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The 2011 Eastern Bering Sea Continental Shelf Bottom Trawl Survey: Results for Commercial Crab Species

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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. In 2011, 376 standard stations were sampled on the eastern Bering Sea shelf and 20 stations were resampled in Bristol Bay at the end of the standard survey to account for female red king crab maturity. The 2011 biomass estimates reported in metric tons (t) and pounds (lbs) with 95% confidence intervals (± 1.96 SE) for legal-sized males of commercial crab stocks in the eastern Bering Sea were as follows:

Commercial Crab Species	2011 Legal-sized Male Biomass (± 95% CI) [1]	
Bristol Bay District red king crab (*Paralithodes camtschaticus*)	15,412 (5,238) t	33,977,299.61 (11,547,788.81) lbs
Pribilof District red king crab (*P. camtschaticus*)	3,751 (4,787) t	8,269,046.58 (10,554,038.49) lbs
Pribilof District blue king crab (*P. platypus*)	399 (693) t	879,573.20 (1,528,179.24) lbs
St. Matthew Island Section blue king crab (*P. platypus*)	5,788 (5,555) t	12,759,351.83 (12,246,469.72) lbs
Southern Tanner crab (*Chionoecetes bairdi*), east 166° W	10,207 (5,880) t	22,503,103.69 (12,964,143.55) lbs
Southern Tanner crab, east 166° W ≥ 5.5 inches	5,356 (4,344) t	11,807,249.93 (10,109,706.61) lbs
Southern Tanner crab, west 166° W	23,278 (16,729) t	51,319,174.78 (36,880,898.03) lbs
Southern Tanner crab, west 166° W ≥ 5.0 inches	15,676 (13,672) t	34,560,932.62 (35,029,759.51) lbs
Snow crab, all Districts (*C. opilio*)	146,297 (32,652) t	322,525,931.00 (71,984,466.52) lbs
Snow crab, all Districts ≥ 4.0 inches	94,763 (22,025) t	208,915,452.54 (48,556,399.29) lbs

[1.] Differences in metric ton biomass estimates compared to pound biomass estimate are due to rounding errors.

INTRODUCTION

Survey History and Purpose

The eastern Bering Sea (EBS) bottom trawl survey has been conducted by the Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC), National Marine Fisheries Service (NMFS) from the early 1970's. Since 1975, annual surveys have been conducted and were expanded to include Bristol Bay and the majority of the Bering Sea continental shelf with the original purpose of assessing potential resource impacts of offshore oil development (Pereyra et al. 1976). 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 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 et al, 2005) but will be referred to as Tanner crab in this document.

Since 1988, 376 standard stations have been included in the survey covering a 140,350 square nautical mile (nmi^2) area of the EBS with station depths ranging from 20 to 150 m (Fig. 1). The annual EBS bottom trawl survey begins in the northeast section of Bristol Bay in early June. Approximately 10 to 12 stations are sampled each day from two vessels. The standard survey is completed in late July 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, a small portion of the inner Bristol Bay area is resampled after the conclusion of the standard survey (see Results: Bristol Bay District Red King Crab section).

Between 1994 and 2010, a survey station producing $\geq$ 100 legal-sized male red king or Tanner crab has been considered a "hot spot". At each hot spot, multiple additional tows were made within the station area and all crab species caught were sampled identical to the standard survey tow protocol described in the Methods section.

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 1998). The annual Stock Assessment and Fishery Evaluation (SAFE) report prepared by the North Pacific Fishery Management Council's Crab Plan Team provides current biological, economic, and ecosystem data associated with these species. 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 Science and Statistical Committee review the assessment, biological, economic, and modeling data to recommend biological reference points associated with the status of stocks. Crab stock boundaries are defined by ADF&G management units for king crab and Tanner crab species (Bowers et al. 2010). 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 are considered

single stocks but are split into separate management units defined by the ADF&G Board of Fish using 166°W and 173°W as the boundary for each east and west unit, respectively.

This report summarizes the 2011 survey results for commercially important crab resources in the EBS. The results of the 2011 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 2010).

METHODS

Survey Area and Sampling Logistics

The 2011 standard survey was conducted onboard the chartered fishing vessels FV *Alaska Knight* and FV *Aldebaran*, beginning 5 June in Bristol Bay and moving westward to end at station K-27 on 25 July. The vessels sampled in close proximity during the standard survey, with both vessels returning to Bristol Bay to resample 20 stations between 25 and 31 July. These stations were resampled due to the delaying effects of cold water temperatures on the red king crab reproductive cycle (see Results: Bristol Bay District Red King Crab).

The survey stations are divided into multiple districts, which are defined by ADF&G commercial crab management units (Fig. 2). 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. Total area calculations for each stock strata uses an area of 401 nmi^2 for each 20 × 20 nmi cell 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 within the stratum. 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 stratum for the St. Matthew Island Section of the Northern District is divided into two sampling areas: 1) a high-density 7,218 nmi^2 area with 28 stations and 2) a standard-density 12,431 nmi^2 area with 29 stations creating a total of 57 stations within the St. Matthew Island Section stratum. The stratum of the Pribilof District is divided into two sampling areas: 1) a high-density 10,025 nmi^2 area with 41 total stations and 2) a standard-density 14,436 nmi^2 area with 36 stations creating a total of 77 stations within the stratum.

The fishing gear used in 2011 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 2010). The trawls on each vessel were rotated every 25-30 consecutive tows 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) 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 2010). 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 Seabird 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 this 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 rostrum horns (Karinen and Hoopes 1971, Urban et al. 2002). Subsampling of the total catch occurred when an exceptionally large number (>300) of a species was caught in a tow. The 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 excluding spines (CW) for Tanner and snow crab, and carapace length (CL) for all king crab and hair crab (Donaldson and Byersdorfer 2005). 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). All female crab abdomens were evaluated to determine reproductive condition based on 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), the condition of the eggs (0 = no eggs, 1 = uneyed, 2 = eyed, 3 = dead, 4 = empty egg cases), and color of the eggs (0 = no eggs, 2 = purple, 3 = brown, 4 = orange, 5 = purple-brown, 6 = pink).

Egg clutch and egg condition codes were used to assess the stage in the molt-mate cycle of mature female red king crab during the survey, 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.

Chela height and carapace width measurements (± 0.1 mm) were collected from a subsample of male *Chionoecetes* spp. crab caught at each station to determine morphometric molt to functional

maturity based on the chela height to carapace width ratio (Stevens et al.1993, Tamone et al. 2007). Functional maturity in male *Chionoecetes* spp. can be separated into two morphometric groups, small claw and large claw.

All crab carapaces were scanned for evidence of bitter crab syndrome or black mat fungus and recorded when present. Crabs with bitter crab syndrome were set aside for further testing by the Fisheries Resource Pathology Laboratory at the AFSC in Seattle, WA.

Crab Biomass Estimates

Crab density (weight/nmi^2) was estimated at each station for legal males, as well as mature and immature males and females of each stock (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. In this document, population biomass estimates are calculated using the variable net width based on net mensuration data. 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), and changes with the depth of the tow due to changes in scope of the trawl wire (Rose and Walters 1990). For 2011 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). Distance traveled by the trawl was determined from ship positions recorded at the beginning and end of each tow using GPS equipment.

All reported historical data and the current biomass estimates are calculated for the number of individual male and female crab species at the 1 mm size category using the weight-size relationship developed by the AFSC Kodiak Laboratory (Table 2). The weight-size relationships are described by the expression:

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

where W is the total weight in grams, L is either carapace length (CL) or carapace width (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 the 1 mm size category are summed within the legal male, mature and immature size categories for each species and sex caught at a station. The crab biomass within a district or section was estimated by averaging crab densities from all stations within the defined district or section and multiplied by the total area of the district or section 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 sections). 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 metric tons and pounds are reported. Metric

tons can be converted to pounds by multiplying the biomass in tons by 2,204.62 for comparison with ADF&G reported values of Total Allowable Catch (TAC) and Guideline Harvest Levels (GHL). Differences in metric ton biomass estimates compared to pound biomass estimate are due to rounding errors.

In the Bristol Bay District, 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 stations with multiple tows (i.e., station A-04), a single estimate of crab density was used by averaging all tows within the station prior to calculating total crab biomass.

In 2011, the total population estimates for Bristol Bay red king crab males was calculated by averaging data collected at the original stations in early June with data collected at the 20 resample stations in late July. Bristol Bay female red king crab biomass was calculated by replacing data collected at the original stations with data collected at the resample stations due to crab movement into the sampling area during the time between the standard survey and the resampling event.

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. However, for consistent analyses and due to a lack of available data, catchability is assumed to be near or equal to one.

RESULTS

Survey Overview

The 2011 EBS bottom trawl survey consisted of 396 bottom trawls (376 standard survey stations, and 20 resampled stations in Bristol Bay) conducted from 5 June to 31 July 2011 over an area of approximately 140,350 nmi^2 beginning on 5 June 2011 in the northeast corner of Bristol Bay, moving northwest of St. Matthew Island and following the slope edge south to finish on 25 July 2011 at station K-27. The latitude and longitude of the midpoint of each successful tow along with the duration (hr), distance fished (km), bottom depth (m) and bottom temperatures (°C) are listed in Appendix A. The mean distance fished was 1.50 nmi (2.79 km, SD = 0.16 nmi) with a range of 0.54 to 1.87 nmi (1.00 to 3.46 km) and the mean fishing time was 30.5 minutes (SD = 3.1 min). The fishing depth of the 83/112 otter trawl ranged from 18 to 170 m with a mean gear depth of 77.5 m (SD = 33.4 m). The mean net width per tow ranged from 13.3 m to 19.2 m and the average mean net width for all 396 successful tows was 16.4 m with a standard deviation of 0.3 m.

The mean bottom temperature at each station during the standard survey ranged from -1.6° to 6.5°C (Fig. 3). A cold pool of water < 2°C extended onto the middle shelf between the 50 m and 100 m isobaths and into the western edge of Bristol Bay with cool temperatures persisting northeast of the Pribilof Islands. Warmer bottom temperatures were evident between the 100 m and 200 m isobaths in the southwestern area of the survey area, at the nearshore stations along the Alaska Peninsula, and in shallow waters surrounding Nunivak Island. Cooler water temperatures persisted in the northwestern area between the 100 m and 200 m isobaths and the

waters surrounding St. Matthew Island. In 2011, the average mean bottom water temperature during the first survey leg (5 to 19 June 2011) was 2.6°C (SD = 1.0) which was warmer than the average mean bottom water temperature during the same time period in 2010 at 1.8°C (SD = 1.6) and in 2009 at 1.5°C (SD = 0.5), as well as 1.4°C (SD = 0.7) in 2008 and 1.8°C (SD = 0.9) in 2007. The mean bottom water temperatures at the 20 stations resampled in July ranged from 4.2°C to 7.7°C, with an average of 5.9°C (SD = 1.1) (Fig. 4).

The time series of mature male biomass, beginning in 1975, for six of the current commercial crab stocks highlights the fluctuations of each stock over the last thirty years with relative increases beginning in 2001 after precipitous decline in 1997 to 2000 (Fig. 5).

Nine special projects were conducted in addition to the assessment survey to collect specific biological data from particular crab species (Table 3). Eight of the projects originated from the AFSC Shellfish Assessment Program: 1) investigate the effects of ocean acidification on the maternal condition and reproductive success as well as larval condition and survival in red king crab, 2) examine *Chionoecetes* spp. stomach contents, 3) collect specimens with rare or unusual pathological conditions, 4) collect hemolymph samples from *Paralithodes, Hyas, Pagurus,* and *Elassochirus* spp., and *E. isenbeckii* at randomly selected stations to monitor bitter crab syndrome and for population genetics, 5) define genetic population structure in EBS blue king crab, 6) investigate the effects of cold temperatures on crab survival using reflex assessment model predictor, 7) collect paired photographic and genetic documentation from *Chionoecetes* hybrid crab, and 8) evaluate adult and juvenile red king crab distribution at nearshore stations along the Alaska Peninsula. Data for an additional project were collected to evaluate sperm reserves and clutch fullness in *Chionoecetes* spp. as indicators of reproductive potential for ADF&G.

A total of 55 live female red king crab with newly extruded embryos were collected and returned to the AFSC Kodiak Laboratory to measure effects of ocean acidification on embryo viability, embryo development, hatching success, fecundity, and maternal condition as well as the condition and survival of larvae. Over 200 stomachs from both male and female Tanner and snow crab were collected to investigate the diet of these species. Hemolymph samples were collected to monitor bitter crab syndrome from 278 *P. camtschaticus*, 53 *Hyas lyratus*, 330 *H. coarctatus*, 81 Pagurus *spp.*, 6 *Elassochirus cavimanus*, 178 *E. isenbeckii*, and 110 *Telmessus cheiragonus*. One hundred and seventeen hemolymph samples were collected from both Pribilof Islands and St. Matthew Island blue king crab for population genetics and to monitor bitter crab syndrome. One hundred male snow crab were collected to investigate the effect of cold temperatures on crab metabolism and reflexes. One hundred and twenty hemolymph samples along with morphometirc photographs were collected from *Chionoecetes* hybrid crab. Nine survey stations were added to the standard survey design to assess adult and juvenile red king crab distribution in the nearshore waters of Bristol Bay. All collections were completed within the guidelines stipulated by the ADF&G collection permit for each project.

Bristol Bay District Red King Crab

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 (Shirley et al. 1990, Stevens and Swiney 2007, Chilton et al. 2010). A delay in the molting and mating cycle is apparent at the beginning of the EBS bottom trawl 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. In years with relatively warmer water temperatures, 94%-99% of the mature females in June carried uneyed embryos (Chilton et al. 2010).

In years with colder than average bottom water temperatures, (1999, 2000, and 2006 to 2010) a number of standard Bristol Bay stations were sampled in early June and again in late July to assess the percentage of ovigerous red king crab females which had recently completed the molting and mating cycle and had extruded a new clutch of uneyed embryos. In 2011, it was necessary to resample 20 Bristol Bay stations in early August due to the low number of newly molted, ovigerous female with clutches of uneyed embryos encountered in early June. These resample stations were selected based on the density of female red king crab at these stations during the first sampling event and from expected distributions based on previous Bristol Bay surveys.

Red king crab were caught at 65 of the 136 stations in the Bristol Bay management district in 2011. The density of legal-sized male crab caught at a station ranged from 73 to 1,894 crab/nmi^2 (Appendix A). Legal-sized male Bristol Bay red king crab were caught at 56 stations (Table 4, Appendix A), resulting in a total biomass estimate (± 95% CI) of 15,412 ± 5,238 t in the Bristol Bay District (Table 5). The majority of these males were concentrated in the central and southwest section of Bristol Bay along the Alaska Peninsula (Figs. 5 and 6). The 2011 estimate of legal-sized males is lower than the 20 year average of 24,464 ± 11,814 t (Table 5).

Red king crab mature males were encountered at 65 of the 156 surveyed stations; 136 Bristol Bay district stations and 20 resample stations. One hundred percent of the 417 mature males caught were measured, while 43% of the 1,295 immature male red king crab caught were measured (Table 4). The estimated biomass of 19,599 ± 6,024 t for mature males represents 46% of the total male biomass in 2011 (Table 5) with immature male red king crab representing the remaining balance of 7,864 ± 5,517 (Table 4). The majority of both size categories were centrally located in the Bristol Bay District, with a high number of immature males caught station G-15 in the nearshore waters of northeastern Bristol Bay (Figs. 6 and 7).

The 2009 male red king crab 125 to 135 mm CL cohort appears in 2010 at 140 to 150 CL and at approximately 165 to 175 mm CL size class in 2011 as the old and very old shell condition classes, with juvenile recruitment appearing at the 40 to 50 mm CL size category in 2011 (Fig. 8). In 2011, 79% legal-sized male were hardshell crabs and 21% were oldshell and very oldshell crabs with the majority of oldshell males caught in central Bristol Bay and at depths of 50 m or less (Fig. 9).

The 2011 mature female red king crab biomass estimate of 37,486 ± 19,011 t represented 91% of the total female abundance (Table 5) with immature female red king crab biomass estimated at 3,760 ± 4,995 t (Table 4). The majority of the mature female red king crab were caught in the

central area of Bristol Bay and along the Alaska Peninsula in shallow, nearshore waters while a high number of juvenile females were caught at station G-15 (Figs. 6 and 7).

Similar to the previous 5 years, the cold water temperatures in 2011 delayed the molting and mating cycle and only 52% of the 450 mature females sampled during the standard survey had extruded a new clutch of uneyed embryos. In early June, the oldshell females with empty egg cases were distributed in the central and northern section of Bristol Bay while the new, hardshell females with uneyed embryos were primarily distributed along the Alaska Peninsula in the southeastern section of Bristol Bay (Fig. 10a). Among resurveyed female crab in late July, 93% were mature females and 94% of these were in new, hardshell condition with newly extruded uneyed embryos (Fig. 11). These new, hardshell females had molted and mated over the six week period between the first sampling event in early June samples and the resample in late July (Fig. 10b).

During years with colder than average bottom temperatures, (1999, 2000, and 2006 to 2010) the ratio of eyed to uneyed embryos encountered in mature females on the EBS bottom trawl survey in June was higher compared to years with warmer bottom temperatures (2001-2005). The eyed to uneyed embryo ratio ranges from 6.54 to 0.42 in cold years, compared to 0.06 to 0.01 in the warmer years, indicating 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 0.02 to < 0.01, and indicating the majority of mature females have completed the mating and molting cycle (Table 6). In 2011, the ratio of eyed to uneyed embryos decreased from 0.81 in early June during the standard survey to 0.06 in late July during the resampling event.

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 7 of the 77 total stations in the Pribilof District; 7 stations in the high-density sampling area and zero stations in the standard-density sampling area in 2011. The density of legal-sized males caught at a station ranged from 74 to 2,219 crab/nmi^2 (Appendix A). Legal-sized male red king crab were caught at 6 of the 77 total stations in the Pribilof District; 6 stations in the high-density sampling area and zero stations in the standard-density sampling area, with a biomass estimate (± 95% CI) of 3,751 ± 4,787 t. Legal-size males represented 49% of the total male biomass but were below the average of 5,360 ± 5,961 t crab from the previous 20 years (Table 7). The majority of the legal-sized males were distributed south and west of St. Paul Island at stations G-21 and GH-2122 (Figs. 12 and 13).

Mature males were encountered at 6 of the 77 total stations in the Pribilof District; 6 stations in the high-density sampling area and zero stations in the standard-density sampling area, and 100% of the 56 mature and 2 immature males caught were measured (Table 4) . The biomass estimate

of mature males was 3,834 ± 4,872 t and represented 99% of the total male biomass (Table 7) with the remaining 1% represented by 44 ± 86 t of immature male red king crab (Table 4). Mature males were distributed ubiquitously around St. Paul Island in the nearshore shallow water stations and to the northeast of St. Paul Island (Figs. 12 and 13).

The 2011 size-frequency for red king crab males shows an increase in the number of oldshell and very oldshell legal-sized males in comparison to the 2009 and 2010 shell conditions (Fig. 14). In 2011, 17% of the legal-sized males were evaluated as new hardshell crabs and distributed northeast of St. Paul Island. Eighty-three percent of the legal-sized males were in oldshell and very oldshell condition and primarily distributed southeast of St. Paul Island (Fig 15).

The 2011 biomass estimate of mature-sized red king crab females was 814 ± 1,165 t, representing 99.9% of the total female biomass, with immature female red king crab biomass estimated at 3 ± 6 t (Table 7). Female biomass estimates are imprecise due to the limited number of tows with positive crab catches (Appendix A, Figs. 12 and 13). All of the mature females were carrying uneyed embryos with 96% of the mature females and 4% immature females in new hardshell condition. The majority of mature females with uneyed embryos were in the130 mm CL to 140 mm CL size class (Fig. 16).

Pribilof District Blue King Crab

Blue king crab were caught at 5 of the 77 total stations in the Pribilof District; 5 stations in the high-density sampling area and zero stations in the standard-density sampling area in 2011. Legal-sized males were caught at two stations east of St. Paul Island and one station north of St. George, with a density ranging from 74 to 454 crab/nmi^2 (Appendix A, Figs. 15 and 16). The 2011 biomass estimate (± 95% CI) of legal-sized males was 399 ± 693 t, representing 86% of the total male abundance and well below the average of 1,603 ± 1,293 t for the previous 20 years (Table 8).

Blue king crab mature males were caught at three of the 77 total stations in the Pribilof District; three stations in the high-density sampling area and zero stations in the standard-density sampling area and 100% of the nine mature males caught were measured (Table 4). The mature male biomass estimate of 461 ± 763 t represents 100% of the total male abundance since no immature male blue king crab were caught on the 2011 survey in the Pribilof District (Tables 4 and 8, Figs. 17 and 18).

The 2009 male blue king crab cohort at the 125 to 130 mm CL size class advanced to approximately the 145 to 155 mm CL size class in 2010 and appears in the 180 mm CL size class in 2011 (Fig. 19). Seven legal-sized male blue king crab were captured on the 2011 survey in the Pribilof District; five new hardshell males and one oldshell male east of St. George Island at station H-19 while one legal-sized male was in new hardshell condition and caught northeast of St. Paul Island (Fig. 20).

One mature female blue king crab was caught in the Pribilof District high-density sampling area at station GF-2120 with a biomass estimate of 22 ± 43 t, and represents 60% of the total female biomass (Table 8, Figs. 17 and 18). Immature female blue king crab were caught at two station

north of St. Paul Island in the Pribilof District high-density sampling area with a biomass estimate of 15 ± 25 t for 2011 (Table 4, Figs. 17 and 18). Estimates of female biomass are imprecise due to the preference of these crab 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). One of the three female blue king crab sampled in the Pribilof District was brooding uneyed embryos, with one immature new hardshell and one barren new hardshell (Fig. 21).

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 ten year rebuilding plan. Blue king crab were caught at 28 of the 57 total stations in the St. Matthew Island Section sampling strata; 18 stations in the high-density sampling area and 10 stations in the standard-density sampling area. The density of legal-sized males caught at a station ranged from 72 to 3,988 crab/nmi^2 and were captured primarily south and west of St. Matthew Island (Appendix A, Figs. 22 and 23). One hundred and thirty-two legal-sized male blue king crab were caught in 2011 with a biomass estimate (± 95% CI) of 5,701 ± 5,504 t and representing 52% of the total male biomass and above an average of 2,997 ±1,468 t from the previous 20 years (Table 9).

Mature male blue king crab were caught at 23 of the 59 of the total stations surveyed in the St. Matthew Island Section sampling strata and 100% of the 255 mature and 92 immature males caught were measured, respectively (Table 4). The mature male biomass estimate in 2011 was 9,516 ± 10,167 t, representing 86% of the total male biomass (Table 9), while the immature male biomass estimate of 1,699 ± 2,064 t made up the remaining 14% of the total male biomass (Table 4). 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 (Figs. 22 and 23).

The 2009 100 mm to 110 mm CL male blue king crab cohort is increasing in age, reflected in the 115 mm to 120 mm CL range in 2010 with increasing oldshell and very oldshell condition classes and decreasing in abundance in 2011 within the 135-145 mm CL size range (Fig. 24). In 2011, 60% of the legal-sized males were new hardshell crabs, with the majority distributed south of St. Matthew Island, followed by 28% in soft and motling condition while the remaining 12% were oldshell and very oldshell condition crabs (Fig. 25).

The 2011 mature female blue king crab biomass estimate was 51 ± 52 t, representing 38% of the female biomass (Table 9), and the immature female blue king crab biomass estimate was 104 ± 125 t (Table 4). Mature females were caught at two stations, Q-23 and PQ-2423 and immature females were caught at 4 stations, primarily southwest of St. Matthew Island (Figs. 22 and 23). One mature female was in new hardshell condition with uneyed embryos while 1 mature female was new hardshell with empty egg cases (see female Pribilof District Blue King Crab discussion above). The remaining 15 females were new hardshell and immature in the 64 mm to 89 mm CL size classes (Fig. 26).

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 total allowable catch or guideline harvest level (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). In this document, we have provided the 2011 abundance and biomass estimates the for the two legal-size categories as well as for ≥ 5.5 inches CW east of 166°W and ≥ 5.0 inches CW (125 mm, without spines) west of 166°W (Tables 4, 10 and 11).

Tanner crab were caught at 72 of the 121 total stations east of 166°W and 162 of the 255 total stations west of 166°W with Tanner crab occurring at 41 and 22 stations in the high-density area of the Pribilof District and St. Matthew Island Section sampling strata west of 166°W (Appendix A, Fig. 27).

Legal-sized Tanner crab were caught at 44 of the 121 total stations east of 166°W and 99 of the 255 total stations west of 166°W (Table 4). Ninety-nine percent of the legal-sized males caught east of 166°W were measured while 74% of the legal-sized males caught west of 166°W were measured (Table 4). The 2011 biomass estimate (± 95% CI) for legal male Tanner crab east of 166°W was 10,201 ± 5,880 t and 52% of those were males ≥ 5.5 inches CW with a biomass estimate of 5,356 ± 4,344 t (Table 10). The 2011 biomass estimate for legal male Tanner crab west of 166°W was 23,259 ± 16,712 t and 67% of those were males ≥ 5.0 inches CW with a biomass estimate of 15,660 ± 13,658 t (Table 11). The majority of the Tanner males ≥ 138 mm CW east of 166°W were distributed in the northeast section of Bristol Bay and the majority of Tanner males ≥ 125 mm west of 166°W were distributed to the southwest of the Pribilof Islands while sublegal males were distributed throughout the eastern Bering Sea shelf with high abundances at stations F-07 and G-01 (Fig. 28).

In 2010, a total of 1,795 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 data collected in 2010 and in 2008 (n =1,783) graphically represents two distinct maturity groups; immature males (small claw) with a ratio of less than 0.18 and mature males (large claw) with a ratio greater than or equal to 0.18 (Fig 29). The carapace widths for small claw males ranged from 14.0 to 137.3 mm compared to 66.6 to 175.2 mm for large claw males. The large claw males smaller than 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).

The 2009 male size class of 55 mm to 65 mm CW appears at approximately the 85 mm to 95 mm CW size classes in 2010 and advanced into the 110 mm to 125mm size classes in 2011 (Fig. 30). A high number of new hardshell males were caught in 2011 in the 30 mm to 50 mm and 60 mm to 70 mm size categories. Old and very oldshell males in the 90 mm to 130 mm CW size classes remain in the population, and are distributed in the southwest section of the EBS shelf at depths greater than 100 m as well as south and east of the St. Paul Island (Fig. 31).

The 2011 mature female Tanner crab biomass estimate east of 166°W and west of 166°W was 1,727 ± 1,006 t and 5,125 ± 842 t, respectively, while the immature female Tanner crab biomass east of 166°W and west of 166°W was 4,939 ± 3,242 t and 6,5556 ± 2,228 t, respectively (Tables 4, 10 and 11). Forty 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, while the immature females were distributed throughout the eastern Bering Sea shelf between the 50 to 200 m isobaths (Figs. 27 and 28). Among sampled mature females, 7% were softshell, 33% were new-hardshell, and 60% were oldshell and very oldshell. Eighty-four percent of the mature females carried newly extruded embryos while 5% were brooding eyed embryos, less than 1% had not produced a new clutch and 10% were barren (Fig. 32).

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 density of legal-sized male snow crab is reported for both legal (≥ 3.1 in. CW) and preferred (≥ 4.0 in. CW) size categories and listed by station in Appendix A. The biomass estimates for male snow crab are reported for both legal and preferred size categories in this report (Table 12).

Snow crab were caught at 274 of the 376 stations in the combined areas of the Bristol Bay District, Pribilof District, and St. Matthew Island Section sampling strata. Snow crab occurred at 40 and 27 stations in the high-density area of the Pribilof District and St. Matthew Island Section sampling strata (Appendix A). Legal-sized snow crab were caught at 231 of the 376 standard stations and 57% of the legal-sized males caught were measured (Table 4).

Legal-sized male snow crab were caught at 235 stations, throughout all Districts combined, resulting in a biomass estimate (± 95% CI) of 146,275 ± 32,651 t and representing 41% of the total male abundance. Thirty-nine percent of those legal males were ≥ 4.0 inches CW with a biomass estimate of 94,741 ± 22,022 t (Table 12), while the biomass estimate of sublegal males was 114,962 ± 36,799 t (Table 4). These legal-sized male snow crab were distributed throughout the eastern Bering Sea shelf with higher concentrations around the Pribilof Islands (Figs. 33 and 34). Approximately 89% of all legal male snow crab were east of 173°W in the ADF&G Eastern management district compared to 70% in 2010.

In 2011, a total of 1,130 male snow 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 data collected in 2011 and in 2009 (n =1,303) 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 ≥ 0.20 (Fig. 35). 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 high number of pre-recruit new hardshell males appeared in the 45 mm to 50 mm size category in 2010, and advanced into the 55 mm to 65 mm size category in 2011 (Fig. 36). Among legal-sized male crab, 4% were in molting or softshell condition while 69% were in new-hardshell condition indicating a recent molt and distributed between the 50 m and 100 m in the

middle shelf of the EBS survey area as well as between the 100m and 200m in the northwest area of the EBS shelf. Twenty-seven percent of the legal-sized males were oldshell and very oldshell condition crabs and primarily distributed in the southwestern section of the EBS shelf (Fig. 37).

The mature female snow crab biomass estimate of 236,886 ± 84,721 t comprised 77% of the total female biomass and the immature female crab biomass estimate was 72,308 ± 27,103 t (Tables 4 and 12). Among sampled mature females; 62% were in new-hardshell condition with 98% brooding newly extruded embryos, 37% were oldshell and very oldshell condition with 97% brooding new embryos, while less than 1% of the old and very old shell females had not produced a new clutch, and less than 1% of the mature females were barren (Fig. 38).

***Chionoecetes bairdi/opilio* hybrid**

Chionoecetes spp. hybrid crab were caught at 163 of the 365 stations in the combined areas of the Bristol Bay District, Pribilof District, and Northern District. *C.* hybrid crab occurred at 36 stations in the Pribilof District high-density sampling area, and 11 stations in the high-density sampling area of the St. Matthew Island Section of the Northern District (Appendix A).

In this document, *C.* 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). The biomass estimates for legal-sized male *C.* hybrid crab combines both the preferred and legal size categories. The density of legal-sized male *C.* hybrid crab are listed by station in Appendix A and are separated into preferred (≥ 4.0 in. CW) and legal (≥ 3.1 in. CW) size categories.

Legal-sized male *C.* hybrid crab were caught at 126 stations, throughout all Districts combined, resulting in a biomass estimate (± 95% CI) of 4,225 ± 1,363 t and were primarily distributed northeast of the Pribilof Islands between 50 and 100 m (Figs. 38 and 39). Ninety-two percent of those legal males were ≥ 4 inches in carapace width, with a biomass estimate of 3,892 ± 1,321 t. The 2011 sublegal male *C.* hybrid crab biomass estimate for all Districts combined was 2,808 ± 1,421 t, were distributed throughout the northeastern Bering Sea shelf at depths greater than 50 m (Figs. 39 and 40).

The 2011 mature female *C.* hybrid crab biomass estimate was 3,084 ± 1,257 t and the immature female crab biomass estimate was 471 ± 229 t. The majority of the mature female hybrid crab were primarily distributed south of St. Matthew Island and between 100 and 200 m in the northwestern area of the eastern Bering Sea shelf (Figs. 39 and 40).

Other Crab Stocks and Species of Interest

Northern District Red King Crab

Red king crab were caught at 28 stations in the Northern District which is outside the management units where red king crab are commercially fished or managed (Fig. 2). The 2011 biomass estimates were calculated using an area of 11,228 nmi^2 based on the number of stations with positive catches of red king crab in the Northern District. Legal-sized males were caught at 14 of those stations. The density of legal-sized males caught at a station ranged from 74 to 156 crab/nmi^2 (Appendix A). The 2011 biomass estimate (± 95% CI) of legal-sized males was 1,479 ± 620 t while the biomass estimate of mature and immature males was 2,047 ± 729 and 369 ± 208 t, respectively. The biomass estimate of mature female red king crab was 888 ± 392 t while

the biomass estimate of immature females was 33 ± 45 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. 41).

Northern District Blue King Crab

Blue king crab were caught at three stations not included in the biomass estimates for the Pribilof District blue king crab or the St. Matthew Island section, Northern District blue king crab. One immature, hardshell female was caught northeast of the Pribilof Islands at station I-02, while one mature, hardshell male and one legal-sized, mature male in oldshell condition were caught northwest of St. Matthew Island at stations T-26 and V-27, respectively. (Appendix A, Fig. 42).

Hair Crab

In 2011, a total of 620 hair crab were captured at 68 of the 317 stations throughout all Districts combined on the EBS bottom trawl survey (Fig. 43). Historically, hair crab have been concentrated just north of the Alaska Peninsula and near the Pribilof Islands. In recent years, abundance of hair crab north of 58°N has been increasing, particularly to the west of Nunivak Island (Fig. 43).

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 and the female hair crab biomass estimate is presented for all sizes combined regardless of carapace size. The 2011 density of legal male hair crab caught at a station ranged from 72 to 862 crab/nmi^2 resulting in a biomass estimate of 2,119 ± 239 t (Table 13). 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. 43).

The 2011 pre-recruit male hair crab biomass estimate (± 95% CI) was 1,750 ± 170 t and the female hair crab biomass estimate was 375 ± 21 t (Table 13). A high number of pre-recruit males were caught west of Nunivak Island in the northeast section of the standard survey while the majority of female hair crab were caught in the central Bristol Bay area at depths > 50 m (Fig. 43). The density of both pre-recruit male and female hair crab has increased in these two areas over the last four years with an increasing number of females occurring west of Nunivak Island (Chilton et al. 2009 and 2011).

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. 2010). In the last few years, the biomass estimates of both size classes of male hair crab have increased relative to 2006 with the 2011 biomass estimate for legal-sized male hair crab higher than the 20-year average of 1,780 ± 820 t (Table 13).

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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 spines) is measured for *Chionoecetes* species.

	Immature	Mature	Legal male
Paralithodes camtschaticus			
Bristol Bay District			
males	<120 mm	≥ 120 mm	≥ 135 mm CL or ≥ 6.5 in. CW
females	<90 mm	≥ 90 mm	
Pribilof District			
males	<120 mm	≥ 120 mm	≥ 135 mm CL or ≥ 6.5 in. CW
females	< 90 mm	≥ 90 mm	
P. platypus			
Pribilof District			
males	<120 mm	≥ 120 mm	≥ 135 mm CL or ≥ 6.5 in. CW
females	< 100 mm	≥ 100 mm	
St. Matthew Island			
males	< 105 mm	≥ 105 mm	≥ 120 mm CL or ≥ 5.5 in. CW
females	< 80 mm	≥ 80 mm	
Chionoecetes bairdi			
East of 166° W			
males			≥ 120 mm or ≥ 4.8 in. CW[1]
females	< 85 mm	≥ 85 mm	
West of 166° W			
males			≥ 110 mm or ≥ 4.4 in. CW[1]
females	< 80 mm	≥ 80 mm	
Chionoecetes opilio		≥ 95 mm	≥ 78 mm or ≥ 3.1 in. CW[2]
	<50 mm	≥ 50 mm	≥ 50 mm
Erimacrus isenbeckii			
males			≥ 83 mm[3] CL or > 3.25 in. CW
females			

[1] The 2011 legal minimum size limit for *C. bairdi* is ≥ 4.8 inches CW (120 mm) east of 166° W and ≥ 4.4 inches CW (110 mm) 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), 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.

Table 2. Weight-size regression relationships used to calculate biomass of crab species caught in the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys.

Species	Number collected	*a*	*b*
Red king crab males	1086	0.000403	3.141334
Ovigerous red king crab	1010	0.003593	2.666076
Non-ovigerous RKC	201	0.000408	3.127956
Blue king crab males	409	0.000508	3.106409
Blue king crab females[2]	n/a	0.02065	2.2700
St Matthew males	386	0.000502	3.107158
Tanner crab males	1030	0.00027	3.022134
Ovigerous Tanner crab	331	0.000441	2.898686
Non-ovigerous Tanner	487	0.000562	2.816928
Snow crab males	1107	0.000267	3.097253
Ovigerous snow crab	588	0.001158	2.827784
Non-ovigerous snow crab	344	0.001047	2.708367
Hair crab males[3]	703	0.00071731	3.02
Hair crab females[3]	178	0.00119453	2.86

[1]Chilton, E.A . Unpublished manuscript. Growth and weight-size relationships of commercial crab in the eastern Bering Sea.

[2] Unpublished data. Available from Kodiak Laboratory, Alaska Fisheries Science Center, 301 Research Court Kodiak AK 99615.

[3] Armetta and Stevens (1987).

Table 3. Special projects related to crab species conducted on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey in 2011.

Project Title	Principle Investigator	Agency
Distribution of Bristol Bay red king crab in nearshore waters of the Alaska Peninsula	Liz Chilton	RACE[1]-SAP[2]
Tanner crab stomach contents and potential prey	Bob Foy and Kathy Swiney	RACE[1]-SAP[2]
Pathological specimen voucher	Pam Jensen and Frank Morado	RACE[1]-SAP[2]
Bitter crab syndrome and population genetics of *Paralithodes, Hyas, Pagurus, & Elassochirus* spp.	Frank Morado	RACE[1]-SAP[2]
Reproductive potential of snow and Tanner crabs in the eastern Bering Sea	Laura Slater	ADF&G[3]
Ocean acidification effects on reproductive success and larval condition and survival of red king crab	Kathy Swiney	RACE[1]-SAP[2]
Genetic population structure and Bitter crab syndrome of blue king crab in the eastern Bering Sea	Dave Tallmon and Frank Morado	UAS-UAF[4]
Cold temperatures effecting snow crab survival	Dan Urban	RACE[1]-SAP[2]
Genetic and photographic documentation of *Chionoecetes* hybrid crab	Dan Urban	RACE[1]-SAP[2]

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

Table 4. Summary of 2011 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	156	46	554	1,295	7,864	5,517
	Mature male	156	65	417	417	19,599	6,024
	Legal male	156	56	281	281	15,412	5,238
	Immature female	136	17	211	967	3,760	4,996
	Mature female	136	42	898	898	37,486	19,011
Pribilof Island District Red King Crab	Immature male	77	1	2	2	44	86
	Mature male	77	6	56	56	3,834	4,872
	Legal male	77	6	53	53	3,751	4,787
	Immature female	77	1	1	1	3	6
	Mature female	77	3	25	25	814	1,165
Pribilof Island District Blue King Crab	Immature male	77	0	0	0	0	0
	Mature male	77	3	9	9	461	763
	Legal male	77	2	7	7	399	693
	Immature female	77	2	2	2	15	25
	Mature female	77	1	1	1	22	43
St. Matthew Island Blue King Crab	Immature male	59	17	95	95	1,699	2,064
	Mature male	59	25	256	256	9,516	10,167
	Legal male	59	20	133	133	5,701	5,504
	Immature female	59	4	14	14	104	125
	Mature female	59	4	4	4	51	52
Tanner Crab east of 166°W	Sublegal male	121	61	2,932	5,039	13,707	6,726
	Legal male	121	44	471	475	10,207	5,881
	Preferred	121	31	196	196	5,356	4,344
	Immature female	121	51	2,289	3,644	4,939	3,242
	Mature female	121	37	262	267	1,727	1,006
Tanner Crab west of 166°W	Sublegal male	255	159	5,407	8,197	16,063	4,615
	Legal male	255	99	1,223	1,647	23,259	16,712
	Preferred	255	71	633	920	15,660	13,658
	Immature female	255	148	4,024	6,788	6,556	2,228
	Mature female	255	83	559	627	5,125	842
Opilio Tanner Crab	Sublegal male	376	221	10,200	61,791	114,962	36,799
	Legal male	376	231	7,163	12,625	146,275	32,651
	Preferred	376	205	4,156	5,762	94,741	22,022
	Immature female	376	182	4,586	60,624	72,308	27,103
	Mature female	376	176	8,119	95,351	236,886	84,721

Table 5. Time series of biomass estimates (t) for Bristol Bay District red king crab (*Paralithodes camtschaticus*) from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE.

