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The 2014 Eastern Bering Sea Continental Shelf Bottom Trawl Survey: Results for Commercial Crab Species

By

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ABSTRACT

The eastern Bering Sea bottom trawl survey has been conducted annually since 1975 by the Resource Assessment and Conservation Engineering Division of the Alaska Fisheries Science Center, National Marine Fisheries Service. The purpose of this survey is to collect data on the distribution and abundance of crab, groundfish, and other benthic resources in the eastern Bering Sea. These data are used to estimate population abundances for the management of commercially important species in the region. This document includes the time series results from 1975 to the present including the 2014 survey data. It is noted that the time series in this document was corrected for errors made between 2010 and 2013 for mature female Tanner crab biomass in the west (see page 16). In 2014, 376 standard stations were sampled on the eastern Bering Sea shelf. The 2014 biomass estimates reported in metric tons (t) and pounds (lb) with 95% confidence intervals (± 1.96 SE) for legal-sized males of each commercial crab stock in the eastern Bering Sea were as follows:

Commercial Crab Species	2014 Legal-sized Male Biomass (± 95% CI) t	lb*
Bristol Bay District red king crab (*Paralithodes camtschaticus*)	35,867 (13,620)	79,071,324 (30,026,849)
Pribilof District red king crab	11,433 (18,242)	25,205,651 (40,216,137)
Pribilof District blue king crab (*P. platypus*)	233 (320)	514,496 (705,150)
St. Matthew Is. Section blue king crab	3,568 (2,472)	7,866,869 (5,450,241)
Southern Tanner crab (*Chionoecetes bairdi*), east 166° W	30,366 (10,146)	66,945,079 (22,368,533)
Southern Tanner crab, east 166° W ≥ 5.5 inches	12,555 (5,661)	27,679,098 (12,479,455)
Southern Tanner crab, west 166° W	24,859 (6,016)	54,804,673 (13,263,677)
Southern Tanner crab, west 166° W ≥ 5.0 inches	11,766 (3,233)	25,940,248 (7,127,839)
Snow crab, all Districts (*C. opilio*)	151,454 (48,661)	333,894,926 (107,278,882)
Snow crab, all Districts ≥ 4.0 inches	79,510 (34,882)	175,286,439 (76,899,933)

*Biomass estimates in pounds were derived using area swept estimates based on raw crab lengths converted to weight with a known length-weight regression. A direct conversion of the biomass estimate in tons will not match the value presented here.

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INTRODUCTION

Survey History and Purpose

The eastern Bering Sea (EBS) bottom trawl survey has been conducted by scientists in the Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC), National Marine Fisheries Service (NMFS) since the early 1970s. Starting in 1975, surveys were conducted annually and were expanded beyond Bristol Bay to include the majority of the Bering Sea continental shelf with the original purpose of assessing potential resource impacts of offshore oil development (Pereyra et al., 1978). The annual collection of data on the distribution and abundance of crab and groundfish resources provides fishery-independent estimates of population abundances and biological data for the management of commercially important species in the EBS. The crab species that have historically been assessed during the survey because of their commercial importance include: red king crab (*Paralithodes camtschaticus*), blue king crab (*P. platypus*), southern Tanner crab (*Chionoecetes bairdi*), snow crab (*C. opilio*), and hair crab (*Erimacrus isenbeckii*). The common name for *C. bairdi* changed from Tanner crab to southern Tanner crab in 2005 (McLaughlin, 2005) but will be referred to as Tanner crab in this document.

Prior to 1988, the total number of stations varied and gradually increased until standardized in 1988 (Fig. 1). Therefore, the pre-1988 estimates provided in this document for stocks that extend northwest of the Pribilof Islands are biased as the entire stocks were not sampled. Since 1988, 376 standard stations have been included in the survey covering an approximately 140,350 square nautical mile (nmi^2) area of the EBS with station depths ranging from 20 to 200 m (Fig. 2). The annual EBS bottom trawl survey begins in the northeast section of Bristol Bay in early June and approximately 8 to 12 stations are sampled each day from two vessels. The standard survey is completed in late July or early August at the western edge of the survey grid, northwest of St. Matthew Island. In some years when the reproductive cycle of red king crab is delayed due to colder water temperatures (i.e., 1999, 2000, 2006-2012), a small portion of the inner Bristol Bay area is resampled after the conclusion of the standard survey (see Methods).

Between 1994 and 2010, a survey station producing ≥ 100 legal-sized red king or Tanner crab males was considered a “hot spot”. At each hot spot, additional tows were made within the station area and all crab species caught were sampled using the standard survey tow protocol described in the Methods section. Starting in 2011, the “hot spot” protocol was discontinued. However, the abundance and biomass estimates presented in the current time series continue to include the results of the “hot spot” protocol.

Eastern Bering Sea Crab Stock Assessment Process

Crabs included in the federal Bering Sea and Aleutian Islands (BSAI) King and Tanner crab Fisheries Management Plan are managed by the Alaska Department of Fish and Game (ADF&G) with federal oversight by NMFS (NPFMC, 2011b). The annual stock assessment and fishery evaluation (SAFE) report prepared by the North Pacific Fishery Management Council provides current biological, ecosystem, and economic data associated with these species. The NMFS determines the procedure for setting overfishing levels and allowable biological catch while

ADF&G sets the annual total allowable catch or guideline harvest level for each crab stock. Currently, the Crab Plan Team and the Council's Scientific and Statistical Committee review the assessment, biological, economic, and modeling data to recommend biological reference points associated with the status of crab stocks. Crab stock boundaries are defined by ADF&G management units for king crab and Tanner crab species (Bowers et al., 2011); however, the Pribilof Islands blue king crab stock boundary also includes a 20 nm column on the east side of the management unit, which was added in 2013 to account for blue king crab bycatch. Red king crab are split into Bristol Bay and Pribilof Islands stocks, blue king crab are split into Pribilof Islands and St. Matthew Island stocks for management purposes, while Tanner and snow crab fisheries are considered single stocks but are split into separate management fishery units defined by the ADF&G Board of Fisheries using 166°W and 173°W as the boundary for each east and west unit, respectively.

This report summarizes the 2014 survey results for commercially important crab resources in the EBS. Note that area swept estimates in this document are indices of abundance and may not match the final modeled population estimates in the SAFE reports because the models include additional population dynamics information. The results of the 2014 standard EBS bottom trawl survey are presented for these crab stocks as defined by the management units. Details of the survey design and fishing gear specifications in addition to the number and weights of the groundfish species sampled at each standard station during this survey will be reported in a separate NOAA Technical Memorandum (e.g.,Lauth and Nichol, 2013).

METHODS

Survey Area and Sampling Logistics

The 2014 standard survey was conducted onboard the chartered fishing vessels FV *Alaska Knight* and FV *Vesteraalen*, beginning 8 June in the northeast corner of Bristol Bay, moving westward, and finishing on 2 August. The vessels sampled in close proximity to each other during the survey.

The survey stations are divided into multiple districts, which are defined by ADF&G commercial crab management units (Fig. 3). Management units are defined by registration areas and districts, which are further divided into strata with standard or high station densities. Standard-density strata have stations centered in 20 × 20 nmi (37.04 × 37.04 km) cells while high-density strata include additional stations at the corners of the 20 × 20 nmi cells. To calculate the total area for each stock strata the area for each 20 × 20 nmi cell is assumed to be 401 nmi^2 due a spherical projection of the grid surface in an area as large as the EBS.

The king crab Registration Area T in Bristol Bay (south of 58 °39 ′N and east of 168 °W) is 54,536 nmi^2 and consists of 136 stations. The king crab Registration Area Q in the Bering Sea is divided into the Northern District (north of 58° 39′ N) and the Pribilof District (south of 58° 39′ N and west of 168°W). The area for the St. Matthew Island Section of the Northern District is divided into two sampling strata: 1) a high-density 7,218 nmi^2 stratum with 28 stations (one of which is not trawlable but included in the total area surveyed) and 2) a standard-density 11,629

nmi^2 stratum with 29 stations creating a total of 57 stations within the St. Matthew Island Section. The area of the Pribilof District is divided into two sampling strata: 1) a high-density 10,025 nmi^2 stratum with 41 total stations and 2) a standard-density 14,436 nmi^2 stratum with 36 stations creating a total of 77 stations within the stock area. For Pribilof District blue king crab, the eastern stock boundary is 20 miles east of the Pribilof District and includes 9 additional stations, as indicated in the 2013 Pribilof Islands Blue King Crab Rebuilding Plan. In general, for all crab stocks, high-density strata have more stations (standard, corner) per area than standard-density strata. In 2014, two tows were completed at A-04 due to the final position of the Z-04 tow which only has limited area within the trawlable depth range. At this station, a single estimate of crab density was used by averaging both tows prior to calculating total crab biomass for Tanner and snow crab. Station A-04 is not important habitat for red king crab, blue king crab, or hair crab, thus the second tow in A-04 was not included in population estimates for those species.

The fishing gear used in 2014 was identical to that of previous EBS annual bottom trawl surveys since 1982 with both vessels fishing a standard 83-112 Eastern otter trawl with an 83 ft (25.3 m) headrope and a 112 ft (34.1 m) footrope (Lauth and Nichol, 2013). The codend mesh size is 8.9 cm stretched and the liner is 3.2 cm. The trawls on each vessel were rotated every 20-30 consecutive tows (~5 days) to mitigate potential impacts from changes in net configuration due to fishing. Each tow was approximately 0.5 h in duration and 1.5 nmi (2.8 km) in length at a speed of 3 knots (1.54 m sec^{-1}) and conducted in strict compliance with NMFS bottom trawl protocols established by the National Oceanic and Atmospheric Administration (Stauffer, 2004).

Net mensuration equipment was used to monitor the net's fishing performance during each tow (Lauth and Nichol, 2013). A bottom contact sensor was attached to the center of the footrope to measure bottom contact of the net at 1-second intervals. The net mensuration system also consisted of an acoustic sensor attached to the headrope and two sensors attached to the port and starboard dandylines to measure net height and width during trawling operations. The bottom contact of the footrope and GPS data were used to calculate distance fished. Fishing power was assumed to be equal between the two vessels.

Surface and bottom water temperatures along with temperature-depth profiles were collected at 6-second intervals throughout the duration of each tow using a Sea-Bird SBE-39 bathythermograph continuous data recorder (Sea-Bird Electronics Inc., Bellevue, WA) attached to the headrope of the net. The temperature measurement range of the SBE-39 is -5 to 35 ± 0.002 °C with pressure sensors measuring to a maximum depth of 1,000 ± 1 m and are calibrated every year by Sea-Bird Electronics. Bottom depth was also derived from these data by adding the net height from the net mensuration system to the headrope depth recorded by the SBE-39.

Biological Data Collection

All crab were removed from the catch, sorted by species and sex, and a total catch weight was obtained for each species. Tanner and snow crab hybrids are identified by a combination of characteristics including curve of the epistome margin, eye color, carapace shape, and space between or shape of the rostrum horns (Karinen and Hoopes, 1971; Urban et al., 2002). A random subsample of the total catch occurred when an exceptionally large number (>300) of a

species was caught in a tow. The subsample varied in size and composition depending on the particular tow. The subsample may have occurred at the level of the entire catch or at the level of a particular size and sex category once the catch was sorted. The total weights of the sampled crab and non-sampled crab were recorded and an expansion factor was calculated to determine the final number of each species in the catch.

Individual crab carapaces were measured (± 1 mm) to provide a size-frequency distribution of each sample. Crab sizes are reported as carapace width (CW) excluding spines for Tanner and snow crab, and carapace length (CL) for all king crab and hair crab (Donaldson and Byersdorfer, 2005). Since 2006, individual weights were measured for blue king crabs every year, red king crab and snow crab in odd years, and for Tanner crab in even years to add to the existing length-weight data and to monitor temporal variability in length-weight regressions. For every haul in 2014, data were collected on up to 5 intact crab per each of the following categories: 1) male Tanner crab, 2) ovigerous Tanner crab, and 3) non-ovigerous female Tanner crab. Because of their relative rarity, weight data were collected for all intact blue king crabs encountered that met the sampling requirements (i.e., whole, live crab without regenerating limbs). Weights were collected from representative size ranges throughout the spatial distribution of each species. Measurements were regionally stratified and tally sheets ensured all size ranges were equally sampled within each region.

In the absence of specific age data, shell condition classification by length and sex is necessary for apportioning stock abundance and biomass for determination of stock status, analytical stock assessment, and for establishing annual management controls. Shell condition class serves as a semi-quantitative index of molt status and time in shell post molt. For all EBS crab stocks, and particularly those which exhibit a terminal molt at maturity (i.e., *Chionoecetes* spp.), shell condition is a requisite for setting overfishing limits and harvest quotas. Carapace shell condition was assessed for each crab sampled and assigned to one of six classes according to specific criteria (0 = premolt or molting, 1 = soft and pliable, 2 = new hardshell both firm and clean, 3 = oldshell slightly worn, 4 = oldshell worn, 5 = very oldshell).

Clutch assessment is used to estimate spawning stock biomass and overall reproductive health and to monitor demographic changes in the mating population. All female crab abdomens were evaluated to determine reproductive condition based on the color of the eggs (0 = no eggs, 2 = purple, 3 = brown, 4 = orange, 5 = purple-brown, 6 = pink), the condition of the eggs (0 = no eggs, 1 = uneyed, 2 = eyed, 3 = dead, 4 = empty egg cases), and the size of the egg clutch (0 = immature, 1 = mature female no eggs, 2 = trace to 1/8, 3 = 1/4, 4 = 1/2, 5 = 3/4, 6 = full).

For mature females, egg clutch and egg condition codes were used to identify the stage in the molt-mate cycle, where the presence of eyed embryos, empty egg cases, or absence of eggs (barren, hereafter) in mature-sized females were indications of an incomplete cycle while mature females brooding uneyed embryos indicated completion of the cycle. The ratio of females with eyed embryos, empty egg cases, and old shell barren to uneyed embryos was derived as a measurement of the molt-mate cycle progression during the survey.

Understanding reproductive biology is critical for managing crab stocks in the Bering Sea. Spatiotemporal variability in reproductive potential including fecundity, sperm reserves, and

reproductive condition likely regulates fluctuations in population abundances. Yet, most stock assessment models use spawning stock biomass (i.e., number and average weight of mature animals), but not embryo production, which can lead to different perceptions of productivity (Swiney et al., 2012; Trippel, 1999). In recent years, egg clutches for red king crabs in Bristol Bay and *Chionoecetes* spp. throughout the eastern Bering Sea were collected during the survey to support process studies to assess female reproductive potential. Red king crab and snow crab fecundity varies interannually and spatially likely due to demographic variability in crab age as measured by size and shell condition (Rugolo et al., 2005; Swiney et al., 2012). Starting in 2012, mature female red king crab samples were collected (even years only) throughout their distribution to monitor fecundity changes over time. Future analyses will consider the correlations of reproductive potential with demographic and environmental patterns.
In addition, mature female *Chionoecetes* spp. with shell condition 1–3 were collected in collaboration with ADF&G.

Maturity in male *Chionoecetes* spp. can be defined by morphometric characteristics of the chela where morphometrically immature and mature crab are separated into two morphometric groups based on the frequency distribution of the chela height (large claw or small claw) to carapace width ratio (Stevens et al., 1993; Tamone et al., 2007). To assess the difference between morphometric maturity and true functional maturity, additional special projects have been conducted in recent years. As standard sampling protocol, chela height and carapace width measurements were taken for male Tanner crabs during even years starting in 2008, while chela height and carapace width measurements for male snow crabs were taken in odd years starting in 2009. For 2014, chela height and carapace width measurements (± 0.1 mm) were collected from a subsample (typically <15 crab per haul) of male Tanner crab caught at each station.

Bitter crab syndrome is caused by a parasitic dinoflagellate, *Hematodinium* sp. and is found in Tanner and snow crab throughout Alaskan waters (Meyers et al., 1996). The mortality rate of parasitized crabs is believed to be high and symptoms include lethargy, pink carapace pigmentation, and white opaque hemolymph (Meyers and Burton, 2009b). Meats of parasitized crabs are harmless to humans, but bitter tasting making crabs unmarketable. The prevalence of bitter crab syndrome fluctuates temporally and spatially between *Chionoecetes* spp. in the eastern Bering Sea (Meyers et al., 1996) and may be effected by changes in environmental conditions (Morado et al., 2010). Black mat syndrome is caused by a parasitic fungus, *Trichomaris invadens*, and was prevalent in the 1970s and 1980s throughout Alaskan waters, primarily infecting Tanner crab, but does not pose human health concerns if infected Tanner crab meat is consumed (Meyers and Burton, 2009a). Infected crabs have a dense, hard, black, tar-like covering over parts of the exoskeleton, which invades internal tissue causing destruction of the host (Meyers and Burton, 2009a). Infections can prevent molting, cause blindness if eyestalks are infected, or result in mortality depending on the severity of the infection. Infected sub-legal crabs could fail to reach legal size or sexual maturity. All crab carapaces were scanned for evidence of bitter crab syndrome and black mat fungus to understand its temporal and spatial variability. In addition, 200 frozen Tanner and snow crab samples were collected in each of three index sites, which comprised of 10 stations per index site (20 crabs sampled per station). Samples were set aside for further testing by scientists in the Shellfish Assessment Program Pathobiology group at the AFSC in Seattle, WA.

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Crab Biomass Estimates

Crab density (number nmi^{-2}) was estimated at each station for legal males, or sublegal males, as well as mature and immature males and females of each stock. Maturity and legal size classes were based on literature values and State of Alaska regulations (Table 1). The ADF&G definition of legal size classes (CW in inches) include spines (ADF&G, 2012), while CW measurements reported in this document exclude spines (Table 1). The area swept by the trawl (nmi^2) was calculated as the product of the distance traveled while the net had bottom contact by the mean net width over the duration of the tow. Prior to 2009, data reported in this annual document used a fixed width of 15.2 m (0.008 nmi) in the area swept calculation to maintain consistency with historical calculations of crab abundances (Fig. 4). Since 2009, all population biomass estimates for the entire time series are calculated using the variable net width based on net mensuration data (Table 2). The effective width of the trawl typically ranges from 14.6 to 18.3 m when towing at a speed of 3 knots (Weinberg 2003; Fig. 4), and changes with the depth of the tow due to changes in scope of the trawl wire (Rose and Walters, 1990). For 2014 and all historical data reported in this current document, crab densities were calculated using the mean net width recorded for the duration of each tow and a mean net width-inverse scope regression relationship was calculated when net width values were not recorded during a tow (Rose and Walters, 1990). From 1975 to 1981, the net width estimates used for the area swept calculations were derived from a single width estimate calculated each year for a particular type of trawl used during the annual survey. From 1982 to 1987, the net width used in the area swept calculations was estimated using the inverse relationship between net scope and net width developed by Rose and Walters (1990). From 1988 to 2014, the net width was estimated using the net mensuration system described above, which measures the height and width of the net throughout the duration of the tow (Table 2, Fig. 4). Distance traveled by the trawl was determined from ship GPS positions recorded at the beginning and end of each tow.

All reported historical data and the current biomass estimates are calculated for the number of individual male and female crab species at each 1 mm size category using the weight-size relationships developed by the AFSC Kodiak Laboratory (Table 3). Prior to 2010, the weight-size relationships were based on limited data (<500 samples for all species) and estimates from survey data total weights. In 2010 the relationships were revised based on species specific length and weight data collect during EBS surveys from 2006 to 2010 from >1,000 measurements made for each species. Length and weight data currently being collected on the survey annually will be used to assess relative changes to the relationship overtime and correlated with environmental variables. The size-weight relationships are described by the expression:

$$W = a\,L^b$$

where W is the total weight in grams, L is either CL or CW in mm, a is the intercept in log scale and b is the slope. Parameters a and b for the size-weight relationships are estimated from a linear regression fitted to log-transformed size-weight data.

The weights calculated at each 1 mm size category are summed within the legal male, sublegal male, mature and immature size categories for each species and sex caught at a station. The crab biomass within a district or section stratum was estimated by averaging crab densities from all

stations within the defined district or section stratum and multiplied by the total area of the district or section stratum specific to that stock. Total biomass was calculated using a stratified design based on management units (standard-density, high-density, ADF&G defined districts, or section stratum). Population biomass estimates were calculated in each stratum and then summed among strata. Variance of the total biomass estimate for each size class was calculated by summing the variance of each stratum. The 95% confidence intervals were calculated using the standard error of the total population multiplied by 1.96. All biomass estimates and confidence intervals (± 95%) reported in this document are reported in metric tons (t) except in the Abstract where both t and pounds (lb) are reported. Metric tons can be converted to lb by multiplying the biomass in t by 2,204.62 for comparison with ADF&G reported values of total allowable catch (TAC) and guideline harvest levels (GHL).

In years with colder than average bottom water temperatures (1999, 2000, and 2006-2012), a small number of standard Bristol Bay stations sampled at the beginning of the survey were resampled in late July to accurately assess the percentage of ovigerous red king crab females which had extruded a new clutch of uneyed embryos. In 2014, average bottom temperatures at Bristol Bay stations in June were warm relative to recent years. All ovigerous females had uneyed embryos indicating the completion of the annual reproductive cycle. As such, Bristol Bay stations were not resampled as in some previous years. Therefore, as with the other species described in this document, the 2014 population estimates for Bristol Bay red king crabs for both males and females were calculated using standard tows.

The population biomass estimates reported in this document are point estimates and have substantial uncertainty due to the expanse of the area being sampled and the distributions of the resource. These point estimates are least precise for small crabs due to gear selectivity, and for females of some stocks due to crab behavior. For example, female blue king crab prefer rocky habitat, which is difficult to sample with bottom trawls. For consistent analyses and due to a lack of available data, catchability is assumed to be near or equal to one for the indices developed in this document. The stock assessment models that incorporate these survey data consider catchability when estimating abundance and biomass.

Centers of Distribution

The centers of distribution for male and female crab from 1975 to 2014 were determined by averaging the latitude and longitude of each positive tow for a particular species. Latitude and longitude were weighted by the CPUE for each size and sex class. For years with retows, only tows from leg 1 were included.

Recruitment

Population fluctuations are likely influenced by variations in recruitment strength. Thus, assessing temporal variability in abundances of new individuals reaching the minimum legal size is important to predict the following season's catches. The term "recruitment" can refer to various life history stages including newly settled juveniles, individuals reaching sexual maturity, or individuals reaching the legal size limit. For the purposes of this technical memorandum, "pre-recruits" are defined as mature male crabs in the size class that will likely

enter the fishery (minimum legal size limit) the following year, also referred to as "P1" crabs by some stock assessment authors (Table 1). A time series of pre-recruit abundance estimates are provided as an index for future abundances of legal crab.

RESULTS

Survey Overview

The 2014 EBS bottom trawl survey consisted of 376 bottom trawls conducted from 8 June to 2 August over an area of approximately 140,350 nmi^2 beginning in the southeast corner of Bristol Bay, moving east to west and finally moving from the stations northwest of St. Matthew Island to the stations along the slope edge south. The latitude and longitude of the midpoint of each successful tow along with the duration (h), distance fished (km), bottom depth (m) and bottom temperatures (°C) are listed in the Appendix. The mean distance fished across all tows was 1.51 nmi (2.80 km, SD = 0.12 nmi) with a range of 0.92 to 1.64 nmi (1.70 to 3.04 km) and the mean tow duration was 30.5 minutes (SD = 1.20 min). The fishing depth of the 83-112 Eastern otter trawl ranged from 21 to 172 m with a mean gear depth of 79.0 m (SD = 34.0 m). The mean net width per tow ranged from 12.47 to 20.82 m and the average mean net width for all 376 successful tows was 16.7 m (SD = 1.30 m, Fig. 4). The 2014 net fishing performance (distance fished, tow duration, gear depth, net width) was consistent with previous years with the exception of 1975, when tow duration was 60 minutes and mean distance fished was 2.26 ± 0.18 nmi.

The bottom temperature at each station during the standard survey ranged from -1.6 to 7.8 °C (Fig. 5). A cold pool of water < 2°C extended onto the middle shelf between the 50 and 100 m isobaths to approximately 100 nm southeast of St. Matthew Island and the edge of the Pribilof Islands District. Warmer bottom temperatures were evident around the Pribilof Islands and between the 100 and 200 m isobaths in the southern area of the survey area and in shallow waters north of Bristol Bay. Cold water temperatures persisted in the northwestern area between the 50 and 200 m isobaths and the waters surrounding St. Matthew Island. In 2014, the average bottom water temperature during the first survey leg (8 to 22 June 2014) was 4.5 °C (SD = 1.2) which was warmer than the average mean bottom water temperature during the same time period in 2012 (Mean = 1.3 °C, SD = 1.5), 2010 (Mean = 1.8 °C, SD = 1.6), 2009 (Mean 1.5 °C, SD = 0.5), 2008 (Mean = 1.4 °C, SD = 0.7), and 2007 (Mean = 1.8 °C, SD = 0.9). In 2014, average bottom and surface temperatures were warmer in both Bristol Bay and the rest of the eastern Bering Sea relative to recent years (Fig. 6).

Population abundance and biomass of the seven commercial crab stocks sampled during this survey fluctuated dramatically from 1975 to current (Figs. 7-13). Overall commercial crab mature male biomass decreased from approximately 300,000 t to below 100,000 t in the mid 1980's, increased to just below 500,000 t due to increases in snow and Tanner crab in the early 1990's, and has since leveled out around 200,000 t in the past 7 years.

Ten special projects were conducted in addition to the standard assessment survey to collect specific biological data from particular crab species (Table 4). Eight of the projects originated

from the AFSC: 1) collect Tanner and snow crab tissue samples at three index sites to monitor bitter crab syndrome, 2) collect snow crab specimens for age determination studies, 3), visually scan stomach contents of large Pacific cod for evidence of predation on red king crabs, 4) collect snow crabs for ocean acidification studies, 5) collect male snow crabs to assess physiological maturity, 6) collect female snow crabs to assess annual vs. biennial reproductive cycles, 7) deploy pop-up satellite tags on mature female red king crabs, and 8) collect ovigerous female snow crabs for laboratory larval and juvenile growth and habitat studies. Two projects originated from ADF&G: 1) collection of Tanner crabs for the evaluation of reproductive potential, and 2) collection of snow crabs for the evaluation of reproductive potential.

Six hundred snow crab and 600 Tanner crab tissue samples were collected from six index sites to monitor bitter crab syndrome, 86 male snow crab were collected for the age determination project, 62 cod stomachs were visually scanned for red king crab predation, 143 snow crabs were collected for ocean acidification studies, 120 snow crabs were collected for the male snow crab physiological maturity study, 251 snow crabs were collected for the annual vs. biennial reproduction study, pop-up satellite tags were deployed on 60 ovigerous red king crabs, and 30 female and 8 male snow crabs were collected for growth and habitat studies. Six hundred and nineteen mature female snow crab, 153 mature female Tanner crab, and 4 mature female *Chionoecetes* spp. hybrid crab were collected to assess female reproductive potential. All collections were completed within the guidelines stipulated by the ADF&G collection permit for each project.

Bristol Bay District Red King Crab

Red king crab were caught at 67 of the 136 stations in the Bristol Bay management district in 2014. The density of legal-sized male crab caught at a station ranged from 74 to 3,767 crab nmi^{-2} (see Appendix). Legal-sized male Bristol Bay red king crab were caught at 53 stations (Table 5, Appendix), resulting in a total biomass estimate (± 95% CI) of 35,867 ± 13,620 t (Table 6) and a total abundance estimate (± 95% CI) of 12.3 ± 4.8 million crab (Table 7) in the Bristol Bay District. The majority of these males were concentrated in the central and southwest section of Bristol Bay along the Alaska Peninsula (Figs. 14 and 15). The 2014 estimated biomass of legal-sized males is higher than last year and is above the 20 year average of 23,935 ± 3,062 t (Table 6).

Red king crab mature males were encountered at 57 of the 136 surveyed stations with no one station dominating in abundance (Fig. 16). One hundred percent of the 631 mature males and 479 immature males caught were measured (Table 5). The estimated biomass of 47,688 ± 17,508 t for mature males is 79% of the total male biomass in 2014 (Table 6) with immature male red king crab estimated at 12,529 ± 9,245 t (Table 5). The majority of both size categories were centrally located in the Bristol Bay District (Figs. 15 and 16).

In 2014, an overall increase in male red king crabs was observed compared to the previous two years, particularly in the 80-100 mm CL size range (Fig. 17). Fifty six percent of legal-sized male were new hardshell crabs and 44% were oldshell and very oldshell crabs with the majority of oldshell males caught in central Bristol Bay (Fig. 18).

One objective of this multi-species bottom trawl survey is to assess the mature red king crab population when mature females are carrying newly extruded, uneyed embryos after completion of the molt-mate cycle (Otto, 1986). Embryo development and larval hatching in female red king crab, followed by the molting and mating cycle, are delayed in years with cold bottom water temperatures (Chilton et al., 2010; Shirley et al., 1990; Stevens and Swiney, 2007). During years with colder than average bottom temperatures (1999, 2000, and 2006-2012), the ratio of eyed to uneyed embryos encountered in mature females on the survey in June was higher compared to warmer years (2001-2005, 2013, 2014). In years with relatively warmer water temperatures, more than 94% of the mature females in June carried uneyed embryos (Chilton et al., 2010). The eyed to uneyed embryo ratio ranged from 6.54 to 0.42 in cold years, compared to 0.06 to 0.01 in the warmer years, indicating that a high number of females within the survey area did not complete the molting and mating cycle in early June. The ratio of eyed to uneyed embryos in mature females decreased dramatically when the Bristol Bay stations were resampled in cold years, ranging from 0.06 to < 0.01, and indicating that the majority of mature females completed the mating and molting cycle (Table 8).

The indication that the molting and mating cycle is delayed is determined during the first leg of the survey by high numbers of oldshell mature females either brooding eyed embryos, which were fertilized from the previous season, or with pleopods exhibiting empty egg cases. To determine whether we need to retow the Bristol Bay red king crab stations, the reproductive condition of the mature female red king crab and the change in abundance of males and females between survey legs during cold years are assessed.

Unlike 2006-2012, the relatively warm water temperatures in 2014 did not delay the molting and mating cycle in mature female red king crab. All of the 1,222 mature females sampled during the standard survey had extruded a new clutch of uneyed embryos and the 2014 ratio of eyed to uneyed embryos in June was 0.00 (Table 8). Average bottom temperature of Bristol Bay stations with mature female red king crab in June was 4.4 °C in 2014, which is warmer than recent years. As such, Bristol Bay stations were not resampled in 2014.

The 2014 mature female red king crab biomass estimate of 51,624 ± 23,119 t (Table 6) and abundance estimate of 38.4 ± 17.5 million crabs (Table 7) is 97% of the total female abundance with immature female red king crab biomass estimated at 479 ± 430 t (Table 6). The majority of the mature female red king crab were caught in the central area of Bristol Bay and along the Alaska Peninsula (Fig. 19).

Historically, most mature red king crab collected during the survey were new hardshell crabs (Fig. 20). Generally, a portion of the population is in the old or very old shell condition for males, while almost all of the mature females have been new hardshell (Fig. 20). In 2014, all female red king crab had new shells and all mature females had clutches of uneyed eggs that were either 75% or 100% full (Fig. 21), which is encouraging because it shows high mating success.

The centers of distribution for mature male and female red king crab shifted north and east of the southwest Bristol Bay region from 1980 to 1987 (Fig. 22). From 1988 to 1991, the mature

female distribution slightly shifted south before returning to the northeastern distribution while males remained in the northeast. Loher and Armstrong (2005) hypothesized that the shift during the late 1970s and early 1980s was due to warmer bottom temperatures. In more recent years from 2008 to 2012 when the cold pool extended onto the Bristol Bay shelf area, the distribution of mature females and males moved from the central area of Bristol Bay to the nearshore areas along the Alaska Peninsula supporting this hypothesis (Chilton et al., 2010). This may be because females avoid water cold enough to delay embryogenesis during brooding (Stone et al., 1992). The center of distribution for mature females in 2014 was slightly to the north compared to recent cold years (e.g. 2012), which corresponds to the less extensive cold pool.

The location of ovigerous females at larval release may impact post-larval settlement success and recruitment strength in subsequent years. Given the known current structure in Bristol Bay, larvae released from females located in southwestern Bristol Bay would have a higher likelihood of settling in inner Bristol Bay. A northward shift in adult spatial distribution may reduce larval supply along the Alaska Peninsula and in inner Bristol Bay which is likely more favorable for juvenile survival than elsewhere in Bristol Bay (McMurray et al., 1984; Zheng and Kruse, 2006). If this mechanism is true, reduced settlement success in warm years relative to cold years (Evans et al., 2012) may explain population trends over the past several decades. Year class strength was high during the 1970s and early 1980s, but has been generally low since 1985 (Figs. 23 and 24). High abundances in the 1970s occurred when the spawning stock was located in southern Bristol Bay (Armstrong et al., 1993), while the low abundances starting in the mid-1980s may be caused by the warmer bottom temperatures and adult spatial shift. Despite relatively cold years in 2008-2012 and an extended cold pool, estimated population abundance has been low in recent years. Yet, 2014 mature male and female and pre-recruit population abundance estimates were higher compared to 2013. Although an increase in pre-recruit, mature, and legal males was observed in recent years, this increase should be interpreted with caution. 2014, mature female, mature male, and male pre-recruit (120-134 mm size category) abundance was at or below the average over the last 10 years (Fig. 13). A strong juvenile size group (40 mm to 50 mm CL size category) was observed in 2011 and could be associated with the colder temperatures in 2008-2012; however, the strong 2011 juvenile size class was not observed in subsequent years (Figs. 23 and 24).

Pribilof District Red King Crab

Historically, red king crab were not abundant in the Pribilof District and landings were taken incidentally during the blue king crab fishery. The red king crab fishery first opened in 1993 while fishing for blue king crab was closed. A combined fishery for red and blue king crab occurred in the Pribilof District from 1995 through 1998, but due to low abundance of blue king crab, the combined fishery and the red king crab fishery have both remained closed since the 1998/1999 season (Gish, 2006).

Red king crab were caught at 5 of the 77 stations in the Pribilof District; all of which were in the high-density sampling area in 2014. The density of legal-sized males caught at a station ranged from 73 to 7,663 crab nmi^{-2} (Appendix; Fig. 25). Legal-sized male red king crab were caught at 4 of the 77 stations in the Pribilof District (Table 5) with a biomass estimate (± 95% CI) of 11,433 ± 18,242 t (Table 9) and an abundance estimate (± 95% CI) of 2.6 ± 3.9 million crab (Table 10).

Legal-size males represented 94% of the total male biomass and were above the average of 5,029 ± 1,810 t from the previous 10 years (Table 9). The majority of the legal-sized males were distributed around and to the south of St. Paul Island (Fig. 26).

Mature males were encountered at 4 of the 77 stations in the Pribilof District; all of which were in the high-density sampling area (Fig. 27). All of the 158 mature and 4 immature males caught were measured (Table 5). Two stations accounted for 98% of all mature red king crab caught (Fig. 27). The biomass estimate of mature males was 12,047 ± 18,525 t and represented 99% of the total male biomass (Table 9) with the remaining 1% represented by 82 ± 129 t of immature male red king crab (Table 5). Mature males were distributed around St. Paul Island in the nearshore shallow water stations and to the west and south of St. Paul Island (Figs. 26 and 27).

The 2014 size-frequency for red king crab males shows considerably more very oldshell legal-sized males compared to 2013 and 2012 (Fig. 28). In 2014, 31% of the legal-sized males were new hardshell crabs and distributed to the west and south of St. Paul Island. Sixty nine percent of the legal-sized males were in oldshell and very oldshell condition and primarily distributed to the west and south of St. Paul Island (Fig. 29).

The 2014 biomass estimate of mature-sized red king crab females was 1,093 ± 2,015 t and abundance was 0.5 ± 0.9 million crab, representing 100% of the total female biomass collected during the survey (Tables 9 and 10). Female biomass estimates are imprecise due to the limited number of tows with positive crab catches (Appendix, Fig. 25), yet 2014 estimates indicate mature female biomass is higher than in 2013 (Fig. 11). All of the mature females were new hardshell between 110 and 168 mm CL and were carrying 75% or 100% full clutches of uneyed embryos (Fig. 30).

The centers of distribution for both males and females have moved within a 40 nm by 40 nm region around St. Paul Island (Fig. 31). The center of the red king crab distribution moved to within 20 nm of the northeast side of St. Paul Island as the population abundance increased in the 1980's and remained in that region until the 1990's. Since then, the centers of distribution have been located closer to St. Paul Island the exception of 2000-2003 located towards the north east.

Specific mechanisms for population fluctuations are unknown for Pribilof red king crab. However, it is generally acknowledged that climate change impacts marine ecosystems, including Bering Sea crab and fish species. A climatic regime shift took place in the North Pacific Ocean during the winter of 1976-77, which was characterized by an abrupt transition from a negative to positive Aleutian Low Pressure Index (ALPI) and Pacific Decadal Oscillation (PDO) resulting in warmer air and sea surface temperatures relative to pre-1977 conditions. After the 1977 regime shift, a slight increase in Pribilof red king crab occurred followed by a larger increase in the 1990s (Figs. 32 and 33). Male Pribilof red king crab size distribution has been relatively stable over the past 4 years, with a slight increase in mature male and female and pre-recruit male abundance in 2014. Yet this increase should be interpreted with caution due to the high variability with the population estimates.

Pribilof District Blue King Crab

Blue king crab were caught at 6 of the 86 stations in the Pribilof District; 6 stations in the high-density sampling area and zero stations in the standard-density sampling area in 2014 (Fig. 34). Legal-sized males were caught at two stations north and east of St. Paul Island with a density of 154 to 221 crab nmi^{-2} (Appendix, Fig. 35). The 2014 biomass estimate (± 95% CI) of legal-sized males was 233 ± 320 t (Table 11) and abundance was 0.09 ± 0.13 million crab (Table 12), representing 50% of the total male abundance and well below the average of 1,187 ± 682 t for the previous 20 years (Table 11 and 12).

Blue king crab mature males were caught at 2 of the 86 stations in the Pribilof District; 2 stations in the high-density sampling area and zero stations in the standard-density sampling area and 100% of the five mature males and five immature males caught were measured (Table 5; Figs. 35-37). The mature male biomass estimate of 233 ± 320 t represents 74% of the total male biomass with 83 ± 102 t of immature male blue king crab estimated in the Pribilof District (Tables 5 and 11). All male blue king crab were captured around St. Paul Island (Figs. 35, 36, and 38).

Four mature female blue king crab were caught in the Pribilof District high-density sampling area which extrapolated to a biomass estimate of 91 ± 108 t (Table 11) and an abundance estimate of 0.07 ± 0.09 million crab, and represents 85% of the total female biomass. Immature female blue king crab were caught at one station northeast of St. Paul Island in the Pribilof District high-density sampling area with a biomass estimate of 16 ± 32 t (Table 11; Fig. 35). Estimates of female biomass are imprecise due to their preference for rocky habitat which is difficult to sample with bottom trawls. Blue king crab females are predominantly biennial spawners with only a portion of the female population carrying eyed embryos in a given year, while the remainder is in a non-embryo-bearing phase (Somerton and Macintosh, 1985). Three of the four mature female blue king crab sampled in the Pribilof District were brooding uneyed embryos and one had empty egg cases (Fig. 39). One mature female with embryos had a 75% full clutch and two had 100% full clutches (Fig. 39).

The centers of distribution for both males and female blue king crab are located within a 40 nm by 40 nm region east of St. Paul Island (Fig. 40). The center of the blue king crab distribution moved to within 20 nm of the northeast side of St. Paul Island as the population abundance decreased in the 1980's before moving easterly the 1990's. Since then, the centers of distribution have been located at the northeastern edge of the distribution. In 2014, the mature male center of distribution was located approximately 20 nm north east of St. Paul Island, while the mature female center of distribution was located approximately 20 nm south east of St. Paul Island.

Pribilof blue king crab production was higher in the late 1970s and early 1980s, and increased in the 1990s and female abundances were at an all-time high in 1980 (Figs. 41 and 42). A pulse of male and female blue king crabs in the 55-60 mm CL size class was seen in 2005, yet this cohort was not observed at elevated abundances in subsequent years. Overall male and female blue king crab abundances have been extremely low in recent years with little evidence of improving.

St. Matthew Island Section, Northern District Blue King Crab

The blue king crab fishery in the St. Matthew Island Section of the Northern District opened in 2009 after a 10-year rebuilding plan but was closed due to ADF&G harvest regulations in 2013. Blue king crab were caught at 21 of the 57 total stations in the St. Matthew Island Section sampling strata; 20 stations in the high-density sampling area and 1 stations in the standard-density sampling area (Fig. 43). The density of legal-sized males caught at a station ranged from 69 to 1,554 crab nmi^{-2} and were captured primarily south west of St. Matthew Island (Appendix, Fig. 44). Eighty three legal-sized male blue king crab were caught in 2014 with a biomass estimate (± 95% CI) of 3,568 ± 2,472 t (Table 13) and abundance estimate (± 95% CI) of 1.8 ± 1.4 million crab (Table 14) representing 57% of the total male biomass which is above the average of 2,872 ± 779 t from the previous 20 years (Table 13).

Mature male blue king crab were caught at 20 of the 57 stations surveyed in the St. Matthew Island Section sampling strata and 100% of the 150 mature and 59 immature males caught were measured, respectively (Table 5, Figs. 44 and 45). In 2012, one station (R-24) had a mature male density of 3,143 crab nmi^{-2}, which accounted for 26% of the mature males; however, in 2013, R-24 had a mature male density of 325 crab nmi^{-2}, which accounted for 8% of the mature males (Fig. 45). Yet in 2014, R-24 had a mature male density of 4,070 crab nm^{-2}, which accounted for 38% of the mature males. The mature male biomass estimate in 2014 was 5,472 ± 4,750 t, representing 87% of the total male biomass (Table 13), while the immature male biomass was estimated at 796 ± 733 t (Table 5). The majority of the immature male blue king crab were distributed in the shallow waters surrounding St. Matthew Island while a majority of the mature males were caught southwest of St. Matthew Island and one station (R-24) north of St. Matthew Island (Figs. 44 and 45).

Overall male St. Matthew Island blue king crab abundance increased in 2014, including newshell and oldshell crabs (Fig. 46). In 2014, 73% of the legal-sized males were new hardshell crabs, with the majority distributed south and north (R-24) of St. Matthew Island (Fig. 47).

The 2014 mature female blue king crab biomass estimate was 74 ± 95 t and abundance was 0.12± 0.16 million crab (Table 14), representing 72% of the total female biomass, and the immature female blue king crab biomass estimate was 28 ± 29 t (Table 13). Mature females were caught at three stations and immature females were caught at four stations in the St. Matthew Island Section sampling strata (Fig. 44). Of the six females in the mature size category, one was an immature new hardshell crab, while five were oldshell crabs with empty egg cases (Fig. 48). The remaining six females were new hardshell and immature in the 40 to 75 mm CL size class (Fig. 48).

The centers of distribution for both males and female blue king crab are located within a 30 nm by 30 nm region around St. Matthew Island (Fig. 49). The center of the blue king crab distribution has randomly moved within this region without a clear pattern of years proximal to each other. In 2014, the mature female center of distribution was located in the south side of St. Matthew Island, while the mature male center of distribution was located approximately 10 nm south west of St. Matthew Island.

NMFS survey abundance estimates for St. Matthew blue king crab do not exist prior to 1978. As such, production cannot be compared between pre- and post-1977 regime shift. Size distribution

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abundance estimates (Figs. 50 and 51) suggest that production of male crabs has been strong in recent years. In 2014, the abundance of pre-recruit male crab in the 105-119 mm size class was slightly above the previous 20 year average (Fig. 13). Yet the high variability and low mature female estimates suggest trends should be interpreted with caution. It is important to highlight that recent fluctuations in population abundance estimates are primarily caused by catch numbers in one station (R-24).

Tanner Crab

In 2011, the ADF&G Board of Fish changed the legal-size limit of Tanner crab from ≥ 5.5 inches CW (138 mm, without spines) to ≥ 4.4 inches CW (110 mm, without spines) west of 166°W and ≥ 4.8 inches CW (120 mm, without spines) east of 166°W (Table 1). According to the regulatory harvest strategy of the State of Alaska (5 AAC 35.508), the annual TAC or GHL for Tanner crab in the area east of 166°W is determined by the biomass estimate of males ≥ 138 mm CW while the Tanner crab GHL in the area west of 166°W is determined by the biomass estimate of males ≥ 125 mm CW. The harvest strategy is based on the assumption that the commercial fishery will target these size categories (Zheng and Pengilly, 2011), although the industry may self-impose retention of crab ≥ 5.5 inches CW and 5.0 inches CW (125 mm, without spines) east and west of 166°W, respectively. We provided the 2014 biomass estimates for the two legal-size categories as well as for ≥ 5.5 inches CW east of 166°W and ≥ 5.0 inches west of 166°W in the abstract.

Tanner crab were caught at 86 of the 121 stations east of 166°W and 156 of the 255 stations west of 166°W with Tanner crab occurring at 41 and 12 stations in the high-density areas of the Pribilof District and St. Matthew Island Section, respectively (Appendix, Fig. 52).

Legal-sized Tanner crab were caught at 67 of the 121 stations east of 166°W and 101 of the 255 stations west of 166°W with no one particular station dominating the catch (Table 5, Fig. 53). Ninety two percent of the legal-sized males caught east of 166°W were measured and 92% of the legal-sized males caught west of 166°W were measured (Table 5). The 2014 biomass estimate (± 95% CI) for legal male Tanner crab east of 166°W was 30,366 ± 10,146 t (Table 15) and abundance was 41.8 ± 13.4 million crab with 31% of those males ≥ 5.5 inches CW with a biomass estimate of 12,555 ± 5,661 t (13.1 ± 5.8 million crab; Table 15 and 16). The 2014 biomass of legal Tanner crab in the eastern area was substantially above the 20 year average biomass of 12,714 ± 2,124 t. The majority of the Tanner males ≥ 113 mm CW east of 166°W were distributed in the southwest section of Bristol Bay (Figs. 53 and 54).

The 2014 biomass estimate for legal male Tanner crab west of 166°W was 24,859 ± 6,016 t (Table 17) and abundance was 43.9 ± 10.6 million crab with 37% of those males ≥ 5.0 inches CW with a biomass estimate of 11,766 ± 3,233 t (16.1 ± 4.3 million crab; Table 17 and 18). The 2014 biomass of legal Tanner crab in the western area was above the 20 year average biomass of 14,305 ± 4,863 t. The majority of Tanner males ≥ 103 mm CW west of 166°W were distributed around the Pribilof Islands (Figs. 53 and 54).

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In 2014, a total of 829 male Tanner crab chela height and carapace width measurements were collected on the EBS bottom trawl survey. The scatterplot of the allometric relationship between chela height and carapace width using the combined data collected in 2008, 2010, 2012, and 2014 (n =5,432) graphically represents two distinct maturity groups; immature, small claw males with a ratio of less than 0.18 and mature, large claw males with a ratio greater than or equal to 0.18 (Fig. 55). The carapace widths for small claw males ranged from 14.0 to 137.3 mm compared to 61.4 to 177.1 mm for large claw males. Large claw males with carapace widths below the legal-size limit will not recruit to the fishery in the future, as morphometrically mature male *Chionoecetes* spp. crab will not molt again during their lifespan (Tamone et al., 2007).

In the area east of 166°W, overall newshell males decreased slightly, with a slight increase in abundance of small juveniles (20 to 50 mm CW) and oldshell crabs 100 to 130 mm (Fig. 56). In the area west of 166°W oldshell males above 85 mm were slightly more abundant than in 2013 (Fig. 57). In both areas, most male crabs were new, hardshell, and distributed in the southwest section of the EBS shelf at depths greater than 100 m (Fig. 58).

The 2014 mature female Tanner crab biomass estimate east and west of 166°W was 4,807 ± 4,460 t and 4,215 ± 2,116 t (20.8 ± 20.1 and 22.2 ± 11.0 million crabs), respectively, while the immature female Tanner crab biomass east and west of 166°W was 3,816 ± 3,263 t and 4,515 ± 1,934 t, respectively (Tables 5, 15-18). Forty eight percent of the mature female population was distributed east of 166°W in the ADF&G Eastern management district in the central and southwestern area of the Bristol Bay District (Fig. 53). In the eastern area only, less than 1% of the mature females were softshell, while 9% were new-hardshell and 90% were oldshell and very oldshell (Fig. 59). In the western area only, 1% of the mature females were softshell, while 23% were new-hardshell and 76% were oldshell and very oldshell (Fig. 60). In the eastern region 99% of the mature females carried newly extruded embryos while less than 1% were brooding eyed embryos, had not produced a new clutch, or were barren (Fig. 59). In the western region, 98% of the mature females carried newly extruded embryos, while less than 1% were brooding eyed embryos and 2% had empty egg cases or were barren (Fig. 60). In the eastern region, 3% of the ovigerous females were ½ full, 40% were ¾ full, and 56% were full, while in the western region 5% were ½ full, 58% were ¾ full, and 35% were full (Figs. 59 and 60).

Prior to 2010, Tanner crab estimates were calculated for a single stock, with mature females ≥85 mm CW. Starting in 2010, Tanner crab was split into east and west of 166°W management units, each with separate size categories for maturity (Table 1). Between 2010 and 2013, the mature female biomass time series was calculated for Tanner crab west of 166°W using an incorrect size category. Female crab ≥70 mm CW were included in the mature size category, as opposed to crab ≥80 mm CW. This miscalculation caused an average 39% overestimation over the 1975-2013 time series (Fig. 12), which was reflected in reports published in 2010-2013. This error has been corrected (Table 17 and Fig. 12).

Pulses of strong recruitment to the mature male and female population appear to have been cyclical throughout the eastern Bering Sea (Figs. 61 and 62), yet it is unclear what environmental conditions triggered the pulses, or if strong cohorts are sequentially linked as theorized for snow crab (Ernst et al., 2005; Ernst et al., 2012; Parada et al., 2010). Shell condition can be used to infer if mature female Tanner crab are primiparous (first clutch of eggs) or multiparous

(subsequent clutches). For example, mature newshell female crabs (shell condition 2) are assumed to be primiparous (first clutch of eggs) and likely molted to maturity during the prior winter (Ernst et al., 2005).

The shell condition time series demonstrates that the survey fails to detect portions of the population. For example, the population estimate of newshell (shell condition 2) female Tanner crab east of 166°W was 37 million in 1990, yet the estimate of oldshell (shell condition 3) mature females was 77 million in 1991 (Fig. 61). Assuming newshell females become oldshell the following year, estimates of oldshell females should be at or below levels of newshell females the year prior. Further, the shell condition time series for mature male Tanner crab should be interpreted with caution, as physiological, morphological, and functional male maturity vary by size. In most of the historical survey data, it is not possible to differentiate morphologically mature and immature males. Thus, a size cutoff is suboptimal for assessment of mature crabs, and future research will strive to refine the accuracy of estimating mature population abundances.

The centers of distribution for both males and female Tanner crab have moved within a 160 nm by 100 nm region east of the Pribilof Islands and west of Bristol Bay (Fig. 63). The center of the distribution moved from the eastern extent of the distribution in the 1970's to the western extent in more recent years.

There is little evidence of changes in Tanner crab production related to the 1977 regime shift (NPFMC, 2011a), yet pulses of strong production have been cyclical from 1975 to the present (Figs. 64-67). A less pervasive regime shift occurred in 1989, as characterized by briefly negative ALPI and PDO indices, although the system did not return to pre-1977 conditions. A slight increase in Tanner crab production coincided with the 1989 shift, although the links between climate and crab production remain speculative. An increase in abundance of pre-recruit male crabs (110-137 mm CW) east of 166°W relative to levels over the past 20 years was observed in the past two years; however, the increase should be interpreted with caution due to the high uncertainty in the estimates (Fig. 13). Male pre-recruit abundance west of 166°W has been on a decreasing trend between 2007 and 2012, but a slight increase was observed in 2013 and 2014 with abundances well above the average over the past 20 years Fig. 13). The male size frequency distribution in 2014 reveals an increase in abundance of male crabs between 100-125 mm CW west of 166°W, while population abundances have remained relatively consistent east of 166°W compared to 2013 (Figs. 64-67).

Snow Crab

Although the legal minimum size limit for male snow crab is 3.1 inches CW (78 mm), processors currently prefer a minimum size of 4.0 inches CW (102 mm). The biomass estimates for male snow crab are reported for both legal and preferred size categories in the abstract.

Snow crab were caught at 260 of the 376 stations in the combined areas of the Bristol Bay District, Pribilof District, and St. Matthew Island Section sampling strata (Fig. 68). Snow crab

occurred at 39 stations in the high-density area of the Pribilof District and 27 stations in the high-density area St. Matthew Island Section sampling strata (Appendix).

Legal-sized snow crab were caught at 222 of the 376 standard stations (Fig. 69) and 70% of the legal-sized males caught were measured (Table 5). Legal-sized male snow crab estimated biomass (± 95% CI) was 151,454 ± 48,661 t (Table 19) and abundance was 385.3 ± 109.6 million crab (Table 20) which was 22% of the total male abundance. This biomass is higher than the 20 year average legal male snow crab biomass of 142,021 ± 32,789 t. Thirty-six percent of those legal males were ≥ 4.0 inches CW with a biomass estimate of 79,510 ± 34,881 t (138.5 ± 58.5 million crab), while the biomass estimate of sublegal males was 94,080 ± 60,316 t. These legal-sized male snow crab were distributed throughout the EBS shelf with higher concentrations around the Pribilof Islands (Figs. 69 and 70).

The scatterplot of the allometric relationship between chela height and carapace width using the data collected in 2009 (n = 1,303), 2011 (n=1,130), and 2013 (n=943) graphically represents two distinct maturity groups for snow crab; immature males (small claw) with a ratio of < 0.20 and mature males (large claw) with a ratio of ≥ 0.20 (Fig. 71). The carapace widths for small claw males ranged from 21.3 to 121.2 mm compared to 40.6 to 151.6 mm for large claw males.

A slight increase in the number of juvenile new hardshell males in the 40 to 75 mm size category was observed in 2014 (Fig. 72). Among legal-sized male crab, 2% were in molting or softshell condition while 74% were in new-hardshell condition indicating a recent molt and distributed between the 50 and 100 m isobaths in the middle shelf of the EBS survey area as well as between the 100 and 200m isobaths in the northwest area of the EBS shelf (Figs. 72 and 73). Twenty-four percent of the legal-sized males were oldshell and very oldshell condition crabs and primarily distributed in the southeastern section of the EBS shelf (Fig. 73).

The mature female snow crab biomass estimate of 177,098 ± 62,868 t and abundance estimate of 1,849.0 ± 748.5 million crab was 77% of the total female biomass (Tables 19 and 20). The immature female crab biomass estimate was 53,757 ± 29,482 t (Tables 5 and 19). Among sampled mature females; 42% were in new-hardshell condition and 58% were oldshell and very oldshell condition (Fig. 74). Ninety one percent of the mature females were brooding new embryos, while < 1% had eyed embryos (Fig. 74). Less than 1% of the mature females had empty egg cases and 8% were barren (Fig. 74). Seventy percent of mature females with embryos were 75% and 100% full (Fig. 74).

Pulses of strong recruitment to the mature female population have been cyclical (Fig. 75), and it is hypothesized that strong cohorts are sequentially linked (see Ernst et al., 2012; Parada et al., 2010 for a detailed discussion). As with Tanner crab, shell condition can be used to infer if mature female snow crab are primiparous (first clutch of eggs) or multiparous (subsequent clutches). Mature newshell female crabs (shell condition 2) are assumed to be primiparous (first clutch of eggs) and likely molted to maturity during the prior winter (Ernst et al., 2005). Strong cohorts of mature primiparous females occurred approximately every 7 years starting in 1980 (Fig. 75), which matches the theoretical time required between egg extrusion of mature females and those offspring reaching maturity (Ernst et al., 2012). It is unknown what specific environmental conditions triggered the initial pulse or how long the sequence may last.

As with Tanner crab, the shell condition time series demonstrates that the survey fails to detect portions of the population. For example, population estimates of newshell (shell condition 2) female snow crab were 125 million in 1999, yet estimates of oldshell (shell condition 3) mature females was nearly 1,000 million in 2000 (Fig. 75). Estimates of oldshell females should be at or below levels of newshell females the year prior. As with Tanner crab, the shell condition time series for mature male snow crab should be interpreted with caution, as physiological, morphological, and functional male maturity vary by size, and it is not possible to differentiate morphologically mature and immature males in most survey data. Future research will strive to refine the accuracy of estimating mature population abundances.

With the exception of 1975 to 1979, the centers of distribution for both males and female snow crab have moved within a 120 nm by 120 nm region between St. Matthew Island and the Pribilof Islands (Fig. 76). The center of snow crab distribution moved dramatically to the northwest after 1979. Since then, the centers of distribution have moved throughout the distribution with males having a broader distribution while females are located more to the north.

Mature and sub-legal male and abundance is up from 2013, but mature female abundance is on a decreasing trend (Figs 8, 10, 13, 77, and 78). However, mature female biomass and abundance is above the previous 10 year average (Figs. 10 and 11). Ovigerous female snow crab held in water less than 1.5 °C are biennial spawners in the Bering Sea (NPFMC, 2011a). Environmental conditions such as temperature and the extent of the cold pool will likely regulate recruitment strength through the numbers of biennial spawners and fecundity of females.

***Chionoecetes* spp. hybrid**

Chionoecetes spp. hybrid crab were caught at 146 of the 376 stations in the combined areas of the Bristol Bay, Pribilof, and Northern Districts (Fig. 79). *Chionoecetes* spp. hybrid crab occurred at 38 stations in the Pribilof District high-density sampling area, and 13 stations in the high-density sampling area of the St. Matthew Island Section of the Northern District (Appendix).

In this document, *Chionoecetes* spp. hybrid crab size classes for legal males and mature females are based on the size categories for snow crab (see Snow Crab section and Table 1). Legal-sized male *Chionoecetes* spp. hybrid crab were caught at 110 stations, throughout all Districts combined, resulting in a biomass estimate (± 95% CI) of 12,408 ± 5,208 t and were primarily distributed around the Pribilof Islands between 50 and 100 m (Fig. 80). Fifty-one percent of those legal males were ≥ 4 inches in carapace width, with a biomass estimate of 8,557 ± 3,365 t. The 2014 sublegal male *Chionoecetes* spp. hybrid crab biomass estimate for all Districts combined was 956 ± 751 t, and were distributed throughout the northeastern Bering Sea shelf at depths greater than 50 m (Fig. 80).

The 2014 mature female *Chionoecetes* spp. hybrid crab biomass estimate was 2,454 ± 1,112 t and the immature female crab biomass estimate was 299 ± 380 t. The majority of the mature female *Chionoecetes* spp. hybrid crab were primarily distributed south of the Pribilof Islands and

St. Matthew Island and between 100 and 200 m in the northwestern area of the eastern Bering Sea shelf (Fig. 80).

Other Crab Stocks and Species of Interest

Northern District Red King Crab

Red king crab were caught at 18 stations in the Northern District (Fig. 81) outside of the current management units where red king crab are commercially fished (Fig. 3). Legal-sized males were caught at 7 of those stations and the density at a station ranged from 69 to 259 crab nmi^{-2} (Appendix). The 2014 biomass estimate (± 95% CI) of legal-sized males was 1,135 ± 896 t while the biomass estimate of mature and immature males was 1,135 ± 896 and 4,618 ± 8,688 t, respectively. The biomass estimate of mature female red king crab was 1,631 ± 2,431 t while the biomass estimate of immature females was 1,444 ± 2,800 t. The majority of both legal males and mature female red king crab were caught in depths < 50 m at stations south and west of Nunivak Island (Fig. 82).

Northern District Blue King Crab

Blue king crab were caught at two stations not included in the blue king crab biomass estimates for the Pribilof District or the St. Matthew Island section sampling strata of the Northern District, which consisted of one legal-sized male, three mature females, and one immature female (Appendix, Fig. 83).

Hair Crab

Hair crab were caught at 86 of the 376 stations throughout all Districts combined on the survey (Fig. 84). Historically, hair crab have been concentrated just north of the Alaska Peninsula and near the Pribilof Islands. In recent years, abundance of hair crab has been increasing, particularly in central Bristol Bay and west of Nunivak Island.

In this report, legal male hair crab are defined as > 3.25 inches CW (≥ 83 mm CL) which was specified in the previous Pribilof District fishery while the female hair crab biomass estimate is presented for all sizes combined. The 2014 density of legal male hair crab caught at a station ranged from 66 to 2,491 crab nmi^{-2} resulting in a biomass estimate of 3,374 ± 1,275 t (Table 21) and abundance of 5.4 ± 2.0 (Table 22). Legal male hair crab were primarily concentrated in the central Bristol Bay area, near St. Paul Island and distributed along the 50 m isobath near Nunivak Island (Fig. 84).

The 2014 pre-recruit male hair crab biomass estimate (± 95% CI) was 1,142 ± 693 t and the female hair crab biomass estimate was 303 ± 135 t (Table 21). A high number of pre-recruit males were caught near St. Paul Island and west of Nunivak Island (Fig. 84).

The Pribilof District hair crab fishery has been closed since 2000 due to a shift in the distribution of legal males to the Northern District and, after one year of experimental fishing with minimal vessel participation, the Northern District fishery was closed in 2001 (Bowers et al., 2011). Since 2005, the biomass estimates of both size classes of male hair crab have increased. The 2014

biomass estimate for legal-sized male hair crab was higher than the 20-year average of 2,229 ± 704 t (Table 21).

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CITATIONS

ADF&G, 2012. 2012-2014 Commercial King and Tanner Crab Fishing Regulations. Alaska Department of Fish and Game.

Armstrong, D.A., Wainwright, T.C., Jensen, G.C., Dinnel, P.A., Andersen, H.B., 1993. Taking refuge from bycatch issues: red king crab (*Paralithodes camtschaticus*) and trawl fisheries in the Eastern Bering Sea Can. J. Fish. Aquat. Sci. 50(9), 1993-2000.

Bowers, F.R., Schwenzfeier, M., Herring, K., Salmon, M., Shaishnikoff, J., Fitch, H., Alas, J., Baechler, B., 2011. Annual management report for the commercial and subsistence shellfish fisheries of the Aleutian Islands, Bering Sea and the Westward Region's shellfish observer progra, 2009/10. Alaska Department of Fish and Game Fishery management Report No. 11-05, Anchorage.

Chilton, E.A., Foy, R.J., Armistead, C.E., 2010. Temperature Effects on Assessment of Red King Crab in Bristol Bay, Alaska. In: Kruse, G.H., Eckert, G.L., Foy, R.J., Lipcius, R.N., Sainte-Marie, B., Stram, D. (Eds.), Biology and Management of Exploited Crab Populations under Climate Change. Alaska Sea Grant, Anchorage, AK, pp. 249-263.

Donaldson, W., Byersdorfer, S., 2005. Biological field techniques for lithodid crabs. Alaska Sea Grant College Program, University of Alaska Fairbanks, 76 pp.

Ernst, B., Orensanz, J., Armstrong, D., 2005. Spatial dynamics of female snow crab (*Chionoecetes opilio*) in the eastern Bering Sea. Can. J. Fish. Aquat. Sci. 62(2), 250-268.

Ernst, B., Armstrong, D.A., Burgos, J., Orensanz, J.M., 2012. Life history schedule and periodic recruitment of female snow crab (*Chionoecetes opilio*) in the eastern Bering Sea. Can. J. Fish. Aquat. Sci. 69(3), 532-550.

Evans, D., Fey, M., Foy, R.J., Olson, J., 2012. The evaluation of adverse impacts from fishing on crab essential fish habitat. NMFS and NPFMC staff discussion paper. Item C-4(c)(1), 37.

Gish, R.K., 2006. The 2005 Pribilof district king crab survey. Alaska Deptartment of Fish and Game Fisheries Management Report No. 06-60, Anchorage.

Karinen, J., Hoopes, D., 1971. Occurrence of Tanner crabs (*Chionoecetes* sp.) in the eastern Bering Sea with characteristics intermediate between *C. bairdi* and *C. opilio*. Proc. Natl. Shellfish. Assoc. 61, 8-9.

Lauth, R.R., Nichol, D.G., 2013. Results of the 2012 eastern Bering Sea continental shelf bottom trawl survey of groundfish and invertebrate resources. NOAA Techical Memorandum NMFS-AFSC-256, 1-171.

Loher, T., Armstrong, D.A., 2005. Historical changes in the abundance and distribution of ovigerous red king crabs (*Paralithodes camtschaticus*) in Bristol Bay (Alaska), and potential relationship with bottom temperature. Fish. Oceanogr. 14(4), 292-306.

McLaughlin, P.A., D.K. Camp, M. V. Angel, E. L. Bousfield, P. Brunel, R. C. Brusca, D. Casien, A. C. Cohen, K. Conlan, L. G. Eldredge, D. L. Felder, J. W. Goy, T. Haney, B. Hann, R. W. Heard, E. A. Hendrycks, H. H. Hobbs III, J. R. Holsinger, B. Kensley, D. R. Laubitz, S. E. LeCroy, R. Lemaitre, R. F. Maddocks, J. W. Martin, P. Mikkelsen, E. Nelson, W. A. Newman, R. M. Overstreet, W. J. Poly, W. W. Price, J. W. Reid, A. Robertson, D. C. Rogers, A. Ross, M. Schotte, F. R. Schram, C. T. Shih, L. Watling, G. D. F. Wilson, D. D. Turgeon., 2005. Common and scientific names of aquatic invertebrates from the United States and Canada: crustaceans., Bethesda, Maryland.

McMurray, G., Vogel, A.H., Fishman, P.A., 1984. Distribution of larval and juvenile red king crab (*Paralithoides camtschatica*) in Bristol Bay, Outer Continental Shelf Environmental

DRAFT

Assessment Program: Final Reports of Principal Investigators. U.S. Department of Commerce, NOAA, pp. 267-477.
Meyers, T., Burton, T., 2009a. Black Mat Syndrome, Diseases of wild and cultured shellfish in Alaska. Alaska Department of Fish and Game, Commercial Fisheries Division, Juneau, Anchorage, pp. 76-77.
Meyers, T., Burton, T., 2009b. *Hematodinium* sp. - Bitter Crab Disease of Tanner Crabs, Diseases of wild and cultured shellfish in Alaska. Alaska Department of Fish and Game, Commercial Fisheries Division, Juneau, Anchorage, pp. 84-89.
Meyers, T., Morado, J., Sparks, A., Bishop, G., Pearson, T., Urban, D., Jackson, D., 1996. Distribution of bitter crab syndrome in Tanner crabs (*Chionoecetes bairdi, C. opilio*) from the Gulf of Alaska and the Bering Sea. Dis. Aquat. Org. 26, 221-227.
Morado, J.F., Dawe, E.G., Mullowney, D.R., Shavey, C.A., Lowe, V.C., Cawthorn, R.J., 2010. Climate Change and the Worldwide Emergence of *Hematodinium*-Associated Disease: Is There Evidence for a Relationship? In: Kruse, G.H., Eckert, G.L., Foy, R.J., Lipcius, R.N., Sainte-Marie, B., Stram, D., Woodby, D. (Eds.), Biology and Management of Exploited Crab Populations Under Climate Change. Alaska Sea Grant, University of Alaska Fairbanks, Anchorage, Alaska, pp. 153-173.
NPFMC, 2011a. Stock assessment and fishery evaluation report for the king and Tanner crab fisheries of the Bering Sea and Aleutian Islands regions, 2011 Crab SAFE. North Pacific Fishery Management Council, Anchorage, AK, pp. 677.
NPFMC, 2011b. Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs. North Pacific Fishery Management Council, Anchorage, AK, pp. 222.
Otto, R., 1986. Management and assessment of eastern Bering Sea king crab stocks. In: Jamieson, G.S., Bourne, N. (Eds.), North Pacific workshop on stock assessment and management of invertebrates. Canadian Special Publication of Fisheries and Aquatic Sciences, pp. 83-106.
Parada, C., Armstrong, D.A., Ernst, B., Hinckley, S., Orensanz, J., 2010. Spatial dynamics of snow crab (*Chionoecetes opilio*) in the eastern Bering Seaputting together the pieces of the puzzle. Bull. Mar. Sci. 86(2), 413-437.
Pereyra, W.T., Reeves, J.E., Bakkala, R.G., 1978. Demersal fish and shellfish resources of the eastern Bering Sea in the baseline year 1975: Distribution of crab resources from research surveys. NWAFC Processed Rep. 62p. Nortwest and Alaska Fish. Cent., Natl. Mar. Fish. Serv., NOAA, 760 Sand Point Way NE, Seattle, Washington.
Rose, C.S., Walters, G.E., 1990. Trawl width variation during bottom trawl surveys: Causes and consequences. In: Low, L. (Ed.), Proceedings of the Symposium on Application of Stock Assessment Techniques to Gadids, Seattle, Washington, pp. 57-67.
Rugolo, L., Pengilly, D., Macintosh, R.A., Gravel, K., 2005. Reproductive potential and life history of snow crabs in the eastern Bering Sea. In: Penguilly, D. (Ed.), Comprehensive report for Bering Sea snow crab fishery restoration research. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau, AK.
Shirley, T.C., Shirley, S.M., Korn, S., 1990. Incubation period, molting and growth of female red king crabs: effects of temperature. In: Melteff, B. (Ed.), Proceedings of the international Symposium on king and Tanner crabs. Lowell Wakefield Symposia. Alaska Sea Grant Report 90-04, pp. 51-63.
Somerton, D.A., Macintosh, R.A., 1985. Reproductive biology of the female blue king crab *Paralithodes platypus* near the Pribilof Islands, Alaska J. Crust. Biol. 5(3), 365-376.

