0	203,380	26	18	18	18
Total	**88.03**	**11.53**	**1,762,443**	**2.31e+05**	**1,303,753**	**2,221,134**	**144**	**132**	**132**	**131**

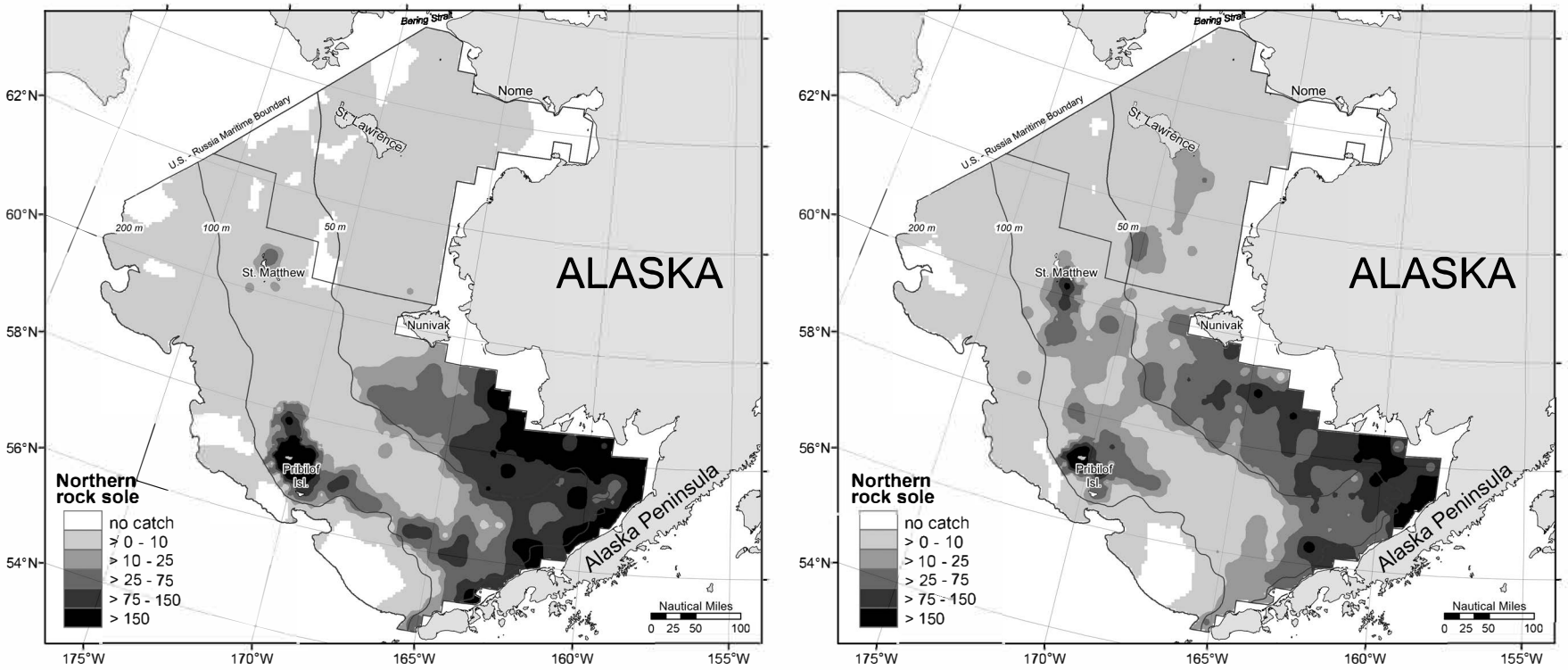

Figure 14. -- Distribution and relative survey abundance (kg/ha) of **northern rock sole** (*Lepidopsetta polyxystra*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

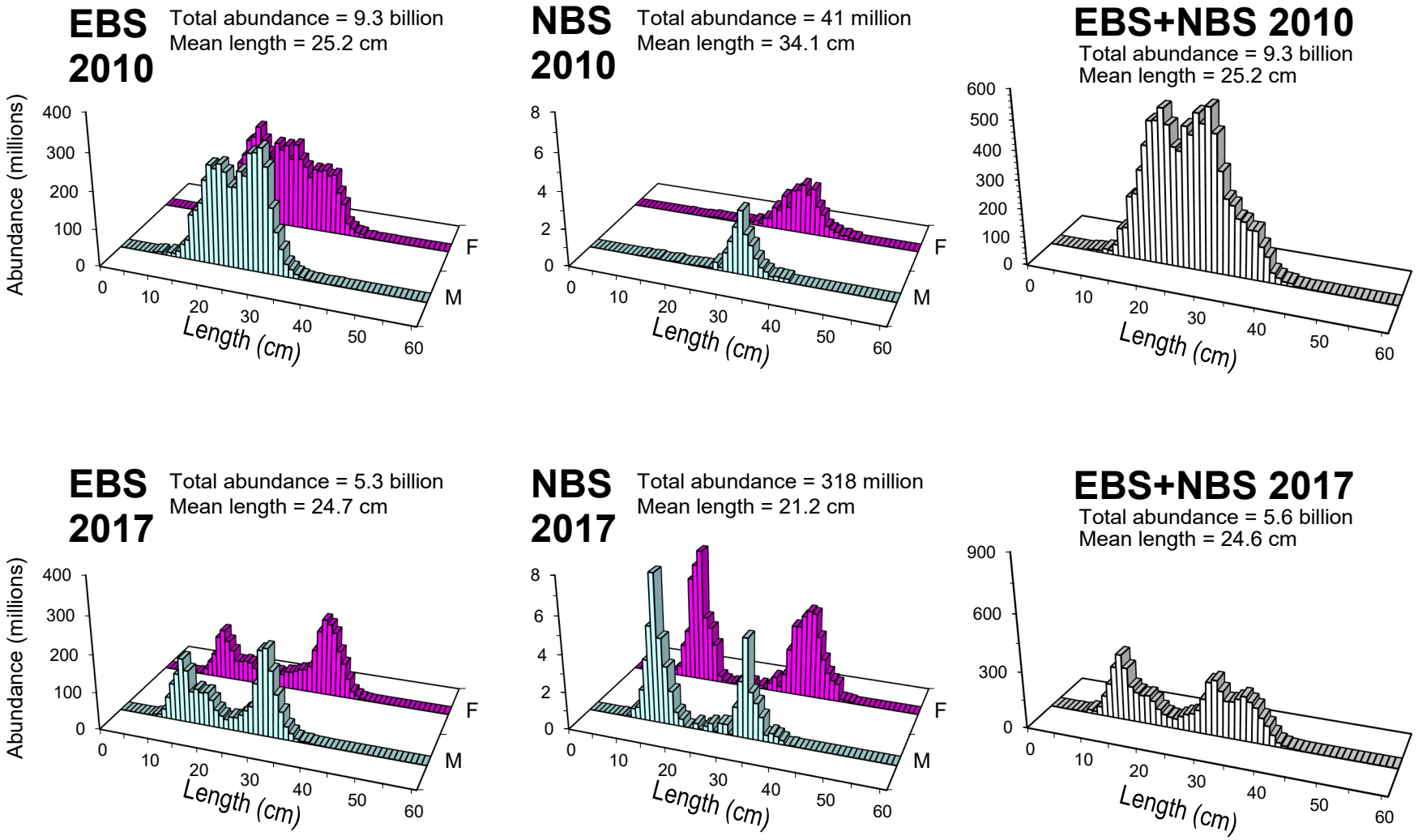

Figure 15. -- Total abundance-at-length and mean length of **northern rock sole** (*Lepidopsetta polyxystra*) by sex (M = male, F = female) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 11a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **northern rock sole** (*Lepidopsetta polyxystra*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	93.06	9.27	724,700	7.22e+04	580,196	869,203	58	58	58	57
20	32.22	5.10	132,190	2.09e+04	89,490	174,889	31	31	31	31
31	21.98	4.22	207,789	3.99e+04	128,204	287,374	69	67	67	67
32	24.37	7.88	21,380	6.92e+03	5,029	37,732	8	8	8	8
41	8.38	1.31	52,556	8.23e+03	35,953	69,159	44	39	39	39
42	52.88	19.21	126,972	4.61e+04	32,763	221,181	31	29	29	29
43	25.75	9.89	54,355	2.09e+04	10,942	97,768	22	22	22	22
50	0.29	0.19	1,108	7.43e+02	0	2,638	26	7	7	7
61	0.89	0.28	7,876	2.48e+03	2,917	12,835	60	29	29	29
62	1.32	0.29	852	1.84e+02	401	1,302	7	7	7	7
82	0.80	0.36	1,444	6.51e+02	10	2,877	12	7	7	7
90	0.48	0.12	560	1.43e+02	221	899	8	6	6	6
Total	**27.02**	**2.02**	**1,331,780**	**9.96e+04**	**1,134,985**	**1,528,576**	**376**	**310**	**310**	**309**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	5.71	1.12	45,248	8.89e+03	27,456	63,040	60	55	55	55
71	0.97	0.26	7,989	2.12e+03	3,736	12,242	58	31	31	31
81	0.19	0.06	712	2.36e+02	225	1,199	26	15	15	15
Total	**2.69**	**0.46**	**53,949**	**9.14e+03**	**35,697**	**72,201**	**144**	**101**	**101**	**101**

Table 11b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **northern rock sole** (*Lepidopsetta polyxystra*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	389.41	36.93	3,032,370	2.88e+05	2,456,426	3,608,313	58	58	58	57
20	194.53	32.32	798,084	1.33e+05	527,267	1,068,902	31	31	31	31
31	87.78	16.79	829,770	1.59e+05	513,019	1,146,521	69	67	67	67
32	68.26	23.48	59,896	2.06e+04	11,173	108,620	8	8	8	8
41	23.15	4.39	145,156	2.75e+04	89,643	200,670	44	39	39	39
42	117.92	37.13	283,147	8.92e+04	101,049	465,246	31	29	29	29
43	43.97	16.27	92,815	3.43e+04	21,382	164,249	22	22	22	22
50	0.54	0.41	2,097	1.57e+03	0	5,336	26	7	7	7
61	1.19	0.33	10,486	2.91e+03	4,668	16,304	60	29	29	29
62	2.22	0.46	1,428	2.94e+02	709	2,148	7	7	7	7
82	1.29	0.57	2,319	1.03e+03	49	4,590	12	7	7	7
90	0.87	0.21	1,004	2.39e+02	438	1,570	8	6	6	6
Total	**106.69**	**7.48**	**5,258,574**	**3.69e+05**	**4,530,357**	**5,986,790**	**376**	**310**	**310**	**309**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	37.86	8.35	300,076	6.62e+04	167,616	432,535	60	55	55	55
71	1.96	0.54	16,222	4.44e+03	7,333	25,111	58	31	31	31
81	0.36	0.12	1,388	4.52e+02	457	2,319	26	15	15	15
Total	**15.87**	**3.31**	**317,685**	**6.63e+04**	**184,998**	**450,373**	**144**	**101**	**101**	**101**

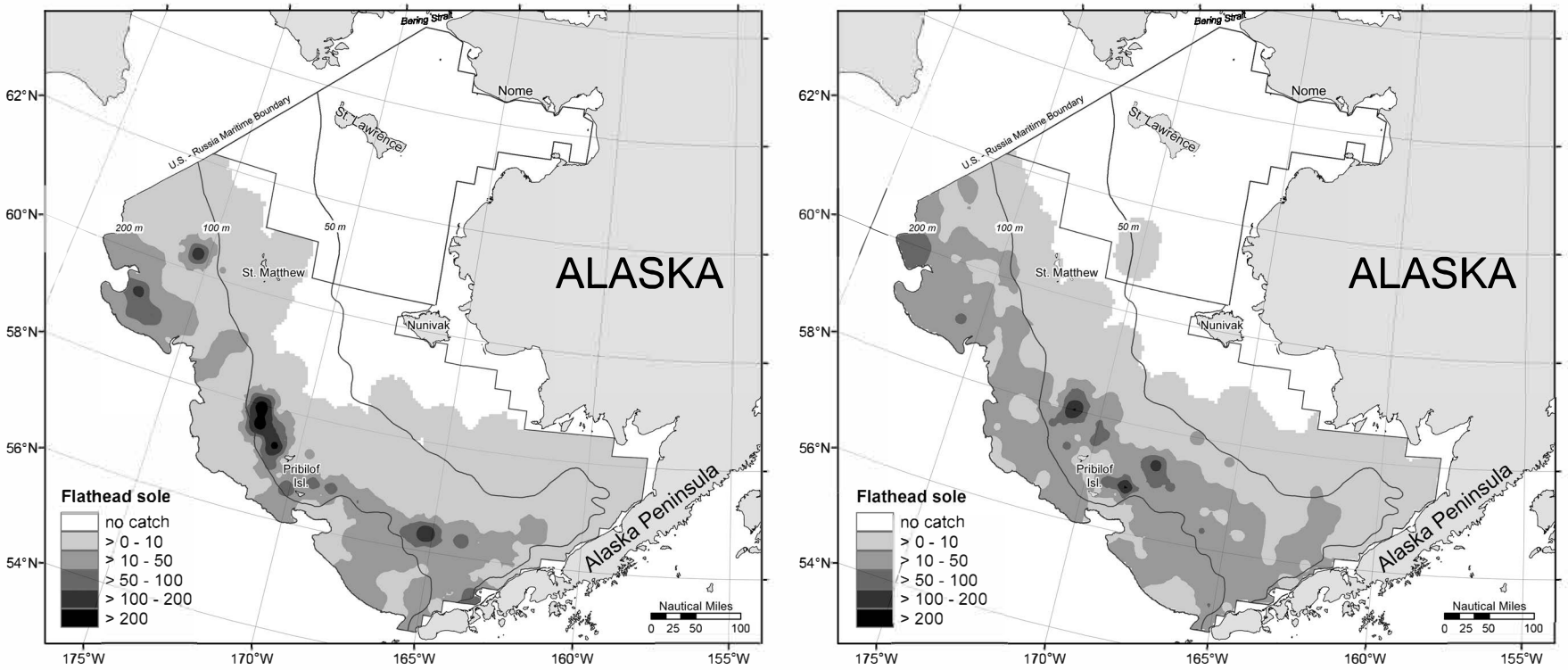

Figure 16. -- Distribution and relative survey abundance (kg/ha) of **flathead sole** (*Hippoglossoides elassodon*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

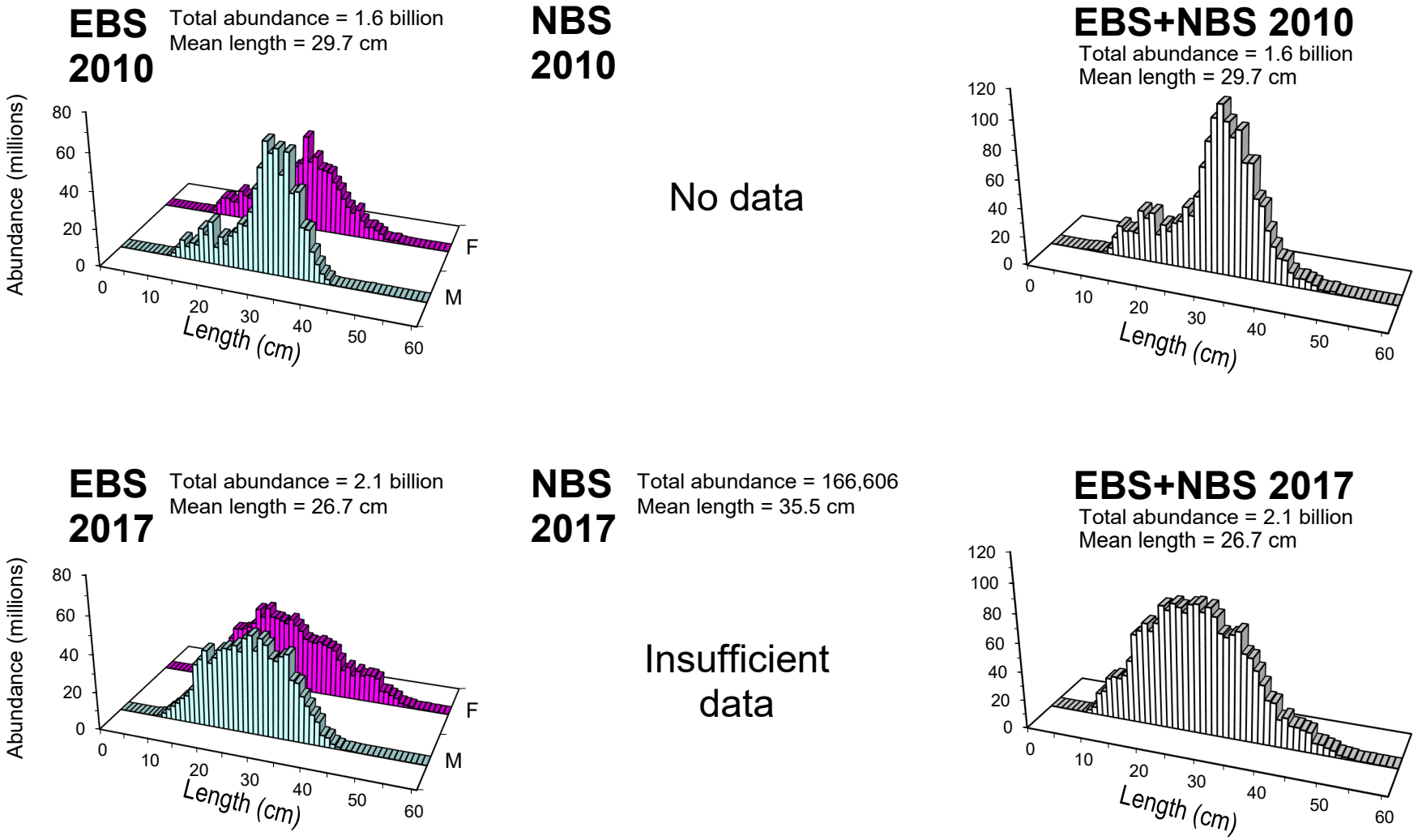

Figure 17. -- Total abundance-at-length and mean length of **flathead sole** (*Hippoglossoides elassodon*) by sex (M = male, F = female) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 12a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **flathead sole** (*Hippoglossoides elassodon*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	1.46	0.32	11,375	2.46e+03	6,455	16,295	58	34	34	32
20	0.00	0.00	20	1.60e+01	0	53	31	2	2	2
31	16.26	2.25	153,695	2.13e+04	111,185	196,206	69	69	69	67
32	56.60	25.53	49,660	2.24e+04	0	102,619	8	8	8	8
41	4.28	1.89	26,808	1.18e+04	2,953	50,663	44	26	26	26
42	27.16	7.33	65,210	1.76e+04	29,267	101,153	31	28	28	27
43	2.16	0.76	4,562	1.60e+03	1,227	7,897	22	16	16	16
50	14.85	2.34	57,602	9.09e+03	38,878	76,326	26	25	25	25
61	17.50	2.02	154,197	1.78e+04	118,560	189,834	60	60	60	60
62	12.70	3.53	8,162	2.27e+03	2,610	13,714	7	7	7	6
82	0.29	0.20	522	3.56e+02	0	1,306	12	3	3	3
90	5.36	2.09	6,205	2.41e+03	499	11,910	8	8	8	8
Total	**10.92**	**0.87**	**538,018**	**4.27e+04**	**448,004**	**628,032**	**376**	**286**	**286**	**280**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.01	0.01	76	5.52e+01	0	187	60	2	2	2
71	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
81	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
Total	**0.00**	**0.00**	**76**	**5.52e+01**	**0**	**187**	**144**	**2**	**2**	**2**

Table 12b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **flathead sole** (*Hippoglossoides elassodon*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	3.39	0.83	26,381	6.45e+03	13,464	39,297	58	34	34	32
20	0.02	0.01	84	6.14e+01	0	209	31	2	2	2
31	50.78	6.05	480,035	5.72e+04	365,895	594,175	69	69	69	67
32	91.21	44.36	80,026	3.89e+04	0	172,058	8	8	8	8
41	7.46	2.68	46,762	1.68e+04	12,871	80,653	44	26	26	26
42	47.88	10.86	114,969	2.61e+04	61,707	168,232	31	28	28	27
43	10.46	3.29	22,076	6.95e+03	7,619	36,532	22	16	16	16
50	114.45	16.50	443,996	6.40e+04	312,134	575,859	26	25	25	25
61	93.78	10.40	826,496	9.16e+04	643,155	1,009,837	60	60	60	60
62	45.16	6.95	29,030	4.47e+03	18,096	39,963	7	7	7	6
82	0.33	0.23	584	4.20e+02	0	1,508	12	3	3	3
90	24.99	9.86	28,909	1.14e+04	1,947	55,871	8	8	8	8
Total	**42.59**	**2.76**	**2,099,347**	**1.36e+05**	**1,827,252**	**2,371,443**	**376**	**286**	**286**	**280**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.02	0.01	166	1.16e+02	0	398	60	2	2	2
71	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
81	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
Total	**0.01**	**0.01**	**166**	**1.16e+02**	**0**	**398**	**144**	**2**	**2**	**2**

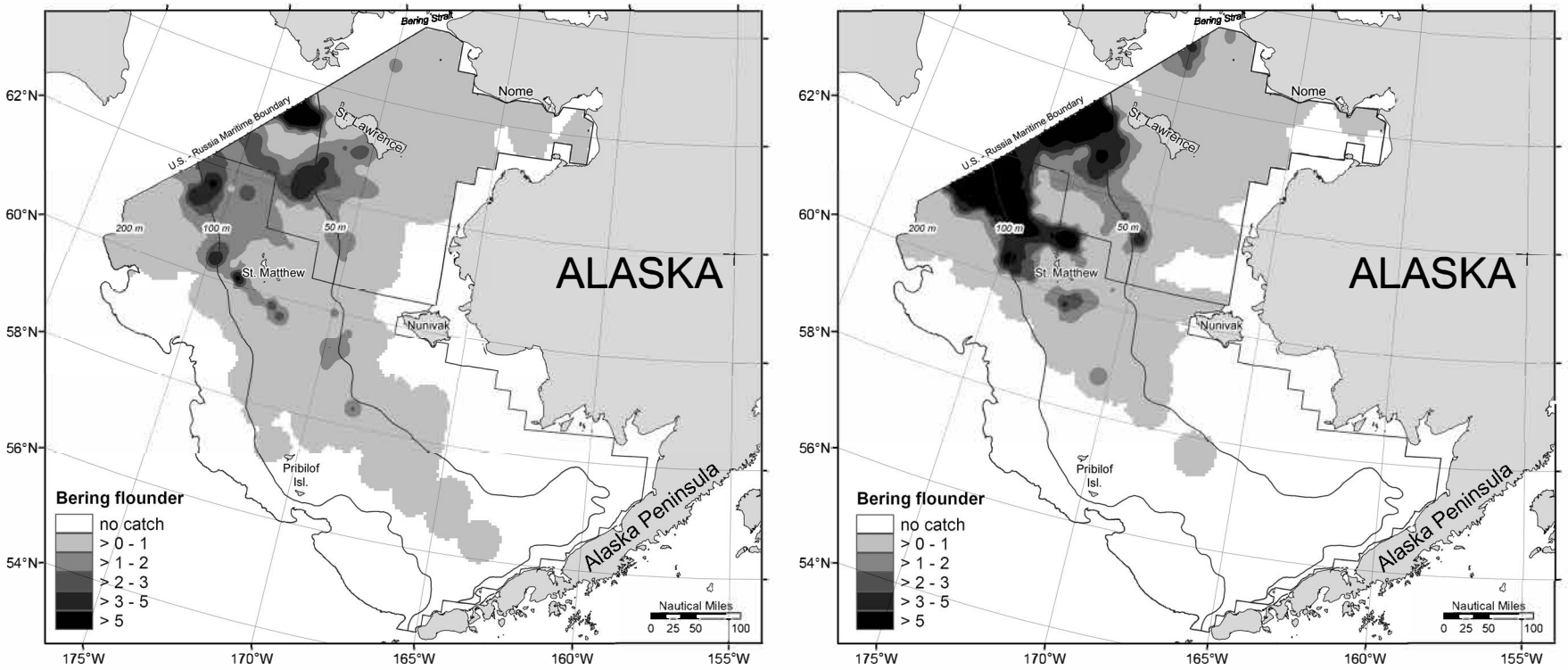

Figure 18. -- Distribution and relative survey abundance (kg/ha) of **Bering flounder** (*Hippoglossoides robustus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

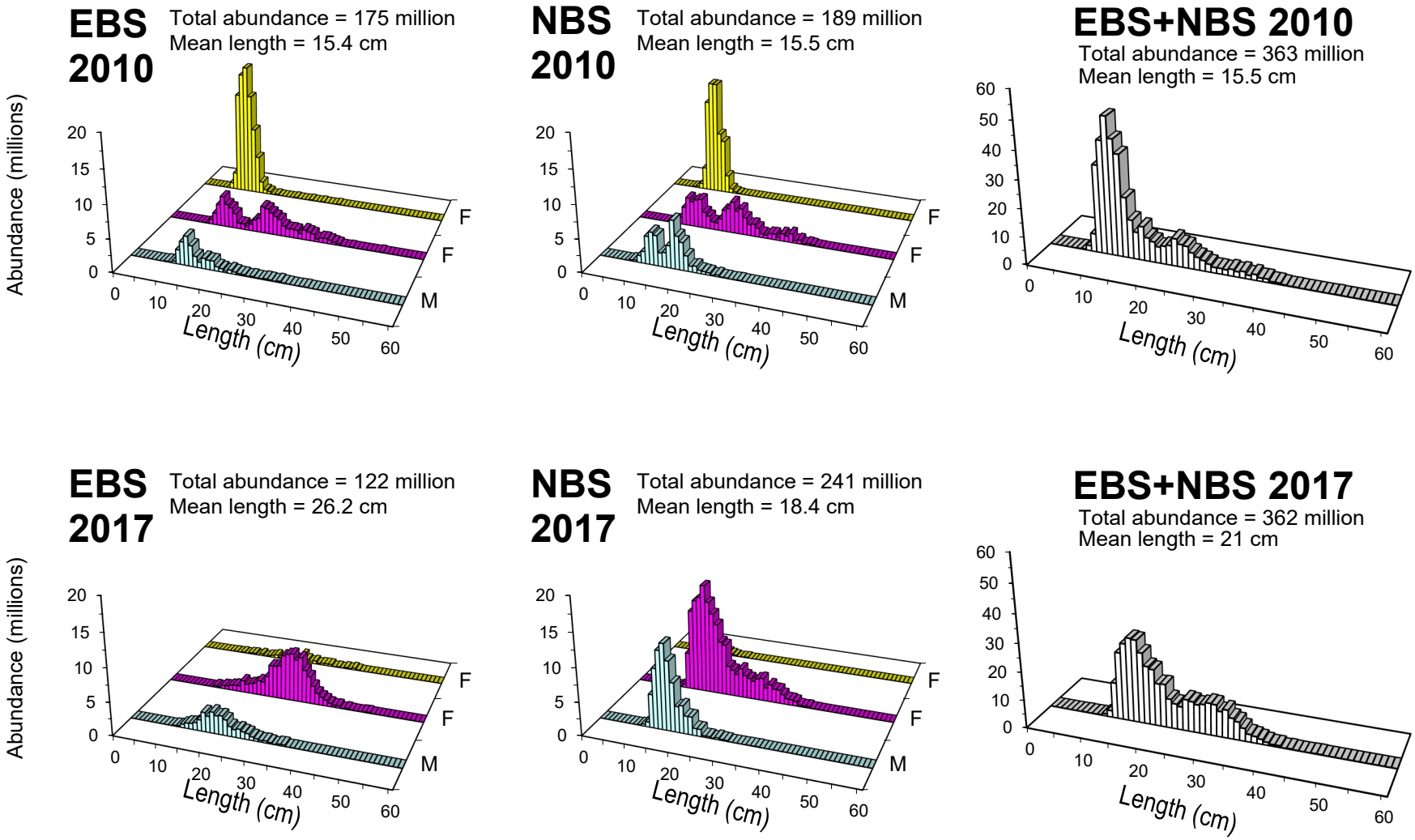

Figure 19. -- Total abundance-at-length and mean length of **Bering flounder** (*Hippoglossoides robustus*) by sex (M = male, F = female, U = unsexed) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 13a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Bering flounder** (*Hippoglossoides robustus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
20	0.05	0.02	197	9.00e+01	13	381	31	7	7	7
31	0.00	0.00	28	2.81e+01	0	84	69	1	1	1
32	0.00	0.00	0	0.00e+00	0	0	8	0	0	0
41	0.94	0.31	5,897	1.92e+03	2,022	9,773	44	28	28	28
42	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
43	1.02	0.28	2,157	5.84e+02	943	3,372	22	14	14	14
50	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
61	0.04	0.03	357	2.28e+02	0	813	60	6	6	6
62	0.99	0.94	638	6.07e+02	0	2,124	7	3	3	3
82	4.60	1.45	8,258	2.60e+03	2,529	13,987	12	12	12	12
90	8.53	2.61	9,871	3.01e+03	2,744	16,997	8	8	8	8
Total	**0.56**	**0.09**	**27,404**	**4.51e+03**	**17,942**	**36,866**	**376**	**79**	**79**	**79**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.41	0.11	3,276	8.46e+02	1,584	4,969	60	37	37	37
71	0.27	0.08	2,192	6.24e+02	942	3,442	58	33	33	32
81	3.99	1.14	15,313	4.37e+03	6,315	24,312	26	25	25	25
Total	**1.04**	**0.22**	**20,782**	**4.49e+03**	**11,567**	**29,997**	**144**	**95**	**95**	**94**

Table 13b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Bering flounder** (*Hippoglossoides robustus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
20	0.19	0.08	760	3.39e+02	68	1,452	31	7	7	7
31	0.01	0.01	85	8.50e+01	0	255	69	1	1	1
32	0.00	0.00	0	0.00e+00	0	0	8	0	0	0
41	4.10	1.43	25,707	9.00e+03	7,564	43,849	44	28	28	28
42	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
43	4.27	1.11	9,008	2.33e+03	4,154	13,863	22	14	14	14
50	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
61	0.18	0.12	1,590	1.02e+03	0	3,622	60	6	6	6
62	3.18	2.95	2,046	1.90e+03	0	6,690	7	3	3	3
82	24.93	5.77	44,764	1.04e+04	21,970	67,559	12	12	12	12
90	32.92	9.17	38,083	1.06e+04	13,011	63,155	8	8	8	8
Total	**2.48**	**0.36**	**122,044**	**1.76e+04**	**85,365**	**158,723**	**376**	**79**	**79**	**79**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	3.33	0.76	26,393	6.00e+03	14,395	38,390	60	37	37	37
71	4.70	1.17	38,817	9.69e+03	19,411	58,223	58	33	33	32
81	45.88	12.47	175,946	4.78e+04	77,483	274,409	26	25	25	25
Total	**12.05**	**2.45**	**241,155**	**4.91e+04**	**140,369**	**341,942**	**144**	**95**	**95**	**94**

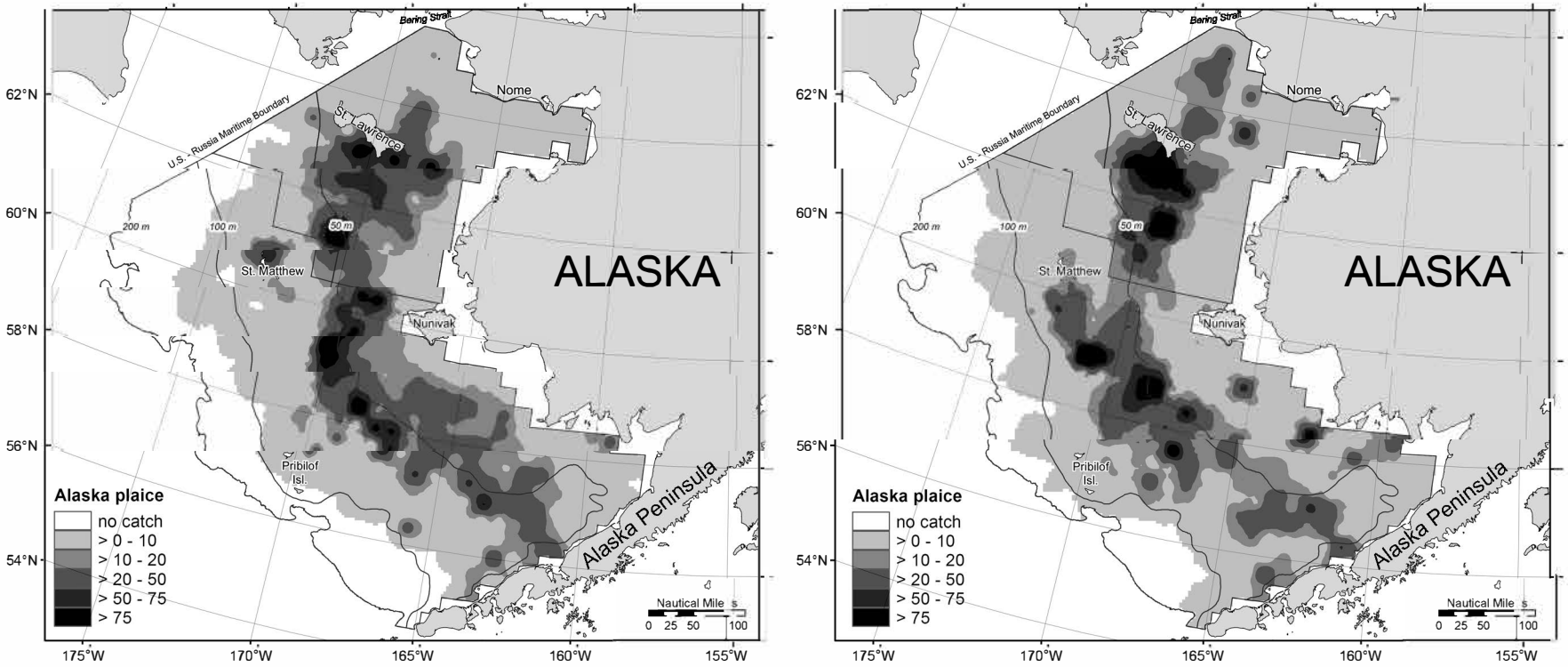

Figure 20. -- Distribution and relative survey abundance (kg/ha) of **Alaska plaice** (*Pleuronectes quadrituberculatus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

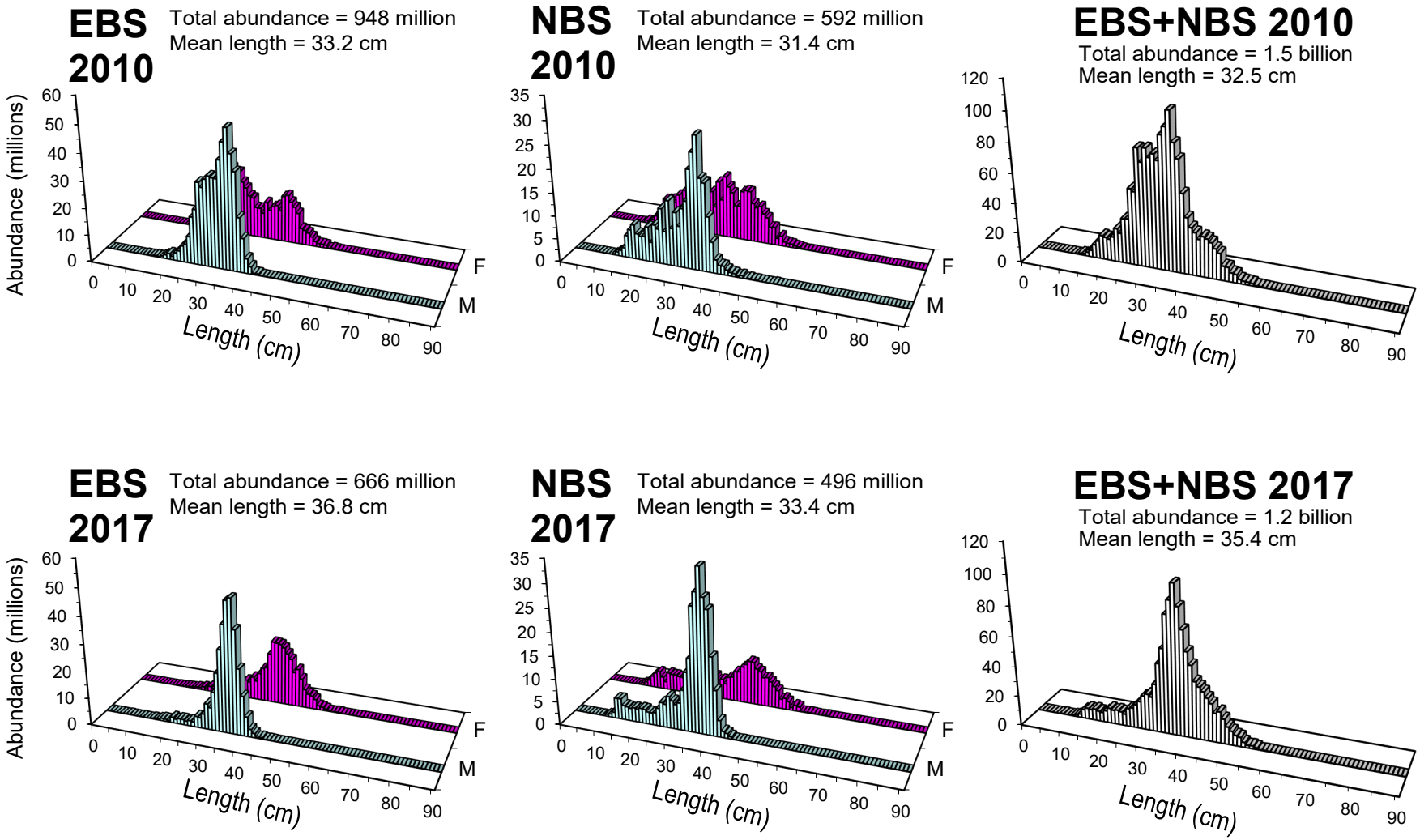

Figure 21. -- Total abundance-at-length and mean length of **Alaska plaice** (*Pleuronectes quadrituberculatus*) by sex (M = male, F = female) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 14a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Alaska plaice** (*Pleuronectes quadrituberculatus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	10.86	2.27	84,531	1.77e+04	49,166	119,896	58	57	57	54
20	16.33	5.91	67,005	2.42e+04	17,509	116,502	31	31	31	31
31	13.41	2.14	126,750	2.02e+04	86,384	167,117	69	62	62	62
32	6.66	1.52	5,843	1.33e+03	2,696	8,990	8	8	8	8
41	23.76	5.84	149,003	3.66e+04	75,134	222,871	44	39	39	39
42	9.76	2.37	23,442	5.68e+03	11,835	35,050	31	24	24	24
43	14.89	3.87	31,420	8.17e+03	14,427	48,413	22	20	20	20
50	0.08	0.07	307	2.76e+02	0	875	26	2	2	2
61	0.19	0.09	1,667	8.32e+02	2	3,333	60	7	7	6
62	0.43	0.39	276	2.53e+02	0	896	7	2	2	2
82	0.42	0.14	750	2.45e+02	210	1,290	12	9	9	9
90	0.05	0.05	54	5.42e+01	0	182	8	1	1	1
Total	**9.96**	**1.06**	**491,050**	**5.25e+04**	**387,219**	**594,881**	**376**	**262**	**262**	**258**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	29.99	6.33	237,668	5.02e+04	137,256	338,079	60	60	60	60
71	7.84	1.87	64,784	1.55e+04	33,839	95,730	58	51	51	50
81	5.69	2.48	21,812	9.53e+03	2,186	41,438	26	21	21	21
Total	**16.20**	**2.67**	**324,264**	**5.34e+04**	**218,098**	**430,430**	**144**	**132**	**132**	**131**

Table 14b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Alaska plaice** (*Pleuronectes quadrituberculatus*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	21.33	4.29	166,135	3.34e+04	99,220	233,051	58	57	57	54
20	27.37	8.56	112,294	3.51e+04	40,573	184,016	31	31	31	31
31	15.59	2.57	147,391	2.43e+04	98,863	195,919	69	62	62	62
32	5.56	1.33	4,878	1.17e+03	2,108	7,648	8	8	8	8
41	28.95	5.85	181,496	3.67e+04	107,564	255,428	44	39	39	39
42	9.86	2.50	23,682	6.00e+03	11,422	35,942	31	24	24	24
43	13.25	3.33	27,957	7.02e+03	13,362	42,553	22	20	20	20
50	0.09	0.07	354	2.73e+02	0	917	26	2	2	2
61	0.12	0.06	1,093	5.43e+02	6	2,180	60	7	7	6
62	0.20	0.17	126	1.07e+02	0	387	7	2	2	2
82	0.42	0.14	754	2.45e+02	216	1,292	12	9	9	9
90	0.04	0.04	41	4.08e+01	0	137	8	1	1	1
Total	**13.52**	**1.34**	**666,201**	**6.61e+04**	**535,376**	**797,027**	**376**	**262**	**262**	**258**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	45.82	8.14	363,193	6.45e+04	234,064	492,323	60	60	60	60
71	13.04	2.35	107,668	1.94e+04	68,789	146,546	58	51	51	50
81	6.56	3.36	25,164	1.29e+04	0	51,704	26	21	21	21
Total	**24.78**	**3.43**	**496,025**	**6.86e+04**	**359,536**	**632,515**	**144**	**132**	**132**	**131**

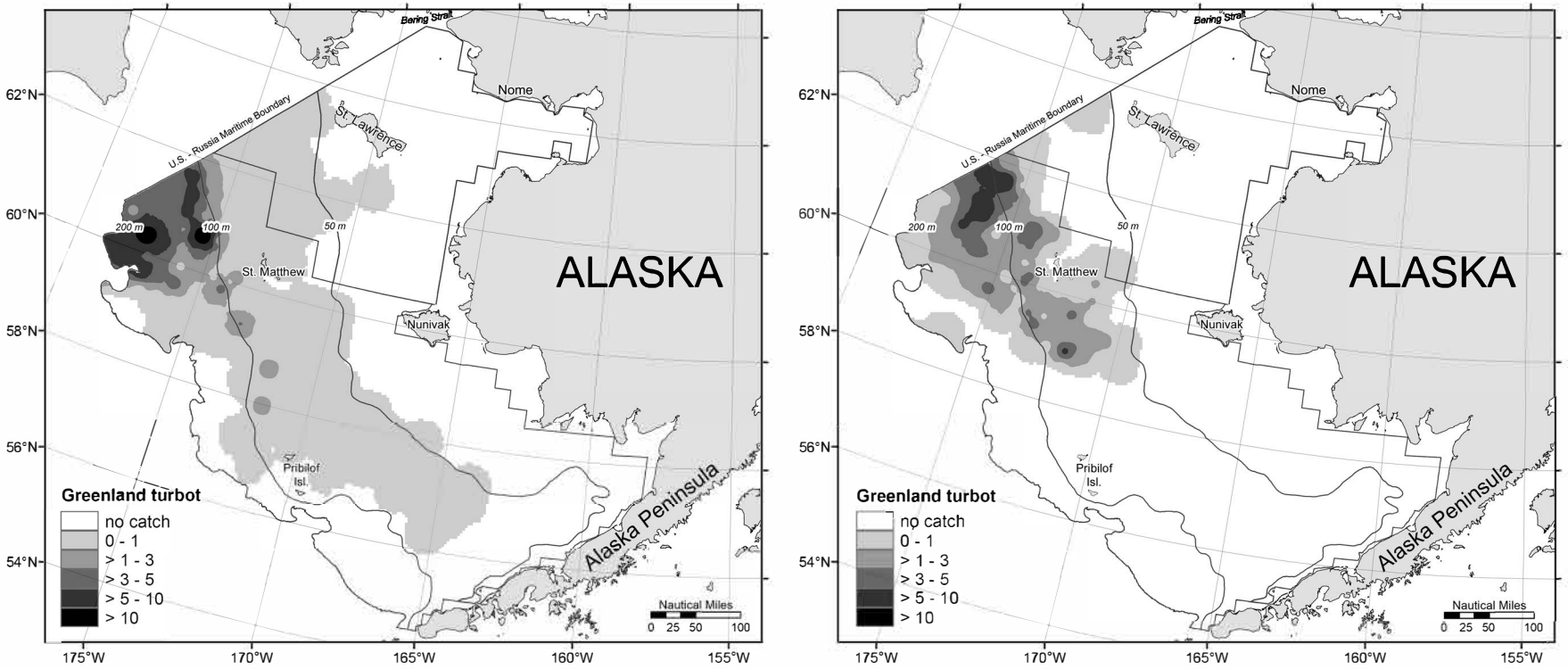

Figure 22. -- Distribution and relative survey abundance (kg/ha) of **Greenland turbot** (*Reinhardtius hippoglossoides*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

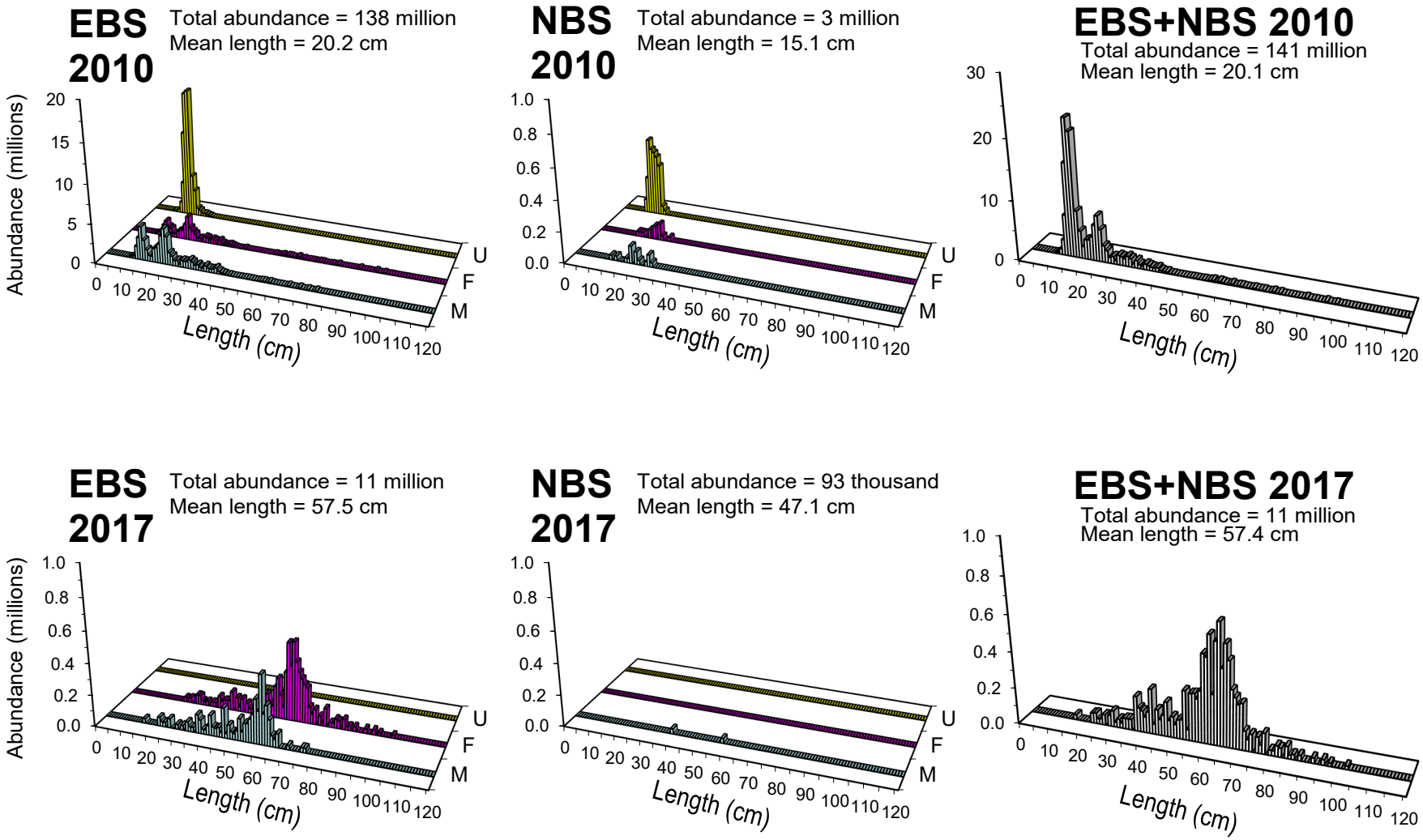

Figure 23. -- Total abundance-at-length and mean length of **Greenland turbot** (*Reinhardtius hippoglossoides*) by sex (M = male, F = female, U = unsexed) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 15a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Greenland turbot** (*Reinhardtius hippoglossoides*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
20	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
31	0.00	0.00	0	0.00e+00	0	0	69	0	0	0
32	0.00	0.00	0	0.00e+00	0	0	8	0	0	0
41	0.67	0.20	4,213	1.26e+03	1,671	6,754	44	15	15	15
42	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
43	1.69	0.29	3,567	6.22e+02	2,273	4,861	22	17	17	17
50	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
61	0.64	0.16	5,631	1.44e+03	2,751	8,512	60	17	17	17
62	0.84	0.40	539	2.57e+02	0	1,167	7	4	4	4
82	1.36	0.74	2,434	1.34e+03	0	5,374	12	6	6	6
90	4.44	0.95	5,136	1.10e+03	2,535	7,736	8	8	8	8
Total	**0.44**	**0.05**	**21,519**	**2.67e+03**	**16,096**	**26,943**	**376**	**67**	**67**	**67**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.01	0.01	43	4.29e+01	0	129	60	1	1	1
71	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
81	0.00	0.00	16	1.48e+01	0	46	26	2	2	1
Total	**0.00**	**0.00**	**58**	**4.54e+01**	**0**	**149**	**144**	**3**	**3**	**2**

Table 15b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Greenland turbot** (*Reinhardtius hippoglossoides*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (thous.)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
20	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
31	0.00	0.00	0	0.00e+00	0	0	69	0	0	0
32	0.00	0.00	0	0.00e+00	0	0	8	0	0	0
41	0.34	0.11	2,143	6.74e+02	784	3,502	44	15	15	15
42	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
43	0.69	0.12	1,457	2.57e+02	923	1,991	22	17	17	17
50	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
61	0.23	0.06	2,064	5.54e+02	956	3,172	60	17	17	17
62	0.28	0.12	181	7.63e+01	0	368	7	4	4	4
82	0.96	0.42	1,731	7.61e+02	57	3,406	12	6	6	6
90	2.54	0.41	2,941	4.77e+02	1,813	4,068	8	8	8	8
Total	**0.21**	**0.03**	**10,518**	**1.28e+03**	**7,907**	**13,129**	**376**	**67**	**67**	**67**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (thous.)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.00	0.00	30	3.02e+01	0	91	60	1	1	1
71	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
81	0.02	0.01	63	4.36e+01	0	153	26	2	2	1
Total	**0.00**	**0.00**	**93**	**5.31e+01**	**0**	**201**	**144**	**3**	**3**	**2**

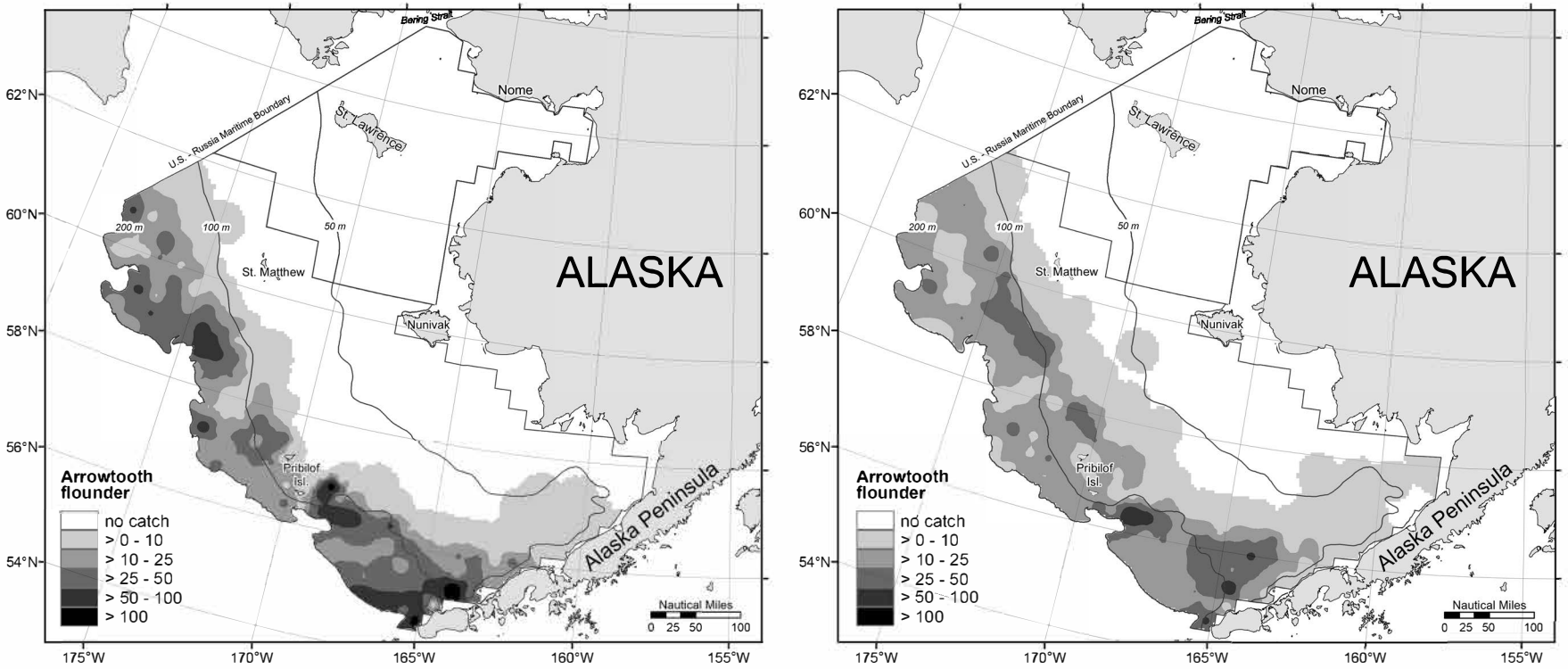

Figure 24. -- Distribution and relative survey abundance (kg/ha) of **arrowtooth flounder** (*Atheresthes stomias*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

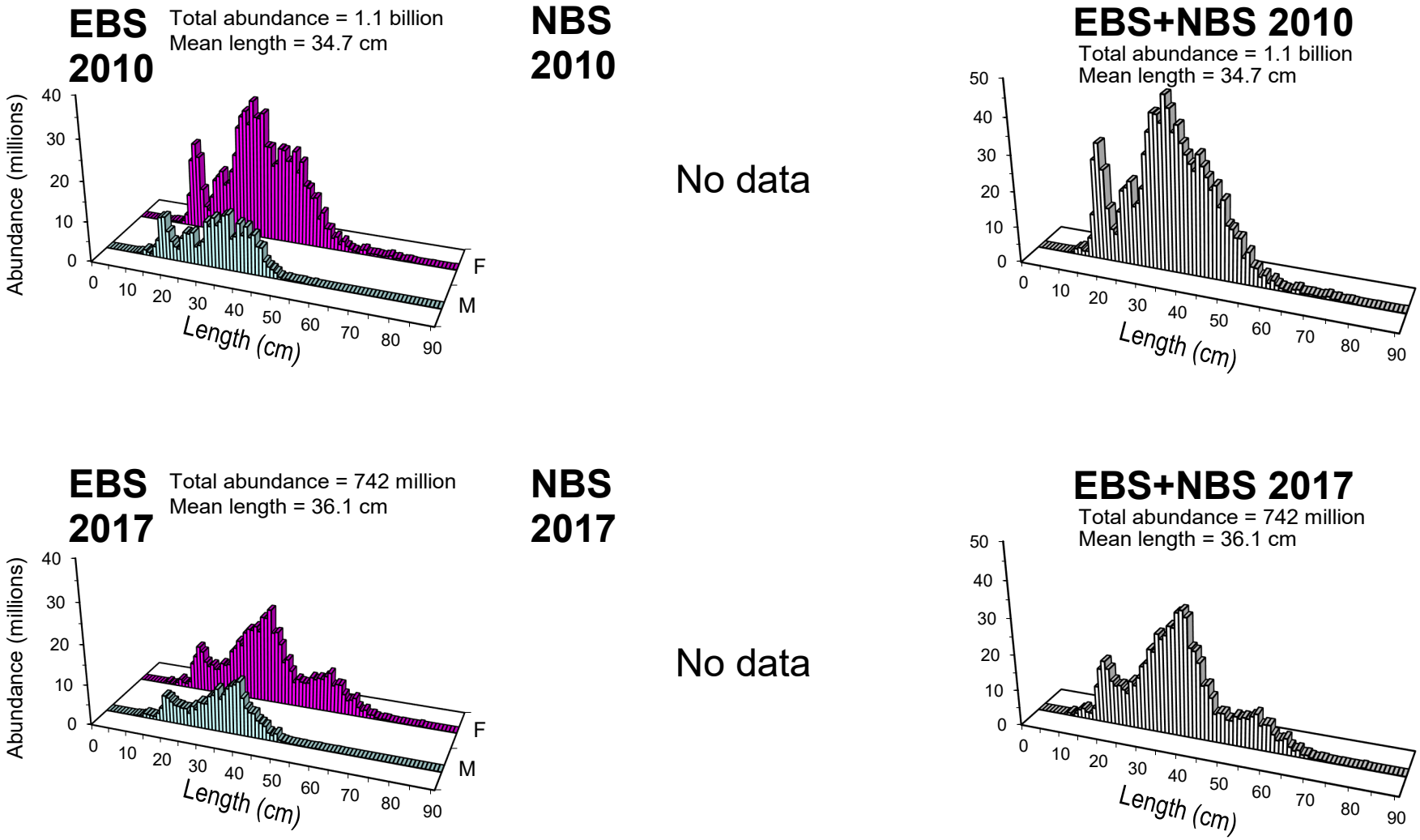

Figure 25. -- Total abundance-at-length and mean length of **arrowtooth flounder** (*Atheresthes stomias*) by sex (M = male, F = female) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 16a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **arrowtooth flounder** (*Atheresthes stomias*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.37	0.21	2,900	1.67e+03	0	6,247	58	6	6	6
20	0.02	0.02	75	7.53e+01	0	229	31	1	1	1
31	10.02	1.98	94,681	1.88e+04	57,242	132,120	69	45	45	45
32	10.53	1.38	9,242	1.21e+03	6,374	12,110	8	8	8	8
41	3.29	1.16	20,649	7.30e+03	5,921	35,378	44	16	16	16
42	13.30	2.09	31,924	5.03e+03	21,651	42,197	31	28	28	28
43	3.38	1.26	7,136	2.65e+03	1,626	12,645	22	13	13	13
50	25.44	3.62	98,679	1.41e+04	69,718	127,639	26	26	26	26
61	14.93	1.18	131,619	1.04e+04	110,763	152,476	60	60	60	59
62	25.99	4.32	16,711	2.78e+03	9,921	23,501	7	7	7	7
82	0.01	0.01	22	2.18e+01	0	70	12	1	1	1
90	9.12	3.36	10,555	3.88e+03	1,373	19,738	8	7	7	7
Total	**8.61**	**0.56**	**424,194**	**2.78e+04**	**369,218**	**479,170**	**376**	**218**	**218**	**217**

Northern

No Data

Table 16b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **arrowtooth flounder** (*Atheresthes stomias*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (mt)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.49	0.27	3,819	2.13e+03	0	8,075	58	6	6	6
20	0.01	0.01	58	5.79e+01	0	176	31	1	1	1
31	24.12	4.97	227,984	4.70e+04	134,208	321,761	69	45	45	45
32	32.11	7.46	28,177	6.55e+03	12,695	43,660	8	8	8	8
41	4.67	1.69	29,281	1.06e+04	7,910	50,651	44	16	16	16
42	23.65	3.25	56,791	7.79e+03	40,876	72,706	31	28	28	28
43	4.22	1.68	8,899	3.55e+03	1,514	16,284	22	13	13	13
50	53.87	9.89	208,960	3.84e+04	129,918	288,002	26	26	26	26
61	16.37	1.28	144,291	1.13e+04	121,755	166,828	60	60	60	59
62	31.81	5.27	20,448	3.39e+03	12,157	28,739	7	7	7	7
82	0.02	0.02	29	2.87e+01	0	92	12	1	1	1
90	11.57	4.18	13,387	4.83e+03	1,954	24,819	8	7	7	7
Total	**15.06**	**1.30**	**742,123**	**6.38e+04**	**615,018**	**869,229**	**376**	**218**	**218**	**217**

Northern

No Data

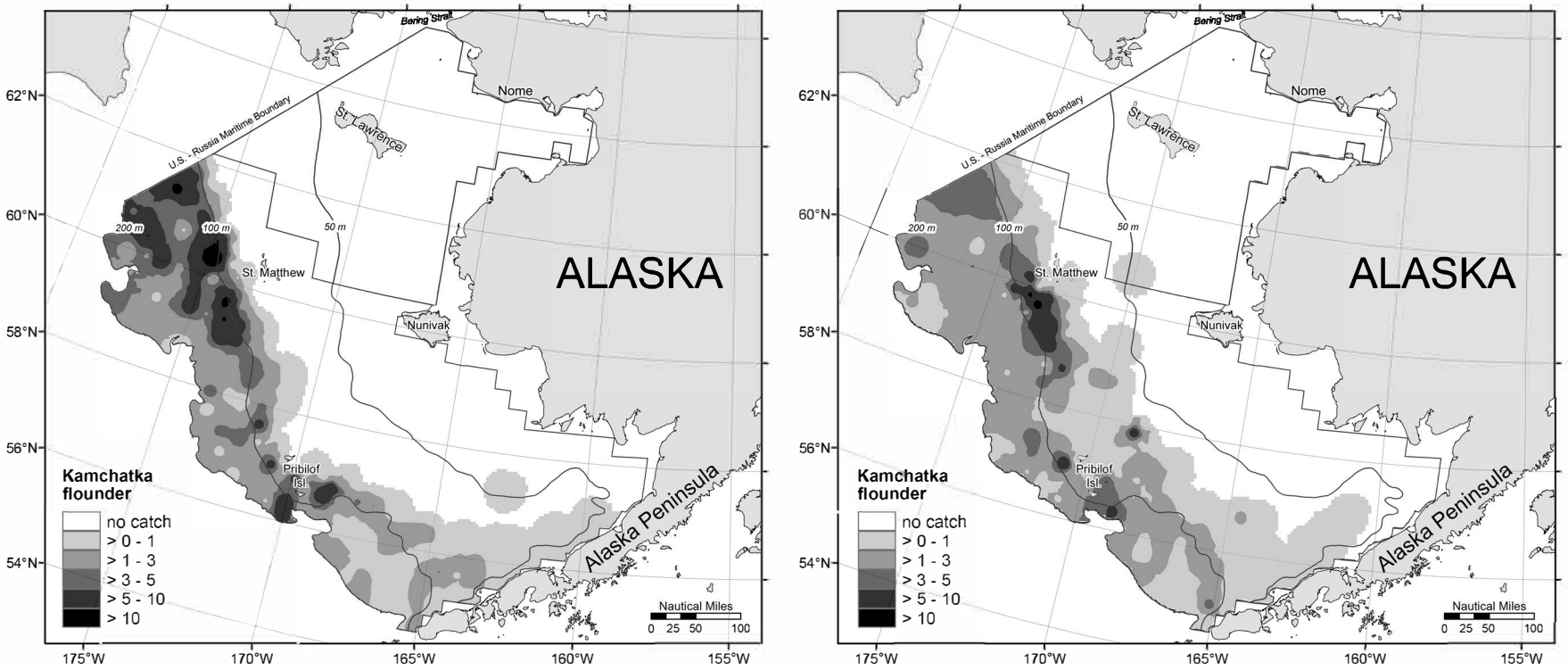

Figure 26. -- Distribution and relative survey abundance (kg/ha) of **Kamchatka flounder** (*Atheresthes evermanni*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

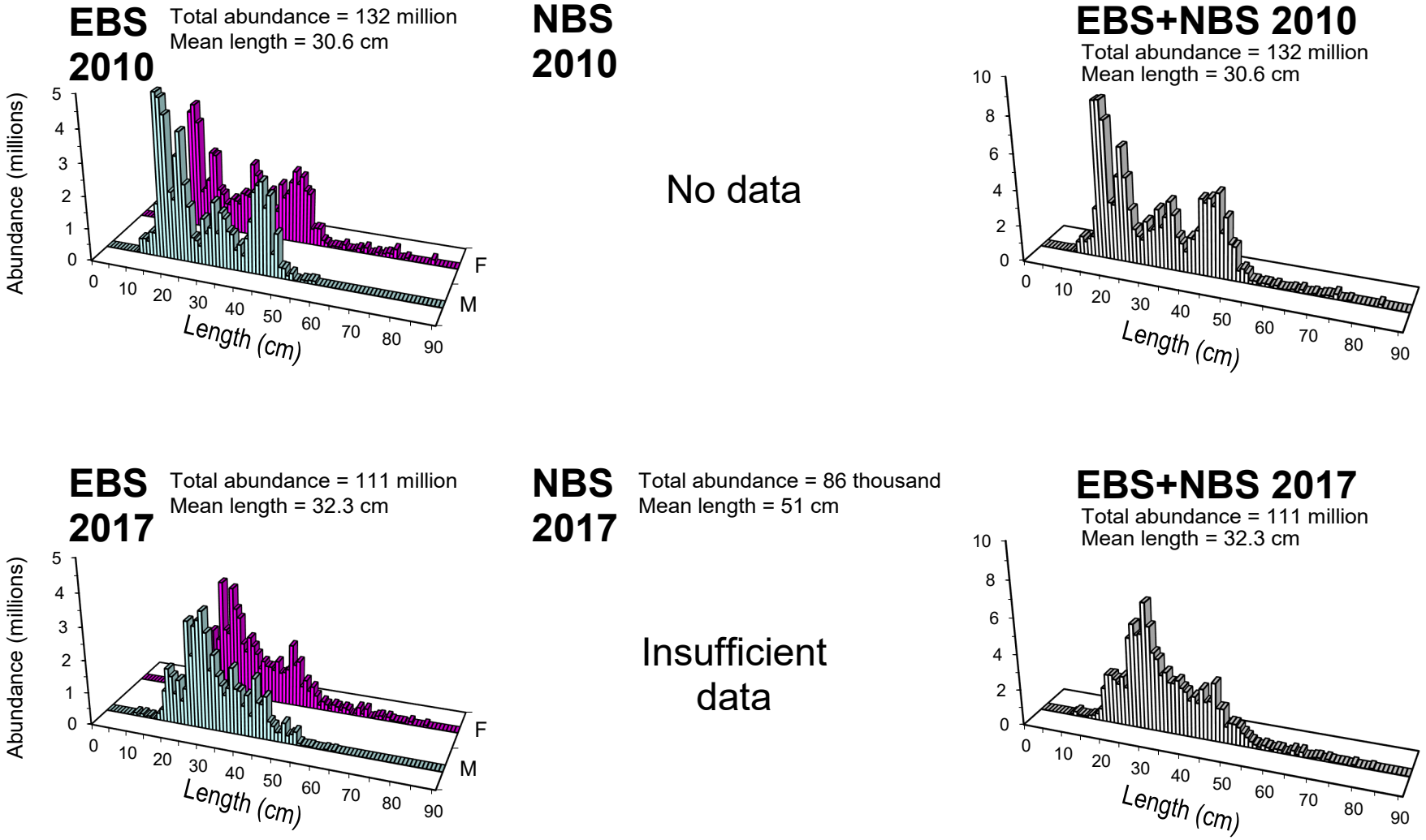

Figure 27. -- Total abundance-at-length and mean length of **Kamchatka flounder** (*Atheresthes evermanni*) by sex (M = male, F = female) and for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 17a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Kamchatka flounder** (*Atheresthes evermanni*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
20	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
31	0.32	0.06	3,061	5.77e+02	1,910	4,212	69	31	31	31
32	2.47	0.53	2,170	4.66e+02	1,069	3,271	8	8	8	8
41	0.78	0.23	4,896	1.43e+03	2,014	7,778	44	17	17	17
42	0.98	0.36	2,358	8.63e+02	595	4,121	31	19	19	19
43	3.60	0.80	7,595	1.69e+03	4,083	11,106	22	15	15	15
50	1.65	0.26	6,418	1.01e+03	4,347	8,489	26	26	26	26
61	1.72	0.12	15,118	1.09e+03	12,927	17,308	60	59	59	58
62	2.84	0.80	1,823	5.14e+02	566	3,081	7	7	7	7
82	0.21	0.12	385	2.22e+02	0	874	12	3	3	3
90	3.68	0.36	4,259	4.18e+02	3,271	5,248	8	8	8	8
Total	**0.98**	**0.06**	**48,084**	**2.98e+03**	**42,170**	**53,997**	**376**	**193**	**193**	**192**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.01	0.01	91	9.13e+01	0	274	60	1	1	1
71	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
81	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
Total	**0.00**	**0.00**	**91**	**9.13e+01**	**0**	**274**	**144**	**1**	**1**	**1**

Table 17b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Kamchatka flounder** (*Atheresthes evermanni*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
20	0.00	0.00	0	0.00e+00	0	0	31	0	0	0
31	1.29	0.26	12,204	2.44e+03	7,336	17,072	69	31	31	31
32	7.73	2.37	6,784	2.08e+03	1,870	11,698	8	8	8	8
41	0.86	0.26	5,411	1.61e+03	2,170	8,652	44	17	17	17
42	1.53	0.48	3,676	1.15e+03	1,323	6,029	31	19	19	19
43	3.58	0.83	7,549	1.75e+03	3,908	11,191	22	15	15	15
50	7.50	1.87	29,096	7.25e+03	14,171	44,020	26	26	26	26
61	4.47	0.38	39,409	3.32e+03	32,763	46,054	60	59	59	58
62	3.97	1.14	2,552	7.31e+02	762	4,342	7	7	7	7
82	0.18	0.10	328	1.82e+02	0	729	12	3	3	3
90	3.61	0.49	4,171	5.71e+02	2,820	5,522	8	8	8	8
Total	**2.26**	**0.18**	**111,180**	**9.04e+03**	**93,044**	**129,316**	**376**	**193**	**193**	**192**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (thous)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.01	0.01	86	8.57e+01	0	257	60	1	1	1
71	0.00	0.00	0	0.00e+00	0	0	58	0	0	0
81	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
Total	**0.00**	**0.00**	**86**	**8.57e+01**	**0**	**257**	**144**	**1**	**1**	**1**

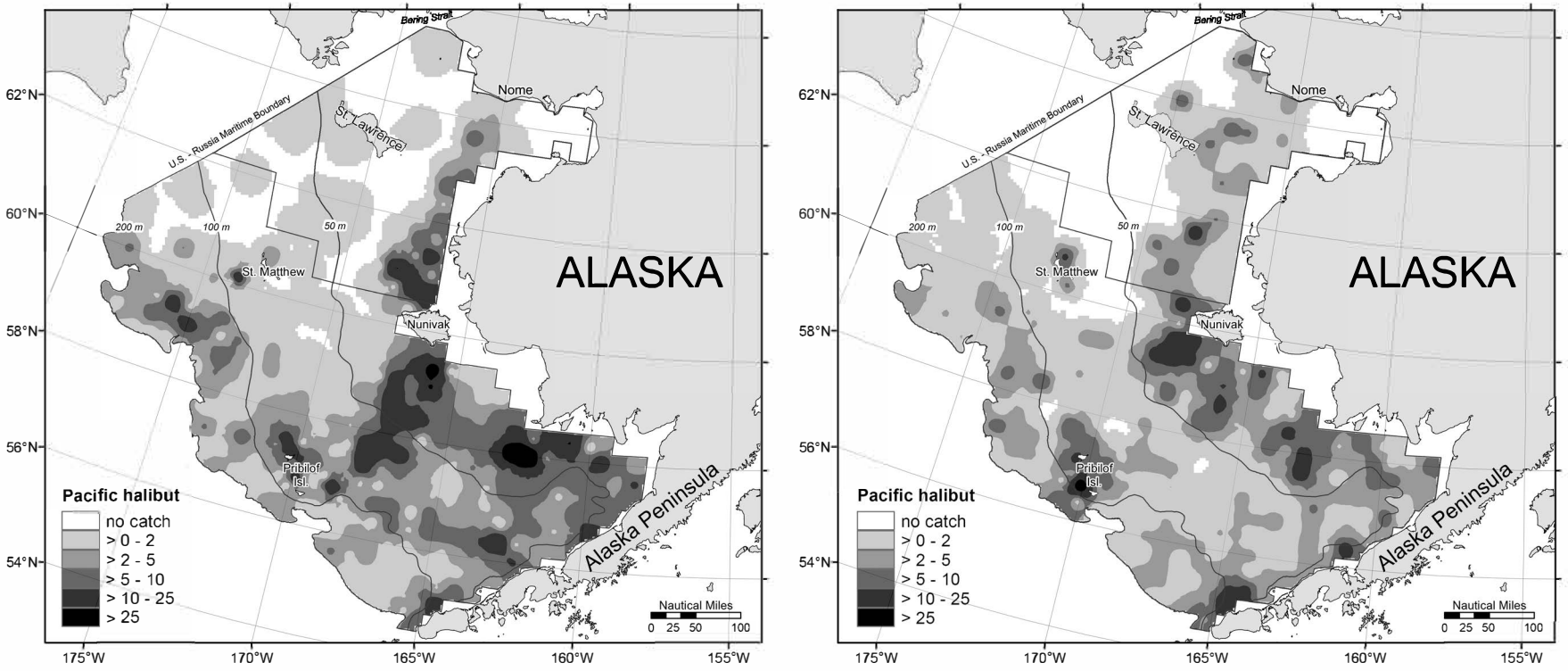

Figure 28. -- Distribution and relative survey abundance (kg/ha) of **Pacific halibut** (*Hippoglossus stenolepis*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

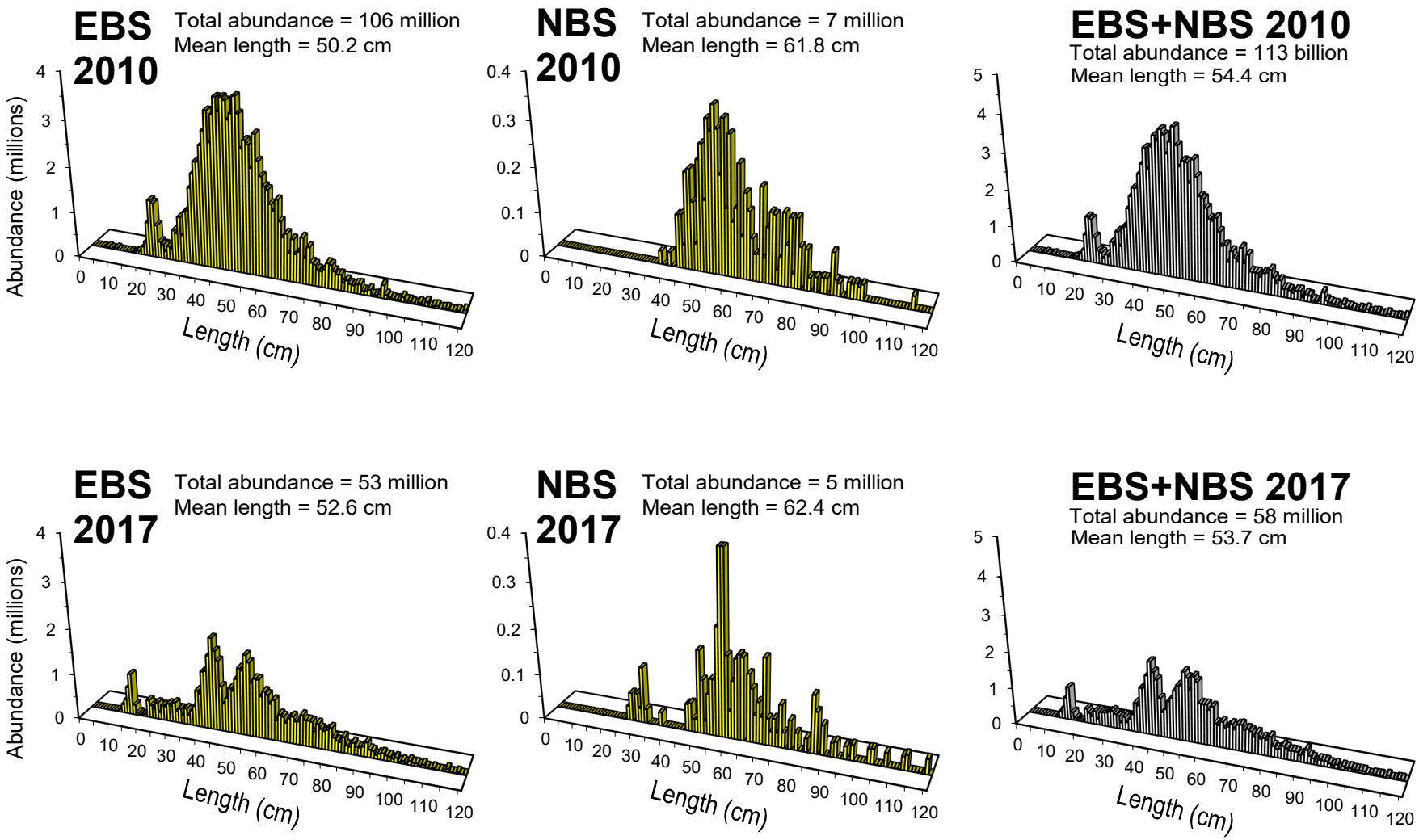

Figure 29. -- Total abundance-at-length and mean length of **Pacific halibut** (*Hippoglossus stenolepis*) for all sexes combined comparing the 2010 and 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

Table 18a. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Pacific halibut** (*Hippoglossus stenolepis*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl surveys. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	4.72	0.54	36,772	4.18e+03	28,399	45,146	58	57	57	57
20	5.74	1.05	23,544	4.30e+03	14,767	32,320	31	27	27	27
31	2.29	0.40	21,629	3.82e+03	14,016	29,242	69	56	56	56
32	3.38	1.05	2,967	9.19e+02	793	5,142	8	7	7	7
41	0.74	0.29	4,671	1.82e+03	993	8,349	44	15	15	15
42	5.07	1.30	12,168	3.13e+03	5,771	18,565	31	23	23	23
43	0.76	0.29	1,609	6.19e+02	322	2,895	22	8	8	8
50	1.92	0.34	7,445	1.33e+03	4,710	10,179	26	21	21	21
61	1.65	0.27	14,513	2.41e+03	9,697	19,328	60	38	38	38
62	1.19	0.87	763	5.62e+02	0	2,138	7	2	2	2
82	0.00	0.00	0	0.00e+00	0	0	12	0	0	0
90	0.52	0.24	605	2.82e+02	0	1,271	8	4	4	4
Total	**2.57**	**0.17**	**126,684**	**8.53e+03**	**109,844**	**143,524**	**376**	**258**	**258**	**258**

Northern

Stratum	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	1.41	0.34	11,186	2.69e+03	5,807	16,564	60	27	27	27
71	0.84	0.27	6,930	2.25e+03	2,429	11,430	58	12	12	12
81	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
Total	**0.90**	**0.18**	**18,115**	**3.50e+03**	**11,175**	**25,055**	**144**	**39**	**39**	**39**

Table 18b. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for **Pacific halibut** (*Hippoglossus stenolepis*) by stratum for the 2017 eastern and northern Bering Sea bottom trawl survey. Differences in sums of estimates and totals are due to rounding.

