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The 2021 Eastern Bering Sea Continental Shelf Trawl Survey: Results for Commercial Crab Species

By

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ABSTRACT

The eastern Bering Sea bottom trawl survey has been conducted by the National Marine Fisheries Service annually since 1975. The survey was cancelled in 2020 due to complications caused by the COVID-19 pandemic, but resumed at full effort in 2021. 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 abundance and biomass for the management of commercially important species. In 2021, 375 total stations sampled on the eastern Bering Sea shelf from 31 May to 22 July. In early June, relatively cold bottom temperatures extending into Bristol Bay resulted in the need to resample 20 stations in August due to temperature effects on the red king crab reproductive cycle. This document includes results for the full 1975-2021 time series.

Total mature male biomass of commercial crab stocks in the eastern Bering Sea in 2021 was the lowest on record and 2021 biomass estimates continued a declining trend that began in 2015. The decline in crab biomass and abundance was most notable for snow crab (*Chionoecetes opilio*). Abundance estimates for mature male and female snow crab declined 55% and 70%, respectively, from 2019 estimates. Declines in immature snow crab abundance had been noted on the 2019 survey, and 2021 abundance estimates for immature males and females showed 96% and >99% declines, respectively, from 2018 values. Results for other crab stocks did not show similar dramatic changes from 2019 results. Abundance estimates declined slightly for mature male Tanner crab (*C. bairdi*) east and west of 166º W, with the largest declines seen in the industry preferred size class. In contrast, estimates of mature female Tanner crab abundance increased, especially east of 166º W. Abundance estimates for all immature Tanner crab declined, except for immature males east of 166º W. Abundance estimates for Bristol Bay red king crab (*Paralithodes camtschaticus*) showed moderate increases in immature females and mature males, while mature female and immature male abundance estimates declined. Abundance estimates declined for St. Matthew Island blue king crab (*P. platypus*), while the estimated abundance of Pribilof Islands red and blue king crab remained low.

Biomass estimates from the 2021 survey, reported in metric tons (t) and pounds (lb) with 95% confidence intervals (± 1.96 SE) for legal and preferred-sized males of each commercial crab stock in the eastern Bering Sea:

Commercial crab stock	2021 legal or preferred-size male biomass (±95% CI)	
	t	lb
Bristol Bay District red king crab (*Paralithodes camtschaticus*)	12,559 (6,031)	27,687,619 (13,295,809)
Pribilof District red king crab	3,615 (2,078)	7,968,745 (4,581,142)
Pribilof District blue king crab (*P. platypus*)	295 (333)	649,476 (733,252)
St. Matthew Is. Section blue king crab	1,426 (1,091)	3,144,568 (2,404,247)
Tanner crab, east 166° W (*Chionoecetes bairdi*)	3,514 (1,538)	7,747,133 (3,390,654)
Tanner crab, east 166° W ≥ 4.9 inches (preferred size)	2,403 (1,073)	5,296,755 (2,366,136)
Tanner crab, west 166° W	5,301 (1,534)	11,686,111 (3,381,018)
Tanner crab, west 166° W ≥ 4.9 inches (preferred size)	2,006 (755)	4,423,139 (1,665,286)
Snow crab, all districts (*C. opilio*)	60,095 (15,753)	132,487,866 (34,729,949)
Snow crab, all districts ≥ 4.0 inches (preferred size)	12,437 (4,500)	27,419,047 (9,921,865)

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INTRODUCTION

Survey History and Purpose

The eastern Bering Sea (EBS) bottom trawl survey has been conducted by scientists in the Resource Assessment and Conservation Engineering (RACE) Division of the Alaska Fisheries Science Center (AFSC), National Marine Fisheries Service (NMFS), since the early 1970s. Beginning in 1975, surveys were expanded beyond Bristol Bay to include the majority of the EBS continental shelf, with the original purpose of assessing potential resource impacts of offshore oil development (Pereyra et al. 1978). The survey was conducted annually during 1975-2019, however, due to complications caused by the COVID-19 pandemic, the survey was cancelled in 2020. A full survey of the EBS shelf was conducted in 2021. The annual collection of data on the distribution and abundance of crab and groundfish resources provides fishery-independent population estimates, and biological data critical to the management of commercially important species in the EBS. Commercially important 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*). Although the common name for *C. bairdi* changed from Tanner crab to southern Tanner crab in 2005 (McLaughlin et al. 2005), it will still be referred to as "Tanner crab" in this document.

The total number of stations gradually increased over time until the survey grid was standardized in 1988 (Fig. 1). Therefore, the pre-1988 estimates provided in this document for stocks that extend northwest of the Pribilof Islands are not directly comparable to later estimates, as the entire stocks were not sampled. From 1988 to 2014, 376 standard stations were included in the survey covering approximately 140,350 square nautical mile (nmi^2) area of the EBS, with station depths ranging from 20 to 200 m (Fig. 1). Since 2015, station Z-04 (AZ-0504) has been excluded for crab population estimation because the station has a limited area of crab habitat within a trawlable depth range. This document reports the full time series re-calculated without data from this station. The annual EBS bottom trawl survey begins in the northeast section of Bristol Bay in early June, and between 4 and 5 stations are typically sampled each day from each of two vessels (Fig. 2). The standard survey is completed in late July or early August at the western edge of the survey grid, northwest of St. Matthew Island. In some years (i.e., 1999, 2000, 2006-2012, 2017, and again in 2021) when the Bristol Bay red king crab reproductive cycle 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 to more accurately evaluate female abundance (see Methods). In addition to the EBS survey grid, the northern Bering Sea (NBS) has been surveyed in 2010, 2017, 2018 (with reduced effort) and 2019. The full NBS survey grid was again sampled in 2021, but those results are not included in the draft version of this report.

Eastern Bering Sea Crab Stock Assessment Process

Crab species 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 2011). The annual stock assessment and

fishery evaluation (SAFE) report prepared by the North Pacific Fishery Management Council provides current biological, ecosystem, and economic data associated with these commercial crab species. The NMFS determines the procedure for setting overfishing levels (OFL) and allowable biological catch (ABC), while ADF&G sets the annual total allowable catch (TAC) or guideline harvest level (GHL) for each crab stock. Currently, the Council's Crab Plan Team (CPT) and the Scientific and Statistical Committee (SSC) review the assessment, biological, economic, and modeling data to recommend biological reference points associated with the status of crab stocks. Crab stock boundaries are defined by ADF&G management units for king crab and Tanner crab species (Fitch et al. 2012). The Pribilof Islands blue king crab stock boundary also includes a 180 nmi × 20 nmi (9 × 1 station) column on the east side of the management unit, which was added in 2013 to account for blue king crab survey and bycatch data (NPFMC 2014). Red king crab are split into Bristol Bay and Pribilof Islands stocks, while blue king crab are split into Pribilof Islands and St. Matthew Island stocks for management purposes. Tanner and snow crab fisheries are considered to be single stocks, but are split into separate management fishery units defined by the ADF&G Board of Fisheries using 166° W and 173° W as the boundary for each east and west unit, respectively.

This draft report summarizes the 2021 survey results for commercially important crab resources in the EBS. Note that area-swept estimates in this document are indices of abundance, and thus may not match the final modeled population estimates in the SAFE reports because the models include additional population dynamics information. Further 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 et al. 2019).

METHODS

Survey Area and Sampling Gear

The 2021 standard survey was conducted onboard the chartered fishing vessels *Alaska Knight* and *Vesteraalen*, beginning 31 May in the northeast corner of Bristol Bay, moving westward, and finishing on 22 July. The vessels sampled in close proximity to each other for much of the survey (Fig. 2). The *Vesteraalen* also returned to Bristol Bay to resample 20 stations between 7 August and 11 August.

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

The king crab Registration Area T in Bristol Bay (south of 58 °39 ′N and east of 168 °W) is 54,536 nmi^2 and consists of 136 stations. The king crab Registration Area Q in the Bering Sea is divided into the Northern District (north of 58° 39′ N) and the Pribilof District (south of 58° 39′ N and west of 168° W). The area for the St. Matthew Island Section of the Northern District is divided into two sampling strata: 1) a high-density 7,218 nmi^2 stratum with 28 stations (one of which is not trawlable, but is included in the total area surveyed), and 2) a standard-density 11,629 nmi^2 stratum with 29 stations, for a total of 56 stations within the St. Matthew Island Section. The area of the Pribilof District is divided into two sampling strata: 1) a high-density 10,025 nmi^2 stratum with 41 total stations, and 2) a standard-density 14,436 nmi^2 stratum with 36 stations, for a total of 77 stations within the stock area. For Pribilof District blue king crab, the eastern stock boundary is 20 miles east of the Pribilof District and includes nine additional stations, as indicated in the 2013 Pribilof Islands Blue King Crab Rebuilding Plan (NPFMC 2014). High-density strata are classified on the basis of having more stations (both the standard center and up to four corner stations) per area than standard-density strata (Fig. 3).

The fishing gear used in 2021 was identical to that of EBS bottom trawl surveys conducted since 1982, with both vessels fishing a standard 83-112 Eastern otter trawl employing an 83 ft (25.3 m) head rope, and a 112 ft (34.1 m) footrope (Lauth and Nichol 2013). The cod-end mesh size is 8.9 cm stretched and the liner is 3.2 cm. The trawl nets on each vessel were removed from service and replaced with new nets every 20-30 consecutive tows (~5 days) to mitigate potential impacts from changes in net configuration due to fishing. Each tow was approximately 0.5 h in duration and 1.5 nmi (2.8 km) in length, and was conducted at a speed of 3 knots (1.54 m sec^{-1}) (see Results for details), 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 fishing performance during each tow. Specifically, a bottom contact sensor (Onset HOBO Pendant G accelerometer) was attached to the center of the footrope to measure bottom contact of the net at 1-second intervals. The net mensuration system also included 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 (Marport sensors). Data on bottom contact of the footrope were combined with GPS data to calculate distance fished which was then combined with the net width data to calculate area-swept. Fishing power was assumed to be equal between the two vessels.

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

Biological Data Collection

For each tow, all crab were removed from the catch, generally sorted by species and sex, and a total catch weight was obtained for each species. Tanner and snow crab hybrids are identified by a combination of characteristics including curve of the epistome margin, eye color, carapace shape, and space between or shape of the rostrum horns (Karinen and Hoopes 1971, Urban et al. 2002). A random subsample of the total catch typically occurred in cases where an exceptionally large number (approximately > 300) of a given species was caught in a tow. When conducted, subsamples varied in size and composition depending on the particular tow. The subsample may have occurred at the level of the entire catch or at the level of a particular size and sex category once the catch was sorted. The total weights of the sampled crab and non-sampled crab were recorded and an expansion factor was calculated to determine the final number of each species in a particular tow.

Individual crab carapaces were measured (± 0.1 mm) to provide a size-frequency distribution for each sample. Crab sizes are reported as carapace width (CW) excluding spines for Tanner and snow crab, and carapace length (CL) for hair crab and all king crab species (Donaldson and Byersdorfer 2005). Since 2006, individual weights were measured for blue king crab every year, red king crab and snow crab in odd years, and for Tanner crab in even years to add to the existing size-weight data and to monitor temporal variability in size-weight regressions. However, since the survey was cancelled in 2020, individual weights were taken in 2021 for Tanner crab, red king crab, and blue king crab. For every haul in 2021, size-weight data were collected on up to five Tanner crab and five red king crab per each of the following categories: 1) males, 2) ovigerous females, and 3) non-ovigerous females. Because of their relative rarity, weight data were collected for all intact blue king crab encountered that met the sampling requirements (i.e., whole, live crab without regenerating limbs). Weights were collected from representative size ranges throughout the spatial distribution of each species.

In the absence age estimates, shell condition serves as a semi-quantitative index of molt status and time in shell post-molt. For all EBS crab stocks, and particularly those which exhibit a terminal molt at maturity (i.e., *Chionoecetes* spp.), shell condition is a requisite for setting harvest quotas. Carapace shell condition was assessed for each crab sampled and assigned to one of six classes according to specific criteria (0 = premolt or molting, 1 = soft and pliable, 2 = new hardshell both firm and clean, 3 = oldshell slightly worn, 4 = oldshell worn, 5 = very oldshell).

Clutch assessment is used to estimate spawning stock biomass and overall reproductive health, and to monitor demographic changes in the mating population. All female crab abdomens were evaluated to determine reproductive condition based on the color of the eggs (0 = no eggs, 2 = purple, 3 = brown, 4 = orange, 5 = purple-brown, 6 = pink), the condition of the eggs (0 = no eggs, 1 = uneyed, 2 = eyed, 3 = dead, 4 = empty egg cases), and the size of the egg clutch (0 = immature, 1 = mature female no eggs, 2 = trace to 1/8, 3 = 1/4, 4 = 1/2, 5 = 3/4, 6 = full). Beginning with the 2017 survey, an additional egg condition code, 5 = hatching, was employed to denote females that were sampled while in the process of hatching their clutch.

For mature females, a combination of individual egg clutch and egg condition codes was used to identify a given female's stage in the molt-mate cycle. Completion of the molt-mate cycle was

indicated by uneyed embryos. Conversely, the presence of eyed embryos, hatching eggs, empty egg cases, or absence of eggs (hereafter, "barren") in morphologically mature females indicated an incomplete cycle. The annual ratio of females with uneyed embryos to those with eyed embryos, hatching eggs, empty egg cases, or that were barren was derived as a metric for the progression of the molt-mate cycle within the population as a whole during the survey.

Maturity in male *Chionoecetes* spp. can be defined by morphometric characteristics of the chela where morphometrically immature and mature crab are separated into two groups based on the frequency distribution of the chela height (large claw or small claw) to carapace width ratio (Stevens et al. 1993, Tamone et al. 2007). To assess the difference between morphometric maturity and true functional maturity, additional special projects have been conducted in recent years. Chela height measurements for *Chionoecetes* spp. began in 1989. In 2008 a standard sampling protocol for chela height and carapace width measurements was developed (measurements to ± 0.1 mm), with measurements taken for male Tanner crab and snow crab during even and odd years, respectively. Beginning in 2018, chela height and carapace width measurements were collected annually from a subsample (typically ≤ 15 crab per haul) of male Tanner and snow crab caught at each station.

Eastern Bering Sea crab are vulnerable to infection by a variety of pathogens, and disease prevalence may serve as an indicator of stock or ecosystem health. Bitter crab syndrome is caused by a parasitic dinoflagellate, *Hematodinium* sp., and is found in Tanner and snow crab throughout Alaska waters (Meyers et al. 1996). The mortality rate of parasitized crab is believed to be high, and symptoms include lethargy, pink carapace pigmentation, and white opaque hemolymph (Meyers and Burton 2009). Meats of parasitized crab are harmless to humans, but are bitter tasting, making the crab unmarketable. The prevalence of bitter crab syndrome fluctuates both temporally and spatially in *Chionoecetes* spp. in the EBS (Meyers et al. 1996), and may be influenced by changes in environmental conditions (Morado et al. 2010). All measured crab were scanned for visual evidence of bitter crab syndrome. In addition, crab were scanned for the following pathologies: 1) black mat syndrome, 2) shell disease, 3) rhizocephalan barnacles, 4) cottage cheese disease, 5) pepper spot syndrome, 6) leatherback, 7) snailfish eggs, and 8) black eyes.

Crab Biomass Estimates

Crab densities (number nmi^{-2}) were estimated at each station for sublegal and legal males, as well as mature and immature males and females of each stock. Maturity and legal size classes were based on literature values and State of Alaska regulations (Table 1). The ADF&G definitions for legal size classes (CW in inches) include spines (ADF&G 2017), while CW measurements reported in this document exclude spines (Table 1). The area swept by the trawl (nmi^2) was calculated as the product of the distance traveled while the net had bottom contact multiplied by the mean net width over the duration of the tow. Prior to 2009, data reported in this annual document were calculated using a fixed width of 15.2 m (0.008 nmi) in the area-swept calculation to maintain consistency with historical crab population estimates. Since 2009, all population abundance and biomass estimates for the entire time series have been calculated using the variable net width based on net mensuration data obtained during the tow (Table 2). The effective width of the trawl typically ranges from 14.6 to 18.3 m when towing at a speed of 3 knots (Weinberg 2003; Fig. 4), and changes with the depth of the tow due to changes in scope of

the trawl wire (Rose and Walters 1990). For 2021 and all historical data reported in this current document, crab densities were calculated using the mean net width recorded for the duration of each tow, and a mean net width-inverse scope regression relationship was calculated when net width values were not recorded during a tow (Rose and Walters 1990). From 1975 to 1981, the net width estimates used for the area-swept calculations were derived from a single width estimate calculated each year for a particular type of trawl used during the annual survey. From 1982 to 1987, the net width used in the area-swept calculations was estimated using the inverse relationship between net scope and net width developed by Rose and Walters (1990). From 1988 to 2021, the net width was estimated using the net mensuration system described above, which measures the height and width of the net throughout the duration of the tow (Table 2, Fig. 4). Distance traveled by the trawl was determined from ship GPS positions recorded at the beginning and end of each tow.

All reported historical data and the current biomass estimates are calculated for the number of individual male and female crab at each 1 mm size category for each species, using the weight-size relationships developed by the AFSC's Kodiak Laboratory (Table 3). The size-weight relationships are described by the expression:

$$W = a\, L^{b} \quad ,$$

where W is the total weight in grams, L is either CL or CW in millimeters, 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 collected between 2000 and 2009.

The weights calculated for each 1 mm size bin are summed for each station by the following categories: legal, mature, and immature male, and mature and immature female. The crab biomass within a district or section stratum was estimated by averaging crab densities from all stations within that stratum, and multiplying by the total area of the stratum specific to that stock. Total biomass was calculated using a stratified design based on management units (standard density, high-density, ADF&G-defined districts, or section stratum). Population biomass estimates were calculated in each stratum and then summed among strata. Variance for each stratum was calculated under the assumption that each station was an independent sample, and 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 (t) and pounds (lb) are reported. Metric tons can be converted to pounds by multiplying the biomass in t by 2,204.62 for comparison with ADF&G reported values of total allowable catch (TAC) and guideline harvest levels (GHL).

In years with colder than average bottom water temperatures (1999, 2000, 2006-2012, and 2017), a small number of standard Bristol Bay stations sampled at the beginning of the survey are resampled in late July/August to 1) accurately assess the reproductive status of female Bristol Bay red king crab, and 2) to assess the relative abundance of adult male and female red king crab that may be unavailable to the bottom trawl survey in cold years (Chilton et al 2010).

Resampling efforts are necessary when 10% or more of mature females have not yet completed the molt-mate cycle, as determined by egg codes. Mature females with eyed embryos, empty egg cases, hatching eggs, or no eggs all indicate an incomplete molt-mate cycle, while uneyed embryos indicate a complete cycle. These resample stations are 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. When resampling is necessary, total population estimates for male Bristol Bay red king crabs are calculated using only standard tows from leg 1 in June, while female Bristol Bay red king crab biomass estimates are calculated by replacing data collected at the original stations with data collected at the resample stations in July/August due to crab growth and movement into the sampling area during the time between the standard survey and the resampling event.

The population biomass estimates reported in this document have substantial uncertainty due to the expanse of the area being sampled and the typically aggregated distribution patterns of the sampled stocks. These estimates are least precise for small crab due to gear selectivity, and for females of some stocks due to crab behavior. For example, female blue king crab prefer rocky habitat, which is difficult to sample with bottom trawls. For consistent analyses, catchability is assumed to be near or equal to one for the indices developed in this document; however, catchability is likely much lower, especially for the smaller size classes (Somerton et al. 2013). The stock assessment models that incorporate these survey data consider catchability when estimating abundance and biomass.

Centers of Distribution

The centers of distribution for male and female crab from 1975 to 2021 were determined by averaging the latitude and longitude of each positive tow for a particular species. Latitude and longitude were weighted by the CPUE for each size and sex class. In years when Bristol Bay stations were resampled (discussed in more detail below), only tows from Leg 1 were included.

Recruitment

Population size is sensitive to variability in recruitment strength. Thus, assessing temporal variability in abundances of new individuals reaching the minimum legal size is important to predict the following season's catches. The term "recruitment" can refer to various life history stages including newly settled juveniles, individuals reaching sexual maturity, or individuals reaching the legal size limit. For the purposes of this technical memorandum, "pre-recruits" are defined as mature male crab in the size class that will likely enter the fishery (minimum legal size limit) the following year (Table 1). A time series of pre-recruit abundance estimates are provided as an index for future abundances of legal crab.

Special Projects

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

1) Tag legal male Bristol Bay red king crab with pop-up satellite tags to elucidate movement from summer into the fall.
2) Measure snow crab shell hardness readings and collect carapace samples to assess post-terminal molt shell age to improve maximum age and natural mortality estimates.
3) Collect immature snow crab that are nearing maturity across six regions to assess body condition and lipid allocation.
4) Collect live, mature male Tanner and snow crab for ocean acidification experiments.
5) Collect live, mature, egg-bearing female snow and Tanner crab for larval growth and hatching studies.
6) Collect crab specimens for the observer training collection.
7) Assess the rate of sampler error in classifying shell condition.
8) Assess whole-haul subsampling methods for estimating biomass and size composition of snow and Tanner crab.

Pop-up satellite tags were placed on 15 legal male Bristol Bay red king crab; these tags will pop to the surface in October to determine movement vectors and fall distribution. Total live crab collected for ocean acidification (males) and larval (females) studies, respectively, were as follows: 60 male Tanner crab, 100 male snow crab, 15 female Tanner crab, and 15 female snow crab. Unfortunately due to poor water quality and flight delays only 5 female Tanner crab made it to the Kodiak Laboratory alive. Preserved samples were collected for radiometric shell ageing (100 snow crab), lipid condition metrics (151 snow crab), and for the observer program (45 crab). Shell condition classification error was evaluated for 174 crab and whole-haul subsampling methods were employed for 1 haul. Chela heights were measured for maturity estimates; 2,194 male Tanner crab and 2,356 male snow crab chela heights were measured in 2021. All collections were completed within the guidelines stipulated by the survey's Scientific Research Permit (NOAA: 2021-5) and Aquatic Resource Permit (ADF&G: CF-19-032), as well as project-specific permits (CF-21-074, CF-21-082).

RESULTS

Survey Overview

The 2021 EBS bottom trawl survey consisted of 395 total bottom trawls (375 standard survey stations, and 20 resampled stations in Bristol Bay) conducted from 31 May to 22 July over an area of approximately 140,350 nmi^2, beginning in the southeast corner of Bristol Bay, moving east to west, and finishing with the northernmost stations. The latitude and longitude of the midpoint of each successful tow along with the duration (h), distance fished (km), bottom depth (m) and bottom temperatures (°C) are listed in the Appendix. The mean distance fished across all tows was 1.75 nmi (2.81 km, SD = 0.12 nmi) with a range of 0.88 to 2.0 nmi (1.42 to 3.27 km) and the mean tow duration was 30.9 minutes (SD = 1.91 min, range = 15.1 to 35.3 min) for standard stations. The fishing depth ranged from 18 to 173 m with a mean gear depth of 78.6 m (SD = 33.6 m) for standard stations. Fishing depth for the 20 resample stations ranged from 42 to 67 m with a mean gear depth of 53.9 m (SD = 7.0 m). Mean net width for standard tows ranged from 12.6 to 19.5 m and the average mean net width for all 375 standard tows was 16.8 m (SD = 1.2 m). The mean net width per tow for 20 resample stations ranged from 15.6 to 17.3 m and the

average mean net width was 16.6 m (SD = 0.5 m). The 2021 net fishing performance (distance fished, tow duration, gear depth, net width) was consistent with previous years with the exception of 1975, when tow duration was 60 minutes and mean distance fished was 2.26 ± 0.18 nmi.

The bottom temperature at each station during the standard survey ranged from -0.6 °C to 6.9 °C (Fig. 5a). A cold pool of water < 2°C extended onto the middle and outer shelf between the 50 and 200 m isobaths north and west of St. Matthews Island. Compared with historical conditions it was a moderate year, lacking a cold-pool that extended south towards Bristol Bay, but considerably cooler than many recent years, including 2018 and 2019. Bottom temperatures south of St. Matthews Island were generally 3 – 5ºC, with warmer temperatures only occurring at some nearshore stations and around the Pribilof Islands. In 2021, the average bottom water temperature during the first survey leg (31 May to 18 June) was 3.9 °C (SD = 0.8), which was almost two degrees cooler than during leg 1 in 2019 (5.7 ºC; SD = 1.4) (Table 8 and Fig. 6). The bottom water temperatures at the 20 stations resampled in August ranged from 4.4 to 8.7 °C, with a mean of 6.7 °C (SD = 1.1) (Fig. 5b).

Population abundance and biomass of the seven commercial crab stocks sampled during this survey have fluctuated dramatically over the 1975 – 2021 time series (Figs. 8-12). Overall, commercial crab mature male biomass decreased from approximately 300,000 t to below 100,000 t in the mid-1980s, before then increasing to just below 500,000 t in the early 1990s due to increases in snow and Tanner crab. Total mature male biomass then leveled out around 200,000 t between 2005 and 2015, but has been steadily dropping since then (Fig. 7). At about 58,522 t, mature male biomass for commercial crab stocks in 2021 is the lowest on record and only 66% of the estimated biomass in 2019.

Bristol Bay District Red King Crab

Red king crab (*Paralithodes camtschaticus*) were caught at 65 of the 136 stations in the Bristol Bay management district during the standard survey and 100% of these crab were measured (Table 5). We estimate the biomass of legal-sized male crab (± 95% CI) as 12,559 ± 6,031 t (4.4 ± 1.8 million crab; Tables 6 & 7). This estimate is higher than the 2019 estimate, but less than half of the 20-year average of 27,254 ± 5,330 t (Table 6). The majority of legal males were concentrated in central Bristol Bay; in addition, station K-1, the northwestern most corner of the Bristol Bay management district, had a high abundance of legal males (Fig. 13). Fifty percent of legal-sized males were new hardshell crab, a decline from the 62% of legal-sized males that were new hardshell in 2019 (Fig. 17). The majority of oldshell males in 2021 were caught in central Bristol Bay (Fig. 18a).

We estimate mature and immature male Bristol Bay red king crab biomass as 15,856 ± 6,757 t (6.3 ± 2.3 million crab) and 2,406 ± 1,138 t (3.5 ± 1.6 million crab), respectively (Tables 6 & 7). Both size categories were located in central Bristol Bay around the 50 m isobath, with mature males also having a higher abundance at station K-1 (Fig. 14). Estimated immature biomass showed a moderate decrease from 2019, while mature biomass had a moderate increase (Tables 6 and 7).

In 2021 the molting and mating cycle was delayed for female Bristol Bay red king crab. Of the 209 mature females sampled in June during the first leg of the survey, 82% had uneyed eggs, 9% were barren, 7% had empty egg cases, 1% had eyed eggs, and 1% had eggs in the process of hatching. The ratio of mature females with eyed embryos, empty egg cases, hatching eggs or no eggs to uneyed embryos was 0.22, necessitating resampling of 20 stations in August (Table 8). The average bottom water temperature at stations with mature females was 4.09 °C in June, by far the warmest temperature when resampling has been necessary (Table 8). During June sampling we found overlapping distributions of female red king crab with different egg condition classes, with the exception that females in the northwestern section of the District mostly carried uneyed clutches (Fig.18b).

Among female crab captured during August resampling, 91% were mature females and 100% of these were in new, hardshell condition with newly extruded uneyed embryos; no barren females were captured during the resampling (Figs. 18c and 20c). This suggests that females with eyed eggs, empty egg cases, hatching eggs, or no eggs had molted, mated, and extruded embryos over the 8-week period between the first sampling event in early June and the resample in early August. The average density of mature female red king crab caught at the 20 resample stations in early June was 503 crab nmi^{-2}, which was almost identical to the average density of 508 crab nmi^{-2} at those same stations in early August (Figs. 15b).

The 2021 biomass estimates for female red king crab were calculated by replacing data collected at the original stations in early June with data collected at the resample stations in early August. The 2021 mature female red king crab biomass estimate was 9,944 ± 4,815 t (6.3 ± 2.9 million crab) and the immature female biomass estimate was 361 ± 281 t (1.4 ± 0.3 million crab; Tables 6 & 7). Mature female abundance estimates in 2021 declined by 25% from 2019 and were well below the 20-year average of 25.3 ± 4.3 million crab (Fig. 19; Tables 6 and 7). Estimates for immature female abundance and biomass were slightly greater than 2019 values. The majority of mature female red king crab were caught in the central area of Bristol Bay, as well as the northwestern-most station in the Bristol Bay District (K-1), while immature females were more abundant throughout all of Bristol Bay (Figs. 15 and 18b-c). Eighty-four percent of mature females were carrying clutches that were either 75% or 100% full, while 12% were half full (Fig. 20a).