DRAFT

Stauffer, D.A., 2004. NOAA protocols for groundfish bottom trawl surveys of the Nation's fishery resources U.S. Department of Commerce, NOAA Technical Memorandum NMFS-F/SPO-65, 205.

Stevens, B., Donaldson, W., Haaga, J., Munk, J., 1993. Morphometry and maturity of paired Tanner crabs, *Chionoecetes bairdi*, from shallow-and deepwater environments. Can. J. Fish. Aquat. Sci. 50(7), 1504-1516.

Stevens, B.G., Swiney, K.M., 2007. Hatch timing, incubation period, and reproductive cycle for captive primiparous and multiparous red king crab, *Paralithodes camtschaticus*. J. Crust. Biol. 27(1), 37-48.

Stone, R., O'Clair, C., Shirley, T., 1992. Seasonal migration and distribution of female red king crabs in a southeast Alaskan estuary. J. Crust. Biol. 12(4), 546-560.

Swiney, K.M., Long, W.C., Eckert, G.L., Kruse, G.H., 2012. Red king crab, *Paralithodes camtschaticus*, size-fecundity relationship, and inter-annual and seasonal variability in fecundity. J. Shellfish Res. 31(4), 925-933.

Tamone, S.L., Taggart, S.J., Andrews, A.G., Mondragon, J., Nielsen, J.K., 2007. The relationship between circulating ecdysteroids and chela allometry in male tanner crabs: Evidence for a terminal molt in the genus *Chionoecetes*. J. Crust. Biol. 27(4), 635-642.

Trippel, E.A., 1999. Estimation of stock reproductive potential: history and challenges for Canadian Atlantic gadoid stock assessments. Journal of Northwest Atlantic Fisheries Science 25, 61-81.

Urban, D., Pengilly, D., Jadamec, L., Byersdorfer, S., 2002. Testing carapace morphology characteristics for the field identification of *Chionoecetes* hybrids In: Paul, A.J., Dawe, E.G., Elner, R., Jamieson, G.S., Kruse, G.H., Otto, R.S., Sainte-Marie, B., Shirley, T.C., Woodby, D. (Eds.), Crabs in cold water regions: Biology, management, and economics. . Alaska Sea Grant College Program, Anchorage, Alaska, pp. 97-113.

Zheng, J., Kruse, G.H., 2006. Recruitment variation of eastern Bering Sea crabs: Climate-forcing or top-down effects? Prog. Oceanogr. 68(2), 184-204.

Zheng, J., Pengilly, D., 2011. Overview of proposed harvest strategy and minimum size limits for Bering Sea district Tanner crab. Alaska Department of Fish and Game Special Publication No. 11-02, Anchorage.

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Table 1. Definition of carapace size classes for crab species caught in National Marine Fisheries Service eastern Bering Sea standard survey. Carapace length (CL) is measured for *Paralithodes* spp. and *Erimacrus isenbeckii*, while carapace width (CW excluding spines) is measured for *Chionoecetes* species. The legal size classes defined by ADF&G (CW in inches) include spines.

Species	District		Immature	Mature	Pre-recruit	Legal Male
Paralithodes camtschaticus	Bristol Bay	male	<120 mm	≥ 120 mm	110-134 mm	≥ 135 mm CL or ≥ 6.5 in. CW
		female	< 90 mm	≥ 90 mm		
	Pribilof	male	<120 mm	≥ 120 mm	120-134 mm	≥ 135 mm CL or ≥ 6.5 in. CW
		female	< 90 mm	≥ 90 mm		
P. platypus	Pribilof	male	<120 mm	≥ 120 mm	120-134 mm	≥ 135 mm CL or ≥ 6.5 in. CW
		female	< 100 mm	≥ 100 mm		
	St. Matthew	male	< 105 mm	≥ 105 mm	105-119 mm	≥ 120 mm CL or ≥ 5.5 in. CW
		female	< 80 mm	≥ 80 mm		
Chionoecetes bairdi	East of 166° W	male	< 113 mm	≥ 113mm	110-137 mm	≥ 120 mm or ≥ 4.8 in. CW[1]
		female	< 85 mm	≥ 85 mm		
	West of 166° W	male	< 103 mm	≥ 103 mm	110-137 mm	≥ 110 mm or ≥ 4.4 in. CW[1]
		female	< 80 mm	≥ 80 mm		
C. opilio		male	< 95 mm	≥ 95 mm	≤ 77 mm	≥ 78 mm or ≥ 3.1 in. CW[2]
		female	< 50 mm	≥ 50 mm		
Erimacrus isenbeckii		male				≥ 83 mm CL or > 3.25 in. CW[3]
		female				

[1] The legal minimum size limit for *C. bairdi* is ≥ 4.8 inches CW (120 mm excluding spines; 122 mm including spines) east of 166° W and ≥ 4.4 inches CW (110 mm excluding spines; 112 including spines) west of 166° W (ADF&G reg. **5 AAC 35.520(b)(1)**).

[2] The legal minimum size limit for *C. opilio* is 3.1 inches CW (78 mm excluding spines; 79 mm including spines), although processors currently prefer a minimum size of 4.0 inches CW (102 mm).

[3] Legal-sized male crab for *E. isenbeckii* are larger than a minimum size of 3.25 inches CW (≥ 83 mm CL) defined by Alaska Department of Fish and Game permit guidelines.

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Table 2. History of methods for determining trawl on bottom and estimating net width on National Marine Fisheries Service eastern Bering Sea bottom trawls.

Year	Net width (m)	Trawling methodology
1975		First and only year tow duration = 1 hour
1976-2012		Tow duration = 30 minutes
1975-1995		Brake set and haul back of winch drum wire defined trawl contact with seafloor (net on bottom)
1996-2012		Began using bottom contact sensors to determine trawl contact with seafloor
1975 - 1980	12.2	Mean width of 400-mesh eastern trawl*
1981	18.0	Mean width* of 83-112 eastern trawl for Vessel 1
1981	13.4 or 14.3	Mean width* of 400-mesh eastern trawl measurements different on haul 1-112 and 114-156 for Vessel 37*
1982 - 1987	Variable with each tow	Rose and Walters (1990) calculated the 83-112 net width based on an inverse relationship to net scope
1988 - 2001	Variable with each tow	All survey vessels used ScanMar acoustic sensors on the 83-112 trawl net
2001 - 2012	Variable with each tow	All survey vessels used NetMind acoustic sensors on the 83-112 trawl net
2013 - 2014	Variable with each tow	All survey vessels used Marport acoustic sensors on the 83-112 trawl net

*Single value used for net width when calculating area swept.

Table 3. Weight-size regression relationships used to calculate biomass of crab species caught in National Marine Fisheries Service eastern Bering Sea bottom trawl surveys.

Stock	Sex	*a* pre-2010	*b* pre-2010	*a* 2010-present	*b* 2010-present
Bristol Bay red king crab	males	0.00036	3.16	0.000403	3.141334
	females	0.01027	2.38849	n/a	n/a
	non-ovigerous females	n/a	n/a	0.000408	3.127956
	ovigerous females	n/a	n/a	0.003593	2.666076
Pribilof Islands red king crab	males	0.00036	3.16	0.000403	3.141334
	females	0.01027	2.38849	n/a	n/a
	non-ovigerous females	n/a	n/a	0.000408	3.127956
	ovigerous females	n/a	n/a	0.003593	2.666076
Pribilof Islands blue king crab	males	0.00047	3.103	0.000508	3.106409
	females	0.02065	2.27	0.02065	2.27
	non-ovigerous females	n/a	n/a	n/a	n/a
	ovigerous females	n/a	n/a	n/a	n/a
St. Matthew Is. blue king crab	males	0.00033	3.175	0.000502	3.107158
	females	0.02065	2.27	0.02065	2.27
	non-ovigerous females	n/a	n/a	n/a	n/a
	ovigerous females	n/a	n/a	n/a	n/a
Tanner crab	males	0.00019	3.09894	0.00027	3.022134
	females	0.00182	2.70462	n/a	n/a
	non-ovigerous females	n/a	n/a	0.000562	2.816928
	ovigerous females	n/a	n/a	0.000441	2.898686
snow crab	males	0.00023	3.12948	0.000267	3.097253
	females	0.00253	2.56427	n/a	n/a
	non-ovigerous females	n/a	n/a	0.001047	2.708367
	ovigerous females	n/a	n/a	0.001158	2.827784
hair crab	males	0.00071731	3.02	0.00071731	3.02
	females	0.001194533	2.86	0.00119453	2.86

Table 4. Special projects related to crab species conducted on National Marine Fisheries Service eastern Bering Sea bottom trawl survey in 2014.

Project Title	Principle Investigator	Agency
Bitter crab syndrome	Pam Jensen	RACE[1]-SAP[2]
Snow crab age determination	Pam Jensen	RACE[1]-SAP[2]
Cod predation on red king crabs	Ben Daly	RACE[1]-SAP[2]
Effects of ocean acidification on snow crabs	Kathy Swiney	RACE[1]-SAP[2]
Male snow crab physiological maturity	Kathy Swiney	RACE[1]-SAP[2]
Annual vs. biennial snow crab reproductive cycle	Kathy Swiney	RACE[1]-SAP[2]
Location of red king crab spawning grounds	Chris Long	RACE[1]-SAP[2]
Snow crab growth and habitat associations	Cliff Ryer	RACE[1]-FBE[3]
Reproductive potential of female Tanner crabs	Laura Stichert	ADF&G[4]
Reproductive potential of female snow crabs	Laura Stichert	ADF&G[4]

[1] Alaska Fisheries Science Center, Resource Assessment and Conservation Engineering Division, Seattle, Washington.

[2] AFSC, Resource Assessment and Conservation Engineering Division, Shellfish Assessment Program, Kodiak, Alaska.

[3] AFSC, Resource Assessment and Conservation Engineering Division, Fisheries Behavioral Ecology Program, Newport, Oregon.

[4] State of Alaska, Department of Fish and Game.

Table 5. Summary of 2014 National Marine Fisheries Service eastern Bering Sea bottom trawl survey details for seven commercial crab stocks. Size categories are defined in Table 1.

		Number of tows in District	Tows with crab	Number of crab measured	Number of crab caught	Biomass (t)	CI (± 95%)
Bristol Bay District Red King Crab	Immature male	136	37	479	479	12,529	9,245
	Mature Male	136	57	631	631	47,688	17,508
	Legal	136	53	398	398	35,867	13,620
	Immature female	136	14	33	33	479	430
	Mature female	136	40	1,222	1,222	51,624	23,119
Pribilof District Red King Crab	Immature male	77	2	4	4	82	129
	Mature Male	77	4	158	158	12,047	18,525
	Legal	77	4	137	137	11,433	18,242
	Immature female	77	0	0	0	0	0
	Mature female	77	3	26	26	1,093	2,015
Pribilof District Blue King Crab	Immature male	86	3	5	5	83	102
	Mature Male	86	2	5	5	233	320
	Legal	86	2	5	5	233	320
	Immature female	86	1	1	1	16	32
	Mature female	86	3	4	4	91	108
St. Matthew Island Blue King Crab	Immature male	56	9	59	59	796	733
	Mature Male	56	20	150	150	5,472	4,750
	Legal	56	20	83	83	3,568	2,472
	Immature female	56	4	6	6	28	29
	Mature female	56	3	6	6	74	95
Tanner Crab east of 166°W	Immature male	121	82	2,481	2,509	18,253	5,900
	Mature Male	121	70	1,907	2,030	39,910	12,421
	Legal	121	67	1,255	1,369	30,366	10,146
	Immature female	121	49	907	1,360	3,816	3,263
	Mature female	121	55	345	690	4,807	4,460
Tanner Crab west of 166°W	Immature male	255	145	4,104	5,845	17,345	7,484
	Mature Male	255	105	2,651	3,068	33,394	8,146
	Legal	255	101	1,821	1,986	24,859	6,016
	Immature female	255	137	2,683	4,248	4,515	1,934
	Mature female	255	78	721	924	4,215	2,116
Opilio Tanner Crab	Immature male	376	241	18,221	56,922	140,093	67,732
	Mature Male	376	193	5,678	7,386	105,441	41,567
	Legal	376	222	10,163	14,558	151,454	48,661
	Immature female	376	162	4,718	58,102	53,757	29,482
	Mature female	376	184	6,340	72,847	177,097	62,868

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Table 6. Time series of biomass estimates (t) for Bristol Bay District red king crab (*Paralithodes camtschaticus*) by size category (CL) and sex from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female < 90 mm	Mature female ≥ 90 mm	Mature female ± CI
1978	52,941	143,700	65,068	96,358	10,809	104,670	40,495
1979	24,478	131,619	48,206	94,312	6,150	74,790	22,065
1980	37,194	122,361	60,234	98,940	12,765	52,526	30,132
1981	26,984	36,083	7,894	24,336	7,670	39,558	12,443
1982	49,074	22,220	8,345	9,838	22,193	37,107	14,475
1983	24,971	9,582	2,440	2,809	6,911	6,022	2,345
1984	64,784	14,117	7,164	6,830	38,569	9,665	7,828
1985	12,395	13,606	4,013	5,210	2,409	3,727	1,828
1986	11,975	27,390	26,390	12,678	1,804	4,021	2,269
1987	15,827	29,162	14,064	17,600	6,409	12,048	7,604
1988	9,018	24,679	8,806	18,296	584	14,313	11,744
1989	7,860	38,901	15,998	28,678	887	9,680	6,395
1990	5,676	29,435	10,316	22,490	2,589	13,559	11,135
1991	6,217	61,403	67,982	53,217	1,715	11,881	10,525
1992	6,562	17,838	6,651	13,393	788	8,547	4,250
1993	6,902	28,283	9,042	19,183	736	12,504	6,149
1994	3,479	19,240	6,588	13,023	577	6,491	2,791
1995	6,141	20,372	14,360	15,159	1,396	6,918	3,299
1996	8,749	17,631	7,148	14,682	4,445	9,707	5,373
1997	26,230	31,679	13,031	26,699	668	18,083	12,686
1998	12,608	32,386	10,211	18,906	1,533	27,643	13,942
1999	4,367	35,215	11,419	26,376	1,446	12,003	5,442
2000	7,971	29,950	6,511	21,180	2,008	15,930	8,610
2001	8,643	18,557	5,622	14,965	1,331	17,589	10,493
2002	11,695	32,469	12,371	24,588	4,952	14,664	7,910
2003	11,010	42,629	16,149	32,165	3,507	28,445	12,691
2004	19,417	39,676	12,686	33,470	4,634	24,260	11,459
2005	16,446	37,090	13,714	27,643	5,273	34,955	14,979
2006	12,733	36,953	15,679	29,273	4,263	24,696	4,995
2007	13,463	42,543	16,015	33,451	1,341	27,532	6,853
2008	14,166	39,411	11,195	28,013	983	35,764	19,492
2009	8,298	34,262	24,416	22,542	594	28,758	18,146
2010	5,641	30,248	9,246	21,346	389	41,087	16,468
2011	7,864	19,599	6,024	15,412	3,766	37,731	13,646
2012	5,799	24,656	13,366	19,713	1,903	28,040	18,669
2013	5,475	33,891	14,120	28,152	427	21,986	15,759
2014	12,529	47,688	17,508	35,867	479	51,624	23,119

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Table 7. Time series of abundance estimates (in millions) for Bristol Bay District red king crab (*Paralithodes camtschaticus*) by size category (CL) and sex from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female < 90 mm	Mature female ≥ 90 mm	Mature female ± CI
1978	89.5	67.9	30.7	38.5	44.5	144.6	54.2
1979	41.1	58.7	22	35.7	21.9	96.7	29.4
1980	71.2	50.1	24.6	35.8	46.5	74.9	48.4
1981	48.1	16.2	3.5	8.9	26.6	50.2	15.6
1982	109.2	11.8	4.8	3.9	72.9	50.6	21.3
1983	46.2	5.7	1.5	1.3	23.3	9.1	3.9
1984	145.5	7.7	3.8	3.1	109.5	17.1	14.7
1985	16.7	7.6	2.2	2.3	6.3	6.3	3.1
1986	15.1	14.7	14.5	5.5	5.2	6.3	3.6
1987	23.8	14.4	6.9	7.2	16.7	18.1	11.3
1988	11	11.2	3.9	7.3	1.6	20.6	17.3
1989	10.8	17.3	6.8	11.1	3.3	14.1	9.6
1990	9.1	12.6	4.2	8.3	7.5	16.8	13.8
1991	9.7	24.1	25.8	19.2	4.7	14.8	14.3
1992	8.3	7.4	2.9	4.6	2	10.4	5
1993	8.3	12.6	4.1	6.9	2.3	14.5	7.4
1994	7	8.5	2.9	4.8	3.3	6.5	2.8
1995	10.9	9.1	6.9	5.9	4.6	7.6	3.6
1996	17.4	7.1	2.8	5.2	12.9	11.1	6.1
1997	32.3	12.3	4.8	9.1	1.7	24.9	20.3
1998	16.7	15.3	5	6.7	5.2	32.5	17.9
1999	8.9	15.6	5.1	10.3	5.8	13.6	6
2000	12.6	13.6	3.1	8.2	5.3	17.6	9.1
2001	11.9	7.3	2.2	5.1	3.8	21.2	13
2002	22.8	13.5	5.2	8.6	17	17.3	9.8
2003	18.6	18	6.5	11.6	9.8	31.5	14.4
2004	34.6	15.5	4.8	11.5	16.9	28.2	12.5
2005	31.3	15.5	5.4	9.6	18.2	40.6	19
2006	22.9	15.8	6.4	11.1	13.1	28.1	5.9
2007	17.3	17.7	6.3	12.2	3.4	32.3	7.9
2008	16.5	16.9	4.6	9.8	2.5	40.1	20.2
2009	9.1	15.7	11	8.5	1.5	30.1	17.3
2010	6.5	13.5	4	8	1	31.7	13.5
2011	37.2	8.1	2.3	5.6	33.3	28.7	10.8
2012	7.9	9.6	4.8	6.7	6	21.1	15
2013	6.6	12.8	5.3	9.3	1.2	15.6	11.1
2014	15.4	19.5	7.3	12.3	1.1	38.4	17.5

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Table 8. Average bottom water temperatures collected at stations with mature female Bristol Bay red king crab (*Paralithodes camtschaticus*) on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey and the ratio of eyed to uneyed embryos in mature red king crab females with the warm years highlighted in gray. Bristol Bay stations were sampled twice during the cold years. An * indicates statistical significance within the year using a two sample t-test, alpha = 0.95 and P < 0.001.

Sample event	Average bottom temperature (°C)	Standard deviation (n = stations)	Two sample t-test values	Eyed to uneyed embryo ratio
May 1999	0.1	0.8 (41)	t = -11.9	6.54
July 1999	2.5*	0.8 (31)		0.02
May 2000	1.7	0.5 (49)	t = -9.2	1.45
July 2000	4.6*	1.6 (23)		0.01
June 2001	3.5	0.3 (40)		0.01
June 2002	3.4	0.6 (52)		0.06
June 2003	4.2	0.4 (51)		0.01
June 2004	3.9	0.5 (61)		0.03
June 2005	4.3	0.5 (49)		0.01
June 2006	2.2	0.7 (69)	t = -12.5	0.59
July 2006	4.2*	0.8 (30)		0.01
June 2007	1.8	0.9 (68)	t = -7.4	0.86
July 2007	3.4*	1.0 (32)		0.01
June 2008	1.4	0.7 (76)	t = -9.5	0.45
July 2008	3.6*	1.1 (32)		0.00
June 2009	1.5	1.6 (73)	t = -8.6	0.42
July 2009	4.5*	1.5 (32)		0.00
June 2010	2	0.9 (40)	t = -10.9	0.64
July 2010	4.8*	1.0 (23)		0.03
June 2011	2.9	0.8 (46)	t = -8.6	0.80
July 2011	5.9*	1.1 (20)		0.06
June 2012	0.9	1.2 (40)	t = -8.4	0.91
July 2012	4.0*	1.3 (15)		0.00
June 2013	2.9	1.1 (35)		0.02
June 2014	4.4	0.8 (40)		0.00

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Table 9. Time series of biomass estimates (t) for Pribilof District red king crab (*Paralithodes camtschaticus*) by size category (CL) and sex from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female < 90 mm	Mature female ≥ 90 mm	Mature female ± CI
1978	0	1,228	1,986	1,228	0	42	82
1979	0	859	661	790	0	76	108
1980	5	1,312	1,354	1,312	0	195	247
1981	0	299	343	299	0	97	148
1982	18	1,440	1,970	1,440	0	673	1,007
1983	26	518	542	486	0	216	205
1984	0	261	283	233	0	67	75
1985	0	60	118	60	0	0	0
1986	0	135	185	135	0	57	111
1987	0	53	103	53	0	25	49
1988	693	104	204	43	312	420	718
1989	656	1,498	2,671	854	405	1,442	1,961
1990	5,918	897	1,632	109	21	1,754	2,375
1991	624	4,335	6,765	1,295	70	3,790	4,468
1992	266	3,238	3,785	2,479	22	2,591	4,658
1993	276	9,687	17,497	9,017	9	4,829	6,789
1994	548	9,052	13,170	7,994	3	3,393	5,024
1995	572	24,282	20,572	22,428	28	6,171	6,180
1996	66	2,323	1,692	2,292	0	1,456	2,117
1997	1,472	6,056	7,393	5,843	6	1,436	1,597
1998	406	2,282	1,610	1,749	3	1,259	1,885
1999	3,260	5,422	7,092	4,394	2,510	2,252	3,258
2000	153	4,239	3,104	3,773	8	727	891
2001	2,280	8,434	12,995	5,663	0	4,333	8,450
2002	8	6,916	9,299	6,894	0	571	576
2003	0	5,280	6,807	5,184	2	1,642	2,922
2004	146	3,563	4,114	3,563	139	844	881
2005	53	1,219	1,398	1,219	0	2,207	3,393
2006	97	6,762	4,735	6,484	0	1,406	1,690
2007	201	7,176	5,489	6,947	7	2,527	2,563
2008	324	5,375	5,335	5,022	22	2,076	2,827
2009	43	2,454	3,066	2,088	0	546	590
2010	30	3,107	2,336	2,881	0	468	379
2011	44	3,834	4,872	3,751	3	814	1,165
2012	336	4,477	5,031	4,360	0	663	710
2013	104	7,749	9,409	7,567	0	169	194
2014	82	12,047	18,525	11,433	0	1,093	2,015

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Table 10. Time series of abundance estimates (in millions) for Pribilof District red king crab (*Paralithodes camtschaticus*) by size category (CL) and sex from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female < 90 mm	Mature female ≥ 90 mm	Mature female ± CI
1978	0	0.4	0.6	0.4	0	0.1	0.1
1979	0	0.3	0.2	0.2	0	0.1	0.1
1980	0	0.4	0.4	0.4	0	0.2	0.2
1981	0	0.1	0.1	0.1	0	0.1	0.1
1982	0	0.3	0.4	0.3	0	0.5	0.7
1983	0	0.1	0.1	0.1	0	0.2	0.1
1984	0	0.1	0.1	0	0	0	0.1
1985	0	0	0	0	0	0	0
1986	0	0	0.1	0	0	0	0.1
1987	0	0	0	0	0	0	0.1
1988	1.9	0.1	0.1	0	1.6	0.4	0.8
1989	1.1	0.8	1.4	0.4	1	2	2.6
1990	5.7	0.6	1.1	0	0.1	2.4	3.2
1991	0.7	2.4	3.8	0.6	0.3	4.3	5.1
1992	0.4	1.5	1.8	1	0.1	2.8	5.2
1993	0.3	3.5	6.4	3.1	0	4.5	6.4
1994	0.6	3.1	4.6	2.5	0	3.2	4.5
1995	0.6	7.1	5.9	6	0.1	5.3	5.2
1996	0.1	0.6	0.4	0.5	0	1.1	1.6
1997	1.6	1.6	1.7	1.4	0	1.3	1.4
1998	0.4	0.8	0.6	0.4	0	1.1	1.6
1999	7.2	1.9	2.2	1.3	6.9	3.4	5.7
2000	0.1	1.5	1.2	1.3	0	0.7	0.8
2001	2.5	3.7	6.1	1.9	0	4.4	8.6
2002	0	1.9	2.5	1.9	0	0.4	0.4
2003	0	1.5	2	1.4	0	1.2	2.1
2004	1.4	0.8	0.9	0.8	1.1	0.5	0.6
2005	0.1	0.2	0.3	0.2	0	1.3	2
2006	0.1	1.4	1	1.2	0	0.9	1
2007	0.2	1.6	1.4	1.5	0	1.7	1.7
2008	0.4	1.3	1.2	1.1	0.1	1.7	2.4
2009	0	0.9	1.2	0.7	0	0.3	0.3
2010	0	0.9	0.7	0.8	0	0.3	0.2
2011	0	1	1.3	1	0	0.5	0.6
2012	0.4	1.2	1.5	1.2	0	0.4	0.5
2013	0.1	1.7	2	1.6	0	0.1	0.1
2014	0.1	3	4.2	2.6	0	0.5	0.9

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Table 11. Time series of biomass estimates (t) for blue king crab (*Paralithodes platypus*) by size category (CL) and sex in the Pribilof District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female < 100 mm	Mature female ≥ 100 mm	Mature female ± CI
1978	2,518	15,798	17,288	12,291	321	6,171	8,927
1979	1,302	12,974	6,506	10,843	1,304	2,793	2,673
1980	1,797	14,253	8,368	12,163	635	63,078	111,557
1981	2,270	10,744	3,533	9,686	1,628	8,282	7,338
1982	1,049	6,691	2,455	6,241	613	8,763	11,923
1983	876	4,919	1,712	4,069	384	9,864	15,159
1984	99	1,761	805	1,446	44	2,536	1,922
1985	36	959	501	687	3	520	457
1986	3	1,368	812	1,340	11	2,420	4,272
1987	175	2,659	2,144	2,529	128	785	908
1988	155	766	794	766	239	478	459
1989	1,162	752	940	752	1,032	714	658
1990	2,117	3,259	2,713	1,549	1,587	2,224	1,701
1991	1,254	4,266	3,223	3,025	659	2,117	1,648
1992	1,640	3,995	3,308	2,761	1,106	1,543	1,400
1993	991	4,144	2,495	2,913	455	1,636	1,465
1994	550	3,028	2,051	2,491	334	4,524	3,969
1995	863	7,753	8,198	6,365	362	4,482	3,835
1996	678	4,221	2,223	3,522	166	5,418	5,356
1997	347	2,940	1,591	2,515	189	2,840	2,390
1998	630	2,545	1,243	2,283	420	1,761	1,588
1999	146	1,573	1,037	1,297	113	2,755	2,480
2000	103	1,902	1,103	1,588	23	1,439	1,304
2001	79	1,454	2,093	1,329	0	1,816	2,571
2002	0	618	613	588	0	1,401	2,129
2003	17	638	501	610	21	1,286	1,880
2004	33	97	111	44	5	118	120
2005	297	313	435	313	477	370	413
2006	72	137	163	115	35	522	732
2007	163	254	397	170	41	216	350
2008	193	42	82	42	178	493	637
2009	232	452	632	170	30	595	979
2010	97	322	290	202	88	352	428
2011	0	461	763	399	15	22	43
2012	165	644	928	459	131	106	91
2013	15	250	391	190	35	131	210
2014	83	233	320	233	16	91	108

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Table 12. Time series of abundance estimates (in millions) by size category (CL) and sex for blue king crab (*Paralithodes platypus*) in the Pribilof District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female < 100 mm	Mature female ≥ 100 mm	Mature female ± CI
1978	2.4	6.1	6.0	3.9	0.5	5.5	7.4
1979	4.5	5.2	2.7	3.9	4.7	2.5	2.5
1980	2.6	5.4	3.4	4.2	1.2	55.1	95.7
1981	4.7	3.9	1.3	3.3	3.9	7.1	6.2
1982	1.4	2.3	0.8	2.1	1.2	7.6	9.9
1983	1.0	1.9	0.7	1.3	0.7	9.1	13.7
1984	0.4	0.7	0.3	0.5	0.3	2.3	1.7
1985	0.1	0.4	0.2	0.3	0.1	0.5	0.4
1986	0.0	0.5	0.3	0.5	0.0	2.1	3.7
1987	0.6	0.9	0.7	0.8	0.4	0.7	0.8
1988	1.2	0.2	0.2	0.2	1.0	0.4	0.4
1989	3.5	0.2	0.3	0.2	3.0	0.8	0.8
1990	3.0	1.7	1.5	0.6	3.1	2.3	1.7
1991	1.9	2.0	1.4	1.2	1.3	2.2	1.7
1992	2.4	1.9	1.6	1.2	2.3	1.7	1.5
1993	1.5	1.9	1.1	1.1	0.9	1.8	1.5
1994	0.6	1.3	0.8	0.9	0.5	4.6	4.0
1995	1.1	3.1	3.3	2.3	0.7	4.5	3.9
1996	0.7	1.7	0.9	1.3	0.3	5.0	4.8
1997	0.5	1.2	0.7	0.9	0.3	2.6	2.2
1998	0.9	1.0	0.5	0.8	0.7	1.6	1.5
1999	0.2	0.6	0.4	0.5	0.2	2.6	2.4
2000	0.2	0.7	0.4	0.5	0.0	1.3	1.2
2001	0.1	0.5	0.7	0.4	0.0	1.7	2.5
2002	0.0	0.2	0.2	0.2	0.0	1.2	1.9
2003	0.0	0.2	0.2	0.2	0.1	1.1	1.7
2004	0.1	0.0	0.1	0.0	0.1	0.1	0.1
2005	2.0	0.1	0.1	0.1	2.3	0.3	0.3
2006	0.1	0.1	0.1	0.0	0.1	0.4	0.6
2007	0.2	0.1	0.2	0.0	0.1	0.2	0.3
2008	0.2	0.0	0.0	0.0	0.3	0.5	0.7
2009	0.3	0.2	0.4	0.1	0.1	0.5	0.9
2010	0.1	0.1	0.1	0.1	0.2	0.3	0.4
2011	0.0	0.2	0.3	0.1	0.0	0.0	0.0
2012	0.2	0.3	0.4	0.2	0.3	0.1	0.1
2013	0.1	0.1	0.2	0.1	0.1	0.1	0.2
2014	0.1	0.1	0.1	0.1	0.0	0.1	0.1

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Table 13. Time series of biomass estimates (t) for blue king crab (*Paralithodes platypus*) by size category (CL) and sex in the St. Matthew Island Section sampling stratum of the Northern District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature male < 105 mm	Mature male ≥ 105 mm	Mature male ± CI	Legal male ≥ 120 mm	Immature female < 80 mm	Mature female ≥ 80 mm	Mature female ± CI
1978	2,727	5,250	4,015	2,900	295	140	137
1979	2,583	5,860	4,493	3,460	203	1,025	1,661
1980	2,430	7,321	6,675	4,495	240	951	1,621
1981	484	5,796	4,604	4,439	33	130	115
1982	1,612	13,947	8,641	11,280	131	296	471
1983	1,054	8,129	4,496	6,382	34	1,645	2,194
1984	490	3,486	1,289	2,946	32	228	305
1985	362	2,608	1,109	2,223	39	95	93
1986	227	1,170	891	668	78	34	66
1987	441	1,842	1,029	1,174	156	84	73
1988	625	2,582	1,226	1,722	291	443	414
1989	2,707	4,372	2,139	3,126	687	1,037	829
1990	1,003	5,423	2,809	4,314	206	143	167
1991	1,482	5,537	2,660	3,749	344	447	722
1992	1,116	5,737	2,296	4,223	298	198	262
1993	1,876	7,692	2,451	5,729	447	1,831	3,277
1994	820	5,305	1,830	3,886	30	197	155
1995	929	4,465	1,512	3,160	139	64	54
1996	1,152	7,762	3,662	5,700	310	487	778
1997	1,199	9,137	5,899	6,723	196	498	767
1998	802	6,828	4,803	5,025	172	280	272
1999	242	1,302	465	1,067	83	24	34
2000	281	1,721	1,041	1,407	15	75	66
2001	432	2,297	1,147	1,776	99	89	100
2002	106	1,502	948	1,258	1	89	120
2003	482	1,126	697	841	68	365	467
2004	394	1,227	689	1,044	143	117	110
2005	400	1,276	901	932	42	103	113
2006	937	2,946	2,064	2,254	36	123	115
2007	2,339	4,153	2,829	2,028	214	81	80
2008	1,757	3,335	1,879	2,471	152	103	129
2009	1,689	4,622	2,390	2,351	208	202	178
2010	3,974	8,141	5,955	4,317	206	362	672
2011	1,699	9,516	10,167	5,701	104	51	52
2012	907	5,652	3,668	3,312	52	75	64
2013	445	2,022	860	1,485	70	42	48
2014	796	5,472	4,750	3,568	28	74	95

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Table 14. Time series of abundance estimates (in millions) for blue king crab (*Paralithodes platypus*) by size category (CL) and sex in the St. Matthew Island Section sampling stratum of the Northern District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature male < 105 mm	Mature male ≥ 105 mm	Mature male ± CI	Legal male ≥ 120 mm	Immature female < 80 mm	Mature female ≥ 80 mm	Mature female ± CI
1978	5.4	3.9	3.2	1.7	0.9	0.3	0.3
1979	4.5	4.5	3.5	2.2	0.6	1.7	2.8
1980	4.3	5.2	5.3	2.6	0.8	1.7	2.9
1981	0.9	3.6	2.6	2.3	0.1	0.3	0.2
1982	3.1	8.5	5.6	6.0	0.4	0.5	0.8
1983	2.1	5.0	2.9	3.4	0.3	2.7	3.5
1984	1.3	2.0	0.7	1.5	0.2	0.4	0.5
1985	0.7	1.5	0.7	1.1	0.2	0.2	0.2
1986	0.6	0.8	0.7	0.4	0.3	0.1	0.1
1987	1.0	1.3	0.8	0.7	0.5	0.2	0.1
1988	1.5	1.8	0.9	1.0	0.9	0.9	0.8
1989	6.2	2.9	1.5	1.8	2.2	2.0	1.6
1990	1.9	3.4	1.8	2.3	0.6	0.3	0.3
1991	3.3	3.9	1.9	2.2	1.1	0.8	1.3
1992	2.2	3.7	1.5	2.3	0.9	0.4	0.5
1993	4.2	5.1	1.7	3.3	1.2	2.7	4.9
1994	1.4	3.6	1.3	2.3	0.1	0.3	0.3
1995	1.7	2.9	1.0	1.7	0.5	0.1	0.1
1996	2.4	5.0	2.5	3.1	1.0	0.8	1.2
1997	2.3	6.0	4.2	3.8	0.6	0.8	1.2
1998	2.1	4.5	3.4	2.8	0.5	0.5	0.4
1999	0.5	0.8	0.3	0.6	0.3	0.0	0.1
2000	0.5	1.0	0.6	0.7	0.1	0.1	0.1
2001	0.8	1.4	0.7	0.9	0.3	0.2	0.2
2002	0.2	0.9	0.5	0.6	0.0	0.1	0.2
2003	1.2	0.7	0.5	0.5	0.2	0.6	0.8
2004	0.9	0.7	0.5	0.6	0.4	0.2	0.2
2005	0.9	0.8	0.6	0.5	0.1	0.2	0.2
2006	1.8	1.9	1.4	1.2	0.1	0.2	0.2
2007	4.5	3.2	2.3	1.2	0.8	0.2	0.2
2008	3.8	2.3	1.3	1.5	0.6	0.2	0.3
2009	3.4	3.6	2.0	1.4	0.6	0.4	0.3
2010	6.2	5.7	4.6	2.5	0.6	0.8	1.4
2011	2.6	6.5	7.2	3.2	0.3	0.1	0.1
2012	1.6	3.8	2.6	1.8	0.2	0.1	0.1
2013	0.8	1.3	0.5	0.8	0.2	0.1	0.1
2014	1.3	3.4	3.4	1.8	0.1	0.1	0.2

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Table 15. Time series of biomass estimates (t) for Tanner crab (*Chionoecetes bairdi*) by size category (CW) and sex from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 113 mm	Mature male ≥ 113 mm	Mature male ± CI	Legal male ≥ 120 mm	Immature female < 85 mm	Mature female ≥ 85 mm	Mature female ± CI
1978	11,128	63,680	18,878	58,229	6,222	25,750	14,471
1979	3,897	27,760	7,713	26,134	3,272	6,795	3,213
1980	8,271	41,545	25,844	38,041	4,131	18,268	13,018
1981	4,507	18,159	7,283	15,748	3,031	11,689	6,002
1982	5,416	11,174	3,961	9,509	2,505	11,692	5,364
1983	3,261	10,285	4,820	8,806	2,359	7,148	3,713
1984	1,999	11,333	3,376	10,194	1,295	6,301	4,009
1985	1,720	6,677	3,098	6,146	801	4,715	3,944
1986	4,842	5,384	3,191	4,286	3,313	3,682	1,793
1987	17,684	11,326	4,675	10,033	18,397	10,855	6,155
1988	24,407	31,965	29,716	22,929	10,297	29,619	17,339
1989	37,420	66,357	21,162	54,096	25,786	22,228	6,857
1990	23,905	58,652	20,725	53,184	24,040	22,635	10,978
1991	25,674	63,636	40,678	54,786	20,447	35,254	19,439
1992	15,684	76,423	48,676	68,294	5,020	14,846	7,175
1993	8,330	46,589	18,006	41,993	2,598	6,864	2,924
1994	3,230	29,865	10,034	27,285	2,750	6,525	3,633
1995	1,982	18,103	8,558	16,731	3,265	7,115	4,509
1996	3,409	16,990	10,934	16,001	4,776	6,967	4,682
1997	3,335	6,006	2,075	5,236	3,200	2,327	971
1998	3,168	5,410	1,623	4,421	1,873	1,364	564
1999	8,347	6,461	3,051	4,590	3,267	2,737	2,170
2000	5,216	11,386	7,017	9,150	2,865	3,456	2,627
2001	5,598	10,717	4,627	9,289	5,964	1,616	839
2002	4,298	10,287	4,570	9,253	5,143	1,322	655
2003	6,206	11,150	5,092	9,424	2,903	2,078	965
2004	3,385	9,182	5,233	7,951	886	1,053	425
2005	5,213	12,412	5,336	10,563	5,316	2,747	1,857
2006	14,970	13,627	5,585	11,067	6,138	5,707	4,445
2007	12,252	16,310	8,947	12,271	3,713	7,331	6,411
2008	9,340	23,387	10,912	19,346	3,478	4,902	2,640
2009	4,049	11,545	4,737	9,512	3,267	4,393	3,765
2010	3,871	11,509	5,463	9,752	1,246	1,614	1,509
2011	11,962	11,952	6,325	10,207	4,939	1,727	1,006
2012	30,889	14,650	6,797	10,734	10,235	4,004	2,214
2013	25,429	39,184	25,941	23,843	6,456	6,985	3,957
2014	18,253	39,909	12,421	30,366	3,816	4,807	4,460

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Table 16. Time series of abundance estimates (in millions) for Tanner crab (*Chionoecetes bairdi*) by size category (CW) and sex from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 113 mm	Mature male ≥ 113 mm	Mature male ± CI	Legal male ≥ 120 mm	Immature female < 85 mm	Mature female ≥ 85 mm	Mature female ± CI
1978	46.4	78.8	22.6	67.3	29.4	63.4	37.2
1979	47.0	33.1	8.9	29.7	41.1	16.4	7.7
1980	39.9	50.2	30.4	42.8	21.7	43.8	31.3
1981	28.4	25.0	10.5	20.0	20.9	29.0	15.3
1982	27.8	16.0	5.9	12.5	15.7	29.3	13.6
1983	38.6	15.2	7.1	12.1	32.1	16.3	8.4
1984	20.1	14.7	4.2	12.3	14.6	13.7	8.4
1985	11.9	8.5	3.7	7.4	6.0	10.2	7.9
1986	57.2	7.6	3.8	5.3	45.5	8.8	4.0
1987	145.3	15.7	5.8	12.9	118.7	29.5	17.6
1988	131.4	48.4	41.1	29.4	69.2	70.2	40.9
1989	302.6	97.2	30.3	71.2	254.3	55.0	16.7
1990	181.2	72.4	23.9	61.0	168.3	55.4	26.6
1991	125.8	87.7	60.5	69.2	105.3	86.9	49.1
1992	56.4	105.7	67.0	88.5	24.1	35.4	16.9
1993	31.9	63.9	25.1	54.3	13.2	16.1	6.8
1994	12.9	39.4	13.4	34.0	13.6	15.7	9.0
1995	13.0	24.0	11.0	21.1	19.7	17.6	11.3
1996	30.0	21.8	13.8	19.7	30.3	17.4	11.5
1997	39.8	7.9	2.6	6.3	42.5	6.0	2.5
1998	25.3	7.9	2.4	5.8	17.1	3.5	1.5
1999	49.6	10.0	4.7	6.1	25.7	7.4	5.8
2000	31.8	16.8	10.0	12.1	21.0	8.6	6.5
2001	115.2	14.5	5.6	11.5	110.6	4.3	2.1
2002	48.6	13.1	5.3	10.9	45.5	3.4	1.7
2003	42.7	14.8	5.8	11.2	21.0	5.3	2.4
2004	18.2	12.3	5.3	9.7	9.9	2.5	1.0
2005	41.6	17.4	6.4	13.5	46.7	7.0	4.7
2006	86.9	19.8	7.6	14.4	40.4	15.2	12.2
2007	58.9	25.0	13.0	16.4	27.2	18.2	15.1
2008	40.2	33.5	13.8	25.0	19.8	12.9	7.0
2009	38.6	16.5	5.9	12.3	38.5	11.0	9.0
2010	47.4	16.4	7.4	12.7	44.3	6.8	6.1
2011	139.1	16.5	7.5	12.8	98.8	7.8	4.4
2012	168.6	23.0	10.7	14.5	100.8	18.5	11.1
2013	111.0	69.7	49.7	37.0	64.5	31.2	17.7
2014	76.2	62.3	19.0	41.8	39.4	20.8	20.1

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Table 17. Time series of biomass estimates (t) for Tanner crab (*Chionoecetes bairdi*) by size category (CW) and sex from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 103 mm	Mature male ≥ 103 mm	Mature male ± CI	Legal male ≥ 110 mm	Immature female < 80 mm	Mature female ≥ 80 mm	Mature female ± CI
1978	11,996	13,989	6,649	12,851	17,662	9,669	4,998
1979	13,770	19,783	5,958	17,212	15,968	16,823	11,222
1980	63,809	39,566	13,321	28,796	76,836	40,718	19,389
1981	34,733	28,350	8,189	19,037	39,466	27,932	13,799
1982	14,664	35,066	12,970	25,998	62,459	40,097	17,934
1983	7,674	17,209	6,637	13,430	15,422	15,813	7,392
1984	5,648	12,661	4,796	10,056	9,545	12,400	6,682
1985	2,495	4,210	1,467	3,230	3,319	2,885	1,634
1986	6,177	5,846	4,167	3,353	2,600	2,273	1,434
1987	7,919	8,771	4,047	7,142	6,480	3,464	1,402
1988	18,909	22,199	12,805	18,235	14,228	9,697	6,333
1989	15,788	29,782	13,083	25,497	12,637	10,402	4,521
1990	15,704	40,385	19,188	36,030	12,984	23,537	20,848
1991	17,700	38,813	14,113	34,951	17,066	19,802	8,528
1992	12,254	27,907	12,237	24,822	12,565	19,740	9,195
1993	7,145	12,887	5,014	11,097	5,942	7,339	2,856
1994	5,104	11,859	4,024	10,351	4,642	6,375	3,435
1995	3,750	13,403	7,360	12,161	5,464	9,413	5,342
1996	2,902	8,002	6,287	6,814	3,185	4,863	4,188
1997	1,960	3,633	1,205	2,926	1,615	1,910	1,177
1998	2,975	3,618	1,248	2,650	3,241	1,586	828
1999	4,311	2,345	974	1,709	4,348	2,156	1,048
2000	3,997	2,815	858	2,029	3,872	1,922	958
2001	7,971	5,001	2,110	4,020	9,326	4,117	2,683
2002	8,496	4,384	1,623	3,087	9,372	3,239	1,368
2003	12,268	8,267	3,857	6,547	14,291	5,145	2,221
2004	12,809	13,593	7,103	9,896	11,015	3,890	1,386
2005	18,588	27,877	10,733	24,158	23,548	9,788	4,278
2006	33,025	41,618	18,696	35,464	29,040	13,290	5,449
2007	36,383	47,741	27,327	37,785	14,552	9,019	2,967
2008	15,566	32,589	17,699	26,871	8,995	8,273	3,867
2009	9,558	23,406	9,319	20,175	6,859	5,236	2,192
2010	8,108	20,506	7,567	17,783	3,998	2,281	1,065
2011	13,198	26,124	17,353	23,259	6,556	2,637	842
2012	19,737	15,027	4,271	11,928	7,053	2,736	972
2013	18,416	20,423	9,312	15,939	6,925	3,941	1,601
2014	17,345	33,394	8,146	24,859	4,515	4,215	2,116

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Table 18. Time series of abundance estimates (in millions) for Tanner crab (*Chionoecetes bairdi*) by size category (CW) and sex from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1977 data.

Year	Immature male < 103 mm	Mature male ≥ 103 mm	Mature male ± CI	Legal male ≥ 110 mm	Immature female < 80 mm	Mature female ≥ 80 mm	Mature female ± CI
1978	153.6	19.4	8.7	16.3	172.9	29.6	16.0
1979	110.5	33.3	10.0	26.1	92.6	52.4	35.9
1980	483.4	78.2	26.3	48.3	418.4	126.0	61.8
1981	186.2	59.6	17.0	33.5	207.0	91.0	47.1
1982	74.2	71.3	26.2	46.0	321.1	127.5	58.0
1983	108.0	34.6	13.5	24.0	156.6	49.8	23.4
1984	64.9	25.5	9.6	18.2	88.0	38.6	21.3
1985	28.6	8.4	2.9	5.7	30.5	9.1	5.2
1986	49.4	13.5	10.5	6.5	25.4	7.1	4.2
1987	91.2	16.2	6.6	11.6	76.8	11.3	4.5
1988	197.2	39.8	21.1	28.8	137.1	30.2	19.8
1989	157.1	50.3	19.5	38.4	113.9	31.9	13.5
1990	129.5	65.6	29.3	53.4	102.0	69.0	57.2
1991	162.8	65.2	22.4	54.3	133.9	59.4	25.3
1992	111.6	45.3	15.8	36.7	96.5	61.2	28.5
1993	58.1	23.4	8.4	18.4	46.0	23.0	9.0
1994	47.3	21.1	6.7	16.9	45.6	19.4	10.4
1995	33.6	23.5	12.7	20.1	39.4	28.7	16.0
1996	24.3	15.0	11.1	11.7	26.2	15.0	12.9
1997	24.6	7.3	2.3	5.3	26.0	5.6	3.5
1998	49.1	7.4	2.5	4.7	46.4	4.9	2.6
1999	83.4	4.9	2.2	3.2	83.1	6.7	3.2
2000	71.2	6.0	1.8	3.8	58.2	5.8	2.9
2001	145.2	9.8	3.7	7.0	135.6	12.6	8.1
2002	128.8	9.1	3.2	5.4	120.6	10.1	4.3
2003	171.5	16.4	7.2	11.6	156.0	16.3	7.0
2004	207.5	29.2	15.9	18.9	185.8	11.9	4.2
2005	241.1	49.5	17.8	39.2	246.1	30.2	13.5
2006	284.9	74.8	28.4	57.5	216.6	41.4	16.7
2007	283.1	92.6	48.5	64.6	138.6	27.7	8.9
2008	110.8	62.2	29.9	46.2	76.6	25.5	11.8
2009	98.3	42.7	16.6	33.7	84.6	16.0	6.7
2010	113.2	37.2	13.1	29.6	100.3	12.6	5.8
2011	186.6	42.9	22.9	34.8	163.1	14.8	4.6
2012	223.8	28.7	8.1	19.9	132.2	15.5	5.5
2013	183.9	39.7	17.1	27.1	123.7	21.5	8.7
2014	140.4	68.0	17.8	43.9	111.9	22.2	11.0

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Table 19. Time series of biomass estimates (t) for eastern Bering Sea snow crab (*Chionoecetes opilio*) by size category (CW) and sex from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature male < 95 mm	Mature male ≥ 95 mm	Mature male ± CI	Legal male ≥ 78 mm	Immature female < 50 mm	Mature female ≥ 50 mm	Mature female ± CI
1980	231,120	111,613	23,098	188,735	68,800	262,930	144,446
1981	160,377	38,715	7,935	96,180	23,009	144,872	45,737
1982	251,534	66,073	19,393	177,666	17,878	161,179	47,003
1983	182,804	68,051	18,258	162,470	19,896	86,299	32,808
1984	114,957	112,003	30,107	173,278	23,412	45,606	16,700
1985	43,840	55,857	11,895	79,401	6,872	7,985	3,081
1986	82,583	59,566	14,357	84,972	25,726	29,501	10,552
1987	263,362	110,614	23,086	182,229	103,492	191,912	58,150
1988	323,998	143,031	53,053	244,099	55,820	194,829	62,098
1989	376,717	147,971	29,304	299,545	84,169	270,382	131,495
1990	307,535	356,511	99,367	533,863	56,654	207,680	75,475
1991	288,981	342,610	103,124	471,500	100,717	239,878	87,868
1992	194,661	178,707	39,022	240,544	83,985	154,162	51,594
1993	267,444	98,923	21,198	142,909	131,310	129,262	38,630
1994	284,738	57,849	11,650	109,755	116,084	129,424	37,003
1995	360,961	60,870	19,832	155,744	83,968	161,407	42,662
1996	337,632	144,002	52,199	312,019	51,766	90,375	23,432
1997	207,510	232,831	56,874	362,785	39,995	92,988	33,764
1998	99,597	164,505	30,683	219,565	32,218	73,583	36,071
1999	43,374	67,232	13,595	86,773	12,009	33,563	13,500
2000	75,974	53,757	15,470	76,333	26,946	104,785	104,992
2001	164,874	56,352	10,620	105,477	17,572	97,136	52,856
2002	82,408	56,095	26,889	100,723	7,102	35,224	18,692
2003	80,476	44,514	10,041	72,353	21,071	47,252	28,272
2004	88,141	44,319	14,384	61,830	52,756	50,109	26,079
2005	181,819	50,388	9,605	106,237	50,125	103,620	34,344
2006	122,465	90,094	61,110	141,290	21,923	77,362	25,977
2007	137,947	98,824	35,074	160,504	17,158	87,063	37,407
2008	112,950	79,654	16,881	123,295	11,265	61,863	23,212
2009	97,311	103,550	30,632	149,714	34,333	68,026	26,916
2010	146,348	107,131	27,491	136,140	110,581	132,166	45,594
2011	149,221	112,016	25,828	146,274	72,308	236,886	84,721
2012	123,677	67,498	18,907	104,456	71,837	193,144	74,898
2013	100,505	58,381	14,776	99,724	53,949	173,353	60,068
2014	140,092	105,442	41,567	151,454	53,757	177,098	62,868

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Table 20. Time series of abundance estimates (in millions) for eastern Bering Sea snow crab (*Chionoecetes opilio*) by size category (CW) and sex from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature male < 95 mm	Mature male ≥ 95 mm	Mature male ± CI	Legal male ≥ 78 mm	Immature female < 50 mm	Mature female ≥ 50 mm	Mature female ± CI
1980	2,561.1	211.7	46.3	515.2	1,611.1	3,488.3	1,995.5
1981	1,547.4	80.4	17.1	313.3	481.7	1,886.4	613.6
1982	1,821.9	145.5	43.8	592.9	364.2	2,050.4	628.6
1983	1,496.6	150.2	40.6	511.2	553.8	1,157.5	453.0
1984	1,203.4	223.4	58.9	455.4	635.1	586.4	219.8
1985	447.8	106.0	22.6	196.2	209.1	110.0	43.3
1986	1,148.7	111.8	26.7	212.8	712.5	403.1	145.5
1987	3,755.5	220.7	47.1	501.8	2,474.7	2,517.7	761.9
1988	3,642.0	274.3	92.8	678.3	1,308.2	2,492.2	805.5
1989	3,162.1	301.8	60.7	907.9	1,775.4	3,513.8	1,902.2
1990	2,265.4	728.1	207.9	1,380.1	1,348.3	2,651.0	1,026.7
1991	3,320.3	610.4	174.8	1,085.4	2,645.9	3,147.6	1,275.0
1992	3,077.7	313.8	67.7	553.4	2,355.9	1,876.9	639.8
1993	4,749.8	182.5	39.8	355.9	3,536.0	1,710.7	516.7
1994	4,114.9	107.2	21.3	321.1	3,235.5	1,645.1	438.3
1995	3,623.0	126.1	43.7	510.0	1,936.6	2,179.7	566.6
1996	2,309.3	302.4	105.1	959.0	1,120.4	1,243.9	325.7
1997	1,205.2	447.0	99.2	946.4	858.4	1,279.9	465.6
1998	778.4	308.6	56.2	514.9	711.0	1,009.8	496.8
1999	419.9	124.4	23.3	197.9	294.6	439.3	181.8
2000	962.3	101.8	30.5	189.8	632.5	1,388.5	1,379.4
2001	1,523.5	110.9	22.5	311.4	441.7	1,264.2	695.7
2002	598.6	115.0	54.7	284.8	161.8	462.4	261.4
2003	1,073.8	88.1	20.2	196.0	592.1	630.3	391.8
2004	1,491.1	80.0	23.8	148.0	1,625.3	683.0	371.2
2005	1,892.6	89.3	16.5	313.8	1,201.2	1,427.9	477.3
2006	1,173.4	171.5	118.5	375.9	585.8	914.7	305.5
2007	1,258.3	194.5	64.5	432.0	378.1	1,075.9	484.2
2008	1,008.0	154.2	31.2	324.8	425.6	715.6	299.2
2009	1,055.8	195.8	57.1	371.7	979.5	827.9	340.7
2010	2,464.3	187.4	44.8	297.0	3,375.4	1,440.1	490.9
2011	1,829.7	194.6	45.7	331.3	1,682.9	2,629.4	914.8
2012	1,384.8	123.5	34.3	274.1	1,717.2	2,104.3	883.5
2013	1,055.9	112.5	27.6	280.0	1,421.2	1,830.5	665.4
2014	1,527.8	204.2	76.8	385.3	1,557.4	1,849.0	748.5

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Table 21. Time series of biomass estimates (t) for hair crab (*Erimacrus isenbeckii*) by size category (CL) and sex from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Sublegal males < 83 mm	Legal males ≥ 83 mm	Legal male ± CI	Total female	Total female ± CI
1980	605	12,017	8,532	384	339
1981	697	12,058	5,424	159	83
1982	180	6,693	3,941	119	69
1983	67	4,231	1,332	296	152
1984	196	2,659	860	95	81
1985	83	2,081	1,041	73	56
1986	207	1,478	786	100	69
1987	354	1,079	606	207	109
1988	638	645	354	167	89
1989	2,937	508	254	59	42
1990	4,412	803	440	246	148
1991	1,390	793	433	229	129
1992	777	591	299	80	53
1993	1,111	2,296	1,588	217	148
1994	1,329	2,420	1,223	193	133
1995	1,479	5,948	3,260	166	85
1996	1,152	3,159	1,738	275	132
1997	583	3,110	1,288	92	56
1998	213	1,991	797	359	241
1999	196	1,728	489	307	123
2000	180	2,856	1,230	329	177
2001	131	1,283	521	564	243
2002	65	1,371	529	101	64
2003	355	676	276	83	49
2004	202	467	184	83	71
2005	325	209	131	271	133
2006	353	665	406	873	951
2007	579	1,271	489	356	166
2008	623	1,362	574	386	164
2009	1,103	1,914	628	464	239
2010	894	1,574	661	469	186
2011	1,750	2,126	868	376	152
2012	3,618	2,867	1,126	532	233
2013	3,351	6,438	2,622	1,049	432
2014	1,142	3,374	1,295	303	139

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Table 22. Time series of abundance estimates (in millions) for hair crab (*Erimacrus isenbeckii*) by size category (CL) and sex from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Sublegal males < 83 mm	Legal males ≥ 83 mm	Legal male ± CI	Total female	Total female ± CI
1980	1.9	15.2	10.2	1.9	2.2
1981	2.0	15.1	7.4	0.6	0.4
1982	0.5	8.4	4.9	0.4	0.2
1983	0.3	5.3	1.7	0.9	0.5
1984	0.7	3.3	1.1	0.4	0.3
1985	0.3	2.5	1.3	0.3	0.2
1986	0.7	1.8	1.0	0.4	0.3
1987	1.6	1.4	0.7	0.9	0.4
1988	4.0	0.8	0.4	0.9	0.7
1989	12.5	0.7	0.4	0.2	0.1
1990	16.5	1.2	0.7	1.0	0.6
1991	4.7	1.3	0.7	1.2	0.7
1992	2.5	1.1	0.6	0.5	0.4
1993	3.8	3.9	2.6	1.3	1.0
1994	5.0	4.1	2.1	1.3	1.1
1995	5.2	8.4	4.5	0.8	0.3
1996	3.6	5.1	2.7	1.0	0.5
1997	1.7	4.6	1.8	0.4	0.2
1998	0.6	2.9	1.1	1.3	0.8
1999	0.6	2.4	0.7	1.2	0.4
2000	0.5	4.1	1.7	1.2	0.7
2001	0.5	1.8	0.7	2.2	1.0
2002	0.3	2.0	0.8	0.5	0.3
2003	1.3	0.9	0.4	0.5	0.3
2004	0.6	0.7	0.3	0.3	0.2
2005	1.0	0.3	0.2	0.8	0.5
2006	1.2	1.0	0.7	3.6	4.6
2007	2.3	1.9	0.7	1.3	0.9
2008	2.3	2.2	0.9	1.4	0.5
2009	3.6	3.1	1.0	1.7	0.9
2010	3.3	2.4	1.0	2.2	1.1
2011	6.9	3.5	1.3	1.6	0.5
2012	11.8	4.6	1.8	2.2	0.8
2013	10.3	10.6	4.6	3.9	1.7
2014	3.3	5.4	2.0	1.0	0.4

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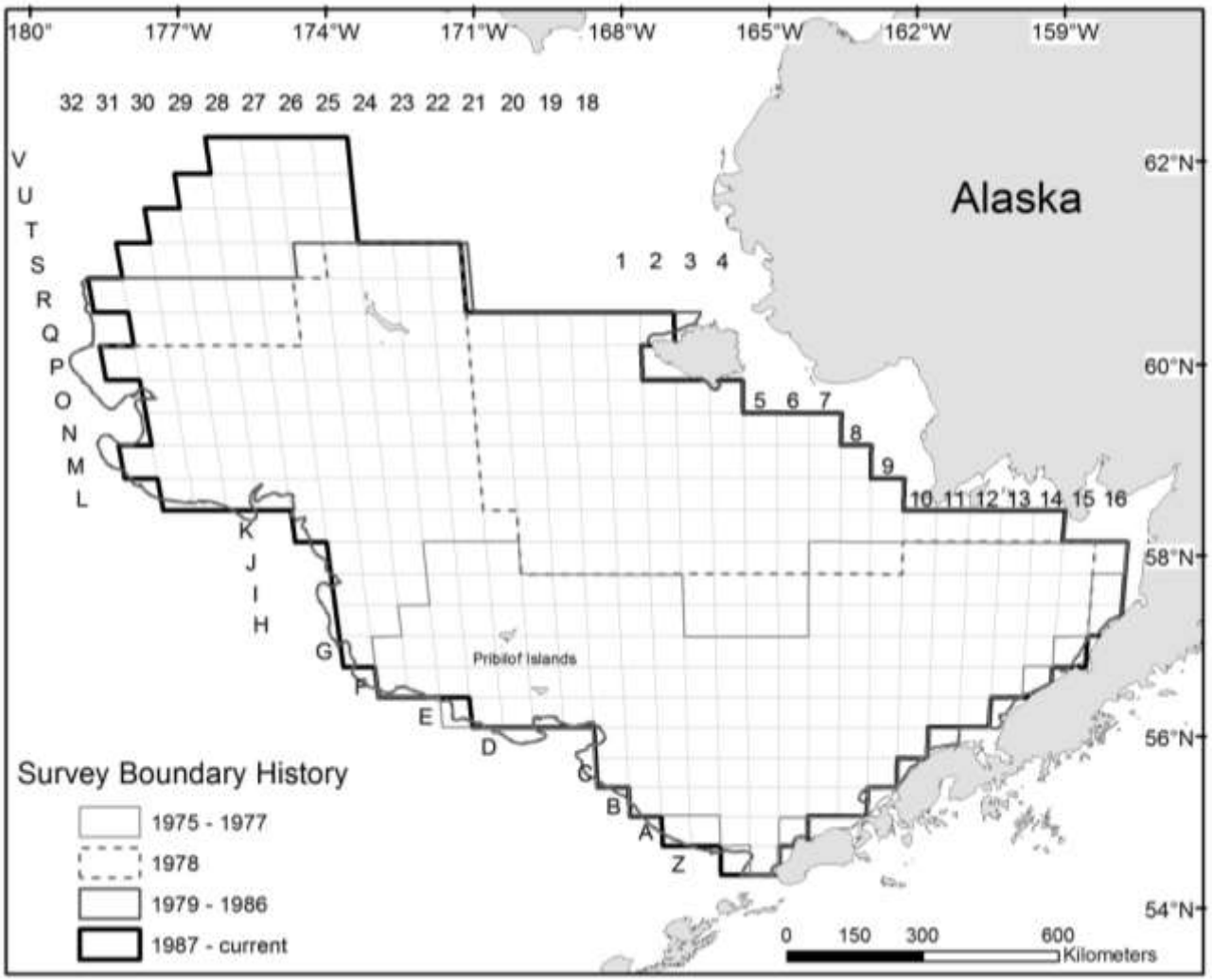


Figure 1. National Marine Fisheries Service eastern Bering Sea bottom trawl survey boundary from 1975 to present indicating four major stanzas in total coverage.

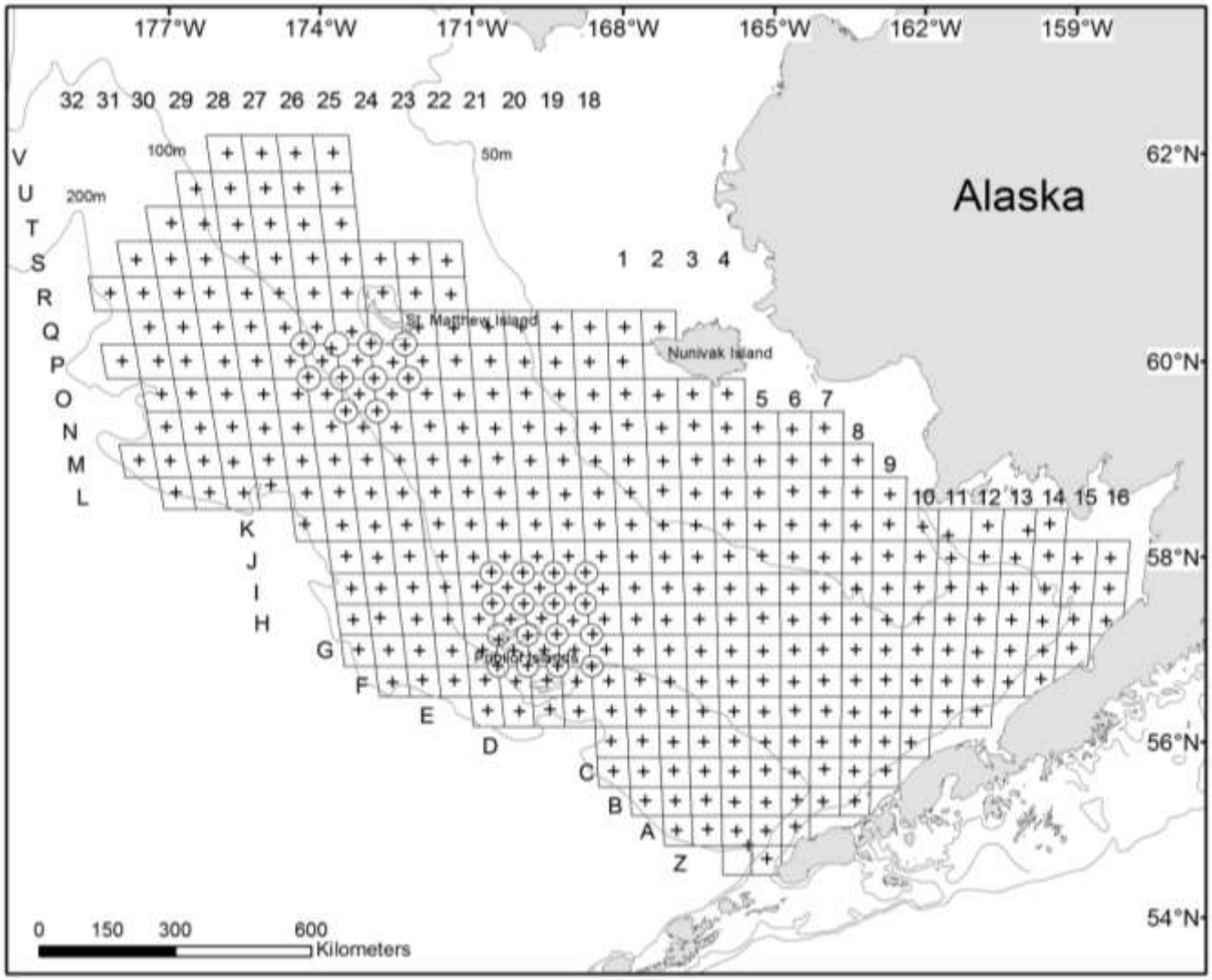


Figure 2. National Marine Fisheries Service eastern Bering Sea standard bottom trawl area surveyed by the FV *Alaska Knight* and the FV *Vesteraalen* from 8 June to 2 August 2014.