Eastern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
10	2.82	0.41	21,938	3.17e+03	15,585	28,291	58	57	57	57
20	2.54	0.46	10,401	1.90e+03	6,512	14,289	31	27	27	27
31	0.99	0.23	9,397	2.21e+03	4,979	13,815	69	56	56	56
32	0.78	0.21	686	1.83e+02	252	1,120	8	7	7	7
41	0.16	0.07	1,025	4.59e+02	100	1,949	44	15	15	15
42	1.65	0.64	3,951	1.52e+03	837	7,065	31	23	23	23
43	0.13	0.05	274	1.10e+02	44	503	22	8	8	8
50	0.47	0.12	1,813	4.61e+02	863	2,763	26	21	21	21
61	0.33	0.05	2,936	4.54e+02	2,027	3,844	60	38	38	38
62	0.17	0.14	109	8.99e+01	0	329	7	2	2	2
82	0.00	0.00	0	0.00e+00	0	0	12	0	0	0
90	0.16	0.07	189	7.63e+01	8	369	8	4	4	4
Total	**1.07**	**0.09**	**52,718**	**4.65e+03**	**43,543**	**61,893**	**376**	**258**	**258**	**258**

Northern

Stratum	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD population	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
70	0.50	0.12	3,950	9.18e+02	2,113	5,787	60	27	27	27
71	0.13	0.04	1,114	3.51e+02	410	1,817	58	12	12	12
81	0.00	0.00	0	0.00e+00	0	0	26	0	0	0
Total	**0.25**	**0.05**	**5,064**	**9.83e+02**	**3,107**	**7,021**	**144**	**39**	**39**	**39**

Table 19. -- Mean CPUE by weight (kg/ha) with standard deviation, and estimated biomass (t) with standard deviation and 95% lower (LCL) and upper (UCL) confidence limits for other common groundfish species for the 2017 eastern (EBS) and northern (NBS) Bering Sea bottom trawl surveys.

Species	Shelf area	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
Bering skate	EBS	0.31	0.05	15,249	2,582	9,995	20,504	376	89	89	89
	NBS	0	0	0	0	0	0	144	0	0	0
Alaska skate	EBS	11.05	0.78	544,657	38,497	468,670	620,643	376	360	360	360
	NBS	4.06	0.59	81,295	11,812	57,752	104,839	144	74	74	74
rex sole	EBS	0.24	0.07	12,060	3,497	4,944	19,176	376	72	72	72
	NBS	0	0	0	0	0	0	144	0	0	0
longhead dab	EBS	0.16	0.05	7,870	2,574	2,722	13,019	376	25	25	23
	NBS	0.08	0.02	1,618	453	714	2,523	144	44	44	44
Sakhalin sole	EBS	0.02	0.01	1,109	697	0	2,628	376	25	25	25
	NBS	0.33	0.10	6,660	1,935	2,686	10,635	144	89	89	89
starry flounder	EBS	3.83	1.36	188,933	66,821	55,186	322,680	376	65	65	65
	NBS	1.57	0.37	31,527	7,466	16,614	46,441	144	62	62	62
sturgeon poacher	EBS	0.28	0.03	13,957	1,283	11,385	16,529	376	189	189	0
	NBS	0.06	0.03	1,220	573	74	2,367	144	49	49	0
Pacific herring	EBS	1.19	0.34	58,710	16,562	25,169	92,250	376	145	145	0
	NBS	1.74	0.84	34,771	16,784	1,405	68,138	144	86	86	0
Arctic staghorn sculpin	EBS	0	0	0	0	0	0	376	0	0	0
	NBS	0.07	0.03	1,306	681	0	2,669	144	33	33	0

Table 19. -- Continued.

Species	Shelf area	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
yellow Irish lord	EBS	0.66	0.18	32,351	9,118	12,054	52,647	376	76	76	75
	NBS	0	0	0	0	0	0	144	0	0	0
butterfly sculpin	EBS	0.01	0.01	666	264	125	1,207	376	24	24	23
	NBS	0.09	0.02	1,870	314	1,244	2,496	144	55	55	54
shorthorn (=warty) sculpin	EBS	0.23	0.06	11,305	3,175	4,946	17,664	376	53	53	53
	NBS	5.55	1.82	111,167	36,371	38,364	183,969	144	53	53	52
great sculpin	EBS	1.03	0.10	50,668	4,766	41,256	60,080	376	220	220	218
	NBS	0.10	0.03	2,015	670	680	3,350	144	29	29	29
plain sculpin	EBS	0.69	0.09	33,962	4,213	25,607	42,318	376	108	108	107
	NBS	1.83	0.37	36,605	7,364	22,010	51,200	144	107	107	106
antlered sculpin	EBS	0	0	0	0	0	0	376	0	0	0
	NBS	0.19	0.08	3,789	1,549	689	6,889	144	43	43	0
bigmouth sculpin	EBS	0.80	0.09	39,438	4,193	31,128	47,747	376	111	111	111
	NBS	0	0	0	0	0	0	144	0	0	0
Arctic cod	EBS	0.07	0.03	3,362	1,541	5	6,720	376	49	49	48
	NBS	0.21	0.06	4,140	1,214	1,645	6,635	144	87	87	87
saffron cod	EBS	0.03	0.02	1,571	963	0	3,489	376	14	14	13
	NBS	3.81	0.55	76,341	11,111	54,271	98,411	144	82	82	81

Table 19. -- Continued.

Species	Shelf area	Mean CPUE (kg/ha)	SD CPUE	Estimated biomass (t)	SD biomass	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
variegated snailfish	EBS	0.02	0.01	1,051	424	197	1,905	376	20	20	0
	NBS	0.23	0.06	4,515	1,238	2,058	6,973	144	48	48	0
eulachon	EBS	0.01	0.00	531	139	245	816	376	21	21	0
	NBS	0.00	0.00	26	24	0	73	144	2	2	0
capelin	EBS	0.02	0.01	837	573	0	2,005	376	53	53	0
	NBS	0.01	0.00	179	53	75	284	144	48	48	0
rainbow smelt	EBS	0.01	0.01	596	276	46	1,146	376	14	14	0
	NBS	0.25	0.05	5,037	1,003	3,043	7,031	144	49	49	0
marbled eelpout	EBS	0.08	0.04	3,896	2,000	0	8,452	376	18	18	0
	NBS	0.15	0.03	2,919	650	1,589	4,249	144	27	27	8
wattled eelpout	EBS	0.46	0.05	22,482	2,259	17,904	27,061	376	129	129	0
	NBS	0.02	0.01	437	211	6	869	144	15	15	0
shortfin eelpout	EBS	0.40	0.08	19,618	3,958	11,717	27,518	376	73	73	0
	NBS	0.00	0.00	2	2	0	5	144	1	1	0

Table 20. -- Mean CPUE by number (no./ha) with standard deviation, and estimated population (millions) with standard deviation and 95%lower (LCL) and upper (UCL) confidence limits for other common groundfish species for the 2017 eastern (EBS) and northern (NBS) Bering Sea bottom trawl surveys.

Species	Shelf area	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD pop.	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
Bering skate	EBS	0.16	0.03	7,822	1,314	5,146	10,498	376	89	89	89
	NBS	0	0	0	0	0	0	144	0	0	0
Alaska skate	EBS	2.41	0.17	118,976	8,491	102,228	135,724	376	360	360	360
	NBS	0.89	0.15	17,803	2,988	11,836	23,770	144	74	74	74
rex sole	EBS	0.73	0.16	35,895	7,681	20,355	51,435	376	72	72	72
	NBS	0	0	0	0	0	0	144	0	0	0
longhead dab	EBS	2.26	0.83	111,634	40,740	30,197	193,071	376	25	25	23
	NBS	1.42	0.45	28,393	9,027	10,339	46,447	144	44	44	44
Sakhalin sole	EBS	0.52	0.32	25,403	15,706	0	59,621	376	25	25	25
	NBS	7.65	2.01	153,136	40,311	70,381	235,890	144	89	89	89
starry flounder	EBS	3.30	1.46	162,609	72,203	18,082	307,135	376	65	65	65
	NBS	1.94	0.70	38,938	14,100	10,719	67,156	144	62	62	62
sturgeon poacher	EBS	4.22	0.37	208,075	18,064	171,877	244,273	376	189	189	0
	NBS	1.16	0.46	23,262	9,110	5,079	41,446	144	49	49	0
Pacific herring	EBS	8.87	2.47	437,431	121,988	190,559	684,304	376	145	145	0
	NBS	15.21	5.85	304,485	117,201	71,497	537,473	144	86	86	0
Arctic staghorn sculpin	EBS	0	0	0	0	0	0	376	0	0	0
	NBS	2.01	1.00	40,289	19,960	336	80,242	144	33	33	0

Table 20. -- Continued.

Species	Shelf area	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD pop.	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
yellow Irish lord	EBS	0.87	0.25	42,765	12,518	14,803	70,727	376	76	76	75
	NBS	0	0	0	0	0	0	144	0	0	0
butterfly sculpin	EBS	0.07	0.03	3,495	1,466	486	6,505	376	24	24	23
	NBS	0.52	0.09	10,414	1,759	6,916	13,912	144	55	55	54
shorthorn (=warty) sculpin	EBS	0.18	0.05	8,795	2,400	3,995	13,595	376	53	53	53
	NBS	7.02	2.32	140,542	46,514	47,437	233,648	144	53	53	52
great sculpin	EBS	0.44	0.04	21,825	2,041	17,784	25,867	376	220	220	218
	NBS	0.20	0.08	4,037	1,638	767	7,307	144	29	29	29
plain sculpin	EBS	1.18	0.17	57,985	8,163	41,765	74,205	376	108	108	107
	NBS	3.62	0.64	72,392	12,869	46,746	98,038	144	107	107	106
antlered sculpin	EBS	0	0	0	0	0	0	376	0	0	0
	NBS	1.98	0.62	39,592	12,473	14,626	64,558	144	43	43	0
bigmouth sculpin	EBS	0.18	0.02	9,084	973	7,157	11,011	376	111	111	111
	NBS	0	0	0	0	0	0	144	0	0	0
Arctic cod	EBS	2.20	0.96	108,222	47,499	4,758	211,686	376	49	49	48
	NBS	6.66	1.84	133,418	36,788	57,853	208,982	144	87	87	87
saffron cod	EBS	0.50	0.38	24,405	18,586	0	61,469	376	14	14	13
	NBS	72.05	12.35	1,442,498	247,225	951,234	1,933,761	144	82	82	81

Table 20. -- Continued.

Species	Shelf area	Mean CPUE (no./ha)	SD CPUE	Estimated population (m)	SD pop.	95% LCL	95% UCL	Total hauls	Hauls with weights	Hauls with counts	Hauls with lengths
variegated snailfish	EBS	0.04	0.01	1,728	496	716	2,741	376	20	20	0
	NBS	0.35	0.10	7,075	2,090	2,813	11,337	144	48	48	0
eulachon	EBS	0.26	0.08	12,795	3,841	4,902	20,687	376	21	21	0
	NBS	0.01	0.01	243	215	0	673	144	2	2	0
capelin	EBS	5.37	5.03	264,736	247,860	0	770,245	376	53	53	0
	NBS	0.87	0.25	17,343	5,075	7,309	27,377	144	48	48	0
rainbow smelt	EBS	0.25	0.13	12,258	6,487	0	25,224	376	14	14	0
	NBS	14.55	4.49	291,314	89,819	111,690	470,939	144	49	49	0
marbled eelpout	EBS	0.04	0.02	1,790	858	0	3,742	376	18	18	0
	NBS	0.20	0.05	4,082	1,009	2,032	6,133	144	27	27	8
wattled eelpout	EBS	2.38	0.22	117,298	11,035	95,093	139,504	376	129	129	0
	NBS	0.26	0.14	5,196	2,900	0	11,153	144	15	15	0
shortfin eelpout	EBS	5.44	1.01	268,160	49,556	168,978	367,342	376	73	73	0
	NBS	0.00	0.00	34	34	0	102	144	1	1	0

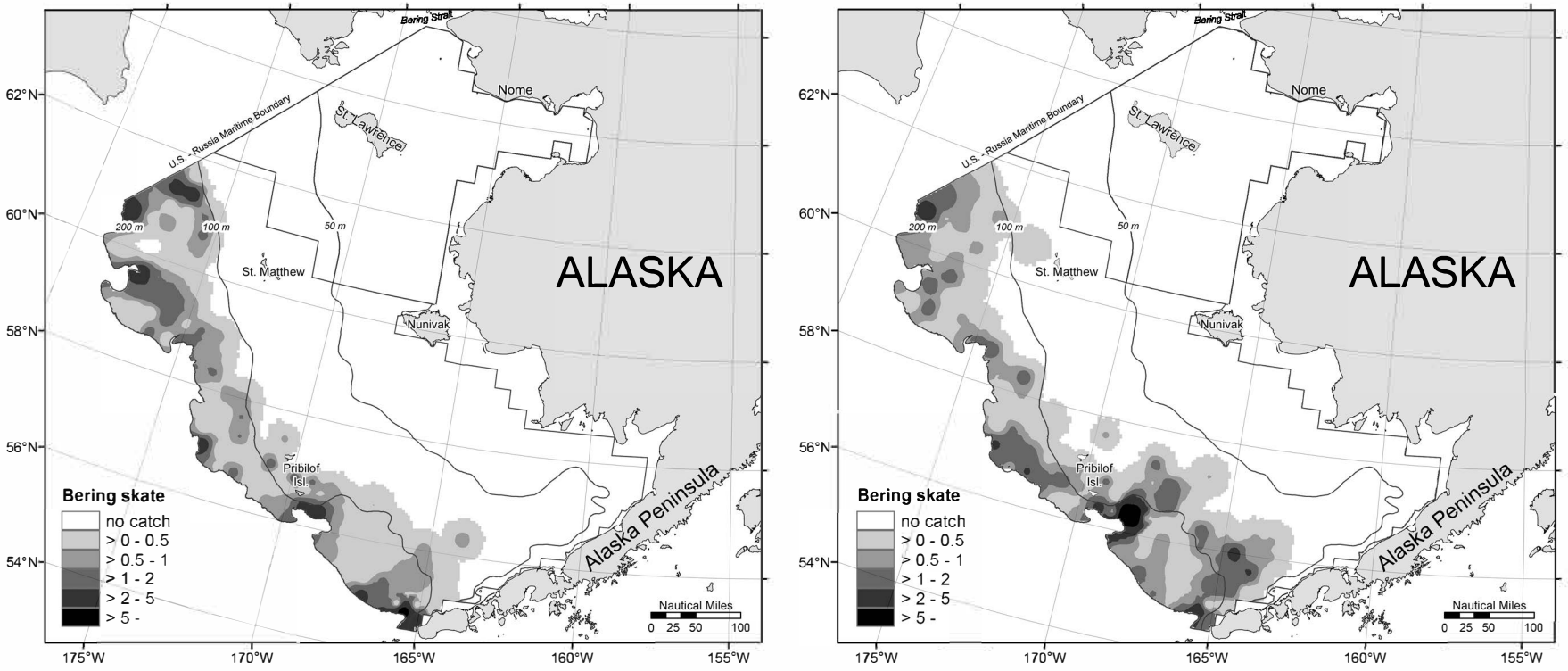

Figure 30. -- Distribution and relative survey abundance (kg/ha) of **Bering skate** (*Bathyraja interrupta*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

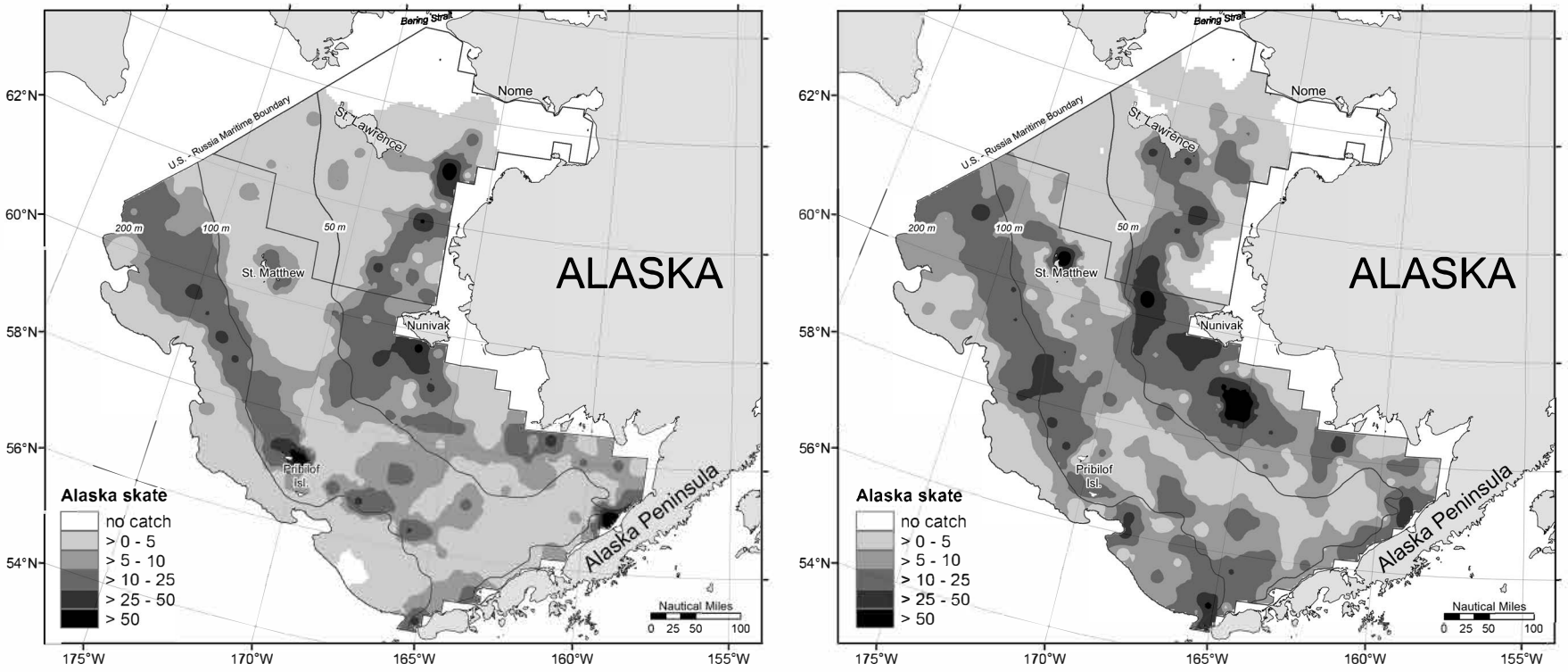

Figure 31. -- Distribution and relative survey abundance (kg/ha) of **Alaska skate** (*Bathyraja parmifera*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

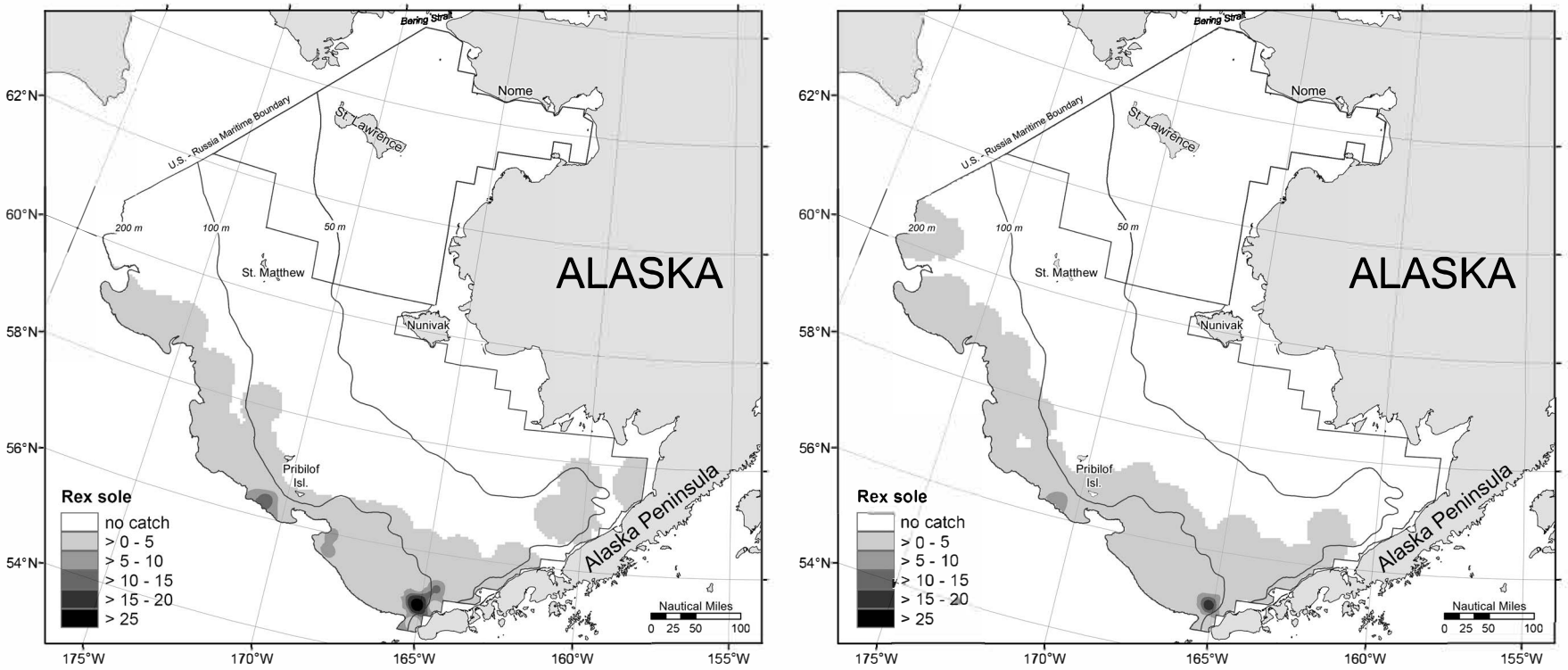

Figure 32. -- Distribution and relative survey abundance (kg/ha) of **rex sole** (*Glyptocephalus zachirus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

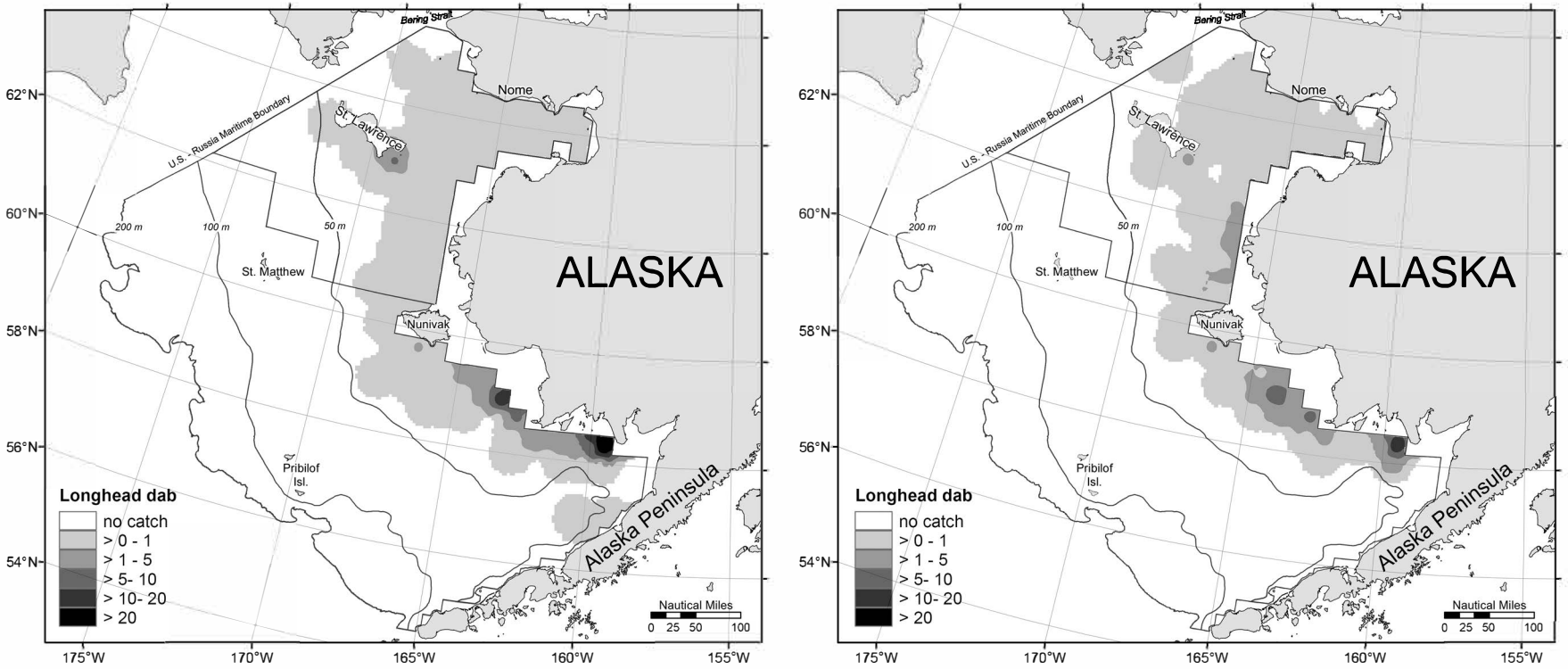

Figure 33. -- Distribution and relative survey abundance (kg/ha) of **longhead dab** (*Limanda proboscidea*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

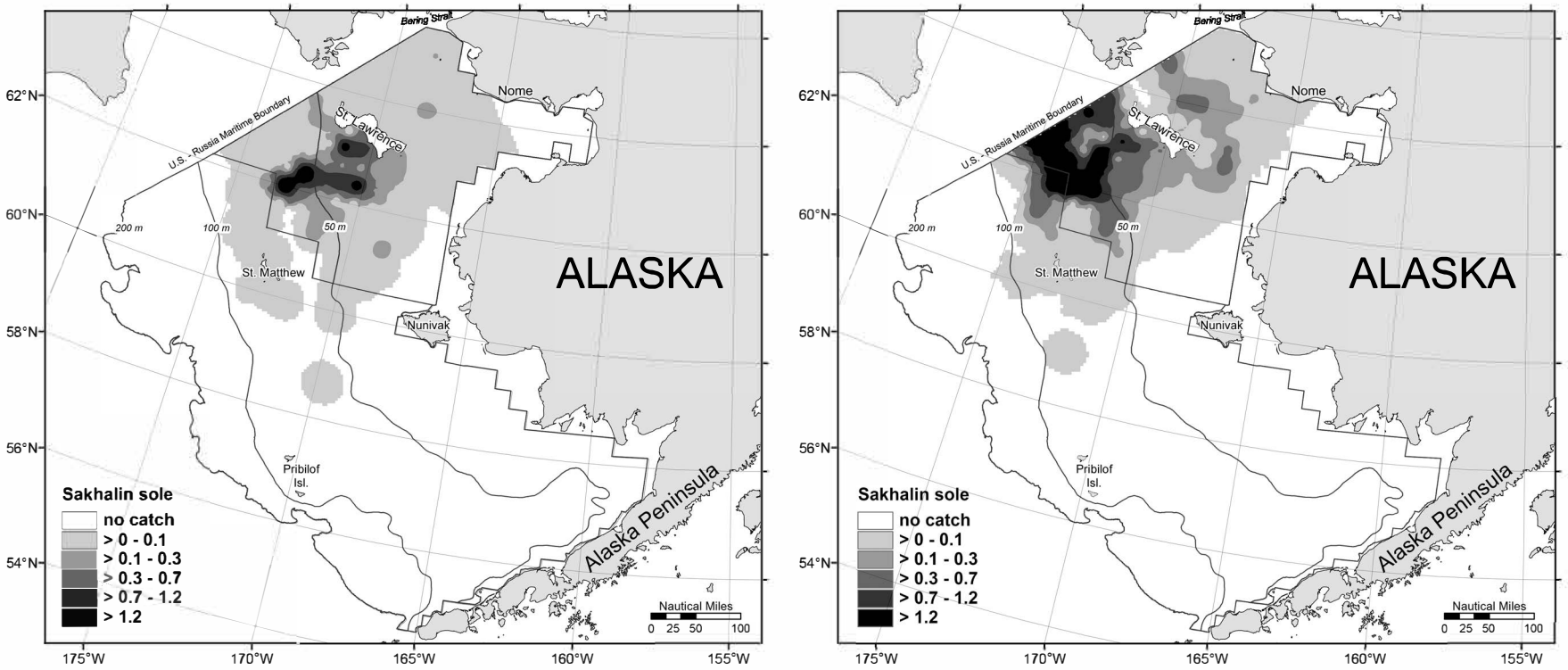

Figure 34. -- Distribution and relative survey abundance (kg/ha) of **Sahkalin sole** (*Limanda sahkalinensis*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

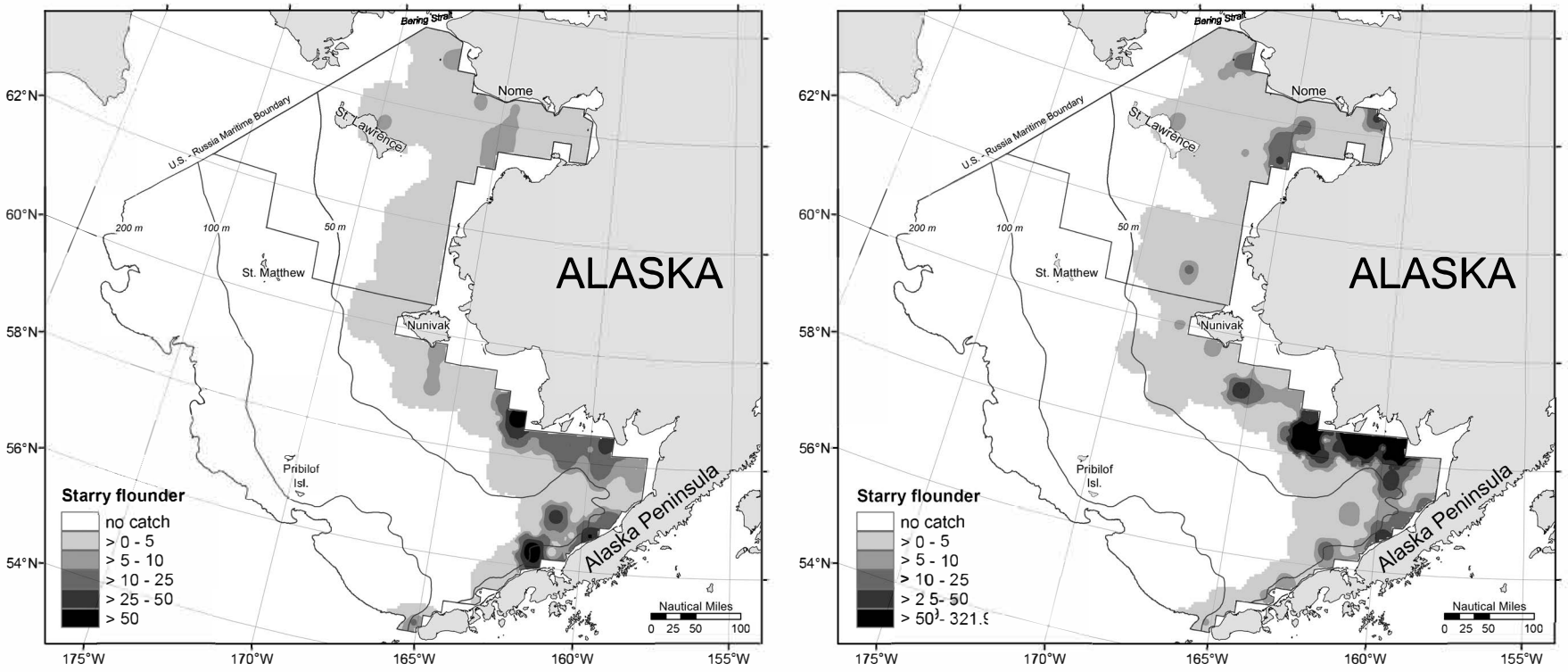

Figure 35. -- Distribution and relative survey abundance (kg/ha) of **starry flounder** (*Platichthys stellatus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

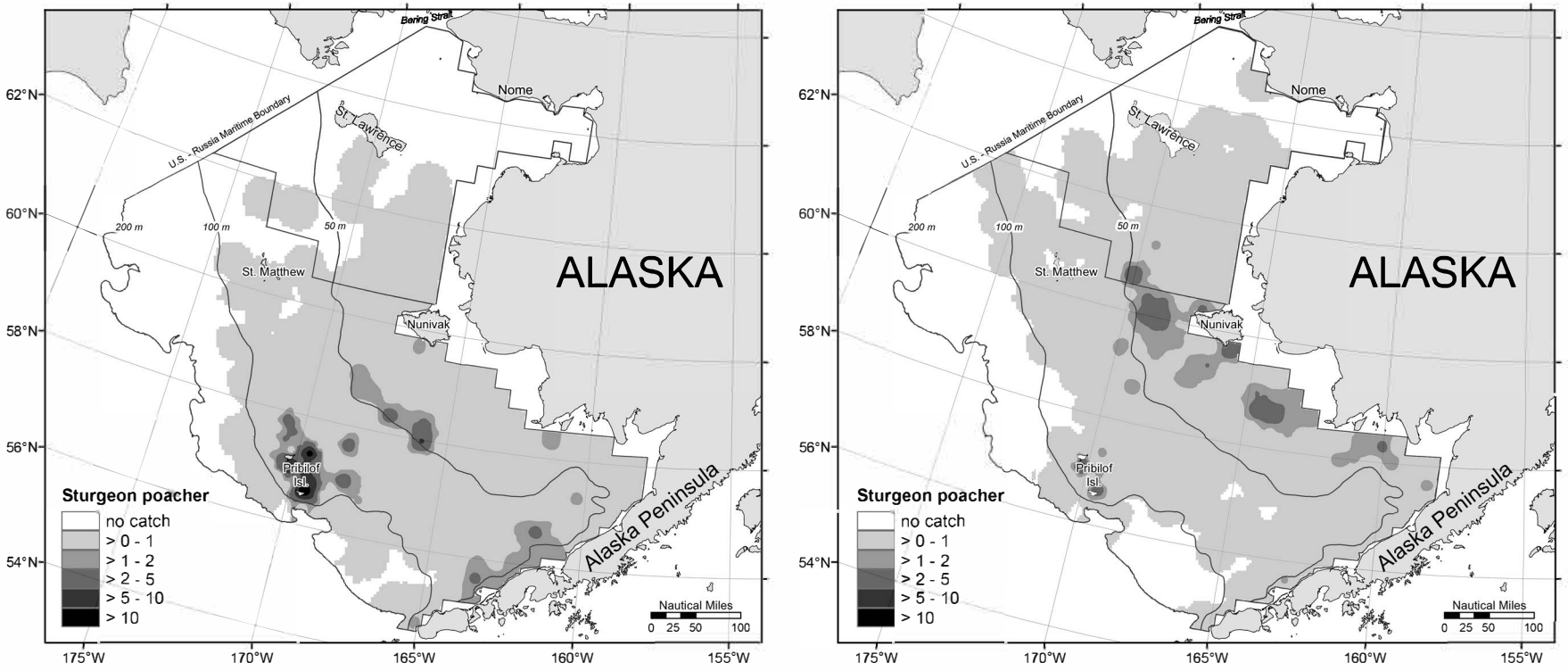

Figure 36. -- Distribution and relative survey abundance (kg/ha) of **sturgeon poacher** (*Podothecus accipenserinus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

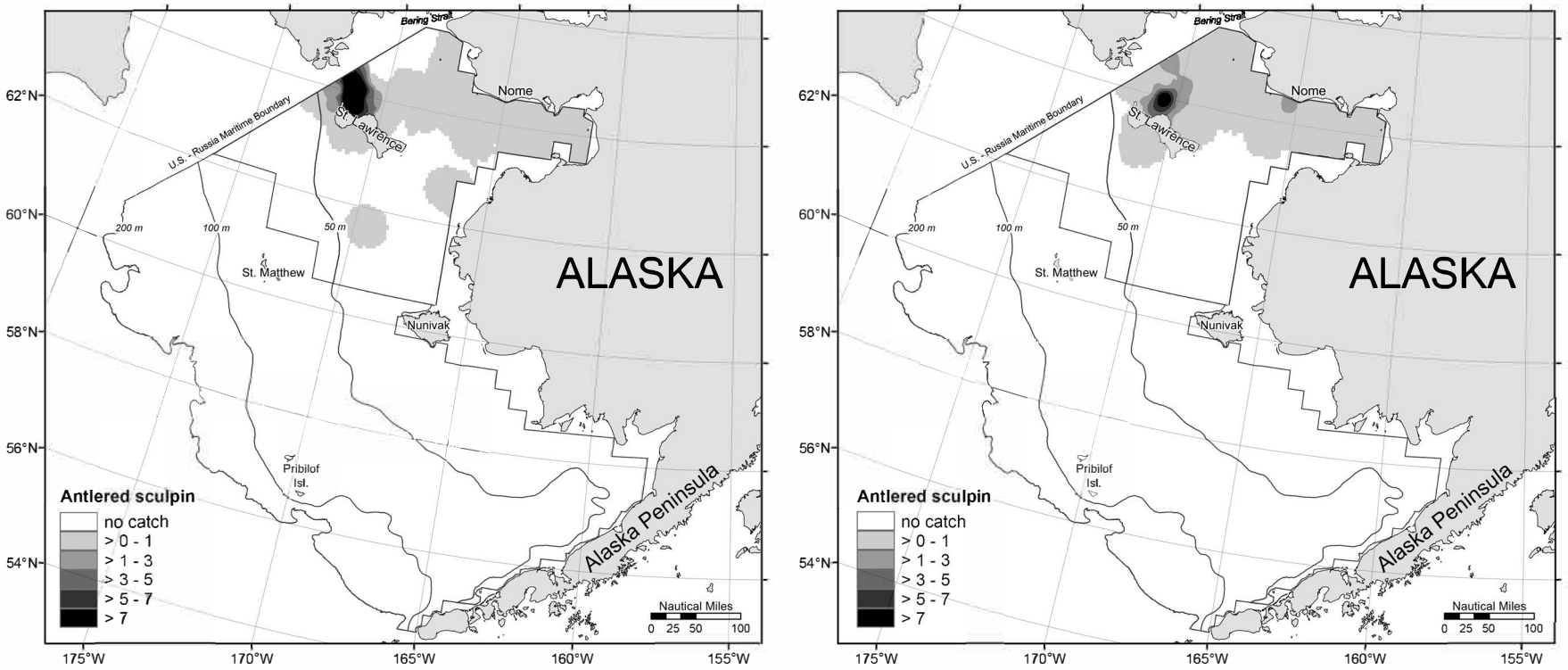

Figure 37. -- Distribution and relative survey abundance (kg/ha) of **antlered sculpin** (*Enophyrs diceraus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

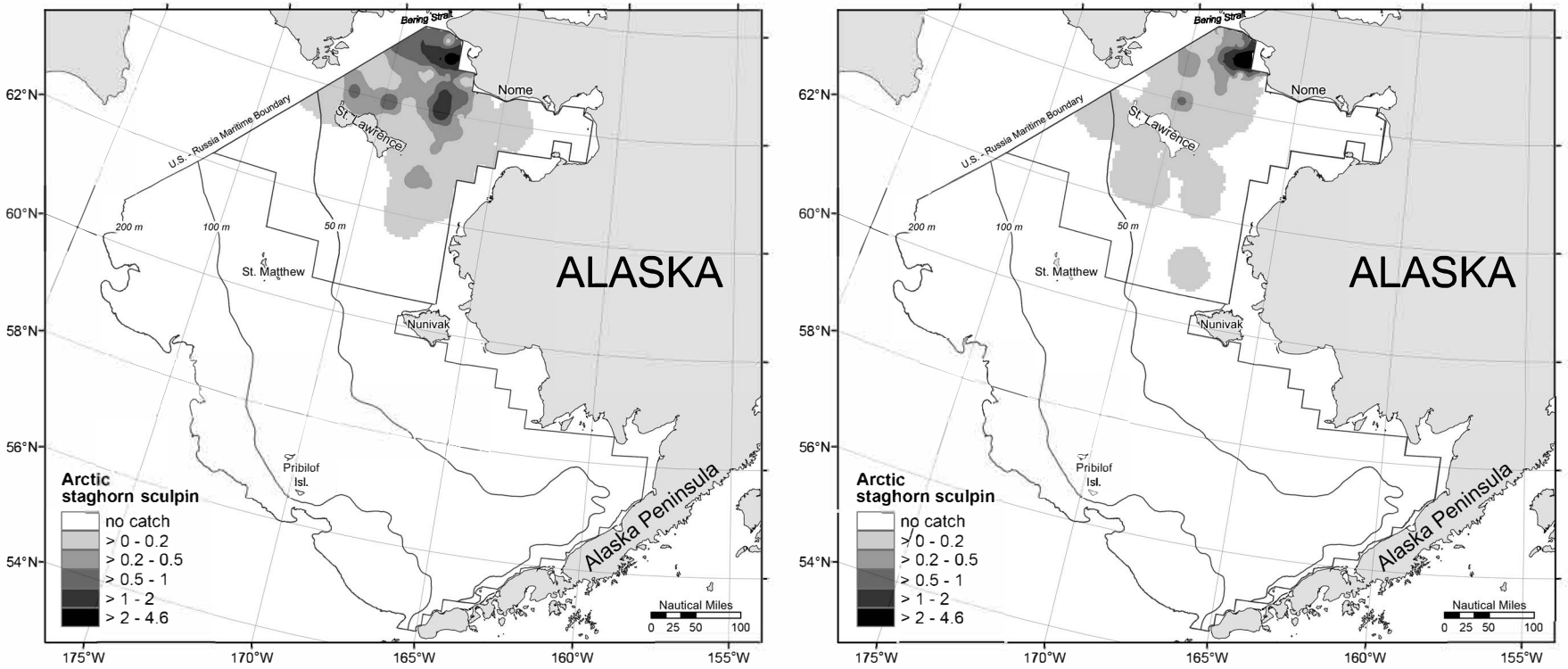

Figure 38. -- Distribution and relative survey abundance (kg/ha) of **Arctic staghorn sculpin** (*Gymnocanthus tricuspis*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

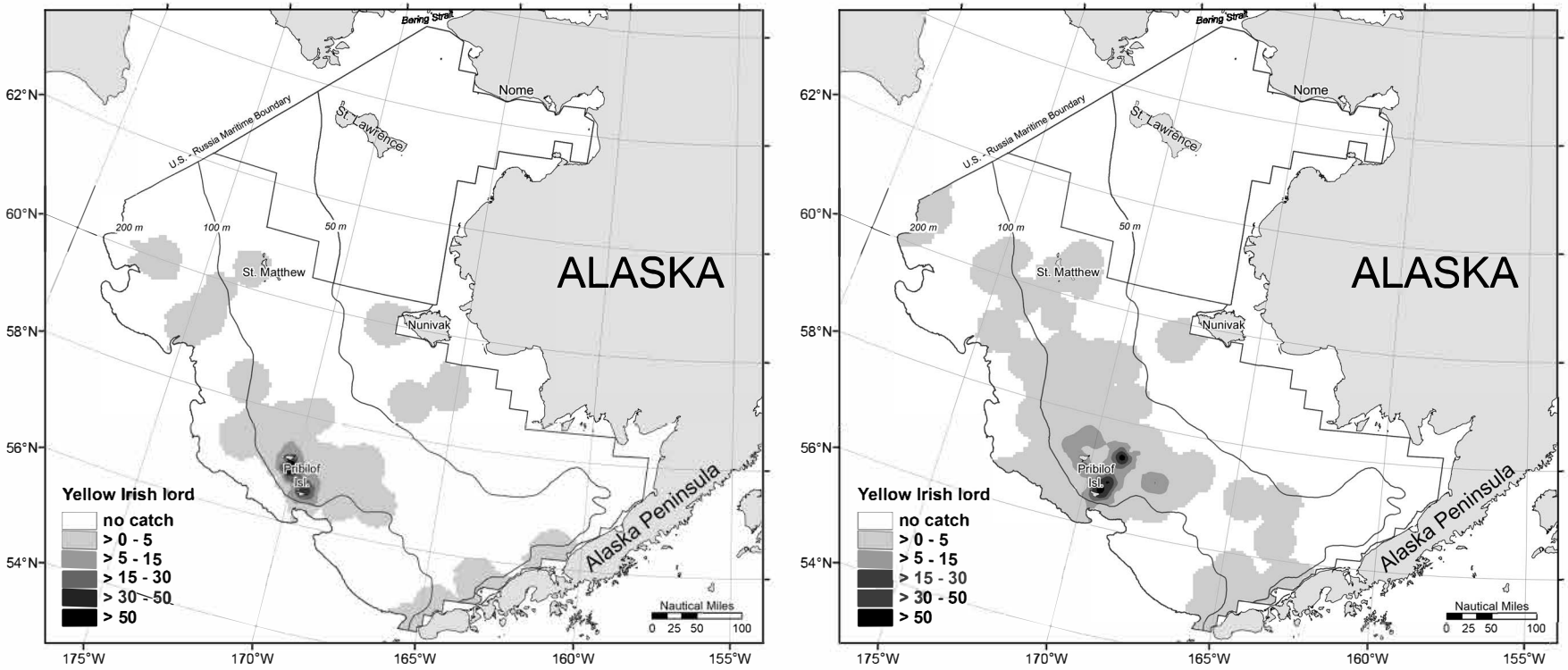

Figure 39. -- Distribution and relative survey abundance (kg/ha) of **yellow Irish lord** (*Hemilepidotus jordani*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

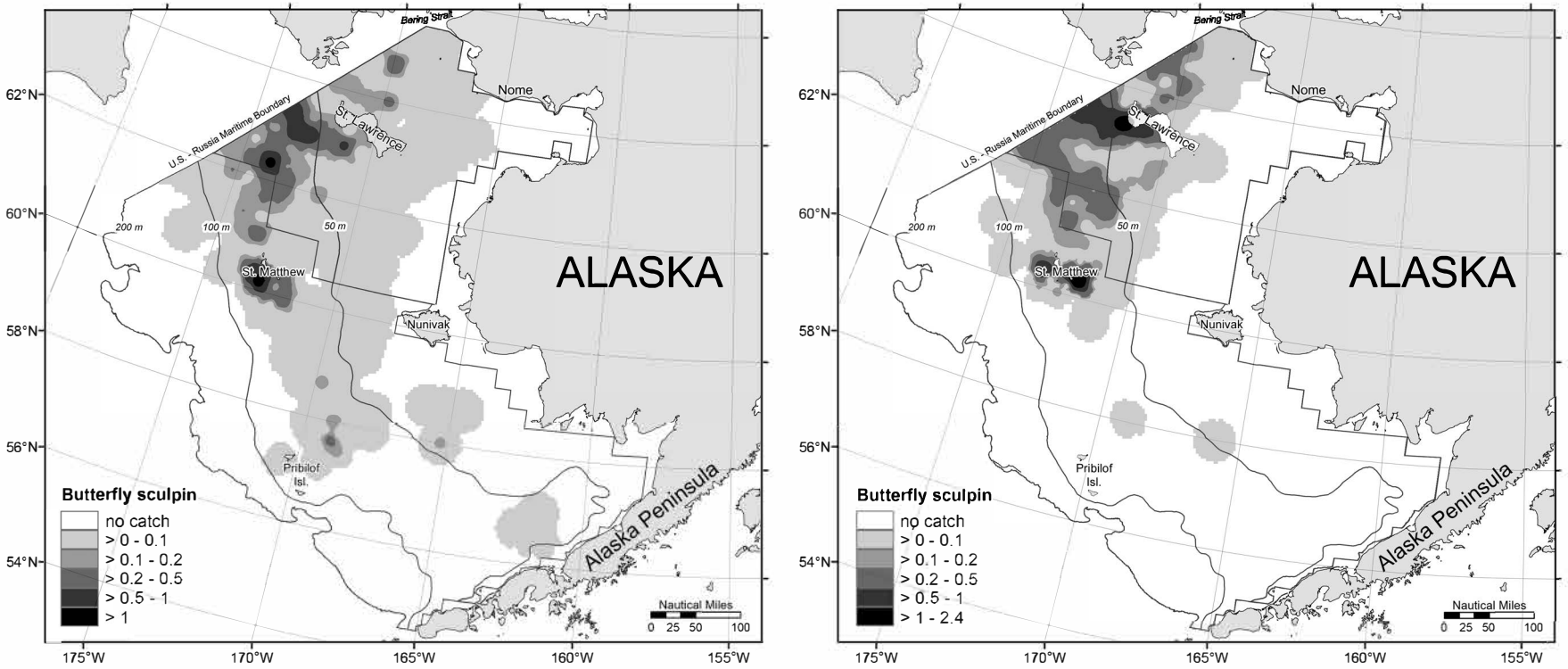

Figure 40. -- Distribution and relative survey abundance (kg/ha) of **butterfly sculpin** (*Hemilepidotus papilio*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

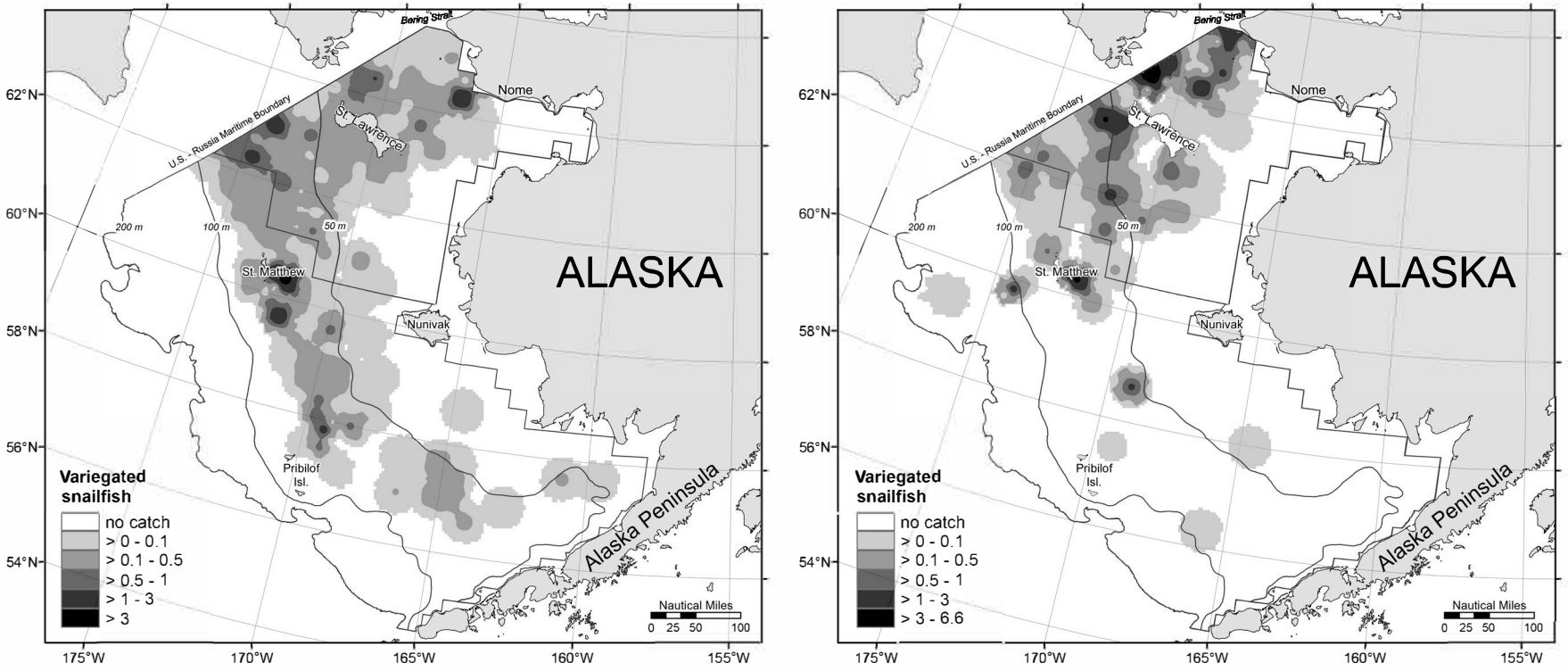

Figure 41. -- Distribution and relative survey abundance (kg/ha) of **variegated snailfish** (*Liparis gibbus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

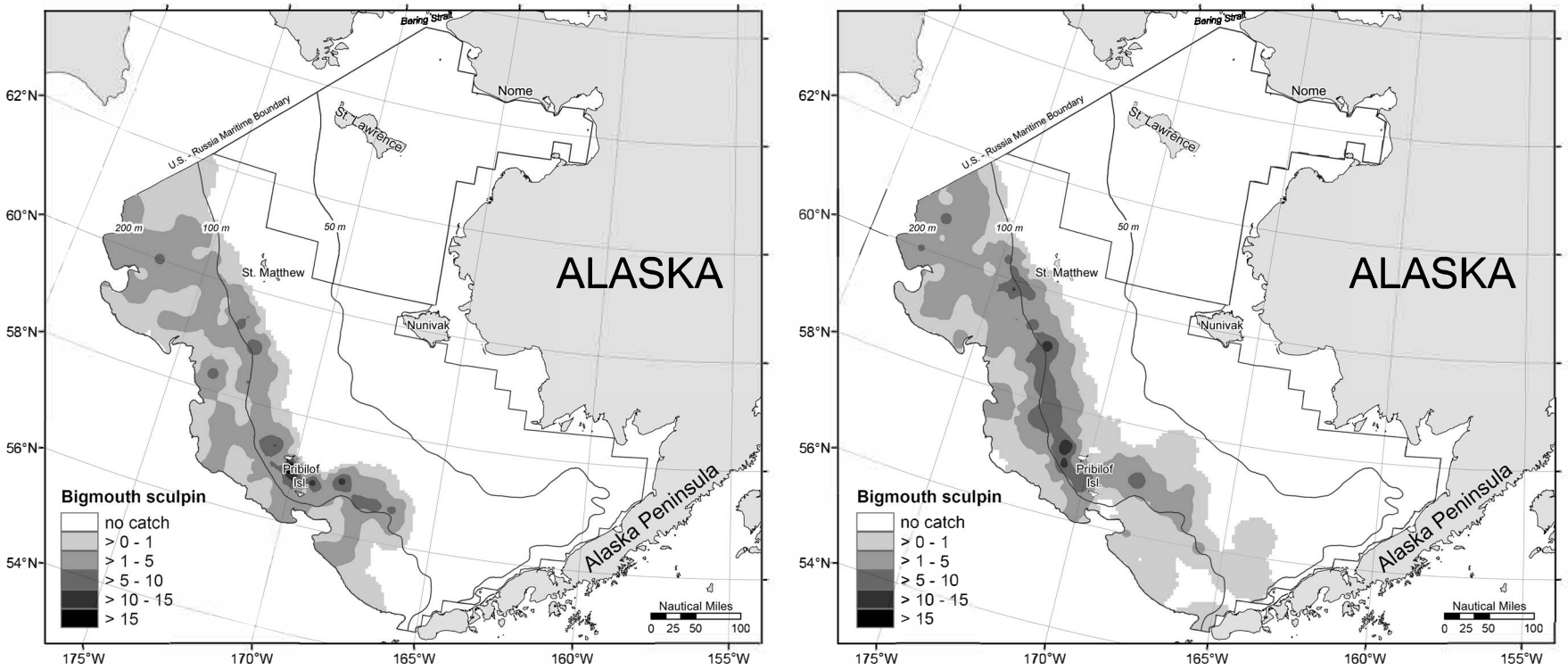

Figure 42. -- Distribution and relative survey abundance (kg/ha) of **bigmouth sculpin** (*Hemitripterus bolini*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

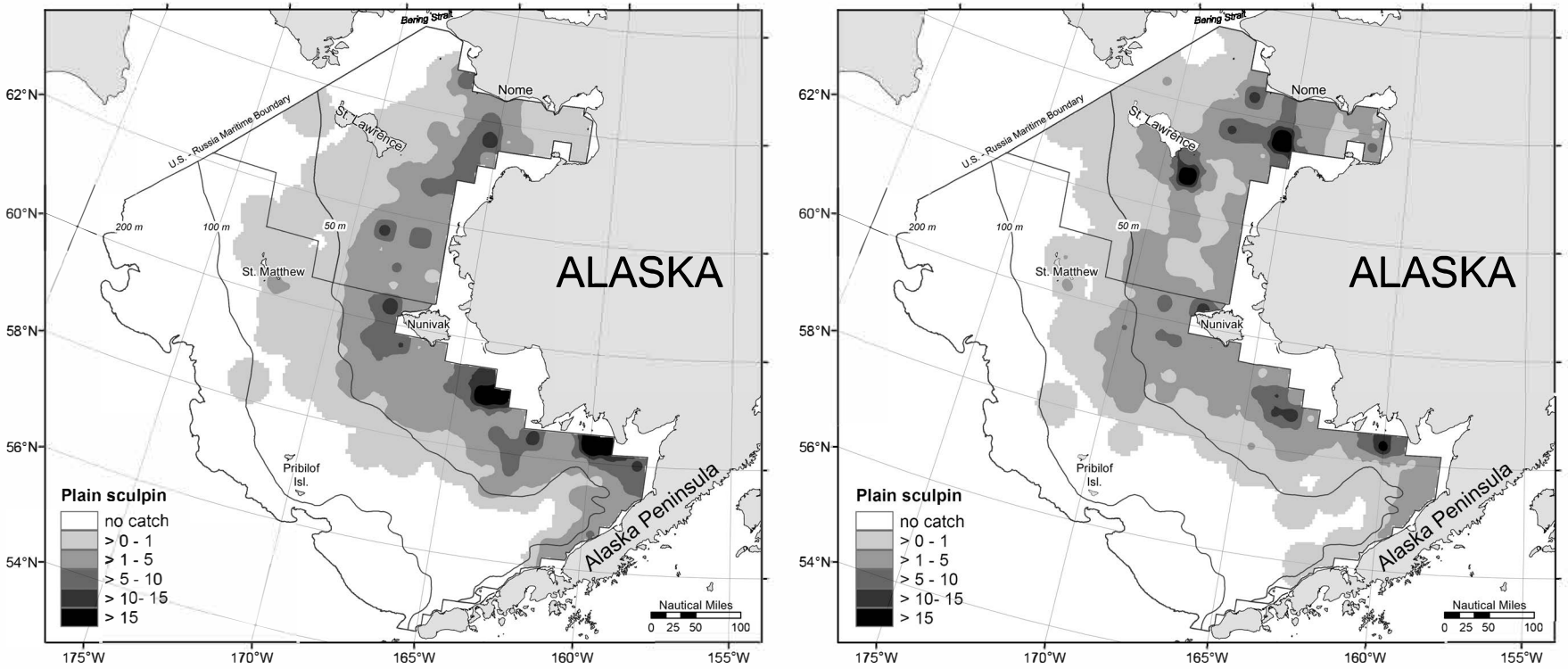

Figure 43. -- Distribution and relative survey abundance (kg/ha) of **plain sculpin** (*Myoxocephalus jaok*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

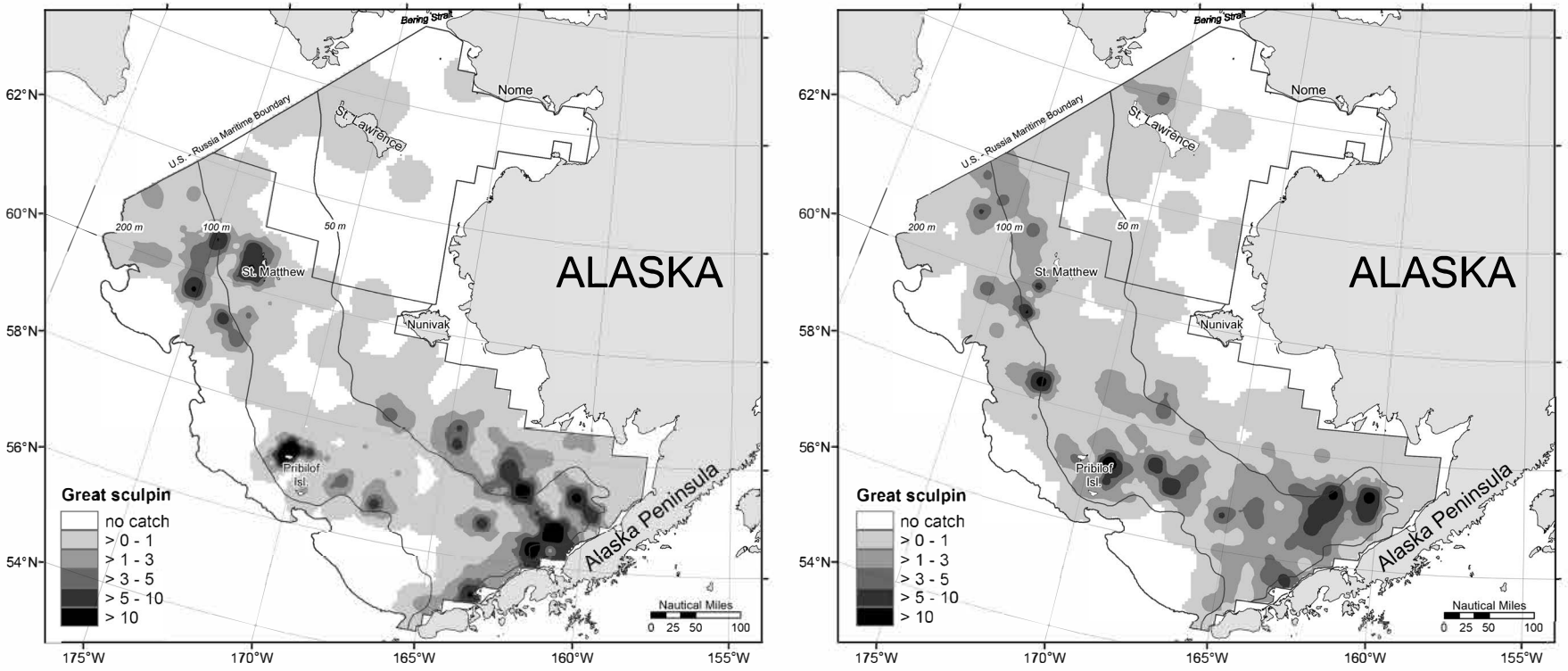

Figure 44. -- Distribution and relative survey abundance (kg/ha) of **great sculpin** (*Myoxocephalus polyacanthocephalus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