Spatial distributions of red king crab have fluctuated over the 1975-2021 time series. The centers of distribution for mature male and female red king crab shifted north and east of the southwest Bristol Bay region from 1975 to 1987 (Fig. 21). From 1988 to 1991, mature female centers of distribution shifted slightly to the south before returning to the northeastern trend, while male centers of distribution remained in the northeast. Loher and Armstrong (2005) hypothesized that the shift during the late 1970s and early 1980s was due to warmer bottom temperatures. However, an alternative hypothesis suggests that the disappearance of the southwestern portion of the population near the Unimak region during the late 1970s and early 1980s was caused by fishing effects (Dew and McConnaughey 2005). In more recent years when the cold pool extended onto the Bristol Bay shelf area (from 2008 to 2012, and 2017), the distribution of mature females and males moved from the central area of Bristol Bay to nearshore areas along the Alaska Peninsula, supporting the temperature hypothesis (Chilton et al. 2010). This may be

the result of females avoiding water cold enough to delay embryogenesis during brooding (Stone et al. 1992). Centers of distribution for mature males and females in 2021 were at or beyond previous northernmost points, north of the 50 m isobath in Bristol Bay (Fig. 21).

The location of ovigerous females at larval release may impact post-larval settlement success and subsequent recruitment strength. Southwestern Bristol Bay has long been considered the most important area for larval release, since larvae released in that area are expected to drift into favorable juvenile habitat in nearshore Bristol Bay (McMurray et al. 1984, Armstrong et al. 1993, Dew and McConnaughey 2005). This hypothesis predicts increased settlement success in cold years when the female center of distribution is shifted southwest (Evans et al. 2012). This prediction is supported by observations that high year-class strengths in the 1970s occurred when the spawning stock was located in southern Bristol Bay (Armstrong et al. 1993). However, despite relatively cold years and an extensive cold pool in 2008-2012, Bristol Bay red king crab abundance has remained low. A recent study modeling larval trajectories under different climate scenarios suggests that southwestern Bristol Bay is not the ideal hatching area previously hypothesized (Daly et al. 2020). Modeled larvae that hatched in central and nearshore Bristol Bay were more likely to settle in high-quality habitat and greater larval retention was found in warm years (Daly et al. 2020).

Pribilof District Red King Crab

Red king crab were caught at 18 of the 77 stations in the Pribilof District in 2021, most of which were in the high-density sampling area (Figs. 24-26), and all of which were measured (Table 5). We estimate legal-sized male crab biomass (± 95% CI) as 3,615 ± 2,078 t (1.1 ± 0.7 million crab) (Tables 9 - 10). Estimated biomass for legal-size males was higher than in 2019, but below the previous 20-year average of (Table 9). Fifty-two percent of legal-sized males were new hardshell (Fig. 28).

The biomass estimate was 3,774 ± 2,176 t (1.2 ± 0.7 million crab) for mature males and 85 ± 167 t (0.1 ± 0.1 million crab) for immature males (Tables 9 & 10). Mature males were distributed to the north and east of St. Paul Island (Figs. 25 and 27), while immature males were caught at a single shallow water station northeast of St. Paul Island (Fig. 25). The center of distribution for mature males moved further northeast of St. Paul Island than previously observed, following a trend that began in 2018 and 2019 (Fig. 31).

The biomass estimate was 1,406 ± 1,572 t (0.9 ± 1.0 million crab) for mature females and no immature females were caught (Tables 9 and 10). Female biomass estimates are imprecise due to the limited number of tows with positive crab catches (Fig. 26; Appendix), but 2021 mature female biomass was similar to the previous 20 year average biomass estimate (1,672 ±600 t) (Fig. 9). One hundred percent of the mature females were new hardshell with uneyed embryos and 95% were carrying three quarter full clutches (Fig. 30). Mature females were distributed to the northeast of St. Paul Island (Figs. 26 and 27). The center of distribution for mature females was further to the northeast of St. Paul Island than all previous years and similar to 2019 (Fig. 31).

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 the fishery for blue king crab was closed. A combined fishery for both red and blue king crab occurred in the Pribilof District from 1995 through 1998, but due to low abundance of blue king crab, both the combined fishery and the red king crab fishery have remained closed since the 1998-1999 season (Gish 2006).

The specific mechanisms regulating recruitment and population fluctuations in the Pribilof District red king crab stock are currently unknown. A slight increase in Pribilof District red king crab abundance was observed in 1977, followed by a larger increase in the 1990s (Figs. 32 and 33). Since the population became established in the 1990s, there has been no obvious trend in biomass and abundance estimates; although there have been short-lived peaks, it is difficult to determine if they were true population increases or simply sampling error (Figs. 32-33).

Pribilof District Blue King Crab

Blue king crab (*Paralithodes platypus*) were caught at 7 of the 86 stations in the Pribilof stock boundary area in 2021, all in the high-density sampling area (Figs. 34-36), and all crab were measured (Table 5). Legal-sized male crab had a biomass estimate (± 95% CI) of 295 ± 333 t (0.1 ± 0.1 million crab), which was slightly below the average of 331 ± 147 t for the previous 20 years (Tables 11-12 and Fig. 38). One hundred percent of legal-sized males were new hardshell (Fig. 39).

The biomass estimate was 401 ± 395 t (0.2 ± 0.2 million crab) for mature males and 15 ± 29 t (0.02 ± 0.04 million crab) for immature males (Tables 11-12). Mature male blue king crab were captured to the northeast of St. Paul Island, while a single immature male was caught east of St. Paul Island (Figs. 34, 35, and 37). The mature male center of distribution moved northward by approximately 20 nmi compared with 2018 and 2019 (Fig. 41).

The biomass estimate was 260 ± 322 t (0.2 ± 0.3 million crab) for mature females and no immature females were caught (Tables 11-12). Mature female biomass in 2021 was less than the previous 20 year average of 462 ± 222 t, although estimates of female biomass are imprecise due to a preference for rocky habitat that 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 are in a non-embryo-bearing phase (Somerton and Macintosh 1985). Fifty-nine percent of mature female blue king crab sampled in the Pribilof stock boundary area were new hardshell, with the remainder having old shells (Fig. 40). Sixty-seven percent were barren and one crab had dead eggs; all crab with live eggs had clutches that were three-quarters full (Fig. 40). The distribution of mature female blue king crab was east of St. Paul Island and north of St. George Island, with the center of distribution approximately 20 nmi due east of St. Paul Island (Fig 41).
Pribilof blue king crab production was higher in the late 1970s and early 1980s, and increased in the 1990s with female abundances at an all-time high in 1980 (Figs. 42 and 43). A pulse of male and female blue king crab in the 55-60 mm CL size class was seen in 2005, yet this cohort was

not observed in subsequent years. Overall, male and female blue king crab abundances have been extremely low in recent years with no evidence of an increasing trend.

St. Matthew Island Section, Northern District Blue King Crab

Blue king crab were caught at 10 of the 56 total stations in the St. Matthew Island Section, primarily in the high-density sampling area (Figs. 44-46), and all crab were measured (Table 5). Legal-sized male crab had a biomass estimate (± 95% CI) of 1,426 ± 1,091 t (0.7 ± 0.5 million crab). The legal male biomass was lower than in 2019 and well below the average of 2,400 ± 1,256 t for the previous 20 years (Tables 13-14 and Fig. 44). In 2021, 78% of the legal-sized males were new hardshell crab (Fig. 49). Legal males were distributed in nearshore areas south of St. Matthew Island (Fig. 44).

The biomass estimate was 1,620 ± 1,249 t (0.8 ± 0.7 million crab) for mature males and 804 ± 1,170 t (1.7 ± 2.5 million crab) for immature males (Tables 13-14). Historically, one station (R-24) has greatly impacted population estimates for St. Matthew Island blue king crab, but since 2018 mature males have been more evenly distributed throughout the high-density area, with the highest catches in 2019 and 2021 at the southeastern tip of St. Matthew Island (Q-23; 25% of mature males and 70% of immature males in 2021). The majority of males were caught in nearshore areas on the southern side of St. Matthew Island (Figs. 45 and 47). The center of distribution for mature males was within the 50 m isobath, closer to shore than most other years (Fig. 51).

The mature female blue king crab biomass estimate was 346 ± 461 t (0.8 ± 1.1 million crab) and the immature female biomass estimate was 404 ± 435 t (1.1 ± 1.1 million crab) (Tables 13-14). Seventy-one percent of mature females were new hardshell (Fig. 50). Fifty-five percent of the mature female blue king crab were caught at one station (Q-23) east of St. Matthew Island (Fig. 46). Immature female blue king crab catches were also high at Q-23 as well as at other nearshore stations south of the island (Fig. 46). The mature female center of distribution was at the southeastern tip of St. Matthew Island, similar to 2019 (Fig. 51). Ninety-three percent of mature females were barren, with 6% of these females possessing empty egg cases. All females with clutches had uneyed eggs and clutches that were 75% full (Fig. 50).

The survey time series for St. Matthew blue king crab begins in 1976, and shows an increase in abundance for both sexes in 1978 (Figs. 52 and 53). Abundance declined in the late 1990s, and the fishery was closed in 1999. The fishery opened again in 2009 after a 10-year rebuilding plan, but was then closed on and off over the next several years, and has remained closed since 2016.

Tanner Crab

Tanner crab were caught at 76 of the 120 stations east of 166° W (Figs. 54-56) and 100% of legal-sized crabs were measured (Table 5). The 2021 biomass estimate (± 95% CI) for legal male Tanner crab east of 166° W (≥ 120 mm carapace width) was 3,514 ± 1,538 t (5.4 ± 2.4 million crab) (Tables 15 and 17). Sixty-eight percent of legal males were ≥ 4.9 inches CW, with a

biomass estimate of 2,403 ± 1,073 t (3.4 ± 1.5 million crab; Tables 15 and 17). The 2021 estimated biomass of legal Tanner crab in the eastern area was below the previous 20-year average biomass of 13.176 ± 3,037 t and the lowest on record since the start of the time series in 1978. The majority of the legal Tanner males (≥ 120 mm CW) occurring east of 166° W were distributed in central and southwest sections of Bristol Bay (Fig. 54). In 2021, 33% of sampled legal-sized males east of 166° W were either oldshell or very oldshell (Fig. 60).

Tanner crab were caught at 169 of the 255 stations west of 166° W, including 41 and 8 stations within the high-density areas of the Pribilof District and St. Matthew Island Section, respectively (Figs. 54-56; Appendix A). One hundred percent of caught legal-sized crabs were measured (Table 5). The 2021 biomass estimate for legal male Tanner crab west of 166° W (≥ 110 mm carapace width) was 5,301 ± 1,534 t (9.9 ± 2.8 million crab; Tables 19 and 21). Thirty-eight percent of legal males were ≥ 4.9 inches CW, for a biomass estimate of 2,006 ± 755 t (2.9 ± 1.1 million crab; Tables 19 and 21). The 2021 estimated biomass of legal Tanner crab in the western area was well below the previous 20-year average biomass of 19,301 ± 4,261 t. The majority of legal Tanner males (≥ 110 mm CW) occurring west of 166° W were distributed around the Pribilof Islands and at the southeastern corner of the western area (Fig. 54). In 2021, 62% of sampled legal-sized males were either oldshell or very oldshell west of 166° W (Fig. 60).

East of 166°W the Tanner crab biomass estimate was 5,023 ± 2,120 t (8.6 ± 3.6 million crab) for mature males and 7,704 ± 2,630 t (50.6 ± 19.6 million crab) for immature males, while west of 166°W the biomass estimate was 7,491 ± 2,043 t (16.0 ± 4.4 million crab) for mature males and 10,920 ± 3,425 t (139.2 ± 61.5 million crab) for immature males (Tables 15 - 21). Since 2019 both stocks saw a moderate decline in estimates of mature male abundance and biomass. Biomass of immature Tanner crab in both stocks increased over the same time scale, but there was a slight decline in abundance of western stock immature males. For the eastern stock there was a strong pseudo-cohort in the 35 – 45 mm range (Fig. 58), while the western stock had a peak of smaller crab, in the 25 – 35 mm range (Fig. 59). Mature male Tanner crab were primarily distributed around the Pribilof Islands, in central Bristol Bay around the 50 m isobath, and near the shelf break north of Unimak Pass (Fig. 57), with the center of distribution approximately 60 nmi east of St. Paul Island (Fig. 65). Immature males generally occurred below the 100 m isobath and around the Pribilof Islands (Fig. 57).

The 2021 mature female Tanner crab biomass estimates east and west of 166° W were 2,816 ± 1,190 t and 5,604 ± 2,197 t (14.8 ± 6.4 and 39.5 ± 16.8 million crab), respectively, while the immature female Tanner crab estimated biomasses east and west of 166°W were 1,063 ± 575 t and 2,238 ± 657 t (22.8 ± 16.1 and 93.4 ± 57.5 million crab), respectively (Tables 5, 16 - 22). Mature females were primarily distributed along the shelf break south of the Pribilof Islands, with 27% of the mature female biomass east of 166° W in the ADF&G eastern management district (Fig. 56). The center of distribution was approximately 40nmi east of St. George Island. In the eastern area only, 13% of the sampled mature females were molting or softshell, while 47% were new-hardshell and 40% were either oldshell or very oldshell (Fig. 63). In the western area only, less than 5% of the mature females were molting or softshell, while 54% were new-hardshell and 41% were oldshell or very oldshell (Fig. 64). In the eastern region 95% of the mature sampled females carried newly extruded embryos, 3% were barren, 2% had eyed eggs (Fig. 63). In the western region, 92% of the mature sampled females carried newly extruded

embryos, 7% were barren, and <1% had eyed eggs (Fig. 64). In the eastern and western regions, 90% and 81% of mature females had clutches that were either full or three-quarters full, respectively (Figs. 63 and 64).

Pulses of strong recruitment to the mature male and female population appear to have been cyclical throughout the EBS (Figs. 66-69), yet it is unclear what environmental conditions triggered the pulses, or if strong cohorts are sequentially linked as theorized for snow crab (Ernst et al. 2005, Ernst et al. 2012, Parada et al. 2010). Shell condition can help track strong cohorts, as peaks in new hardshell crab are closely followed by peaks in older shell crab (Figs. 61-62). Shell condition can be used to infer whether mature female Tanner crab are primiparous (first clutch of eggs) or multiparous (subsequent clutches); mature new hardshell female crab are assumed to be primiparous (first clutch of eggs) and likely molted to maturity during the prior winter and old or very old shell females are assumed to be multiparous (Ernst et al. 2005).

Snow Crab

Historically low snow crab catches for some size-sex categories were the most noteworthy result of the 2021 survey. This result follows survey catches in 2019 that showed dramatic declines in the abundance of immature crab. In the 2021 survey, snow crab were caught at 257 of the 375 stations in the combined areas of the Bristol Bay District, Pribilof District, and St. Matthew Island Section sampling strata (Figs. 70-72). Ninety-three percent of legal-sized male crabs were measured (Table 5), and we report results for both legal (3.1 inches / 78 mm CW) and industry-preferred (4.0 inches / 102 mm CW) size classes. Legal-sized male snow crab estimated biomass (± 95% CI) was 60,095 ± 15,753 t (192.1 ± 51.9 million crab; Tables 23 and 25). This represents a 69% decline in estimated abundance since 2019, and is approximately half the previous 20-year average of 112,719 ± 17,061 t. Twenty-one percent of the legal male biomass was comprised of crab ≥ 4.0 inches CW, resulting in a preferred-size male biomass estimate of 12,437 ± 4,500 t (23.5 ± 8.5 million crab), the lowest value in the 1980-2021 time series, and a 56% decline in estimated abundance from 2019. In 2019, pre-recruit (95 – 101 mm) abundance was the highest observed since the late 1990s, however few of these crab appear to have recruited to the fishery (Figs. 8-9, 12, and 79); estimated pre-recruit abundance declined 54% from 2019 to 2021 (Fig. 12). Legal males (≥ 78 mm CW) were distributed throughout the EBS survey area in waters deeper than 50 m, particularly in the northern half of the survey grid (Fig. 70). Less than 1% of legal-sized male crab were in molting or softshell condition, while 64% were in new hardshell condition and 36% were oldshell (Fig. 75). This was a dramatic change from 2019, when only 6% of legal males were oldshell crab (Fig. 74). Legal males south and east of the Pribilof Islands were almost entirely oldshell crab, while new hardshell crab were more prevalent between the 50 and 100 m isobaths north of the Pribilof Islands, as well as north of St. Matthew Island (Fig. 75).

Estimated mature male biomass was 24,387 ± 7,637 t (54.2 ± 16.6 million crab), which was a 55% decline in abundance from 2019 (Tables 23 and 25). Estimated immature biomass was 49,158 ± 13,873 t (253.6 ± 67.8 million crab). Immature male biomass and abundance had begun to decline in 2019 and this pattern continued in 2021, resulting in a 96% drop in abundance from 2018 values (Tables 23 and 25; Fig. 74). These are the lowest abundance values on record since

the time series started in 1980, although biomass estimates for immature males have been slightly lower on two other occasions (Fig. 79). The immature male snow crab abundance estimate in 2021 was 13.9% of the average abundance for the previous 20 years (Table 25). Mature and immature males were primarily distributed south and west of St. Matthew Island (Fig. 71), with the center of distribution for mature males approximately 20 nmi southwest of St. Matthew Island, the furthest northwest in the time series (Fig. 78). Immature males dominated the population structure throughout most of the range, with mature males making up a higher percentage of the population in the southernmost areas (Fig. 73).

Estimated mature female snow crab biomass was 29,844 ± 25,907 t (609.8 ± 542.4 million crab), while estimated immature female snow crab biomass was 298 ± 139 t (22.6 ± 18.0 million crab; Tables 24 and 26). The mature female abundance estimate for 2021 was 70% lower than the 2019 estimate, or 40% of the previous 20-year average (1,507 ± 388 million crab). This is the lowest value since the early 2000s (Figs. 10-11 and 80). Estimated immature female abundance declined > 99% since 2018 (Fig. 80) and was 1.9% of the average for the previous 20 years, the lowest value in the 1980-2021 time series (Table 26), with only 3.6% of sampled female snow crab being immature. Among mature females in 2021, 0.8% were in new-hardshell condition (77% in 2019), and 99.2% were oldshell or very oldshell condition (23% in 2019; Fig. 77a). Ninety percent of the mature females were brooding new embryos, while 7% were barren (Fig. 77a). Sixty percent of mature females had clutches that were full or three-quarters full (Fig. 77a), compared with 87% in 2019 (Fig. 77b). Immature female snow crab were only found in high abundance at one station (R-24) north of St. Matthew Island, while mature females were primarily distributed west and south of St. Matthew Island (Fig. 72). The center of distribution for mature females was approximately 20 nmi southwest of St. Matthew Island (Fig. 78).

Pulses of strong recruitment to the mature female population have been cyclical in the past (Fig. 76), and it has been hypothesized that strong cohorts are sequentially linked (see Ernst et al. 2012, Parada et al. 2010 for a detailed discussion). As with Tanner crab, shell condition can be used to infer if mature female snow crab are primiparous (first clutch of eggs) or multiparous (subsequent clutches). Mature new hardshell female crab are assumed to be primiparous (first clutch of eggs), and likely molted to maturity during the prior winter (Ernst et al. 2005). Strong cohorts of mature primiparous females occurred approximately every 7 years beginning in 1980 (Fig. 76), which matches the theoretical time required between egg extrusion of mature females and those offspring reaching maturity (Ernst et al. 2012). It is unknown what specific environmental conditions may have triggered the initial pulse, or whether the pattern will persist.

The shell condition time series demonstrates that the survey fails to detect portions of the population. If the survey succeeded in detecting the whole population then abundance estimates for oldshell females in any given year should be at or below levels of newshell females in the previous year, but this is frequently not the case. For example, estimated newshell (shell condition 2) female snow crab abundance was 125 million in 1999, but the 2000 estimate of oldshell (shell condition 3) mature female abundance was nearly 1,000 million (Fig. 76). As with Tanner crab, the shell condition time series for mature male snow crab should be interpreted with caution, as physiological, morphological, and functional male maturity vary by size, and it is not possible to differentiate morphologically mature and immature males in most survey data unless chela heights are taken.

Chionoecetes spp. Hybrid

Chionoecetes spp. hybrid crab were caught at 108 of the 375 stations in the combined areas of the Bristol Bay, Pribilof, and Northern Districts (Figs. 81-83; Appendix A). In this document, *Chionoecetes* spp. hybrid crab size classes for legal and mature males and mature females are based on the size categories for snow crab (see Snow Crab section and Table 1). Legal-sized male crab had a biomass estimate (± 95% CI) of 763 ± 459 t (1.9 ± 1.1 million crab). Fifty-four percent of the legal biomass were males were ≥ 4 inches in carapace width, with a biomass estimate of 409 ± 189 t (0.7 ± 0.5 million crab). Legal and mature males were primarily distributed in the southeastern half of the survey grid below the 50 m isobath (Fig. 81), with oldshell crab generally in deeper water than hard newshell crab (Fig. 85). Immature male *Chionoecetes* spp. hybrid crab were also primarily distributed just below the 50 m isobath (Figs. 82 and 84).

The 2021 mature female *Chionoecetes* spp. hybrid crab biomass estimate was 128 ± 96 t (1.1 ± 0.8 million crab), and the immature female crab biomass estimate was 100 ± 35 t (3.1 ± 0.9 million crab). The majority of the mature female *Chionoecetes* spp. hybrid crab were distributed south of St. Matthew Island below the 100 m isobath, while immature females were most abundant along the 50 m isobath (Fig. 83).

Other Crab Stocks and Species of Interest

Northern District Red King Crab

Red king crab were caught at 29 stations in the Northern District (Fig. 86), outside of the current management units where red king crab are commercially fished (Fig. 3). The 2021 biomass estimate (± 95% CI) of legal-sized males was 887 ± 486 t (0.3 ± 0.2 million crab), while the biomass estimates for mature and immature males were 1,193 ± 596 (0.5 ± 0.2 million crab) and 1,171 ± 533 t (1.4 ± 0.6 million crab), respectively. The 2021 estimated biomass for mature and immature male Northern District red king crab was 8% and 49%, respectively, of 2021 biomass estimates for the Bristol Bay red king crab stock. Mature male biomass was similar to the past 20-year average, while immature male biomass was the second highest on record.

Estimated biomass of mature and immature female red king crabs was 2,026 ± 1,510 t (2.0 ± 1.8 million crab) and 64 ± 121 t (0.2 ± 0.2 million crab), respectively. The 2021 biomass estimates for mature and immature female Northern District red king crab were 20% and 18%, respectively, of 2021 biomass estimates for the Bristol Bay red king crab stock. The biomass and abundance of mature females was approximately double that of any other year on record. The majority of mature male and mature female red king crab were caught near the 50 m isobath at stations south and west of Nunivak Island (Fig. 86).

Northern District Blue King Crab

No Northern District blue king crab were caught in 2021.

Hair Crab

In this report, legal male hair crab (*Erimacrus isenbeckii*) are defined as > 3.25 inches CW (≥ 83 mm CL), which was specified in the previous Pribilof District fishery, while the female hair crab biomass estimate is presented for all sizes and maturity states combined. Hair crab were caught at 51 of the 375 stations throughout all districts combined on the survey (Fig. 89). The 2021 biomass estimate (± 95% CI) of legal-sized males was 544 ± 244 t (0.8 ± 0.3 million crab). Historically, hair crab have been concentrated just north of the Alaska Peninsula and near the Pribilof Islands. However, in 2021 (and 2019) male and female hair crab were primarily concentrated south of Nunivak Island along the 50 m isobaths, as well as around the Pribilof Islands (Figs. 87 and 89). The 2021 sublegal male hair crab biomass estimate (± 95% CI) was 597 ± 292 t (2.2 ± 1.3 million crab), while the female hair crab biomass estimate was 589 ± 311 t (1.8 ± 1.0 million crab) (Table 27).

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 (Fitch et al. 2012).

Golden King Crab – All Districts

No golden king crab were caught in 2021.

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Table 1. -- Definition of carapace size classes for crab species caught in National Marine Fisheries Service's eastern Bering Sea standard survey. Carapace length (CL) is measured for *Paralithodes* spp. and *Erimacrus isenbeckii*, while carapace width (CW excluding spines) is measured for *Chionoecetes* species. **We define female maturity based on abdominal flap morphology and egg presence throughout this document.** The legal size classes defined by ADF&G (CW in inches) include spines.

Species	District	Sex	Immature	Mature	Pre-recruit	Legal Male
Paralithodes camtschaticus	Bristol Bay	male	< 120 mm	≥ 120 mm	110-134 mm	≥ 135 mm CL or ≥ 6.5 in. CW
	Pribilof	male	< 120 mm	≥ 120 mm	120-134 mm	≥ 135 mm CL or ≥ 6.5 in. CW
	Norton Sound	male	< 94 mm	≥ 94 mm	90-120 mm	≥ 104 mm CL or ≥ 4.8 in. CW
Paralithodes platypus	Pribilof	male	< 120 mm	≥ 120 mm	120-134 mm	≥ 135 mm CL or ≥ 6.5 in. CW
	St. Matthew	male	< 105 mm	≥ 105 mm	105-119 mm	≥ 120 mm CL or ≥ 5.5 in. CW
	Northern Bering Sea	male	<105 mm	≥ 105 mm	105-119 mm	≥ 120 mm CL or ≥ 5.5 in. CW
Chionoecetes bairdi	East of 166° W	male	< 113 mm	≥ 113 mm	113-124 mm	≥ 120 mm or ≥ 4.8 in. CW[1]
	West of 166° W	male	< 103 mm	≥ 103 mm	103-124 mm	≥ 110 mm or ≥ 4.4 in. CW[1]
	Preferred	male				≥ 125 mm or ≥ 4.9 in. CW
Chionoecetes opilio	Eastern Bering Sea	male	< 95 mm	≥ 95 mm	95-101 mm	≥ 78 mm or ≥ 3.1 in. CW[2]
	EBS Preferred	male				≥ 102 mm or ≥ 4.0 in. CW
	Northern Bering Sea	male	< 68 mm	≥ 68 mm	78-101 mm	≥ 78 mm or ≥ 3.1 in. CW
	NBS Preferred	male				≥ 102 mm or ≥ 4.0 in. CW
Erimacrus isenbeckii		male				≥ 83 mm CL or > 3.25 in. CW[3]

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

[2] The legal minimum size limit for *C. opilio* is 3.1 inches CW (78 mm excluding spines; 79 mm including spines).

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

Year	Net width (m)	Trawling methodology
1975		First and only year tow duration = 1 hour
1976 - 2012		Tow duration = 30 minutes
1975 - 1995		Brake set and haul back of winch drum wire defined trawl contact with seafloor (net on bottom)
1996 - 2012		Began using bottom contact sensors to determine trawl contact with seafloor
1975 - 1980	12.2	Mean width of 400-mesh Eastern trawl*
1981	18.0	Mean width* of 83-112 Eastern trawl for Vessel 1
1981	13.4 or 14.3	Mean width* of 400-mesh Eastern trawl measurements different on haul 1-112 and 114-156 for Vessel 37*
1982 - 1987	Variable with each tow	Rose and Walters (1990) calculated the 83-112 net width based on an inverse relationship to net scope
1988 - 2001	Variable with each tow	All survey vessels used ScanMar acoustic sensors on the 83-112 trawl net
2001 - 2012	Variable with each tow	All survey vessels used NetMind acoustic sensors on the 83-112 trawl net
2013 - 2021	Variable with each tow	All survey vessels used Marport acoustic sensors on the 83-112 trawl net

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

Table 3. – Size-weight regression relationships used to calculate biomass of crab species caught in National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The size-weight relationships are described by the expression: $W = a\ L^b$, where W is the total weight in grams, L is either carapace length or carapace width in millimeters, *a* is the intercept in log scale and *b* is the slope.

Stock	Sex	*a*	*b*
Bristol Bay	Males	0.000403	3.141334
red king crab	Females	n/a	n/a
	non-ovigerous females	0.000408	3.127956
	ovigerous females	0.003593	2.666076
Pribilof Islands	Males	0.000403	3.141334
red king crab	Females	n/a	n/a
	non-ovigerous females	0.000408	3.127956
	ovigerous females	0.003593	2.666076
Pribilof Islands	Males	0.000508	3.106409
blue king crab	Females	0.02065	2.27
	non-ovigerous females	n/a	n/a
	ovigerous females	n/a	n/a
St. Matthew	Males	0.000502	3.107158
blue king crab	Females	0.02065	2.27
	non-ovigerous females	n/a	n/a
	ovigerous females	n/a	n/a
Tanner crab	Males	0.00027	3.022134
	Females	n/a	n/a
	non-ovigerous females	0.000562	2.816928
	ovigerous females	0.000441	2.898686
Snow crab	Males	0.000267	3.097253
	Females	n/a	n/a
	non-ovigerous females	0.001047	2.708367
	ovigerous females	0.001158	2.708793
Hair crab	Males	0.00071731	3.02
	Females	0.00119453	2.86

Table 4. -- Special projects related to crab species conducted on National Marine Fisheries Service eastern Bering Sea bottom trawl survey in 2021.