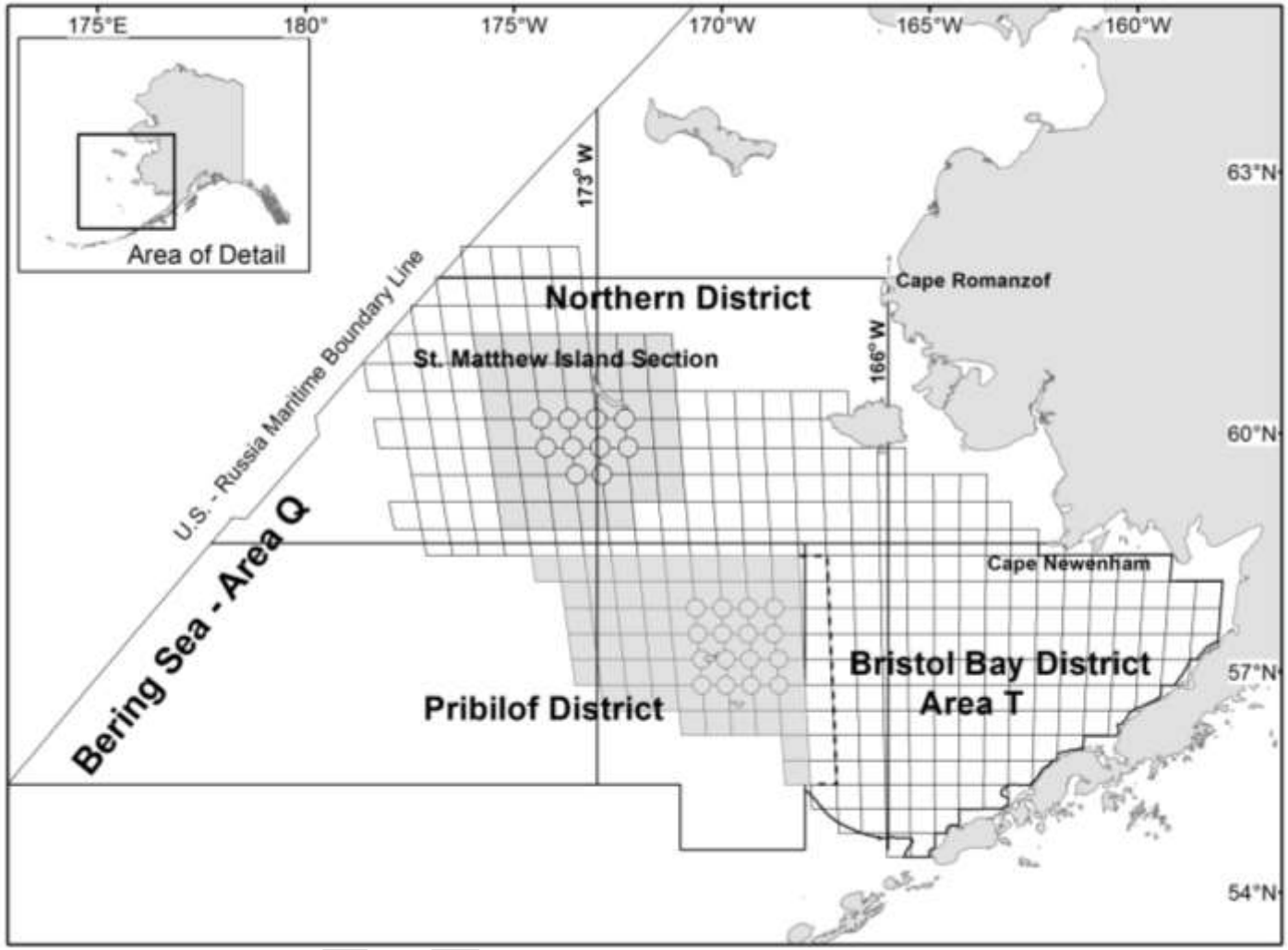


Figure 3. Alaska Department of Fish and Game commercial crab management units within the 2014 eastern Bering Sea bottom trawl survey area. Grey areas represent stations included in in the Pribilof District (dashed line indicates expanded stock boundary) and St. Matthew Island Section, Northern District sampling strata and circles represent the high-density sampling areas.

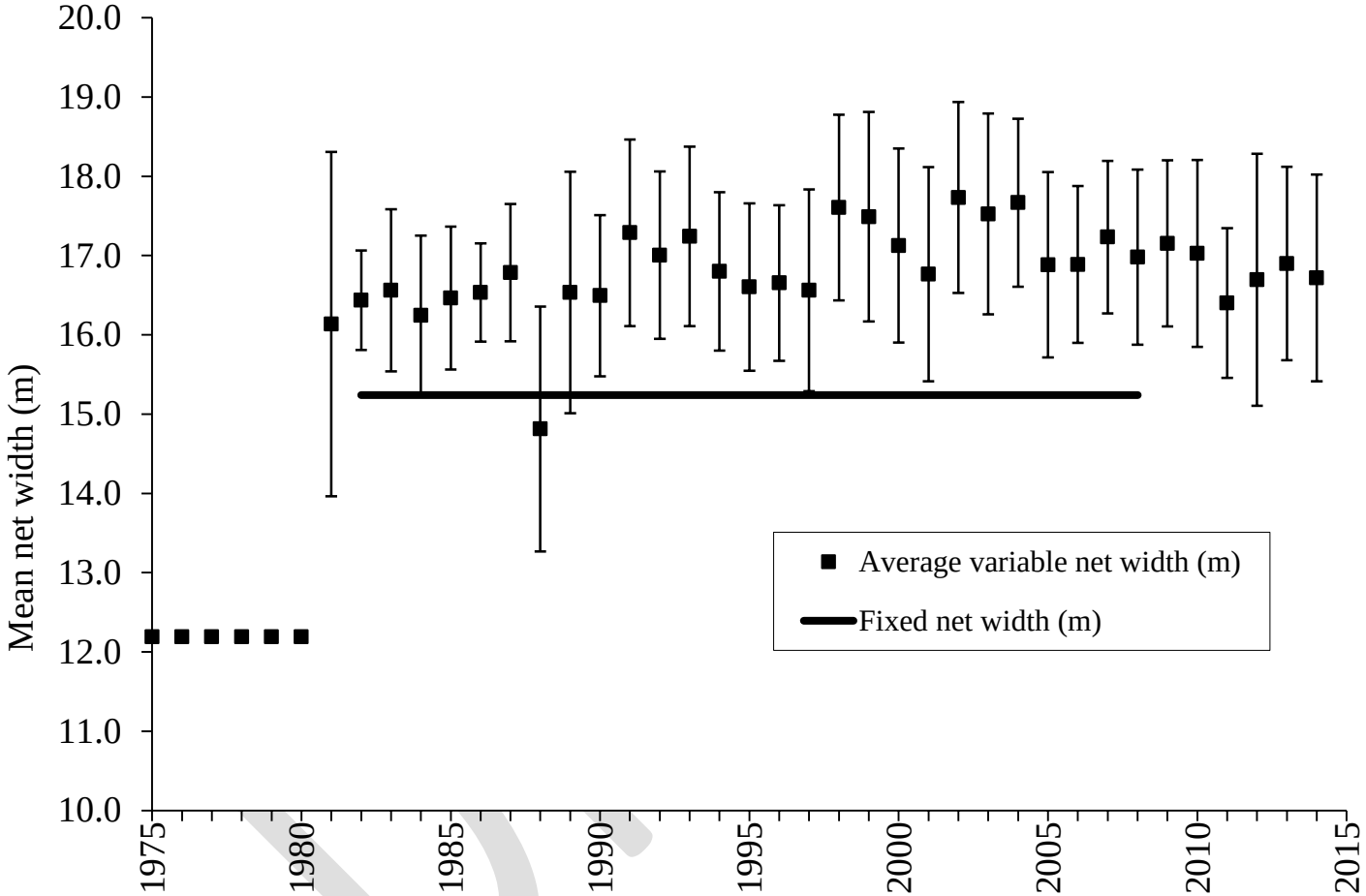


Figure 4. Fixed and average variable net widths (± SD) used to calculate area swept by National Marine Fisheries Service eastern Bering Sea standard bottom trawls from 1975 to the present.

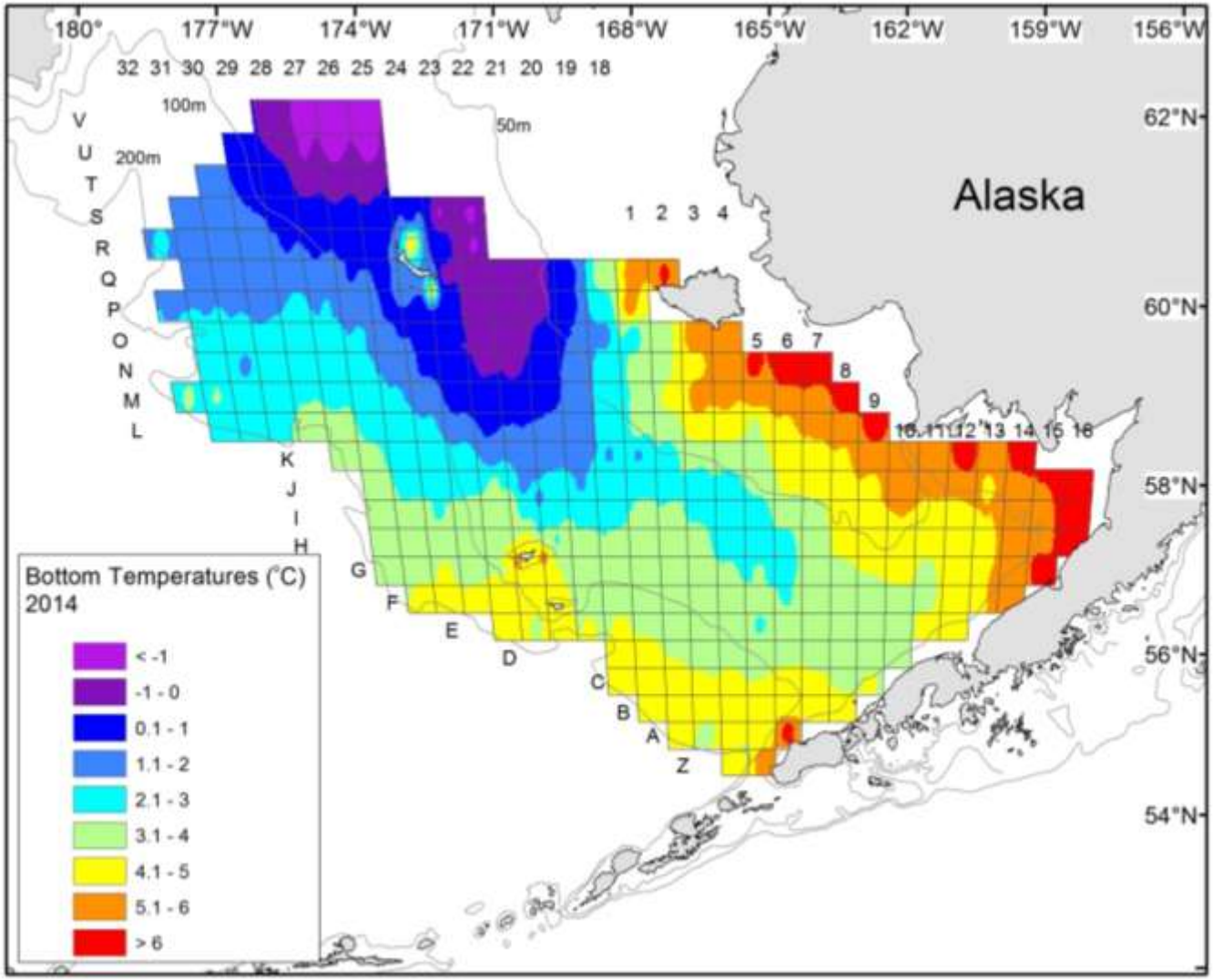


Figure 5. Bottom temperatures (°C) measured at stations from the National Marine Fisheries Service eastern Bering Sea bottom trawl survey, beginning 8 June 2014 in Bristol Bay and ending on 2 August 2014 at the western edge of the survey.

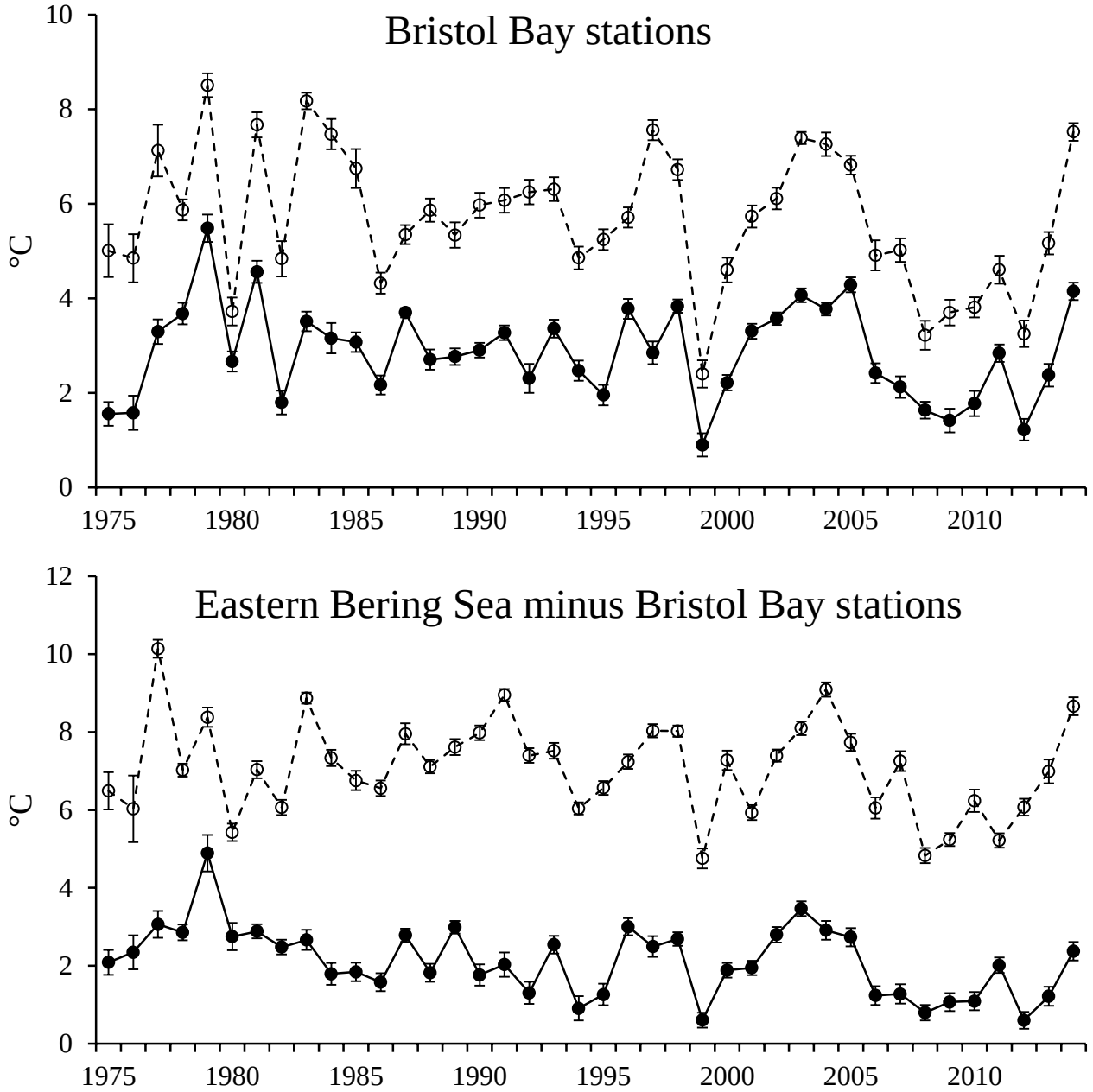


Figure 6. Average (± 95% CI) bottom (filled circle, solid line) and surface (open circle, dashed line) temperatures for Bristol Bay stations and the rest of the eastern Bering Sea during the National Marine Fisheries Service eastern Bering Sea bottom trawl survey. The number of stations used to calculate averages was inconsistent among years, particularly as the survey boundary expanded from 1975-1987.

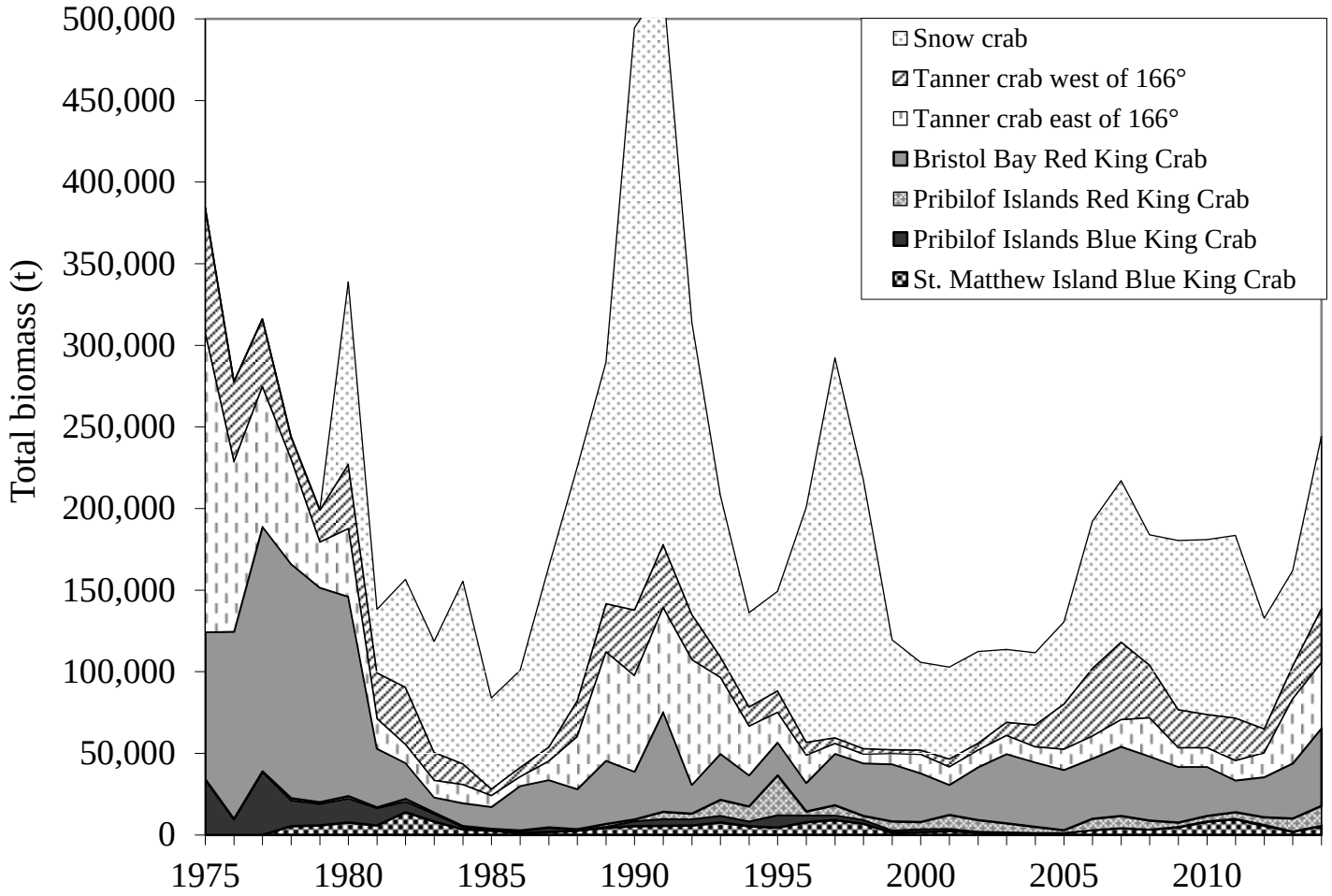


Figure 7. Historical mature male biomass for six commercial species caught on National Marine Fisheries Service eastern Bering Sea bottom trawl surveys.

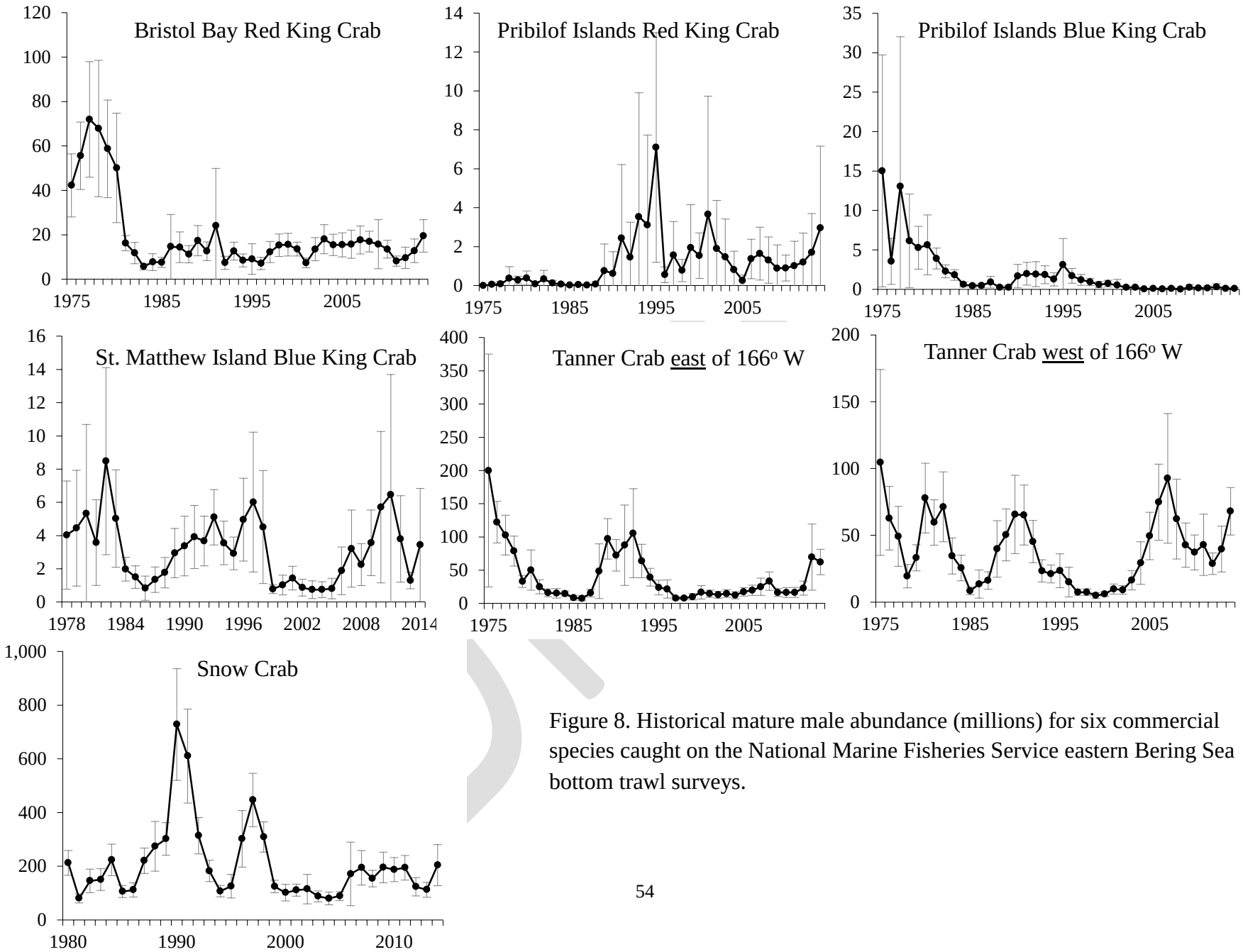


Figure 8. Historical mature male abundance (millions) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys.

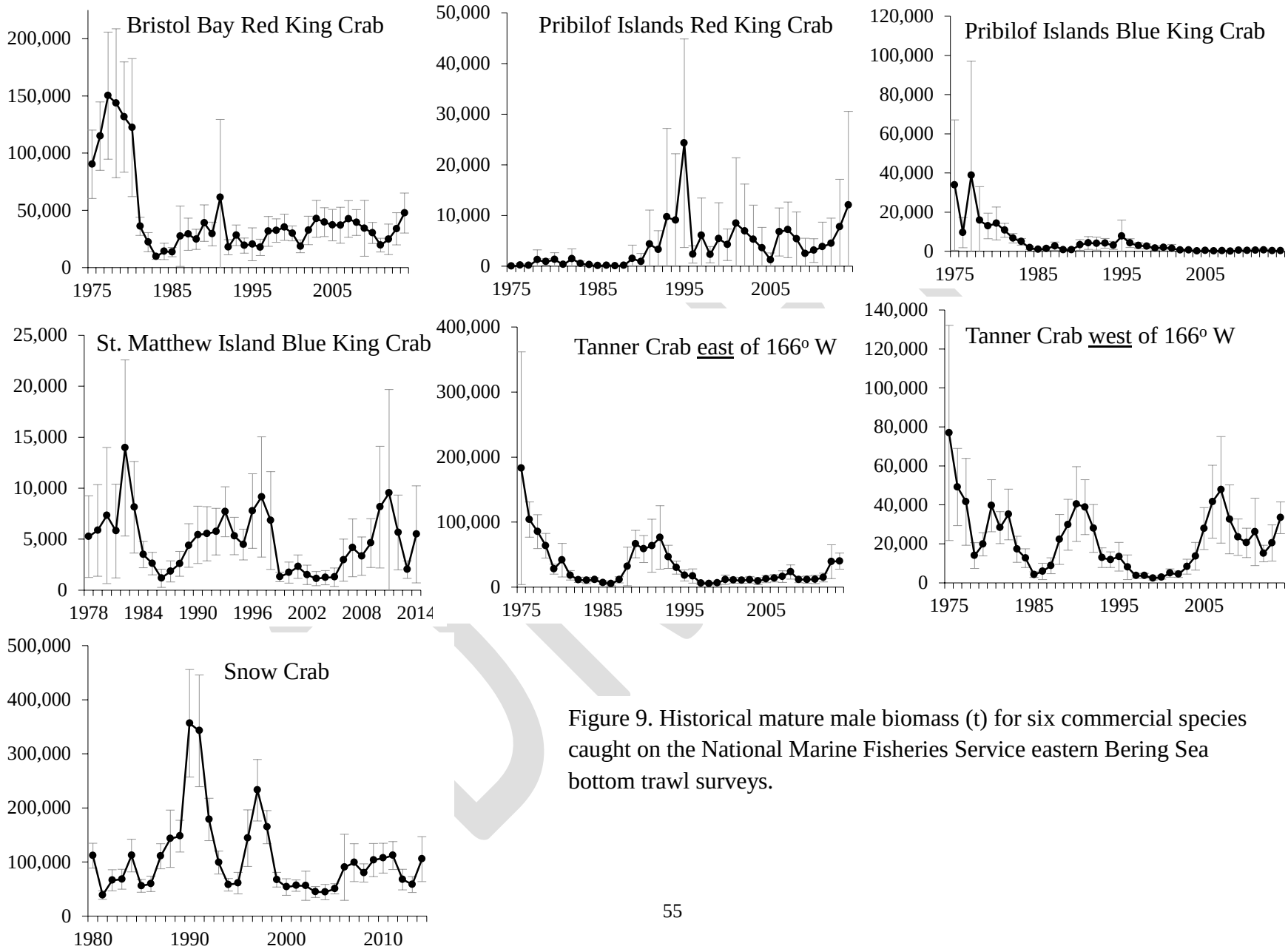


Figure 9. Historical mature male biomass (t) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys.

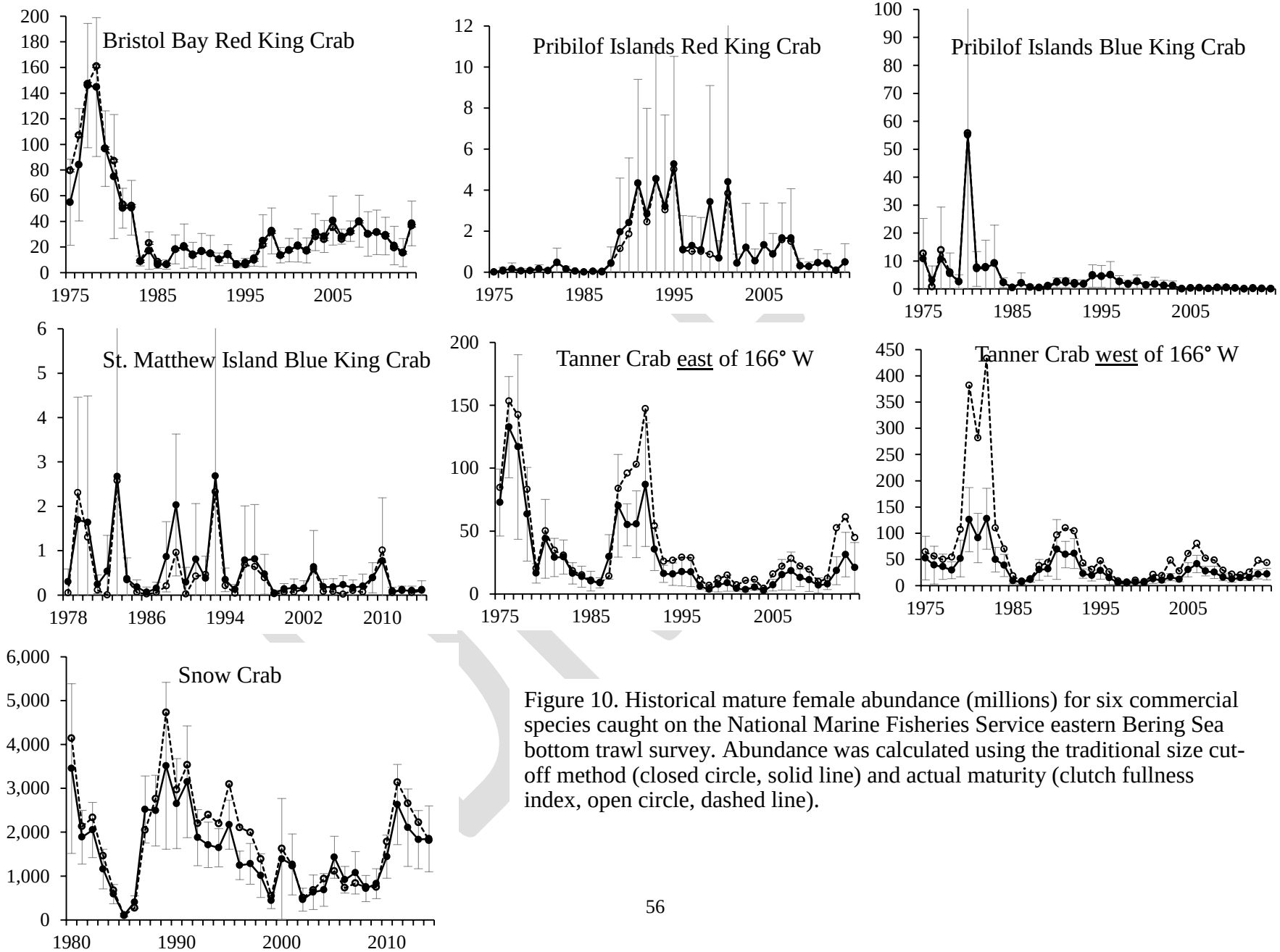


Figure 10. Historical mature female abundance (millions) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey. Abundance was calculated using the traditional size cut-off method (closed circle, solid line) and actual maturity (clutch fullness index, open circle, dashed line).

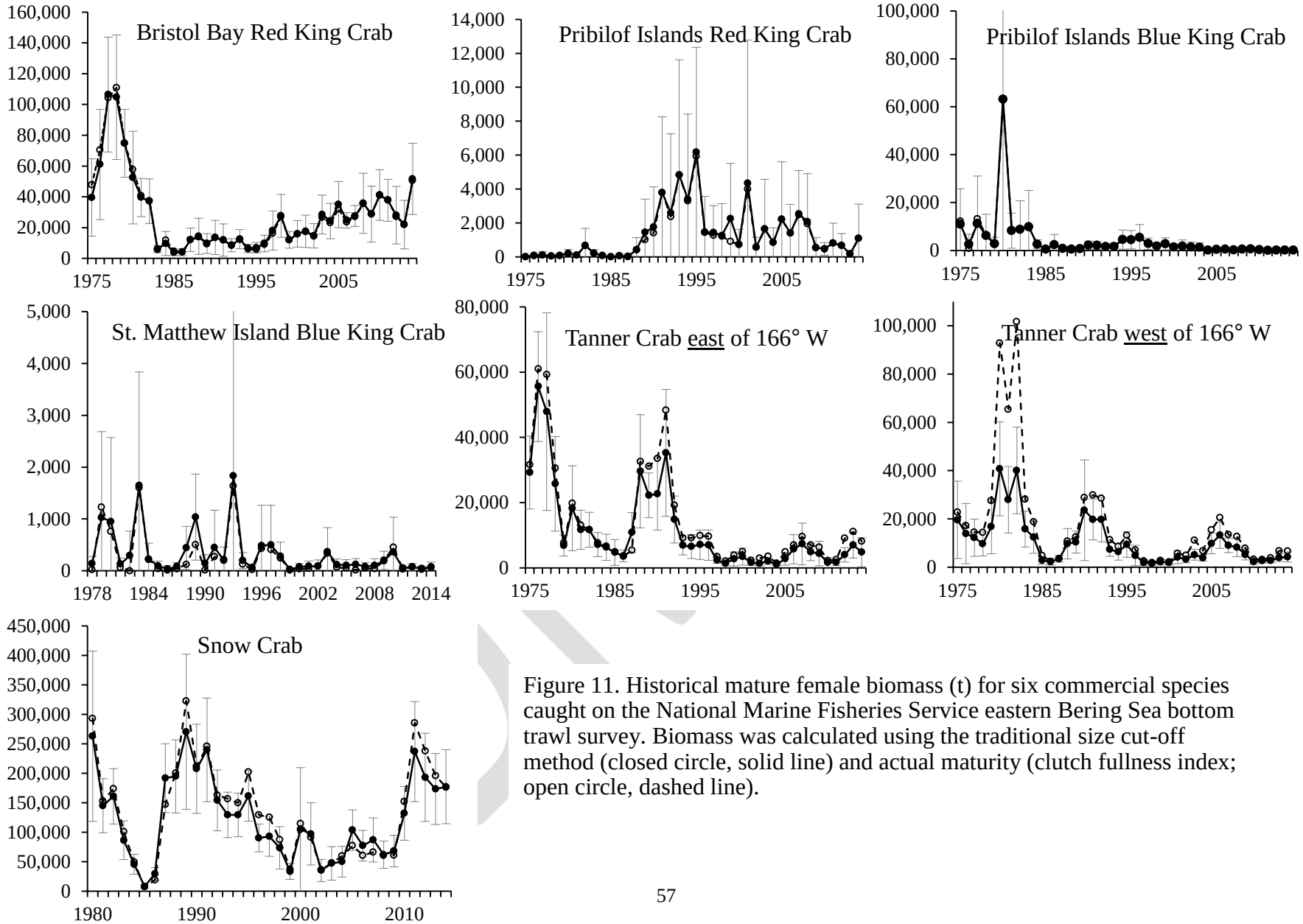


Figure 11. Historical mature female biomass (t) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey. Biomass was calculated using the traditional size cut-off method (closed circle, solid line) and actual maturity (clutch fullness index; open circle, dashed line).

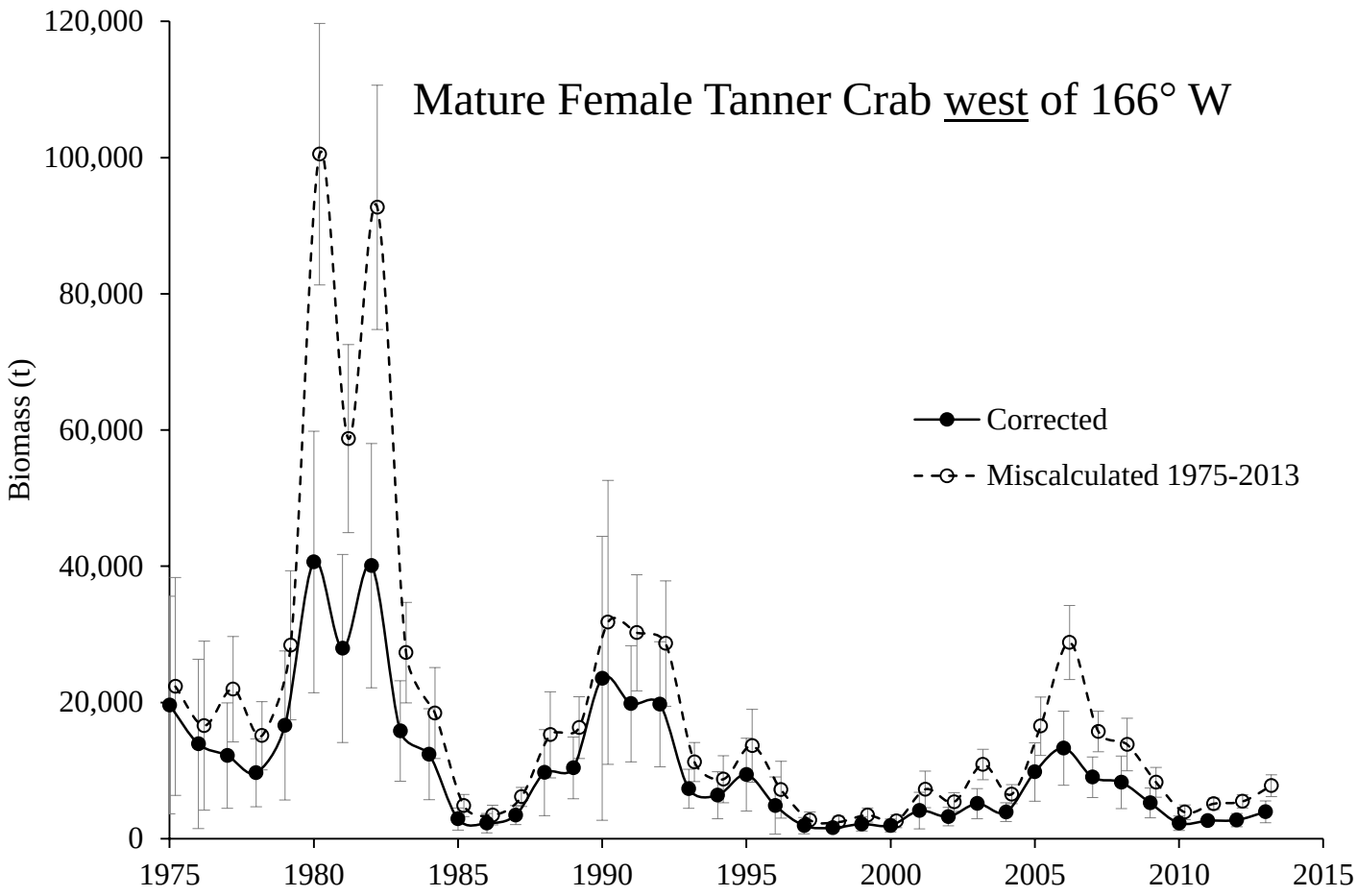


Figure 12. Historical mature female biomass (t) for Tanner crab west of 166°W using correct (filled circle, solid line; ≥80 mm CW) and incorrect (open circles, dashed line; ≥70 mm CW) size categories. The erroneous time series was reported from 2010 to 2013, and is corrected in this document.

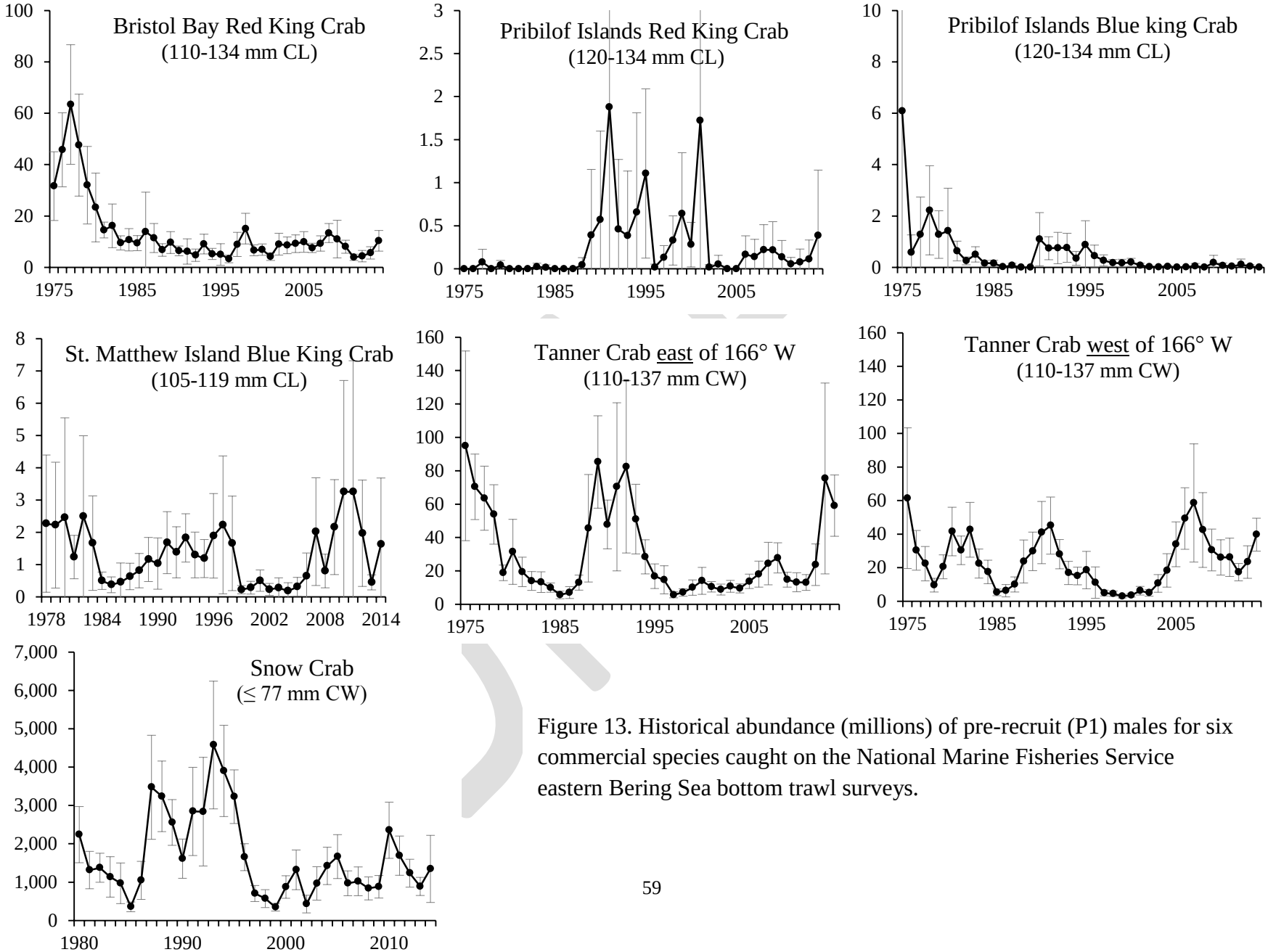


Figure 13. Historical abundance (millions) of pre-recruit (P1) males for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys.

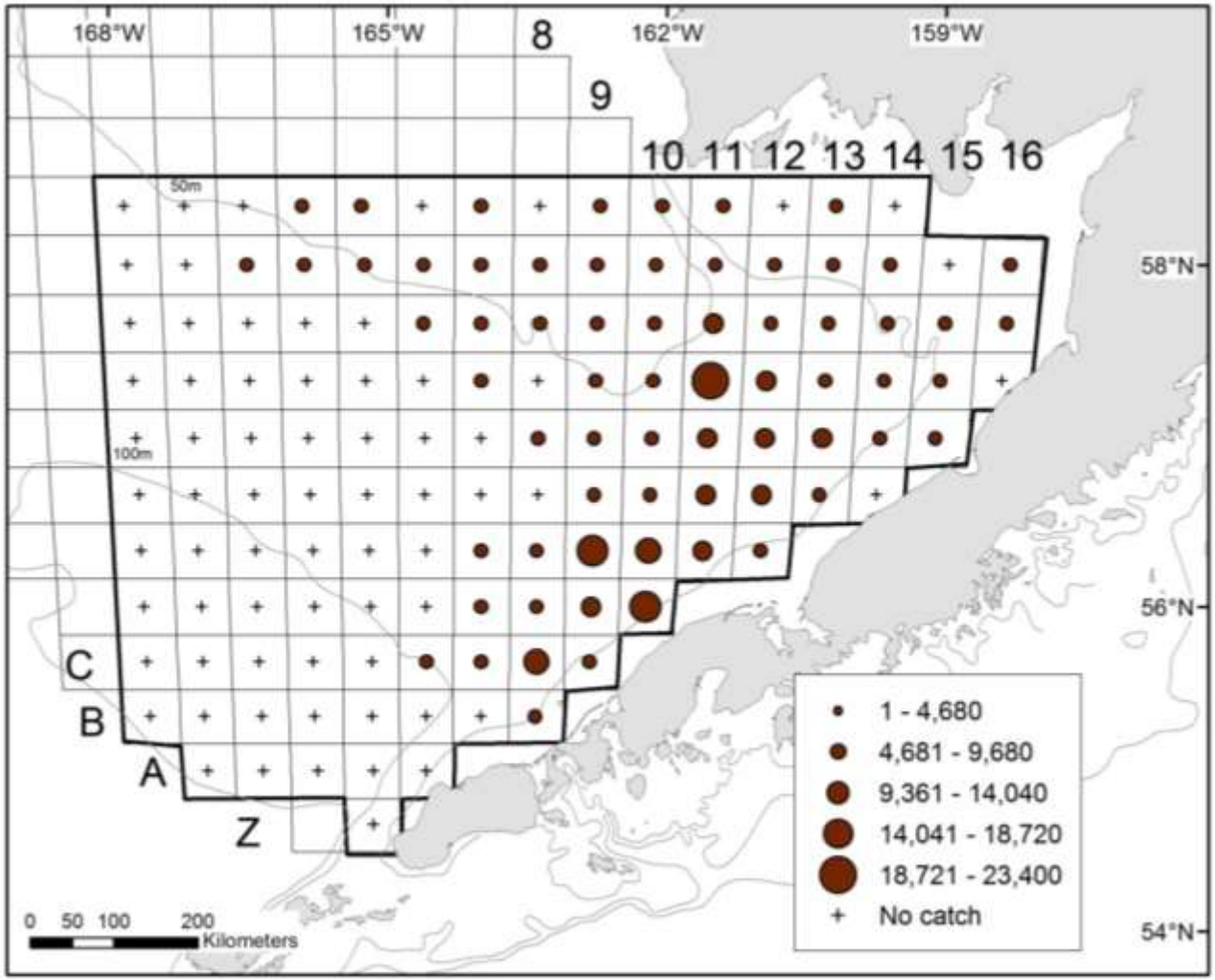


Figure 14. Total density (number nmi^{-2}) of red king crab (*Paralithodes camtschaticus*) at each station sampled in the 2014 Bristol Bay District. Data depicted by circles are equal interval densities. The outlined area depicts the management district.

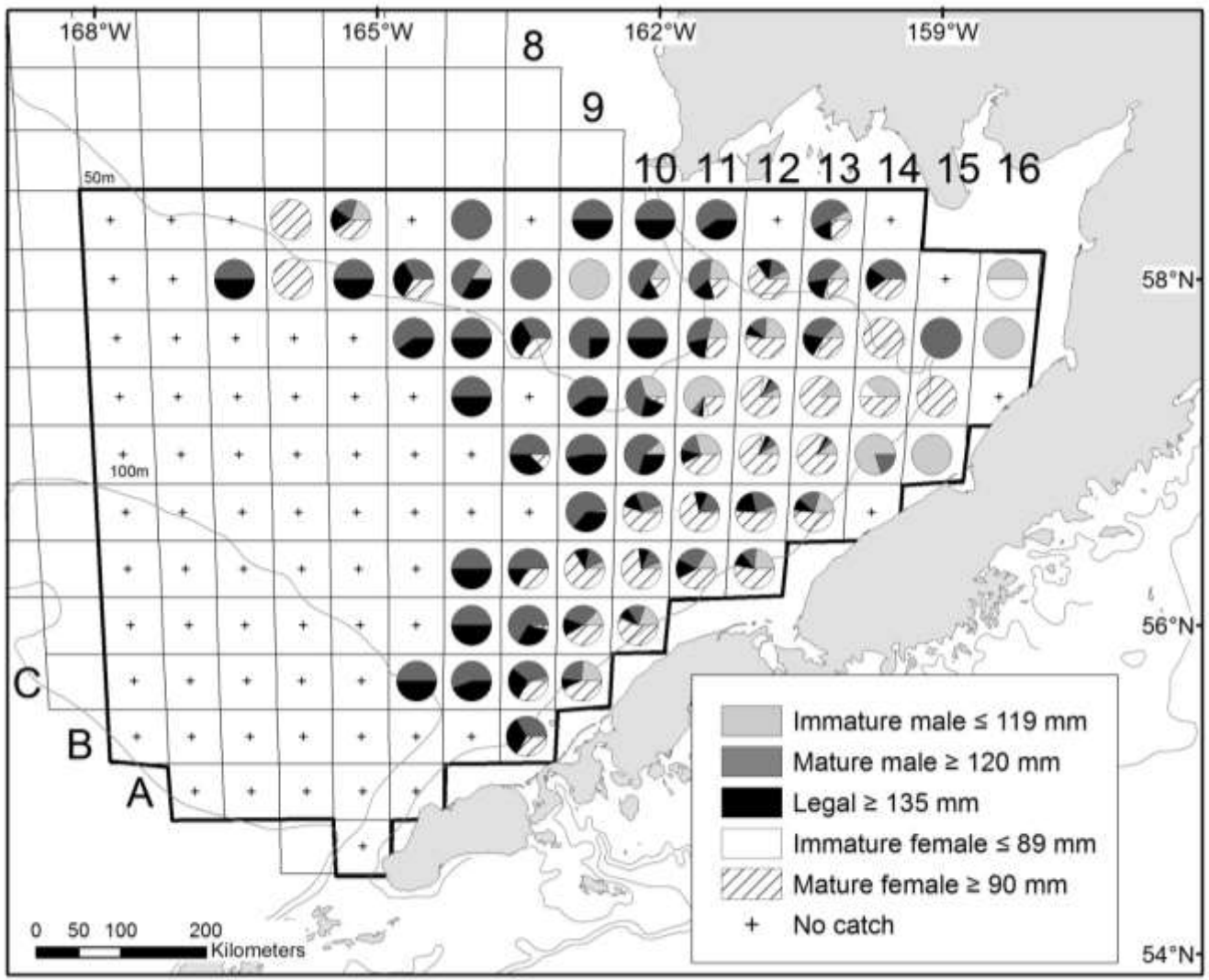


Figure 15. Percentage of male and female red king crab (*Paralithodes camtschaticus*) size classes caught at each station of the Bristol Bay District in 2014. The outlined area depicts management district.

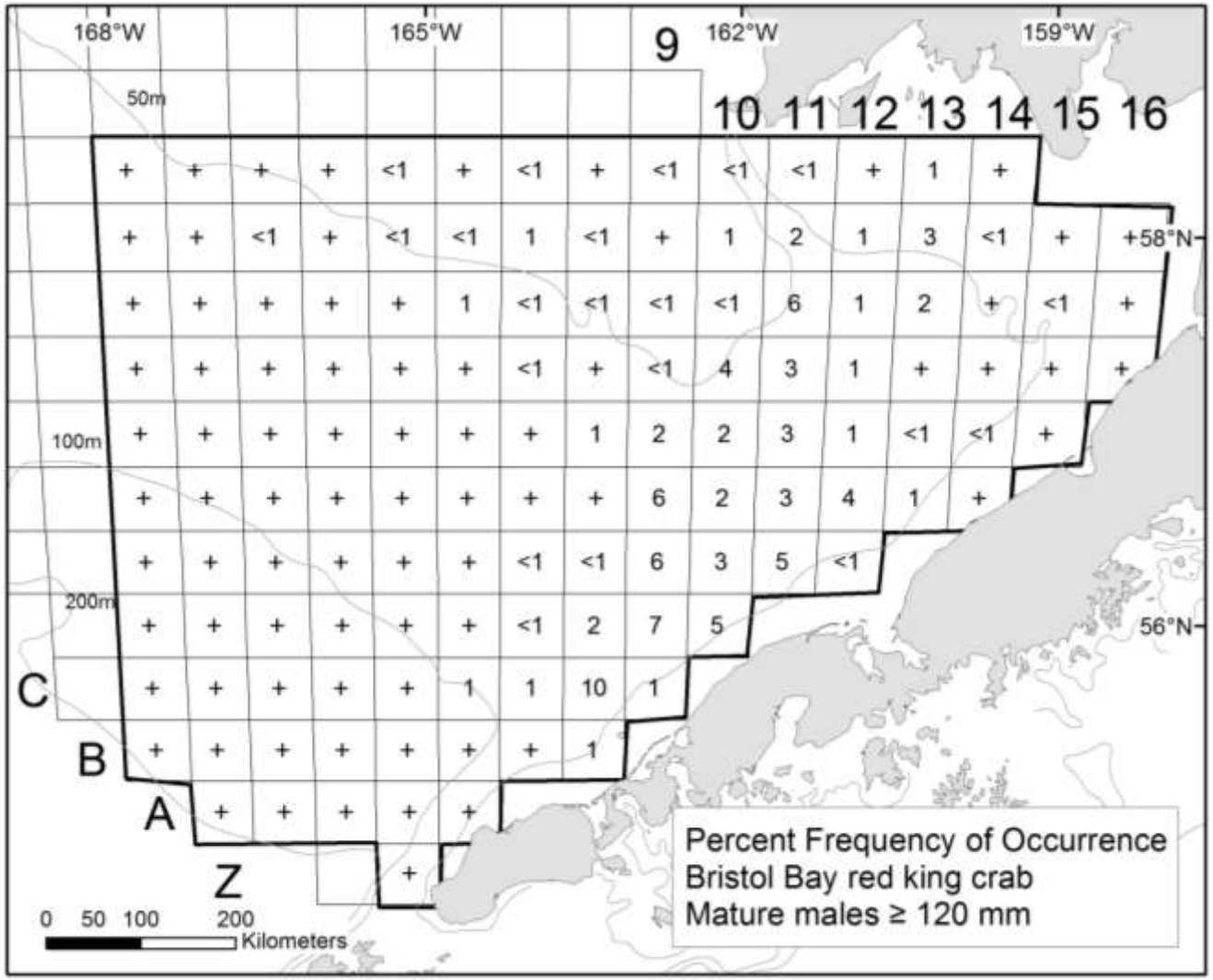


Figure 16. Percent frequency of occurrence of mature male red king crab (*Paralithodes camtschaticus*) at stations sampled in the 2014 Bristol Bay District. The outlined area depicts management district.

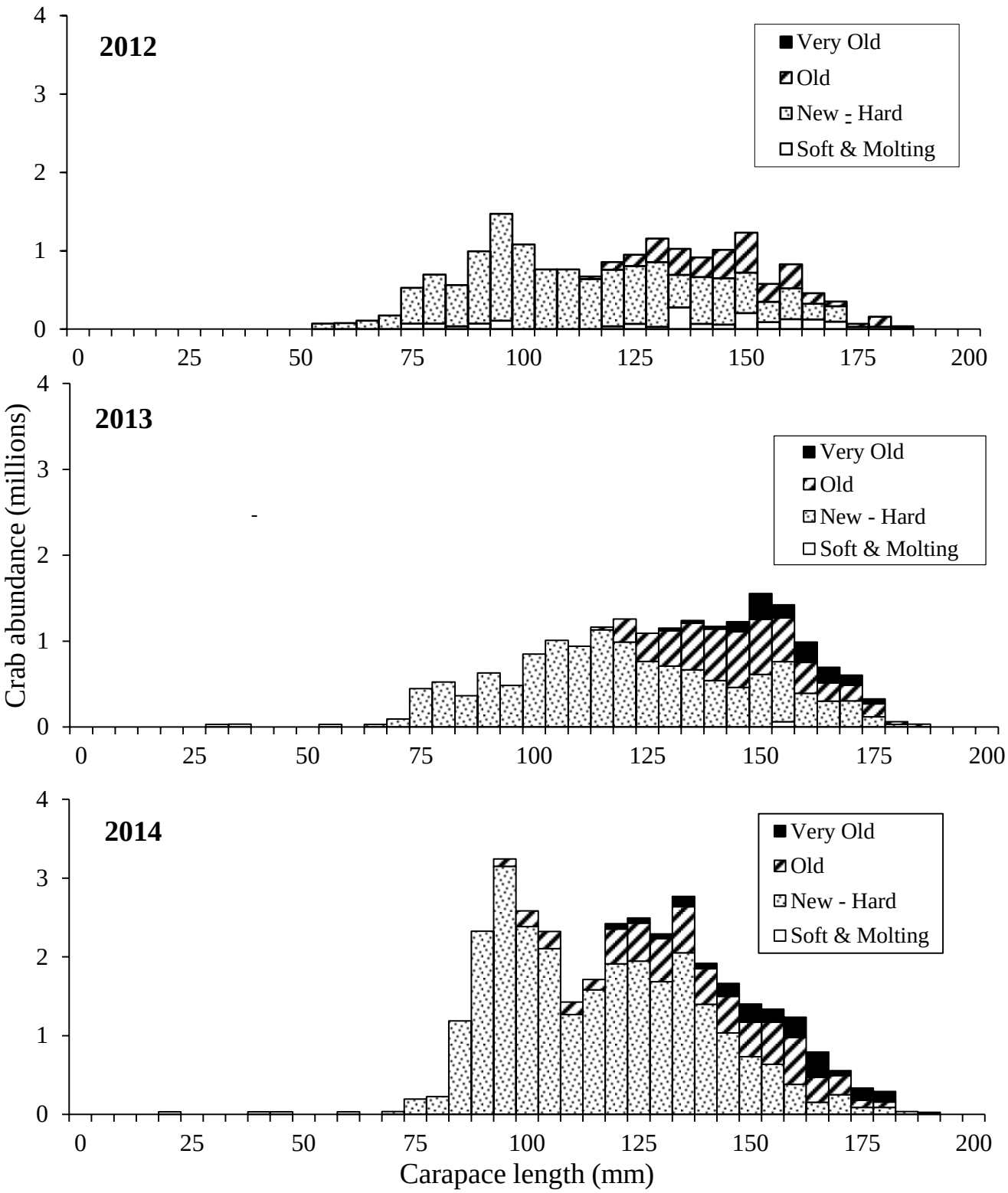


Figure 17. Size-frequency by shell condition of Bristol Bay District male red king crab (*Paralithodes camtschaticus*) by 5 mm length classes, 2012-2014.

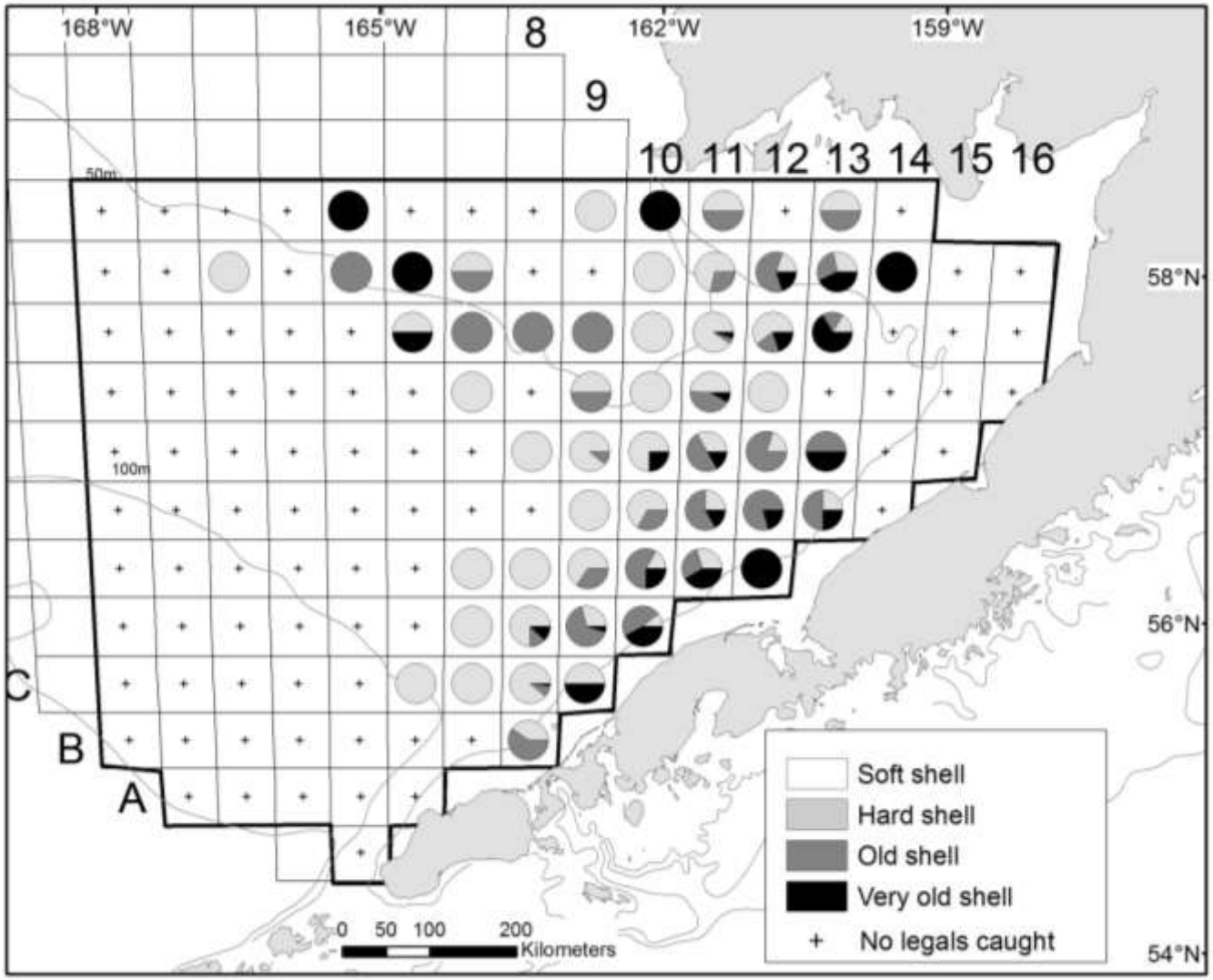


Figure 18. Distribution of legal-sized male red king crab (*Paralithodes camtschaticus*) caught at each station in the 2014 Bristol Bay District distinguished by shell condition. The outlined area depicts management district.

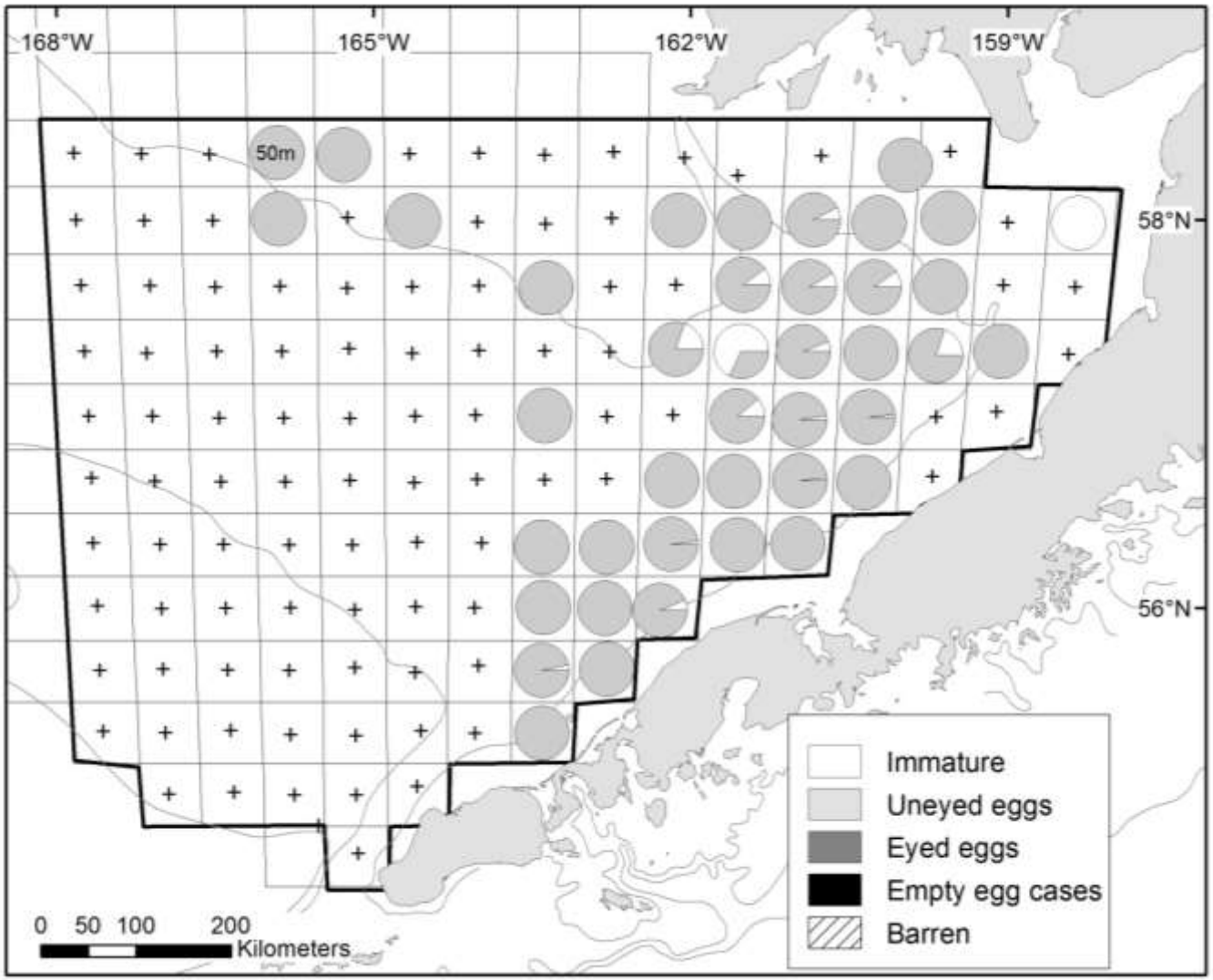


Figure 19. Distribution and egg condition of female red king crab (*Paralithodes camtschaticus*) in the Bristol Bay District in 2014. The outlined area depicts management district.