Carapace length	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Legal male ± CI	Mature female ≥ 90 mm	Mature female ± CI	Grand total	Grand total ± CI
1975	90,276	29,852	60,026	21,210	39,514	25,130	205,284	75,990
1976	114,833	29,855	71,170	17,175	61,012	35,817	274,281	90,984
1977	150,193	55,524	94,684	38,241	106,413	37,247	353,230	97,109
1978	143,700	65,068	96,358	44,868	104,669	40,494	312,120	93,670
1979	131,619	48,206	94,312	34,386	74,790	22,065	237,037	61,231
1980	122,361	60,234	98,940	50,257	52,526	30,132	224,846	96,489
1981	36,083	7,894	24,336	5,849	39,558	12,443	110,295	27,088
1982	22,220	8,345	9,838	3,420	37,106	14,474	130,594	67,045
1983	9,582	2,440	2,809	936	6,022	2,345	47,487	19,533
1984	14,117	7,164	6,830	4,951	9,665	7,828	127,135	169,052
1985	13,606	4,013	5,210	2,023	3,727	1,828	32,137	9,952
1986	27,390	26,390	12,678	11,302	4,021	2,268	45,190	37,836
1987	29,162	14,064	17,600	8,692	12,048	7,604	63,446	25,922
1988	24,679	8,806	18,296	7,051	14,313	11,744	48,594	20,664
1989	38,901	15,998	28,678	12,954	9,679	6,395	57,327	23,846
1990	29,435	10,316	22,490	8,598	13,559	11,135	51,259	21,426
1991	61,403	67,982	53,217	60,515	11,881	10,525	81,217	70,131
1992	17,838	6,651	13,393	4,856	8,547	4,250	33,735	11,480
1993	28,283	9,042	19,183	6,461	12,504	6,149	48,426	16,464
1994	19,240	6,588	13,023	4,593	6,491	2,791	29,787	9,945
1995	20,372	14,360	15,159	9,703	6,918	3,299	34,826	18,801
1996	17,631	7,148	14,682	6,438	9,706	5,373	40,531	16,107
1997	31,679	13,031	26,699	11,934	18,084	12,686	76,661	39,515
1998	32,386	10,211	18,906	6,459	27,643	13,942	74,171	25,796
1999	35,215	11,419	26,376	9,158	12,003	5,442	53,032	13,942
2000	29,950	6,511	21,180	4,617	15,930	8,610	55,859	15,353
2001	18,557	5,622	14,965	4,737	17,589	10,493	46,121	16,117
2002	32,469	12,371	24,588	9,507	14,664	7,910	63,780	25,223
2003	42,629	16,149	32,165	12,968	28,445	12,691	85,591	27,509
2004	39,676	12,686	33,470	11,228	24,260	11,459	87,987	28,393
2005	37,090	13,714	27,643	11,650	34,955	14,979	93,764	31,741
2006	36,953	15,679	29,273	14,164	24,696	4,995	78,645	18,777
2007	42,543	16,015	33,451	13,949	27,532	6,853	84,879	20,608
2008	39,411	11,195	28,013	8,701	35,764	19,492	90,324	27,059
2009	34,262	24,416	22,542	17,128	28,758	18,146	71,912	46,293
2010	30,248	9,246	21,347	7,504	40,797	21,869	77,072	32,165
2011	19,599	6,024	15,412	5,238	37,486	19,011	68,709	28,611

Table 6. Average bottom water temperatures collected at stations with mature Bristol Bay red king crab (*Paralithodes camtschaticus*) females 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. 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	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

Table 7. Time series of biomass estimates (t) for Pribilof District red king crab (*Paralithodes camtschaticus*) from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE.

Carapace length	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Legal male ± CI	Mature female ≥ 90 mm	Mature female ± CI	Grand total	Grand total ± CI
1978	1,228	1,986	1,228	1,986	42	82	1,270	2,068
1979	859	661	790	657	76	108	935	715
1980	1,312	1,354	1,312	1,354	195	247	1,512	1,586
1981	299	343	299	343	97	148	396	366
1982	1,440	1,970	1,440	1,970	673	1,007	2,131	2,988
1983	518	542	486	494	216	205	761	716
1984	261	283	233	279	67	75	328	343
1985	60	118	60	118	0	0	60	118
1986	135	185	135	185	57	111	192	273
1987	53	103	53	103	25	49	77	113
1988	104	204	43	84	420	718	1,529	1,756
1989	1,498	2,671	854	1,415	1,442	1,961	4,000	5,512
1990	897	1,632	109	213	1,754	2,375	8,589	14,123
1991	4,335	6,765	1,295	2,047	3,790	4,468	8,819	11,747
1992	3,238	3,785	2,479	2,630	2,591	4,658	6,117	8,649
1993	9,687	17,497	9,017	16,185	4,829	6,789	14,800	22,430
1994	9,052	13,170	7,994	11,344	3,393	5,024	12,996	18,940
1995	24,282	20,572	22,428	19,226	6,171	6,180	31,053	25,213
1996	2,323	1,692	2,292	1,670	1,456	2,117	3,845	3,448
1997	6,056	7,393	5,843	7,305	1,436	1,597	8,970	8,604
1998	2,282	1,610	1,749	1,296	1,259	1,885	3,951	3,553
1999	5,422	7,092	4,394	5,995	2,252	3,258	13,445	16,773
2000	4,239	3,104	3,773	2,722	727	891	5,127	3,892
2001	8,434	12,995	5,663	7,808	4,333	8,450	15,047	25,801
2002	6,916	9,299	6,894	9,300	571	576	7,495	9,735
2003	5,280	6,807	5,184	6,638	1,642	2,922	6,924	8,408
2004	3,563	4,114	3,563	4,114	844	881	4,693	5,188
2005	1,219	1,398	1,219	1,398	2,207	3,393	3,479	4,019
2006	6,762	4,735	6,484	4,573	1,406	1,690	8,265	6,075
2007	7,176	5,489	6,947	5,245	2,527	2,563	9,912	8,127
2008	5,375	5,335	5,022	5,162	2,076	2,827	7,797	7,639
2009	2,454	3,066	2,088	2,519	546	590	3,044	3,623
2010	3,107	2,336	2,881	2,049	468	379	3,605	2,486
2011	3,834	4,872	3,751	4,787	814	1,165	4,695	5,707

Table 8. Time series of biomass estimates (t) for blue king crab (*Paralithodes platypus*) in the Pribilof District from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE.

Carapace length	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Legal male ± CI	Mature female ≥ 100 mm	Mature female ± CI	Grand total	Grand total ± CI
1975	34,051	33,248	24,267	23,702	10,912	14,772	53,560	46,308
1976	9,543	7,723	8,595	7,056	2,594	4,126	19,076	21,334
1977	38,756	58,267	36,706	56,390	11,259	19,765	55,710	66,015
1978	15,798	17,245	12,291	15,458	6,171	8,918	24,807	26,813
1979	13,261	6,655	11,198	5,469	2,843	2,706	18,720	10,371
1980	14,782	9,167	12,418	7,042	62,997	111,482	80,052	116,752
1981	10,675	3,524	9,617	3,203	8,298	7,358	22,816	11,733
1982	6,584	2,450	6,185	2,343	8,763	11,923	17,009	13,670
1983	4,867	1,708	4,069	1,392	9,864	15,159	15,992	16,991
1984	1,615	779	1,342	693	2,536	1,922	4,294	2,351
1985	959	501	687	381	520	457	1,518	856
1986	1,368	812	1,340	807	2,383	4,271	3,766	4,443
1987	2,659	2,144	2,529	2,054	785	908	3,746	2,961
1988	766	794	766	794	478	459	1,617	1,129
1989	752	940	752	940	714	658	3,660	3,722
1990	3,121	2,706	1,411	1,140	2,224	1,701	9,002	6,840
1991	4,203	3,221	3,025	2,666	2,119	1,651	8,237	5,304
1992	3,982	3,308	2,790	2,414	1,543	1,400	8,286	6,985
1993	4,072	2,491	2,841	1,710	1,636	1,465	7,155	3,986
1994	3,028	2,051	2,491	1,716	4,524	3,969	8,436	5,821
1995	7,696	8,198	6,307	6,780	4,482	3,835	13,402	11,546
1996	4,221	2,223	3,522	1,830	5,418	5,356	10,449	6,631
1997	2,940	1,591	2,515	1,337	2,840	2,390	6,316	3,392
1998	2,453	1,230	2,191	1,125	1,761	1,588	5,265	2,508
1999	1,476	1,020	1,201	862	2,755	2,480	4,491	3,568
2000	1,902	1,103	1,588	949	1,439	1,304	3,467	2,072
2001	1,454	2,093	1,329	1,975	1,816	2,571	3,350	4,724
2002	618	613	588	605	1,401	2,129	2,019	2,675
2003	638	501	610	492	1,286	1,880	1,963	2,311
2004	97	111	44	86	118	120	251	172
2005	313	435	313	435	370	413	1,457	1,662
2006	137	163	115	158	522	732	758	886
2007	254	397	170	245	216	350	674	872
2008	42	82	42	82	493	637	906	1,291
2009	452	632	170	201	595	979	1,309	1,929
2010	322	290	202	191	352	428	852	938
2011	461	763	399	693	22	43	498	786

Table 9. Time series of biomass estimates (t) for blue king crab (*Paralithodes platypus*) in the St. Matthew Island Section sampling stratum of the Northern District from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE.

Carapace length	Mature male ≥ 105 mm	Mature male ± CI	Legal male ≥ 120 mm	Legal male ± CI	Mature female ≥ 80 mm	Mature female ± CI	Grand total	Grand total ± CI
1978	5,387	4,125	3,004	1,940	143	140	8,477	6,876
1979	5,835	4,472	3,500	2,761	1,025	1,662	9,626	8,348
1980	7,586	7,052	4,945	3,893	938	1,611	11,039	11,807
1981	5,821	4,609	4,483	4,110	125	109	6,455	5,059
1982	13,947	8,641	11,280	6,366	296	471	15,986	10,807
1983	8,129	4,496	6,382	3,341	1,645	2,194	10,861	7,507
1984	3,486	1,289	2,946	1,168	228	305	4,208	1,591
1985	2,608	1,109	2,223	910	95	93	3,105	1,227
1986	1,170	891	668	407	34	66	1,509	1,213
1987	1,842	1,029	1,174	628	84	73	2,523	1,501
1988	2,582	1,226	1,722	752	443	414	3,941	2,089
1989	4,388	2,152	3,137	1,586	1,041	830	8,815	5,139
1990	5,423	2,809	4,314	2,233	143	167	6,775	3,743
1991	5,559	2,666	3,754	1,742	454	724	7,818	4,750
1992	5,737	2,296	4,223	1,663	198	262	7,349	3,025
1993	7,692	2,451	5,729	1,832	1,798	3,279	11,813	6,576
1994	5,305	1,830	3,886	1,326	197	155	6,352	2,107
1995	4,465	1,512	3,160	1,182	64	54	5,597	1,925
1996	7,762	3,662	5,700	2,539	487	778	9,711	4,468
1997	9,137	5,899	6,723	3,736	498	767	11,030	7,158
1998	6,828	4,803	5,025	3,259	280	272	8,083	5,279
1999	1,302	465	1,067	424	24	34	1,652	612
2000	1,721	1,041	1,407	912	75	66	2,092	1,258
2001	2,297	1,147	1,776	971	89	100	2,917	1,419
2002	1,502	948	1,258	892	89	120	1,698	1,026
2003	1,126	697	841	453	365	467	2,041	1,752
2004	1,227	689	1,044	548	117	110	1,881	1,277
2005	1,276	901	932	640	103	113	1,821	1,319
2006	2,946	2,064	2,254	1,341	123	115	4,042	2,569
2007	4,153	2,829	2,028	1,220	81	80	6,788	4,903
2008	3,335	1,879	2,471	1,417	103	129	5,346	3,129
2009	4,622	2,390	2,351	1,098	202	178	6,720	3,371
2010	8,141	5,955	4,317	2,165	362	672	12,683	12,501
2011	9,516	10,167	5,701	5,504	51	52	11,294	12,272

Table 10. Time series of biomass estimates (t) for Tanner crab (*Chionoecetes bairdi*) from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. The 95% confidence intervals (CI) are 1.96 SE.

Carapace width	Legal male ≥ 120 mm	Legal male ± CI	Preferred male ≥ 138 mm	Preferred male ± CI	Mature female ≥ 85 mm	Mature female ± CI	Grand total	Grand total ± CI
1976	97,166	25,908	64,626	18,909	55,558	16,852	194,701	43,271
1977	78,490	24,688	50,660	17,633	47,898	30,259	170,293	60,736
1978	58,229	17,719	34,583	12,710	25,751	14,471	106,782	33,092
1979	26,134	7,368	16,963	5,303	6,795	3,212	41,723	12,108
1980	38,041	24,131	24,470	17,294	18,268	13,018	72,215	42,213
1981	15,748	6,125	7,199	2,712	11,689	6,002	37,387	14,977
1982	9,509	3,383	3,640	1,395	11,692	5,364	30,787	10,856
1983	8,806	4,306	2,967	1,486	7,148	3,712	23,053	8,531
1984	10,194	3,126	5,734	2,038	6,301	4,009	20,927	7,062
1985	6,146	2,955	3,466	1,976	4,714	3,943	13,912	6,810
1986	4,286	2,965	2,234	2,493	3,681	1,793	17,221	5,992
1987	10,033	4,445	4,312	2,814	10,855	6,155	58,262	27,155
1988	22,929	24,162	11,032	13,729	29,619	17,339	96,289	50,079
1989	54,096	18,262	23,762	9,531	22,228	6,857	151,792	34,821
1990	53,184	19,958	33,140	15,060	22,635	10,978	129,232	33,230
1991	54,786	34,572	26,074	13,522	35,255	19,440	145,012	62,623
1992	68,294	44,366	30,942	22,509	14,846	7,175	111,973	60,555
1993	41,993	16,562	17,559	7,233	6,864	2,924	64,382	21,551
1994	27,285	9,443	13,412	4,709	6,525	3,633	42,370	15,520
1995	16,731	8,221	7,967	4,330	7,115	4,508	30,465	14,320
1996	15,867	10,440	8,026	5,697	6,910	4,645	31,877	17,523
1997	5,236	1,937	2,976	1,408	2,327	971	14,869	4,816
1998	4,421	1,369	1,791	716	1,364	564	11,815	3,023
1999	4,590	2,184	1,996	1,173	2,737	2,170	20,812	14,111
2000	9,150	5,854	4,230	3,239	3,456	2,627	22,923	11,595
2001	9,289	4,310	5,171	3,206	1,616	839	23,896	10,388
2002	9,253	4,305	5,722	3,399	1,322	655	21,049	8,241
2003	9,424	4,794	5,708	3,902	2,078	964	22,337	8,271
2004	7,951	5,134	4,358	4,449	1,053	425	14,507	5,875
2005	10,563	4,981	5,337	3,752	2,747	1,857	25,689	10,534
2006	11,067	4,834	5,238	3,306	5,707	4,445	40,442	26,449
2007	12,271	6,678	4,976	3,847	7,331	6,411	39,607	23,044
2008	19,346	10,082	8,928	6,530	4,902	2,640	41,106	14,009
2009	9,512	4,339	3,962	2,659	4,393	3,765	23,255	9,780
2010	9,752	4,808	4,636	2,701	1,613	1,509	18,240	7,262
2011	10,207	5,880	5,356	4,344	1,727	1,006	30,580	12,720

Table 11. Time series of biomass estimates (t) for Tanner crab (*Chionoecetes bairdi*) from the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. The 95% confidence intervals (CI) are 1.96 SE.

Carapace width	Legal male ≥ 110 mm	Legal male ± CI	Preferred male ≥ 125 mm	Preferred male ± CI	Mature female ≥ 80 mm	Mature female ± CI	Grand total	Grand total ± CI
1976	47,276	19,447	39,813	17,586	16,595	12,410	76,573	27,584
1977	40,254	22,107	34,480	20,378	21,949	7,746	93,727	50,647
1978	12,851	6,236	10,239	5,442	15,112	4,998	53,316	19,345
1979	17,142	5,356	10,818	3,609	28,398	10,937	66,091	27,534
1980	28,633	9,871	14,311	5,776	100,494	19,195	219,464	88,296
1981	19,037	6,038	8,362	3,848	58,732	13,799	130,482	51,595
1982	25,998	10,018	11,913	5,430	92,704	17,934	152,287	70,254
1983	13,430	5,087	5,776	2,339	27,310	7,392	56,118	19,662
1984	10,056	3,985	3,747	1,635	18,434	6,682	40,255	14,415
1985	3,230	1,191	1,494	636	4,858	1,635	12,911	4,772
1986	3,353	1,839	842	502	3,466	1,434	16,896	10,212
1987	7,142	3,741	4,272	2,927	6,135	1,402	26,634	8,168
1988	18,235	11,352	10,898	7,885	15,244	6,333	65,033	28,486
1989	25,497	12,160	16,967	9,763	16,308	4,521	68,610	21,966
1990	36,030	17,810	24,819	13,220	31,766	20,848	92,611	39,024
1991	34,951	13,422	22,478	9,170	30,239	8,528	93,382	26,677
1992	24,822	11,947	17,109	10,572	28,648	9,195	72,467	21,808
1993	11,097	4,734	6,471	3,276	11,251	2,856	33,314	9,934
1994	10,351	3,759	5,982	2,424	8,727	3,435	27,980	8,625
1995	12,161	7,037	6,853	4,086	13,633	5,342	32,030	14,482
1996	6,814	5,799	3,767	3,461	7,182	4,188	18,953	12,896
1997	2,926	1,068	1,149	518	2,724	1,177	9,118	3,090
1998	2,650	962	1,112	450	2,437	828	11,420	3,779
1999	1,709	635	627	292	3,457	1,048	13,160	4,808
2000	2,029	654	639	296	2,571	958	12,607	3,541
2001	4,020	1,887	1,826	1,141	7,246	2,683	26,414	8,808
2002	3,087	1,320	1,253	620	5,394	1,368	25,492	8,472
2003	6,547	3,335	2,730	1,651	10,896	2,221	39,972	14,086
2004	9,896	5,111	2,873	1,220	6,528	1,386	41,307	11,777
2005	24,158	9,813	14,199	7,147	16,511	4,278	79,802	21,033
2006	35,464	17,785	21,130	14,918	28,795	5,449	116,973	31,793
2007	37,785	24,597	19,397	15,258	15,739	2,967	107,696	37,742
2008	26,871	16,126	13,474	10,557	13,823	3,867	65,423	24,664
2009	20,175	8,249	11,087	4,609	8,282	2,192	45,060	13,789
2010	17,783	7,015	10,354	4,649	3,877	1,065	34,893	9,539
2011	23,259	16,712	15,660	13,658	5,125	842	47,965	19,494

Table 12. Time series of biomass estimates (t) for eastern Bering Sea snow crab (*Chionoecetes opilio*) from the National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Carapace width	Legal male ≥ 78 mm	Legal male ± CI	Preferred male ≥ 102 mm	Preferred male ± CI	Mature female ≥ 50 mm	Mature female ± CI	Grand total	Grand total ± CI
1980	189,234	44,165	81,496	16,389	260,950	140,114	670,790	210,422
1981	96,180	19,914	23,307	4,814	144,871	45,737	366,972	82,341
1982	177,666	47,437	35,037	9,912	161,179	47,003	496,664	97,049
1983	162,470	39,061	35,138	9,723	86,298	32,808	357,050	71,583
1984	173,278	39,318	78,377	23,058	45,606	16,700	295,979	54,006
1985	79,401	15,792	43,273	9,538	7,985	3,081	114,554	19,814
1986	84,972	18,029	46,730	11,772	29,501	10,552	197,376	44,047
1987	182,229	35,811	76,981	15,580	191,911	58,150	669,378	133,957
1988	244,099	70,776	104,981	44,036	194,829	62,097	717,678	139,285
1989	299,545	61,320	95,777	18,835	270,382	131,495	879,238	229,565
1990	533,863	137,444	230,379	63,244	207,679	75,475	928,380	184,686
1991	471,500	134,243	273,249	91,303	239,877	87,868	972,185	220,736
1992	240,544	43,398	149,383	34,712	154,161	51,594	611,515	104,170
1993	142,909	27,985	77,337	16,398	129,262	38,630	626,939	153,987
1994	109,755	16,969	45,063	9,757	129,423	37,003	588,094	106,658
1995	155,270	39,182	37,525	11,116	160,727	42,361	664,769	100,290
1996	312,019	75,336	89,236	37,346	90,375	23,432	623,773	94,601
1997	362,785	66,506	171,986	49,745	92,988	33,764	573,323	87,782
1998	219,565	36,397	127,921	25,811	73,582	36,071	369,902	69,225
1999	86,773	14,895	51,992	12,251	33,562	13,500	156,177	26,311
2000	76,333	19,638	41,070	11,472	104,784	104,992	261,461	134,299
2001	105,477	22,242	39,997	6,996	97,135	52,856	335,933	100,890
2002	100,723	44,492	37,354	18,178	35,224	18,692	180,828	58,456
2003	72,353	15,988	31,642	7,124	47,252	28,272	193,313	56,798
2004	61,831	16,327	35,755	13,110	50,109	26,079	235,326	60,384
2005	106,237	22,523	40,162	8,094	103,619	34,344	385,952	92,856
2006	141,290	71,516	72,344	51,653	77,362	25,977	311,843	107,058
2007	160,504	44,710	73,844	30,309	87,063	37,408	340,991	83,585
2008	123,374	23,878	60,477	14,219	61,862	23,212	265,828	54,954
2009	149,714	36,776	77,903	25,537	68,026	26,916	303,219	69,010
2010	136,140	31,567	88,788	24,996	132,166	45,594	496,226	106,812
2011	146,275	32,651	94,741	22,022	236,886	84,721	570,446	135,776

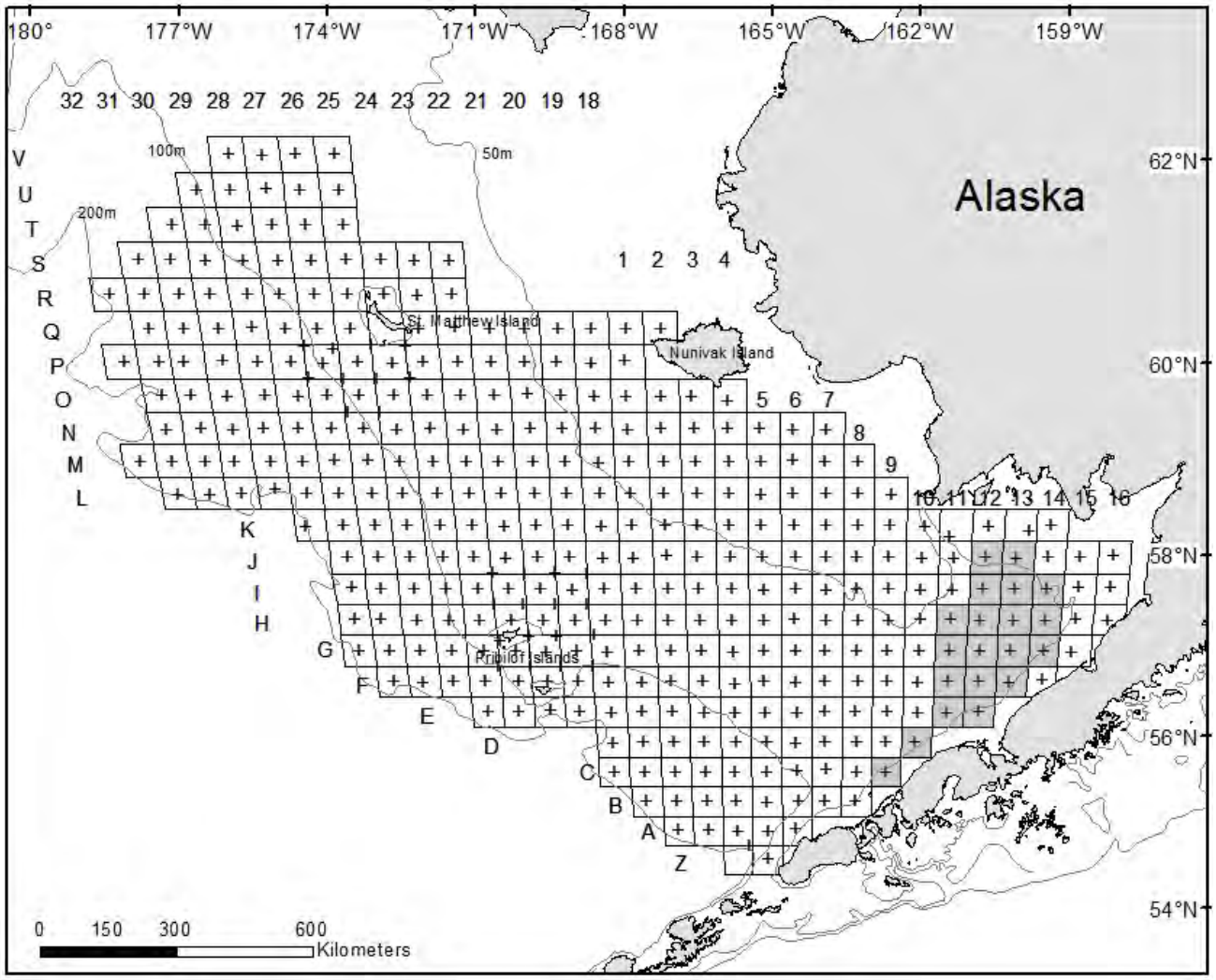


Figure 1. National Marine Fisheries Service eastern Bering Sea standard bottom trawl area surveyed by FV *Alaska Knight* and FV *Aldebaran* from 5 June to 31 July 2011. Shaded area depicts Bristol Bay resample stations, 25 to 31 July 2011.

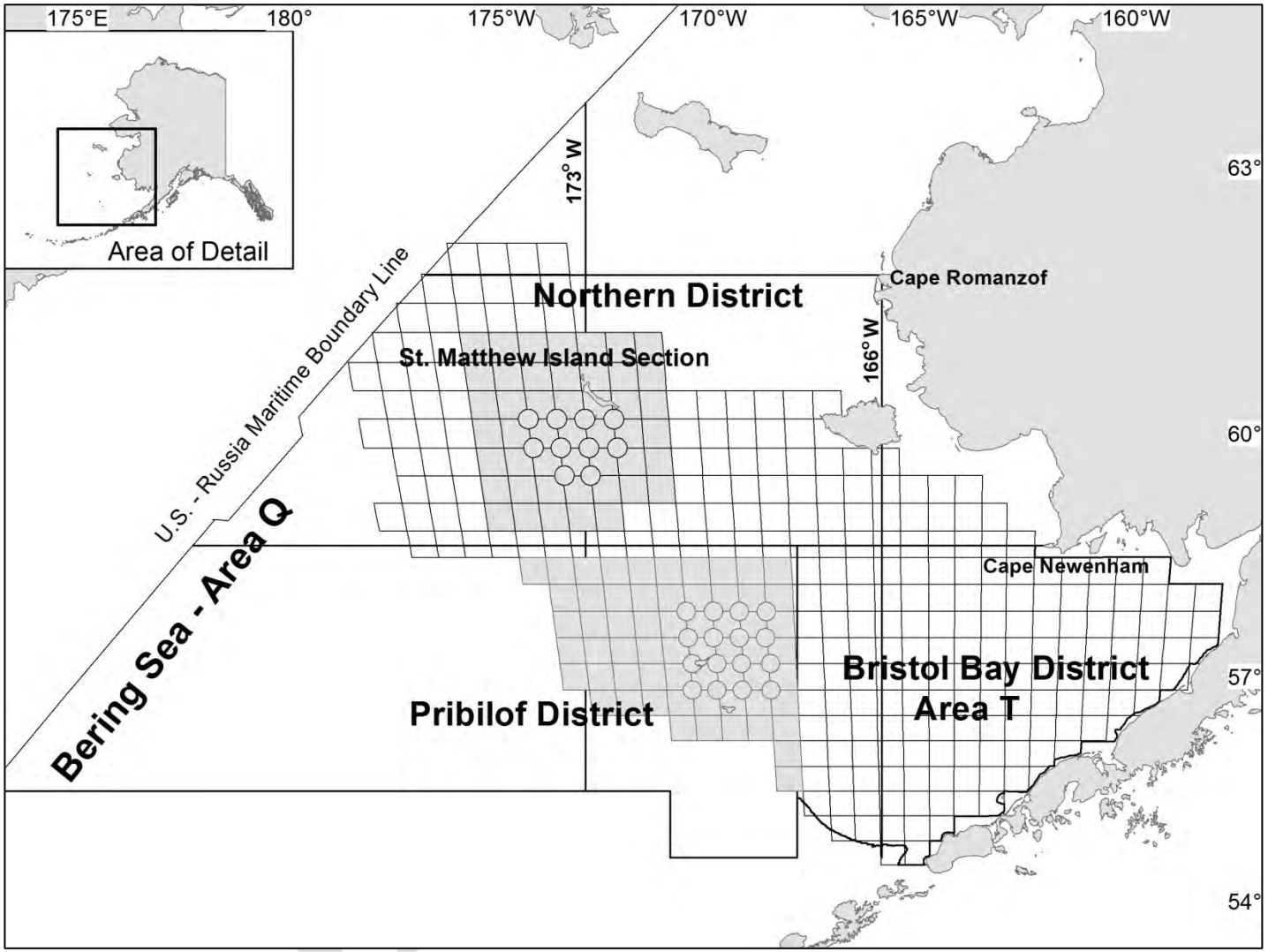


Figure 2. Alaska Department of Fish and Game commercial crab management units within the 2011 eastern Bering Sea bottom trawl survey area. Grey areas represent stations included in in the Pribilof District and St. Matthew Island Section, Northern District sampling strata and circles represent the high-density sampling areas.

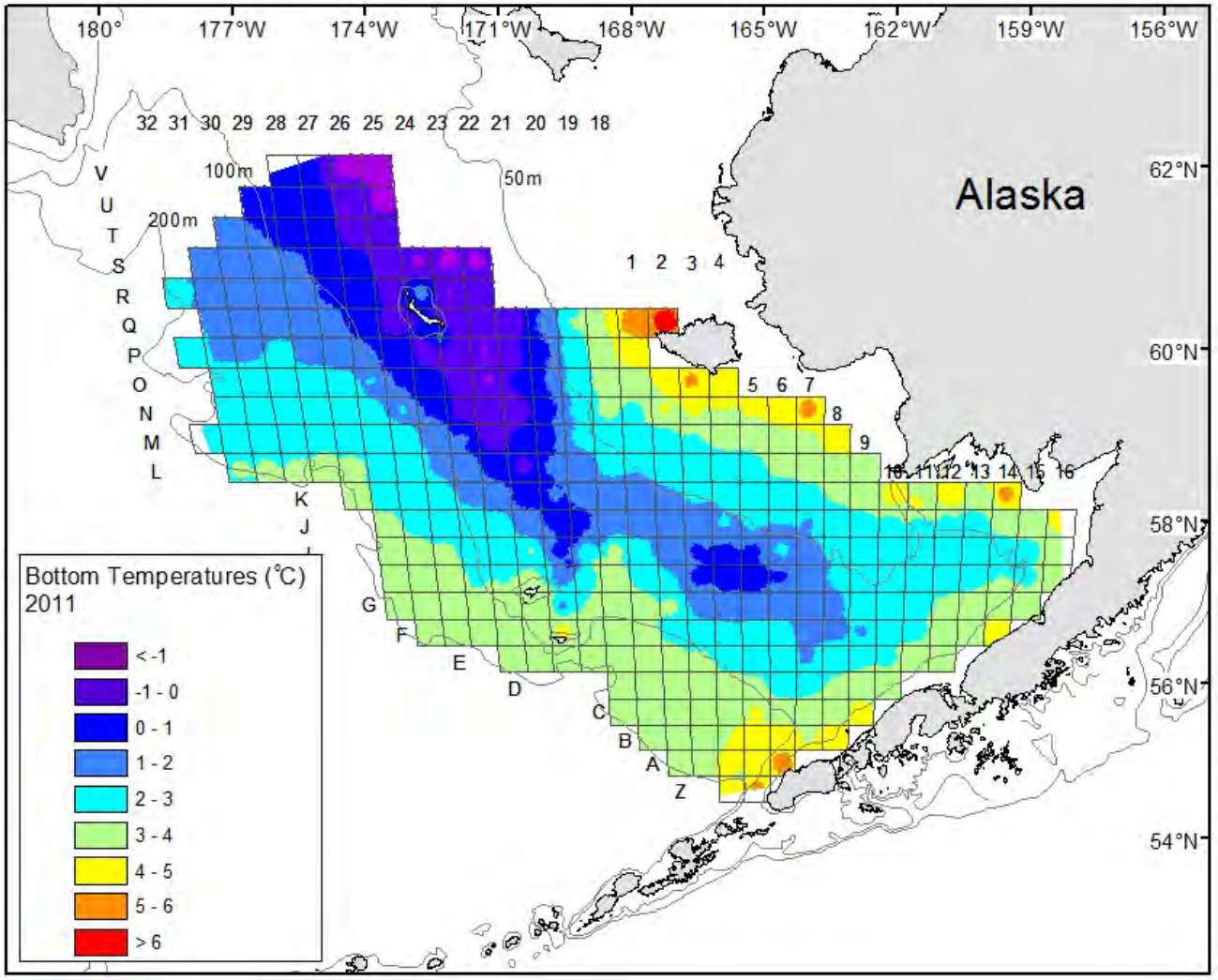


Figure 3. Mean bottom temperatures (°C) measured at stations from the National Marine Fisheries Service eastern Bering Sea bottom trawl survey, beginning 5 June 2011 in Bristol Bay and ending on 25 July 2011 at K-27. This figure does not reflect the 20 stations resampled in Bristol Bay from 25 to 31 July 2011.

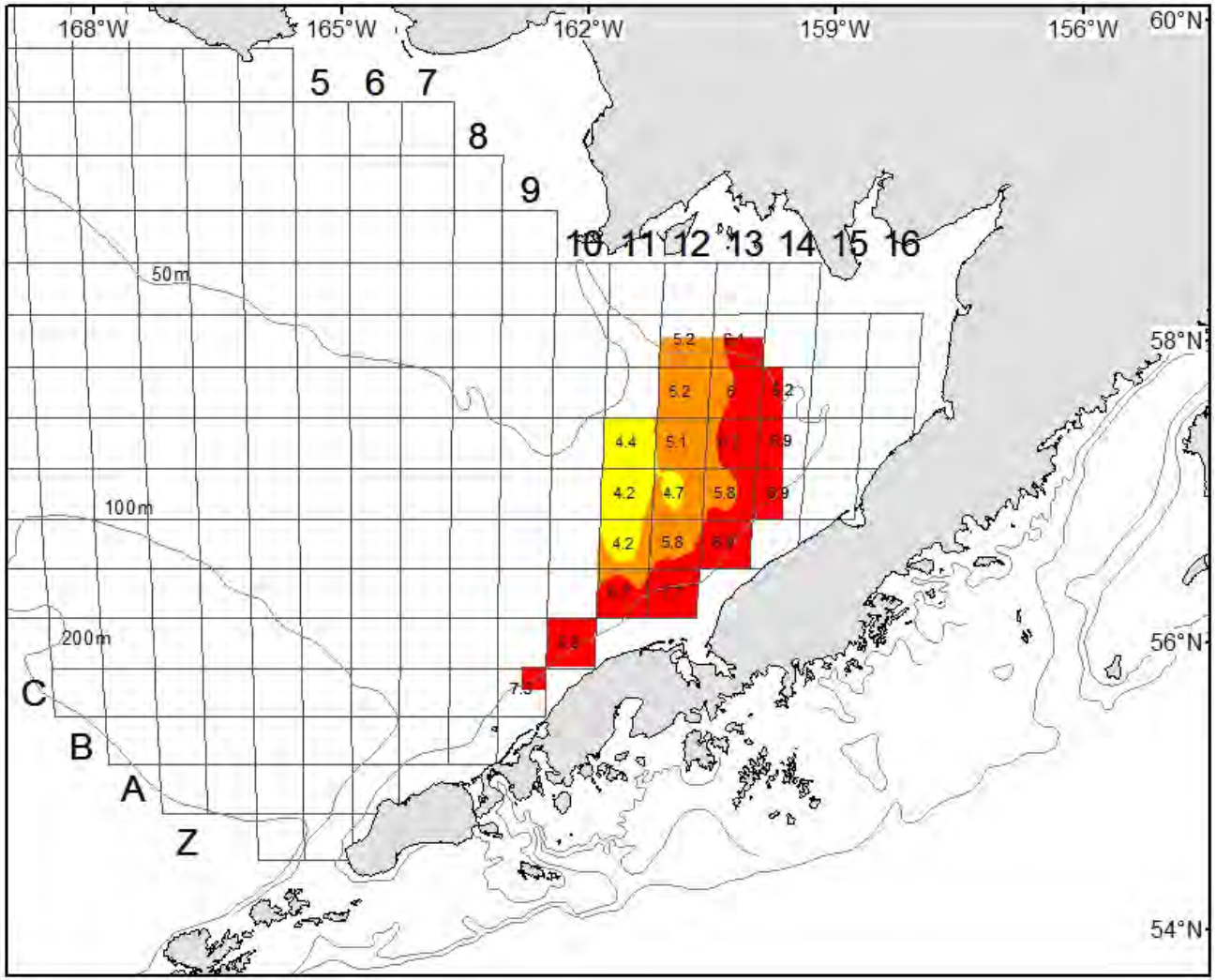


Figure 4. Mean bottom temperatures (°C) measured at the 20 resample stations in Bristol Bay, surveyed from 25 to 31 July 2011.

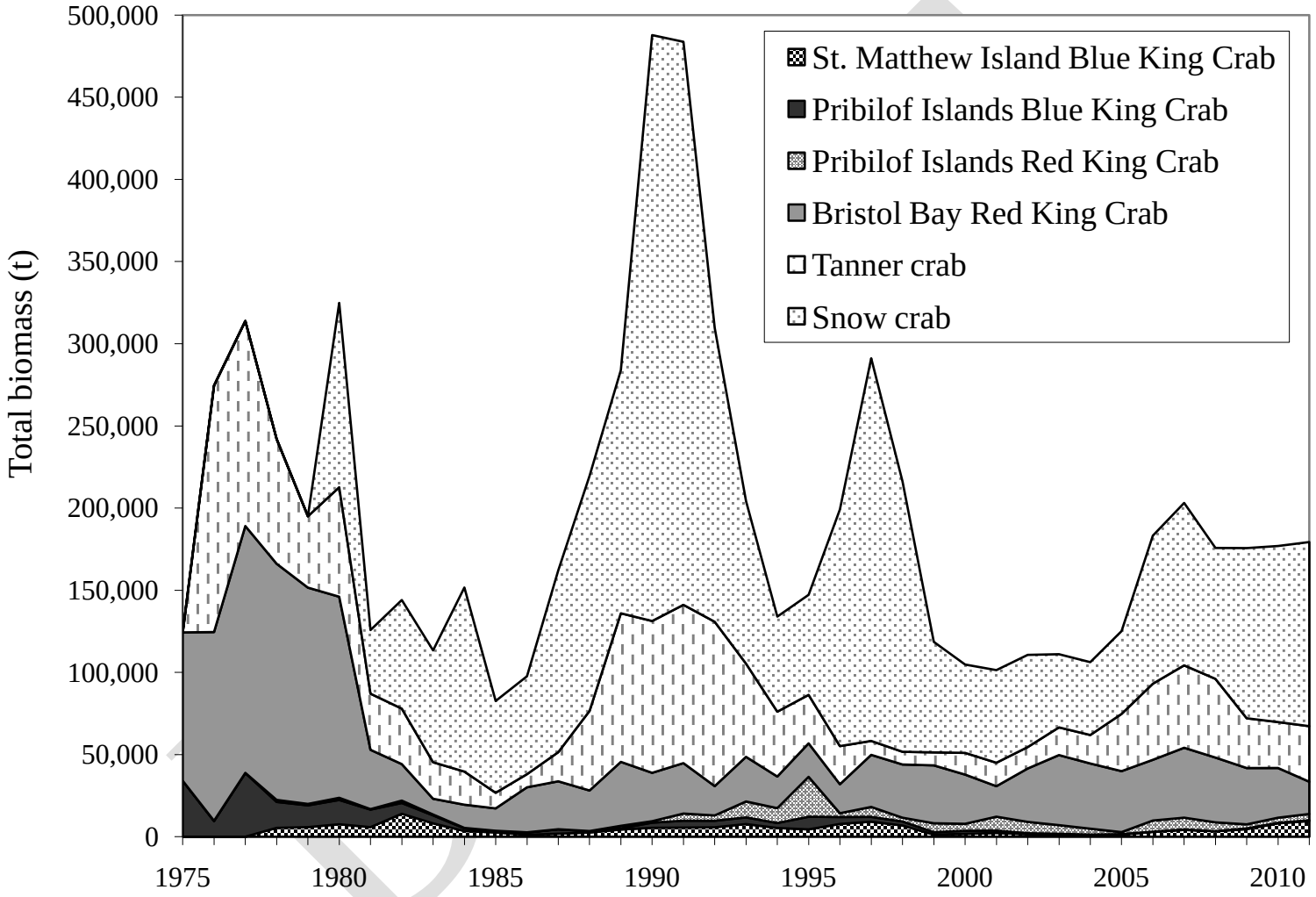


Figure 5. Historical mature male biomass for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey.