Project Title	Principle Investigator	Agency
Bristol Bay red king crab tagging	Leah Zacher	RACE[1]-SAP[2]
Snow crab shell age and hardness	Erin Fedewa	RACE[1]-SAP[2]
Snow crab body condition	Erin Fedewa	RACE[1]-SAP[2]
Tanner and snow crab ocean acidification	Chris Long	RACE[1]-SAP[2]
Growth & hatching of Tanner and snow crab	Louise Copeman	RACE[1]-FBE[3]
Observer training collections	Melanie Rickett	FMA[4]
Snow crab shell condition classification error	Jonathan Richar	RACE[1]-SAP[2]
Whole-haul subsampling	Chris Long	RACE[1]-SAP[2]

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

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

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

[4] AFSC, Fisheries Monitoring and Analysis Division, Seattle, Washington.

Table 5. -- Summary of 2021 National Marine Fisheries Service eastern Bering Sea bottom trawl survey details for seven commercial crab stocks. Male size categories are defined in Table 1.

		Tows in District	Tows with crab	Crab caught	Crab measured	Biomass (t)	CI (± 95%)
Bristol Bay District	Immature male	136	34	119	119	2,406	1,138
Red King Crab	Mature Male	136	51	211	211	15,856	6,757
	Legal	136	48	146	146	12,559	6,031
	Immature female	136	15	47	47	361	281
	Mature female	136	40	219	219	9,944	4,815
Pribilof District	Immature male	77	1	4	4	85	167
Red King Crab	Mature Male	77	18	64	64	3,744	2,176
	Legal	77	18	60	60	3,615	2,078
	Immature female	77	0	0	0	0	0
	Mature female	77	8	44	44	1,406	1,572
Pribilof District	Immature male	77	1	1	1	15	29
Blue King Crab	Mature Male	77	5	9	9	401	395
	Legal	77	4	6	6	295	333
	Immature female	77	0	0	0	0	0
	Mature female	77	3	12	12	260	322
St. Matthew Is.	Immature male	56	5	84	84	804	1,170
Blue King Crab	Mature Male	56	9	39	39	1,620	1,249
	Legal	56	9	31	31	1,426	1,091
	Immature female	56	4	47	47	404	435
	Mature female	56	5	36	36	346	461
Tanner Crab	Immature male	120	70	1,801	1,561	7,704	2,630
east of 166°W	Mature Male	120	53	303	303	5,023	2,120
	Legal	120	45	189	189	3,514	1,538
	Preferred	120	35	117	117	2,403	1,073
	Immature female	120	49	828	551	1,063	575
	Mature female	120	44	520	520	2,816	1,190
Tanner Crab	Immature male	255	153	5,166	4,428	10,920	3,425
west of 166°W	Mature Male	255	109	687	687	7,491	2,043
	Legal	255	90	434	434	5,301	1,534
	Preferred	255	50	131	131	2,006	755
	Immature female	255	140	3,406	2,748	2,238	657
	Mature female	255	104	1,593	1,471	5,604	2,197
Snow Crab	Immature male	375	245	10,015	8,862	49,158	13,873
	Mature Male	375	193	2,095	2,051	24,387	7,637
	Legal	375	233	7,415	6,914	60,095	15,753
	Preferred	375	151	904	894	12,437	4,500
	Immature female	375	82	839	576	298	139
	Mature female	375	89	27,922	3,065	29,844	25,907

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

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female	Mature female	Mature female ± CI
1978	54,371	146,682	66,417	98,241	3,795	141,265	54,370
1979	16,886	86,906	43,304	63,107	5,132	59,165	21,521
1980	37,369	129,829	65,411	106,655	7,594	73,712	46,197
1981	27,294	41,520	12,659	27,368	4,215	59,099	30,597
1982	51,268	23,038	8,656	10,184	21,932	48,913	18,738
1983	25,675	9,796	2,494	2,867	7,257	7,237	2,683
1984	79,710	16,849	8,751	7,623	38,806	17,529	14,374
1985	12,823	14,006	4,130	5,356	1,602	5,723	2,805
1986	12,382	28,189	27,164	13,033	1,847	5,062	2,860
1987	16,626	30,197	14,575	18,167	7,074	15,427	9,677
1988	9,513	25,861	9,178	19,117	1,205	18,019	14,900
1989	7,059	35,503	15,936	27,552	1,322	11,615	7,455
1990	6,344	32,481	14,786	24,527	2,871	17,995	14,579
1991	6,395	60,142	69,981	52,119	1,826	15,553	13,342
1992	6,787	18,327	6,835	13,747	1,088	11,163	5,657
1993	6,939	28,740	12,766	19,839	1,170	16,101	7,849
1994	3,601	19,775	6,740	13,371	1,104	8,283	3,558
1995	6,359	20,939	14,711	15,570	2,992	7,868	3,839
1996	9,067	18,111	7,309	15,073	5,380	12,042	6,829
1997	27,126	32,533	13,321	27,403	3,051	21,365	14,033
1998	13,035	33,297	10,450	19,409	2,161	35,849	17,889
1999	5,093	39,870	16,942	30,005	1,163	19,126	13,276
2000	6,961	31,450	10,638	22,090	2,615	26,387	18,086
2001	8,942	19,060	5,746	15,360	1,692	22,866	13,703
2002	12,113	33,359	12,655	25,241	5,150	19,144	10,306
2003	11,514	63,271	57,913	51,115	5,642	35,587	16,085
2004	27,917	63,159	54,053	53,895	6,162	34,826	18,589
2005	17,036	38,105	14,021	28,373	8,455	42,715	17,805
2006	11,756	39,808	17,766	32,148	6,521	37,005	14,306
2007	14,043	44,115	17,880	34,226	2,257	42,931	19,123
2008	15,840	51,375	35,542	38,155	1,675	44,194	28,234
2009	8,926	34,250	25,727	21,996	760	46,616	30,241
2010	5,441	33,586	16,497	24,891	535	40,951	21,869
2011	7,952	21,990	9,231	16,622	3,515	38,035	19,244
2012	5,841	24,837	13,411	19,858	2,881	27,282	17,713
2013	5,515	34,141	14,164	28,358	547	22,031	15,783
2014	12,621	48,038	17,559	36,130	1,560	50,926	22,953
2015	4,984	32,121	11,019	27,209	838	26,296	15,078
2016	2,077	25,481	7,302	22,424	772	33,370	17,051
2017	2,239	23,102	8,328	20,842	1,193	26,424	13,139
2018	2,818	13,226	3,589	12,010	520	12,282	5,437
2019	2,793	12,431	3,959	8,965	351	13,088	4,757
2021	2,406	15,856	6,757	12,559	361	9,944	4,815

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

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female	Mature female	Mature female ± CI
1978	89.5	67.9	30.7	38.5	27.8	161.3	61.9
1979	33.4	38.0	19.1	23.6	22.1	57.9	20.3
1980	70.8	51.3	25.3	37.5	34.4	87.9	66.4
1981	41.1	18.4	5.4	9.7	13.1	58.4	29.6
1982	110.9	12.0	4.9	4.0	72.4	52.9	21.8
1983	46.2	5.7	1.5	1.3	23.8	8.7	3.6
1984	164.9	9.1	4.7	3.3	109.8	27.4	23.9
1985	16.8	7.6	2.2	2.3	4.3	8.4	4.1
1986	15.2	14.8	14.6	5.6	5.2	6.4	3.6
1987	24.4	14.6	7.0	7.3	17.4	18.5	11.4
1988	11.3	11.6	4. 0	7.5	2.5	20.1	17.0
1989	10.0	15.1	6.5	10.4	3.9	13.2	8.6
1990	9.7	13.7	6.1	8.9	7.8	17.0	13.8
1991	9.7	23.2	26.1	18.5	4.8	14.9	13.8
1992	8.3	7.5	3.0	4.6	2.3	10.2	4.9
1993	8.2	12.5	5.6	7.0	2.8	14.0	7.0
1994	7.1	8.6	2.9	4.8	3.8	6.1	2.5
1995	11.0	9.1	6.9	5.9	6.1	6.3	3.0
1996	17.5	7.2	2.8	5.3	14.3	9.8	5.6
1997	32.6	12.3	4.8	9.2	5.1	21.8	17.1
1998	16.8	15.4	5.0	6.8	6.3	31.7	17.5
1999	11.3	17.4	7.7	11.7	4.1	15.4	10.8
2000	10.7	14.0	4.9	8.4	6.3	21.0	13.6
2001	12.0	7.4	2.2	5.1	4.3	20.9	12.9
2002	22.9	13.6	5.2	8.6	17.6	17.0	9.7
2003	18.8	24.4	19.4	17.1	13.2	28.3	13.2
2004	43.3	23.7	19.8	18.0	19.7	31.7	18.9
2005	31.5	15.6	5.4	9.6	23.6	35.6	15.3
2006	21.2	16.4	7.2	11.8	16.9	31.0	12.2
2007	17.5	18.2	7.1	12.3	4.5	35.8	16.3
2008	17.1	20.9	13.8	12.9	3.7	36.8	24.3
2009	9.6	15.6	11.5	8.3	1.7	35.8	22.4
2010	6.5	14.7	7.0	9.4	1.2	31.5	17.4
2011	37.5	9.3	3.9	6.1	33.0	29.3	15.1
2012	8.0	9.7	4.9	6.7	7.6	19.6	13.2
2013	6.7	12.9	5.3	9.4	1.3	15.6	11.1
2014	15.5	19.7	7.3	12.4	2.8	36.9	17.0
2015	6.7	11.6	4.0	8.7	2.4	18.4	10.6
2016	4.7	9.0	2.6	7.1	3.6	22.4	11.6
2017	3.3	7.7	2.7	6.4	2.5	17.5	8.6
2018	3.8	4.6	1.2	3.8	1.4	9.0	4.0
2019	3.7	5.0	1.6	2.9	1.2	8.4	3.1
2021	3.5	6.3	2.3	4.4	1.4	6.3	2.9

Table 8. -- Average bottom water temperatures collected at stations with mature female Bristol Bay red king crab (*Paralithodes camtschaticus*) on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey, and the mean ratio of crab with eyed eggs, empty egg cases, hatching eggs, or no eggs to uneyed eggs in mature red king crab females. Bristol Bay stations were sampled twice during years with high eyed: uneyed ratios on leg 1 (highlighted in gray).

Sample event	Average bottom temperature (°C)	Standard deviation (n = stations)	Mean eyed to uneyed embryo ratio
May 1999	0.1	0.8 (41)	6.68
July 1999	2.5	0.8 (31)	0.03
May 2000	1.7	0.5 (49)	1.54
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)	0.63
July 2006	4.2	0.8 (30)	0.01
June 2007	1.8	0.9 (68)	1.05
July 2007	3.4	1.0 (32)	0.01
June 2008	1.4	0.7 (76)	2.41
July 2008	3.6	1.1 (32)	0.01
June 2009	1.5	1.6 (73)	0.93
July 2009	4.5	1.5 (32)	0.01
June 2010	2	0.9 (40)	0.64
July 2010	4.8	1.0 (23)	0.00
June 2011	2.9	0.8 (46)	0.94
July 2011	5.9	1.1 (20)	0.06
June 2012	0.9	1.2 (40)	1.89
July 2012	4.0	1.3 (15)	0.00
June 2013	2.9	1.1 (35)	0.02
June 2014	4.4	0.8 (40)	0.00
June 2015	4.6	0.4 (44)	0.00
June 2016	5.7	0.7 (57)	0.00
June 2017	3.2	1.02 (51)	1.19
August 2017	5.0	1.54 (20)	0.00
June 2018	4.6	0.39 (41)	0.00
June 2019	5.2	0.87 (51)	0.00
June 2021	4.1	0.56 (46)	0.22
August 2021	6.7	1.08(20)	0.00

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

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female	Mature female	Mature female ± CI
1978	0	1,250	2,022	1,250	0	52	102
1979	0	556	561	488	0	93	182
1980	18	1,269	950	1,269	0	262	374
1981	0	312	358	312	0	35	68
1982	18	1,464	2,002	1,464	14	919	1,402
1983	26	527	551	493	0	309	292
1984	0	317	341	283	0	112	125
1985	0	61	121	61	0	0	0
1986	0	138	188	138	0	79	154
1987	0	54	105	54	31	0	0
1988	713	107	209	44	283	553	940
1989	675	1,529	2,728	871	924	1,327	2,140
1990	7,477	1, 141	2,077	138	522	2,200	3,048
1991	640	4,430	6,913	1,321	66	4,967	5,864
1992	274	3,305	3,864	2,528	278	3,153	5,620
1993	282	9,873	17,834	9,189	7	6,471	9,096
1994	430	9,139	13,748	8,117	47	3,917	6,772
1995	431	18,056	21,267	16,793	315	4,834	6,393
1996	68	2,361	1,720	2,330	31	1,976	2,867
1997	1,510	6,159	7,515	5,940	218	1,744	2,018
1998	416	2,324	1,639	1,778	50	1,669	2,487
1999	3,358	5,523	7,217	4,472	4,117	1,302	1,826
2000	157	4,320	3,164	3,843	8	987	1,214
2001	2,339	8,603	13,262	5,770	406	5,369	10,462
2002	8	7,037	9,461	7,014	12	775	803
2003	0	5,373	6,928	5,275	1	2,268	4,032
2004	152	3,622	4,183	3,622	105	1,187	1,238
2005	55	1,238	1,420	1,238	0	3,118	4,791
2006	109	7,003	5,252	6,696	10	2,173	2,627
2007	214	5,224	5,042	5,007	50	1,760	2,647
2008	332	5,462	5,418	5,102	192	2,825	3,701
2009	44	2,500	3,125	2,127	15	811	841
2010	53	4,405	3,767	3,973	0	840	1,167
2011	44	3,834	4,872	3,751	3	814	1,165
2012	336	4,477	5,031	4,360	0	663	710
2013	104	7,749	9,409	7,567	0	169	194
2014	82	12,047	18,525	11,433	0	1,093	2,015
2015	113	15,173	21,971	14,788	0	3,859	7,270
2016	526	4,150	5,700	3,653	26	1,873	2,241
2017	88	3,658	4,632	3,513	0	505	550
2018	1,325	929	775	827	0	877	1,500
2019	293	2,086	1,406	1,101	13	797	624
2021	85	3,744	2,176	3,615	0	1,406	1,572

Table 10. -- Time series of abundance estimates (in millions) for Pribilof District red king crab (*Paralithodes camtschaticus*) by size category (CL) and sex from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female	Mature female	Mature female ± CI
1979	0.0	0.2	0.2	0.2	0.0	0.1	0.1
1980	0.1	0.4	0.3	0.4	0.0	0.1	0.2
1981	0.0	0.1	0.1	0.1	0.0	0.0	0.0
1982	0.0	0.3	0.4	0.3	0.0	0.5	0.7
1983	0.0	0.1	0.1	0.1	0.0	0.2	0.1
1984	0.0	0.1	0.1	0.1	0.0	0.1	0.1
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	0.0	0.0	0.1	0.0	0.0	0.0	0.1
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	1.9	0.1	0.1	0.0	1.6	0.4	0.7
1989	1.1	0.8	1.4	0.4	1.8	1.1	1.7
1990	7.1	0.8	1.4	0.1	0.7	2.3	3.0
1991	0.7	2.4	3.8	0.6	0.3	4.3	5.1
1992	0.4	1.5	1.8	1.0	0.4	2.4	4.4
1993	0.3	3.5	6.4	3.1	0.0	4.5	6.4
1994	0.4	3.1	4.7	2.4	0.1	2.4	4.2
1995	0.5	5.2	5.9	4.4	0.3	3.0	3.9
1996	0.1	0.6	0.4	0.5	0.0	1.1	1.6
1997	1.6	1.6	1.7	1.4	0.3	1.0	1.1
1998	0.4	0.8	0.6	0.4	0.1	1.0	1.4
1999	7.2	1.9	2.2	1.3	9.5	0.9	1.1
2000	0.1	1.5	1.2	1.3	0.0	0.7	0.8
2001	2.5	3.7	6.1	1.9	0.6	3.8	7.5
2002	0.0	1.9	2.5	1.9	0.0	0.4	0.4
2003	0.0	1.5	2.0	1.4	0.0	1.2	2.1
2004	1.4	0.8	0.9	0.8	1.1	0.5	0.6
2005	0.1	0.2	0.3	0.2	0.0	1.3	2.0
2006	0.1	1.4	1.1	1.2	0.0	1.0	1.1
2007	0.2	1.2	1.3	1.1	0.1	0.8	1.3
2008	0.4	1.3	1.2	1.1	0.2	1.5	2.1
2009	0.0	0.9	1.2	0.7	0.0	0.3	0.3
2010	0.1	1.4	1.3	1.2	0.0	0.6	0.8
2011	0.0	1.0	1.3	1.0	0.0	0.5	0.6
2012	0.4	1.2	1.5	1.2	0.0	0.4	0.5
2013	0.1	1.7	2.0	1.6	0.0	0.1	0.1
2014	0.1	3.0	4.2	2.6	0.0	0.5	0.9
2015	0.1	3.5	4.9	3.3	0.0	1.8	3.3
2016	0.5	1.3	1.9	1.0	0.04	1.3	1.4
2017	0.1	1.0	1.3	1.0	0.0	0.3	0.3
2018	1.5	0.3	0.2	0.2	0.0	0.9	1.7
2019	0.2	0.9	0.6	0.3	0.02	0.6	0.5
2021	0.1	1.2	0.7	1.1	0.0	0.9	1.0

Table 11. -- Time series of biomass estimates (t) for blue king crab (*Paralithodes platypus*) by size category (CL) and sex in the Pribilof District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female	Mature female	Mature female ± CI
1979	61	10,959	6,775	9,040	92	1,097	1,706
1980	2,084	23,553	19,846	20,679	699	211,604	408,004
1981	1,704	11,628	3,963	10,554	497	5,987	5,507
1982	1,152	7,389	2,712	6,893	553	8,824	11,724
1983	962	5,409	1,882	4,474	258	9,990	15,495
1984	130	2,216	993	1,824	15	3,070	2,292
1985	39	1,055	551	755	5	520	457
1986	4	1,505	893	1,473	11	2,420	4,272
1987	191	2,923	2,357	2,781	119	795	909
1988	170	842	873	842	190	528	508
1989	1,275	827	1,034	827	801	945	1,075
1990	2,004	3,078	3,617	1,514	1,118	1,810	1,803
1991	1,377	4,690	3,544	3,326	343	2,433	1,973
1992	1,801	4,391	3,637	3,035	802	1,848	1,737
1993	1,088	4,556	2,743	3,203	444	1,647	1,489
1994	619	3,410	2,305	2,806	87	4,806	4,207
1995	968	8,360	9,898	6,787	331	3,948	4,017
1996	745	4,641	2,444	3,873	177	5,408	5,318
1997	381	3,233	1,749	2,765	194	2,835	2,386
1998	692	2,798	1,367	2,510	267	1,914	1,654
1999	161	1,729	1,141	1,426	0	2,868	2,625
2000	113	2,091	1,212	1,746	0	1,462	1,319
2001	87	1,599	2,302	1,461	0	1,816	2,571
2002	0	680	674	647	0	1,401	2,129
2003	19	702	550	671	21	1,286	1,880
2004	36	107	122	48	25	98	114
2005	326	344	479	344	477	370	413
2006	87	166	196	139	38	538	801
2007	197	306	479	206	59	223	384
2008	212	46	90	46	222	450	560
2009	254	497	695	187	80	545	907
2010	92	303	274	190	84	310	401
2011	0	461	763	399	3	34	49
2012	165	644	928	459	9	229	296
2013	15	250	391	190	12	154	211
2014	83	233	320	233	16	91	108
2015	82	622	480	428	0	160	207
2016	70	129	154	68	49	352	340
2017	45	253	254	223	55	204	237
2018	94	152	170	152	13	108	154
2019	114	204	241	204	0	407	685
2021	15	401	395	295	0	260	322

Table 12. -- Time series of abundance estimates (in millions) by size category (CL) and sex for blue king crab (*Paralithodes platypus*) in the Pribilof District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature male < 120 mm	Mature male ≥ 120 mm	Mature male ± CI	Legal male ≥ 135 mm	Immature female	Mature female	Mature female ± CI
1979	0.1	4.1	2.6	3.0	0.1	1.2	1.9
1980	2.7	7.8	6.3	6.2	0.8	182.9	350.4
1981	2.1	3.8	1.3	3.2	0.8	5.4	4.7
1982	1.4	2.4	0.8	2.1	0.9	7.8	10.0
1983	1.0	1.9	0.7	1.3	0.5	9.3	14.2
1984	0.5	0.8	0.3	0.6	0.5	2.8	2.1
1985	0.1	0.4	0.2	0.3	0.3	0.5	0.4
1986	0.0	0.5	0.3	0.5	0.0	2.1	3.7
1987	0.6	0.9	0.7	0.8	0.4	0.7	0.8
1988	1.2	0.2	0.2	0.2	0.9	0.5	0.4
1989	3.5	0.2	0.3	0.2	2.6	1.1	1.5
1990	2.4	1.5	1.8	0.6	2.2	2.0	2.2
1991	1.9	2.0	1.4	1.2	0.8	2.8	2.3
1992	2.4	1.9	1.6	1.2	1.8	2.1	2.1
1993	1.5	1.9	1.1	1.1	0.9	1.8	1.6
1994	0.6	1.3	0.9	0.9	0.1	5.0	4.4
1995	1.1	3.1	3.6	2.2	0.7	4.0	4.1
1996	0.7	1.7	0.9	1.3	0.3	5.0	4.8
1997	0.5	1.2	0.7	0.9	0.3	2.6	2.2
1998	0.9	1.0	0.5	0.8	0.5	1.8	1.6
1999	0.2	0.6	0.4	0.5	0.0	2.8	2.6
2000	0.2	0.7	0.4	0.5	0.0	1.4	1.2
2001	0.1	0.5	0.7	0.4	0.0	1.7	2.5
2002	0.0	0.2	0.2	0.2	0.0	1.2	1.9
2003	0.0	0.2	0.2	0.2	0.1	1.1	1.7
2004	0.1	0.0	0.1	0.0	0.1	0.1	0.1
2005	2.0	0.1	0.1	0.1	2.3	0.3	0.3
2006	0.1	0.1	0.1	0.0	0.1	0.4	0.6
2007	0.2	0.1	0.2	0.1	0.1	0.2	0.3
2008	0.2	0.0	0.0	0.0	0.3	0.4	0.6
2009	0.3	0.2	0.4	0.1	0.2	0.5	0.8
2010	0.1	0.1	0.1	0.1	0.2	0.2	0.3
2011	0.0	0.2	0.3	0.1	0.0	0.0	0.0
2012	0.2	0.3	0.4	0.2	0.0	0.3	0.5
2013	0.1	0.1	0.2	0.1	0.0	0.2	0.2
2014	0.1	0.1	0.1	0.1	0.0	0.1	0.1
2015	0.1	0.2	0.2	0.1	0.0	0.2	0.3
2016	0.1	0.1	0.1	0.02	0.1	0.4	0.4
2017	0.1	0.1	0.1	0.1	0.1	0.2	0.3
2018	0.1	0.1	0.1	0.1	0.02	0.1	0.1
2019	0.2	0.1	0.1	0.1	0.0	0.3	0.5
2021	0.02	0.2	0.2	0.1	0.0	0.2	0.3

Table 13. -- Time series of biomass estimates (t) for blue king crab (*Paralithodes platypus*) by size category (CL) and sex in the St. Matthew Island Section sampling stratum of the Northern District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1978-1979 data.

Year	Immature male < 105 mm	Mature male ≥ 105 mm	Mature male ± CI	Legal male ≥ 120 mm	Immature female	Mature female	Mature female ± CI
1980	2,646	7,826	7,151	4,786	423	737	1,248
1981	527	6,175	4,894	4,715	97	63	71
1982	1,758	14,934	9,259	12,065	416	0	0
1983	1,162	8,834	4,907	6,919	78	1,597	2,183
1984	539	3,737	1,358	3,145	42	216	285
1985	404	2,831	1,208	2,405	95	38	60
1986	252	1,267	971	725	99	13	25
1987	495	2,022	1,130	1,284	205	35	49
1988	702	2,830	1,346	1,880	612	123	147
1989	3,041	4,790	2,344	3,415	1,219	504	448
1990	1,122	5,931	3,073	4,707	336	13	25
1991	1,664	6,073	2,918	4,099	521	270	506
1992	1,250	6,279	2,513	4,608	280	216	250
1993	2,106	8,425	2,685	6,258	643	1,635	3,026
1994	916	5,812	2,008	4,246	99	128	131
1995	1,038	4,889	1,653	3,448	182	21	28
1996	1,291	8,494	4,013	6,218	364	432	770
1997	1,342	10,005	6,471	7,341	287	407	707
1998	902	7,478	5,269	5,487	210	243	261
1999	272	1,423	507	1,163	93	14	28
2000	315	1,880	1,136	1,534	52	37	52
2001	483	2,512	1,254	1,937	145	43	48
2002	119	1,640	1,033	1,371	1	89	120
2003	542	1,233	765	918	94	339	430
2004	443	1,341	754	1,139	194	66	82
2005	449	1,396	987	1,016	93	52	76
2006	1,050	3,223	2,262	2,460	145	14	28
2007	2,618	4,564	3,113	2,217	247	47	47
2008	1,972	3,655	2,059	2,701	214	40	45
2009	1,891	5,079	2,630	2,571	218	192	191
2010	3,974	8,141	5,955	4,317	112	456	856
2011	1,699	9,516	10,167	5,701	122	32	46
2012	907	5,652	3,668	3,313	52	74	64
2013	446	2,022	860	1,485	85	27	38
2014	796	5,472	4,750	3,568	40	62	75
2015	825	5,134	7,656	3,592	5	24	35
2016	509	3,072	2,273	2,305	0	129	104
2017	122	1,721	1,968	1,333	61	0	0
2018	434	1,612	879	1,358	312	316	267
2019	765	2,879	1,892	2,304	525	389	481
2021	804	1,620	1,249	1,426	404	346	461

Table 14. -- Time series of abundance estimates (in millions) for blue king crab (*Paralithodes platypus*) by size category (CL) and sex in the St. Matthew Island Section sampling stratum of the Northern District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1978-1979 data.