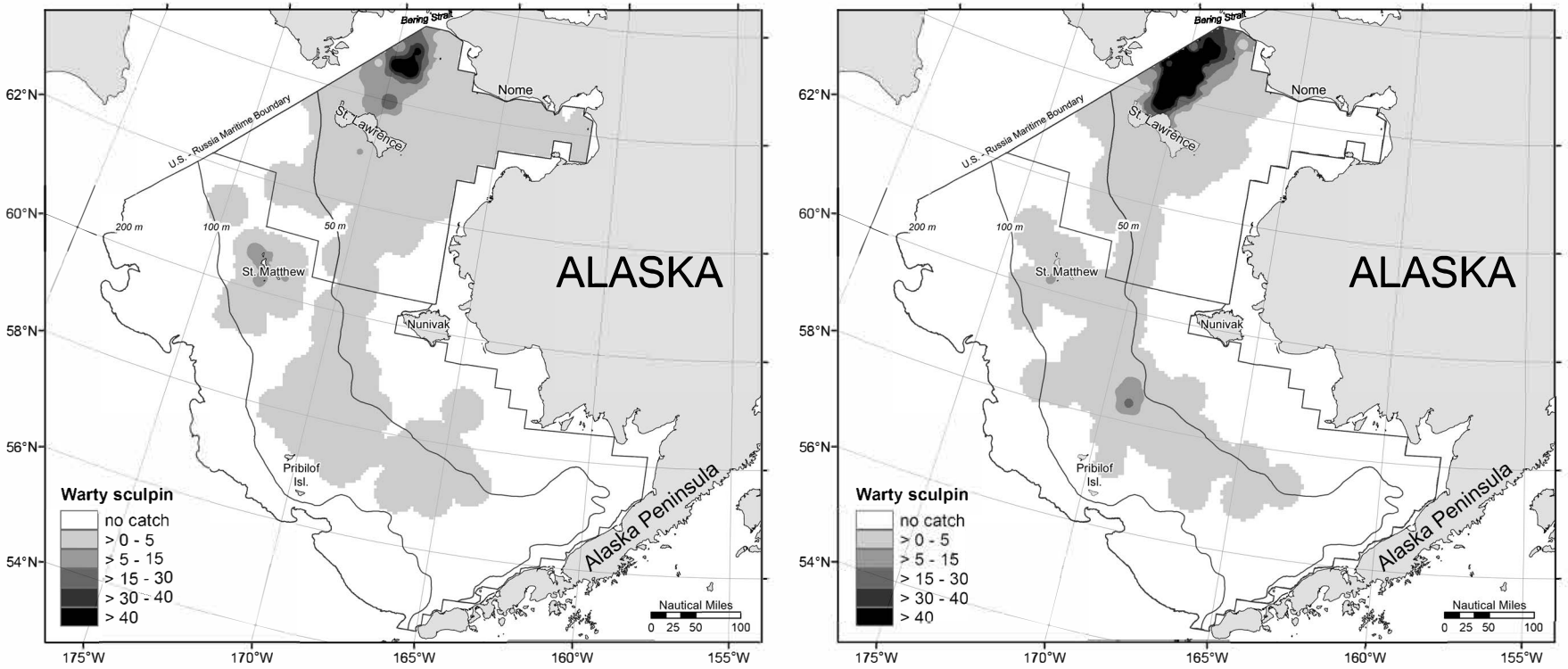

Figure 45. -- Distribution and relative survey abundance (kg/ha) of **shorthorn sculpin** (*Myoxocephalus scorpius*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

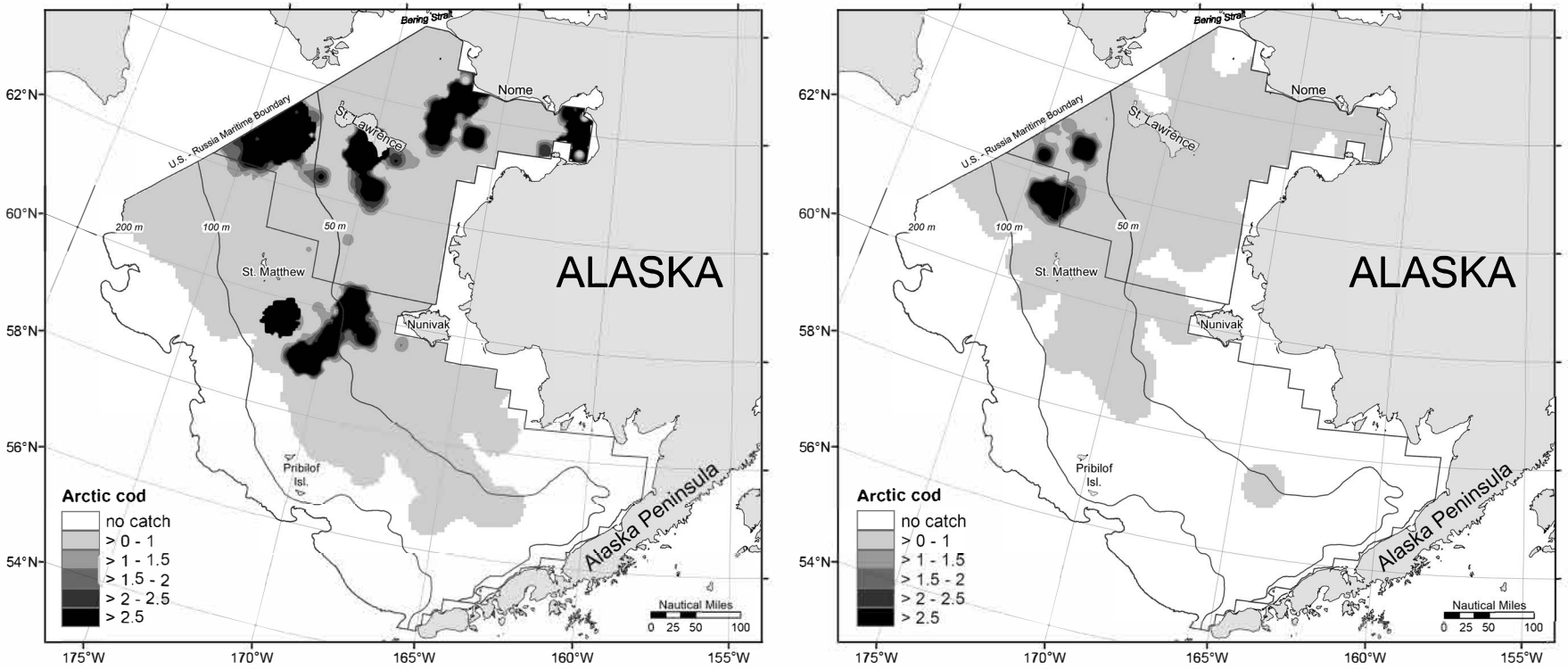

Figure 46. -- Distribution and relative survey abundance (kg/ha) of **Arctic cod** (*Boreogadus saida*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

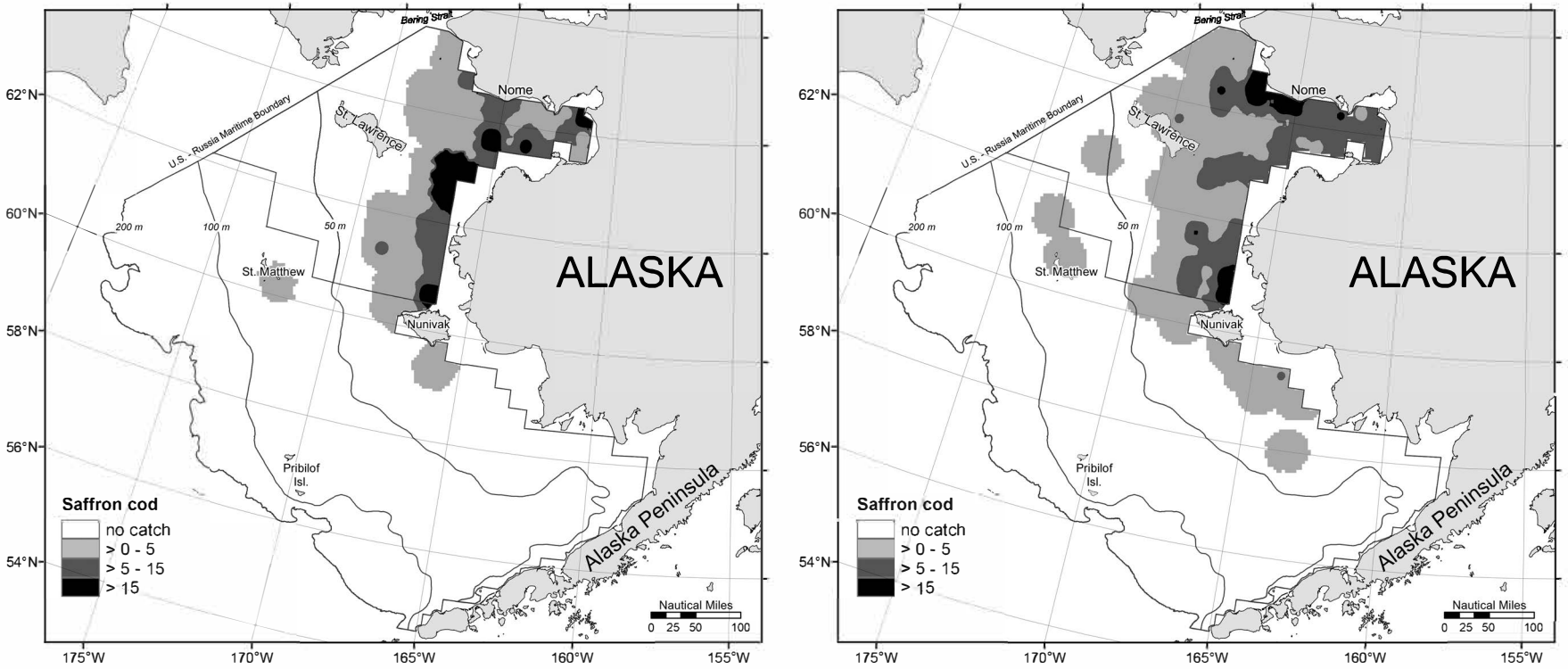

Figure 47. -- Distribution and relative survey abundance (kg/ha) of **saffron cod** (*Eleginus gracilis*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

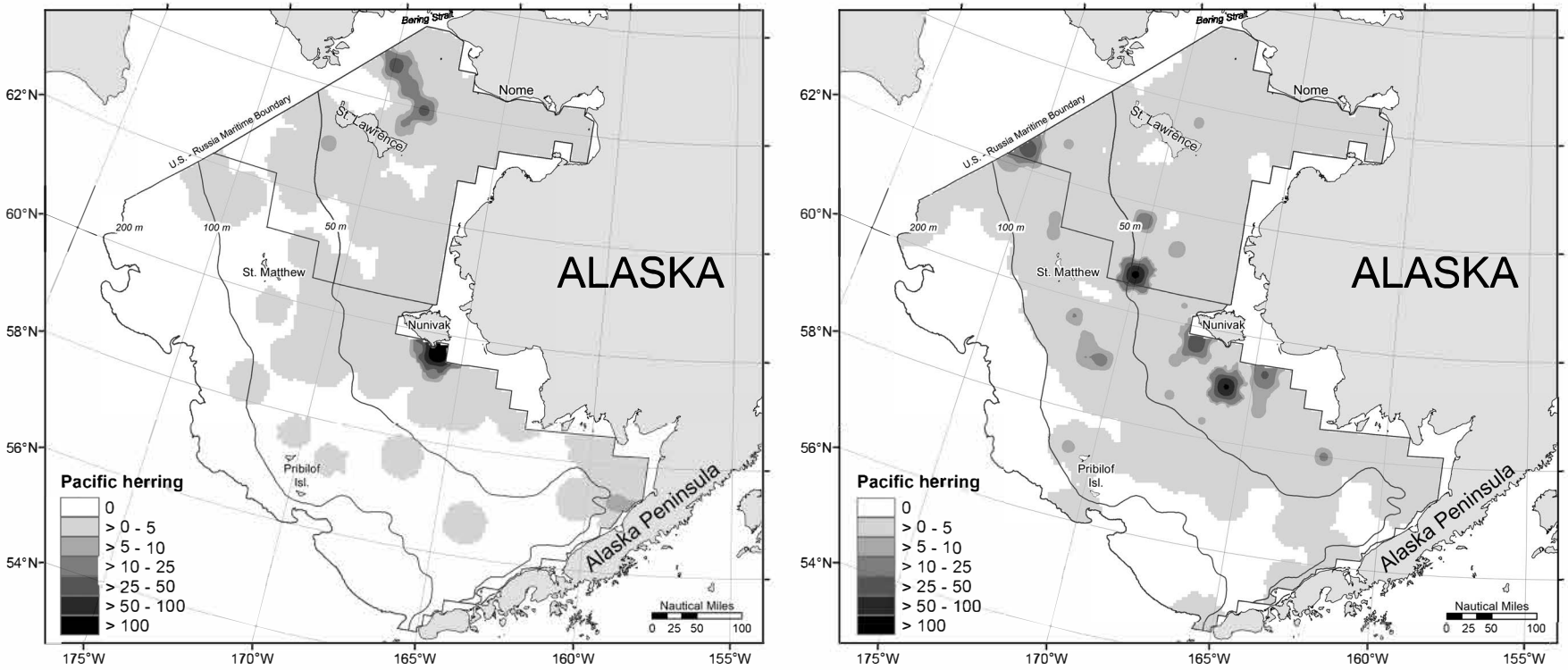

Figure 48. -- Distribution and relative survey abundance (kg/ha) of **Pacific herring** (*Clupea pallasi*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

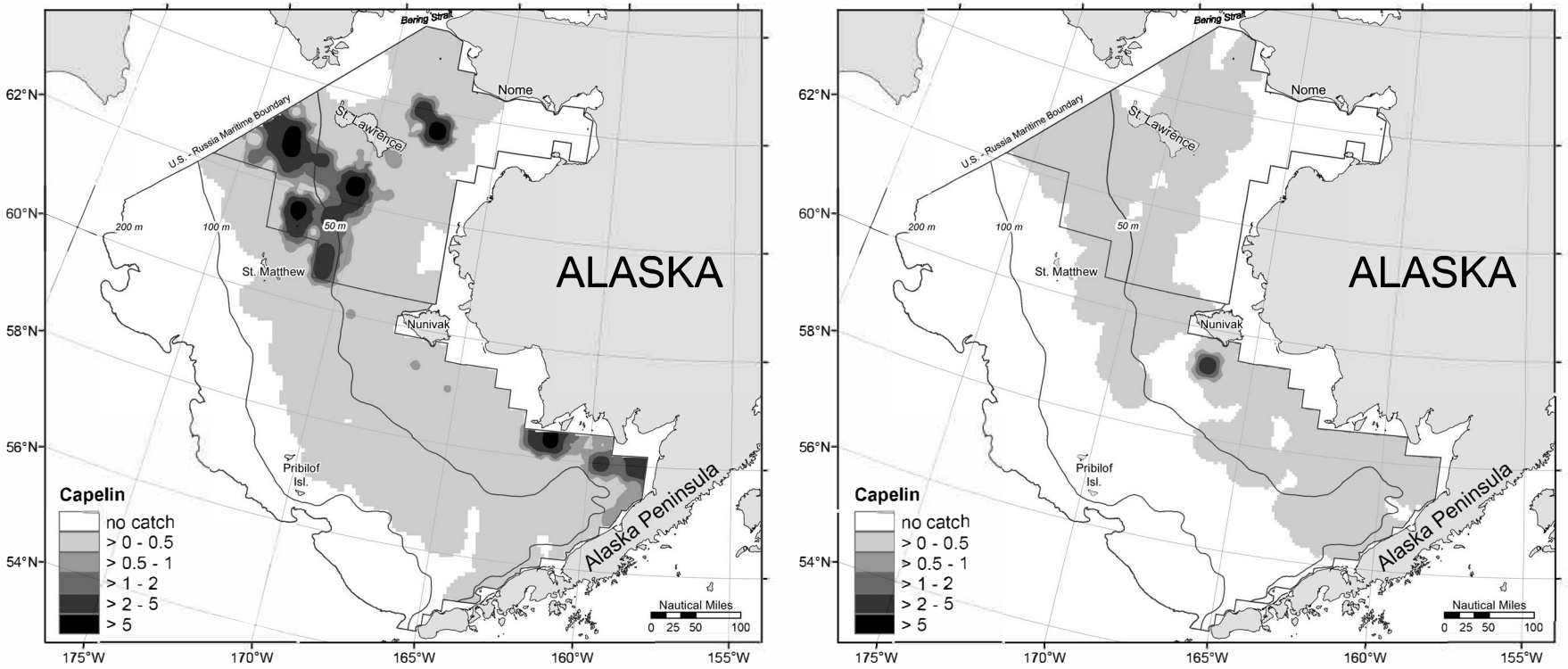

Figure 49. -- Distribution and relative survey abundance (kg/ha) of **capelin** (*Mallotus villosus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

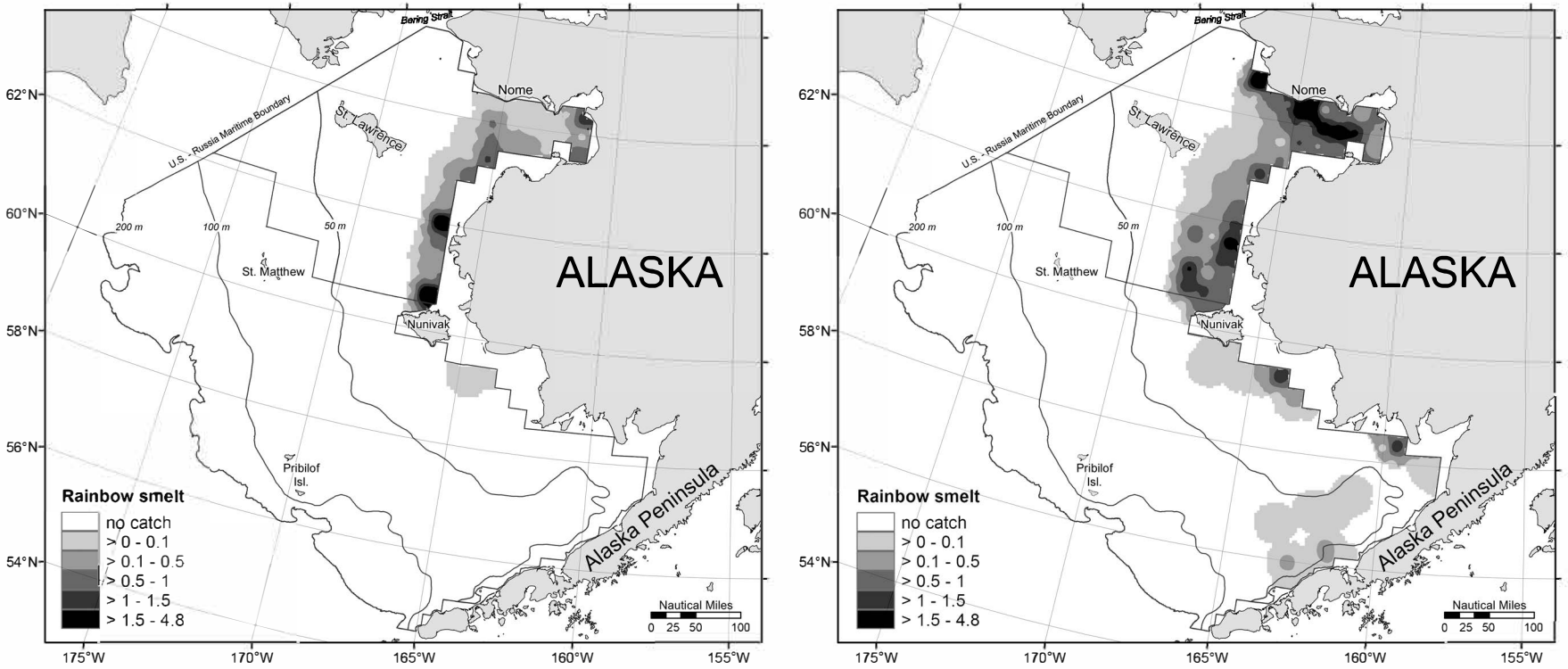

Figure 50. -- Distribution and relative survey abundance (kg/ha) of **rainbow smelt** (*Osmerus mordax*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

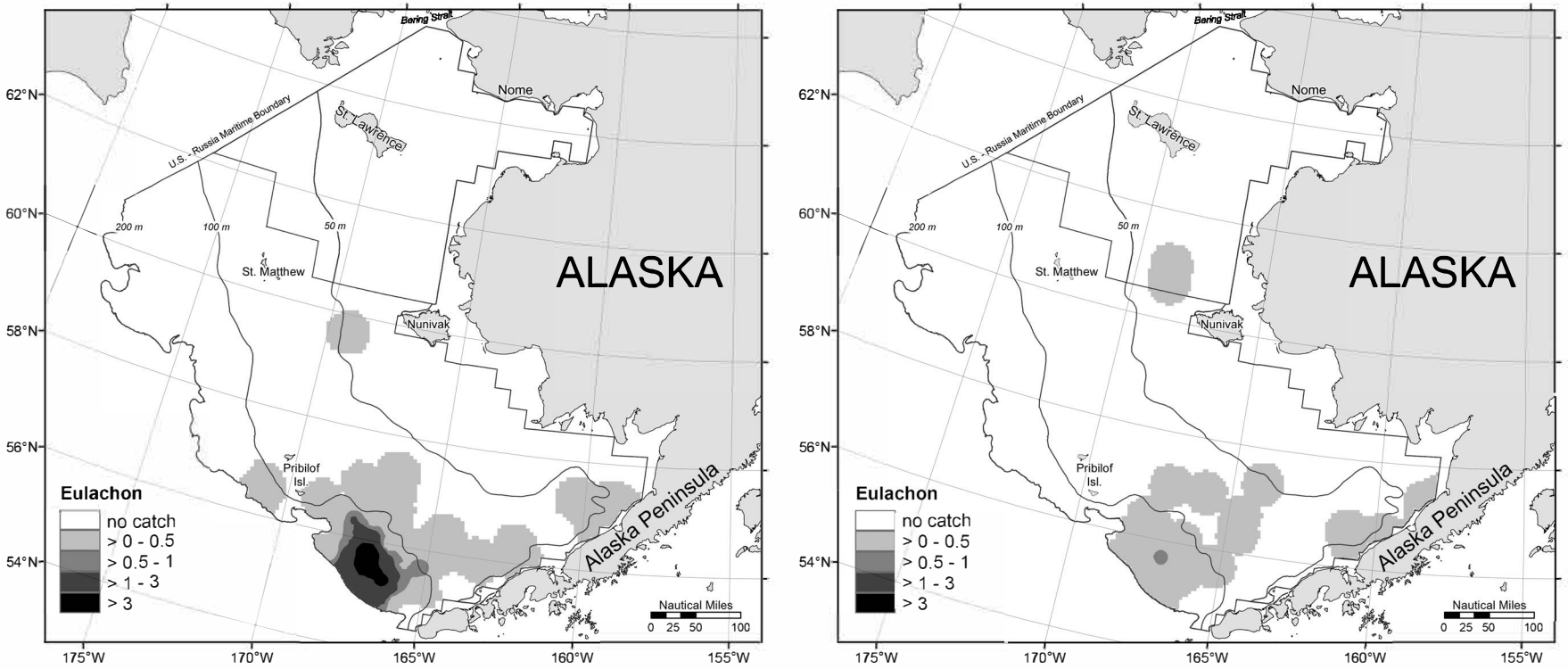

Figure 51. -- Distribution and relative survey abundance (kg/ha) of **eulachon** (*Thaleichthys pacificus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

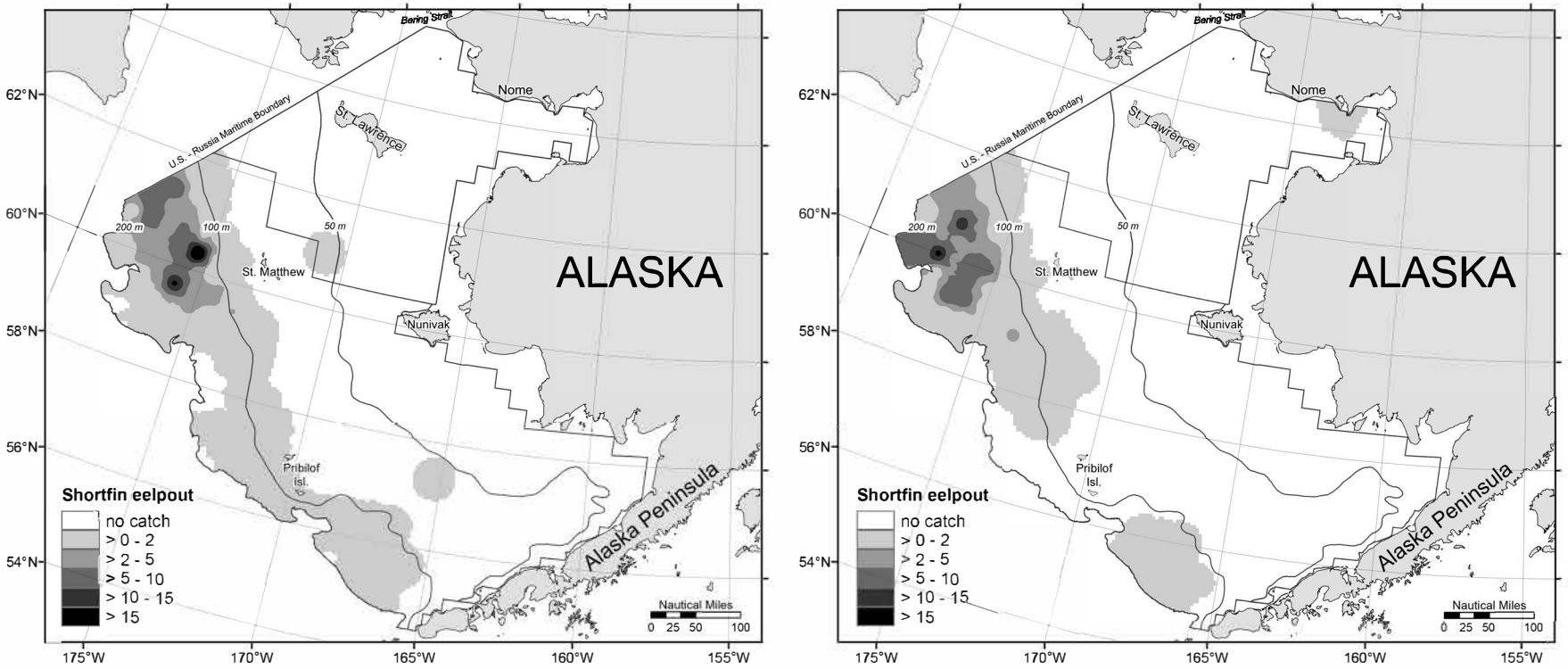

Figure 52. -- Distribution and relative survey abundance (kg/ha) of **shortfin eelpout** (*Lycodes brevipes*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

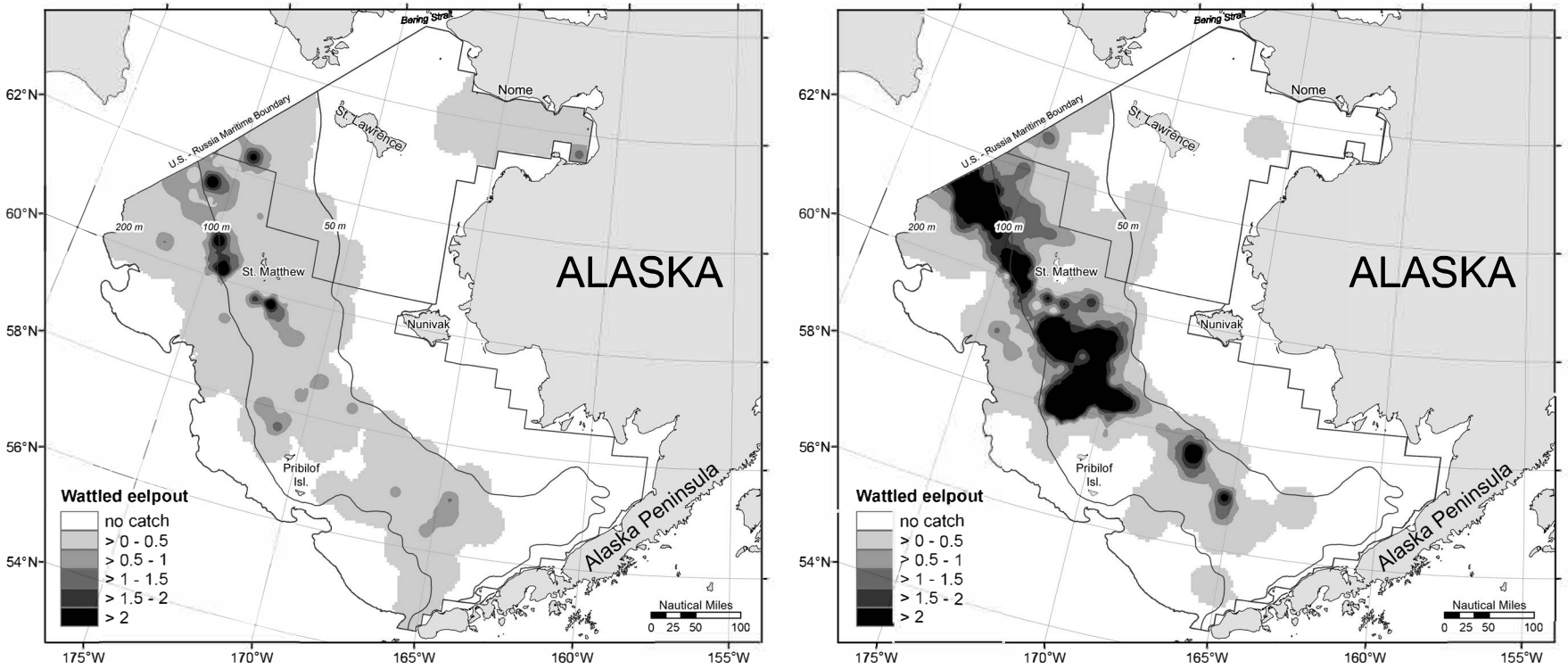

Figure 53. -- Distribution and relative survey abundance (kg/ha) of **wattled eelpout** (*Lycodes palearis*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

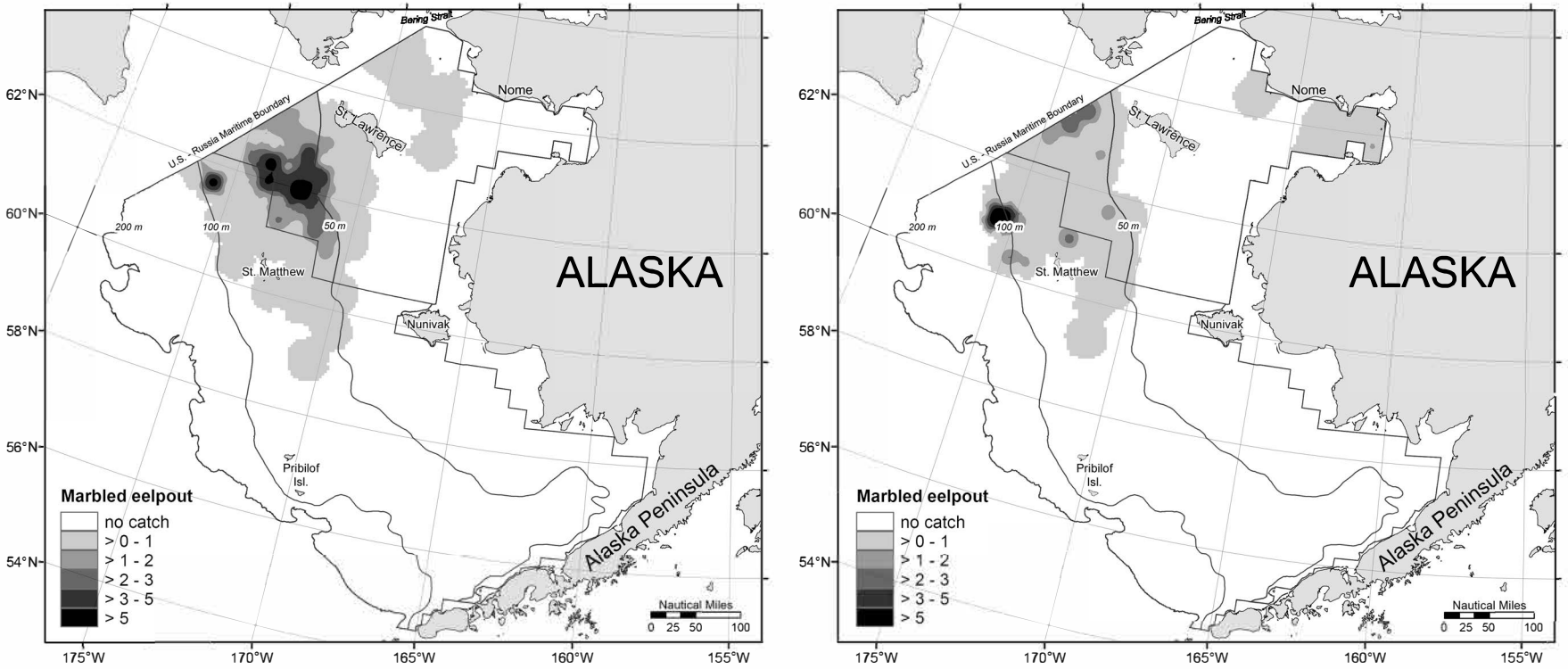

Figure 54. -- Distribution and relative survey abundance (kg/ha) of **marbled eelpout** (*Lycodes raridens*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

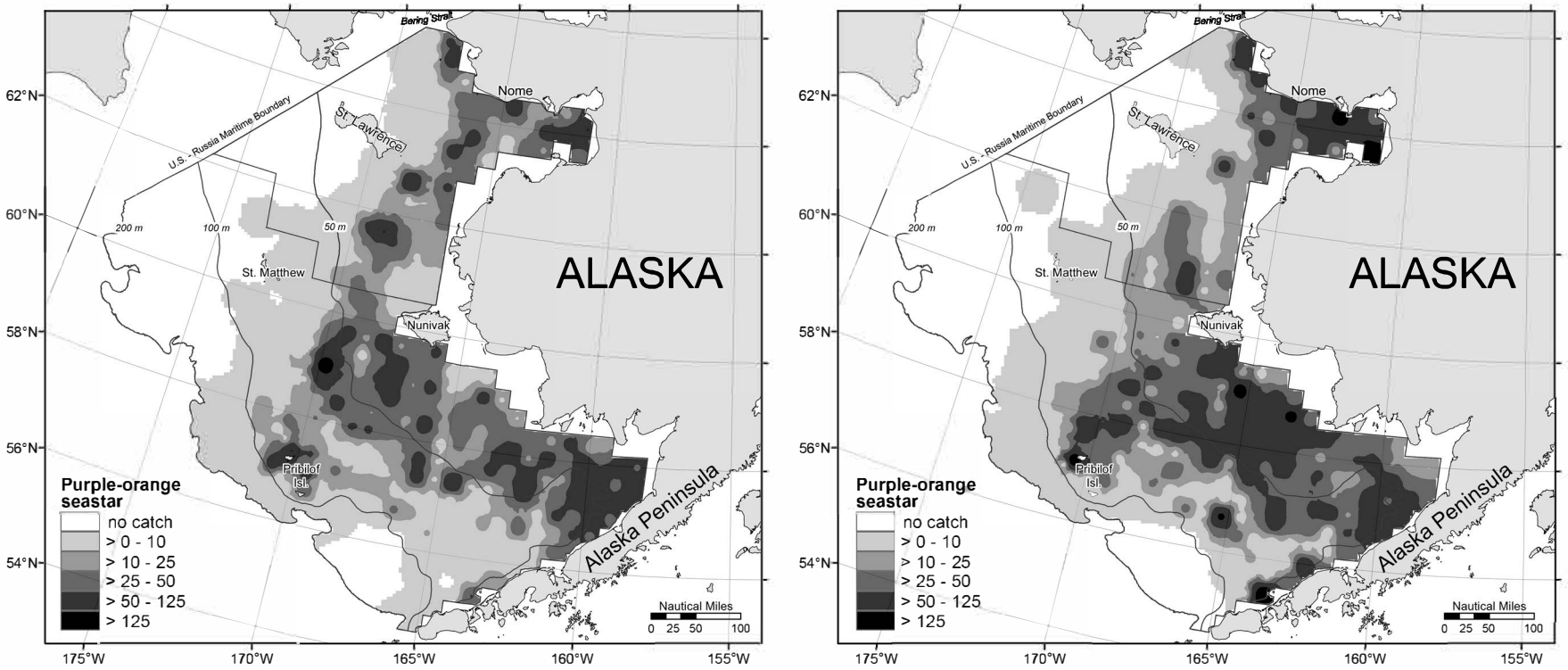

Figure 55. -- Distribution and relative survey abundance (kg/ha) of **purple sea star** (*Asterias amurensis*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

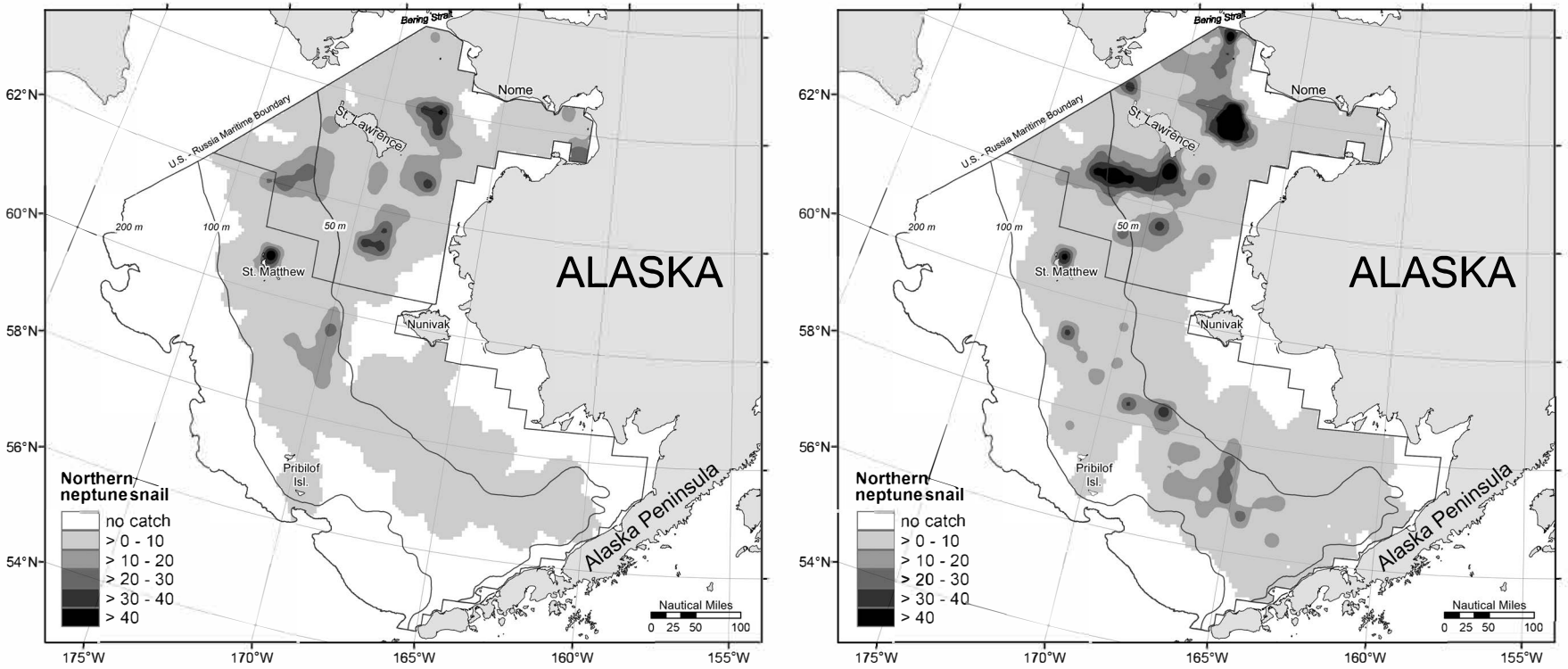

Figure 56. -- Distribution and relative survey abundance (kg/ha) of **northern neptune snail** (*Neptunea heros*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

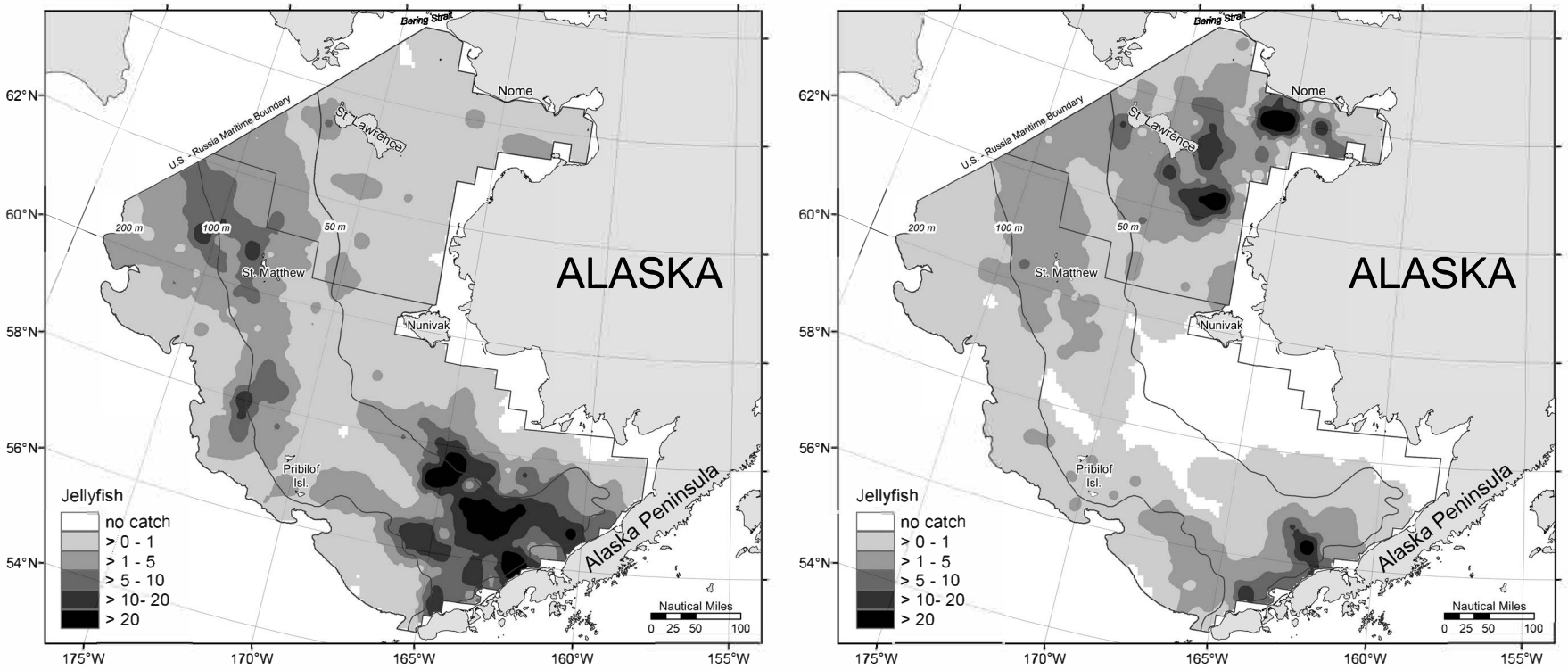

Figure 57. -- Distribution and relative survey abundance (kg/ha) of **jellyfishes** (Scyphozoa) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

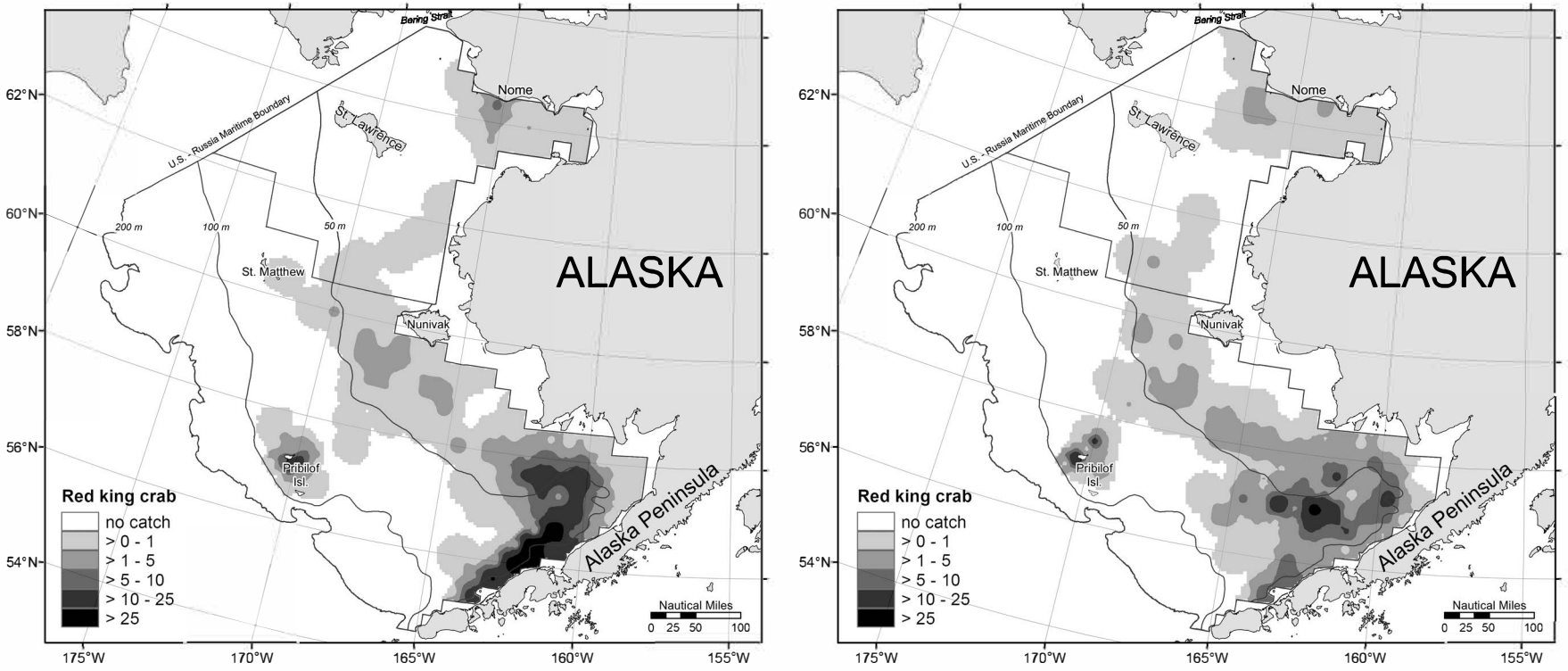

Figure 58. -- Distribution and relative survey abundance (kg/ha) of **red king crab** (*Paralithodes camtschaticus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

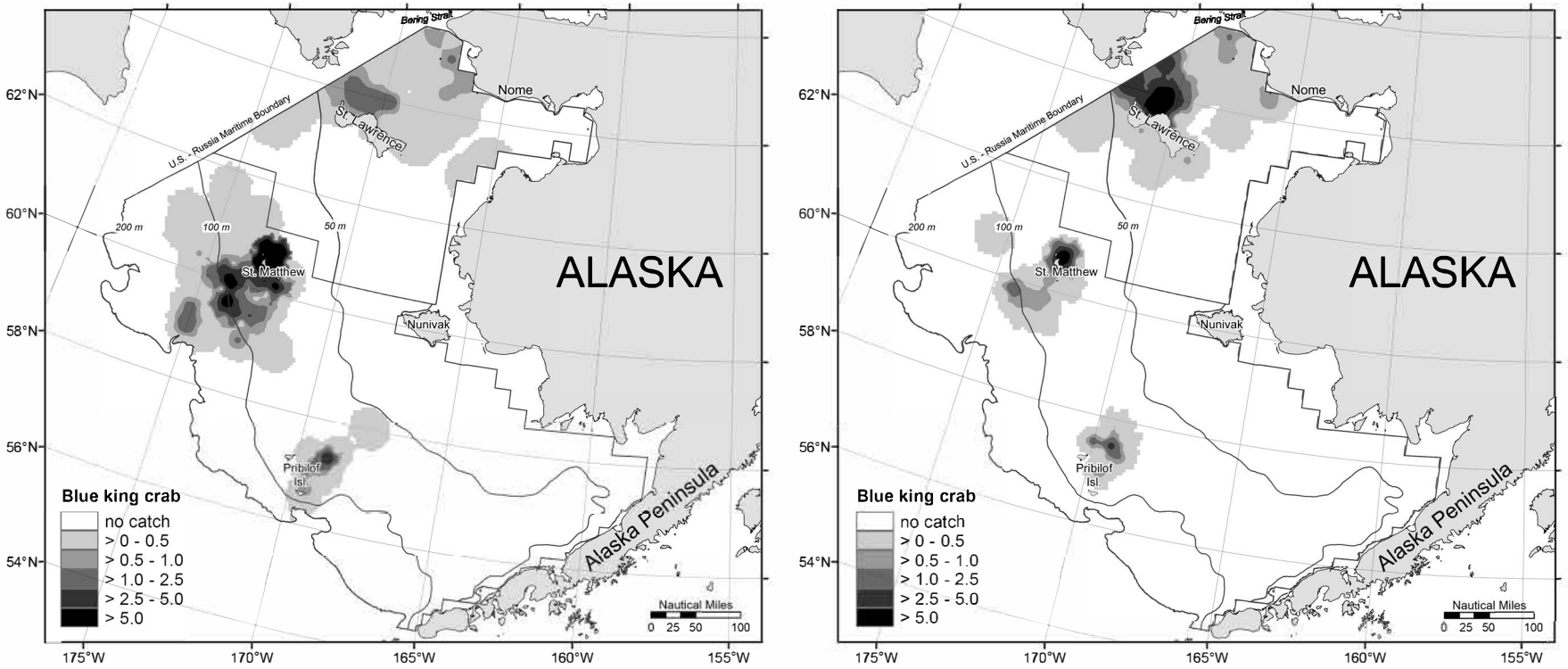

Figure 59. -- Distribution and relative survey abundance (kg/ha) of **blue king crab** (*Paralithodes platypus*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

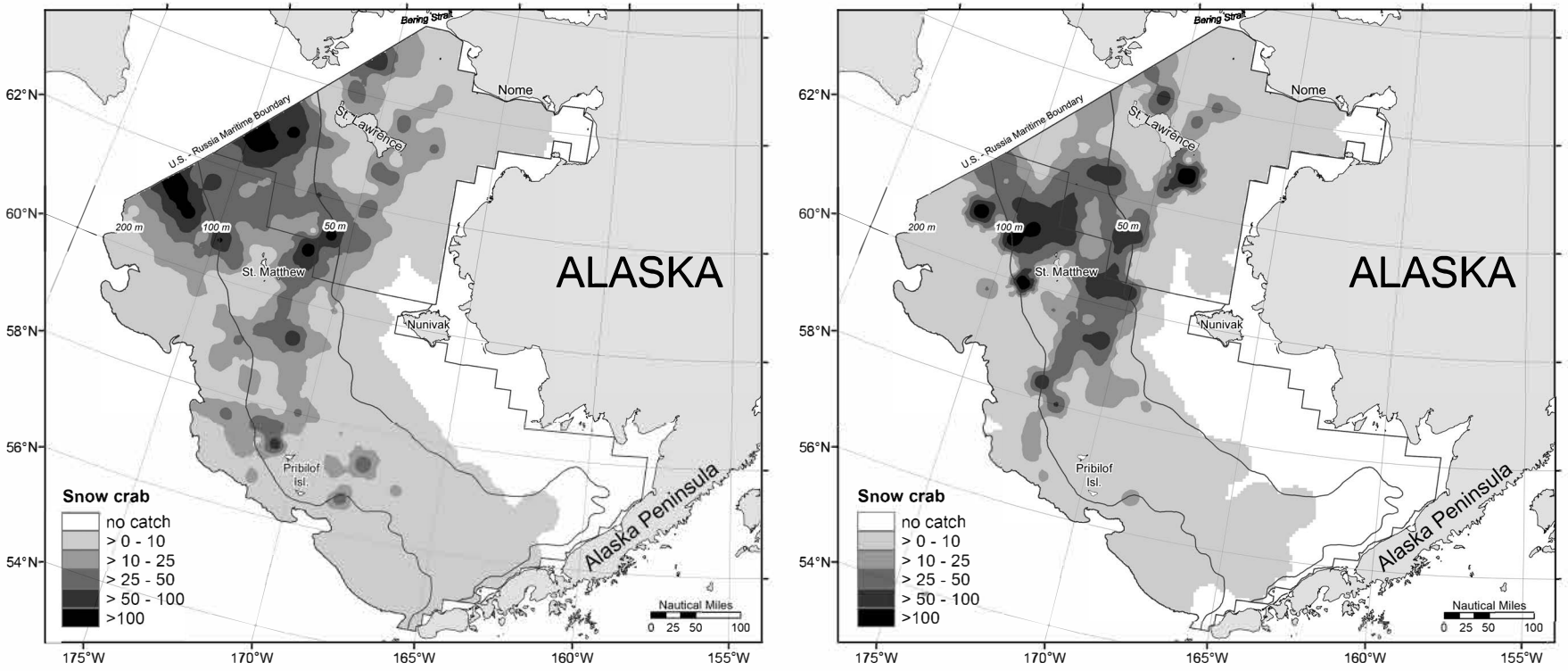

Figure 60. -- Distribution and relative survey abundance (kg/ha) of **snow crab** (*Chionoecetes opilio*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

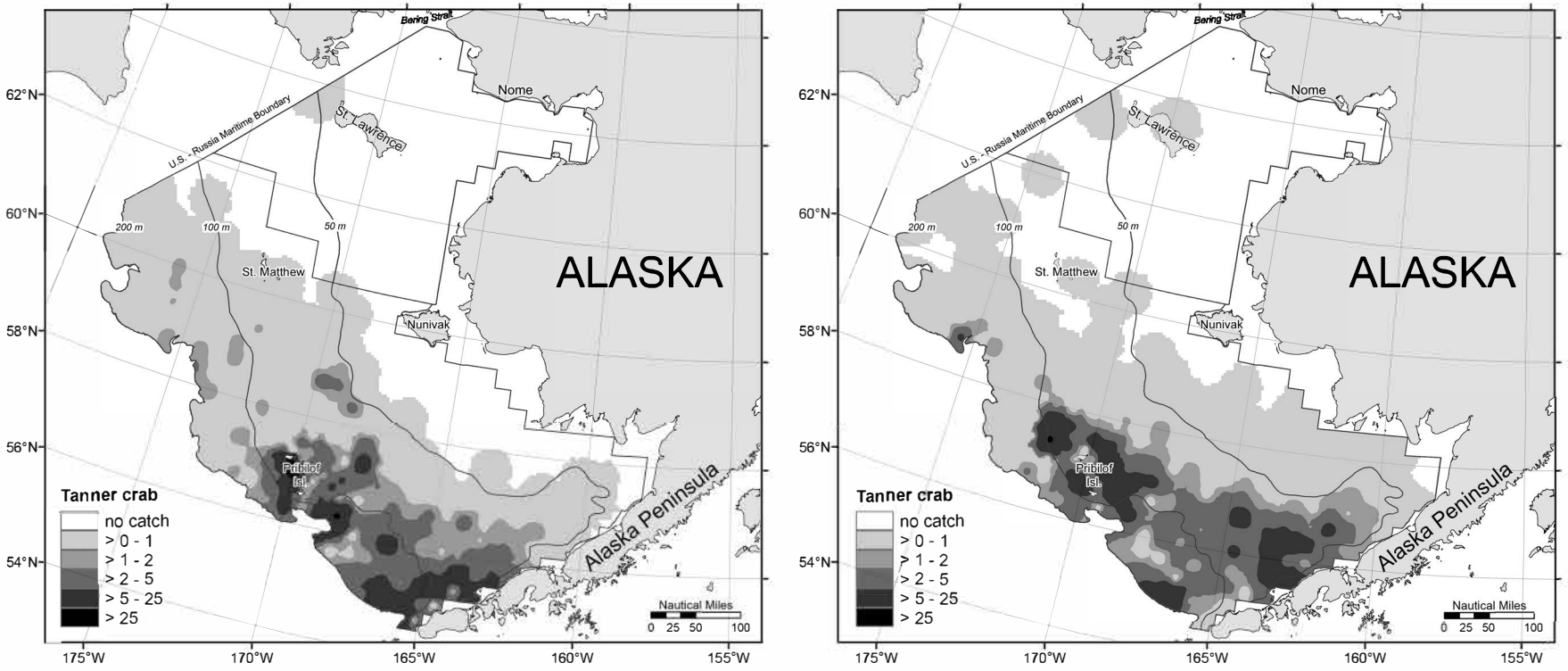

Figure 61. -- Distribution and relative survey abundance (kg/ha) of **Tanner crab** (*Chionoecetes bairdi*) during the 2010 (left) and 2017 (right) EBS (eastern Bering Sea) and NBS (northern Bering Sea) bottom trawl surveys.

APPENDICES

Appendix A: Station and Catch Data

Appendix A contains station data by vessel for the 376 successfully completed standard survey stations in the EBS (eastern Bering Sea) and 144 successfully completed standard survey stations in the NBS (northern Bering Sea). In using the tables, the following should be noted:

1. Time represents the nearest hour and minute at the start of the haul in Alaska Daylight Time (ADT).
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. Start and end 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 inverse scope (wire out) and net height.
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 *Alaska Knight* during the 2017 eastern Bering Sea shelf bottom trawl survey.

Station	**F-14**	**G-14**	**H-14**	**H-15**	**I-15**	**I-14**	**I-13**	**J-13**	**H-13**	**G-13**	**F-13**
Start date and time	6/4/17 7:35	6/4/17 12:13	6/4/17 16:10	6/5/17 7:13	6/5/17 9:58	6/5/17 12:43	6/5/17 15:12	6/5/17 17:51	6/6/17 6:59	6/6/17 9:44	6/6/17 12:22
Haul number	2	3	4	5	6	7	8	9	10	11	12
Start latitude	5640.16	5700.09	5719.83	5719.58	5738.97	5740.37	5739.13	5758.52	5720.86	5700.48	5640.77
Start longitude	16013.35	16018.48	16021.17	16056.20	16059.13	16023.45	16145.34	16146.60	16142.08	16139.72	16138.88
End latitude	5640.51	5659.98	5719.74	5721.04	5740.49	5739.57	5740.35	5800.08	5719.31	5658.93	5639.48
End longitude	16016.00	16015.66	16018.38	16057.12	16059.31	16020.89	16143.63	16147.15	16141.62	16139.67	16137.07
Bottom depth (m)	39	56	54	49	48	49	53	50	62	64	59
Duration (h)	0.52	0.51	0.51	0.52	0.52	0.52	0.52	0.54	0.52	0.52	0.53
Distance fished (km)	2.79	2.87	2.81	2.86	2.82	2.96	2.83	2.95	2.91	2.88	3.02
Net width (m)	15.45	16.33	16.82	15.39	16.01	15.56	15.47	14.49	16.77	16.00	16.06
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	60.20	17.90	55.70	184.60	40.00	17.60	33.50	22.80	10.00	15.00	83.97
Sharks											
Total elasmobranch	**60.2**	**17.9**	**55.7**	**184.6**	**40.0**	**17.6**	**33.5**	**22.8**	**10.0**	**15.0**	**84.0**
Alaska plaice	2.2	6.7	2.1	2.1	3.1	1.8	4.3	39.6	14.0		1.6
Arrowtooth flounder						3.7				1.5	3.2
Flathead sole											
Greenland turbot											
Pacific halibut	20.3	36.8	6.8	1.9	21.0	34.0	26.4	29.6	23.3	0.5	6.9
Rock sole	281.9	234.1	545.4	649.3	381.2	656.7	759.4	513.6	374.0	428.6	196.1
Yellowfin sole	343.3	102.3	70.6	840.8	920.7	775.6	123.0	734.7	174.9	136.1	245.9
Other flatfish	158.2	36.1	39.6	6.0	6.3	210.7	12.5	33.4	9.4	16.4	16.4
Total flatfish	**830.6**	**418.5**	**676.4**	**1,513.4**	**1,336.0**	**1,682.4**	**947.7**	**1,352.5**	**625.6**	**594.1**	**480.1**
Walleye pollock	48.1	66.4	219.4	349.3	230.0	93.1	57.1	79.9	22.8	104.4	192.9
Pacific cod	35.0	64.9	83.1	22.2	123.4	4.1	9.8	17.7	96.4	27.2	23.6
Sablefish	0.3	0.2			0.2						
Atka mackerel											
Eelpouts											
Pacific herring			1.5			0.7		20.8			
Pacific ocean perch											
Sculpins	5.5	4.5	3.1	5.0	12.8	2.8	5.5	0.3	63.9	37.2	5.1
Other rockfish											
Other roundfish	2.5	0.2	0.8	3.1	1.0	1.7	0.8	1.2	0.3	2.0	2.2
Total roundfish	**91.4**	**136.2**	**308.0**	**379.6**	**367.3**	**102.5**	**73.1**	**120.0**	**183.4**	**170.8**	**223.8**
Blue king crab											
Red king crab	3.9	30.9	69.2	6.3		37.6	12.2	32.4	24.0	46.8	6.3
Tanner crab, bairdi	2.7	4.5	3.2	1.6		1.8	2.5	1.1	4.0	6.3	5.6
Tanner crab, opilio											
Other crab	2.4	15.4	4.3	7.1	0.9	10.4	3.6	4.1	20.1	22.2	38.0
Shrimp	0.0								0.0	0.0	
Octopus											
Squids											
Snails		5.1	0.4	0.9	0.5	3.8	1.7	3.1	7.1	0.1	11.2
Starfish	246.7	306.2	214.2	442.6	184.8	384.1	205.0	292.8	377.7	331.8	297.9
Other invertebrates	6.7	65.7	20.0	17.4	7.5	7.0	15.5	3.9	99.7	95.0	182.6
Total invertebrates	**262.4**	**427.7**	**311.4**	**475.8**	**193.6**	**444.7**	**240.6**	**337.4**	**532.6**	**502.2**	**541.6**
Miscellaneous	2.7	2.2	2.5	6.5	1.0	2.8	1.0	1.4	6.5	21.8	26.5
Total catch	**1,247.2**	**1,002.5**	**1,354.0**	**2,560.0**	**1,938.0**	**2,250.0**	**1,296.0**	**1,834.0**	**1,358.0**	**1,304.0**	**1,356.0**

Appendix A Table 1. -- Continued.

Station	**F-12**	**E-12**	**D-10**	**B-07**	**C-07**	**D-07**	**E-07**	**F-07**	**G-07**	**H-07**	**H-06**
Start date and time	6/6/17 15:01	6/6/17 17:53	6/7/17 7:04	6/18/17 7:00	6/18/17 9:53	6/18/17 12:53	6/18/17 15:34	6/18/17 18:13	6/19/17 7:00	6/19/17 9:46	6/19/17 12:28
Haul number	13	14	15	16	17	18	19	20	21	22	23
Start latitude	5640.26	5620.92	5559.32	5519.21	5541.29	5559.15	5619.30	5639.30	5658.56	5718.79	5720.11
Start longitude	16101.10	16101.80	16344.34	16557.65	16559.48	16557.93	16559.38	16558.76	16558.08	16400.39	16524.51
End latitude	5639.29	5619.95	5600.40	5520.63	5542.78	5600.71	5620.83	5640.82	5700.04	5720.29	5719.97
End longitude	16258.89	16259.72	16346.21	16558.65	16558.63	16558.19	16559.57	16558.52	16558.26	16400.06	16521.64
Bottom depth (m)	66	53	71	78	94	91	87	75	69	62	65
Duration (h)	0.52	0.52	0.51	0.52	0.53	0.54	0.52	0.53	0.52	0.53	0.53
Distance fished (km)	2.89	2.80	2.80	2.83	2.91	2.90	2.84	2.83	2.75	2.81	2.90
Net width (m)	15.82	16.17	16.95	16.74	17.93	17.58	18.00	18.40	17.46	17.04	17.09
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	20.20	98.40	54.00	230.90	100.70	60.70	45.00	56.50	11.40	2.90	11.40
Sharks											
Total elasmobranch	**20.2**	**98.4**	**54.0**	**230.9**	**100.7**	**60.7**	**45.0**	**56.5**	**11.4**	**2.9**	**11.4**
Alaska plaice	7.4	234.4	4.4		4.1	20.0	106.9	191.1	43.1	52.0	99.6
Arrowtooth flounder	4.7	38.8	36.2	58.9	182.8	275.2	113.2	3.1			
Flathead sole											
Greenland turbot											
Pacific halibut	13.1	61.9	12.0	59.2		13.4		12.5		9.4	
Rock sole	147.2	403.7	286.5	117.8	90.2	110.1	78.3	77.3	5.6	10.3	2.5
Yellowfin sole	100.2	262.8	499.2	309.5	60.1	144.7	248.8	533.6	347.2	290.2	706.4
Other flatfish	15.5	22.6	5.5	0.8	7.0	3.7	2.5	1.1			
Total flatfish	**300.6**	**1,063.7**	**869.4**	**606.8**	**421.2**	**648.5**	**609.3**	**892.4**	**440.5**	**371.6**	**828.2**
Walleye pollock	149.1	70.4	123.8	128.4	6.2	772.3	1,169.5	748.4	413.9	234.3	183.9
Pacific cod	61.1	54.8	55.1	64.5	5.3	30.1	39.5	21.5	14.0	9.9	12.3
Sablefish					1.4						
Atka mackerel											
Eelpouts								0.3			
Pacific herring											
Pacific ocean perch											
Sculpins	6.9	1.7	0.9	0.5	6.7	5.4	15.5	21.8	16.6	8.1	14.7
Other rockfish											
Other roundfish	0.6	2.5	2.8	12.0	0.0		1.8	0.0	0.0	0.1	
Total roundfish	**217.7**	**129.4**	**182.6**	**205.4**	**19.6**	**807.8**	**1,226.3**	**792.0**	**444.5**	**252.4**	**210.9**
Blue king crab											
Red king crab	49.5	1.2	10.8					5.9	7.4	3.8	11.2
Tanner crab, bairdi	16.4	6.9	5.9	2.1	11.9	12.3	15.4	22.8	5.9	2.0	5.5
Tanner crab, opilio					1.9		1.3	2.5	0.7		
Other crab	6.2	17.6	0.5	3.3	120.7	226.3	371.1	121.2	27.8	12.8	33.8
Shrimp	0.0								0.1	0.0	0.4
Octopus				0.0							
Squids											
Snails	0.5	17.0	5.0	3.3	138.7	258.4	357.1	326.7	70.7	10.3	59.7
Starfish	263.3	180.6	445.2	17.2	9.8	70.8		131.7	199.6	275.4	278.1
Other invertebrates	43.7	115.5	50.8	500.0	34.9	29.4	211.0	88.3	180.3	67.3	617.7
Total invertebrates	**379.5**	**338.8**	**518.3**	**525.9**	**317.9**	**597.0**	**955.9**	**699.1**	**492.5**	**371.6**	**1,006.4**
Miscellaneous	4.4	33.7	5.7	1.0	66.6	108.0	245.4	127.8	59.1	17.3	110.1
Total catch	**922.4**	**1,664.0**	**1,630.0**	**1,570.0**	**926.0**	**2,222.0**	**3,082.0**	**2,568.0**	**1,448.0**	**1,015.8**	**2,167.0**

Appendix A Table 1. -- Continued.