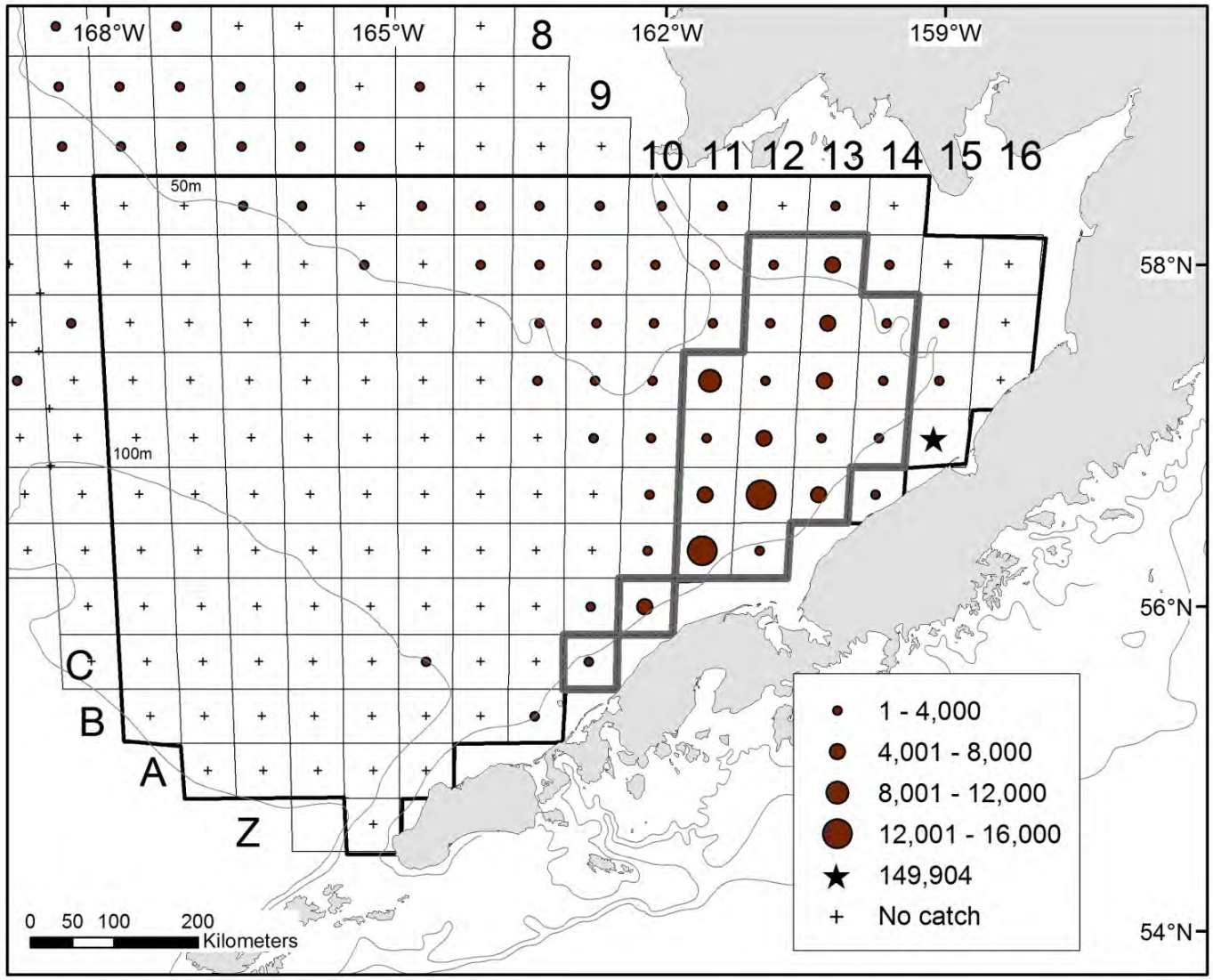


Figure 6. Total density (number/nmi^2) of red king crab (*Paralithodes camtschaticus*) at each station sampled in the 2011 Bristol Bay District. Data depicted by circles are equal interval densities, while stars are densities larger than the standard scale. Outlined area depicts the management district and the resurveyed stations outlined in grey within the management district.

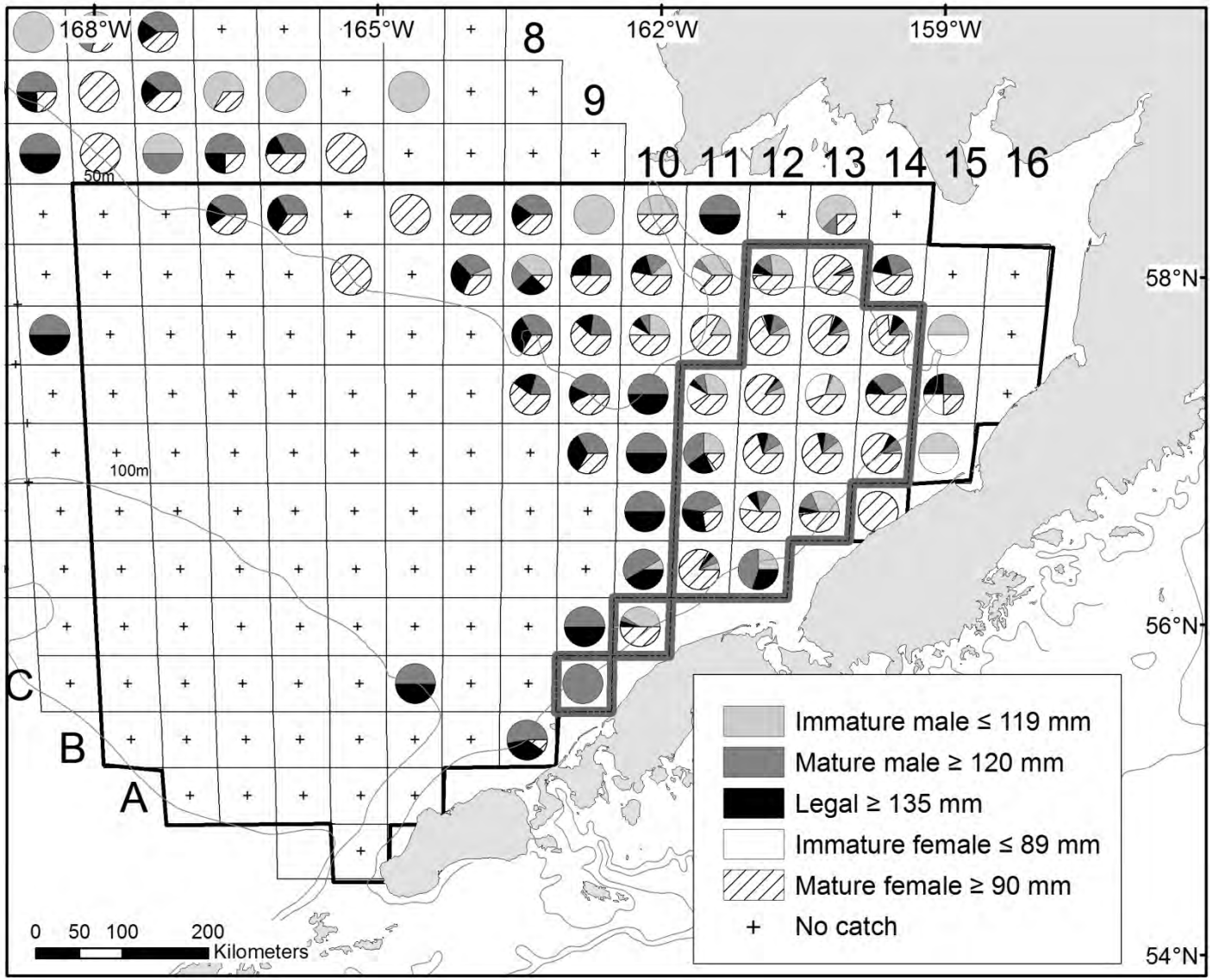


Figure 7. Percentage of male and female red king crab (*Paralithodes camtschaticus*) size classes caught at each station of the Bristol Bay District in 2011. Outlined area depicts management district and the 20 resurveyed stations are outlined in grey.

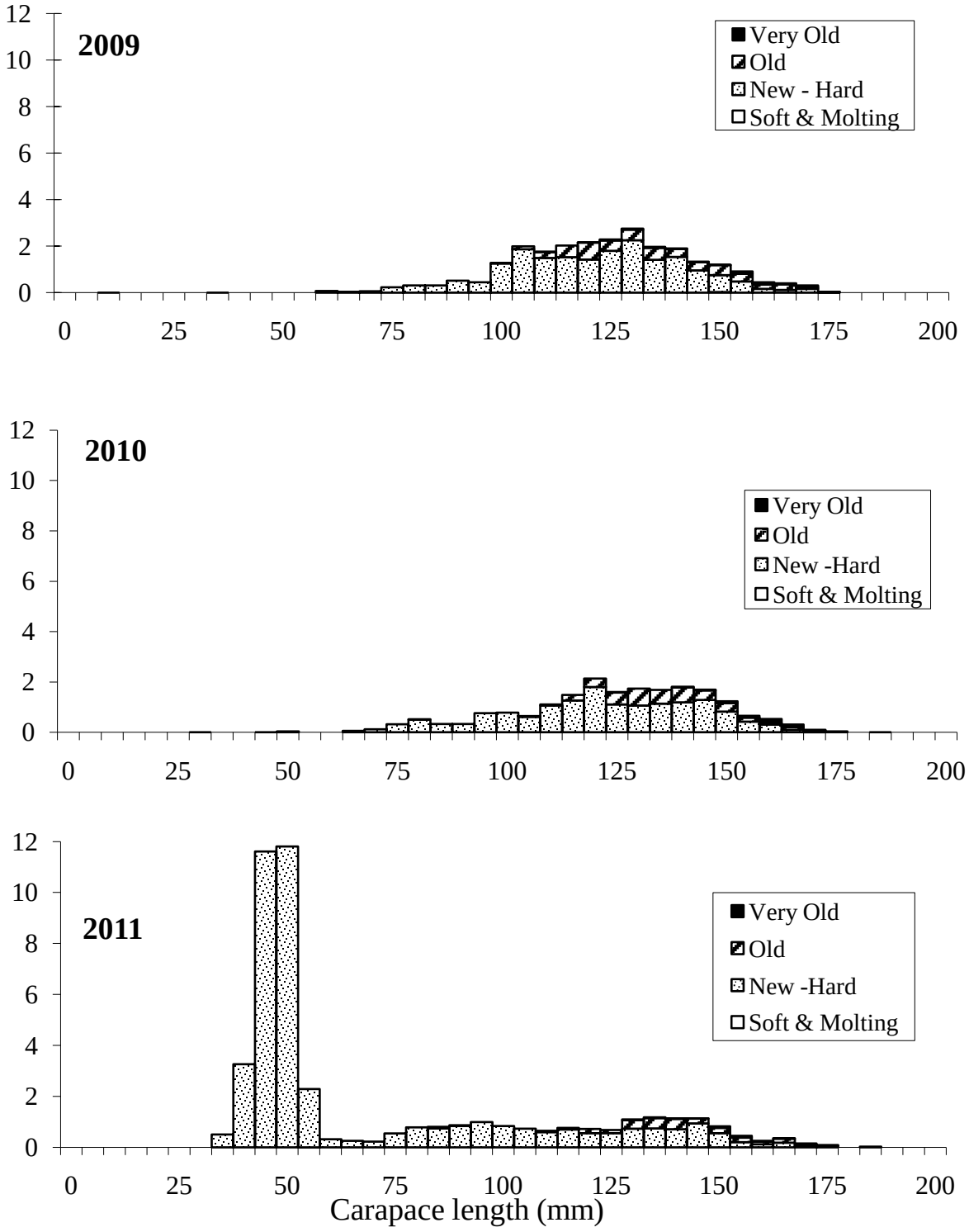


Figure 8. Size-frequency of Bristol Bay District male red king crab (*Paralithodes camtschaticus*) by 5 mm length classes, 2009-2011.

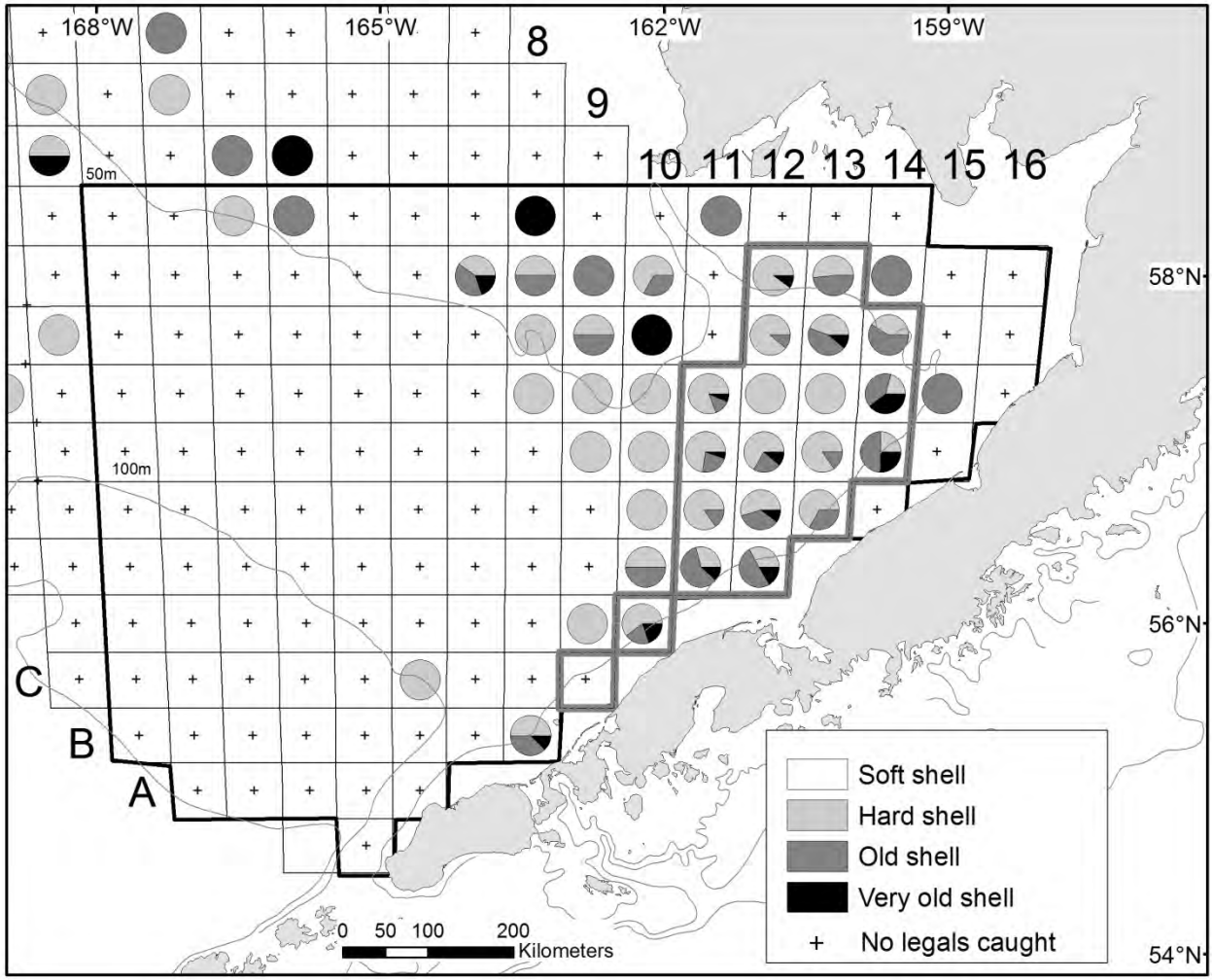


Figure 9. Distribution of legal-sized male red king crab (*Paralithodes camtschaticus*) caught at each station in the 2011 Bristol Bay District and distinguished by shell condition. Outlined area depicts management district and the 20 resurveyed stations are outlined in grey.

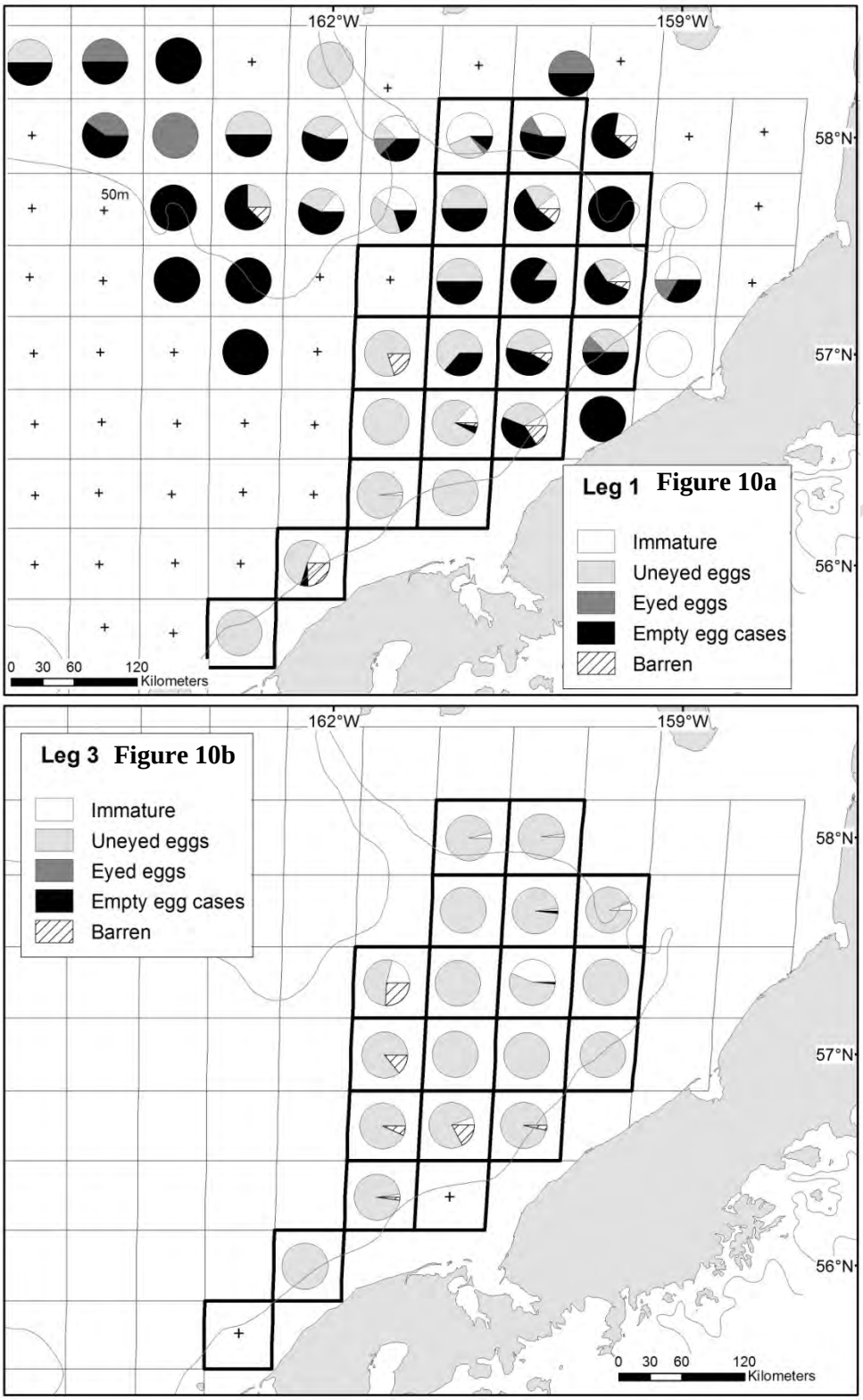


Figure 10. Changes in the distribution and egg condition of female red king crab (*Paralithodes camtschaticus)* caught (a) Leg 1 (5-17, June 2011) and (b) Leg 3 (25 to 31 July) in the Bristol Bay District. Outline depicts the 20 stations resampled in late July on Leg 3.

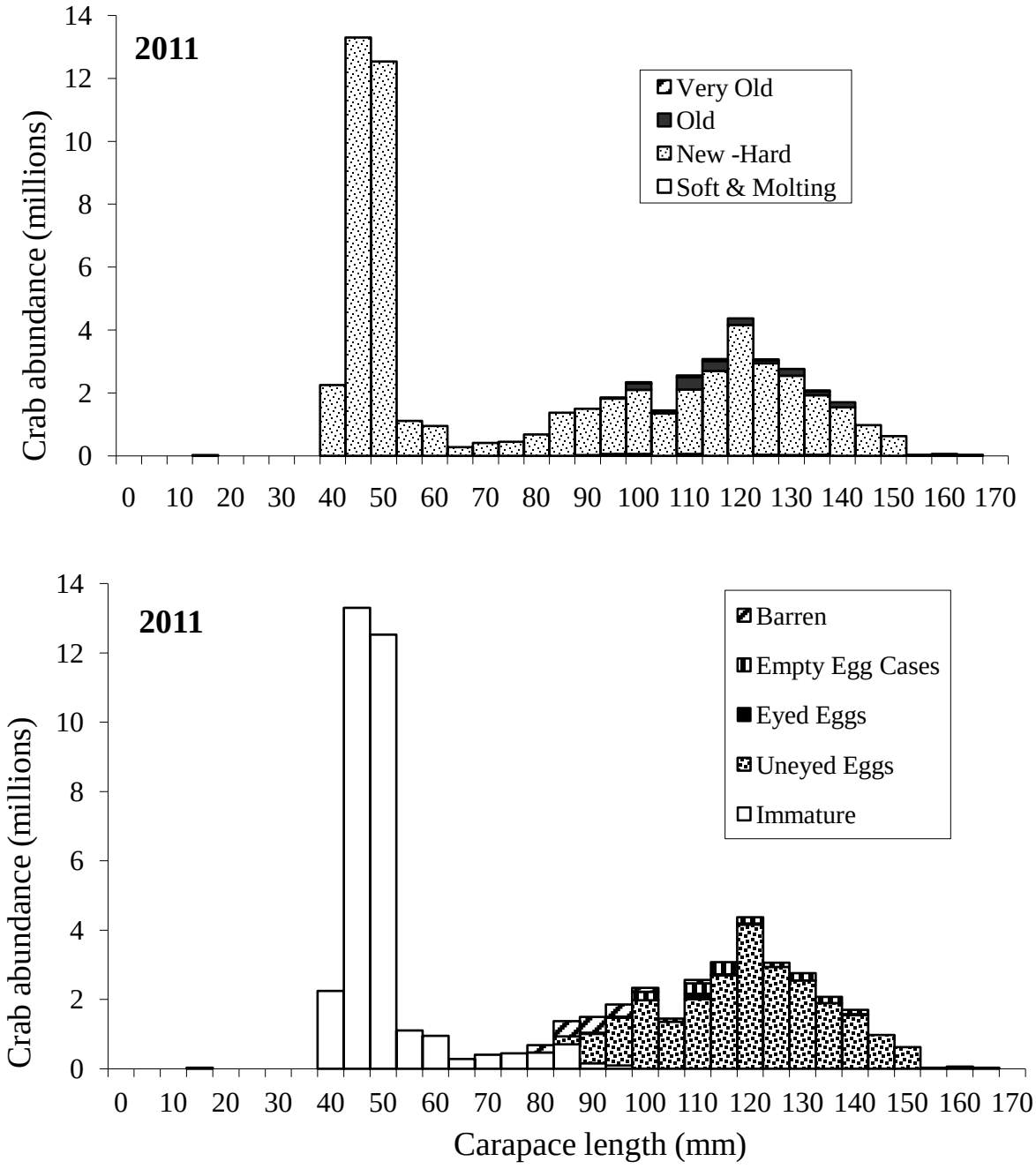


Figure 11. Size-frequency and egg condition of Bristol Bay District female red king crab (*Paralithodes camtschaticus*) by 5 mm length classes in 2011.

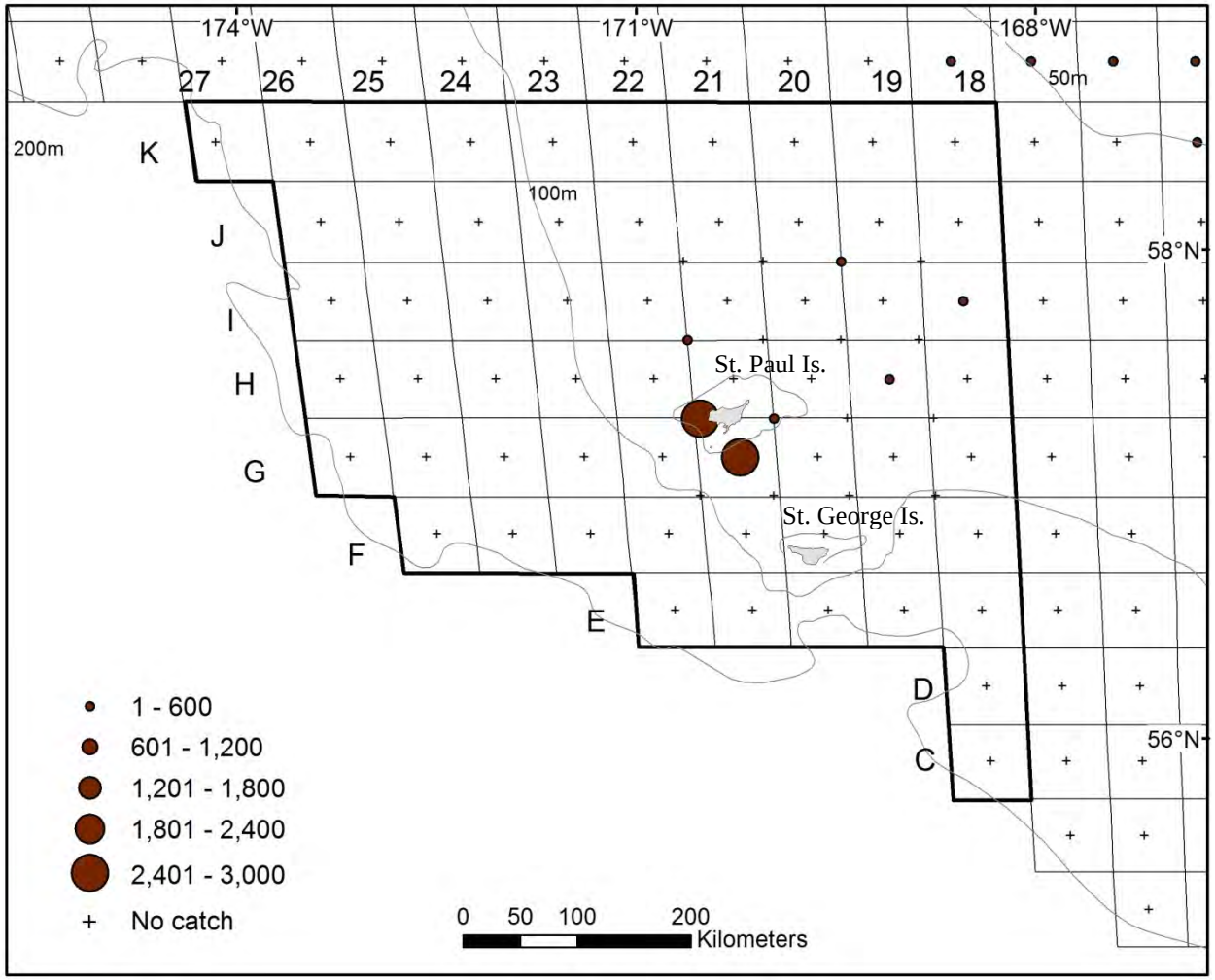


Figure 12. Total density (number/nmi^2) of red king crab (*Paralithodes camtschaticus*) at each station sampled in the Pribilof District in 2011. Data depicted by circles are equal interval densities and outlined area depicts stations within the management district.

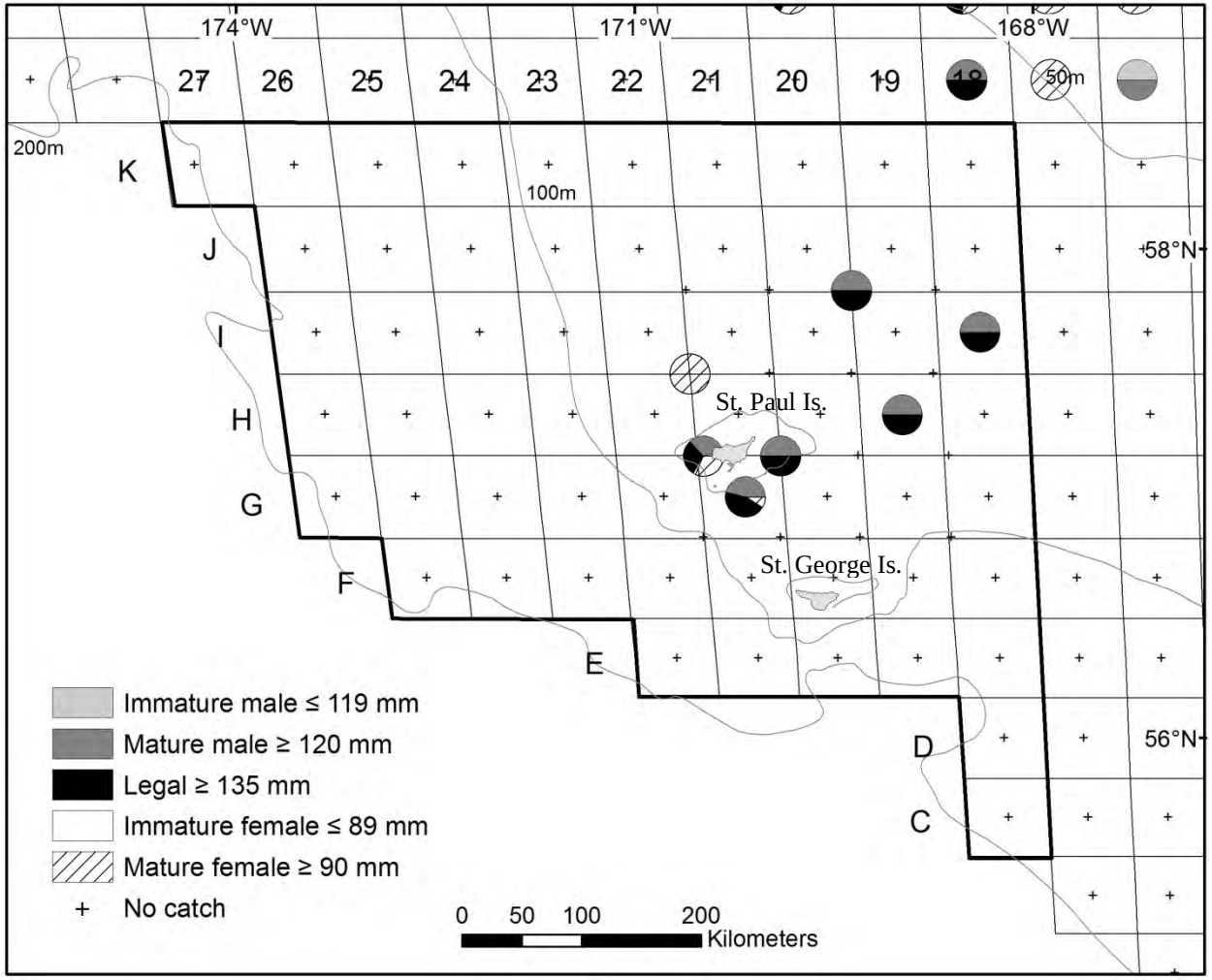


Figure 13. Percentage of male and female red king crab (*Paralithodes camtschaticus*) size classes at each station of the Pribilof District in 2011. The outlined area depicts stations within the management district.

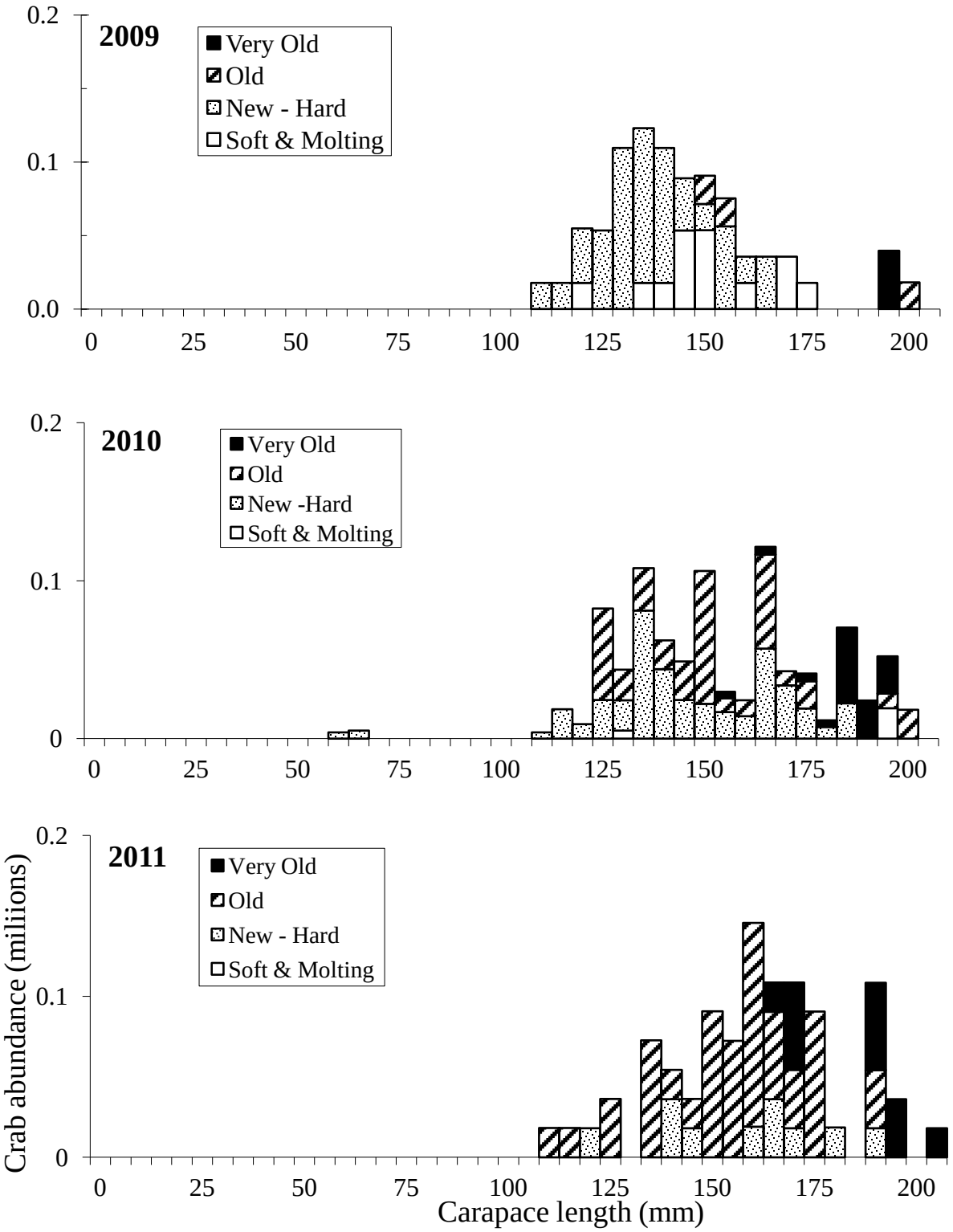


Figure 14. Size-frequency of Pribilof District male red king crab (*Paralithodes camtschaticus*) by 5 mm length classes, 2009-2011.