Year	Immature male < 105 mm	Mature male ≥ 105 mm	Mature male ± CI	Legal male ≥ 120 mm	Immature female	Mature female	Mature female ± CI
1980	4.2	5.1	5.1	2.5	1.1	1.3	2.2
1981	0.9	3.5	2.5	2.3	0.2	0.1	0.1
1982	3.0	8.3	5.5	5.9	0.9	0.0	0.0
1983	2.0	5.0	2.9	3.3	0.4	2.6	3.5
1984	1.3	1.9	0.7	1.5	0.2	0.3	0.4
1985	0.7	1.5	0.7	1.1	0.3	0.1	0.1
1986	0.6	0.8	0.7	0.4	0.3	0.0	0.0
1987	1.0	1.3	0.8	0.7	0.6	0.1	0.1
1988	1.5	1.8	0.9	1.0	1.6	0.2	0.2
1989	6.2	2.9	1.5	1.8	3.2	1.0	0.8
1990	1.9	3.4	1.8	2.3	0.8	0.0	0.0
1991	3.3	3.9	1.9	2.2	1.4	0.4	0.8
1992	2.2	3.7	1.5	2.3	0.8	0.5	0.5
1993	4.2	5.1	1.7	3.3	1.7	2.3	4.3
1994	1.4	3.6	1.3	2.3	0.2	0.2	0.2
1995	1.7	2.9	1.0	1.7	0.6	0.0	0.1
1996	2.4	5.0	2.5	3.1	1.1	0.7	1.2
1997	2.3	6.0	4.2	3.8	0.8	0.6	1.1
1998	2.1	4.5	3.4	2.8	0.6	0.4	0.4
1999	0.5	0.8	0.3	0.6	0.3	0.0	0.0
2000	0.5	1.0	0.6	0.7	0.1	0.1	0.1
2001	0.8	1.4	0.7	0.9	0.4	0.1	0.1
2002	0.2	0.9	0.5	0.6	0.0	0.1	0.2
2003	1.2	0.7	0.5	0.5	0.3	0.6	0.7
2004	0.9	0.7	0.5	0.6	0.5	0.1	0.1
2005	0.9	0.8	0.6	0.5	0.3	0.1	0.1
2006	1.8	1.9	1.4	1.2	0.3	0.0	0.0
2007	4.5	3.2	2.3	1.2	0.8	0.1	0.1
2008	3.8	2.3	1.3	1.5	0.7	0.1	0.1
2009	3.4	3.6	2.0	1.4	0.6	0.4	0.4
2010	6.2	5.7	4.6	2.5	0.4	1.0	1.9
2011	2.6	6.5	7.2	3.2	0.4	0.1	0.1
2012	1.6	3.8	2.6	1.8	0.2	0.1	0.1
2013	0.8	1.3	0.5	0.8	0.3	0.1	0.1
2014	1.3	3.4	3.4	1.8	0.1	0.1	0.1
2015	1.2	3.2	4.8	2.0	0.0	0.1	0.1
2016	0.8	1.8	1.5	1.2	0.0	0.3	0.2
2017	0.2	1.0	1.2	0.7	0.1	0.0	0.0
2018	1.1	0.9	0.5	0.7	1.0	0.6	0.5
2019	1.9	1.7	1.1	1.2	1.5	0.8	1
2021	1.7	0.8	0.7	0.7	1.1	0.8	1.1

Table 15. -- Time series of biomass estimates (t) for male Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature male < 113 mm	Mature male ≥ 113 mm	Mature male ± CI	Legal male ≥ 120 mm	Preferred male ≥ 125 mm
1979	2,278	15,700	5,632	14,652	13,192
1980	8,433	40,546	25,266	37,082	34,041
1981	4,668	18,722	8,004	16,324	14,731
1982	5,518	11,084	3,934	9,415	7,860
1983	3,289	10,047	4,708	8,572	7,233
1984	2,522	9,498	4,010	8,376	7,424
1985	1,735	6,495	3,007	5,971	5,101
1986	4,583	5,043	3,078	4,005	3,280
1987	17,778	11,085	4,604	9,840	8,385
1988	26,460	31,670	29,201	22,482	18,413
1989	27,575	60,142	20,624	49,413	41,104
1990	23,938	52,942	18,111	47,567	42,987
1991	25,932	63,893	40,349	54,968	47,449
1992	15,381	74,538	47,450	66,517	57,665
1993	8,056	45,337	17,552	40,826	34,932
1994	3,217	29,086	9,786	26,534	23,912
1995	1,985	17,687	8,332	16,321	14,757
1996	3,435	16,545	10,642	15,562	14,242
1997	3,301	5,787	2,014	5,026	4,561
1998	3,175	5,229	1,580	4,259	3,605
1999	8,470	6,365	3,007	4,498	3,483
2000	5,297	11,131	6,847	8,913	7,529
2001	5,780	10,451	4,498	9,036	8,073
2002	4,359	10,043	4,434	9,030	8,046
2003	6,281	10,883	4,939	9,175	7,991
2004	3,444	9,011	5,060	7,773	6,513
2005	5,325	12,118	5,182	10,289	8,190
2006	15,136	13,500	5,467	10,921	8,927
2007	12,137	15,802	8,749	11,884	9,457
2008	10,424	26,753	28,996	22,447	18,764
2009	3,849	10,937	5,728	8,947	7,783
2010	3,674	10,752	5,420	9,137	7,582
2011	11,865	11,525	6,302	9,814	8,500
2012	30,882	14,485	6,790	10,602	8,378
2013	25,423	39,157	25,944	23,823	14,397
2014	18,262	39,934	12,430	30,404	24,210
2015	7,853	27,241	6,936	22,853	19,301
2016	6,997	18,523	4,755	14,143	10,695
2017	4,565	19,387	6,292	15,675	12,470
2018	2,711	11,058	3,127	8,861	7,355
2019	4,414	6,377	2,347	5,521	4,769
2021	7,704	5,023	2,120	3,514	2,403

Table 16. -- Time series of biomass estimates (t) for female Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature female	Mature female	Mature female ± CI
1979	591	2,858	2,042
1980	1,321	11,562	8,541
1981	893	7,684	4,249
1982	1,310	6,797	3,505
1983	913	4,438	2,368
1984	671	4,129	3,590
1985	324	2,836	2,350
1986	1,499	2,006	1,000
1987	11,912	3,097	1,426
1988	3,703	19,182	11,150
1989	6,666	12,309	4,797
1990	5,990	19,032	8,996
1991	3,633	27,708	17,830
1992	346	11,013	4,847
1993	153	5,171	2,167
1994	65	5,268	3,096
1995	250	5,732	3,442
1996	1,015	5,533	3,885
1997	967	1,947	857
1998	550	1,202	492
1999	1,089	2,272	1,486
2000	729	2,885	2,197
2001	2,617	1,314	618
2002	1,768	1,701	1,106
2003	705	2,090	940
2004	267	863	341
2005	1,673	2,820	2,022
2006	2,451	4,025	2,318
2007	696	5,916	4,373
2008	622	4,457	2,665
2009	533	4,021	3,045
2010	795	2,115	1,752
2011	4,390	2,225	1,174
2012	5,694	8,550	5,264
2013	2,344	11,054	7,122
2014	489	8,159	7,538
2015	628	4,675	3,126
2016	50	1,429	850
2017	158	1,986	769
2018	990	598	269
2019	1,481	652	437
2021	1,063	2,816	1,190

Table 17. -- Time series of abundance estimates (in millions) for male Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature male < 113 mm	Mature male ≥ 113 mm	Mature male ± CI	Legal male ≥ 120 mm	Preferred male ≥ 125 mm
1979	12.7	20.1	7.0	17.8	15.2
1980	40.5	50.4	30.6	43.0	37.5
1981	29.2	26.2	11.3	21.0	18.1
1982	28.2	16.3	6.0	12.7	9.9
1983	38.6	15.2	7.1	12.1	9.6
1984	27.4	13.0	5.3	10.6	8.8
1985	12.0	8.5	3.7	7.4	5.8
1986	50.6	7.3	3.8	5.1	3.7
1987	136.0	15.7	5.9	13.0	10.3
1988	138.2	49.3	41.4	29.6	22.1
1989	243.7	89.5	30.2	66.4	51.1
1990	167.4	68.1	22.0	56.7	48.3
1991	123.4	90.2	61.3	71.3	57.5
1992	54.7	105.7	67.0	88.5	72.3
1993	30.0	63.8	25.1	54.2	43.5
1994	12.8	39.4	13.4	34.0	29.2
1995	10.6	24.0	11.0	21.2	18.3
1996	29.3	21.8	13.8	19.8	17.3
1997	36.5	7.9	2.6	6.3	5.4
1998	24.9	7.8	2.4	5.8	4.6
1999	50.1	10.1	4.8	6.1	4.3
2000	32.7	16.8	10.0	12.1	9.6
2001	118.0	14.5	5.6	11.5	9.8
2002	45.8	13.2	5.3	11.0	9.2
2003	41.8	14.9	5.8	11.2	9.1
2004	18.2	12.4	5.3	9.7	7.4
2005	41.9	17.5	6.4	13.5	9.7
2006	84.0	20.1	7.7	14.6	10.9
2007	52.2	24.7	13.0	16.2	11.8
2008	42.1	37.8	36.2	28.7	21.9
2009	32.8	16.1	8.1	11.8	9.7
2010	39.1	15.3	7.3	11.9	9.1
2011	135.2	16.0	7.5	12.4	10.0
2012	167.6	22.7	10.7	14.4	10.3
2013	110.0	69.6	49.7	37.0	19.6
2014	75.5	62.3	19.0	41.9	30.5
2015	40.2	40.0	9.4	30.7	24.1
2016	24.6	29.6	7.7	20.2	13.9
2017	20.6	29.8	9.5	21.8	15.9
2018	40.8	16.7	4.5	12.0	9.2
2019	37.6	9.3	3.3	7.5	6.1
2021	50.6	8.6	3.6	5.4	3.4

Table 18. -- Time series of abundance estimates (in millions) for female Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature female	Mature female	Mature female ± CI
1979	7.7	13.0	9.5
1980	15.6	50.5	37.7
1981	16.1	35.1	20.4
1982	14.7	31.2	16.6
1983	30.2	18.3	10.0
1984	19.5	16.3	13.1
1985	5.4	10.8	8.0
1986	37.5	8.7	3.9
1987	123.1	13.4	5.5
1988	56.3	84.4	47.9
1989	183.1	57.8	22.9
1990	98.7	101.5	47.2
1991	41.8	145.9	103.7
1992	5.1	53.9	23.2
1993	2.9	24.9	10.8
1994	2.7	27.0	17.2
1995	5.6	30.2	18.5
1996	18.1	28.9	20.4
1997	34.7	11.1	5.2
1998	13.4	6.7	2.9
1999	21.3	12.6	7.8
2000	16.6	15.0	11.2
2001	112.2	7.1	3.3
2002	36.4	10.8	7.9
2003	13.6	12.0	5.7
2004	8.6	4.5	2.1
2005	39.3	16.1	12.1
2006	29.1	21.9	12.0
2007	11.5	30.5	21.1
2008	8.9	24.6	15.2
2009	23.9	22.1	16.9
2010	29.7	10.6	8.4
2011	88.8	12.2	6.2
2012	65.8	52.4	35.7
2013	33.2	60.8	42.5
2014	15.1	44.7	42.0
2015	14.5	27.6	19.2
2016	1.4	7.7	4.7
2017	5.3	10.2	4.0
2018	35.0	3.5	1.6
2019	30.3	3.7	2.5
2021	22.8	14.8	6.4

Table 19. -- Time series of biomass estimates (t) for male Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature male < 103 mm	Mature male ≥ 103 mm	Mature male ± CI	Legal male ≥ 110 mm	Preferred male ≥ 125 mm
1979	16,462	15,596	6,183	12,913	7,860
1980	64,467	39,038	17,099	27,984	12,887
1981	29,763	26,777	8,029	18,061	8,050
1982	14,735	34,520	12,749	25,512	11,622
1983	7,761	16,947	6,540	13,195	5,655
1984	5,865	12,625	4,735	10,016	3,730
1985	2,533	4,143	1,442	3,169	1,458
1986	6,228	5,758	4,123	3,286	816
1987	8,047	8,601	3,960	6,994	4,163
1988	19,282	21,812	12,530	17,868	10,618
1989	15,988	29,119	12,768	24,883	16,499
1990	16,029	39,509	22,820	35,175	24,356
1991	17,926	38,059	13,836	34,230	21,816
1992	11,419	26,255	11,787	23,410	16,311
1993	7,226	12,651	4,912	10,873	6,312
1994	5,070	10, 962	3,745	9,526	5,391
1995	3,553	11,757	6,911	10,592	5,761
1996	2,927	7,863	6,170	6,682	3,680
1997	1,986	3,575	1,185	2,873	1,121
1998	3,041	3,563	1,227	2,602	1,085
1999	4,409	2,311	961	1,679	612
2000	4,116	2,787	850	2,003	627
2001	8,171	4,918	2,069	3,943	1,780
2002	8,691	4,318	1,595	3,029	1,222
2003	12,528	8,133	3,789	6,424	2,661
2004	13,064	13,404	7,012	9,732	2,805
2005	18,964	27,348	10,511	23,655	13,839
2006	33,861	39,045	19,584	32,859	19,083
2007	35,745	40,540	25,656	31,673	16,281
2008	15,705	32,031	17,342	26,351	13,145
2009	9,673	22,980	9,143	19,770	10,812
2010	8,305	26,296	14,128	23,372	14,460
2011	13,198	26,123	17,353	23,259	15,660
2012	19,737	15,027	4,271	11,928	6,365
2013	18,417	20,423	9,311	15,939	8,220
2014	17,345	33,394	8,146	24,859	11,766
2015	8,036	31,122	9,281	27,067	14,306
2016	8,196	35,119	8,671	31,252	18,326
2017	5,417	24,268	7,812	21,288	12,553
2018	8,786	23,948	6,999	21,572	12,871
2019	7,691	9,813	2,616	8,749	5,001
2021	10,920	7,491	2,043	5,301	2,006

Table 20. -- Time series of biomass estimates (t) for female Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature female	Mature female	Mature female ± CI
1979	3,236	16,465	11,111
1980	12,199	52,221	33,389
1981	631	34,893	20,587
1982	410	57,347	32,263
1983	1,426	15,993	6,928
1984	1,573	10,785	5,490
1985	675	2,718	1,636
1986	1,210	1,360	831
1987	3,095	2,042	837
1988	6,484	6,184	3,169
1989	5,165	7,090	3,186
1990	3,869	18,663	17,538
1991	3,390	17,056	7,234
1992	1,644	15,213	6,889
1993	913	6,470	2,484
1994	1,137	4,579	2,492
1995	808	6,667	4,052
1996	424	4,047	3,539
1997	442	1,451	884
1998	1,413	1,076	505
1999	1,793	1,554	635
2000	1,753	1,246	622
2001	3,741	3,247	1,915
2002	3,733	2,766	1,375
2003	3,984	6,313	3,007
2004	3,866	3,865	1,569
2005	8,710	8,759	3,745
2006	10,808	10,914	4,484
2007	4,944	7,521	2,312
2008	2,238	7,206	3,191
2009	2,039	4,456	1,569
2010	3,008	3,358	1,567
2011	6,001	3,189	983
2012	5,982	3,805	1,338
2013	4,071	6,795	2,393
2014	2,023	6,705	3,547
2015	1,038	6,536	4,526
2016	1,057	6,076	3,664
2017	1,255	5,019	3,069
2018	3,921	4,293	1,926
2019	3,339	4,113	1,984
2021	2,238	5,604	2,197

Table 21. -- Time series of abundance estimates (in millions) for male Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature male < 103 mm	Mature male ≥ 103 mm	Mature male ± CI	Legal male ≥ 110 mm	Preferred male ≥ 125 mm
1979	135.8	28.2	10.9	20.7	9.9
1980	476.3	80.0	33.1	49.0	16.7
1981	156.1	56.8	16.8	32.3	10.7
1982	74.3	71.3	26.1	46.0	16.3
1983	108.0	34.6	13.5	24.1	8.1
1984	67.2	25.8	9.6	18.5	5.3
1985	28.6	8.4	2.9	5.7	2.1
1986	49.3	13.5	10.5	6.5	1.1
1987	91.0	16.2	6.6	11.6	5.6
1988	198.0	39.9	21.1	28.8	13.5
1989	156.4	50.2	19.6	38.3	20.7
1990	130.0	65.5	35.9	53.4	30.9
1991	162.7	65.2	22.5	54.4	28.6
1992	101.9	43.2	15.5	35.1	20.5
1993	58.1	23.4	8.4	18.4	8.8
1994	46.8	20.0	6.4	15.9	7.3
1995	32.4	21.3	12.3	18.1	8.2
1996	24.3	15.0	11.1	11.7	5.4
1997	24.6	7.3	2.3	5.3	1.5
1998	49.1	7.4	2.5	4.7	1.5
1999	83.4	5.0	2.2	3.2	0.9
2000	71.5	6.0	1.8	3.8	0.9
2001	145.2	9.8	3.7	7.0	2.4
2002	128.8	9.1	3.2	5.5	1.7
2003	171.5	16.4	7.2	11.6	3.6
2004	207.5	29.2	15.9	18.9	4.1
2005	241.1	49.5	17.8	39.2	18.7
2006	287.0	72.3	30.4	54.8	25.9
2007	279.4	80.2	45.3	55.1	22.6
2008	110.8	62.2	29.9	46.2	18.5
2009	98.3	42.7	16.6	33.7	15.0
2010	114.2	45.7	21.5	37.5	19.1
2011	186.6	42.9	22.9	34.8	18.9
2012	223.8	28.7	8.1	20.0	8.3
2013	183.9	39.7	17.1	27.0	10.8
2014	140.4	68.0	17.8	43.8	16.1
2015	67.7	57.4	16.5	46.0	19.6
2016	75.2	62.2	15.5	51.3	24.7
2017	99.0	43.2	12.4	34.9	16.8
2018	173.0	41.8	11.4	35.1	17.2
2019	143.4	17.6	4.5	14.6	6.9
2021	139.2	16.0	4.4	9.9	2.9

Table 22. -- Time series of abundance estimates (in millions) for female Tanner crab (*Chionoecetes bairdi*) by size category (CW) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. The 95% confidence intervals (CI) are 1.96 SE. See authors for 1975-1978 data.

Year	Immature female	Mature female	Mature female ± CI
1979	49.0	118.3	80.6
1980	159.2	380.4	259.6
1981	10.3	268.7	170.6
1982	15.5	433.1	265.7
1983	96.5	109.9	48.3
1984	59.0	70.1	36.8
1985	21.0	18.6	12.3
1986	24.1	8.3	4.6
1987	74.9	12.9	5.3
1988	129.9	38.1	18.6
1989	101.9	43.3	19.2
1990	75.1	107.5	91.6
1991	84.1	109.2	48.3
1992	48.6	97.0	43.1
1993	26.4	42.6	16.4
1994	34.3	29.2	15.6
1995	20.6	43.1	25.9
1996	15.0	26.2	22.3
1997	22.6	9.0	5.4
1998	44.7	6.6	3.1
1999	79.7	10.1	4.0
2000	57.0	7.3	3.6
2001	127.2	21.0	11.5
2002	111.6	19.1	10.9
2003	123.8	48.5	26.2
2004	169.9	27.7	13.5
2005	215.7	60.7	27.9
2006	178.1	76.4	31.2
2007	114.3	51.5	16.3
2008	53.4	48.6	21.8
2009	71.4	29.2	10.0
2010	91.6	21.9	10.1
2011	157.6	20.3	6.0
2012	122.0	25.6	8.9
2013	97.2	48.0	17.0
2014	90.4	43.6	23.7
2015	36.3	45.4	33.7
2016	42.1	42.6	27.3
2017	101.2	35.6	21.4
2018	166.2	30.3	13.2
2019	146.0	32.9	17.2
2021	93.4	39.5	16.8

Table 23. -- Time series of biomass estimates (t) for male snow crab (*Chionoecetes opilio*) by size category (CW) from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature male < 95 mm	Mature male ≥ 95 mm	Mature male ± CI	Legal male ≥ 78 mm	Preferred male ≥ 102 mm
1980	236,814	99,240	30,937	180,837	68,592
1981	166,540	38,042	8,061	97,286	22,630
1982	250,475	65,864	19,430	177,794	34,823
1983	184,837	68,047	18,468	163,096	35,087
1984	119,438	119,971	32,543	183,321	85,096
1985	44,214	55,691	12,225	79,334	43,099
1986	83,408	58,725	14,454	84,159	45,967
1987	266,342	107,536	23,901	178,662	74,290
1988	331,332	144,135	53,992	246,515	105,695
1989	372,788	143,216	29,275	291,753	92,421
1990	306,733	347,750	102,169	521,713	225,142
1991	293,255	347,976	105,727	477,618	278,678
1992	179,621	166,483	35,962	223,585	139,020
1993	273,570	98,857	22,246	143,013	77,228
1994	289,633	57,386	12,134	109,683	44,637
1995	368,026	61,758	20,003	158,155	38,179
1996	341,043	143,856	52,118	312,771	89,015
1997	209,131	232,388	57,042	362,928	171,516
1998	100,536	164,119	32,216	219,422	127,490
1999	44,127	67,352	13,850	87,096	52,043
2000	77,782	53,942	16,022	76,830	41,129
2001	167,671	56,449	11,370	106,070	39,995
2002	83,002	55,907	26,886	100,734	37,172
2003	81,606	44,423	10,558	72,396	31,535
2004	89,330	44,162	14,554	61,726	35,580
2005	184,025	50,072	10,120	105,971	39,847
2006	124,579	90,152	61,487	141,960	72,344
2007	140,003	99,875	36,249	162,108	74,720
2008	114,297	79,600	16,993	123,530	60,329
2009	98,468	103,188	30,883	149,588	77,510
2010	146,025	105,278	27,471	134,170	87,099
2011	149,214	111,662	25,824	145,916	94,381
2012	123,683	67,476	18,910	104,438	53,152
2013	100,506	58,389	14,779	99,733	43,126
2014	140,092	105,441	41,571	151,453	79,510
2015	85,434	46,410	14,071	71,550	35,838
2016	103,747	29,961	6,869	51,670	21,997
2017	188,851	29,363	7,301	52,272	20,617
2018	458,902	47,054	18,589	130,474	27,018
2019	284,181	54,550	19,151	175,907	28,955
2021	49,158	24,387	7,637	60,095	12,437

Table 24. -- Time series of biomass estimates (t) for female snow crab (*Chionoecetes opilio*) by size category (CW) from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature female	Mature female	Mature female ± CI
1980	27,575	271,682	174,119
1981	10,988	118,845	40,403
1982	3,654	141,492	43,943
1983	3,622	82,182	32,620
1984	14,119	39,369	15,417
1985	5,364	5,889	2,487
1986	26,043	15,174	6,209
1987	107,989	119,551	44,272
1988	36,803	165,619	57,314
1989	23,265	256,728	163,114
1990	38,213	174,942	72,149
1991	68,925	199,020	94,676
1992	49,374	123,479	48,802
1993	74,921	127,081	41,412
1994	68,240	122,604	33,649
1995	31,019	164,959	44,039
1996	9,274	104,429	31,008
1997	5,452	101,393	39,142
1998	13,324	70,183	38,534
1999	6,160	29,849	13,945
2000	12,480	93,882	99,120
2001	17,033	74,840	43,557
2002	4,388	29,508	18,448
2003	14,838	38,761	30,847
2004	30,472	47,743	26,154
2005	55,125	62,603	27,395
2006	28,090	50,592	20,186
2007	27,875	54,449	34,546
2008	8,994	49,352	22,756
2009	29,660	50,002	22,623
2010	90,479	94,956	34,177
2011	41,232	169,117	63,699
2012	41,425	143,268	65,922
2013	31,364	125,672	50,923
2014	54,523	111,362	46,704
2015	35,701	81,628	29,256
2016	53,788	52,022	21,010
2017	66,242	103,422	44,445
2018	83,164	161,573	63,268
2019	5,125	106,799	41,236
2021	298	29,844	25,907

Table 25. -- Time series of abundance estimates (in millions) for male snow crab (*Chionoecetes opilio*) by size category (CW) from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature male < 95 mm	Mature male ≥ 95 mm	Mature male ± CI	Legal male ≥ 78 mm	Preferred male ≥ 102 mm
1980	2,567.0	194.8	65.0	513.4	116.6
1981	1,575.4	79.8	17.7	318.8	40.3
1982	1,779.0	145.3	44.0	591.1	65.0
1983	1,486.0	150.3	41.2	511.7	65.6
1984	1,223.6	237.6	62.8	476.1	148.3
1985	444.6	105.9	23.3	195.9	73.8
1986	1,143.1	110.6	27.0	211.2	78.2
1987	3,758.6	215.7	48.8	493.3	130.8
1988	3,677.9	276.9	94.8	683.8	178.5
1989	3,111.0	292.3	60.6	882.5	162.0
1990	2,263.9	710.4	214.0	1,348.1	395.1
1991	3,331.8	618.3	179.4	1,093.8	439.7
1992	2,776.2	293.2	62.7	512.9	223.3
1993	4,805.5	182.8	41.9	355.8	127.6
1994	4,116.9	106.4	22.2	320.6	73.8
1995	3,635.3	128.0	43.9	515.7	67.3
1996	2,309.8	302.4	105.2	958.6	161.4
1997	1,204.4	447.1	100.4	945.8	290.8
1998	778.2	308.4	59.3	514.6	214.9
1999	422.4	124.9	23.9	198.8	85.7
2000	971.1	102.4	31.8	191.1	69.8
2001	1,529.4	111.3	24.1	312.7	69.3
2002	596.3	114.7	54.8	284.5	66.6
2003	1,073.7	88.1	21.3	196.0	55.0
2004	1,491.2	79.9	24.2	147.8	58.0
2005	1,890.3	89.2	17.6	312.5	63.0
2006	1,178.4	171.9	119.4	377.6	126.4
2007	1,260.8	196.7	67.0	435.0	132.5
2008	1,008.8	154.3	31.6	325.2	105.1
2009	1,055.4	195.7	57.9	371.5	129.9
2010	2,460.5	184.4	45.1	293.7	138.3
2011	1,829.8	194.1	45.7	330.8	150.1
2012	1,384.9	123.5	34.3	274.1	87.0
2013	1,055.9	112.6	27.6	280.0	73.6
2014	1,527.8	204.2	76.8	385.3	138.5
2015	1,504.2	84.2	22.3	183.8	57.2
2016	2,361.9	57.8	13.2	143.2	37.4
2017	3,541.7	58.0	14.0	151.9	36.0
2018	5,773.1	100.6	41.2	437.8	49.4
2019	2,018.0	119.7	42.8	611.1	53.7
2021	253.6	54.2	16.6	192.1	23.5

Table 26. -- Time series of abundance estimates (in millions) for female snow crab (*Chionoecetes opilio*) by size category (CW) from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Immature female	Mature female	Mature female ± CI
1980	898.5	4,830.3	3,219.6
1981	233.3	2,047.8	713.9
1982	79.9	2,317.2	770.8
1983	240.5	1,466.0	611.0
1984	551.9	670.0	273.8
1985	213.0	103.4	44.7
1986	842.1	267.4	110.5
1987	2,955.5	2,040.2	768.0
1988	1,045.8	2,795.6	975.4
1989	564.7	4,625.9	3,417.8
1990	1,043.9	3,008.7	1,392.7
1991	2,270.7	3,545.4	1,930.8
1992	1,862.2	2,068.9	849.0
1993	2,909.2	2,396.3	818.2
1994	2,684.2	2,204.8	552.4
1995	1,021.7	3,109.1	825.9
1996	258.4	2,107.2	680.4
1997	142.9	2,001.0	813.2
1998	336.0	1,386.7	791.2
1999	187.6	551.0	270.0
2000	391.9	1,649.1	1,711.0
2001	470.9	1,243.8	727.5
2002	121.1	502.8	342.5
2003	542.4	680.2	601.4
2004	1,375.9	931.9	525.2
2005	1,512.2	1,110.9	498.3
2006	765.7	744.3	304.8
2007	620.4	839.6	623.2
2008	395.9	747.7	445.2
2009	1,059.9	747.2	356.6
2010	3,027.6	1,777.8	654.1
2011	1,175.4	3,137.0	1,190.0
2012	1,165.5	2,656.1	1,309.6
2013	1,029.4	2,222.2	994.7
2014	1,590.8	1,815.6	894.7
2015	1,461.0	1,238.6	497.4
2016	2,131.6	818.4	347.2
2017	2,494.8	2,086.9	923.7
2018	2,588.7	3,282.0	1,341.3
2019	117.3	2,040.9	785.5
2021	22.6	609.8	543.4

Table 27. -- Time series of biomass estimates (t) for hair crab (*Erimacrus isenbeckii*) by size category (CL) from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Sublegal male < 83 mm	Legal male ≥ 83 mm	Legal male ± CI	Total female	Total female ± CI
1980	988	16,164	11,703	758	1,041
1981	183	10,091	3,658	182	114
1982	182	6,717	3,942	120	70
1983	67	4,231	1,331	296	152
1984	310	3,048	999	106	94
1985	83	2,084	1,041	73	57
1986	207	1,482	787	100	69
1987	355	1,083	607	208	110
1988	631	618	354	168	89
1989	2,955	404	240	43	40
1990	2,540	783	453	255	155
1991	1,393	795	434	230	130
1992	778	591	300	80	53
1993	1,111	2,296	1,588	217	148
1994	1,324	2,413	1,253	194	133
1995	1,396	4,326	2,791	158	84
1996	1,152	3,163	1,738	277	132
1997	584	3,103	1,289	92	56
1998	213	1,984	798	361	241
1999	196	1,735	510	308	125
2000	180	2,873	1,259	331	180
2001	132	1,287	521	565	243
2002	65	1,375	529	101	64
2003	357	659	275	83	49
2004	204	491	191	83	71
2005	328	212	132	273	134
2006	357	661	415	877	954
2007	575	1,278	519	357	168
2008	623	1,346	631	387	174
2009	1,104	1,916	731	464	250
2010	903	1,610	677	469	186
2011	1,752	2,129	935	377	162
2012	3,626	2,878	1,128	534	234
2013	3,357	6,469	2,626	1,055	433
2014	1,144	3,391	1,298	304	139
2015	616	1,338	511	127	74
2016	213	716	307	71	50
2017	208	1,084	364	71	45
2018	332	886	338	195	105
2019	459	552	238	147	89
2021	597	544	244	589	311

Table 28. -- Time series of abundance estimates (in millions) for hair crab (*Erimacrus isenbeckii*) by size category (CL) from National Marine Fisheries Service bottom trawl surveys, all Districts combined. The 95% confidence intervals (CI) are 1.96 SE.