Station	**G-06**	**F-06**	**E-06**	**D-06**	**C-06**	**AZ0504**	**A-04**	**B-04**	**C-04**	**D-04**	**E-04**
Start date and time	6/19/17 15:08	6/19/17 17:47	6/20/17 7:00	6/20/17 9:50	6/20/17 13:39	6/23/17 7:06	6/23/17 10:14	6/23/17 13:02	6/23/17 15:35	6/23/17 18:12	6/24/17 7:11
Haul number	24	25	26	27	29	30	31	32	33	34	35
Start latitude	5700.90	5641.11	5620.46	5600.26	5540.83	5449.97	5459.67	5519.19	5538.90	5559.34	5618.82
Start longitude	16523.57	16525.01	16525.19	16524.59	16524.31	16630.37	16615.16	16612.69	16611.89	16612.82	16612.12
End latitude	5659.37	5639.56	5618.93	5558.58	5539.30	5449.63	5501.19	5520.70	5540.43	5600.91	5620.33
End longitude	16523.75	16525.31	16524.89	16525.03	16524.49	16627.72	16614.85	16612.31	16611.89	16613.05	16611.58
Bottom depth (m)	70	75	87	92	96	157	129	120	118	108	93
Duration (h)	0.52	0.53	0.52	0.58	0.53	0.52	0.52	0.52	0.53	0.54	0.53
Distance fished (km)	2.83	2.87	2.85	3.15	2.86	2.92	2.83	2.82	2.84	2.93	2.86
Net width (m)	16.55	16.51	17.41	17.43	17.87	17.83	18.46	19.07	19.59	16.92	16.86
Net measured?	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	31.20	78.80	53.00	65.20	144.90	220.22	130.75	58.10	61.04	77.12	16.70
Sharks											
Total elasmobranch	**31.2**	**78.8**	**53.0**	**65.2**	**144.9**	**220.2**	**130.7**	**58.1**	**61.0**	**77.1**	**16.7**
Alaska plaice	38.0	97.0	55.8	10.5	1.6						3.4
Arrowtooth flounder		23.8	76.1	243.4	121.1	174.3	114.1	128.7	204.7	250.4	103.1
Flathead sole											
Greenland turbot											
Pacific halibut	14.5	11.6	10.8	12.9	22.2	36.7	14.5	3.7	12.4	13.7	3.7
Rock sole	5.7	32.5	34.0	32.9	83.2	2.5					11.2
Yellowfin sole	299.3	708.9	167.8	87.3	78.4						47.7
Other flatfish		6.6	3.9	4.7	8.6	22.1	10.3	6.4	9.9	13.0	6.8
Total flatfish	**387.9**	**1,011.7**	**379.4**	**516.4**	**429.3**	**236.0**	**170.1**	**194.5**	**304.2**	**371.2**	**437.9**
Walleye pollock	3,377.0	2,066.8	65.0	1,319.2	10.8	7.0	25.6	3.1	3.1	173.7	980.6
Pacific cod	29.7	27.4	37.6	21.4	19.8	30.3	10.5			26.7	14.0
Sablefish				3.9	0.4	1.3	4.7			2.8	
Atka mackerel						2.8					
Eelpouts		1.9	0.4					0.1			
Pacific herring						0.2					
Pacific ocean perch					0.8						
Sculpins	14.5	13.5		7.6	17.8	0.0	0.9	0.2	0.1	7.6	3.4
Other rockfish					4.7			0.1			
Other roundfish		0.7	0.6	0.2	0.1	2.3		0.1	2.2	2.0	0.0
Total roundfish	**3,421.2**	**2,110.2**	**103.5**	**1,352.3**	**54.4**	**44.0**	**41.7**	**3.5**	**5.4**	**212.7**	**998.0**
Blue king crab											
Red king crab	28.1	4.0		2.4							
Tanner crab, bairdi	12.8	44.9	18.4	34.7	5.9	9.6	8.0	26.8	5.3	24.2	9.3
Tanner crab, opilio		3.7	4.1		3.8				0.2	22.0	5.6
Other crab	1.5	96.6	85.2	299.0	67.2	9.2	2.5	10.7	9.4	44.5	16.7
Shrimp	0.1					0.2	0.0	0.0			
Octopus					0.1						
Squids											
Snails	0.2	479.7	207.5	265.0	66.2	14.8	7.0	3.0	2.8	34.4	90.4
Starfish	55.1	22.2	174.5	3.8	0.6	2.6	0.1				0.5
Other invertebrates	117.1	254.2	85.5	28.3	60.6	72.3	50.6	30.8	38.1	35.5	23.2
Total invertebrates	**215.0**	**905.3**	**575.1**	**633.2**	**204.2**	**108.7**	**68.2**	**71.4**	**55.8**	**160.7**	**145.7**
Miscellaneous	0.8	140.0	46.3	105.0	26.6	1.3	0.1	0.4	0.3	3.6	16.6
Total catch	**4,056.0**	**4,246.0**	**1,157.3**	**2,672.0**	**859.5**	**610.3**	**411.0**	**327.9**	**426.7**	**825.2**	**1,615.0**

Appendix A Table 1. -- Continued.

Station	**F-04**	**G-04**	**H-04**	**I-04**	**I-03**	**H-03**	**G-03**	**F-03**	**E-03**	**D-03**	**C-03**
Start date and time	6/24/17 9:59	6/24/17 12:40	6/24/17 15:23	6/24/17 17:56	6/25/17 6:59	6/25/17 10:31	6/25/17 14:06	6/25/17 17:43	6/26/17 6:58	6/26/17 10:07	6/26/17 12:47
Haul number	36	37	38	39	40	41	42	43	44	45	46
Start latitude	5639.31	5658.69	5718.80	5739.04	5741.86	5720.83	5700.84	5641.22	5621.59	5600.78	5540.83
Start longitude	16609.80	16608.48	16608.40	16606.82	16729.55	16730.61	16731.73	16734.10	16735.36	16736.00	16737.04
End latitude	5640.82	5700.20	5720.29	5740.58	5740.32	5719.37	5659.32	5639.92	5620.07	5559.31	5539.24
End longitude	16609.71	16607.88	16607.64	16606.49	16729.38	16729.90	16731.29	16735.42	16735.54	16736.07	16736.95
Bottom depth (m)	78	72	67	64	67	70	73	83	103	125	127
Duration (h)	0.53	0.53	0.53	0.52	0.52	0.51	0.53	0.52	0.52	0.51	0.54
Distance fished (km)	2.80	2.88	2.86	2.86	2.87	2.80	2.84	2.77	2.82	2.74	2.96
Net width (m)	16.62	17.07	16.59	16.04	16.85	16.32	16.75	17.08	17.62	18.80	19.62
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	29.10	12.22	12.70	13.30	30.76	8.00	15.08	87.80	29.06	91.42	21.50
Sharks											
Total elasmobranch	**29.1**	**12.2**	**12.7**	**13.3**	**30.8**	**8.0**	**15.1**	**87.8**	**29.1**	**91.4**	**21.5**
Alaska plaice	17.6	31.8	17.1	63.7	97.9	194.7	106.1	45.6			
Arrowtooth flounder	8.6							12.7	63.2	80.2	68.9
Flathead sole											
Greenland turbot											
Pacific halibut	2.0	4.9						2.5	5.9	11.7	3.7
Rock sole	11.1	15.4	3.8	8.9	6.5	26.3	10.7	12.1			
Yellowfin sole	229.2	707.0	845.6	295.0	1,137.4	590.0	580.0	214.2	1.6		
Other flatfish	0.9							1.6	6.1	5.9	6.2
Total flatfish	**296.7**	**900.6**	**890.9**	**392.8**	**1,269.5**	**887.7**	**854.1**	**371.6**	**160.1**	**258.5**	**204.1**
Walleye pollock	917.7	580.1	433.4	110.6	248.7	1,591.6	4,022.1	842.2	1,754.4	62.3	23.8
Pacific cod	16.3	8.8	7.0	11.5	11.0	21.9	14.6	19.2	66.0	25.5	7.0
Sablefish											
Atka mackerel											
Eelpouts	1.1		3.6	0.5	18.4	6.7		1.5		0.1	0.1
Pacific herring			9.0	0.4	6.5	4.9					
Pacific ocean perch											
Sculpins	1.7	3.5	2.1	5.3	3.4	24.9	22.1	16.4	10.8	0.1	0.2
Other rockfish											
Other roundfish	0.2	0.6	0.0	0.0	0.1	0.1				1.2	2.4
Total roundfish	**937.0**	**593.0**	**455.1**	**128.4**	**288.1**	**1,650.0**	**4,058.8**	**879.3**	**1,831.2**	**89.2**	**33.5**
Blue king crab											
Red king crab		3.6									
Tanner crab, bairdi	14.9	2.9	1.6	1.9	2.4	7.4	9.4	16.4	9.9	8.9	17.3
Tanner crab, opilio	2.6	0.9	0.4	1.4	0.2	1.3	1.6	0.6	2.2	0.8	
Other crab	189.0	19.5	33.0	11.8	45.3	45.7	52.4	61.5	2.6	3.1	2.1
Shrimp										0.0	0.0
Octopus											
Squids											
Snails	312.2	182.2	146.3	6.4	130.7	31.6	129.5	159.9	20.9	5.7	1.1
Starfish	26.9	134.6	159.2	461.7	201.6	170.8	20.3	151.0		1.1	0.4
Other invertebrates	162.8	118.0	61.6	51.9	41.1	380.9	78.2	49.2	23.4	23.4	29.1
Total invertebrates	**708.3**	**461.7**	**402.1**	**535.2**	**421.3**	**637.6**	**291.3**	**438.7**	**59.0**	**43.1**	**50.0**
Miscellaneous	182.9	48.5	29.2	4.3	20.4	44.8	9.7	40.6	6.6	0.1	
Total catch	**2,154.0**	**2,016.0**	**1,790.0**	**1,074.0**	**2,030.0**	**3,228.0**	**5,229.0**	**1,818.0**	**2,086.0**	**482.2**	**309.1**

Appendix A Table 1. -- Continued.

Station	**B-03**	**A-03**	**A-02**	**B-02**	**C-02**	**D-02**	**E-02**	**F-02**	**G-02**	**H-02**	**I-02**
Start date and time	6/26/17 15:24	6/26/17 18:07	6/27/17 7:06	6/27/17 9:44	6/27/17 12:25	6/27/17 15:14	6/27/17 17:50	6/28/17 7:01	6/28/17 9:46	6/28/17 12:27	6/28/17 15:02
Haul number	47	48	49	50	51	52	53	54	55	56	57
Start latitude	5521.24	5501.15	5500.05	5519.60	5540.01	5559.53	5619.48	5639.95	5659.64	5719.52	5738.79
Start longitude	16739.48	16740.64	16703.82	16701.71	16701.03	16859.41	16857.89	16855.89	16854.63	16852.76	16851.97
End latitude	5519.73	5459.86	5501.29	5521.09	5541.49	5601.02	5621.00	5641.51	5701.23	5720.99	5740.29
End longitude	16739.94	16741.90	16702.22	16701.86	16700.89	16859.02	16857.29	16855.79	16854.54	16852.81	16852.10
Bottom depth (m)	131	142	156	141	135	134	113	95	74	71	69
Duration (h)	0.53	0.50	0.52	0.52	0.51	0.52	0.53	0.52	0.53	0.51	0.52
Distance fished (km)	2.85	2.75	2.86	2.77	2.75	2.79	2.88	2.89	2.94	2.73	2.79
Net width (m)	19.79	18.36	18.45	20.12	19.20	18.66	18.15	17.44	16.23	16.24	15.75
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	48.18	59.48	84.53	85.67	57.10	46.50		131.30	119.40	26.80	12.30
Sharks											
Total elasmobranch	**48.2**	**59.5**	**84.5**	**85.7**	**57.1**	**46.5**		**131.3**	**119.4**	**26.8**	**12.3**
Alaska plaice								43.4	26.1	35.8	466.1
Arrowtooth flounder	97.6	73.1	129.6	105.0	62.9	135.1	164.2	73.6	5.8		
Flathead sole											
Greenland turbot											
Pacific halibut		8.8	6.0	26.2	17.3	15.8	11.2	9.0	9.6	10.5	4.1
Rock sole								11.2	38.1	21.4	16.4
Yellowfin sole								115.6	436.1	263.6	439.9
Other flatfish	11.2	13.9	8.7	12.0	8.9	10.2	10.7	6.0	4.0	4.3	
Total flatfish	**160.7**	**142.7**	**170.0**	**215.3**	**177.2**	**367.3**	**270.9**	**309.1**	**785.8**	**408.2**	**950.9**
Walleye pollock	2.5	4.3	3.7	57.7	2,088.2	24.7	2,128.5	229.0	712.6	914.8	889.6
Pacific cod	7.5	6.4	11.6	5.5	15.0	17.3	20.3	18.2	58.8	37.6	15.6
Sablefish											
Atka mackerel											
Eelpouts	0.0	0.3		0.6	0.6	0.1		0.8	0.4	1.6	4.4
Pacific herring										1.1	3.9
Pacific ocean perch											
Sculpins	0.5	0.8	2.2	1.0	0.1	3.6		17.9	67.7	4.4	4.0
Other rockfish	0.2										
Other roundfish	0.5	0.0	0.2	2.4	3.7	1.8		0.3	1.2		
Total roundfish	**11.3**	**11.8**	**17.8**	**67.2**	**2,107.5**	**47.5**	**2,148.8**	**266.1**	**840.6**	**959.4**	**917.5**
Blue king crab											
Red king crab											
Tanner crab, bairdi	3.3	74.5	68.8	14.9	1.2	19.0	20.5	5.7	9.9	2.5	3.4
Tanner crab, opilio	0.6	0.6	0.5	0.7		2.0	15.8	2.5	6.1	2.0	1.4
Other crab	0.8	0.6	2.9	2.3		2.7	3.6	33.9	238.6	50.9	88.6
Shrimp	0.1	0.3	0.7	0.2	0.1	0.0					
Octopus						20.1		0.1			
Squids				0.0							
Snails	2.9	2.8	9.7	2.6	0.4	4.2	1.2	148.6	470.9	83.9	136.6
Starfish			0.0	0.0	0.2	1.0	0.1	47.1	70.6	226.6	48.9
Other invertebrates	32.8	31.8	8.2	17.1	14.5	13.2	49.2	26.3	221.5	297.8	157.8
Total invertebrates	**40.5**	**110.5**	**90.9**	**37.9**	**16.2**	**62.3**	**90.3**	**264.2**	**1,017.7**	**663.6**	**436.8**
Miscellaneous	0.1	0.0	0.5			0.1		16.3	94.5	58.0	44.5
Total catch	**260.9**	**324.4**	**363.6**	**406.1**	**2,358.0**	**523.7**	**2,510.0**	**987.0**	**2,858.0**	**2,116.0**	**2,362.0**

Appendix A Table 1. -- Continued.

Station	**J-02**	**K-01**	**L-01**	**M-01**	**N-01**	**O-01**	**P-01**	**P-18**	**Q-18**	**Q-01**	**Q-02**
Start date and time	6/28/17 17:39	6/29/17 7:01	6/29/17 9:54	6/29/17 12:42	6/29/17 15:07	6/29/17 17:44	6/30/17 6:56	6/30/17 9:28	6/30/17 12:04	6/30/17 14:37	6/30/17 17:25
Haul number	58	59	60	61	62	63	64	65	66	67	68
Start latitude	5758.77	5819.28	5840.28	5859.44	5918.59	5938.90	5958.54	5959.63	6019.30	6020.06	6020.37
Start longitude	16850.04	16809.61	16807.84	16807.21	16805.02	16802.88	16800.78	16921.87	16918.66	16959.12	16847.06
End latitude	5800.28	5820.78	5841.79	5901.00	5920.07	5940.42	6000.09	6000.34	6020.46	6020.42	6020.12
End longitude	16849.39	16808.92	16807.29	16807.41	16805.33	16802.59	16800.27	16919.22	16920.64	16802.14	16843.87
Bottom depth (m)	64	60	46	43	41	36	27	39	36	32	31
Duration (h)	0.53	0.53	0.52	0.53	0.51	0.52	0.53	0.51	0.52	0.52	0.53
Distance fished (km)	2.87	2.85	2.85	2.89	2.77	2.82	2.91	2.80	2.83	2.86	2.99
Net width (m)	16.49	16.76	16.26	15.89	15.38	15.47	15.42	15.26	16.14	14.80	15.85
Net measured?	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	27.00	68.20	42.90	62.86	81.37	163.22	49.10	115.40	117.12	54.40	25.86
Sharks											
Total elasmobranch	**27.0**	**68.2**	**42.9**	**62.9**	**81.4**	**163.2**	**49.1**	**115.4**	**117.1**	**54.4**	**25.9**
Alaska plaice	98.5	93.0	33.2	19.6	12.8	26.8	26.4	33.3	77.7	12.4	54.0
Arrowtooth flounder											
Flathead sole											
Greenland turbot											
Pacific halibut	8.8		42.6	18.8	59.4	106.5	5.9	8.0	12.6	63.5	30.5
Rock sole	20.5	62.2	87.0	47.8	54.5	27.1	271.2	37.0	26.9	18.0	48.9
Yellowfin sole	611.8	1,604.5	576.2	406.7	195.1	494.6	98.5	202.6	213.9	259.5	354.8
Other flatfish			2.6	4.2		8.2	27.6			7.2	18.0
Total flatfish	**755.9**	**1,767.9**	**741.7**	**497.2**	**321.7**	**663.2**	**429.6**	**280.9**	**331.5**	**360.6**	**506.3**
Walleye pollock	153.9	311.1	115.9	25.9	18.1	30.5	219.5	245.6	225.9	42.8	173.4
Pacific cod	17.9	84.6	79.2	58.0	0.0	13.3	90.3	97.0	33.0	14.5	31.3
Sablefish											
Atka mackerel											
Eelpouts	2.8										
Pacific herring	4.5	0.8	30.6		33.8	2.3	22.5	8.7	2.0	22.4	2.0
Pacific ocean perch											
Sculpins	2.9	47.5	23.8	4.0	5.7	28.2	8.3	21.2	33.5	14.0	59.6
Other rockfish											
Other roundfish	0.7	4.7	2.4	4.6	1.6	5.8	5.2	14.7	11.1	6.3	41.5
Total roundfish	**182.7**	**448.8**	**251.9**	**92.6**	**59.1**	**80.0**	**345.8**	**387.1**	**305.6**	**100.1**	**307.8**
Blue king crab											
Red king crab		3.5	10.1	1.7	3.5	6.1	3.2		2.2		
Tanner crab, bairdi	2.0	1.3	0.2	0.3							
Tanner crab, opilio	1.8	4.0									
Other crab	58.4	75.3	26.2	18.7	21.9	7.0	2.7	43.6	12.6	1.0	1.3
Shrimp			0.0						0.0		0.0
Octopus											
Squids											
Snails	96.8	224.2	9.0	3.0	2.8		0.2	7.6	1.7	0.2	
Starfish	373.0	205.3	133.5	223.9	66.1	249.7	12.9	104.6	46.7	72.5	128.0
Other invertebrates	80.7	222.2	24.1	10.2	6.5	1.0	0.6	12.2	2.7	0.4	0.3
Total invertebrates	**612.6**	**735.9**	**203.1**	**257.8**	**100.8**	**263.8**	**19.6**	**168.0**	**65.9**	**74.0**	**129.6**
Miscellaneous	75.7	35.2	53.7	5.7	5.6	13.7	0.2	20.8	3.9	0.3	0.7
Total catch	**1,654.0**	**3,056.0**	**1,293.4**	**916.1**	**568.7**	**1,184.0**	**844.2**	**972.2**	**824.0**	**589.4**	**970.3**

Appendix A Table 1. -- Continued.

Station	**O-18**	**N-18**	**M-18**	**L-18**	**K-18**	**J-18**	**J-19**	**JI2019**	**J-20**	**JI2120**	**I-20**
Start date and time	7/1/17 6:58	7/1/17 9:21	7/1/17 12:24	7/1/17 18:49	7/2/17 7:02	7/2/17 10:05	7/2/17 12:52	7/2/17 15:16	7/2/17 17:43	7/3/17 7:00	7/3/17 9:19
Haul number	69	70	71	72	73	74	75	76	77	78	79
Start latitude	5940.56	5920.70	5900.38	5840.95	5820.90	5800.57	5759.91	5751.44	5759.42	5750.97	5740.69
Start longitude	16922.93	16925.31	16927.87	16932.36	16932.27	16933.86	17058.00	17038.81	17019.07	17000.56	17020.66
End latitude	5939.00	5919.18	5858.80	5839.91	5819.36	5759.05	5800.02	5749.99	5800.65	5749.56	5739.16
End longitude	16923.01	16925.05	16927.96	16930.15	16932.26	16933.75	17055.22	17037.93	17017.51	17001.59	17020.67
Bottom depth (m)	40	42	46	53	65	69	70	67	70	72	70
Duration (h)	0.51	0.51	0.53	0.52	0.55	0.52	0.51	0.52	0.51	0.51	0.51
Distance fished (km)	2.89	2.82	2.93	2.88	2.85	2.81	2.76	2.81	2.75	2.81	2.84
Net width (m)	15.56	15.09	16.09	16.31	16.72	16.85	16.75	17.91	16.79	16.71	16.59
Net measured?	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	83.00	38.20	90.70	31.10	24.40	19.20	6.00	17.50	15.50	18.10	37.94
Sharks											
Total elasmobranch	**83.0**	**38.2**	**90.7**	**31.1**	**24.4**	**19.2**	**6.0**	**17.5**	**15.5**	**18.1**	**37.9**
Alaska plaice	30.9	12.9	238.3	801.5	224.3	90.1	211.0	98.1	146.5	109.6	216.5
Arrowtooth flounder								5.8	25.7	102.4	24.9
Flathead sole											
Greenland turbot											
Pacific halibut	18.0	62.4	25.5	5.8		18.0					
Rock sole	89.4	55.6	240.7	283.4	29.2	21.8	36.9	48.1	97.0	92.8	160.0
Yellowfin sole	289.1	247.9	407.6	573.4	358.3	778.7	417.4	312.6	112.6	291.9	369.3
Other flatfish								3.9			
Total flatfish	**428.0**	**378.8**	**912.6**	**1,665.8**	**631.9**	**921.2**	**687.8**	**485.6**	**581.1**	**850.4**	**1,073.3**
Walleye pollock	137.1	50.7	45.7	482.5	174.7	442.3	1,040.4	1,168.2	556.6	636.5	933.5
Pacific cod	82.8	25.8	90.7	64.6	59.4	23.1	73.3	40.4	20.3	22.9	33.7
Sablefish											
Atka mackerel											
Eelpouts					3.4		1.3		6.0	0.6	2.8
Pacific herring	3.2		1.3	0.8	0.3						
Pacific ocean perch											
Sculpins	24.5	10.5	9.7	8.4	18.5	6.0	7.2	13.5	4.3	1.3	23.3
Other rockfish											
Other roundfish	8.0	5.1	2.9	2.7	1.0		0.6	0.8	0.8	0.8	1.1
Total roundfish	**255.6**	**92.2**	**150.3**	**559.0**	**257.2**	**471.5**	**1,122.8**	**1,222.8**	**588.0**	**662.0**	**994.5**
Blue king crab								2.7			
Red king crab	2.7		6.1	5.0							4.3
Tanner crab, bairdi		0.3	0.2	0.4	1.1	3.2	5.2	4.2	3.5	5.2	13.8
Tanner crab, opilio				0.2	61.2	2.3	2.3	2.8	0.9	1.4	1.4
Other crab	22.8	18.1	25.4	27.3	48.2	19.2	89.2	58.3	156.8	65.0	74.8
Shrimp	0.0										
Octopus											
Squids											
Snails	18.2	6.7	25.1	7.4	96.4	23.5	31.5	16.2	24.4	15.7	2.4
Starfish	40.8	75.1	344.5	48.8	333.7	41.3	344.3	516.2	242.2	277.3	213.9
Other invertebrates	4.3	6.0	27.3	95.4	107.8	1,284.6	493.4	292.9	296.9	429.2	393.9
Total invertebrates	**88.8**	**106.2**	**428.6**	**184.4**	**648.4**	**1,374.1**	**966.0**	**893.3**	**724.6**	**793.7**	**704.5**
Miscellaneous	6.5	13.3	7.7	11.6	40.1	44.0	75.5	72.7	90.8	71.8	167.8
Total catch	**861.9**	**628.7**	**1,590.0**	**2,452.0**	**1,602.0**	**2,830.0**	**2,858.0**	**2,692.0**	**2,000.0**	**2,396.0**	**2,978.0**

Appendix A Table 1. -- Continued.

Station	**IH2120**	**H-20**	**HG2120**	**H-21**	**I-21**	**JI2221**	**I-22**	**IH2221**	**J-21**	**J-22**	**K-22**
Start date and time	7/3/17 11:37	7/3/17 14:06	7/3/17 16:28	7/3/17 19:16	7/4/17 7:03	7/4/17 9:29	7/4/17 11:59	7/4/17 14:17	7/7/17 7:46	7/7/17 10:42	7/7/17 13:33
Haul number	80	81	82	83	84	85	86	87	89	90	91
Start latitude	5731.02	5721.20	5710.72	5720.36	5739.43	5749.93	5740.16	5730.76	5759.64	5759.43	5818.82
Start longitude	17000.44	17023.42	17007.22	17147.64	17144.26	17123.98	17105.92	17123.37	17140.12	17103.32	17258.97
End latitude	5729.50	5719.67	5709.23	5719.95	5740.59	5750.13	5738.63	5729.69	5759.67	5800.26	5820.31
End longitude	17000.68	17023.76	17006.36	17144.99	17143.33	17121.06	17105.50	17125.43	17137.28	17100.87	17258.45
Bottom depth (m)	68	63	50	56	73	78	85	75	75	87	84
Duration (h)	0.52	0.52	0.52	0.51	0.42	0.53	0.52	0.52	0.52	0.52	0.53
Distance fished (km)	2.82	2.85	2.90	2.78	2.34	2.92	2.88	2.87	2.81	2.87	2.81
Net width (m)	16.23	16.45	16.15	14.48	16.17	17.10	17.60	17.28	17.37	17.22	17.64
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	16.40	58.74	25.20	27.54	55.40	52.50	60.80	81.40	24.88	62.64	59.66
Sharks											
Total elasmobranch	**16.4**	**58.7**	**25.2**	**27.5**	**55.4**	**52.5**	**60.8**	**81.4**	**24.9**	**62.6**	**59.7**
Alaska plaice	5.4	5.4			4.4	17.3	3.8	2.3	95.7	3.8	18.6
Arrowtooth flounder	120.7	80.9	0.4		149.9	186.7	101.0	49.1	106.9	184.4	27.2
Flathead sole											
Greenland turbot											
Pacific halibut	25.6	19.9	30.9	40.2	16.8	23.4	50.6	41.5	6.1		5.1
Rock sole	83.2	256.2	332.7	762.6	52.9	140.5	53.1	33.1	95.4	185.9	52.7
Yellowfin sole	174.8	219.5	3.2		85.1	77.3	83.5	82.6	201.6	22.0	150.7
Other flatfish	0.1	1.6					4.0	2.5	3.1	1.2	3.0
Total flatfish	**779.7**	**588.0**	**367.2**	**802.8**	**416.7**	**710.7**	**465.3**	**223.2**	**673.5**	**1,432.5**	**554.9**
Walleye pollock	730.3	1,494.7			1,783.2	1,407.0	1,149.7	257.0	537.5	2,306.8	739.5
Pacific cod	79.2	52.2	3.1		73.6	87.3	73.7	24.0	25.2	44.3	45.1
Sablefish											
Atka mackerel											
Eelpouts						1.4			3.8	37.8	21.2
Pacific herring	0.4	1.0						0.7			
Pacific ocean perch											
Sculpins	65.8	10.4	4.7	13.8	47.5	15.9	24.1	43.4	2.0	15.4	10.5
Other rockfish											
Other roundfish	1.1	7.1	0.3		0.2	0.1			0.4	0.4	
Total roundfish	**876.8**	**1,565.4**	**8.0**	**13.8**	**1,904.5**	**1,511.7**	**1,247.5**	**325.1**	**568.8**	**2,404.7**	**816.3**
Blue king crab	6.5										
Red king crab	58.5	7.6	6.3		0.0						
Tanner crab, bairdi	57.7	33.9	6.8		11.7	12.5	36.9	10.7	1.8	2.8	0.2
Tanner crab, opilio	2.1	7.3			2.3	4.8	2.1	0.3	1.3	1.5	1.0
Other crab	114.0	12.4	56.3	0.0	138.2	235.8	198.9	248.2	272.1	54.4	102.4
Shrimp										0.2	0.3
Octopus											
Squids											
Snails	12.8	1.2	2.5		40.6	182.4	553.4	100.2	61.1	222.7	282.2
Starfish	256.0	181.4	230.8	142.0	358.6	337.8	59.4	277.1	240.5	60.0	112.4
Other invertebrates	114.1	18.2	13.7	3,799.8	258.1	142.0	54.6	36.5	193.1	119.4	97.3
Total invertebrates	**621.8**	**261.9**	**316.3**	**3,941.8**	**809.4**	**915.4**	**905.2**	**672.9**	**769.9**	**461.0**	**595.7**
Miscellaneous	61.4	3.9	1.8		154.1	139.7	21.2	43.3	69.0	3.2	43.4
Total catch	**2,356.0**	**2,478.0**	**718.5**	**4,786.0**	**3,340.0**	**3,330.0**	**2,700.0**	**1,346.0**	**2,106.0**	**4,364.0**	**2,070.0**

Appendix A Table 1. -- Continued.

Station	**K-21**	**K-20**	**K-19**	**L-19**	**M-19**	**N-19**	**O-19**	**P-19**	**Q-19**	**Q-20**	**P-21**	**P-20**
Start date and time	7/7/17 17:23	7/8/17 7:05	7/8/17 9:54	7/8/17 12:56	7/8/17 15:55	7/8/17 18:41	7/9/17 7:00	7/9/17 9:47	7/9/17 12:30	7/9/17 15:14	7/10/17 8:18	7/10/17 11:12
Haul number	92	93	94	95	96	97	98	99	100	101	102	103
Start latitude	5820.14	5820.28	5819.51	5839.21	5859.13	5919.26	5938.58	5958.94	6018.29	6019.84	6000.33	6000.85
Start longitude	17137.38	17014.69	17052.34	17050.95	17049.96	17046.04	17044.05	17041.13	17040.29	17002.08	17121.64	17001.35
End latitude	5821.59	5820.02	5821.00	5840.68	5900.53	5920.76	5940.05	6000.45	6019.83	6019.90	5958.88	5959.45
End longitude	17136.15	17017.54	17052.56	17050.15	17048.89	17045.46	17043.11	17040.96	17040.22	17159.09	17122.59	17002.41
Bottom depth (m)	74	69	68	62	54	51	48	47	44	52	65	55
Duration (h)	0.53	0.51	0.52	0.52	0.52	0.52	0.52	0.51	0.52	0.50	0.51	0.50
Distance fished (km)	2.94	2.83	2.77	2.82	2.79	2.83	2.85	2.81	2.86	2.76	2.82	2.78
Net width (m)	16.72	16.74	17.04	16.95	16.27	16.16	15.88	15.83	15.86	15.68	16.56	15.87
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	42.62	59.42	21.46	23.86	53.95	124.88	158.56	168.40	324.54	84.66	7.04	1.48
Sharks												
Total elasmobranch	**42.6**	**59.4**	**21.5**	**23.9**	**54.0**	**124.9**	**158.6**	**168.4**	**324.5**	**84.7**	**7.0**	**1.5**
Alaska plaice	64.5	204.5	335.0	356.4	261.5	89.2	63.3	28.4	30.8	60.4	54.6	128.7
Arrowtooth flounder	24.9	5.4	6.2			2.6						
Flathead sole												
Greenland turbot												
Pacific halibut		7.1	7.6	0.2	17.5	11.7	3.6					
Rock sole	14.5	36.3	69.9	48.3	90.1	17.6	38.0	23.8	26.9	49.7	64.1	35.1
Yellowfin sole	260.8	614.7	272.7	340.4	343.5	230.9	347.6	165.7	112.7	62.9	29.5	259.9
Other flatfish	2.7	2.6				2.2						
Total flatfish	**406.0**	**947.0**	**701.1**	**745.6**	**713.3**	**354.2**	**452.5**	**219.1**	**170.4**	**175.4**	**148.9**	**424.3**
Walleye pollock	1,054.0	333.4	453.4	173.1	154.3	23.1	123.7	432.1	401.8	155.3	598.0	355.5
Pacific cod	123.7	57.6	154.8	40.1	79.2	13.1	90.2	84.2	228.2	21.7	24.9	54.1
Sablefish												
Atka mackerel												
Eelpouts	10.7	23.7	11.3	2.5							0.6	1.6
Pacific herring	0.7	1.6	2.4	0.2		0.5	6.4	6.2	4.2	0.1		2.2
Pacific ocean perch												
Sculpins	6.2	26.7	109.9	67.1	7.6	7.7	5.4	11.9	12.0	3.0	1.7	12.7
Other rockfish												
Other roundfish		0.5	2.1	14.9	1.4	2.3	4.5	11.9	11.1	2.2	0.4	4.2
Total roundfish	**1,195.4**	**443.5**	**733.9**	**297.8**	**242.5**	**46.6**	**230.3**	**546.4**	**657.3**	**182.3**	**625.7**	**430.4**
Blue king crab												
Red king crab			5.1				11.6	4.7				
Tanner crab, bairdi	2.0	1.4	3.0	1.6						0.6	0.1	
Tanner crab, opilio	105.0	86.7	24.9	79.1	0.2			0.4		323.1	126.9	124.7
Other crab	57.6	49.9	61.7	85.1	40.8	137.3	57.3	45.9	92.1	30.4	9.3	33.3
Shrimp												
Octopus												
Squids												
Snails	59.7	17.7	162.8	36.7	11.9	41.8	7.2	10.5	18.9	13.9	7.2	72.5
Starfish	193.1	175.0	72.2	385.9	105.2	119.4	121.2	93.9	51.7	61.5	4.0	46.2
Other invertebrates	92.5	294.0	705.4	671.9	122.9	55.3	15.0	12.3	16.9	27.0	6.9	68.8
Total invertebrates	**509.8**	**624.8**	**1,035.1**	**1,260.2**	**281.0**	**353.7**	**212.4**	**167.7**	**179.6**	**456.5**	**154.3**	**345.4**
Miscellaneous	26.2	21.3	6.5	78.6	19.3	42.5	18.6	7.8	22.2	0.8	1.1	3.5
Total catch	**2,180.0**	**2,096.0**	**2,498.0**	**2,406.0**	**1,310.0**	**922.0**	**1,072.4**	**1,109.4**	**1,354.0**	**899.6**	**937.1**	**1,205.1**

Appendix A Table 1. -- Continued.

Station	**O-20**	**O-21**	**N-21**	**N-20**	**M-20**	**L-20**	**F-19**	**F-20**	**F-21**	**F-25**	**G-26**	**H-26**
Start date and time	7/10/17 14:14	7/10/17 17:02	7/11/17 7:05	7/11/17 10:26	7/11/17 13:03	7/11/17 15:36	7/17/17 9:34	7/17/17 12:53	7/17/17 16:06	7/18/17 7:44	7/18/17 11:34	7/18/17 14:18
Haul number	104	105	106	107	108	109	110	111	112	113	114	115
Start latitude	5940.99	5940.47	5921.35	5921.22	5901.06	5840.88	5639.54	5640.70	5640.15	5638.98	5659.10	5719.05
Start longitude	17004.62	17125.34	17127.43	17007.29	17009.91	17011.56	16906.35	17031.45	17155.51	17327.35	17445.57	17440.73
End latitude	5939.53	5938.99	5919.85	5919.77	5859.51	5839.39	5640.54	5640.65	5640.16	5640.02	5700.42	5720.60
End longitude	17004.71	17124.60	17127.25	17008.06	17009.90	17011.43	16904.28	17028.62	17152.78	17325.54	17444.23	17440.17
Bottom depth (m)	57	67	68	61	63	66	100	79	95	139	141	122
Duration (h)	0.50	0.52	0.50	0.52	0.51	0.51	0.52	0.52	0.51	0.49	0.50	0.51
Distance fished (km)	2.70	2.83	2.78	2.79	2.87	2.75	2.81	2.90	2.80	2.67	2.79	2.92
Net width (m)	15.78	16.31	15.70	16.25	16.02	16.07	17.04	16.32	17.27	17.02	17.43	17.07
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	55.40	44.26	29.18	52.44	45.58	26.02	49.80	71.25	150.72	637.36	28.08	3.88
Sharks												
Total elasmobranch	**55.4**	**44.3**	**29.2**	**52.4**	**45.6**	**26.0**	**49.8**	**71.2**	**150.7**	**637.4**	**28.1**	**3.9**
Alaska plaice	218.5	99.0	156.3	210.6	152.6	81.2	22.7	17.7				
Arrowtooth flounder							9.5	59.2	115.5	36.4	0.7	100.1
Flathead sole												
Greenland turbot			8.0	1.7	1.9							
Pacific halibut			16.8	7.7		1.7	13.2	18.6	189.4			37.8
Rock sole	100.2	200.3	43.4	77.8	23.8	39.0	15.9	307.7	0.1			2.0
Yellowfin sole	159.5	145.9	429.2	240.4	134.7	288.7	87.2	156.2				
Other flatfish				2.4		5.1	16.3	16.2	13.5	25.0	5.2	5.5
Total flatfish	**479.7**	**446.9**	**655.5**	**548.1**	**314.5**	**433.1**	**186.3**	**582.9**	**389.6**	**98.6**	**34.1**	**187.9**
Walleye pollock	418.4	775.0	235.7	389.4	801.4	719.9	275.2	89.4	3,258.2	568.2	985.0	40.7
Pacific cod	80.7	37.1	134.1	67.0	50.8	51.1	30.8	48.9	12.3	32.7	36.6	25.4
Sablefish										11.8		
Atka mackerel										11.2		
Eelpouts	5.3	4.9	23.9	7.4	3.9	2.7						
Pacific herring	1.2	2.0	0.5	14.1	10.4							
Pacific ocean perch										191.5		
Sculpins	25.6	4.5	21.1	13.0	11.7	38.1	16.4	314.0	46.0		0.4	
Other rockfish										20.5		
Other roundfish	2.3	1.4	1.8	6.3	4.6	1.0	1.6	18.0	0.3		3.8	4.4
Total roundfish	**533.4**	**824.9**	**417.0**	**497.2**	**882.8**	**812.8**	**324.0**	**470.2**	**3,316.8**	**836.0**	**1,025.9**	**70.6**
Blue king crab												
Red king crab						1.2						
Tanner crab, bairdi			0.2			1.2	57.3	19.4	56.4	0.0	0.4	0.1
Tanner crab, opilio	92.7	143.1	335.3	0.9	5.4	55.7	38.7	0.3	28.2			
Other crab	63.6	17.1	88.5	52.6	148.6	23.7	18.1	60.6	6.2	2.5	9.7	1.9
Shrimp			0.4								0.1	0.0
Octopus										0.0	0.1	0.1
Squids								0.0				
Snails	60.3	6.0	94.4	76.1	89.1	23.9	13.8	55.7	8.5	12.6	33.2	5.9
Starfish	32.8	12.6	162.5	19.5	60.1	216.8	3.3	33.1	5.5	3.1	0.6	0.1
Other invertebrates	26.9	46.8	48.5	144.8	291.4	199.6	7.1	24.6	4.2	541.2	23.2	369.9
Total invertebrates	**276.3**	**225.7**	**729.8**	**293.9**	**594.5**	**522.0**	**138.4**	**193.7**	**108.9**	**559.5**	**67.4**	**378.0**
Miscellaneous	3.0	0.4	20.5	16.6	36.6	6.1	3.2	22.9		4.6	3.0	3.0
Total catch	**1,347.9**	**1,542.0**	**1,852.0**	**1,408.3**	**1,874.0**	**1,800.0**	**701.8**	**1,341.0**	**3,966.0**	**2,136.0**	**1,158.4**	**643.3**

Appendix A Table 1. -- Continued.

Station	**I-26**	**J-26**	**K-26**	**K-27**	**L-27**	**L-26**	**M-26**	**N-26**	**ON2625**	**O-26**	**PO2726**	**P-26**
Start date and time	7/18/17 17:05	7/19/17 7:41	7/19/17 10:30	7/19/17 13:50	7/19/17 16:26	7/19/17 19:08	7/20/17 7:39	7/20/17 10:23	7/20/17 12:37	7/20/17 15:09	7/20/17 17:22	7/21/17 7:41
Haul number	116	117	118	119	120	121	122	123	124	125	126	127
Start latitude	5738.39	5758.53	5818.53	5819.56	5839.09	5839.56	5859.27	5919.17	5929.39	5939.25	5949.53	5958.92
Start longitude	17437.83	17430.64	17426.24	17541.88	17542.97	17420.61	17417.14	17411.36	17430.78	17408.32	17547.01	17404.55
End latitude	5739.88	5800.00	5820.04	5821.03	5840.53	5840.58	5900.69	5920.28	5930.31	5940.33	5950.73	5959.94
End longitude	17437.20	17430.39	17425.88	17540.96	17544.01	17422.83	17416.31	17413.28	17428.49	17406.30	17545.26	17402.42
Bottom depth (m)	143	118	114	165	158	127	117	110	102	104	106	97
Duration (h)	0.50	0.51	0.51	0.52	0.51	0.52	0.50	0.50	0.50	0.51	0.50	0.51
Distance fished (km)	2.82	2.75	2.82	2.88	2.85	2.86	2.75	2.74	2.76	2.76	2.77	2.73
Net width (m)	17.77	17.07	17.66	16.63	17.72	17.46	18.25	17.01	16.88	16.32	16.81	16.25
Net measured?	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	25.40	33.90	82.06	20.20	14.82	47.54	131.60	118.58	99.78	63.58	129.20	51.94
Sharks												
Total elasmobranch	**25.4**	**33.9**	**82.1**	**20.2**	**14.8**	**47.5**	**131.6**	**118.6**	**99.8**	**63.6**	**129.2**	**51.9**
Alaska plaice									60.5			2.4
Arrowtooth flounder	37.4	44.0	87.5	21.4	64.5	105.6	124.1	196.0	93.0	60.2	88.2	11.6
Flathead sole												
Greenland turbot									15.1		2.9	15.3
Pacific halibut		16.0	32.2			14.1	17.9		10.2			
Rock sole			23.6			16.4	8.9	2.5	98.6	3.5	7.1	5.4
Yellowfin sole												
Other flatfish	17.3	12.5	6.1	14.2	6.5	9.5	8.1	10.1	12.3	10.8	30.8	16.2
Total flatfish	**117.5**	**131.7**	**275.4**	**52.0**	**98.2**	**210.8**	**236.4**	**356.9**	**310.0**	**93.4**	**193.9**	**53.8**
Walleye pollock	978.1	325.8	292.0	2.0	46.0	503.7	268.2	395.9	562.3	661.9	376.3	306.7
Pacific cod	8.5	72.8	61.0	25.2	46.7	107.2	71.3	78.2	239.6	112.1	55.2	757.1
Sablefish												
Atka mackerel												
Eelpouts		0.2	0.0			4.0	16.1	5.5	7.6	9.3	8.5	24.5
Pacific herring												
Pacific ocean perch	4.3			84.5	6.5							
Sculpins	13.5	9.1	5.0	8.2	12.6	4.0	11.9	24.0	67.1	30.5	58.9	43.8
Other rockfish		1.8										
Other roundfish	6.9			0.2	7.8	4.2	0.3	0.1	0.2	0.4	6.6	1.6
Total roundfish	**1,011.3**	**409.6**	**358.1**	**120.1**	**119.5**	**623.2**	**367.8**	**503.6**	**876.8**	**814.2**	**505.5**	**1,133.7**
Blue king crab									1.7	3.6	9.8	2.2
Red king crab												
Tanner crab, bairdi	0.4	0.6	0.2	1.2	8.6	2.1	3.7	0.8	1.3	0.1		
Tanner crab, opilio		2.4	9.9	0.6		2.1	29.1	20.4	8.0	9.0	2.1	1,148.7
Other crab	2.7	2.4	21.2	9.7	8.3	44.9	85.0	44.9	41.5	109.5	65.8	3.5
Shrimp	0.4	0.1		0.3	2.0	0.3	1.3	6.1	3.9	3.0	1.0	0.0
Octopus	0.1				0.0		1.1	0.0			2.7	2.1
Squids				0.1	0.1		0.0					
Snails	7.4	1.2	10.5	6.4	6.1	25.8	52.6	69.7	32.0	55.7	203.9	10.2
Starfish	0.5	0.4	1.3	1.4	2.2	3.1	2.9	2.6	9.4	135.8	221.4	8.6
Other invertebrates	1.2	598.2	1.0	5.5	16.4	12.8	14.6	13.4	12.3	36.4	99.4	7.6
Total invertebrates	**12.8**	**605.3**	**44.1**	**25.2**	**43.6**	**91.1**	**190.3**	**158.1**	**110.1**	**353.0**	**606.1**	**1,182.8**
Miscellaneous	0.7	1.3	1.0	0.9	2.1	4.4	9.5	3.4	7.4	9.8	91.3	0.5
Total catch	**1,167.7**	**1,181.9**	**760.6**	**218.4**	**278.3**	**977.1**	**935.5**	**1,140.7**	**1,404.0**	**1,334.0**	**1,526.0**	**2,422.8**

Appendix A Table 1. -- Continued.

Station	**QP2726**	**Q-26**	**Q-25**	**QP2625**	**P-25**	**QP2524**	**P-24**	**QP2423**	**Q-23**	**R-23**	**S-22**
Start date and time	7/21/17 11:07	7/21/17 13:26	7/21/17 16:24	7/22/17 7:42	7/22/17 10:00	7/22/17 13:35	7/22/17 16:03	7/22/17 18:10	7/23/17 7:39	7/23/17 11:10	7/23/17 14:49
Haul number	128	129	130	131	132	133	134	135	136	137	138
Start latitude	6009.31	6019.89	6018.26	6008.15	6000.17	6011.21	6000.24	6009.53	6019.16	6039.16	6059.17
Start longitude	17537.37	17553.59	17437.07	17414.01	17438.71	17457.66	17322.02	17338.65	17356.69	17352.21	17232.04
End latitude	6010.40	6020.11	6017.54	6006.66	5959.68	6010.05	6000.31	6010.48	6020.66	6040.34	6059.24
End longitude	17539.29	17555.86	17437.28	17413.79	17440.90	17459.70	17324.99	17341.18	17356.49	17354.17	17228.86
Bottom depth (m)	100	90	64	88	75	59	65	58	59	61	59
Duration (h)	0.50	0.39	0.25	0.50	0.40	0.52	0.50	0.53	0.52	0.51	0.52
Distance fished (km)	2.70	2.13	1.34	2.78	2.24	2.85	2.77	2.94	2.79	2.82	2.88
Net width (m)	15.92	14.95	17.66	16.54	17.92	17.12	16.51	16.19	16.05	16.55	17.06
Net measured?	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Performance	0	1	0	0	2	0	0	0	0	0	0
Alaska skates											
Other skates	71.42	26.32	2.56	28.70	29.94	15.80	10.90	5.52	31.34	7.18	9.10
Sharks											
Total elasmobranch	**71.4**	**26.3**	**2.6**	**28.7**	**29.9**	**15.8**	**10.9**	**5.5**	**31.3**	**7.2**	**9.1**
Alaska plaice	1.4	1.2	10.0	3.2	10.6	5.5	67.1	108.0	20.8	5.8	16.9
Arrowtooth flounder	9.8	2.5		3.4							
Flathead sole											
Greenland turbot	12.3	1.9		16.4	2.4				2.9		
Pacific halibut	5.6	4.1		7.9				27.7			
Rock sole	2.7	4.0	5.1	10.3	35.7	73.7	159.0	885.2	2.2	1.9	
Yellowfin sole			6.4	1.3	13.6	23.0	120.5	347.5	10.4	1.7	9.4
Other flatfish	20.5	9.8	0.1	30.8		0.1		4.6	0.1	0.1	0.1
Total flatfish	**126.5**	**40.0**	**22.7**	**102.4**	**62.3**	**102.3**	**355.6**	**1,374.9**	**36.4**	**15.8**	**29.5**
Walleye pollock	455.3	189.5	351.0	287.7	889.1	1,022.5	1,660.8	559.0	494.1	158.5	60.0
Pacific cod	37.2	15.4	16.4	53.6	56.0	202.5	40.2	1,457.0	94.8	3.8	1.9
Sablefish											
Atka mackerel											
Eelpouts	23.2	12.0		4.8	0.8						1.2
Pacific herring		0.3	15.2	1.3	1.0		2.1			0.0	0.0
Pacific ocean perch											
Sculpins	26.5	8.7	4.7	4.3	45.5	43.7	7.9	16.3	24.1	1.0	1.5
Other rockfish											
Other roundfish	0.3	0.5	0.0	0.1		0.0	0.4	0.5	15.7	0.4	1.5
Total roundfish	**542.5**	**226.4**	**387.2**	**351.8**	**992.4**	**1,268.8**	**1,711.4**	**2,032.8**	**628.7**	**163.8**	**66.2**
Blue king crab					1.6	3.9		2.2			
Red king crab											
Tanner crab, bairdi									0.8		
Tanner crab, opilio	3.6	133.3	9.2	161.3	21.3	0.4	21.0		149.3	135.8	101.8
Other crab	1.9	0.5	3.1	1.5	13.7	4.0	23.3	13.4	303.2	1.3	1.4
Shrimp	0.7		0.0		0.1				0.0		
Octopus	1.0										
Squids											
Snails	26.6	1.3	20.7	2.7	9.6	25.5	20.9	33.5	82.6	3.3	2.2
Starfish	126.7	1.6	2.6	1.8	3.0	2.5	8.6	22.4	3.8	12.6	7.4
Other invertebrates	19.4	21.3	14.5	9.1	51.3	25.4	25.5	7.8	329.2	11.7	5.2
Total invertebrates	**179.9**	**157.9**	**50.2**	**176.3**	**100.6**	**61.9**	**99.4**	**79.3**	**868.9**	**164.7**	**118.0**
Miscellaneous	1.3	0.1	0.5	0.3	4.1	1.4	4.7	1.5	48.7	0.1	0.0
Total catch	**921.6**	**450.6**	**463.2**	**659.6**	**1,189.3**	**1,450.1**	**2,182.0**	**3,494.0**	**1,614.0**	**351.6**	**222.8**

Appendix A Table 1. -- Continued.

Station	**S-23**	**R-24**	**R-25**	**R-26**	**S-26**	**S-27**	**R-28**	**Q-28**	**P-28**	**O-28**	**N-28**
Start date and time	7/23/17 17:28	7/24/17 7:35	7/24/17 10:36	7/24/17 13:24	7/24/17 15:58	7/24/17 18:53	7/25/17 7:40	7/25/17 10:22	7/25/17 13:06	7/25/17 15:53	7/25/17 18:31
Haul number	139	140	141	142	143	144	145	146	147	148	149
Start latitude	6100.19	6039.63	6040.72	6039.59	6058.59	6100.24	6040.59	6021.55	6001.19	5940.46	5921.51
Start longitude	17352.59	17316.60	17434.32	17552.78	17550.10	17509.12	17631.47	17637.24	17644.40	17651.58	17652.05
End latitude	6100.28	6040.51	6040.64	6040.99	6059.69	6058.96	6039.10	6020.04	5959.65	5939.06	5920.02
End longitude	17349.39	17314.08	17431.20	17551.80	17547.98	17507.45	17632.28	17637.58	17644.97	17652.43	17652.21
Bottom depth (m)	63	46	66	86	83	92	108	111	117	125	133
Duration (h)	0.52	0.52	0.52	0.50	0.51	0.52	0.52	0.51	0.53	0.50	0.51
Distance fished (km)	2.90	2.83	2.85	2.74	2.80	2.82	2.85	2.81	2.91	2.72	2.77
Net width (m)	17.27	15.96	16.90	17.11	16.52	16.84	17.44	17.35	19.01	17.84	17.95
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	12.54	365.84	11.30	27.62	82.38	29.32	47.48	105.80	83.78	92.02	39.30
Sharks											
Total elasmobranch	**12.5**	**365.8**	**11.3**	**27.6**	**82.4**	**29.3**	**47.5**	**105.8**	**83.8**	**92.0**	**39.3**
Alaska plaice	2.5	77.5	8.8	2.8		0.8		1.0	27.6		
Arrowtooth flounder							21.6	152.9	129.2	80.6	129.9
Flathead sole											
Greenland turbot				15.0	22.8	9.4	2.1	14.6	10.9	18.1	
Pacific halibut		50.8		4.1	1.2					16.8	17.5
Rock sole	2.5	71.8	13.0	4.0	10.5	14.6	2.3	2.7	21.0	4.3	0.4
Yellowfin sole	2.1	178.0	4.2	1.0	1.0	0.6		0.3			
Other flatfish	0.2	0.2	0.2	6.2	5.7	1.7	8.6	11.2	9.3	5.8	8.1
Total flatfish	**9.1**	**378.3**	**27.5**	**45.3**	**75.3**	**81.8**	**49.3**	**236.9**	**234.2**	**181.9**	**228.0**
Walleye pollock	143.7	277.2	293.2	140.2	95.3	184.9	455.4	589.5	565.1	481.7	811.8
Pacific cod	3.6	375.7	31.5	26.4	28.4	46.7	37.0	44.1	53.3	75.0	86.0
Sablefish											
Atka mackerel											
Eelpouts			0.4	3.5	5.8	12.9	10.3	27.2	33.3	5.1	4.9
Pacific herring	0.1		0.1	0.5		0.5					
Pacific ocean perch											
Sculpins	0.6	13.9	4.5	10.3	20.7	2.9	4.3	8.5	2.2	45.6	14.2
Other rockfish											
Other roundfish	2.0	0.1	2.6		0.1	0.0	0.1	0.4	0.1	0.1	0.1
Total roundfish	**150.1**	**667.0**	**332.4**	**180.9**	**150.4**	**247.9**	**507.1**	**669.7**	**654.0**	**607.5**	**917.0**
Blue king crab		35.9					1.1				
Red king crab											
Tanner crab, bairdi									0.2		0.7
Tanner crab, opilio	59.6	4.2	186.3	284.5	615.3	226.3	29.5	2.9	4.9	128.1	0.4
Other crab	1.1	75.8	3.5	0.1	0.6	0.3	0.9	16.8	36.4	18.8	18.2
Shrimp	0.0		0.0				0.4	2.2	3.5	0.1	0.4
Octopus							2.4				
Squids											
Snails	0.5	208.7	4.0	0.8	5.0	4.1	37.2	76.1	40.3	129.3	39.0
Starfish	83.6	27.5	13.0	3.3	8.1	2.2	22.5	23.7	6.2	3.9	8.8
Other invertebrates	6.6	7.4	22.6	5.8	8.8	18.8	3.9	11.1	24.4	2.9	9.6
Total invertebrates	**151.5**	**359.4**	**229.3**	**294.5**	**637.8**	**251.7**	**97.9**	**132.8**	**115.8**	**283.0**	**77.1**
Miscellaneous	0.5	14.2	0.3		0.1	0.0	0.1	1.4	0.8	1.5	2.6
Total catch	**323.7**	**1,784.6**	**600.8**	**548.4**	**945.9**	**610.8**	**701.8**	**1,146.6**	**1,088.6**	**1,166.0**	**1,263.9**

Appendix A Table 1. -- Continued.

Station	**L-28**	**L-29**	**L-30**	**L-31**	**M-31**	**M-32**	**N-31**	**N-30**	**O-30**	**O-31**	**P-32**
Start date and time	7/26/17 7:53	7/26/17 10:41	7/27/17 7:53	7/27/17 11:33	7/27/17 14:26	7/27/17 17:26	7/28/17 7:49	7/28/17 10:37	7/28/17 13:41	7/28/17 16:27	7/29/17 8:00
Haul number	150	151	152	153	154	155	156	157	158	159	160
Start latitude	5841.23	5840.78	5839.58	5840.31	5858.19	5900.12	5921.45	5920.51	5939.34	5940.20	5959.62
Start longitude	17506.05	17629.37	17752.41	17712.18	17702.21	17829.13	17853.64	17735.23	17728.23	17854.10	17804.32
End latitude	5841.17	5840.72	5839.64	5840.74	5859.02	5900.50	5921.49	5920.60	5939.33	5941.14	5959.67
End longitude	17503.11	17626.56	17749.52	17709.33	17859.69	17826.29	17856.58	17738.14	17725.28	17851.89	17807.22
Bottom depth (m)	195	135	142	135	134	134	151	136	136	166	141
Duration (h)	0.52	0.51	0.51	0.52	0.52	0.52	0.51	0.51	0.51	0.49	0.50
Distance fished (km)	2.85	2.72	2.80	2.87	2.87	2.81	2.80	2.77	2.78	2.72	2.71
Net width (m)	18.27	17.97	17.76	18.08	18.22	18.13	17.42	17.62	17.53	17.77	16.92
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	25.86	26.06		2.01	42.14	13.26	25.12	4.74	25.72	51.38	31.78
Sharks											
Total elasmobranch	**25.9**	**26.1**		**2.0**	**42.1**	**13.3**	**25.1**	**4.7**	**25.7**	**51.4**	**31.8**
Alaska plaice											
Arrowtooth flounder	54.9	59.0	15.3	19.7	98.7	54.9	152.8	22.8	29.9	109.1	70.1
Flathead sole											
Greenland turbot			2.0						3.3		
Pacific halibut	6.5	10.0	6.0	3.4	7.1	17.4	9.9			4.1	
Rock sole					9.3	19.9					
Yellowfin sole											
Other flatfish	14.7	20.3	7.0	5.9	4.5	6.5	3.1	7.7	6.8	13.0	17.2
Total flatfish	**181.1**	**157.7**	**235.6**	**114.3**	**249.8**	**247.4**	**258.6**	**114.9**	**223.1**	**359.2**	**483.8**
Walleye pollock	156.2	359.3	166.7	249.9	152.2	6.4	868.9	525.5	608.8	1,317.6	603.3
Pacific cod	43.4	40.8	24.2	96.9	4.9	22.6	16.6	45.9	101.1	26.2	54.9
Sablefish											
Atka mackerel											
Eelpouts		0.0	0.0				0.9	48.2	25.0		23.5
Pacific herring											
Pacific ocean perch	848.1				0.1						
Sculpins	3.2	8.7			9.3		7.1	12.1	12.2		24.9
Other rockfish											
Other roundfish	1.6	0.2	0.2	0.0	0.2	0.1		1.0	0.3		5.8
Total roundfish	**1,052.5**	**408.9**	**191.2**	**346.9**	**166.7**	**29.1**	**893.6**	**632.7**	**747.4**	**1,343.8**	**712.4**
Blue king crab											
Red king crab											
Tanner crab, bairdi	0.0	27.9	0.6	0.0	0.4	0.0	0.3	0.2			
Tanner crab, opilio		2.4				0.7	0.1	0.2	0.1	0.0	
Other crab	0.8	10.6	7.3	4.3	7.6	5.4	0.4	5.1	0.1	0.7	10.6
Shrimp	7.0	0.0	0.0				0.0	5.5	3.1		2.3
Octopus	5.3	0.2	4.3		4.3	0.0		1.1	0.9		
Squids	0.1		0.1					0.3			
Snails	3.5	4.4	3.5	2.1	4.7	3.9	4.3	54.7	12.4	1.0	75.2
Starfish	3.3	0.1		0.5	0.4	0.4	0.6	10.6	93.8		204.7
Other invertebrates	2.1	4.7	1.4	5.0	22.7	5.9	44.4	15.2	6.9	3.9	328.7
Total invertebrates	**22.1**	**50.2**	**17.1**	**11.9**	**40.1**	**16.3**	**50.1**	**93.0**	**117.3**	**5.7**	**621.6**
Miscellaneous	0.4	0.8	2.2	0.9	1.4	2.2	0.5	0.6	6.5		12.4
Total catch	**1,282.1**	**643.7**	**446.0**	**475.9**	**500.2**	**308.3**	**1,227.9**	**845.8**	**1,120.1**	**1,760.0**	**1,862.0**

Appendix A Table 1. -- Continued.

Station	**P-31**	**Q-31**	**R-31**	**R-32**	**S-31**	**S-30**	**T-30**	**T-29**	**U-29**	**V-28**
Start date and time	7/29/17 10:55	7/29/17 13:29	7/29/17 16:22	7/29/17 19:06	7/30/17 7:55	7/30/17 10:46	7/30/17 13:25	7/30/17 16:08	7/31/17 7:47	7/31/17 11:05
Haul number	161	162	163	164	165	166	167	168	169	170
Start latitude	5959.36	6018.38	6039.75	6039.34	6059.06	6059.85	6119.18	6119.10	6138.44	6159.19
Start longitude	17844.72	17838.74	17831.42	17951.56	17818.66	17700.35	17700.99	17740.34	17730.28	17605.62
End latitude	6000.84	6019.83	6039.76	6038.93	6059.10	6101.34	6119.67	6120.65	6139.40	6200.24
End longitude	17844.01	17838.00	17828.44	17948.69	17821.76	17700.62	17703.98	17740.30	17732.61	17607.94
Bottom depth (m)	137	147	147	160	136	122	117	107	105	93
Duration (h)	0.52	0.51	0.50	0.50	0.51	0.51	0.51	0.51	0.51	0.51
Distance fished (km)	2.83	2.77	2.72	2.72	2.80	2.75	2.83	2.88	2.73	2.80
Net width (m)	17.48	17.42	17.49	18.41	17.62	17.40	17.31	17.28	17.57	19.24
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0
Alaska skates										
Other skates	33.08	25.84	24.80	83.20	111.88	74.14	71.52	38.16	46.10	38.74
Sharks										
Total elasmobranch	**33.1**	**25.8**	**24.8**	**83.2**	**111.9**	**74.1**	**71.5**	**38.2**	**46.1**	**38.7**
Alaska plaice										
Arrowtooth flounder	33.7	46.4	50.4	37.8	97.9	121.2	52.1	20.6	1.4	
Flathead sole										
Greenland turbot	10.7	9.5	8.5		3.2	16.3	23.0	25.2	25.2	9.1
Pacific halibut				1.5				9.7	3.1	
Rock sole				0.9		1.8	4.4	3.6		8.0
Yellowfin sole							0.8			
Other flatfish	5.7	9.3	12.9	12.1	23.6	16.3	19.3	24.6	14.4	
Total flatfish	**172.0**	**91.9**	**82.3**	**289.7**	**139.0**	**222.1**	**252.7**	**163.7**	**88.1**	**55.7**
Walleye pollock	615.2	838.7	277.6	1,260.9	211.4	441.8	554.5	193.3	106.1	177.2
Pacific cod	53.3	40.3	31.6	78.1	75.6	139.5	110.1	48.9	77.7	55.6
Sablefish										
Atka mackerel										
Eelpouts	81.4	20.0	12.6	2.3	18.4	37.3	30.0	30.1	12.0	3.1
Pacific herring				0.9			0.7		11.5	45.2
Pacific ocean perch										
Sculpins	10.4	6.8	32.4	8.6	4.5	9.6	20.0	6.6	16.5	11.5
Other rockfish										
Other roundfish		3.2	0.5		0.2	1.0	0.1	0.7	1.6	0.2
Total roundfish	**760.3**	**908.9**	**354.7**	**1,350.8**	**310.1**	**629.2**	**715.5**	**279.7**	**225.4**	**292.9**
Blue king crab										
Red king crab										
Tanner crab, bairdi				0.4	0.2					
Tanner crab, opilio	0.8	1.0	0.6	0.2	1.9	27.6	26.7	49.5	208.6	223.7
Other crab	1.7	1.1	2.0	40.9	26.5	6.7	3.4	1.3	1.1	1.5
Shrimp	5.3	0.9	4.5	2.0	2.6	7.2	3.7	0.2	0.2	0.0
Octopus			2.5		11.6	0.1	2.0	2.8	15.6	
Squids										
Snails	113.7	78.2	39.3	55.9	46.0	118.5	51.0	19.1	3.9	10.7
Starfish	506.2	617.5	530.7	7.5	269.9	285.2	291.1	45.1	9.8	7.1
Other invertebrates	56.7	37.4	15.2	21.6	12.2	15.9	10.6	2.6	0.9	11.7
Total invertebrates	**684.4**	**736.1**	**594.7**	**128.5**	**370.9**	**461.1**	**388.5**	**120.6**	**240.0**	**254.9**
Miscellaneous	16.3	5.3	13.6	1.8	6.1	3.5	3.8			0.2
Total catch	**1,666.0**	**1,768.0**	**1,070.0**	**1,854.0**	**938.0**	**1,390.0**	**1,432.0**	**602.1**	**599.6**	**642.4**

Appendix A Table 2. -- Haul and catch data for successfully completed tows by FV *Alaska Knight* during the 2017 northern Bering Sea shelf bottom trawl survey.

Station	**W-27**	**W-26**	**W-25**	**W-24**	**W-23**	**W-22**	**W-21**	**V-21**	**U-20**	**T-20**	**S-20**
Start date and time	8/1/17 7:42	8/1/17 10:06	8/1/17 12:48	8/1/17 15:21	8/2/17 7:38	8/2/17 11:03	8/2/17 14:13	8/2/17 17:15	8/3/17 7:42	8/3/17 10:26	8/3/17 13:23
Haul number	1	2	3	4	5	6	7	8	9	10	11
Start latitude	6220.13	6220.44	6220.48	6220.57	6219.85	6220.23	6220.97	6159.77	6141.14	6120.65	6100.49
Start longitude	17640.47	17519.68	17405.36	17447.90	17331.64	17214.74	17256.11	17100.73	17146.61	17149.28	17151.99
End latitude	6220.11	6220.40	6220.54	6220.62	6219.84	6220.23	6219.55	6159.75	6139.62	6119.11	6058.91
End longitude	17643.71	17522.87	17408.60	17451.19	17334.88	17218.01	17257.29	17103.96	17146.87	17149.43	17152.01
Bottom depth (m)	79	71	64	60	54	48	43	50	46	47	48
Duration (h)	0.52	0.51	0.51	0.52	0.51	0.52	0.52	0.51	0.52	0.52	0.53
Distance fished (km)	2.81	2.76	2.80	2.85	2.80	2.83	2.83	2.82	2.83	2.85	2.94
Net width (m)	17.28	16.73	17.93	16.81	16.30	15.61	16.10	16.76	16.23	16.47	16.66
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0
Alaska skates											
Other skates	14.36	4.82	15.28	14.86	3.64	1.70	16.88		13.96	37.86	85.10
Sharks											
Total elasmobranch	**14.4**	**4.8**	**15.3**	**14.9**	**3.6**	**1.7**	**16.9**		**14.0**	**37.9**	**85.1**
Alaska plaice		0.5	1.9	5.8	8.3	79.0	270.9	219.3	180.9	217.4	361.4
Arrowtooth flounder											
Flathead sole											
Greenland turbot	0.0										
Pacific halibut											
Rock sole	1.2	0.2	0.7	0.3		0.5		1.7	6.3	205.5	145.5
Yellowfin sole			0.5	0.5	3.5	45.2	115.1	26.8	98.4	222.6	239.4
Other flatfish	3.1	5.8	18.7	5.4	6.4	1.4	2.6	0.7		0.0	
Total flatfish	**25.6**	**14.3**	**27.7**	**23.3**	**36.2**	**133.7**	**389.6**	**254.5**	**291.4**	**666.0**	**750.2**
Walleye pollock	90.1	23.4	13.7	472.2	268.5	408.3	317.1	322.8	449.8	521.6	1,894.9
Pacific cod	6.0				1.2	42.7	172.4	12.1	116.0	74.4	82.4
Sablefish											
Atka mackerel											
Eelpouts	5.7	3.4	1.4		4.3				0.5		1.8
Pacific herring	194.5			21.2	0.3		0.4		97.1	3.1	2.7
Pacific ocean perch											
Sculpins	2.7	2.0	1.4	0.5	1.2	1.6	5.9	0.2	2.1	14.9	13.8
Other rockfish											
Other roundfish	8.4	22.7	2.3	2.8	3.8	3.6	7.1	3.6	3.0	2.6	2.6
Total roundfish	**307.2**	**51.5**	**18.8**	**496.7**	**279.4**	**456.2**	**502.8**	**338.7**	**668.4**	**616.7**	**1,998.1**
Blue king crab											
Red king crab											1.6
Tanner crab, bairdi											
Tanner crab, opilio	14.8	14.6	55.8	186.4	297.4	405.2	61.1	94.4	187.7	275.3	
Other crab	0.1	0.7	8.4	13.1	85.1	102.5	132.1	14.9	49.4	78.4	13.3
Shrimp	0.0	0.0	0.2		0.0			0.0			
Octopus	0.1	0.2	1.0	0.3							
Squids											
Snails	13.6	14.6	58.6	61.2	229.2	279.0	204.8	16.4	69.0	66.9	26.1
Starfish	14.0	21.6	42.7	20.0	35.7	15.1	21.2	6.5	14.5	18.4	86.5
Other invertebrates	31.4	30.0	32.6	18.9	59.1	13.3	35.5	19.9	212.6	46.4	31.9
Total invertebrates	**74.0**	**81.7**	**199.1**	**299.9**	**706.7**	**815.2**	**454.7**	**152.1**	**533.2**	**485.3**	**159.4**
Miscellaneous		0.3	3.8	43.1	0.3	4.0	12.4	1.7	40.1	5.6	3.2
Total catch	**421.1**	**152.7**	**264.7**	**877.8**	**1,026.2**	**1,410.7**	**1,376.4**	**747.0**	**1,547.0**	**1,811.4**	**2,996.0**

Appendix A Table 2. -- Continued.