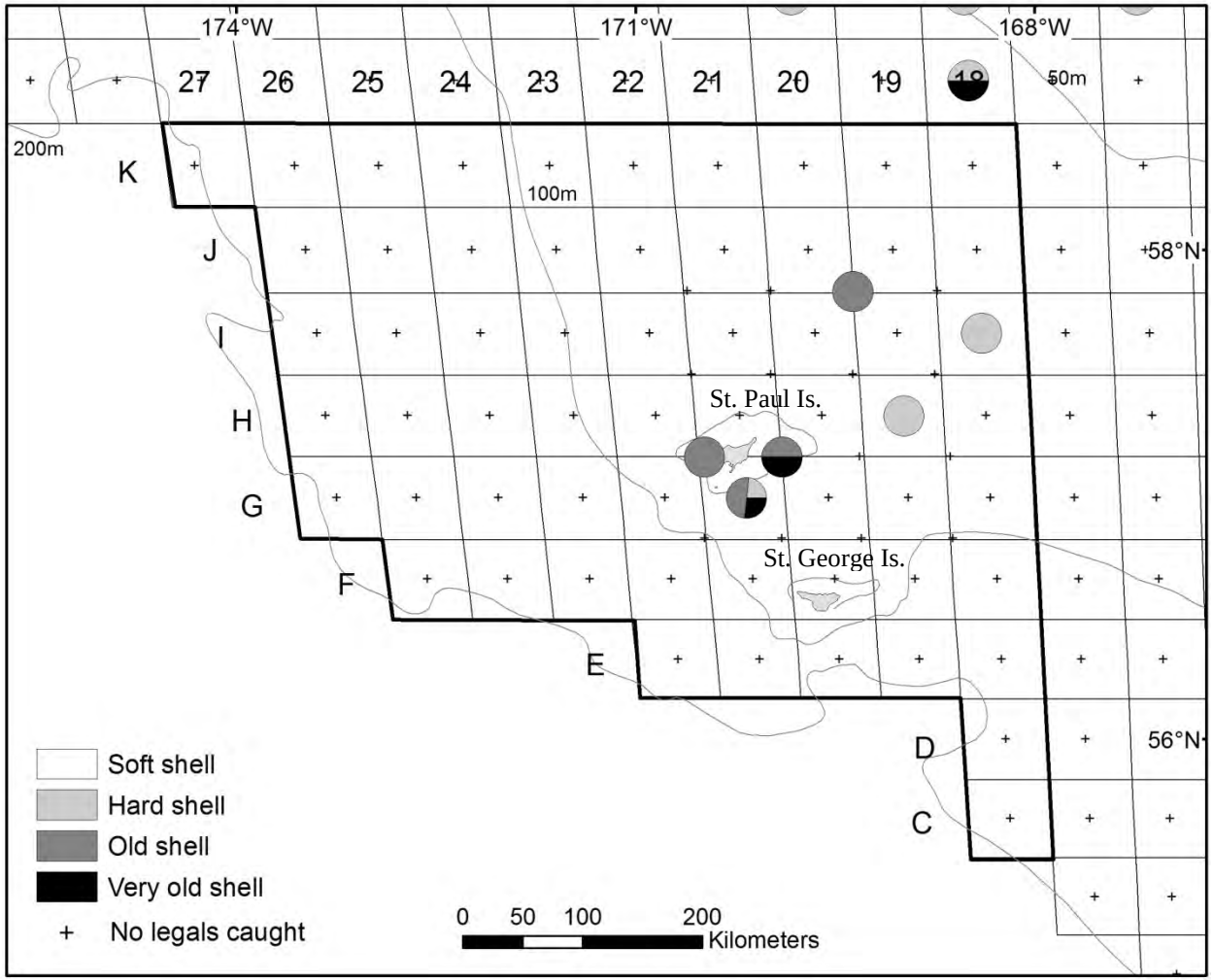
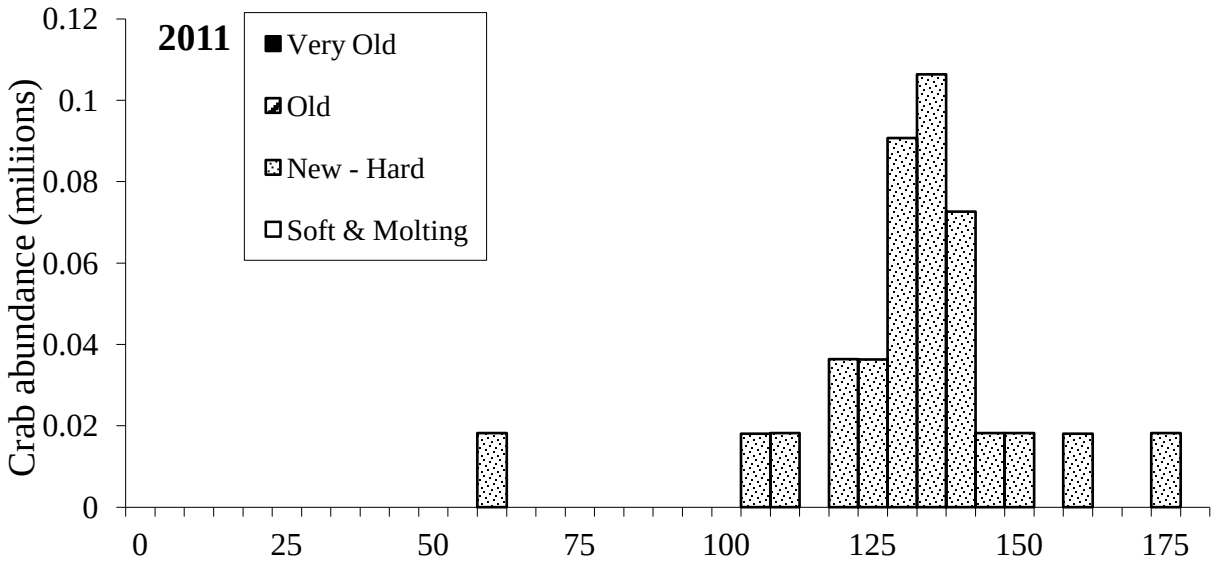


Figure 15. Distribution of legal-sized male red king crab (*Paralithodes camtschaticus*) caught at each station of the Pribilof District in 2011 and distinguished by shell condition. The outlined area depicts stations within the management district.



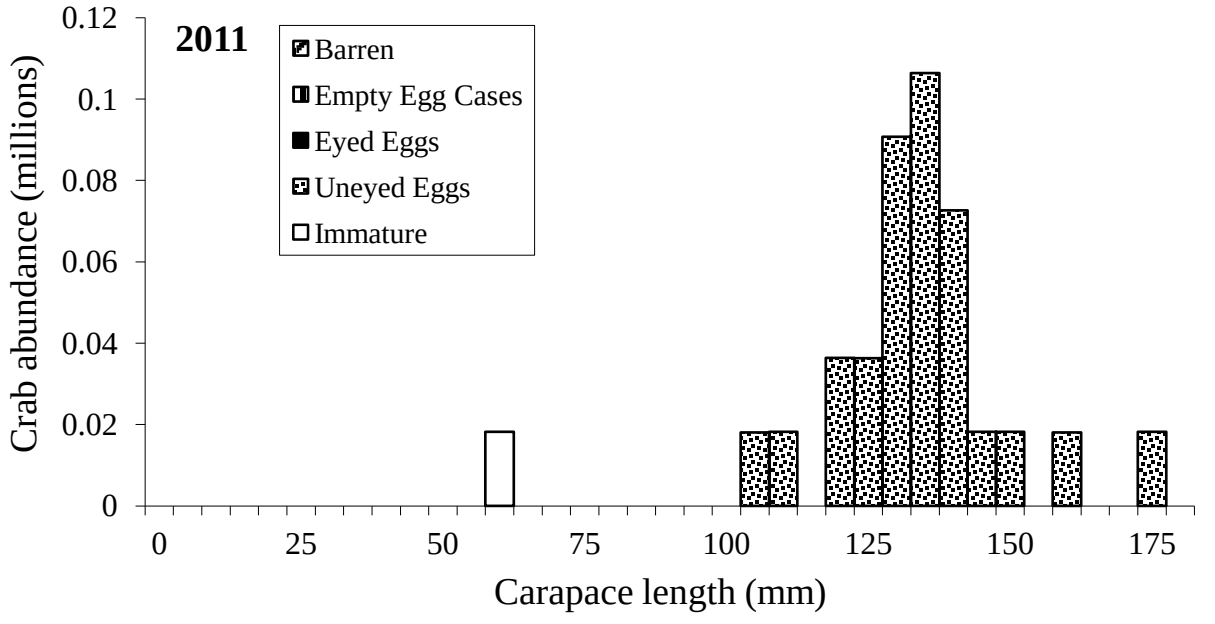


Figure 16. Size-frequency and egg condition of Pribilof District female red king crab (*Paralithodes camtschaticus*) by 5 mm length classes in 2011.

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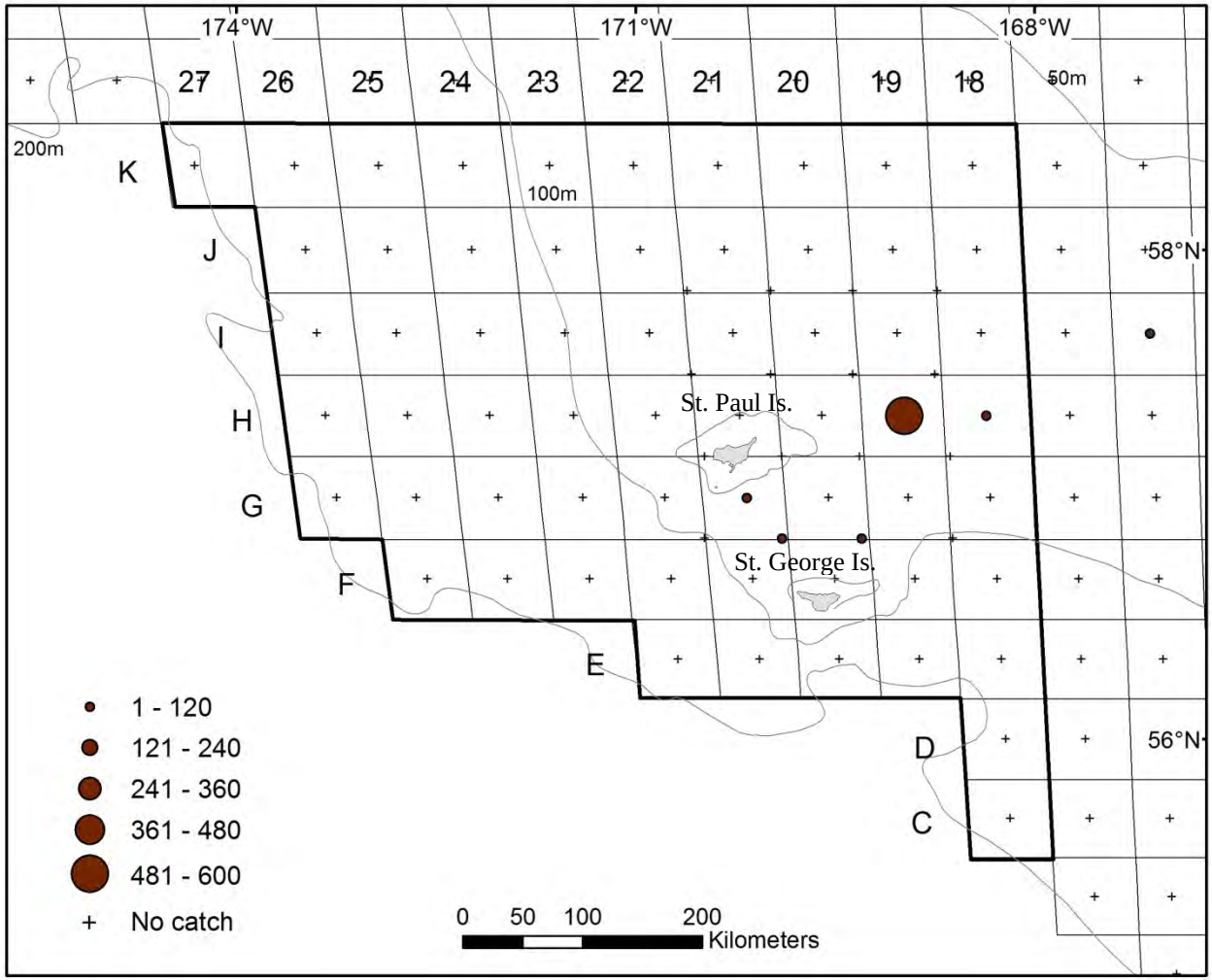

Figure 17. Total density (number/nmi^2) of blue king crab (*Paralithodes platypus*) at each station sampled in the Pribilof District in 2011.The outlined area depicts the management district.

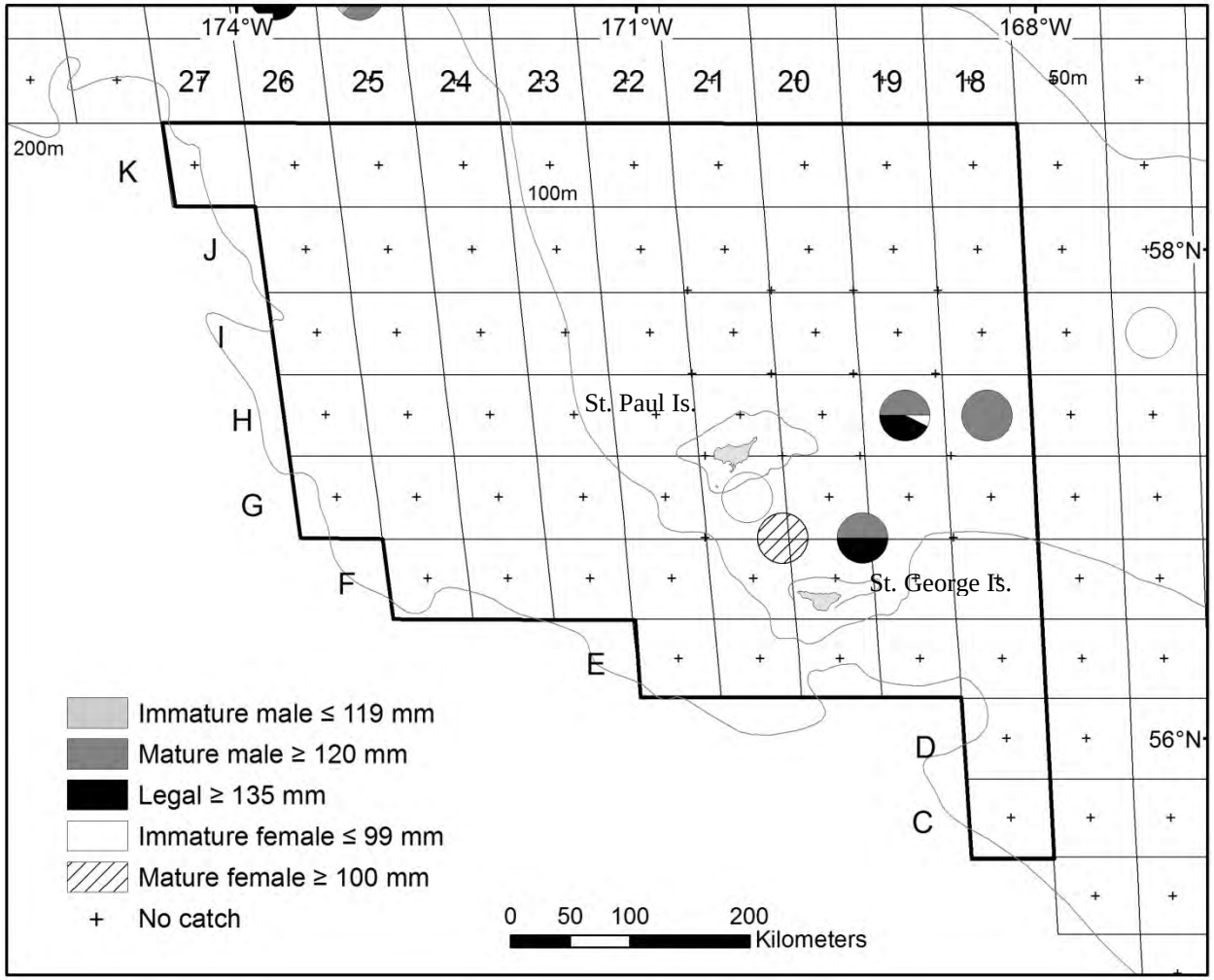

Figure 18. Percentage of male and female blue king crab (*Paralithodes platypus*) size categories at each station of the Pribilof District in 2011. The outlined area depicts stations within the management district.

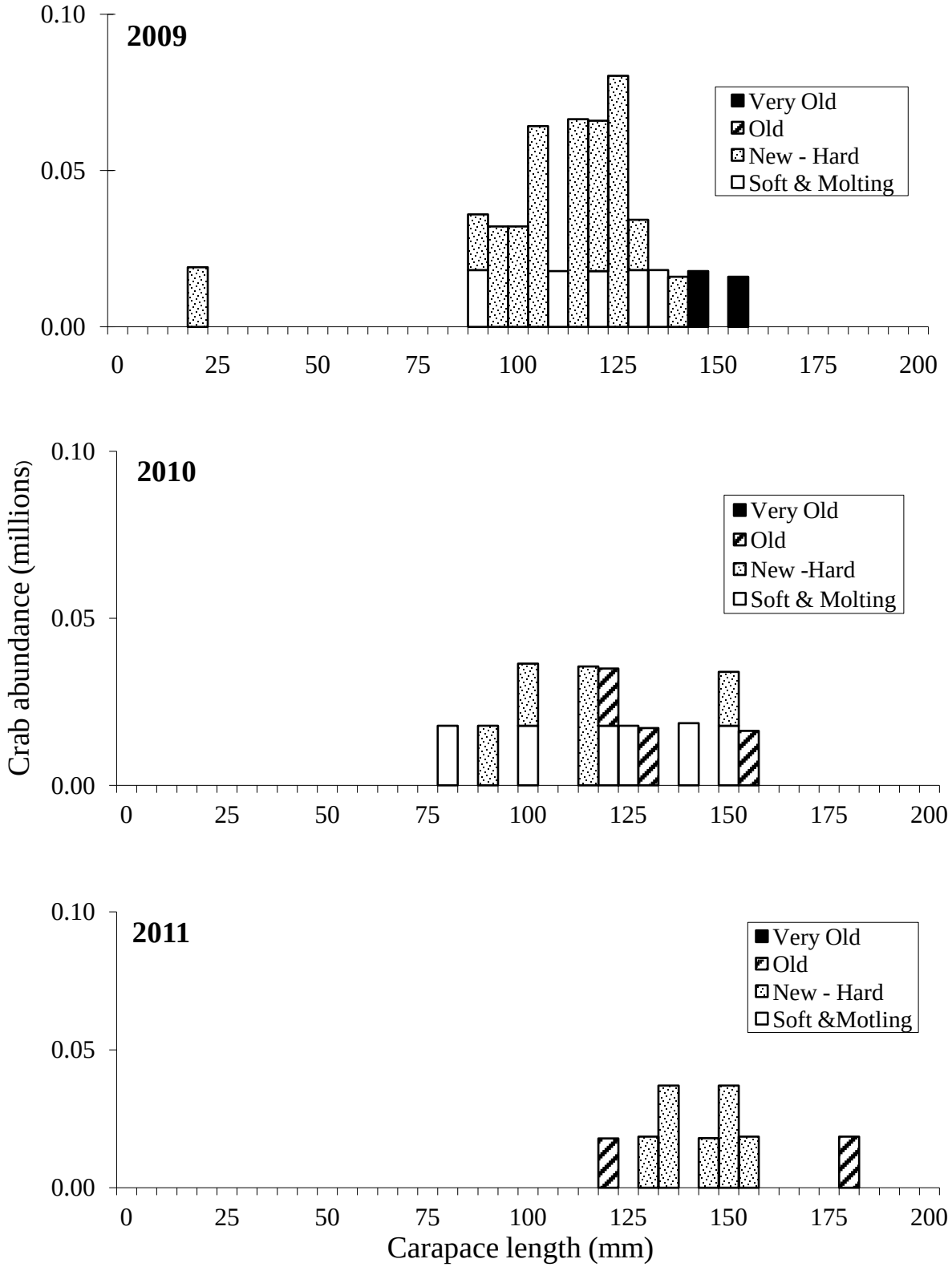

Figure 19. Size-frequency of Pribilof District male blue king crab (*Paralithodes platypus*) by 5 mm length classes, 2009-2011.

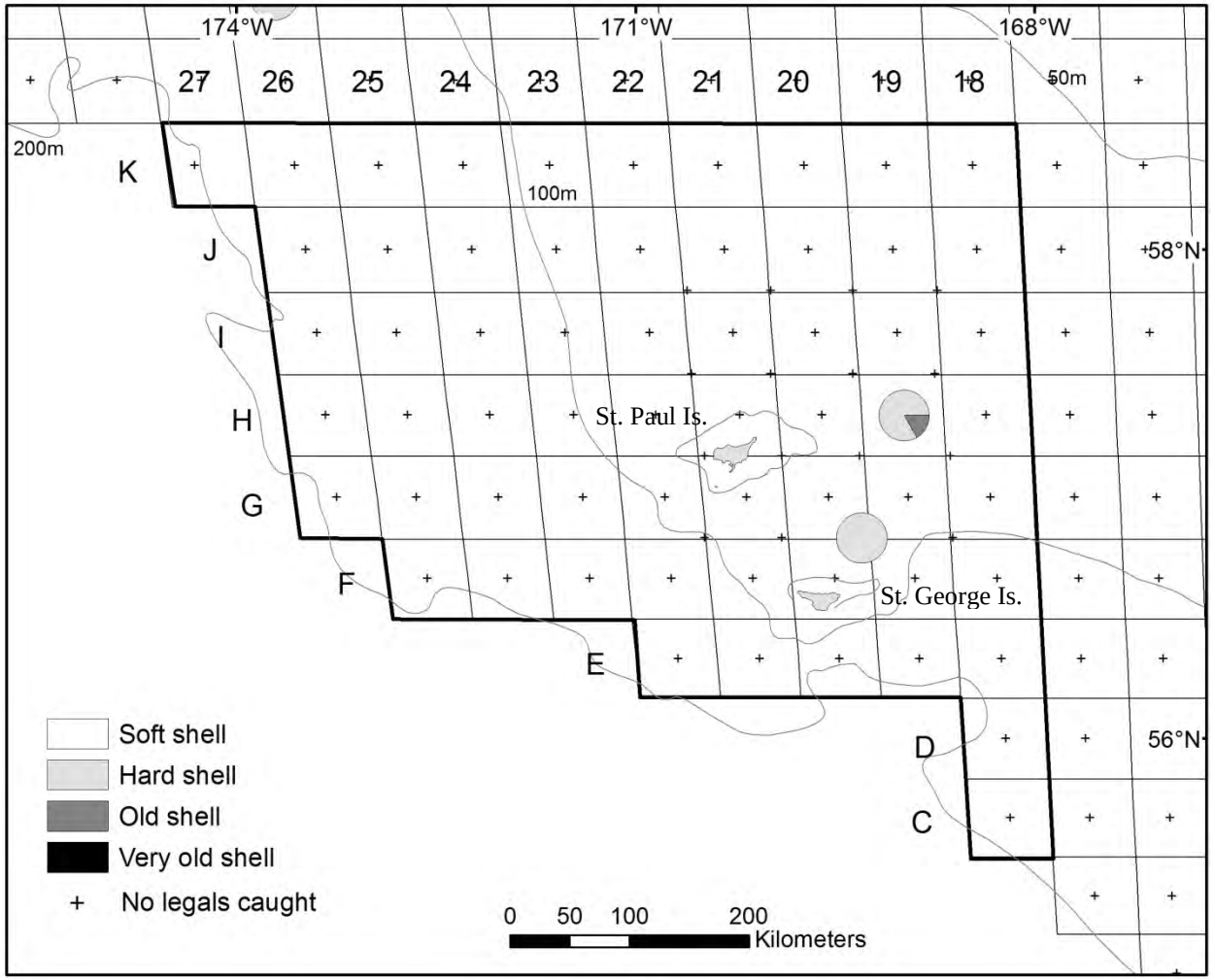

Figure 20. Distribution of legal-sized male blue king crab (*Paralithodes platypus*) caught at each station of the Pribilof District in 2011 and distinguished by shell condition. The outlined area depicts stations within the management district.

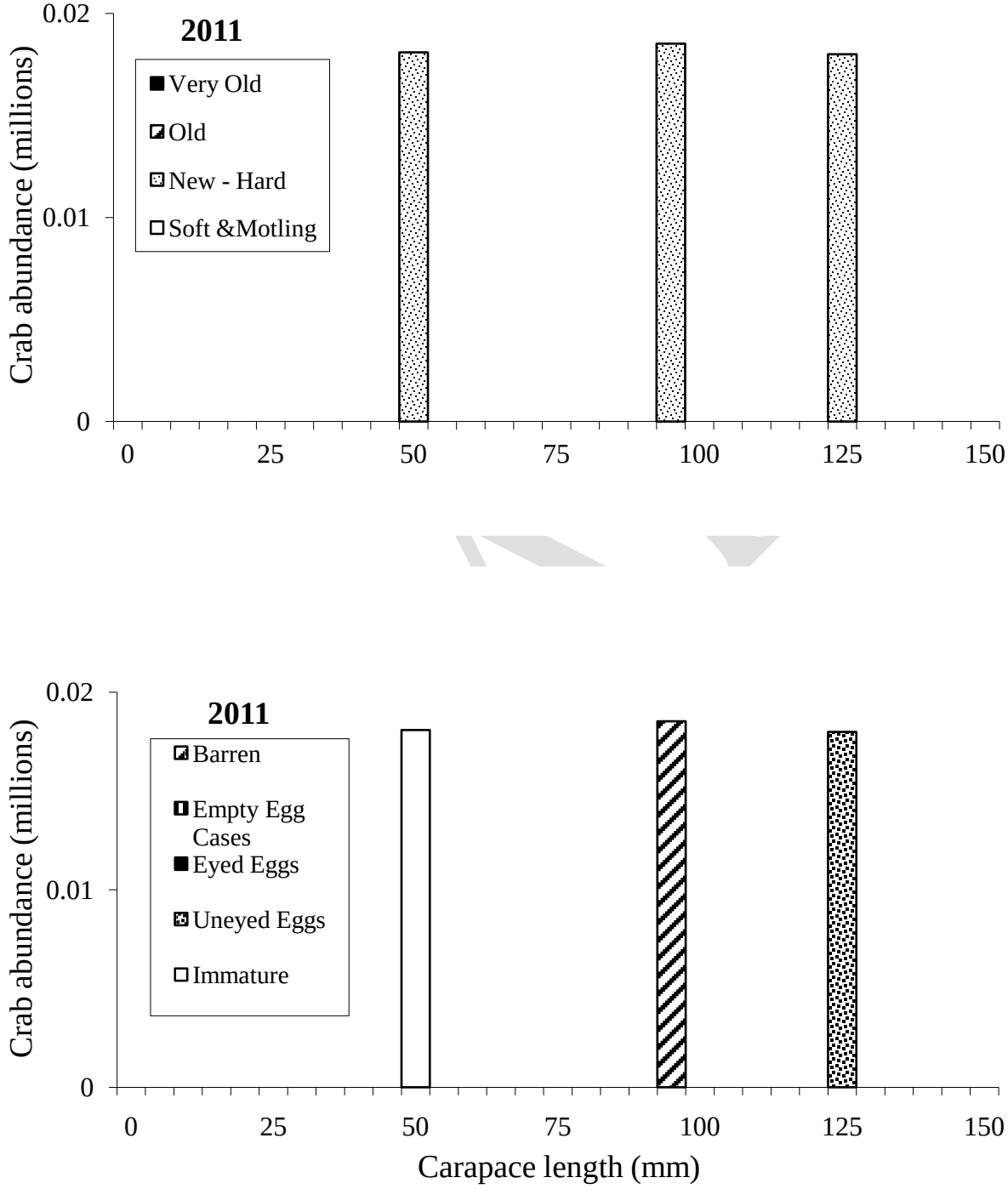

Figure 21. Size-frequency, shell and egg condition of Pribilof District female blue king crab (*Paralithodes platypus*) by 5 mm length classes in 2011.

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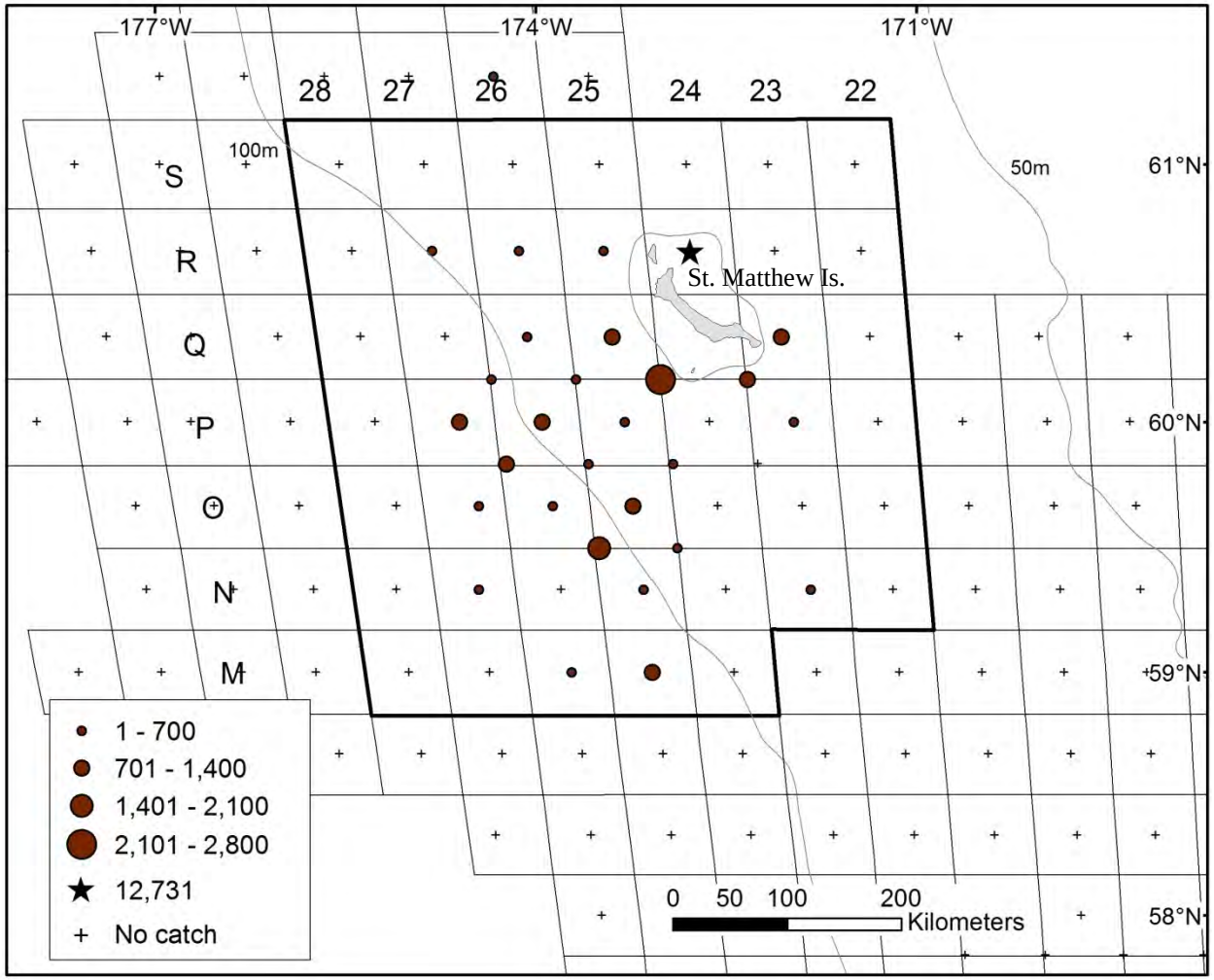

Figure 22. Total density (number/nmi^2) of blue king crab (*Paralithodes platypus*) at each station sampled in the St. Mathew Island Section of the Northern District in 2011. Data depicted by circles are equal interval densities, while stars are densities larger than the standard scale. The outlined area depicts stations within the management district.

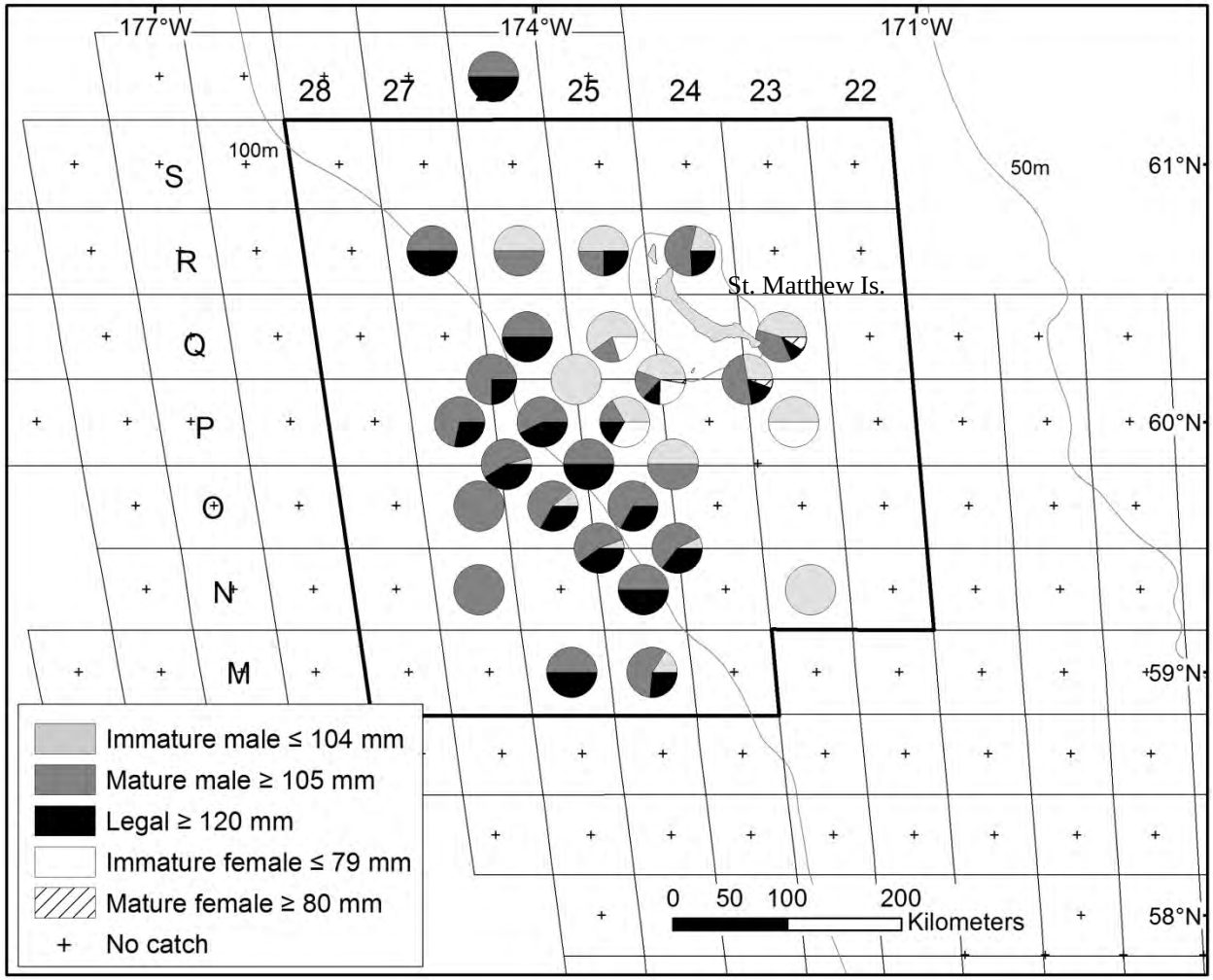

Figure 23. Percentage of male and female blue king crab (*Paralithodes platypus*) size categories at each station of the St. Matthew Island Section of the Northern District in 2011. The outlined area depicts stations within the management district.

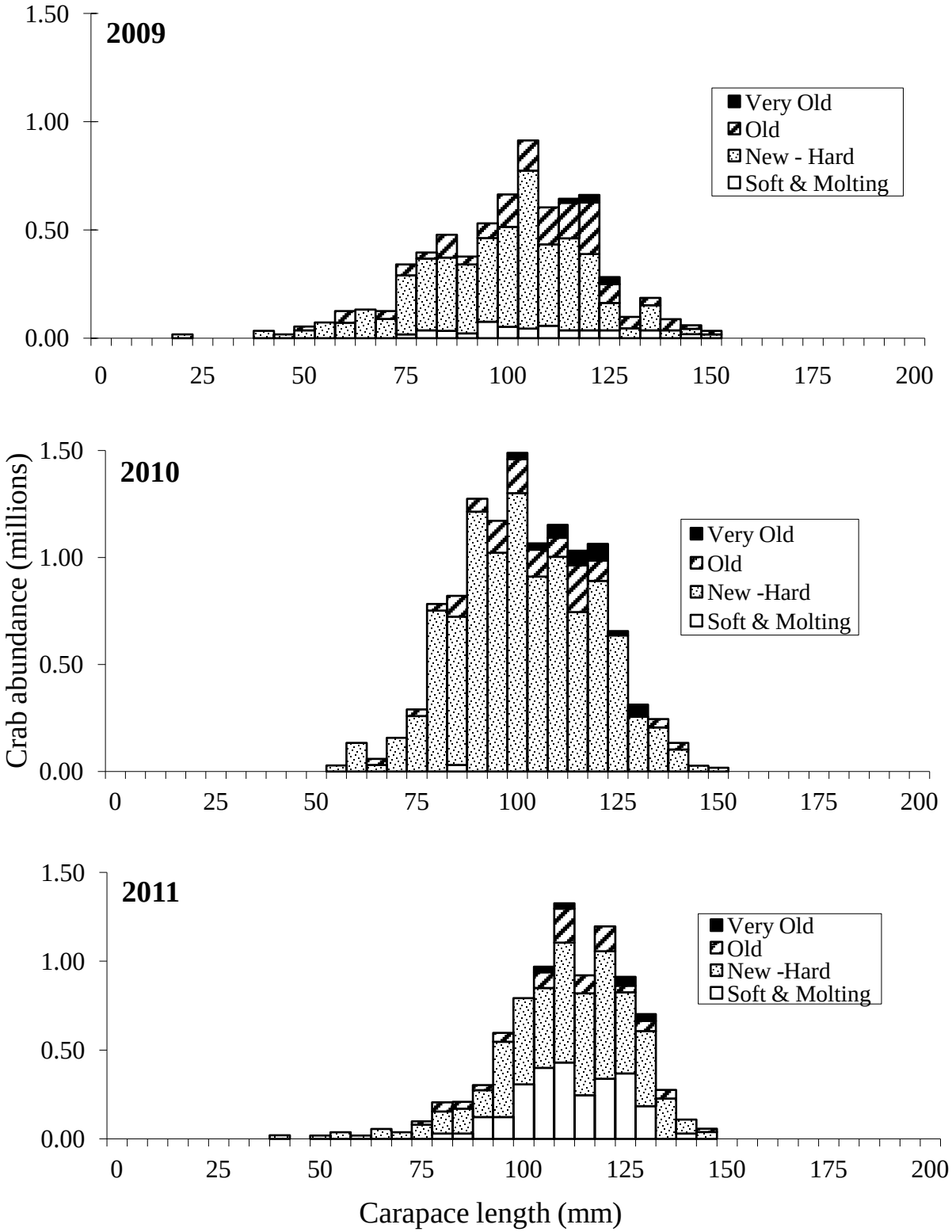

Figure 24. Size-frequency of St. Matthew Island Section male blue king crab (*Paralithodes platypus*) by 5 mm length classes, 2009-2011.

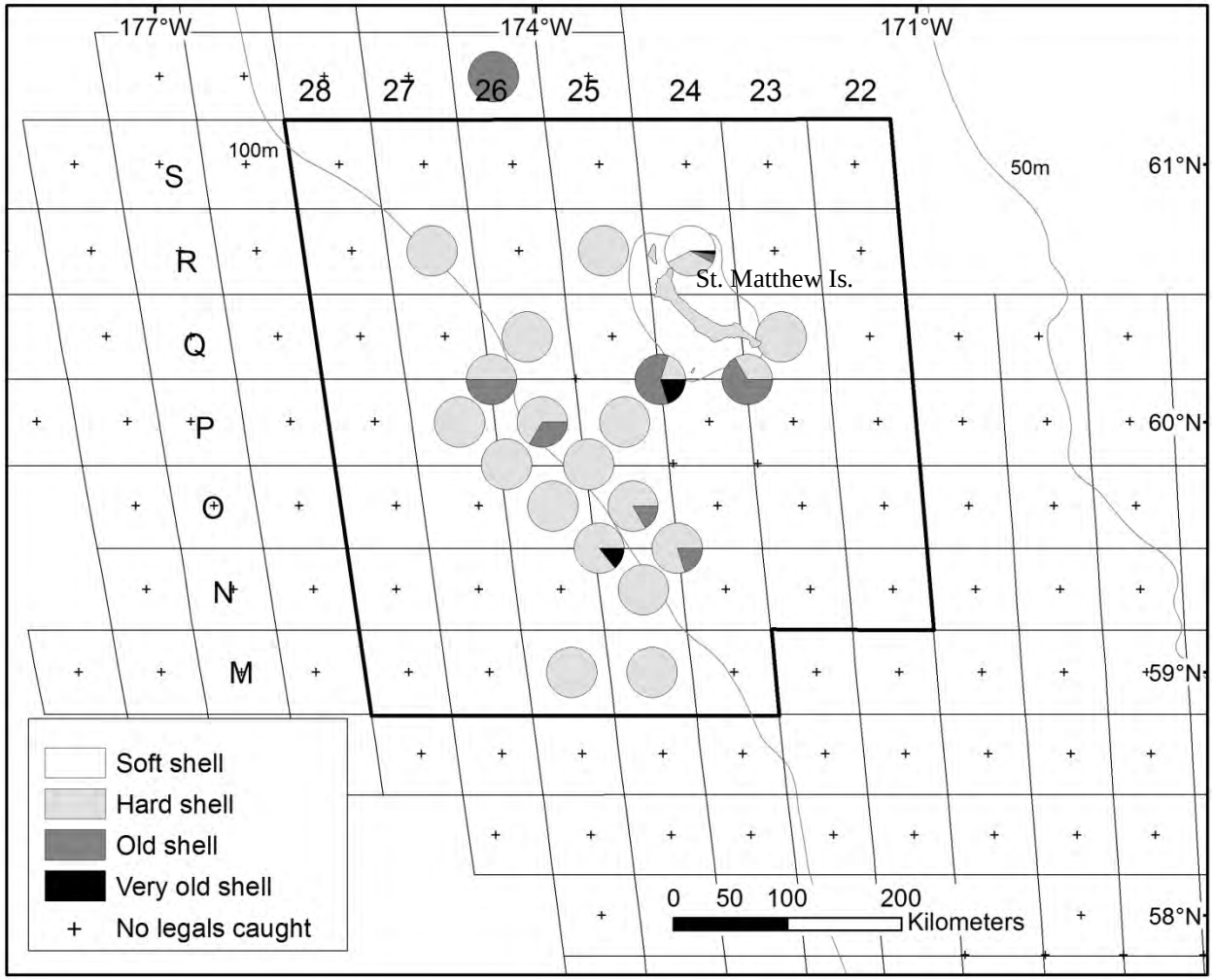

Figure 25. Distribution of legal-sized male blue king crab (*Paralithodes platypus*) caught at each station of the St. Matthew Island Section of the Northern District in 2011 and distinguished by shell condition. The outlined area depicts stations within the management district.