Year	Sublegal male	Legal male	Legal male	Total female	Total female
	< 83 mm	≥ 83 mm	± CI		± CI
1980	3.0	20.8	15.2	4.8	7.8
1981	0.5	12.2	4.5	0.5	0.3
1982	0.6	8.4	4.9	0.4	0.2
1983	0.3	5.3	1.7	0.9	0.5
1984	1.1	3.8	1.3	0.4	0.3
1985	0.3	2.5	1.3	0.3	0.2
1986	0.7	1.9	1.0	0.4	0.3
1987	1.6	1.4	0.7	0.9	0.4
1988	3.9	0.8	0.4	0.9	0.7
1989	12.6	0.5	0.3	0.1	0.1
1990	10.1	1.2	0.8	1.0	0.6
1991	4.8	1.3	0.7	1.2	0.7
1992	2.5	1.1	0.6	0.5	0.4
1993	3.8	3.9	2.6	1.3	1.0
1994	5.0	4.0	2.1	1.3	1.1
1995	5.0	6.6	4.3	0.7	0.3
1996	3.6	5.1	2.7	1.0	0.5
1997	1.7	4.6	1.8	0.4	0.2
1998	0.6	2.9	1.1	1.3	0.8
1999	0.6	2.4	0.7	1.2	0.4
2000	0.5	4.1	1.7	1.2	0.7
2001	0.5	1.8	0.7	2.2	1.0
2002	0.3	2.0	0.8	0.5	0.3
2003	1.3	0.9	0.4	0.5	0.3
2004	0.6	0.8	0.3	0.3	0.2
2005	1.0	0.3	0.2	0.8	0.5
2006	1.2	1.0	0.7	3.6	4.6
2007	2.3	1.9	0.7	1.3	0.9
2008	2.3	2.2	1.0	1.4	0.6
2009	3.6	3.1	1.1	1.7	0.9
2010	3.3	2.5	1.0	2.2	1.1
2011	6.9	3.5	1.4	1.6	0.6
2012	11.8	4.6	1.8	2.2	0.8
2013	10.3	10.7	4.6	4.0	1.7
2014	3.3	5.4	2.0	1.0	0.4
2015	1.8	2.1	0.8	0.6	0.3
2016	0.6	1.2	0.5	0.3	0.3
2017	0.6	1.6	0.6	0.3	0.2
2018	1.1	1.4	0.5	0.8	0.5
2019	1.8	0.8	0.3	0.5	0.3
2021	2.2	0.8	0.3	1.8	1.0

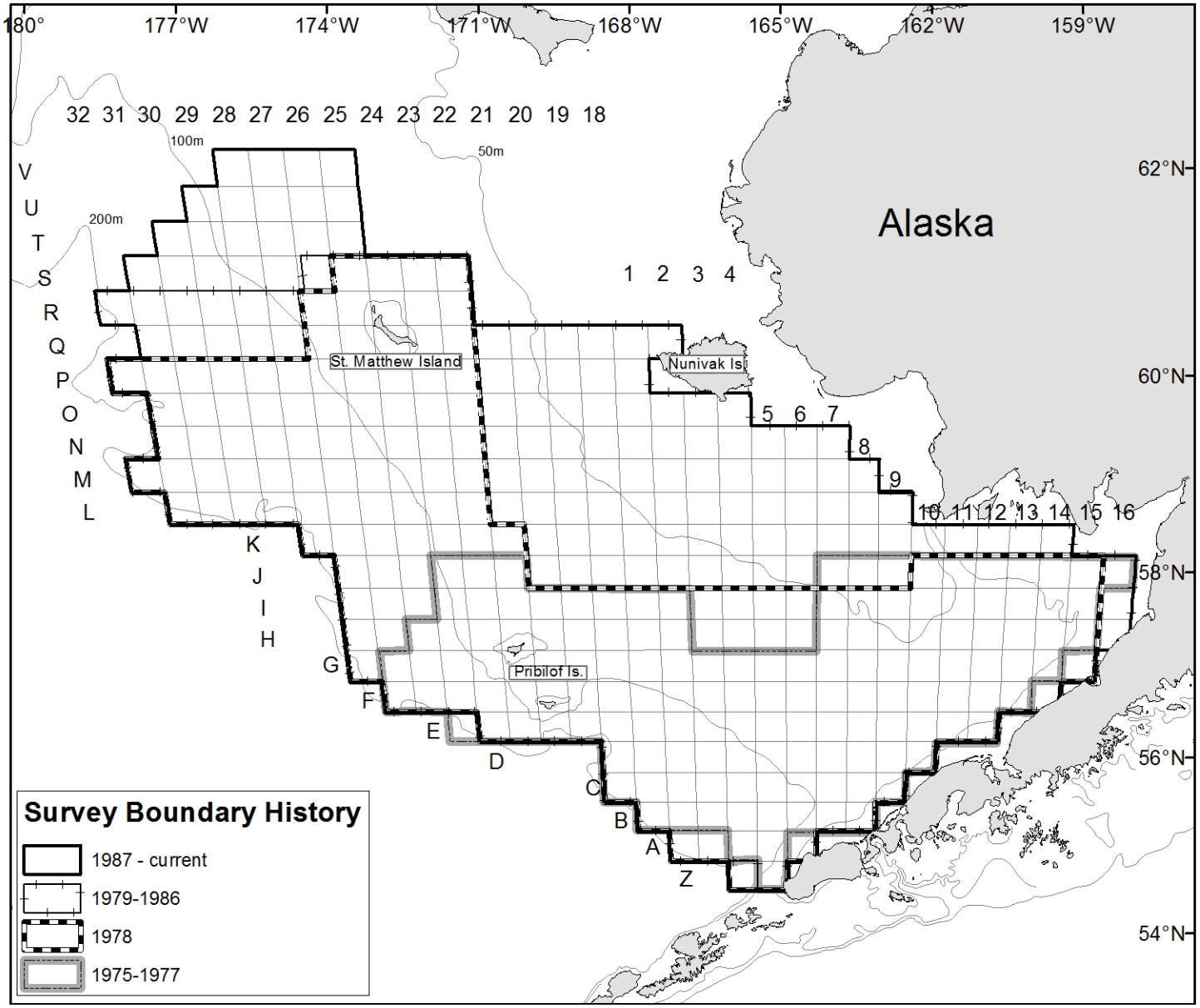

Figure 1. -- National Marine Fisheries Service eastern Bering Sea bottom trawl survey boundary from 1975 to present indicating four major stanzas in total coverage.

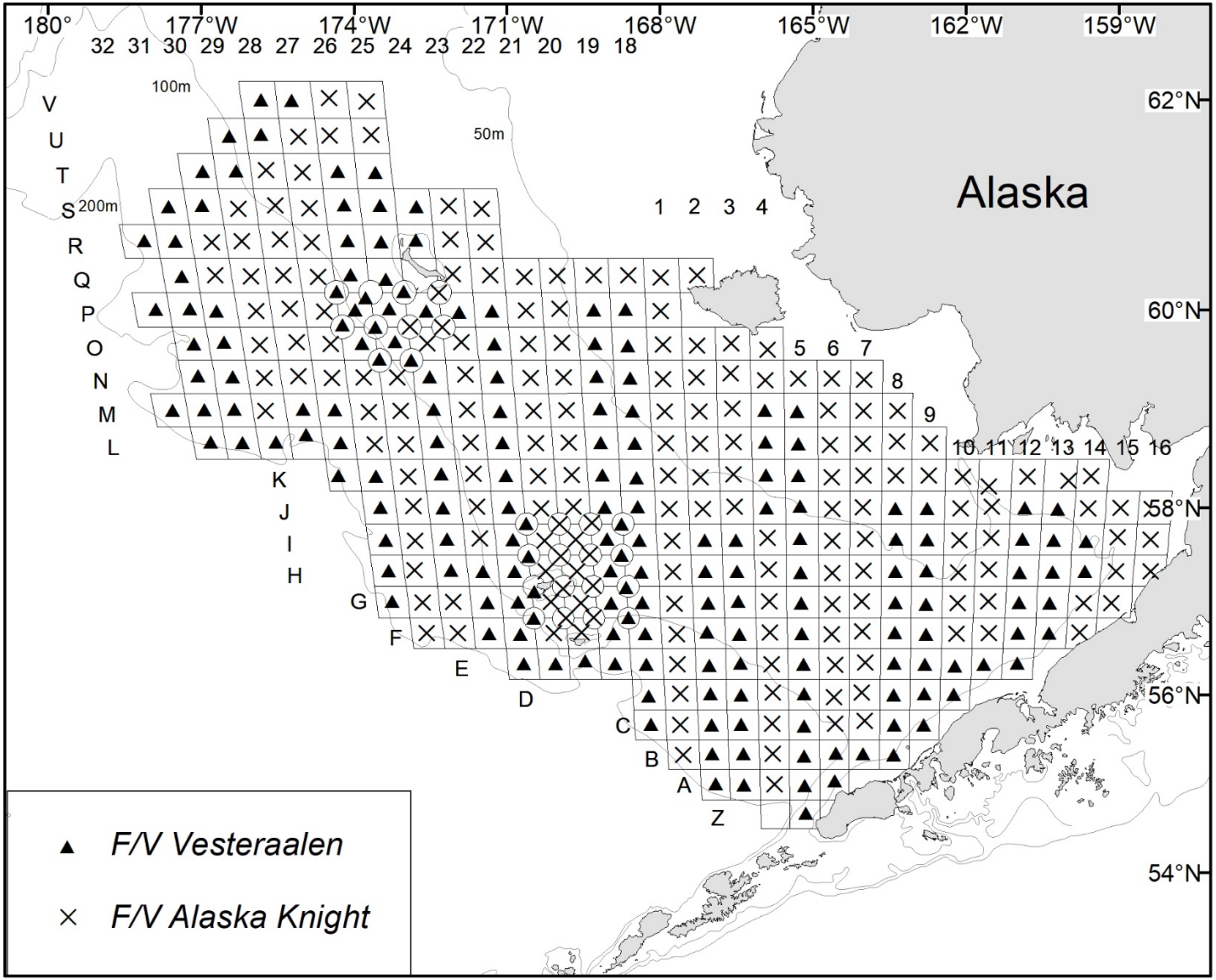

Figure 2. -- National Marine Fisheries Service eastern Bering Sea standard bottom trawl area surveyed by the FV *Alaska Knight* and the FV *Vesteraalen* from 31 May to 22 July 2021.

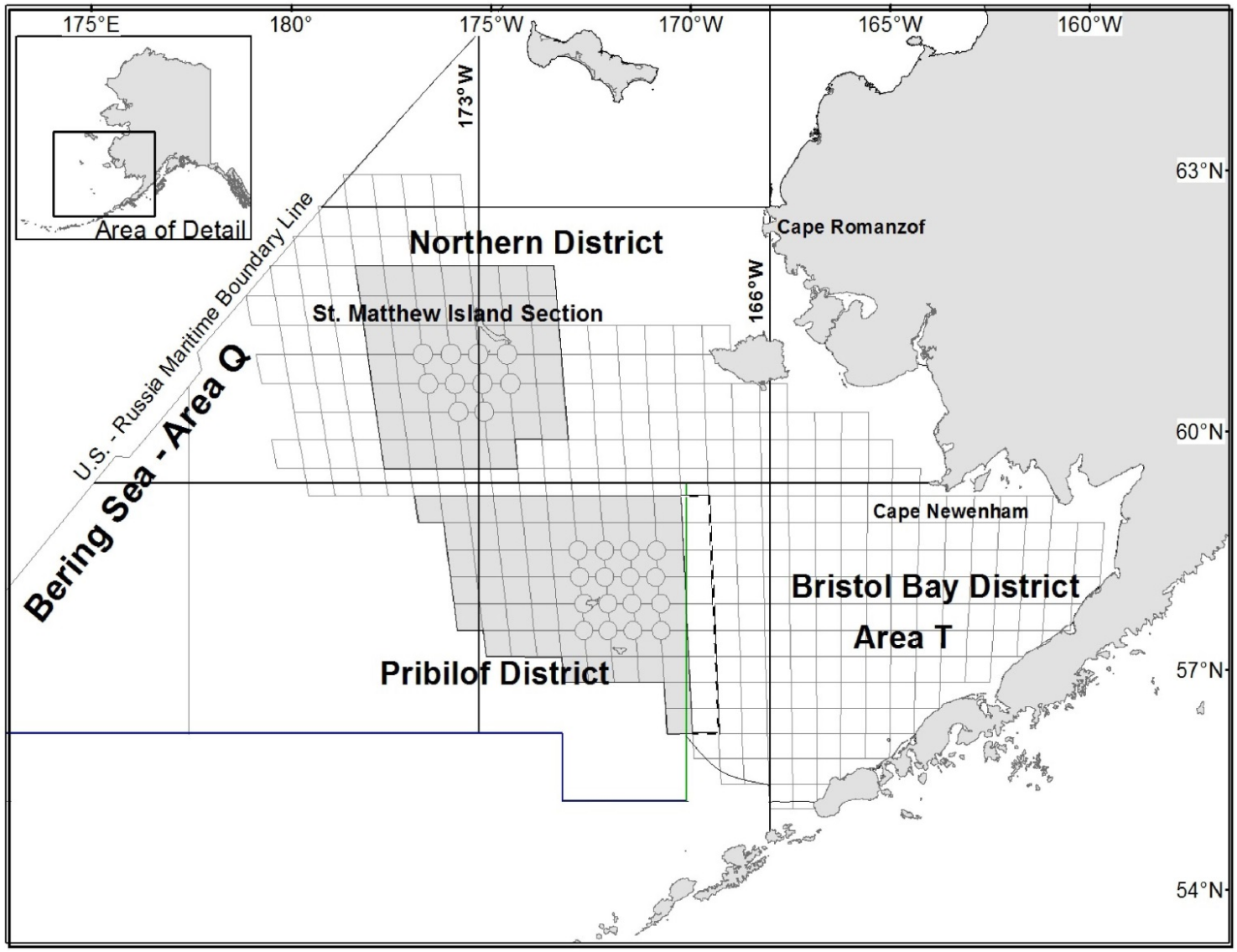

Figure 3. -- Alaska Department of Fish and Game commercial crab management units within the 2021 eastern Bering Sea bottom trawl survey area. Grey areas represent stations included in the Pribilof District (dashed line indicates expanded stock boundary for blue king crab) and St. Matthew Island Section, Northern District sampling strata and circles represent the high-density sampling areas.

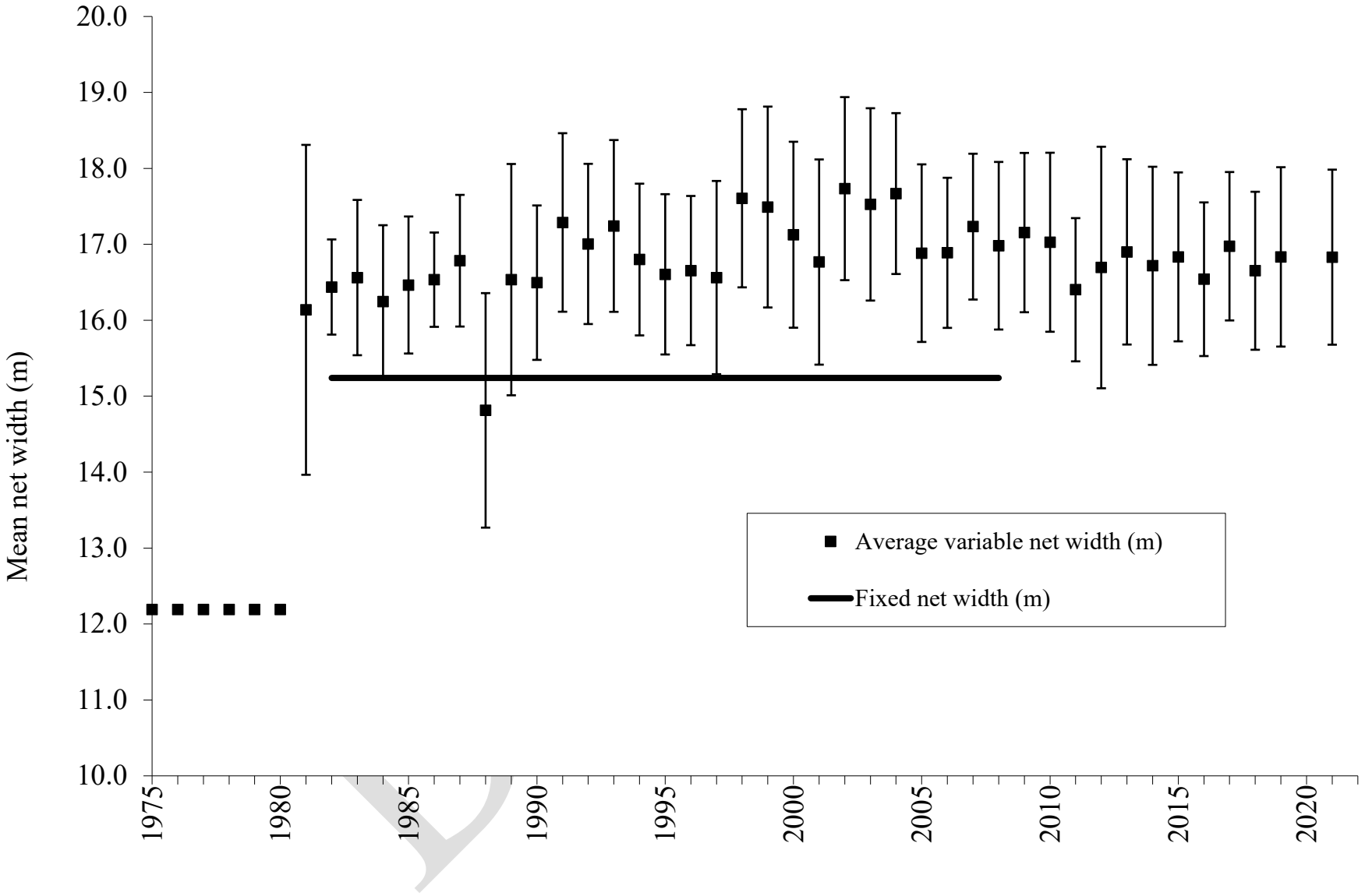

Figure 4. -- Fixed and average variable net widths (± SD) used to calculate area-swept by National Marine Fisheries Service eastern Bering Sea standard bottom trawls from 1975 to the present.

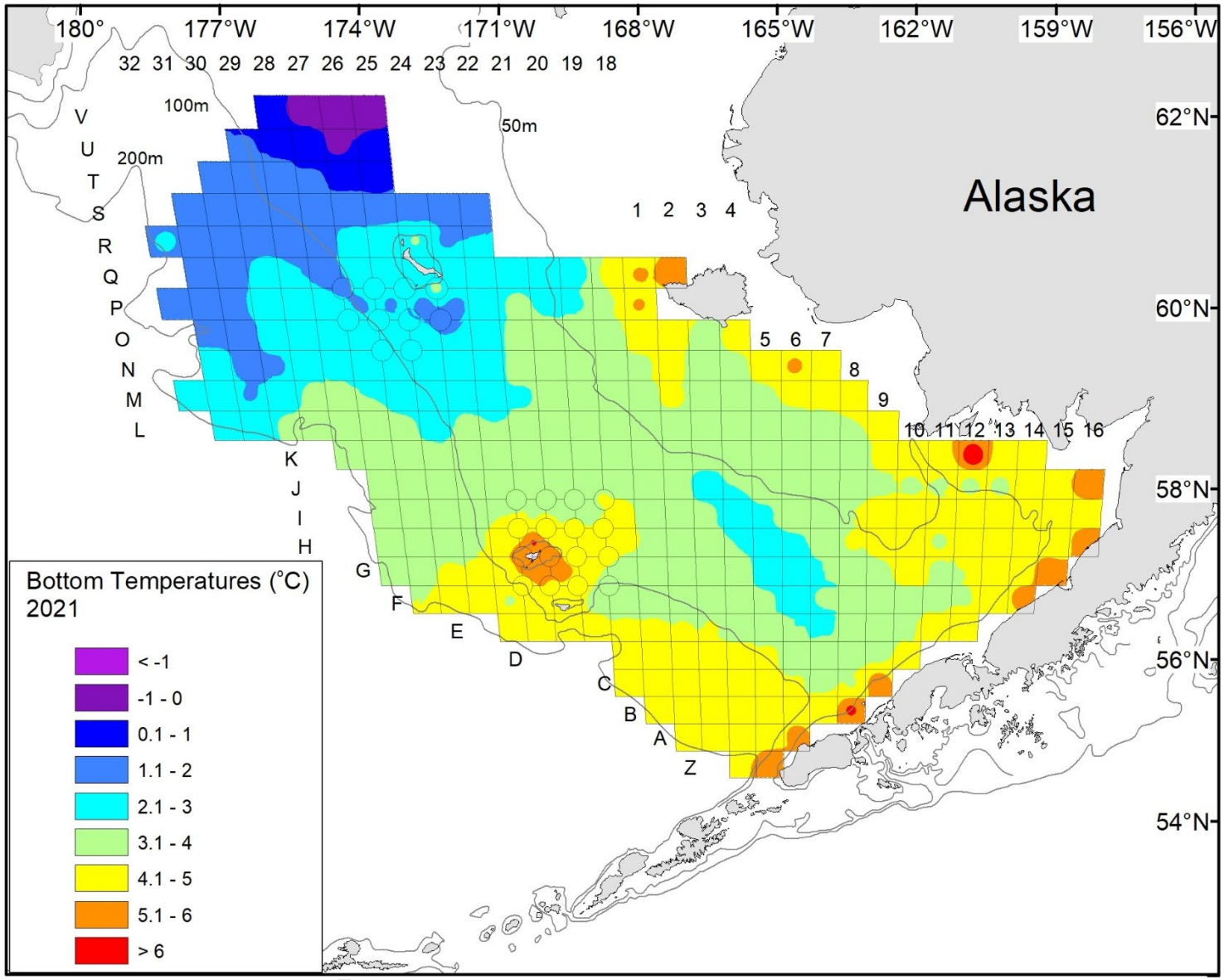

Figure 5a. -- Bottom temperatures (°C) measured at stations from the National Marine Fisheries Service eastern Bering Sea bottom trawl survey, beginning 31 May 2021 in Bristol Bay and ending on 22 July 2021 at the northern edge of the survey. This figure does not reflect the 20 stations resampled in Bristol Bay from 7 August to 11 August 2021.

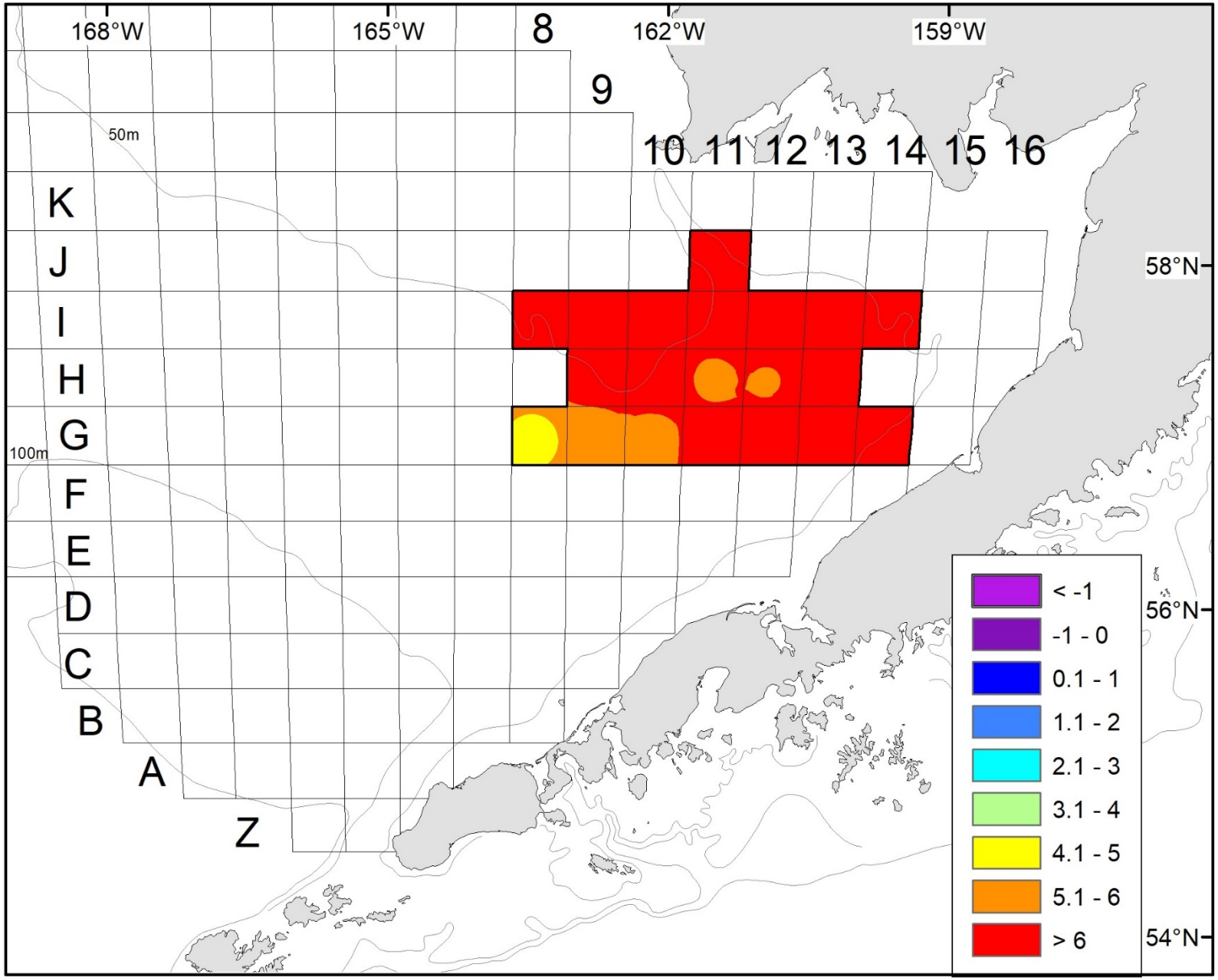

Figure 5b. -- Bottom temperatures (°C) measured at the 20 resample stations in Bristol Bay, surveyed from 7 August to 11 August, 2021.