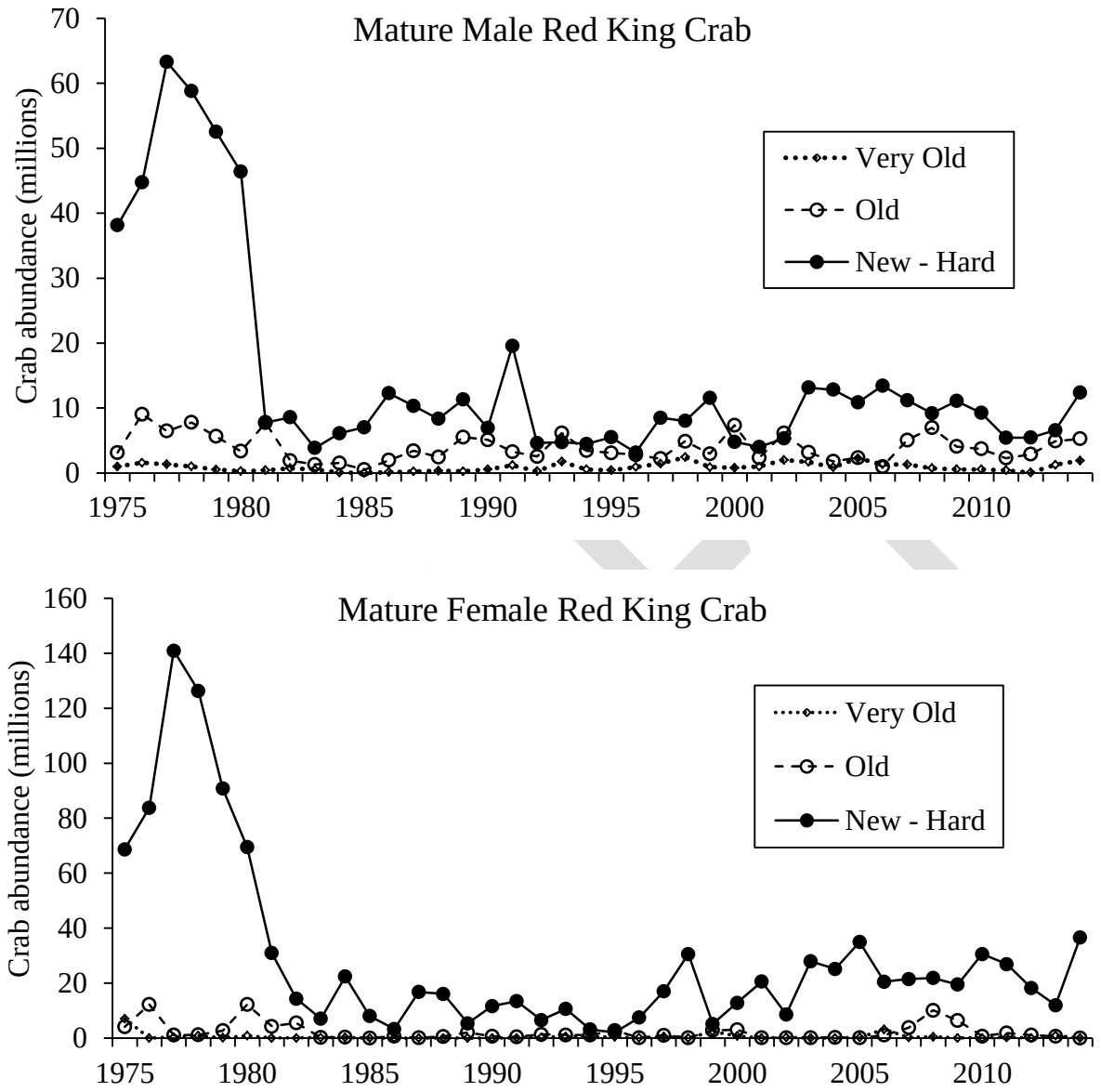


Figure 20. Time series of mature male (≥120 mm CL) and female (as verified by egg condition) Bristol Bay District red king crab (*Paralithodes camtschaticus*) by shell condition, 1975-2014. New- Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined.

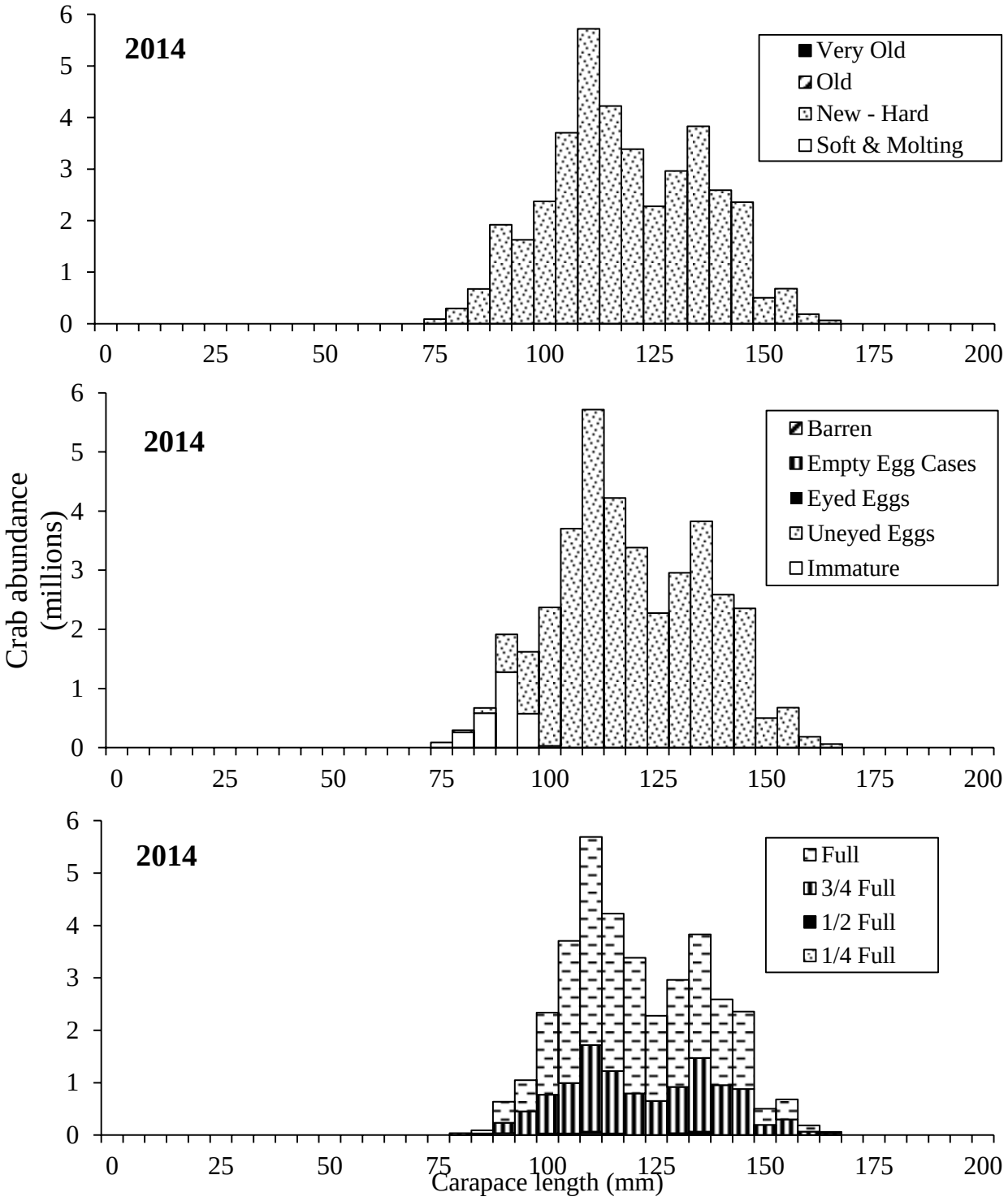
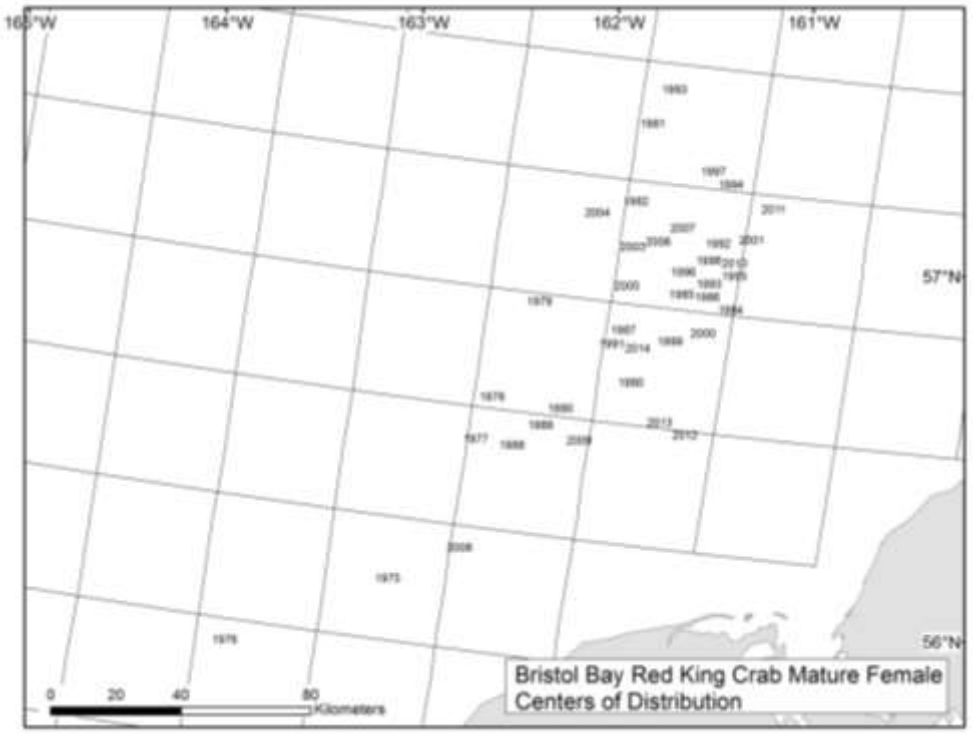


Figure 21. Size-frequency by shell condition, egg condition, and clutch fullness of Bristol Bay District female red king crab (*Paralithodes camtschaticus*) by 5 mm length classes in 2014.



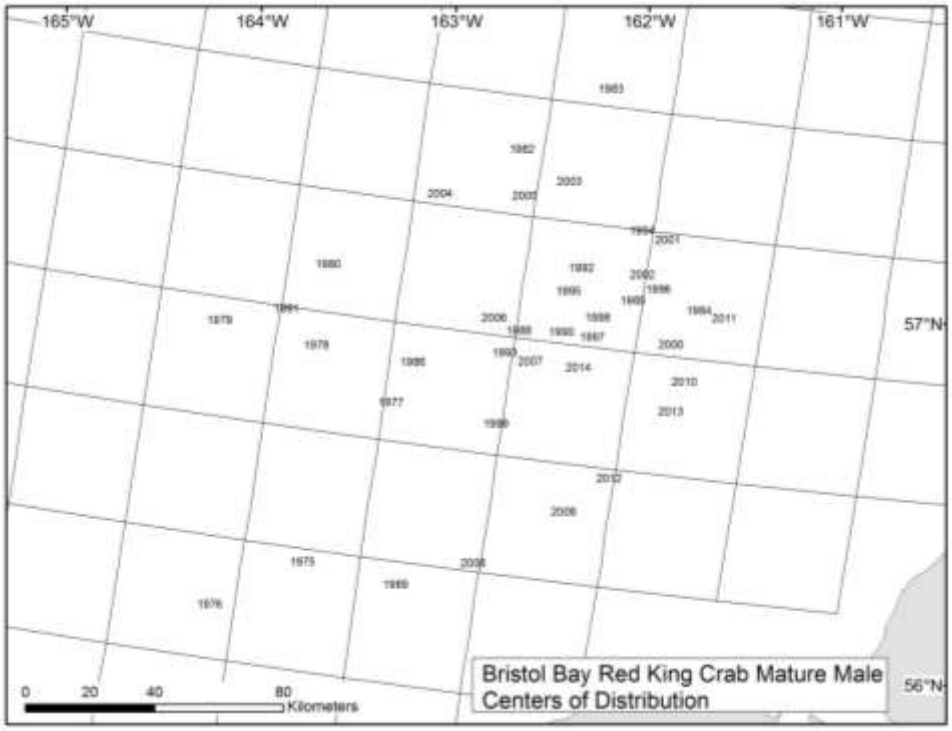


Figure 22. Centers of stock distribution of Bristol Bay District female and male red king crab (*Paralithodes camtschaticus*) from 1975 to 2014.

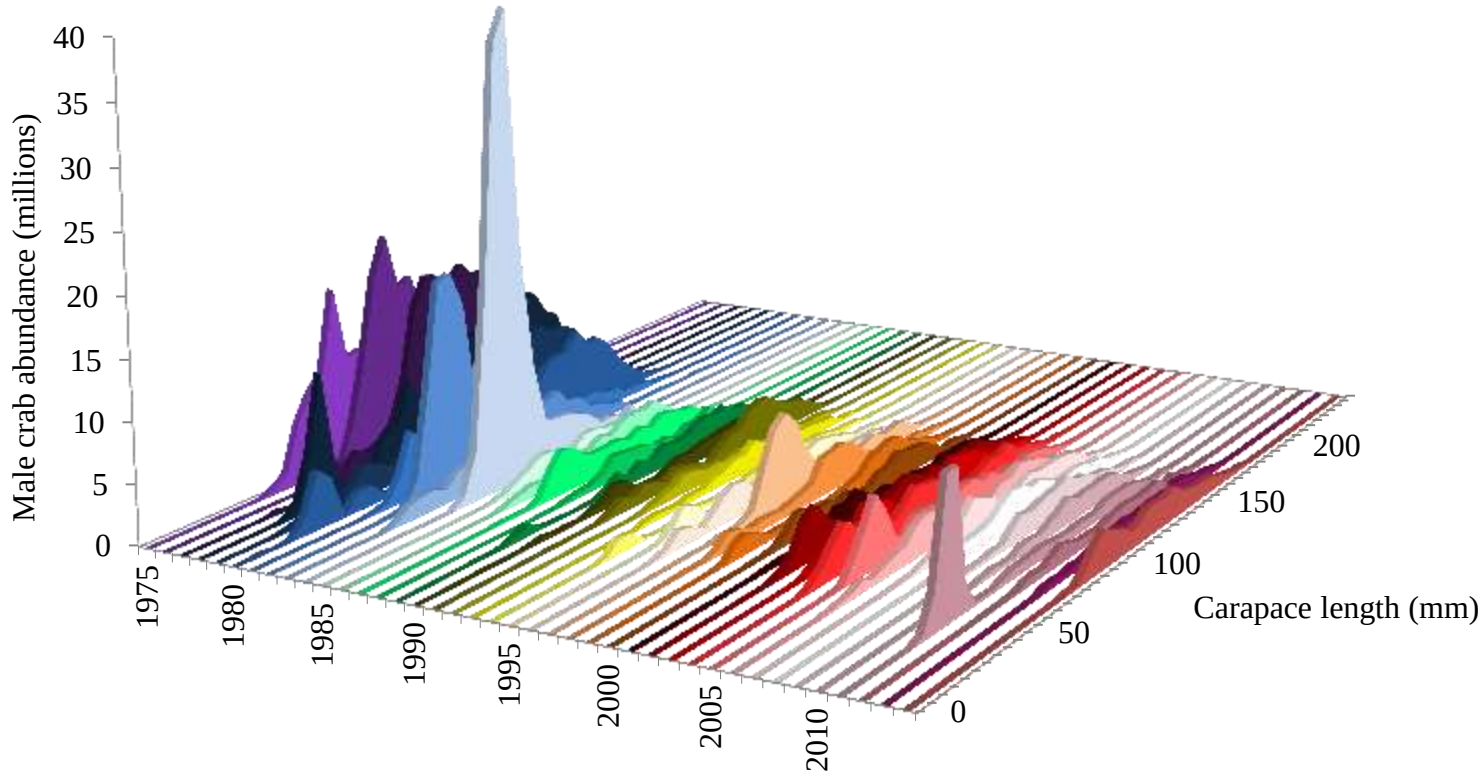


Figure 23. Historical size frequency by 5 mm length classes of Bristol Bay District male red king crab (*Paralithodes camtschaticus*), 1975 to 2014.

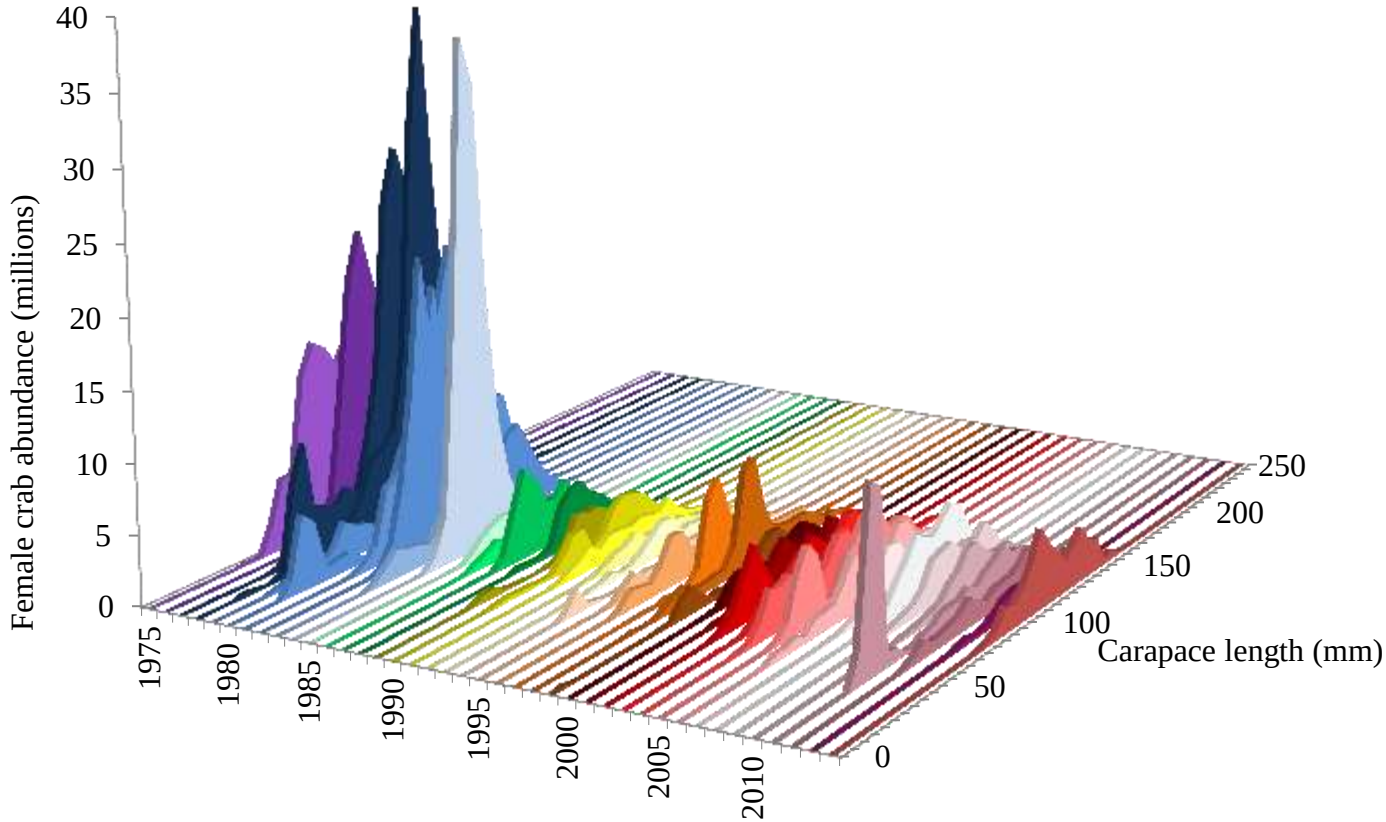


Figure 24. Historical size frequency by 5 mm length classes of Bristol Bay District female red king crab (*Paralithodes camtschaticus*), 1975 to 2014.

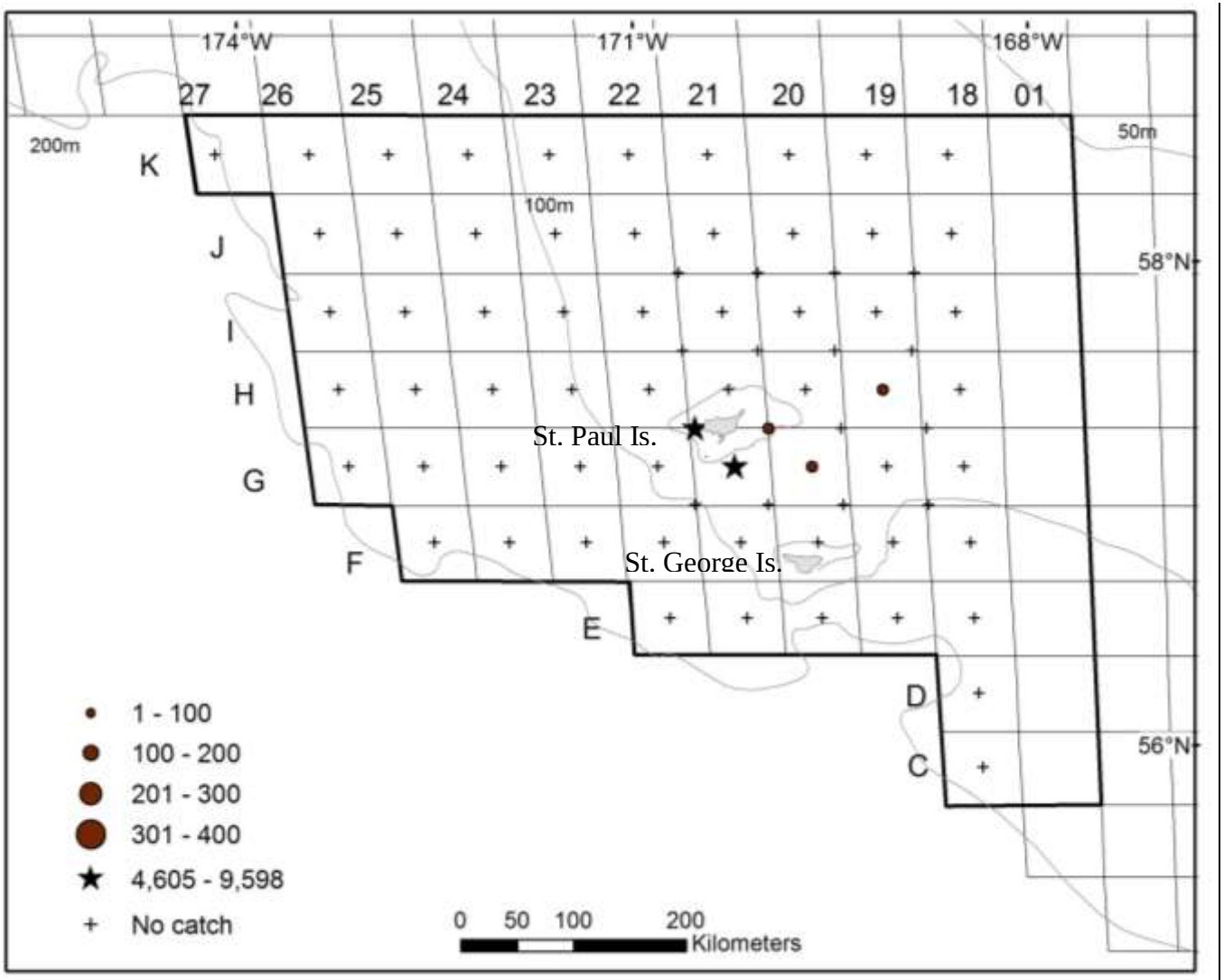


Figure 25. Total density (number nmi^{-2}) of red king crab (*Paralithodes camtschaticus*) at each station sampled in the Pribilof District in 2014. Data depicted by circles are equal interval densities, while stars represent densities larger than the standard scale. The outlined area depicts stations within the management district.

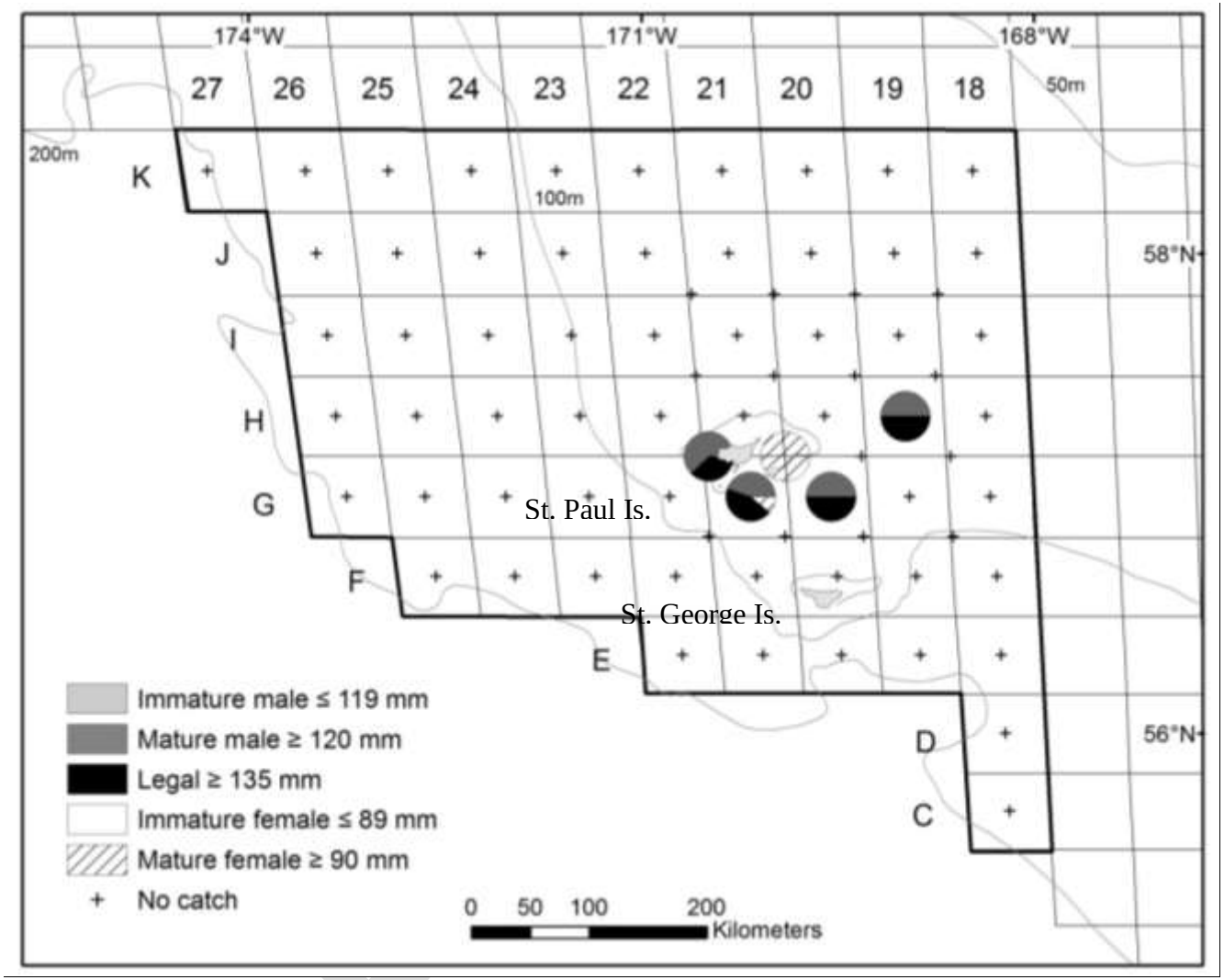


Figure 26. Percentage of male and female red king crab (*Paralithodes camtschaticus*) size classes at each station of the Pribilof District in 2014. The outlined area depicts stations within the management district.

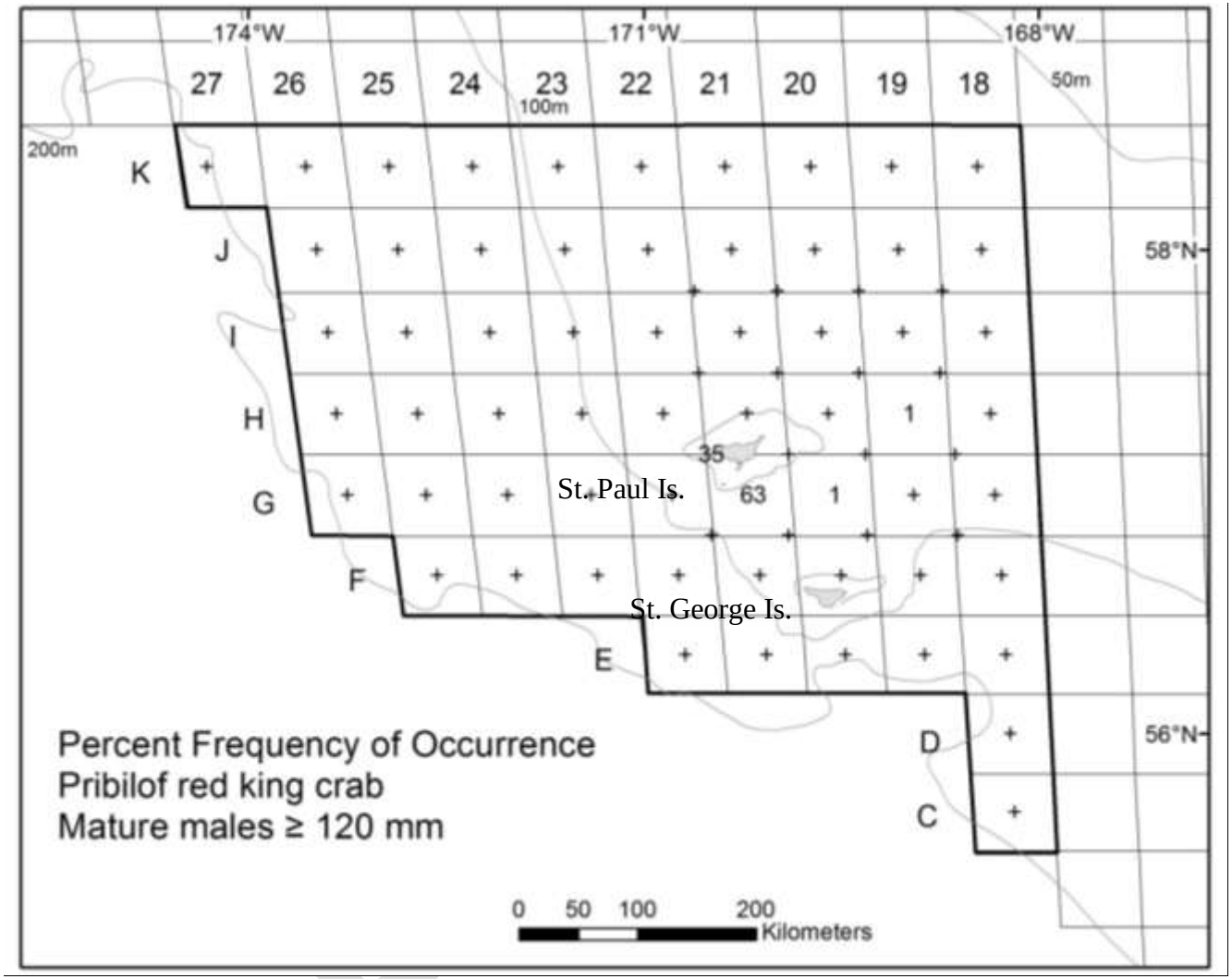


Figure 27. Percent frequency of occurrence of mature male red king crab (*Paralithodes camtschaticus*) at stations sampled in the 2014 Pribilof District.

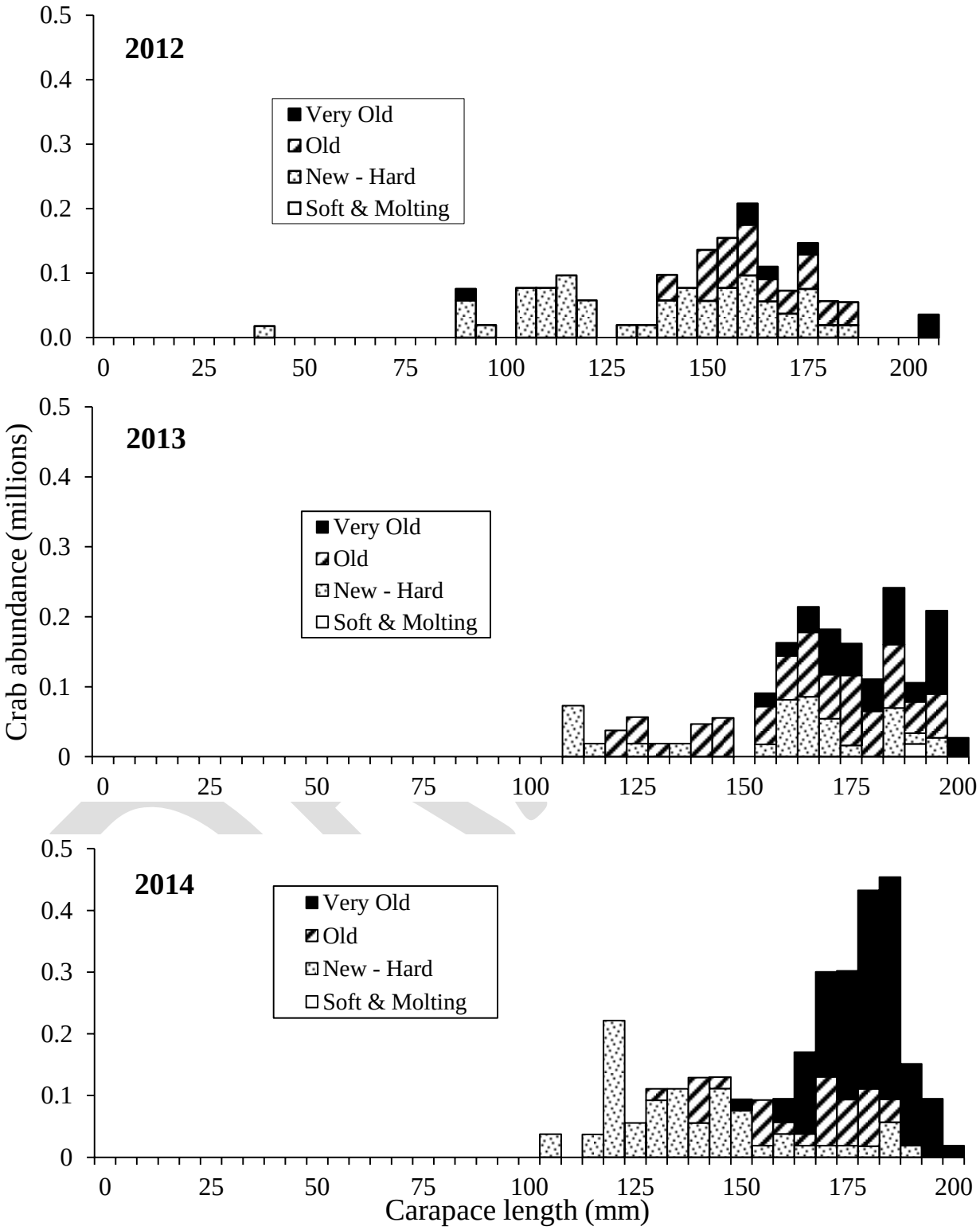


Figure 28. Size-frequency by shell condition of Pribilof District male red king crab (*Paralithodes camtschaticus*) by 5 mm length classes, 2012-2014.

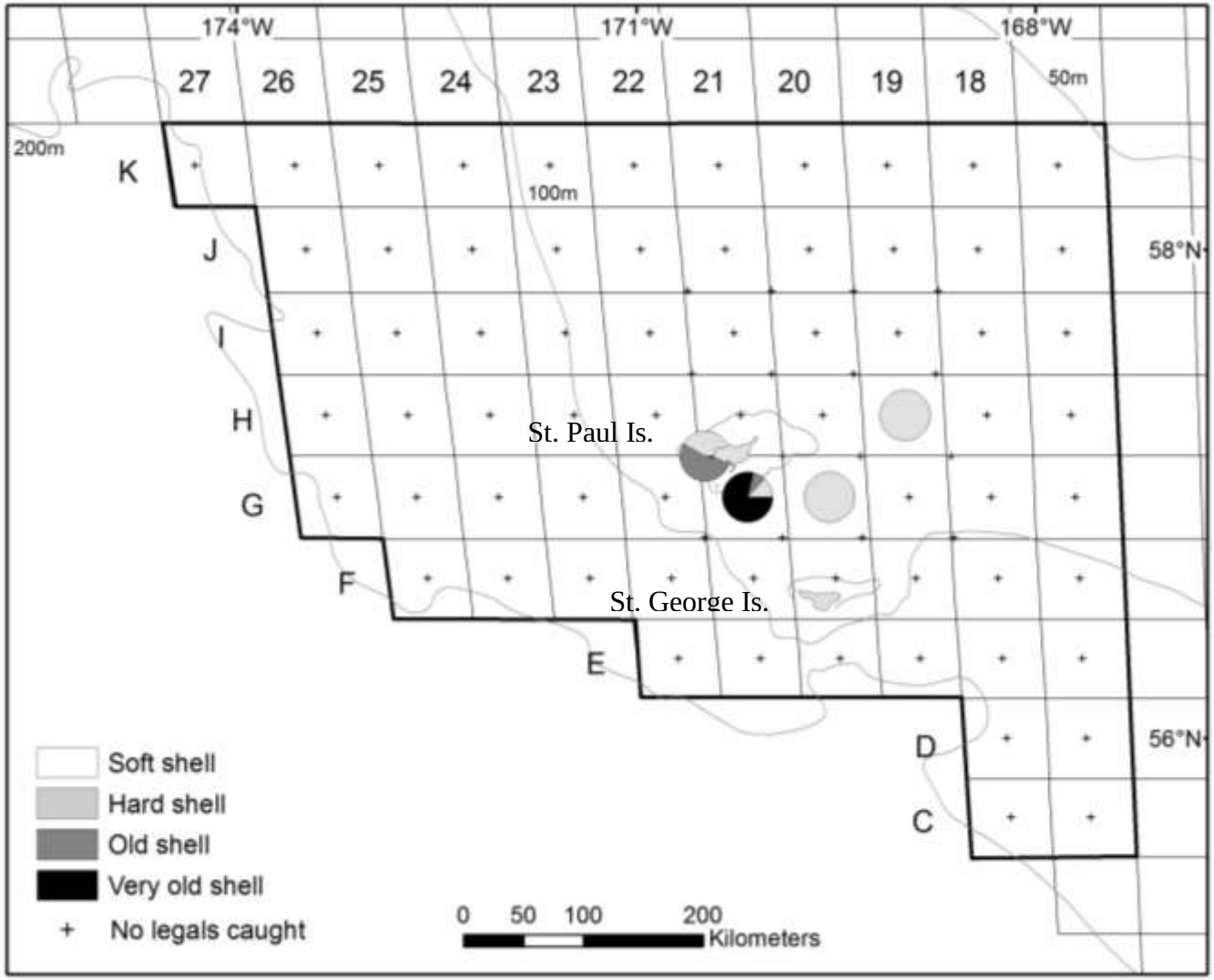


Figure 29. Distribution of legal-sized male red king crab (*Paralithodes camtschaticus*) caught at each station of the Pribilof District in 2014 and distinguished by shell condition. The outlined area depicts stations within the management district.

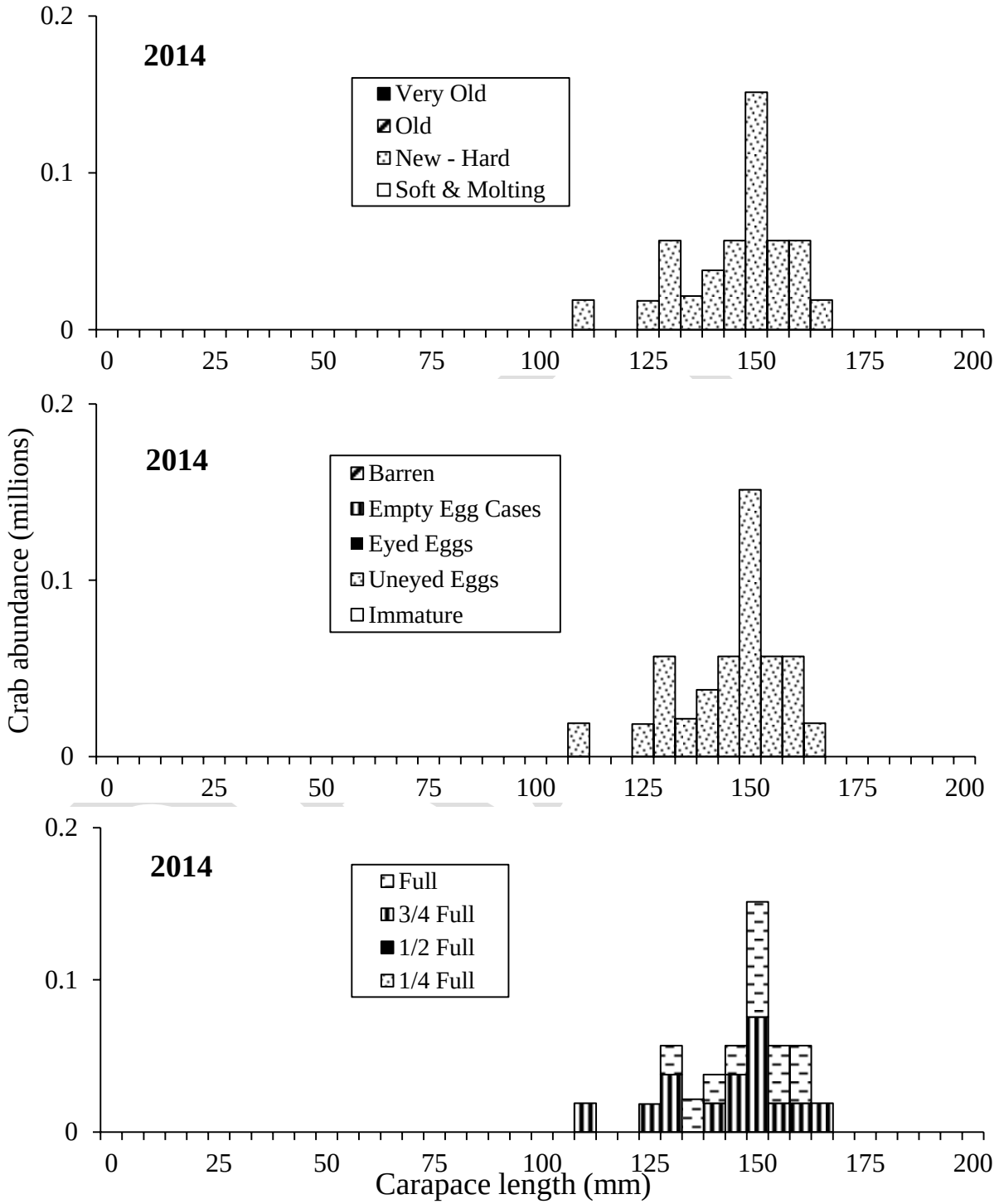


Figure 30. Size-frequency by shell condition, egg condition, and clutch fullness of Pribilof District female red king crab (*Paralithodes camtschaticus*) by 5 mm length classes in 2014.

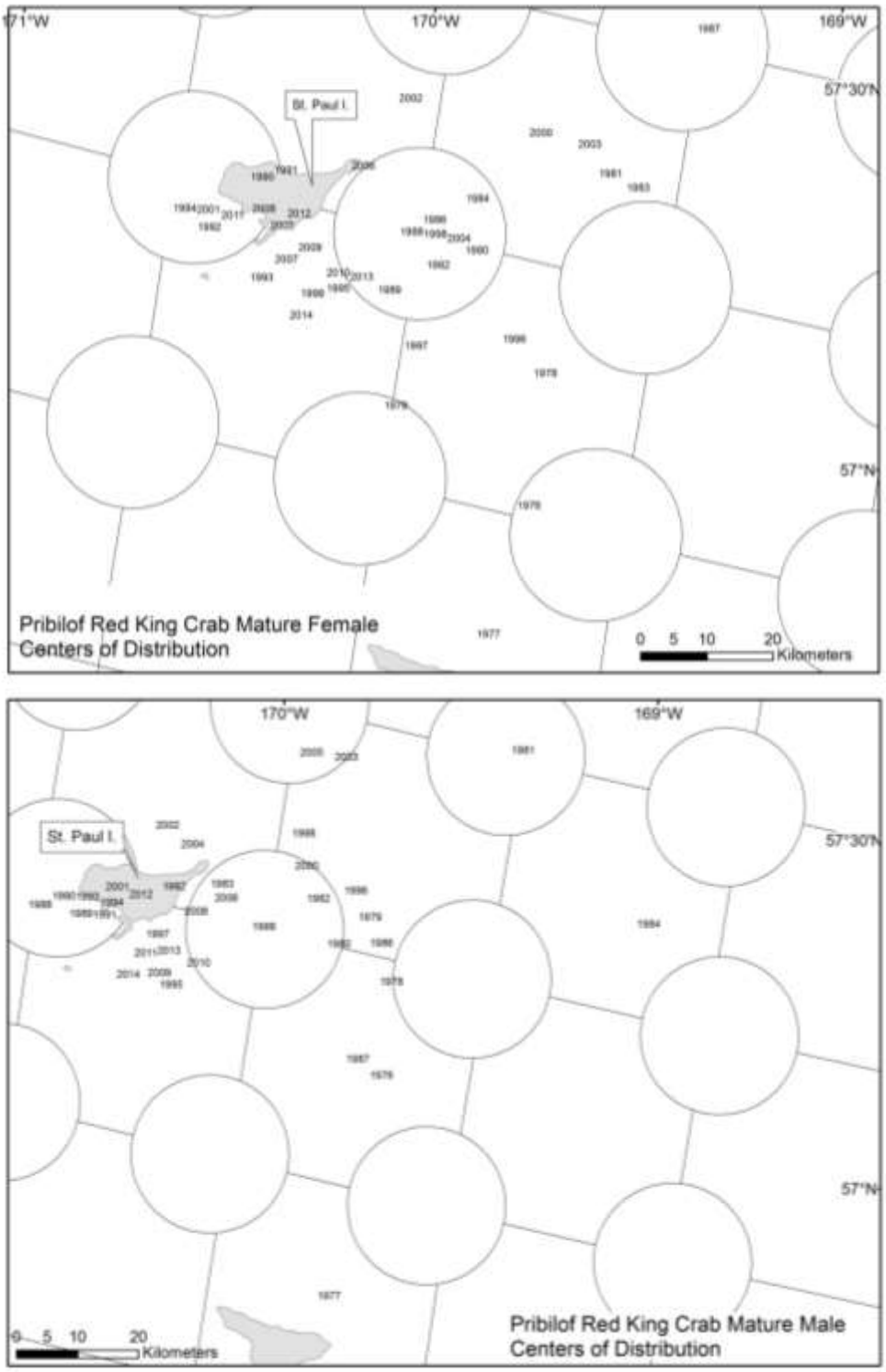


Figure 31. Centers of stock distribution of Pribilof Islands female and male red king crab (*Paralithodes camtschaticus*) from 1975 to 2014.

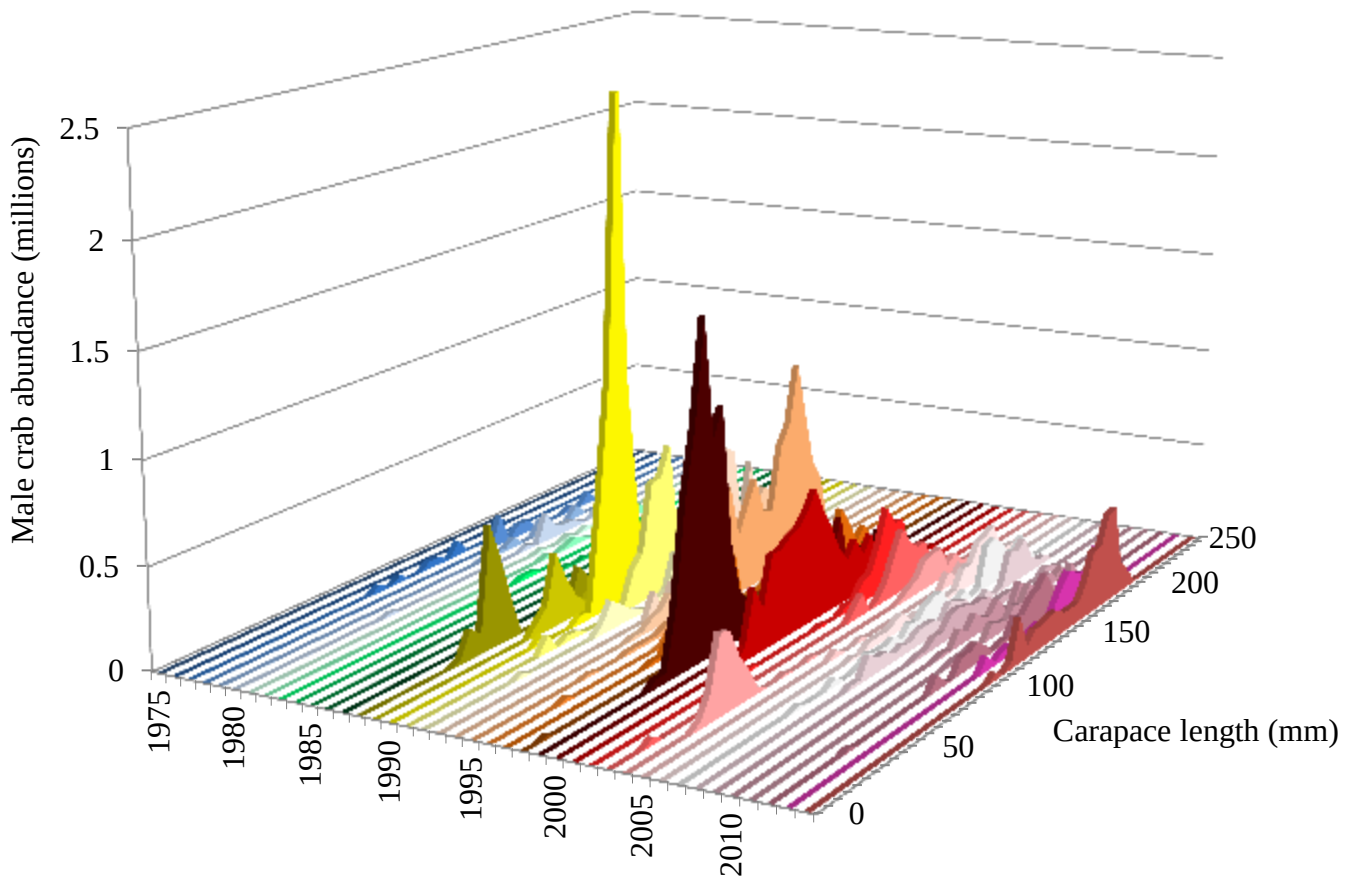


Figure 32. Size frequency by 5 mm length classes of Pribilof Islands male red king crab (*Paralithodes camtschaticus*) from 1975 to 2014.

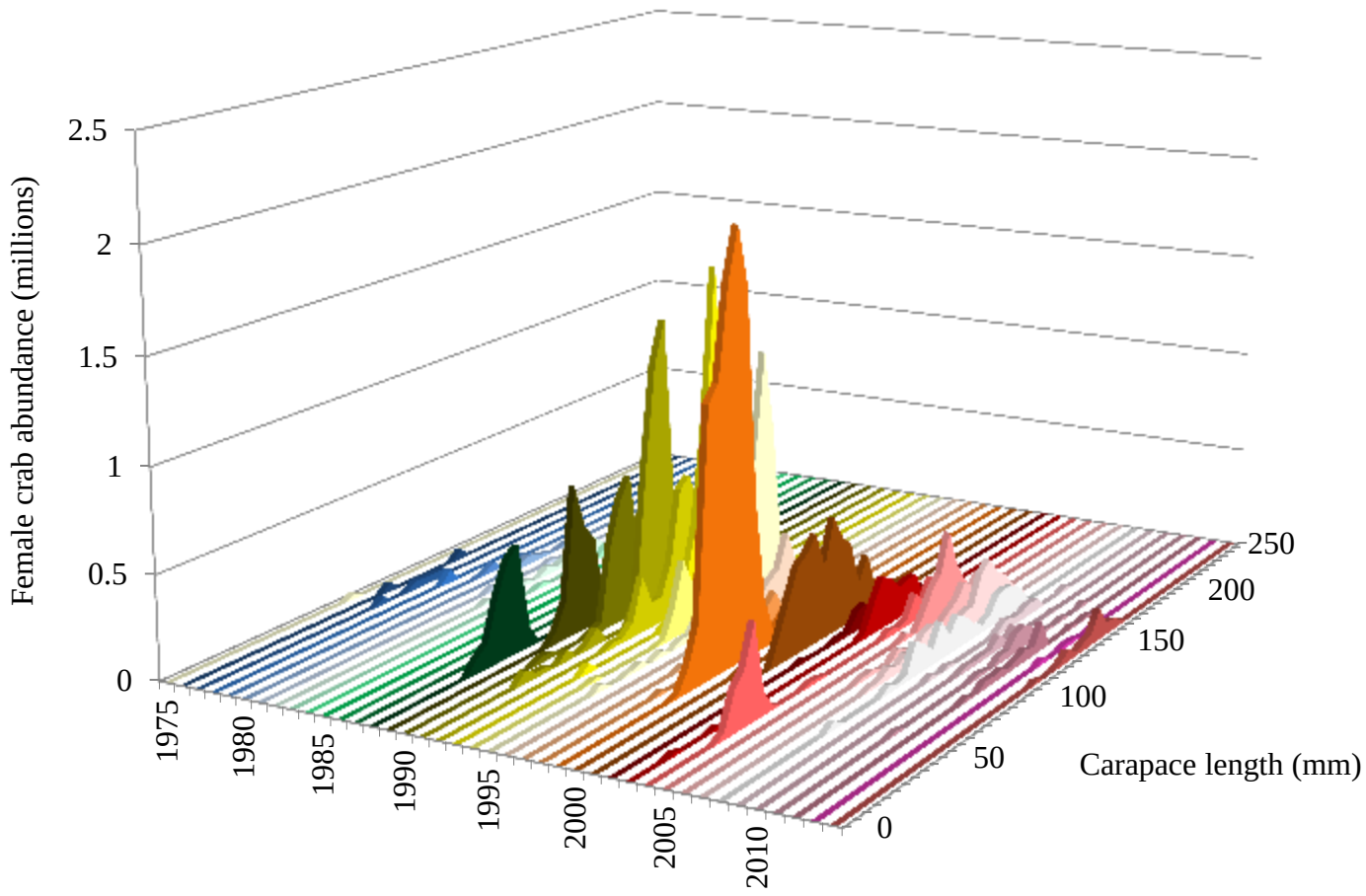


Figure 33. Size frequency by 5 mm length classes of Pribilof Islands female red king crab (*Paralithodes camtschaticus*) from 1975 to 2014.

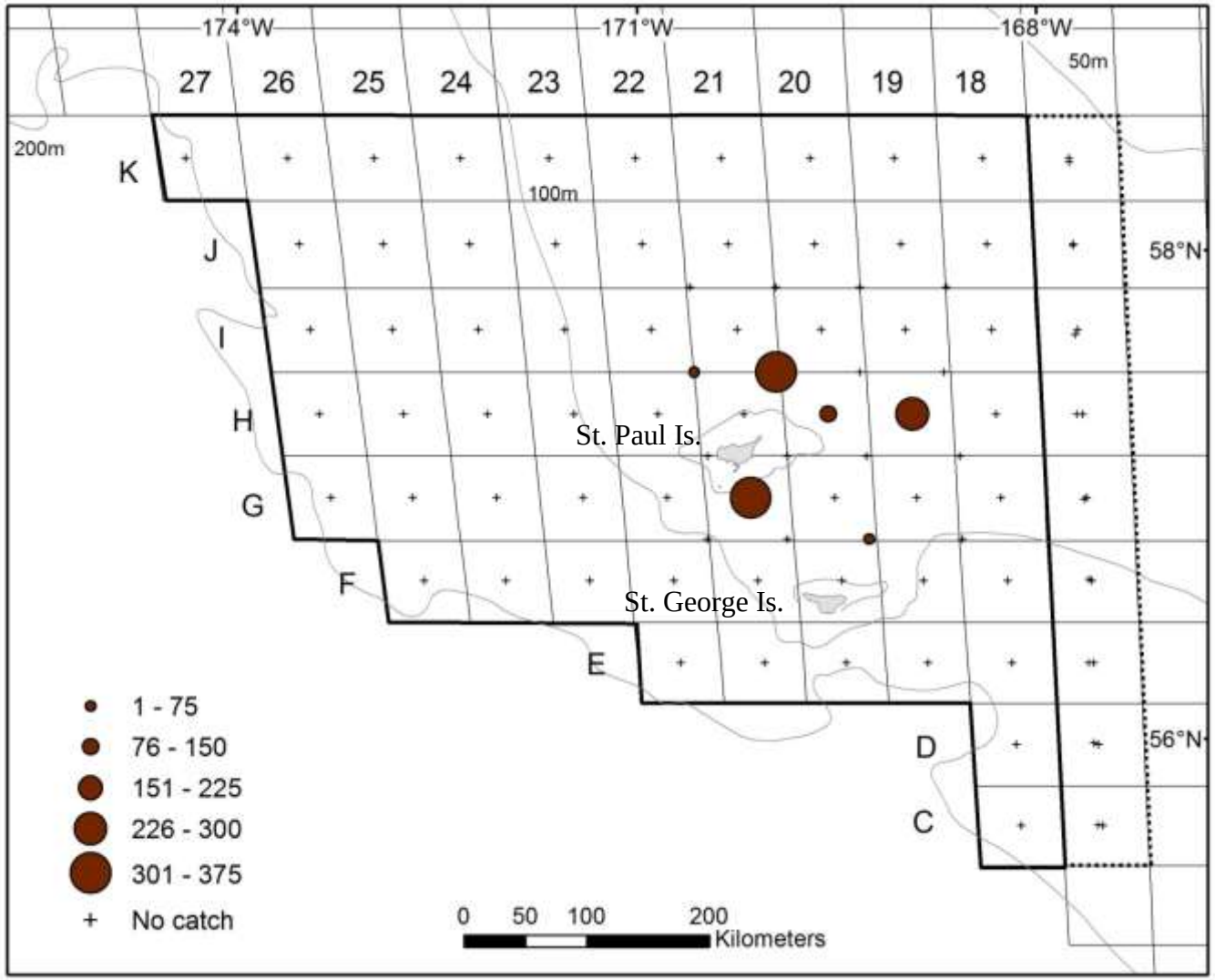


Figure 34. Total density (number nmi^{-2}) of blue king crab (*Paralithodes platypus*) at each station sampled in the Pribilof District in 2014. The outlined area depicts the management district as defined by ADF&G, while the dashed line depicts the modified eastern boundary as defined in the 2013 Rebuilding Plan (additional 9 stations).

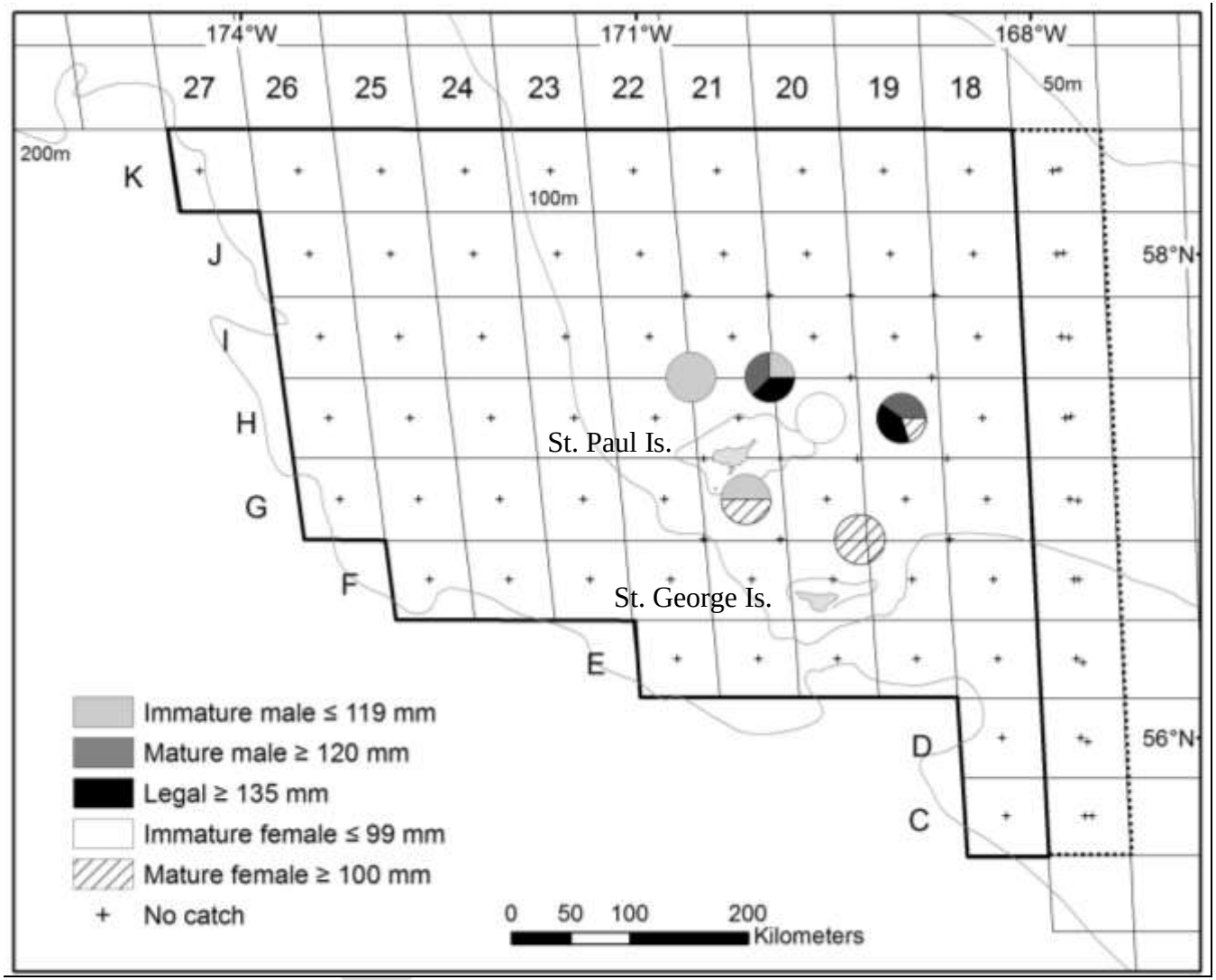


Figure 35. Percentage of male and female blue king crab (*Paralithodes platypus*) size categories at each station of the Pribilof District in 2014. The outlined area depicts the management district as defined by ADF&G, while the dashed line depicts the modified eastern boundary as defined in the 2013 Rebuilding Plan (additional 9 stations).

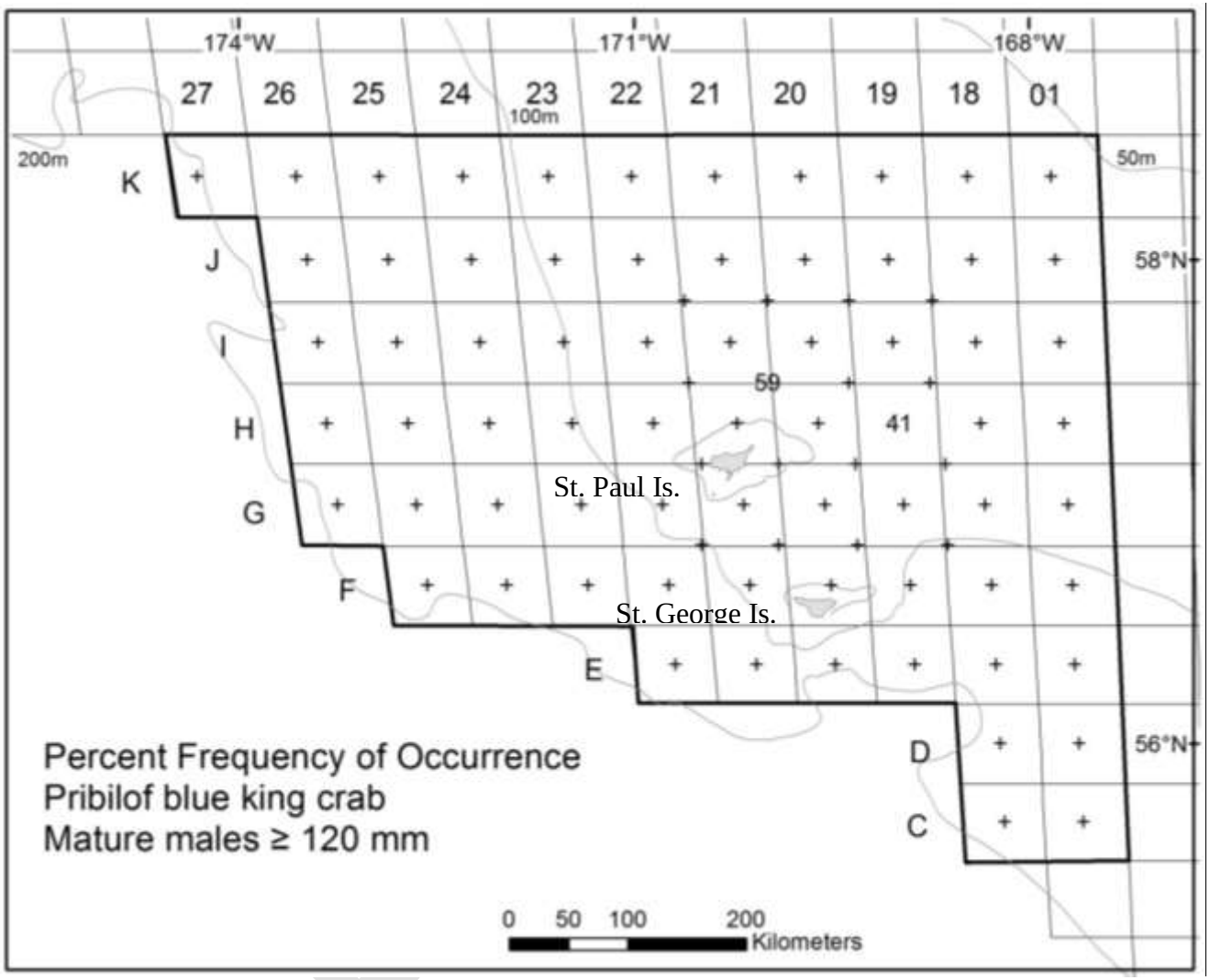


Figure 36. Percent frequency of occurrence of mature male blue king crab (*Paralithodes platypus)* at Pribilof District stations sampled in 2014. The outlined area depicts the management district as defined by ADF&G, while the dashed line depicts the modified eastern boundary as defined in the 2013 Rebuilding Plan (additional 9 stations).