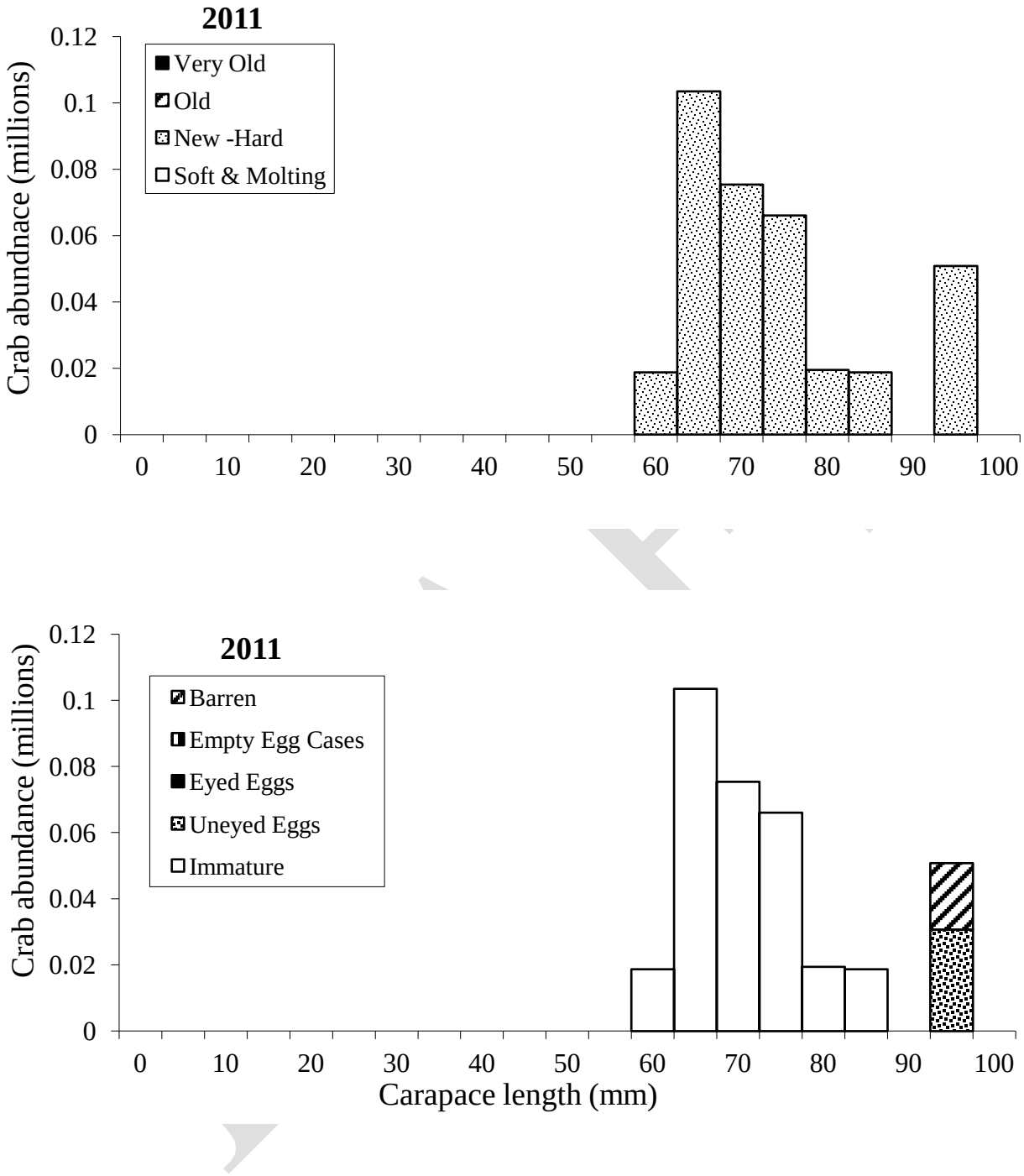

Figure 26. Size-frequency, shell and egg condition of St. Matthew Island Section female blue king crab (*Paralithodes platypus*) by 5 mm length classes in 2011.

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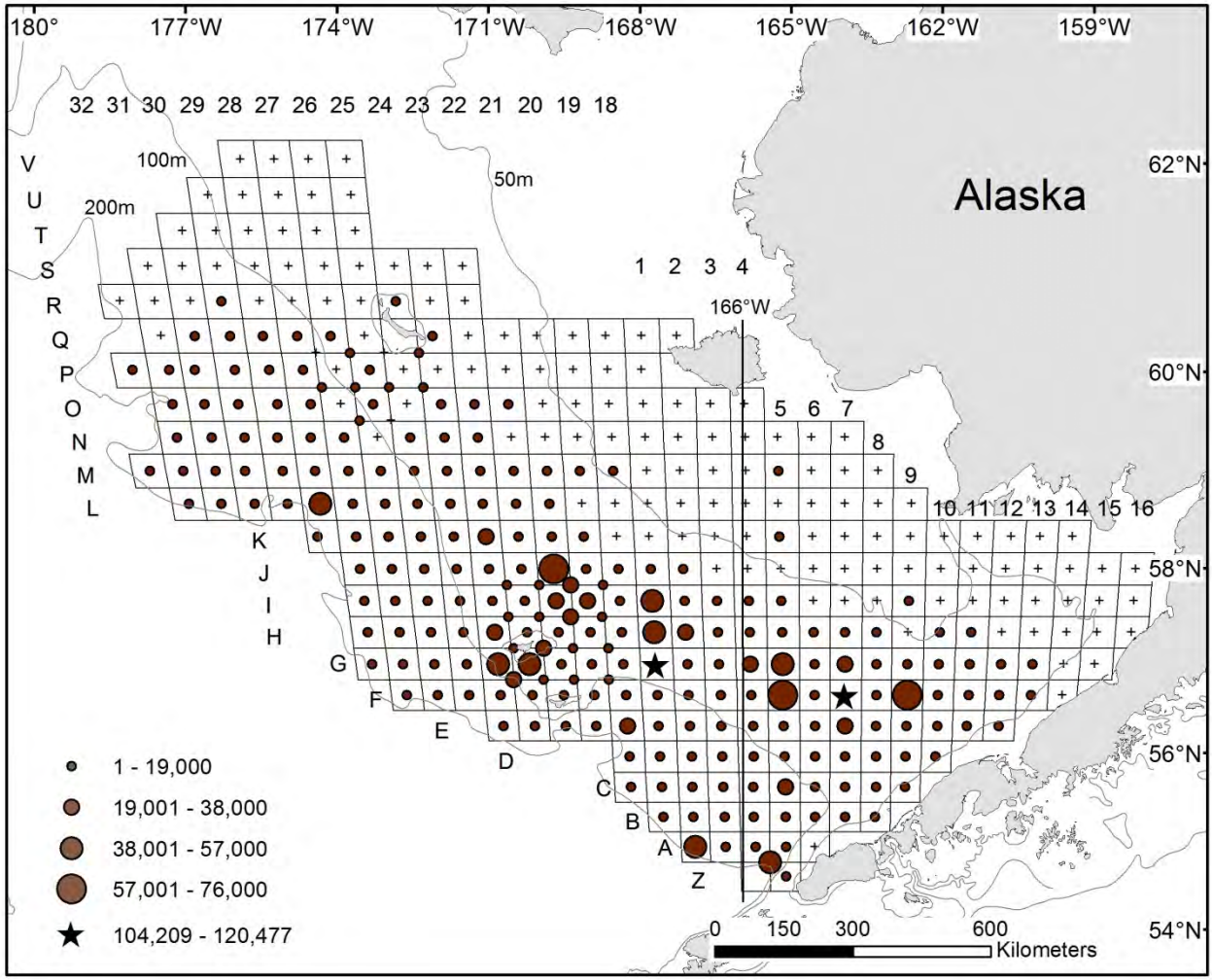

Figure 27. Total density (number/nmi^2) of Tanner crab (*Chionoecetes bairdi)* at each station sampled in 2011. Data depicted by circles are crab densities at equal intervals, while stars are densities larger than the standard scale.

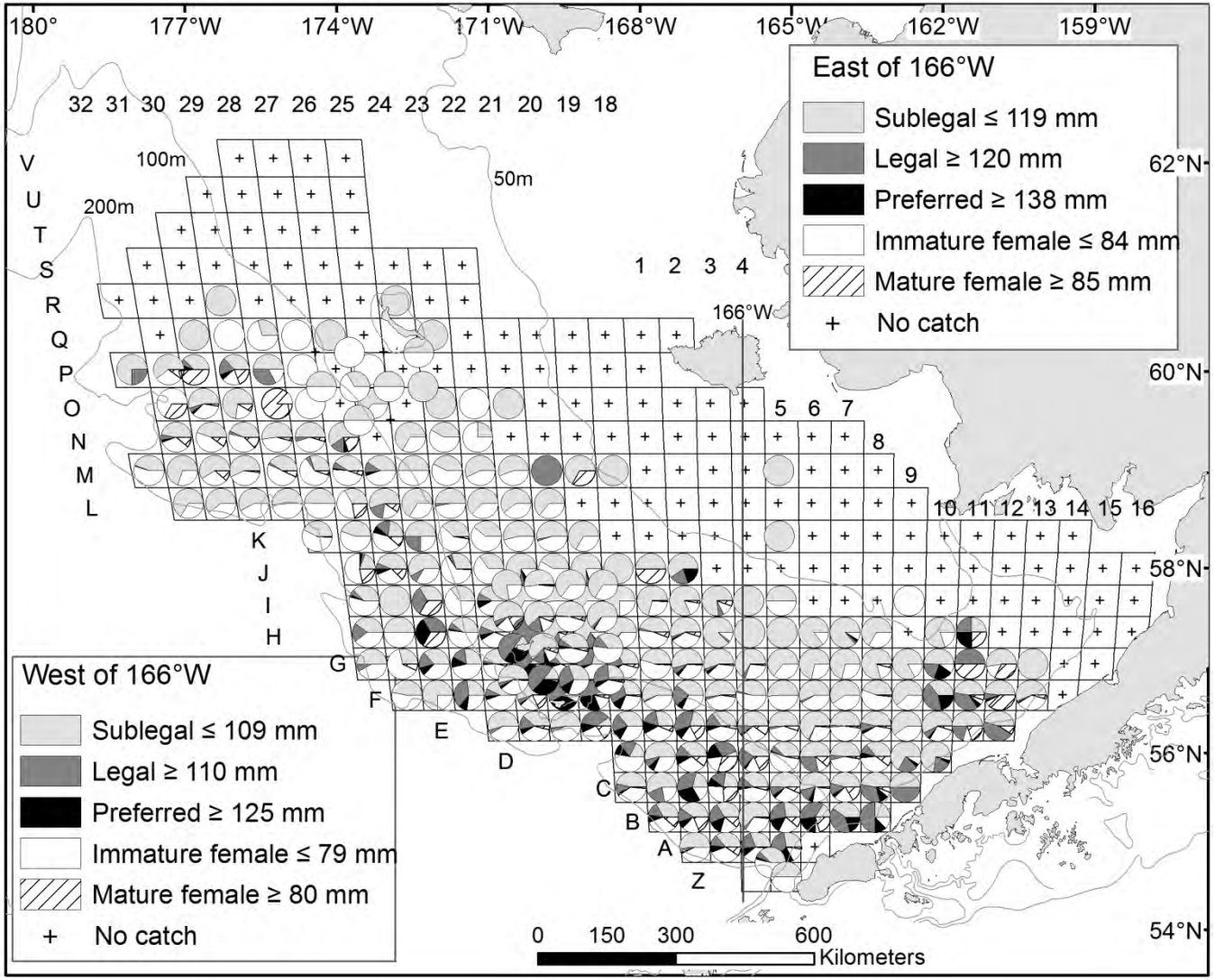

Figure 28. Percentage of male and female Tanner crab (*Chionoecetes bairdi*) size categories at each station sampled in 201. Tanner crab males ≥ 138 mm CW east of 166° W and ≥ 125 mm CW west of 166° W are preferred size categories while males ≥ 120 mm and ≥ 110 mm CW are the legal-size categories for east and west of 166° W, respectively.

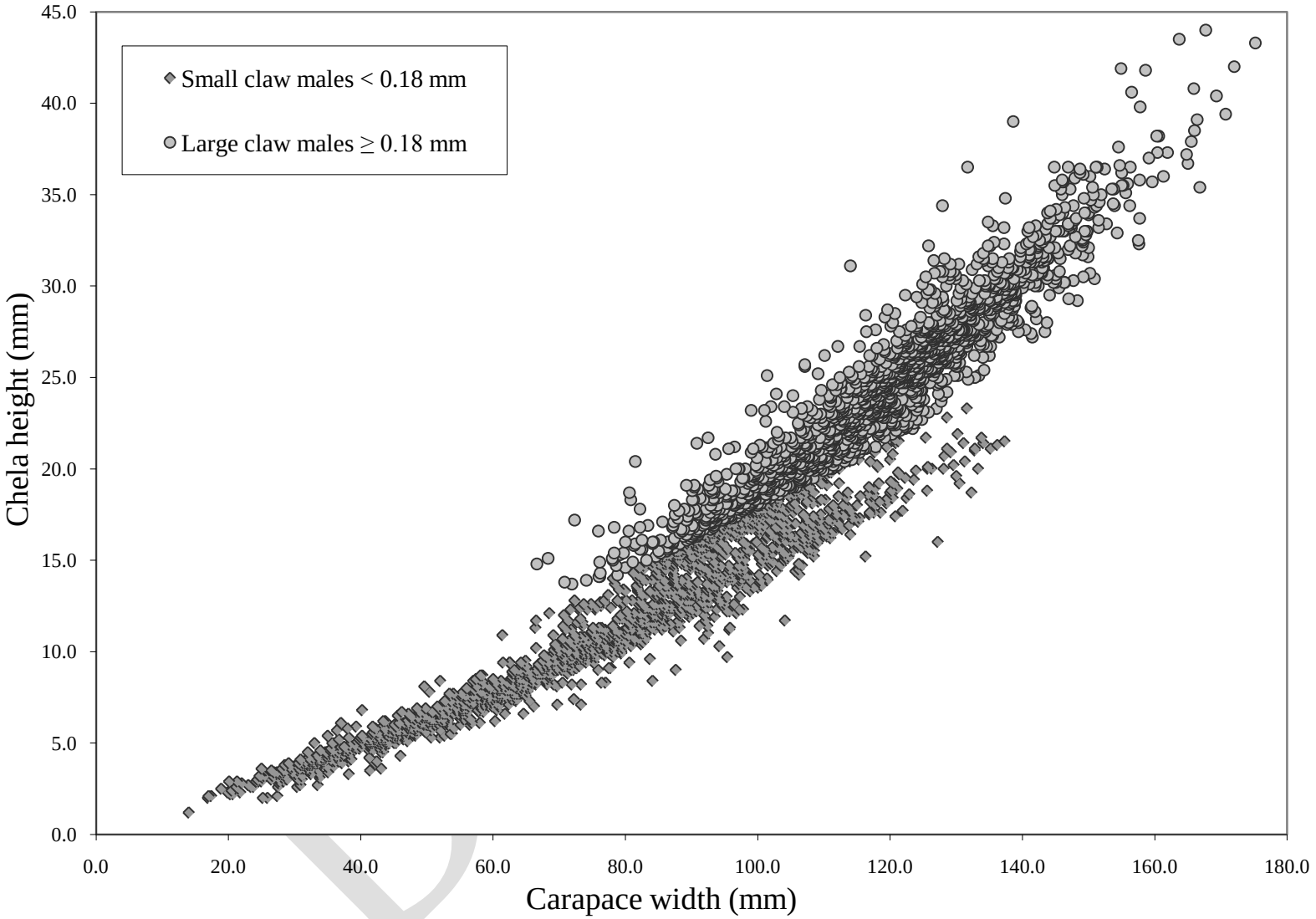

Figure 29. Male Tanner crab (*Chionoecetes bairdi*) chela height versus carapace width measurements collected on the 2008 and 2010 National Marine Fisheries Service eastern Bering Sea bottom trawl survey.

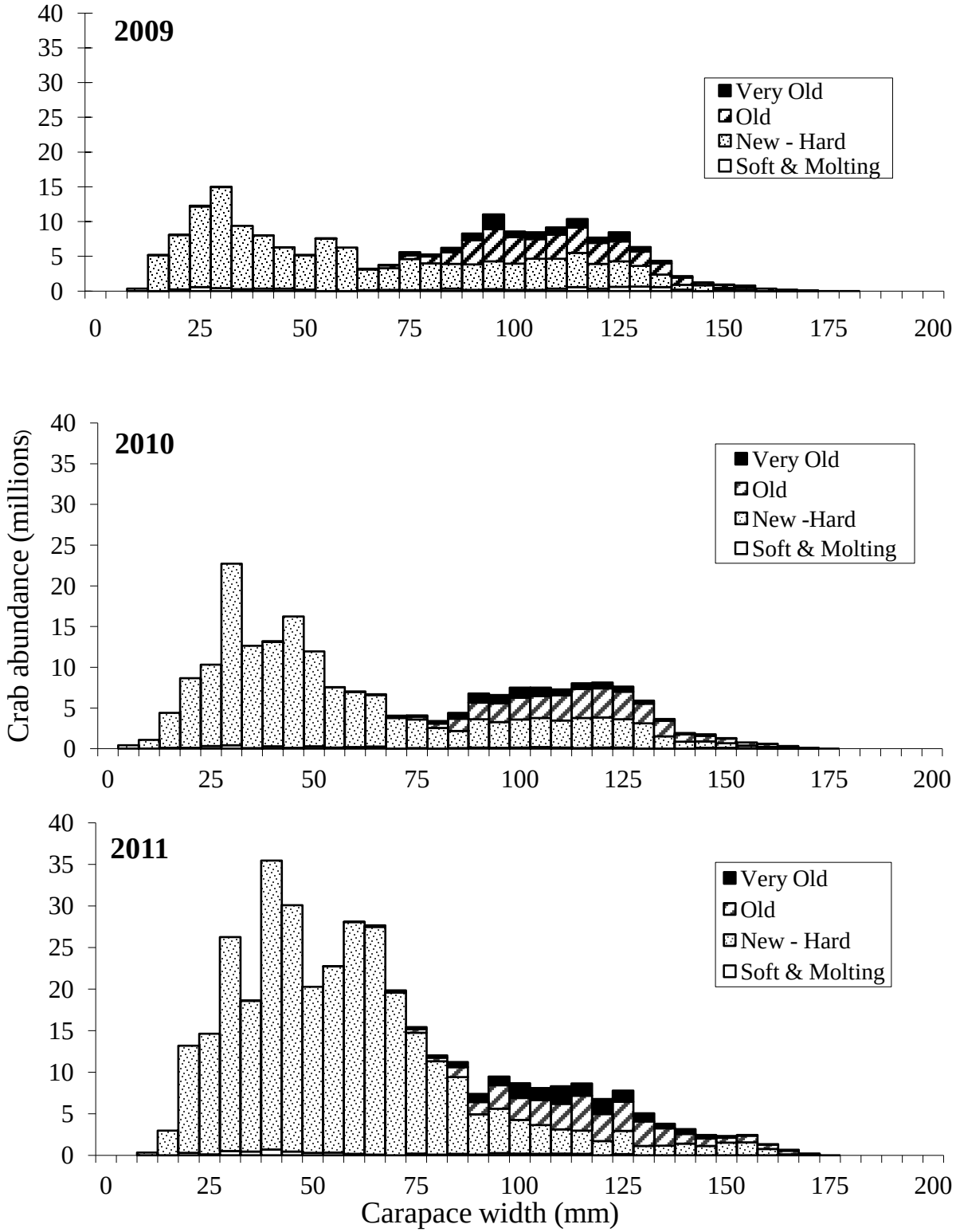

Figure 30. Size-frequency of male Tanner crab (*Chionoecetes bairdi*) by 5 mm width classes of all districts combined, 2009-2011.

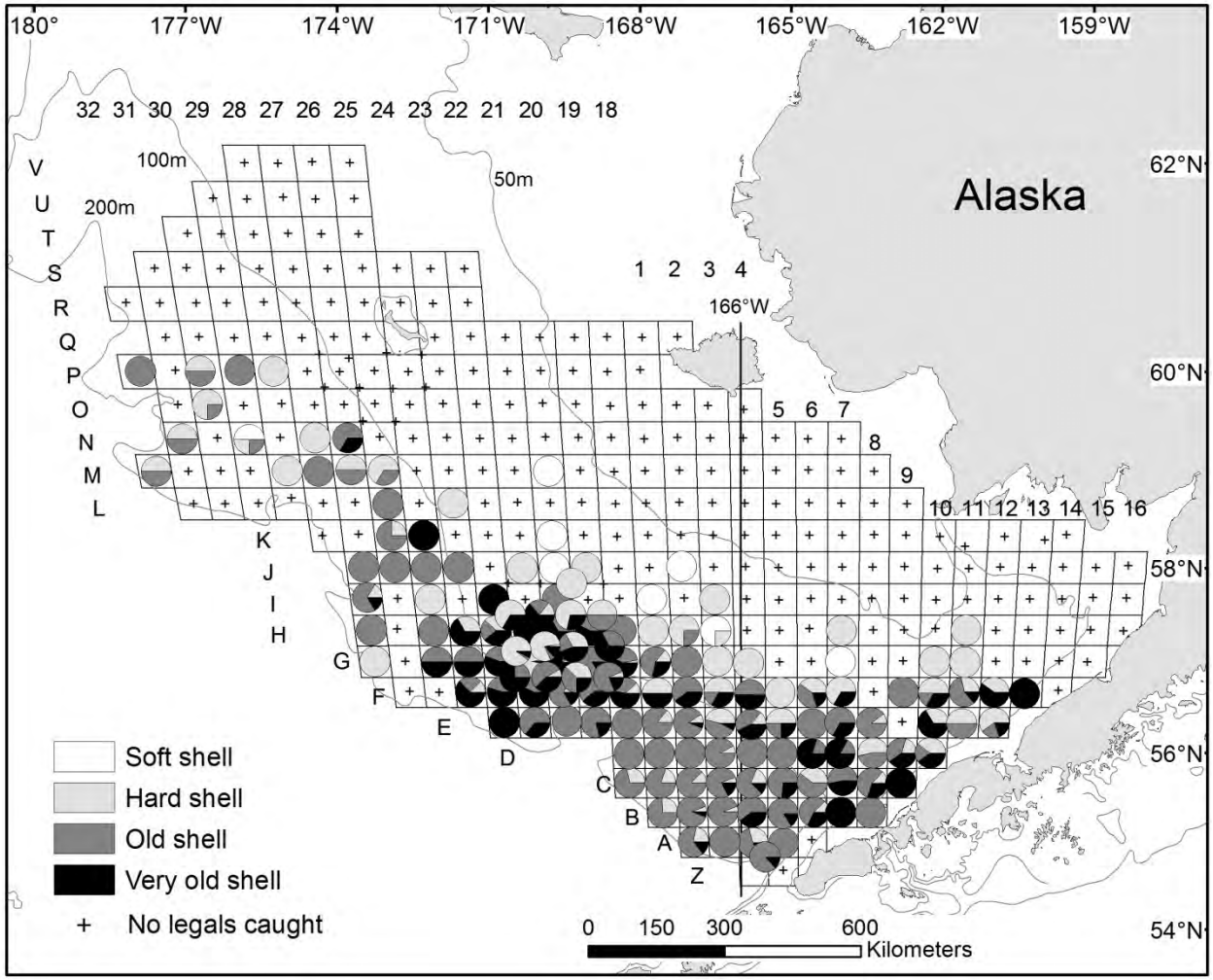

Figure 31. Distribution of legal-sized male Tanner crab (*Chionoecetes bairdi*) caught at each station in 2011 and distinguished by shell condition. Tanner male crab ≥ 120 mm and ≥ 110 mm CW are the legal-size categories for east and west of 166° W, respectively.

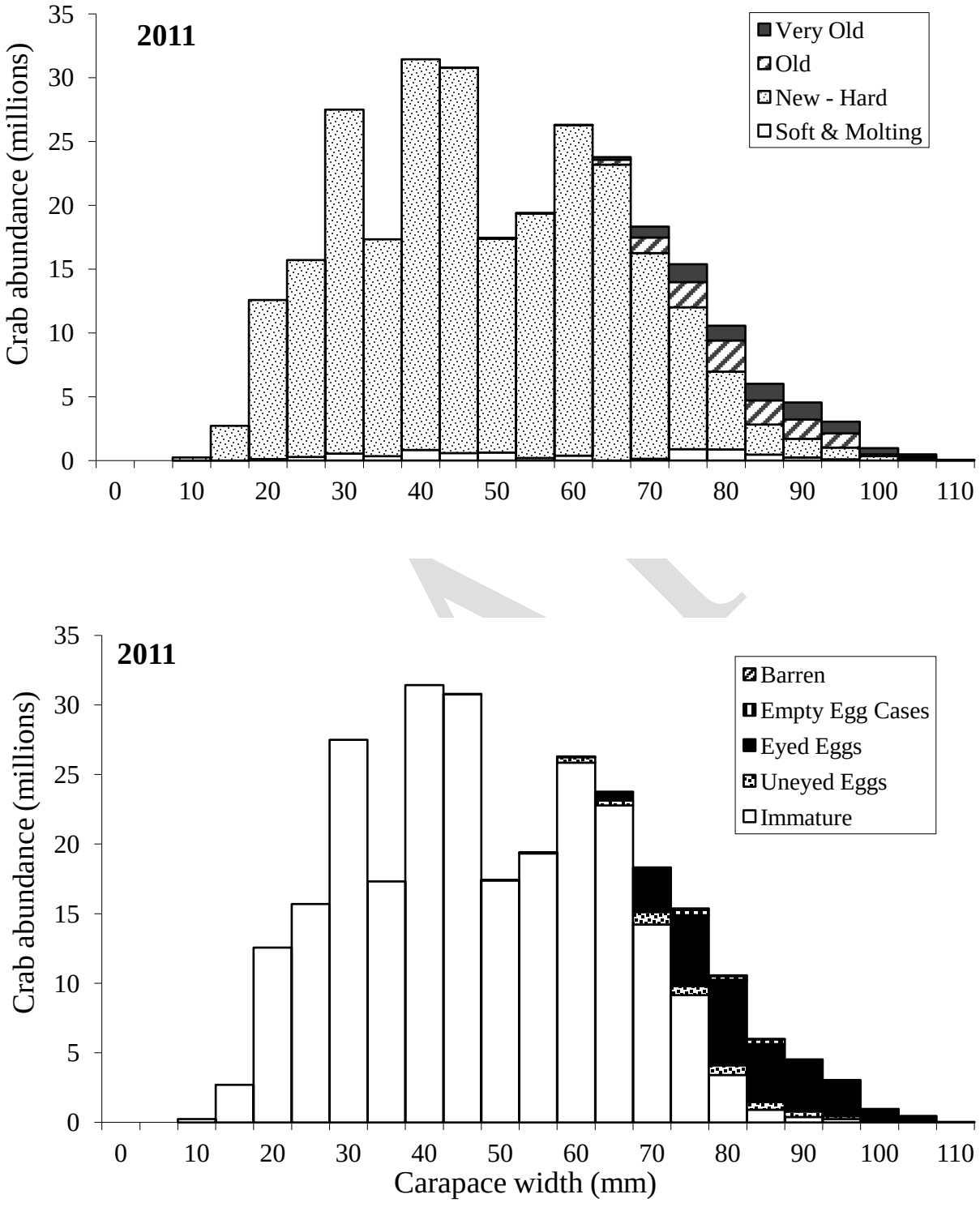

Figure 32. Size-frequency, shell and egg condition of female Tanner crab (*Chionoecetes bairdi*) by 5 mm width classes of all districts combined in 2011.

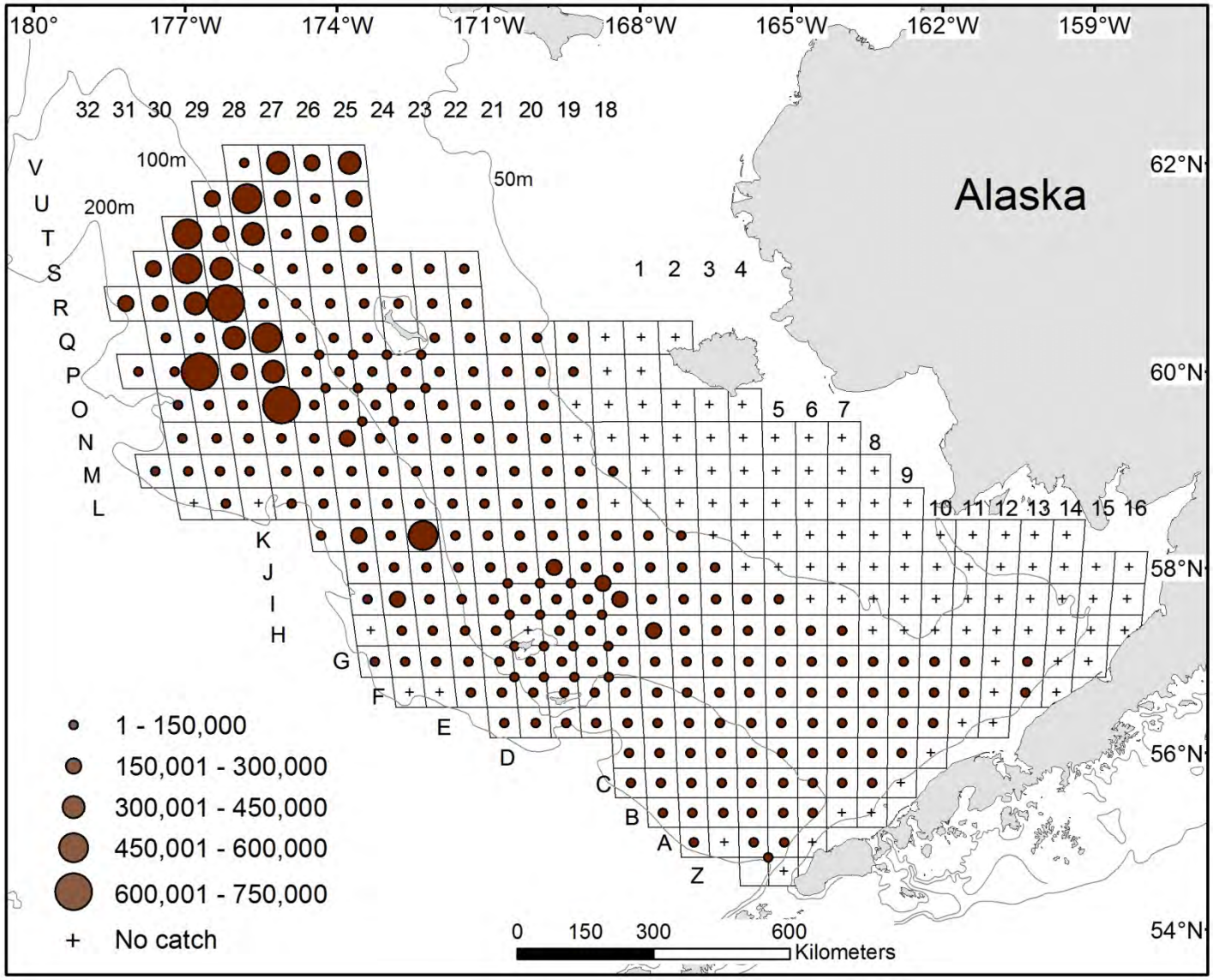

Figure 33. Total density (number/nmi^2) of snow crab (*Chionoecetes opilio*) at each station sampled in 2011. Data depicted by circles are crab densities at equal intervals.

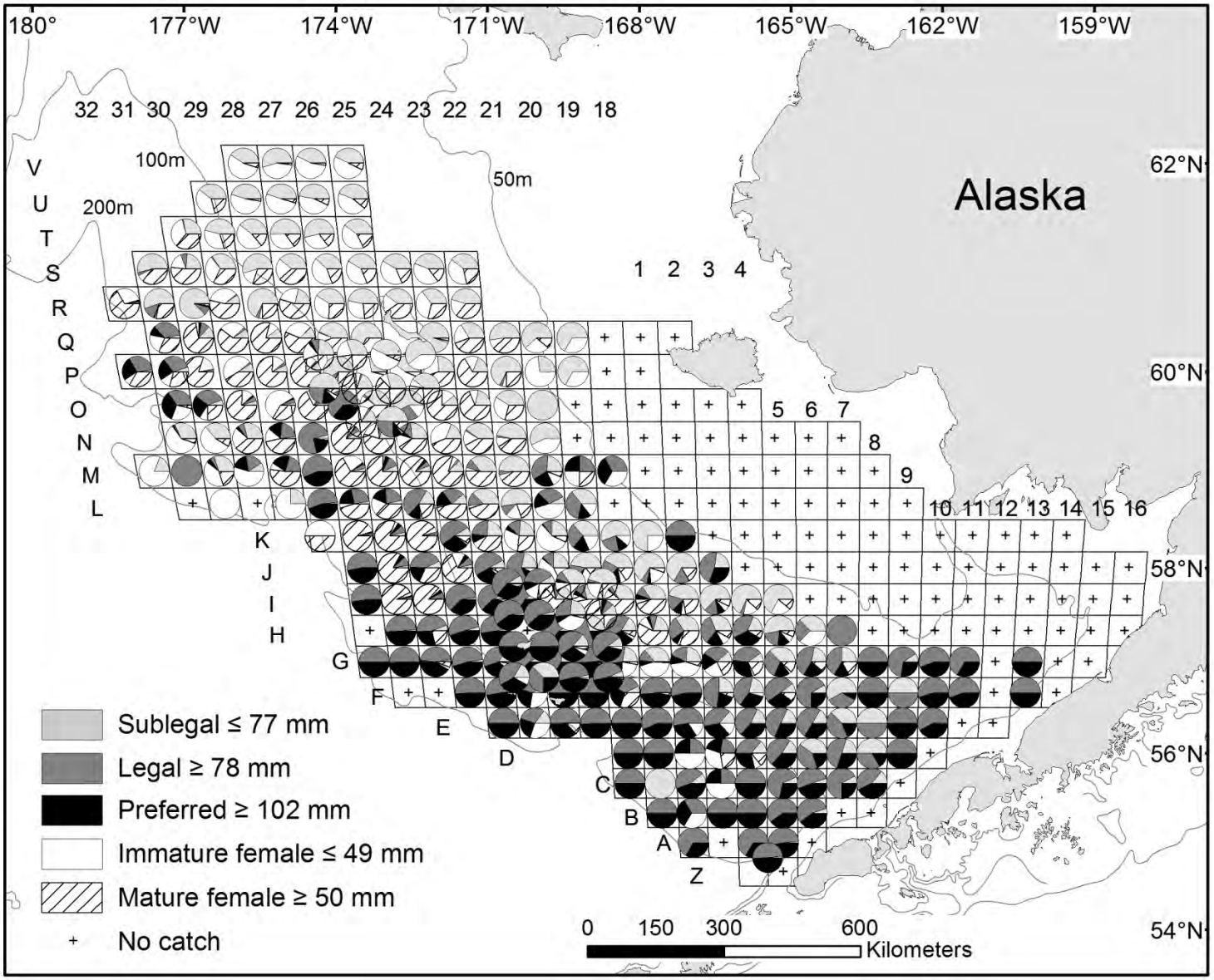

Figure 34. Percentage of male and female snow crab (*Chionoecetes opilio*) size categories at each station sampled in 2011.

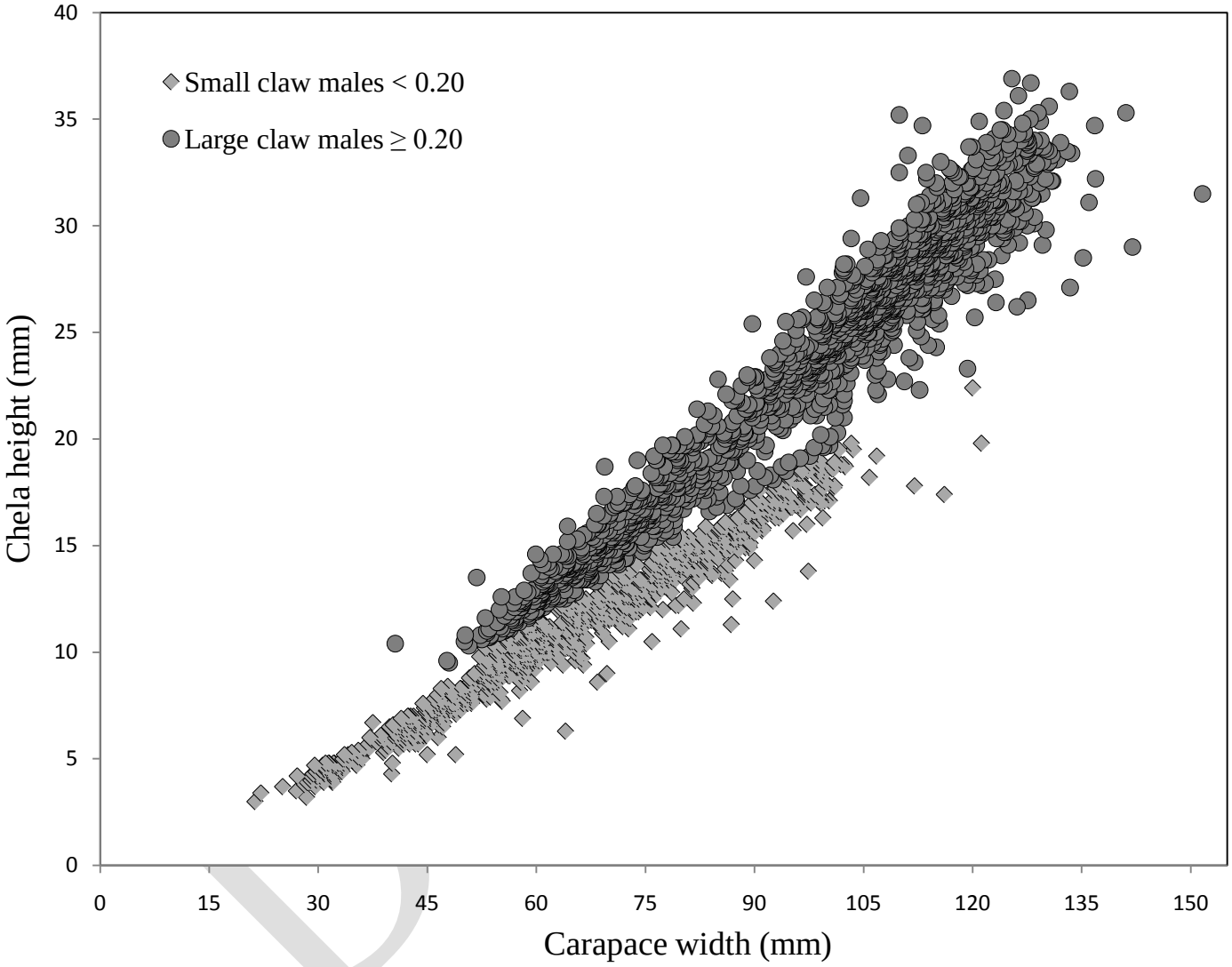

Figure 35. Male snow crab (*Chionoecetes opilio*) chela height versus carapace width measurements collected on the 2009 and 2011 National Marine Fisheries Service eastern Bering Sea bottom trawl survey.