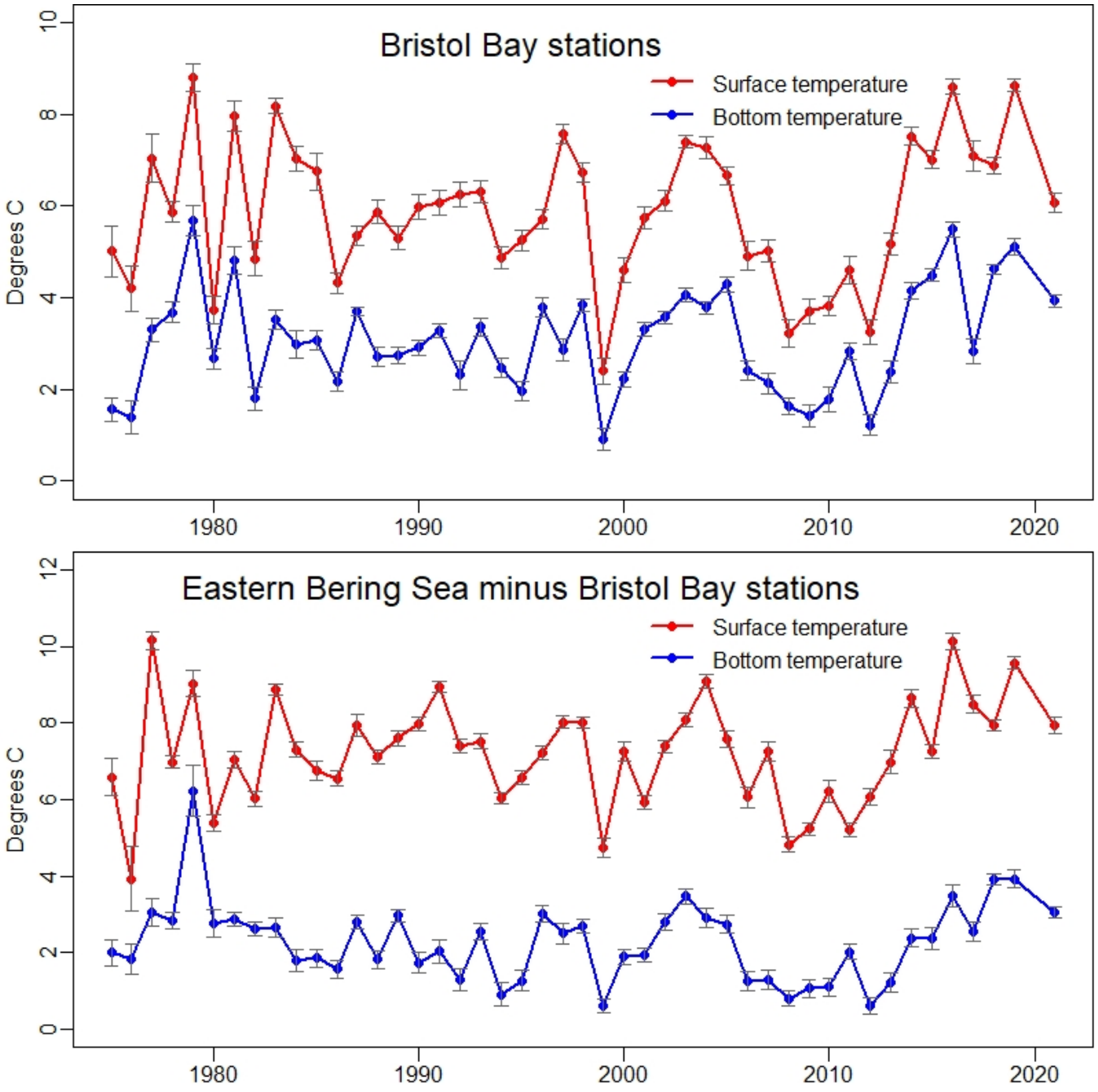

Figure 6. -- Average (± 95% CI) bottom (blue) and surface (red) temperatures for Bristol Bay (standard) stations and the rest of the eastern Bering Sea during the National Marine Fisheries Service's eastern Bering Sea bottom trawl survey. The number of stations used to calculate averages was not constant among years, particularly as the survey boundary expanded from 1975 to 1987. Temperature data in time series does not include resample stations in Bristol Bay. No survey was conducted in 2020.

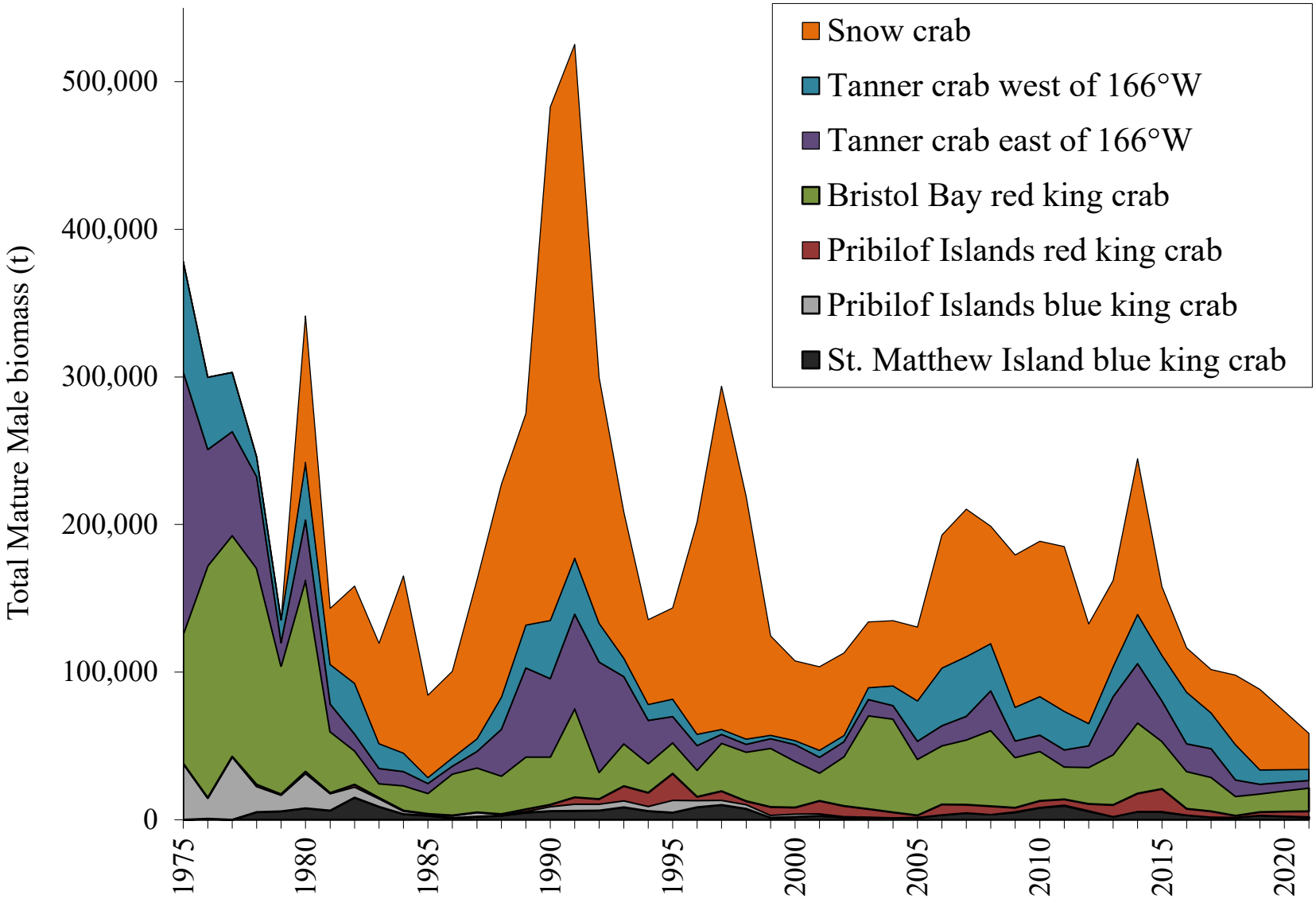

Figure 7. -- Historical mature male biomass (t) for six commercial species caught on National Marine Fisheries Service eastern Bering Sea bottom trawl surveys from 1975 through 2021. No survey was conducted in 2020.

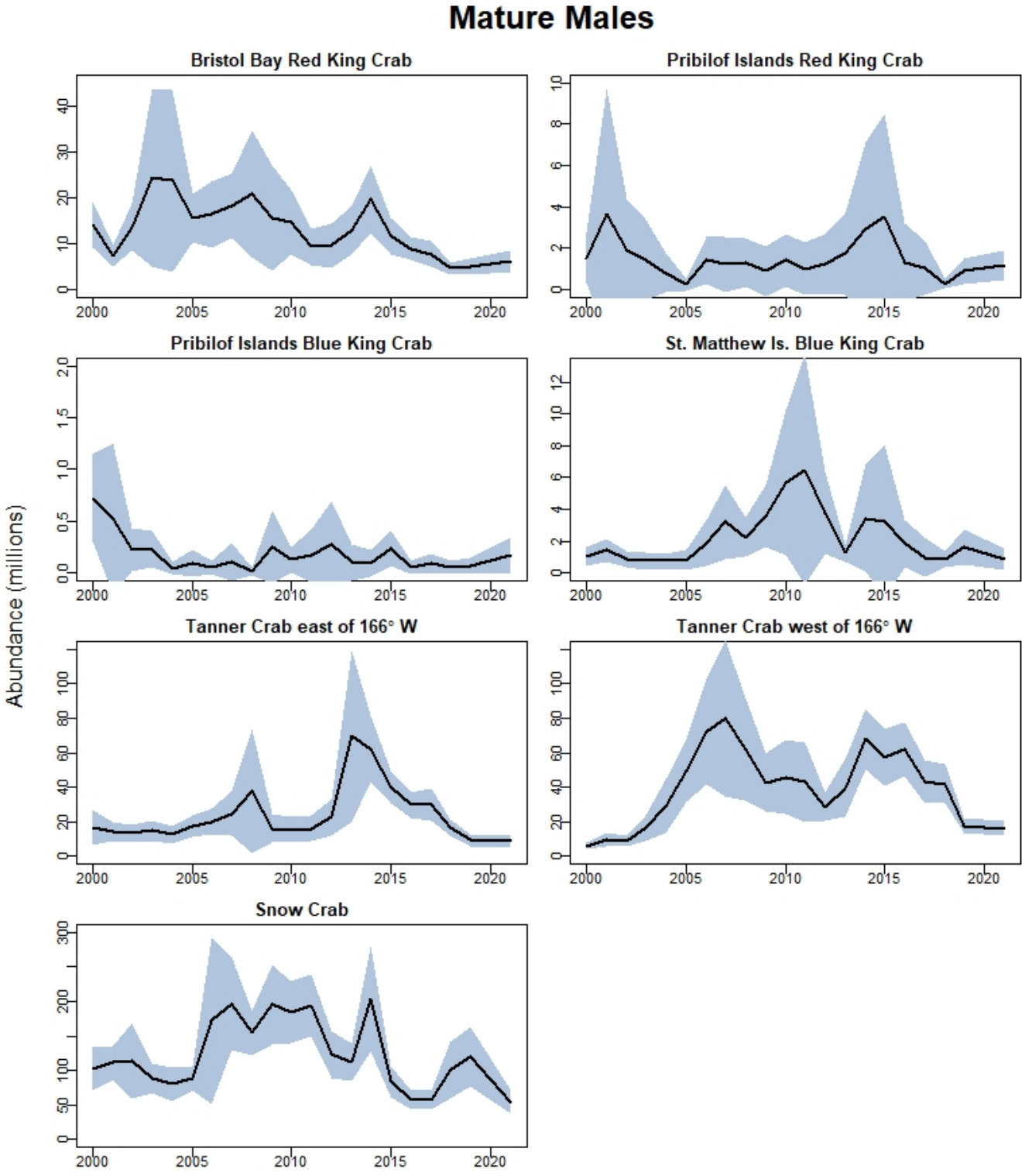

Figure 8. -- Historical mature male abundance (millions, gray area indicates ± 95% CI) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys (2000-2021).

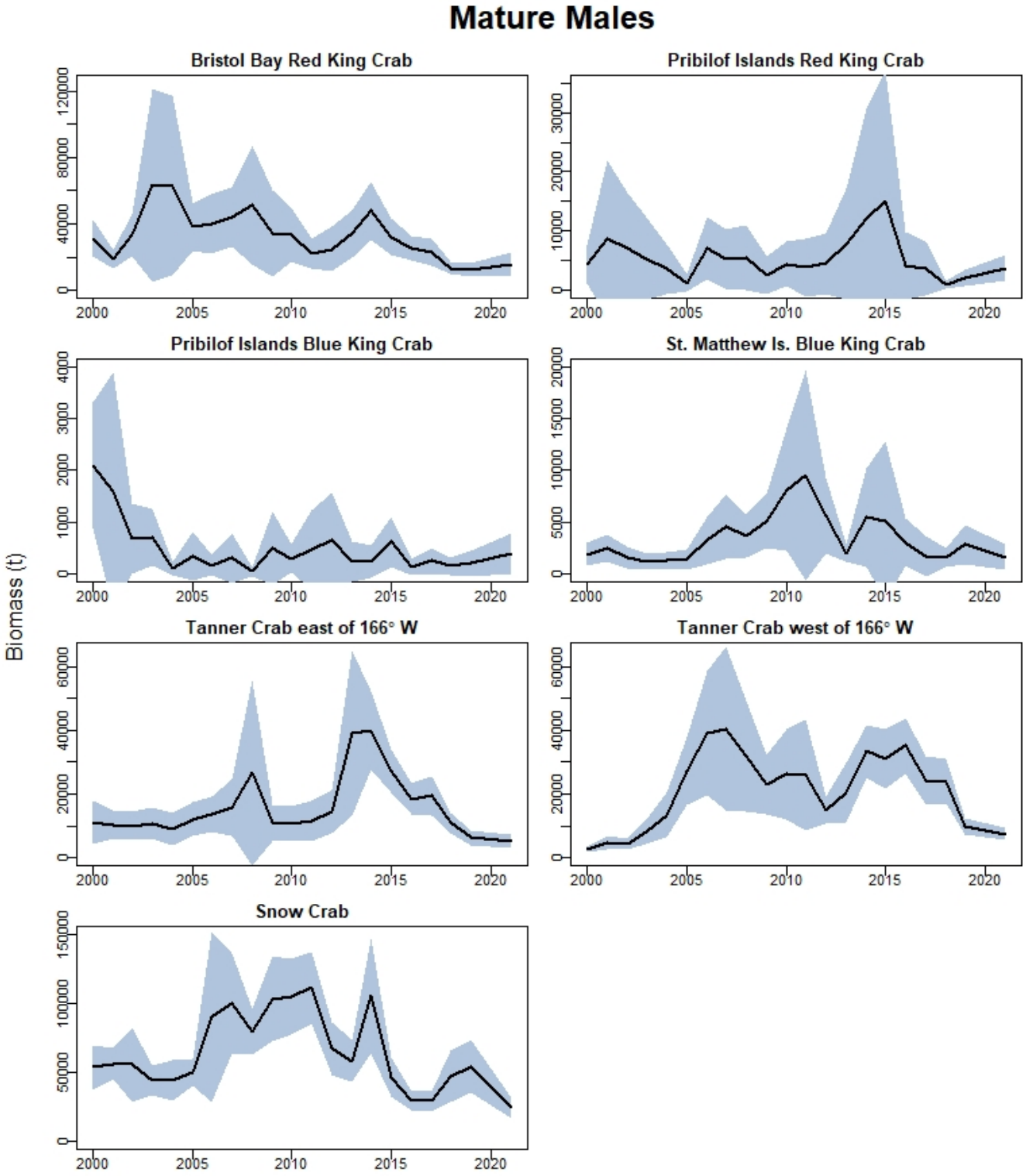

Figure 9. -- Historical mature male biomass (t, gray area indicates ± 95% CI) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl surveys (2000-2021).

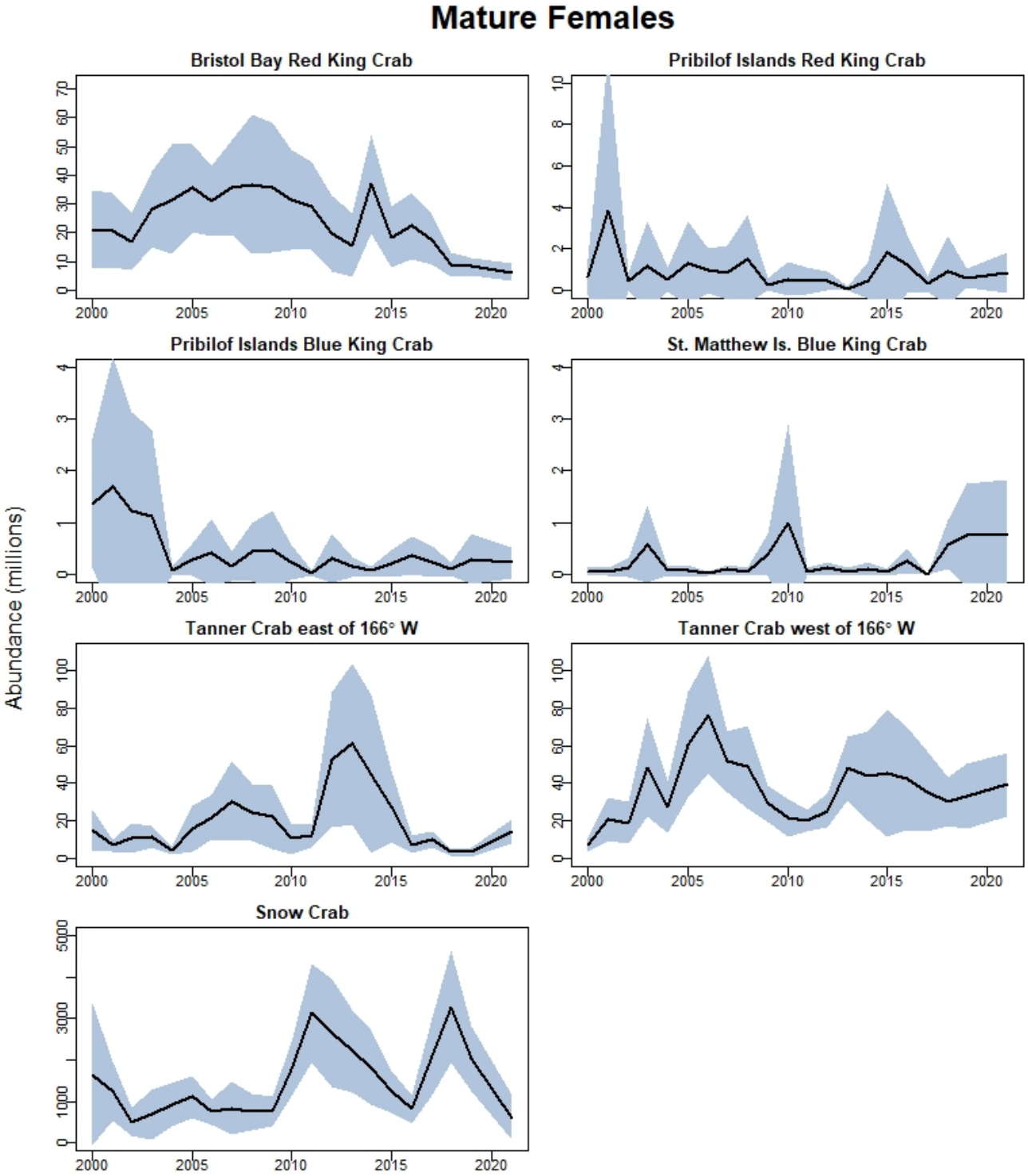

Figure 10. -- Historical mature female abundance (millions, gray area indicates ± 95% CI) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey (2000-2021). Abundance was calculated using actual maturity (abdominal flap morphology and clutch fullness index) as opposed to the size cut-off method used for males.

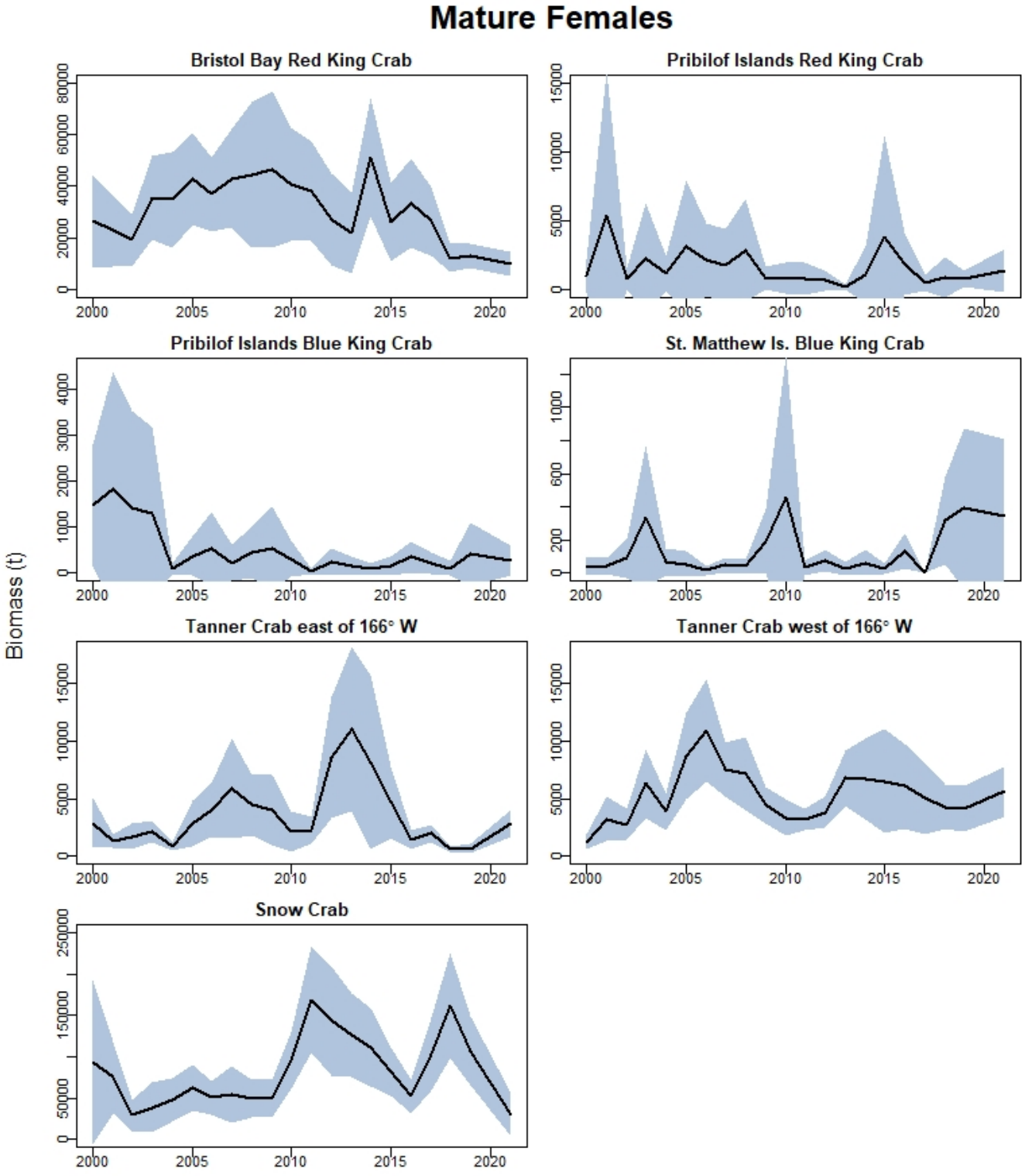

Figure 11. -- Historical mature female biomass (t, gray area indicates ± 95% CI) for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey (2000-2021). Biomass was calculated using actual maturity (abdominal flap morphology and clutch fullness index), as opposed to the size cut-off method used for males.

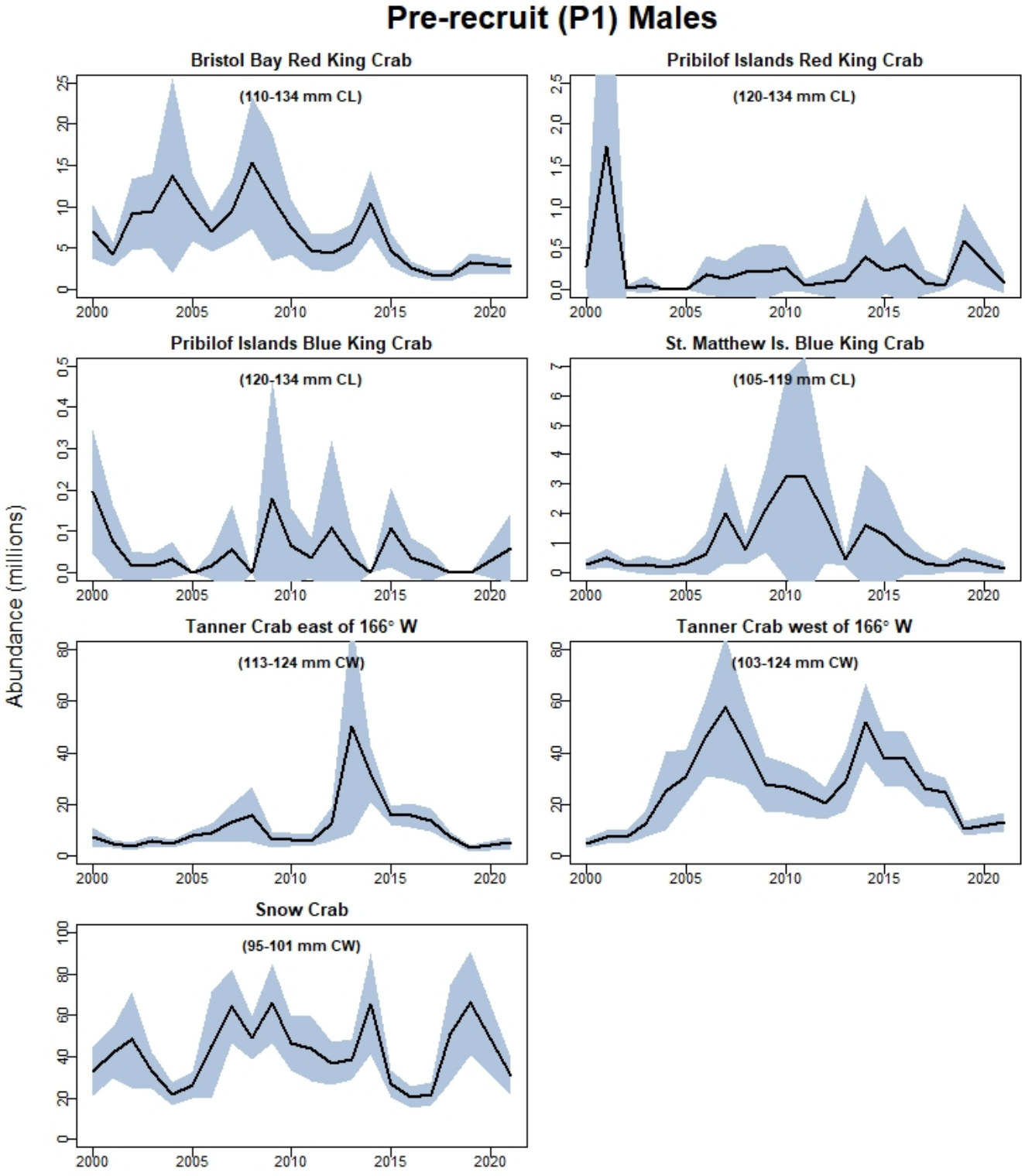

Figure 12. -- Historical abundance (millions, gray area indicates ± 95% CI) of pre-recruit (P1) males for six commercial species caught on the National Marine Fisheries Service eastern Bering Sea bottom trawl survey (2000-2021).

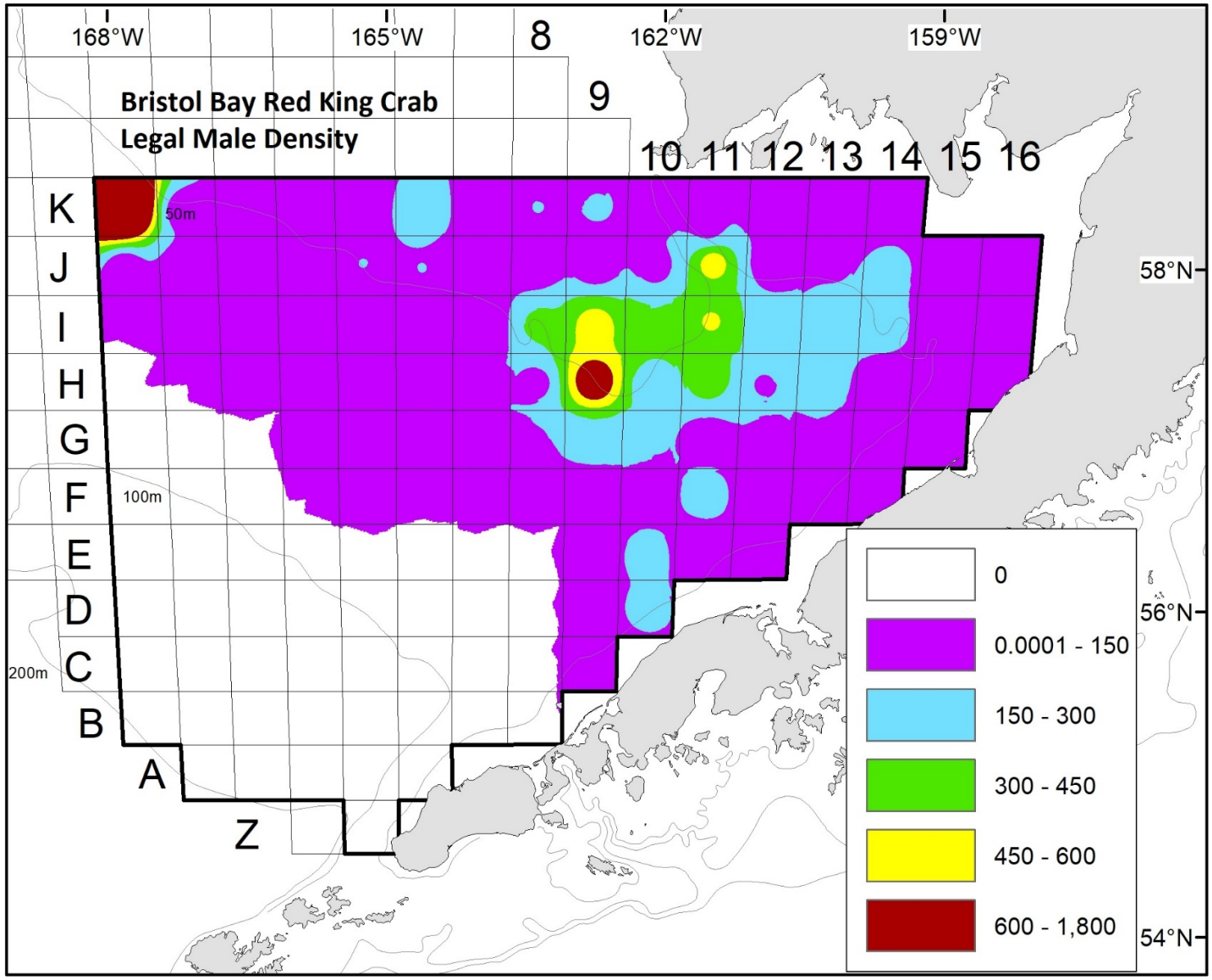

Figure 13. -- Estimated total density (number nmi^{-2}) of legal-sized male red king crab (*Paralithodes camtschaticus*) at each station sampled in the 2021 Bristol Bay District. Outlined area depicts the management district.