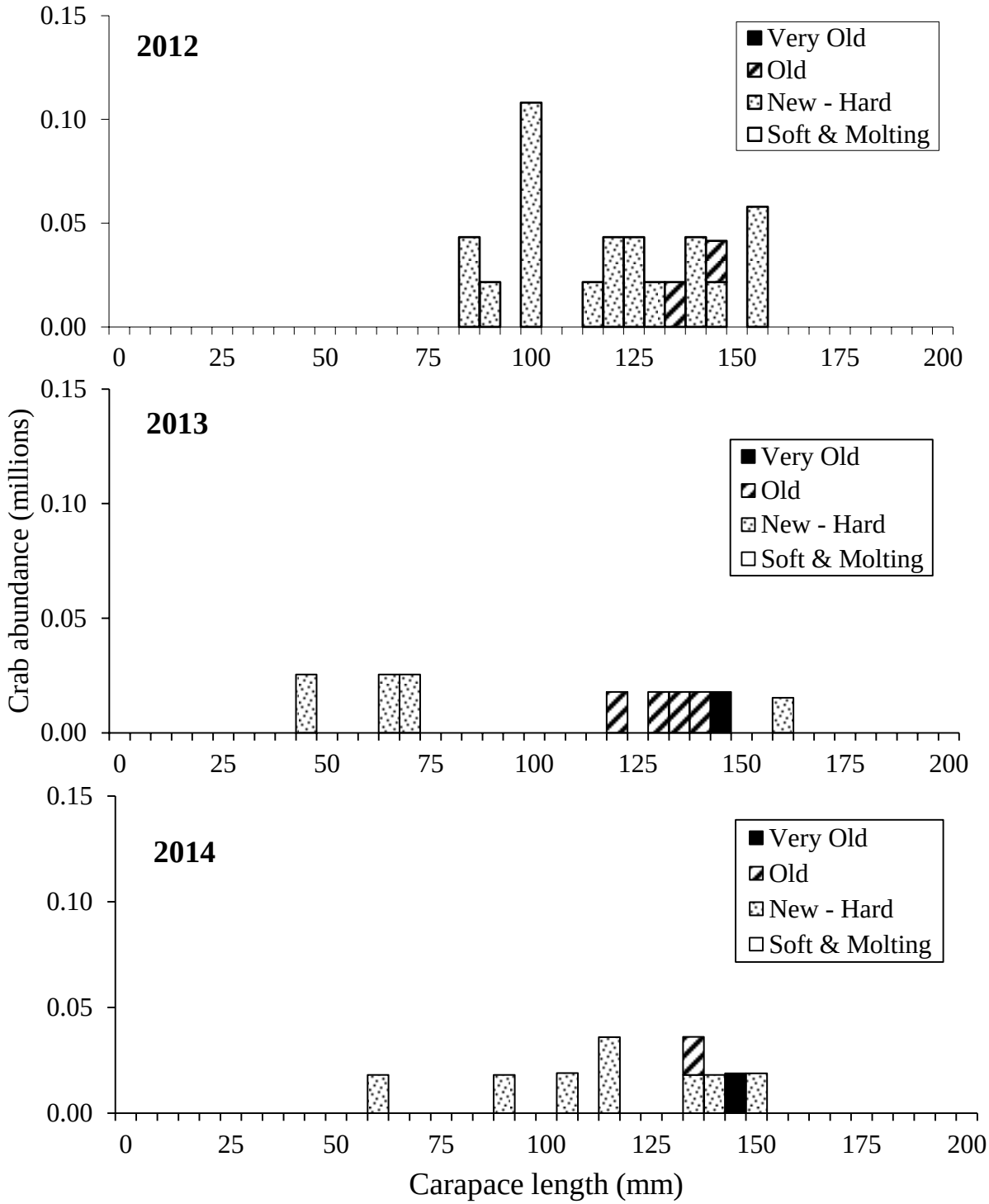


Figure 37. Size-frequency by shell condition of Pribilof District male blue king crab (*Paralithodes platypus*) by 5 mm length classes, 2012-2014.

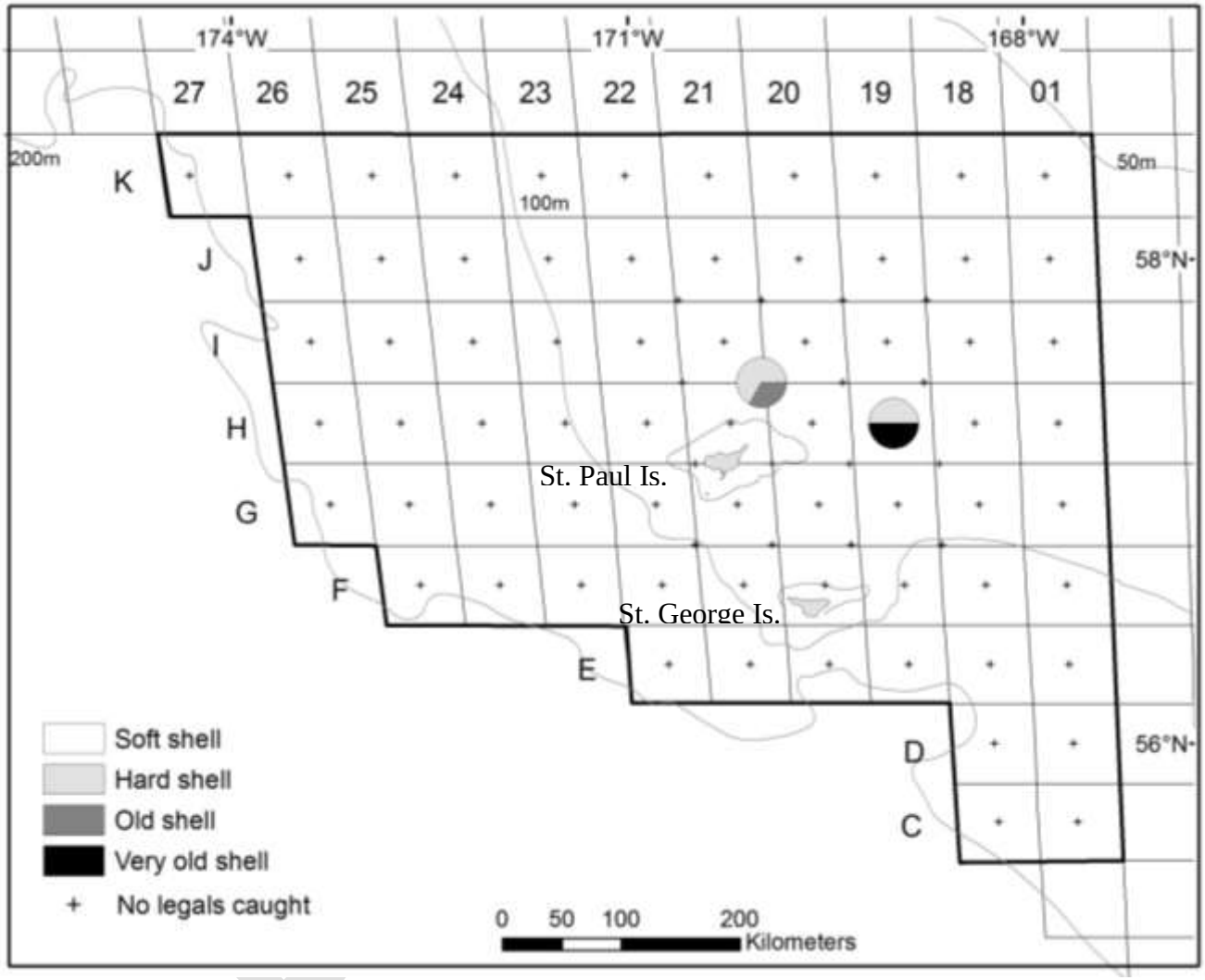


Figure 38. Distribution of legal-sized male blue king crab (*Paralithodes platypus*) caught at each station of the Pribilof District in 2014 distinguished by shell condition. The outlined area depicts the management district as defined by ADF&G, while the dashed line depicts the modified eastern boundary as defined in the 2013 Rebuilding Plan (additional 9 stations).

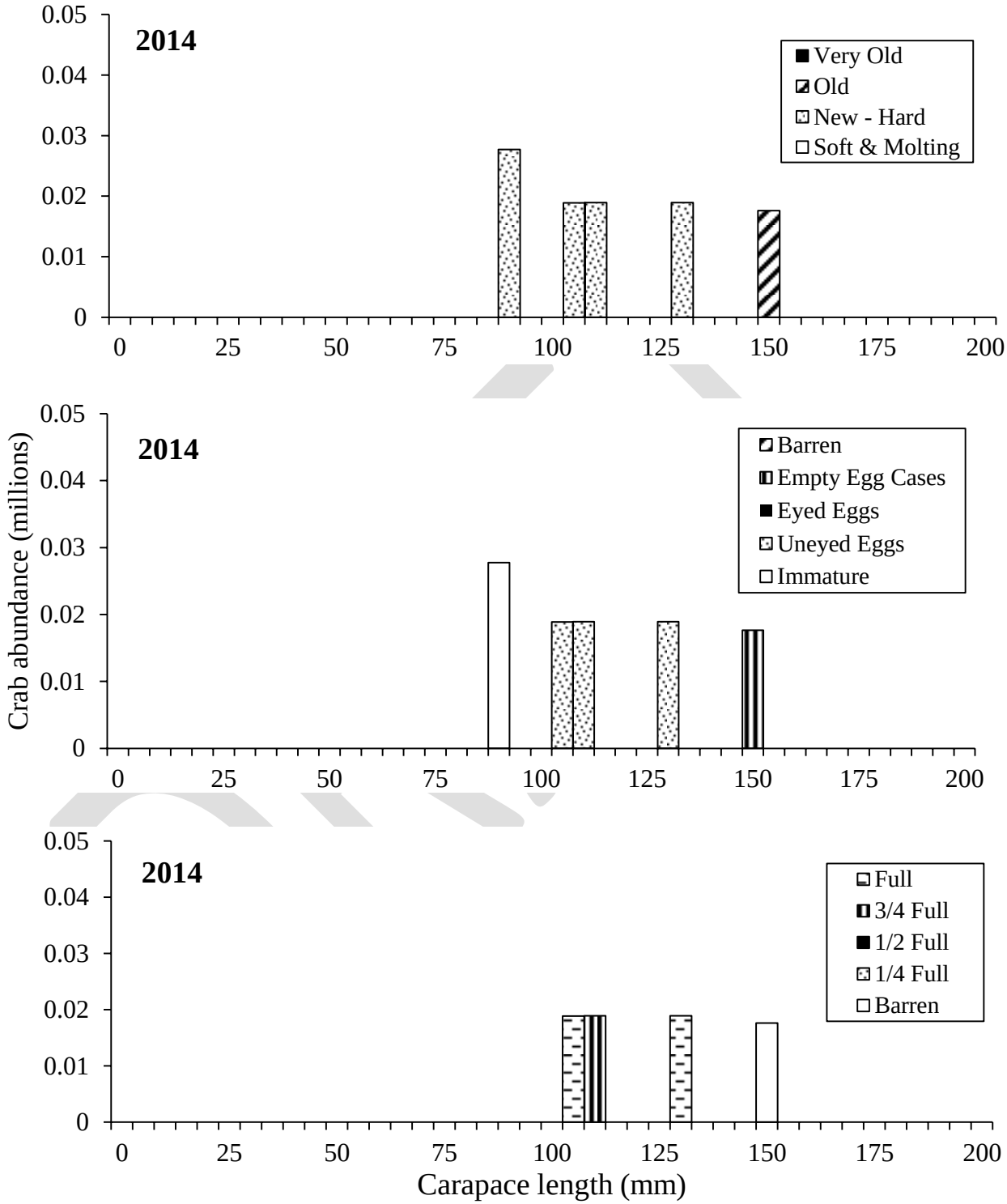


Figure 39. Size-frequency by shell condition, egg condition, and clutch fullness of Pribilof District female blue king crab (*Paralithodes platypus*) by 5 mm length classes in 2014.

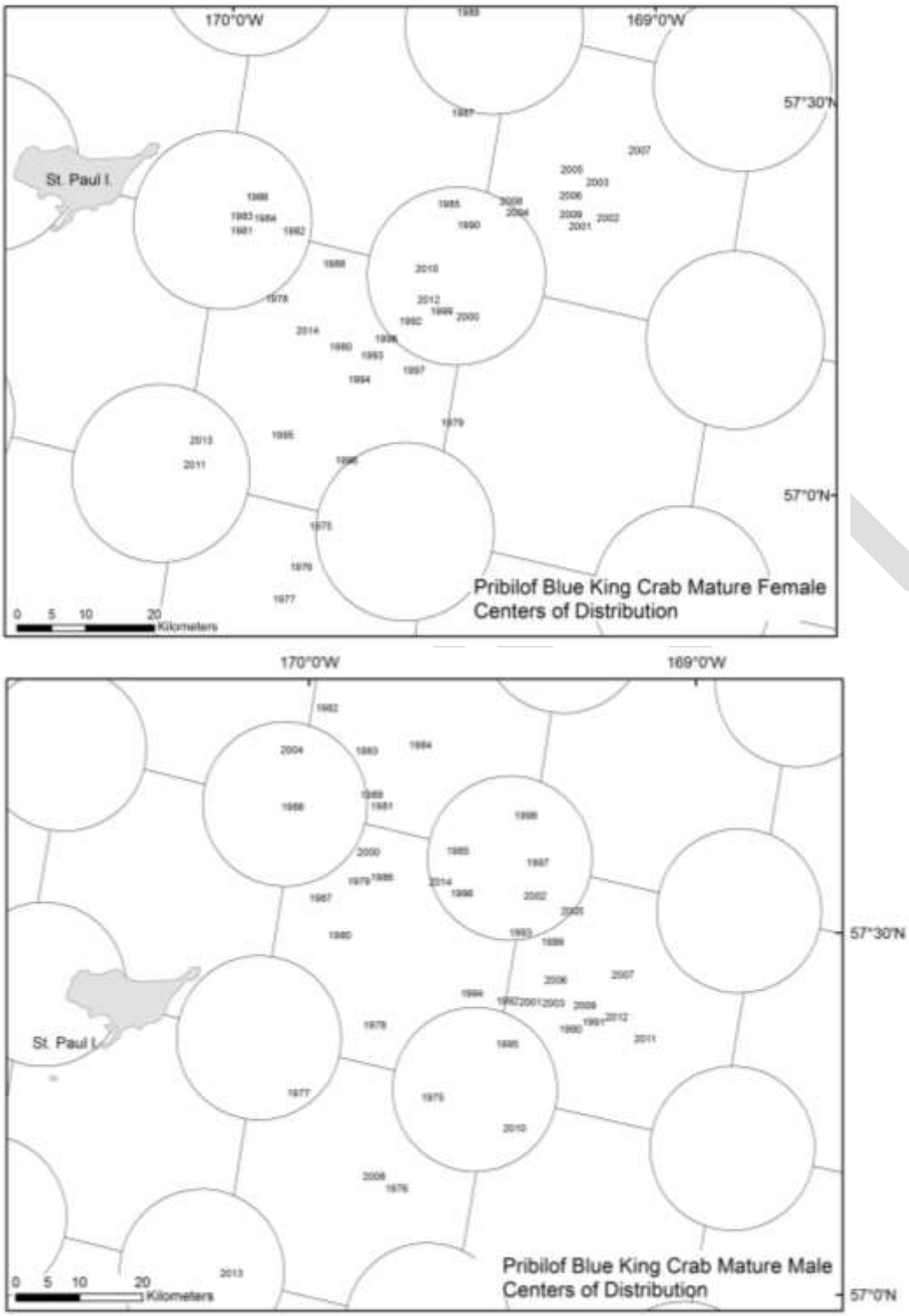


Figure 40. Centers of stock distribution of Pribilof Islands female and male blue king crab (*Paralithodes platypus*) from 1975 to 2014.

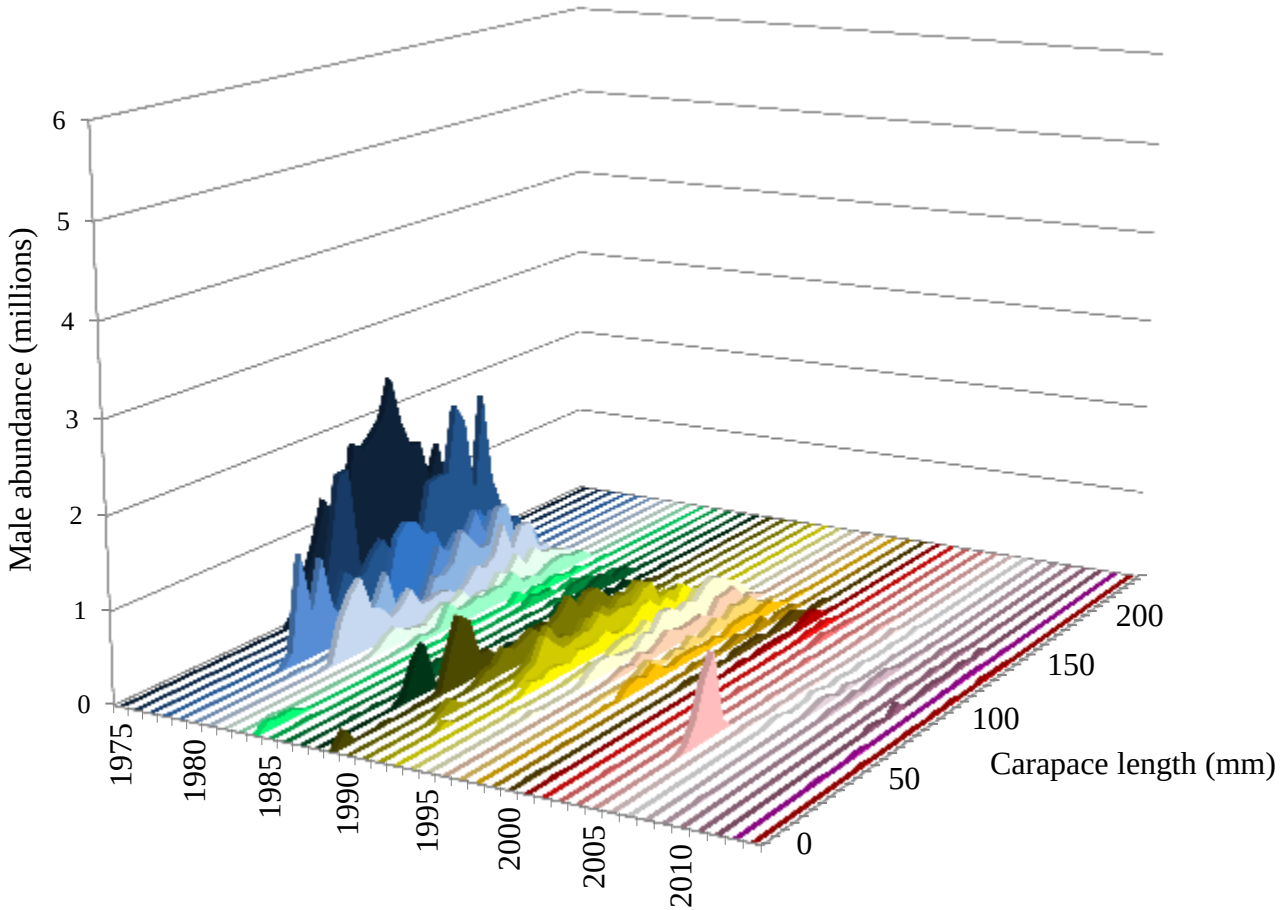


Figure 41. Size frequency by 5 mm length classes of Pribilof Islands male blue king crab (*Paralithodes platypus*) from 1975 to 2014.

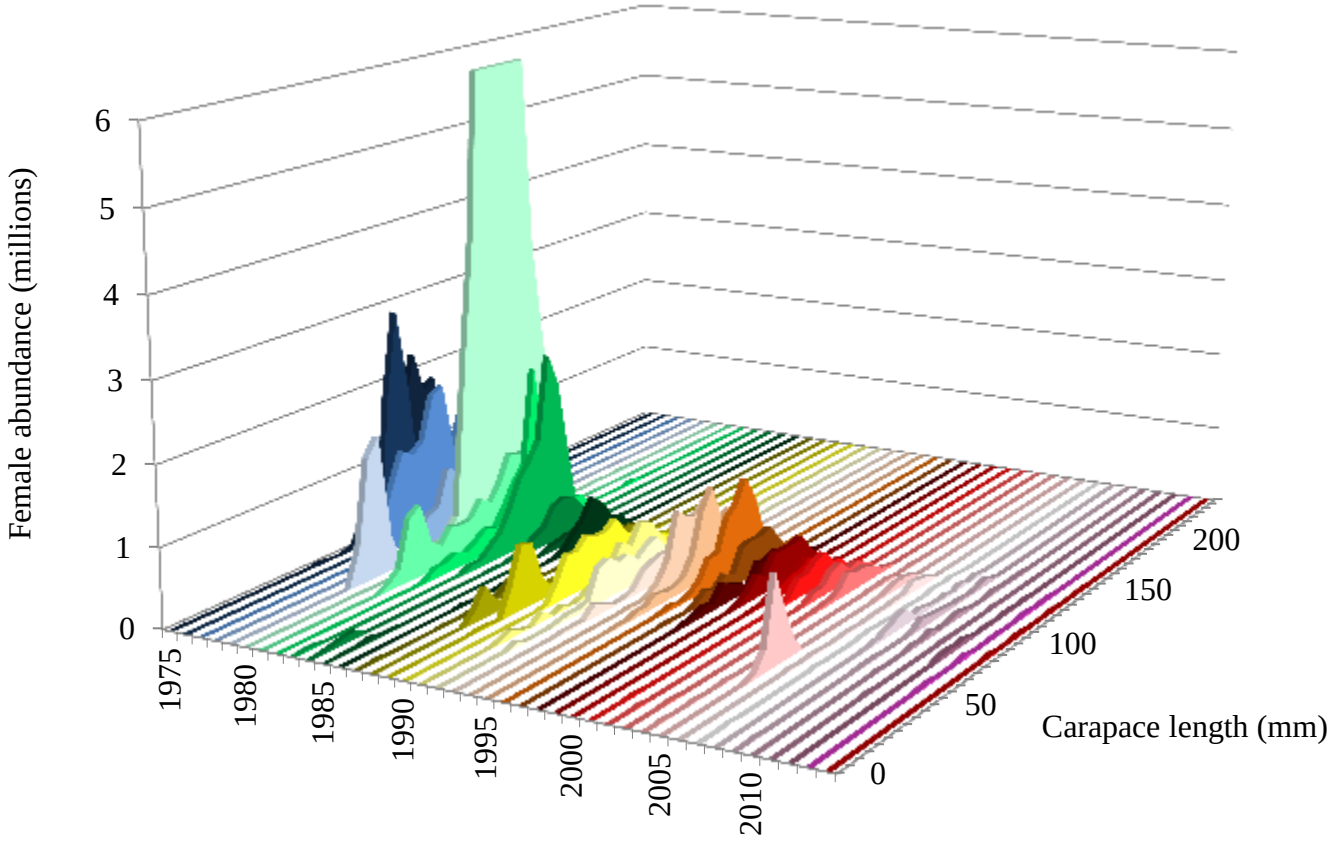


Figure 42. Size frequency by 5 mm length classes of Pribilof Islands female blue king crab (*Paralithodes platypus*) from 1975 to 2014.

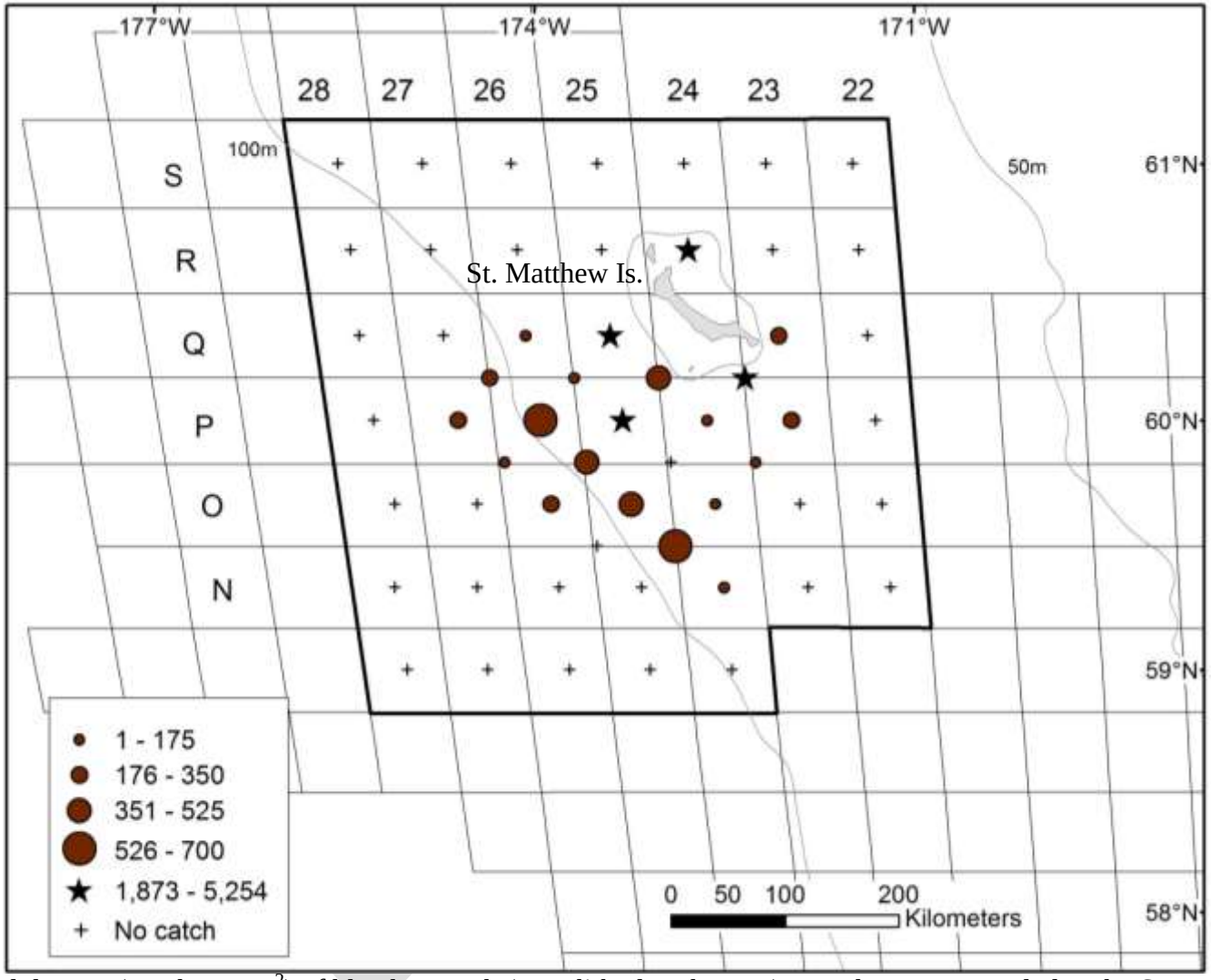


Figure 43. Total density (number nmi^{-2}) of blue king crab (*Paralithodes platypus*) at each station sampled in the St. Matthew Island Section of the Northern District in 2014. Data depicted by circles are equal interval densities, while stars are densities larger than the standard scale. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

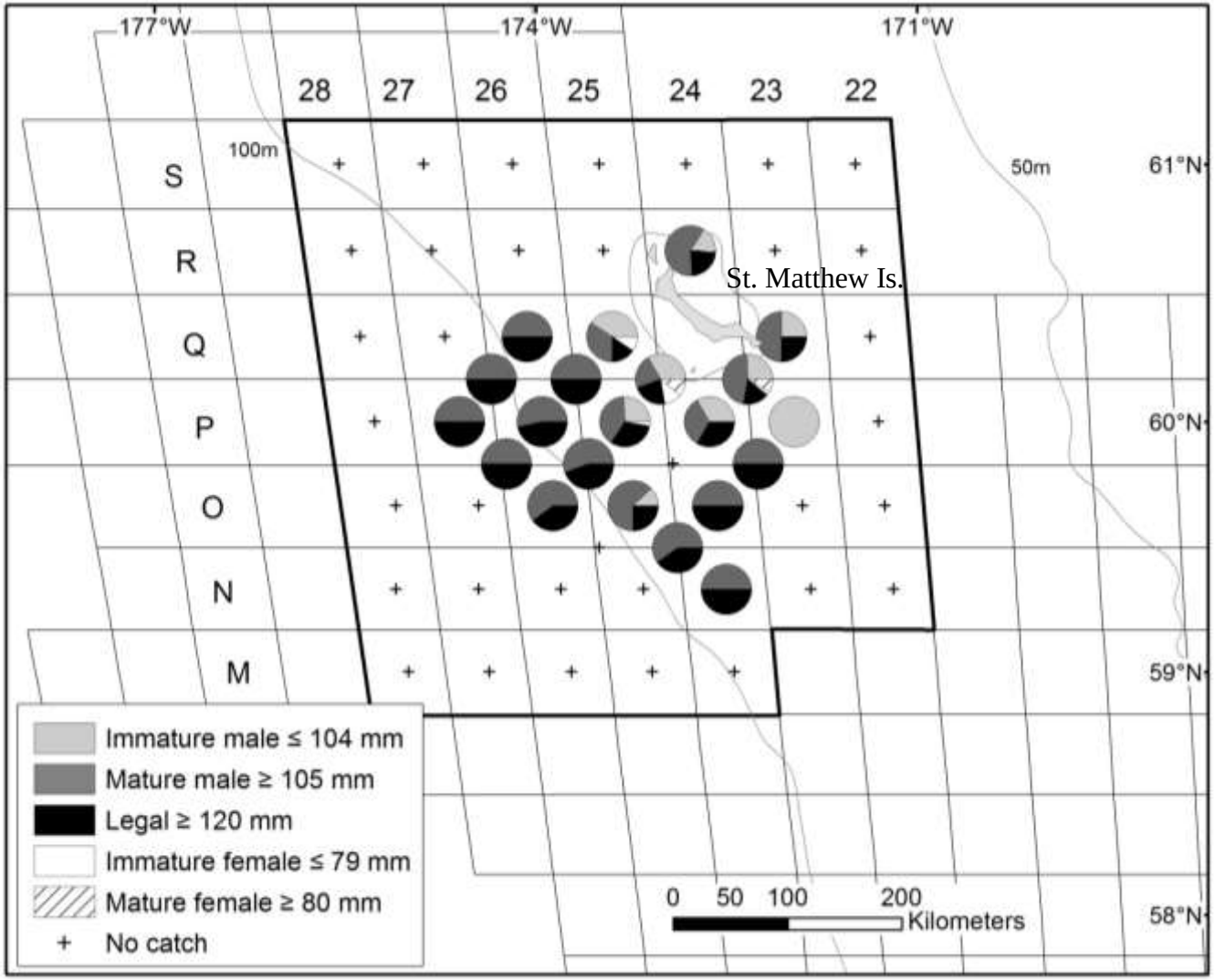


Figure 44. Percentage of male and female blue king crab (*Paralithodes platypus*) size categories at each station of the St. Matthew Island Section of the Northern District in 2014. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

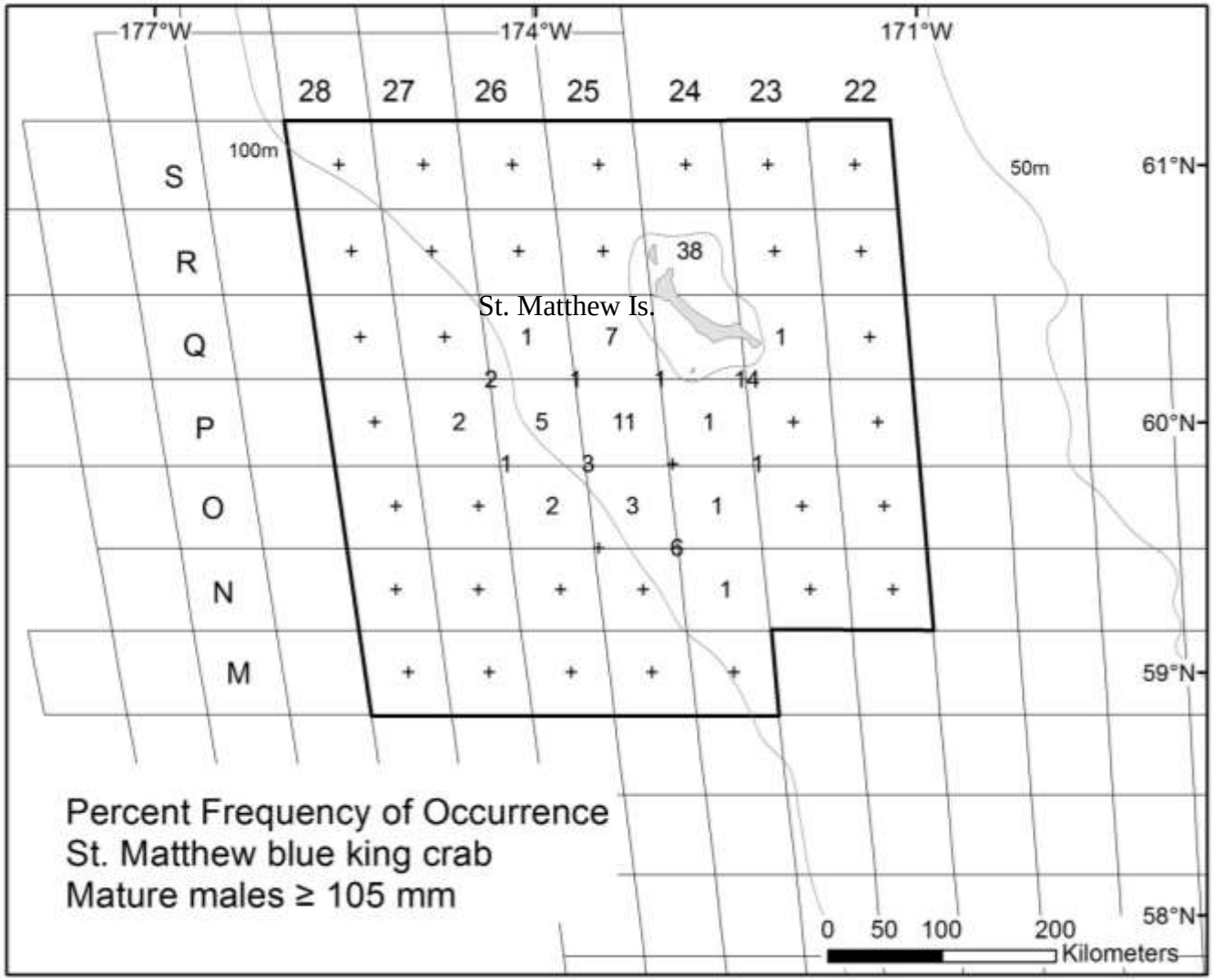


Figure 45. Percent frequency of occurrence of mature male blue king crab (*Paralithodes platypus)* at stations in the 2014 St. Matthew Island Section sampling strata of the Northern District.

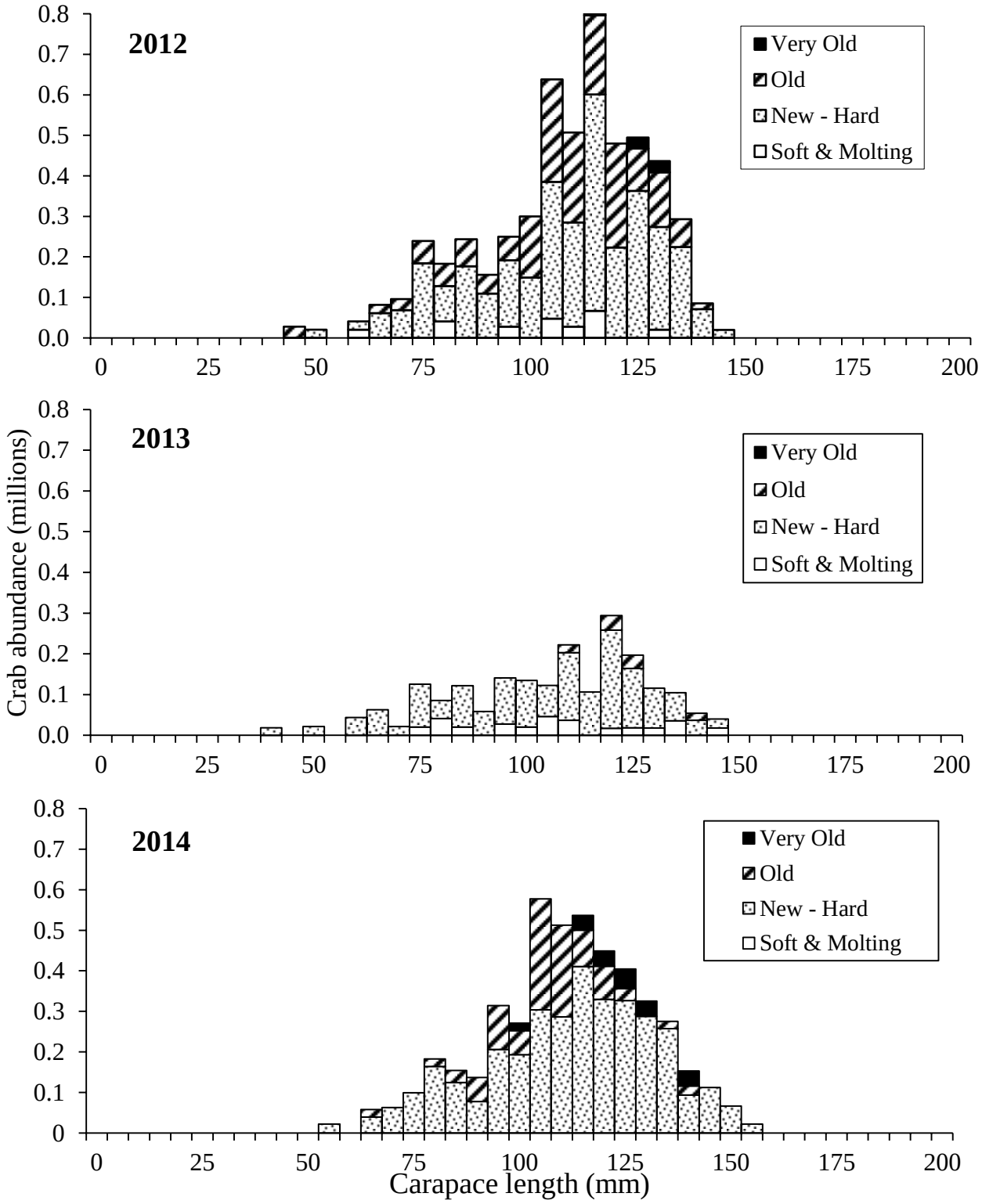


Figure 46. Size-frequency by shell condition of St. Matthew Island Section male blue king crab (*Paralithodes platypus*) by 5 mm length classes, 2012-2014.

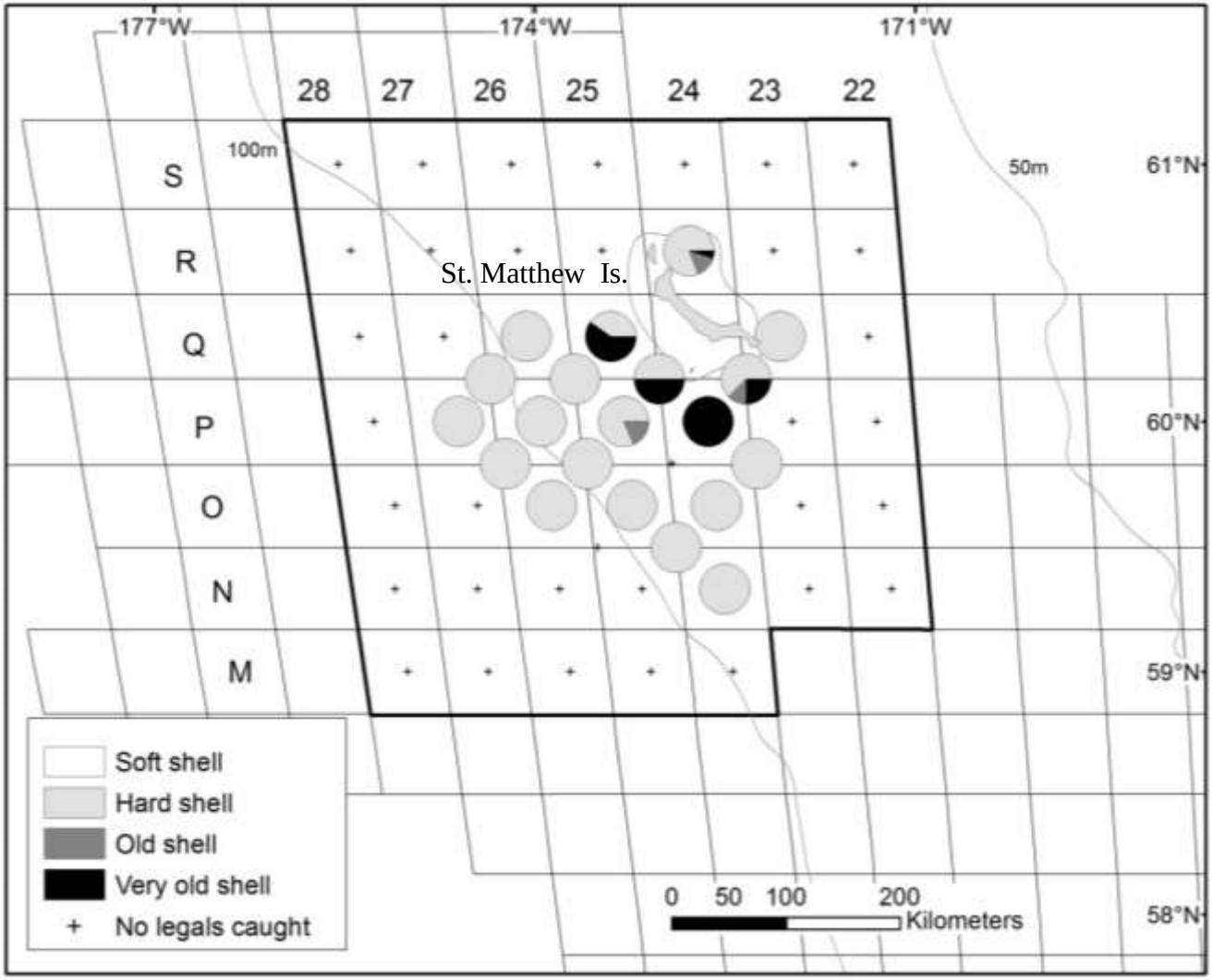


Figure 47. Distribution of legal-sized male blue king crab (*Paralithodes platypus*) caught at each station of the St. Matthew Island Section of the Northern District in 2014 and distinguished by shell condition. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

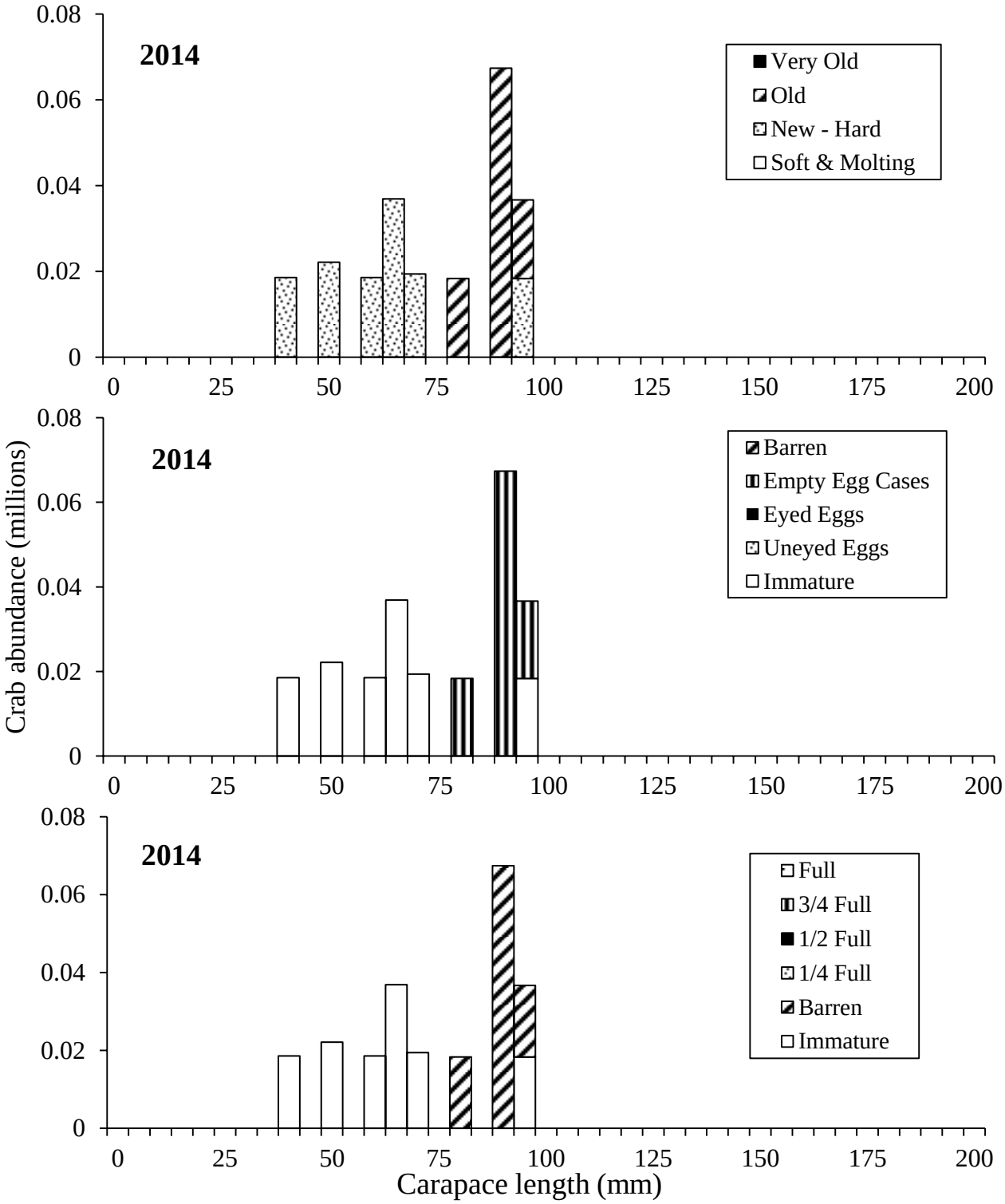


Figure 48. Size-frequency by shell condition, egg condition, and clutch size of St. Matthew Island Section female blue king crab (*Paralithodes platypus*) by 5 mm length classes in 2014.

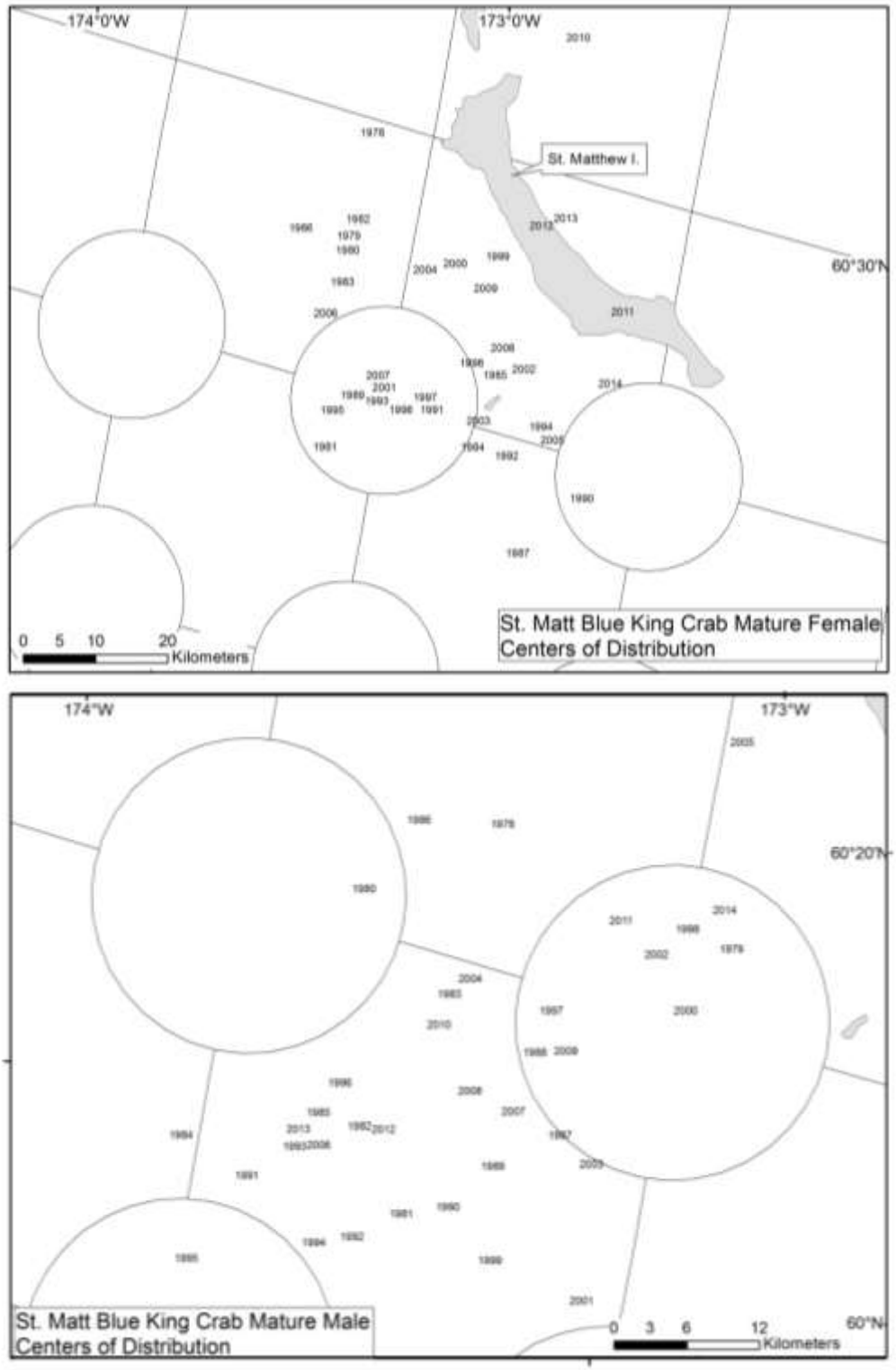


Figure 49. Centers of stock distribution of St. Matthew Island female and male blue king crab (*Paralithodes platypus*) from 1975 to 2014.

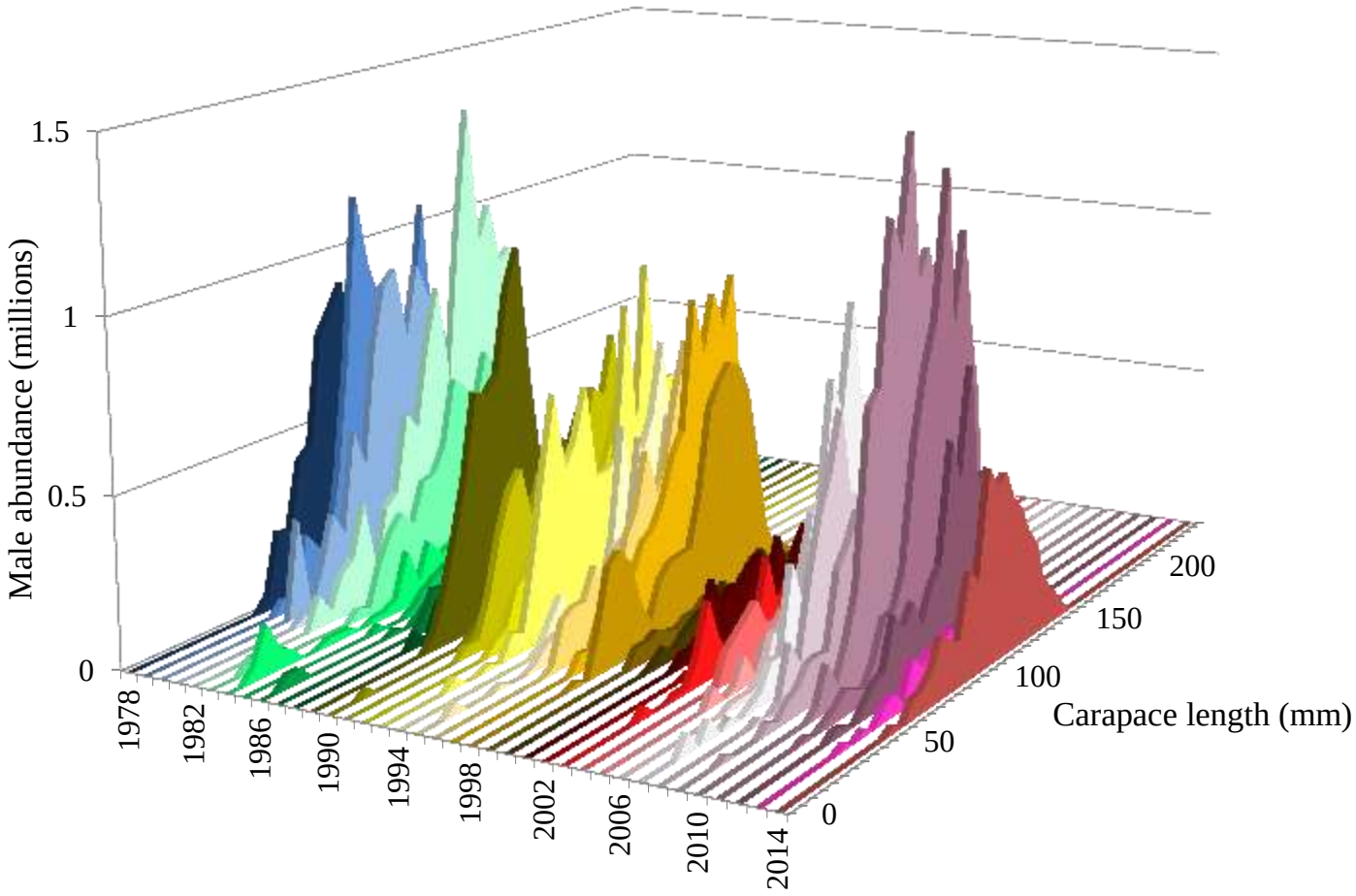


Figure 50. Size frequency by 5 mm length classes of St. Matthew Island Section male blue king crab (*Paralithodes platypus*) from 1978 to 2014.

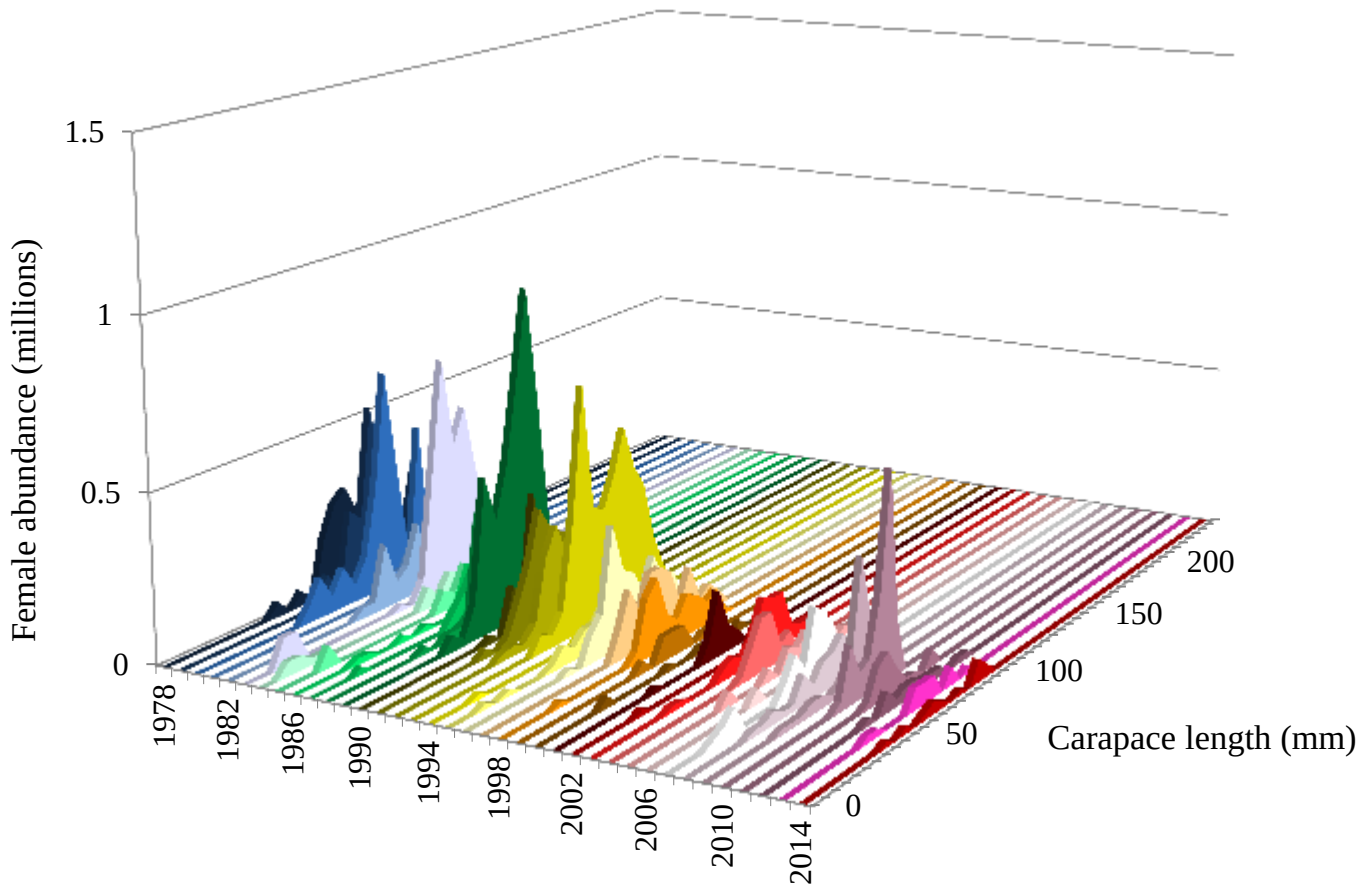


Figure 51. Size frequency by 5 mm length classes of St. Matthew Island Section female blue king crab (*Paralithodes platypus*) from 1978 to 2014.

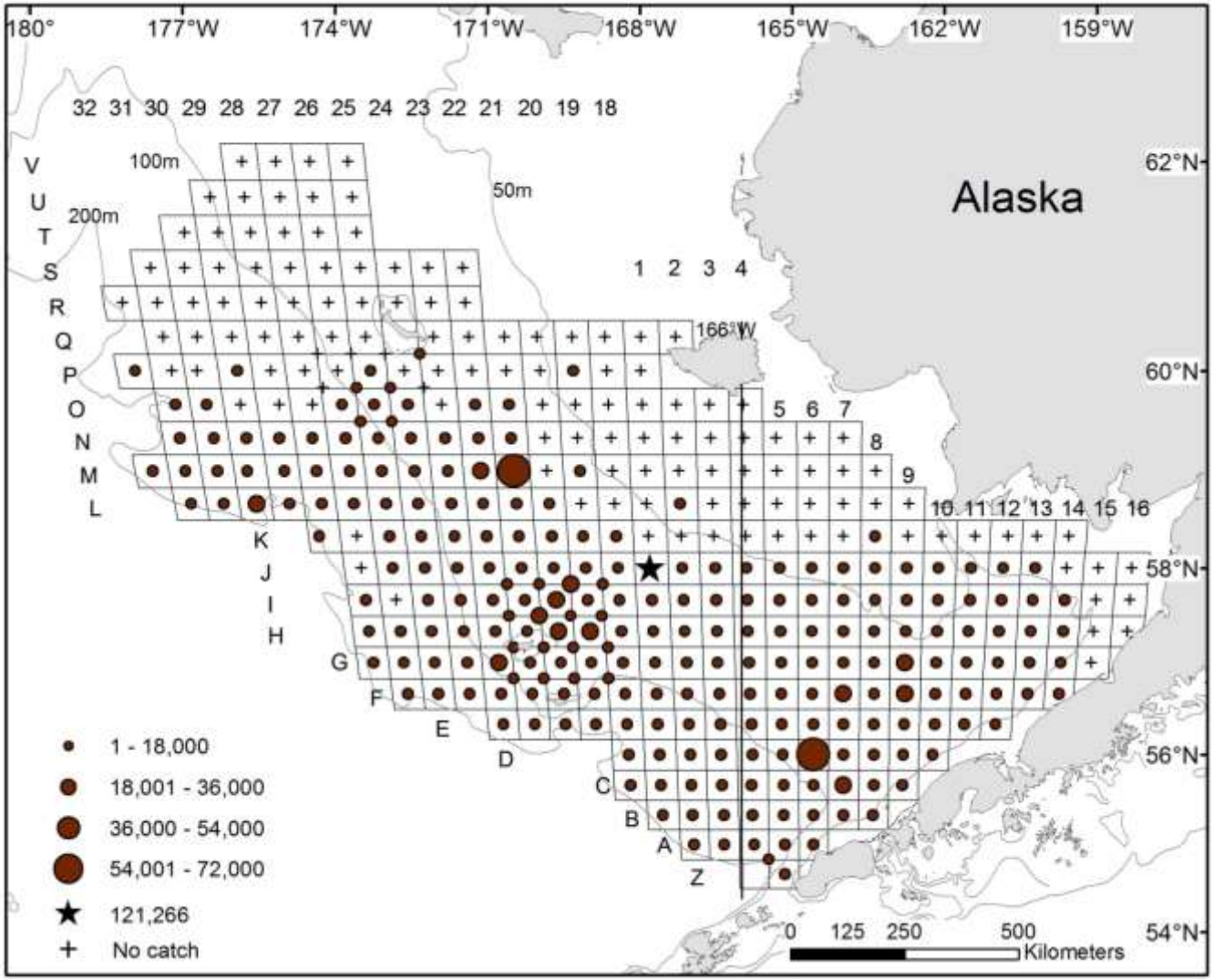


Figure 52. Total density (number nmi^{-2}) of Tanner crab (*Chionoecetes bairdi)* at each station sampled in 2014. Data depicted by circles are crab densities at equal intervals, while stars are densities larger than the standard scale.

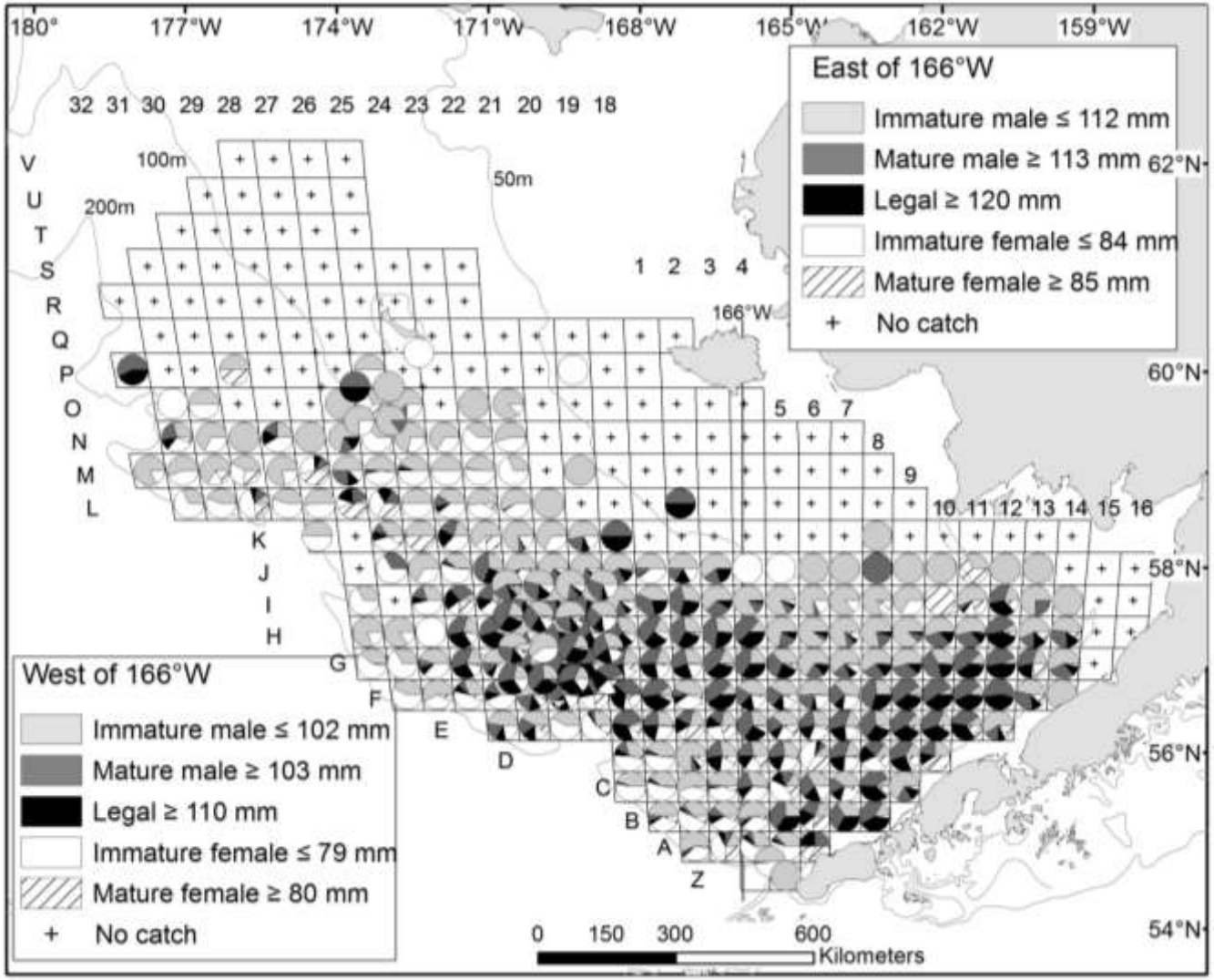


Figure 53. Percentage of male and female Tanner crab (*Chionoecetes bairdi*) size categories at each station sampled in 2014. Tanner crab males ≥ 138 mm CW east of 166° W and ≥ 125 mm CW west of 166° W are preferred size categories while males ≥ 120 mm and ≥ 110 mm CW are the legal-size categories for east and west of 166° W, respectively.

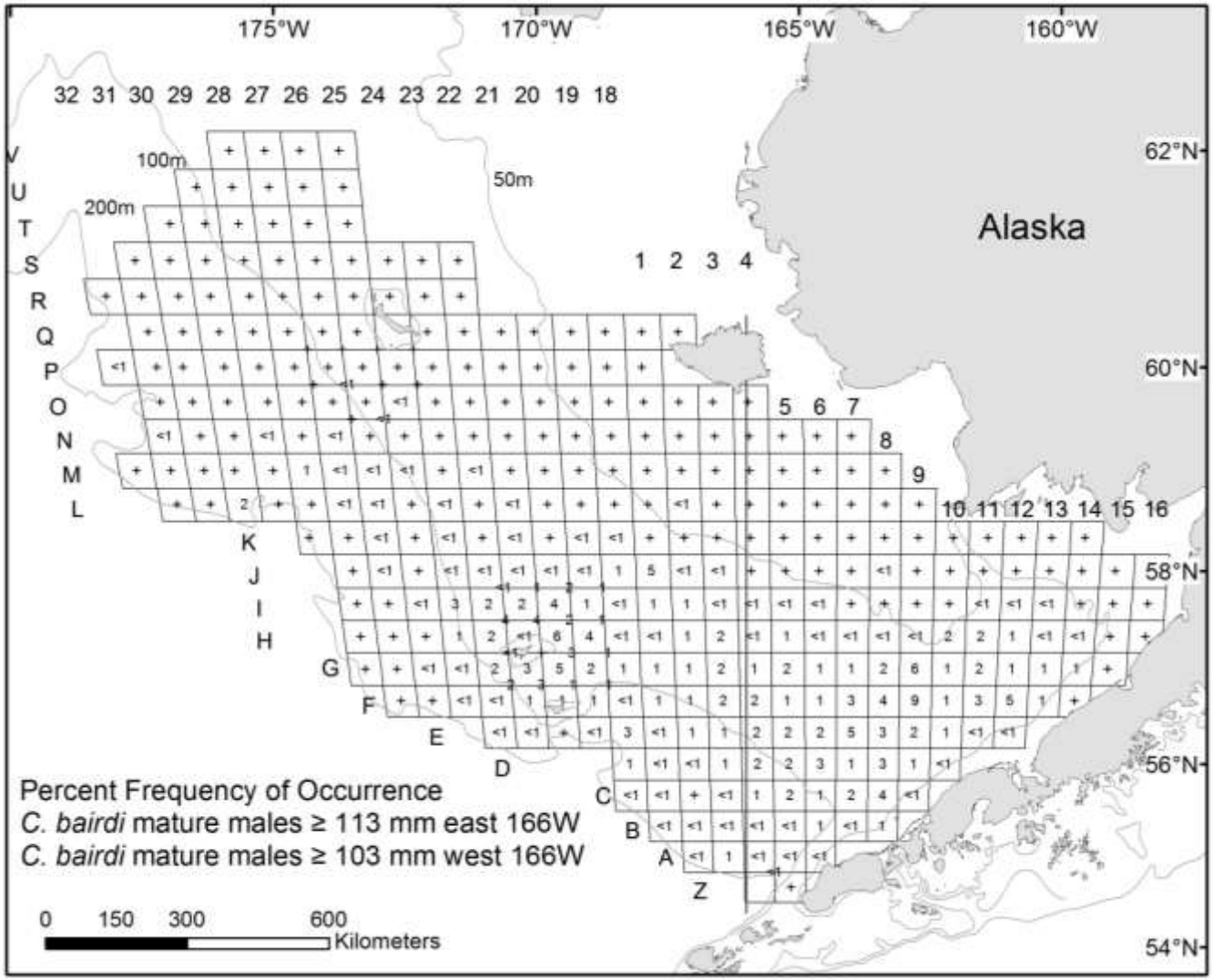


Figure 54. Percent frequency of occurrence of mature male Tanner crab (*Chionoecetes bairdi)* at stations sampled in the 2014.