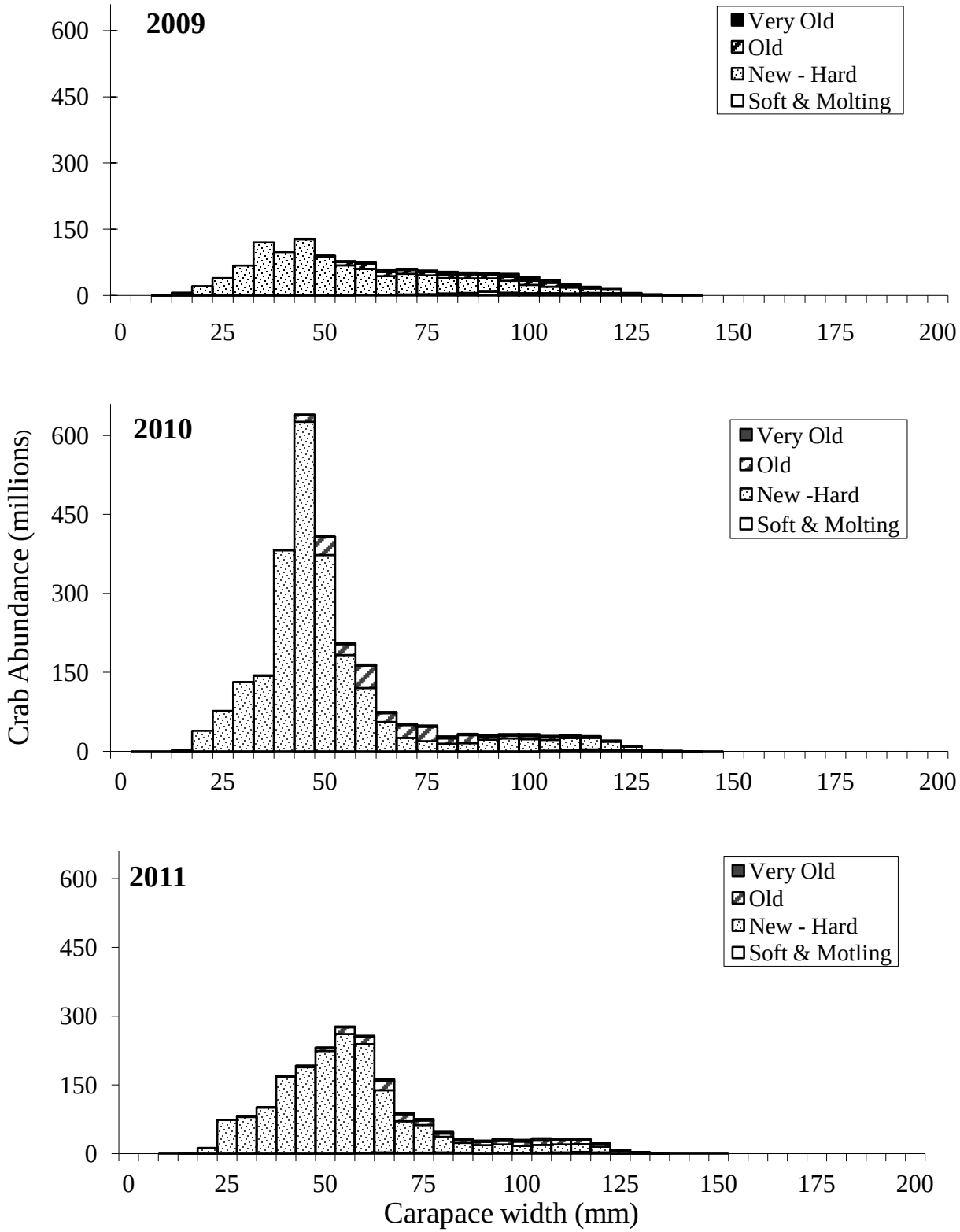

Figure 36. Size-frequency of male snow crab (*Chionoecetes opilio*) by 5 mm width classes of all districts combined, 2009-2011.

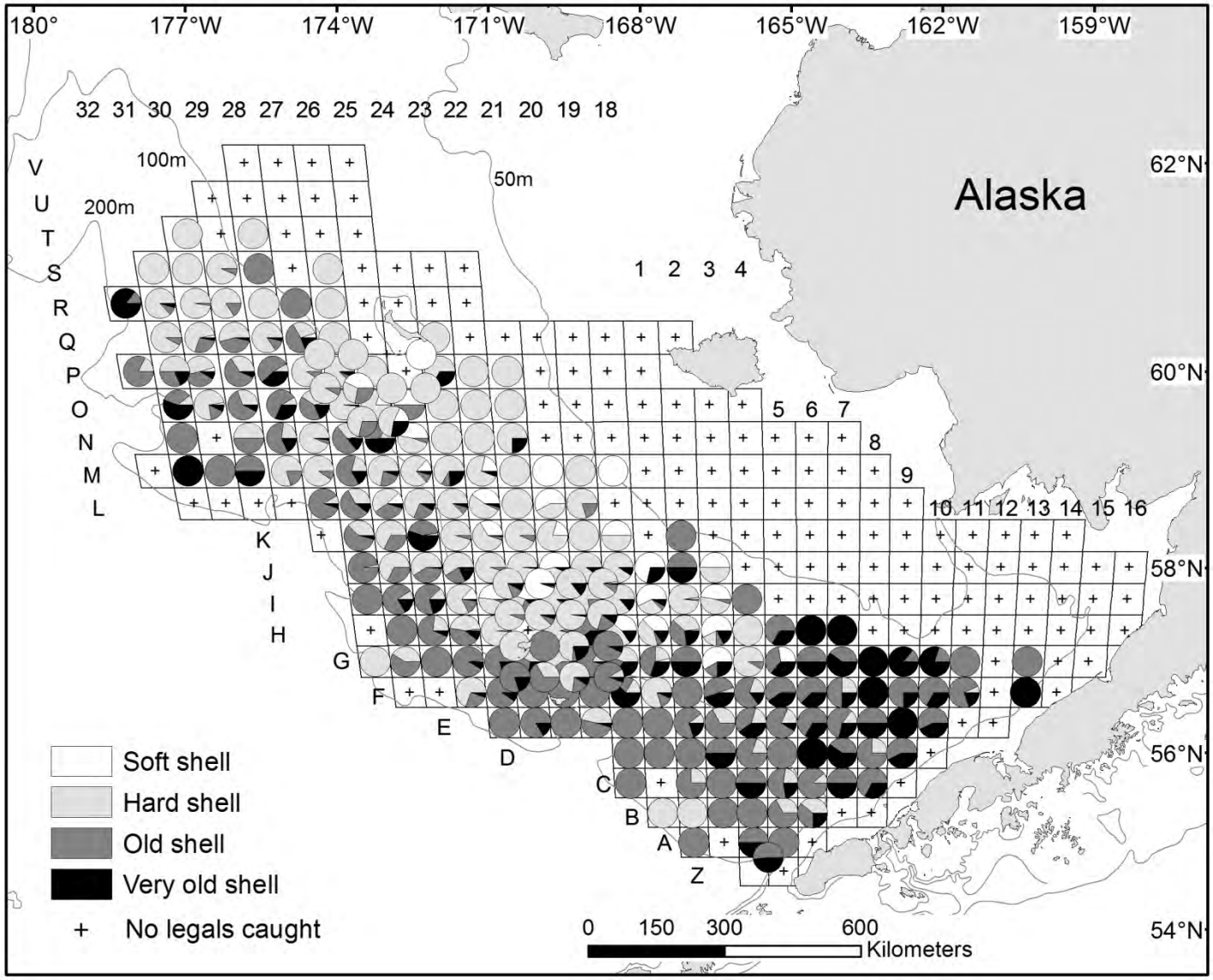

Figure 37.Distribution of legal-sized male snow crab (*Chionoecetes opilio*) caught at each station in 2011 and distinguished by shell condition.

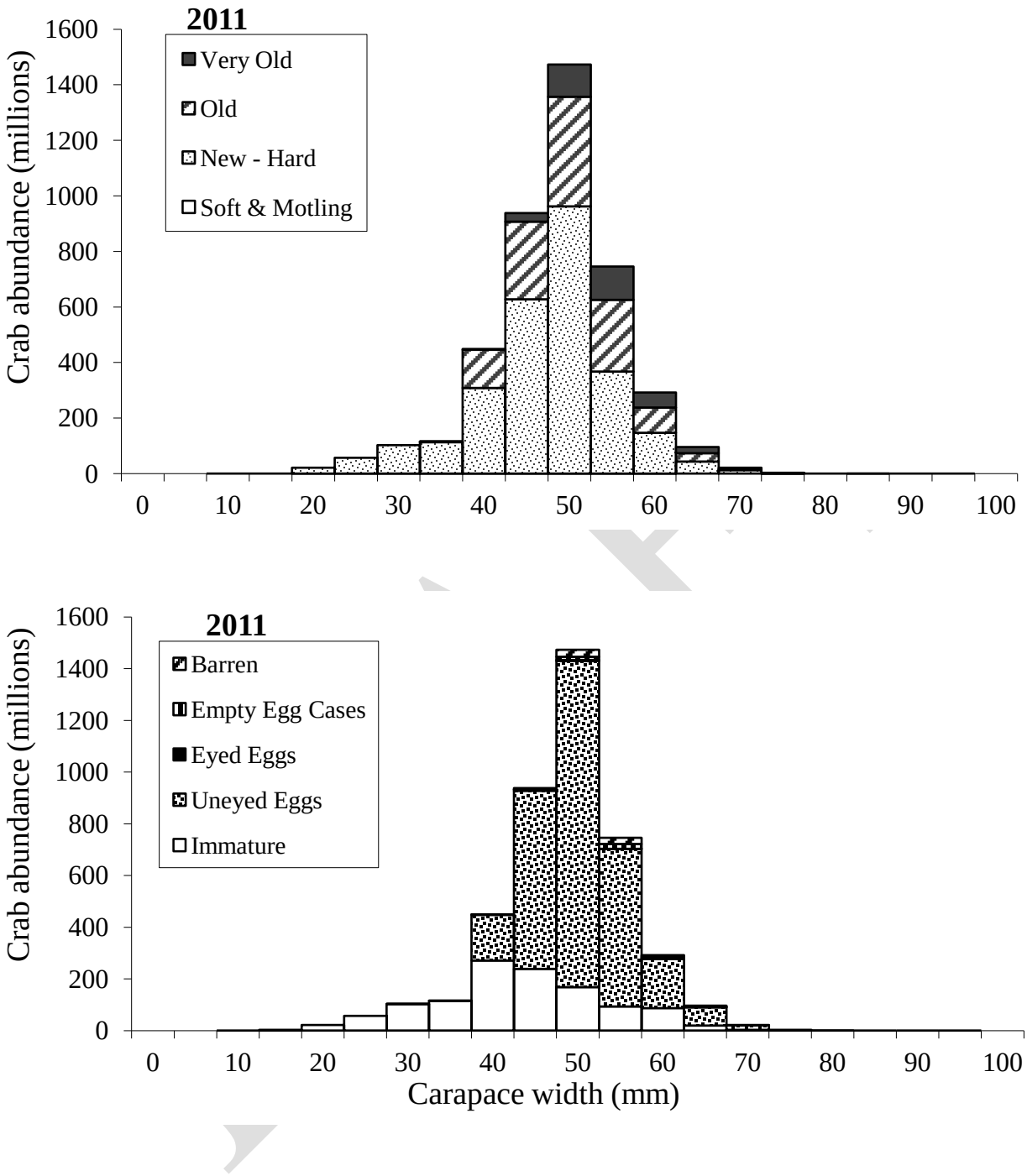

Figure 38. Size-frequency, shell and egg condition of female snow crab (*Chionoecetes opilio*) by 5 mm width classes of all districts combined in 2011.

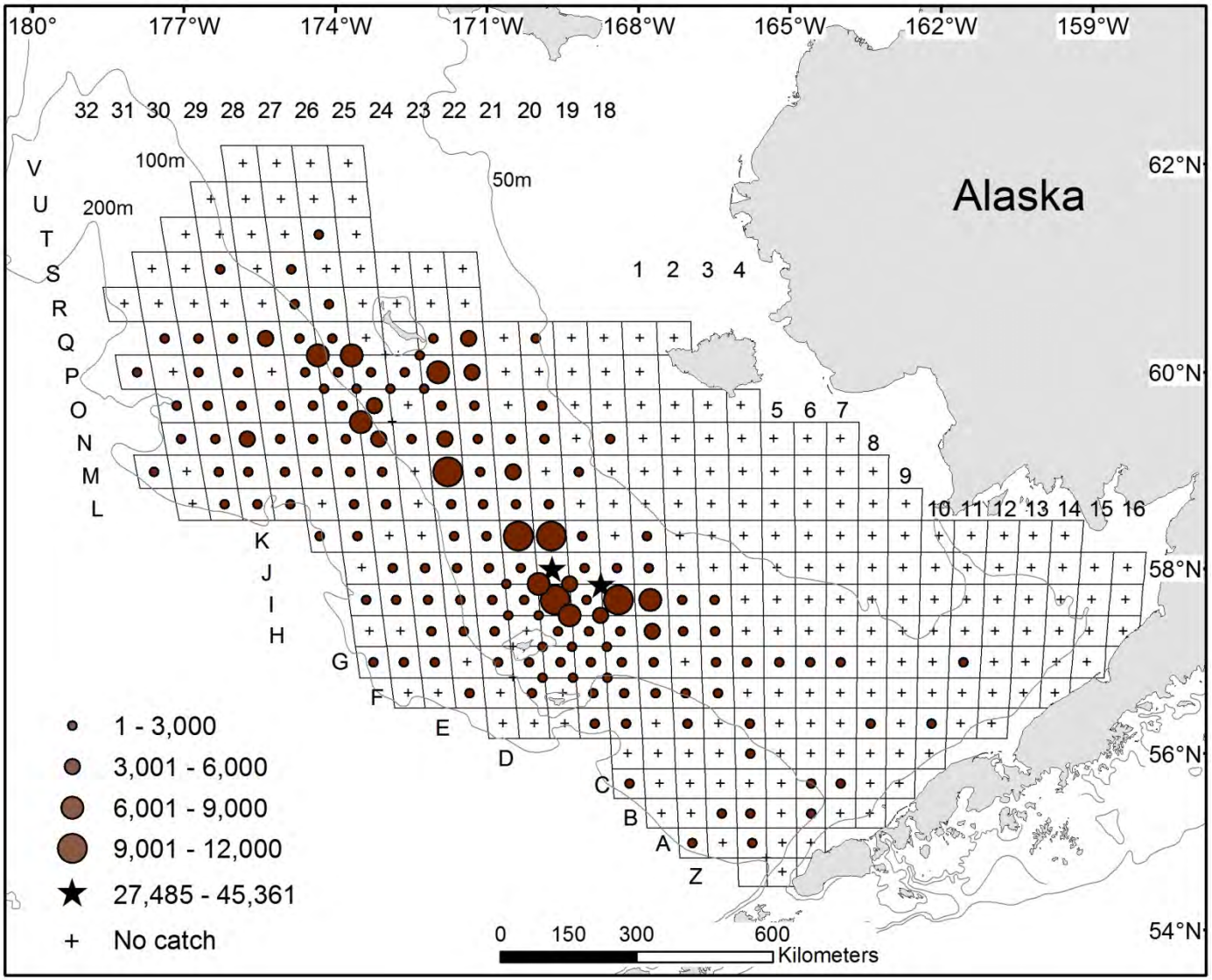

Figure 39. Total density (number/nmi^2) of *Chionoecetes bairdi/opilio* hybrid crab at each station sampled in 2011. Data depicted by circles are crab densities at equal intervals.

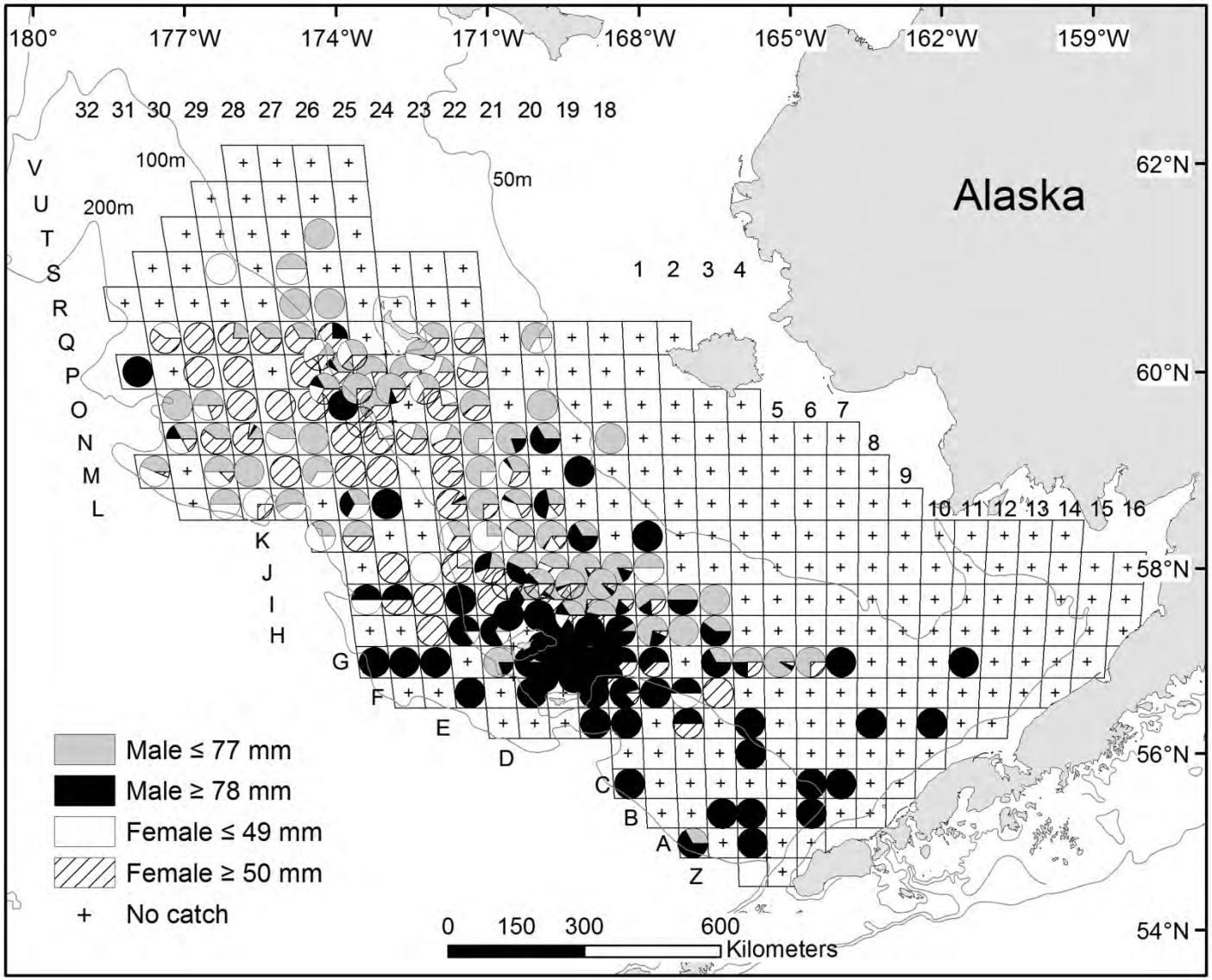

Figure 40. Percentage of male and female *Chionoecetes bairdi/opilio* hybrid crab size categories at each station sampled in 2011.

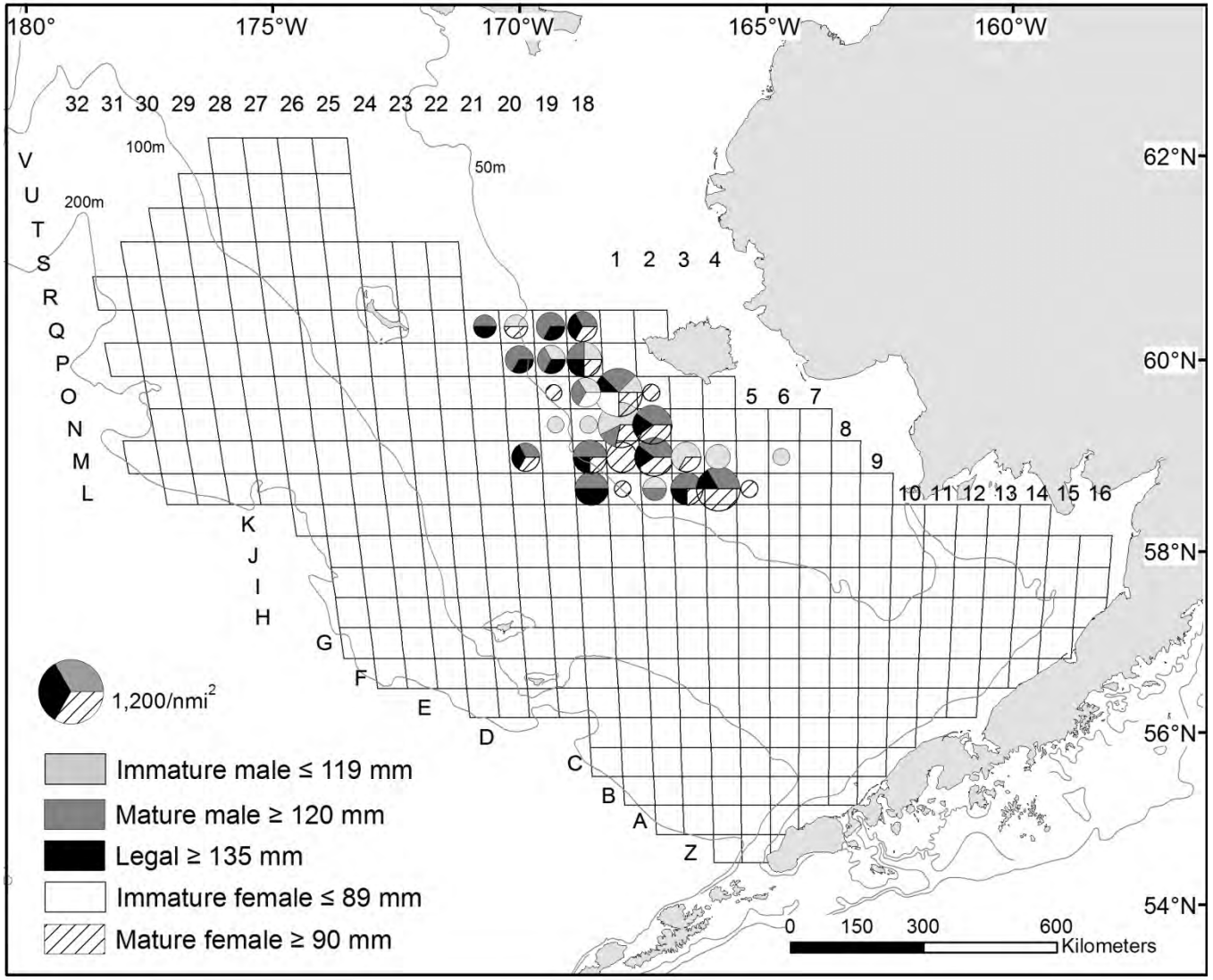

Figure 41. Total density (number/nmi^2) and percentage of male and female red king crab (*Paralithodes camtschaticus*) size categories at each station sampled in the Northern District in 2011.

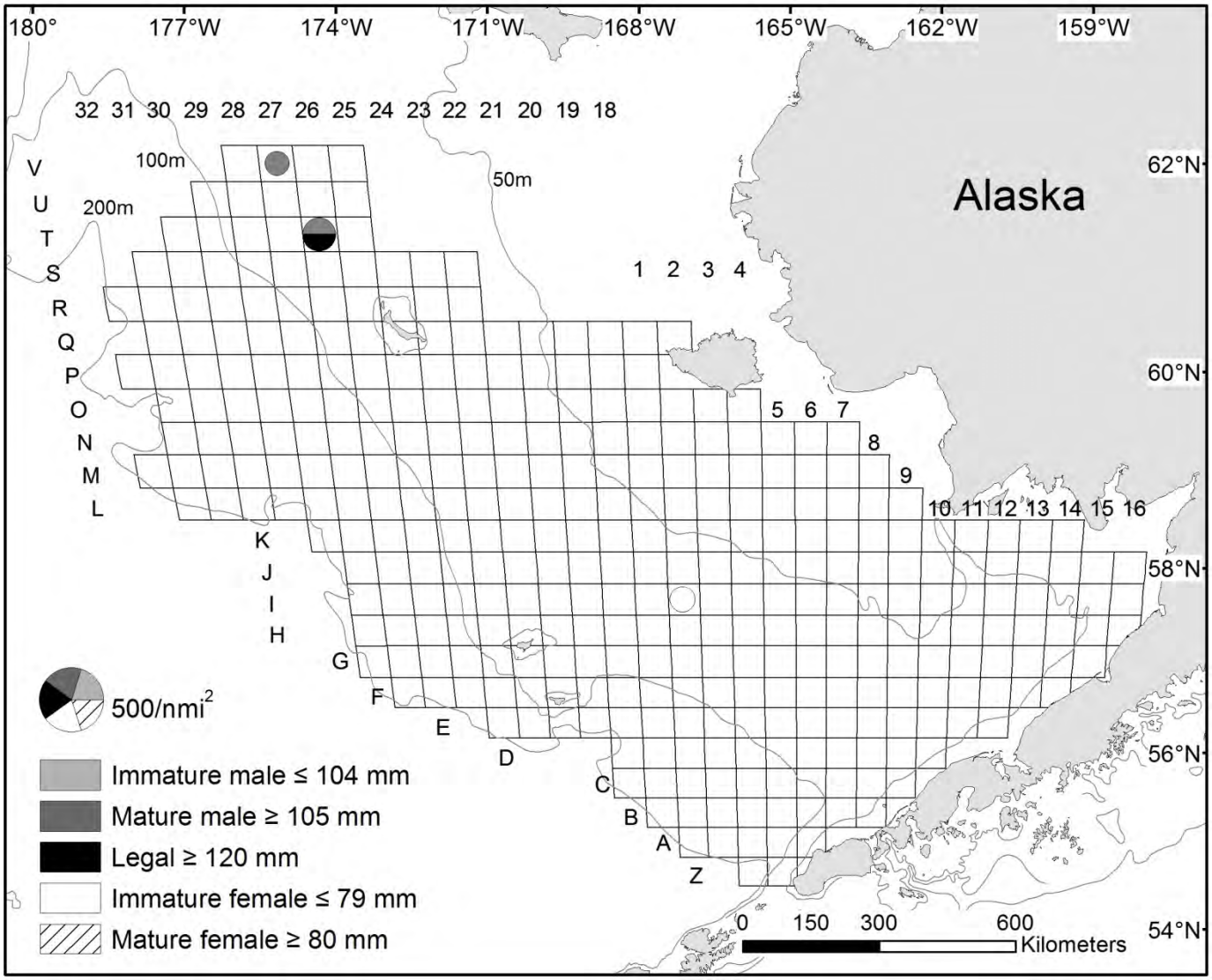

Figure 42. Total density (number/nmi^2) and percentage of male and female blue king crab (*Paralithodes platypus*) size categories at stations sampled outside of the Pribilof District and St. Matthew Island section of the Northern District in 2011.

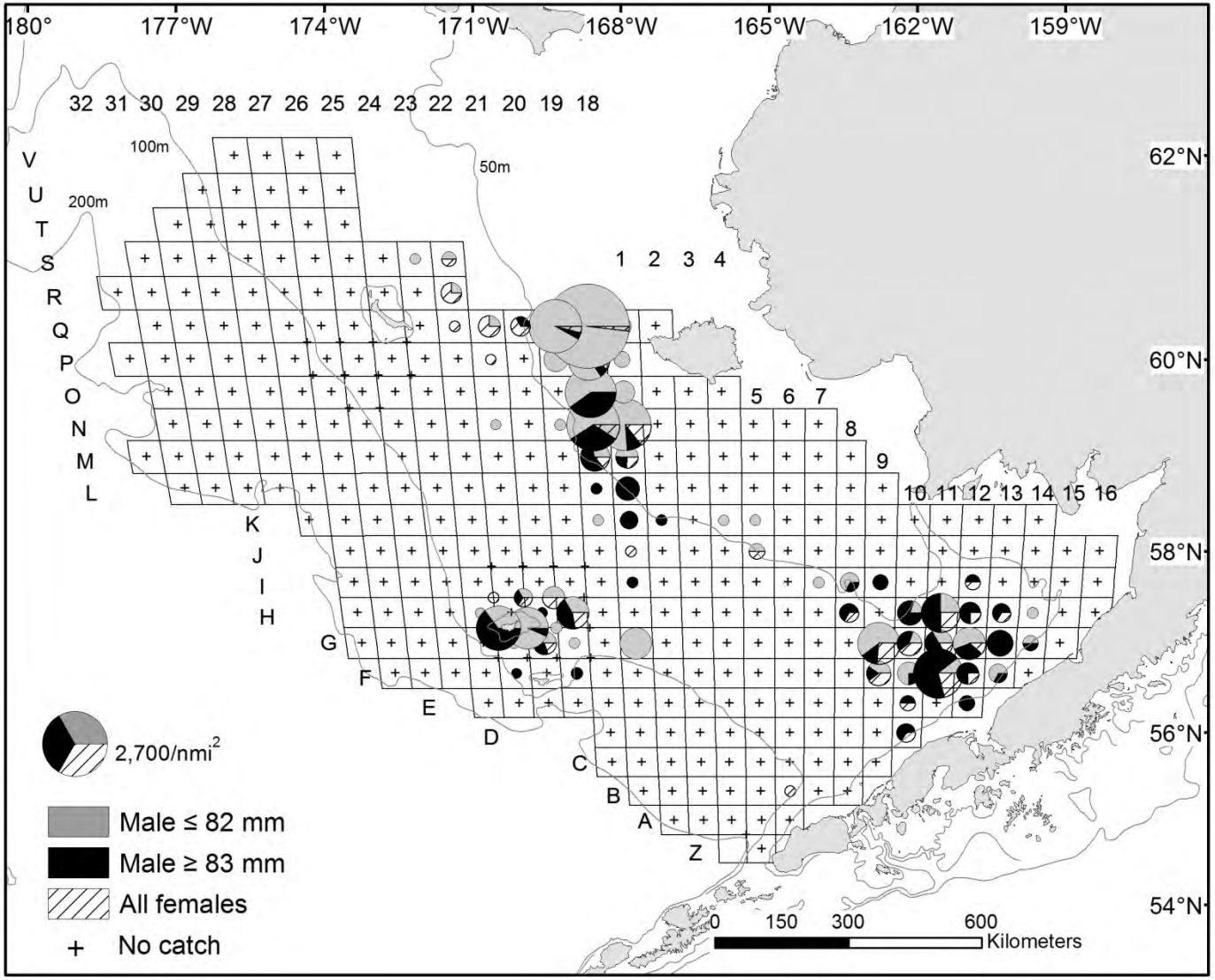

Figure 43. Total density (number/nmi^2) and percentage of male and female hair crab (*Erimacrus isenbeckii*) size categories at each station sampled in 2011.

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	A-02	A-03	A-04	A-05	A-06	AZ0504	B-01	B-02	B-03	B-04	B-05
Start Date	07/14/2011	06/25/2011	06/25/2011	06/24/2011	06/24/2011	06/24/2011	07/14/2011	07/14/2011	06/25/2011	06/25/2011	06/24/2011
Duration (hour)	0.49	0.55	0.51	0.57	0.51	0.60	0.56	0.49	0.57	0.50	0.59
Distance Fished (km)	2.66	2.97	2.83	3.15	2.81	3.13	2.98	2.66	3.08	2.75	3.25
Mid-Latitude (^{o}N)	55.01	55.01	55.00	54.99	55.03	54.84	55.34	55.35	55.35	55.34	55.33
Mid-Longitude (^{o}W)	-166.94	-166.32	-165.77	-165.15	-164.59	-165.52	-167.55	-166.97	-166.35	-165.79	-165.16
Bottom Depth (m)	155	142	130	111	63	154	148	138	132	120	111
Bottom Temperature (^{o}C)	3.9	3.8	4.2	4.3	5.6	3.8	3.8	3.8	3.8	4.0	4.1
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	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											
Sublegal	26,582	7,150	1,834	807	0	21,659	2,879	3,359	3,593	7,846	1,229
Legal	2,064	2,362	1,199	993	0	3,318	1,243	1,269	2,310	367	1,168
Preferred	917	1,468	564	621	0	1,628	654	672	1,476	0	676
Immature females	22,036	6,831	2,257	434	0	30,548	2,879	1,568	1,989	4,179	983
Mature females	459	1,851	71	62	0	0	981	1,568	1,155	147	492
Total weight (kg)	44.03	58.91	19.69	24.89	0.00	71.60	22.83	20.62	36.02	13.70	25.78
Opilio Tanner Crab											
Sublegal	0	0	0	62	0	63	0	0	0	0	0
Legal	306	0	141	2,420	0	2,629	65	75	257	220	184
Preferred	153	0	71	2,172	0	2,566	65	75	257	220	123
Immature females	0	0	0	0	0	0	0	75	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	1.71	0.00	0.86	24.34	0.00	28.43	0.80	0.58	2.96	2.94	1.98
Hybrid Tanner Crab											
Males ≤ 77 mm	76	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	153	0	71	0	0	0	0	0	128	147	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)	2.25	0.00	0.74	0.00	0.00	0.00	0.00	0.00	1.58	1.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/24/2011	06/11/2011	06/11/2011	07/14/2011	07/14/2011	06/25/2011	06/25/2011	06/24/2011	06/24/2011	06/11/2011	06/10/2011
Duration (hour)	0.50	0.35	0.48	0.53	0.50	0.53	0.51	0.54	0.51	0.54	0.54
Distance Fished (km)	2.82	1.90	2.64	2.90	2.77	2.85	2.74	2.95	2.75	2.92	2.86
Mid-Latitude (^{o}N)	55.34	55.34	55.34	55.67	55.68	55.67	55.67	55.67	55.68	55.70	55.67
Mid-Longitude (^{o}W)	-164.55	-164.02	-163.43	-167.59	-166.98	-166.39	-165.80	-165.16	-164.59	-163.99	-163.40
Bottom Depth (m)	101	78	52	134	134	126	117	109	96	95	83
Bottom Temperature (^{o}C)	4.6	3.9	4.7	3.8	3.8	3.8	4.0	4.1	3.6	3.2	3.8
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	892	0	0	0	0	0	77	0	0
Legal	0	0	649	0	0	0	0	0	77	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	162	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	34.77	0.00	0.00	0.00	0.00	0.00	2.40	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											
Sublegal	3,246	217	162	854	338	1,460	3,757	14,611	2,761	4,012	2,534
Legal	6,926	217	324	328	540	1,079	1,134	2,812	767	1,075	1,714
Preferred	4,689	109	81	0	473	635	354	1,235	230	358	522
Immature females	794	0	81	328	270	1,714	4,324	9,055	1,380	1,863	298
Mature females	4,040	0	0	0	0	1,587	354	1,921	77	1,433	298
Total weight (kg)	123.70	2.14	3.80	3.21	6.75	19.78	22.52	69.96	11.60	25.19	23.92
Opilio Tanner Crab											
Sublegal	216	0	0	66	68	0	0	69	77	72	75
Legal	2,381	0	0	0	270	63	142	617	690	573	224
Preferred	1,731	0	0	0	270	63	142	274	614	215	224
Immature females	0	0	0	0	0	127	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	19.10	0.00	0.00	0.13	3.22	0.76	1.35	5.08	5.60	3.19	2.39
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	289	0	0	0	0	0	0	0	153	143	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)	3.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.66	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/10/2011	07/14/2011	06/26/2011	06/26/2011	06/25/2011	06/25/2011	06/24/2011	06/15/2011	06/11/2011	06/10/2011	06/10/2011
Duration (hour)	0.49	0.55	0.56	0.57	0.55	0.50	0.56	0.49	0.35	0.56	0.54
Distance Fished (km)	2.70	3.03	3.06	3.09	2.96	2.71	3.02	2.67	1.91	2.99	2.92
Mid-Latitude (^{o}N)	55.67	55.67	56.00	56.00	56.00	56.01	56.00	56.00	56.00	56.01	56.00
Mid-Longitude (^{o}W)	-162.84	-168.20	-167.62	-167.01	-166.41	-165.79	-165.18	-164.59	-164.04	-163.39	-162.82
Bottom Depth (m)	53	135	133	134	124	106	96	92	91	89	78
Bottom Temperature (^{o}C)	4.4	3.5	3.4	3.6	3.7	3.6	3.3	2.2	2.6	3.1	3.8
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	174	0	0	0	0	0	0	0	0	0	1,316
Legal	0	0	0	0	0	0	0	0	0	0	1,316
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	1,302	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	25.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.69
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											
Sublegal	174	2,089	1,516	1,461	332	3,445	3,428	679	6,446	3,648	1,170
Legal	174	457	243	468	1,659	1,837	538	377	691	1,052	366
Preferred	0	131	182	351	995	230	134	0	0	561	73
Immature females	0	1,763	910	1,228	1,062	1,378	4,840	151	5,870	3,929	146
Mature females	0	65	0	409	1,725	1,531	202	151	345	1,052	0
Total weight (kg)	1.79	6.58	3.29	11.23	26.15	34.70	17.33	6.32	9.11	26.56	8.79
Opilio Tanner Crab											
Sublegal	0	0	0	0	0	153	202	151	230	421	0
Legal	0	392	61	58	133	383	605	151	576	281	512
Preferred	0	392	61	58	133	306	471	75	345	140	512
Immature females	0	0	0	117	199	77	0	0	0	0	0
Mature females	0	0	0	0	133	153	0	0	0	0	0
Total weight (kg)	0.00	4.93	0.67	0.24	2.51	3.49	7.00	1.46	3.08	2.80	4.31
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	65	0	0	0	230	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	0.91	0.00	0.00	0.00	1.74	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/10/2011	06/27/2011	06/26/2011	06/26/2011	06/25/2011	06/25/2011	06/15/2011	06/15/2011	06/11/2011	06/12/2011	06/12/2011
Duration (hour)	0.50	0.60	0.56	0.52	0.55	0.52	0.54	0.49	0.52	0.49	0.47
Distance Fished (km)	2.73	3.34	3	2.85	2.98	2.88	2.86	2.66	2.87	2.62	2.56
Mid-Latitude (^{o}N)	56.00	55.99	56.34	56.34	56.33	56.32	56.33	56.33	56.34	56.33	56.34
Mid-Longitude (^{o}W)	-162.25	-168.22	-167.66	-167.04	-166.41	-165.80	-165.20	-164.59	-164.04	-163.42	-162.80
Bottom Depth (m)	71	149	128	113	103	92	86	86	86	84	79
Bottom Temperature (^{o}C)	3.9	3.8	3.4	3.3	3.2	2.5	2.1	2.4	1.8	2.6	2.7
Red King Crab											
Immature males	3,451	0	0	0	0	0	0	0	0	0	0
Mature males	225	0	0	0	0	0	0	0	0	0	0
Legal	225	0	0	0	0	0	0	0	0	0	0
Immature females	1,726	0	0	0	0	0	0	0	0	0	0
Mature females	2,551	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	80.81	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											
Sublegal	1,426	361	1,405	1,456	2,203	2,580	4,896	3,593	11,171	3,949	498
Legal	375	361	894	2,288	895	502	288	76	444	806	0
Preferred	75	241	639	693	344	143	72	0	74	242	0
Immature females	75	1,083	1,788	1,178	2,616	1,505	3,960	1,605	10,801	3,304	332
Mature females	0	0	319	1,178	207	502	504	76	444	242	0
Total weight (kg)	11.05	5.73	16.45	27.88	13.16	13.43	13.63	4.38	15.85	15.21	1.11
Opilio Tanner Crab											
Sublegal	0	0	0	0	138	143	288	76	444	161	0
Legal	0	301	255	693	413	358	792	229	518	161	166
Preferred	0	301	192	416	344	287	504	153	222	0	166
Immature females	0	0	0	208	138	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	3.35	2.36	5.36	4.25	3.44	6.33	1.62	3.77	1.12	0.98
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	208	0	143	0	0	0	161	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	208	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	2.46	0.00	1.19	0.00	0.00	0.00	1.06	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/10/2011	06/07/2011	06/07/2011	06/27/2011	06/27/2011	06/28/2011	06/28/2011	06/29/2011	06/26/2011	06/26/2011	06/16/2011
Duration (hour)	0.51	0.54	0.50	0.58	0.55	0.42	0.59	0.55	0.50	0.51	0.51
Distance Fished (km)	2.86	2.90	2.74	3.16	3.11	2.19	3.11	2.97	2.76	2.78	2.95
Mid-Latitude (^{o}N)	56.33	56.33	56.34	56.33	56.34	56.36	56.34	56.34	56.66	56.67	56.67
Mid-Longitude (^{o}W)	-162.19	-161.63	-160.98	-168.25	-168.88	-169.45	-170.09	-170.69	-167.65	-167.06	-166.44
Bottom Depth (m)	75	65	53	154	129	135	109	121	103	95	84
Bottom Temperature (^{o}C)	2.7	4.0	3.9	3.6	3.6	3.6	3.4	3.5	3.0	2.8	2.1
Red King Crab											
Immature males	147	998	401	0	0	0	0	0	0	0	0
Mature males	881	1,381	722	0	0	0	0	0	0	0	0
Legal	735	921	481	0	0	0	0	0	0	0	0
Immature females	0	77	0	0	0	0	0	0	0	0	0
Mature females	0	3,530	802	0	0	0	0	0	0	0	0
Total weight (kg)	33.30	124.85	40.20	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											
Sublegal	1,763	384	401	7,806	320	1,974	2,140	1,592	4,788	1,197	8,266
Legal	220	153	401	4,372	1,215	172	856	133	147	704	403
Preferred	73	0	0	2,498	320	0	306	0	0	211	134
Immature females	881	77	0	7,182	895	1,630	2,018	1,194	3,609	985	6,855
Mature females	147	153	80	125	511	0	245	0	74	0	336
Total weight (kg)	7.76	3.44	4.80	50.09	16.52	1.25	13.92	2.30	2.60	6.63	11.15
Opilio Tanner Crab											
Sublegal	0	0	0	0	0	0	183	0	0	0	605
Legal	514	0	0	62	3,964	343	367	66	1,105	493	1,210
Preferred	367	0	0	62	3,772	257	306	66	958	422	538
Immature females	0	0	0	0	0	0	367	0	0	0	0
Mature females	0	0	0	0	0	86	0	0	74	0	134
Total weight (kg)	4.01	0.00	0.00	0.64	44.16	2.38	4.31	0.70	9.88	4.38	9.49
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	220	0	0	1,187	1,087	0	0	0	221	70	0
Immature females	0	0	0	0	0	0	0	0	0	70	0
Mature females	0	0	0	0	0	0	0	0	0	0	67
Total weight (kg)	1.19	0.00	0.00	12.47	13.44	0.00	0.00	0.00	1.58	0.65	0.12