Station	**R-20**	**R-18**	**S-18**	**T-18**	**Y-18**	**X-18**	**W-18**	**ZZ-21**	**Y-21**	**Y-20**	**X-19**	**V-18**
Start date and time	8/3/17 15:59	8/4/17 7:39	8/4/17 10:20	8/4/17 12:53	8/11/17 7:59	8/11/17 11:57	8/11/17 17:11	8/14/17 8:09	8/14/17 11:30	8/14/17 15:19	8/14/17 19:07	8/15/17 7:59
Haul number	12	13	14	15	16	17	18	19	20	21	22	23
Start latitude	6041.25	6039.25	6058.88	6119.03	6256.66	6240.37	6220.75	6316.41	6259.83	6257.06	6240.59	6158.99
Start longitude	17156.50	16917.30	16917.35	16915.57	16901.64	16906.52	16907.92	17252.52	17251.14	17130.10	17025.43	16909.60
End latitude	6039.76	6040.72	6100.40	6120.62	6255.31	6238.91	6219.16	6314.91	6259.72	6256.59	6239.58	6200.53
End longitude	17156.83	16917.92	16917.05	16915.31	17059.61	16905.44	16907.59	17253.53	17254.61	17133.52	17022.62	16909.50
Bottom depth (m)	49	37	36	34	30	36	35	34	47	42	40	36
Duration (h)	0.51	0.51	0.52	0.52	0.54	0.52	0.52	0.53	0.54	0.53	0.54	0.52
Distance fished (km)	2.77	2.79	2.83	2.96	3.04	2.87	2.95	2.90	2.95	3.03	3.05	2.86
Net width (m)	16.67	15.53	15.73	15.58	15.07	14.72	15.85	15.07	17.05	16.37	15.72	16.00
Net measured?	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Performance	0	0	0	0	0	0	0	4	0	0	0	0
Alaska skates												
Other skates	112.90	20.20	6.06	7.56	126.70	20.27	71.60		19.80	143.84	84.80	36.40
Sharks												
Total elasmobranch	**112.9**	**20.2**	**6.1**	**7.6**	**126.7**	**20.3**	**71.6**		**19.8**	**143.8**	**84.8**	**36.4**
Alaska plaice	91.1	46.6	14.5	12.1	81.1	123.5	396.1	2.6	228.5	247.6	712.1	80.1
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut		17.2	32.2	11.8		2.0						
Rock sole	27.3	37.7	31.2	12.9	107.7	69.9	103.6	4.7	0.9	4.4	31.7	54.5
Yellowfin sole	125.0	563.6	656.8	752.1	17.6	127.9	284.1	0.9	81.3	70.4	293.8	334.0
Other flatfish	3.2	1.7	4.2		6.6	0.4	0.0	0.1	3.9	1.9	1.3	0.1
Total flatfish	**247.2**	**666.8**	**738.9**	**788.9**	**213.2**	**325.7**	**783.8**	**8.7**	**320.4**	**324.8**	**1,040.4**	**468.8**
Walleye pollock	1,474.4	8.9	21.7	26.2	128.5	938.7	452.9	364.7	677.9	555.8	487.1	191.5
Pacific cod	113.8	8.9	1.6	0.0	234.4	342.8	222.9	110.0	88.7	320.6	811.5	160.6
Sablefish												
Atka mackerel												
Eelpouts								0.0				
Pacific herring	541.2	15.3	8.0	43.0		11.0	0.4					
Pacific ocean perch												
Sculpins	25.0	6.9	1.8	2.3	36.7	152.6	12.2	25.5	9.0	32.9	23.8	7.8
Other rockfish												
Other roundfish	19.0	1.4	1.5	0.6	0.5	1.9	1.0	0.3	0.7	0.6	4.5	2.6
Total roundfish	**2,173.3**	**41.4**	**34.6**	**72.3**	**400.1**	**1,447.0**	**689.4**	**500.5**	**776.3**	**909.8**	**1,326.8**	**362.5**
Blue king crab					2.6			2.4				
Red king crab		1.9										
Tanner crab, bairdi												
Tanner crab, opilio						977.3	0.7		0.0	0.0	101.6	0.6
Other crab	30.4	50.2	30.4	45.0	43.9	86.6	64.6	33.5	10.5	25.8	89.3	21.5
Shrimp					0.1	0.0		0.5	0.3			
Octopus												
Squids												
Snails	34.9	10.9	6.1	27.2	23.5	44.9	109.9	4.2	40.7	37.1	315.7	50.3
Starfish	119.4	119.0	112.1	184.1	1.5	7.5	18.9	5.1	0.3	0.7	5.4	193.1
Other invertebrates	35.3	8.5	13.6	23.8	12.5	11.0	92.1	66.5	28.3	7.9	97.8	47.0
Total invertebrates	**220.0**	**190.4**	**162.3**	**280.2**	**84.1**	**1,127.3**	**286.2**	**112.1**	**80.1**	**71.6**	**609.8**	**312.5**
Miscellaneous	10.5	11.0	14.9	54.9	3.4	12.2	17.0	0.6	1.3	1.9	8.2	10.8
Total catch	**2,764.0**	**929.7**	**956.8**	**1,203.7**	**827.5**	**2,932.4**	**1,848.0**	**622.0**	**1,198.0**	**1,452.0**	**3,070.0**	**1,191.1**

Appendix A Table 2. -- Continued.

Station	**U-18**	**U-19**	**V-19**	**W-19**	**V-20**	**W-20**	**X-20**	**X-21**	**ZZ-22**	**Y-22**	**X-22**	**X-23**
Start date and time	8/15/17 11:09	8/15/17 14:14	8/15/17 16:58	8/15/17 19:48	8/16/17 8:03	8/16/17 11:04	8/16/17 14:01	8/16/17 16:50	8/17/17 8:12	8/17/17 10:37	8/17/17 14:44	8/17/17 19:21
Haul number	24	25	26	27	28	29	30	31	32	33	34	35
Start latitude	6139.22	6139.18	6159.74	6220.74	6159.43	6219.74	6240.68	6239.34	6319.37	6300.78	6240.87	6239.40
Start longitude	16911.90	17030.06	17027.05	17024.28	17144.60	17143.03	17139.61	17255.06	17205.81	17212.04	17210.96	17332.70
End latitude	6140.75	6140.72	6201.36	6219.20	6200.92	6221.27	6239.76	6240.87	6318.89	6259.28	6239.40	6240.92
End longitude	16911.71	17029.61	17027.15	17024.27	17144.57	17142.85	17136.65	17254.70	17204.08	17212.13	17211.23	17332.62
Bottom depth (m)	37	42	42	37	46	40	42	45	60	53	49	54
Duration (h)	0.52	0.51	0.53	0.51	0.52	0.51	0.53	0.52	0.32	0.51	0.50	0.51
Distance fished (km)	2.85	2.87	3.01	2.84	2.77	2.85	3.04	2.86	1.70	2.79	2.73	2.82
Net width (m)	15.57	15.70	16.87	14.52	16.44	15.12	16.11	16.43	17.19	16.01	15.42	15.90
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	1	0	0	0
Alaska skates												
Other skates	119.40	64.40	42.60	24.70	7.00	23.00	39.80	2.00		5.50		
Sharks												
Total elasmobranch	**119.4**	**64.4**	**42.6**	**24.7**	**7.0**	**23.0**	**39.8**	**2.0**		**5.5**		
Alaska plaice	85.6	1,277.3	232.0	305.8	138.4	331.0	902.5	493.8	18.7	48.6	65.7	51.8
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut												
Rock sole	48.4	43.7	12.8	11.4	1.3	2.3	13.7	5.2		0.9		2.0
Yellowfin sole	265.2	330.7	45.2	104.0	16.3	266.8	337.6	120.9	9.5	22.4	23.1	19.3
Other flatfish	1.1	2.9	0.0	0.4	0.3	0.8	0.7	2.0	0.5	5.6	0.9	12.2
Total flatfish	**400.4**	**1,656.0**	**292.6**	**422.4**	**160.6**	**603.8**	**1,256.0**	**625.5**	**29.0**	**92.5**	**103.3**	**113.1**
Walleye pollock	182.3	153.1	117.3	168.7	153.0	112.7	180.1	154.3	131.0	385.1	281.6	206.5
Pacific cod	93.5	86.6	103.3	215.5	6.8	52.5	97.2	31.5	12.3	83.1	2.7	4.4
Sablefish												
Atka mackerel												
Eelpouts					0.1							5.2
Pacific herring					0.1	0.7				0.2		
Pacific ocean perch												
Sculpins	5.5	2.8	3.5	2.8	2.0	3.0	19.6	6.8	10.7	3.0		0.7
Other rockfish												
Other roundfish	6.6	0.2	1.6	0.9	0.9	0.3	0.4	0.5	5.6	5.0	3.3	3.9
Total roundfish	**287.9**	**242.7**	**225.7**	**387.9**	**163.0**	**169.2**	**297.3**	**193.0**	**159.5**	**476.3**	**287.6**	**220.7**
Blue king crab							0.9					
Red king crab												
Tanner crab, bairdi												
Tanner crab, opilio			21.5	222.6	96.5	17.1	0.0	0.1		0.9	51.8	90.5
Other crab	30.4	18.4	5.6	50.2	11.8	61.7	42.3	25.9	15.7	12.7	27.2	30.4
Shrimp							0.1		0.1			0.1
Octopus										0.1		
Squids												
Snails	61.2	180.9	22.6	118.0	2.7	210.7	88.3	94.4	28.7	72.9	78.5	137.6
Starfish	196.7	45.4	22.7	16.1	4.9	12.5	11.6	7.4	1.9	18.7	17.8	24.9
Other invertebrates	43.9	36.3	16.7	27.0	24.9	38.2	23.8	9.2	44.0	40.5	28.0	17.2
Total invertebrates	**332.1**	**281.0**	**89.1**	**433.8**	**140.8**	**340.3**	**167.1**	**136.9**	**90.4**	**145.8**	**203.2**	**300.8**
Miscellaneous	9.1	3.9	1.1	10.6	0.2	8.9	1.8	2.5	0.1	9.6	9.7	6.4
Total catch	**1,148.9**	**2,248.0**	**651.0**	**1,279.4**	**471.5**	**1,145.3**	**1,762.0**	**959.9**	**279.1**	**729.7**	**603.9**	**641.0**

Appendix A Table 2. -- Continued.

Station	**X-26**	**X-25**	**X-24**	**Y-25**	**ZZ-24**	**Y-24**	**Y-23**	**ZZ-23**	**AA-23**	**AA-22**	**BB-22**	**BB-21**
Start date and time	8/18/17 8:29	8/18/17 11:20	8/18/17 13:59	8/18/17 17:38	8/19/17 8:29	8/19/17 11:11	8/19/17 14:25	8/19/17 16:58	8/19/17 19:41	8/20/17 8:23	8/20/17 11:41	8/20/17 18:10
Haul number	36	37	38	39	40	41	43	44	45	46	47	48
Start latitude	6239.50	6240.01	6239.44	6258.85	6320.17	6300.46	6259.73	6318.73	6339.71	6342.25	6359.55	6403.19
Start longitude	17521.93	17403.99	17448.69	17400.40	17433.62	17446.04	17323.73	17318.30	17314.56	17353.72	17356.94	17239.52
End latitude	6241.03	6240.02	6240.91	6300.30	6320.15	6258.98	6301.28	6320.31	6340.65	6341.35	6400.35	6402.16
End longitude	17521.84	17406.32	17449.24	17559.53	17436.93	17446.08	17323.42	17318.73	17317.36	17353.74	17359.90	17237.47
Bottom depth (m)	73	69	64	74	71	68	61	65	57	40	54	33
Duration (h)	0.52	0.36	0.49	0.50	0.51	0.50	0.52	0.52	0.52	0.32	0.51	0.46
Distance fished (km)	2.84	1.99	2.76	2.77	2.77	2.73	2.90	2.95	2.89	1.67	2.83	2.54
Net width (m)	17.26	18.00	17.92	18.93	16.34	17.77	17.64	16.36	16.19	15.30	15.27	13.86
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	5	0	0	0	0	0	0	0	2	4	0
Alaska skates												
Other skates	15.70					8.60			3.00			
Sharks												
Total elasmobranch	**15.7**					**8.6**			**3.0**			
Alaska plaice				2.2	0.8		1.4	18.1	21.1	10.2	4.1	13.1
Arrowtooth flounder												
Flathead sole												
Greenland turbot					0.5							
Pacific halibut												
Rock sole				0.8					0.9			1.5
Yellowfin sole	1.0							0.8	3.6	5.1		3.5
Other flatfish	63.6	2.4	0.8	5.9	5.9	0.6	0.3	5.5	4.6			
Total flatfish	**98.4**	**13.5**	**6.7**	**95.6**	**124.6**	**32.0**	**21.6**	**72.5**	**31.6**	**15.2**	**4.1**	**18.1**
Walleye pollock	127.9	43.8	38.5	341.2	246.9	62.7	145.1	599.7	923.4	1,214.7	3,560.5	98.5
Pacific cod	6.0	0.4		0.8	8.9		0.2	30.6	52.1	95.3	61.1	326.4
Sablefish												
Atka mackerel												
Eelpouts	12.7		4.2	15.0	13.7	1.1	1.4	2.0			0.4	4.1
Pacific herring	3.4	23.6		5.7	1.8	1.3		2.2	18.5			
Pacific ocean perch												
Sculpins	2.0	0.8	0.2	4.8	6.0	1.0	4.4	10.0	7.2	15.5	16.6	12.2
Other rockfish												
Other roundfish	5.9	3.2	39.1	6.3	3.2	4.0	2.8	20.7	0.8			0.0
Total roundfish	**157.8**	**71.8**	**82.0**	**373.9**	**280.5**	**70.1**	**153.9**	**665.3**	**1,001.9**	**1,325.5**	**3,638.5**	**441.2**
Blue king crab						0.7		1.4		1.6	19.6	8.2
Red king crab												
Tanner crab, bairdi								0.2				
Tanner crab, opilio	10.1	45.8	31.4	20.0	49.1	108.9	13.4	69.2	116.2	6.7	43.4	12.4
Other crab	0.1	0.1	0.2		6.5		2.3	11.0	12.2	1.0	212.1	9.3
Shrimp	0.0	0.1	0.1	1.1	4.5	2.6	0.7	0.0				
Octopus	0.1	0.1	0.1		0.1							
Squids												
Snails	3.4	3.1	2.0	3.4	6.7	23.2	6.4	26.6	20.2	1.5	183.3	4.8
Starfish	3.5	0.5	2.1	0.5	5.3	0.6	3.3	43.3	5.0	6.0	1.7	
Other invertebrates	5.1	12.6	6.4	15.3	8.3	23.5	18.6	27.0	9.0	4.9	1,943.7	192.0
Total invertebrates	**22.3**	**62.2**	**42.3**	**40.3**	**80.5**	**159.5**	**44.6**	**178.7**	**162.8**	**21.6**	**2,403.9**	**226.6**
Miscellaneous	0.0	0.0	0.1	0.1	0.1	0.3			1.8		49.5	1.7
Total catch	**294.2**	**147.5**	**131.0**	**509.9**	**485.7**	**270.5**	**220.1**	**916.5**	**1,201.1**	**1,362.4**	**6,096.0**	**687.6**

Appendix A Table 2. -- Continued.

Station	**CC-21**	**CC-20**	**BB-20**	**CC-19**	**DD-20**	**DD-19**	**EE-19**	**EE-18**	**FF-18**	**CC-02**	**DD-02**	**EE-02**
Start date and time	8/21/17 8:27	8/21/17 11:26	8/21/17 14:44	8/21/17 20:03	8/22/17 8:35	8/22/17 11:29	8/22/17 14:54	8/22/17 18:06	8/22/17 20:48	8/24/17 18:29	8/25/17 8:17	8/25/17 12:19
Haul number	49	50	51	52	53	54	55	56	57	58	59	60
Start latitude	6418.71	6417.30	6358.87	6418.19	6436.71	6438.68	6500.96	6501.55	6513.82	6419.01	6443.04	6458.89
Start longitude	17243.95	17119.65	17126.19	17010.62	17118.92	17006.27	17006.77	17054.12	16906.31	16825.41	16823.52	16822.96
End latitude	6418.12	6416.08	6400.42	6419.19	6437.49	6440.07	6459.98	6500.52	6512.30	6419.85	6441.48	6457.54
End longitude	17243.08	17117.49	17126.69	17009.82	17118.56	17004.66	17003.91	17051.43	16906.32	16825.45	16823.63	16824.98
Bottom depth (m)	45	35	30	39	47	47	50	49	54	31	30	33
Duration (h)	0.25	0.52	0.53	0.35	0.27	0.53	0.52	0.52	0.52	0.29	0.52	0.52
Distance fished (km)	1.30	2.86	2.91	1.96	1.46	2.87	2.88	2.86	2.83	1.56	2.90	2.97
Net width (m)	14.11	13.99	14.61	14.03	16.18	16.09	16.17	15.69	14.91	15.62	15.54	14.63
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	6	0	0	0	1	0	0	0	0	6	0	0
Alaska skates												
Other skates		4.70										
Sharks												
Total elasmobranch		**4.7**										
Alaska plaice		24.7		41.4	2.3	28.3	6.6	4.7		0.3		
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut												35.1
Rock sole	3.1	0.9	8.0							2.8	4.9	11.3
Yellowfin sole		12.3	1.7	3.3	0.8		0.2	113.2	53.1	3.8	0.3	1.4
Other flatfish		1.0		0.5	1.2	0.1	0.1	13.8	19.5	4.0	12.0	99.5
Total flatfish	**3.1**	**39.1**	**10.0**	**46.2**	**7.7**	**38.4**	**22.3**	**133.8**	**74.7**	**10.9**	**17.1**	**147.3**
Walleye pollock	1,382.1	1,063.9	820.8	379.7	680.9	166.3	367.8	1,420.6	1,036.5	64.4	343.3	44.5
Pacific cod	45.0	244.4	67.5	31.8	32.6	161.8	63.2	239.7	402.9	58.1	127.9	3.9
Sablefish												
Atka mackerel												
Eelpouts	0.0	3.5	33.1			4.6	0.6		7.1			
Pacific herring			5.5	0.1				3.3			0.4	
Pacific ocean perch												
Sculpins	14.0	262.7	388.6	401.1	93.0	854.9	94.2	283.0	156.1	4.4	0.6	24.0
Other rockfish												
Other roundfish	12.1	4.9	0.9	1.5	5.1	0.8	0.8	3.4	0.7	19.3	2.3	9.0
Total roundfish	**1,453.3**	**1,579.3**	**1,316.5**	**814.1**	**811.7**	**1,188.4**	**526.6**	**1,949.9**	**1,603.2**	**146.2**	**474.6**	**81.4**
Blue king crab	4.0	9.7	60.2	3.3	7.7	0.8	0.9		1.9	0.7		0.9
Red king crab												1.5
Tanner crab, bairdi												
Tanner crab, opilio	70.6	38.1	313.4	0.8	43.3	0.6	2.4	1.4	6.2	2.6	0.8	0.0
Other crab	37.7	95.4	19.5	10.8	46.6	66.5	79.3	63.6	34.7	76.4	1.2	95.8
Shrimp				0.1		1.3	0.1	0.1	0.1	1.3	0.0	16.3
Octopus												
Squids												
Snails	3.0	103.3		18.3	74.5	78.6	41.7	67.5	98.4	1.7		16.9
Starfish	14.6	8.1	23.7	34.5	83.5	86.8	106.6	79.1	102.8	51.4	42.6	694.6
Other invertebrates	1,035.5	208.4	1,156.7	7.1	7.9	32.9	7.3	50.8	65.2	184.6	14.7	209.9
Total invertebrates	**1,165.3**	**463.0**	**1,573.5**	**74.9**	**263.4**	**267.5**	**238.3**	**262.4**	**309.4**	**318.6**	**59.3**	**1,035.9**
Miscellaneous	16.0	8.3		0.8	15.9	7.8	15.3	17.8	20.7	17.1	0.1	51.4
Total catch	**2,637.8**	**2,094.4**	**2,900.0**	**936.0**	**1,098.8**	**1,502.0**	**802.5**	**2,364.0**	**2,008.0**	**492.7**	**551.1**	**1,316.0**

Appendix A Table 2. -- Continued.

Station	**FF-02**	**FF-01**	**EE-01**	**DD-18**	**DD-01**	**CC-01**	**CC-18**	**BB-18**	**BB-19**	**AA-19**	**AA-18**	**BB-01**
Start date and time	8/25/17 16:40	8/25/17 19:59	8/26/17 8:30	8/26/17 12:29	8/26/17 15:43	8/26/17 18:28	8/27/17 8:27	8/27/17 11:11	8/27/17 14:12	8/27/17 16:56	8/27/17 19:51	8/28/17 8:28
Haul number	61	62	63	64	65	66	67	68	69	70	71	72
Start latitude	6516.17	6520.28	6500.83	6439.62	6440.30	6420.46	6418.27	6401.22	6400.21	6340.74	6340.89	6401.16
Start longitude	16807.24	16937.29	16939.37	17051.60	16937.92	16940.45	17052.47	17057.14	17011.36	17014.53	17059.96	16942.20
End latitude	6514.67	6518.83	6459.28	6438.53	6438.89	6419.04	6416.94	6359.71	6358.96	6339.19	6339.52	6359.64
End longitude	16808.44	16938.34	16939.23	17048.95	16939.51	16939.29	17050.86	17056.54	17013.39	17015.01	17058.35	16942.50
Bottom depth (m)	33	53	44	43	40	40	40	35	35	40	36	36
Duration (h)	0.52	0.51	0.53	0.53	0.51	0.51	0.51	0.52	0.51	0.51	0.52	0.52
Distance fished (km)	2.92	2.82	2.88	2.92	2.90	2.81	2.78	2.84	2.85	2.89	2.86	2.82
Net width (m)	14.46	15.58	15.26	16.32	14.62	14.52	14.15	13.63	14.70	14.49	14.00	13.16
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates							7.05	7.60			9.90	26.60
Sharks												
Total elasmobranch							**7.0**	**7.6**			**9.9**	**26.6**
Alaska plaice	1.6		219.7	149.2	114.1	114.5	43.9	75.8	7.5	18.2	172.3	38.7
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut									32.9			
Rock sole	1.4		10.1	3.2	21.6	39.2	9.4	2.9	1.1	0.7	1.6	2.2
Yellowfin sole	0.6		50.0	4.1	50.0	49.6	19.0	9.2	5.8	24.3	33.5	40.5
Other flatfish	0.1	4.9	8.6	0.1	27.8	6.2	0.8	3.9	1.8	33.3	0.2	3.7
Total flatfish	**4.0**	**11.4**	**289.2**	**157.8**	**215.4**	**210.9**	**74.8**	**92.6**	**49.4**	**78.1**	**211.0**	**87.7**
Walleye pollock	658.9	198.5	482.8	1,340.0	550.4	397.5	333.2	208.3	227.7	57.1	153.7	234.5
Pacific cod	130.6	217.0	143.6	113.6	82.7	116.2	85.4	50.0	76.2	11.4	208.3	115.5
Sablefish												
Atka mackerel												
Eelpouts	1.9	4.2	93.0		7.6	10.8	2.0		11.2		0.0	4.7
Pacific herring	0.3			0.6	0.4	0.1	17.6	1.0		1.6	26.1	0.8
Pacific ocean perch												
Sculpins	6.3	114.6	136.6	108.6	41.2	8.4	44.6	4.6	86.1	2.5	2.5	11.6
Other rockfish												
Other roundfish	4.6	18.2	6.7	1.5	38.5	69.6	10.3	0.7	4.3	28.1	4.3	32.4
Total roundfish	**802.6**	**552.6**	**862.6**	**1,564.4**	**720.8**	**602.5**	**493.1**	**264.6**	**405.6**	**100.7**	**394.9**	**399.5**
Blue king crab	1.3	4.8	4.2	1.0	0.9		1.6		11.6			
Red king crab	0.5											
Tanner crab, bairdi										0.1		
Tanner crab, opilio	0.1	31.2	1.4	0.4	3.0	23.1	39.1	1.0	11.9	1.7	134.4	116.9
Other crab	21.6	231.0	532.7	95.4	82.5	62.4	26.4	35.0	114.3	14.4	34.1	61.0
Shrimp		1.6	4.3	0.5	0.4	0.7		0.0	8.1	0.4	0.2	
Octopus												
Squids												
Snails	14.7	375.5	200.2	141.2	150.9	111.8	71.5	152.6	238.9	33.5	29.2	129.8
Starfish	401.2	114.6	97.6	84.5	92.3	29.1	38.7	44.8	57.4	61.1	120.9	77.8
Other invertebrates	169.8	306.0	131.6	77.7	123.7	88.0	173.8	43.5	720.8	48.5	33.5	130.5
Total invertebrates	**609.1**	**1,064.7**	**972.0**	**400.7**	**453.8**	**315.1**	**351.1**	**277.0**	**1,163.1**	**159.6**	**352.3**	**516.0**
Miscellaneous	4.2	47.3	184.1	25.0	73.9	31.4	18.1	14.3	48.0	18.3	22.6	54.3
Total catch	**1,420.0**	**1,676.0**	**2,308.0**	**2,148.0**	**1,464.0**	**1,160.0**	**944.2**	**656.1**	**1,666.0**	**356.8**	**990.8**	**1,084.1**

Appendix A Table 2. -- Continued.

Station	**BB-02**	**AA-02**	**AA-01**	**Y-01**	**ZZ-01**	**ZZ-02**	**Y-02**	**X-01**	**W-01**	**X-02**	**W-02**	**V-02**
Start date and time	8/28/17 11:28	8/28/17 14:20	8/28/17 17:23	8/29/17 8:41	8/29/17 12:13	8/29/17 15:39	8/29/17 18:21	8/31/17 8:37	8/31/17 11:47	8/31/17 16:14	8/31/17 18:52	9/1/17 8:40
Haul number	73	74	75	76	77	78	79	80	81	82	83	84
Start latitude	6402.47	6340.75	6340.80	6301.00	6320.27	6320.61	6300.73	6240.26	6220.75	6240.50	6221.10	6200.04
Start longitude	16825.86	16828.50	16942.28	16945.94	16945.59	16829.71	16830.97	16948.98	16950.14	16831.76	16833.63	16835.13
End latitude	6400.92	6339.15	6339.55	6259.69	6318.72	6319.07	6259.18	6238.72	6219.29	6238.95	6219.56	6159.98
End longitude	16826.25	16828.16	16944.36	16947.29	16945.18	16829.33	16830.95	16948.68	16951.30	16831.88	16833.90	16831.77
Bottom depth (m)	37	29	33	40	27	33	34	34	31	28	27	26
Duration (h)	0.52	0.53	0.52	0.49	0.52	0.52	0.51	0.51	0.52	0.52	0.52	0.52
Distance fished (km)	2.88	2.97	2.89	2.69	2.90	2.87	2.88	2.86	2.88	2.88	2.87	2.94
Net width (m)	13.39	14.05	14.52	14.57	14.26	14.65	14.79	14.46	14.76	14.67	14.60	15.15
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	17.60	15.70	22.90	13.30	0.04	72.70	94.01	27.53	48.20	14.20	4.20	53.90
Sharks												
Total elasmobranch	**17.6**	**15.7**	**22.9**	**13.3**	**0.0**	**72.7**	**94.0**	**27.5**	**48.2**	**14.2**	**4.2**	**53.9**
Alaska plaice	30.2	7.2	149.3	72.8	17.9	14.5	70.2	173.3	21.6	17.1	1.8	14.8
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut		32.4	7.5	13.7	23.7				5.4	22.4		23.2
Rock sole	2.4	5.4	2.8	6.2	29.6	6.8	4.7	110.2	23.8	5.8	3.9	5.5
Yellowfin sole	9.6	38.4	61.5	215.0	133.0	23.1	369.1	295.9	158.1	24.8	32.8	38.4
Other flatfish	0.8	6.1	1.2	2.7	4.1	1.4	4.7	0.9	0.2	2.5	0.1	
Total flatfish	**43.6**	**90.0**	**223.2**	**312.0**	**208.4**	**46.1**	**450.8**	**581.7**	**209.3**	**72.7**	**38.6**	**82.0**
Walleye pollock	549.0	71.1	195.7	192.9	151.6	55.1	52.0	223.0	125.6	40.5	22.4	43.0
Pacific cod	98.4	34.2	123.9	56.4	21.0	39.2	8.4	54.2	12.6	12.9	14.3	25.2
Sablefish												
Atka mackerel												
Eelpouts												
Pacific herring		0.4	3.1	0.7	2.9	19.5	0.2			0.9	0.3	0.0
Pacific ocean perch												
Sculpins	22.4	49.3	18.9	4.7	6.0	13.5	0.9	11.0	1.3	2.8	2.4	0.6
Other rockfish												
Other roundfish	16.3	18.7	10.2	22.0	1.9	20.1	31.4	43.5	10.6	22.9	3.6	6.4
Total roundfish	**686.1**	**173.7**	**351.8**	**276.7**	**183.3**	**147.3**	**92.8**	**331.7**	**150.1**	**80.1**	**42.9**	**75.3**
Blue king crab		0.6										
Red king crab	1.2	2.3										
Tanner crab, bairdi												
Tanner crab, opilio	64.6	1.1	31.9	0.4	0.0	0.4	0.0	20.6	0.4	0.1	0.2	0.2
Other crab	168.7	164.8	74.5	39.1	3.7	75.4	71.8	66.6	46.2	40.6	10.4	16.1
Shrimp			0.3	0.4	0.0		0.1	1.2	0.2		0.2	0.1
Octopus												
Squids												
Snails	385.0	527.7	172.5	54.7	7.1	54.4	20.0	166.9	18.0	23.4	2.4	4.7
Starfish	168.1	109.8	33.7	12.9	3.2	40.6	308.8	52.4	11.1	38.7	22.2	33.2
Other invertebrates	309.7	142.3	55.9	76.9	61.7	137.6	24.1	32.2	107.4	52.4	171.3	20.4
Total invertebrates	**1,097.4**	**948.6**	**368.8**	**184.4**	**75.8**	**308.4**	**424.9**	**339.9**	**183.3**	**155.1**	**206.8**	**74.7**
Miscellaneous	129.4	22.0	29.2	19.5	0.8	71.2	5.3	22.5	21.4	1.8	1.7	1.0
Total catch	**1,974.0**	**1,250.0**	**995.9**	**805.8**	**468.3**	**645.8**	**1,067.8**	**1,303.3**	**612.3**	**323.8**	**294.2**	**286.8**

Appendix A Table 2. -- Continued.

Station	**V-01**	**U-01**	**T-01**	**S-01**	**R-01**
Start date and time	9/1/17 11:28	9/1/17 14:13	9/1/17 16:59	9/2/17 9:10	9/2/17 12:05
Haul number	85	86	87	88	89
Start latitude	6200.84	6140.85	6121.18	6101.11	6041.09
Start longitude	16952.42	16954.02	16956.01	16958.08	16959.40
End latitude	6159.31	6139.30	6119.58	6059.56	6039.56
End longitude	16952.46	16954.42	16956.04	16957.70	16958.61
Bottom depth (m)	29	29	30	30	29
Duration (h)	0.52	0.52	0.52	0.52	0.52
Distance fished (km)	2.85	2.90	2.96	2.90	2.92
Net width (m)	14.25	14.51	14.69	14.48	14.22
Net measured?	Y	Y	Y	Y	Y
Performance	0	0	0	0	0
Alaska skates					
Other skates	206.60	37.00	71.10		
Sharks					
Total elasmobranch	**206.6**	**37.0**	**71.1**		
Alaska plaice	20.6	32.4	23.2	9.1	6.5
Arrowtooth flounder					
Flathead sole					
Greenland turbot					
Pacific halibut	1.7	67.2	14.7	9.0	11.5
Rock sole	21.4	24.4	51.1	36.7	9.3
Yellowfin sole	155.0	318.2	293.9	384.4	249.7
Other flatfish	0.3		1.0	51.1	20.6
Total flatfish	**199.1**	**442.2**	**383.9**	**490.3**	**297.5**
Walleye pollock	77.2	63.7	101.2	97.3	61.7
Pacific cod	61.1	39.0	6.8	16.2	
Sablefish					
Atka mackerel					
Eelpouts					
Pacific herring	1.0	8.7	7.4	2.0	13.1
Pacific ocean perch					
Sculpins	4.2	4.9	4.1	2.2	6.0
Other rockfish					
Other roundfish	9.3	70.9	16.2	68.9	56.3
Total roundfish	**152.7**	**187.2**	**135.8**	**186.6**	**137.1**
Blue king crab					
Red king crab	2.4		1.0		
Tanner crab, bairdi					
Tanner crab, opilio	0.2	0.0			
Other crab	14.5	3.7	2.3	1.3	3.1
Shrimp	0.0	0.0		0.1	0.1
Octopus					
Squids					
Snails	6.4	7.3	1.1	0.0	
Starfish	71.9	64.1	90.3	314.3	348.1
Other invertebrates	73.9	9.2	2.2	4.4	5.7
Total invertebrates	**169.3**	**84.2**	**97.0**	**320.0**	**356.9**
Miscellaneous	14.5	3.2	1.1	1.6	2.0
Total catch	**742.2**	**753.8**	**688.9**	**998.5**	**793.5**

Appendix A Table 3. -- Haul and catch data for successfully completed tows by FV *Vesteraalen* during the 2017 eastern Bering Sea shelf bottom trawl survey.

Station	**G-15**	**H-16**	**I-16**	**J-16**	**J-15**	**J-14**	**K-14**	**K-13**	**K-12**	**J-12**	**I-12**	**H-12**	**E-11**
Start date and time	6/4/17 8:52	6/4/17 13:48	6/4/17 16:58	6/5/17 7:18	6/5/17 10:24	6/5/17 13:49	6/5/17 17:25	6/6/17 7:03	6/6/17 10:54	6/6/17 13:11	6/6/17 15:49	6/6/17 18:16	6/7/17 6:59
Haul number	2	4	5	6	7	8	9	10	11	12	13	14	15
Start latitude	5700.28	5719.64	5738.94	5759.02	5800.62	5800.25	5818.99	5817.22	5817.09	5801.12	5740.73	5721.29	5619.52
Start longitude	16050.70	15935.61	15937.24	15940.04	15902.89	16021.59	16026.55	16001.60	16112.71	16108.46	16105.87	16103.35	16222.98
End latitude	5700.43	5721.15	5740.38	5800.05	5759.52	5800.72	5820.58	5815.72	5817.09	5759.46	5739.16	5719.79	5621.09
End longitude	16053.53	15936.83	15938.66	15942.48	15900.84	16024.26	16026.86	16002.62	16110.87	16107.87	16105.67	16103.50	16223.11
Bottom depth (m)	36	30	34	36	43	42	24	42	31	45	56	59	66
Duration (h)	0.54	0.54	0.53	0.53	0.52	0.52	0.54	0.51	0.32	0.54	0.52	0.51	0.52
Distance fished (km)	2.89	3.06	3.03	3.08	2.87	2.79	2.97	2.95	1.81	3.13	2.91	2.79	2.91
Net width (m)	15.79	16.37	16.24	17.32	15.49	14.98	15.27	16.90	16.28	16.57	16.85	16.73	17.08
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates													
Other skates	144.8	79.7	16.8	18.1	65.9	53.3		6.5	7.2	38.9	2.5	12.8	23.9
Sharks													
Total elasmobranch	**144.8**	**79.7**	**16.8**	**18.1**	**65.9**	**53.3**		**6.5**	**7.2**	**38.9**	**2.5**	**12.8**	**23.9**
Alaska plaice	0.8	5.9	2.1	0.2		39.1	134.2	82.0	7.8	173.7	9.9	17.5	6.5
Arrowtooth flounder				0.8							0.7	3.4	43.3
Flathead sole													
Greenland turbot													
Pacific halibut	0.4	23.7	20.7	33.8	5.4	3.9	7.4	7.7	21.7	19.4	10.3	21.4	5.3
Rock sole	1370.9	1118.4	1549.5	288.4	655.8	948.9	54.4	1434.6	448.8	827.2	65.3	369.1	590.4
Yellowfin sole	1317.1	2641.1	2123.5	299.1	522.9	5033.2	1198.8	2424.5	114.3	333.2	129.1	82.9	1121.7
Other flatfish	82.2	69.0	9.9	11.9	50.4	113.9	1528.7	68.4	729.5	46.9	1.5	21.3	92.5
Total flatfish	**2772.9**	**3859.5**	**3705.7**	**634.1**	**1234.5**	**6139.0**	**2923.5**	**4018.7**	**1322.0**	**1404.4**	**238.2**	**553.6**	**1888.1**
Walleye pollock	95.4	193.5	714.5	48.9	447.0	491.7	81.6	218.2	26.0	136.0	156.2	38.0	494.4
Pacific cod	335.7	903.3	422.6	208.7	89.3	57.2	170.2	199.3	53.1	97.0	40.4	43.7	58.5
Sablefish		0.2										0.3	
Atka mackerel													
Eelpouts													
Pacific herring		18.6	0.9	0.5			1.1			0.5			1.5
Pacific ocean perch													
Sculpins	20.0	25.1	19.2	15.9	4.0	5.8	30.3	94.9	17.2	5.9	3.2	4.5	19.0
Other rockfish													
Other roundfish	3.3	1.4	6.4	0.2		6.5	8.3	15.3	5.0	7.6	0.9	2.4	1.9
Total roundfish	**454.4**	**1142.1**	**1163.7**	**274.3**	**540.3**	**561.2**	**291.6**	**527.6**	**101.3**	**247.0**	**200.7**	**89.0**	**575.3**
Blue king crab													
Red king crab						8.9		1.5	1.2	14.9	11.9		9.8
Tanner crab, bairdi	0.5					1.8				0.9	1.0	7.6	10.2
Tanner crab, opilio													
Other crab	4.3	1.1	0.1	0.2		1.2		8.7	0.9	2.0	2.7	9.7	14.3
Shrimp	0.1	0.3	0.2	0.1	0.2	0.1	0.1	0.9	0.1	0.1	0.2	0.3	
Octopus													
Squids													
Snails										0.5	3.4	5.1	14.7
Starfish	416.3	215.6	155.1	52.0	67.1	100.1	84.8	194.1	105.6	277.5	64.8	159.9	
Other invertebrates	20.2	101.6	0.2	0.5		1.3		1.2	1.6	1.5	55.8	139.9	23.6
Total invertebrates	**441.4**	**318.6**	**155.6**	**52.7**	**67.3**	**113.4**	**84.9**	**206.5**	**109.4**	**297.4**	**139.7**	**322.5**	**72.7**
Miscellaneous	2.4	6.2	0.2	0.2		0.1		0.6	0.2	0.3	1.1	4.4	19.9
Total catch	**3816.0**	**5406.0**	**5042.0**	**979.4**	**1908.0**	**6867.0**	**3300.0**	**4760.0**	**1540.0**	**1988.0**	**582.2**	**982.2**	**2580.0**

Appendix A Table 3. -- Continued.

Station	**F-11**	**G-11**	**G-12**	**H-11**	**I-11**	**J-11**	**K-11**	**K-10**	**J-10**	**I-10**	**H-10**	**G-10**	**F-10**
Start date and time	6/7/17 9:44	6/7/17 12:44	6/7/17 15:36	6/8/17 7:02	6/8/17 9:38	6/8/17 12:18	6/8/17 14:47	6/8/17 17:03	6/9/17 7:03	6/9/17 9:46	6/9/17 12:21	6/9/17 14:57	6/9/17 18:02
Haul number	16	17	18	19	20	21	22	23	24	25	26	27	28
Start latitude	5639.86	5659.59	5659.83	5719.26	5739.03	5759.53	5812.79	5819.43	5800.64	5740.57	5721.04	5700.29	5640.42
Start longitude	16225.48	16225.00	16101.64	16227.89	16229.53	16231.63	16227.34	16356.51	16351.44	16352.65	16352.15	16350.11	16349.16
End latitude	5641.00	5700.42	5659.78	5720.68	5740.60	5800.96	5813.84	5819.94	5759.81	5739.00	5719.46	5658.64	5639.03
End longitude	16225.72	16227.22	16104.39	16228.67	16229.86	16230.49	16226.75	16353.67	16353.95	16352.07	16352.01	16349.81	16348.17
Bottom depth (m)	90	70	64	57	54	56	40	47	39	48	51	61	71
Duration (h)	0.40	0.52	0.52	0.51	0.52	0.52	0.38	0.53	0.52	0.52	0.52	0.54	0.51
Distance fished (km)	2.13	2.72	2.79	2.75	2.92	2.89	2.04	2.94	2.92	2.97	2.93	3.08	2.76
Net width (m)	17.10	17.23	17.02	16.22	16.45	16.50	15.99	16.40	15.72	16.74	16.60	16.90	16.67
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	5	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates													
Other skates	20.9	23.0		17.4	24.6	9.5	123.9	98.4	70.2	67.6	41.9	29.8	13.1
Sharks													
Total elasmobranch	**20.9**	**23.0**		**17.4**	**24.6**	**9.5**	**123.9**	**98.4**	**70.2**	**67.6**	**41.9**	**29.8**	**13.1**
Alaska plaice	118.3	212.1	43.8	9.6	55.3	27.5	5.0	21.8	4.7	35.3	32.1	299.3	79.8
Arrowtooth flounder	10.4	3.0	1.5							0.9		1.3	10.7
Flathead sole													
Greenland turbot													
Pacific halibut	0.7	4.7	2.6	12.1		23.3	5.1	43.7	34.6	21.5	19.6	29.4	17.0
Rock sole	86.8	198.9	112.7	338.9	269.7	591.1	309.5	478.2	441.4	274.1	371.6	422.2	128.3
Yellowfin sole	321.5	208.6	113.5	2465.4	317.4	405.7	404.1	359.1	296.4	253.8	247.9	320.7	306.1
Other flatfish	6.9	9.1	48.5	5.6			118.1	16.8	186.4			3.2	
Total flatfish	**585.1**	**715.6**	**359.6**	**2843.5**	**646.2**	**1052.5**	**841.8**	**926.5**	**981.6**	**619.0**	**729.8**	**1138.6**	**596.1**
Walleye pollock	896.0	161.8	103.3	102.2	317.0	210.0	116.3	56.9	31.8	50.3	26.2	101.1	2143.7
Pacific cod	45.0	5.7	63.3	3.6	35.5	41.8	141.9	42.0	48.5	28.8	74.5	67.6	23.6
Sablefish													
Atka mackerel													0.5
Eelpouts													
Pacific herring								3.7	57.0	0.3	21.6	2.3	
Pacific ocean perch													
Sculpins	14.3	32.2	12.5	54.6	3.9	5.5	6.3	10.1	9.8		14.2	29.9	30.8
Other rockfish													
Other roundfish	0.4	0.2	0.3	1.5	1.6	7.7	1.6	4.1	2.2	2.9	0.8	0.7	0.1
Total roundfish	**955.7**	**200.0**	**179.4**	**161.9**	**358.1**	**265.0**	**266.1**	**116.7**	**149.4**	**82.2**	**137.4**	**201.6**	**2198.7**
Blue king crab													
Red king crab	22.6	111.7	10.0	11.1	56.0	20.7	6.7	4.5	17.0	22.3	19.4	160.2	55.3
Tanner crab, bairdi	25.0	10.3	4.4	4.6	0.4	1.2		1.3		2.1	3.3	3.7	8.8
Tanner crab, opilio													
Other crab	27.0	1.5	3.1	11.6	1.0	22.9	4.8	27.7	27.3	5.6	17.3	5.9	5.9
Shrimp			0.0	0.1	0.1	0.1	0.0	0.2	0.2	0.3	0.3	0.0	
Octopus													
Squids													
Snails	8.9		1.2	5.0		19.9		4.1	40.0	1.3	18.2	1.4	2.3
Starfish		375.0	103.8	102.5	81.2	168.2	135.3	379.5	78.6	282.2	240.6	292.8	193.8
Other invertebrates	1635.7	31.5	38.3	145.0	139.5	62.5	1.0	16.1	6.6	9.7	13.5	12.3	1595.1
Total invertebrates	**1719.3**	**530.0**	**160.7**	**279.8**	**278.2**	**295.5**	**147.8**	**433.3**	**169.8**	**323.6**	**312.7**	**476.4**	**1861.2**
Miscellaneous	9.1	1.4	1.6	7.4		15.5	0.4	5.1	7.1	1.6	6.2	2.7	16.0
Total catch	**3290.0**	**1470.0**	**701.3**	**3310.0**	**1307.0**	**1638.0**	**1380.0**	**1580.0**	**1378.0**	**1094.0**	**1228.0**	**1849.0**	**4685.0**

Appendix A Table 3. -- Continued.

Station	**C-09**	**D-09**	**E-09**	**E-10**	**F-09**	**G-09**	**H-09**	**I-09**	**J-09**	**K-09**	**L-09**	**L-08**
Start date and time	6/10/17 7:18	6/10/17 10:26	6/10/17 13:38	6/10/17 16:39	6/11/17 7:11	6/11/17 9:48	6/11/17 12:27	6/11/17 15:03	6/11/17 17:50	6/12/17 7:04	6/12/17 9:38	6/12/17 12:23
Haul number	29	30	31	32	33	34	35	36	37	38	39	40
Start latitude	5539.47	5558.59	5619.28	5619.24	5639.85	5659.17	5719.05	5738.26	5759.19	5819.42	5839.51	5840.56
Start longitude	16310.08	16311.16	16311.38	16347.33	16312.54	16312.22	16314.48	16313.65	16314.55	16316.62	16318.59	16439.86
End latitude	5540.99	5600.10	5620.76	5620.33	5641.36	5700.67	5720.54	5739.75	5800.70	5821.02	5841.13	5840.59
End longitude	16310.21	16311.24	16312.09	16349.14	16312.52	16312.08	16314.39	16313.47	16314.77	16315.90	16317.25	16436.85
Bottom depth (m)	53	80	78	76	72	61	50	44	40	32	23	32
Duration (h)	0.52	0.53	0.53	0.54	0.52	0.53	0.53	0.53	0.51	0.53	0.55	0.52
Distance fished (km)	2.82	2.79	2.84	2.75	2.78	2.80	2.76	2.76	2.80	3.05	3.28	2.92
Net width (m)	16.53	17.68	17.61	17.46	17.47	17.25	16.82	16.85	15.96	15.80	13.61	16.00
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	29.7	12.1	5.1	37.9	9.9	7.0	25.8		32.7	24.5	41.9	26.0
Sharks												
Total elasmobranch	**29.7**	**12.1**	**5.1**	**37.9**	**9.9**	**7.0**	**25.8**		**32.7**	**24.5**	**41.9**	**26.0**
Alaska plaice	70.7	78.1	20.0	10.7	166.8	54.5	70.3	11.4	13.9	463.8	4.5	19.9
Arrowtooth flounder	14.9	88.7	10.2	75.7	1.1							
Flathead sole												
Greenland turbot												
Pacific halibut	15.4	2.4	2.3	19.4		3.9	15.5	79.3	58.7	29.1	42.4	6.3
Rock sole	253.5	159.4	158.5	891.6	52.1	95.0	404.7	433.7	319.1	143.7	472.5	738.8
Yellowfin sole	418.1	477.2	207.0	668.1	379.8	354.6	381.5	294.7	642.6	1497.8	924.1	747.4
Other flatfish	50.7			8.8				2.6	15.1	1490.2	133.3	28.9
Total flatfish	**841.2**	**938.8**	**482.0**	**1859.3**	**614.4**	**535.2**	**895.2**	**835.8**	**1062.0**	**3624.5**	**1576.9**	**1541.4**
Walleye pollock	176.7	5140.4	6699.3	1538.7	1023.1	935.1	1528.7	39.8	51.7	17.0	11.8	202.1
Pacific cod	56.6	62.0	37.4	71.7	19.8	14.6	58.0	7.8	19.1	51.0	149.6	105.6
Sablefish												
Atka mackerel												
Eelpouts						0.7						
Pacific herring	1.2				0.7		0.6		0.3		0.3	4.0
Pacific ocean perch												
Sculpins	28.6	11.3	17.6	15.3	10.4	6.1	22.1		5.2	20.2	2.0	65.9
Other rockfish												
Other roundfish	5.6	0.9			0.2	0.1	1.5	0.6	3.1	2.6	6.4	6.0
Total roundfish	**268.7**	**5214.6**	**6754.3**	**1625.7**	**1054.2**	**956.5**	**1611.0**	**48.1**	**79.3**	**90.8**	**170.0**	**383.6**
Blue king crab												
Red king crab	46.0	38.4	12.1	20.2	16.5	20.8	31.7	22.5	18.0	3.7		
Tanner crab, bairdi	90.3	14.0	49.1	33.1	20.4	7.7	1.4	0.6		0.6	0.5	0.9
Tanner crab, opilio						0.3						
Other crab	24.4	3.2	7.3	2.7	18.1	2.5	17.9	2.9	10.8	9.3	2.5	2.9
Shrimp	0.0						0.0				0.0	0.0
Octopus	12.4											
Squids												
Snails	43.0	5.0	58.7	13.8	24.4	0.6	23.0	0.5	6.7	5.6		
Starfish	148.7	2.7	4.3	37.6	169.8	152.3	228.8	184.8	129.0	441.8	107.4	735.7
Other invertebrates	91.4	15.1	26.4	279.2	67.4	11.5	49.5	4.2	0.8	6.9	0.8	0.9
Total invertebrates	**456.3**	**78.4**	**157.8**	**386.6**	**316.6**	**195.6**	**352.4**	**215.6**	**165.3**	**468.0**	**111.2**	**740.4**
Miscellaneous	10.1	0.1	1.8	6.5	14.9	1.6	5.7	2.5	0.7	2.2		0.7
Total catch	**1606.0**	**6244.0**	**7401.0**	**3916.0**	**2010.0**	**1696.0**	**2890.0**	**1102.0**	**1340.0**	**4210.0**	**1900.0**	**2692.0**

Appendix A Table 3. -- Continued.

Station	**M-08**	**M-07**	**N-07**	**N-06**	**N-05**	**N-03**	**O-03**	**O-04**	**N-04**	**M-04**	**M-05**	**M-06**
Start date and time	6/12/17 15:04	6/12/17 17:46	6/13/17 11:45	6/13/17 14:26	6/13/17 17:11	6/14/17 12:01	6/14/17 14:51	6/15/17 6:58	6/15/17 9:26	6/15/17 12:02	6/15/17 14:40	6/15/17 17:16
Haul number	41	42	43	44	45	46	47	49	50	51	52	53
Start latitude	5858.93	5859.93	5921.18	5920.56	5919.68	5920.13	5939.94	5939.71	5920.65	5900.93	5900.70	5859.78
Start longitude	16438.49	16401.09	16400.90	16522.55	16640.22	16722.30	16722.85	16603.70	16602.69	16604.48	16641.20	16518.66
End latitude	5900.44	5859.81	5919.70	5920.41	5919.70	5920.15	5940.03	5938.34	5919.18	5859.38	5859.42	5859.73
End longitude	16438.39	16557.79	16559.72	16519.14	16643.35	16725.30	16719.55	16601.64	16603.13	16604.36	16643.05	16521.56
Bottom depth (m)	23	29	22	23	22	28	28	23	24	30	28	28
Duration (h)	0.54	0.55	0.55	0.55	0.55	0.54	0.55	0.54	0.52	0.52	0.53	0.53
Distance fished (km)	2.80	3.18	2.96	3.25	2.98	2.86	3.12	3.19	2.76	2.87	2.97	2.79
Net width (m)	15.52	15.46	15.52	15.59	15.28	15.20	15.26	15.27	15.11	15.84	15.32	15.41
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates		18.2			0.0	54.8	220.1	62.2	16.5	241.0	221.0	94.5
Sharks												
Total elasmobranch		**18.2**			**0.0**	**54.8**	**220.1**	**62.2**	**16.5**	**241.0**	**221.0**	**94.5**
Alaska plaice	9.9	22.7	17.0	1.2	1.3	22.2	8.7	7.5	10.9	36.4	278.8	11.2
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut	7.3	3.6	5.6	56.6	6.5	4.4	34.1	17.3	32.3	46.3	19.4	30.9
Rock sole	561.5	383.7	12.8	63.5	79.8	112.8	158.5	475.6	271.4	376.0	365.6	733.1
Yellowfin sole	783.8	869.8	1079.0	656.1	248.8	228.3	3505.3	110.6	477.8	395.1	1609.0	460.9
Other flatfish	52.7	68.9	25.8	6.7	4.5		49.1	14.4	10.5	10.4	233.1	78.2
Total flatfish	**1415.2**	**1348.6**	**1140.2**	**784.1**	**340.9**	**367.7**	**3755.6**	**625.5**	**802.9**	**864.2**	**2505.9**	**1314.3**
Walleye pollock	32.8	55.8	12.6	9.3	95.3	142.4	60.2	57.8	110.8	90.8	59.0	71.9
Pacific cod	29.1	34.2	11.6	6.4	39.5	30.5	101.9	162.3	36.9	31.3	11.3	75.1
Sablefish												
Atka mackerel												
Eelpouts												
Pacific herring	1.3	0.4	13.2	143.8	1.5	21.0		2.0	13.4	498.8		34.0
Pacific ocean perch												
Sculpins	8.2	51.7	6.4	2.8	10.3	14.8	24.0	10.2	12.7	16.1	13.1	28.6
Other rockfish												
Other roundfish	8.9	6.8	33.2	2.9	3.7	33.1	2.7	41.1	1.5	3.5	3.9	9.5
Total roundfish	**80.4**	**148.8**	**76.9**	**165.2**	**150.3**	**241.8**	**188.7**	**273.3**	**175.4**	**640.5**	**87.3**	**219.0**
Blue king crab												
Red king crab												
Tanner crab, bairdi											0.2	
Tanner crab, opilio												
Other crab	0.1	4.4		0.3	3.5	10.8	9.1	1.7	2.3	7.8	2.3	5.6
Shrimp						0.1	0.0		0.0		0.0	
Octopus												
Squids												
Snails					0.0							
Starfish	112.1	319.2	56.8	30.3	66.0	391.4	203.7	333.8	332.6	80.5	783.0	235.5
Other invertebrates		0.6		0.1	3.2	1.9	0.3	0.6		0.0	0.1	0.6
Total invertebrates	**112.2**	**324.2**	**56.8**	**30.7**	**72.7**	**404.2**	**213.1**	**336.1**	**334.9**	**88.2**	**785.7**	**241.7**
Miscellaneous	0.2	0.2	0.0	0.0	0.6	3.5	0.5	0.8	0.3	2.1	0.1	0.6
Total catch	**1608.0**	**1840.0**	**1274.0**	**980.0**	**564.6**	**1072.0**	**4378.0**	**1298.0**	**1330.0**	**1836.0**	**3600.0**	**1870.0**

Appendix A Table 3. -- Continued.

Station	**L-07**	**L-06**	**L-05**	**K-05**	**K-06**	**K-07**	**K-08**	**J-08**	**J-07**	**I-07**	**I-08**	**H-08**
Start date and time	6/16/17 6:57	6/16/17 9:34	6/16/17 12:07	6/16/17 14:48	6/16/17 17:29	6/17/17 7:02	6/17/17 9:38	6/17/17 12:18	6/17/17 14:57	6/18/17 7:07	6/18/17 9:56	6/18/17 12:32
Haul number	54	55	56	57	58	59	60	61	62	63	64	65
Start latitude	5839.27	5840.02	5840.25	5820.80	5820.08	5819.18	5820.36	5800.74	5800.81	5740.80	5740.29	5720.62
Start longitude	16559.78	16522.08	16642.61	16642.58	16521.03	16400.75	16435.89	16437.44	16400.24	16559.60	16436.52	16436.36
End latitude	5840.82	5840.18	5839.15	5819.20	5820.02	5820.68	5820.01	5759.25	5759.17	5739.40	5738.80	5719.29
End longitude	16558.85	16519.13	16640.49	16642.77	16524.03	16400.21	16438.78	16436.92	16558.59	16400.80	16437.40	16437.19
Bottom depth (m)	34	37	40	45	44	41	36	44	47	52	46	53
Duration (h)	0.53	0.52	0.51	0.53	0.53	0.52	0.52	0.51	0.61	0.52	0.53	0.50
Distance fished (km)	3.01	2.88	2.89	2.98	2.95	2.83	2.90	2.80	3.44	2.85	2.89	2.60
Net width (m)	15.95	15.97	15.27	16.36	16.26	15.63	15.33	14.94	16.16	16.28	16.39	16.53
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	66.5	94.8	974.7	99.5	63.6	114.7	72.8	15.3	47.1	48.7	31.0	6.4
Sharks												
Total elasmobranch	**66.5**	**94.8**	**974.7**	**99.5**	**63.6**	**114.7**	**72.8**	**15.3**	**47.1**	**48.7**	**31.0**	**6.4**
Alaska plaice	30.1	37.6	18.7	31.4	23.7	12.7	7.0	25.2	41.8	53.1	74.6	75.3
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut	2.1	10.4	14.9	9.5	10.8	23.1	61.4	10.2	44.5	7.1	19.2	3.5
Rock sole	273.3	365.4	80.2	91.2	190.2	227.9	514.2	341.1	252.6	148.4	206.8	109.8
Yellowfin sole	572.6	449.9	1080.2	300.2	909.5	330.3	394.0	210.0	282.3	503.7	715.2	274.4
Other flatfish	11.8	4.7					92.1					
Total flatfish	**889.9**	**867.9**	**1196.5**	**435.9**	**1136.5**	**594.1**	**1068.7**	**593.4**	**625.5**	**722.8**	**1020.7**	**477.4**
Walleye pollock	227.0	99.0	143.3	75.6	175.6	70.1	91.8	59.6	69.1	135.2	28.2	1888.8
Pacific cod	46.0	19.6	55.5	18.0	22.0	19.9	22.4	16.0	44.2	39.3	11.0	35.9
Sablefish												
Atka mackerel												
Eelpouts												
Pacific herring		35.2	2.8	19.2	4.0	0.7	1.7	3.0		14.5	2.2	
Pacific ocean perch												
Sculpins	53.5	16.2	4.0	1.6	2.2	7.1	17.3	11.8	10.6	1.7	11.5	11.6
Other rockfish												
Other roundfish	20.1	13.4	2.1	1.0	1.2	3.4	4.7	4.2	2.2	1.6	1.3	0.3
Total roundfish	**346.5**	**183.4**	**207.6**	**115.4**	**205.0**	**101.2**	**137.8**	**94.6**	**126.1**	**192.3**	**54.2**	**1936.6**
Blue king crab												
Red king crab		0.7	3.3	5.4	5.9	5.8		7.7	12.3	3.2	4.2	9.6
Tanner crab, bairdi				1.7	0.8	0.2		0.8	0.9	0.9	1.1	1.6
Tanner crab, opilio												
Other crab	29.5	7.0	6.1	28.0	16.2	7.9	5.8	10.8	36.9	64.1	47.8	7.7
Shrimp	0.0	0.0		0.0	0.0	0.0	0.0	0.0				
Octopus												
Squids												
Snails		0.1	2.1	19.2	11.3	2.0	1.0	3.6	15.8	73.1	47.2	9.3
Starfish	419.4	332.2	472.7	290.0	545.6	228.3	223.9	426.6	390.1	172.7	334.1	120.6
Other invertebrates	0.4	2.1	5.7	79.0	44.2	21.2	0.8	19.8	129.0	125.9	79.4	49.4
Total invertebrates	**449.3**	**342.0**	**489.9**	**423.3**	**624.0**	**265.4**	**231.5**	**469.3**	**585.0**	**440.0**	**513.8**	**198.2**
Miscellaneous	1.7	1.8	1.3	21.0	20.9	4.6	1.2	7.4	16.4	86.2	30.3	1.4
Total catch	**1754.0**	**1490.0**	**2870.0**	**1095.0**	**2050.0**	**1080.0**	**1512.0**	**1180.0**	**1400.0**	**1490.0**	**1650.0**	**2620.0**

Appendix A Table 3. -- Continued.

Station	**G-08**	**F-08**	**E-08**	**D-08**	**C-08**	**B-08**	**Z-05**	**A-05**	**A-06**	**B-06**	**B-05**	**C-05**
Start date and time	6/18/17 15:08	6/18/17 17:40	6/19/17 8:07	6/19/17 10:34	6/19/17 13:03	6/19/17 15:40	6/23/17 7:16	6/23/17 10:41	6/23/17 13:37	6/23/17 16:31	6/24/17 7:11	6/24/17 9:59
Haul number	66	67	69	70	71	72	73	74	75	76	77	78
Start latitude	5700.89	5640.82	5619.20	5600.49	5540.85	5521.05	5441.19	5458.66	5500.60	5519.80	5519.31	5539.35
Start longitude	16436.86	16436.39	16435.56	16435.30	16435.25	16435.19	16650.01	16650.39	16524.11	16526.25	16650.35	16649.76
End latitude	5659.36	5639.23	5617.63	5558.92	5539.30	5519.84	5442.55	5459.92	5502.06	5521.37	5520.87	5540.80
End longitude	16436.79	16436.49	16435.39	16434.97	16434.87	16434.30	16651.96	16651.85	16525.12	16526.45	16650.79	16649.28
Bottom depth (m)	66	75	86	87	82	54	85	110	62	102	112	109
Duration (h)	0.52	0.53	0.52	0.52	0.52	0.47	0.61	0.55	0.52	0.52	0.53	0.51
Distance fished (km)	2.84	2.95	2.91	2.93	2.90	2.44	3.27	2.82	2.92	2.91	2.91	2.74
Net width (m)	16.92	17.24	16.95	17.59	17.28	15.80	16.10	16.83	16.79	17.33	18.00	18.27
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	3	0	0	0	0	0	0
Alaska skates												
Other skates	12.5	28.2	42.4	71.5	109.0	19.9	186.0	267.8	90.1	129.4	162.3	77.9
Sharks												
Total elasmobranch	**12.5**	**28.2**	**42.4**	**71.5**	**109.0**	**19.9**	**186.0**	**267.8**	**90.1**	**129.4**	**162.3**	**77.9**
Alaska plaice	218.5	138.6	16.8	4.5	191.5	54.9		1.0		3.7		
Arrowtooth flounder			147.3	162.1	88.8	30.4	285.6	77.0	20.5	356.9	208.0	182.2
Flathead sole												
Greenland turbot												
Pacific halibut	3.8	19.5	2.9		14.0	9.8	24.6	22.9	110.7	52.5	18.4	13.0
Rock sole	37.8	34.3	32.1	41.4	135.0	36.6	147.0	23.3	447.5	60.0	1.1	0.5
Yellowfin sole	701.6	408.4	141.4	79.7	683.0	2179.4	29.9	11.2	23.6	51.1		
Other flatfish				3.6	12.0	25.8	40.1	117.9	11.0	23.7	11.1	7.5
Total flatfish	**1001.3**	**625.7**	**383.3**	**316.1**	**1216.4**	**2401.2**	**703.5**	**506.0**	**626.4**	**770.1**	**340.9**	**289.5**
Walleye pollock	2137.2	702.3	3577.6	1235.0	882.0	175.7	1.9	156.6	400.4	70.5	239.3	67.0
Pacific cod	32.6	1.3	21.7	17.8	18.0	69.8	17.8	242.3	161.8	36.7	23.5	14.9
Sablefish						1.3				2.0	24.4	1.6
Atka mackerel	0.7											
Eelpouts											0.9	
Pacific herring												
Pacific ocean perch												
Sculpins	4.0	5.7	3.9	17.0	21.8	7.1	3.2	12.4	9.1	10.1	4.3	
Other rockfish												
Other roundfish		0.4	0.5		1.3	2.6	0.5		32.6	4.2		0.1
Total roundfish	**2174.6**	**709.7**	**3603.8**	**1269.8**	**923.1**	**256.5**	**23.5**	**411.4**	**603.9**	**123.5**	**292.3**	**83.6**
Blue king crab												
Red king crab	97.0	1.5	0.9		7.7	36.0						
Tanner crab, bairdi	4.5	17.6	52.4	42.0	45.9	12.1	0.7	5.6		12.7	15.9	17.1
Tanner crab, opilio		1.8		0.7								
Other crab	13.7	90.9	119.2	83.6	16.5	20.4	1.1	11.7	0.3	19.8	6.4	12.4
Shrimp										0.0	0.0	
Octopus										0.3	0.0	
Squids												
Snails	121.6	150.5	479.2	233.2	48.3	11.2	4.4	36.0	33.3	32.8	9.4	14.1
Starfish	345.9	403.0			17.2	898.9		0.0		8.8	0.0	0.2
Other invertebrates	120.2	102.0	651.3	106.9	37.5	169.9	0.1	25.9	489.2	99.7	26.4	34.8
Total invertebrates	**702.8**	**767.2**	**1303.0**	**466.3**	**173.0**	**1148.6**	**6.3**	**79.3**	**522.8**	**174.0**	**58.2**	**78.7**
Miscellaneous	13.8	49.1	139.6	51.4	0.5	7.9	0.1	3.5	100.9	13.0	2.0	3.7
Total catch	**3905.0**	**2180.0**	**5472.0**	**2175.0**	**2422.0**	**3834.0**	**919.4**	**1268.0**	**1944.0**	**1210.0**	**855.8**	**533.5**

Appendix A Table 3. -- Continued.

Station	**D-05**	**E-05**	**F-05**	**G-05**	**H-05**	**I-05**	**I-06**	**J-06**	**J-05**	**J-04**	**J-03**	**K-03**
Start date and time	6/24/17 14:25	6/24/17 17:09	6/25/17 7:10	6/25/17 9:58	6/25/17 12:41	6/25/17 15:31	6/26/17 7:10	6/26/17 9:46	6/26/17 12:43	6/26/17 15:30	6/26/17 17:57	6/27/17 7:08
Haul number	80	81	82	83	84	85	86	87	88	89	90	91
Start latitude	5559.31	5619.09	5639.09	5659.33	5718.95	5739.29	5739.17	5759.39	5800.29	5759.74	5759.37	5819.30
Start longitude	16649.12	16648.52	16647.39	16647.43	16646.33	16644.73	16522.68	16523.30	16646.32	16606.97	16729.11	16726.50
End latitude	5600.82	5620.69	5640.66	5700.80	5720.44	5740.56	5740.68	5801.03	5800.02	5759.89	5800.57	5820.86
End longitude	16648.17	16648.48	16646.96	16646.82	16645.56	16642.90	16521.81	16523.43	16643.41	16603.99	16727.04	16726.64
Bottom depth (m)	96	87	77	72	68	61	54	46	51	56	61	48
Duration (h)	0.53	0.52	0.53	0.51	0.52	0.52	0.51	0.52	0.52	0.51	0.52	0.52
Distance fished (km)	2.97	2.97	2.96	2.81	2.86	2.98	2.92	3.04	2.92	2.96	3.01	2.90
Net width (m)	17.96	18.07	17.83	17.44	17.63	17.38	16.60	16.78	16.93	16.93	17.18	16.33
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	32.6	47.8	49.1	15.9	8.3	19.98	16.04	27.92	68.30	40.71	33.27	56.45
Sharks												
Total elasmobranch	**32.6**	**47.8**	**49.1**	**15.9**	**8.3**	**19.98**	**16.04**	**27.92**	**68.30**	**40.71**	**33.27**	**56.45**
Alaska plaice	1.7	20.6	29.1	31.7	14.8	182.60	56.59	31.27	161.77	67.57	70.64	228.98
Arrowtooth flounder	245.4	46.3	21.5									
Flathead sole												
Greenland turbot												
Pacific halibut		11.4	3.6	3.9	5.6	6.70	5.11	8.14	1.23	9.80	13.79	45.86
Rock sole	55.3	21.7	10.3	15.7	3.6	26.65	118.47	344.22	41.84	208.56	53.54	98.34
Yellowfin sole	51.3	126.2	271.8	750.1	444.1	1027.61	456.48	543.23	258.12	670.88	996.32	258.88
Other flatfish	5.2	1.8										
Total flatfish	**465.6**	**293.6**	**358.9**	**921.8**	**480.5**	**1307.28**	**638.74**	**926.86**	**467.96**	**966.03**	**1213.67**	**635.94**
Walleye pollock	142.0	287.8	1003.5	818.7	584.1	97.92	217.81	79.38	42.00	77.92	64.98	32.94
Pacific cod	21.6	42.2	22.0	51.7	21.9	37.41	69.04	52.06	30.08	36.10	39.83	26.76
Sablefish	0.8											
Atka mackerel						0.95						
Eelpouts		0.7	6.2	11.3		0.47					4.66	
Pacific herring				7.6	2.4	23.49	21.53	0.49	1.79	9.96	17.38	26.33
Pacific ocean perch												
Sculpins	7.3	3.7	28.8	3.7	0.3	4.29	6.32	5.66	2.63	3.55	20.88	3.03
Other rockfish												
Other roundfish	0.1	0.0				0.20	1.62	1.43	0.58	4.73	1.07	2.26
Total roundfish	**171.8**	**334.4**	**1060.4**	**893.0**	**608.7**	**164.72**	**316.32**	**139.01**	**77.07**	**132.25**	**148.80**	**91.31**
Blue king crab												
Red king crab			18.3				4.14	6.21	8.85	8.45		0.85
Tanner crab, bairdi	16.4	20.7	17.0	11.8	1.9	0.05	2.94	2.28	1.96	2.19	2.82	1.46
Tanner crab, opilio						0.16						
Other crab	22.9	41.5	62.3	105.3	18.0	68.35	102.95	38.91	57.33	29.37	107.46	18.86
Shrimp				0.0			0.46					0.01
Octopus												
Squids												
Snails	84.6	154.4	376.0	279.9	181.5	242.16	48.20	44.08	94.35	5.88	232.97	26.59
Starfish		146.2	791.4	189.8	155.4	93.09	529.94	399.26	354.39	383.23	305.51	286.49
Other invertebrates	15.3	56.3	94.0	430.6	288.2	154.54	485.41	29.40	143.92	50.70	224.46	100.00
Total invertebrates	**139.0**	**419.0**	**1359.0**	**1017.6**	**645.0**	**558.34**	**1174.04**	**520.14**	**660.80**	**479.81**	**873.22**	**434.25**
Miscellaneous	20.5	22.1	72.6	51.7	27.5	74.67	134.86	16.06	115.86	16.20	111.04	12.05
Total catch	**829.5**	**1117.0**	**2900.0**	**2900.0**	**1770.0**	**2125.00**	**2280.00**	**1630.00**	**1390.00**	**1635.00**	**2380.00**	**1230.00**

Appendix A Table 3. -- Continued.