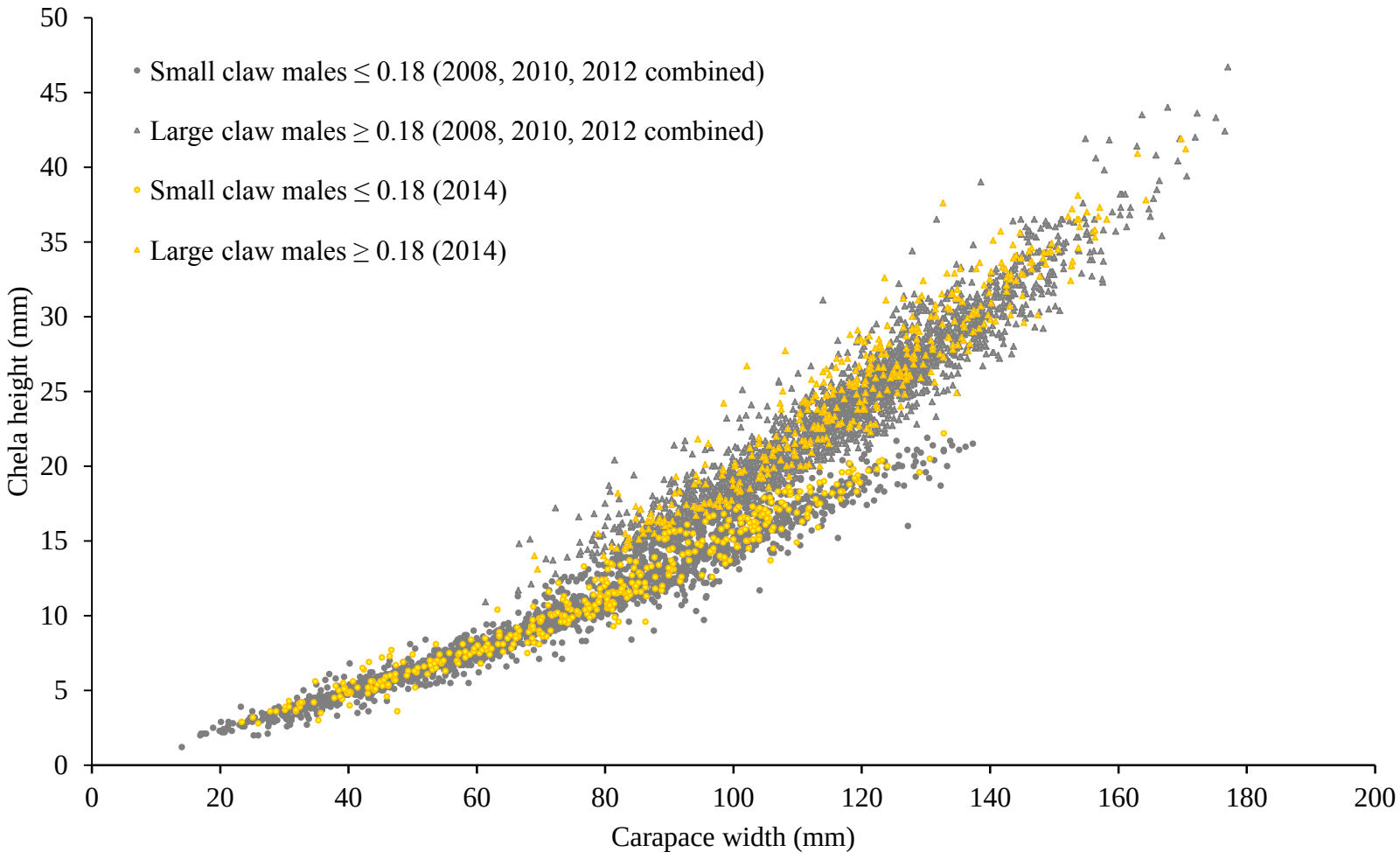


Figure 55. Male Tanner crab (*Chionoecetes bairdi*) chela height versus carapace width measurements collected on the 2008, 2010, 2012, and 2014 (all years combined, n=5,432) National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. 2008, 2010, and 2012 data combined are indicated by grey, while 2014 data are indicated by yellow.

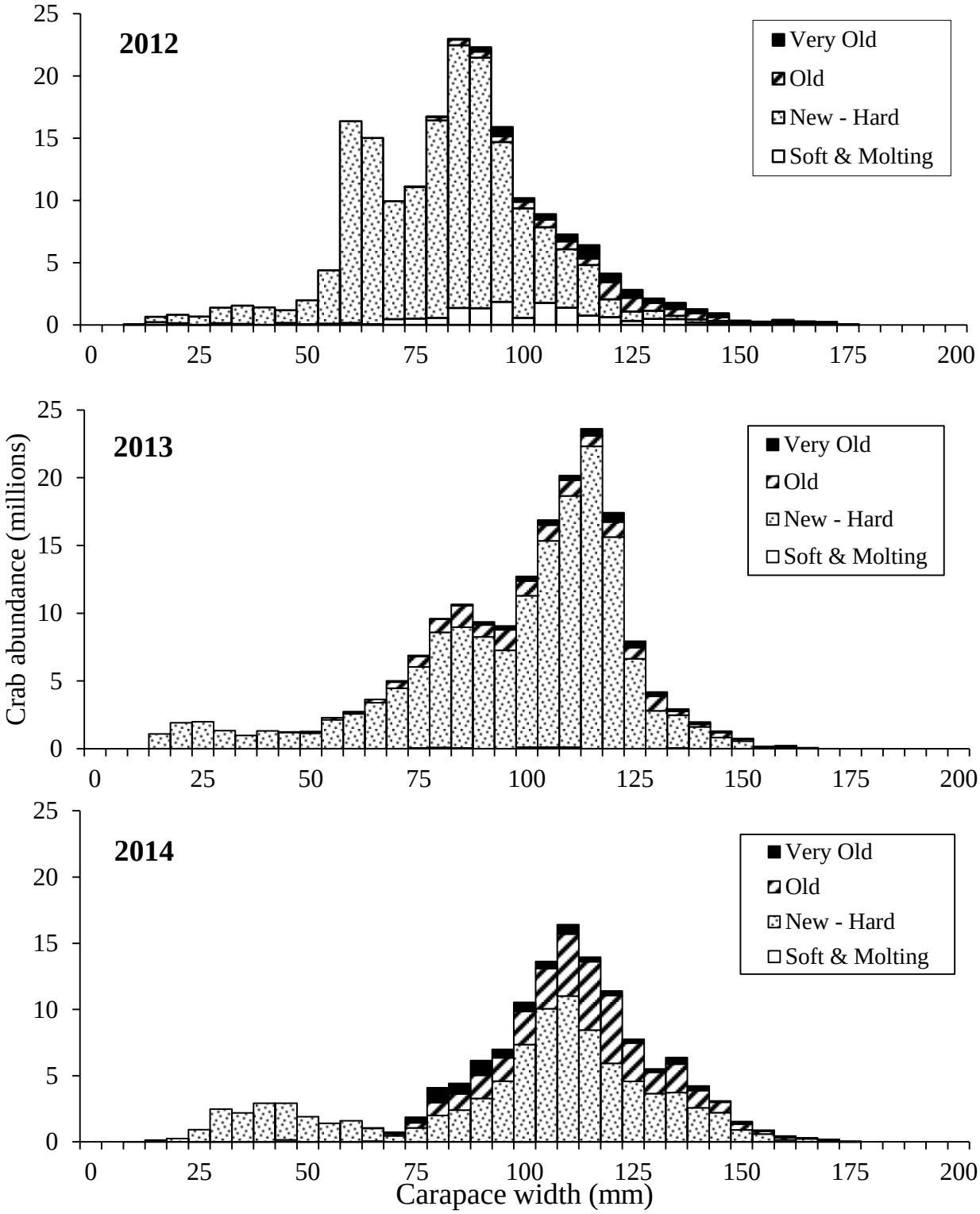


Figure 56. Size-frequency by shell condition of male Tanner crab (*Chionoecetes bairdi*) east of 166° by 5 mm width classes of all districts combined, 2012-2014.

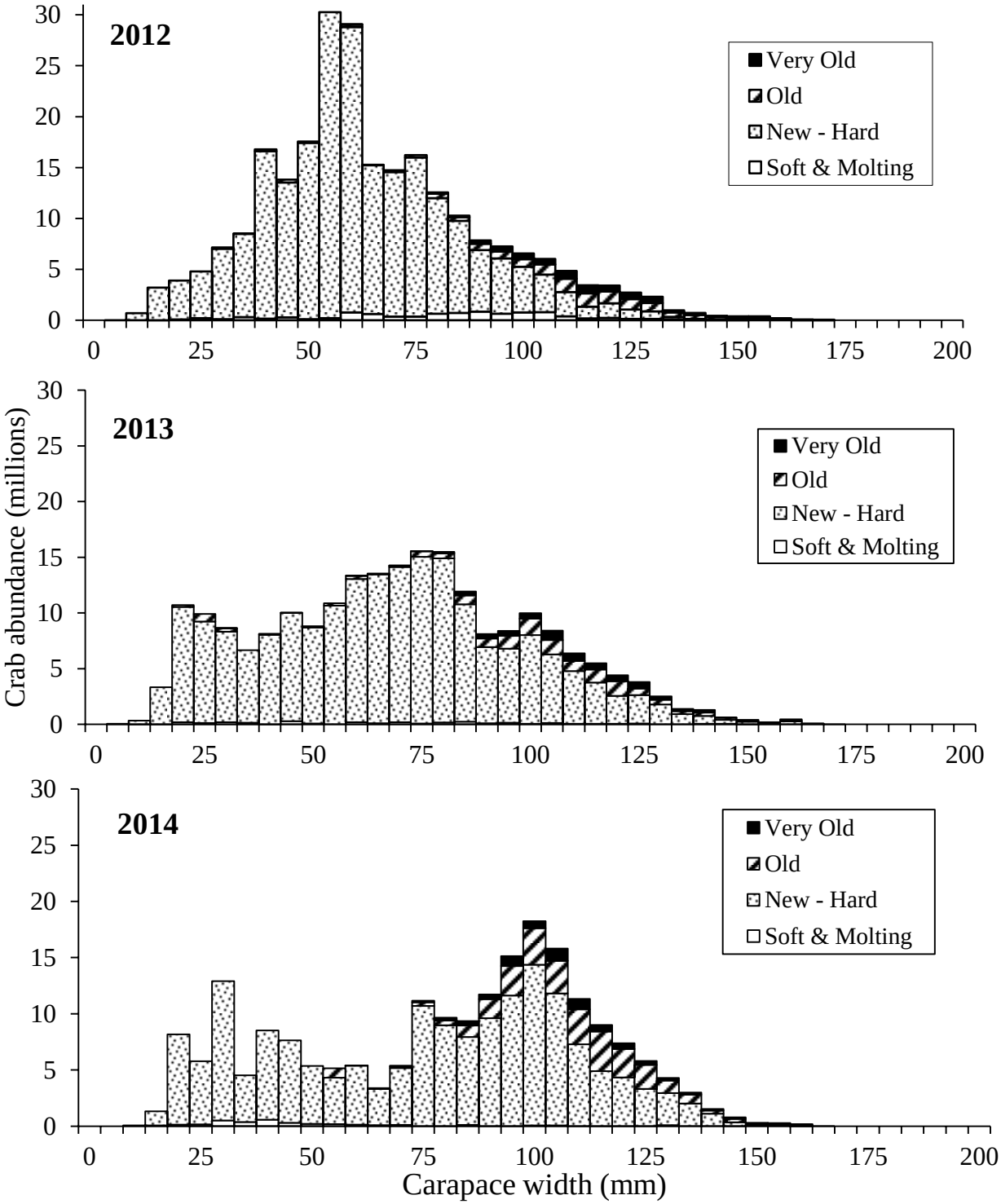


Figure 57. Size-frequency by shell condition of male Tanner crab (*Chionoecetes bairdi*) west of 166° by 5 mm width classes of all districts combined, 2012-2014.

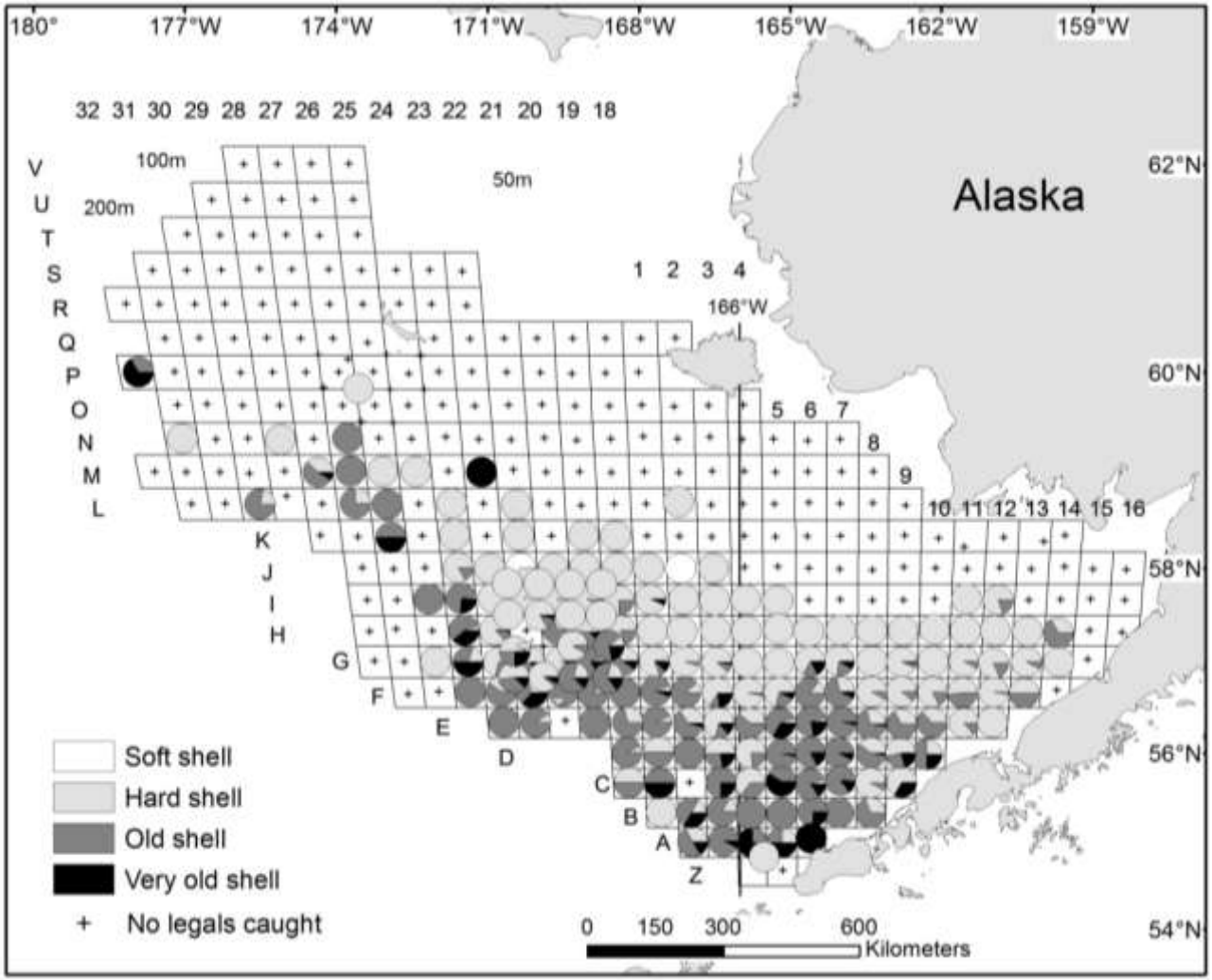


Figure 58. Distribution of legal-sized male Tanner crab (*Chionoecetes bairdi*) caught at each station in 2014 and distinguished by shell condition. Tanner male crab ≥ 120 mm and ≥ 110 mm CW are the legal-size categories for east and west of 166° W, respectively.

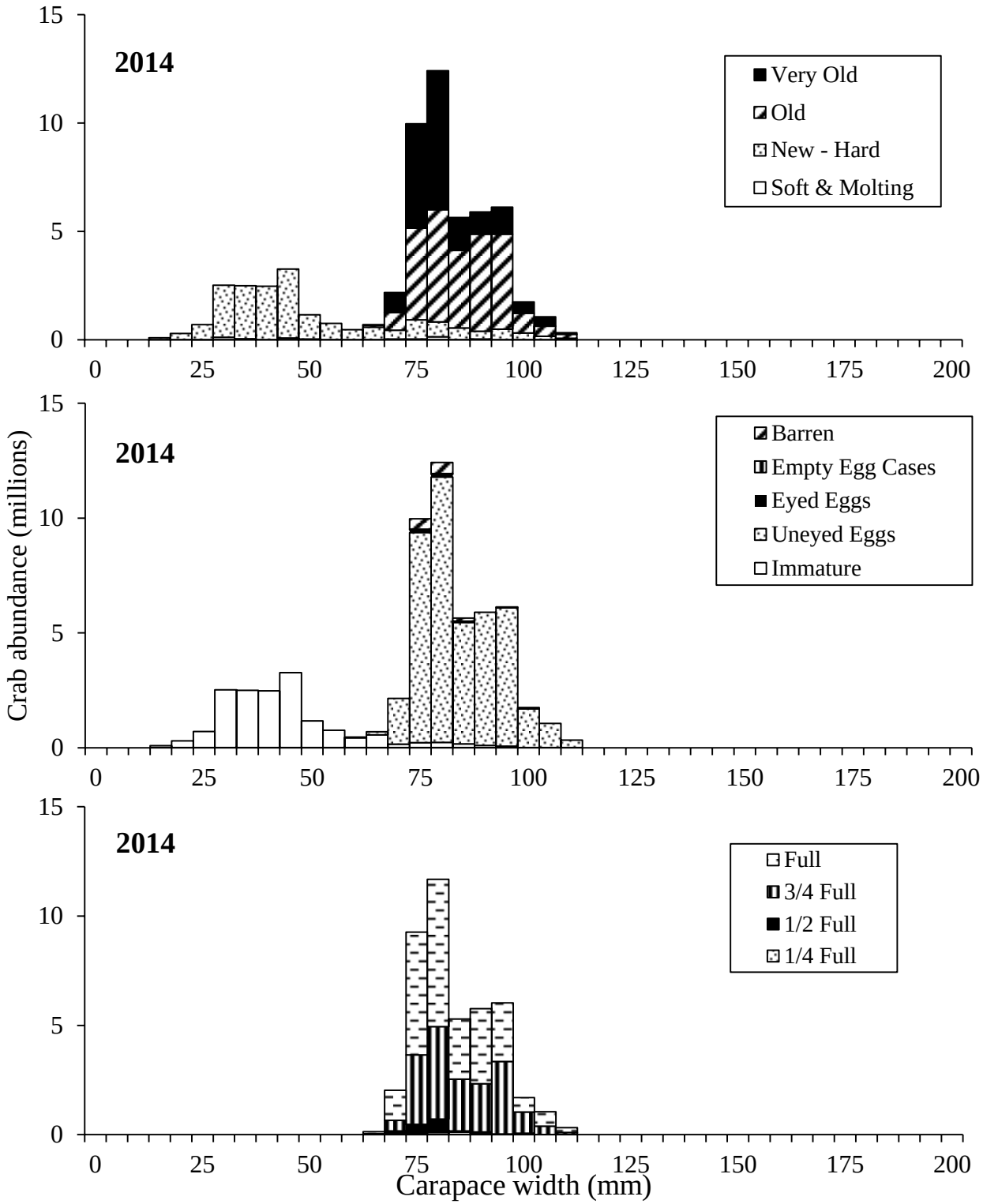


Figure 59. Size-frequency by shell condition, egg condition, and clutch fullness of female Tanner crab (*Chionoecetes bairdi*) east of 166° by 5 mm width classes of all districts combined in 2014.

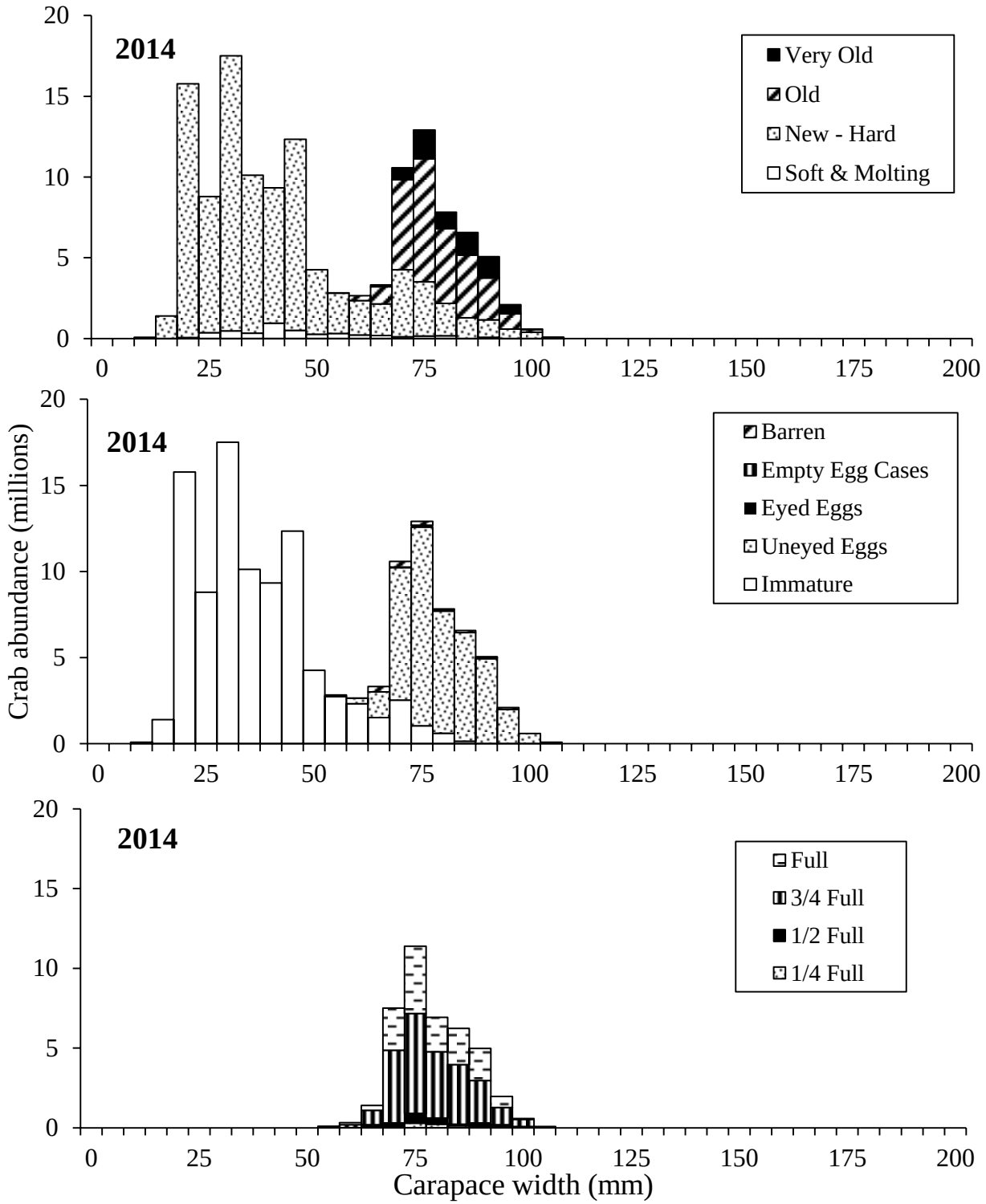


Figure 60. Size-frequency by shell condition, egg condition, and clutch fullness of female Tanner crab (*Chionoecetes bairdi*) west of 166° by 5 mm width classes of all districts combined in 2014.

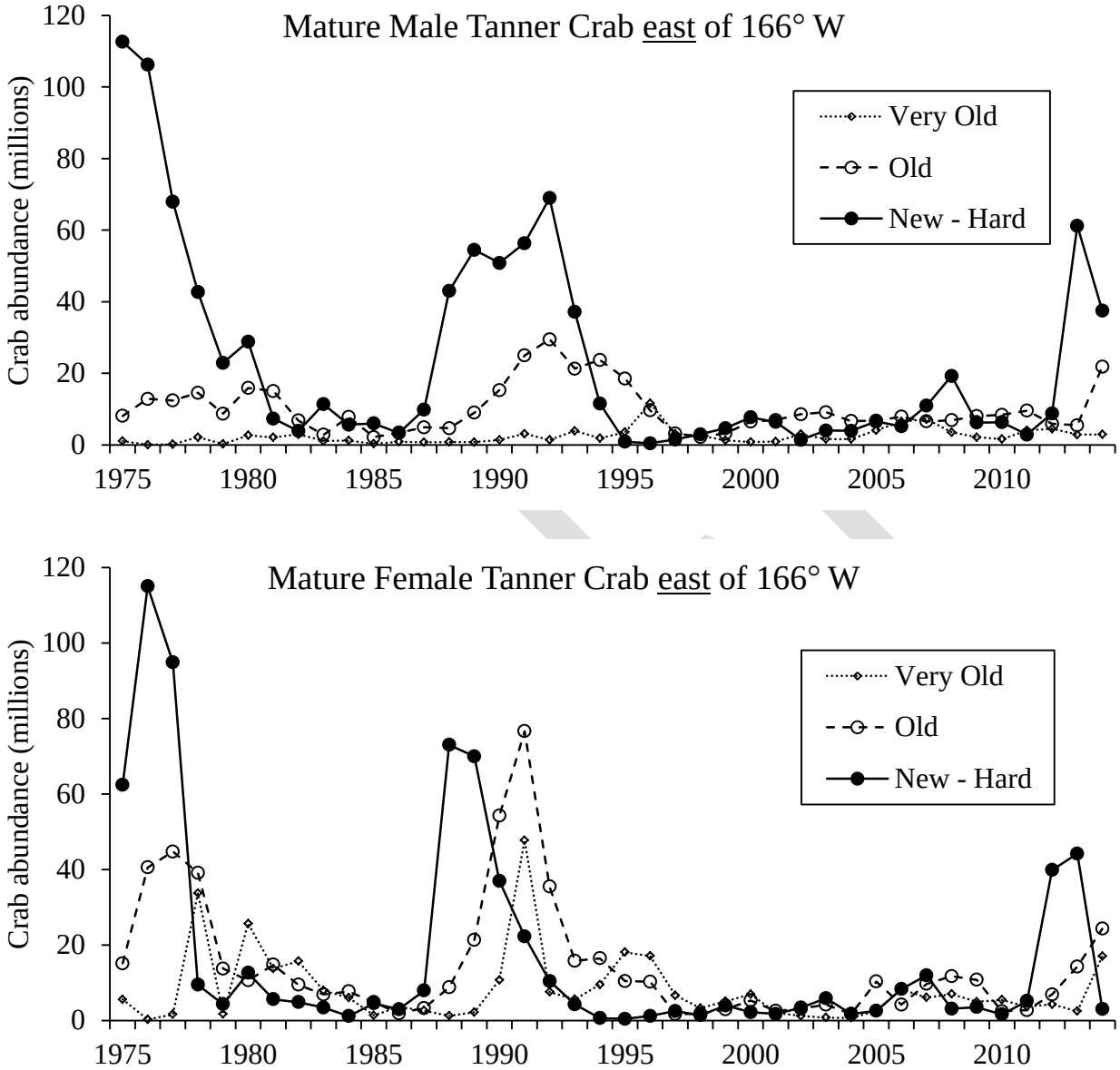


Figure 61. Time series of mature male (≥113 mm CW) and female (as verified by egg condition) Tanner crab (*Chionoecetes bairdi*) east of 166° by shell condition, 1975-2014. New-Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined.

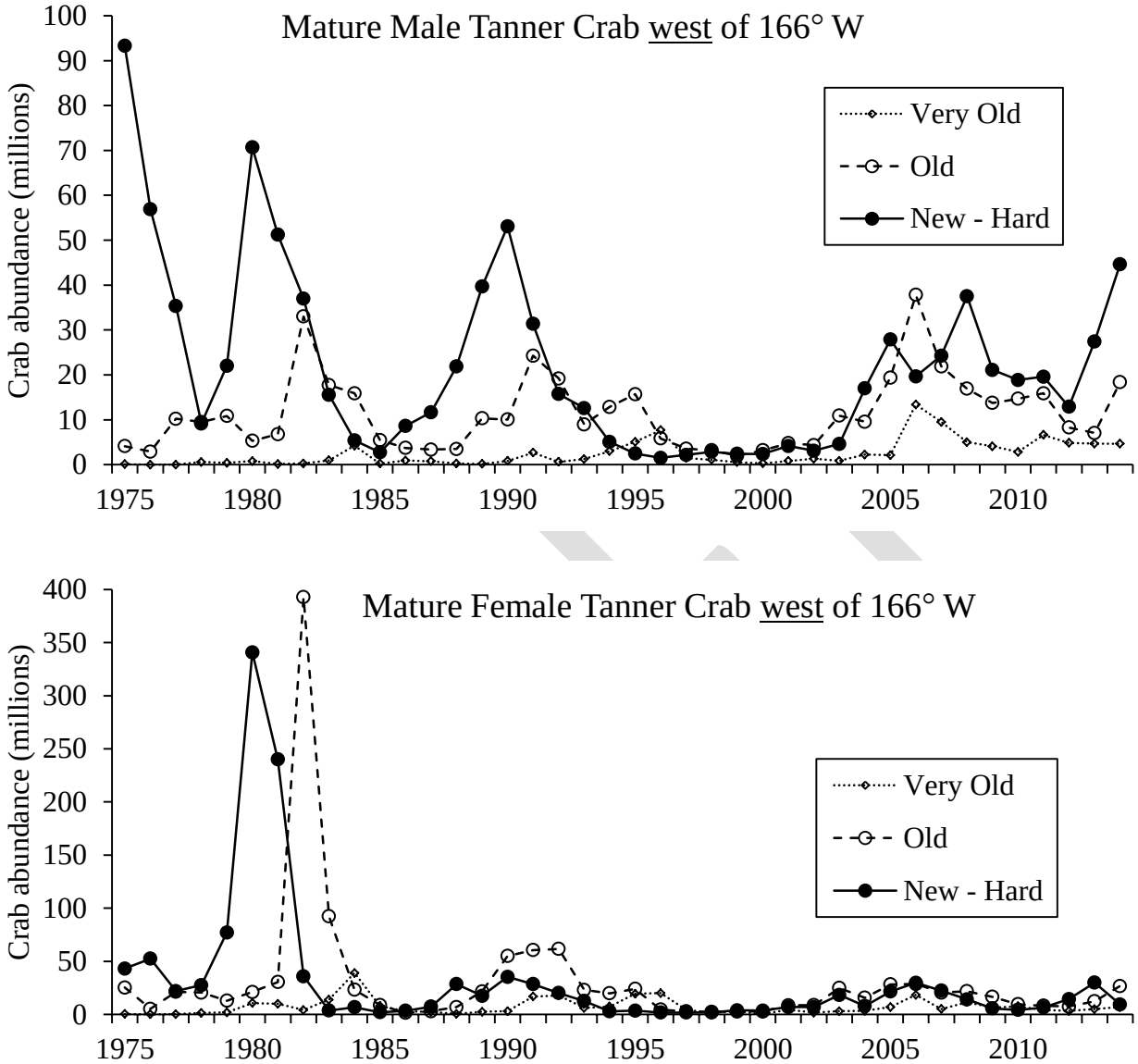


Figure 62. Time series of mature male (≥103 mm CW) and female (as verified by egg condition) Tanner crab (*Chionoecetes bairdi*) west of 166° by shell condition, 1975-2014. New-Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined.

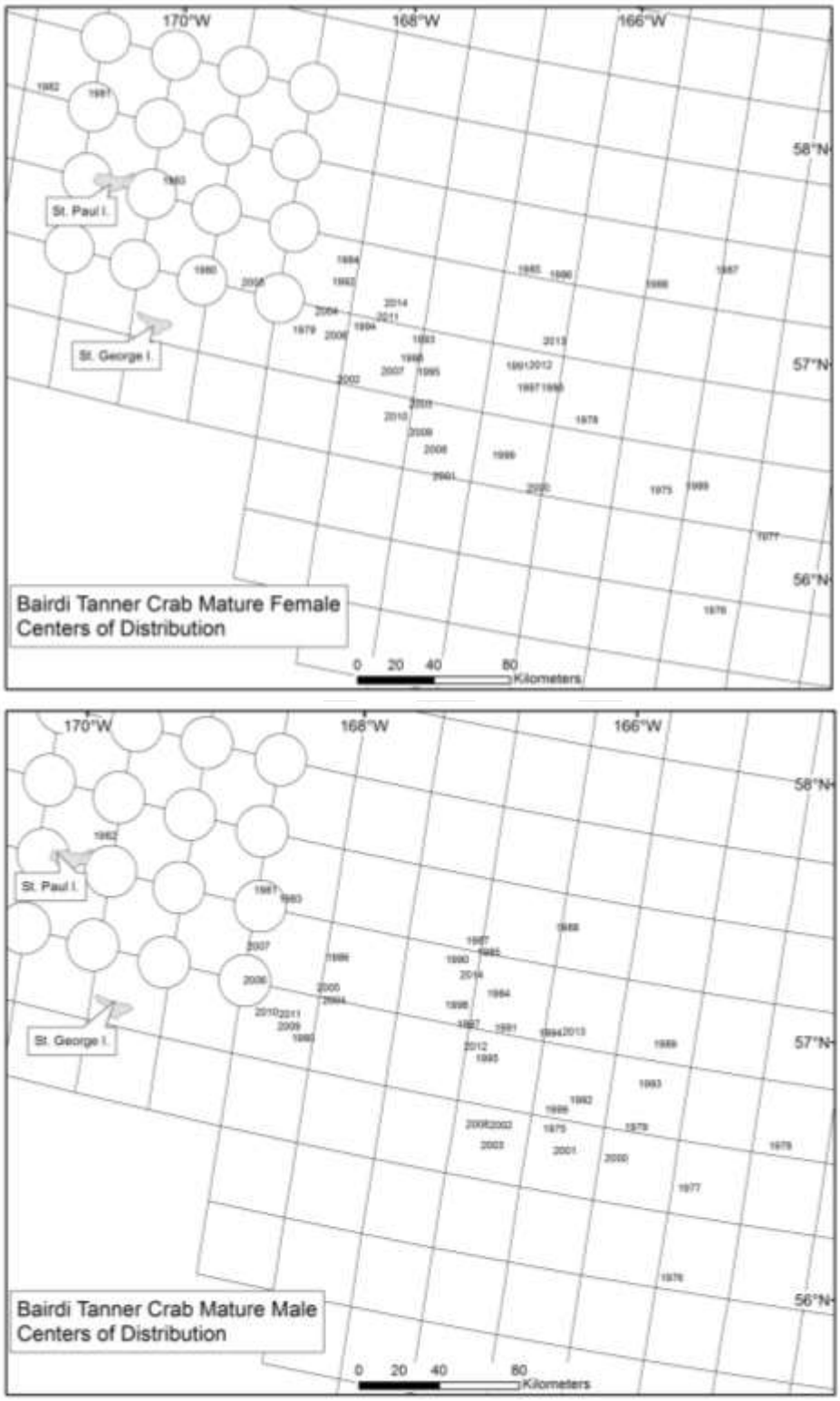


Figure 63. Centers of stock distribution of female and male Tanner crab (*Chionoecetes bairdi*) from 1975 to 2014.

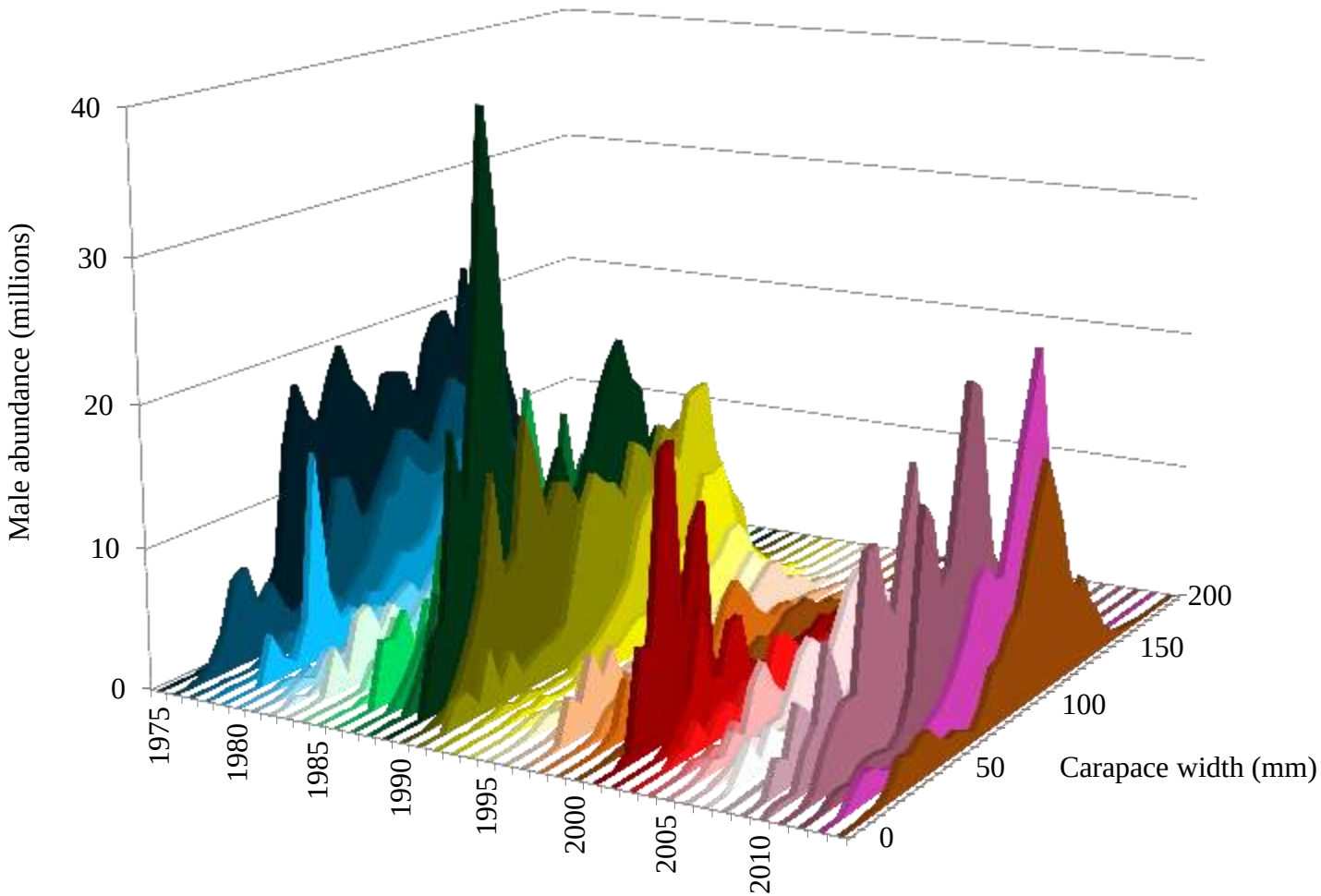


Figure 64. Historical size frequency by 5 mm length classes of male Tanner crab (*Chionoecetes bairdi*) east of 166°W, 1975 to 2014.

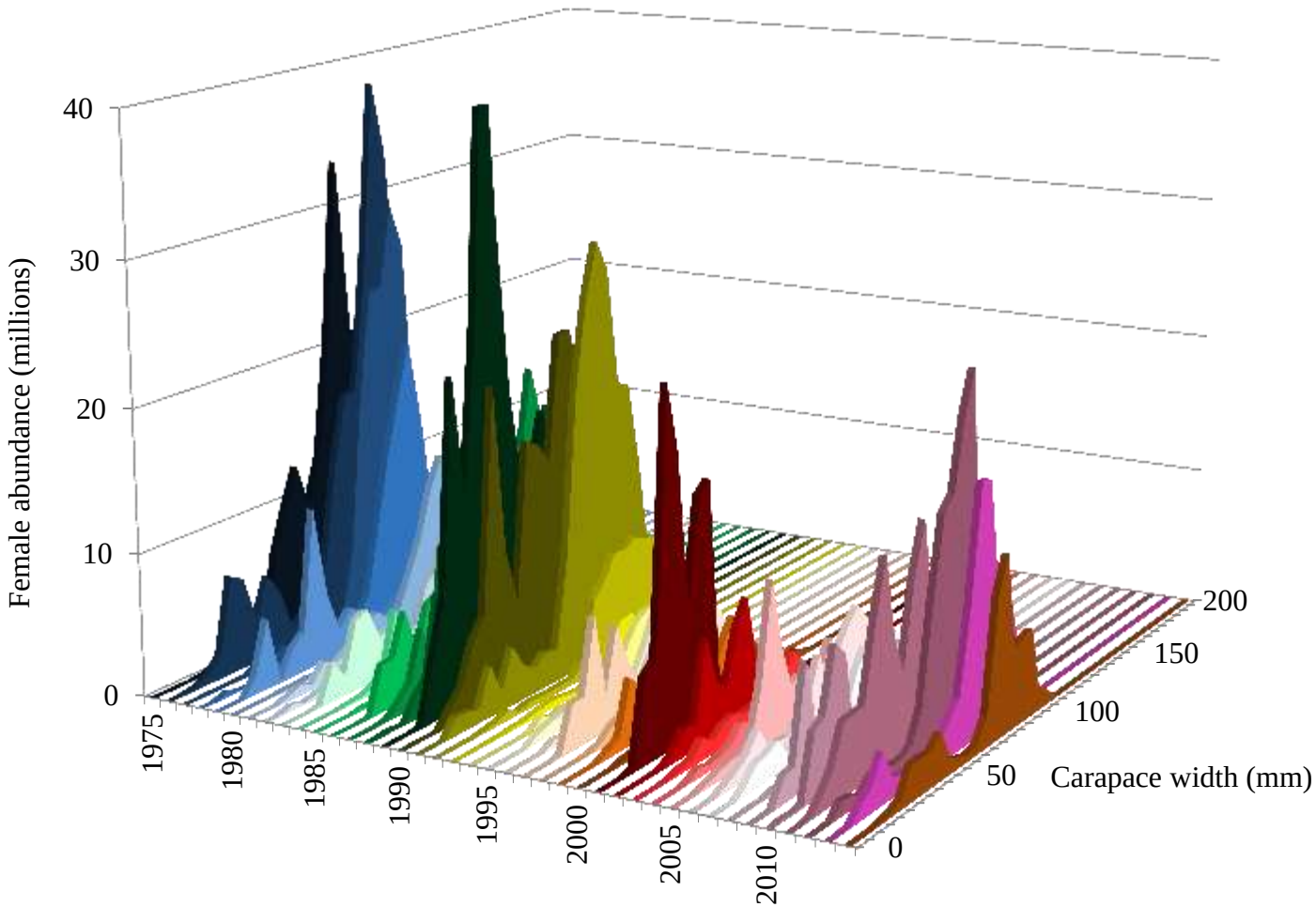


Figure 65. Historical size frequency by 5 mm length classes of female Tanner crab (*Chionoecetes bairdi*) east of 166°W, 1975 to 2014.

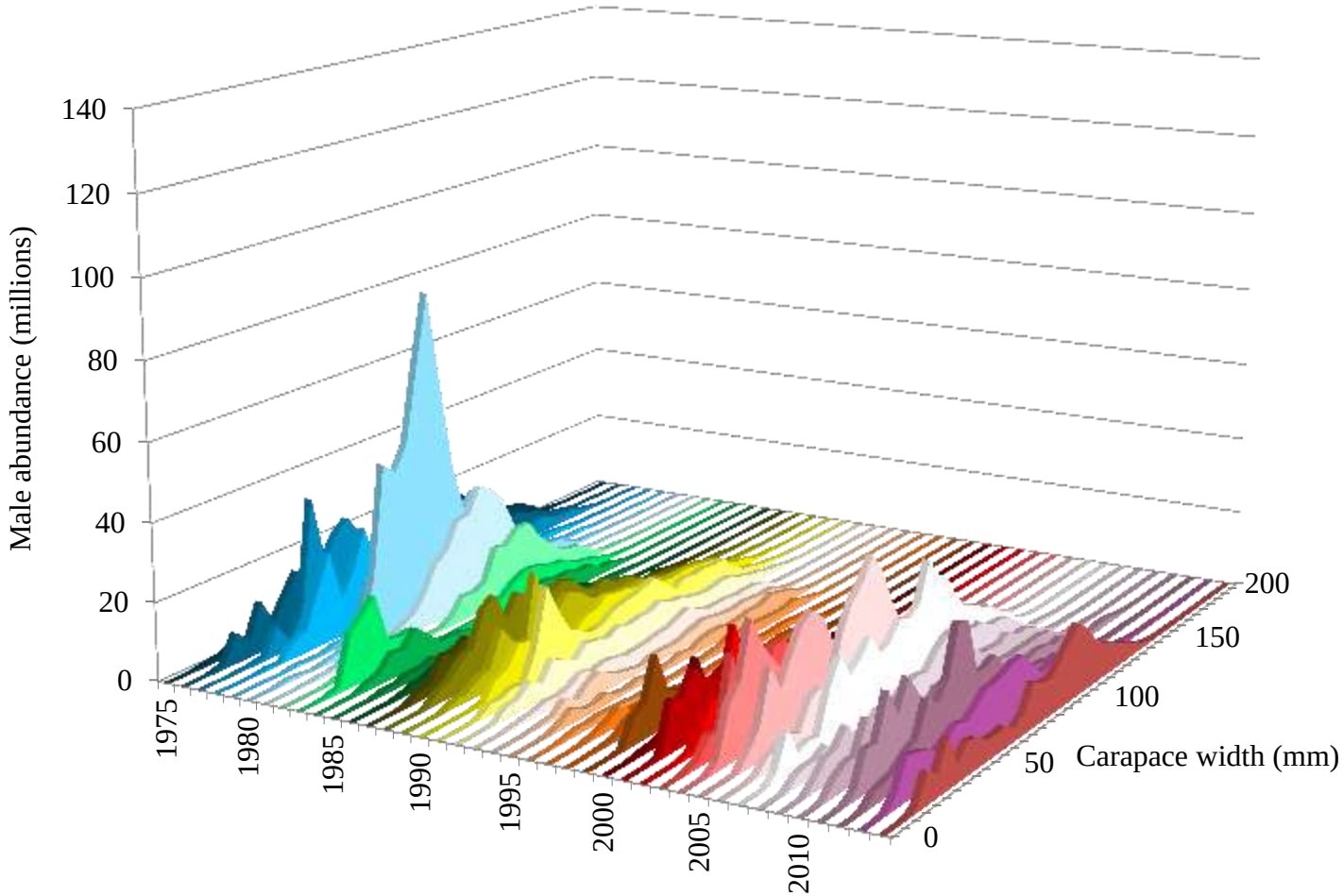


Figure 66. Historical size frequency by 5 mm length classes of male Tanner crab (*Chionoecetes bairdi*) west of 166°W, 1975 to 2014.

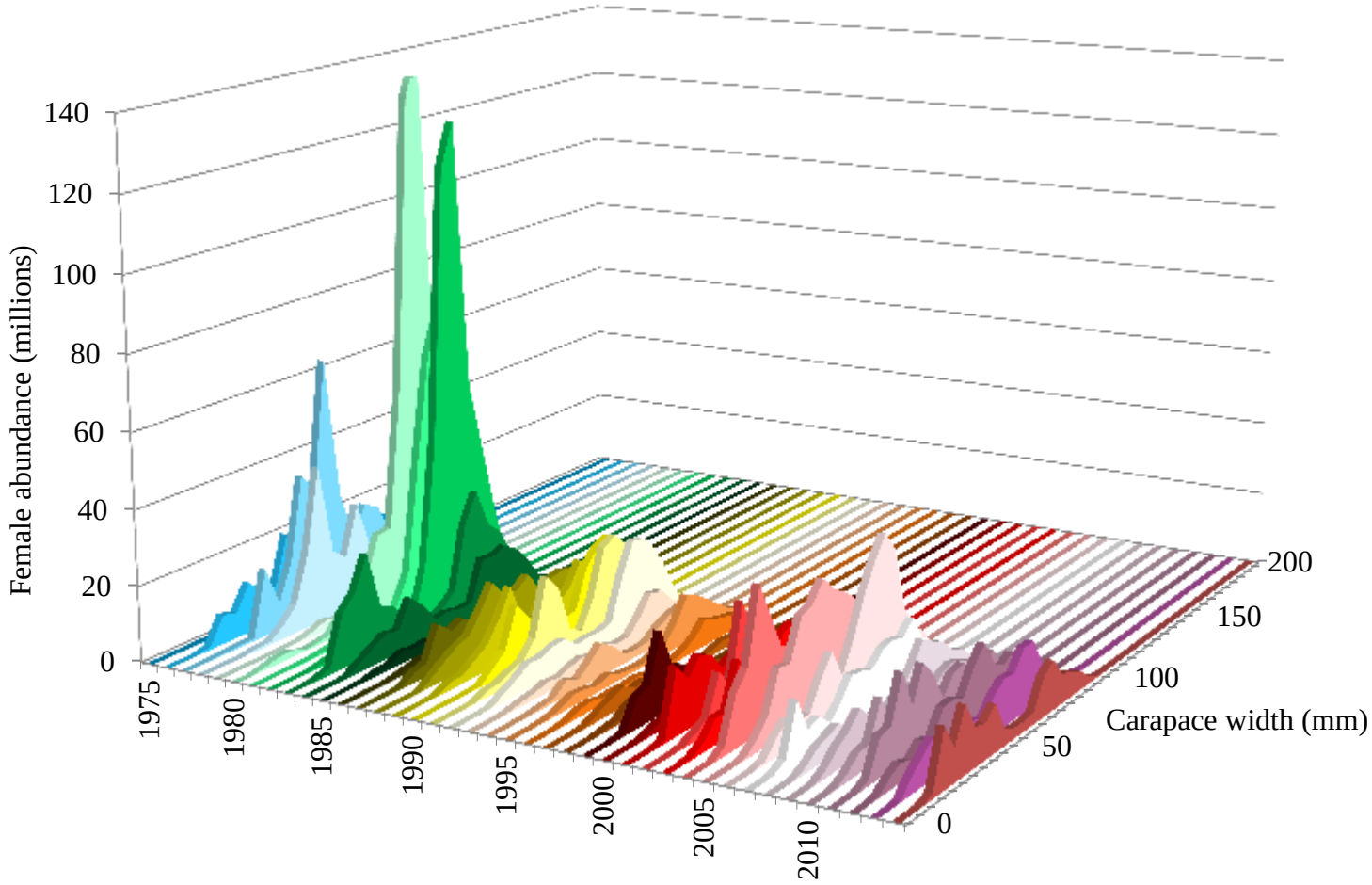


Figure 67. Historical size frequency by 5 mm length classes of female Tanner crab (*Chionoecetes bairdi*) west of 166°W, 1975 to 2014.

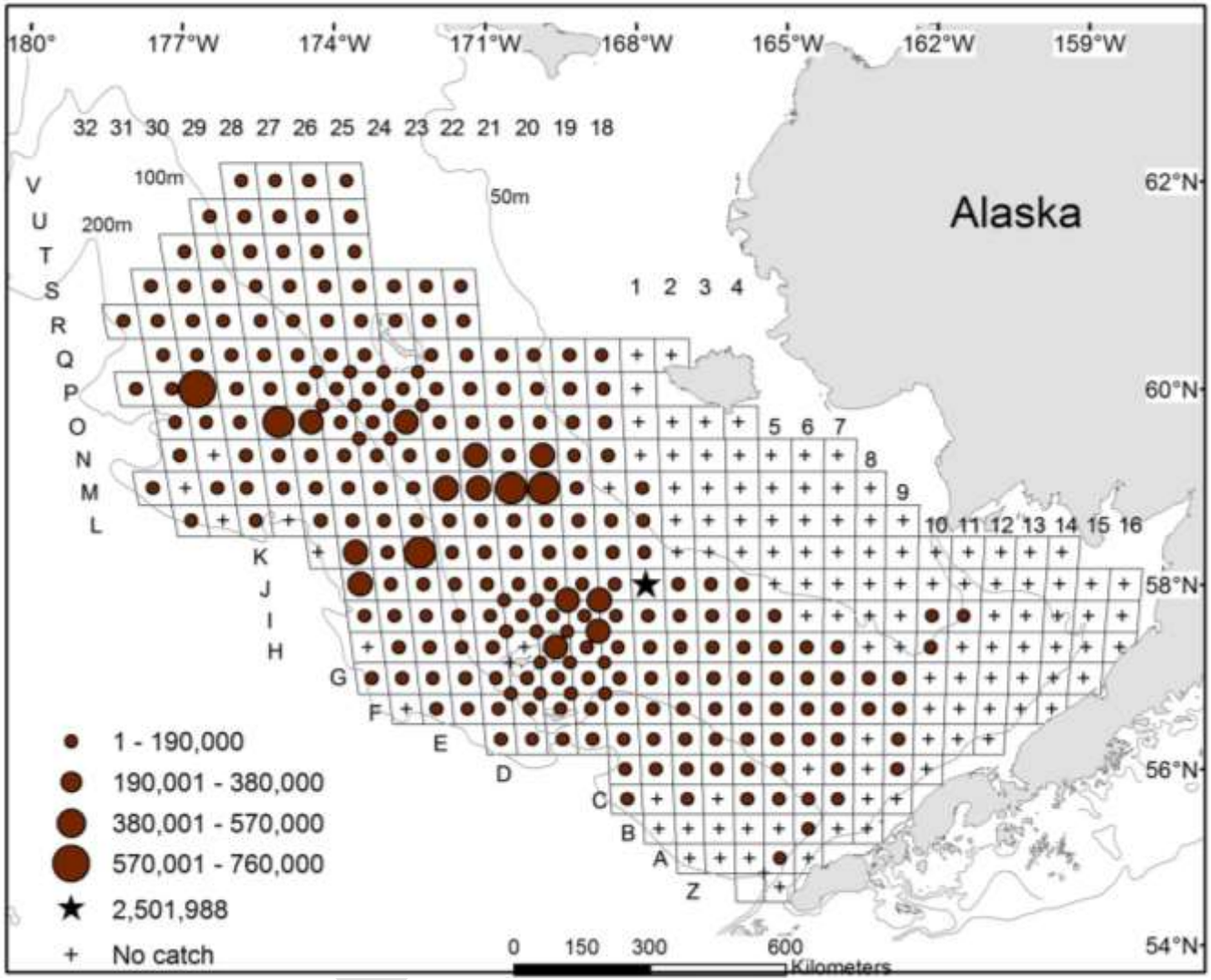


Figure 68. Total density (number nmi^{-2}) of snow crab (*Chionoecetes opilio*) at each station sampled in 2014. Data depicted by circles are crab densities at equal intervals.

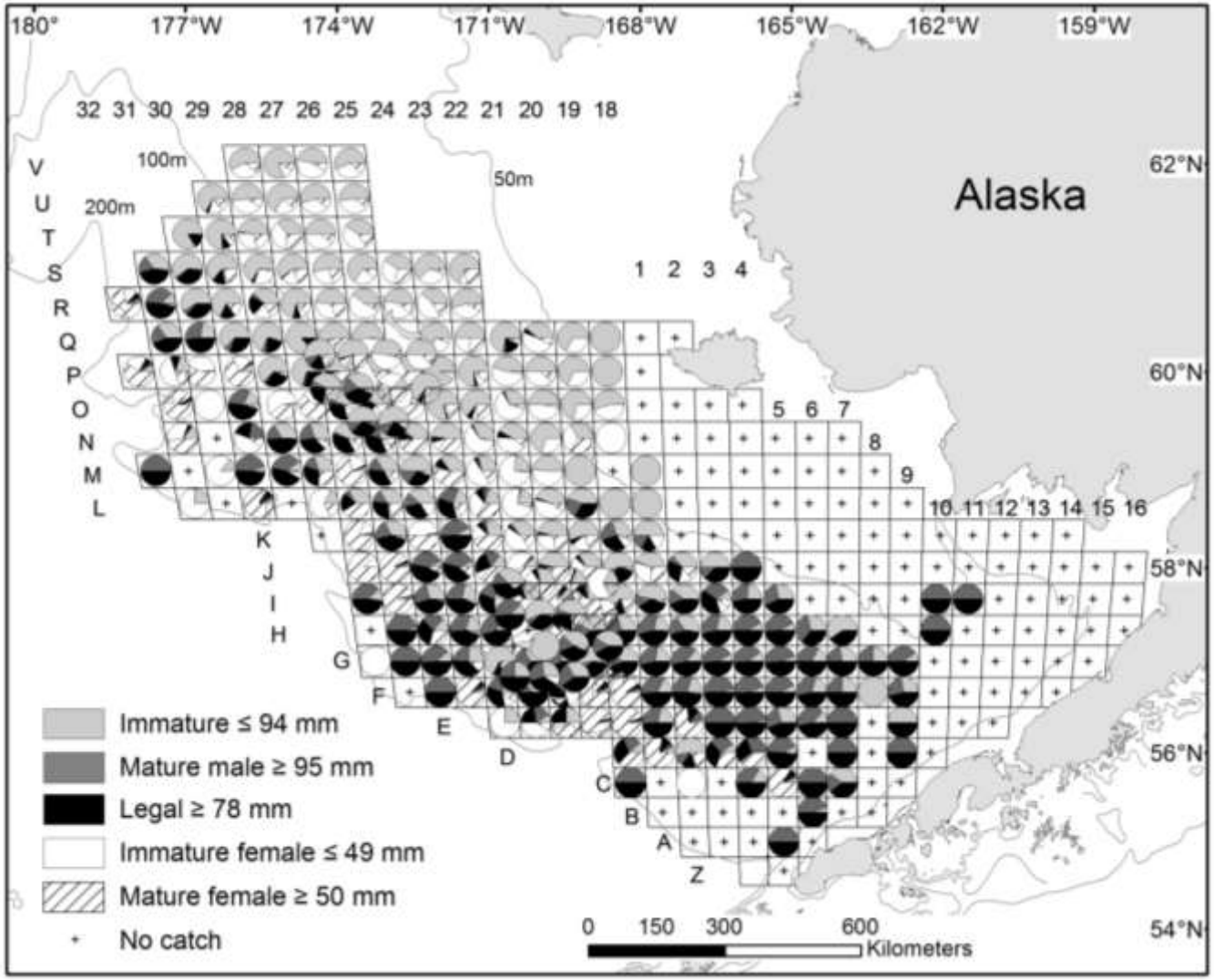


Figure 69. Percentage of male and female snow crab (*Chionoecetes opilio*) size categories at each station sampled in 2014.

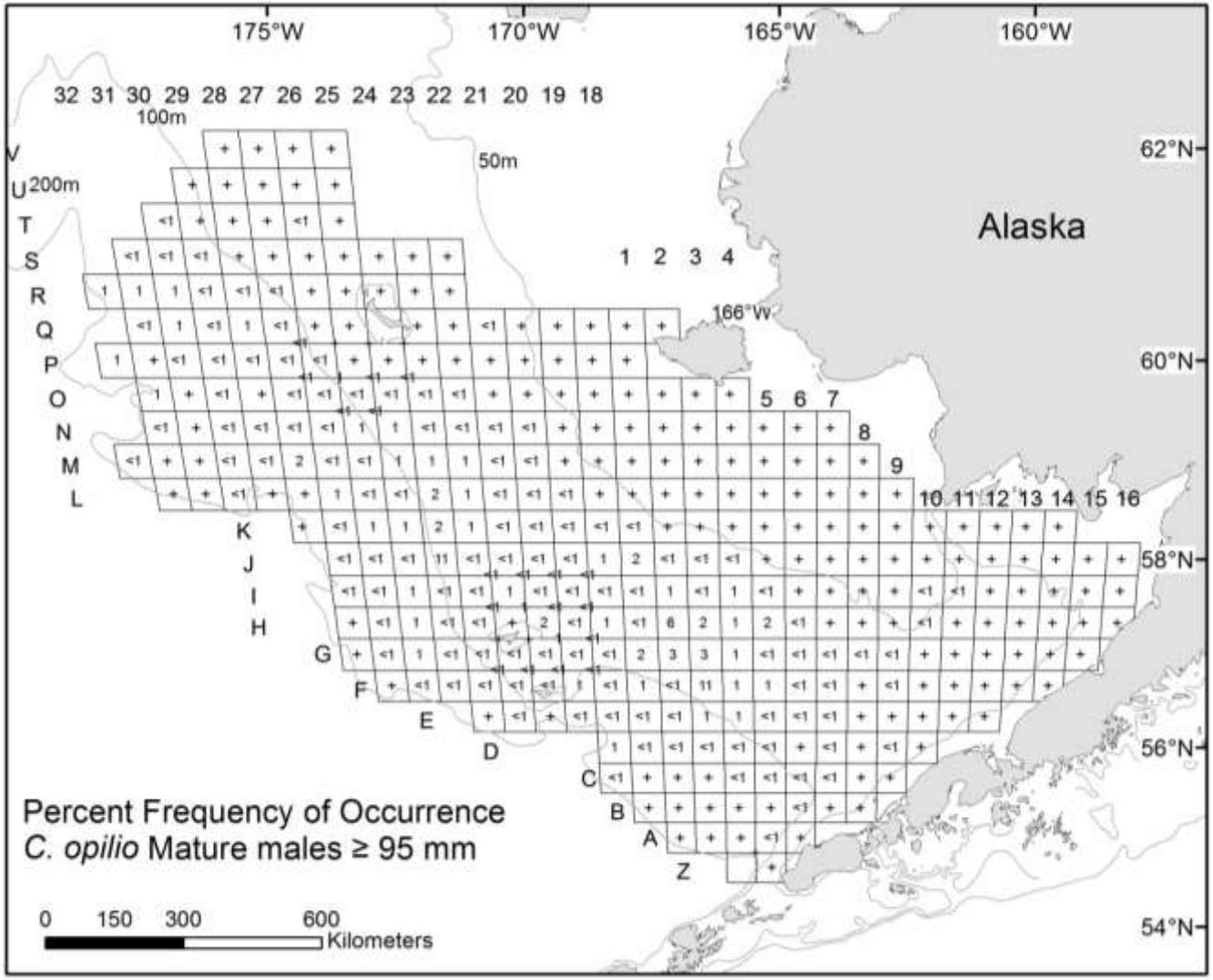


Figure 70. Percent frequency of occurrence of mature male snow crab (*Chionoecetes opilio*) at stations sampled in the 2014.

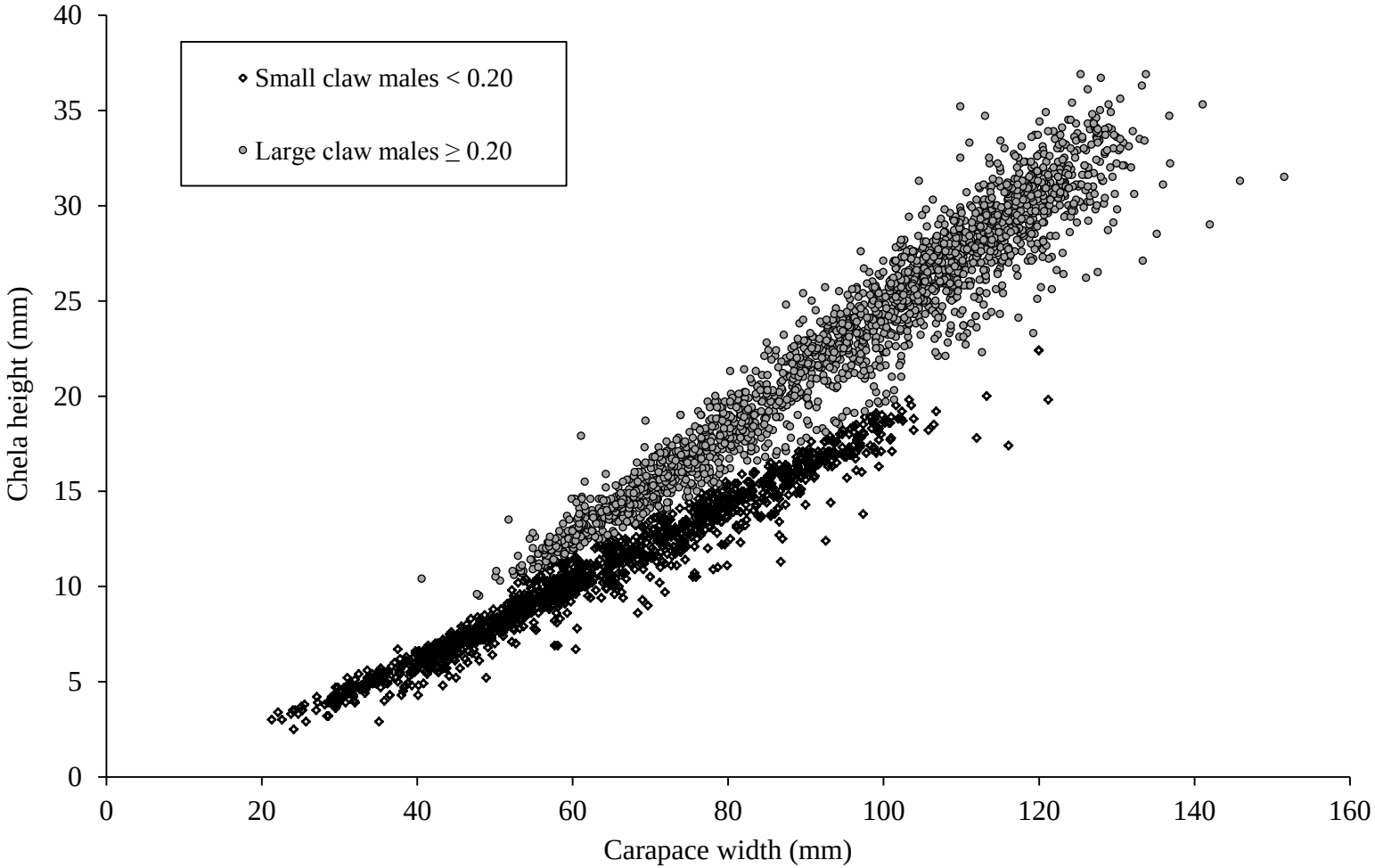


Figure 71. Male snow crab (*Chionoecetes opilio*) chela height versus carapace width measurements collected during the 2009, 2011, and 2013 (all years combined, n=3,598) National Marine Fisheries Service eastern Bering Sea bottom trawl surveys.