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/16/2011	06/15/2011	06/15/2011	06/11/2011	06/12/2011	06/10/2011	06/10/2011	06/07/2011	06/07/2011	06/07/2011	06/07/2011
Duration (hour)	0.49	0.54	0.50	0.54	0.50	0.52	0.49	0.55	0.50	0.52	0.40
Distance Fished (km)	2.64	2.97	2.73	2.96	2.72	2.80	2.70	2.78	2.72	2.83	2.22
Mid-Latitude (^{o}N)	56.64	56.67	56.67	56.67	56.67	56.67	56.66	56.68	56.67	56.66	56.69
Mid-Longitude (^{o}W)	-165.82	-165.22	-164.59	-164.02	-163.37	-162.79	-162.19	-161.58	-160.98	-160.39	-159.71
Bottom Depth (m)	79	75	75	75	74	72	71	90	67	58	38
Bottom Temperature (^{o}C)	2.4	2.7	2.5	1.5	1.8	1.9	3.0	2.6	3.3	3.9	4.7
Red King Crab											
Immature males	0	0	0	0	0	0	0	329	2,274	2,606	0
Mature males	0	0	0	0	0	0	161	3,047	2,352	1,266	0
Legal	0	0	0	0	0	0	161	1,894	1,568	447	0
Immature females	0	0	0	0	0	0	0	0	314	223	0
Mature females	0	0	0	0	0	0	0	329	2,666	1,638	101
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	4.85	86.15	134.15	91.49	1.12
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											
Sublegal	8,358	38,308	9,115	71,021	2,647	43,646	401	741	2,823	2,978	0
Legal	315	139	377	221	0	75	482	577	392	74	0
Preferred	0	69	75	0	0	0	241	82	157	74	0
Immature females	9,755	36,596	6,780	49,222	3,252	27,184	0	82	314	1,936	0
Mature females	79	69	75	0	76	179	0	82	2,196	223	0
Total weight (kg)	14.68	36.17	15.67	115.19	6.48	89.51	5.51	7.44	17.23	3.29	0.00
Opilio Tanner Crab											
Sublegal	789	69	75	516	0	302	0	0	0	0	0
Legal	1,577	347	603	295	151	302	482	1,235	0	149	0
Preferred	1,104	208	226	74	151	0	401	988	0	149	0
Immature females	158	0	0	0	0	0	0	0	0	0	0
Mature females	0	69	0	0	0	0	0	0	0	0	0
Total weight (kg)	11.30	2.48	3.17	2.44	1.20	2.09	3.43	8.39	0.00	1.20	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 A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/27/2011	06/27/2011	06/28/2011	06/28/2011	06/29/2011	07/11/2011	07/11/2011	07/15/2011	06/20/2011	06/20/2011	06/16/2011
Duration (hour)	0.51	0.42	0.54	0.56	0.56	0.48	0.52	0.53	0.54	0.51	0.55
Distance Fished (km)	2.75	2.17	2.98	3.10	3.02	2.57	2.82	2.90	2.96	2.80	2.96
Mid-Latitude (^{o}N)	56.66	56.68	56.67	56.67	56.67	56.67	56.66	56.67	57.00	57.00	57.01
Mid-Longitude (^{o}W)	-168.30	-168.91	-169.52	-170.10	-170.74	-171.37	-171.98	-172.56	-167.69	-167.08	-166.46
Bottom Depth (m)	106	100	80	95	113	118	126	136	77	73	74
Bottom Temperature (^{o}C)	3.3	3.4	4.5	3.8	3.4	3.6	3.7	3.7	3.4	3.4	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											
Sublegal	1,256	1,065	137	5,418	3,773	490	223	510	47,069	3,261	2,135
Legal	1,256	5,235	410	457	692	654	0	0	975	388	133
Preferred	443	3,549	342	196	377	163	0	0	209	233	133
Immature females	1,256	1,863	68	2,089	3,899	490	74	582	54,784	2,019	1,401
Mature females	74	444	0	1,697	63	0	0	0	1,392	78	67
Total weight (kg)	11.40	51.07	4.53	23.89	12.19	5.31	0.39	0.95	35.65	5.40	7.18
Opilio Tanner Crab											
Sublegal	739	0	0	65	63	0	0	0	17,333	388	667
Legal	3,547	1,952	478	261	1,258	6,130	0	0	5,987	311	1,601
Preferred	2,808	1,952	478	196	1,132	5,803	0	0	2,924	155	1,001
Immature females	0	0	0	196	0	0	0	0	21,441	699	1,268
Mature females	3,104	0	0	0	63	0	0	0	557	78	1,001
Total weight (kg)	33.40	9.54	4.13	2.50	12.30	48.79	0.00	0.00	51.55	2.14	32.42
Hybrid Tanner Crab											
Males ≤ 77 mm	74	0	0	0	0	0	0	0	0	0	133
Males ≥ 78 mm	1,330	89	0	131	0	736	0	0	557	0	267
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	222	0	0	0	0	0	0	0	348	0	0
Total weight (kg)	11.66	0.82	0.00	0.63	0.00	5.49	0.00	0.00	4.56	0.00	2.17

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/16/2011	06/15/2011	06/15/2011	06/11/2011	06/12/2011	06/09/2011	06/09/2011	06/07/2011	06/08/2011	06/06/2011	06/06/2011
Duration (hour)	0.48	0.53	0.48	0.54	0.49	0.52	0.51	0.54	0.51	0.54	0.50
Distance Fished (km)	2.62	2.92	2.64	2.91	2.69	2.76	2.74	2.83	2.77	2.99	2.75
Mid-Latitude (^{o}N)	56.98	57.00	57.00	57.00	57.00	57.00	57.01	57.00	57.00	57.00	57.00
Mid-Longitude (^{o}W)	-165.85	-165.23	-164.60	-164.03	-163.39	-162.79	-162.16	-161.56	-160.94	-160.34	-159.69
Bottom Depth (m)	73	71	70	69	65	61	60	69	67	65	55
Bottom Temperature (^{o}C)	1.6	1.2	2.0	1.2	2.0	2.1	2.3	2.8	3.2	3.4	3.9
Red King Crab											
Immature males	0	0	0	0	0	0	0	396	519	805	154
Mature males	0	0	0	0	0	75	77	554	741	952	386
Legal	0	0	0	0	0	75	77	317	519	439	154
Immature females	0	0	0	0	0	0	0	0	0	220	0
Mature females	0	0	0	0	0	75	0	396	816	4,173	617
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	4.16	2.12	21.69	42.17	117.14	21.87
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											
Sublegal	16,478	26,549	827	20,743	1,508	753	384	0	2,076	146	0
Legal	766	0	0	73	0	0	154	79	0	0	0
Preferred	0	0	0	0	0	0	154	0	0	0	0
Immature females	7,280	14,816	331	8,268	317	151	77	0	593	0	0
Mature females	502	271	0	0	79	0	0	79	1,260	0	0
Total weight (kg)	43.32	39.43	0.48	21.10	3.36	2.81	3.09	0.66	8.50	0.59	0.00
Opilio Tanner Crab											
Sublegal	2,158	907	165	218	0	75	0	0	0	0	0
Legal	8,392	767	331	363	79	527	384	158	0	73	0
Preferred	6,793	418	165	145	79	226	308	79	0	73	0
Immature females	480	70	0	0	0	0	0	0	0	0	0
Mature females	3,836	279	83	145	0	0	0	0	0	0	0
Total weight (kg)	55.06	5.71	2.13	2.95	0.58	2.74	2.64	0.95	0.00	0.77	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	160	1,325	248	0	0	0	0	0	0	0	0
Males ≥ 78 mm	80	70	0	73	0	0	0	79	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	80	70	83	0	0	0	0	0	0	0	0
Total weight (kg)	0.35	1.45	0.33	0.26	0.00	0.00	0.00	0.36	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	G-15	G-18	G-19	G-20	G-21	G-22	G-23	G-24	G-25	G-26	GF1918
Start Date	06/05/2011	06/27/2011	06/28/2011	06/29/2011	06/29/2011	06/29/2011	07/11/2011	07/11/2011	07/15/2011	07/15/2011	06/27/2011
Duration (hour)	0.53	0.51	0.52	0.51	0.52	0.55	0.45	0.56	0.54	0.51	0.52
Distance Fished (km)	2.83	2.85	2.80	2.86	2.79	3.05	2.39	3.04	2.94	2.80	2.81
Mid-Latitude (^{o}N)	56.99	56.99	57.00	56.99	57.00	57.01	57.00	57.00	57.00	57.00	56.83
Mid-Longitude (^{o}W)	-159.14	-168.34	-168.95	-169.55	-170.16	-170.79	-171.40	-172.03	-172.65	-173.26	-168.62
Bottom Depth (m)	34	81	79	60	68	95	108	116	122	141	96
Bottom Temperature (^{o}C)	4.0	3.4	3.1	1.7	3.4	3.1	3.2	3.4	3.5	3.6	3.1
Red King Crab											
Immature males	74,644	0	0	0	0	0	0	0	0	0	0
Mature males	87	0	0	0	2,293	0	0	0	0	0	0
Legal	0	0	0	0	2,219	0	0	0	0	0	0
Immature females	75,173	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	444	0	0	0	0	0	0
Total weight (kg)	141.32	0.00	0.00	0.00	131.31	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	74	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	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Sublegal	0	4,197	295	5,086	10,002	21,922	607	273	285	448	1,159
Legal	0	2,678	442	1,625	41,849	1,160	347	137	0	75	1,159
Preferred	0	724	74	989	29,216	709	260	68	0	0	290
Immature females	0	4,415	589	5,439	74	21,528	1,040	273	642	373	1,666
Mature females	0	579	0	918	3,625	1,804	0	0	71	0	145
Total weight (kg)	0.00	28.13	4.19	26.95	413.41	56.38	2.52	1.13	0.45	1.88	12.20
Opilio Tanner Crab											
Sublegal	0	507	74	212	74	515	260	137	71	0	362
Legal	0	651	1,767	353	518	1,224	5,028	2,870	4,853	373	2,608
Preferred	0	507	1,620	283	370	1,095	4,422	2,665	4,710	373	2,391
Immature females	0	507	74	0	0	258	0	205	0	0	72
Mature females	0	72	74	0	0	64	0	342	0	0	145
Total weight (kg)	0.00	6.12	15.23	3.29	3.26	12.53	34.32	28.41	45.71	3.50	23.49
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	148	258	0	0	0	0	0
Males ≥ 78 mm	0	868	442	141	1,258	64	0	137	143	75	435
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	507	0	0	0	0	0	0	0	0	145
Total weight (kg)	0.00	7.95	4.04	1.10	5.74	0.57	0.00	1.39	1.27	0.17	2.76

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	GF2019	GF2120	GF2221	H-01	H-02	H-03	H-04	H-05	H-06	H-07	H-08
Start Date	06/28/2011	06/29/2011	06/29/2011	06/20/2011	06/20/2011	06/16/2011	06/16/2011	06/15/2011	06/15/2011	06/12/2011	06/12/2011
Duration (hour)	0.51	0.51	0.55	0.51	0.50	0.52	0.49	0.52	0.48	0.53	0.51
Distance Fished (km)	2.80	2.79	2.97	2.87	2.71	2.85	2.68	2.87	2.61	2.89	2.78
Mid-Latitude (^{o}N)	56.83	56.84	56.83	57.33	57.34	57.33	57.33	57.33	57.35	57.33	57.34
Mid-Longitude (^{o}W)	-169.26	-169.86	-170.49	-167.74	-167.13	-166.50	-165.87	-165.24	-164.64	-164.01	-163.37
Bottom Depth (m)	81	71	101	74	71	70	68	67	66	62	53
Bottom Temperature (^{o}C)	3.3	3.7	3.2	2.6	2.1	0.7	0.4	0.2	0.8	1.8	2.1
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	79
Legal	0	0	0	0	0	0	0	0	0	0	79
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	236
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.31
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	74	0	0	0	0	0	0	0	0	0	0
Legal	74	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	74	0	0	0	0	0	0	0	0	0
Total weight (kg)	2.58	1.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Sublegal	662	809	13,346	19,233	13,270	8,833	78	215	501	2,365	157
Legal	588	2,723	1,042	955	610	292	0	0	0	76	0
Preferred	221	1,913	651	294	305	73	0	0	0	76	0
Immature females	662	0	9,570	19,924	8,759	1,022	0	0	84	229	79
Mature females	0	147	326	2,359	1,251	73	0	0	0	0	0
Total weight (kg)	5.75	30.14	30.07	63.87	39.74	17.28	0.06	0.69	0.45	3.22	0.28
Opilio Tanner Crab											
Sublegal	74	221	130	39,683	6,399	2,847	860	574	251	0	0
Legal	1,618	221	326	15,065	4,723	2,920	1,797	215	167	76	0
Preferred	1,398	147	260	7,055	1,447	1,679	1,563	143	0	0	0
Immature females	74	0	65	18,813	457	803	0	72	251	0	0
Mature females	0	0	0	110,818	5,561	730	391	72	0	0	0
Total weight (kg)	15.11	2.15	4.02	242.53	34.18	16.50	10.34	1.75	0.84	0.32	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	3,380	76	146	0	0	0	0	0
Males ≥ 78 mm	294	221	0	1,029	0	219	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	294	0	0	0	0	0	0	0
Total weight (kg)	2.08	1.64	0.00	8.54	0.12	0.74	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/09/2011	06/09/2011	06/08/2011	06/08/2011	06/06/2011	06/06/2011	06/05/2011	06/05/2011	06/28/2011	06/28/2011	07/01/2011
Duration (hour)	0.28	0.51	0.51	0.49	0.55	0.50	0.54	0.51	0.52	0.50	0.52
Distance Fished (km)	1.50	2.77	2.79	2.67	2.91	2.74	2.85	2.78	2.81	2.77	2.81
Mid-Latitude (^{o}N)	57.34	57.35	57.34	57.33	57.34	57.33	57.34	57.33	57.33	57.33	57.33
Mid-Longitude (^{o}W)	-162.76	-162.14	-161.54	-160.94	-160.30	-159.67	-159.06	-158.42	-168.38	-168.98	-169.61
Bottom Depth (m)	49	51	57	61	61	56	49	32	74	70	61
Bottom Temperature (^{o}C)	2.3	2.3	2.3	2.7	2.6	3.0	2.7	3.7	3.3	2.9	1.4
Red King Crab											
Immature males	0	0	244	73	297	157	0	0	0	0	0
Mature males	437	158	815	220	74	861	235	0	0	76	0
Legal	146	158	652	0	0	313	235	0	0	76	0
Immature females	0	0	0	0	0	235	235	0	0	0	0
Mature females	437	0	0	146	1,483	2,505	235	0	0	0	0
Total weight (kg)	9.91	6.26	22.99	8.62	35.18	67.51	13.31	0.00	0.00	3.73	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	73	530	0
Legal	0	0	0	0	0	0	0	0	0	454	0
Immature females	0	0	0	0	0	0	0	0	0	76	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	1.32	19.73	0.00
Bairdi Tanner Crab											
Sublegal	0	316	81	0	0	0	0	0	1,538	2,272	1,119
Legal	0	0	81	0	0	0	0	0	73	530	224
Preferred	0	0	81	0	0	0	0	0	0	76	0
Immature females	0	79	0	0	0	0	0	0	879	454	299
Mature females	0	0	81	0	0	0	0	0	0	0	75
Total weight (kg)	0.00	0.28	1.25	0.00	0.00	0.00	0.00	0.00	1.82	11.22	5.20
Opilio Tanner Crab											
Sublegal	0	0	0	0	0	0	0	0	366	227	821
Legal	0	0	0	0	0	0	0	0	952	379	6,568
Preferred	0	0	0	0	0	0	0	0	732	151	3,955
Immature females	0	0	0	0	0	0	0	0	73	0	75
Mature females	0	0	0	0	0	0	0	0	146	0	75
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.77	2.70	38.69
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	73	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	732	76	597
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	4.12	0.23	4.64

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	H-21	H-22	H-23	H-24	H-25	H-26	HG1918	HG2019	HG2120	HG2221	I-01
Start Date	07/01/2011	07/01/2011	07/11/2011	07/15/2011	07/15/2011	07/15/2011	06/27/2011	06/28/2011	06/29/2011	06/29/2011	06/20/2011
Duration (hour)	0.50	0.54	0.50	0.52	0.53	0.51	0.53	0.50	0.51	0.53	0.52
Distance Fished (km)	2.73	2.97	2.74	2.78	2.91	2.85	2.93	2.73	2.84	2.91	2.85
Mid-Latitude (^{o}N)	57.34	57.34	57.33	57.33	57.35	57.34	57.17	57.16	57.17	57.11	57.67
Mid-Longitude (^{o}W)	-170.22	-170.85	-171.47	-172.09	-172.81	-173.32	-168.61	-169.33	-169.89	-170.46	-167.77
Bottom Depth (m)	56	83	101	108	117	120	76	71	50	51	69
Bottom Temperature (^{o}C)	3.8	2.9	2.9	3.1	3.3	3.4	3.5	2.1	3.7	4.0	2.5
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	149	0
Mature males	0	0	0	0	0	0	0	0	295	1338	0
Legal	0	0	0	0	0	0	0	0	295	1190	0
Immature females	0	0	0	0	0	0	0	0	0	74	0
Mature females	0	0	0	0	0	0	0	0	0	1264	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.80	80.05	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											
Sublegal	0	14,097	1,301	0	576	441	612	4,231	15,273	2,825	31,716
Legal	79	3,117	230	74	0	221	204	705	3,246	9,443	320
Preferred	0	1,842	77	74	0	0	0	392	1,107	6,023	160
Immature females	0	11,759	1,760	0	576	441	884	4,857	3,246	0	12,558
Mature females	0	1,771	0	74	0	0	0	392	1,254	744	483
Total weight (kg)	0.41	42.30	2.21	1.16	0.47	2.79	3.28	11.26	57.80	88.83	44.02
Opilio Tanner Crab											
Sublegal	0	567	536	883	72	0	204	548	0	0	34,185
Legal	0	12,822	5,817	6,694	2,950	0	1,020	1,802	74	74	9,287
Preferred	0	11,972	4,975	4,120	2,878	0	680	1,175	74	74	5,924
Immature females	0	0	77	0	0	0	68	235	0	0	4,403
Mature females	0	0	153	3,237	0	0	0	157	0	0	44,593
Total weight (kg)	0.00	111.71	45.38	50.89	13.06	0.00	8.12	12.02	0.55	0.66	107.50
Hybrid Tanner Crab											
Males ≤ 77 mm	0	71	0	0	0	0	0	0	0	0	3,603
Males ≥ 78 mm	0	283	459	0	0	0	136	157	221	0	961
Immature females	0	71	77	0	0	0	0	0	0	0	0
Mature females	0	0	0	294	0	0	0	0	0	0	1,441
Total weight (kg)	0.00	2.43	3.75	0.55	0.00	0.00	0.77	1.03	0.76	0.00	7.57

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/20/2011	06/16/2011	06/16/2011	06/15/2011	06/14/2011	06/12/2011	06/12/2011	06/09/2011	06/09/2011	06/08/2011	06/08/2011
Duration (hour)	0.50	0.52	0.49	0.54	0.47	0.51	0.52	0.29	0.52	0.27	0.50
Distance Fished (km)	2.73	2.98	2.69	2.95	2.56	2.78	2.85	1.46	2.90	1.44	2.72
Mid-Latitude (^{o}N)	57.68	57.67	57.67	57.66	57.67	57.66	57.67	57.67	57.65	57.66	57.67
Mid-Longitude (^{o}W)	-167.12	-166.52	-165.88	-165.25	-164.62	-164.00	-163.40	-162.77	-162.13	-161.51	-160.90
Bottom Depth (m)	67	66	64	62	52	52	46	44	46	53	56
Bottom Temperature (^{o}C)	1.1	0.9	0.8	0.8	2.2	1.7	2.1	2.2	2.3	2.3	2.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	222	152	300
Mature males	0	0	0	0	0	0	77	450	74	0	300
Legal	0	0	0	0	0	0	77	300	74	0	150
Immature females	0	0	0	0	0	0	0	0	74	0	0
Mature females	0	0	0	0	0	0	77	1201	444	761	300
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	3.31	14.14	11.76	5.01	15.70
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	77	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)	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Sublegal	4,321	890	79	72	0	0	0	0	0	0	0
Legal	0	68	0	0	0	0	0	0	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	849	137	0	72	0	0	0	150	0	0	0
Mature females	154	68	0	0	0	0	0	0	0	0	0
Total weight (kg)	8.59	1.96	0.06	0.05	0.00	0.00	0.00	0.09	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	41,354	5,202	1,340	858	0	0	0	0	0	0	0
Legal	15,585	1,301	79	0	0	0	0	0	0	0	0
Preferred	9,104	684	0	0	0	0	0	0	0	0	0
Immature females	4,706	548	315	286	0	0	0	0	0	0	0
Mature females	19,983	616	236	143	0	0	0	0	0	0	0
Total weight (kg)	130.68	10.68	1.28	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	540	137	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	540	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)	2.09	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/06/2011	06/06/2011	06/05/2011	06/05/2011	07/01/2011	07/02/2011	07/01/2011	07/07/2011	07/07/2011	07/07/2011	07/15/2011
Duration (hour)	0.53	0.51	0.28	0.53	0.50	0.52	0.52	0.49	0.50	0.51	0.49
Distance Fished (km)	2.82	2.80	1.51	2.89	2.78	2.85	2.87	2.69	2.78	2.78	2.70
Mid-Latitude (^{o}N)	57.67	57.67	57.68	57.68	57.67	57.66	57.67	57.66	57.67	57.67	57.67
Mid-Longitude (^{o}W)	-160.28	-159.64	-159.02	-158.36	-168.41	-169.03	-169.65	-170.28	-170.90	-171.52	-172.16
Bottom Depth (m)	55	49	47	36	70	69	70	72	85	98	107
Bottom Temperature (^{o}C)	2.2	2.3	2.5	3.6	3.6	2.8	0.3	3.1	2.7	2.9	3.1
Red King Crab											
Immature males	466	0	432	0	0	0	0	0	0	0	0
Mature males	544	298	0	0	78	0	0	0	0	0	0
Legal	389	224	0	0	78	0	0	0	0	0	0
Immature females	155	0	432	0	0	0	0	0	0	0	0
Mature females	1,243	894	0	0	0	0	0	0	0	0	0
Total weight (kg)	37.88	23.15	1.38	0.00	3.45	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											
Sublegal	0	0	0	0	6,818	12,554	18,887	4,283	371	437	75
Legal	0	0	0	0	0	0	193	0	74	0	75
Preferred	0	0	0	0	0	0	0	0	74	0	0
Immature females	0	0	0	0	2,273	7,131	17,220	2,025	371	800	0
Mature females	0	0	0	0	0	74	363	0	0	0	75
Total weight (kg)	0.00	0.00	0.00	0.00	11.64	1.37	42.70	8.87	1.83	1.27	0.94
Opilio Tanner Crab											
Sublegal	0	0	0	0	70,444	6,834	16,758	545	965	1,164	1,205
Legal	0	0	0	0	7,948	2,303	5,539	2,959	7,348	32,886	4,969
Preferred	0	0	0	0	3,429	1,189	1,917	1,557	4,750	20,445	2,936
Immature females	0	0	0	0	24,702	2,080	5,894	78	0	218	2,183
Mature females	0	0	0	0	104,263	10,920	52,192	78	371	0	70,391
Total weight (kg)	0.00	0.00	0.00	0.00	189.81	27.41	95.09	16.85	41.15	217.59	99.76
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	6,857	1,189	3,621	78	0	0	0
Males ≥ 78 mm	0	0	0	0	1,714	74	497	78	0	364	0
Immature females	0	0	0	0	0	0	213	0	0	0	0
Mature females	0	0	0	0	1,169	371	4,829	78	148	0	301
Total weight (kg)	0.00	0.00	0.00	0.00	14.02	1.60	10.55	0.52	0.19	2.57	0.46

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	I-25	I-26	IH1918	IH2019	IH2120	IH2221	J-01	J-02	J-03	J-04	J-05
Start Date	07/15/2011	07/16/2011	07/01/2011	07/01/2011	07/01/2011	07/01/2011	06/20/2011	06/20/2011	06/16/2011	06/16/2011	06/14/2011
Duration (hour)	0.51	0.52	0.50	0.51	0.52	0.54	0.53	0.52	0.54	0.49	0.52
Distance Fished (km)	2.75	2.89	2.73	2.77	2.84	2.97	2.95	2.80	3.16	2.67	2.85
Mid-Latitude (^{o}N)	57.67	57.69	57.50	57.50	57.50	57.50	58.00	58.01	58.00	58.01	58.00
Mid-Longitude (^{o}W)	-172.80	-173.40	-168.75	-169.38	-170.00	-170.58	-167.82	-167.17	-166.55	-165.91	-165.25
Bottom Depth (m)	118	148	71	69	68	74	66	63	61	55	50
Bottom Temperature (^{o}C)	3.1	3.4	3.5	0.7	2.3	2.7	1.0	1.1	1.1	2.1	2.2
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	138	0	0	0	0	77
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	3.03	0.00	0.00	0.00	0.00	1.09
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											
Sublegal	77	3,063	7,089	17,480	3,993	2,408	70	223	0	0	0
Legal	0	459	322	542	1,035	206	0	74	0	0	0
Preferred	0	230	161	155	74	69	0	74	0	0	0
Immature females	0	4,365	3,828	16,293	961	895	0	0	0	0	0
Mature females	0	0	0	1,704	370	757	70	0	0	0	0
Total weight (kg)	0.35	4.82	16.40	40.16	22.16	13.05	0.29	1.08	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	384	0	5,159	3,795	887	344	4,544	594	185	0	0
Legal	4,148	4,671	3,412	4,570	14,050	8,395	489	148	370	0	0
Preferred	3,303	4,212	2,247	1,239	9,317	5,780	280	0	246	0	0
Immature females	6,298	0	1,082	6,119	0	0	1,258	0	0	0	0
Mature females	158,914	0	31,869	542	148	69	350	148	0	0	0
Total weight (kg)	178.16	38.01	50.17	23.40	82.57	52.09	5.90	1.21	1.73	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	1,831	2,091	0	0	70	0	0	0	0
Males ≥ 78 mm	77	77	416	852	1,109	275	0	0	0	0	0
Immature females	0	77	0	1,084	0	0	70	0	0	0	0
Mature females	77	0	1,664	2,091	0	0	0	0	0	0	0
Total weight (kg)	0.55	0.98	5.11	7.09	6.74	1.61	0.08	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/14/2011	06/12/2011	06/12/2011	06/09/2011	06/09/2011	06/08/2011	06/08/2011	06/06/2011	06/06/2011	06/05/2011	06/05/2011
Duration (hour)	0.50	0.52	0.53	0.26	0.51	0.26	0.53	0.52	0.52	0.50	0.50
Distance Fished (km)	2.71	2.85	2.96	1.38	2.75	1.46	2.85	3.02	2.91	2.77	2.83
Mid-Latitude (^{o}N)	58.00	58.00	58.00	58.01	57.99	57.99	58.00	58.00	58.00	58.00	58.02
Mid-Longitude (^{o}W)	-164.61	-163.99	-163.39	-162.76	-162.10	-161.48	-160.85	-160.23	-159.61	-158.96	-158.32
Bottom Depth (m)	44	47	43	40	37	55	45	51	42	42	35
Bottom Temperature (^{o}C)	2.0	1.9	2.4	2.7	2.7	2.7	2.8	2.0	3.4	4.0	4.4
Red King Crab											
Immature males	0	77	230	0	163	757	2198	153	74	0	0
Mature males	0	384	153	170	245	151	985	76	297	0	0
Legal	0	384	153	170	245	0	758	76	223	0	0
Immature females	0	0	0	0	0	454	1667	305	149	0	0
Mature females	0	384	77	341	735	757	2501	839	520	0	0
Total weight (kg)	0.00	23.44	9.15	5.86	16.00	13.02	81.80	18.36	16.55	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											
Sublegal	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	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											
Sublegal	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	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 A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	J-18	J-19	J-20	J-21	J-22	J-23	J-24	J-25	J-26	JI1918	JI2019
Start Date	07/02/2011	07/02/2011	07/07/2011	07/06/2011	07/06/2011	07/07/2011	07/15/2011	07/15/2011	07/16/2011	07/02/2011	07/02/2011
Duration (hour)	0.51	0.52	0.51	0.55	0.53	0.54	0.50	0.51	0.53	0.51	0.55
Distance Fished (km)	2.78	2.85	2.76	2.91	2.87	2.93	2.74	2.87	2.85	2.76	2.83
Mid-Latitude (^{o}N)	57.99	58.00	58.00	58.00	58.01	58.01	58.00	58.00	58.01	57.83	57.84
Mid-Longitude (^{o}W)	-168.43	-169.07	-169.70	-170.34	-170.98	-171.60	-172.24	-172.86	-173.48	-168.73	-169.36
Bottom Depth (m)	69	69	70	75	87	97	105	108	117	71	66
Bottom Temperature (^{o}C)	1.7	0.6	0.1	1.4	2.4	2.5	2.8	2.9	3.1	1.4	0.3
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	74
Legal	0	0	0	0	0	0	0	0	0	0	74
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	3.42
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											
Sublegal	930	4,554	29,946	956	1,346	1,887	547	524	544	8,919	18,442
Legal	0	145	304	68	0	202	78	75	78	0	74
Preferred	0	72	0	68	0	67	0	75	78	0	0
Immature females	0	1,229	41,683	205	2,490	4,043	312	374	1,477	4,567	10,147
Mature females	0	0	0	0	0	67	0	150	622	79	0
Total weight (kg)	1.05	6.40	35.06	2.30	2.73	9.32	1.80	1.47	3.89	11.93	20.70
Opilio Tanner Crab											
Sublegal	5,195	6,362	51,982	7,788	1,346	1,685	3,201	1,198	0	97,735	7,999
Legal	2,714	2,169	26,714	20,973	7,873	4,582	19,753	4,566	7,383	6,694	2,296
Preferred	1,861	651	3,044	4,167	4,576	2,830	8,979	2,620	6,528	2,835	815
Immature females	775	2,386	90,645	273	807	7,615	0	0	0	42,055	2,148
Mature females	1,938	1,952	36,532	2,254	1,144	36,725	14,912	39,749	0	65,682	9,850
Total weight (kg)	18.50	17.57	178.80	98.36	53.52	74.93	132.06	69.28	58.12	165.98	30.36
Hybrid Tanner Crab											
Males ≤ 77 mm	1,706	2,096	19,332	205	135	202	0	0	0	23,548	1,926
Males ≥ 78 mm	310	145	457	205	202	0	0	0	0	1,496	148
Immature females	0	0	7,459	0	67	337	78	0	0	0	222
Mature females	78	361	18,114	68	202	1,617	0	75	0	2,441	1,259
Total weight (kg)	2.64	3.38	28.11	1.26	1.87	2.03	0.01	0.09	0.00	23.98	3.31

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	JI2120	JI2221	K-01	K-02	K-03	K-04	K-05	K-06	K-07	K-08	K-09
Start Date	07/07/2011	07/06/2011	06/19/2011	06/19/2011	06/17/2011	06/17/2011	06/14/2011	06/14/2011	06/13/2011	06/13/2011	06/09/2011
Duration (hour)	0.50	0.55	0.55	0.51	0.53	0.51	0.53	0.50	0.50	0.49	0.27
Distance Fished (km)	2.75	2.96	3.01	2.79	2.93	2.79	2.92	2.74	2.78	2.61	1.45
Mid-Latitude (^{o}N)	57.83	57.83	58.34	58.33	58.34	58.33	58.33	58.33	58.34	58.34	58.34
Mid-Longitude (^{o}W)	-169.97	-170.61	-167.84	-167.19	-166.56	-165.92	-165.30	-164.64	-163.99	-163.36	-162.73
Bottom Depth (m)	72	78	59	51	48	44	45	44	41	38	31
Bottom Temperature (^{o}C)	2.0	2.0	1.6	2.0	2.2	2.2	2.1	2.3	2.7	3.2	3.6
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	166
Mature males	0	0	0	0	148	73	0	0	173	171	0
Legal	0	0	0	0	74	73	0	0	0	85	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	148	73	0	156	173	171	0
Total weight (kg)	0.00	0.00	0.00	0.00	6.80	3.91	0.00	1.65	6.91	7.19	1.35
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											
Sublegal	9,498	942	0	0	0	0	74	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	8,415	269	0	0	0	0	0	0	0	0	0
Mature females	330	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	13.88	0.93	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	2,143	269	198	0	0	0	0	0	0	0	0
Legal	9,366	1,749	0	79	0	0	0	0	0	0	0
Preferred	2,302	1,009	0	79	0	0	0	0	0	0	0
Immature females	3,810	0	66	0	0	0	0	0	0	0	0
Mature females	6,508	135	0	0	0	0	0	0	0	0	0
Total weight (kg)	43.87	10.31	0.11	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	2,460	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	873	0	66	0	0	0	0	0	0	0	0
Immature females	317	0	0	0	0	0	0	0	0	0	0
Mature females	3,095	67	0	0	0	0	0	0	0	0	0
Total weight (kg)	7.47	0.03	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/08/2011	06/08/2011	06/08/2011	06/06/2011	06/06/2011	07/02/2011	07/02/2011	07/06/2011	07/06/2011	07/08/2011	07/07/2011
Duration (hour)	0.29	0.26	0.53	0.54	0.52	0.51	0.52	0.51	0.54	0.51	0.54
Distance Fished (km)	1.47	1.41	2.97	2.93	2.86	2.79	2.89	2.74	2.86	2.70	3.01
Mid-Latitude (^{o}N)	58.32	58.22	58.32	58.28	58.34	58.32	58.33	58.34	58.33	58.34	58.34
Mid-Longitude (^{o}W)	-162.05	-161.56	-160.78	-159.98	-159.55	-168.46	-169.12	-169.74	-170.38	-171.01	-171.65
Bottom Depth (m)	47	41	23	41	26	65	67	69	74	83	96
Bottom Temperature (^{o}C)	4.7	4.2	4.9	3.6	5.6	1.2	1.2	1.1	0.1	1.6	1.7
Red King Crab											
Immature males	149	0	0	370	0	0	0	0	0	0	0
Mature males	0	166	0	74	0	0	0	0	0	0	0
Legal	0	166	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	149	0	0	148	0	0	0	0	0	0	0
Total weight (kg)	0.72	2.32	0.00	6.38	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											
Sublegal	0	0	0	0	0	0	145	3,941	5,730	8,254	846
Legal	0	0	0	0	0	0	0	149	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	73	3,285	4,970	12,535	1,301
Mature females	0	0	0	0	0	0	0	0	0	0	65
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.39	3.17	5.79	6.90	1.28
Opilio Tanner Crab											
Sublegal	0	0	0	0	0	377	580	12,475	12,771	23,506	1,626
Legal	0	0	0	0	0	151	435	4,678	8,077	23,882	8,847
Preferred	0	0	0	0	0	75	290	817	2,623	9,162	5,399
Immature females	0	0	0	0	0	75	290	27,624	16,982	7,360	325
Mature females	0	0	0	0	0	0	0	3,342	14,359	34,246	1,431
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.88	2.40	37.72	64.03	180.75	63.02
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	0	73	6,535	4,004	300	65
Males ≥ 78 mm	0	0	0	0	0	0	145	223	138	0	0
Immature females	0	0	0	0	0	0	0	1,782	3,314	901	65
Mature females	0	0	0	0	0	0	0	1,559	2,692	0	65
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.45	3.89	4.79	0.14	0.17