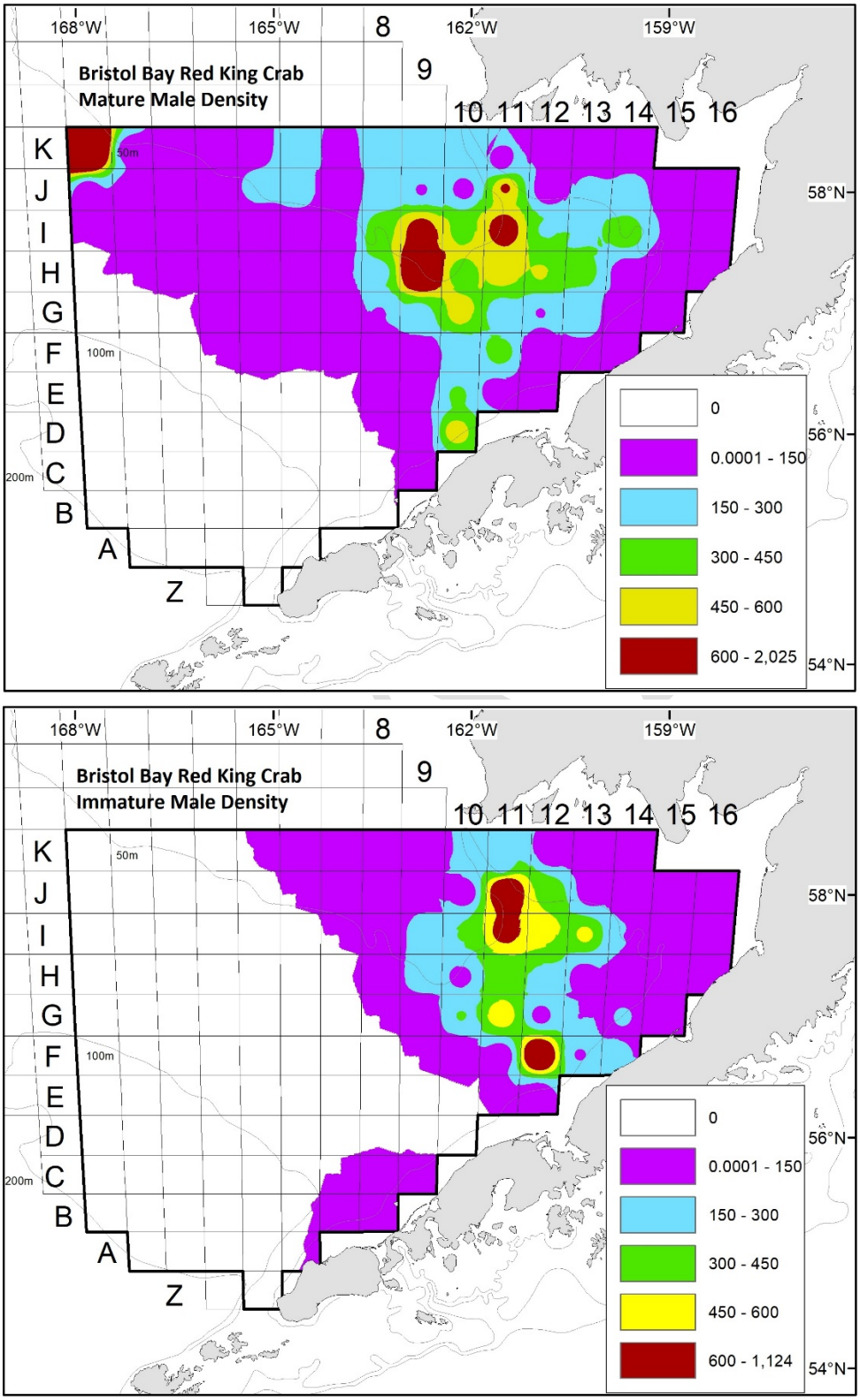

Figure 14. -- Estimated total density (number nmi^{-2}) of mature male (top) and immature male (bottom) red king crab (*Paralithodes camtschaticus*) at each station sampled in the 2021 Bristol Bay District. Outlined area depicts the management district.

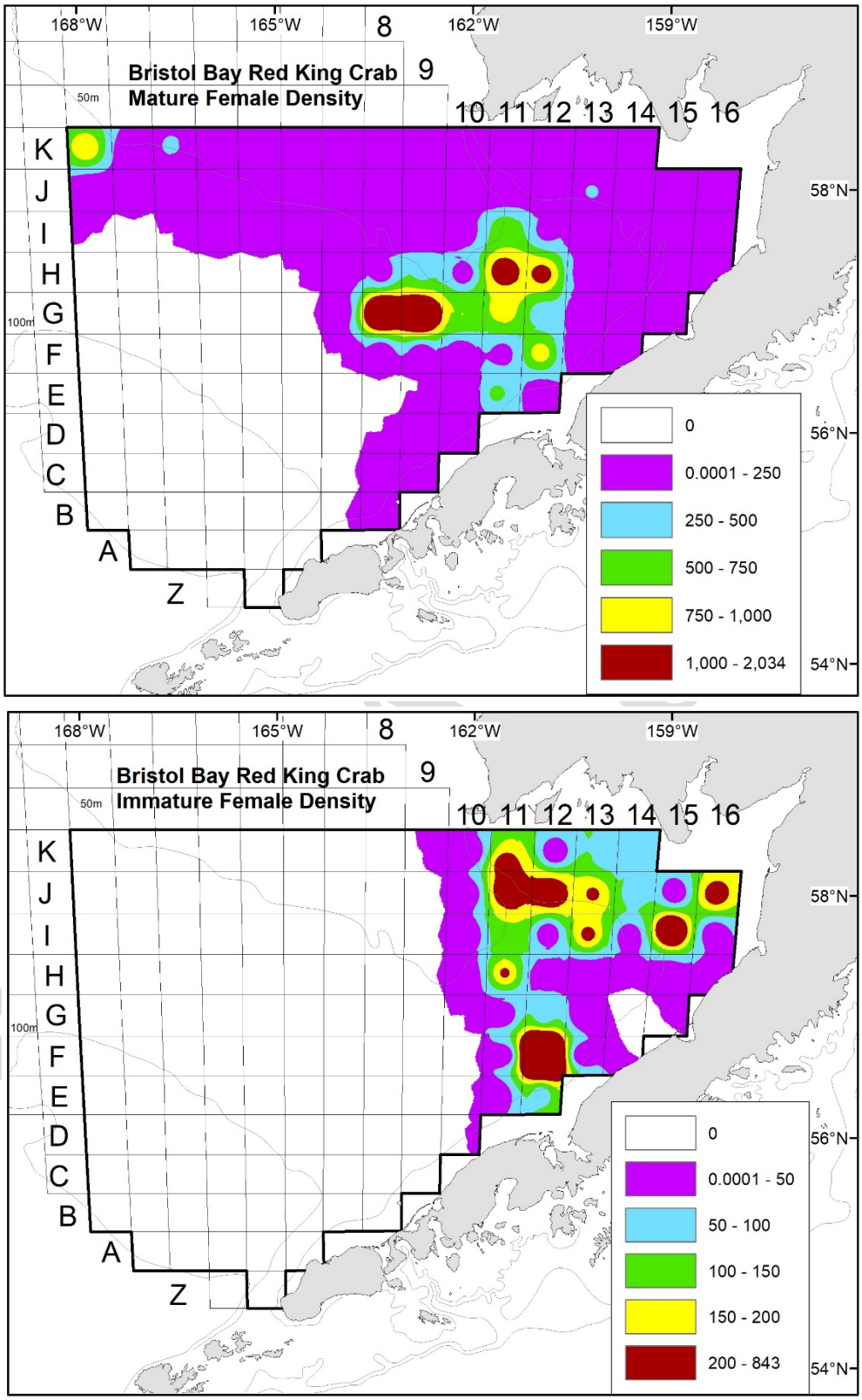

Figure 15a. -- Estimated total density (number nmi^{-2}) of mature female (top) and immature female (bottom) red king crab (*Paralithodes camtschaticus*) at each station sampled in the 2021 Bristol Bay District. Outlined area depicts the management district. For resample stations, August resample data supersedes June standard survey data.

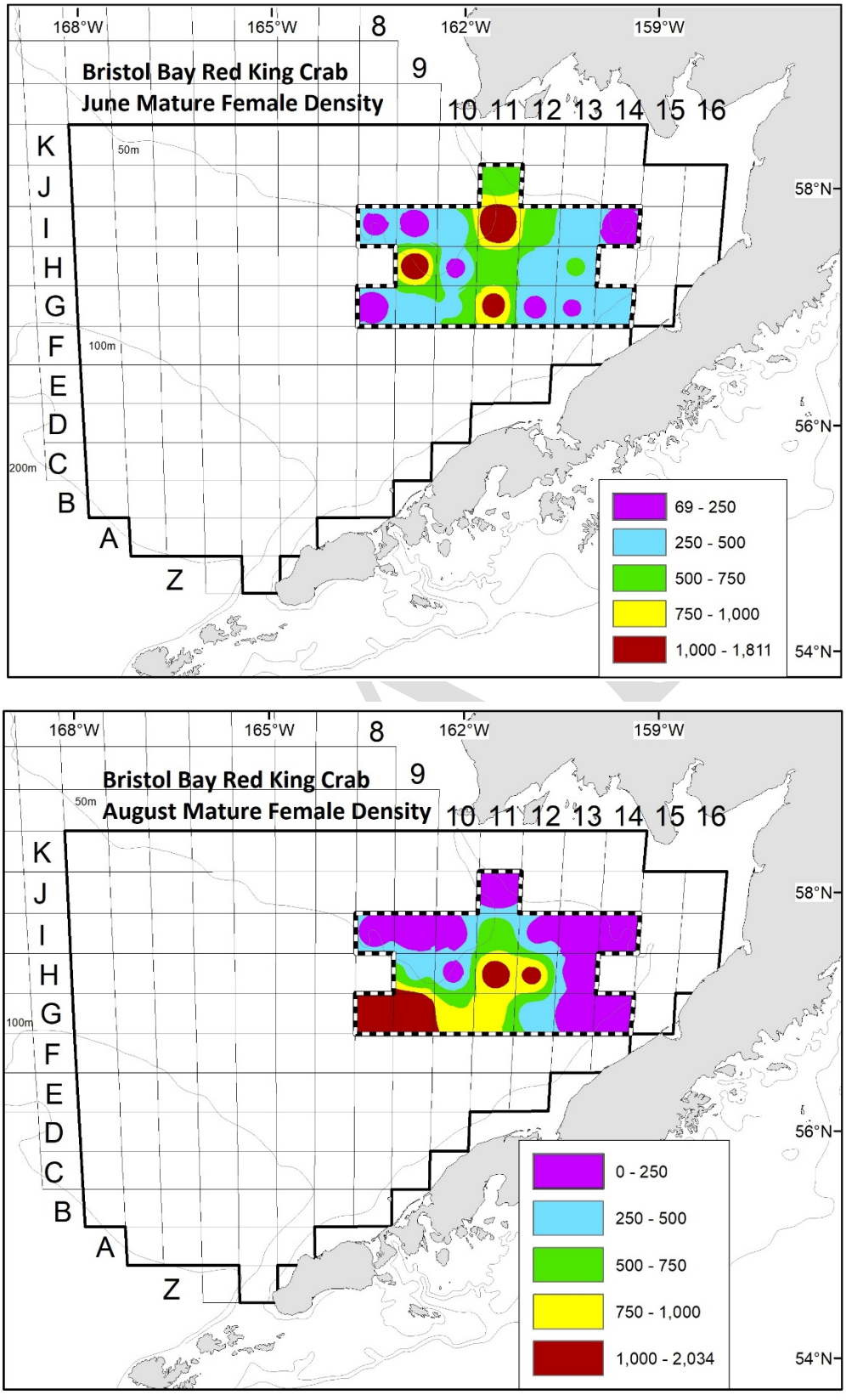

Figure 15b. -- Estimated total density (number nmi^{-2}) of mature female red king crab (*Paralithodes camtschaticus*) during the standard survey in June (top) and during the resampling in August (bottom).

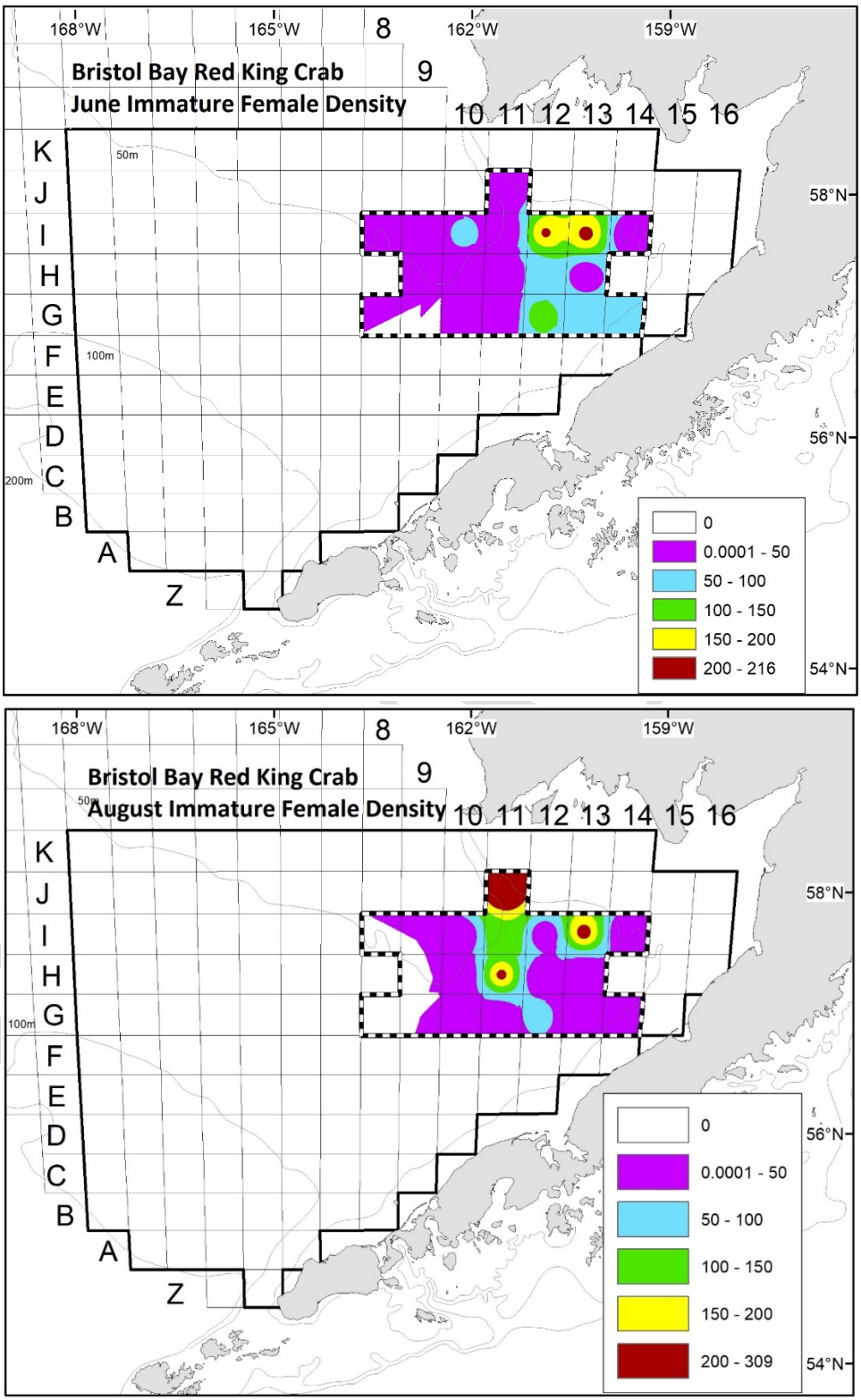

Figure 15c. -- Estimated total density (number nmi^{-2}) of immature female red king crab (*Paralithodes camtschaticus*) during the standard survey in June (top) and during the resampling in August (bottom).

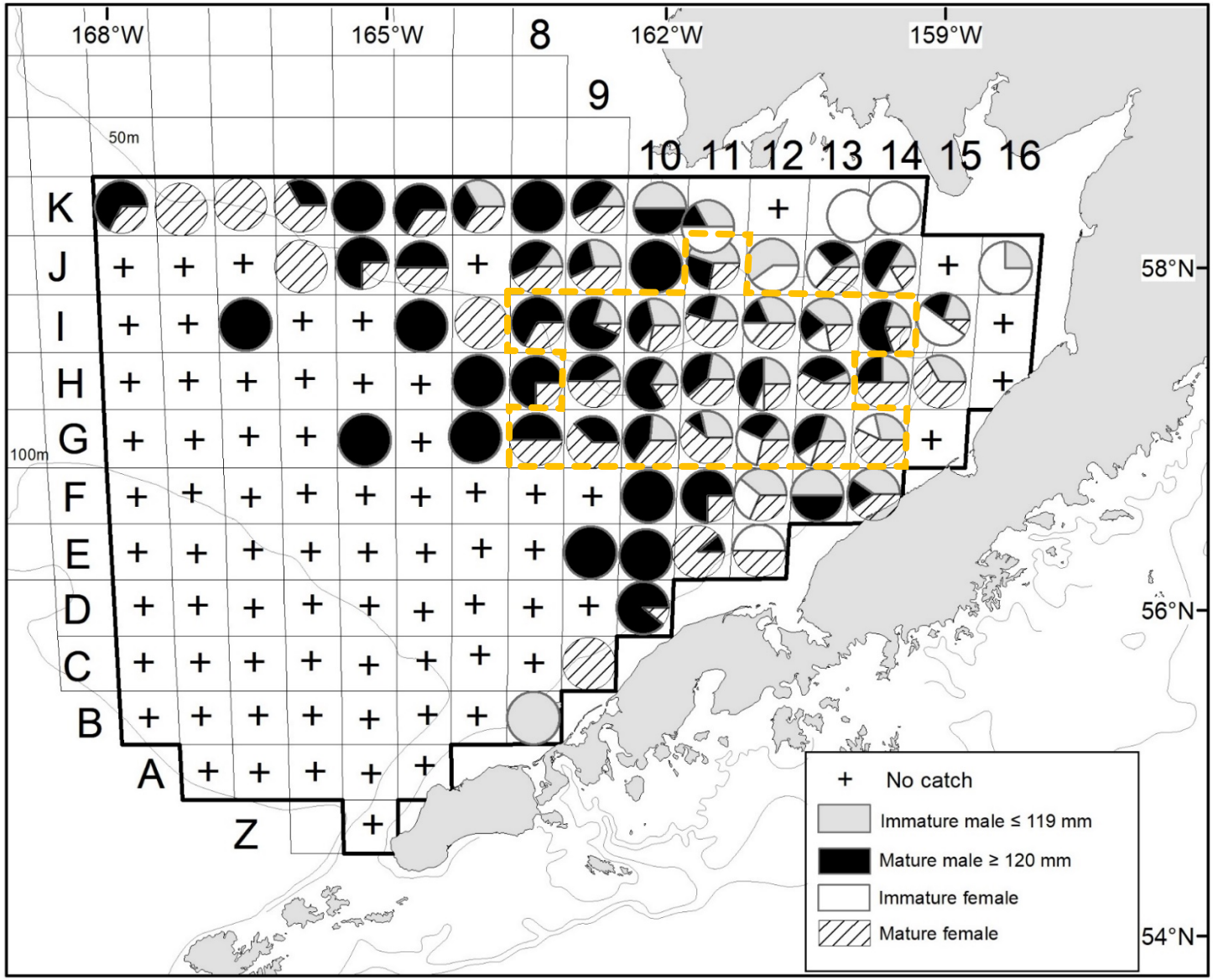

Figure 16a. -- Proportion of male and female red king crab (*Paralithodes camtschaticus*) maturity classes caught at each station sampled in 2021 in the Bristol Bay District from standard leg 1 stations. Black outlined area depicts the management district. Stations outlined in yellow were resampled in August 2021.

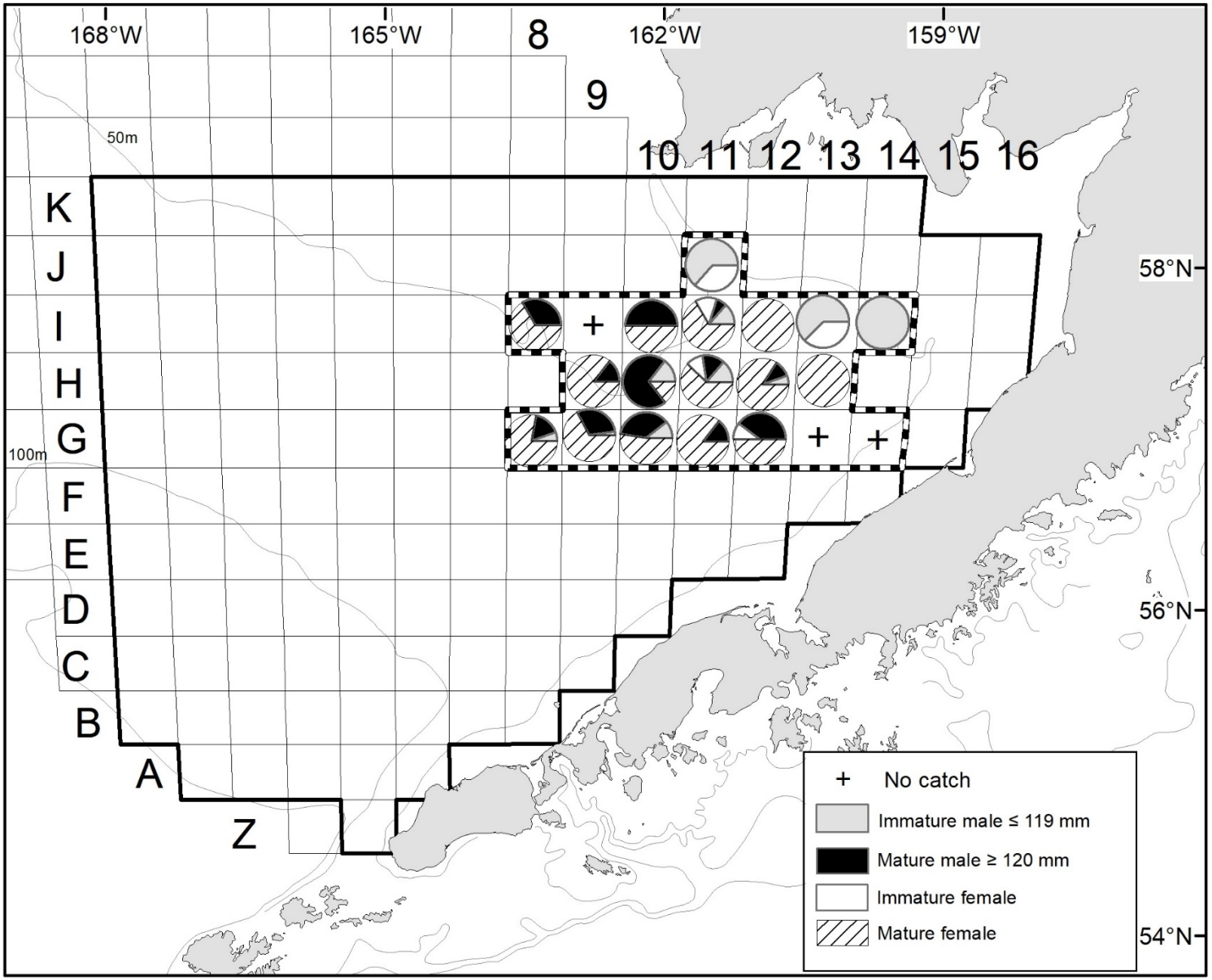

Figure 16b. -- Proportion of male and female red king crab (*Paralithodes camtschaticus*) maturity classes caught at 20 resample stations in August 2021. Outlined area depicts the management district.

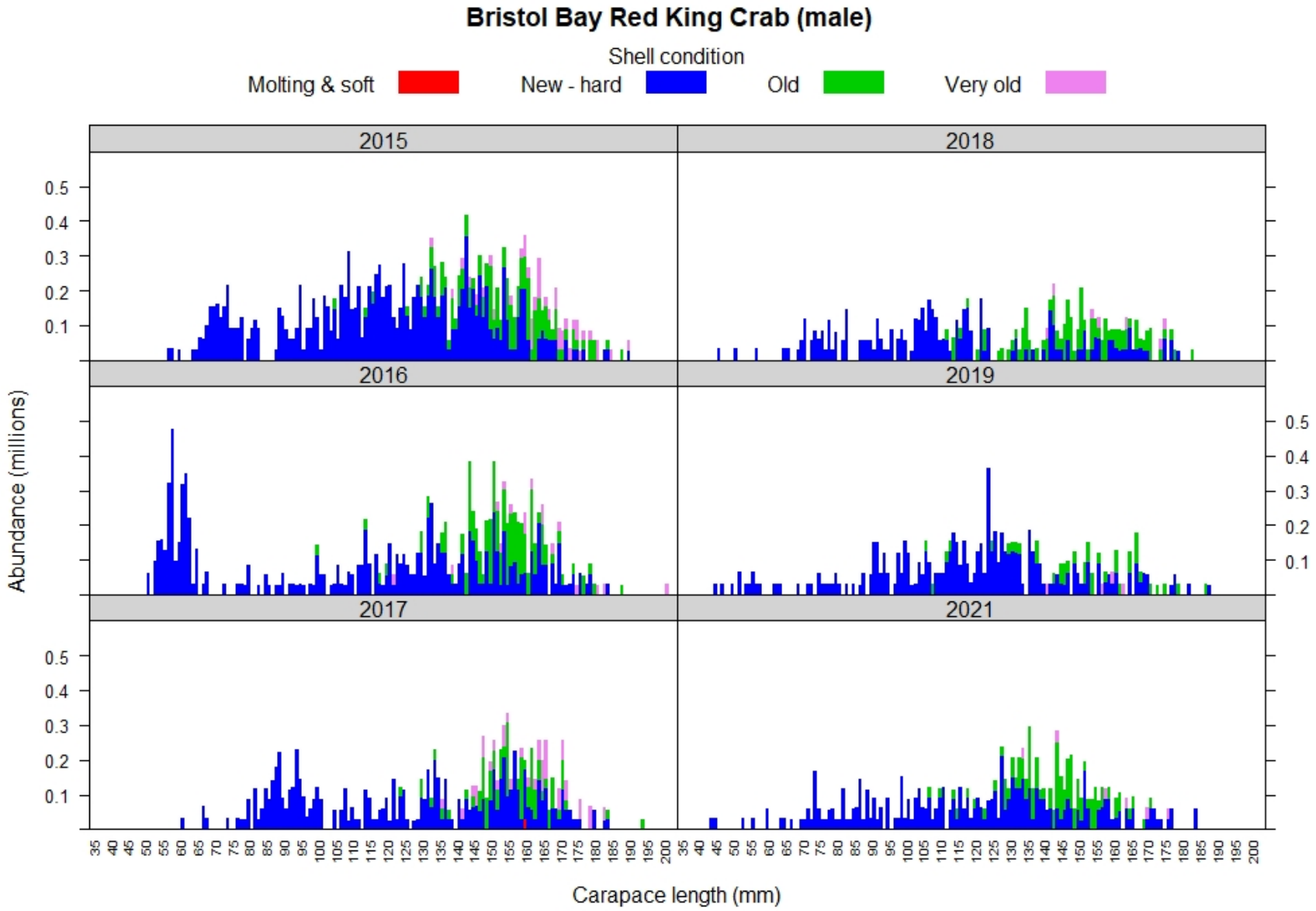

Figure 17. – Abundance (millions) by size and shell condition of Bristol Bay District male red king crab (*Paralithodes camtschaticus*) using 1 mm length classes, 2015-2021.