Station	**K-04**	**L-04**	**L-03**	**M-03**	**O-02**	**N-02**	**M-02**	**L-02**	**K-02**	**J-01**	**I-01**	**H-01**
Start date and time	6/27/17 10:02	6/27/17 12:27	6/27/17 15:10	6/27/17 17:52	6/28/17 7:00	6/28/17 9:46	6/28/17 12:41	6/28/17 15:26	6/28/17 18:10	6/29/17 7:00	6/29/17 9:40	6/29/17 12:27
Haul number	92	93	94	95	96	97	98	99	100	101	102	103
Start latitude	5819.77	5839.09	5839.38	5859.59	5940.70	5921.06	5900.86	5840.96	5820.98	5800.80	5740.82	5720.69
Start longitude	16603.55	16603.95	16726.92	16724.53	16842.71	16843.07	16845.53	16846.97	16847.56	16811.52	16813.80	16815.88
End latitude	5821.38	5840.52	5840.61	5901.18	5939.17	5919.63	5859.48	5839.39	5819.48	5759.35	5739.34	5719.23
End longitude	16604.33	16603.30	16725.00	16724.24	16842.49	16843.62	16846.96	16846.96	16848.05	16811.55	16814.11	16815.89
Bottom depth (m)	45	38	42	34	31	32	41	44	52	67	69	74
Duration (h)	0.52	0.51	0.51	0.52	0.52	0.52	0.51	0.52	0.52	0.52	0.52	0.51
Distance fished (km)	3.07	2.73	2.93	2.97	2.85	2.70	2.89	2.91	2.81	2.68	2.76	2.69
Net width (m)	16.54	16.15	16.02	16.00	15.98	16.50	16.43	17.12	17.07	17.34	17.19	16.71
Net measured?	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	108.12	26.23	115.36	108.19	199.09	141.90	105.76	10.22	44.70	21.26	13.19	45.49
Sharks												
Total elasmobranch	**108.12**	**26.23**	**115.36**	**108.19**	**199.09**	**141.90**	**105.76**	**10.22**	**44.70**	**21.26**	**13.19**	**45.49**
Alaska plaice	55.73	16.78	30.48	40.49	46.79	19.77	24.31	56.02	398.29	242.77	63.89	23.81
Arrowtooth flounder										4.65		3.74
Flathead sole												
Greenland turbot												
Pacific halibut	47.77	55.13	19.87	37.81	53.21	53.65	11.46	3.62			1.08	16.46
Rock sole	283.89	361.22	366.61	307.51	137.63	101.33	368.97	131.81	283.97	37.78	28.16	29.33
Yellowfin sole	254.39	285.77	261.10	582.18	487.10	270.83	383.27	333.90	423.46	660.62	355.76	572.74
Other flatfish				7.47		6.65						5.12
Total flatfish	**641.78**	**718.90**	**678.05**	**975.44**	**724.73**	**452.23**	**788.01**	**525.36**	**1106.28**	**963.11**	**459.02**	**1225.00**
Walleye pollock	18.53	190.40	46.15	50.56	117.90	117.09	88.43	45.63	73.24	26.56	496.23	1182.86
Pacific cod	28.16	31.95	18.53	60.67	42.14	71.04	51.94	1.29	34.38	57.21	10.04	44.96
Sablefish												
Atka mackerel												
Eelpouts										3.21		
Pacific herring	5.79	4.31	10.49	0.27	228.68	2.32	0.85		5.74	9.57	11.02	
Pacific ocean perch												
Sculpins	3.19	14.72	2.41	15.72	9.27	17.54	10.54	1.41	1.40	6.54	5.35	41.22
Other rockfish												
Other roundfish	1.87	4.84	3.23	4.23	9.29	4.79	7.49	2.51	3.99	0.32	0.01	0.44
Total roundfish	**57.55**	**246.23**	**80.80**	**131.45**	**407.27**	**212.77**	**159.25**	**50.84**	**118.75**	**103.42**	**522.65**	**1269.48**
Blue king crab												
Red king crab	21.62	3.47	2.03			3.58	13.16	9.25	3.51			
Tanner crab, bairdi	2.96	0.17						0.02	1.20	8.08	4.98	11.86
Tanner crab, opilio											2.79	2.43
Other crab	11.19	5.81	5.43	2.29	0.92	4.27	6.95	17.19	22.65	102.36	120.74	159.85
Shrimp	0.01							0.03	0.05			
Octopus												
Squids												
Snails	0.38	0.36	1.20	0.11		0.04	2.83	14.88	38.99	125.97	613.34	157.84
Starfish	219.10	55.23	294.68	180.22	131.55	131.02	168.93	298.97	187.06	391.59	163.68	158.00
Other invertebrates	25.29	3.36	26.94	0.68	0.08	0.80	9.63	28.06	60.27	363.02	978.14	554.07
Total invertebrates	**280.55**	**68.40**	**330.28**	**183.30**	**132.56**	**139.71**	**201.50**	**368.39**	**313.72**	**991.01**	**1883.67**	**1044.05**
Miscellaneous	2.01	0.25	5.51	1.63	0.35	0.54	5.49	4.15	16.55	81.20	211.47	155.99
Total catch	**1090.00**	**1060.00**	**1210.00**	**1400.00**	**1464.00**	**947.15**	**1260.00**	**958.96**	**1600.00**	**2160.00**	**3090.00**	**3740.00**

Appendix A Table 3. -- Continued.

Station	**G-01**	**F-01**	**E-01**	**D-01**	**C-01**	**B-01**	**C-18**	**D-18**	**E-18**	**F-18**	**GF1918**	**G-18**
Start date and time	6/29/17 15:11	6/29/17 17:49	6/30/17 7:10	6/30/17 9:53	6/30/17 12:53	6/30/17 16:00	7/1/17 7:04	7/1/17 9:51	7/1/17 12:23	7/1/17 15:14	7/1/17 17:44	7/2/17 7:14
Haul number	104	105	106	107	108	109	110	111	112	113	114	115
Start latitude	5700.64	5640.62	5620.49	5600.78	5540.63	5521.12	5539.36	5559.92	5619.35	5639.51	5649.77	5659.42
Start longitude	16818.03	16818.92	16820.79	16822.43	16824.74	16826.45	16949.15	16946.50	16945.51	16942.55	16923.67	16941.05
End latitude	5659.08	5639.10	5619.05	5559.31	5539.08	5519.64	5540.90	5601.49	5620.80	5640.75	5650.87	5700.89
End longitude	16818.28	16818.86	16820.84	16822.73	16825.36	16826.46	16948.57	16946.09	16944.93	16941.18	16921.83	16940.39
Bottom depth (m)	78	102	129	133	135	147	135	151	154	107	97	81
Duration (h)	0.52	0.52	0.51	0.52	0.52	0.51	0.52	0.52	0.52	0.52	0.52	0.52
Distance fished (km)	2.90	2.81	2.67	2.74	2.94	2.74	2.92	2.93	2.74	2.69	2.77	2.81
Net width (m)	17.58	18.08	17.86	17.98	17.79	17.54	17.24	16.89	16.71	17.06	16.74	16.82
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	36.93	6.62	27.16	52.26	30.28	36.19	14.76	174.73	249.36	40.99	21.93	3.29
Sharks										40.84		
Total elasmobranch	**36.93**	**6.62**	**27.16**	**52.26**	**30.28**	**36.19**	**14.76**	**174.73**	**249.36**	**81.83**	**21.93**	**3.29**
Alaska plaice	173.90	69.15								8.47	5.45	50.33
Arrowtooth flounder	26.55	17.75	297.90	75.10	79.22	79.22	60.30	139.03	436.48	35.85	52.63	53.78
Flathead sole												
Greenland turbot												
Pacific halibut		5.11		11.36		10.81	6.04	2.64	3.45		12.00	
Rock sole	198.60	19.85					2.43	0.57		0.50	16.51	162.43
Yellowfin sole	293.71	95.23								8.93	56.48	40.21
Other flatfish	5.91	5.40	11.95	5.60	4.37	20.70	19.48	20.01	13.70	4.66	10.35	3.99
Total flatfish	**985.68**	**347.10**	**427.61**	**140.09**	**126.68**	**194.59**	**150.32**	**208.65**	**494.30**	**93.21**	**1158.04**	**357.33**
Walleye pollock	226.39	182.98	9.55	183.33	652.16	13.61	192.85	26.57	3.11	106.67	563.33	30.95
Pacific cod	77.90	14.60	12.96	4.44	12.66	66.84	35.86	57.07	16.45	46.57	26.21	51.37
Sablefish			1.23			6.74	1.58					
Atka mackerel			1.32									
Eelpouts		0.48	0.60	0.04		0.10						
Pacific herring												
Pacific ocean perch								17.47	1.65			
Sculpins	102.04	5.94	0.41	4.22		0.35	0.04	8.01		13.15	28.81	68.38
Other rockfish								7.73				
Other roundfish	0.22	0.10	0.14	0.82	1.21	0.08	2.32	0.41	1.27	0.34	0.52	0.61
Total roundfish	**406.55**	**204.10**	**26.21**	**192.85**	**666.03**	**87.71**	**232.66**	**117.26**	**22.48**	**166.73**	**618.88**	**151.31**
Blue king crab												
Red king crab												
Tanner crab, bairdi	32.44	2.41	9.07	0.98	3.31	18.25	5.12	11.03	32.60	19.49	47.26	29.13
Tanner crab, opilio	5.49	10.39	4.12	1.96		0.53	0.24	2.31	22.66	73.03	41.30	19.05
Other crab	19.50	35.24	5.83	0.08	0.34	3.41	3.36	1.85	9.98	25.07	27.68	13.72
Shrimp		0.03	0.01		0.07	1.13	0.05	0.47	0.06			
Octopus							11.58	0.27		0.02		
Squids							0.03	0.52				
Snails	5.83	16.99	7.27	1.64	1.79	13.81	18.10	7.08	0.43	34.43	6.26	2.15
Starfish	142.56	26.77	0.17	0.05		0.06	0.06	2.93	0.40	0.73	39.60	22.05
Other invertebrates	134.86	5.15	21.43	1.38	1.45	26.81	15.11	26.53	132.70	0.57	3.30	15.53
Total invertebrates	**340.69**	**96.98**	**47.89**	**6.09**	**6.96**	**64.01**	**53.64**	**53.00**	**198.83**	**153.34**	**165.40**	**101.64**
Miscellaneous	9.16	8.91		0.02	0.08	0.32	5.57	0.47	1.87	6.17	5.76	7.67
Total catch	**1779.00**	**663.71**	**528.87**	**391.30**	**830.03**	**382.82**	**456.94**	**554.11**	**966.84**	**501.27**	**1970.00**	**621.23**

Appendix A Table 3. -- Continued.

Station	**HG1918**	**H-18**	**IH1918**	**I-18**	**JI1918**	**I-19**	**IH2019**	**H-19**	**HG2019**	**G-19**	**GF2019**	**G-20**	**GF2120**
Start date and time	7/2/17 9:43	7/2/17 12:19	7/2/17 14:45	7/2/17 17:04	7/3/17 7:03	7/3/17 9:06	7/3/17 11:15	7/3/17 13:53	7/3/17 16:25	7/4/17 6:58	7/4/17 9:24	7/4/17 11:44	7/4/17 14:05
Haul number	116	117	118	119	120	121	122	123	124	125	126	127	128
Start latitude	5709.25	5719.44	5729.59	5739.81	5750.35	5740.72	5730.18	5720.72	5710.80	5700.79	5650.49	5659.49	5650.07
Start longitude	16921.46	16938.31	16914.03	16935.13	16916.91	17058.95	17038.86	16900.64	17041.15	16903.56	17042.66	17027.75	17007.84
End latitude	5710.54	5720.84	5730.93	5740.81	5749.44	5739.45	5729.83	5719.27	5709.29	5659.30	5649.63	5700.77	5650.17
End longitude	16922.97	16937.29	16915.37	16937.17	16914.81	17057.57	17037.51	16900.94	17041.25	16902.92	17040.42	17026.10	17004.96
Bottom depth (m)	76	74	71	71	71	69	70	70	73	80	80	60	72
Duration (h)	0.52	0.51	0.51	0.51	0.51	0.51	0.28	0.51	0.51	0.52	0.52	0.52	0.53
Distance fished (km)	2.84	2.79	2.81	2.75	2.69	2.73	1.50	2.69	2.79	2.84	2.78	2.90	2.94
Net width (m)	16.11	16.39	16.30	16.37	16.52	16.10	16.41	15.93	16.06	16.84	16.33	16.63	16.60
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	3	0	0	0	0	0	0
Alaska skates													
Other skates	10.01	18.18	29.39	32.44	17.46	5.22	10.31	15.36	2.44	7.10	48.92	17.57	31.77
Sharks													
Total elasmobranch	**10.01**	**18.18**	**29.39**	**32.44**	**17.46**	**5.22**	**10.31**	**15.36**	**2.44**	**7.10**	**48.92**	**17.57**	**31.77**
Alaska plaice	20.45	58.68	22.36	92.64	41.10	78.18	26.49		73.17	54.41	19.47	27.50	
Arrowtooth flounder	54.84	68.25	67.88	11.65	43.26	12.74	32.08	42.01	53.18	39.29	54.03	69.28	7.16
Flathead sole													
Greenland turbot													
Pacific halibut	12.74	18.33	11.59	12.07			3.57	3.02	33.24	5.11	45.03	18.63	39.95
Rock sole	199.03	57.60	70.03	54.51	35.31	89.97	203.16	178.32	57.26	126.55	27.39	892.88	48.47
Yellowfin sole	60.58	176.37	108.88	501.08	279.24	244.56	65.58	41.27	70.46	110.88	322.35	100.67	1.79
Other flatfish	8.89	11.94	2.03	2.47	33.76	10.61	2.31			2.84	23.99	4.69	0.04
Total flatfish	**524.60**	**614.05**	**403.01**	**690.34**	**456.79**	**448.39**	**377.49**	**397.30**	**300.00**	**502.66**	**948.15**	**1123.40**	**99.25**
Walleye pollock	243.52	120.50	521.68	645.16	757.53	225.22	95.59	948.71	213.15	224.71	145.33	6.83	0.12
Pacific cod	125.20	135.83	57.75	19.35	61.94	48.17	45.19	113.33	61.94	76.96	211.38	51.75	46.33
Sablefish													
Atka mackerel													
Eelpouts													
Pacific herring		6.86		1.85	1.04			1.24					
Pacific ocean perch													
Sculpins	56.94	16.97	14.72	10.83	12.09	15.84	27.28	284.37	154.12	58.74	276.67	56.76	64.30
Other rockfish													
Other roundfish	0.07	0.22		0.67	0.90	0.35	0.32		0.90	0.10	0.62	7.16	0.60
Total roundfish	**425.73**	**280.38**	**594.15**	**677.85**	**833.50**	**289.58**	**168.37**	**1347.64**	**430.12**	**360.51**	**633.99**	**122.50**	**111.36**
Blue king crab						0.87	7.99	4.81	1.79			5.38	
Red king crab												18.88	
Tanner crab, bairdi	17.28	15.31	4.25	3.31	1.12	10.30	16.74	21.11	78.94	52.26	23.46	29.49	19.50
Tanner crab, opilio	0.10	2.59	0.85	1.63	0.58	1.60	0.50	0.73	11.20	7.34	1.91	3.71	28.01
Other crab	5.96	13.50	52.95	160.45	42.46	42.20	17.00	9.81	89.84	11.49	57.61	105.98	10.84
Shrimp		0.02					0.06						
Octopus													
Squids													
Snails	0.35	1.70	7.67	158.62	25.82	7.03	9.37	43.96	26.34	10.77	144.36	93.22	8.17
Starfish	31.98	112.49	128.97	59.16	230.76	197.95	102.14	49.17	164.59	42.16	242.90	148.70	13.45
Other invertebrates	63.99	286.54	580.00	925.93	751.39	1114.69	173.98	1130.21	137.56	13.63	290.99	51.15	9.24
Total invertebrates	**119.66**	**432.15**	**774.69**	**1309.10**	**1052.14**	**1374.63**	**327.78**	**1259.79**	**510.26**	**137.66**	**761.23**	**456.50**	**89.21**
Miscellaneous		13.24	108.77	220.26	40.11	150.18	38.81	59.91	167.19	5.90	87.71	70.03	0.45
Total catch	**1080.00**	**1358.00**	**1910.00**	**2930.00**	**2400.00**	**2268.00**	**922.76**	**3080.01**	**1410.00**	**1013.83**	**2480.00**	**1790.00**	**332.04**

Appendix A Table 3. -- Continued.

Station	**HG2221**	**G-21**	**E-22**	**F-22**	**GF2221**	**G-22**	**H-22**	**J-23**	**J-24**	**I-24**	**I-23**	**F-23**	**G-23**
Start date and time	7/6/17 13:30	7/6/17 16:36	7/7/17 7:10	7/7/17 10:07	7/7/17 12:59	7/7/17 15:11	7/7/17 17:43	7/8/17 7:08	7/8/17 9:54	7/8/17 13:08	7/8/17 15:58	7/9/17 7:05	7/9/17 9:43
Haul number	129	130	131	132	133	134	135	136	137	138	139	140	141
Start latitude	5706.00	5701.56	5619.40	5639.49	5649.50	5659.23	5719.39	5800.05	5759.85	5740.13	5740.07	5639.54	5659.27
Start longitude	17132.49	17147.24	17120.30	17116.85	17132.04	17113.28	17108.83	17225.46	17347.20	17349.00	17225.54	17239.03	17236.21
End latitude	5707.38	5700.70	5620.58	5640.80	5650.97	5700.71	5720.89	5800.16	5759.95	5739.51	5739.77	5641.03	5700.80
End longitude	17131.18	17149.56	17118.52	17115.31	17131.05	17112.33	17108.83	17222.69	17344.52	17351.43	17228.26	17238.59	17235.91
Bottom depth (m)	47	66	121	114	101	96	83	98	105	107	100	120	109
Duration (h)	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.51	0.51	0.51	0.52	0.52	0.53
Distance fished (km)	2.89	2.85	2.85	2.90	2.89	2.91	2.78	2.75	2.74	2.68	2.77	2.80	2.85
Net width (m)	16.29	16.82	17.73	17.88	17.69	17.74	17.35	17.07	17.43	17.30	16.74	17.00	17.12
Net measured?	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates													
Other skates		37.25	26.12	40.48	61.98	62.05	141.20	62.60	119.51	30.35	141.93	10.77	29.38
Sharks													
Total elasmobranch		**37.25**	**26.12**	**40.48**	**61.98**	**62.05**	**141.20**	**62.60**	**119.51**	**30.35**	**141.93**	**10.77**	**29.38**
Alaska plaice		1.02			9.29		7.33						
Arrowtooth flounder	1.85	23.92	116.19	108.41	87.66	111.73	96.52	11.48	57.00	63.65	99.44	45.85	129.34
Flathead sole													
Greenland turbot													
Pacific halibut	62.26	23.59	39.32	7.88	20.28	31.06	18.94					8.17	3.92
Rock sole	2656.31	639.16					32.27			13.74			
Yellowfin sole	87.32	227.82					25.57	2.47			1.34		
Other flatfish		1.79	51.02	5.93	8.12	43.64	6.35	9.83	3.86	4.52	0.24	11.04	11.78
Total flatfish	**2807.74**	**934.24**	**263.42**	**210.12**	**284.67**	**309.73**	**484.19**	**46.40**	**115.73**	**105.24**	**367.59**	**96.06**	**237.39**
Walleye pollock			98.84	171.41	490.42	1438.40	227.18	352.12	411.64	302.57	369.79	33.89	230.45
Pacific cod	8.17	32.63	48.23	71.42	59.70	81.65	43.98	82.36	110.64	47.78	46.46	25.53	98.93
Sablefish													
Atka mackerel												0.87	
Eelpouts								28.69	2.97	0.77	1.87		
Pacific herring		24.85					42.05						
Pacific ocean perch			0.63										
Sculpins	51.80	130.69	4.83	2.90	33.01	77.16	124.04	28.62	26.83	44.53	43.93		2.97
Other rockfish													
Other roundfish	1.43	32.70		0.08	2.59	0.18	0.90	0.19	0.05	0.04	0.48	0.13	9.08
Total roundfish	**61.41**	**220.87**	**152.53**	**245.81**	**585.72**	**1597.38**	**438.14**	**491.99**	**552.13**	**395.70**	**462.53**	**60.42**	**341.44**
Blue king crab													
Red king crab	115.06	5.71											
Tanner crab, bairdi	3.66	10.81	7.49	13.37	38.75	12.15	34.99	7.04	2.09	0.15	64.19	2.58	1.45
Tanner crab, opilio	0.28				4.11			254.62	4.37	59.65	4.36	56.94	40.74
Other crab	111.94	100.91	4.83	31.32	77.44	103.03	107.67	134.21	103.56	30.94	40.53	13.02	18.06
Shrimp					0.02		0.01	1.51	1.34	0.05	20.49	0.01	
Octopus			0.06							0.01		6.85	
Squids			0.02										
Snails	8.26	278.48	25.95	16.59	42.20	144.49	75.85	488.69	268.69	45.67	381.85	12.40	23.11
Starfish	1082.72	242.03	7.03	0.07		5.53	49.61	54.62	14.93	3.72	10.31	0.31	0.53
Other invertebrates	13.20	184.94	12.67	18.52	12.11	9.40	15.16	58.25	159.81	64.32	622.60	230.96	71.70
Total invertebrates	**1335.13**	**822.88**	**58.06**	**79.88**	**174.62**	**274.60**	**283.29**	**998.94**	**554.79**	**204.50**	**1144.33**	**323.06**	**155.60**
Miscellaneous	38.73	50.77	7.08	2.13	4.00	14.24	20.18	24.07	22.84	12.20	23.63	7.08	8.04
Total catch	**4243.00**	**2066.00**	**507.21**	**578.41**	**1111.00**	**2258.00**	**1367.00**	**1624.00**	**1365.00**	**747.99**	**2140.00**	**497.38**	**771.84**

Appendix A Table 3. -- Continued.

Station	**G-24**	**H-24**	**H-23**	**K-23**	**K-24**	**L-24**	**L-23**	**L-22**	**M-22**	**M-21**	**L-21**	**E-19**
Start date and time	7/9/17 12:33	7/9/17 15:27	7/9/17 18:22	7/10/17 7:08	7/10/17 9:53	7/10/17 13:24	7/10/17 16:15	7/11/17 7:00	7/11/17 9:34	7/11/17 12:10	7/11/17 14:45	7/17/17 8:47
Haul number	142	143	144	145	146	147	148	149	150	151	152	153
Start latitude	5659.65	5719.36	5720.18	5820.05	5819.77	5839.60	5840.18	5839.22	5858.64	5900.12	5841.36	5619.93
Start longitude	17358.97	17353.99	17230.43	17222.58	17343.21	17337.68	17215.63	17255.13	17252.33	17129.43	17133.51	16908.77
End latitude	5700.17	5720.85	5719.98	5820.03	5820.46	5841.10	5840.11	5840.72	5900.09	5859.61	5839.93	5620.05
End longitude	17356.35	17353.76	17233.17	17219.66	17340.78	17337.69	17218.55	17255.10	17252.52	17132.07	17134.33	16906.06
Bottom depth (m)	117	108	101	96	103	101	92	83	78	72	73	129
Duration (h)	0.51	0.51	0.51	0.52	0.51	0.52	0.53	0.52	0.52	0.51	0.50	0.52
Distance fished (km)	2.83	2.76	2.78	2.86	2.70	2.79	2.84	2.79	2.69	2.71	2.76	2.81
Net width (m)	16.86	17.62	17.14	16.71	16.71	16.87	17.14	17.63	17.62	16.96	16.86	17.82
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	27.98	26.34	40.96	132.06	149.64	211.81	36.39	42.88	19.51	41.52	52.14	41.16
Sharks												
Total elasmobranch	**27.98**	**26.34**	**40.96**	**132.06**	**149.64**	**211.81**	**36.39**	**42.88**	**19.51**	**41.52**	**52.14**	**41.16**
Alaska plaice		5.22	11.53	7.52	6.68	4.65	7.31	29.52	1072.74	380.89	21.84	
Arrowtooth flounder	39.50	41.86	67.74	111.47	16.98	134.08	37.57	32.16	3.57		34.91	105.37
Flathead sole												
Greenland turbot									9.85			
Pacific halibut	10.52	16.14			42.56			11.27			0.94	
Rock sole					16.37	1.99	22.39	79.51	68.30	60.68	53.87	
Yellowfin sole				3.44			17.75	592.55	119.91	279.98	730.89	
Other flatfish	15.17	22.27	8.35	8.13	18.11	2.80	27.32		6.78		9.73	28.49
Total flatfish	**163.90**	**164.16**	**150.54**	**134.51**	**252.73**	**148.06**	**112.48**	**753.46**	**1281.29**	**725.39**	**860.49**	**154.34**
Walleye pollock	87.19	532.23	529.01	385.68	190.19	263.50	1484.28	582.41	81.16	434.81	207.72	1239.20
Pacific cod	18.60	21.90	63.76	123.32	166.64	130.13	134.83	74.76	83.56	58.65	93.71	45.43
Sablefish												
Atka mackerel												
Eelpouts			0.90	11.17	2.57	4.82	3.80	11.74	6.33	11.07	17.46	
Pacific herring								4.57	47.90	62.41	3.52	
Pacific ocean perch												2.98
Sculpins	3.43	12.71	27.69	27.46	112.29	28.06	10.00	3.45	11.31	14.19	10.46	
Other rockfish												
Other roundfish			3.97	1.21	0.37		0.59	0.22		2.43	1.10	3.74
Total roundfish	**109.22**	**566.84**	**625.33**	**548.84**	**472.06**	**426.51**	**1633.50**	**677.16**	**230.26**	**583.55**	**333.95**	**1291.35**
Blue king crab												
Red king crab												
Tanner crab, bairdi	1.11	0.80	131.18	3.07	7.50	0.43	0.40	0.16			1.96	22.82
Tanner crab, opilio	74.57	101.49	3.22	23.81	360.54	1.30	217.13	18.38	64.00	154.41	58.73	25.38
Other crab	5.89	87.52	43.52	60.99	35.79	50.67	23.59	47.27	94.31	13.81	95.50	16.42
Shrimp	0.01	0.02	0.03	0.46	0.62	2.80	0.07					
Octopus	0.65				1.82							
Squids												
Snails	10.88	61.36	183.48	350.74	849.31	85.10	197.11	146.63	107.01	42.34	82.58	5.14
Starfish	0.49	1.08	2.56	52.35	11.81	26.45	32.88	10.63	46.52	13.46	36.49	0.84
Other invertebrates	1007.42	242.67	12.47	29.63	62.42	142.65	60.48	99.24	69.33	142.90	268.39	14.46
Total invertebrates	**1101.02**	**494.94**	**376.47**	**521.04**	**1329.81**	**309.40**	**531.67**	**322.31**	**381.17**	**366.92**	**543.65**	**85.06**
Miscellaneous	3.88	47.72	16.71	53.56	65.77	24.23	25.96	4.19	137.77	12.62	9.77	0.10
Total catch	**1406.00**	**1300.00**	**1210.00**	**1390.00**	**2270.00**	**1120.00**	**2340.00**	**1800.00**	**2050.00**	**1730.00**	**1800.00**	**1572.00**

Appendix A Table 3. -- Continued.

Station	**E-20**	**E-21**	**F-24**	**G-25**	**H-25**	**I-25**	**J-25**	**K-25**	**L-25**	**M-25**	**M-24**	**M-23**
Start date and time	7/17/17 11:47	7/17/17 15:16	7/18/17 7:38	7/18/17 11:39	7/18/17 14:44	7/18/17 17:31	7/19/17 7:40	7/19/17 10:28	7/19/17 13:05	7/19/17 15:44	7/19/17 18:23	7/20/17 7:33
Haul number	154	155	156	157	158	159	160	161	162	163	164	165
Start latitude	5620.49	5620.66	5639.94	5659.37	5721.04	5739.13	5759.52	5819.32	5839.39	5859.44	5900.32	5858.95
Start longitude	17042.44	17156.27	17202.80	17321.40	17310.65	17312.57	17308.55	17303.70	17301.26	17455.75	17332.77	17213.07
End latitude	5620.00	5619.62	5639.96	5700.86	5721.62	5740.61	5800.57	5820.87	5840.92	5900.91	5900.09	5900.44
End longitude	17039.77	17154.31	17200.12	17321.44	17312.74	17312.76	17306.59	17303.63	17300.72	17455.39	17335.72	17213.08
Bottom depth (m)	137	110	126	122	118	119	109	109	112	107	98	87
Duration (h)	0.52	0.51	0.51	0.51	0.43	0.52	0.51	0.51	0.53	0.51	0.52	0.51
Distance fished (km)	2.90	2.80	2.74	2.77	2.36	2.76	2.74	2.88	2.90	2.75	2.86	2.76
Net width (m)	17.99	17.89	17.32	17.73	17.65	17.81	18.06	17.80	18.14	18.16	18.01	16.90
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	3	0	3	3	0	0	0	0	0	0
Alaska skates												
Other skates	64.80	12.71	26.40	29.70	37.65	23.74	148.88	78.90	116.46	60.03	88.70	119.59
Sharks												
Total elasmobranch	**64.80**	**12.71**	**26.40**	**29.70**	**37.65**	**23.74**	**148.88**	**78.90**	**116.46**	**60.03**	**88.70**	**119.59**
Alaska plaice								3.07		10.06		46.35
Arrowtooth flounder	164.39	60.37	68.07	107.07	135.00	62.94	29.49	50.00	128.76	214.91	203.81	31.09
Flathead sole												
Greenland turbot										4.05	3.22	25.66
Pacific halibut	8.90	5.56	8.84	16.85	15.78	13.08	4.90	16.72	17.56	9.16	1.79	
Rock sole	5.80		15.62	0.57			7.28	75.75	5.82	4.31	131.23	47.79
Yellowfin sole									0.20			32.51
Other flatfish	25.51	21.09	9.63	3.72	6.80	8.80	8.80	5.95	14.04	21.42	35.53	17.73
Total flatfish	**204.60**	**181.34**	**159.29**	**195.97**	**307.69**	**96.09**	**98.29**	**246.13**	**189.62**	**287.22**	**383.76**	**206.21**
Walleye pollock	1187.75	373.18	429.00	11.17	3522.76	3213.78	389.93	586.17	409.33	534.91	522.74	462.24
Pacific cod	45.44	4.46	25.40	66.37	53.76	34.92	115.08	124.32	54.26	124.98	78.26	53.74
Sablefish												
Atka mackerel						0.74						
Eelpouts							1.23	1.16	4.74	4.00	12.29	19.36
Pacific herring		0.41										1.24
Pacific ocean perch			2.90									
Sculpins	0.17	6.49	1.38	0.01	3.26	5.54	0.02	13.28	31.11	17.52	66.47	15.16
Other rockfish												
Other roundfish	3.36	0.09	1.76	2.56		1.87	0.05	0.05	0.09		0.24	0.24
Total roundfish	**1236.72**	**384.64**	**460.44**	**80.11**	**3579.78**	**3256.84**	**506.31**	**724.98**	**499.53**	**681.40**	**680.01**	**551.98**
Blue king crab												
Red king crab												
Tanner crab, bairdi	3.35	10.30	10.71	2.20	0.01		1.51	1.33	1.91	2.03	0.07	0.28
Tanner crab, opilio	0.95	0.87	2.04	0.32		28.34	14.14	22.36	12.22	10.35	0.90	209.59
Other crab	17.39	18.98	7.17	6.51	11.89	0.33	88.83	78.94	78.04	80.80	63.22	17.72
Shrimp		0.03	0.07	0.03			0.34	0.12	1.72	4.97	17.62	0.02
Octopus	0.04		0.01	3.73			0.01					1.56
Squids	0.08	0.01	0.02	0.03								
Snails	7.41	52.73	7.25	27.15	43.37	0.55	39.77	28.92	59.86	106.45	119.86	47.38
Starfish	3.12	0.61	0.85	2.14	5.88	0.02	6.37	8.27	8.01	8.01	29.67	21.18
Other invertebrates	15.66	14.92	737.30	388.01	289.07	0.10	10.50	79.33	61.23	27.77	117.08	28.83
Total invertebrates	**48.01**	**98.45**	**765.41**	**430.12**	**350.22**	**29.33**	**161.47**	**219.26**	**222.98**	**240.38**	**348.41**	**326.55**
Miscellaneous	3.88	0.85	8.01	4.04	0.66		10.32	14.74	5.73	6.97	1.12	1.71
Total catch	**1558.00**	**677.98**	**1419.56**	**739.95**	**4276.00**	**3406.00**	**925.27**	**1284.00**	**1034.32**	**1276.00**	**1502.00**	**1206.04**

Appendix A Table 3. -- Continued.

Station	**N-23**	**N-22**	**O-22**	**O-23**	**N-24**	**N-25**	**ON2524**	**O-25**	**PO2625**	**PO2524**	**O-24**	**PO2423**
Start date and time	7/20/17 10:38	7/20/17 13:33	7/20/17 16:08	7/20/17 18:56	7/21/17 7:32	7/21/17 10:11	7/21/17 12:27	7/21/17 14:32	7/21/17 16:36	7/22/17 7:41	7/22/17 10:14	7/22/17 13:09
Haul number	166	167	168	169	170	171	172	173	174	175	176	177
Start latitude	5919.55	5919.32	5939.59	5940.43	5919.80	5919.79	5929.51	5939.56	5949.36	5950.40	5939.51	5949.53
Start longitude	17208.02	17248.56	17245.92	17207.28	17331.90	17451.95	17307.73	17446.87	17424.69	17305.70	17325.14	17343.65
End latitude	5920.31	5920.82	5941.02	5939.31	5919.93	5920.23	5930.67	5940.67	5950.87	5949.25	5940.44	5950.59
End longitude	17210.43	17248.97	17244.74	17205.44	17328.94	17448.99	17305.60	17444.52	17424.37	17303.67	17327.39	17345.68
Bottom depth (m)	79	75	73	78	88	100	93	95	95	80	84	75
Duration (h)	0.51	0.52	0.52	0.52	0.52	0.52	0.53	0.53	0.52	0.51	0.51	0.52
Distance fished (km)	2.69	2.80	2.87	2.71	2.83	2.93	2.94	3.01	2.81	2.86	2.72	2.74
Net width (m)	16.80	17.49	17.43	17.21	17.58	17.44	17.49	17.52	17.61	16.88	16.73	17.12
Net measured?	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	10.19	30.46	22.32	48.70	25.23	81.62	41.75	32.32	0.81	42.75	4.72	8.47
Sharks												
Total elasmobranch	**10.19**	**30.46**	**22.32**	**48.70**	**25.23**	**81.62**	**41.75**	**32.32**	**0.81**	**42.75**	**4.72**	**8.47**
Alaska plaice	190.27	65.41	46.64	182.85	111.10		1.18	4.01		228.42	267.83	126.02
Arrowtooth flounder				8.12	33.19	104.71	35.63	9.59	30.92	10.48	8.45	
Flathead sole												
Greenland turbot	5.20	12.86	1.34	16.57	14.04	19.72	2.92	12.71	8.50	8.48	9.80	10.34
Pacific halibut		17.44			6.04	11.27		5.33				
Rock sole	191.47	48.40	6.84	77.90	211.34	7.94	0.75	1.36	8.15	130.76	57.70	633.00
Yellowfin sole	92.77	86.17	27.08	27.58	39.12		1.39	1.74	1.11	62.28	34.50	168.64
Other flatfish	2.53				31.37	33.25	39.13	61.14	54.17	40.02	18.32	6.97
Total flatfish	**484.10**	**233.12**	**82.72**	**321.42**	**459.27**	**229.04**	**81.35**	**96.89**	**104.52**	**516.32**	**410.24**	**965.04**
Walleye pollock	270.45	677.69	290.30	871.23	561.98	680.76	774.09	1403.14	959.59	1037.37	968.10	436.37
Pacific cod	9.68	90.76	14.23	58.26	81.72	121.14	78.14	207.75	118.75	152.74	137.82	35.96
Sablefish												
Atka mackerel												
Eelpouts	9.14	16.83	3.28	4.66	38.24	7.00	7.64		6.98	10.42	0.58	9.78
Pacific herring	0.58	39.84	3.04	50.07	1.24		0.79	0.96				8.25
Pacific ocean perch												
Sculpins	2.28	1.11	0.38	2.24	12.16	33.62	13.08	15.41	37.57	3.74	5.81	1.20
Other rockfish												
Other roundfish	0.11	0.24	0.27	2.02	0.14	0.18	0.05	0.06	0.10	0.74	0.27	0.67
Total roundfish	**292.24**	**826.47**	**311.50**	**988.48**	**695.47**	**842.71**	**873.79**	**1627.31**	**1122.98**	**1205.01**	**1112.58**	**492.23**
Blue king crab							2.27	3.65	3.43	3.67		
Red king crab												
Tanner crab, bairdi							0.69					
Tanner crab, opilio	139.35	257.60	97.05	125.39	1.74	5.83	21.71	10.00	21.59	95.19	122.70	44.57
Other crab	55.15	25.86	1.01	16.83	35.72	178.74	38.58	68.43	43.88	60.42	69.12	121.71
Shrimp				0.01	0.19	10.65	1.66	0.64	0.92			
Octopus					3.58							
Squids												
Snails	157.16	15.16	0.22	10.51	37.04	177.71	99.94	196.49	250.95	32.00	30.69	63.03
Starfish	26.69	12.15	25.26	10.62	56.26	16.84	30.95	11.39	52.16	19.64	34.73	29.10
Other invertebrates	52.10	53.48	174.27	18.01	70.32	24.28	22.04	29.40	23.14	27.00	9.95	16.41
Total invertebrates	**430.45**	**364.26**	**297.81**	**181.37**	**204.85**	**414.04**	**217.84**	**320.00**	**396.07**	**237.93**	**267.19**	**274.81**
Miscellaneous	29.02	9.71		2.03	11.18	4.59	17.27	13.49	25.62	25.99	25.28	47.45
Total catch	**1246.00**	**1464.00**	**714.36**	**1542.00**	**1396.00**	**1572.00**	**1232.00**	**2090.00**	**1650.00**	**2028.00**	**1820.00**	**1788.00**

Appendix A Table 3. -- Continued.

Station	**P-23**	**P-22**	**Q-21**	**Q-22**	**R-22**	**S-24**	**S-25**	**T-25**	**T-26**	**T-27**	**R-27**	**Q-27**
Start date and time	7/22/17 16:13	7/23/17 7:42	7/23/17 11:03	7/23/17 14:12	7/23/17 17:03	7/24/17 7:43	7/24/17 10:30	7/24/17 13:17	7/24/17 16:07	7/24/17 18:38	7/25/17 7:36	7/25/17 10:16
Haul number	179	180	181	182	183	184	185	186	187	188	189	190
Start latitude	6000.13	5959.43	6019.02	6020.62	6039.44	6059.82	6059.69	6119.20	6119.98	6120.59	6040.82	6020.63
Start longitude	17203.59	17242.20	17119.70	17240.73	17233.38	17314.07	17430.76	17425.39	17541.18	17501.22	17512.14	17516.21
End latitude	5958.62	6000.91	6020.09	6020.18	6040.72	6059.93	6100.20	6120.58	6120.13	6120.84	6039.67	6019.10
End longitude	17203.44	17243.23	17121.89	17237.83	17235.04	17311.70	17427.80	17424.15	17538.03	17658.25	17512.06	17516.49
Bottom depth (m)	66	70	62	66	63	67	76	74	78	87	98	103
Duration (h)	0.52	0.52	0.52	0.52	0.52	0.41	0.53	0.51	0.52	0.51	0.41	0.52
Distance fished (km)	2.80	2.91	2.84	2.80	2.81	2.16	2.83	2.80	2.84	2.70	2.14	2.84
Net width (m)	16.53	18.17	18.04	18.25	19.40	18.12	18.19	17.98	18.13	18.27	18.54	18.20
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	1	0	0	0	0	1	0
Alaska skates												
Other skates	17.30	43.13	7.78	19.25	17.92	5.07	74.95	10.86	25.13	41.83	39.40	83.44
Sharks												
Total elasmobranch	**17.30**	**43.13**	**7.78**	**19.25**	**17.92**	**5.07**	**74.95**	**10.86**	**25.13**	**41.83**	**39.40**	**83.44**
Alaska plaice	114.54	40.54	66.48	32.95	10.65	11.24	6.42	0.76	1.38	5.60		1.17
Arrowtooth flounder											2.56	60.10
Flathead sole												
Greenland turbot		5.85		5.64	1.87		11.23			14.63	11.70	6.66
Pacific halibut												
Rock sole	57.59	2.55	39.60	1.49	4.75	8.57	16.42		0.53	17.33	5.51	4.78
Yellowfin sole	86.52	16.72	24.60	5.31	6.64	2.24	0.62	0.97		1.45		
Other flatfish	0.28	0.06	0.07		0.02	0.05	0.70	0.62	2.39	5.38	11.89	24.88
Total flatfish	**272.84**	**73.42**	**136.11**	**48.45**	**27.20**	**65.06**	**61.50**	**3.47**	**7.65**	**92.79**	**69.71**	**203.47**
Walleye pollock	667.94	122.65	205.34	368.71	127.67	47.54	201.75	44.50	104.75	197.68	241.76	307.86
Pacific cod	78.78	25.62	3.56	17.07	18.02	18.30	63.08	4.86	1.27	68.74	33.44	50.78
Sablefish												
Atka mackerel												
Eelpouts	2.96	11.79	1.79	4.15	0.94	12.91	9.51	3.82	6.49	7.76	6.11	26.82
Pacific herring					0.05		37.59	34.61	2.26	0.48		
Pacific ocean perch												
Sculpins	3.19	0.22	3.74		0.68	0.73	4.01	0.57	0.90	10.22	4.54	28.93
Other rockfish												
Other roundfish	0.44	3.02	0.48	1.72	0.34	0.83	0.73	14.19	9.84	0.19		0.50
Total roundfish	**753.32**	**163.30**	**214.91**	**391.64**	**147.70**	**80.32**	**316.67**	**102.56**	**125.51**	**285.07**	**285.85**	**414.89**
Blue king crab												
Red king crab												
Tanner crab, bairdi												
Tanner crab, opilio	113.34	254.31	315.45	436.21	151.40	306.92	309.96	261.78	317.73	300.05	564.27	6.20
Other crab	36.20	29.73	4.09	3.46	0.80	3.88	1.77	0.82	1.12	0.87	0.86	2.76
Shrimp					0.00				0.10	0.09	0.00	0.36
Octopus								0.15	0.11		3.13	
Squids												
Snails	50.74	22.82	12.80	6.49	2.64	2.54	1.06	1.80	1.38	4.17	0.81	56.70
Starfish	12.24	5.01	1.96	2.42	3.03	5.66	15.80	11.55	13.24	4.51	1.15	299.97
Other invertebrates	20.90	14.32	13.20	2.94	0.55	12.87	9.83	14.80	82.69	17.30	5.59	1.66
Total invertebrates	**233.42**	**326.19**	**347.50**	**451.52**	**158.43**	**331.87**	**338.43**	**290.89**	**416.38**	**326.98**	**575.81**	**367.65**
Miscellaneous	7.13	4.62	0.10	0.81	0.07	0.03	0.21	0.35	0.42	0.71	0.14	
Total catch	**1284.00**	**610.66**	**706.39**	**911.68**	**351.33**	**482.34**	**791.75**	**408.12**	**575.09**	**747.38**	**971.02**	**1069.45**

Appendix A Table 3. -- Continued.

Station	**P-27**	**O-27**	**N-27**	**M-27**	**M-28**	**M-29**	**M-30**	**N-29**	**O-29**	**P-29**	**P-30**	**Q-29**
Start date and time	7/25/17 12:58	7/25/17 15:40	7/25/17 18:22	7/26/17 7:35	7/26/17 10:20	7/26/17 13:24	7/26/17 15:54	7/28/17 7:44	7/28/17 10:58	7/28/17 14:05	7/28/17 17:40	7/29/17 7:37
Haul number	191	192	193	194	195	196	197	198	199	200	201	202
Start latitude	6000.94	5940.62	5920.54	5859.98	5900.64	5900.77	5900.07	5920.09	5940.13	5958.91	5959.87	6019.91
Start longitude	17524.52	17532.39	17533.91	17539.63	17501.33	17616.91	17742.79	17613.84	17606.67	17603.34	17719.03	17759.99
End latitude	5959.61	5939.08	5919.07	5900.09	5900.37	5900.52	5900.11	5920.33	5940.61	5959.42	5959.77	6019.88
End longitude	17522.98	17532.39	17533.90	17536.75	17658.35	17613.93	17739.84	17616.89	17609.65	17606.28	17716.01	17756.84
Bottom depth (m)	108	115	120	128	130	134	135	137	138	130	141	121
Duration (h)	0.52	0.53	0.52	0.52	0.53	0.53	0.53	0.53	0.52	0.53	0.52	0.52
Distance fished (km)	2.85	2.85	2.74	2.78	2.91	2.90	2.84	2.94	2.95	2.90	2.82	2.91
Net width (m)	18.24	17.84	18.41	18.30	18.68	18.71	19.23	18.58	18.33	18.44	18.28	18.57
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	63.58	69.96	97.94	111.45	17.53	52.70	23.60	9.24	3.23	67.09	56.16	109.44
Sharks												
Total elasmobranch	**63.58**	**69.96**	**97.94**	**111.45**	**17.53**	**52.70**	**23.60**	**9.24**	**3.23**	**67.09**	**56.16**	**109.44**
Alaska plaice		14.17										
Arrowtooth flounder	163.56	168.12	158.99	101.57	122.59	138.78	71.38	34.53	35.02	96.76	14.77	124.16
Flathead sole												
Greenland turbot		14.83	5.19						8.36	11.02	8.84	22.62
Pacific halibut		11.27	30.67	2.01	4.10		12.08		1.69	9.83		4.49
Rock sole	14.60	8.17	5.56	2.79	0.83		1.68			1.16		4.71
Yellowfin sole												
Other flatfish	9.59	2.94	7.25	10.19	8.58	13.59	4.88	10.75	9.54	16.52	5.07	
Total flatfish	**253.07**	**244.14**	**248.30**	**159.41**	**272.28**	**476.94**	**304.47**	**91.42**	**109.07**	**181.24**	**62.93**	**231.11**
Walleye pollock	562.31	502.17	740.863	337.780	293.960	1,185.294	1,069.388	540.316	434.032	619.799	535.591	314.325
Pacific cod	63.58	33.20	87.08	37.33	120.49	43.60	101.64	57.41	38.99	63.60	25.61	66.90
Sablefish												
Atka mackerel												
Eelpouts	1.42	6.59	3.90	11.03	9.04	0.41	0.35	42.26	31.35	38.43	21.02	25.90
Pacific herring												
Pacific ocean perch												
Sculpins	18.93	27.92	15.81	21.76	1.51	4.76	8.12	1.87	12.25	15.60	7.35	4.00
Other rockfish												
Other roundfish	0.25		0.08	0.14	0.04	0.13		0.92	1.05	0.76	0.13	
Total roundfish	**646.49**	**569.87**	**847.74**	**408.04**	**425.04**	**1,234.19**	**1,179.49**	**642.78**	**517.67**	**738.19**	**589.71**	**411.12**
Blue king crab												
Red king crab												
Tanner crab, bairdi	0.60		1.21	4.34	7.20	1.30	0.11	1.05	0.12	0.01		0.14
Tanner crab, opilio	4.31	29.96	1.95	4.25	0.50		0.26	0.41	13.41	27.13	0.79	12.93
Other crab	14.34	84.44	54.70	131.69	52.88	57.72	27.89	11.48	11.01	47.86	47.58	47.30
Shrimp	2.47	9.86	1.42	0.58	0.40	0.91	0.09	1.24	5.42	1.06	0.26	1.88
Octopus				0.01	0.01	0.05	0.03	3.18		2.51		
Squids				0.18		0.15						
Snails	61.92	127.68	34.90	61.66	33.66	90.86	46.14	38.02	41.36	31.11	61.73	120.29
Starfish	126.60	123.84	4.96	23.25	4.97	69.64	14.18	105.07	122.20	271.97	491.29	177.90
Other invertebrates	20.82	3.40	15.38	51.28	15.51	64.55	30.69	19.92	12.53	2.50	6.46	7.93
Total invertebrates	**231.06**	**379.18**	**114.50**	**277.22**	**115.14**	**285.17**	**119.38**	**180.37**	**206.05**	**384.15**	**608.11**	**368.36**
Miscellaneous	8.80	14.85	5.517	14.190	6.009	10.997	3.060	4.583	1.365	9.333	5.102	3.969
Total catch	**1203.00**	**1278.00**	**1,314.000**	**970.315**	**835.997**	**2,060.001**	**1,629.998**	**928.397**	**837.380**	**1,380.002**	**1,322.002**	**1,124.003**

Appendix A Table 3. -- Continued.

Station	**Q-30**	**R-30**	**R-29**	**S-29**	**S-28**	**T-28**	**U-28**	**U-27**	**V-27**	**V-26**	**U-26**	**U-25**
Start date and time	7/29/17 10:22	7/29/17 13:04	7/29/17 15:33	7/29/17 18:13	7/30/17 7:42	7/30/17 10:18	7/30/17 12:50	7/30/17 15:30	7/31/17 7:40	7/31/17 10:14	7/31/17 12:58	7/31/17 15:42
Haul number	203	204	205	206	207	208	209	210	211	212	213	214
Start latitude	6020.50	6039.21	6040.94	6059.49	6059.04	6119.15	6139.90	6141.06	6200.03	6159.51	6141.08	6140.13
Start longitude	17718.60	17712.44	17745.69	17743.48	17626.76	17622.30	17614.88	17653.42	17647.21	17528.57	17533.28	17418.30
End latitude	6020.61	6040.72	6040.99	6100.99	6100.59	6120.18	6141.40	6141.12	6159.80	6159.48	6140.54	6140.18
End longitude	17715.65	17712.33	17748.90	17742.87	17626.55	17622.20	17614.11	17656.56	17650.22	17531.79	17536.19	17421.35
Bottom depth (m)	137	130	119	112	103	97	95	85	81	73	77	70
Duration (h)	0.53	0.53	0.54	0.53	0.52	0.35	0.52	0.52	0.51	0.52	0.52	0.51
Distance fished (km)	2.73	2.81	2.94	2.83	2.88	1.91	2.86	2.78	2.67	2.82	2.76	2.70
Net width (m)	18.29	17.06	18.13	17.38	17.67	18.58	18.18	18.28	17.65	17.17	17.01	16.81
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	32.31	89.38	59.38	207.65	54.22	46.16	51.66	46.88	12.79	2.73	9.29	29.08
Sharks												
Total elasmobranch	**32.31**	**89.38**	**59.38**	**207.65**	**54.22**	**46.16**	**51.66**	**46.88**	**12.79**	**2.73**	**9.29**	**29.08**
Alaska plaice						1.330	1.670	4.010	1.270			2.010
Arrowtooth flounder	20.56	97.36	67.46	56.70	6.65		0.76					
Flathead sole												
Greenland turbot	14.62	27.39	17.25	49.20	14.94	12.56	46.27	3.51	0.24			
Pacific halibut	2.64			3.57		3.08						
Rock sole	1.01	1.18	3.17	4.18	2.17	2.18	3.84	3.63			0.03	
Yellowfin sole									0.36		0.20	
Other flatfish	11.02	12.16	6.18	21.32	16.05	6.76	5.83		0.14	3.35	2.74	1.27
Total flatfish	**165.95**	**185.56**	**114.77**	**190.91**	**62.56**	**104.05**	**147.36**	**35.17**	**20.90**	**6.07**	**5.04**	**5.49**
Walleye pollock	826.629	324.469	706.391	1,021.633	336.480	109.200	141.480	281.410	60.840	2.610	16.672	24.374
Pacific cod	77.42	85.52	33.88	700.97	44.85	24.52	69.74	61.76	8.36			0.15
Sablefish												
Atka mackerel								0.75				
Eelpouts	17.66	74.04	28.58	47.22	86.56	6.03	6.24	7.96	6.38	0.12	4.05	0.24
Pacific herring					0.14	1.70	2.71	19.59	16.71	2.04	8.51	2.94
Pacific ocean perch												
Sculpins	21.33	12.12	15.82	35.17	5.73	13.16	6.60	9.85	2.99	0.54		1.24
Other rockfish												
Other roundfish		0.09	1.55	1.25	0.59	0.06	0.11	2.59	4.49	1.98	28.67	42.49
Total roundfish	**943.03**	**496.24**	**786.22**	**1,806.25**	**474.36**	**154.67**	**226.89**	**383.91**	**99.76**	**7.29**	**57.90**	**71.43**
Blue king crab												
Red king crab												
Tanner crab, bairdi		0.02		0.31	0.55					0.12		
Tanner crab, opilio	8.92	11.58	19.07	845.74	77.36	140.89	124.16	155.06	68.56	14.78	103.47	220.12
Other crab	33.51	106.91	17.33	23.82	1.89	0.69	2.94	2.13	1.75	1.26	0.70	0.98
Shrimp	2.53	2.61	5.32	0.64	0.29	0.06	0.13	0.13		0.06		
Octopus	4.76				2.39					0.09	0.12	
Squids												
Snails	80.41	160.49	84.77	56.30	5.92	1.47	3.35	10.55	10.02	7.14	17.15	3.66
Starfish	352.47	435.96	138.90	59.90	22.60	20.30	17.05	7.67	14.92	10.24	11.90	22.47
Other invertebrates	1.41	13.01	10.39	6.95	12.23	6.16	30.46	25.24	22.52	16.22	18.38	17.23
Total invertebrates	**484.00**	**730.57**	**275.78**	**993.66**	**123.23**	**169.57**	**178.09**	**200.76**	**117.77**	**49.91**	**151.72**	**264.47**
Miscellaneous	2.693	0.248	1.854	3.536	0.429	0.097	0.084	0.098	0.283	1.056	2.914	0.336
Total catch	**1,627.997**	**1,501.999**	**1,238.001**	**3,202.000**	**714.800**	**474.542**	**604.077**	**666.823**	**251.507**	**67.051**	**226.859**	**370.802**

Appendix A Table 3. -- Continued.

Station	**V-25**
Start date and time	7/31/17 18:29
Haul number	215
Start latitude	6159.65
Start longitude	17416.43
End latitude	6200.91
End longitude	17414.93
Bottom depth (m)	62
Duration (h)	0.52
Distance fished (km)	2.69
Net width (m)	16.79
Net measured?	Y
Performance	0
Alaska skates	
Other skates	31.17
Sharks	
Total elasmobranch	**31.17**
Alaska plaice	6.610
Arrowtooth flounder	
Flathead sole	
Greenland turbot	
Pacific halibut	
Rock sole	
Yellowfin sole	1.00
Other flatfish	21.51
Total flatfish	**37.96**
Walleye pollock	9.482
Pacific cod	0.14
Sablefish	
Atka mackerel	
Eelpouts	4.16
Pacific herring	
Pacific ocean perch	
Sculpins	3.56
Other rockfish	
Other roundfish	4.65
Total roundfish	**22.00**
Blue king crab	
Red king crab	
Tanner crab, bairdi	
Tanner crab, opilio	152.06
Other crab	19.44
Shrimp	
Octopus	
Squids	
Snails	65.90
Starfish	10.52
Other invertebrates	42.97
Total invertebrates	**290.89**
Miscellaneous	5.669
Total catch	**387.680**

Appendix A Table 4. -- Haul and catch data for successfully completed tows by FV *Vesteraalen* during the 2017 northern Bering Sea shelf bottom trawl survey.

Station	**V-24**	**U-24**	**T-24**	**T-23**	**U-23**	**V-23**	**V-22**	**U-22**	**T-22**	**U-21**	**T-21**	**S-21**	**R-21**
Start date and time	8/1/17 7:31	8/1/17 10:10	8/1/17 12:36	8/1/17 15:06	8/2/17 7:26	8/2/17 10:04	8/2/17 12:49	8/2/17 15:32	8/2/17 18:13	8/3/17 7:30	8/3/17 10:05	8/3/17 12:44	8/3/17 15:20
Haul number	1	2	3	4	5	6	7	8	9	10	11	12	13
Start latitude	6201.02	6140.50	6120.89	6120.05	6138.83	6158.98	6159.98	6141.19	6120.61	6141.27	6120.86	6100.94	6040.96
Start longitude	17454.71	17457.78	17303.73	17342.92	17340.35	17338.11	17219.42	17224.64	17229.07	17105.29	17109.23	17111.01	17114.50
End latitude	6159.58	6139.71	6119.95	6120.23	6140.31	6200.51	6159.49	6139.71	6119.14	6139.85	6119.39	6059.46	6039.52
End longitude	17455.10	17457.92	17304.18	17346.10	17340.50	17338.12	17222.36	17224.76	17229.54	17105.52	17109.22	17110.80	17114.74
Bottom depth (m)	58	65	68	64	61	55	51	55	55	50	49	53	58
Duration (h)	0.52	0.29	0.34	0.51	0.52	0.51	0.51	0.51	0.51	0.51	0.52	0.51	0.51
Distance fished (km)	2.69	1.48	1.79	2.86	2.74	2.83	2.73	2.73	2.76	2.64	2.74	2.75	2.69
Net width (m)	16.65	16.65	17.71	18.67	17.12	15.73	15.73	16.17	16.39	17.26	16.28	16.38	16.28
Net measured?	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates													
Other skates	13.9		0.6	7.4	2.9	18.0	9.6	6.8	18.8	3.3	0.4	12.7	20.7
Sharks													
Total elasmobranch	**13.9**		**0.6**	**7.4**	**2.9**	**18.0**	**9.6**	**6.8**	**18.8**	**3.3**	**0.4**	**12.7**	**20.7**
Alaska plaice	12.5	0.6	2.1	2.9	2.5	19.4	31.4	22.0	33.9	106.2	271.5	75.2	78.2
Arrowtooth flounder													
Flathead sole													
Greenland turbot													1.4
Pacific halibut													
Rock sole		0.3	0.4	1.3				0.8	4.5	5.9	2.0	4.4	5.7
Yellowfin sole	0.4	0.6	0.3	0.5	1.1	36.8	64.0	19.0	44.6	70.2	982.5	60.8	10.9
Other flatfish	11.0	0.2		0.3	0.3	7.4	3.0	2.2	1.9	1.6	0.3	0.6	0.2
Total flatfish	**28.5**	**2.6**	**3.2**	**5.7**	**5.7**	**70.3**	**106.0**	**48.8**	**90.3**	**194.1**	**1256.2**	**145.4**	**98.5**
Walleye pollock	63.4	10.2	38.9	50.7	32.6	111.3	355.0	180.9	106.0	240.2	655.3	119.2	140.0
Pacific cod	2.7		1.7	0.3	0.9	7.5	49.1	3.1	9.7	12.2	30.9	1.7	12.2
Sablefish													
Atka mackerel													
Eelpouts	0.0	1.3	0.2	1.0	1.1			6.7	4.5	1.2	0.8	1.1	3.7
Pacific herring	10.8			0.8	0.2		3.0		0.2		0.2	2.4	0.1
Pacific ocean perch													
Sculpins	1.9	0.2	1.1	0.2	1.0	2.2	2.0	3.1	0.8	3.4	0.7	0.2	0.1
Other rockfish													
Other roundfish	6.6	5.1	1.3	0.6	1.0	4.8	8.3	2.7	4.8	0.6	0.3	0.8	1.1
Total roundfish	**85.4**	**16.8**	**43.2**	**53.5**	**36.7**	**125.7**	**417.5**	**196.6**	**126.1**	**257.7**	**688.2**	**125.4**	**157.2**
Blue king crab													
Red king crab													
Tanner crab, bairdi													
Tanner crab, opilio	225.6	133.3	242.8	72.5	93.6	113.0	112.5	135.0	121.8	86.5	389.8	236.4	245.5
Other crab	27.2	1.9	0.5	0.8	1.6	38.0	63.4	6.6	20.6	21.7	171.6	17.5	3.6
Shrimp	0.0			0.0	0.0	0.0					0.1		
Octopus													
Squids													
Snails	56.3	7.1	0.7	1.2	1.5	44.8	110.6	52.3	16.5	19.9	121.7	18.7	7.7
Starfish	12.6	7.7	8.1	10.3	11.4	11.6	56.4	27.3	6.9	3.7	7.6	3.4	2.0
Other invertebrates	34.7	9.8	10.1	6.6	3.9	6.2	23.3	0.5	13.7	23.3	180.5	23.9	5.9
Total invertebrates	**356.4**	**159.8**	**262.3**	**91.4**	**112.0**	**213.6**	**366.3**	**221.7**	**179.5**	**155.2**	**871.4**	**299.9**	**264.7**
Miscellaneous	13.3	0.4	0.1	0.1	0.1	11.8	23.3	0.2	4.7	3.6	71.9	3.4	0.7
Total catch	**497.5**	**179.7**	**309.3**	**158.2**	**157.4**	**439.4**	**922.7**	**474.0**	**419.4**	**613.8**	**2888.0**	**586.8**	**541.7**

Appendix A Table 4. -- Continued.

Station	**R-19**	**S-19**	**T-19**	**R-03**	**S-03**	**T-03**	**U-03**	**V-03**	**W-03**	**X-03**	**Y-03**	**Y-04**
Start date and time	8/4/17 7:27	8/4/17 9:58	8/4/17 12:30	8/16/17 16:09	8/16/17 19:02	8/17/17 7:30	8/17/17 11:17	8/17/17 14:24	8/17/17 17:13	8/18/17 8:26	8/18/17 11:33	8/18/17 14:25
Haul number	14	15	16	17	18	19	20	21	22	23	24	25
Start latitude	6039.46	6059.10	6118.84	6039.01	6059.80	6119.00	6137.97	6159.18	6218.76	6237.81	6258.76	6300.14
Start longitude	17037.51	17034.09	17032.22	16721.43	16720.15	16705.61	16715.60	16717.88	16716.21	16715.16	16715.09	16756.25
End latitude	6041.01	6100.58	6120.33	6040.31	6101.39	6120.64	6139.59	6200.73	6220.30	6239.29	6300.24	6300.07
End longitude	17037.46	17033.80	17032.75	16719.68	16719.23	16704.98	16715.07	16718.26	16716.97	16715.00	16714.89	16759.62
Bottom depth (m)	43	41	40	20	20	21	22	21	22	26	28	21
Duration (h)	0.51	0.51	0.51	0.53	0.53	0.54	0.54	0.54	0.54	0.54	0.52	0.53
Distance fished (km)	2.87	2.75	2.80	2.89	3.05	3.09	3.04	2.90	2.93	2.74	2.74	2.85
Net width (m)	15.19	15.29	15.73	15.10	14.90	15.20	15.40	15.57	15.20	15.89	15.82	15.35
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0	0	0	0	0	0
Alaska skates												
Other skates	157.7	145.7	61.7							35.0	94.2	
Sharks												
Total elasmobranch	**157.7**	**145.7**	**61.7**							**35.0**	**94.2**	
Alaska plaice	95.3	95.9	98.1	3.5	7.1	12.1	5.9	13.8	24.0	10.1	3.0	7.1
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut	21.4	4.8	27.0	5.6		8.6		7.5	3.1	10.7	15.5	8.6
Rock sole	19.9	88.3	47.9	1.1	2.6	0.6	0.7	0.9	7.1	10.8	8.1	0.4
Yellowfin sole	183.2	291.4	330.2	64.4	194.3	258.9	263.3	43.9	158.2	53.2	24.8	193.9
Other flatfish		4.2		7.6	14.4	6.1	10.7	13.0	9.0	2.5	0.1	9.6
Total flatfish	**319.8**	**484.6**	**503.1**	**82.1**	**218.3**	**286.3**	**280.6**	**79.1**	**201.4**	**87.2**	**51.7**	**219.6**
Walleye pollock	146.0	102.7	194.7	13.0	15.6	9.7	13.7	31.1	49.4	94.6	20.0	33.9
Pacific cod	18.6	48.9	73.6					2.0		46.3	32.4	0.0
Sablefish												
Atka mackerel												
Eelpouts						0.4						
Pacific herring	0.2	16.4		0.4	0.6	0.0	0.0	0.0	1.0			
Pacific ocean perch												
Sculpins	9.0	10.5	7.6	4.8	6.7	6.9	8.2	5.3	16.9	1.4	8.4	12.1
Other rockfish												
Other roundfish	3.8	2.6	5.3	88.9	110.1	66.5	49.0	31.1	16.6	19.9	26.4	57.7
Total roundfish	**177.6**	**181.2**	**281.2**	**107.1**	**133.0**	**83.4**	**70.9**	**69.6**	**83.9**	**162.1**	**87.2**	**103.8**
Blue king crab												
Red king crab	0.7	6.3										
Tanner crab, bairdi												
Tanner crab, opilio	1.7	0.1	0.0							0.0	4.6	0.1
Other crab	66.7	63.7	24.1	5.1	0.6	7.6	13.1	7.3	32.5	41.1	67.3	45.7
Shrimp	0.1			0.0	0.0	1.6	0.6	0.3	0.4	0.1	1.3	1.5
Octopus												
Squids												
Snails	37.2	31.0	59.1	0.0					0.8	7.9	12.1	1.6
Starfish	24.2	27.4	69.5	108.1	164.6	55.3	75.7	59.0	72.9	65.3	43.0	129.9
Other invertebrates	24.2	19.0	29.7	20.3	20.6	2.1	0.7	1.2	5.0	4.9	66.6	13.8
Total invertebrates	**154.8**	**147.4**	**182.4**	**133.6**	**185.8**	**66.6**	**90.2**	**67.7**	**111.5**	**119.3**	**194.9**	**192.5**
Miscellaneous	25.4	43.3	23.2	0.1	0.1	1.2	0.0	0.4	13.5	4.5	24.4	10.2
Total catch	**835.3**	**1002.2**	**1051.6**	**322.8**	**537.2**	**437.4**	**441.8**	**216.8**	**410.3**	**408.2**	**452.3**	**526.0**

Appendix A Table 4. -- Continued.

Station	**ZZ-04**	**ZZ-05**	**AA-05**	**AA-06**	**AA-07**	**AA-08**	**BB-08**	**BB-09**	**AA-10**	**BB-10**	**CC-10**	**CC-09**
Start date and time	8/18/17 17:26	8/19/17 8:29	8/19/17 11:25	8/19/17 14:24	8/19/17 17:21	8/20/17 8:34	8/20/17 11:19	8/20/17 14:17	8/20/17 19:44	8/21/17 8:41	8/21/17 11:25	8/21/17 14:54
Haul number	26	27	28	29	30	31	32	33	35	36	37	38
Start latitude	6319.44	6318.74	6338.33	6340.60	6340.25	6339.25	6359.06	6400.36	6347.89	6358.74	6419.40	6420.58
Start longitude	16758.19	16639.44	16638.77	16521.61	16408.56	16456.02	16456.49	16338.32	16225.07	16228.75	16227.86	16344.62
End latitude	6320.98	6320.20	6339.46	6341.15	6340.16	6340.74	6400.51	6400.20	6348.63	6400.18	6417.83	6419.19
End longitude	16758.56	16639.66	16640.84	16524.81	16412.16	16456.76	16455.99	16341.63	16224.67	16227.28	16227.71	16343.35
Bottom depth (m)	23	16	18	12	14	15	20	18	14	18	15	19
Duration (h)	0.53	0.53	0.52	0.52	0.53	0.52	0.52	0.52	0.27	0.51	0.52	0.52
Distance fished (km)	2.87	2.71	2.71	2.84	2.98	2.84	2.73	2.72	1.42	2.92	2.91	2.78
Net width (m)	15.56	14.85	15.62	13.45	13.74	14.93	14.12	14.45	13.53	15.04	14.49	14.90
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	0	6	6	6	6	6	6	6	6	6	6	6
Alaska skates												
Other skates	10.5											
Sharks												
Total elasmobranch	**10.5**											
Alaska plaice	8.9	2.7	19.6	1.2	3.8	4.4	2.7	1.8	3.3	1.8	6.9	10.1
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut			12.3									
Rock sole	1.8											
Yellowfin sole	36.3	23.0	97.2	10.9	22.3	7.1	4.6	2.3	7.7	3.7	14.2	5.7
Other flatfish	9.1	108.9	104.4	13.8	1.8	9.7	6.6	4.1	3.6	2.0	130.8	3.9
Total flatfish	**56.0**	**134.6**	**233.5**	**25.9**	**28.0**	**21.1**	**13.9**	**8.2**	**14.6**	**7.5**	**151.8**	**19.6**
Walleye pollock	10.6	19.4	42.4	5.2	4.1							
Pacific cod	55.8	3.3										
Sablefish												
Atka mackerel												
Eelpouts			2.0	0.3	1.6	0.5	0.8	1.7	3.0	1.1		1.9
Pacific herring			0.0	0.0	0.1	0.0	0.2	0.7			0.0	0.0
Pacific ocean perch												
Sculpins	3.6	24.6	154.9	13.6	5.6	1.9	3.9	7.8	14.5	4.2	3.2	21.2
Other rockfish												
Other roundfish	11.6	62.7	49.3	20.5	22.5	29.8	59.2	43.1	24.7	49.2	66.6	19.1
Total roundfish	**81.6**	**110.0**	**248.6**	**39.5**	**34.0**	**32.1**	**64.1**	**53.3**	**42.2**	**54.5**	**69.8**	**42.3**
Blue king crab												
Red king crab					0.1		0.2	2.9	0.9			0.1
Tanner crab, bairdi												
Tanner crab, opilio			0.0		0.1							
Other crab	60.3	0.4	5.0		23.2	5.9	18.1	46.0	19.2	10.9	18.5	67.2
Shrimp	0.6	0.6	0.0	0.1	4.6	0.3	3.6	0.2	5.8	10.0	5.4	2.3
Octopus												
Squids												
Snails	12.3		0.3		15.5	6.8	2.4	35.1	42.6	27.5	5.7	67.3
Starfish	132.4	153.5	181.0	59.5	333.2	66.7	419.7	369.8	355.4	362.8	124.4	247.0
Other invertebrates	40.4	2.4	1.0	1.7	48.8	36.2	28.2	37.6	40.5	23.0	13.5	42.7
Total invertebrates	**245.9**	**156.9**	**187.4**	**61.3**	**425.6**	**115.9**	**472.1**	**491.8**	**464.5**	**434.2**	**167.5**	**426.7**
Miscellaneous	23.6		1.0		16.0	2.8	15.2	34.6	98.2	41.6	10.5	99.5
Total catch	**417.6**	**401.4**	**670.4**	**126.7**	**503.5**	**171.9**	**565.3**	**587.9**	**619.6**	**537.8**	**399.6**	**588.1**

Appendix A Table 4. -- Continued.