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/16/2011	07/16/2011	07/16/2011	07/25/2011	06/19/2011	06/19/2011	06/17/2011	06/17/2011	06/14/2011	06/14/2011	06/13/2011
Duration (hour)	0.52	0.51	0.52	0.53	0.53	0.52	0.54	0.49	0.51	0.49	0.52
Distance Fished (km)	2.81	2.79	2.84	2.95	2.92	2.86	2.98	2.62	2.90	2.68	2.80
Mid-Latitude (^{o}N)	58.34	58.34	58.34	58.33	58.66	58.68	58.67	58.67	58.66	58.67	58.67
Mid-Longitude (^{o}W)	-172.29	-172.93	-173.57	-174.30	-167.88	-167.22	-166.57	-165.93	-165.30	-164.65	-164.01
Bottom Depth (m)	102	109	116	159	47	44	43	37	40	37	36
Bottom Temperature (^{o}C)	2.2	2.5	2.9	3.3	2.0	2.4	2.4	2.7	2.4	3.5	3.4
Red King Crab											
Immature males	0	0	0	0	0	77	0	0	0	0	0
Mature males	0	0	0	0	0	77	145	178	0	0	0
Legal	0	0	0	0	0	0	73	89	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	74	0	73	267	78	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	1.04	1.91	6.40	8.54	1.32	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											
Sublegal	1,616	433	295	4,261	0	0	0	0	0	0	0
Legal	808	288	0	0	0	0	0	0	0	0	0
Preferred	0	144	0	0	0	0	0	0	0	0	0
Immature females	808	793	368	5,614	0	0	0	0	0	0	0
Mature females	0	216	0	135	0	0	0	0	0	0	0
Total weight (kg)	7.12	3.44	0.85	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	9,705	3,245	1,989	0	0	0	0	0	0	0	0
Legal	17,455	5,553	3,903	0	0	0	0	0	0	0	0
Preferred	4,346	3,822	2,430	0	0	0	0	0	0	0	0
Immature females	34,041	2,812	14,288	68	0	0	0	0	0	0	0
Mature females	538,420	64,182	148,848	68	0	0	0	0	0	0	0
Total weight (kg)	543.50	99.09	138.64	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	74	203	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	406	0	0	0	0	0	0	0
Mature females	0	0	74	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.30	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/13/2011	06/09/2011	07/02/2011	07/02/2011	07/06/2011	07/05/2011	07/08/2011	07/07/2011	07/16/2011	07/16/2011	07/16/2011
Duration (hour)	0.49	0.30	0.51	0.53	0.51	0.52	0.50	0.56	0.50	0.51	0.52
Distance Fished (km)	2.65	1.51	2.84	2.91	2.79	2.71	2.81	3.02	2.76	2.85	2.88
Mid-Latitude (^{o}N)	58.67	58.66	58.66	58.67	58.67	58.67	58.67	58.67	58.67	58.66	58.67
Mid-Longitude (^{o}W)	-163.36	-162.71	-168.48	-169.15	-169.78	-170.43	-171.07	-171.71	-172.38	-173.00	-173.64
Bottom Depth (m)	32	23	53	62	67	73	82	93	101	111	125
Bottom Temperature (^{o}C)	3.9	4.0	2.3	1.4	1.2	-0.4	0.7	1.5	1.9	2.5	2.9
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	156	0	0	0	0	0	0	0	0
Legal	0	0	156	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	5.85	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											
Sublegal	0	0	0	0	518	2,877	1,079	1,205	154	422	222
Legal	0	0	0	0	0	0	0	67	0	141	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	296	1,893	648	1,138	77	141	295
Mature females	0	0	0	0	0	0	0	0	0	70	148
Total weight (kg)	0.00	0.00	0.00	0.00	0.73	1.36	0.49	0.97	0.52	3.34	0.46
Opilio Tanner Crab											
Sublegal	0	0	0	355	222	16,809	16,695	5,357	2,780	844	1,256
Legal	0	0	0	355	888	3,483	6,189	12,119	8,262	5,206	14,995
Preferred	0	0	0	142	518	227	288	8,638	2,471	3,940	12,188
Immature females	0	0	0	142	1,332	5,452	1,511	803	232	4,432	2,659
Mature females	0	0	0	0	0	6,209	19,645	22,498	3,707	8,512	25,484
Total weight (kg)	0.00	0.00	0.00	1.52	4.41	41.73	64.87	122.45	62.35	49.48	134.10
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	148	1,136	216	67	0	0	74
Males ≥ 78 mm	0	0	0	0	222	151	0	67	0	70	74
Immature females	0	0	0	0	74	1,060	0	67	0	0	74
Mature females	0	0	0	0	74	530	72	1,071	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	1.29	1.40	0.08	1.53	0.00	0.74	0.47

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/25/2011	07/24/2011	07/24/2011	07/23/2011	07/23/2011	06/19/2011	06/19/2011	06/17/2011	06/17/2011	06/14/2011	06/14/2011
Duration (hour)	0.55	0.57	0.54	0.55	0.55	0.50	0.50	0.51	0.49	0.52	0.51
Distance Fished (km)	2.96	3.08	2.96	3.05	3.05	2.77	2.73	2.81	2.64	2.87	2.77
Mid-Latitude (^{o}N)	58.67	58.72	58.66	58.66	58.66	59.00	59.00	59.00	59.00	59.00	59.01
Mid-Longitude (^{o}W)	-174.28	-174.91	-175.56	-176.22	-176.84	-167.90	-167.23	-166.59	-165.93	-165.30	-164.66
Bottom Depth (m)	156	159	135	141	137	42	40	35	31	28	28
Bottom Temperature (^{o}C)	3.2	3.2	3.2	3.2	3.1	2.5	2.6	2.9	3.2	3.1	3.6
Red King Crab											
Immature males	0	0	0	0	0	0	0	163	167	0	82
Mature males	0	0	0	0	0	0	166	0	0	0	0
Legal	0	0	0	0	0	0	83	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	254	166	81	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	2.54	4.65	2.86	1.02	0.00	0.58
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											
Sublegal	21,460	3,533	711	1,137	376	0	0	0	0	82	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	21,922	3,347	517	758	188	0	0	0	0	0	0
Mature females	288	62	0	0	0	0	0	0	0	0	0
Total weight (kg)	17.76	1.47	0.68	0.50	0.21	0.00	0.00	0.00	0.00	0.36	0.00
Opilio Tanner Crab											
Sublegal	266	62	0	0	0	0	0	0	0	0	0
Legal	9,505	0	0	0	0	0	0	0	0	0	0
Preferred	7,910	0	0	0	0	0	0	0	0	0	0
Immature females	0	186	0	126	0	0	0	0	0	0	0
Mature females	133	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	88.16	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	186	0	126	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	124	194	126	0	0	0	0	0	0	0
Mature females	0	0	65	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	0.05	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/13/2011	06/13/2011	07/02/2011	07/03/2011	07/06/2011	07/05/2011	07/08/2011	07/07/2011	07/10/2011	07/16/2011	07/16/2011
Duration (hour)	0.53	0.51	0.51	0.51	0.51	0.53	0.51	0.52	0.50	0.50	0.53
Distance Fished (km)	2.85	2.80	2.82	2.82	2.82	2.93	2.82	2.79	2.74	2.76	2.91
Mid-Latitude (^{o}N)	59.00	58.99	58.99	59.00	59.00	59.00	59.00	59.00	59.00	59.01	59.01
Mid-Longitude (^{o}W)	-164.02	-163.35	-168.51	-169.18	-169.82	-170.49	-171.11	-171.78	-172.43	-173.08	-173.73
Bottom Depth (m)	29	22	47	54	63	71	77	87	98	106	117
Bottom Temperature (^{o}C)	3.7	4.6	3.0	2.2	0.9	0.2	-0.8	1.1	1.8	2.4	2.5
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	159	0	74	0	0	0	0	0	0
Legal	0	0	79	0	74	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	79	0	74	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	5.96	0.00	4.81	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	229	0
Mature males	0	0	0	0	0	0	0	0	0	839	72
Legal	0	0	0	0	0	0	0	0	0	381	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.25	1.89
Bairdi Tanner Crab											
Sublegal	0	0	79	154	0	952	564	216	74	839	1,717
Legal	0	0	0	0	74	0	0	0	0	229	286
Preferred	0	0	0	0	0	0	0	0	0	76	72
Immature females	0	0	0	0	0	748	423	288	74	915	1,932
Mature females	0	0	0	77	0	0	0	0	0	0	215
Total weight (kg)	0.00	0.00	0.18	0.67	0.38	0.95	0.31	0.82	0.02	4.50	7.33
Opilio Tanner Crab											
Sublegal	0	0	0	0	297	37,191	17,216	13,959	2,078	2,287	4,508
Legal	0	0	79	77	446	3,671	4,445	2,734	1,707	4,345	7,513
Preferred	0	0	79	77	297	408	282	1,151	1,188	1,830	3,005
Immature females	0	0	79	77	149	4,691	1,764	7,267	0	762	35,345
Mature females	0	0	0	77	74	29,304	23,778	94,837	29,245	28,510	100,955
Total weight (kg)	0.00	0.00	0.46	0.49	2.82	88.88	60.56	111.67	38.89	51.24	150.87
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	0	0	1,700	212	144	0	0	0
Males ≥ 78 mm	0	0	0	77	0	204	0	0	0	0	0
Immature females	0	0	0	0	0	1,700	71	1,007	0	0	0
Mature females	0	0	0	0	0	1,564	0	9,426	0	76	215
Total weight (kg)	0.00	0.00	0.00	0.28	0.00	3.75	0.21	8.40	0.00	0.14	0.46

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/25/2011	07/25/2011	07/24/2011	07/24/2011	07/23/2011	07/23/2011	06/19/2011	06/19/2011	06/17/2011	06/17/2011	06/14/2011
Duration (hour)	0.52	0.54	0.56	0.56	0.53	0.55	0.51	0.50	0.52	0.50	0.54
Distance Fished (km)	2.79	3.02	3.03	3.03	3.00	3.02	2.87	2.69	2.94	2.76	2.85
Mid-Latitude (^{o}N)	59.00	59.00	59.00	59.00	58.99	59.00	59.32	59.34	59.33	59.33	59.33
Mid-Longitude (^{o}W)	-174.37	-174.99	-175.72	-176.30	-176.95	-177.59	-167.92	-167.26	-166.61	-165.95	-165.31
Bottom Depth (m)	126	129	133	134	137	135	40	32	29	25	21
Bottom Temperature (^{o}C)	2.8	2.9	2.3	2.4	2.7	3.0	2.7	4.1	4.1	4.0	4.1
Red King Crab											
Immature males	0	0	0	0	0	0	327	0	0	0	0
Mature males	0	0	0	0	0	0	82	169	0	0	0
Legal	0	0	0	0	0	0	0	84	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	163	169	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	6.20	6.48	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											
Sublegal	448	1,166	5,225	1,668	2,370	4,864	0	0	0	0	0
Legal	75	65	0	0	0	131	0	0	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	897	1,425	3,823	834	1,025	6,004	0	0	0	0	0
Mature females	75	194	191	321	0	66	0	0	0	0	0
Total weight (kg)	0.83	2.28	12.54	8.57	4.76	7.50	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	0	0	64	385	0	197	0	0	0	0	0
Legal	21,975	2,849	127	64	64	0	0	0	0	0	0
Preferred	16,893	2,849	127	64	0	0	0	0	0	0	0
Immature females	0	971	382	513	0	852	0	0	0	0	0
Mature females	224	7,188	0	257	0	0	0	0	0	0	0
Total weight (kg)	144.81	35.55	1.34	1.20	0.21	0.19	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	149	0	127	257	0	459	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	75	0	0	192	0	524	0	0	0	0	0
Mature females	0	194	0	64	0	66	0	0	0	0	0
Total weight (kg)	0.03	0.39	0.03	0.22	0.00	0.24	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	06/13/2011	06/13/2011	07/03/2011	07/03/2011	07/06/2011	07/04/2011	07/08/2011	07/07/2011	07/10/2011	07/10/2011	07/17/2011
Duration (hour)	0.54	0.50	0.50	0.52	0.51	0.53	0.52	0.54	0.48	0.53	0.52
Distance Fished (km)	3.01	2.71	2.75	2.84	2.81	2.96	2.86	2.85	2.66	2.93	2.77
Mid-Latitude (^{o}N)	59.32	59.32	59.34	59.34	59.34	59.33	59.33	59.34	59.33	59.34	59.34
Mid-Longitude (^{o}W)	-164.67	-164.00	-168.57	-169.22	-169.87	-170.53	-171.18	-171.83	-172.50	-173.16	-173.80
Bottom Depth (m)	22	22	42	51	60	68	75	80	87	101	110
Bottom Temperature (^{o}C)	4.8	5.4	3.3	2.1	0.7	-0.6	-0.9	-0.5	0.9	2.1	2.3
Red King Crab											
Immature males	0	0	83	76	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	1.46	0.60	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	70	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	64	0
Legal	0	0	0	0	0	0	0	0	0	64	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	0.61	0.00	1.27	0.00
Bairdi Tanner Crab											
Sublegal	0	0	0	0	0	0	298	1,047	155	0	847
Legal	0	0	0	0	0	0	0	0	0	0	218
Preferred	0	0	0	0	0	0	0	0	0	0	73
Immature females	0	0	0	0	0	0	893	1,466	78	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	278
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	0.00	0.52	1.63	0.24	0.00	5.38
Opilio Tanner Crab											
Sublegal	0	0	0	0	298	28,400	31,869	13,192	3,024	9,170	16,942
Legal	0	0	0	0	0	1,054	1,223	279	1,473	2,865	9,962
Preferred	0	0	0	0	0	0	0	0	775	764	2,981
Immature females	0	0	0	0	224	6,721	12,877	26,663	1,628	8,979	8,071
Mature females	0	0	0	0	0	24,513	33,452	30,432	4,653	26,108	161,861
Total weight (kg)	0.00	0.00	0.00	0.00	0.15	59.42	70.87	38.27	14.93	66.41	231.42
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	165	0	75	264	863	628	78	191	0
Males ≥ 78 mm	0	0	0	0	149	66	0	0	0	0	0
Immature females	0	0	0	0	0	0	288	1,326	78	1,019	0
Mature females	0	0	0	0	0	0	0	1,466	233	2,993	291
Total weight (kg)	0.00	0.00	0.26	0.00	0.85	0.44	0.56	2.09	0.31	3.18	0.57

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/17/2011	07/17/2011	07/23/2011	07/23/2011	07/23/2011	06/19/2011	06/19/2011	06/17/2011	06/17/2011	07/03/2011	07/03/2011
Duration (hour)	0.50	0.53	0.50	0.51	0.58	0.52	0.52	0.52	0.48	0.50	0.53
Distance Fished (km)	2.70	2.93	2.75	2.71	3.20	2.84	2.81	3.13	2.65	2.75	2.89
Mid-Latitude (^{o}N)	59.34	59.33	59.32	59.33	59.33	59.66	59.66	59.66	59.62	59.65	59.67
Mid-Longitude (^{o}W)	-174.44	-175.13	-175.75	-176.38	-177.07	-167.95	-167.28	-166.66	-165.94	-168.60	-169.27
Bottom Depth (m)	120	133	136	136	149	35	31	28	27	39	50
Bottom Temperature (^{o}C)	2.6	2.3	2.1	2.2	2.6	3.0	4.2	5.3	4.8	3.7	2.4
Red King Crab											
Immature males	0	0	0	0	0	81	0	0	0	82	0
Mature males	0	0	0	0	0	161	0	0	0	82	0
Legal	0	0	0	0	0	81	0	0	0	0	0
Immature females	0	0	0	0	0	161	0	0	0	82	0
Mature females	0	0	0	0	0	161	81	0	0	0	73
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	8.34	0.75	0.00	0.00	6.50	0.72
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	77	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)	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Sublegal	845	1,842	3,869	665	1,043	0	0	0	0	0	0
Legal	77	0	287	0	123	0	0	0	0	0	0
Preferred	0	0	0	0	61	0	0	0	0	0	0
Immature females	691	1,559	3,726	665	736	0	0	0	0	0	0
Mature females	77	142	1,075	148	245	0	0	0	0	0	0
Total weight (kg)	1.47	1.64	13.00	0.99	4.08	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	845	142	645	295	1,105	0	0	0	0	0	0
Legal	17,197	1,559	143	0	61	0	0	0	0	0	0
Preferred	4,453	1,134	72	0	61	0	0	0	0	0	0
Immature females	461	1,063	502	443	2,086	0	0	0	0	0	0
Mature females	230	3,330	860	74	184	0	0	0	0	0	0
Total weight (kg)	76.67	14.09	2.67	0.25	1.28	0.00	0.00	0.00	0.00	0.00	0.00
Hybrid Tanner Crab											
Males ≤ 77 mm	154	213	645	148	123	0	0	0	0	0	0
Males ≥ 78 mm	0	0	143	0	61	0	0	0	0	0	0
Immature females	0	283	215	0	123	0	0	0	0	0	0
Mature females	0	0	3,367	222	61	0	0	0	0	0	0
Total weight (kg)	0.02	1.45	8.90	0.68	0.28	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/05/2011	07/04/2011	07/08/2011	07/08/2011	07/10/2011	07/10/2011	07/10/2011	07/17/2011	07/17/2011	07/23/2011	07/23/2011
Duration (hour)	0.52	0.52	0.52	0.54	0.49	0.51	0.51	0.50	0.52	0.49	0.50
Distance Fished (km)	2.77	2.82	2.87	2.96	2.67	2.77	2.81	2.75	2.82	2.76	2.75
Mid-Latitude (^{o}N)	59.68	59.67	59.67	59.67	59.67	59.67	59.66	59.66	59.67	59.66	59.67
Mid-Longitude (^{o}W)	-169.93	-170.58	-171.24	-171.90	-172.56	-173.25	-173.87	-174.45	-175.10	-175.86	-176.57
Bottom Depth (m)	56	67	72	77	84	94	104	114	125	137	135
Bottom Temperature (^{o}C)	1.0	0.2	-1.1	-0.2	0.8	0.9	2.1	2.4	2.5	2.3	2.5
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	150	0	0	0	0
Mature males	0	0	0	0	0	867	1,353	147	0	0	0
Legal	0	0	0	0	0	433	977	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	17.32	9.52	2.23	0.00	0.00	0.00
Bairdi Tanner Crab											
Sublegal	0	71	0	473	0	826	0	0	0	580	3,086
Legal	0	0	0	0	0	0	0	0	0	0	281
Preferred	0	0	0	0	0	0	0	0	0	0	140
Immature females	0	0	224	0	0	472	0	73	77	145	1,964
Mature females	0	0	0	0	0	0	0	0	536	72	140
Total weight (kg)	0.00	0.05	0.05	0.15	0.00	0.85	0.00	0.11	1.41	0.88	6.86
Opilio Tanner Crab											
Sublegal	227	10,536	13,649	3,243	313	21,093	526	3,080	18,225	3,696	491
Legal	0	212	144	135	156	1,517	23,376	5,939	28,639	3,986	2,805
Preferred	0	0	0	0	0	289	12,477	1,540	9,725	1,739	2,174
Immature females	0	7,708	6,106	4,324	78	10,402	75	14,151	388,927	9,857	771
Mature females	0	7,425	43,391	22,498	0	23,983	827	52,279	224,137	59,213	2,104
Total weight (kg)	0.26	23.98	49.70	30.08	0.76	40.52	130.69	86.87	509.26	92.16	23.41
Hybrid Tanner Crab											
Males ≤ 77 mm	151	0	216	68	0	2,456	0	0	0	0	351
Males ≥ 78 mm	0	0	0	0	0	0	451	0	0	0	0
Immature females	0	0	0	473	0	144	0	0	0	0	210
Mature females	0	0	144	1,419	0	1,517	0	73	153	362	140
Total weight (kg)	0.08	0.00	0.15	1.28	0.00	2.33	2.38	0.10	0.26	0.71	0.43

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	O-31	ON2524	ON2625	P-01	P-18	P-19	P-20	P-21	P-22	P-23	P-24
Start Date	07/22/2011	07/10/2011	07/10/2011	07/03/2011	07/03/2011	07/03/2011	07/03/2011	07/04/2011	07/08/2011	07/08/2011	07/09/2011
Duration (hour)	0.54	0.52	0.52	0.52	0.50	0.53	0.52	0.53	0.52	0.53	0.50
Distance Fished (km)	2.93	2.83	2.86	2.85	2.77	2.85	2.87	2.86	2.90	2.89	2.79
Mid-Latitude (^{o}N)	59.67	59.50	59.50	60.01	59.99	60.00	60.01	60.00	60.00	60.00	59.99
Mid-Longitude (^{o}W)	-177.16	-172.85	-173.49	-168.00	-168.65	-169.33	-169.97	-170.63	-171.30	-171.97	-172.59
Bottom Depth (m)	172	93	102	26	39	46	55	65	69	66	67
Bottom Temperature (^{o}C)	3.0	0.8	1.5	5.0	3.6	2.5	0.7	-0.3	-1.1	-1.0	-1.0
Red King Crab											
Immature males	0	0	0	0	86	75	0	0	0	0	0
Mature males	0	0	0	0	86	75	145	0	0	0	0
Legal	0	0	0	0	86	75	73	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	86	0	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	5.13	2.69	3.38	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	0	73	143	0	0	0	0	0	0	72	0
Mature males	0	581	1,362	0	0	0	0	0	0	0	0
Legal	0	363	1,004	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	72	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.00	13.25	32.63	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.00
Bairdi Tanner Crab											
Sublegal	0	0	215	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	401	0	215	0	0	0	0	0	0	0	0
Mature females	201	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.87	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	0	1,452	18,712	0	0	151	218	3,186	9,503	21,449	2,859
Legal	602	798	3,441	0	0	0	0	139	69	216	0
Preferred	602	290	1,004	0	0	0	0	0	0	0	0
Immature females	468	73	13,335	0	0	75	580	208	7,643	23,609	3,913
Mature females	67	363	93,130	0	0	0	0	1,177	34,085	36,781	451
Total weight (kg)	5.69	6.19	126.82	0.00	0.00	0.03	0.32	4.48	41.76	60.75	2.49
Hybrid Tanner Crab											
Males ≤ 77 mm	134	0	0	0	0	0	0	0	620	1,512	226
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	932	0	0	0	0	0	826	3,455	0
Mature females	0	0	7,313	0	0	0	0	0	1,721	2,735	150
Total weight (kg)	0.02	0.00	7.32	0.00	0.00	0.00	0.00	0.00	2.02	4.23	0.19

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	P-25	P-26	P-27	P-28	P-29	P-30	P-31	P-32	PO2423	PO2524	PO2625
Start Date	07/09/2011	07/10/2011	07/17/2011	07/17/2011	07/22/2011	07/23/2011	07/22/2011	07/22/2011	07/09/2011	07/09/2011	07/09/2011
Duration (hour)	0.35	0.53	0.51	0.52	0.51	0.49	0.55	0.53	0.51	0.50	0.51
Distance Fished (km)	1.93	2.96	2.84	2.82	2.84	2.66	3.03	2.91	2.84	2.76	2.82
Mid-Latitude (^{o}N)	60.00	59.99	60.00	60.00	60.01	60.00	60.01	60.00	59.84	59.83	59.83
Mid-Longitude (^{o}W)	-173.26	-173.95	-174.59	-175.26	-175.93	-176.72	-177.20	-177.90	-172.25	-172.89	-173.56
Bottom Depth (m)	75	97	107	116	129	141	137	141	75	80	94
Bottom Temperature (^{o}C)	0.2	1.4	1.8	1.7	2.3	1.7	1.6	2.4	-0.1	0.2	0.9
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	214	0	0	0	0	0	0	0	0	73	0
Mature males	107	809	708	0	0	0	0	0	0	73	360
Legal	107	607	283	0	0	0	0	0	0	0	360
Immature females	214	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)	2.89	18.16	14.00	0.00	0.00	0.00	0.00	0.00	0.00	1.49	9.82
Bairdi Tanner Crab											
Sublegal	0	0	0	228	422	820	389	212	141	146	72
Legal	0	0	0	152	211	146	0	71	0	0	0
Preferred	0	0	0	0	70	146	0	0	0	0	0
Immature females	214	0	71	76	221	0	194	0	0	146	144
Mature females	0	0	0	0	221	1,054	65	0	0	0	0
Total weight (kg)	0.07	0.00	0.10	1.69	5.26	5.77	1.14	1.53	0.10	0.17	0.23
Opilio Tanner Crab											
Sublegal	5,347	19,748	13,036	28,479	23,852	8,423	907	71	13,969	7,212	5,548
Legal	107	2,763	1,488	11,193	5,277	12,158	5,962	1,199	282	73	504
Preferred	0	539	0	914	1,407	5,493	4,536	987	0	73	72
Immature females	13,260	1,550	12,327	53,454	127,842	127,000	2,203	282	2,681	2,040	1,585
Mature females	749	8,830	87,637	290,649	108,916	601,088	5,573	1,269	18,696	15,517	21,109
Total weight (kg)	4.15	48.94	100.46	316.79	215.13	679.68	57.39	21.19	29.94	18.12	25.48
Hybrid Tanner Crab											
Males ≤ 77 mm	1,176	876	0	0	0	0	0	0	71	583	216
Males ≥ 78 mm	0	202	0	0	0	0	0	71	0	73	0
Immature females	428	404	0	0	0	0	0	0	71	0	0
Mature females	428	1,078	71	0	1,337	1,025	0	0	71	146	72
Total weight (kg)	0.66	2.76	0.09	0.00	1.75	1.51	0.00	0.53	0.16	0.65	0.18

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	PO2726	Q-01	Q-02	Q-18	Q-19	Q-20	Q-21	Q-22	Q-23	Q-25	Q-26
Start Date	07/10/2011	07/04/2011	07/03/2011	07/04/2011	07/04/2011	07/04/2011	07/04/2011	07/08/2011	07/08/2011	07/09/2011	07/18/2011
Duration (hour)	0.62	0.51	0.52	0.51	0.52	0.51	0.50	0.52	0.53	0.19	0.52
Distance Fished (km)	3.46	2.82	2.88	2.77	2.86	2.80	2.75	2.88	2.92	1.00	2.88
Mid-Latitude (^{o}N)	59.84	60.33	60.34	60.33	60.33	60.33	60.33	60.34	60.33	60.33	60.34
Mid-Longitude (^{o}W)	-174.25	-167.96	-167.26	-168.66	-169.30	-169.99	-170.66	-171.36	-172.06	-173.42	-174.07
Bottom Depth (m)	106	32	33	36	43	51	62	66	59	63	91
Bottom Temperature (^{o}C)	1.9	5.9	6.5	4.0	3.1	1.2	-0.5	-0.6	-0.4	-0.9	0.6
Red King Crab											
Immature males	0	0	0	0	0	77	0	0	0	0	0
Mature males	0	0	0	82	151	0	74	0	0	0	0
Legal	0	0	0	82	75	0	74	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	82	0	77	0	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	4.17	3.29	2.48	2.67	0.00	0.00	0.00	0.00
Blue King Crab											
Immature males	58	0	0	0	0	0	0	0	364	603	0
Mature males	760	0	0	0	0	0	0	0	291	201	282
Legal	584	0	0	0	0	0	0	0	73	0	282
Immature females	0	0	0	0	0	0	0	0	0	201	0
Mature females	0	0	0	0	0	0	0	0	73	0	0
Total weight (kg)	21.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.34	2.53	6.80
Bairdi Tanner Crab											
Sublegal	58	0	0	0	0	0	0	0	73	0	141
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	58	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)	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.19
Opilio Tanner Crab											
Sublegal	5,901	0	0	0	151	56,787	29,644	34,265	15,863	402	14,396
Legal	2,921	0	0	0	0	0	0	0	73	0	423
Preferred	1,753	0	0	0	0	0	0	0	0	0	141
Immature females	467	0	0	0	75	25,042	5,424	21,977	364	0	3,740
Mature females	993	0	0	0	0	10,248	21,397	43,954	582	201	14,748
Total weight (kg)	33.97	0.00	0.00	0.00	0.04	49.35	46.17	79.72	17.84	0.08	32.51
Hybrid Tanner Crab											
Males ≤ 77 mm	467	0	0	0	0	771	0	913	146	0	0
Males ≥ 78 mm	175	0	0	0	0	0	0	0	0	0	71
Immature females	292	0	0	0	0	385	0	1,896	73	0	0
Mature females	467	0	0	0	0	0	0	2,598	146	0	212
Total weight (kg)	3.08	0.00	0.00	0.00	0.00	0.94	0.00	4.03	0.36	0.00	0.41

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	Q-27	Q-28	Q-29	Q-30	Q-31	QP2423	QP2524	QP2625	QP2726	R-22	R-23
Start Date	07/17/2011	07/17/2011	07/22/2011	07/22/2011	07/22/2011	07/09/2011	07/09/2011	07/09/2011	07/09/2011	07/20/2011	07/20/2011
Duration (hour)	0.51	0.53	0.50	0.50	0.58	0.51	0.55	0.51	0.52	0.51	0.51
Distance Fished (km)	2.82	2.92	2.67	2.69	3.22	2.80	2.99	2.80	2.86	2.80	2.83
Mid-Latitude (^{o}N)	60.33	60.34	60.32	60.33	60.33	60.16	60.18	60.13	60.17	60.67	60.66
Mid-Longitude (^{o}W)	-174.70	-175.38	-176.04	-176.74	-177.40	-172.33	-173.02	-173.77	-174.35	-171.42	-172.11
Bottom Depth (m)	100	110	122	137	146	57	59	88	100	63	61
Bottom Temperature (^{o}C)	1.1	1.6	1.6	1.6	2.0	1.3	0.0	0.5	1.0	-0.9	-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	0	0	0	0	0	375	1,331	74	0	0	0
Mature males	0	0	0	0	0	675	560	0	440	0	0
Legal	0	0	0	0	0	225	350	0	147	0	0
Immature females	0	0	0	0	0	0	700	0	0	0	0
Mature females	0	0	0	0	0	75	70	0	0	0	0
Total weight (kg)	0.00	0.00	0.00	0.00	0.00	16.88	21.56	0.70	7.57	0.00	0.00
Bairdi Tanner Crab											
Sublegal	0	435	0	223	0	75	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	0	0	0	0	0	0	0	0	0	0	0
Immature females	72	1,016	332	0	0	75	0	74	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.07	1.14	0.32	0.16	0.00	0.15	0.00	0.05	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	16,642	51,885	39,395	13,237	2,009	40,743	420	14,027	8,871	47,331	20,519
Legal	1,441	3,991	9,340	9,816	24,355	75	0	148	2,933	0	0
Preferred	72	943	603	3,272	7,306	75	0	74	1,393	0	0
Immature females	43,513	53,191	115,624	2,900	15,526	26,562	490	9,893	7,038	19,641	21,485
Mature females	79,174	395,780	245,184	75,553	22,467	300	70	21,927	16,202	37,027	16,504
Total weight (kg)	107.97	261.72	336.26	138.05	180.37	9.54	0.21	34.20	41.28	87.42	34.77
Hybrid Tanner Crab											
Males ≤ 77 mm	72	1,742	301	0	0	675	0	2,732	953	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	365	675	0	2,732	2,786	0	0
Mature females	144	2,903	979	223	548	75	0	3,175	2,713	0	0
Total weight (kg)	0.23	1.00	1.68	0.29	1.28	0.39	0.00	2.86	4.72	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/20/2011	07/18/2011	07/18/2011	07/21/2011	07/17/2011	07/22/2011	07/22/2011	07/21/2011	07/21/2011	07/20/2011	07/20/2011
Duration (hour)	0.51	0.51	0.50	0.50	0.50	0.50	0.51	0.54	0.54	0.51	0.51
Distance Fished (km)	2.81	2.70	2.73	2.77	2.83	2.75	2.75	2.92	3.03	2.74	2.79
Mid-Latitude (^{o}N)	60.67	60.67	60.68	60.66	60.68	60.67	60.67	60.66	60.67	61.00	61.00
Mid-Longitude (^{o}W)	-172.75	-173.47	-174.13	-174.81	-175.45	-176.19	-176.80	-177.51	-178.18	-171.48	-172.15
Bottom Depth (m)	45	66	86	97	107	118	129	146	160	60	64
Bottom Temperature (^{o}C)	1.6	-0.4	0.6	0.9	1.3	1.3	1.5	1.9	2.3	-1.1	-1.2
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	3,528	157	76	0	0	0	0	0	0	0	0
Mature males	9,127	78	76	73	0	0	0	0	0	0	0
Legal	3,988	78	0	73	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	77	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	186.29	2.73	1.90	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bairdi Tanner Crab											
Sublegal	77	0	0	0	0	441	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	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)	0.20	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00
Opilio Tanner Crab											
Sublegal	6,673	627	45,478	17,340	47,803	61,076	351,826	90,702	0	53,663	31,013
Legal	0	0	76	294	2,405	7,727	35,656	22,951	6,222	0	0
Preferred	0	0	0	0	150	1,337	7,131	2,068	5,314	0	0
Immature females	3,451	392	37,470	19,691	2,555	226,696	0	2,412	88,013	54,706	29,357
Mature females	6,749	313	28,480	44,599	17,964	340,007	9,969	46,109	200,006	29,081	10,463
Total weight (kg)	12.00	0.58	81.72	63.29	93.41	462.61	595.61	260.50	279.42	91.11	34.00
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	76	73	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	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/18/2011	07/18/2011	07/21/2011	07/21/2011	07/21/2011	07/21/2011	07/21/2011	07/21/2011	07/18/2011	07/18/2011	07/18/2011
Duration (hour)	0.49	0.50	0.50	0.51	0.49	0.49	0.53	0.40	0.51	0.54	0.52
Distance Fished (km)	2.66	2.71	2.77	2.78	2.67	2.69	2.87	2.23	2.83	3.06	2.89
Mid-Latitude (^{o}N)	61.00	61.00	61.00	60.99	61.00	61.00	61.01	61.00	61.34	61.33	61.34
Mid-Longitude (^{o}W)	-172.83	-173.50	-174.19	-174.87	-175.54	-176.30	-176.98	-177.62	-173.58	-174.31	-174.98
Bottom Depth (m)	66	75	83	92	102	112	121	134	73	78	87
Bottom Temperature (^{o}C)	-1.2	-0.3	0.3	0.7	1.1	1.1	1.1	1.5	-1.0	-0.6	0.6
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	67	0
Legal	0	0	0	0	0	0	0	0	0	67	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	1.84	0.00
Bairdi Tanner Crab											
Sublegal	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	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											
Sublegal	26,704	27,764	46,693	31,615	62,238	126,432	123,142	92,368	75,261	109,013	68,383
Legal	0	0	450	0	533	4,661	36,685	5,934	0	0	0
Preferred	0	0	0	0	0	74	2,646	974	0	0	0
Immature females	26,633	26,485	52,689	19,101	17,348	117,184	90,676	12,753	79,797	64,640	48,344
Mature females	11,939	12,791	23,684	31,469	34,695	119,477	267,379	60,929	33,466	29,559	20,879
Total weight (kg)	36.11	42.59	78.98	64.40	103.86	314.64	541.04	140.08	102.21	101.91	100.98
Hybrid Tanner Crab											
Males ≤ 77 mm	0	0	0	73	0	0	0	0	0	539	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	73	0	444	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	0.08	0.00	0.17	0.00	0.00	0.00	0.22	0.00

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

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	07/18/2011	07/20/2011	07/21/2011	07/19/2011	07/19/2011	07/19/2011	07/20/2011	07/20/2011	07/19/2011	07/19/2011	07/20/2011
Duration (hour)	0.54	0.52	0.56	0.51	0.54	0.52	0.54	0.52	0.54	0.55	0.53
Distance Fished (km)	3.01	2.86	3.12	2.85	2.98	2.89	2.95	2.88	2.93	2.89	2.90
Mid-Latitude (^{o}N)	61.33	61.34	61.34	61.67	61.66	61.68	61.66	61.67	62.00	62.01	62.00
Mid-Longitude (^{o}W)	-175.66	-176.30	-176.97	-173.66	-174.43	-175.07	-175.79	-176.46	-173.75	-174.50	-175.18
Bottom Depth (m)	97	106	116	70	77	87	96	105	63	73	81
Bottom Temperature (^{o}C)	0.9	1.0	1.1	-1.3	-0.1	0.4	0.6	0.8	-1.6	-1.6	0.1
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	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	71
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	0.96
Bairdi Tanner Crab											
Sublegal	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Preferred	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											
Sublegal	150,382	103,402	154,669	107,620	58,590	93,522	213,873	96,062	134,247	105,799	236,892
Legal	1,395	0	6,719	0	0	0	0	0	0	0	0
Preferred	0	0	3,393	0	0	0	0	0	0	0	0
Immature females	180,273	77,430	191,325	109,749	58,590	106,814	247,531	95,460	156,151	137,373	189,968
Mature females	52,873	45,295	198,177	25,840	8,268	9,339	11,516	50,238	21,835	6,169	7,443
Total weight (kg)	256.90	145.75	627.68	113.23	66.36	92.06	243.12	156.78	123.12	66.90	114.82
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 A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	V-28	Z-05	C-09	D-10	E-11	E-12	F-11	F-12	F-13	G-11	G-12
Start Date	07/20/2011	06/24/2011	07/31/2011	07/31/2011	07/30/2011	07/30/2011	07/29/2011	07/29/2011	07/30/2011	07/29/2011	07/28/2011
Duration (hour)	0.29	0.51	0.51	0.51	0.53	0.51	0.51	0.51	0.52	0.51	0.52
Distance Fished (km)	1.62	2.81	2.77	2.74	2.93	2.85	2.88	2.80	2.86	2.84	2.86
Mid-Latitude (^{o}N)	62.00	54.68	55.68	56.00	56.33	56.33	56.66	56.67	56.67	57.00	57.00
Mid-Longitude (^{o}W)	-175.83	-165.15	-162.81	-162.25	-161.63	-161.00	-161.58	-160.99	-160.37	-161.56	-160.96
Bottom Depth (m)	92	82	53	72	63	53	89	67	61	70	60
Bottom Temperature (^{o}C)	0.6	5.3	7.3	6.8	6.7	7.7	4.2	5.8	6.9	4.2	4.7
Red King Crab											
Immature males	0	0	0	77	973	0	446	2,111	221	1,156	688
Mature males	0	0	0	154	674	0	1,784	829	74	1,619	1,223
Legal	0	0	0	154	374	0	1,605	679	0	1,079	840
Immature females	0	0	0	0	299	0	0	1,659	74	77	0
Mature females	0	0	0	2,151	13,399	0	1,338	7,164	2,139	463	5,348
Total weight (kg)	0.00	0.00	0.00	50.75	279.25	0.00	76.34	140.72	46.61	64.44	140.66
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											
Sublegal	0	73									
Legal	0	0									
Preferred	0	0									
Immature females	0	73									
Mature females	0	0									
Total weight (kg)	0.00	0.29									
Opilio Tanner Crab											
Sublegal	43,531	0									
Legal	0	0									
Preferred	0	0									
Immature females	57,846	0									
Mature females	5,163	0									
Total weight (kg)	63.50	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									

Appendix A. Tow details, crab density (number/nmi^2), and catch weight at successful stations on the 2011 eastern Bering Sea bottom trawl survey.

Station	G-13	G-14	H-11	H-12	H-13	H-14	I-12	I-13	I-14	J-12	J-13
Start Date	07/30/2011	07/27/2011	07/29/2011	07/28/2011	07/28/2011	07/26/2011	07/28/2011	07/28/2011	07/26/2011	07/25/2011	07/28/2011
Duration (hour)	0.52	0.51	0.49	0.52	0.51	0.50	0.51	0.51	0.51	0.52	0.51
Distance Fished (km)	2.85	2.73	2.74	2.94	2.75	2.63	2.79	2.80	2.80	2.79	2.78
Mid-Latitude (^{o}N)	56.99	57.00	57.33	57.33	57.33	57.34	57.67	57.66	57.67	58.00	58
Mid-Longitude (^{o}W)	-160.34	-159.69	-161.54	-160.93	-160.29	-159.66	-160.89	-160.27	-159.64	-160.84	-160.22
Bottom Depth (m)	65	54	57	62	62	55	56	56	49	45	52
Bottom Temperature (^{o}C)	5.8	6.9	4.4	5.1	6.2	6.9	5.2	6.0	6.2	5.2	6.1
Red King Crab											
Immature males	79	0	6,579	290	2,663	82	399	0	0	155	81
Mature males	79	158	1,434	145	161	82	877	313	156	155	161
Legal	79	158	675	145	161	82	558	313	156	0	81
Immature females	0	0	2,109	0	2,663	0	80	78	78	77	81
Mature females	2,989	2,295	5,060	2,395	3,470	821	2,950	4,073	1,401	2,166	4,275
Total weight (kg)	59.63	49.40	170.13	47.33	83.50	17.04	76.97	80.74	33.20	43.23	76.06