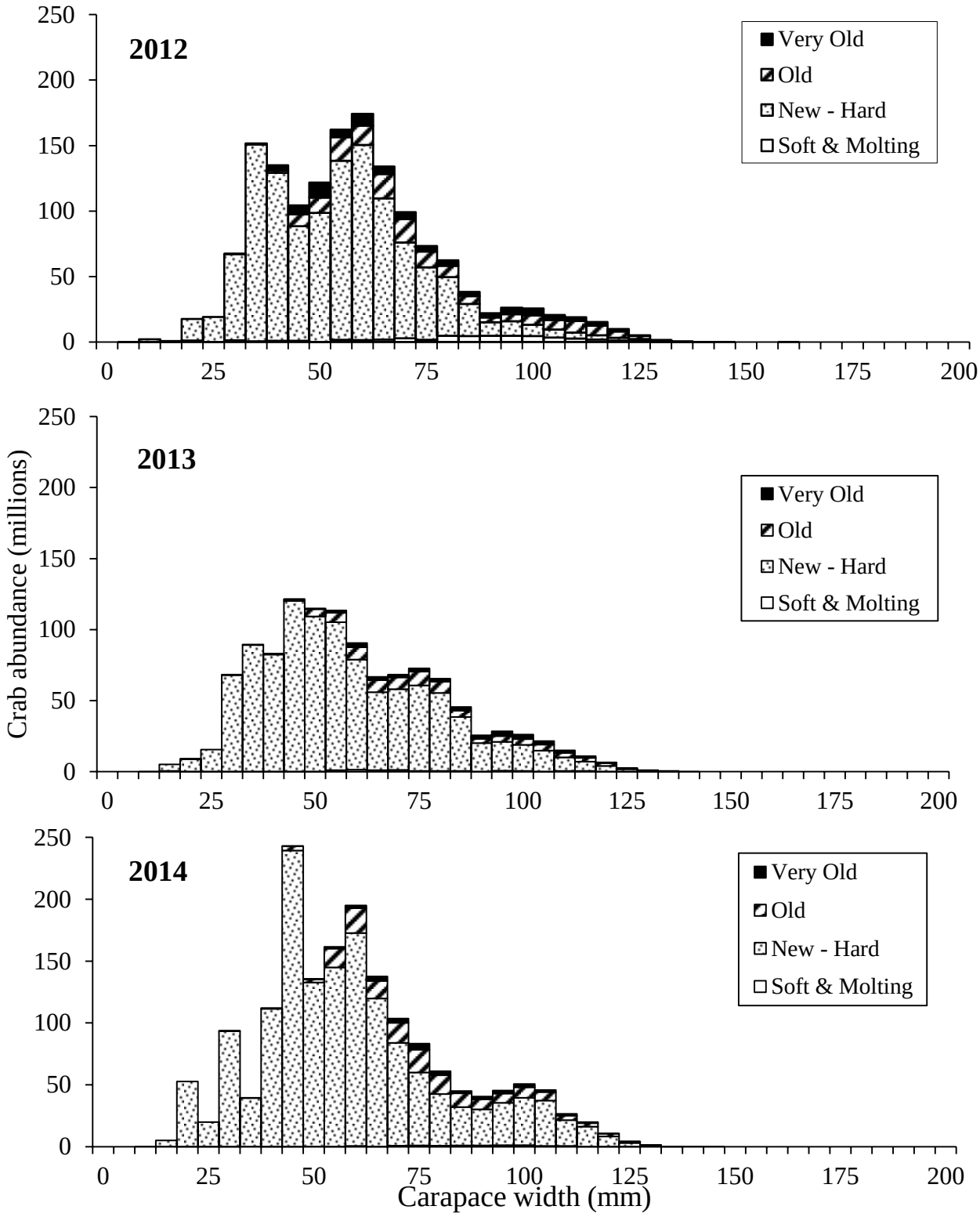


Figure 72. Size-frequency by shell condition of male snow crab (*Chionoecetes opilio*) by 5 mm width classes of all districts combined, 2012-2014.

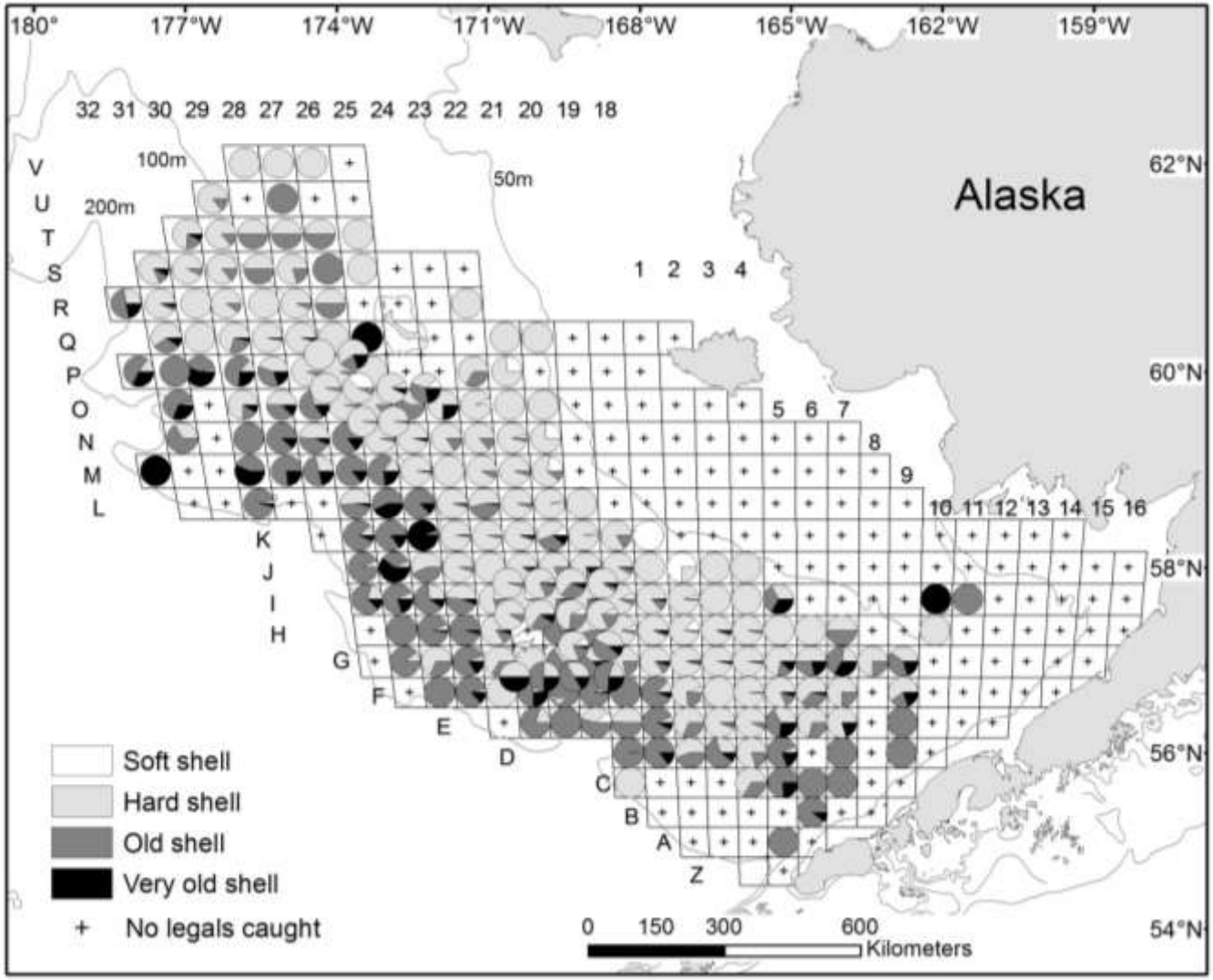


Figure 73. Distribution of legal-sized male snow crab (*Chionoecetes opilio*) caught at each station in 2014 and distinguished by shell condition.

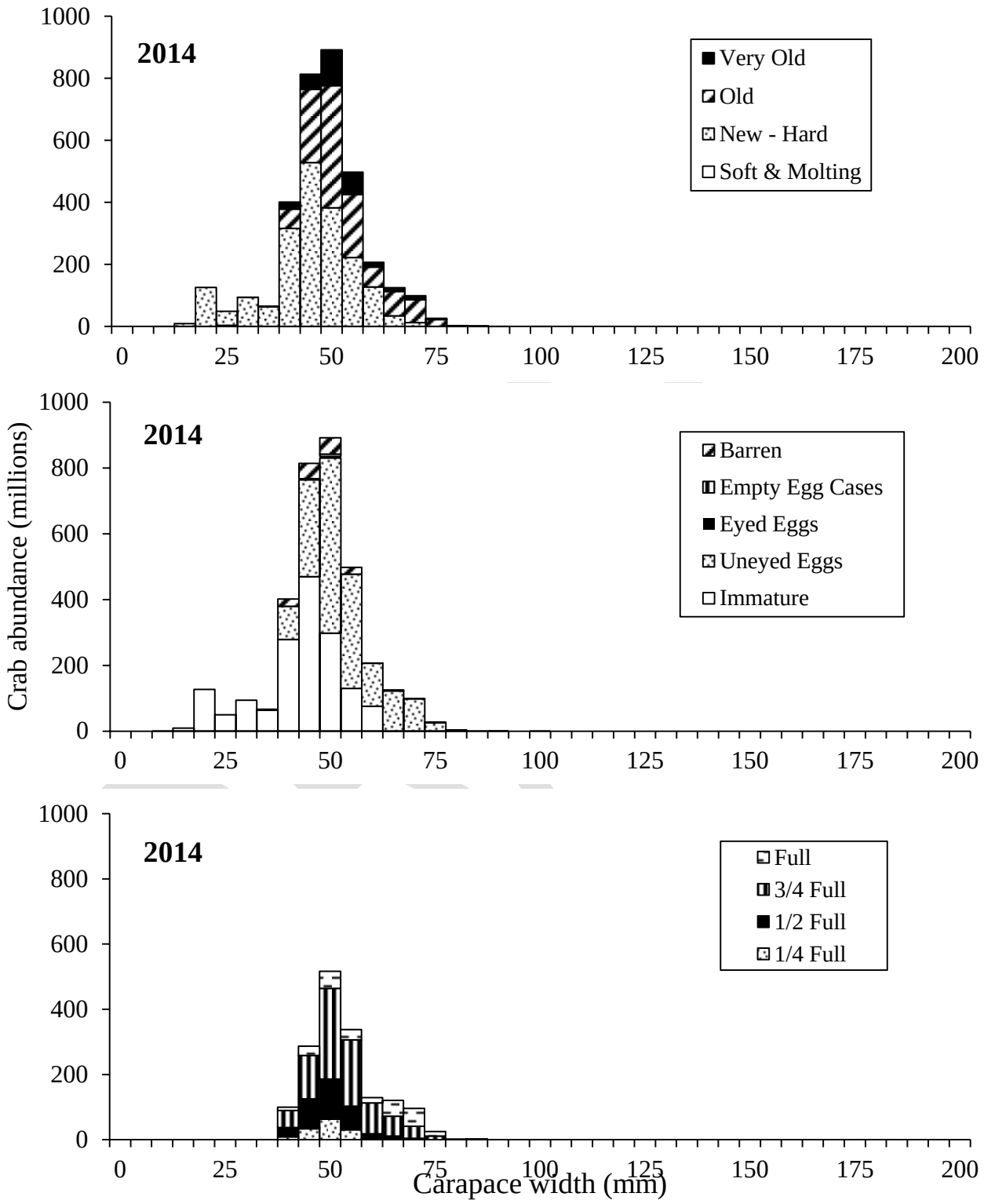


Figure 74. Size-frequency by shell condition, egg condition, and clutch fullness of female snow crab (*Chionoecetes opilio*) by 5 mm width classes of all districts combined in 2014.

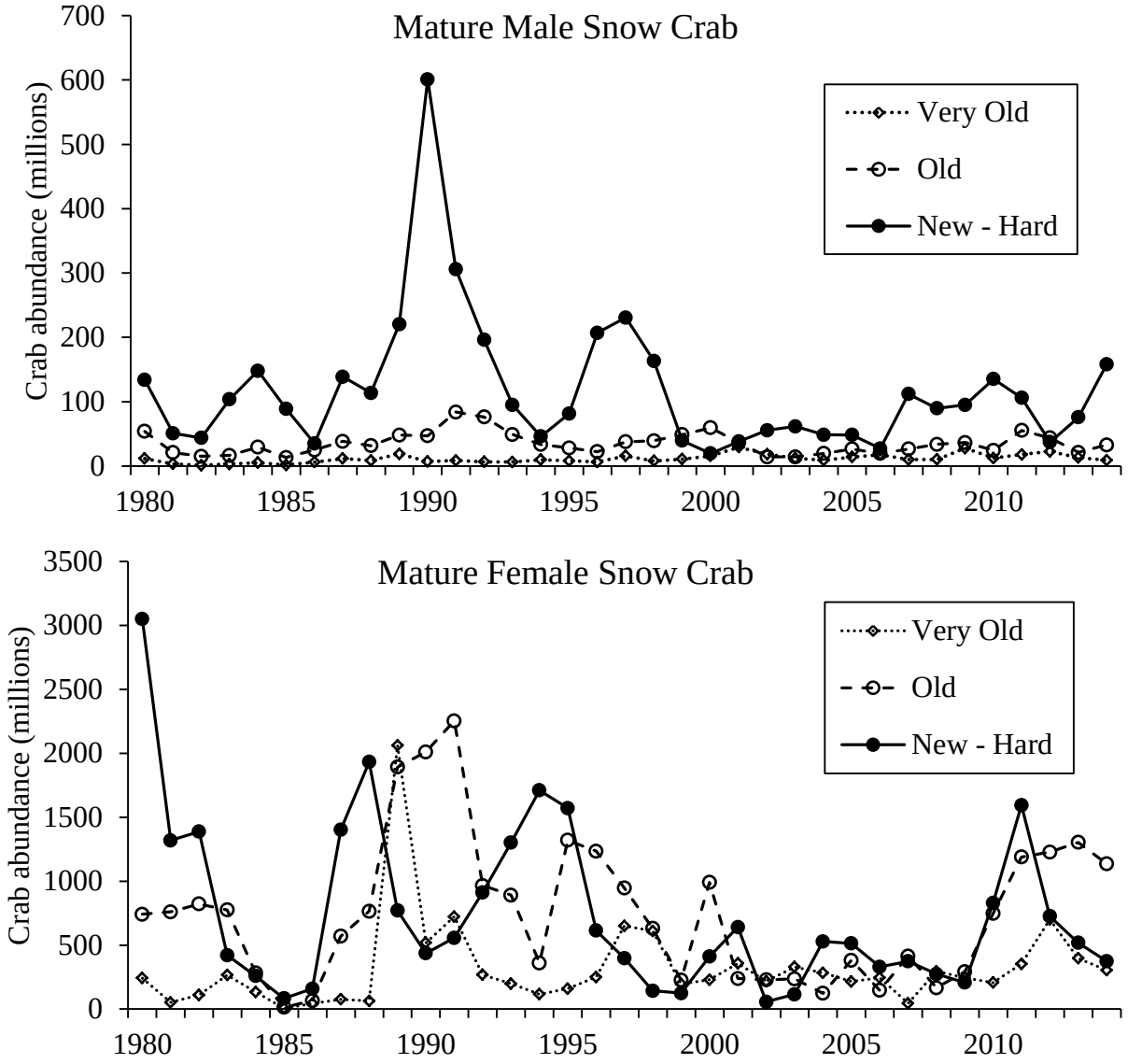


Figure 75. Time series of mature male (≥95 mm CW) and female (as verified by egg condition) snow crab (*Chionoecetes opilio*) by shell condition, 1980-2014. New- Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined.

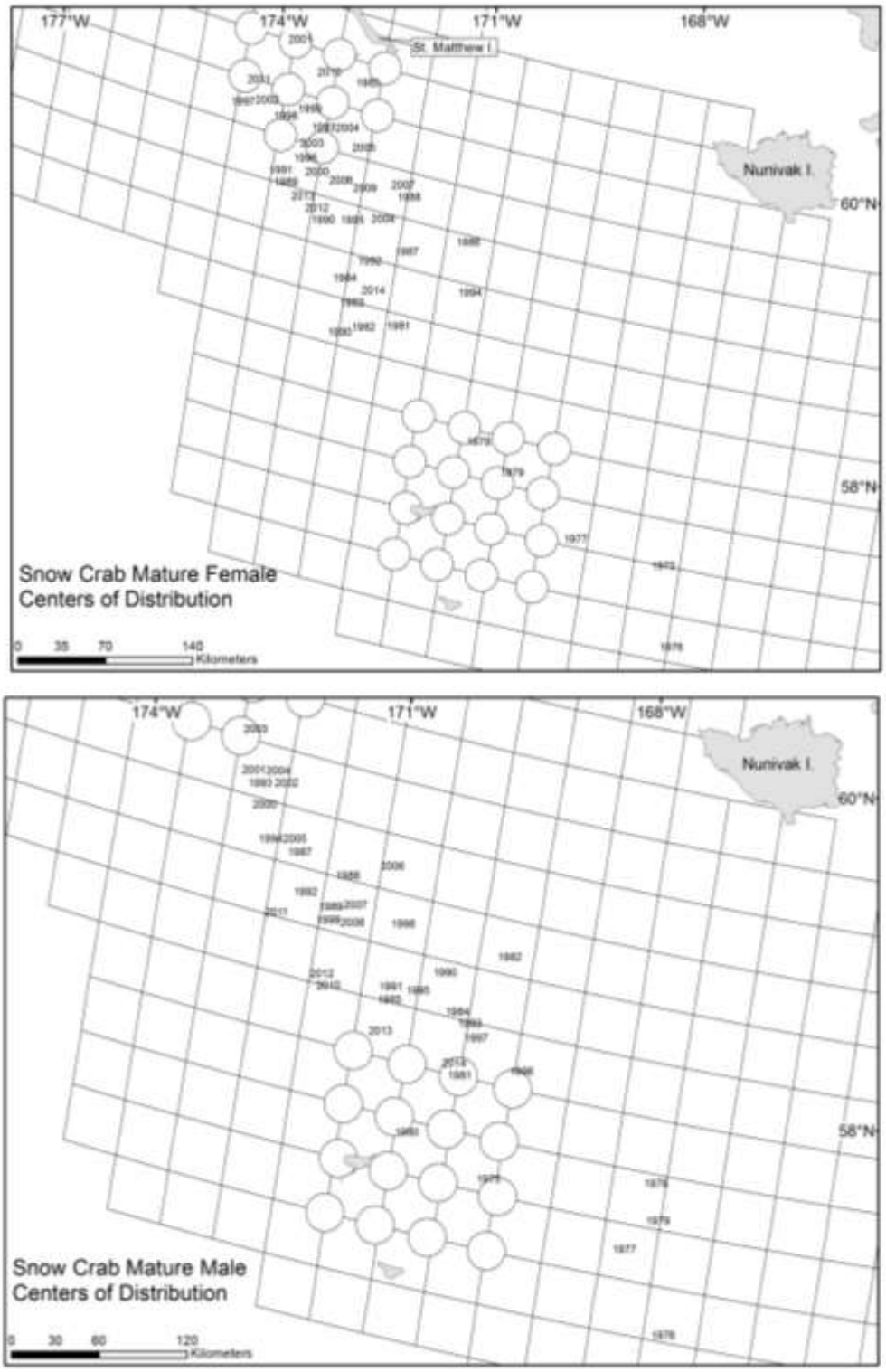


Figure 76. Centers of stock distribution of female and male snow crab (*Chionoecetes opilio*) from 1975 to 2014.

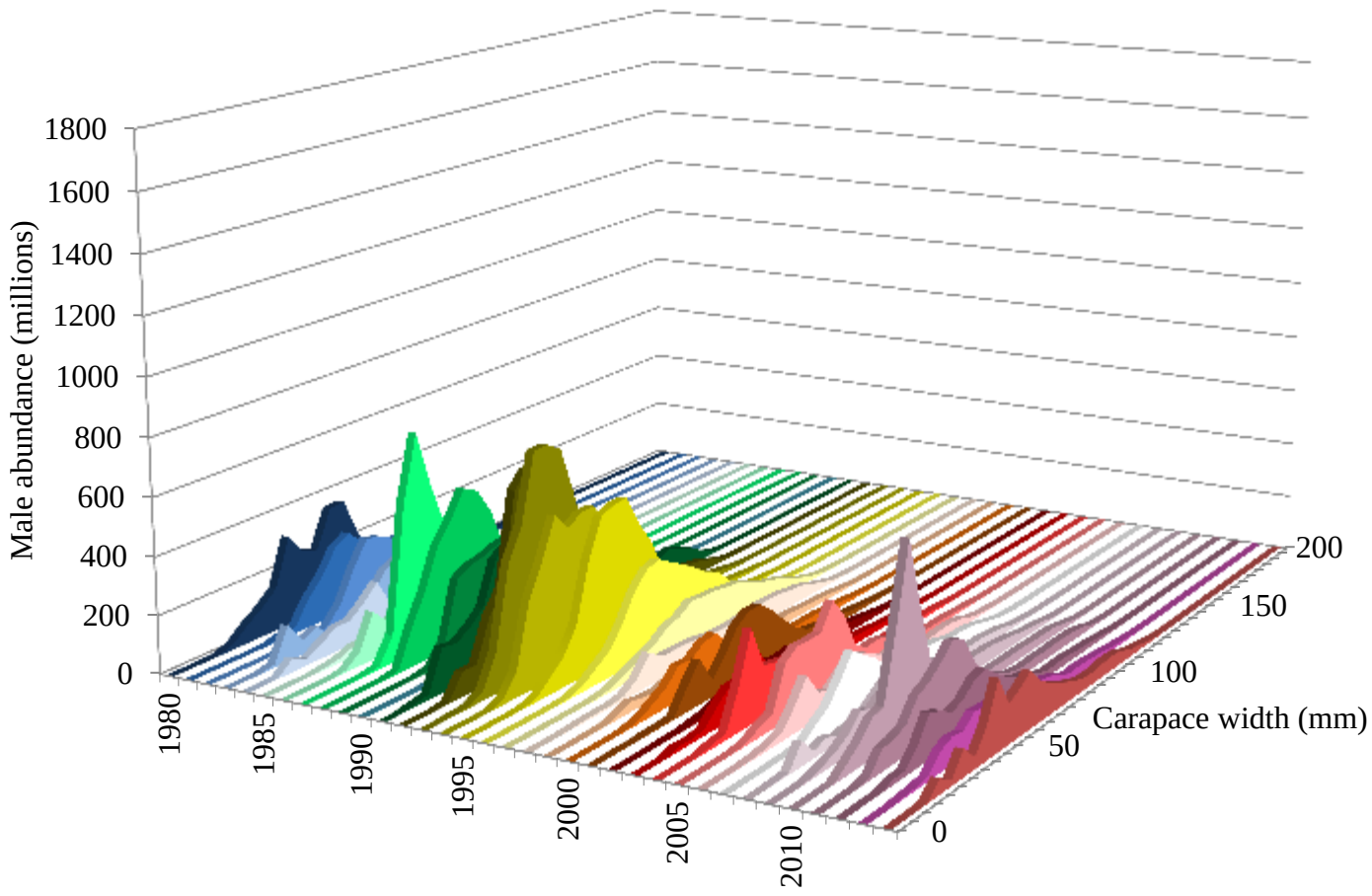


Figure 77. Historical size frequency by 5 mm length classes of male snow crab (*Chionoecetes opilio*), 1980 to 2014.

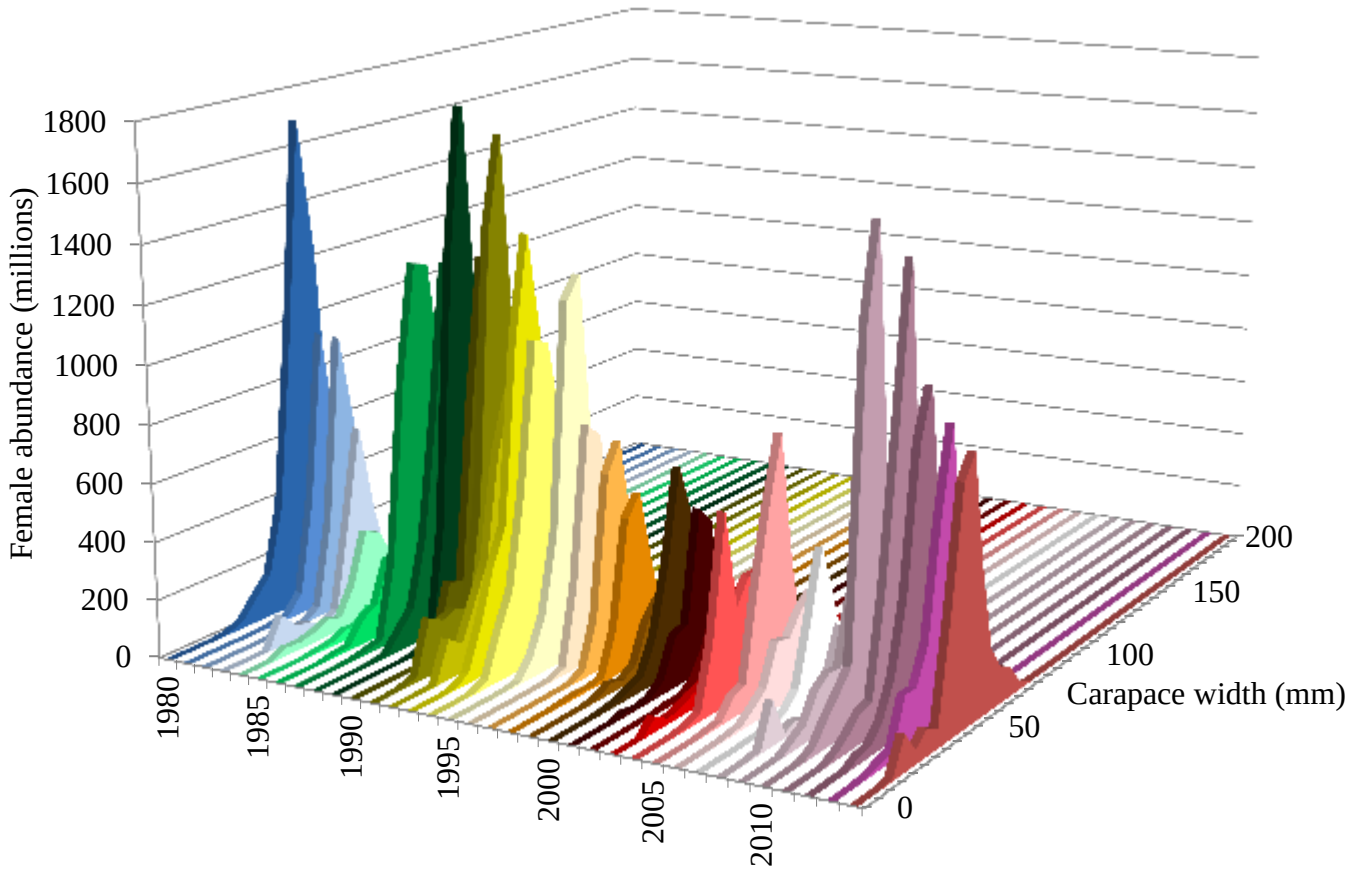


Figure 78. Historical size frequency by 5 mm length classes of female snow crab (*Chionoecetes opilio*), 1980 to 2014.

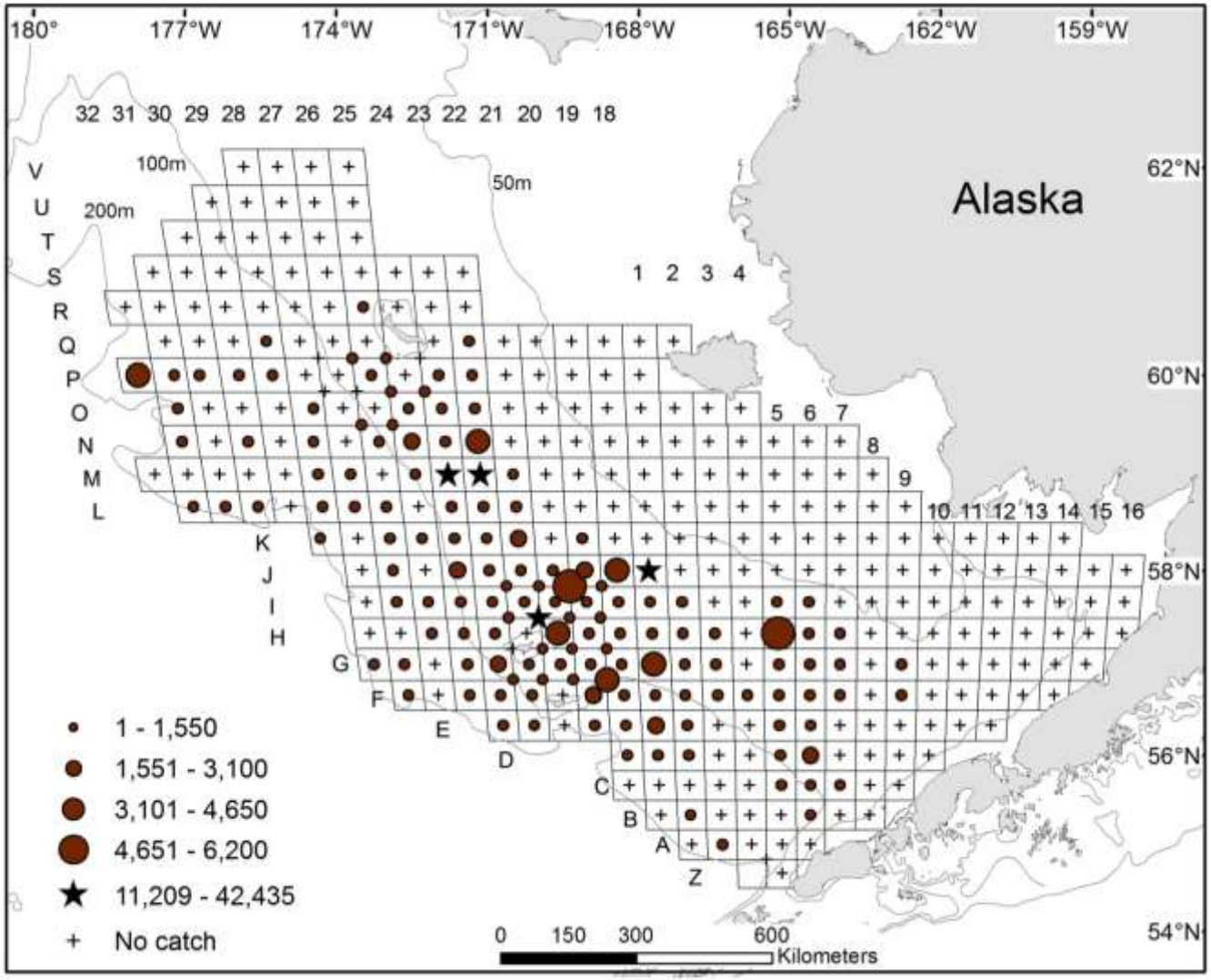


Figure 79. Total density (number nmi^{-2}) of *Chionoecetes* spp. hybrid crab at each station sampled in 2014. Data depicted by circles are crab densities at equal intervals, while stars are densities larger than the standard scale.

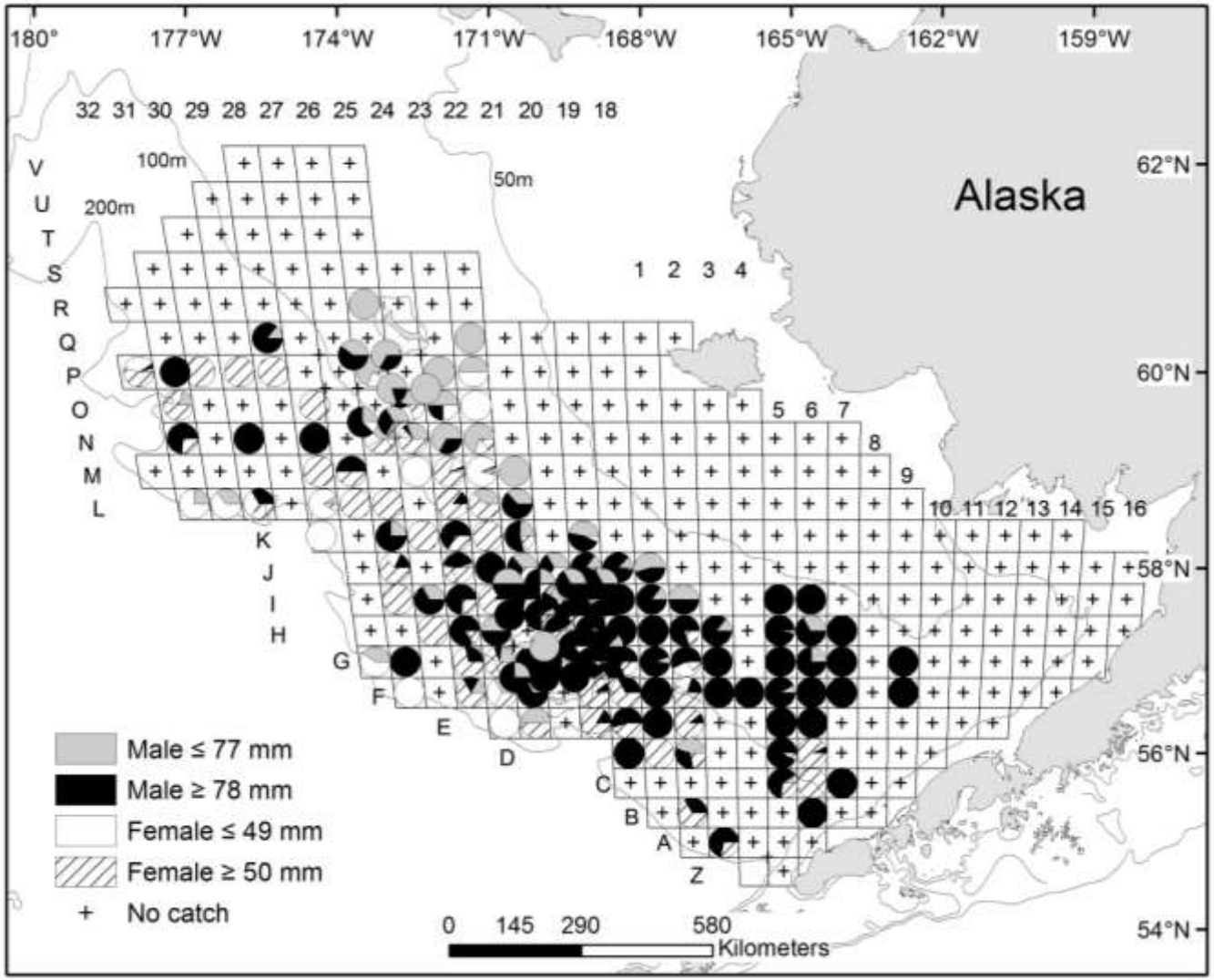


Figure 80. Percentage of male and female *Chionoecetes* spp. hybrid crab size categories at each station sampled in 2014.

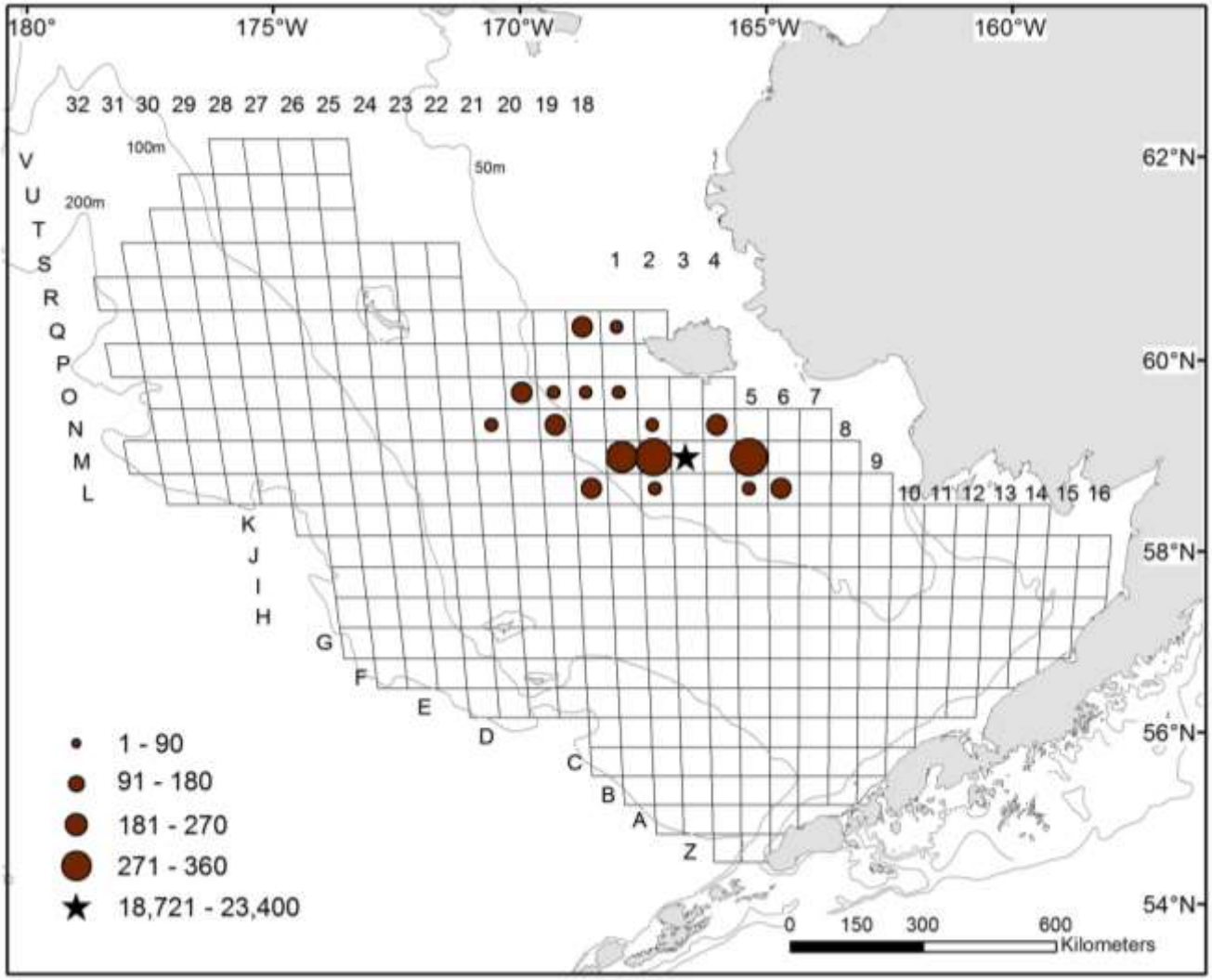


Figure 81. Total density (number nmi^{-2}) of male and female red king crab (*Paralithodes camtschaticus*) at each station sampled in the Northern District in 2014. Data depicted by circles are crab densities at equal intervals, while stars are densities larger than the standard scale.

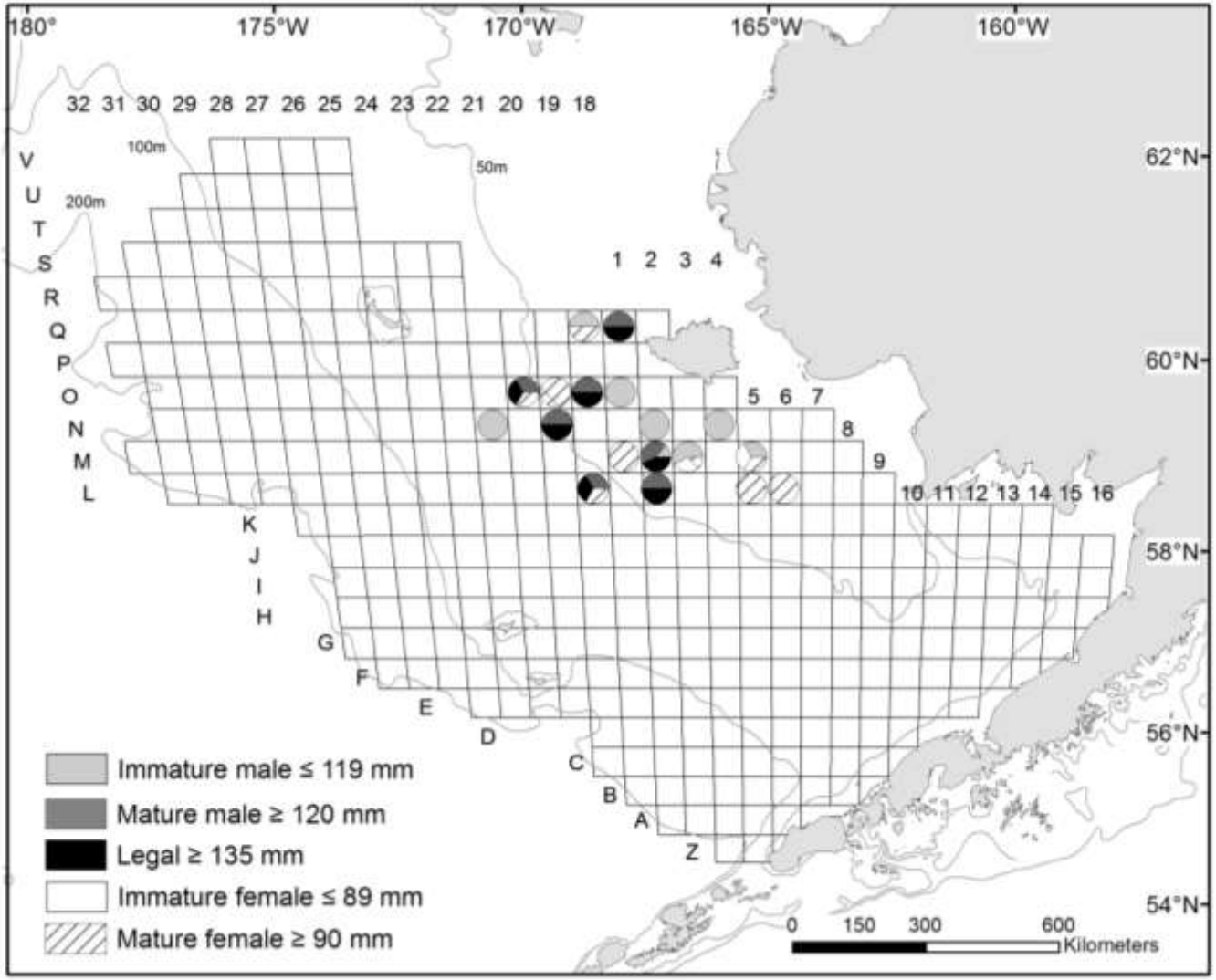


Figure 82. Total density (number nmi^{-2}) and percentage of male and female red king crab (*Paralithodes camtschaticus*) size categories at each station sampled in the Northern District in 2014.

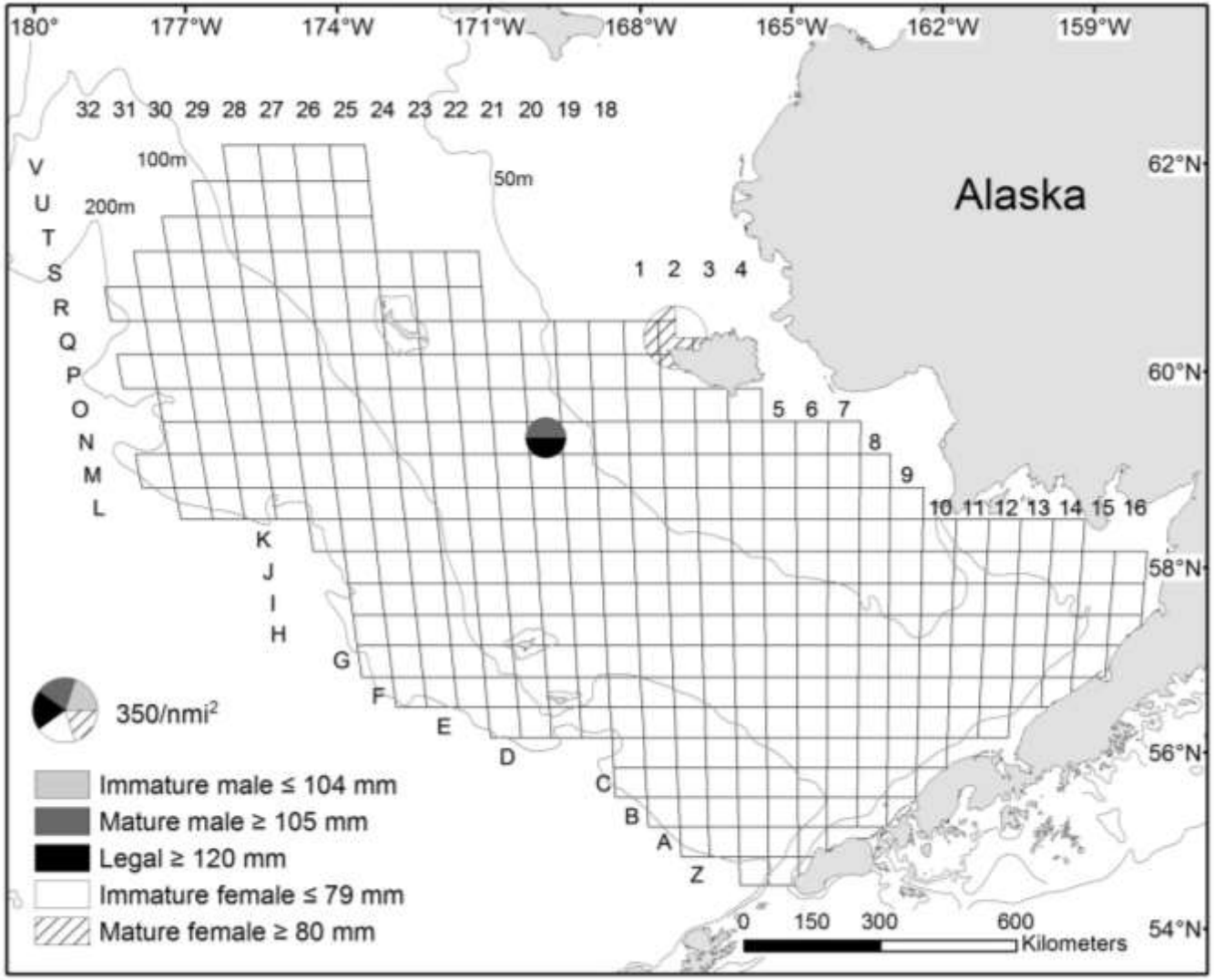


Figure 83. Total density (number nmi^{-2}) and percentage of male and female blue king crab (*Paralithodes platypus*) size categories at stations sampled outside of the Pribilof District and St. Matthew Island section of the Northern District in 2014.

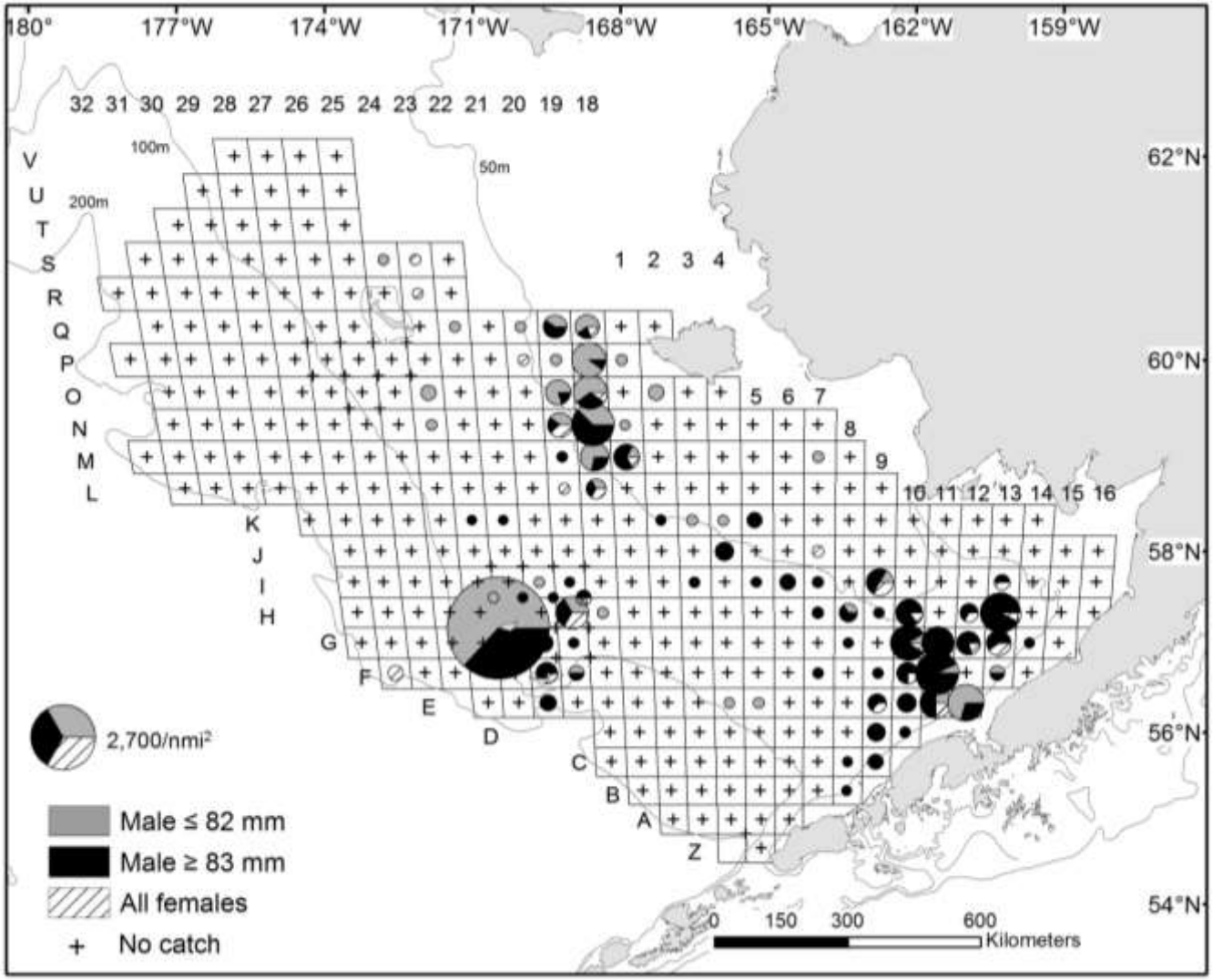


Figure 84. Total density (number nmi^{-2}) and percentage of male and female hair crab (*Erimacrus isenbeckii*) size categories at each station sampled in 2014.

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Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	A-02	A-03	A-04	A-04	A-05	A-06	B-01	B-02	B-03	B-04	B-05
Start Date	06/27/2014	06/27/2014	06/27/2014	06/27/2014	06/22/2014	06/22/2014	07/14/2014	06/27/2014	06/27/2014	06/27/2014	06/22/2014
Duration (hour)	0.5	0.5	0.52	0.52	0.52	0.46	0.51	0.49	0.52	0.51	0.53
Distance Fished (km)	2.76	2.77	2.84	2.8	2.82	2.53	2.76	2.8	2.89	2.75	3.01
Mid-Latitude (°N)	55	55.01	54.83	55	55	55.04	55.34	55.33	55.35	55.32	55.32
Mid-Longitude (°W)	-166.93	-166.32	-165.52	-165.75	-165.16	-164.59	-167.56	-166.97	-166.35	-165.78	-165.17
Bottom Depth (m)	156	142	156	130	111	66	147	139	132	120	112
Bottom Temperature (°C)	4	3.9	3.9	4.1	4.6	6.7	4.1	4	4.1	4.3	4.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	10,342	2,140	5,019	1,326	2,983	0	881	3,837	1,596	1,887	321
Mature males	676	1,167	215	279	373	90	136	448	447	195	514
Legal	406	843	72	279	298	90	68	384	383	130	450
Immature females	6,557	5,188	4,804	2,303	4,549	0	610	5,243	1,468	1,236	0
Mature females	406	3,242	72	419	0	181	136	895	255	130	0
Total weight (kg)	20.28	32.80	3.46	8.92	6.15	1.14	2.03	15.20	7.85	7.03	6.09
Opilio Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	75	0	0	0	0	0	0
Legal	0	0	0	0	75	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	324	0	0	0	0	0	64	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	130	0	0	0	0	0	128	0	0	0
Total weight (kg)	0.00	4.02	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	B-06	B-07	B-08	C-01	C-02	C-03	C-04	C-05	C-06	C-07	C-08
Start Date	06/21/2014	06/15/2014	06/13/2014	07/14/2014	06/28/2014	06/28/2014	06/21/2014	06/21/2014	06/21/2014	06/15/2014	06/13/2014
Duration (hour)	0.49	0.31	0.5	0.53	0.5	0.52	0.51	0.51	0.51	0.51	0.5
Distance Fished (km)	2.65	1.7	2.77	2.95	2.79	2.85	2.78	2.77	2.76	2.69	2.82
Mid-Latitude (°N)	55.34	55.33	55.33	55.67	55.67	55.67	55.67	55.68	55.66	55.69	55.67
Mid-Longitude (°W)	-164.55	-164.04	-163.41	-167.59	-166.99	-166.38	-165.8	-165.18	-164.61	-164.01	-163.41
Bottom Depth (m)	102	79	53	134	136	127	117	108	97	94	82
Bottom Temperature (°C)	4.6	4.9	4.4	4.2	4.1	4	4.1	4	4	4	3.8
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	419
Mature males	0	0	349	0	0	0	0	0	635	399	4,883
Legal	0	0	349	0	0	0	0	0	635	319	3,767
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	349	0	0	0	0	0	0	0	4,465
Total weight (kg)	0.00	0.00	27.50	0.00	0.00	0.00	0.00	0.00	32.24	12.73	261.94
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	1,405	129	488	1,572	1,930	5,966	3,264	2,898	2,700	8,377	1,545
Mature males	1,488	129	1,186	121	0	393	2,222	2,608	2,223	3,590	6,525
Legal	1,323	129	1,116	121	0	262	1,181	2,318	1,509	2,713	6,525
Immature females	827	0	70	2,177	1,415	5,179	3,542	7,640	1,509	4,947	488
Mature females	1,902	0	0	60	129	787	208	2,952	79	1,197	1,256
Total weight (kg)	24.93	1.06	15.30	4.09	4.29	13.35	30.48	61.69	26.13	49.19	92.60
Opilio Tanner Crab											
Immature males	248	0	0	0	0	0	69	1,521	0	160	0
Mature males	2,067	0	0	0	0	0	139	1,087	79	80	0
Legal	2,315	0	0	0	0	0	208	2,391	79	160	0
Immature females	0	0	0	0	129	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	24,050	0	0	0
Total weight (kg)	17.00	0.00	0.00	0.00	0.03	0.00	1.70	64.21	0.40	1.01	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	72	0	0	0
Males ≥ 78 mm	165	0	0	0	0	0	0	507	0	80	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	217	79	0	0
Total weight (kg)	1.24	0.00	0.00	0.00	0.00	0.00	0.00	4.20	0.13	0.65	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	C-09	C-18	D-01	D-02	D-03	D-04	D-05	D-06	D-07	D-08	D-09
Start Date	06/13/2014	07/14/2014	07/14/2014	06/28/2014	06/28/2014	06/21/2014	06/21/2014	06/21/2014	06/15/2014	06/13/2014	06/13/2014
Duration (hour)	0.51	0.51	0.51	0.5	0.5	0.52	0.51	0.52	0.51	0.52	0.52
Distance Fished (km)	2.74	2.86	2.82	2.84	2.72	2.95	2.8	2.9	2.73	2.75	2.87
Mid-Latitude (°N)	55.68	55.67	56.01	56	56	56	55.99	56.01	56	56	56
Mid-Longitude (°W)	-162.79	-168.19	-167.61	-167	-166.39	-165.78	-165.18	-164.6	-164.04	-163.39	-162.81
Bottom Depth (m)	49	136	133	135	125	108	96	92	89	87	78
Bottom Temperature (°C)	4.1	4.2	4.2	4	4	4	3.9	3.9	3.9	3.9	3.7
Red King Crab											
Immature males	482	0	0	0	0	0	0	0	0	0	1,380
Mature males	482	0	0	0	0	0	0	0	160	1,213	3,412
Legal	161	0	0	0	0	0	0	0	160	539	1,525
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	884	0	0	0	0	0	0	0	0	67	4,502
Total weight (kg)	33.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.42	41.78	213.06
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	1,286	4,321	3,415	6,266	1,570	3,148	3,675	9,130	962	2,390	653
Mature males	321	131	273	512	1,428	2,492	3,522	4,715	1,603	3,911	1,525
Legal	241	131	273	384	1,285	1,705	2,527	3,368	1,042	3,259	1,089
Immature females	0	5,237	4,166	639	999	2,099	3,522	31,993	1,203	4,846	218
Mature females	80	0	137	512	571	1,836	613	25,215	80	2,302	508
Total weight (kg)	6.16	2.81	6.82	18.82	16.41	49.75	46.98	191.38	18.35	58.25	18.71
Opilio Tanner Crab											
Immature males	0	0	273	1,918	214	131	306	0	0	0	0
Mature males	0	65	205	448	571	2,164	1,684	0	80	0	73
Legal	0	65	478	575	714	2,230	1,991	0	80	0	73
Immature females	0	0	0	64	0	66	0	0	0	0	0
Mature females	0	0	3,346	639	642	2,886	77	0	0	0	0
Total weight (kg)	0.00	0.42	10.22	8.03	8.04	28.76	15.03	0.00	0.66	0.00	0.67
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	256	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	192	0	0	919	150	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	273	128	0	0	77	1,871	0	0	0
Total weight (kg)	0.00	0.00	0.53	2.22	0.00	0.00	6.94	6.32	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	D-10	D-18	E-01	E-02	E-03	E-04	E-05	E-06	E-07	E-08	E-09
Start Date	06/13/2014	07/14/2014	07/14/2014	06/28/2014	06/28/2014	06/21/2014	06/20/2014	06/20/2014	06/15/2014	06/13/2014	06/13/2014
Duration (hour)	0.5	0.5	0.51	0.5	0.5	0.51	0.49	0.49	0.48	0.49	0.51
Distance Fished (km)	2.72	2.85	2.78	2.74	2.67	2.81	2.73	2.68	2.63	2.79	2.82
Mid-Latitude (^{o}N)	55.99	56	56.34	56.33	56.33	56.33	56.33	56.35	56.34	56.32	56.32
Mid-Longitude (^{o}W)	-162.29	-168.24	-167.66	-167.02	-166.42	-165.8	-165.2	-164.59	-163.97	-163.41	-162.79
Bottom Depth (m)	70	153	129	113	104	91	87	88	85	85	79
Bottom Temperature (^{o}C)	4	4.4	4	3.9	3.8	3.2	2.8	3.5	3.4	3.6	3.5
Red King Crab											
Immature males	3,278	0	0	0	0	0	0	0	0	0	1,080
Mature males	2,416	0	0	0	0	0	0	0	87	234	2,700
Legal	1,639	0	0	0	0	0	0	0	87	78	2,006
Immature females	173	0	0	0	0	0	0	0	0	0	0
Mature females	9,404	0	0	0	0	0	0	0	0	156	11,418
Total weight (kg)	239.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.73	7.66	278.63
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	690	3,270	1,107	1,828	1,818	1,884	5,475	3,181	4,337	2,725	1,003
Mature males	604	1,294	1,045	1,687	1,423	2,721	2,618	2,773	7,892	4,127	3,317
Legal	345	886	922	1,406	1,106	1,814	1,428	1,794	4,770	3,192	2,546
Immature females	0	5,178	1,168	914	2,213	488	2,936	3,018	4,423	545	154
Mature females	1,122	409	61	2,601	1,739	70	1,587	571	867	78	386
Total weight (kg)	10.41	15.00	12.01	28.44	19.20	35.44	43.41	35.81	72.78	44.19	35.23
Opilio Tanner Crab											
Immature males	0	2,384	1,660	281	0	488	793	163	0	0	77
Mature males	0	3,883	2,213	914	7,113	6,629	714	489	434	0	0
Legal	0	6,200	3,812	1,125	7,113	6,978	1,190	571	434	0	77
Immature females	0	0	0	70	79	0	0	0	0	0	0
Mature females	0	7,358	61	6,257	0	0	0	0	0	0	0
Total weight (kg)	0.00	44.08	28.17	21.83	52.47	51.84	6.66	3.29	2.74	0.00	0.23
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	204	1,906	70	0	0	159	245	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	562	0	0	0	0	0	0	0
Total weight (kg)	0.00	1.51	18.41	2.24	0.00	0.00	1.08	0.85	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	E-10	E-11	E-12	E-18	E-19	E-20	E-21	E-22	F-01	F-02	F-03
Start Date	06/12/2014	06/10/2014	06/10/2014	07/06/2014	07/06/2014	07/06/2014	07/09/2014	07/09/2014	07/05/2014	06/28/2014	06/28/2014
Duration (hour)	0.5	0.51	0.5	0.5	0.51	0.41	0.52	0.51	0.53	0.49	0.5
Distance Fished (km)	2.65	2.79	2.7	2.92	2.9	2.14	2.89	2.91	2.89	2.87	2.72
Mid-Latitude (°N)	56.34	56.33	56.34	56.34	56.33	56.36	56.34	56.35	56.68	56.66	56.66
Mid-Longitude (°W)	-162.19	-161.56	-160.99	-168.22	-168.88	-169.46	-170.05	-170.68	-167.67	-167.07	-166.44
Bottom Depth (m)	78	63	54	151	129	136	109	121	100	95	84
Bottom Temperature (°C)	3.5	4.6	5	4.3	4.2	4.1	3.8	4.2	3.2	3.1	3.5
Red King Crab											
Immature males	645	1,430	346	0	0	0	0	0	0	0	0
Mature males	1,531	2,224	173	0	0	0	0	0	0	0	0
Legal	967	1,350	173	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	8,542	3,653	778	0	0	0	0	0	0	0	0
Total weight (kg)	185.50	157.65	23.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	725	159	1,210	698	1,810	460	1,684	844	274	6,400	1,423
Mature males	1,612	556	346	6,285	279	0	777	325	1,165	1,213	4,979
Legal	1,531	556	173	5,028	209	0	648	195	1,096	1,145	4,426
Immature females	81	0	86	1,397	3,621	644	583	390	137	5,120	79
Mature females	242	238	259	1,467	696	0	389	0	69	674	79
Total weight (kg)	19.65	6.89	6.37	48.70	8.30	0.13	10.17	3.98	11.12	21.61	41.66
Opilio Tanner Crab											
Immature males	0	0	0	3,701	1,880	92	130	65	1,850	606	4,189
Mature males	0	0	0	1,467	627	0	259	0	3,563	876	57,934
Legal	0	0	0	4,539	1,810	92	324	0	5,139	1,415	61,964
Immature females	0	0	0	0	0	0	583	195	69	0	0
Mature females	0	0	0	137,086	71,583	184	130	0	69	67	158
Total weight (kg)	0.00	0.00	0.00	259.47	129.33	0.39	4.00	0.04	35.38	8.64	340.75
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	65	0	0	0	0
Males ≥ 78 mm	0	0	0	768	139	0	0	0	891	67	1,107
Immature females	0	0	0	0	0	0	0	130	0	67	0
Mature females	0	0	0	629	696	0	65	0	0	202	0
Total weight (kg)	0.00	0.00	0.00	6.40	2.45	0.00	0.10	0.04	6.86	0.46	6.81

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	F-04	F-05	F-06	F-07	F-08	F-09	F-10	F-11	F-12	F-13	F-14
Start Date	06/21/2014	06/20/2014	06/20/2014	06/16/2014	06/13/2014	06/13/2014	06/12/2014	06/10/2014	06/10/2014	06/10/2014	06/10/2014
Duration (hour)	0.51	0.52	0.52	0.51	0.51	0.5	0.51	0.49	0.51	0.51	0.51
Distance Fished (km)	2.89	2.78	2.9	2.77	2.77	2.71	2.88	2.66	2.77	2.93	2.82
Mid-Latitude (°N)	56.66	56.67	56.66	56.67	56.67	56.68	56.67	56.66	56.67	56.66	56.69
Mid-Longitude (°W)	-165.83	-165.22	-164.61	-164.02	-163.38	-162.8	-162.18	-161.59	-160.97	-160.36	-159.71
Bottom Depth (m)	78	75	75	75	75	71	69	89	69	57	37
Bottom Temperature (°C)	3.2	3.1	2.9	3.3	3.3	3.4	3.7	3.5	4.2	5	5.9
Red King Crab											
Immature males	0	0	0	0	0	77	306	175	489	596	0
Mature males	0	0	0	0	0	2,942	1,222	1,574	2,201	521	0
Legal	0	0	0	0	0	1,703	687	1,049	1,956	298	0
Immature females	0	0	0	0	0	0	0	0	82	0	0
Mature females	0	0	0	0	0	0	2,673	6,820	4,809	1,490	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	85.97	79.72	151.74	188.30	56.74	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	5,443	3,594	4,700	7,573	3,386	2,865	229	1,137	158	1,192	248
Mature males	2,825	1,997	2,003	5,286	5,776	14,478	1,680	4,634	7,726	819	0
Legal	1,998	1,118	539	2,209	3,984	10,297	1,299	4,197	6,780	298	0
Immature females	2,481	1,358	1,926	4,812	66	310	0	0	82	0	0
Mature females	413	719	154	789	0	697	0	175	326	298	0
Total weight (kg)	41.47	30.35	34.71	64.46	70.04	135.23	14.73	47.81	72.38	12.38	0.66
Opilio Tanner Crab											
Immature males	965	719	925	158	66	232	0	0	0	0	0
Mature males	7,028	4,073	1,464	158	0	232	0	0	0	0	0
Legal	7,717	4,712	2,080	316	0	387	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	69	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	49.98	25.23	11.40	1.52	0.12	2.26	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	80	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	69	879	385	237	0	232	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.37	5.94	1.88	1.77	0.00	1.95	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	F-18	F-19	F-20	F-21	F-22	F-23	F-24	F-25	G-01	G-02	G-03
Start Date	07/05/2014	07/06/2014	07/09/2014	07/08/2014	07/09/2014	07/13/2014	07/13/2014	07/18/2014	07/05/2014	06/28/2014	06/28/2014
Duration (hour)	0.51	0.5	0.5	0.53	0.5	0.51	0.51	0.5	0.53	0.51	0.52
Distance Fished (km)	2.81	2.72	2.77	2.86	2.8	2.75	2.78	2.73	2.85	2.83	2.89
Mid-Latitude (°N)	56.66	56.66	56.68	56.66	56.68	56.67	56.68	56.65	57	57	56.99
Mid-Longitude (°W)	-168.28	-168.91	-169.51	-170.12	-170.73	-171.35	-171.97	-172.57	-167.69	-167.09	-166.46
Bottom Depth (m)	107	101	80	97	114	119	125	138	78	74	74
Bottom Temperature (°C)	3.6	3.2	5	4	4.1	4.2	4.3	4.2	3.2	3.4	3.3
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	1,081	1,404	5,432	1,093	296	577	4,636	1,362	3,359	1,665
Mature males	786	2,935	1,256	2,063	410	74	0	0	2,151	3,286	3,981
Legal	715	2,240	961	1,306	341	74	0	0	1,864	2,921	3,185
Immature females	214	2,780	739	963	1,434	444	361	6,282	1,362	2,118	217
Mature females	357	2,780	74	619	0	74	72	0	215	219	145
Total weight (kg)	7.60	33.80	12.33	34.50	5.96	0.68	0.94	3.45	18.83	28.82	34.18
Opilio Tanner Crab											
Immature males	1,429	5,406	74	206	137	1,407	0	0	7,171	6,646	2,534
Mature males	1,715	3,166	74	69	137	1,703	289	0	9,895	17,673	14,188
Legal	2,787	6,642	148	275	205	2,222	289	0	14,700	21,325	16,143
Immature females	0	0	74	0	68	0	0	0	0	73	72
Mature females	57,885	103,410	0	0	68	34,880	0	0	72	0	145
Total weight (kg)	113.21	190.10	0.66	1.26	1.52	72.35	2.37	0.00	84.18	115.78	95.39
Hybrid Tanner Crab											
Males ≤ 77 mm	0	77	0	69	68	74	0	0	215	0	0
Males ≥ 78 mm	143	232	0	138	0	74	0	0	3,442	292	217
Immature females	0	0	0	0	68	0	0	150	0	146	0
Mature females	286	2,626	0	0	68	296	0	0	72	73	0
Total weight (kg)	1.80	6.11	0.00	0.95	0.10	1.51	0.00	0.03	22.30	1.91	0.98