Station	**CC-08**	**CC-07**	**BB-07**	**BB-06**	**CC-06**	**DD-03**	**CC-03**	**CC-04**	**CC-05**	**BB-05**	**BB-04**	**AA-04**
Start date and time	8/21/17 18:37	8/22/17 7:33	8/22/17 10:10	8/22/17 12:47	8/22/17 16:24	8/23/17 7:23	8/23/17 10:27	8/23/17 13:14	8/24/17 8:59	8/24/17 11:41	8/24/17 14:47	8/24/17 17:12
Haul number	39	40	41	42	43	44	45	46	47	48	49	50
Start latitude	6415.45	6421.07	6400.84	6359.52	6420.18	6439.96	6421.13	6419.87	6420.53	6401.66	6400.37	6341.40
Start longitude	16453.75	16412.90	16412.64	16529.06	16526.67	16710.46	16709.50	16754.68	16638.81	16641.25	16756.50	16756.57
End latitude	6414.13	6419.54	6359.39	6359.84	6419.18	6438.70	6419.69	6419.86	6419.34	6400.18	6358.79	6339.79
End longitude	16452.03	16412.67	16412.28	16525.50	16529.19	16712.59	16710.59	16758.15	16640.86	16641.24	16757.30	16756.41
Bottom depth (m)	20	19	19	18	15	25	30	23	25	18	22	26
Duration (h)	0.52	0.52	0.52	0.52	0.52	0.53	0.52	0.53	0.53	0.52	0.54	0.53
Distance fished (km)	2.82	2.83	2.70	2.98	2.75	2.89	2.80	2.80	2.76	2.74	3.00	2.98
Net width (m)	14.85	14.19	13.52	14.65	14.08	15.54	15.77	14.95	15.07	13.46	15.02	15.60
Net measured?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Performance	6	6	6	6	6	0	0	0	0	0	6	0
Alaska skates												
Other skates							10.7					17.5
Sharks												
Total elasmobranch							**10.7**					**17.5**
Alaska plaice	2.1	3.1		6.6	6.7	37.0	114.4	5.8	1.7	7.2	3.7	12.3
Arrowtooth flounder												
Flathead sole												
Greenland turbot												
Pacific halibut						9.9	3.2		16.4	6.0	2.5	
Rock sole						0.1	33.3	0.8				3.8
Yellowfin sole	5.7	40.2	8.6	122.8	28.9	11.9	7.5	8.2	12.7	45.5	15.4	6.1
Other flatfish	3.4	2.9	6.7	66.9	2.1	5.3	10.5	4.6	4.9	8.3	2.5	15.0
Total flatfish	**11.1**	**46.1**	**15.3**	**196.3**	**37.7**	**64.1**	**169.5**	**19.4**	**35.8**	**67.0**	**24.1**	**37.6**
Walleye pollock	3.7	9.2		4.7	2.1	37.3	86.0	116.6	106.7	12.6	138.8	80.0
Pacific cod						33.5	174.2	30.3			92.9	83.2
Sablefish												
Atka mackerel												
Eelpouts	0.1		2.4	4.2			3.8		0.2	0.0		0.1
Pacific herring	0.0		0.7	0.1	1.8	0.7	3.9	0.8	0.6	0.0		
Pacific ocean perch												
Sculpins	8.3	10.3	5.8	15.7	8.7	31.3	63.7	6.0	36.8	25.8	11.9	33.3
Other rockfish												
Other roundfish	72.7	41.7	37.4	36.1	67.7	175.0	123.2	63.3	219.9	18.8	15.1	18.1
Total roundfish	**84.7**	**61.1**	**46.2**	**60.7**	**80.3**	**277.8**	**454.9**	**217.0**	**364.1**	**57.2**	**258.7**	**214.7**
Blue king crab						2.2	1.7	4.0				
Red king crab	0.0	7.9		0.7		1.0	14.4	0.4	1.4	3.4	5.7	1.6
Tanner crab, bairdi												
Tanner crab, opilio		0.0				0.0	0.2	0.0	0.2	0.3	0.7	0.1
Other crab	3.4	6.5	6.4	5.6	5.7	21.3	179.6	0.6	5.0	2.0	4.6	42.4
Shrimp	0.4	2.8		3.3	1.4	11.5	12.7	0.1	0.2	2.1	0.7	
Octopus												
Squids												
Snails	5.9	5.1	6.5	2.4			1.1		0.4			
Starfish	792.7	249.6	215.5	291.0	113.9	328.5	194.5	161.5	327.2	164.2	81.0	365.6
Other invertebrates	27.8	52.2	66.5	7.1	3.2	319.3	502.7	35.9	48.6	171.6	187.5	37.4
Total invertebrates	**830.2**	**324.0**	**294.9**	**310.1**	**124.1**	**683.8**	**906.9**	**202.6**	**383.0**	**343.5**	**280.3**	**447.1**
Miscellaneous	16.0	16.6	12.4	6.6	3.1	3.3		0.2	3.0	1.5	3.2	35.0
Total catch	**942.1**	**447.9**	**368.8**	**573.8**	**245.2**	**1029.0**	**1542.0**	**439.1**	**785.9**	**469.2**	**566.2**	**751.8**

Appendix A Table 4. -- Continued.

Station	**BB-03**	**AA-03**	**ZZ-03**	**U-02**	**T-02**	**S-02**	**R-02**
Start date and time	8/25/17 8:56	8/25/17 11:32	8/25/17 14:46	8/26/17 7:44	8/26/17 10:28	8/26/17 13:16	8/26/17 15:53
Haul number	51	52	53	54	55	56	57
Start latitude	6400.69	6340.60	6319.37	6141.45	6121.45	6100.60	6041.21
Start longitude	16710.78	16711.76	16712.53	16835.24	16837.90	16839.88	16841.21
End latitude	6359.18	6339.00	6317.76	6139.91	6119.92	6059.08	6039.61
End longitude	16711.12	16711.31	16712.73	16834.54	16837.44	16840.84	16841.31
Bottom depth (m)	33	29	26	24	24	23	26
Duration (h)	0.50	0.53	0.53	0.53	0.53	0.53	0.53
Distance fished (km)	2.81	2.99	2.98	2.93	2.85	2.94	2.97
Net width (m)	17.03	16.47	15.85	15.54	15.60	16.32	15.73
Net measured?	Y	Y	Y	Y	Y	Y	Y
Performance	0	0	0	0	0	0	0
Alaska skates							
Other skates	22.4	51.0	6.4				
Sharks							
Total elasmobranch	**22.4**	**51.0**	**6.4**				
Alaska plaice	12.8	353.6	9.0	13.6	10.7	8.3	3.6
Arrowtooth flounder							
Flathead sole							
Greenland turbot							
Pacific halibut		26.9		12.8	4.5	1.9	2.8
Rock sole	0.7	15.9	3.5	2.1	1.8	11.1	35.3
Yellowfin sole	3.7	251.6	103.9	275.6	268.1	124.3	159.4
Other flatfish	1.0	19.7	26.6	1.2	0.4	4.9	9.8
Total flatfish	**19.9**	**669.3**	**143.0**	**305.3**	**285.5**	**150.5**	**210.8**
Walleye pollock	71.3	33.0	11.2	7.1	13.8	14.5	4.7
Pacific cod	161.0	19.1	40.2		2.8		2.7
Sablefish							
Atka mackerel							
Eelpouts		0.0					
Pacific herring	0.1	0.0					0.2
Pacific ocean perch							
Sculpins	15.1	46.3	4.7	2.3	5.6	4.3	3.9
Other rockfish							
Other roundfish	21.2	14.1	23.8	14.4	31.6	10.6	21.1
Total roundfish	**268.6**	**112.6**	**79.9**	**23.8**	**53.9**	**29.4**	**32.7**
Blue king crab							
Red king crab	8.5						
Tanner crab, bairdi							
Tanner crab, opilio	0.7	2.0	1.1	0.2		0.0	
Other crab	39.2	118.3	54.2	12.9	15.7	28.4	25.3
Shrimp		3.9	2.6	0.1	0.4	0.0	0.9
Octopus							
Squids							
Snails		165.4	41.0	3.0			
Starfish	291.1	34.5	9.4	3.0	12.6	43.2	30.2
Other invertebrates	32.5	118.2	10.1	3.4	1.7	1.8	5.1
Total invertebrates	**372.1**	**442.4**	**118.4**	**22.5**	**30.2**	**73.4**	**61.5**
Miscellaneous	20.9	16.0	42.6	1.8	0.7	1.2	2.7
Total catch	**704.0**	**1291.2**	**390.2**	**353.4**	**370.3**	**254.4**	**307.8**

Appendix B: List of Taxa Encountered

Appendix B lists all fish and invertebrate taxa taken during the AFSC's eastern and northern Bering Sea bottom trawl survey.

List of Tables

Appendix B Table 1. -- Fish taxa encountered during the 2017 eastern Bering Sea shelf 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	*Aspidophoroides bartoni*	Aleutian alligatorfish	29	51	158	79	56.655	61.665
	Bathyagonus alascanus	gray starsnout	1	142	142	142	55.019	55.019
	Bathyagonus sp.	starsnout poacher unid.	2	97	158	128	58.652	61.319
	Leptagonus decagonus	Atlantic poacher	1	87	87	87	61.343	61.343
	Leptagonus frenatus	sawback poacher	78	67	195	107	54.833	62.000
	Leptagonus leptorhynchus	longnose poacher	1	79	79	79	56.678	56.678
	Occella dodecaedron	Bering poacher	25	22	56	37	57.992	60.340
	Podothecus accipenserinus	sturgeon poacher	189	22	129	59	54.687	61.665
Ammodytidae	*Ammodytes* sp.	sand lance unid.	1	48	48	48	57.327	59.666
Anarhichadidae	*Anarhichas orientalis*	Bering wolffish	6	23	78	46	55.010	60.340
Anoplopomatidae	*Anoplopoma fimbria*	sablefish	20	30	157	97	54.833	57.649
Bathymasteridae	*Bathymaster signatus*	searcher	29	85	195	128	54.687	59.674
Clupeidae	*Clupea pallasii*	Pacific herring	145	22	160	61	54.833	62.000
Cottidae	*Artediellus pacificus*	hookhorn sculpin	4	110	128	117	58.656	59.320
	Dasycottus setiger	spinyhead sculpin	44	80	195	124	54.995	60.663
	Gymnocanthus detrisus	purplegray sculpin	3	59	98	71	60.319	60.997
	Gymnocanthus galeatus	armorhead sculpin	5	70	102	88	55.330	59.490
	Gymnocanthus pistilliger	threaded sculpin	39	22	74	41	57.005	60.340
	Hemilepidotus hemilepidotus	red Irish lord	1	56	56	56	57.679	57.679
	Hemilepidotus jordani	yellow Irish lord	76	36	160	82	54.978	60.656
	Hemilepidotus papilio	butterfly sculpin	24	56	103	70	57.996	62.000
	Hemitripterus bolini	bigmouth sculpin	111	47	160	106	54.687	61.320
	Icelinus borealis	northern sculpin	3	62	67	65	57.979	58.654
	Icelus spatula	spatulate sculpin	10	75	108	93	58.982	62.000
	Icelus spiniger	thorny sculpin	69	65	160	125	54.833	61.641
	Leptocottus armatus	Pacific staghorn sculpin	1	39	39	39	56.669	56.669
	Malacocottus zonurus	darkfin sculpin	1	195	195	195	58.687	58.687
	Myoxocephalus jaok	plain sculpin	108	22	98	48	55.989	60.986

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	220	30	160	78	54.978	62.000
	Myoxocephalus scorpius	shorthorn (=warty) sculpin	53	44	103	69	57.014	60.977
	Triglops forficata	scissortail sculpin	1	79	79	79	56.678	56.678
	Triglops macellus	roughspine sculpin	4	79	126	103	54.978	56.678
	Triglops pingeli	ribbed sculpin	9	30	80	59	56.842	60.187
	Triglops scepticus	spectacled sculpin	11	127	195	149	54.833	60.656
Cyclopteridae	*Aptocyclus ventricosus*	smooth lumpsucker	1	141	141	141	59.994	59.994
Gadidae	*Boreogadus saida*	Arctic cod	49	27	107	71	57.313	62.000
	Eleginus gracilis	saffron cod	14	22	74	34	58.012	61.320
	Gadus chalcogrammus	walleye pollock	372	22	195	82	54.687	62.000
	Gadus macrocephalus	Pacific cod	371	22	195	82	54.687	62.000
Hexagrammidae	*Hexagrammos decagrammus*	kelp greenling	2	53	85	69	54.687	55.658
	Hexagrammos stelleri	whitespotted greenling	14	22	54	33	55.351	60.340
	Pleurogrammus monopterygius	Atka mackerel	9	61	157	121	54.833	61.684
Liparidae	*Careproctus phasma*	monster snailfish	25	67	138	97	57.992	62.000
	Careproctus rastrinus	salmon snailfish	19	90	156	117	55.001	61.641
	Careproctus scottae	peachskin snailfish	15	73	141	99	59.669	62.000
	Careproctus sp.	snailfish unidentified	2	92	96	94	58.334	58.670
	Crystallichthys cyclospilus	blotched snailfish	1	157	157	157	54.833	54.833
	Liparis gibbus	variegated snailfish	20	46	136	79	56.314	62.000
	Liparis sp.	snailfish unidentified	1	54	54	54	57.653	57.653
Osmeridae	*Mallotus villosus*	capelin	53	22	90	49	56.664	61.994
	Osmerus mordax	rainbow smelt	14	22	80	38	55.977	60.340
	Thaleichthys pacificus	eulachon	21	30	156	109	55.001	57.327
Pleuronectidae	*Atheresthes evermanni*	Kamchatka flounder	193	58	195	107	54.687	61.665
	Atheresthes stomias	arrowtooth flounder	218	36	195	102	54.687	61.665
	Glyptocephalus zachirus	rex sole	72	54	195	119	54.833	60.306
	Hippoglossoides elassodon	flathead sole	286	30	195	92	54.687	61.665

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)	*Hippoglossoides robustus*	Bering flounder	79	31	147	81	57.698	62.000
	Hippoglossus stenolepis	Pacific halibut	258	22	195	79	54.687	61.641
	Isopsetta isolepis	butter sole	14	39	85	65	54.687	57.348
	Lepidopsetta bilineata	southern rock sole	2	62	78	70	55.010	55.320
	Lepidopsetta polyxystra	northern rock sole	310	22	160	72	54.687	61.987
	Limanda aspera	yellowfin sole	260	22	117	64	54.687	62.000
	Limanda proboscidea	longhead dab	25	22	47	31	58.004	60.340
	Limanda sakhalinensis	Sakhalin sole	25	46	100	71	58.982	62.000
	Platichthys stellatus	starry flounder	65	22	90	45	54.687	60.340
	Pleuronectes quadrituberculatus	Alaska plaice	262	22	117	65	54.978	62.000
	Reinhardtius hippoglossoides	Greenland turbot	67	59	147	101	58.660	62.000
Rajidae	*Bathyraja aleutica*	Aleutian skate	27	92	166	132	54.833	59.670
	Bathyraja interrupta	Bering skate	89	66	195	117	54.687	61.320
	Bathyraja interrupta egg case	Bering skate egg case	8	96	195	128	54.833	58.687
	Bathyraja minispinosa	whitebrow skate	1	160	160	160	60.656	60.656
	Bathyraja parmifera	Alaska skate	360	23	195	82	54.687	62.000
	Bathyraja parmifera egg case	Alaska skate egg case	18	41	195	100	54.833	60.986
	Bathyraja taranetzi	mud skate	1	134	134	134	59.002	59.002
	Raja binoculata	big skate	9	49	112	75	54.687	57.339
	Bathyraja sp. egg case	skate egg case unid.	12	22	154	108	55.352	61.685
Salmonidae	*Oncorhynchus keta*	chum salmon	8	62	147	116	55.010	60.306
	Oncorhynchus tshawytscha	chinook salmon	3	28	62	43	55.010	59.336
Scorpaenidae	*Sebastes aleutianus*	rougheye rockfish	2	120	131	126	55.320	55.354
	Sebastes alutus	Pacific ocean perch	12	96	195	142	55.681	58.970
	Sebastes polyspinis	northern rockfish	4	96	151	135	55.681	57.975
	Sebastes variabilis	dusky rockfish	2	96	139	118	55.681	56.650
Somniosidae	*Somniosus pacificus*	Pacific sleeper shark	1	107	107	107	56.659	56.659
Stichaeidae	*Lumpenus fabricii*	slender eelblenny	16	23	158	89	58.324	62.000

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 (continued)	*Lumpenus maculatus*	daubed shanny	23	24	138	111	55.688	60.998
	Lumpenus sagitta	snake prickleback	1	31	31	31	60.340	60.340
	Poroclinus rothrocki	whitebarred prickleback	1	96	96	96	55.681	55.681
Zaproridae	*Zaprora silenus*	prowfish	1	158	158	158	58.652	58.652
Zoarcidae	*Gymnelus viridis*	fish doctor	1	100	100	100	59.330	59.330
	Lycodes beringi	Bering eelpout	1	95	95	95	56.666	56.666
	Lycodes brevipes	shortfin eelpout	73	83	160	120	55.019	61.665
	Lycodes palearis	wattled eelpout	129	55	160	89	55.322	62.000
	Lycodes raridens	marbled eelpout	18	59	103	79	59.322	61.994

Appendix B Table 2. -- Invertebrate taxa encountered during the 2017 eastern Bering Sea shelf bottom trawl survey listed alphabetically by group.

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.	6	42	165	106	58.287	61.319
		tube worm unid.	14	30	160	97	56.994	61.320
	Aphroditidae	sea mouse unid.	7	101	137	119	54.978	60.359
	Aphrodita sp.	sea mouse unid.	3	93	135	108	55.667	56.677
	Aphrodita negligens		26	88	195	132	56.989	60.656
	Eunoe sp.		70	44	157	77	54.833	61.641
	Eunoe nodosa	giant scale worm	40	54	158	104	57.653	62.000
	Eunoe depressa	depressed scale worm	40	40	160	106	56.677	60.998
	Eunoe senta	thorny scaleworm	2	66	120	93	59.342	60.002
	Serpulidae	serpulid worm	2	61	122	92	57.317	60.653
	Serpula columbiana	calcareous tubeworm	4	70	154	124	55.999	57.345
	Serpula sp.		1	112	112	112	55.322	55.322
Hirudinea	Hirudinea	leech unid.	1	48	48	48	57.676	57.676
	Notostomum cyclostomum	striped sea leech	4	79	141	106	59.005	61.641
Arthropoda	Isopoda	isopod unid.	7	85	151	121	54.687	56.659
	Mysidae		1	36	36	36	58.339	58.339
	Thoracica	barnacle unid.	12	32	151	65	55.999	59.994
	Balanus sp.		9	41	141	98	56.320	58.347
	Balanus balanus		1	70	70	70	57.503	57.503
	Chirona evermanni	giant barnacle	1	64	64	64	60.304	60.304
		shrimp unid.	2	63	158	111	58.652	61.003
	Pandalus eous	Alaskan pink shrimp	91	42	195	123	54.833	61.320
	Pandalus goniurus	humpy shrimp	30	31	119	80	57.015	61.684
	Eualus sp.		5	59	73	69	56.976	61.992
	Eualus macilentus	Greenland shrimp	3	73	103	85	60.984	61.992
	Crangon sp.		106	23	158	95	55.001	61.992
	Crangon septemspinosa	sevenspine bay shrimp	1	135	135	135	55.656	55.656
	Argis sp.		31	40	158	114	55.001	61.992

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)	*Argis dentata*	Arctic argid	6	54	135	86	55.656	57.653
	Argis lar	kuro argid	1	44	44	44	58.335	58.335
	Cancer oregonensis	Oregon rock crab	30	46	102	73	55.330	57.679
	Oregonia sp.		3	30	36	33	57.327	58.676
	Oregonia gracilis	graceful decorator crab	39	28	157	65	54.833	60.340
	Chionoecetes bairdi	Tanner crab	256	23	195	88	54.687	61.992
	Hyas coarctatus	circumboreal toad crab	217	27	147	70	55.320	62.000
	Hyas lyratus	Pacific lyre crab	109	28	165	88	54.833	61.641
	Chionoecetes opilio	snow crab	223	46	166	94	55.001	62.000
	Chionoecetes hybrid	hybrid Tanner crab	102	46	156	90	55.001	62.000
	Telmessus cheiragonus	helmet crab	17	22	44	35	57.005	60.340
	Pagurus brandti	sponge hermit	3	75	157	130	54.833	56.680
	Pagurus aleuticus	Aleutian hermit	133	57	160	105	54.833	60.656
	Labidochirus splendescens	splendid hermit	202	27	165	79	54.687	62.000
	Pagurus confragosus	knobbyhand hermit	95	61	195	112	54.687	60.016
	Pagurus cornutus	hornyhand hermit	2	134	135	135	58.672	59.002
	Pagurus trigonocheirus	fuzzy hermit crab	188	27	166	84	55.681	61.994
	Pagurus ochotensis	Alaskan hermit	103	22	87	47	54.687	60.340
	Pagurus rathbuni	longfinger hermit	111	59	166	101	56.687	62.000
	Elassochirus tenuimanus	widehand hermit crab	4	53	82	67	55.320	56.349
	Pagurus capillatus	hairy hermit crab	148	23	158	77	54.833	60.305
	Elassochirus cavimanus	purple hermit	30	62	195	123	54.687	59.670
	Paralithodes camtschaticus	red king crab	100	27	92	56	55.351	60.322
	Paralithodes platypus	blue king crab	20	46	108	80	56.991	60.676
	Erimacrus isenbeckii	horsehair crab	48	36	137	61	55.681	61.994
Bryozoa	Bryozoa	bryozoan unid.	23	29	151	73	55.999	61.665
	Flustra serrulata	leafy bryozoan	7	40	93	63	56.314	59.676
	Alcyonidium pedunculatum		3	36	110	71	54.978	57.316

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
Bryozoa	*Alcyonidium* sp.		1	77	77	77	61.685	61.685
(continued)	*Rhamphostomella costata*	ribbed bryozoan	19	64	81	73	56.678	60.304
Cnidaria	Hydrozoa		2	22	44	33	58.012	59.328
	Hydroidolina	hydroid unid.	17	46	143	72	56.013	61.320
	Scyphozoa	jellyfish unid.	23	63	165	117	55.681	61.992
	Chrysaora melanaster		162	36	158	84	54.978	62.000
	Phacellophora camtschatica	egg yolk jelly	8	50	195	122	56.323	59.669
	Aequorea sp.		9	87	138	114	57.992	61.343
	Aurelia labiata		1	158	158	158	58.652	58.652
	Cyanea capillata	lion's mane	37	58	166	102	55.999	61.684
	Gersemia sp.	sea raspberry	82	36	117	65	56.655	62.000
	Gersemia rubiformis		18	36	66	49	56.997	58.671
	Antipatharia	black coral	1	36	36	36	57.005	57.005
	Virgulariidae	sea whip unid.	9	94	156	116	55.001	57.323
	Halipteris sp. *A (Stone 2015*)	maroon sea whip	1	141	141	141	59.994	59.994
	Halipteris willemoesi		7	79	151	112	55.656	57.317
	Actiniaria	sea anemone unid.	78	31	166	93	54.995	61.987
	Metridium sp.		99	29	156	69	54.687	60.340
	Metridium farcimen	gigantic anemone	1	135	135	135	58.672	58.672
	Stomphia sp.		26	72	165	131	56.988	61.665
	Stomphia coccinea	swimming anemone	29	70	141	104	56.323	62.000
	Urticina sp.		13	62	141	102	55.681	61.685
	Urticina crassicornis	mottled anemone	29	36	135	76	54.687	61.320
	Urticina lofotensis	spotted red anemone	2	109	109	109	57.992	58.322
	Cribrinopsis fernaldi	chevron-tentacled anemone	4	100	130	114	57.351	59.011
	Liponema brevicorne	tentacle-shedding anemone	40	93	195	126	54.995	59.670
	Actinostolidae		9	62	137	113	56.989	61.994
Echinodermata	*Evasterias echinosoma*	giant sea star	14	47	94	62	55.688	57.975

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)	*Leptasterias groenlandica*		2	66	119	93	57.652	60.002
	Pycnopodia helianthoides	sunflower sea star	1	102	102	102	55.330	55.330
	Lethasterias nanimensis	blackspined sea star	86	50	158	85	55.320	60.344
	Pedicellaster magister	majestic sea star	2	135	157	146	54.833	58.680
	Henricia sp.		31	56	195	114	54.833	60.977
	Henricia tumida	tumid sea star	1	75	75	75	60.003	60.003
	Leptasterias polaris		137	46	195	94	56.341	62.000
	Leptasterias arctica		97	44	165	78	56.655	62.000
	Leptasterias sp.		1	65	65	65	57.335	57.335
	Leptasterias camtschatica		1	70	70	70	57.345	57.345
	Henricia beringiania	Bering Henricia	3	135	154	145	55.352	56.323
	Pseudarchaster sp.		4	110	195	147	57.975	59.320
	Pseudarchaster parelii	scarlet sea star	5	110	157	142	54.833	56.666
	Mediaster sp.		1	151	151	151	55.999	55.999
	Mediaster aequalis	vermilion sea star	1	154	154	154	56.323	56.323
	Ceramaster sp.		2	107	157	132	54.833	56.659
	Ceramaster arcticus	Arctic bat sea star	1	87	87	87	57.990	57.990
	Solaster sp.		3	64	165	119	54.995	60.304
	Crossaster borealis	grooved sea star	1	157	157	157	54.833	54.833
	Crossaster papposus	rose sea star	25	42	97	74	57.345	60.986
	Pteraster sp.		5	50	158	124	54.833	58.652
	Pteraster militaris	wrinkled star	1	195	195	195	58.687	58.687
	Pteraster obscurus	obscure sea star	54	61	160	105	55.688	61.992
	Diplopteraster multipes	pincushion sea star	6	121	195	150	55.999	58.687
	Asterias amurensis	purple-orange sea star	241	22	126	64	55.320	61.685
	Ctenodiscus crispatus	common mud star	88	64	195	118	54.978	62.000
	Leptychaster anomalus		13	87	134	121	56.332	59.492
	Dipsacaster sp.		2	158	165	162	58.326	58.652

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)	*Dipsacaster borealis*	northern sea star	4	139	195	158	54.833	58.687
	Echinacea	sea urchin unid.	1	92	92	92	58.670	58.670
	Strongylocentrotus droebachiensis	green sea urchin	19	36	160	96	55.658	60.676
	Strongylocentrotus sp.		76	39	195	108	54.833	60.984
	Allocentrotus fragilis	orange-pink sea urchin	1	135	135	135	55.656	55.656
	Echinarachnius parma	parma sand dollar	11	48	110	79	54.687	60.977
	Ophiuroidea	brittlestar unid.	1	134	134	134	59.002	59.002
	Gorgonocephalus eucnemis	basketstar	229	22	165	82	54.978	61.994
	Ophiura sarsi	notched brittlestar	114	60	157	83	54.833	62.000
	Ophiopholis aculeata	ubiquitous brittle star	5	69	154	92	56.323	58.009
	Holothuroidea	sea cucumber unid.	4	30	59	54	57.327	60.319
	Molpadia sp.		5	118	141	128	55.327	56.013
	Pentamera sp.		3	65	70	68	57.015	57.335
	Bathyplotes sp.		1	137	137	137	56.341	56.341
	Cucumaria sp.		9	50	94	76	55.688	57.517
	Cucumaria fallax	sea football	20	39	90	65	56.318	59.354
	Psolus sp.		3	59	75	64	60.003	60.986
	Synallactes sp.		1	195	195	195	58.687	58.687
Mollusca	Polyplacophora	chiton unid.	1	64	64	64	60.304	60.304
	gastropod eggs	snail eggs	194	32	165	82	54.687	62.000
	Nudibranchia	nudibranch unid.	13	63	119	88	56.687	60.682
	Tochuina tetraquetra	giant orange tochui	8	56	120	79	56.008	60.016
	Tritonia sp.		16	66	135	86	54.978	61.343
	Tritonia festiva	festive Tritonia	11	73	103	84	58.982	62.000
	Tritonia diomedea	rosy tritonia	12	61	122	87	56.323	59.825
	Doridiidae	dorid nudibranch unid.	5	73	95	85	59.492	59.823
	Gastropoda	snail unid.	3	75	108	87	56.678	60.676
	Naticidae eggs	moonsnail eggs unid.	7	22	80	50	55.658	59.328

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)	*Bulbus fragilis*	fragile moonsnail	1	76	76	76	57.154	57.154
	Cryptonatica aleutica	Aleutian moonsnail	5	59	108	83	56.678	60.986
	Cryptonatica russa	rusty moonsnail	35	44	134	86	55.681	62.000
	Euspira lewisii		1	74	74	74	58.336	58.336
	Euspira sp.		3	59	92	71	60.653	61.004
	Euspira pallida	pale moonsnail	15	59	95	77	56.008	62.000
	Lamellariidae	lamellarid unid.	3	64	69	67	57.646	57.979
	Lamellaria sp.		5	59	75	67	57.015	60.187
	Onchidiopsis sp.		1	66	66	66	58.681	58.681
	Crepidula sp.	slipper shell	1	54	54	54	57.653	57.653
	Crepidula grandis	great slippersnail	7	66	87	69	56.341	58.338
	Colus sp.		21	61	158	106	55.648	60.998
	Colus herendeenii	thin-ribbed whelk	22	61	158	107	54.978	60.304
	Colus hypolispus		1	93	93	93	61.987	61.987
	Colus aphelus	oblique whelk	4	102	156	123	55.001	56.677
	Colus halli	shrew whelk	10	62	134	95	55.656	61.994
	Pyrulofusus sp.		1	137	137	137	56.341	56.341
	Volutopsius sp.		27	59	141	98	56.332	60.991
	Pyrulofusus deformis	warped whelk	52	59	165	99	54.978	60.304
	Volutopsius fragilis	fragile whelk	30	48	156	82	55.001	60.359
	Volutopsius filosus	threaded whelk	1	74	74	74	57.345	57.345
	Volutopsius castaneus	volute whelk	2	117	136	127	60.984	61.320
	Pyrulofusus melonis		35	71	160	120	54.995	61.318
	Volutopsius stefanssoni	shouldered whelk	8	59	78	67	57.011	60.187
	Beringius sp.		37	56	151	101	54.995	60.998
	Beringius frielei		7	60	156	95	55.001	58.336
	Beringius beringii		31	45	147	100	55.322	61.320
	Beringius stimpsoni		5	54	70	63	57.316	57.990

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)	*Beringius* sp. *J (McLean and Clark)*		1	121	121	121	56.323	56.323
	Neptunea sp.		1	71	71	71	57.839	57.839
	Neptunea phoenicia		1	165	165	165	58.326	58.326
	Neptunea pribiloffensis	Pribilof whelk	147	69	195	113	54.978	61.641
	Neptunea borealis		51	36	112	71	56.659	62.000
	Neptunea middendorffii		5	42	52	48	57.990	58.656
	Neptunea lyrata	lyre whelk	118	48	160	97	54.687	61.320
	Neptunea ventricosa	fat whelk	125	27	107	64	55.658	60.679
	Neptunea heros		136	32	95	64	55.681	61.994
	Neptunea sp. *E (Clark and McLean)*		1	157	157	157	54.833	54.833
	Clinopegma magnum	helmet whelk	58	67	137	96	56.314	61.987
	Plicifusus sp.		6	100	158	129	56.341	60.359
	Plicifusus kroyeri		53	59	160	101	56.655	61.320
	Plicifusus oceanodromae	seahorse whelk	1	136	136	136	59.342	59.342
	Ancistrolepis sp.		1	134	134	134	58.970	58.970
	Aforia circinata	keeled aforia	37	83	158	122	55.320	61.320
	Oenopota nobilis		1	66	66	66	57.015	57.015
	Trichotropis bicarinata	two-keel hairysnail	2	64	75	70	60.003	60.304
	Boreotrophon beringi	Bering trophon	1	66	66	66	60.679	60.679
	Boreotrophon sp.		1	111	111	111	60.359	60.359
	Fusitriton oregonensis	Oregon triton	104	54	195	112	54.687	60.306
	Buccinum sp.		15	59	137	88	56.666	61.641
	Buccinum angulosum	angular whelk	94	38	147	89	56.651	61.994
	Buccinum oedematum	swollen whelk	29	32	154	95	55.681	60.984
	Buccinum plectrum	sinuous whelk	20	36	143	87	56.323	59.342
	Buccinum scalariforme	ladder whelk	125	32	166	97	54.833	62.000
	Buccinum polare	polar whelk	66	38	111	74	56.978	62.000
	Buccinum glaciale	glacial whelk	2	64	133	99	59.359	60.304

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)	*Arctomelon* sp.		1	165	165	165	58.326	58.326
	Arctomelon stearnsii	Alaska volute	3	98	195	137	54.833	59.005
	Bivalvia	bivalve unid.	1	56	56	56	57.679	57.679
	Mytilidae	mussel unid.	15	36	68	57	56.669	61.003
	Modiolus modiolus	northern horsemussel	11	47	67	56	55.351	60.331
	Mytilus sp.		1	79	79	79	56.678	56.678
	Mytilus edulis	blue mussel	1	76	76	76	60.995	60.995
	Pectinidae	scallop unid.	2	76	195	136	56.321	58.687
	Chlamys sp.		4	62	137	85	55.010	60.003
	Patinopecten caurinus	weathervane scallop	9	92	135	108	55.322	57.317
	Hiatella sp.		7	44	87	68	56.678	60.305
	Hiatella arctica	Arctic hiatella	4	41	97	79	56.829	59.310
	Yoldia sp.		9	46	122	71	55.681	60.998
	Yoldia hyperborea	northern yoldia	5	71	81	75	56.989	57.839
	Nuculana pernula	northern nutclam	3	67	95	83	58.314	61.665
	Musculus discors	discordant mussel	8	31	69	52	57.680	59.014
	Astarte sp.		3	54	129	80	56.332	57.996
	Cyclocardia sp.		5	23	47	43	57.671	59.982
	Clinocardium sp.		12	23	92	64	56.008	61.004
	Clinocardium ciliatum	hairy cockle	22	57	102	77	56.990	61.319
	Mactromeris polynyma	Arctic surfclam	47	23	82	53	55.658	59.976
	Tellina sp.		7	32	90	57	56.321	60.159
	Tellina lutea	Alaska great-tellin	17	23	66	46	56.671	59.976
	Macoma sp.		6	28	87	54	57.355	60.305
	Macoma nasuta	bent-nose macoma	4	28	47	36	58.013	58.999
	Macoma brota	heavy macoma	1	50	50	50	57.318	57.318
	Siliqua patula	Pacific razor	1	22	22	22	59.328	59.328
	Siliqua alta	Alaska razor	10	23	40	32	57.987	60.334

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	*Serripes* sp.		22	31	156	61	55.001	61.003
(continued)	*Serripes groenlandicus*	Greenland cockle	11	39	75	53	56.669	59.826
	Serripes notabilis	oblique smoothcockle	39	28	165	84	56.989	61.994
	Mya sp.		1	63	63	63	57.353	57.353
	Pododesmus macrochisma	Alaska falsejingle	2	70	141	106	56.985	57.503
	Octopodidae	octopus unid.	6	78	143	122	55.320	59.320
	Benthoctopus leioderma	smoothskin octopus	22	74	195	114	58.330	61.685
	Benthoctopus sibiricus		5	105	136	117	60.984	61.641
	Enteroctopus dofleini	giant octopus	26	53	158	119	55.322	61.992
	Benthoctopus sp.		2	134	135	135	58.680	59.002
	Decapodiformes	squid unid.	1	79	79	79	56.678	56.678
	Rossia pacifica	eastern Pacific bobtail	16	110	195	140	55.327	59.342
Nemertea	Nemertea	nemertean worm unid.	4	73	134	112	58.656	61.992
Porifera	Porifera	sponge unid.	78	28	195	84	54.833	61.343
	Suberites sp.		14	38	154	64	56.323	59.014
	Suberites montalbidus	stinky sponge	3	86	96	92	55.681	56.664
	Aphrocallistes vastus	clay pipe sponge	1	154	154	154	56.323	56.323
		funnel sponge	1	74	74	74	57.324	57.324
	Echinoclathria beringensis	hat sponge	1	72	72	72	57.849	57.849
	Polymastia sp.		1	129	129	129	56.332	56.332
	Stelletta sp.	stone sponge	1	80	80	80	57.013	57.013
	Stelodoryx alaskensis	Alaskan lobed sponge	1	44	44	44	58.012	58.012
	Aulosaccus schulzei	vase sponge	3	71	80	74	57.013	57.663
Sipuncula	Sipuncula	peanut worm unid.	6	34	135	85	55.656	61.987
Tunicata	Ascidiacea	tunicate unid.	7	66	195	119	58.672	61.992
	Styela rustica	sea potato	101	23	93	60	56.976	60.986
	Boltenia sp.		2	23	60	42	56.991	59.343
	Boltenia ecinata		1	73	73	73	57.180	57.180

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)	*Boltenia ovifera*	sea onion	100	23	125	56	56.013	60.679
	Halocynthia aurantium	sea peach	38	54	83	70	57.013	60.986
	Aplidium californicum	california sea pork	1	60	60	60	56.991	56.991
		compound ascidian unid.	19	36	71	55	56.349	60.679
	Amaroucium sp.		7	48	66	53	56.349	57.673
	Aplidium sp.		24	30	74	56	57.005	60.317
	Ascidia paratropa	glassy tunicate	1	56	56	56	57.339	57.339

Appendix B Table 3. -- Fish species encountered during the 2017 northern Bering Sea shelf 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	*Hypsagonus quadricornis*	fourhorn poacher	1	44	44	44	65.014	65.014
	Occella dodecaedron	Bering poacher	23	12	26	19	60.650	64.351
	Pallasina barbata	tubenose poacher	14	14	26	20	60.650	64.666
	Podothecus accipenserinus	sturgeon poacher	49	20	64	36	60.650	64.666
	Podothecus veternus	veteran poacher	66	15	79	32	61.353	65.338
	Ulcina olrikii	Arctic alligatorfish	8	31	53	42	62.346	65.338
Ammodytidae	*Ammodytes* sp.	sand lance unid.	4	30	34	33	63.273	64.981
Anarhichadidae	*Anarhichas orientalis*	Bering wolffish	4	14	25	18	63.798	64.342
Clupeidae	*Clupea pallasii*	Pacific herring	86	12	79	37	63.798	64.342
Cottidae	*Artediellus scaber*	hamecon	7	25	44	33	60.650	65.269
	Blepsias bilobus	crested sculpin	4	18	30	26	63.984	64.717
	Enophrys diceraus	antlered sculpin	43	14	53	30	62.997	65.338
	Enophrys lucasi	leister sculpin	6	30	47	42	62.997	65.014
	Eurymen gyrinus	smoothcheek sculpin	5	18	30	23	63.979	64.666
	Gymnocanthus galeatus	armorhead sculpin	1	54	54	54	63.993	63.993
	Gymnocanthus pistilliger	threaded sculpin	48	14	71	33	60.650	64.717
	Gymnocanthus tricuspis	Arctic staghorn sculpin	33	30	65	41	61.019	65.338
	Hemilepidotus papilio	butterfly sculpin	55	30	79	54	60.683	65.026
	Icelus spatula	spatulate sculpin	1	69	69	69	62.667	62.667
	Megalocottus platycephalus	belligerent sculpin	1	15	15	15	63.654	63.654
	Myoxocephalus jaok	plain sculpin	107	12	74	32	60.650	65.269
	Myoxocephalus polyacanthocephalus	great sculpin	29	22	79	44	60.687	64.612
	Myoxocephalus quadricornis	fourhorn sculpin	2	15	30	23	63.654	64.352
	Myoxocephalus scorpius	shorthorn (=warty) sculpin	53	27	65	44	60.687	65.338
	Nautichthys pribilovius	eyeshade sculpin	12	15	53	32	63.979	65.338
	Triglops pingeli	ribbed sculpin	19	20	71	38	60.650	65.269
	Triglops sp.		6	21	26	24	60.687	63.323
Cyclopteridae	*Eumicrotremus andriashevi*	pimpled lumpsucker	1	49	49	49	65.026	65.026

Appendix B Table 3. -- Continued.

Family	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Gadidae	*Boreogadus saida*	Arctic cod	87	15	79	42	60.683	65.016
	Eleginus gracilis	saffron cod	82	12	54	28	60.650	65.338
	Gadus chalcogrammus	walleye pollock	136	12	79	39	60.650	65.338
	Gadus macrocephalus	Pacific cod	113	16	79	41	60.654	65.338
Hexagrammidae	*Hexagrammos stelleri*	whitespotted greenling	22	14	34	25	60.650	64.351
Liparidae	*Careproctus phasma*	monster snailfish	2	64	69	67	62.657	62.667
	Careproctus rastrinus	salmon snailfish	3	64	79	71	62.336	62.341
	Careproctus scottae	peachskin snailfish	1	73	73	73	62.658	62.658
	Liparidae	snailfish unid.	4	18	30	25	60.687	64.352
	Liparis gibbus	variegated snailfish	48	29	79	52	60.683	65.338
	Liparis marmoratus	festive snailfish	1	40	40	40	62.329	62.329
	Liparis sp.		3	14	35	28	62.979	64.288
	Liparis tunicatus	kelp snailfish	6	33	54	43	63.017	65.230
	Mallotus villosus	capelin	48	29	74	50	60.658	65.016
Osmeridae	*Osmerus mordax*	rainbow smelt	49	12	34	26	60.650	64.666
	Thaleichthys pacificus	eulachon	2	36	37	37	60.654	60.981
Pleuronectidae	*Atheresthes evermanni*	Kamchatka flounder	1	49	49	49	60.687	60.687
	Hippoglossoides elassodon	flathead sole	2	47	48	48	61.008	61.344
	Hippoglossoides robustus	snailfish unidentified	95	19	79	44	60.683	65.338
	Hippoglossus stenolepis	Pacific halibut	39	18	43	29	60.650	64.981
	Lepidopsetta polyxystra	northern rock sole	101	20	79	38	60.650	65.269
	Limanda aspera	snailfish unidentified	132	12	73	36	60.650	65.269
	Limanda proboscidea	longhead dab	44	12	47	29	60.650	64.717
	Limanda sakhalinensis	Sakhalin sole	89	22	79	46	60.683	65.338
	Liopsetta glacialis	Arctic flounder	5	12	19	15	63.654	64.343
	Platichthys stellatus	starry flounder	62	12	54	29	60.650	65.338
	Pleuronectes quadrituberculatus	Alaska plaice	132	12	74	37	60.650	65.269
	Reinhardtius hippoglossoides	Greenland turbot	3	58	79	67	60.683	63.336

Appendix B Table 3. -- Continued.

Family	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Rajidae	*Bathyraja parmifera*	Alaska skate	74	23	79	43	60.654	64.352
	Bathyraja parmifera egg case	Alaska skate egg case	7	27	58	42	61.314	64.304
		skate egg case unid.	4	49	61	55	60.683	61.688
Salmonidae	*Oncorhynchus keta*	chum salmon	2	35	48	42	62.337	64.288
	Oncorhynchus tshawytscha	chinook salmon	5	29	43	36	60.981	63.679
Stichaeidae	*Acantholumpenus mackayi*	pighead prickleback	14	12	29	24	60.685	64.336
	Lumpenus fabricii	slender eelblenny	42	12	68	34	60.683	65.338
	Lumpenus maculatus	daubed shanny	8	20	68	36	60.650	64.612
	Stichaeus punctatus	Arctic shanny	9	14	30	21	63.798	64.666
Zoarcidae	*Gymnelus viridis*	fish doctor	3	34	54	44	63.273	64.312
	Lycodes brevipes	shortfin eelpout	1	20	20	20	64.258	64.258
	Lycodes mucosus	saddled eelpout	1	36	36	36	63.681	63.681
	Lycodes palearis	wattled eelpout	15	26	79	58	60.683	63.690
	Lycodes raridens	marbled eelpout	27	14	79	54	60.683	64.352
	Lycodes turneri	polar eelpout	29	12	54	30	61.317	65.338

Appendix B Table 4. -- Invertebrate species encountered during the 2017 northern Bering Sea shelf bottom trawl survey listed alphabetically by group.

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.	3	60	71	65	62.341	62.343
		tube worm unid.	1	37	37	37	60.654	60.654
	Nephtyidae	cat worm unid.	1	22	22	22	62.313	62.313
	Nereididae		1	69	69	69	62.667	62.667
	Eunoe sp.		8	36	79	47	61.654	62.678
	Eunoe nodosa	giant scale worm	10	15	73	46	60.683	64.351
	Eunoe depressa	depressed scale worm	19	14	71	27	61.019	65.016
	Eunoe senta	thorny scaleworm	1	55	55	55	61.983	61.983
	Hirudinea	leech unid.	1	71	71	71	62.341	62.341
Arthropoda	Amphipoda	amphipod unid.	2	30	53	42	63.013	64.717
	Iphinoe sp.		1	74	74	74	62.981	62.981
	Eusirus cuspidatus	speckled amphipod	1	64	64	64	62.341	62.341
	Isopoda	isopod unid.	4	12	68	28	61.348	63.677
	Thoracica	barnacle unid.	8	30	60	40	61.653	63.323
	Balanus sp.		19	18	54	30	61.686	65.016
	Chirona evermanni	giant barnacle	2	40	45	43	63.704	64.312
	Pandalus sp.		2	18	30	24	64.006	64.352
	Pandalus eous	Alaskan pink shrimp	2	12	14	13	63.671	63.677
	Pandalus goniurus	humpy shrimp	30	15	71	37	60.685	65.026
	Eualus sp.		1	64	64	64	61.334	61.334
	Eualus barbatus	barbed eualid	1	34	34	34	63.273	63.273
	Eualus gaimardii	circumpolar eualid	1	55	55	55	61.983	61.983
	Lebbeus groenlandicus	spiny lebbeid	2	30	30	30	62.944	64.352
	Crangon sp.		16	16	43	27	60.650	64.666
	Crangon septemspinosa	sevenspine bay shrimp	21	12	24	19	61.317	64.351
	Argis sp.		63	15	79	38	61.317	65.338
	Argis dentata	Arctic argid	9	14	28	19	62.979	64.006

Appendix B Table 4. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Arthropoda (continued)	*Sclerocrangon* sp.		2	33	35	34	64.003	64.981
	Sclerocrangon boreas	sculptured shrimp	9	14	34	27	63.273	64.666
	Oregonia gracilis	graceful decorator crab	1	29	29	29	60.685	60.685
	Chionoecetes bairdi	Tanner crab	2	40	65	53	63.312	63.679
	Hyas coarctatus	circumboreal toad crab	102	18	71	42	60.654	65.338
	Hyas lyratus	Pacific lyre crab	1	29	29	29	60.685	60.685
	Chionoecetes opilio	snow crab	109	14	79	41	60.658	65.338
	Chionoecetes hybrid	hybrid Tanner crab	3	29	36	33	60.981	62.014
	Telmessus cheiragonus	helmet crab	32	14	40	27	60.650	64.981
	Pagurus brandti	sponge hermit	1	49	49	49	62.681	62.681
	Pagurus aleuticus	Aleutian hermit	5	23	33	27	61.010	64.012
	Labidochirus splendescens	splendid hermit	75	14	61	35	60.654	65.338
	Pagurus trigonocheirus	fuzzy hermit crab	111	14	73	40	60.658	65.338
	Pagurus ochotensis	Alaskan hermit	36	14	43	27	60.650	64.336
	Pagurus rathbuni	longfinger hermit	47	33	79	54	60.683	65.016
	Pagurus capillatus	hairy hermit crab	51	14	43	27	60.654	64.351
	Lithodes sp.		1	30	30	30	62.944	62.944
	Dermaturus mandtii	wrinkled crab	1	20	20	20	63.984	63.984
	Paralithodes camtschaticus	red king crab	26	14	48	30	60.654	65.269
	Paralithodes platypus	blue king crab	29	23	68	34	62.678	65.338
	Erimacrus isenbeckii	horsehair crab	11	29	46	38	60.654	62.014
Bryozoa	Bryozoa	bryozoan unid.	21	21	68	36	60.658	64.981
	Myriapora orientalis		1	35	35	35	64.003	64.003
	Bugula pacifica		1	23	23	23	61.010	61.010
	Flustra serrulata	leafy bryozoan	3	30	45	35	61.019	64.317
	Flustrellidra corniculata		3	35	47	43	64.003	64.645
	Alcyonidium pedunculatum		8	30	53	37	62.681	65.269

Appendix B Table 4. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Bryozoa (continued)	*Alcyonidium enteromorpha*	noodle bryozoan	6	37	54	44	64.041	65.230
	Rhamphostomella costata	ribbed bryozoan	6	28	45	35	62.346	65.269
	Hippoporina insculpta		1	24	24	24	61.357	61.357
	Microporina articulata		3	24	29	26	61.357	63.677
	Dendrobeania sp.		1	23	23	23	61.010	61.010
Cnidaria	Scyphozoa	jellyfish unid.	30	12	68	34	60.650	64.351
	Chrysaora sp.	chrysaora jellyfish	2	21	22	22	61.633	61.986
	Periphylla periphylla	helmet jelly	1	22	22	22	62.313	62.313
	Chrysaora melanaster		106	18	79	45	60.654	65.338
	Aurelia sp.		1	40	40	40	63.679	63.679
	Cyanea capillata	lion's mane	1	37	37	37	60.654	60.654
	Gersemia sp.	sea raspberry	71	26	79	46	60.654	65.338
	Gersemia rubiformis		21	12	29	20	60.650	64.351
	Actiniaria	sea anemone unid.	24	18	79	37	60.650	64.351
	Metridium sp.		21	12	43	29	60.658	64.666
	Metridium farcimen	gigantic anemone	5	29	54	34	61.019	65.230
	Stomphia sp.		19	14	74	53	61.334	64.666
	Stomphia coccinea	swimming anemone	3	35	68	53	63.008	64.003
	Urticina sp.		29	26	71	48	61.019	65.338
	Urticina crassicornis	mottled anemone	1	20	20	20	60.650	60.650
	Cribrinopsis fernaldi	chevron-tentacled anemone	2	33	68	51	63.008	64.053
	Actinostolidae		1	55	55	55	61.983	61.983
Echinodermata	*Evasterias echinosoma*	giant sea star	23	15	54	31	63.677	65.338
	Leptasterias groenlandica		13	40	79	58	62.331	64.672
	Lethasterias nanimensis	blackspined sea star	34	14	53	30	63.323	65.338
	Henricia sp.		37	15	71	32	62.346	65.338
	Leptasterias polaris		88	23	79	46	61.016	65.338

Appendix B Table 4. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Echinodermata (continued)	*Leptasterias arctica*		98	14	73	38	60.658	65.338
	Crossaster borealis	grooved sea star	1	53	53	53	65.338	65.338
	Crossaster papposus	rose sea star	23	19	60	35	62.681	65.338
	Pteraster sp.		2	25	34	30	63.273	64.666
	Pteraster obscurus	obscure sea star	11	33	79	48	62.336	65.269
	Asterias sp.		1	54	54	54	65.230	65.230
	Asterias amurensis	purple-orange sea star	86	12	58	31	60.650	65.338
	Strongylocentrotus droebachiensis	green sea urchin	25	27	60	38	61.654	65.269
	Strongylocentrotus sp.		24	14	49	22	61.348	64.666
		sand dollar unid.	2	30	40	35	62.329	62.944
	Echinarachnius parma	parma sand dollar	4	31	35	33	63.343	64.317
	Gorgonocephalus eucnemis	basketstar	93	16	79	41	60.654	65.338
	Ophiura sp.		1	23	23	23	63.324	63.324
	Ophiura cryptolepis		1	42	42	42	62.678	62.678
	Ophiura sarsi	notched brittlestar	21	42	79	63	61.334	63.336
	Ophiopholis longispina		3	33	40	36	63.679	64.053
	Holothuroidea	sea cucumber unid.	5	30	74	50	62.657	64.352
	Pentamera sp.		3	40	53	46	64.341	65.338
	Psolus fabricii	brownscaled sea cucumber	3	25	34	31	63.273	64.666
	Psolus squamatus	whitescaled sea cucumber	3	30	45	37	63.981	64.312
	Synallactes sp.		1	31	31	31	64.317	64.317
Mollusca	*Amicula vestita*		7	31	44	37	63.273	65.014
	gastropod eggs	snail eggs	98	19	79	47	60.650	65.338
	Nudibranchia	nudibranch unid.	6	30	74	48	61.686	64.352
	Dendronotus dalli	Dall's dendronotid	1	40	40	40	64.341	64.341
	Tritonia festiva	festive Tritonia	2	61	74	68	62.981	62.995
	Chlamylla sp.		1	35	35	35	64.003	64.003

Appendix B Table 4. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (continued)	Doridídae	dorid nudibranch unid.	2	36	49	43	61.348	62.673
	Naticidae eggs	moonsnail eggs unid.	5	43	54	49	64.645	65.230
	Cryptonatica aleutica	Aleutian moonsnail	3	48	71	60	62.337	62.343
	Cryptonatica russa	rusty moonsnail	32	28	79	59	61.334	65.338
	Euspira sp.		1	42	42	42	61.653	61.653
	Euspira pallida	pale moonsnail	21	30	65	54	61.334	65.230
	Lamellaria sp.		1	51	51	51	62.000	62.000
	Onchidiopsis sp.		11	35	53	45	62.681	65.338
	Crepidula grandis	great slippersnail	2	34	40	37	63.273	63.679
	Colus sp.		6	40	54	46	64.341	65.230
	Colus herendeenii	thin-ribbed whelk	1	49	49	49	61.348	61.348
	Colus halli	shrew whelk	3	53	58	56	60.683	62.017
	Volutopsius attenuatus	attenuate melon whelk	1	28	28	28	62.979	62.979
	Volutopsius sp.		2	37	50	44	60.654	65.016
	Pyrulofusus deformis	warped whelk	4	18	47	32	63.979	64.672
	Volutopsius fragilis	fragile whelk	1	54	54	54	62.331	62.331
	Pyrulofusus melonis		1	28	28	28	62.979	62.979
	Volutopsius stefanssoni	shouldered whelk	1	54	54	54	65.230	65.230
	Beringius sp.		7	25	60	35	61.681	65.338
	Beringius beringii		4	26	40	31	62.630	65.269
	Neptunea sp.		12	14	45	31	61.691	64.351
	Neptunea borealis		64	23	79	48	60.658	65.338
	Neptunea lyrata	lyre whelk	2	37	42	40	61.654	62.951
	Neptunea ventricosa	fat whelk	56	23	60	38	60.654	65.338
	Neptunea heros		97	14	71	41	60.654	65.338
	Clinopegma magnum	helmet whelk	2	58	60	59	62.017	62.343
	Plicifusus sp.		1	31	31	31	64.317	64.317

Appendix B Table 4. -- Continued.

Phylum	Scientific name	Common name	Number stations present	Bottom depth (m)			Latitude range	
				Min. depth	Max. depth	Avg. depth	Southern	Northern
Mollusca (continued)	*Plicifusus kroyeri*		2	36	37	37	64.019	64.041
	Trichotropis bicarinata	two-keel hairysnail	3	31	35	33	63.273	64.317
	Boreotrophon sp.		2	26	71	49	62.341	62.630
	Margarites sp. C (Clark and McLean)	Silvery Margarite	1	65	65	65	61.675	61.675
	Buccinum sp.		9	14	79	38	61.343	64.003
	Buccinum angulosum	angular whelk	32	26	68	48	61.334	65.338
	Buccinum scalariforme	ladder whelk	49	26	79	49	60.683	65.230
	Buccinum polare	polar whelk	63	23	79	49	60.683	65.338
	Velutina conica	conical lamellaria	1	31	31	31	64.317	64.317
	Mytilidae	mussel unid.	2	34	48	41	62.337	63.273
	Modiolus modiolus	northern horsemussel	16	26	47	36	61.019	64.612
	Hiatella sp.		3	18	24	21	61.317	63.992
	Hiatella arctica	Arctic hiatella	8	28	49	37	60.654	64.317
	Panomya norvegica	Arctic roughmya	1	34	34	34	63.273	63.273
	Yoldia hyperborea	northern yoldia	4	45	74	63	62.656	63.008
	Nuculana pernula	northern nutclam	2	51	64	58	61.334	62.000
	Musculus sp.		2	55	61	58	61.647	61.686
	Musculus niger	black mussel	3	29	69	55	60.685	63.008
	Musculus discors	discordant mussel	7	34	68	49	60.654	61.686
	Astarte sp.		3	31	49	41	64.317	65.026
	Cyclocardia sp.		5	18	57	33	60.650	64.981
	Clinocardium sp.		2	18	20	19	64.006	64.258
	Clinocardium ciliatum	hairy cockle	8	40	71	55	60.683	65.338
	Mactromeris polynyma	Arctic surfclam	3	18	21	20	63.002	64.006
	Tellina sp.		2	18	54	36	62.331	63.992
	Tellina lutea	Alaska great-tellin	1	14	14	14	63.671	63.671
	Macoma sp.		10	29	73	51	61.653	64.303

Appendix B Table 4. -- 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 nasuta*	bent-nose macoma	1	20	20	20	60.997	60.997
	Siliqua sp.		1	29	29	29	60.685	60.685
	Siliqua alta	Alaska razor	2	20	20	20	60.650	60.997
	Serripes sp.		25	14	61	34	61.008	64.336
	Serripes groenlandicus	Greenland cockle	3	18	23	20	63.639	64.331
	Serripes laperousii	broad cockle	1	49	49	49	62.681	62.681
	Serripes notabilis	oblique smoothcockle	20	29	65	42	60.685	65.338
	Mya sp.		1	34	34	34	61.317	61.317
	Benthoctopus leioderma	smoothskin octopus	2	60	64	62	62.341	62.343
	Benthoctopus sibiricus		3	64	79	71	62.336	62.341
	Benthoctopus sp.		4	64	73	69	62.657	63.336
	Sasakiopus salebrosus	pygmy benthoctopus	1	53	53	53	63.013	63.013
Nematoda	Nematoda	nematode worm unid.	3	64	74	69	62.657	63.008
Nemertea	Nemertea	nemertean worm unid.	2	69	79	74	62.336	62.667
Porifera	Porifera	sponge unid.	25	15	65	36	60.650	65.269
	Echinoclathria beringensis	hat sponge	1	40	40	40	63.679	63.679
Priapulida	Priapula	priapulid worm unid.	2	64	68	66	61.334	61.348
Sipuncula	Sipuncula	peanut worm unid.	8	21	74	40	61.986	63.679
Tunicata	Ascidiacea	tunicate unid.	11	18	79	41	60.654	64.666
	Styela rustica	sea potato	90	12	65	37	60.654	65.269
	Boltenia ovifera	sea onion	27	20	54	33	60.650	65.016
	Halocynthia sp.	sea peach unid.	2	35	58	47	60.683	62.346
	Halocynthia igaboja	bristly tunicate	1	40	40	40	62.676	62.676
	Halocynthia aurantium	sea peach	1	35	35	35	64.003	64.003
		compound ascidian unid.	24	27	54	38	61.019	65.269
Other	Polychaete tubes		7	30	58	44	60.683	65.230
		empty shells	125	14	74	38	60.650	65.338

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

Appendix C presents population estimates by sex and size group from the 2017 EBS (eastern Bering Sea) and NBS (northern Bering Sea) surveys for principal fish species.

List of Tables

Appendix C Table 1a. -- Population estimates by sex and size for **walleye pollock** (*Gadus chalcogrammus*) from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
50	0	0	0	0	0.0000	0.0000
60	0	0	0	0	0.0000	0.0000
70	0	0	0	0	0.0000	0.0000
80	47,113	113,055	218,442	378,609	0.0000	0.0000
90	0	0	783,779	783,779	0.0001	0.0001
100	0	58,299	6,777,043	6,835,342	0.0008	0.0009
110	0	234,249	18,886,657	19,120,906	0.0023	0.0032
120	526,933	1,869,075	36,215,411	38,611,419	0.0046	0.0077
130	6,100,683	4,612,464	45,834,615	56,547,761	0.0067	0.0144
140	16,831,993	9,642,885	43,036,831	69,511,709	0.0082	0.0226
150	23,179,613	19,916,745	36,892,165	79,988,523	0.0094	0.0320
160	31,045,312	32,025,138	19,997,826	83,068,277	0.0098	0.0418
170	32,205,938	27,892,128	8,675,683	68,773,749	0.0081	0.0499
180	19,801,427	20,489,863	6,312,580	46,603,870	0.0055	0.0554
190	16,110,890	10,777,269	5,639,669	32,527,828	0.0038	0.0593
200	12,351,277	12,892,429	3,388,100	28,631,806	0.0034	0.0626
210	14,813,887	13,384,662	3,476,420	31,674,969	0.0037	0.0664
220	15,199,877	16,399,449	2,493,876	34,093,201	0.0040	0.0704
230	21,569,269	15,692,687	2,806,826	40,068,781	0.0047	0.0751
240	19,452,148	14,640,406	1,183,925	35,276,479	0.0042	0.0793
250	20,573,576	18,872,928	2,071,868	41,518,372	0.0049	0.0842
260	20,297,009	16,726,660	1,479,906	38,503,575	0.0045	0.0887
270	18,992,576	19,906,260	3,255,793	42,154,629	0.0050	0.0937
280	19,773,448	16,405,618	591,962	36,771,029	0.0043	0.0980
290	21,026,456	22,360,249	1,156,188	44,542,894	0.0053	0.1033
300	20,243,981	19,934,139	1,704,481	41,882,601	0.0049	0.1082
310	30,911,084	22,399,139	295,981	53,606,205	0.0063	0.1145
320	28,790,728	22,230,361	418,783	51,439,873	0.0061	0.1206
330	23,176,611	24,294,192	590,035	48,060,839	0.0057	0.1262
340	25,530,063	21,843,448	295,017	47,668,528	0.0056	0.1319
350	35,583,390	30,085,523	1,618,962	67,287,876	0.0079	0.1398
360	60,706,079	39,594,894	3,115,122	103,416,095	0.0122	0.1520
370	102,941,703	61,069,814	2,668,357	166,679,874	0.0196	0.1716
380	150,383,483	74,472,408	7,423,514	232,279,405	0.0274	0.1990
390	224,079,038	132,582,403	5,705,120	362,366,561	0.0427	0.2417
400	274,032,114	146,043,066	7,394,341	427,469,521	0.0504	0.2921
410	272,251,346	186,702,846	5,258,127	464,212,319	0.0547	0.3468
420	284,027,800	182,844,264	4,669,255	471,541,320	0.0556	0.4024
430	301,146,165	174,095,265	2,957,799	478,199,229	0.0564	0.4588
440	366,821,513	223,679,958	4,626,780	595,128,251	0.0702	0.5290
450	344,964,498	237,728,061	2,461,620	585,154,179	0.0690	0.5979
460	341,821,139	241,159,602	3,814,511	586,795,251	0.0692	0.6671
470	280,138,856	250,520,858	1,561,070	532,220,785	0.0627	0.7299
480	225,377,452	211,736,533	1,555,495	438,669,479	0.0517	0.7816
490	193,375,532	187,675,259	2,224,495	383,275,286	0.0452	0.8267
500	155,140,866	173,691,119	388,874	329,220,859	0.0388	0.8656

Appendix C Table 1a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
510	99,169,874	155,329,419	712,837	255,212,131	0.0301	0.8956
520	73,235,238	125,603,625	417,820	199,256,683	0.0235	0.9191
530	52,024,490	92,486,168	122,802	144,633,460	0.0170	0.9362
540	39,629,433	73,255,543	0	112,884,976	0.0133	0.9495
550	23,576,933	50,969,173	0	74,546,105	0.0088	0.9583
560	17,286,250	37,126,037	0	54,412,287	0.0064	0.9647
570	12,030,610	27,296,110	0	39,326,719	0.0046	0.9693
580	9,848,844	20,665,427	295,017	30,809,288	0.0036	0.9730
590	6,350,935	11,553,018	0	17,903,953	0.0021	0.9751
600	2,999,648	10,186,176	0	13,185,824	0.0016	0.9766
610	3,251,955	6,652,238	0	9,904,193	0.0012	0.9778
620	2,589,427	3,646,149	0	6,235,576	0.0007	0.9785
630	1,824,595	2,699,314	0	4,523,908	0.0005	0.9791
640	1,086,609	1,906,781	0	2,993,390	0.0004	0.9794
650	719,171	684,477	0	1,403,648	0.0002	0.9796
660	533,226	1,642,439	0	2,175,665	0.0003	0.9798
670	483,514	758,480	0	1,241,994	0.0001	0.9800
680	203,135	758,454	0	961,589	0.0001	0.9801
690	204,971	123,887	0	328,858	0.0000	0.9801
700	0	319,197	0	319,197	0.0000	0.9802
710	241,815	496,672	0	738,487	0.0001	0.9803
720	268,476	360,213	0	628,689	0.0001	0.9803
730	30,652	208,493	0	239,144	0.0000	0.9804
740	0	92,723	0	92,723	0.0000	0.9804
750	54,388	0	0	54,388	0.0000	0.9804
760	0	100,694	0	100,694	0.0000	0.9804
770	0	30,353	0	30,353	0.0000	0.9804
780	0	58,299	0	58,299	0.0000	0.9804
9999	0	0	0	166,328,432	0.0196	1.0000
Total	**4,418,987,054**	**3,584,305,226**	**313,471,781**	**8,483,092,493**	**1.0000**	**1.0000**

Appendix C Table 1b. -- Population estimates by sex and size for **walleye pollock** (*Gadus chalcogrammus*) from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
50	0	0	398,047	398,047	0.0002	0.0002
60	0	0	94,581	94,581	0.0001	0.0003
70	0	0	0	0	0.0000	0.0003
80	0	0	470,480	470,480	0.0003	0.0005
90	0	0	4,924,989	4,924,989	0.0027	0.0032
100	0	418,063	12,496,287	12,914,350	0.0071	0.0103
110	249,881	354,903	28,682,969	29,287,753	0.0160	0.0263
120	5,556,693	2,503,138	27,648,580	35,708,411	0.0195	0.0458
130	12,052,878	10,543,702	21,358,851	43,955,432	0.0240	0.0697
140	21,236,828	16,426,533	10,012,854	47,676,215	0.0260	0.0958
150	18,378,519	16,246,641	4,470,497	39,095,657	0.0213	0.1171
160	11,713,160	10,982,613	1,267,417	23,963,191	0.0131	0.1302
170	8,282,853	6,119,607	963,993	15,366,453	0.0084	0.1386
180	1,533,746	1,537,000	0	3,070,746	0.0017	0.1403
190	1,500,266	175,570	404,325	2,080,161	0.0011	0.1414
200	670,991	71,935	0	742,926	0.0004	0.1418
210	0	61,759	0	61,759	0.0000	0.1418
220	129,757	36,110	92,204	258,071	0.0001	0.1420
230	185,967	0	0	185,967	0.0001	0.1421
240	33,067	33,067	0	66,135	0.0000	0.1421
250	435,770	0	0	435,770	0.0002	0.1424
260	435,770	0	0	435,770	0.0002	0.1426
270	0	0	0	0	0.0000	0.1426
280	62,560	30,384	0	92,944	0.0001	0.1427
290	0	560,543	0	560,543	0.0003	0.1430
300	0	0	0	0	0.0000	0.1430
310	0	0	0	0	0.0000	0.1430
320	435,770	435,770	0	871,539	0.0005	0.1434
330	28,581	435,770	0	464,350	0.0003	0.1437
340	871,539	513,323	0	1,384,862	0.0008	0.1444
350	435,770	435,770	0	871,539	0.0005	0.1449
360	120,237	496,069	0	616,306	0.0003	0.1453
370	1,462,466	932,307	0	2,394,773	0.0013	0.1466
380	1,545,577	1,334,323	0	2,879,900	0.0016	0.1481
390	4,644,825	1,217,926	0	5,862,751	0.0032	0.1513
400	3,821,577	2,087,619	0	5,909,196	0.0032	0.1546
410	9,246,567	10,026,563	0	19,273,131	0.0105	0.1651
420	15,050,021	8,910,491	0	23,960,512	0.0131	0.1782
430	29,812,518	16,862,342	0	46,674,861	0.0255	0.2036
440	42,863,472	25,895,390	0	68,758,862	0.0375	0.2412
450	57,118,686	33,083,495	0	90,202,181	0.0492	0.2904
460	79,264,465	63,843,568	0	143,108,033	0.0781	0.3686
470	81,118,759	65,095,125	0	146,213,884	0.0798	0.4484
480	79,213,167	82,871,077	1,191,734	163,275,978	0.0891	0.5375
490	67,952,966	85,869,307	0	153,822,273	0.0840	0.6215
500	61,990,214	87,200,123	0	149,190,337	0.0815	0.7030

Appendix C Table 1b. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
510	51,324,790	69,720,925	0	121,045,715	0.0661	0.7690
520	36,356,301	65,511,353	0	101,867,654	0.0556	0.8247
530	23,916,365	54,631,846	0	78,548,212	0.0429	0.8675
540	20,056,161	43,114,354	0	63,170,514	0.0345	0.9020
550	13,133,815	33,303,623	0	46,437,438	0.0254	0.9274
560	8,383,489	19,932,465	0	28,315,954	0.0155	0.9428
570	5,265,024	18,141,468	0	23,406,492	0.0128	0.9556
580	5,420,001	17,882,520	0	23,302,521	0.0127	0.9683
590	3,520,611	9,965,137	0	13,485,748	0.0074	0.9757
600	2,736,411	7,960,271	0	10,696,682	0.0058	0.9816
610	2,042,108	5,201,901	0	7,244,008	0.0040	0.9855
620	2,217,252	5,466,502	0	7,683,754	0.0042	0.9897
630	423,335	3,847,753	0	4,271,088	0.0023	0.9920
640	466,549	3,394,509	0	3,861,059	0.0021	0.9941
650	128,720	1,658,724	0	1,787,444	0.0010	0.9951
660	496,891	1,701,144	0	2,198,035	0.0012	0.9963
670	413,935	1,916,513	0	2,330,448	0.0013	0.9976
680	199,428	1,623,028	0	1,822,456	0.0010	0.9986
690	180,828	543,117	0	723,946	0.0004	0.9990
700	155,059	353,653	0	508,712	0.0003	0.9993
710	0	208,089	0	208,089	0.0001	0.9994
720	31,411	482,811	0	514,222	0.0003	0.9997
730	105,702	63,757	0	169,459	0.0001	0.9997
740	29,815	34,284	0	64,099	0.0000	0.9998
750	0	147,018	0	147,018	0.0001	0.9999
760	0	65,962	0	65,962	0.0000	0.9999
770	0	56,489	0	56,489	0.0000	0.9999
780	0	33,875	0	33,875	0.0000	0.9999
790	0	33,952	0	33,952	0.0000	1.0000
Total	**796,459,879**	**920,644,971**	**114,545,559**	**1,831,650,409**	**1.0000**	**1.0000**