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	G-04	G-05	G-06	G-07	G-08	G-09	G-10	G-11	G-12	G-13	G-14
Start Date	06/21/2014	06/20/2014	06/19/2014	06/16/2014	06/14/2014	06/12/2014	06/12/2014	06/10/2014	06/10/2014	06/09/2014	06/10/2014
Duration (hour)	0.53	0.49	0.5	0.5	0.5	0.51	0.5	0.5	0.5	0.51	0.51
Distance Fished (km)	2.87	2.66	2.72	2.71	2.81	2.73	2.77	2.74	2.81	2.8	2.79
Mid-Latitude (°N)	56.99	56.99	57	57.01	57.01	57	57.01	57	56.98	57	57
Mid-Longitude (°W)	-165.85	-165.22	-164.6	-164.03	-163.38	-162.79	-162.16	-161.56	-160.97	-160.32	-159.67
Bottom Depth (m)	72	71	70	69	66	60	59	68	63	62	56
Bottom Temperature (°C)	3.2	3.1	2.8	3.3	3.8	4	4.3	3.6	4.3	5	5.5
Red King Crab											
Immature males	0	0	0	0	0	0	229	2,394	653	645	292
Mature males	0	0	0	0	293	775	1,224	1,390	508	242	73
Legal	0	0	0	0	220	698	612	927	363	161	0
Immature females	0	0	0	0	0	0	0	77	218	81	0
Mature females	0	0	0	0	73	0	0	3,475	5,949	4,680	0
Total weight (kg)	0.00	0.00	0.00	0.00	11.27	30.49	38.75	125.95	143.45	109.82	5.02
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	470	3,957	5,479	6,601	5,647	16,127	1,300	618	218	968	2,701
Mature males	806	3,452	1,636	2,084	2,420	9,847	1,759	2,394	1,596	1,614	1,387
Legal	671	2,526	981	955	1,320	3,489	765	1,931	1,596	1,049	511
Immature females	0	421	82	869	73	78	0	0	0	161	146
Mature females	0	337	164	261	147	78	76	77	0	1,049	0
Total weight (kg)	8.88	39.49	28.87	36.24	42.56	136.79	18.11	24.55	19.90	19.82	21.71
Opilio Tanner Crab											
Immature males	1,276	253	409	434	147	78	0	0	0	0	0
Mature males	4,633	1,937	736	347	147	310	0	0	0	0	0
Legal	5,708	2,105	1,145	782	293	388	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	33.25	11.26	5.23	3.28	1.76	2.04	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	164	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	674	491	695	0	310	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	3.61	3.37	4.20	0.00	1.87	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	G-15	G-18	G-19	G-20	G-21	G-22	G-23	G-24	G-25	G-26	GF1918
Start Date	06/08/2014	07/05/2014	07/06/2014	07/08/2014	07/08/2014	07/10/2014	07/13/2014	07/13/2014	07/18/2014	07/18/2014	07/06/2014
Duration (hour)	0.5	0.5	0.53	0.53	0.52	0.51	0.51	0.5	0.51	0.52	0.53
Distance Fished (km)	2.78	2.74	2.84	2.93	2.84	2.84	2.76	2.85	2.78	2.92	2.9
Mid-Latitude (°N)	57.02	57.01	57	57	57	57	57	57	57	57.01	56.83
Mid-Longitude (°W)	-159.1	-168.33	-168.97	-169.56	-170.17	-170.78	-171.39	-172.04	-172.65	-173.24	-168.62
Bottom Depth (m)	35	81	80	61	70	96	108	117	123	142	98
Bottom Temperature (°C)	6.7	3.1	3.2	4	4.5	3.9	3.8	4.1	4	3.8	3
Red King Crab											
Immature males	153	0	0	0	77	0	0	0	0	0	0
Mature males	0	0	0	73	7,663	0	0	0	0	0	0
Legal	0	0	0	73	7,663	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	1,858	0	0	0	0	0	0
Total weight (kg)	0.12	0.00	0.00	5.48	519.46	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	155	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	155	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	5.66	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	1,578	924	3,932	4,644	17,664	507	337	501	865	549
Mature males	0	2,254	4,082	12,305	7,895	4,284	941	67	0	0	3,365
Legal	0	1,578	3,312	7,354	5,960	2,926	724	67	0	0	2,266
Immature females	0	977	1,078	146	310	5,816	362	269	1,001	1,298	2,060
Mature females	0	676	616	291	2,090	5,413	72	0	0	62	1,648
Total weight (kg)	0.00	19.60	32.94	92.46	67.99	83.65	8.94	0.76	0.99	0.61	33.66
Opilio Tanner Crab											
Immature males	0	8,266	5,161	146	77	8,840	1,448	875	0	0	3,571
Mature males	0	2,630	847	146	77	206	1,448	3,030	644	0	2,610
Legal	0	8,116	3,620	218	77	1,439	2,244	3,771	644	0	4,532
Immature females	0	0	0	0	0	0	0	0	0	185	0
Mature females	0	75	231	0	0	2,741	724	67	0	0	80,552
Total weight (kg)	0.00	43.38	19.38	1.10	0.52	16.70	15.94	26.84	5.65	0.01	164.61
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	73	0	411	0	0	0	494	0
Males ≥ 78 mm	0	150	1,001	146	77	137	145	0	72	0	1,236
Immature females	0	0	0	0	0	0	0	0	0	742	0
Mature females	0	75	77	73	0	1,233	362	0	0	0	2,266
Total weight (kg)	0.00	1.22	5.35	1.30	0.24	3.36	1.91	0.00	0.51	0.20	11.76

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	GF2019	GF2120	GF2221	H-01	H-02	H-03	H-04	H-05	H-06	H-07	H-08
Start Date	07/08/2014	07/08/2014	07/09/2014	07/05/2014	06/29/2014	06/29/2014	06/20/2014	06/19/2014	06/19/2014	06/16/2014	06/14/2014
Duration (hour)	0.51	0.52	0.52	0.53	0.5	0.51	0.5	0.5	0.5	0.5	0.51
Distance Fished (km)	2.87	2.83	2.85	2.85	2.83	2.84	2.78	2.76	2.72	2.6	2.81
Mid-Latitude (°N)	56.83	56.84	56.83	57.33	57.32	57.33	57.33	57.35	57.32	57.34	57.34
Mid-Longitude (°W)	-169.3	-169.89	-170.48	-167.74	-167.15	-166.48	-165.87	-165.23	-164.63	-164	-163.38
Bottom Depth (m)	81	72	102	73	71	70	68	67	66	63	54
Bottom Temperature (°C)	3.8	4.7	4	3.2	3.3	3.3	2.3	2.4	2.6	3.4	4.6
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	89	0
Legal	0	0	0	0	0	0	0	0	0	89	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.74	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	72	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	1,010	3,976	2,663	127	1,263	3,202	220	7,205	1,376	1,608	3,945
Mature males	2,091	6,000	4,062	317	1,857	5,233	732	2,011	81	179	834
Legal	1,731	4,988	3,862	190	1,337	3,046	585	754	81	89	228
Immature females	865	217	1,931	63	149	156	0	0	0	0	0
Mature females	0	651	0	0	74	78	0	84	0	179	0
Total weight (kg)	18.48	55.96	55.76	3.21	15.54	40.06	6.30	35.79	5.50	6.08	19.99
Opilio Tanner Crab											
Immature males	361	217	67	1,333	54,889	6,327	951	1,927	324	268	0
Mature males	288	217	67	2,031	32,310	8,748	4,830	10,388	405	0	0
Legal	433	289	133	2,856	69,076	13,356	5,708	11,980	405	179	0
Immature females	0	72	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	63	3,714	0	0	0	0	0	0
Total weight (kg)	2.75	2.01	0.72	17.68	298.60	66.72	28.51	54.18	2.70	0.67	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	67	0	0	78	0	84	81	0	0
Males ≥ 78 mm	72	578	200	444	297	469	0	5,278	162	89	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	74	0	0	168	0	0	0
Total weight (kg)	0.43	3.14	1.04	2.48	1.86	2.38	0.00	22.27	0.90	0.23	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	H-09	H-10	H-11	H-12	H-13	H-14	H-15	H-16	H-18	H-19	H-20
Start Date	06/12/2014	06/12/2014	06/10/2014	06/11/2014	06/09/2014	06/09/2014	06/08/2014	06/08/2014	07/05/2014	07/06/2014	07/08/2014
Duration (hour)	0.51	0.5	0.5	0.5	0.52	0.52	0.51	0.5	0.51	0.52	0.34
Distance Fished (km)	2.76	2.78	2.72	2.75	2.79	2.83	2.79	2.72	2.75	2.79	1.93
Mid-Latitude (°N)	57.33	57.35	57.33	57.33	57.33	57.31	57.34	57.32	57.34	57.32	57.35
Mid-Longitude (°W)	-162.77	-162.14	-161.52	-160.94	-160.29	-159.68	-159.06	-158.42	-168.37	-168.99	-169.61
Bottom Depth (m)	48	52	56	63	60	55	50	32	74	71	64
Bottom Temperature (°C)	4.9	4.8	4.5	4.2	4.7	5.1	5.5	6.9	3.1	3.5	2.9
Red King Crab											
Immature males	0	1,545	15,617	445	243	230	0	0	0	0	0
Mature males	243	2,178	1,503	445	0	0	0	0	0	77	0
Legal	162	1,124	1,002	148	0	0	0	0	0	77	0
Immature females	0	0	1,086	297	0	77	0	0	0	0	0
Mature females	0	351	5,178	4,526	1,539	307	80	0	0	0	0
Total weight (kg)	6.40	96.73	240.61	93.24	26.99	7.45	0.78	0.00	0.00	5.11	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	154	0
Legal	0	0	0	0	0	0	0	0	0	154	0
Immature females	0	0	0	0	0	0	0	0	0	0	113
Mature females	0	0	0	0	0	0	0	0	0	77	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.97	0.52
Bairdi Tanner Crab											
Immature males	4,775	4,144	4,009	297	1,296	767	0	0	623	7,182	10,442
Mature males	486	2,388	2,505	1,335	405	460	0	0	779	8,881	13,783
Legal	162	983	835	1,335	324	230	0	0	389	5,406	5,430
Immature females	0	70	84	0	0	0	0	0	156	3,861	1,047
Mature females	0	0	84	148	243	153	0	0	78	309	209
Total weight (kg)	18.58	38.09	32.59	17.65	8.64	7.35	0.00	0.00	6.52	79.11	66.01
Opilio Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	3,972	2,162	64,848
Mature males	0	70	0	0	0	0	0	0	3,427	1,004	11,564
Legal	0	70	0	0	0	0	0	0	5,841	1,931	29,136
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	180,826
Total weight (kg)	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	27.90	10.56	293.26
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	77	453
Males ≥ 78 mm	0	0	0	0	0	0	0	0	467	927	1,927
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	2,041
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.94	5.30	8.09

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	H-21	H-22	H-23	H-24	H-25	H-26	HG1918	HG2019	HG2120	HG2221	I-01
Start Date	07/09/2014	07/10/2014	07/13/2014	07/13/2014	07/18/2014	07/18/2014	07/06/2014	07/08/2014	07/08/2014	07/09/2014	07/05/2014
Duration (hour)	0.51	0.51	0.51	0.5	0.52	0.52	0.53	0.52	0.5	0.52	0.52
Distance Fished (km)	2.78	2.81	2.83	2.79	2.83	2.93	2.86	2.89	2.77	2.87	2.82
Mid-Latitude (°N)	57.33	57.34	57.34	57.33	57.35	57.33	57.17	57.17	57.16	57.11	57.67
Mid-Longitude (°W)	-170.23	-170.86	-171.47	-172.1	-172.82	-173.34	-168.6	-169.32	-169.89	-170.46	-167.77
Bottom Depth (m)	56	83	101	109	118	122	77	73	49	48	69
Bottom Temperature (°C)	4.7	3.8	3.6	3.7	3.7	3.4	3.2	3.6	5.5	5.5	3.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	226	0
Mature males	0	0	0	0	0	0	0	0	0	4,303	0
Legal	0	0	0	0	0	0	0	0	0	2,718	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	88	75	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.83	160.24	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	236	1,195	737	0	768	278	2,079	2,936	3,346	1,057	2,291
Mature males	79	4,709	1,167	0	0	0	2,150	7,635	0	528	1,833
Legal	0	4,428	1,106	0	0	0	1,290	5,065	0	302	1,145
Immature females	0	141	430	273	140	69	1,147	367	2,201	226	0
Mature females	79	422	123	0	0	0	287	147	0	75	0
Total weight (kg)	1.20	43.70	13.45	0.01	0.62	0.69	21.33	57.22	1.92	5.05	17.42
Opilio Tanner Crab											
Immature males	0	773	676	3,212	70	0	3,154	7,414	88	0	10,156
Mature males	0	1,335	1,044	5,536	977	0	1,362	3,671	0	0	2,291
Legal	0	1,757	1,474	7,996	1,047	0	3,226	7,488	0	0	8,018
Immature females	0	0	61	0	0	0	0	0	0	0	153
Mature females	0	0	123	6,766	0	0	0	1,101	0	0	1,069
Total weight (kg)	0.00	10.70	12.07	65.60	8.84	0.00	18.29	40.67	0.00	0.00	38.37
Hybrid Tanner Crab											
Males ≤ 77 mm	0	70	0	0	0	0	143	0	440	0	229
Males ≥ 78 mm	0	70	307	0	0	0	932	514	0	0	1,298
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	61	137	0	0	0	73	0	0	0
Total weight (kg)	0.00	0.56	3.17	0.34	0.00	0.00	5.28	3.06	0.09	0.00	5.41

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	I-02	I-03	I-04	I-05	I-06	I-07	I-08	I-09	I-10	I-11	I-12
Start Date	06/29/2014	06/29/2014	06/20/2014	06/19/2014	06/19/2014	06/16/2014	06/14/2014	06/12/2014	06/12/2014	06/11/2014	06/11/2014
Duration (hour)	0.5	0.51	0.51	0.51	0.5	0.49	0.51	0.52	0.5	0.5	0.51
Distance Fished (km)	2.72	2.74	2.83	2.79	2.77	2.68	2.87	2.79	2.74	2.72	2.81
Mid-Latitude (°N)	57.67	57.66	57.67	57.66	57.66	57.67	57.66	57.66	57.67	57.67	57.66
Mid-Longitude (°W)	-167.11	-166.5	-165.88	-165.25	-164.63	-164	-163.37	-162.76	-162.14	-161.5	-160.88
Bottom Depth (m)	68	67	64	60	52	51	47	43	48	53	57
Bottom Temperature (°C)	3.2	3	2.2	2.3	3.3	3.3	4.7	4.9	5	4.8	4.8
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	1,992	1,160
Mature males	0	0	0	0	253	179	74	241	142	3,118	725
Legal	0	0	0	0	168	179	74	80	142	1,819	362
Immature females	0	0	0	0	0	0	0	0	0	173	72
Mature females	0	0	0	0	0	0	74	0	0	2,425	2,464
Total weight (kg)	0.00	0.00	0.00	0.00	9.34	5.62	4.77	5.94	6.17	132.62	79.50
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	1,137	1,046	1,826	6,920	1,094	537	589	322	0	1,126	217
Mature males	1,592	483	281	700	84	0	0	0	0	87	362
Legal	1,061	161	70	389	0	0	0	0	0	87	362
Immature females	76	0	0	389	253	90	74	161	0	260	0
Mature females	0	0	0	78	0	0	74	0	71	433	145
Total weight (kg)	13.29	4.86	8.55	24.59	3.47	1.42	1.72	1.27	0.17	5.31	5.54
Opilio Tanner Crab											
Immature males	10,536	80	2,529	155	0	0	0	0	0	0	0
Mature males	4,396	241	3,091	155	0	0	0	0	71	87	0
Legal	11,446	322	5,058	233	0	0	0	0	71	87	0
Immature females	152	80	0	0	0	0	0	0	0	0	0
Mature females	303	80	0	0	0	0	0	0	0	0	0
Total weight (kg)	46.77	1.66	22.96	1.49	0.00	0.00	0.00	0.00	0.45	0.39	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	76	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	76	0	0	78	84	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.40	0.00	0.00	0.26	0.19	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	I-13	I-14	I-15	I-16	I-18	I-19	I-20	I-21	I-22	I-23	I-24
Start Date	06/09/2014	06/09/2014	06/08/2014	06/08/2014	07/05/2014	07/04/2014	07/04/2014	07/10/2014	07/11/2014	07/13/2014	07/13/2014
Duration (hour)	0.5	0.5	0.51	0.51	0.51	0.5	0.51	0.52	0.52	0.51	0.51
Distance Fished (km)	2.77	2.79	2.81	2.74	2.85	2.91	2.76	2.93	2.79	2.78	2.88
Mid-Latitude (°N)	57.66	57.66	57.67	57.66	57.66	57.67	57.67	57.68	57.69	57.68	57.67
Mid-Longitude (°W)	-160.26	-159.63	-159.04	-158.36	-168.4	-169.03	-169.65	-170.3	-170.89	-171.52	-172.17
Bottom Depth (m)	54	49	48	34	70	69	71	73	86	100	109
Bottom Temperature (°C)	5	5.7	5.5	6.7	2.8	2.6	2.8	2.8	3.4	3.1	2.9
Red King Crab											
Immature males	330	0	0	82	0	0	0	0	0	0	0
Mature males	824	0	80	0	0	0	0	0	0	0	0
Legal	495	0	0	0	0	0	0	0	0	0	0
Immature females	82	0	0	0	0	0	0	0	0	0	0
Mature females	742	227	0	0	0	0	0	0	0	0	0
Total weight (kg)	37.38	3.31	2.08	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	247	227	0	0	3,341	2,842	16,151	8,325	4,310	1,561	263
Mature males	82	0	0	0	594	2,842	8,399	3,816	4,032	5,798	131
Legal	0	0	0	0	297	1,457	4,522	2,660	2,711	4,831	66
Immature females	0	0	0	0	445	364	1,751	2,279	5,342	2,601	394
Mature females	0	0	0	0	74	219	838	483	1,603	5,277	0
Total weight (kg)	1.24	0.68	0.00	0.00	11.60	25.08	82.90	48.46	53.25	67.99	1.22
Opilio Tanner Crab											
Immature males	0	0	0	0	19,377	11,585	14,390	41,855	695	1,264	3,612
Mature males	0	0	0	0	1,708	1,457	1,523	3,730	1,043	1,635	3,086
Legal	0	0	0	0	4,232	4,226	5,177	14,090	1,321	2,601	5,188
Immature females	0	0	0	0	742	729	1,675	4,558	209	74	197
Mature females	0	0	0	0	5,271	25,355	98,371	82,604	695	223	131
Total weight (kg)	0.00	0.00	0.00	0.00	38.36	54.22	127.69	187.95	10.23	13.72	34.28
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	533	0	0	0	66
Males ≥ 78 mm	0	0	0	0	445	364	533	691	70	446	131
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	73	228	276	695	149	0
Total weight (kg)	0.00	0.00	0.00	0.00	1.55	1.75	3.16	5.13	1.78	3.27	1.70

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	I-25	I-26	IH1918	IH2019	IH2120	IH2221	J-01	J-02	J-03	J-04	J-05
Start Date	07/18/2014	07/18/2014	07/04/2014	07/04/2014	07/09/2014	07/10/2014	07/04/2014	06/29/2014	06/29/2014	06/20/2014	06/18/2014
Duration (hour)	0.51	0.53	0.51	0.51	0.52	0.52	0.52	0.5	0.51	0.5	0.5
Distance Fished (km)	2.71	2.95	2.73	2.87	2.8	2.92	2.79	2.71	2.76	2.75	2.72
Mid-Latitude (°N)	57.66	57.66	57.5	57.5	57.5	57.5	58	58	58	58.01	58.01
Mid-Longitude (°W)	-172.8	-173.38	-168.75	-169.36	-169.97	-170.59	-167.81	-167.17	-166.52	-165.9	-165.24
Bottom Depth (m)	119	145	71	71	69	73	67	64	62	55	51
Bottom Temperature (°C)	3.2	4	3	3.2	2.7	3.6	2.8	2.8	2.2	2.4	3.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	77	0	85
Legal	0	0	0	0	0	0	0	0	77	0	85
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	77	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76	0.94	3.19
Blue King Crab											
Immature males	0	0	0	0	147	70	0	0	0	0	0
Mature males	0	0	0	0	221	0	0	0	0	0	0
Legal	0	0	0	0	221	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	8.12	1.53	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	130	2,273	9,352	10,913	4,616	60,641	224	232	0	0
Mature males	0	0	1,489	4,192	9,291	9,671	12,128	75	77	0	0
Legal	0	0	705	1,720	4,867	6,154	2,021	75	77	0	0
Immature females	0	260	1,254	1,401	3,908	559	48,514	75	0	77	85
Mature females	0	0	78	1,254	1,254	698	0	0	0	0	0
Total weight (kg)	0.00	0.44	16.55	49.45	90.28	83.90	179.97	0.95	1.09	0.08	0.04
Opilio Tanner Crab											
Immature males	2,848	389	20,375	6,269	28,758	629	1,094,425	373	309	0	0
Mature males	1,314	1,233	1,332	811	3,097	2,026	9,783	75	77	154	0
Legal	2,848	1,557	3,448	3,614	18,066	2,445	39,057	298	232	154	0
Immature females	15,260	65	60,186	0	0	0	806,391	149	0	0	0
Mature females	128,285	0	227,420	3,467	1,401	70	591,389	149	0	0	0
Total weight (kg)	127.80	11.89	226.15	25.50	92.86	14.10	1,776.09	1.28	0.87	0.72	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	885	0	12,134	0	0	0	0
Males ≥ 78 mm	0	0	627	590	7,890	698	10,087	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	365	0	157	295	2,655	0	0	0	0	0	0
Total weight (kg)	0.63	0.00	3.02	2.79	40.64	4.24	56.56	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	J-06	J-07	J-08	J-09	J-10	J-11	J-12	J-13	J-14	J-15	J-16
Start Date	06/18/2014	06/16/2014	06/14/2014	06/12/2014	06/11/2014	06/11/2014	06/11/2014	06/09/2014	06/09/2014	06/08/2014	06/08/2014
Duration (hour)	0.51	0.5	0.51	0.5	0.5	0.52	0.51	0.5	0.51	0.5	0.51
Distance Fished (km)	2.82	2.68	2.86	2.79	2.8	2.79	2.83	2.76	2.8	2.66	2.79
Mid-Latitude (^{o}N)	58	57.99	57.98	58.01	58	57.99	58	57.99	58.01	57.99	57.98
Mid-Longitude (^{o}W)	-164.62	-164.02	-163.37	-162.75	-162.12	-161.49	-160.84	-160.22	-159.56	-159	-158.33
Bottom Depth (m)	46	46	43	41	38	55	45	51	42	41	34
Bottom Temperature (^{o}C)	4.5	4.4	4.7	4.7	5.6	5.1	5.1	4.7	5.7	6	7
Red King Crab											
Immature males	0	87	0	85	88	723	233	423	0	0	81
Mature males	81	262	134	0	264	1,205	466	1,270	154	0	0
Legal	81	175	0	0	88	562	388	593	77	0	0
Immature females	0	0	0	0	0	0	78	85	0	0	81
Mature females	81	0	0	0	88	642	1,940	847	154	0	0
Total weight (kg)	5.92	8.43	3.52	0.49	7.93	49.40	51.48	53.70	6.02	0.00	0.33
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	81	87	0	85	88	80	233	85	0	0	0
Mature males	0	0	67	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	161	0	0	0	0	0
Total weight (kg)	0.20	0.24	0.40	0.16	0.17	0.69	0.73	0.12	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	J-18	J-19	J-20	J-21	J-22	J-23	J-24	J-25	J-26	JI1918	JI2019
Start Date	07/04/2014	07/04/2014	07/03/2014	07/03/2014	07/11/2014	07/12/2014	07/12/2014	07/18/2014	07/18/2014	07/04/2014	07/04/2014
Duration (hour)	0.52	0.52	0.51	0.54	0.53	0.51	0.51	0.53	0.5	0.52	0.52
Distance Fished (km)	2.89	2.82	2.84	2.98	2.98	2.7	2.83	2.87	2.78	2.85	2.84
Mid-Latitude (°N)	58	58.01	58	58	58	58	58	57.99	58	57.83	57.83
Mid-Longitude (°W)	-168.43	-169.08	-169.7	-170.34	-170.96	-171.59	-172.24	-172.86	-173.49	-168.74	-169.37
Bottom Depth (m)	70	70	70	74	87	97	105	109	117	71	66
Bottom Temperature (°C)	2.7	1.8	2.3	1.5	3.3	3	2.9	2.6	3.2	2.6	2.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	5,948	4,517	2,726	2,867	406	5,759	274	0	0	1,861	20,958
Mature males	2,423	932	717	261	676	640	0	68	0	1,226	3,574
Legal	1,395	430	215	195	406	480	0	0	0	289	1,678
Immature females	294	574	359	1,629	68	8,239	137	135	0	809	2,642
Mature females	0	0	0	195	0	160	0	0	0	0	0
Total weight (kg)	30.11	18.04	9.60	9.38	5.00	10.03	0.12	0.35	0.00	12.19	74.66
Opilio Tanner Crab											
Immature males	35,612	28,322	25,107	17,267	744	11,438	137	3,720	2,476	44,367	40,044
Mature males	5,801	1,076	215	1,499	812	60,951	821	1,488	1,132	361	511
Legal	20,560	3,298	3,085	2,737	1,285	70,310	958	2,773	1,768	1,515	5,033
Immature females	1,615	21,654	4,806	63,465	406	0	0	5,681	36,995	163,401	9,847
Mature females	1,028	30,330	20,946	64,573	1,827	16,798	137	81,163	275,803	43,357	150,768
Total weight (kg)	106.59	81.21	55.31	111.38	9.15	426.62	6.70	98.87	236.75	154.94	226.32
Hybrid Tanner Crab											
Males ≤ 77 mm	587	287	215	261	0	160	0	0	0	216	2,042
Males ≥ 78 mm	3,965	1,506	215	261	135	1,120	0	135	0	433	4,085
Immature females	0	0	0	0	0	80	0	135	0	0	0
Mature females	73	72	215	195	0	1,360	0	473	0	0	0
Total weight (kg)	18.57	6.19	1.40	1.93	0.48	8.10	0.00	1.10	0.00	2.52	24.67

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	JI2120	JI2221	K-01	K-02	K-03	K-04	K-05	K-06	K-07	K-08	K-09
Start Date	07/04/2014	07/10/2014	06/29/2014	06/29/2014	06/29/2014	06/20/2014	06/18/2014	06/18/2014	06/17/2014	06/14/2014	06/12/2014
Duration (hour)	0.51	0.51	0.5	0.5	0.51	0.52	0.51	0.51	0.51	0.5	0.51
Distance Fished (km)	2.83	2.81	2.75	2.76	2.76	2.89	2.74	2.79	2.8	2.84	2.76
Mid-Latitude (^{o}N)	57.83	57.84	58.33	58.33	58.33	58.34	58.33	58.33	58.33	58.32	58.34
Mid-Longitude (^{o}W)	-169.99	-170.61	-167.83	-167.2	-166.55	-165.92	-165.29	-164.66	-164	-163.38	-162.73
Bottom Depth (m)	72	79	60	52	48	44	45	43	41	37	32
Bottom Temperature (^{o}C)	1.7	3.3	1.8	2.2	3.1	3.5	3.5	4.6	4.4	4.8	5.5
Red King Crab											
Immature males	0	0	0	0	0	0	81	0	0	0	0
Mature males	0	0	0	0	0	0	81	0	83	0	88
Legal	0	0	0	0	0	0	81	0	0	0	88
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	74	161	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	1.41	6.35	0.00	2.10	0.00	3.36
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	2,402	1,702	0	0	0	0	0	0	0	76	0
Mature males	1,455	638	0	0	0	0	0	0	0	0	0
Legal	728	213	0	0	0	0	0	0	0	0	0
Immature females	582	71	0	0	0	0	0	0	0	0	0
Mature females	0	284	0	0	0	0	0	0	0	0	0
Total weight (kg)	13.45	8.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00
Opilio Tanner Crab											
Immature males	17,029	1,702	225	0	0	0	0	0	0	0	0
Mature males	873	638	75	0	0	0	0	0	0	0	0
Legal	3,202	1,773	75	0	0	0	0	0	0	0	0
Immature females	8,296	0	75	0	0	0	0	0	0	0	0
Mature females	31,656	497	0	0	0	0	0	0	0	0	0
Total weight (kg)	105.60	9.09	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	73	71	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	146	71	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	73	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.75	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	K-10	K-11	K-12	K-13	K-14	K-18	K-19	K-20	K-21	K-22	K-23
Start Date	06/11/2014	06/11/2014	06/11/2014	06/09/2014	06/09/2014	07/01/2014	07/01/2014	07/03/2014	07/03/2014	07/11/2014	07/12/2014
Duration (hour)	0.51	0.52	0.38	0.5	0.52	0.51	0.51	0.51	0.53	0.5	0.52
Distance Fished (km)	2.82	2.86	1.99	2.69	2.83	2.78	2.76	2.83	2.94	2.79	2.83
Mid-Latitude (°N)	58.31	58.22	58.32	58.27	58.34	58.34	58.34	58.34	58.34	58.34	58.34
Mid-Longitude (°W)	-162.06	-161.55	-160.76	-159.97	-159.54	-168.46	-169.1	-169.73	-170.39	-171.01	-171.66
Bottom Depth (m)	46	40	23	42	24	65	68	70	74	84	95
Bottom Temperature (°C)	5.9	5.5	7.3	5.6	7.2	1.9	1.4	1.7	1.6	1.5	2.6
Red King Crab											
Immature males	0	0	0	95	0	0	0	0	0	0	0
Mature males	82	228	0	570	0	0	0	0	0	0	0
Legal	82	152	0	190	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	285	0	0	0	0	0	0	0
Total weight (kg)	2.22	7.42	0.00	16.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	0	0	0	2,371	143	6,572	343	284
Mature males	0	0	0	0	0	153	869	0	526	0	284
Legal	0	0	0	0	0	153	395	0	131	0	284
Immature females	0	0	0	0	0	0	790	71	1,446	69	497
Mature females	0	0	0	0	0	0	0	0	66	137	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	1.10	10.60	0.41	17.66	1.11	2.85
Opilio Tanner Crab											
Immature males	0	0	0	0	0	459	62,281	10,576	45,085	34,822	2,201
Mature males	0	0	0	0	0	382	1,502	286	2,629	4,808	10,013
Legal	0	0	0	0	0	459	4,900	643	4,403	8,997	12,001
Immature females	0	0	0	0	0	153	24,185	6,431	57,967	21,085	142
Mature females	0	0	0	0	0	76	20,549	5,073	18,994	58,723	71
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	2.28	91.77	15.73	113.61	127.80	71.53
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	553	0	460	0	0
Males ≥ 78 mm	0	0	0	0	0	0	553	0	1,052	0	142
Immature females	0	0	0	0	0	0	79	0	66	0	0
Mature females	0	0	0	0	0	0	0	0	329	618	71
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	3.11	0.00	5.48	0.42	0.94

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	K-24	K-25	K-26	K-27	L-01	L-02	L-03	L-04	L-05	L-06	L-07
Start Date	07/12/2014	07/19/2014	07/19/2014	08/02/2014	06/30/2014	06/30/2014	06/29/2014	06/20/2014	06/16/2014	06/17/2014	06/17/2014
Duration (hour)	0.5	0.52	0.51	0.47	0.51	0.51	0.52	0.5	0.52	0.5	0.5
Distance Fished (km)	2.83	2.93	2.78	2.64	2.8	2.77	2.82	2.85	2.93	2.61	2.75
Mid-Latitude (^{o}N)	58.33	58.32	58.33	58.34	58.67	58.69	58.66	58.66	58.66	58.68	58.67
Mid-Longitude (^{o}W)	-172.3	-172.92	-173.57	-174.32	-167.85	-167.21	-166.56	-165.94	-165.31	-164.63	-164.01
Bottom Depth (m)	102	109	115	169	46	44	42	37	39	37	35
Bottom Temperature (^{o}C)	2.5	2.6	3.1	3.9	3.4	3.9	5	4.8	3.6	4.7	5.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	80	0	0	0	0	0
Legal	0	0	0	0	0	80	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	72	92	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	2.54	0.00	0.00	1.64	0.98	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	68	467	0	1,843	0	0	0	0	0	0	0
Mature males	0	133	0	0	0	80	0	0	0	0	0
Legal	0	133	0	0	0	80	0	0	0	0	0
Immature females	0	467	0	1,914	0	0	0	0	0	0	0
Mature females	68	133	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.34	2.32	0.00	0.37	0.00	0.56	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	9,555	6,734	6,262	0	80	0	0	0	0	0	0
Mature males	2,798	4,534	1,618	0	0	0	0	0	0	0	0
Legal	6,552	8,934	4,433	0	0	0	0	0	0	0	0
Immature females	213,141	467	46,511	0	0	0	0	0	0	0	0
Mature females	229,930	467	238,748	0	0	0	0	0	0	0	0
Total weight (kg)	297.19	53.87	360.78	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	67	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	200	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	71	0	0	0	0	0	0	0
Mature females	409	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.42	1.42	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	L-08	L-09	L-18	L-19	L-20	L-21	L-22	L-23	L-24	L-25	L-26
Start Date	06/15/2014	06/11/2014	06/30/2014	07/01/2014	07/03/2014	07/03/2014	07/11/2014	07/12/2014	07/12/2014	07/19/2014	07/19/2014
Duration (hour)	0.51	0.52	0.5	0.51	0.5	0.53	0.5	0.52	0.5	0.53	0.51
Distance Fished (km)	2.94	2.83	2.72	2.69	2.81	2.98	2.81	2.8	2.81	2.92	2.87
Mid-Latitude (°N)	58.67	58.65	58.66	58.65	58.67	58.66	58.67	58.67	58.66	58.66	58.67
Mid-Longitude (°W)	-163.36	-162.71	-168.49	-169.14	-169.78	-170.43	-171.08	-171.72	-172.37	-172.99	-173.62
Bottom Depth (m)	31	24	53	63	67	73	83	92	102	112	126
Bottom Temperature (°C)	5.7	6.8	2.2	1.5	1.1	1	0.7	1.1	2.2	2.5	2.9
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	82	0	0	0	0	0	0	0	0
Legal	0	0	82	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	82	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	5.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	0	579	3,586	840	378	1,227	0	135
Mature males	0	0	0	0	0	64	0	126	0	66	607
Legal	0	0	0	0	0	64	0	63	0	66	539
Immature females	0	0	0	0	0	2,561	653	378	1,227	132	337
Mature females	0	0	0	0	0	0	133	0	0	132	1,281
Total weight (kg)	0.00	0.00	0.00	0.00	1.10	6.86	2.39	1.34	0.40	0.81	11.00
Opilio Tanner Crab											
Immature males	0	0	82	318	48,711	36,372	24,758	9,392	682	2,903	16,244
Mature males	0	0	0	159	579	1,729	6,807	12,418	273	1,188	2,831
Legal	0	0	0	239	2,244	2,625	11,545	17,146	545	2,442	9,975
Immature females	0	0	0	0	50,666	126,023	35,902	2,332	273	264	0
Mature females	0	0	0	0	9,337	8,645	39,172	7,690	0	1,716	20,288
Total weight (kg)	0.00	0.00	0.01	1.39	60.89	114.95	131.07	120.66	3.38	19.75	94.77
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	256	200	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	448	0	126	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	334	756	0	66	67
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	2.26	0.77	1.67	0.00	0.15	0.10

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	L-27	L-28	L-29	L-30	L-31	M-01	M-02	M-03	M-04	M-05	M-06
Start Date	08/02/2014	07/31/2014	07/31/2014	07/29/2014	07/29/2014	06/19/2014	06/30/2014	06/30/2014	06/16/2014	06/16/2014	06/17/2014
Duration (hour)	0.5	0.52	0.53	0.52	0.52	0.52	0.5	0.47	0.51	0.51	0.51
Distance Fished (km)	2.8	2.8	2.88	2.9	2.88	2.86	2.71	2.53	2.8	2.82	2.67
Mid-Latitude (°N)	58.66	58.74	58.66	58.67	58.67	59	58.99	59	59	58.99	59
Mid-Longitude (°W)	-174.28	-174.99	-175.52	-176.2	-176.87	-167.9	-167.21	-166.55	-165.91	-165.29	-164.65
Bottom Depth (m)	158	142	136	141	137	42	39	34	31	27	28
Bottom Temperature (°C)	3.8	3.7	3	2.8	2.6	3.1	4.2	5.7	5.2	5.4	5.8
Red King Crab											
Immature males	0	0	0	0	0	0	86	18,773	0	97	0
Mature males	0	0	0	0	0	0	259	0	0	0	0
Legal	0	0	0	0	0	0	259	0	0	0	0
Immature females	0	0	0	0	0	0	0	8,958	0	97	0
Mature females	0	0	0	0	0	220	0	4,670	0	97	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	2.68	12.84	172.14	0.00	1.64	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	8,719	1,265	3,633	2,917	1,339	0	0	0	0	0	0
Mature males	0	0	4,306	0	0	0	0	0	0	0	0
Legal	0	0	2,489	0	0	0	0	0	0	0	0
Immature females	8,328	1,546	16,626	3,695	2,878	0	0	0	0	0	0
Mature females	0	0	8,156	0	0	0	0	0	0	0	0
Total weight (kg)	5.58	0.29	92.61	1.25	0.59	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	345	0	1,951	0	201	953	0	0	0	0	0
Mature males	0	0	1,615	0	0	0	0	0	0	0	0
Legal	0	0	3,229	0	0	0	0	0	0	0	0
Immature females	1,243	0	1,413	0	602	0	0	0	0	0	0
Mature females	345	0	33,436	0	0	0	0	0	0	0	0
Total weight (kg)	0.46	0.00	57.26	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	138	0	0	259	67	0	0	0	0	0	0
Males ≥ 78 mm	0	0	67	0	0	0	0	0	0	0	0
Immature females	1,243	0	67	454	201	0	0	0	0	0	0
Mature females	138	0	67	0	0	0	0	0	0	0	0
Total weight (kg)	0.38	0.00	0.57	0.10	0.03	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	M-07	M-08	M-18	M-19	M-20	M-21	M-22	M-23	M-24	M-25	M-26
Start Date	06/15/2014	06/15/2014	06/30/2014	07/01/2014	07/03/2014	07/03/2014	07/10/2014	07/12/2014	07/12/2014	07/19/2014	07/19/2014
Duration (hour)	0.51	0.53	0.5	0.5	0.5	0.51	0.51	0.5	0.5	0.51	0.5
Distance Fished (km)	2.83	3	2.83	2.69	2.71	2.84	2.82	2.72	2.76	2.74	2.75
Mid-Latitude (°N)	59	59	58.99	59	58.99	59.02	58.99	59	59	59	59
Mid-Longitude (°W)	-163.97	-163.34	-168.55	-169.18	-169.84	-170.49	-171.12	-171.78	-172.43	-173.08	-173.72
Bottom Depth (m)	28	23	47	54	63	70	78	87	99	107	118
Bottom Temperature (°C)	5.4	6.9	2.6	1	0.7	0.3	0.2	0.4	1.6	2.1	2.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	81	0	17,835	10,068	590	826	1,639	275
Mature males	0	0	0	0	0	0	215	0	69	71	137
Legal	0	0	0	0	0	0	72	0	69	71	69
Immature females	0	0	0	0	0	40,100	11,084	590	964	1,497	69
Mature females	0	0	0	0	0	0	0	0	0	71	0
Total weight (kg)	0.00	0.00	0.00	0.10	0.00	6.42	8.38	1.65	0.89	1.35	1.42
Opilio Tanner Crab											
Immature males	0	0	0	243	211,670	98,081	75,265	102,160	10,806	1,782	5,014
Mature males	0	0	0	0	76	765	6,236	6,319	3,441	784	412
Legal	0	0	0	0	681	1,322	9,032	26,781	6,263	1,853	2,060
Immature females	0	0	0	0	223,014	305,513	128,237	5,040	551	285	24,312
Mature females	0	0	0	0	2,949	5,148	42,148	162,342	619	570	80,423
Total weight (kg)	0.00	0.00	0.00	0.05	112.33	85.15	166.60	364.25	44.59	10.53	107.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	70	1,864	301	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	645	301	0	0	69
Immature females	0	0	0	0	0	0	38,206	1,505	69	0	0
Mature females	0	0	0	0	0	0	1,864	9,103	0	0	69
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.10	10.17	10.09	0.02	0.00	1.38

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	M-27	M-28	M-29	M-30	M-31	M-32	N-01	N-02	N-03	N-04	N-05
Start Date	08/02/2014	07/30/2014	07/31/2014	07/29/2014	07/28/2014	07/28/2014	06/19/2014	06/18/2014	06/18/2014	06/16/2014	06/16/2014
Duration (hour)	0.52	0.53	0.53	0.52	0.52	0.55	0.53	0.51	0.51	0.51	0.53
Distance Fished (km)	2.9	2.85	2.83	2.83	2.83	3.04	3.02	2.82	2.85	2.84	3
Mid-Latitude (°N)	58.99	59	58.98	58.99	58.99	59	59.36	59.33	59.35	59.33	59.33
Mid-Longitude (°W)	-174.37	-175.03	-175.72	-176.31	-176.98	-177.59	-167.91	-167.23	-166.59	-165.95	-165.33
Bottom Depth (m)	127	130	133	134	136	135	40	32	29	25	21
Bottom Temperature (°C)	2.7	2.9	2.3	2.5	3.1	3.1	3.2	3.9	4.6	5.7	6.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	77	0	154	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	1.10	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	1,216	676	565	276	350	281	0	0	0	0	0
Mature males	2,026	0	0	0	0	0	0	0	0	0	0
Legal	1,418	0	0	0	0	0	0	0	0	0	0
Immature females	5,047	203	424	69	280	56	0	0	0	0	0
Mature females	8,201	0	353	69	0	0	0	0	0	0	0
Total weight (kg)	59.55	0.36	2.43	0.69	0.48	0.37	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	24,248	338	212	69	0	0	0	0	0	0	0
Mature males	11,009	1,150	1,908	0	0	56	0	0	0	0	0
Legal	24,248	1,420	2,120	0	0	56	0	0	0	0	0
Immature females	338	203	0	414	0	0	0	0	0	0	0
Mature females	19,993	68	71	0	0	0	0	0	0	0	0
Total weight (kg)	112.89	10.00	17.13	0.07	0.00	0.59	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	743	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	2.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	N-06	N-07	N-18	N-19	N-20	N-21	N-22	N-23	N-24	N-25	N-26
Start Date	06/17/2014	06/15/2014	06/30/2014	07/01/2014	07/02/2014	07/03/2014	07/10/2014	07/11/2014	07/20/2014	07/19/2014	07/19/2014
Duration (hour)	0.51	0.52	0.51	0.51	0.51	0.52	0.52	0.51	0.51	0.52	0.51
Distance Fished (km)	2.8	2.88	2.82	2.74	2.89	2.89	2.82	2.82	2.74	2.82	2.84
Mid-Latitude (°N)	59.31	59.33	59.33	59.32	59.34	59.32	59.33	59.35	59.33	59.33	59.34
Mid-Longitude (°W)	-164.65	-164.01	-168.55	-169.23	-169.87	-170.54	-171.17	-171.83	-172.5	-173.16	-173.78
Bottom Depth (m)	23	22	42	50	60	67	75	80	88	101	110
Bottom Temperature (°C)	7	7.8	2.8	1.7	0.2	-0.2	-0.1	0.1	0.8	2	2.2
Red King Crab											
Immature males	0	0	0	0	0	67	0	0	0	0	0
Mature males	0	0	0	161	0	0	0	0	0	0	0
Legal	0	0	0	161	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	7.04	0.00	1.43	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	69	0	0	0	74	0	0
Legal	0	0	0	0	69	0	0	0	74	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	1.81	0.00	0.00	0.00	1.56	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	0	0	2,337	1,684	293	1,190	211	340
Mature males	0	0	0	0	0	0	0	0	0	0	68
Legal	0	0	0	0	0	0	0	0	0	0	68
Immature females	0	0	0	0	0	2,003	2,691	146	446	351	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	1.96	3.54	0.12	1.12	0.73	0.88
Opilio Tanner Crab											
Immature males	0	0	0	81	137,484	24,174	70,395	22,255	40,308	9,982	1,020
Mature males	0	0	0	0	483	868	1,679	146	3,570	7,592	68
Legal	0	0	0	0	1,104	3,606	4,268	2,855	9,445	13,567	884
Immature females	0	0	74	81	58,596	23,306	134,002	4,832	3,124	2,390	204
Mature females	0	0	0	81	69	6,211	8,607	15,959	45,514	4,428	204
Total weight (kg)	0.00	0.00	0.00	0.07	66.08	43.59	85.77	52.40	130.65	83.18	4.08
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	2,659	146	818	141	0
Males ≥ 78 mm	0	0	0	0	0	0	0	73	149	0	0
Immature females	0	0	0	0	0	0	560	0	297	70	0
Mature females	0	0	0	0	0	0	560	0	1,339	141	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	2.06	0.45	2.60	0.53	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	N-27	N-28	N-29	N-30	N-31	O-01	O-02	O-03	O-04	O-18	O-19
Start Date	08/01/2014	07/30/2014	07/30/2014	07/29/2014	07/28/2014	06/19/2014	06/19/2014	06/18/2014	06/18/2014	06/30/2014	07/02/2014
Duration (hour)	0.51	0.52	0.51	0.52	0.52	0.5	0.5	0.5	0.52	0.51	0.51
Distance Fished (km)	2.83	2.87	2.82	2.89	2.89	2.81	2.87	2.81	2.99	2.76	2.73
Mid-Latitude (^{o}N)	59.33	59.32	59.34	59.33	59.34	59.67	59.66	59.67	59.67	59.66	59.66
Mid-Longitude (^{o}W)	-174.45	-175.11	-175.75	-176.38	-177.06	-167.94	-167.3	-166.62	-165.93	-168.59	-169.26
Bottom Depth (m)	121	133	137	136	150	35	31	27	21	39	47
Bottom Temperature (^{o}C)	2.4	2.4	2.1	1.8	3	2.2	3.2	5.5	6	1.4	1
Red King Crab											
Immature males	0	0	0	0	0	75	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	76	0
Legal	0	0	0	0	0	0	0	0	0	76	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	81
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.00	3.50	0.90
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	333	203	140	137	328	0	0	0	0	0	0
Mature males	0	136	0	0	263	0	0	0	0	0	0
Legal	0	136	0	0	131	0	0	0	0	0	0
Immature females	0	339	0	69	328	0	0	0	0	0	0
Mature females	0	0	0	0	66	0	0	0	0	0	0
Total weight (kg)	0.45	1.47	0.19	0.03	3.29	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	800	4,407	0	0	656	0	0	0	0	454	1,217
Mature males	600	2,305	140	0	66	0	0	0	0	0	0
Legal	933	6,306	140	0	197	0	0	0	0	0	0
Immature females	200	136	279	0	1,641	0	0	0	0	378	487
Mature females	133	68	70	0	2,297	0	0	0	0	0	0
Total weight (kg)	6.54	33.48	1.10	0.00	4.28	0.00	0.00	0.00	0.00	0.09	0.13
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	67	0	70	0	197	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	66	0	0	0	0	0	0
Total weight (kg)	0.52	0.00	0.18	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	O-20	O-21	O-22	O-23	O-24	O-25	O-26	O-27	O-28	O-29	O-30
Start Date	07/02/2014	07/02/2014	07/10/2014	07/11/2014	07/20/2014	07/20/2014	07/20/2014	07/31/2014	07/31/2014	07/30/2014	07/29/2014
Duration (hour)	0.51	0.51	0.52	0.51	0.52	0.52	0.52	0.51	0.52	0.49	0.51
Distance Fished (km)	2.95	2.78	2.91	2.76	2.8	2.86	2.99	2.79	2.95	2.73	2.86
Mid-Latitude (^{o}N)	59.68	59.67	59.66	59.67	59.67	59.67	59.67	59.67	59.67	59.67	59.68
Mid-Longitude (^{o}W)	-169.92	-170.58	-171.25	-171.89	-172.58	-173.23	-173.87	-174.44	-175.12	-175.86	-176.56
Bottom Depth (m)	57	66	72	77	84	94	105	115	126	138	136
Bottom Temperature (^{o}C)	0.2	-0.5	-0.2	0	0.4	1.2	2.2	2.3	2.3	2	2.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	69	0	0	0	0	0	0	0	0	0	0
Legal	69	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	69	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	4.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	68	0	0	0	0	0
Mature males	0	0	0	0	72	342	195	0	0	0	0
Legal	0	0	0	0	72	137	130	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	2.21	7.08	5.66	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	1,042	273	0	359	68	325	0	0	0	67
Mature males	0	0	0	0	72	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	149	0	0	144	68	0	0	0	0	67
Mature females	0	0	0	0	0	68	0	0	0	0	0
Total weight (kg)	0.00	1.01	0.07	0.00	0.95	0.31	0.72	0.00	0.00	0.00	0.02
Opilio Tanner Crab											
Immature males	6,628	38,114	24,330	12,450	39,349	958	10,774	13,747	11,626	623	0
Mature males	0	0	136	75	287	137	1,103	208	0	1,039	0
Legal	69	2,829	2,453	298	1,292	479	7,464	3,958	3,423	1,662	0
Immature females	6,282	75,632	2,181	596	69,794	411	3,440	74,013	276,964	69	134
Mature females	345	4,764	9,064	2,386	81,785	479	1,752	146,428	190,606	69	0
Total weight (kg)	4.80	58.94	45.29	17.71	140.01	3.85	43.77	191.11	323.80	9.68	0.03
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	149	646	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	75	144	0	0	0	0	0	0
Immature females	0	0	68	75	359	0	0	0	0	0	0
Mature females	0	0	0	0	287	0	0	417	0	0	0
Total weight (kg)	0.00	0.00	0.03	0.33	1.40	0.00	0.00	0.42	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	O-31	ON2524	ON2625	P-01	P-18	P-19	P-20	P-21	P-22	P-23	P-24
Start Date	07/28/2014	07/20/2014	07/20/2014	06/30/2014	06/30/2014	07/02/2014	07/02/2014	07/02/2014	07/10/2014	07/11/2014	07/20/2014
Duration (hour)	0.5	0.52	0.5	0.52	0.51	0.52	0.51	0.5	0.51	0.51	0.51
Distance Fished (km)	2.74	2.93	2.86	2.85	2.83	2.8	2.74	2.81	2.78	2.79	2.78
Mid-Latitude (°N)	59.67	59.5	59.5	60	59.99	59.98	59.99	60	60.01	60	59.98
Mid-Longitude (°W)	-177.15	-172.88	-173.5	-168.01	-168.66	-169.33	-169.95	-170.62	-171.31	-171.97	-172.56
Bottom Depth (m)	172	93	102	27	39	46	54	65	69	66	67
Bottom Temperature (°C)	2.8	1.5	2	5.9	2.2	0.7	-0.3	-0.7	-0.5	0	0.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	298	72
Mature males	0	603	0	0	0	0	0	0	0	0	72
Legal	0	402	0	0	0	0	0	0	0	0	72
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	18.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52	1.96
Bairdi Tanner Crab											
Immature males	0	402	201	0	0	0	0	0	0	0	0
Mature males	0	67	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	70	0	67	0	0	157	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.14	1.05	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	5,191	9,979	10,656	0	155	1,333	316	76,708	28,290	4,253	72
Mature males	2,736	2,344	2,413	0	0	0	0	0	0	0	0
Legal	4,560	4,487	6,702	0	0	0	0	1,289	1,371	0	0
Immature females	7,857	201	335	0	0	627	237	89,934	3,320	298	72
Mature females	114,201	1,540	938	0	0	0	79	2,442	4,258	75	72
Total weight (kg)	133.63	35.03	43.35	0.00	0.02	0.13	0.41	29.03	40.89	5.25	0.16
Hybrid Tanner Crab											
Males ≤ 77 mm	70	67	134	0	0	0	0	0	72	149	0
Males ≥ 78 mm	0	67	335	0	0	0	0	0	0	0	0
Immature females	0	0	67	0	0	0	0	0	72	0	0
Mature females	281	67	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.65	0.61	1.73	0.00	0.00	0.00	0.00	0.00	0.06	0.16	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	P-25	P-26	P-27	P-28	P-29	P-30	P-31	P-32	PO2423	PO2524	PO2625
Start Date	07/21/2014	07/21/2014	07/21/2014	07/30/2014	07/27/2014	07/27/2014	07/29/2014	07/29/2014	07/21/2014	07/20/2014	07/20/2014
Duration (hour)	0.45	0.51	0.51	0.51	0.53	0.52	0.5	0.5	0.53	0.51	0.5
Distance Fished (km)	2.43	2.82	2.86	2.82	2.86	2.86	2.81	2.81	2.84	2.79	2.78
Mid-Latitude (^{o}N)	60	60	60	60	59.99	60	60	60	59.83	59.83	59.84
Mid-Longitude (^{o}W)	-173.27	-173.96	-174.6	-175.26	-175.9	-176.67	-177.21	-177.93	-172.26	-172.94	-173.57
Bottom Depth (m)	75	97	108	117	129	142	137	143	76	81	95
Bottom Temperature (^{o}C)	0.3	1.9	2.1	2.3	2	1.9	1.8	1.9	0.1	0.3	1.6
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	745	0	0	0	0	0	0	0	0	0	0
Mature males	1,159	545	212	0	0	0	0	0	69	0	352
Legal	911	477	212	0	0	0	0	0	69	0	282
Immature females	83	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	25.65	14.83	5.32	0.00	0.00	0.00	0.00	0.00	1.63	0.00	10.29
Bairdi Tanner Crab											
Immature males	83	0	0	0	67	0	0	0	0	131	0
Mature males	0	0	0	0	0	0	0	595	0	0	70
Legal	0	0	0	0	0	0	0	446	0	0	70
Immature females	83	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	67	0	0	0	0	0	0
Total weight (kg)	0.09	0.00	0.00	0.00	0.41	0.00	0.00	4.34	0.00	0.09	0.72
Opilio Tanner Crab											
Immature males	16,062	28,835	27,427	8,931	9,766	8,890	138	9,495	7,911	15,354	8,458
Mature males	0	409	1,269	403	337	1,145	0	3,741	139	65	4,370
Legal	414	2,590	10,858	4,096	2,896	4,243	69	8,920	625	980	8,317
Immature females	24,010	4,022	0	336	21,754	308,382	346	30,573	278	33,909	634
Mature females	8,693	22,904	141	470	71,727	440,516	138	76,827	3,261	65,140	775
Total weight (kg)	21.88	71.10	73.07	27.37	99.92	546.55	0.61	128.73	14.41	97.79	49.52
Hybrid Tanner Crab											
Males ≤ 77 mm	745	0	0	0	0	0	0	144	69	261	0
Males ≥ 78 mm	0	0	0	0	0	0	69	144	0	65	0
Immature females	248	0	0	0	0	0	0	1,223	0	0	0
Mature females	83	0	0	67	876	1,280	0	1,798	0	0	0
Total weight (kg)	0.73	0.00	0.00	0.12	1.32	1.75	0.65	5.29	0.11	0.35	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	PO2726	Q-01	Q-02	Q-18	Q-19	Q-20	Q-21	Q-22	Q-23	Q-25	Q-26
Start Date	07/21/2014	07/01/2014	07/01/2014	07/01/2014	07/01/2014	07/01/2014	07/02/2014	07/11/2014	07/11/2014	07/22/2014	07/22/2014
Duration (hour)	0.51	0.5	0.52	0.49	0.51	0.5	0.51	0.51	0.52	0.52	0.51
Distance Fished (km)	2.9	2.79	2.82	2.82	2.92	2.8	2.91	2.76	2.82	2.87	2.75
Mid-Latitude (°N)	59.84	60.33	60.33	60.33	60.33	60.33	60.33	60.32	60.33	60.29	60.33
Mid-Longitude (°W)	-174.25	-167.96	-167.27	-168.66	-169.31	-170.02	-170.67	-171.35	-172.06	-173.38	-174.07
Bottom Depth (m)	106	31	30	37	43	52	62	66	59	63	90
Bottom Temperature (°C)	2	5.8	6.2	3.7	0.9	-0.3	-0.4	-0.6	-0.5	0.6	0.8
Red King Crab											
Immature males	0	0	0	78	0	0	0	0	0	0	0
Mature males	0	77	0	0	0	0	0	0	0	0	0
Legal	0	77	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	78	0	0	0	0	0	0	0
Total weight (kg)	0.00	3.60	0.00	1.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	78	902	0
Mature males	133	0	0	0	0	0	0	0	155	763	71
Legal	133	0	0	0	0	0	0	0	78	347	71
Immature females	0	0	84	0	0	0	0	0	0	208	0
Mature females	0	0	251	0	0	0	0	0	0	0	0
Total weight (kg)	2.89	0.00	1.64	0.00	0.00	0.00	0.00	0.00	3.35	20.94	2.01
Bairdi Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	6,518	0	0	78	2,334	1,068	1,944	36,411	931	5,828	40,980
Mature males	998	0	0	0	0	0	67	0	0	0	0
Legal	3,858	0	0	0	0	142	469	0	0	69	1,552
Immature females	466	0	0	0	1,131	1,282	134	16,800	310	4,579	13,049
Mature females	3,725	0	0	0	0	214	67	19,168	78	278	16,999
Total weight (kg)	27.18	0.00	0.00	0.01	0.25	1.03	4.05	49.98	0.71	6.85	66.38
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	148	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	Q-27	Q-28	Q-29	Q-30	Q-31	QP2423	QP2524	QP2625	QP2726	R-22	R-23
Start Date	07/21/2014	07/27/2014	07/27/2014	07/28/2014	07/28/2014	07/21/2014	07/21/2014	07/22/2014	07/21/2014	07/23/2014	07/22/2014
Duration (hour)	0.5	0.53	0.51	0.51	0.52	0.53	0.53	0.51	0.5	0.51	0.52
Distance Fished (km)	2.79	2.88	2.83	2.8	2.84	2.97	2.86	2.72	2.8	2.82	2.86
Mid-Latitude (°N)	60.33	60.34	60.33	60.33	60.33	60.16	60.17	60.12	60.17	60.65	60.67
Mid-Longitude (°W)	-174.71	-175.38	-176.03	-176.72	-177.4	-172.32	-173	-173.77	-174.35	-171.42	-172.12
Bottom Depth (m)	103	112	122	137	147	58	60	89	100	64	62
Bottom Temperature (°C)	1.5	1.7	1.9	1.8	1.7	4.4	1.8	1.2	1.5	-1.1	0.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	823	218	0	0	0	0
Mature males	0	0	0	0	0	1,509	145	73	205	0	0
Legal	0	0	0	0	0	549	145	73	205	0	0
Immature females	0	0	0	0	0	69	73	0	0	0	0
Mature females	0	0	0	0	0	274	73	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	41.00	5.56	1.86	5.79	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	137	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	14,187	47,409	14,430	3,132	540	274	1,524	43,570	3,889	34,766	14,188
Mature males	280	3,467	1,634	4,085	337	0	0	0	682	0	0
Legal	1,887	16,070	7,011	6,741	675	0	0	1,525	1,296	423	0
Immature females	0	200	0	136	0	206	1,451	7,116	136	22,989	16,884
Mature females	210	2,534	68	68	0	69	145	27,740	1,228	5,712	5,959
Total weight (kg)	24.80	125.26	45.52	35.62	4.76	0.30	1.24	81.71	12.66	36.13	24.38
Hybrid Tanner Crab											
Males ≤ 77 mm	0	67	0	0	0	0	145	145	0	0	0
Males ≥ 78 mm	0	400	0	0	0	0	73	218	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	1.71	0.00	0.00	0.00	0.00	0.31	0.99	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	R-24	R-25	R-26	R-27	R-28	R-29	R-30	R-31	R-32	S-22	S-23
Start Date	07/22/2014	07/22/2014	07/22/2014	07/22/2014	07/25/2014	07/25/2014	07/28/2014	07/27/2014	07/27/2014	07/23/2014	07/23/2014
Duration (hour)	0.52	0.52	0.52	0.5	0.53	0.52	0.52	0.51	0.5	0.52	0.52
Distance Fished (km)	2.87	2.85	2.9	2.87	2.9	2.82	2.87	3.02	2.82	2.74	2.82
Mid-Latitude (°N)	60.67	60.67	60.67	60.67	60.66	60.67	60.67	60.67	60.67	60.98	61
Mid-Longitude (°W)	-172.76	-173.47	-174.13	-174.82	-175.46	-176.21	-176.8	-177.51	-178.17	-171.5	-172.15
Bottom Depth (m)	45	65	86	97	108	119	130	147	161	60	64
Bottom Temperature (°C)	4.5	0.6	0.5	0.7	0.9	1.4	1.6	1.6	2.1	-1.1	-1.1
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	1,110	0	0	0	0	0	0	0	0	0	0
Mature males	4,070	0	0	0	0	0	0	0	0	0	0
Legal	1,554	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	74	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	81.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	592	27,013	37,700	10,935	5,848	25,333	32,888	1,067	2,874	29,228	18,755
Mature males	0	0	0	267	723	700	3,356	3,326	3,476	0	0
Legal	0	0	407	1,067	3,154	6,012	20,001	4,331	5,481	0	0
Immature females	518	36,109	24,817	1,334	3,022	292	134	188	13,503	3,536	9,841
Mature females	148	5,237	14,375	1,800	2,760	5,662	201	126	63,571	9,526	1,640
Total weight (kg)	0.53	32.46	62.74	21.59	23.57	74.11	101.28	29.15	96.32	35.19	13.99
Hybrid Tanner Crab											
Males ≤ 77 mm	0	138	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	S-24	S-25	S-26	S-27	S-28	S-29	S-30	S-31	T-25	T-26	T-27
Start Date	07/23/2014	07/24/2014	07/24/2014	07/22/2014	07/25/2014	07/25/2014	07/25/2014	07/27/2014	07/23/2014	07/24/2014	07/24/2014
Duration (hour)	0.52	0.53	0.52	0.5	0.51	0.53	0.51	0.5	0.5	0.52	0.51
Distance Fished (km)	2.86	2.86	2.84	2.87	2.75	2.86	2.85	2.78	2.82	2.87	2.83
Mid-Latitude (°N)	61	60.99	61	61	61.01	61	60.99	60.99	61.34	61.33	61.34
Mid-Longitude (°W)	-172.81	-173.5	-174.15	-174.88	-175.52	-176.27	-176.96	-177.65	-173.58	-174.34	-174.99
Bottom Depth (m)	67	76	83	92	102	112	122	136	74	78	87
Bottom Temperature (°C)	0.5	0.4	0.4	0.6	0.6	1	1.4	1.5	-0.6	-0.4	-0.5
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	16,506	25,906	35,854	10,461	2,753	16,754	14,128	4,122	15,066	26,657	17,929
Mature males	0	0	0	0	0	265	586	2,194	0	141	0
Legal	0	357	204	329	141	3,775	8,594	5,252	134	352	138
Immature females	12,884	9,420	18,950	3,224	1,129	662	0	66	15,401	21,171	19,515
Mature females	11,352	3,925	13,156	3,289	141	4,900	391	199	5,959	5,838	12,895
Total weight (kg)	32.09	33.98	57.22	17.06	3.28	40.57	44.18	26.79	27.71	39.87	34.82
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	T-28	T-29	T-30	U-25	U-26	U-27	U-28	U-29	V-25	V-26	V-27
Start Date	07/24/2014	07/25/2014	07/25/2014	07/23/2014	07/24/2014	07/24/2014	07/24/2014	07/25/2014	07/23/2014	07/23/2014	07/24/2014
Duration (hour)	0.53	0.52	0.49	0.51	0.51	0.51	0.51	0.51	0.53	0.51	0.5
Distance Fished (km)	2.91	2.98	2.71	2.87	2.83	2.78	2.79	2.82	2.94	2.84	2.86
Mid-Latitude (°N)	61.33	61.33	61.34	61.67	61.67	61.67	61.67	61.66	62	62	62
Mid-Longitude (°W)	-175.65	-176.3	-176.95	-173.67	-174.43	-175.08	-175.78	-176.47	-173.75	-174.49	-175.16
Bottom Depth (m)	97	106	116	70	77	85	96	105	62	74	80
Bottom Temperature (°C)	0.2	0.8	1.2	-1.5	-1.4	-1.2	0	0.5	-1.5	-1.5	-1.6
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Immature males	5,875	7,725	10,925	10,788	18,759	6,287	3,443	8,852	35,126	8,977	7,869
Mature males	0	0	207	0	0	0	0	0	0	0	0
Legal	129	927	1,867	0	0	68	0	452	0	67	67
Immature females	3,680	803	0	7,924	11,998	2,119	2,548	2,068	19,720	8,842	1,067
Mature females	2,583	680	138	1,998	3,646	1,093	620	1,874	7,326	1,687	734
Total weight (kg)	10.55	15.86	22.69	13.43	23.78	8.02	4.92	15.31	39.77	13.21	9.86
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix: Tow details, crab density (number nmi^{-2}), and catch weight at 2014 eastern Bering Sea bottom trawl survey stations.

Station	V-28	Z-05
Start Date	07/24/2014	06/22/2014
Duration (hour)	0.51	0.42
Distance Fished (km)	2.84	2.26
Mid-Latitude (^{o}N)	62	54.68
Mid-Longitude (^{o}W)	-175.84	-165.15
Bottom Depth (m)	92	82
Bottom Temperature (^{o}C)	-0.7	5.6
Red King Crab		
Immature males	0	0
Mature males	0	0
Legal	0	0
Immature females	0	0
Mature females	0	0
Total weight (kg)	0.00	0.00
Blue King Crab		
Immature males	0	0
Mature males	0	0
Legal	0	0
Immature females	0	0
Mature females	0	0
Total weight (kg)	0.00	0.00
Bairdi Tanner Crab		
Immature males	0	106
Mature males	0	0
Legal	0	0
Immature females	0	0
Mature females	0	0
Total weight (kg)	0.00	0.04
Opilio Tanner Crab		
Immature males	6,579	0
Mature males	0	0
Legal	67	0
Immature females	3,826	0
Mature females	1,141	0
Total weight (kg)	10.25	0.00
Hybrid Tanner Crab		
Males ≤ 77 mm	0	0
Males ≥ 78 mm	0	0
Immature females	0	0
Mature females	0	0
Total weight (kg)	0.00	0.00