Appendix C Table 2a. -- Population estimates by sex and size for Pacific cod (*Gadus macrocephalus)* from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
100	0	29,636	27,860	57,496	0.0002	0.0002
110	0	0	58,131	58,131	0.0002	0.0003
120	27,178	146,486	200,992	374,656	0.0010	0.0013
130	173,826	233,643	612,776	1,020,245	0.0028	0.0041
140	320,405	174,518	836,315	1,331,237	0.0037	0.0078
150	292,327	521,274	520,548	1,334,149	0.0037	0.0115
160	611,225	1,021,825	142,107	1,775,158	0.0049	0.0163
170	716,591	904,710	29,733	1,651,033	0.0045	0.0209
180	973,184	1,045,834	28,661	2,047,679	0.0056	0.0265
190	1,174,941	1,309,977	0	2,484,918	0.0068	0.0333
200	1,465,510	1,354,087	0	2,819,598	0.0077	0.0411
210	1,693,962	1,957,258	0	3,651,220	0.0100	0.0511
220	1,927,902	1,968,076	0	3,895,978	0.0107	0.0618
230	2,052,897	2,532,230	0	4,585,127	0.0126	0.0744
240	2,490,278	2,660,461	0	5,150,739	0.0141	0.0885
250	2,214,570	3,116,204	0	5,330,774	0.0146	0.1032
260	2,220,391	2,697,432	0	4,917,823	0.0135	0.1167
270	2,245,903	1,862,478	0	4,108,381	0.0113	0.1280
280	1,411,372	1,531,676	0	2,943,048	0.0081	0.1360
290	1,460,569	1,552,095	0	3,012,664	0.0083	0.1443
300	1,448,333	1,342,225	0	2,790,558	0.0077	0.1520
310	1,873,209	1,748,561	0	3,621,769	0.0099	0.1619
320	1,547,774	1,246,920	0	2,794,695	0.0077	0.1696
330	1,913,228	1,464,984	0	3,378,212	0.0093	0.1789
340	1,951,074	1,528,108	0	3,479,182	0.0096	0.1884
350	1,798,778	1,952,117	0	3,750,894	0.0103	0.1987
360	1,525,194	2,293,185	0	3,818,378	0.0105	0.2092
370	2,587,610	2,114,281	0	4,701,892	0.0129	0.2221
380	2,218,707	2,116,075	0	4,334,782	0.0119	0.2340
390	1,814,841	2,782,517	0	4,597,358	0.0126	0.2467
400	2,547,226	2,394,358	0	4,941,584	0.0136	0.2602
410	2,791,562	2,676,873	29,244	5,497,679	0.0151	0.2753
420	2,692,093	2,212,861	0	4,904,954	0.0135	0.2888
430	3,136,631	2,590,238	0	5,726,869	0.0157	0.3045
440	3,657,932	3,568,578	0	7,226,510	0.0198	0.3244
450	3,167,446	2,748,069	0	5,915,514	0.0162	0.3406
460	4,027,699	3,496,763	0	7,524,461	0.0207	0.3613
470	3,633,180	3,333,187	0	6,966,367	0.0191	0.3804
480	3,518,848	3,717,548	0	7,236,396	0.0199	0.4003
490	4,807,078	3,695,038	0	8,502,116	0.0233	0.4236
500	5,106,971	4,927,013	0	10,033,984	0.0276	0.4512
510	4,285,665	4,778,695	0	9,064,360	0.0249	0.4761
520	5,577,437	5,143,616	0	10,721,053	0.0294	0.5055
530	5,594,977	5,258,780	0	10,853,757	0.0298	0.5353
540	6,694,860	5,761,344	0	12,456,204	0.0342	0.5696
550	7,433,999	5,897,465	0	13,331,464	0.0366	0.6062

Appendix C Table 2a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
560	6,225,792	6,081,306	0	12,307,099	0.0338	0.6400
570	5,894,260	6,019,415	0	11,913,675	0.0327	0.6727
580	5,141,663	5,392,213	0	10,533,875	0.0289	0.7016
590	3,704,901	4,578,388	0	8,283,289	0.0227	0.7244
600	3,939,061	3,835,919	0	7,774,981	0.0214	0.7457
610	3,493,499	3,963,838	0	7,457,337	0.0205	0.7662
620	2,850,922	3,154,909	0	6,005,830	0.0165	0.7827
630	3,068,008	3,980,727	0	7,048,734	0.0194	0.8020
640	3,239,340	2,271,861	29,244	5,540,445	0.0152	0.8173
650	2,208,342	2,689,844	0	4,898,186	0.0135	0.8307
660	2,150,674	2,098,739	29,244	4,278,657	0.0118	0.8425
670	2,288,980	2,011,218	29,244	4,329,442	0.0119	0.8543
680	2,035,247	1,912,334	0	3,947,582	0.0108	0.8652
690	1,909,757	2,690,005	0	4,599,762	0.0126	0.8778
700	2,285,297	1,795,973	29,244	4,110,515	0.0113	0.8891
710	1,301,622	1,705,570	0	3,007,192	0.0083	0.8974
720	1,124,092	1,421,208	29,244	2,574,545	0.0071	0.9044
730	1,740,382	1,725,706	0	3,466,088	0.0095	0.9140
740	1,076,359	1,326,977	0	2,403,336	0.0066	0.9206
750	998,306	1,722,892	29,244	2,750,443	0.0076	0.9281
760	970,341	1,588,223	29,244	2,587,808	0.0071	0.9352
770	882,919	1,445,038	0	2,327,957	0.0064	0.9416
780	738,330	1,186,343	0	1,924,673	0.0053	0.9469
790	722,050	1,249,023	0	1,971,074	0.0054	0.9523
800	632,816	1,285,435	0	1,918,251	0.0053	0.9576
810	144,440	445,373	0	589,813	0.0016	0.9592
820	284,090	862,424	0	1,146,513	0.0031	0.9623
830	338,350	627,603	0	965,952	0.0027	0.9650
840	151,771	491,373	0	643,143	0.0018	0.9668
850	223,270	124,608	0	347,878	0.0010	0.9677
860	77,914	235,995	0	313,908	0.0009	0.9686
870	104,887	325,851	0	430,739	0.0012	0.9698
880	164,029	159,037	0	323,066	0.0009	0.9707
890	177,811	311,081	0	488,892	0.0013	0.9720
900	0	107,486	0	107,486	0.0003	0.9723
910	107,600	123,201	0	230,801	0.0006	0.9729
920	31,500	215,210	0	246,711	0.0007	0.9736
930	0	97,769	0	97,769	0.0003	0.9739
940	30,440	147,215	0	177,655	0.0005	0.9744
950	18,177	134,164	0	152,341	0.0004	0.9748
960	15,490	0	0	15,490	0.0000	0.9748
970	41,567	74,926	0	116,492	0.0003	0.9751
980	0	17,643	0	17,643	0.0000	0.9752
1000	16,505	0	0	16,505	0.0000	0.9752
1050	0	19,384	0	19,384	0.0001	0.9753
9999	0	0	0	8,998,790	0.0247	1.0000
Total	**173,376,184**	**179,062,746**	**2,691,076**	**364,128,797**	**1.0000**	**1.0000**

Appendix C Table 2b. -- Population estimates by sex and size for Pacific cod (*Gadus macrocephalus)* from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
130	0	28,144	0	28,144	0.0002	0.0002
140	146,667	92,580	118,933	358,181	0.0027	0.0029
150	32,008	121,969	28,759	182,735	0.0014	0.0043
160	285,893	101,699	33,474	421,066	0.0032	0.0074
170	214,576	122,634	0	337,211	0.0025	0.0100
180	97,371	68,077	0	165,448	0.0012	0.0112
190	219,420	0	0	219,420	0.0016	0.0128
200	62,774	161,641	0	224,415	0.0017	0.0145
210	95,009	157,418	0	252,427	0.0019	0.0164
220	29,686	224,692	0	254,378	0.0019	0.0183
230	253,170	124,866	0	378,036	0.0028	0.0212
240	380,588	472,630	0	853,218	0.0064	0.0275
250	183,478	313,240	0	496,718	0.0037	0.0313
260	517,247	408,758	0	926,005	0.0069	0.0382
270	742,427	498,588	0	1,241,015	0.0093	0.0475
280	896,061	880,369	0	1,776,430	0.0133	0.0608
290	949,632	819,318	0	1,768,950	0.0133	0.0741
300	1,193,937	1,330,263	0	2,524,200	0.0189	0.0930
310	1,334,683	1,151,172	0	2,485,855	0.0186	0.1117
320	1,316,886	1,565,246	0	2,882,132	0.0216	0.1333
330	914,236	1,462,617	0	2,376,853	0.0178	0.1511
340	1,425,060	1,051,014	0	2,476,075	0.0186	0.1696
350	738,038	714,891	0	1,452,929	0.0109	0.1805
360	597,206	723,640	0	1,320,846	0.0099	0.1904
370	594,755	630,903	0	1,225,658	0.0092	0.1996
380	484,133	556,191	0	1,040,324	0.0078	0.2074
390	287,568	309,923	0	597,491	0.0045	0.2119
400	210,409	593,522	0	803,931	0.0060	0.2179
410	306,117	371,923	0	678,040	0.0051	0.2230
420	700,817	294,176	0	994,993	0.0075	0.2305
430	551,797	497,719	0	1,049,516	0.0079	0.2383
440	745,756	639,059	0	1,384,815	0.0104	0.2487
450	747,693	995,300	0	1,742,993	0.0131	0.2618
460	1,023,356	751,700	0	1,775,056	0.0133	0.2751
470	908,544	627,321	0	1,535,866	0.0115	0.2866
480	1,041,901	648,767	0	1,690,667	0.0127	0.2993
490	1,078,371	854,031	0	1,932,402	0.0145	0.3138
500	1,438,599	1,307,904	0	2,746,504	0.0206	0.3343
510	1,667,331	1,360,818	0	3,028,149	0.0227	0.3570
520	1,753,262	1,615,486	0	3,368,749	0.0253	0.3823
530	1,563,530	1,861,867	0	3,425,397	0.0257	0.4080
540	2,079,144	1,511,396	0	3,590,540	0.0269	0.4349
550	1,892,733	2,390,076	0	4,282,808	0.0321	0.4670
560	2,999,657	3,145,338	0	6,144,995	0.0461	0.5131
570	2,837,638	2,262,441	0	5,100,079	0.0382	0.5513
580	2,435,484	2,545,700	0	4,981,183	0.0373	0.5886

Appendix C Table 2b. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
590	2,491,837	2,583,581	0	5,075,418	0.0380	0.6267
600	2,578,814	2,125,300	0	4,704,114	0.0353	0.6620
610	1,972,031	2,405,621	0	4,377,652	0.0328	0.6948
620	2,058,664	2,338,055	0	4,396,719	0.0330	0.7277
630	2,000,137	2,388,521	0	4,388,658	0.0329	0.7606
640	1,967,491	1,813,516	0	3,781,007	0.0283	0.7890
650	1,891,100	1,461,744	0	3,352,845	0.0251	0.8141
660	1,292,464	1,189,669	0	2,482,133	0.0186	0.8327
670	1,446,149	1,597,458	0	3,043,607	0.0228	0.8555
680	1,537,921	918,913	0	2,456,834	0.0184	0.8740
690	927,890	924,468	0	1,852,358	0.0139	0.8878
700	1,030,862	1,166,110	0	2,196,973	0.0165	0.9043
710	934,827	628,591	0	1,563,418	0.0117	0.9160
720	1,029,863	992,915	0	2,022,778	0.0152	0.9312
730	623,371	698,982	0	1,322,353	0.0099	0.9411
740	757,179	574,702	0	1,331,881	0.0100	0.9511
750	493,437	668,172	0	1,161,609	0.0087	0.9598
760	194,294	521,798	0	716,091	0.0054	0.9652
770	329,985	481,554	0	811,539	0.0061	0.9712
780	259,494	214,661	0	474,155	0.0036	0.9748
790	195,211	471,184	0	666,395	0.0050	0.9798
800	316,768	253,562	0	570,331	0.0043	0.9841
810	142,546	331,249	0	473,795	0.0036	0.9876
820	0	326,618	0	326,618	0.0024	0.9901
830	94,953	228,033	0	322,986	0.0024	0.9925
840	59,897	119,286	0	179,183	0.0013	0.9938
850	81,072	29,747	0	110,819	0.0008	0.9947
860	28,572	55,183	0	83,755	0.0006	0.9953
870	0	67,733	0	67,733	0.0005	0.9958
880	26,936	59,131	0	86,067	0.0006	0.9964
890	88,597	56,069	0	144,666	0.0011	0.9975
900	36,853	92,700	0	129,554	0.0010	0.9985
930	32,934	62,118	0	95,052	0.0007	0.9992
950	46,123	26,608	0	72,731	0.0005	0.9998
1010	0	31,647	0	31,647	0.0002	1.0000
Total	**66,942,919**	**66,272,232**	**181,166**	**133,396,317**	**1.0000**	**1.0000**

Appendix C Table 3a. -- Population estimates by sex and size for yellowfin sole (*Limanda aspera)* from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	0	1,139,018	1,139,018	0.0001	0.0001
70	0	0	0	0	0.0000	0.0001
80	964,699	550,749	1,139,018	2,654,467	0.0003	0.0004
90	3,775,513	12,707,262	80,196	16,562,971	0.0017	0.0022
100	11,710,336	13,480,756	1,550,735	26,741,827	0.0028	0.0050
110	14,194,896	9,286,314	1,045,361	24,526,571	0.0026	0.0076
120	35,271,973	25,100,864	0	60,372,837	0.0064	0.0139
130	39,786,363	30,574,668	823,434	71,184,465	0.0075	0.0215
140	46,804,855	74,161,934	0	120,966,789	0.0128	0.0342
150	60,081,248	71,766,902	0	131,848,151	0.0139	0.0482
160	89,376,466	104,101,963	0	193,478,429	0.0204	0.0686
170	88,464,247	128,312,665	0	216,776,912	0.0229	0.0915
180	143,757,115	141,570,269	0	285,327,384	0.0301	0.1217
190	185,202,661	176,256,615	480,440	361,939,716	0.0382	0.1599
200	187,865,528	176,915,065	0	364,780,593	0.0385	0.1984
210	173,154,939	185,591,052	0	358,745,991	0.0379	0.2363
220	186,353,610	168,537,041	100,633	354,991,284	0.0375	0.2738
230	180,695,059	221,443,871	201,266	402,340,196	0.0425	0.3163
240	200,777,194	188,141,500	402,532	389,321,225	0.0411	0.3575
250	165,386,644	217,179,162	905,696	383,471,502	0.0405	0.3980
260	187,826,286	199,837,704	805,063	388,469,053	0.0410	0.4390
270	195,150,932	185,170,790	201,266	380,522,987	0.0402	0.4792
280	202,037,730	159,095,208	704,431	361,837,369	0.0382	0.5175
290	192,937,512	136,733,472	603,798	330,274,782	0.0349	0.5524
300	251,251,528	183,352,429	503,165	435,107,122	0.0460	0.5983
310	321,375,392	209,413,054	603,798	531,392,244	0.0561	0.6545
320	343,250,617	283,092,365	603,798	626,946,780	0.0662	0.7207
330	281,439,206	340,082,772	805,063	622,327,042	0.0657	0.7864
340	224,825,127	350,745,277	1,509,494	577,079,899	0.0610	0.8474
350	123,511,252	343,998,192	1,710,760	469,220,203	0.0496	0.8970
360	50,267,823	277,018,026	1,710,760	328,996,609	0.0348	0.9317
370	31,064,284	213,003,596	1,106,962	245,174,842	0.0259	0.9576
380	10,557,426	155,506,083	805,063	166,868,572	0.0176	0.9753
390	3,123,693	106,008,430	1,207,595	110,339,718	0.0117	0.9869
400	66,523	73,394,958	301,899	73,763,380	0.0078	0.9947
410	211,709	27,302,441	201,266	27,715,416	0.0029	0.9977
420	0	16,540,530	0	16,540,530	0.0017	0.9994
430	0	3,328,622	0	3,328,622	0.0004	0.9998
440	0	1,196,686	0	1,196,686	0.0001	0.9999
450	0	1,128,565	0	1,128,565	0.0001	1.0000
Total	**4,232,520,389**	**5,211,627,852**	**21,252,509**	**9,465,400,749**	**1.0000**	**1.0000**

Appendix C Table 3b. -- Population estimates by sex and size for yellowfin sole (*Limanda aspera)* from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
40	0	0	221,114	221,114	0.0001	0.0001
50	0	0	2,149,877	2,149,877	0.0012	0.0013
60	599,510	244,842	1,366,431	2,210,783	0.0013	0.0026
70	3,226,551	1,012,480	1,049,476	5,288,507	0.0030	0.0056
80	2,627,040	1,430,162	1,877,600	5,934,803	0.0034	0.0090
90	2,848,904	4,214,324	673,440	7,736,668	0.0044	0.0134
100	5,206,357	10,342,354	1,203,726	16,752,438	0.0095	0.0229
110	10,430,989	6,519,791	0	16,950,780	0.0096	0.0325
120	20,255,271	12,563,081	0	32,818,352	0.0186	0.0512
130	24,943,450	20,302,740	0	45,246,190	0.0257	0.0768
140	27,129,648	19,253,951	0	46,383,599	0.0263	0.1032
150	32,530,665	14,711,648	0	47,242,313	0.0268	0.1300
160	29,416,324	23,963,933	0	53,380,257	0.0303	0.1603
170	36,076,629	33,035,726	0	69,112,354	0.0393	0.1996
180	45,696,485	33,452,252	0	79,148,736	0.0450	0.2445
190	53,336,378	45,097,428	0	98,433,806	0.0559	0.3004
200	64,381,536	54,260,012	0	118,641,548	0.0674	0.3678
210	63,346,821	62,708,575	0	126,055,396	0.0716	0.4394
220	73,558,055	72,025,530	0	145,583,586	0.0827	0.5221
230	60,956,046	67,111,008	0	128,067,054	0.0727	0.5948
240	37,227,865	54,335,952	0	91,563,817	0.0520	0.6468
250	27,784,779	32,158,195	0	59,942,973	0.0340	0.6809
260	19,913,154	20,634,804	0	40,547,958	0.0230	0.7039
270	13,848,827	19,805,534	0	33,654,361	0.0191	0.7230
280	11,256,433	16,577,801	0	27,834,235	0.0158	0.7388
290	8,711,386	11,117,184	0	19,828,570	0.0113	0.7501
300	10,821,934	13,037,064	0	23,858,998	0.0136	0.7637
310	12,827,058	12,218,042	0	25,045,100	0.0142	0.7779
320	13,740,603	10,102,733	0	23,843,336	0.0135	0.7914
330	19,321,389	14,183,821	0	33,505,210	0.0190	0.8104
340	26,607,716	17,470,947	0	44,078,663	0.0250	0.8355
350	33,859,489	25,323,446	0	59,182,934	0.0336	0.8691
360	31,243,764	30,579,361	0	61,823,125	0.0351	0.9042
370	21,064,164	29,173,305	0	50,237,469	0.0285	0.9327
380	16,846,113	30,281,215	0	47,127,328	0.0268	0.9595
390	8,772,520	19,448,583	0	28,221,103	0.0160	0.9755
400	3,589,268	16,119,622	0	19,708,890	0.0112	0.9867
410	2,424,311	9,565,459	0	11,989,771	0.0068	0.9935
420	655,135	3,559,864	0	4,214,999	0.0024	0.9959
430	792,130	2,000,699	0	2,792,829	0.0016	0.9975
440	0	2,056,136	0	2,056,136	0.0012	0.9987
450	0	1,177,182	0	1,177,182	0.0007	0.9994
460	0	526,915	0	526,915	0.0003	0.9997
470	0	302,981	0	302,981	0.0002	0.9998
500	0	67,483	0	67,483	0.0000	0.9999
510	0	244,842	0	244,842	0.0001	1.0000
Total	**877,874,699**	**874,319,005**	**8,541,664**	**1,760,735,369**	**1.0000**	**1.0000**

Appendix C Table 4a. -- Population estimates by sex and size for **northern rock sole** *(Lepidopsetta polyxystra*) from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
40	0	0	1,652,115	1,652,115	0.0003	0.0003
60	785,845	0	3,609,468	4,395,314	0.0008	0.0012
70	4,815,960	1,621,860	11,589,916	18,027,736	0.0034	0.0046
80	7,585,868	2,243,989	4,187,315	14,017,172	0.0027	0.0072
90	24,041,372	18,286,407	2,208,133	44,535,912	0.0085	0.0157
100	59,039,912	39,975,795	6,072,027	105,087,734	0.0200	0.0357
110	98,391,933	65,176,724	8,373,182	171,941,839	0.0327	0.0684
120	127,335,859	116,888,204	17,588,575	261,812,638	0.0498	0.1182
130	170,451,861	137,927,046	18,263,149	326,642,056	0.0621	0.1803
140	140,661,477	109,279,752	9,666,821	259,608,050	0.0494	0.2297
150	85,712,117	83,128,634	3,373,361	172,214,112	0.0327	0.2624
160	95,103,722	55,765,182	1,298,964	152,167,869	0.0289	0.2914
170	87,930,436	55,681,704	0	143,612,140	0.0273	0.3187
180	90,309,223	59,388,087	0	149,697,310	0.0285	0.3471
190	71,924,354	55,537,387	0	127,461,740	0.0242	0.3714
200	46,812,260	42,298,745	0	89,111,005	0.0169	0.3883
210	33,615,615	32,092,317	0	65,707,933	0.0125	0.4008
220	25,986,410	30,134,545	0	56,120,955	0.0107	0.4115
230	34,703,027	17,640,521	0	52,343,549	0.0100	0.4214
240	35,751,211	34,808,816	0	70,560,027	0.0134	0.4349
250	45,378,547	40,944,419	0	86,322,966	0.0164	0.4513
260	59,898,905	36,540,123	0	96,439,028	0.0183	0.4696
270	73,206,317	46,544,355	0	119,750,673	0.0228	0.4924
280	136,954,485	47,573,009	0	184,527,494	0.0351	0.5275
290	225,318,336	53,008,140	0	278,326,476	0.0529	0.5804
300	232,910,067	59,685,219	0	292,595,286	0.0556	0.6360
310	176,800,180	61,774,164	0	238,574,344	0.0454	0.6814
320	116,541,265	72,609,857	0	189,151,122	0.0360	0.7174
330	72,777,381	120,800,006	0	193,577,386	0.0368	0.7542
340	35,476,351	175,750,877	0	211,227,228	0.0402	0.7944
350	19,766,753	209,731,914	0	229,498,667	0.0436	0.8380
360	7,743,366	198,600,502	0	206,343,868	0.0392	0.8772
370	3,372,992	177,475,188	0	180,848,180	0.0344	0.9116
380	3,975,777	128,145,729	0	132,121,506	0.0251	0.9368
390	1,432,192	94,770,230	0	96,202,422	0.0183	0.9551
400	724,685	53,648,804	0	54,373,489	0.0103	0.9654
410	589,873	20,085,438	0	20,675,311	0.0039	0.9693
420	0	9,776,995	0	9,776,995	0.0019	0.9712
430	0	3,709,281	0	3,709,281	0.0007	0.9719
440	0	1,682,047	0	1,682,047	0.0003	0.9722
450	0	374,332	0	374,332	0.0001	0.9723
460	0	202,856	0	202,856	0.0000	0.9723
470	0	111,218	0	111,218	0.0000	0.9723
470	0	0	0	145,416,554	0.0277	1.0000
Total	**2,453,825,936**	**2,571,420,419**	**87,883,026**	**5,258,545,935**	**1.0000**	**1.0000**

Appendix C Table 4b. -- Population estimates by sex and size for **northern rock sole** *(Lepidopsetta polyxystra*) from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	28,202	0	0	28,202	0.0001	0.0001
70	0	0	29,707	29,707	0.0001	0.0002
80	88,946	29,292	118,653	236,891	0.0007	0.0009
90	502,441	313,312	525,880	1,341,633	0.0042	0.0052
100	631,888	559,698	3,480,365	4,671,952	0.0147	0.0199
110	1,638,375	1,827,167	5,764,964	9,230,506	0.0291	0.0489
120	3,310,112	2,673,364	9,832,185	15,815,660	0.0498	0.0987
130	5,133,585	5,678,524	10,568,263	21,380,372	0.0673	0.1660
140	7,860,846	6,463,700	7,757,682	22,082,228	0.0695	0.2355
150	4,575,916	7,261,722	1,904,165	13,741,803	0.0433	0.2788
160	3,108,947	3,614,246	445,940	7,169,134	0.0226	0.3013
170	1,827,540	3,078,646	62,071	4,968,256	0.0156	0.3170
180	727,413	2,130,825	36,853	2,895,091	0.0091	0.3261
190	398,969	323,190	0	722,159	0.0023	0.3284
200	0	125,596	0	125,596	0.0004	0.3288
210	0	0	0	0	0.0000	0.3288
220	296,660	63,558	0	360,219	0.0011	0.3299
230	33,999	132,292	0	166,291	0.0005	0.3304
240	244,871	122,756	0	367,627	0.0012	0.3316
250	447,659	121,844	0	569,503	0.0018	0.3334
260	78,328	248,681	0	327,009	0.0010	0.3344
270	545,341	0	0	545,341	0.0017	0.3361
280	545,341	190,470	0	735,812	0.0023	0.3384
290	56,822	90,809	0	147,631	0.0005	0.3389
300	1,576,164	391,031	0	1,967,195	0.0062	0.3451
310	2,988,943	788,790	0	3,777,732	0.0119	0.3570
320	5,267,601	303,737	0	5,571,338	0.0175	0.3745
330	2,505,127	1,039,244	0	3,544,370	0.0112	0.3857
340	1,969,180	2,495,391	0	4,464,571	0.0141	0.3997
350	1,267,843	3,851,012	0	5,118,855	0.0161	0.4158
360	350,786	3,866,883	0	4,217,668	0.0133	0.4291
370	496,574	4,463,513	0	4,960,086	0.0156	0.4447
380	383,766	4,775,689	0	5,159,455	0.0162	0.4610
390	220,147	4,674,601	0	4,894,748	0.0154	0.4764
400	0	3,433,411	0	3,433,411	0.0108	0.4872
410	35,628	2,231,683	0	2,267,310	0.0071	0.4943
420	0	1,509,257	0	1,509,257	0.0048	0.4991
430	0	1,125,569	0	1,125,569	0.0035	0.5026
440	0	965,550	0	965,550	0.0030	0.5056
450	0	133,088	0	133,088	0.0004	0.5061
460	0	103,999	0	103,999	0.0003	0.5064
470	0	63,570	0	63,570	0.0002	0.5066
9999	0	0	0	156,749,070	0.4934	1.0000
Total	**49,143,958**	**71,265,707**	**40,526,728**	**317,685,463**	**1.0000**	**1.0000**

Appendix C Table 5a. -- Population estimates by sex and size for flathead sole (*Hippoglossoides elassodon*) from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
40	0	63,817	0	63,817	0.0000	0.0000
60	0	57,583	192,509	250,092	0.0001	0.0002
70	416,021	267,585	1,755,297	2,438,903	0.0012	0.0013
80	1,003,495	338,749	3,660,764	5,003,008	0.0024	0.0037
90	2,476,260	1,290,209	12,104,315	15,870,784	0.0076	0.0113
100	5,099,387	2,094,683	11,034,126	18,228,196	0.0087	0.0201
110	7,407,310	5,502,928	15,138,373	28,048,610	0.0135	0.0335
120	9,566,285	7,472,405	12,923,315	29,962,006	0.0144	0.0479
130	12,643,203	13,497,350	3,367,100	29,507,654	0.0142	0.0621
140	14,493,177	15,674,795	2,126,979	32,294,951	0.0155	0.0776
150	18,377,264	24,086,761	776,718	43,240,742	0.0208	0.0983
160	32,268,188	29,881,852	82,612	62,232,652	0.0299	0.1282
170	35,438,202	30,068,354	0	65,506,556	0.0314	0.1596
180	40,502,755	30,637,097	0	71,139,852	0.0341	0.1938
190	34,325,218	31,998,108	0	66,323,326	0.0318	0.2256
200	37,613,321	34,643,638	62,598	72,319,557	0.0347	0.2603
210	41,993,408	42,638,733	0	84,632,141	0.0406	0.3009
220	43,310,968	38,755,847	0	82,066,816	0.0394	0.3403
230	43,145,711	43,940,936	0	87,086,647	0.0418	0.3821
240	45,580,495	39,488,558	0	85,069,052	0.0408	0.4229
250	42,825,343	39,209,804	0	82,035,146	0.0394	0.4623
260	49,972,693	38,060,341	0	88,033,034	0.0422	0.5046
270	51,909,152	36,961,356	0	88,870,507	0.0426	0.5472
280	44,419,946	39,546,259	0	83,966,204	0.0403	0.5875
290	51,103,745	36,631,426	0	87,735,171	0.0421	0.6296
300	48,205,353	33,939,997	0	82,145,350	0.0394	0.6690
310	41,707,661	29,850,585	74,158	71,632,405	0.0344	0.7034
320	40,788,721	28,850,551	0	69,639,273	0.0334	0.7368
330	43,577,603	28,365,943	0	71,943,547	0.0345	0.7713
340	45,081,415	29,322,213	148,317	74,551,945	0.0358	0.8071
350	32,277,445	28,140,561	0	60,418,005	0.0290	0.8361
360	31,282,642	27,003,137	0	58,285,780	0.0280	0.8641
370	24,678,705	25,608,496	0	50,287,201	0.0241	0.8882
380	20,158,754	20,901,896	152,644	41,213,294	0.0198	0.9080
390	15,906,333	15,375,563	0	31,281,897	0.0150	0.9230
400	12,638,102	17,518,603	74,158	30,230,864	0.0145	0.9375
410	5,940,034	13,304,798	0	19,244,832	0.0092	0.9468
420	5,161,972	16,058,844	0	21,220,816	0.0102	0.9569
430	2,213,127	13,994,768	0	16,207,895	0.0078	0.9647
440	1,167,887	14,888,619	0	16,056,506	0.0077	0.9724
450	185,039	14,705,148	0	14,890,187	0.0071	0.9796
460	341,198	13,609,256	0	13,950,454	0.0067	0.9863
470	149,427	6,968,517	0	7,117,944	0.0034	0.9897
480	0	6,926,401	0	6,926,401	0.0033	0.9930
490	0	5,426,773	0	5,426,773	0.0026	0.9956

Appendix C Table 5a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
500	0	4,272,188	0	4,272,188	0.0021	0.9977
510	0	1,845,712	0	1,845,712	0.0009	0.9985
520	0	1,352,421	0	1,352,421	0.0006	0.9992
530	0	918,370	0	918,370	0.0004	0.9996
540	0	143,462	0	143,462	0.0001	0.9997
550	0	184,502	0	184,502	0.0001	0.9998
560	0	308,262	0	308,262	0.0001	0.9999
580	0	114,434	0	114,434	0.0001	1.0000
Total	**1,037,352,965**	**982,709,197**	**63,673,983**	**2,083,736,145**	**1.0000**	**1.0000**

Appendix C Table 5b. -- Population estimates by sex and size for flathead sole (*Hippoglossoides elassodon*) from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
340	0	81,049	0	81,049	0.4894	0.4894
350	28,186	0	0	28,186	0.1702	0.6596
360	0	28,186	0	28,186	0.1702	0.8298
400	0	28,186	0	28,186	0.1702	1.0000
Total	**28,186**	**137,420**	**0**	**165,606**	**1.0000**	**1.0000**

Appendix C Table 6a. -- Population estimates by sex and size for flathead sole (*Hippoglossoides robustus*) from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
80	0	0	52,636	52,636	0.0004	0.0004
100	113,056	0	95,626	208,682	0.0017	0.0021
110	166,102	251,666	0	417,769	0.0034	0.0056
120	520,038	171,839	148,262	840,140	0.0069	0.0124
130	805,222	495,753	191,252	1,492,228	0.0122	0.0247
140	885,721	501,956	0	1,387,678	0.0114	0.0360
150	1,114,566	740,116	286,878	2,141,561	0.0175	0.0536
160	1,660,610	870,634	0	2,531,244	0.0207	0.0743
170	2,899,675	866,611	191,252	3,957,538	0.0324	0.1067
180	2,435,934	1,780,970	286,878	4,503,783	0.0369	0.1436
190	3,193,091	1,338,683	478,131	5,009,905	0.0410	0.1846
200	2,738,490	1,550,791	95,626	4,384,907	0.0359	0.2205
210	2,858,060	1,749,296	286,878	4,894,234	0.0401	0.2606
220	2,366,093	2,216,237	191,252	4,773,582	0.0391	0.2996
230	1,476,653	2,134,906	286,878	3,898,438	0.0319	0.3316
240	1,130,480	3,118,465	382,505	4,631,449	0.0379	0.3695
250	1,327,495	4,912,498	286,878	6,526,871	0.0534	0.4229
260	1,047,366	4,960,675	1,243,140	7,251,181	0.0594	0.4823
270	899,762	5,136,499	573,757	6,610,017	0.0541	0.5364
280	535,160	6,765,510	286,878	7,587,548	0.0621	0.5985
290	367,296	7,086,787	478,131	7,932,214	0.0649	0.6635
300	240,794	7,266,022	191,252	7,698,068	0.0630	0.7265
310	302,093	6,427,252	286,878	7,016,223	0.0574	0.7840
320	170,059	6,866,672	286,878	7,323,609	0.0600	0.8439
330	30,783	5,015,146	286,878	5,332,807	0.0437	0.8876
340	201,123	4,158,161	0	4,359,284	0.0357	0.9233
350	221,117	2,762,047	95,626	3,078,791	0.0252	0.9485
360	0	1,768,278	0	1,768,278	0.0145	0.9630
370	30,140	1,250,129	191,252	1,471,521	0.0120	0.9750
380	0	918,922	95,626	1,014,548	0.0083	0.9833
390	0	509,085	286,878	795,964	0.0065	0.9899
400	0	306,929	95,626	402,555	0.0033	0.9932
410	0	365,043	0	365,043	0.0030	0.9961
430	0	142,423	0	142,423	0.0012	0.9973
440	0	30,783	0	30,783	0.0003	0.9976
470	0	88,314	0	88,314	0.0007	0.9983
480	0	122,447	0	122,447	0.0010	0.9993
9999	0	0	0	87,165	0.0007	1.0000
Total	**29,736,980**	**84,647,545**	**7,659,738**	**122,131,427**	**1.0000**	**1.0000**

Appendix C Table 6b. -- Population estimates by sex and size for flathead sole (*Hippoglossoides robustus*) from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	0	0	96,866	96,866	0.0004	0.0004
70	0	0	28,144	28,144	0.0001	0.0005
80	0	0	0	0	0.0000	0.0005
90	86,744	0	34,048	120,792	0.0005	0.0010
100	302,034	171,371	96,866	570,271	0.0024	0.0034
110	729,858	474,000	693,756	1,897,614	0.0079	0.0113
120	5,014,262	5,591,554	1,369,353	11,975,170	0.0497	0.0609
130	8,982,795	12,191,649	1,285,128	22,459,572	0.0931	0.1540
140	11,687,104	13,850,571	515,225	26,052,899	0.1080	0.2621
150	12,765,621	14,438,232	317,185	27,521,038	0.1141	0.3762
160	10,367,806	16,275,930	166,417	26,810,153	0.1112	0.4874
170	7,302,415	13,883,727	0	21,186,142	0.0879	0.5752
180	3,886,129	12,239,440	59,792	16,185,361	0.0671	0.6423
190	4,134,490	10,681,983	102,115	14,918,588	0.0619	0.7042
200	2,692,887	8,092,691	0	10,785,578	0.0447	0.7489
210	2,691,393	7,729,153	0	10,420,546	0.0432	0.7921
220	1,077,864	4,510,450	0	5,588,314	0.0232	0.8153
230	1,061,912	4,022,937	0	5,084,849	0.0211	0.8364
240	206,489	3,444,267	0	3,650,755	0.0151	0.8515
250	215,793	4,432,280	0	4,648,073	0.0193	0.8708
260	86,604	3,469,086	0	3,555,691	0.0147	0.8856
270	277,890	3,125,382	0	3,403,272	0.0141	0.8997
280	146,895	2,782,303	0	2,929,197	0.0121	0.9118
290	132,885	3,265,080	0	3,397,965	0.0141	0.9259
300	0	3,446,924	0	3,446,924	0.0143	0.9402
310	0	2,043,630	0	2,043,630	0.0085	0.9487
320	0	2,648,191	0	2,648,191	0.0110	0.9597
330	0	2,079,127	0	2,079,127	0.0086	0.9683
340	28,186	2,050,856	0	2,079,042	0.0086	0.9769
350	28,186	1,432,679	0	1,460,865	0.0061	0.9830
360	56,371	883,035	0	939,407	0.0039	0.9868
370	0	856,627	0	856,627	0.0036	0.9904
380	0	698,512	0	698,512	0.0029	0.9933
390	0	212,914	0	212,914	0.0009	0.9942
400	0	166,346	0	166,346	0.0007	0.9949
410	0	218,591	0	218,591	0.0009	0.9958
420	0	29,325	0	29,325	0.0001	0.9959
430	0	36,276	0	36,276	0.0002	0.9960
9999	0	0	0	952,701	0.0040	1.0000
Total	**73,962,609**	**161,475,122**	**4,764,896**	**241,155,328**	**1.0000**	**1.0000**

Appendix C Table 7a. -- Population estimates by sex and size for **Alaska plaice** (*Pleuronectes quadrituberculatus*) from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
60	115,207	0	193,396	308,603	0.0005	0.0005
100	98,642	0	0	98,642	0.0001	0.0006
110	0	138,253	0	138,253	0.0002	0.0008
120	0	0	34,026	34,026	0.0001	0.0009
130	243,540	97,389	0	340,929	0.0005	0.0014
140	112,622	307,461	0	420,083	0.0006	0.0020
150	516,991	374,791	0	891,782	0.0013	0.0034
160	849,323	408,817	0	1,258,140	0.0019	0.0052
170	754,125	714,662	0	1,468,788	0.0022	0.0074
180	544,110	674,842	0	1,218,951	0.0018	0.0093
190	2,006,914	1,239,666	0	3,246,579	0.0049	0.0141
200	1,495,380	956,587	0	2,451,967	0.0037	0.0178
210	1,914,118	1,789,996	0	3,704,114	0.0056	0.0234
220	1,924,412	1,201,240	0	3,125,653	0.0047	0.0281
230	1,536,066	1,005,752	0	2,541,817	0.0038	0.0319
240	1,966,209	2,204,701	0	4,170,910	0.0063	0.0382
250	1,736,195	3,115,722	0	4,851,917	0.0073	0.0454
260	4,069,380	2,718,031	0	6,787,411	0.0102	0.0556
270	3,823,640	3,583,159	0	7,406,798	0.0111	0.0667
280	5,480,084	5,894,477	0	11,374,561	0.0171	0.0838
290	9,597,892	6,328,342	0	15,926,234	0.0239	0.1077
300	8,359,147	5,463,981	0	13,823,128	0.0207	0.1285
310	14,375,646	5,416,199	0	19,791,845	0.0297	0.1582
320	21,748,676	6,868,525	0	28,617,201	0.0430	0.2011
330	30,418,199	6,378,575	0	36,796,774	0.0552	0.2564
340	39,544,121	8,460,726	0	48,004,847	0.0721	0.3284
350	48,033,752	7,171,345	0	55,205,097	0.0829	0.4113
360	49,004,799	10,383,454	0	59,388,253	0.0891	0.5004
370	38,272,870	12,589,233	0	50,862,103	0.0763	0.5768
380	24,574,683	13,076,005	0	37,650,688	0.0565	0.6333
390	14,761,098	18,623,460	0	33,384,558	0.0501	0.6834
400	7,262,065	23,440,059	0	30,702,124	0.0461	0.7295
410	2,869,134	23,213,849	0	26,082,983	0.0392	0.7687
420	1,572,834	22,918,038	0	24,490,872	0.0368	0.8054
430	265,232	21,813,374	0	22,078,606	0.0331	0.8386
440	473,360	19,767,387	0	20,240,746	0.0304	0.8689
450	61,141	17,801,947	0	17,863,088	0.0268	0.8957
460	179,025	12,947,881	0	13,126,905	0.0197	0.9155
470	110,953	14,342,962	0	14,453,915	0.0217	0.9371
480	0	10,893,230	0	10,893,230	0.0164	0.9535
490	29,584	6,896,738	0	6,926,322	0.0104	0.9639
500	30,571	5,343,514	0	5,374,085	0.0081	0.9720
510	30,571	4,854,031	0	4,884,601	0.0073	0.9793

Appendix C Table 7a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
520	30,571	3,716,317	0	3,746,887	0.0056	0.9849
530	0	1,479,193	0	1,479,193	0.0022	0.9871
540	0	1,110,001	0	1,110,001	0.0017	0.9888
550	0	676,756	0	676,756	0.0010	0.9898
560	0	105,809	0	105,809	0.0002	0.9900
570	0	86,544	0	86,544	0.0001	0.9901
580	0	203,086	0	203,086	0.0003	0.9904
590	0	152,122	0	152,122	0.0002	0.9906
9999	0	0	0	6,232,870	0.0094	1.0000
Total	**340,792,879**	**318,948,226**	**227,422**	**666,201,397**	**1.0000**	**1.0000**

Appendix C Table 7b. -- Population estimates by sex and size for **Alaska plaice** (*Pleuronectes quadrituberculatus*) from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
50	0	0	62,567	62,567	0.0001	0.0001
70	34,732	0	0	34,732	0.0001	0.0002
80	0	28,242	0	28,242	0.0001	0.0003
90	415,883	140,303	0	556,186	0.0011	0.0014
100	667,103	506,694	0	1,173,796	0.0024	0.0037
110	1,191,847	849,348	0	2,041,195	0.0041	0.0079
120	4,506,264	1,398,120	0	5,904,385	0.0119	0.0198
130	4,526,536	2,464,181	0	6,990,717	0.0141	0.0339
140	3,134,876	3,368,758	0	6,503,633	0.0131	0.0470
150	2,995,907	3,812,745	0	6,808,653	0.0137	0.0607
160	2,789,875	2,631,675	0	5,421,550	0.0109	0.0716
170	3,036,199	1,675,216	0	4,711,415	0.0095	0.0811
180	2,851,240	3,839,959	0	6,691,199	0.0135	0.0946
190	3,185,456	3,636,835	0	6,822,291	0.0138	0.1084
200	3,088,689	3,651,286	0	6,739,975	0.0136	0.1220
210	2,656,333	3,417,203	0	6,073,536	0.0122	0.1342
220	2,632,836	3,361,781	0	5,994,617	0.0121	0.1463
230	2,786,537	2,563,785	0	5,350,322	0.0108	0.1571
240	3,900,652	4,189,097	0	8,089,748	0.0163	0.1734
250	5,342,471	3,046,214	0	8,388,685	0.0169	0.1903
260	5,094,800	4,024,459	0	9,119,259	0.0184	0.2087
270	6,942,690	4,211,637	0	11,154,327	0.0225	0.2312
280	6,108,545	5,319,452	0	11,427,997	0.0230	0.2542
290	5,427,022	3,187,571	0	8,614,593	0.0174	0.2716
300	5,923,019	3,336,358	0	9,259,377	0.0187	0.2902
310	8,868,953	3,543,270	0	12,412,223	0.0250	0.3153
320	12,875,285	5,005,055	0	17,880,340	0.0360	0.3513
330	15,878,168	4,174,878	0	20,053,045	0.0404	0.3917
340	26,782,649	4,437,592	0	31,220,242	0.0629	0.4547
350	29,715,757	3,529,870	0	33,245,627	0.0670	0.5217
360	34,784,465	5,156,012	0	39,940,477	0.0805	0.6022
370	28,822,996	5,383,802	0	34,206,798	0.0690	0.6712
380	26,501,211	6,719,945	0	33,221,157	0.0670	0.7382
390	16,991,006	6,825,934	0	23,816,940	0.0480	0.7862
400	10,025,129	8,071,662	0	18,096,791	0.0365	0.8227
410	3,605,549	8,757,693	0	12,363,242	0.0249	0.8476
420	1,346,815	9,567,543	0	10,914,358	0.0220	0.8696
430	1,050,644	9,438,474	0	10,489,118	0.0211	0.8907
440	464,446	8,093,428	0	8,557,874	0.0173	0.9080
450	31,486	7,620,517	0	7,652,004	0.0154	0.9234
460	0	6,367,621	0	6,367,621	0.0128	0.9362
470	54,276	6,534,168	0	6,588,443	0.0133	0.9495
480	0	5,693,513	0	5,693,513	0.0115	0.9610
490	38,404	4,765,265	0	4,803,669	0.0097	0.9707
500	0	3,939,528	0	3,939,528	0.0079	0.9786
510	0	2,120,097	0	2,120,097	0.0043	0.9829

Appendix C Table 7b. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
520	0	2,452,800	0	2,452,800	0.0049	0.9879
530	0	1,804,852	0	1,804,852	0.0036	0.9915
540	0	607,153	0	607,153	0.0012	0.9927
550	0	1,219,350	0	1,219,350	0.0025	0.9952
560	0	995,877	0	995,877	0.0020	0.9972
570	0	51,777	0	51,777	0.0001	0.9973
580	0	100,302	0	100,302	0.0002	0.9975
590	0	123,465	0	123,465	0.0002	0.9977
600	0	103,555	0	103,555	0.0002	0.9979
610	0	51,777	0	51,777	0.0001	0.9980
630	0	48,525	0	48,525	0.0001	0.9981
640	0	141,186	0	141,186	0.0003	0.9984
9999	0	0	0	778,548	0.0016	1.0000
Total	**297,076,753**	**198,107,402**	**62,567**	**496,025,270**	**1.0000**	**1.0000**

Appendix C Table 8a. -- Population estimates by sex and size for **Greenland turbot** (*Reinhardtius hippoglossoides)* from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
150	28,436	0	0	28,436	0.0027	0.0027
210	55,492	0	0	55,492	0.0053	0.0080
220	30,370	28,436	0	58,806	0.0056	0.0136
230	28,750	0	0	28,750	0.0027	0.0163
240	0	31,771	0	31,771	0.0030	0.0193
250	57,854	0	0	57,854	0.0055	0.0248
270	0	60,520	0	60,520	0.0058	0.0306
280	30,783	57,539	0	88,321	0.0084	0.0390
290	0	26,582	0	26,582	0.0025	0.0415
300	30,177	18,177	0	48,354	0.0046	0.0461
310	0	28,750	0	28,750	0.0027	0.0488
320	58,663	0	0	58,663	0.0056	0.0544
330	30,108	29,103	0	59,211	0.0056	0.0600
340	30,108	29,103	0	59,211	0.0056	0.0657
360	117,448	75,841	0	193,289	0.0184	0.0840
370	86,320	46,503	0	132,823	0.0126	0.0967
380	29,471	56,871	0	86,342	0.0082	0.1049
390	29,103	58,574	0	87,677	0.0083	0.1132
400	59,320	57,853	0	117,173	0.0111	0.1244
410	129,150	119,282	0	248,431	0.0236	0.1480
420	57,188	0	0	57,188	0.0054	0.1534
430	52,469	88,030	0	140,499	0.0134	0.1668
440	58,806	29,485	0	88,292	0.0084	0.1752
450	30,370	84,977	0	115,347	0.0110	0.1861
460	190,469	0	0	190,469	0.0181	0.2042
470	30,370	62,341	0	92,711	0.0088	0.2131
480	87,485	29,103	0	116,588	0.0111	0.2241
490	48,156	27,746	0	75,902	0.0072	0.2314
500	39,638	65,101	0	104,739	0.0100	0.2413
510	59,533	48,423	0	107,955	0.0103	0.2516
520	140,700	131,276	0	271,975	0.0259	0.2774
530	59,801	0	0	59,801	0.0057	0.2831
540	116,770	145,586	0	262,356	0.0249	0.3081
550	119,661	145,702	0	265,363	0.0252	0.3333
560	150,705	87,930	0	238,636	0.0227	0.3560
570	182,993	71,429	0	254,422	0.0242	0.3802
580	281,253	203,814	0	485,067	0.0461	0.4263
590	210,091	259,273	0	469,365	0.0446	0.4709
600	437,643	151,907	0	589,549	0.0561	0.5270
610	198,058	79,399	0	277,457	0.0264	0.5534
620	253,168	306,310	0	559,478	0.0532	0.6065
630	166,094	495,545	0	661,639	0.0629	0.6695
640	69,973	353,919	0	423,891	0.0403	0.7098
650	49,735	505,573	0	555,309	0.0528	0.7626
660	87,604	382,463	0	470,067	0.0447	0.8072
670	0	318,912	0	318,912	0.0303	0.8376

Appendix C Table 8a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
680	0	280,679	0	280,679	0.0267	0.8642
690	0	245,963	0	245,963	0.0234	0.8876
700	27,217	226,890	0	254,107	0.0242	0.9118
710	0	108,044	0	108,044	0.0103	0.9221
720	0	64,434	0	64,434	0.0061	0.9282
730	0	96,840	0	96,840	0.0092	0.9374
750	29,704	58,773	0	88,477	0.0084	0.9458
760	28,489	18,779	0	47,269	0.0045	0.9503
770	0	115,051	0	115,051	0.0109	0.9612
790	0	29,471	0	29,471	0.0028	0.9640
800	0	28,750	0	28,750	0.0027	0.9668
810	0	58,858	0	58,858	0.0056	0.9724
820	0	49,831	0	49,831	0.0047	0.9771
840	0	65,703	0	65,703	0.0062	0.9834
850	0	20,898	0	20,898	0.0020	0.9853
860	0	27,484	0	27,484	0.0026	0.9880
880	0	30,156	0	30,156	0.0029	0.9908
920	0	29,387	0	29,387	0.0028	0.9936
950	0	30,269	0	30,269	0.0029	0.9965
970	0	18,048	0	18,048	0.0017	0.9982
1020	0	18,779	0	18,779	0.0018	1.0000
Total	**4,095,696**	**6,422,233**	**0**	**10,517,929**	**1.0000**	**1.0000**

Appendix C Table 8b. -- Population estimates by sex and size for **Greenland turbot** (*Reinhardtius hippoglossoides)* from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
380	32,572	0	0	32,572	0.3497	0.3497
570	30,197	0	0	30,197	0.3242	0.6738
9999	0	0	0	30,384	0.3262	1.0000
Total	**62,769**	**0**	**0**	**93,153**	**1.0000**	**1.0000**

Appendix C Table 9a. -- Population estimates by sex and size for **arrowtooth flounder** (*Atheresthes stomias)* from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
70	0	64,121	0	64,121	0.0001	0.0001
80	162,787	533,891	0	696,677	0.0009	0.0010
90	197,642	84,065	115,975	397,682	0.0005	0.0016
100	407,722	228,741	327,279	963,741	0.0013	0.0029
110	979,207	788,249	442,843	2,210,299	0.0030	0.0058
120	869,964	1,806,492	101,300	2,777,757	0.0037	0.0096
130	767,809	1,069,000	80,735	1,917,545	0.0026	0.0122
140	752,257	957,032	79,241	1,788,529	0.0024	0.0146
150	1,752,747	1,645,910	57,987	3,456,644	0.0047	0.0192
160	3,229,366	6,611,678	79,241	9,920,285	0.0134	0.0326
170	6,521,133	8,658,132	0	15,179,265	0.0205	0.0531
180	6,168,732	11,336,718	37,342	17,542,792	0.0236	0.0767
190	5,333,032	10,193,706	0	15,526,738	0.0209	0.0976
200	4,629,938	7,640,998	0	12,270,936	0.0165	0.1141
210	4,491,035	6,606,416	0	11,097,451	0.0150	0.1291
220	4,201,579	7,182,044	0	11,383,623	0.0153	0.1444
230	4,244,692	6,130,920	0	10,375,612	0.0140	0.1584
240	3,216,433	6,302,616	0	9,519,049	0.0128	0.1713
250	5,133,131	7,925,797	0	13,058,928	0.0176	0.1888
260	4,446,892	7,638,547	0	12,085,439	0.0163	0.2051
270	6,495,097	7,976,824	0	14,471,920	0.0195	0.2246
280	6,307,513	11,507,385	0	17,814,898	0.0240	0.2486
290	6,406,284	12,549,316	0	18,955,600	0.0255	0.2742
300	8,387,875	14,482,741	0	22,870,616	0.0308	0.3050
310	8,856,181	13,507,481	0	22,363,662	0.0301	0.3351
320	10,524,143	16,871,961	0	27,396,104	0.0369	0.3720
330	8,207,733	17,942,130	0	26,149,863	0.0352	0.4073
340	9,535,168	17,796,797	0	27,331,965	0.0368	0.4441
350	11,080,771	18,853,974	0	29,934,745	0.0403	0.4845
360	11,923,827	17,718,666	0	29,642,493	0.0399	0.5244
370	12,381,320	21,415,939	0	33,797,259	0.0455	0.5699
380	13,229,470	21,341,303	0	34,570,774	0.0466	0.6165
390	9,386,581	23,491,281	0	32,877,863	0.0443	0.6608
400	7,046,644	17,897,313	0	24,943,957	0.0336	0.6944
410	6,085,880	18,172,293	0	24,258,173	0.0327	0.7271
420	6,000,608	15,268,417	0	21,269,026	0.0287	0.7558
430	4,408,333	10,788,842	0	15,197,174	0.0205	0.7763
440	3,902,590	11,616,326	0	15,518,917	0.0209	0.7972
450	3,348,589	8,861,440	0	12,210,029	0.0165	0.8136
460	1,846,025	6,041,808	0	7,887,833	0.0106	0.8243
470	1,409,388	6,981,121	0	8,390,508	0.0113	0.8356
480	1,958,649	6,452,907	0	8,411,556	0.0113	0.8469
490	534,874	6,329,154	0	6,864,028	0.0092	0.8561
500	334,477	6,474,035	0	6,808,511	0.0092	0.8653
510	175,847	8,022,038	0	8,197,885	0.0110	0.8764
520	98,373	7,662,106	0	7,760,479	0.0105	0.8868

Appendix C Table 9a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
530	110,165	8,172,759	0	8,282,924	0.0112	0.8980
540	61,208	8,058,379	0	8,119,587	0.0109	0.9089
550	103,696	8,901,820	0	9,005,516	0.0121	0.9211
560	0	9,867,752	0	9,867,752	0.0133	0.9344
570	0	6,836,914	0	6,836,914	0.0092	0.9436
580	29,593	7,327,308	0	7,356,901	0.0099	0.9535
590	101,381	7,266,186	0	7,367,567	0.0099	0.9634
600	0	5,014,493	0	5,014,493	0.0068	0.9702
610	0	3,584,348	0	3,584,348	0.0048	0.9750
620	0	3,862,420	0	3,862,420	0.0052	0.9802
630	0	4,482,868	0	4,482,868	0.0060	0.9862
640	60,855	2,304,565	0	2,365,421	0.0032	0.9894
650	28,923	1,510,767	0	1,539,689	0.0021	0.9915
660	0	1,904,987	0	1,904,987	0.0026	0.9941
670	0	830,156	0	830,156	0.0011	0.9952
680	0	925,356	0	925,356	0.0012	0.9964
690	0	438,836	0	438,836	0.0006	0.9970
700	0	146,246	0	146,246	0.0002	0.9972
710	0	370,744	0	370,744	0.0005	0.9977
720	0	314,517	0	314,517	0.0004	0.9981
730	0	89,378	0	89,378	0.0001	0.9983
740	0	80,735	0	80,735	0.0001	0.9984
750	0	0	0	0	0.0000	0.9984
760	0	99,335	0	99,335	0.0001	0.9985
770	0	65,507	0	65,507	0.0001	0.9986
780	0	31,049	0	31,049	0.0000	0.9986
790	0	46,359	0	46,359	0.0001	0.9987
800	0	31,049	0	31,049	0.0000	0.9987
810	0	253,355	0	253,355	0.0003	0.9991
820	0	28,522	0	28,522	0.0000	0.9991
9999	0	0	0	651,718	0.0009	1.0000
Total	**217,874,160**	**522,275,381**	**1,321,943**	**742,123,202**	**1.0000**	**1.0000**

Appendix C Table 9b. -- Population estimates by sex and size for **arrowtooth flounder** (*Atheresthes stomias)* from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
No data						
Total	**0**	**0**	**0**	**0**	**0.0000**	**0.0000**

Appendix C Table 10a. -- Population estimates by sex and size for **Kamchatka flounder** (*Atheresthes evermanni)* from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
80	87,413	0	0	87,413	0.0008	0.0008
90	0	232,178	0	232,178	0.0021	0.0029
100	94,143	0	0	94,143	0.0008	0.0037
110	31,049	26,280	29,936	87,265	0.0008	0.0045
120	60,111	28,645	0	88,756	0.0008	0.0053
130	0	29,936	144,498	174,434	0.0016	0.0069
140	27,673	189,792	0	217,465	0.0020	0.0088
150	211,765	150,359	0	362,124	0.0033	0.0121
160	360,999	322,198	0	683,197	0.0061	0.0182
170	966,434	918,857	26,452	1,911,742	0.0172	0.0354
180	1,676,358	1,049,684	0	2,726,042	0.0245	0.0599
190	1,457,353	1,283,922	0	2,741,275	0.0247	0.0846
200	939,664	1,589,242	0	2,528,906	0.0227	0.1073
210	1,375,015	935,061	0	2,310,076	0.0208	0.1281
220	748,697	2,009,051	0	2,757,748	0.0248	0.1529
230	1,145,831	1,029,585	0	2,175,416	0.0196	0.1725
240	3,217,842	1,762,192	0	4,980,034	0.0448	0.2173
250	2,202,249	3,563,995	0	5,766,244	0.0519	0.2692
260	3,102,761	2,100,559	0	5,203,321	0.0468	0.3160
270	3,289,631	2,001,303	0	5,290,934	0.0476	0.3635
280	3,573,266	3,425,185	0	6,998,451	0.0629	0.4265
290	2,955,647	2,800,670	0	5,756,317	0.0518	0.4783
300	1,837,852	2,534,262	0	4,372,114	0.0393	0.5176
310	2,328,163	1,732,664	0	4,060,827	0.0365	0.5541
320	1,706,361	1,494,750	0	3,201,111	0.0288	0.5829
330	1,435,494	1,958,653	0	3,394,146	0.0305	0.6134
340	1,155,581	1,707,634	0	2,863,215	0.0258	0.6392
350	1,394,185	1,467,281	0	2,861,466	0.0257	0.6649
360	2,028,154	1,017,559	0	3,045,713	0.0274	0.6923
370	1,407,498	1,261,074	0	2,668,572	0.0240	0.7163
380	1,365,194	1,126,691	0	2,491,885	0.0224	0.7387
390	921,072	1,118,448	0	2,039,520	0.0183	0.7571
400	1,272,345	1,030,652	0	2,302,997	0.0207	0.7778
410	653,429	1,326,520	0	1,979,949	0.0178	0.7956
420	1,819,889	977,288	0	2,797,177	0.0252	0.8208
430	1,097,904	1,015,961	0	2,113,866	0.0190	0.8398
440	1,071,400	1,122,899	0	2,194,299	0.0197	0.8595
450	1,324,129	1,906,045	0	3,230,174	0.0291	0.8886
460	573,427	1,304,543	0	1,877,971	0.0169	0.9055
470	452,311	1,427,125	0	1,879,436	0.0169	0.9224
480	282,563	644,675	0	927,238	0.0083	0.9307
490	305,439	861,829	0	1,167,268	0.0105	0.9412
500	610,230	538,685	0	1,148,915	0.0103	0.9515
510	242,806	686,012	0	928,818	0.0084	0.9599
520	306,536	417,267	0	723,803	0.0065	0.9664
530	399,818	136,247	0	536,065	0.0048	0.9712

Appendix C Table 10a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
540	68,760	269,617	0	338,377	0.0030	0.9743
550	19,673	187,952	0	207,626	0.0019	0.9761
560	27,217	89,991	0	117,208	0.0011	0.9772
570	30,370	219,556	0	249,927	0.0022	0.9794
580	0	174,659	0	174,659	0.0016	0.9810
590	0	90,404	0	90,404	0.0008	0.9818
600	0	182,763	0	182,763	0.0016	0.9835
610	30,370	138,603	0	168,974	0.0015	0.9850
630	30,571	67,574	0	98,144	0.0009	0.9859
640	0	265,377	0	265,377	0.0024	0.9882
650	0	86,548	0	86,548	0.0008	0.9890
660	0	263,557	0	263,557	0.0024	0.9914
680	0	29,826	0	29,826	0.0003	0.9917
690	0	94,143	0	94,143	0.0008	0.9925
700	0	120,054	0	120,054	0.0011	0.9936
720	0	121,992	0	121,992	0.0011	0.9947
730	0	47,981	0	47,981	0.0004	0.9951
740	0	21,598	0	21,598	0.0002	0.9953
750	0	30,783	0	30,783	0.0003	0.9956
760	0	29,826	0	29,826	0.0003	0.9959
780	0	97,758	0	97,758	0.0009	0.9967
820	0	68,188	0	68,188	0.0006	0.9974
9999	0	0	0	294,305	0.0026	1.0000
Total	**53,722,644**	**56,962,208**	**200,886**	**111,180,043**	**1.0000**	**1.0000**

Appendix C Table 10b. -- Population estimates by sex and size for **Kamchatka flounder** (*Atheresthes evermanni)* from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
510	0	85,717	0	85,717	1.0000	1.0000
Total	**0**	**85,717**	**0**	**85,717**	**1.0000**	**1.0000**

Appendix C Table 11a. -- Population estimates by sex and size for **Pacific halibut** (*Hippoglossus stenolepis*) from the 2017 eastern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
100	0	0	58,940	58,940	0.0011	0.0011
110	0	0	194,729	194,729	0.0037	0.0048
120	0	0	312,609	312,609	0.0059	0.0107
130	0	0	611,346	611,346	0.0116	0.0223
140	0	0	925,679	925,679	0.0176	0.0399
150	0	29,644	194,729	224,373	0.0043	0.0442
160	0	0	58,940	58,940	0.0011	0.0453
180	0	0	33,084	33,084	0.0006	0.0459
190	0	0	49,626	49,626	0.0009	0.0468
200	0	0	389,917	389,917	0.0074	0.0542
210	0	0	286,588	286,588	0.0054	0.0597
220	0	0	206,913	206,913	0.0039	0.0636
230	0	0	368,832	368,832	0.0070	0.0706
240	0	0	160,889	160,889	0.0031	0.0736
250	0	0	332,476	332,476	0.0063	0.0800
260	0	0	314,778	314,778	0.0060	0.0859
270	0	0	393,809	393,809	0.0075	0.0934
280	0	0	361,129	361,129	0.0069	0.1002
290	29,644	0	408,654	438,298	0.0083	0.1086
300	0	0	269,577	269,577	0.0051	0.1137
310	0	0	324,741	324,741	0.0062	0.1198
320	0	0	179,328	179,328	0.0034	0.1232
330	0	0	352,871	352,871	0.0067	0.1299
340	0	0	218,069	218,069	0.0041	0.1341
350	0	0	330,167	330,167	0.0063	0.1403
360	0	0	445,892	445,892	0.0085	0.1488
370	0	0	811,612	811,612	0.0154	0.1642
380	0	0	751,822	751,822	0.0143	0.1784
390	0	28,151	1,228,665	1,256,816	0.0238	0.2023
400	0	0	1,280,958	1,280,958	0.0243	0.2266
410	0	0	1,627,466	1,627,466	0.0309	0.2575
420	28,151	0	1,989,604	2,017,754	0.0383	0.2957
430	28,151	29,644	1,693,564	1,751,359	0.0332	0.3289
440	0	0	1,548,884	1,548,884	0.0294	0.3583
450	0	0	994,559	994,559	0.0189	0.3772
460	0	0	624,621	624,621	0.0118	0.3890
470	0	0	752,766	752,766	0.0143	0.4033
480	0	0	989,726	989,726	0.0188	0.4221
490	0	0	942,826	942,826	0.0179	0.4400
500	0	0	1,218,385	1,218,385	0.0231	0.4631
510	0	0	1,463,339	1,463,339	0.0278	0.4908
520	0	0	1,420,484	1,420,484	0.0269	0.5178
530	28,151	0	1,738,600	1,766,750	0.0335	0.5513
540	56,861	0	1,562,032	1,618,893	0.0307	0.5820
550	0	0	1,187,850	1,187,850	0.0225	0.6045
560	0	0	1,287,449	1,287,449	0.0244	0.6290

Appendix C Table 11a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
570	0	0	1,279,997	1,279,997	0.0243	0.6532
580	0	57,794	867,243	925,038	0.0175	0.6708
590	0	0	1,042,799	1,042,799	0.0198	0.6906
600	0	0	981,242	981,242	0.0186	0.7092
610	0	0	797,822	797,822	0.0151	0.7243
620	29,430	0	862,317	891,747	0.0169	0.7412
630	0	0	456,370	456,370	0.0087	0.7499
640	0	0	596,466	596,466	0.0113	0.7612
650	0	40,759	517,161	557,920	0.0106	0.7718
660	0	0	438,180	438,180	0.0083	0.7801
670	26,933	0	519,061	545,994	0.0104	0.7905
680	56,319	0	541,983	598,302	0.0113	0.8018
690	0	0	502,304	502,304	0.0095	0.8113
700	0	0	514,955	514,955	0.0098	0.8211
710	73,949	0	591,777	665,726	0.0126	0.8337
720	0	0	570,618	570,618	0.0108	0.8446
730	27,179	0	543,973	571,152	0.0108	0.8554
740	0	0	558,054	558,054	0.0106	0.8660
750	0	0	362,117	362,117	0.0069	0.8728
760	0	0	540,728	540,728	0.0103	0.8831
770	18,177	0	417,330	435,507	0.0083	0.8914
780	0	0	404,231	404,231	0.0077	0.8990
790	0	0	441,184	441,184	0.0084	0.9074
800	0	0	494,543	494,543	0.0094	0.9168
810	0	0	294,949	294,949	0.0056	0.9224
820	0	0	240,926	240,926	0.0046	0.9269
830	0	0	223,550	223,550	0.0042	0.9312
840	30,039	0	317,584	347,623	0.0066	0.9378
850	0	0	177,536	177,536	0.0034	0.9411
860	0	0	160,039	160,039	0.0030	0.9442
870	0	0	259,692	259,692	0.0049	0.9491
880	0	0	187,842	187,842	0.0036	0.9527
890	0	0	181,448	181,448	0.0034	0.9561
900	0	0	215,460	215,460	0.0041	0.9602
910	32,586	18,231	268,020	318,837	0.0060	0.9663
920	0	0	174,417	174,417	0.0033	0.9696
930	0	27,484	131,779	159,263	0.0030	0.9726
940	0	0	80,939	80,939	0.0015	0.9741
950	0	0	124,158	124,158	0.0024	0.9765
960	32,586	0	115,086	147,672	0.0028	0.9793
970	0	36,827	72,656	109,483	0.0021	0.9813
980	0	0	102,429	102,429	0.0019	0.9833
990	0	0	65,860	65,860	0.0012	0.9845
1000	0	0	103,764	103,764	0.0020	0.9865
1010	0	0	27,938	27,938	0.0005	0.9870
1020	0	0	59,086	59,086	0.0011	0.9882

Appendix C Table 11a. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
1030	27,673	0	0	27,673	0.0005	0.9887
1040	0	0	85,524	85,524	0.0016	0.9903
1050	0	0	55,395	55,395	0.0011	0.9914
1060	0	0	57,045	57,045	0.0011	0.9924
1070	0	0	30,329	30,329	0.0006	0.9930
1080	0	0	61,320	61,320	0.0012	0.9942
1090	0	0	15,854	15,854	0.0003	0.9945
1110	0	0	29,067	29,067	0.0006	0.9950
1150	0	0	62,585	62,585	0.0012	0.9962
1180	0	0	30,435	30,435	0.0006	0.9968
1220	0	0	31,777	31,777	0.0006	0.9974
1230	0	0	30,435	30,435	0.0006	0.9980
1250	0	0	29,229	29,229	0.0006	0.9985
1300	0	0	19,280	19,280	0.0004	0.9989
1320	0	0	30,329	30,329	0.0006	0.9995
1340	0	0	27,860	27,860	0.0005	1.0000
Total	**525,828**	**268,533**	**51,923,602**	**52,717,963**	**1.0000**	**1.0000**

Appendix C Table 11b. -- Population estimates by sex and size for **Pacific halibut** (*Hippoglossus stenolepis*) from the 2017 northern Bering Sea bottom trawl survey.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
250	0	0	31,851	31,851	0.0063	0.0063
260	0	0	62,896	62,896	0.0124	0.0187
280	0	0	63,703	63,703	0.0126	0.0313
290	0	0	31,448	31,448	0.0062	0.0375
300	29,062	0	95,554	124,617	0.0246	0.0621
310	0	0	31,448	31,448	0.0062	0.0683
360	0	0	30,393	30,393	0.0060	0.0743
450	0	0	60,109	60,109	0.0119	0.0862
460	0	0	63,325	63,325	0.0125	0.0987
470	0	0	29,686	29,686	0.0059	0.1046
480	0	0	28,703	28,703	0.0057	0.1102
490	0	0	183,219	183,219	0.0362	0.1464
500	0	29,062	90,471	119,534	0.0236	0.1700
510	0	0	29,686	29,686	0.0059	0.1759
520	0	0	90,302	90,302	0.0178	0.1937
530	0	34,495	90,471	124,966	0.0247	0.2184
540	0	30,045	94,327	124,372	0.0246	0.2430
550	60,312	60,090	118,467	238,869	0.0472	0.2901
560	60,090	63,684	392,793	516,567	0.1020	0.3921
570	0	34,495	366,584	401,079	0.0792	0.4713
580	0	57,174	124,054	181,228	0.0358	0.5071
590	0	0	60,321	60,321	0.0119	0.5191
600	0	98,402	30,349	128,750	0.0254	0.5445
610	0	86,891	90,567	177,458	0.0350	0.5795
620	0	0	187,326	187,326	0.0370	0.6165
630	0	58,287	123,983	182,270	0.0360	0.6525
650	30,045	58,207	61,511	149,763	0.0296	0.6821
660	0	60,400	58,297	118,697	0.0234	0.7055
670	30,045	0	31,448	61,493	0.0121	0.7177
680	61,679	0	30,268	91,946	0.0182	0.7358
690	30,268	0	30,045	60,312	0.0119	0.7477
700	0	34,284	155,273	189,557	0.0374	0.7852
710	0	28,915	30,186	59,100	0.0117	0.7968
720	0	0	31,851	31,851	0.0063	0.8031
730	0	0	61,113	61,113	0.0121	0.8152
740	0	0	31,319	31,319	0.0062	0.8214
750	0	0	94,392	94,392	0.0186	0.8400
760	0	0	34,284	34,284	0.0068	0.8468
780	0	0	64,331	64,331	0.0127	0.8595
800	0	38,671	0	38,671	0.0076	0.8671
830	0	30,349	0	30,349	0.0060	0.8731
850	0	0	127,494	127,494	0.0252	0.8983
860	0	0	92,499	92,499	0.0183	0.9166
880	0	34,495	31,407	65,902	0.0130	0.9296
910	0	0	31,407	31,407	0.0062	0.9358
920	0	34,495	0	34,495	0.0068	0.9426

Appendix C Table 11b. -- Continued.

Length (mm)	Males	Females	Unsexed	Total	Proportion	Cumulative proportion
950	0	0	28,915	28,915	0.0057	0.9483
970	0	0	34,110	34,110	0.0067	0.9551
1020	0	0	32,782	32,782	0.0065	0.9615
1030	0	0	33,738	33,738	0.0067	0.9682
1070	0	0	30,489	30,489	0.0060	0.9742
1120	0	0	29,648	29,648	0.0059	0.9801
1130	0	0	34,110	34,110	0.0067	0.9868
1190	0	0	32,782	32,782	0.0065	0.9933
1350	34,038	0	0	34,038	0.0067	1.0000
Total	**301,501**	**872,440**	**3,889,773**	**5,063,713**	**1.0000**	**1.0000**

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