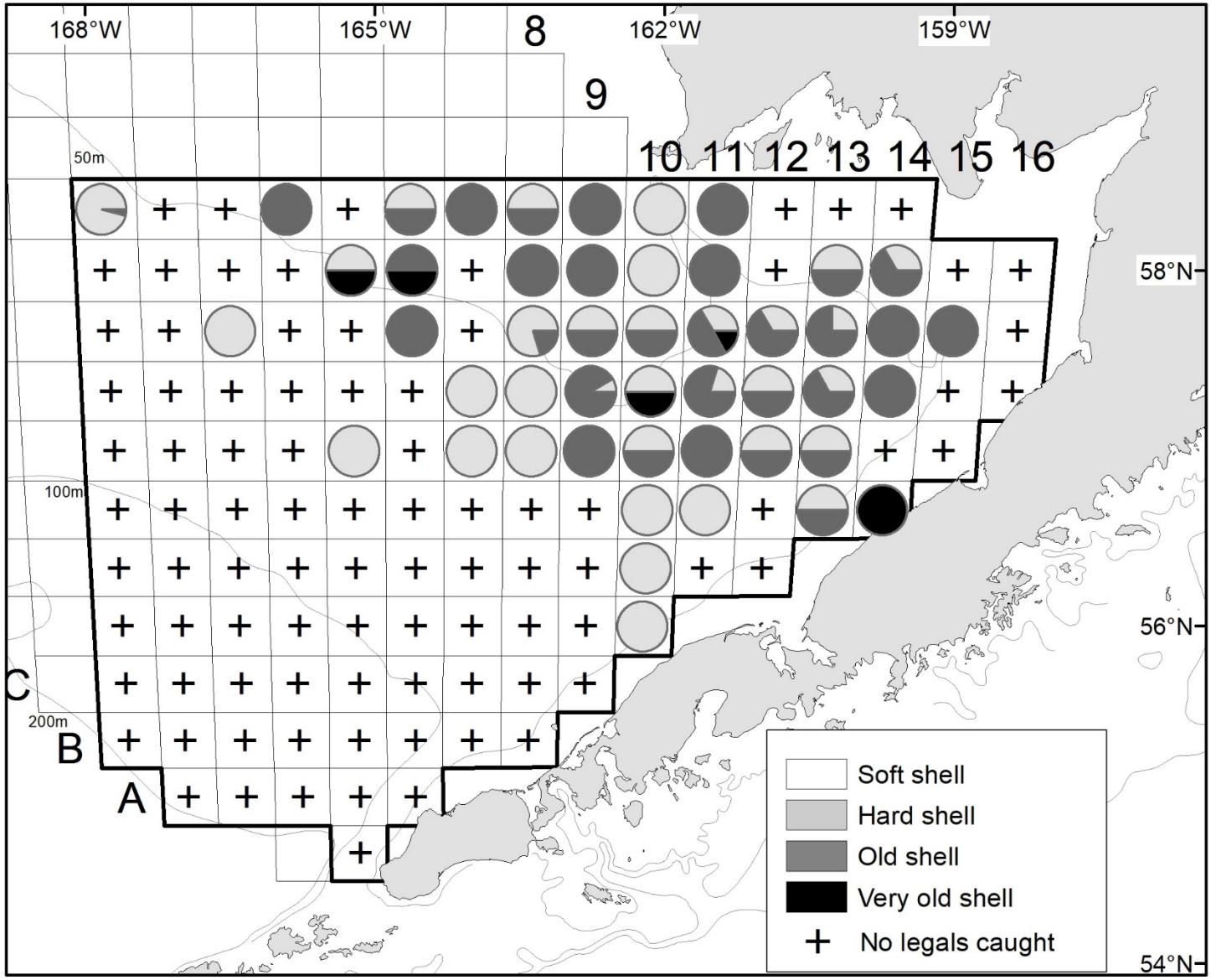

Figure 18a. -- Proportion of legal-sized, male red king crab (*Paralithodes camtschaticus*) shell condition classes caught at each station sampled in 2021 in the Bristol Bay District during the standard survey (June 2021). The outlined area depicts management district.

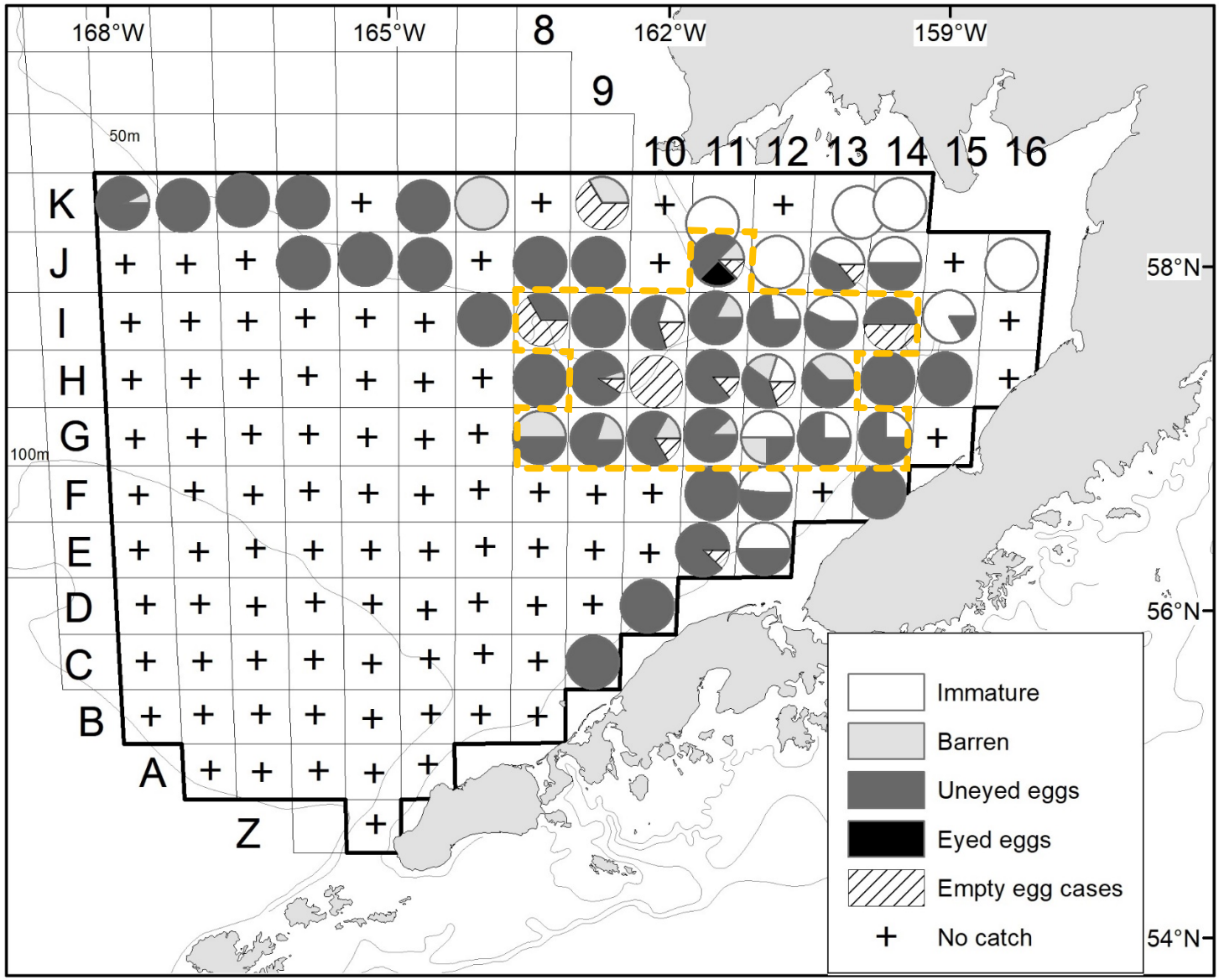

Figure 18b. -- Proportion of female red king crab (*Paralithodes camtschaticus)* egg condition classes caught at each station sampled in 2021 in the Bristol Bay District during the standard survey (June 2021). The black outlined area depicts management district. Stations outlined in yellow were resampled in August 2021.

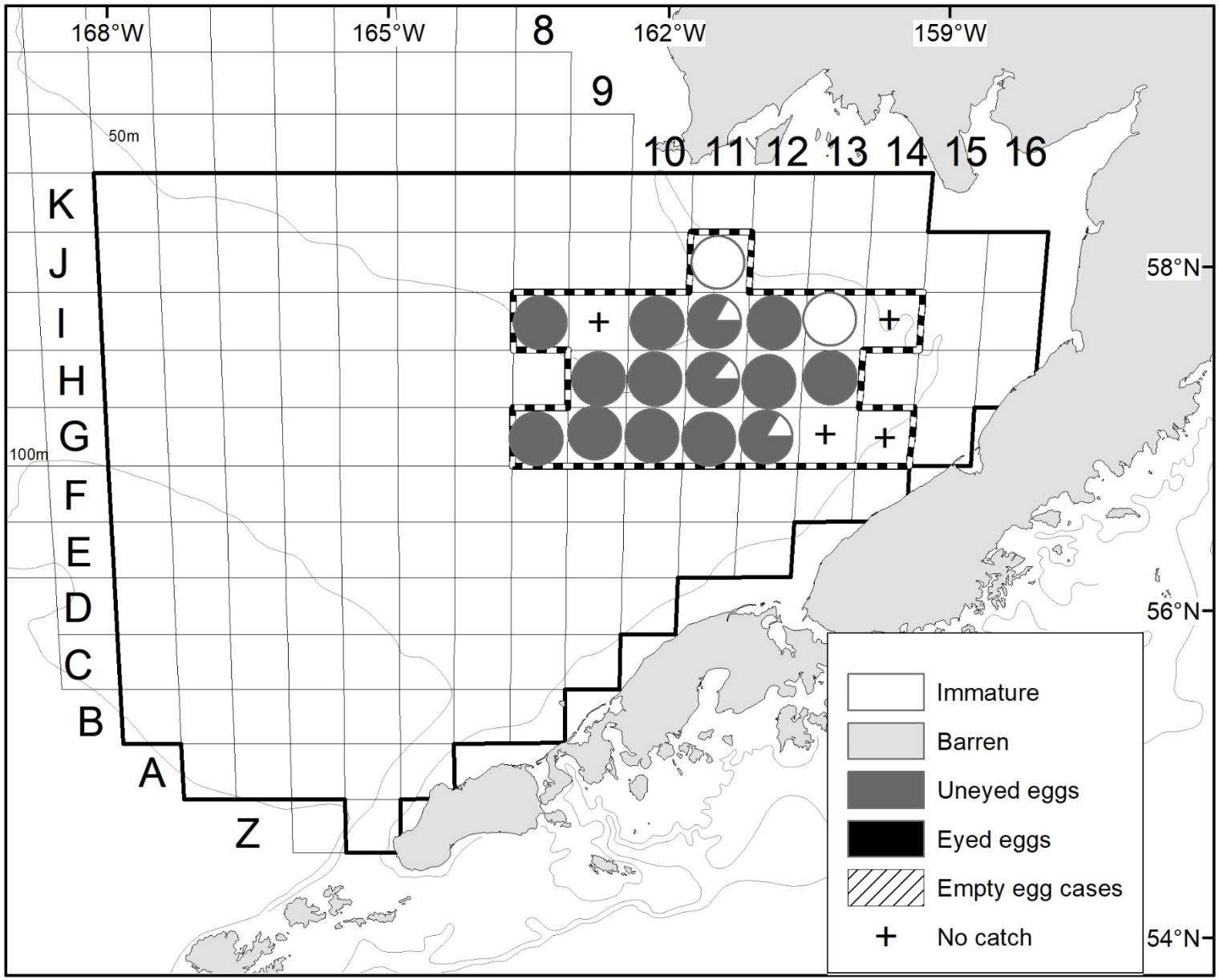

Figure 18c. -- Distribution and egg condition of female red king crab (*Paralithodes camtschaticus)* at 20 resample stations in August 2021. The black outlined area depicts management district.

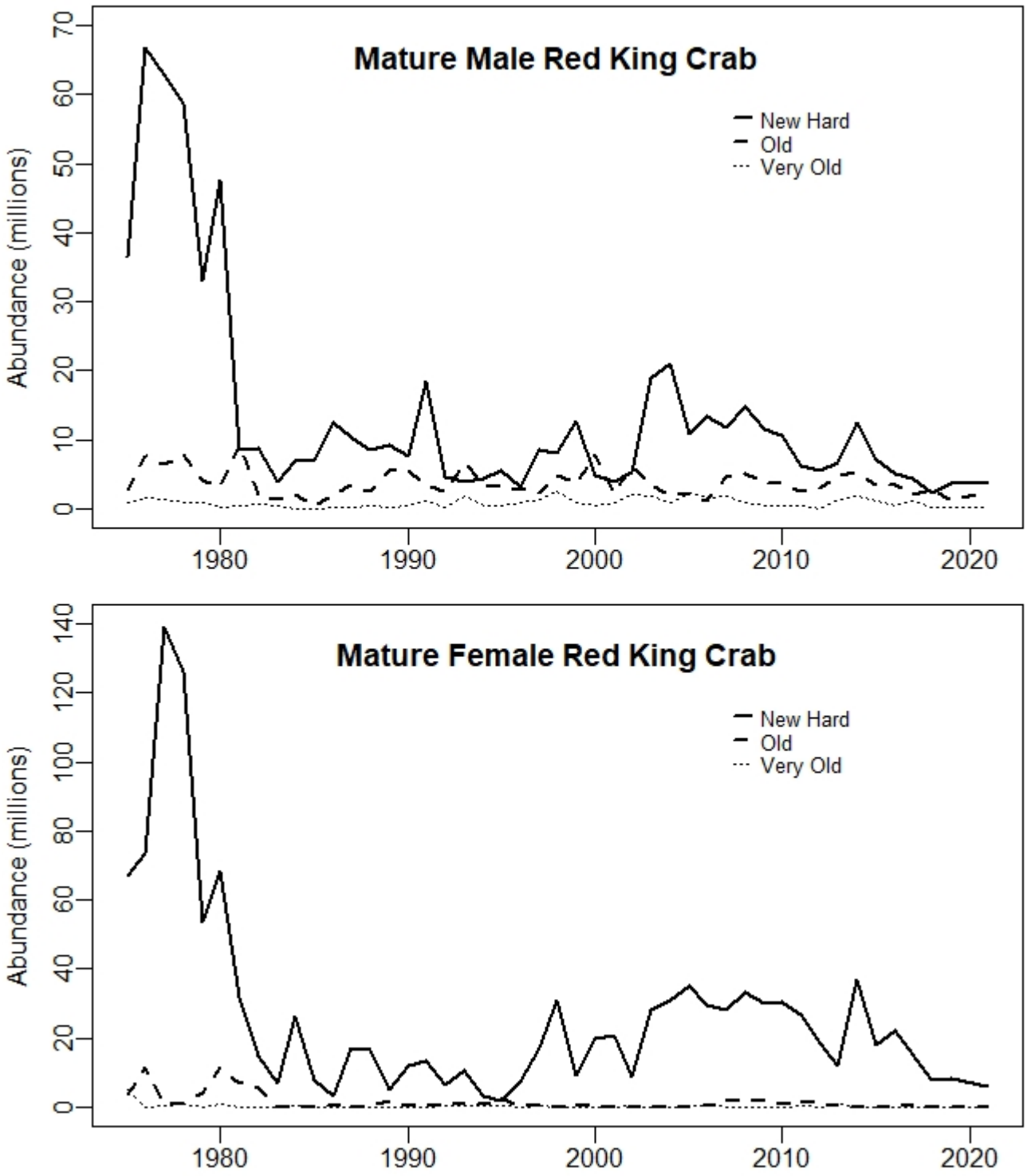

Figure 19. -- Time series of mature male (≥120 mm CL) and female (actual maturity) Bristol Bay District red king crab (*Paralithodes camtschaticus*) abundance by shell condition, 1975-2021. New-Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined. Mature male data is from leg 1 standard stations. For mature females, if resampling occurred, resample data supersedes leg 1 data for resample stations.

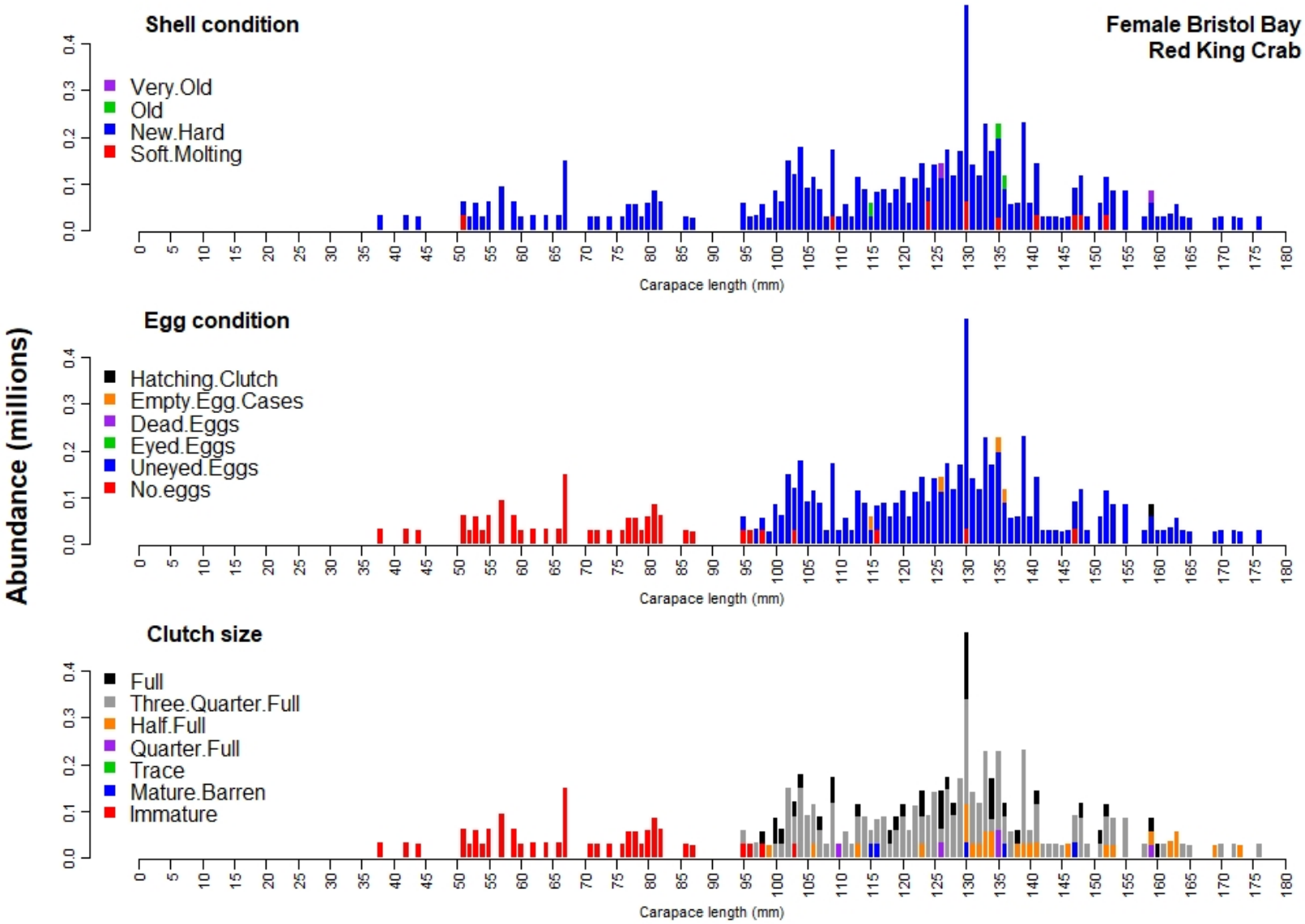

Figure 20a. -- Size frequency by shell condition, egg condition, and clutch fullness of Bristol Bay District female red king crab (*Paralithodes camtschaticus*) by 1 mm length classes in 2021. Data includes 2021 standard survey stations (June), with superseded resample stations from August 2021.

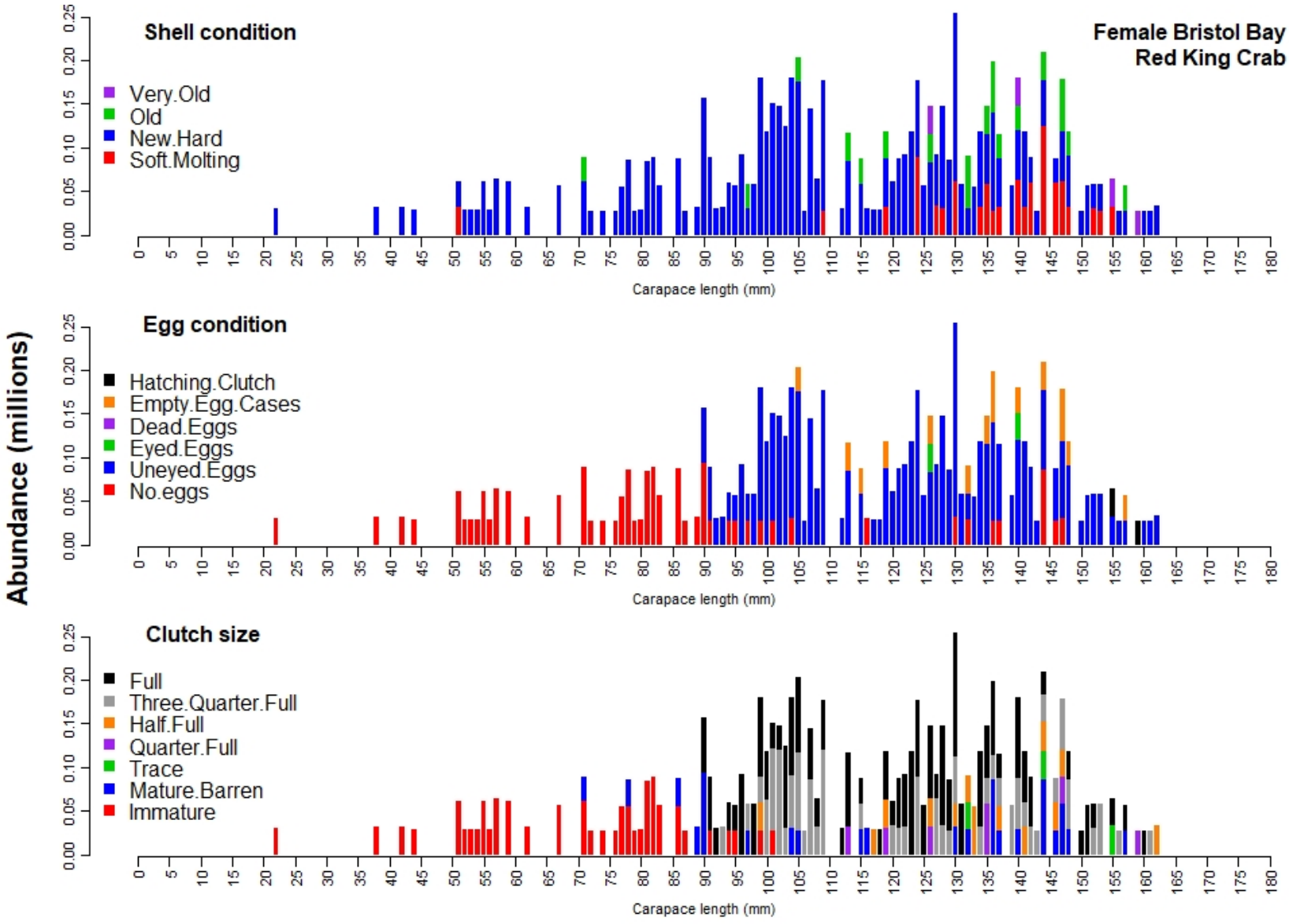

Figure 20b. -- Size frequency by shell condition, egg condition, and clutch fullness of Bristol Bay District female red king crab (*Paralithodes camtschaticus*) by 1 mm length classes. Data are from standard survey stations in June.

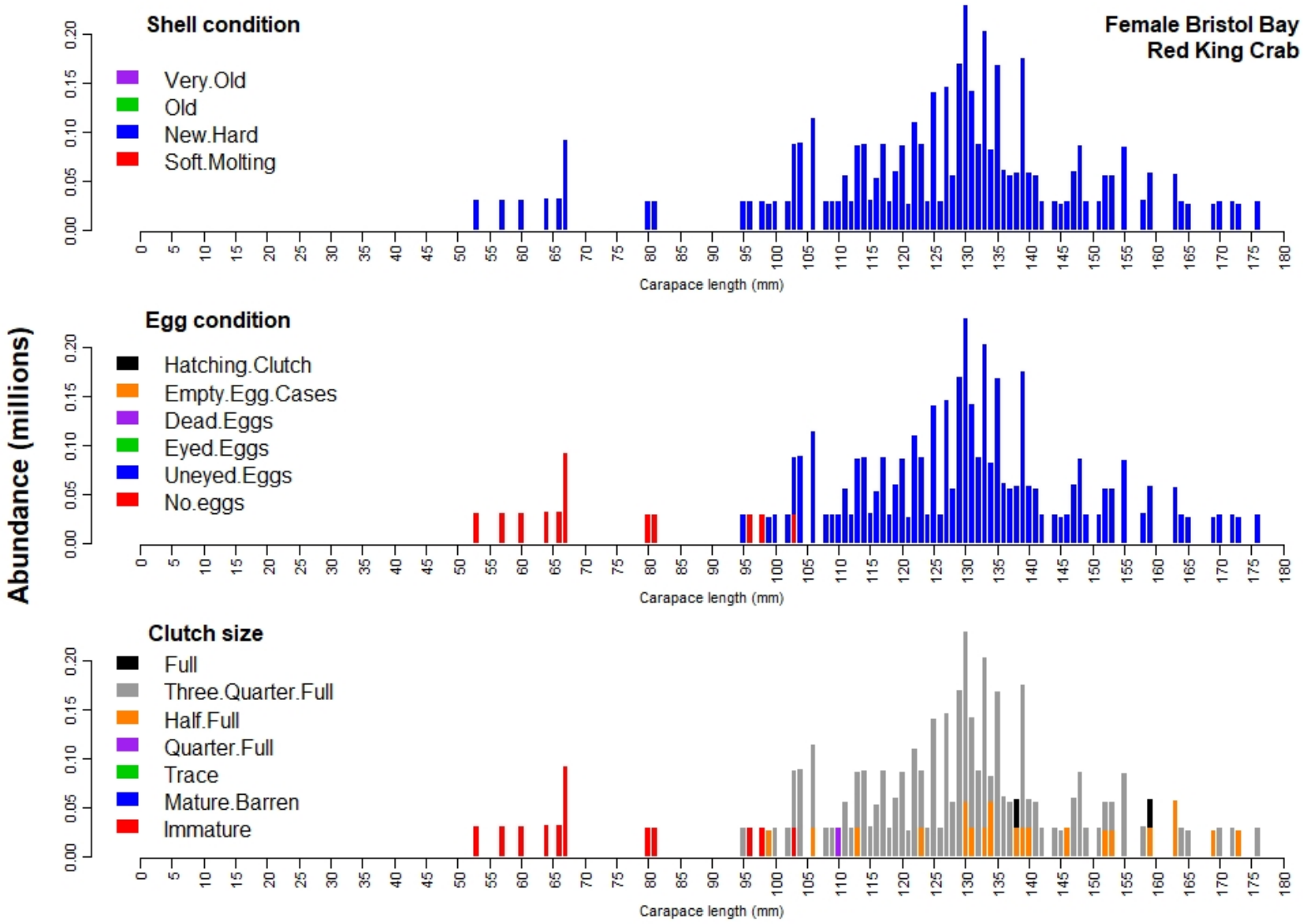

Figure 20c. -- Size frequency by shell condition, egg condition, and clutch fullness of Bristol Bay District female red king crab (*Paralithodes camtschaticus*) by 1 mm length classes. Data are from 20 resample stations (August 2021).

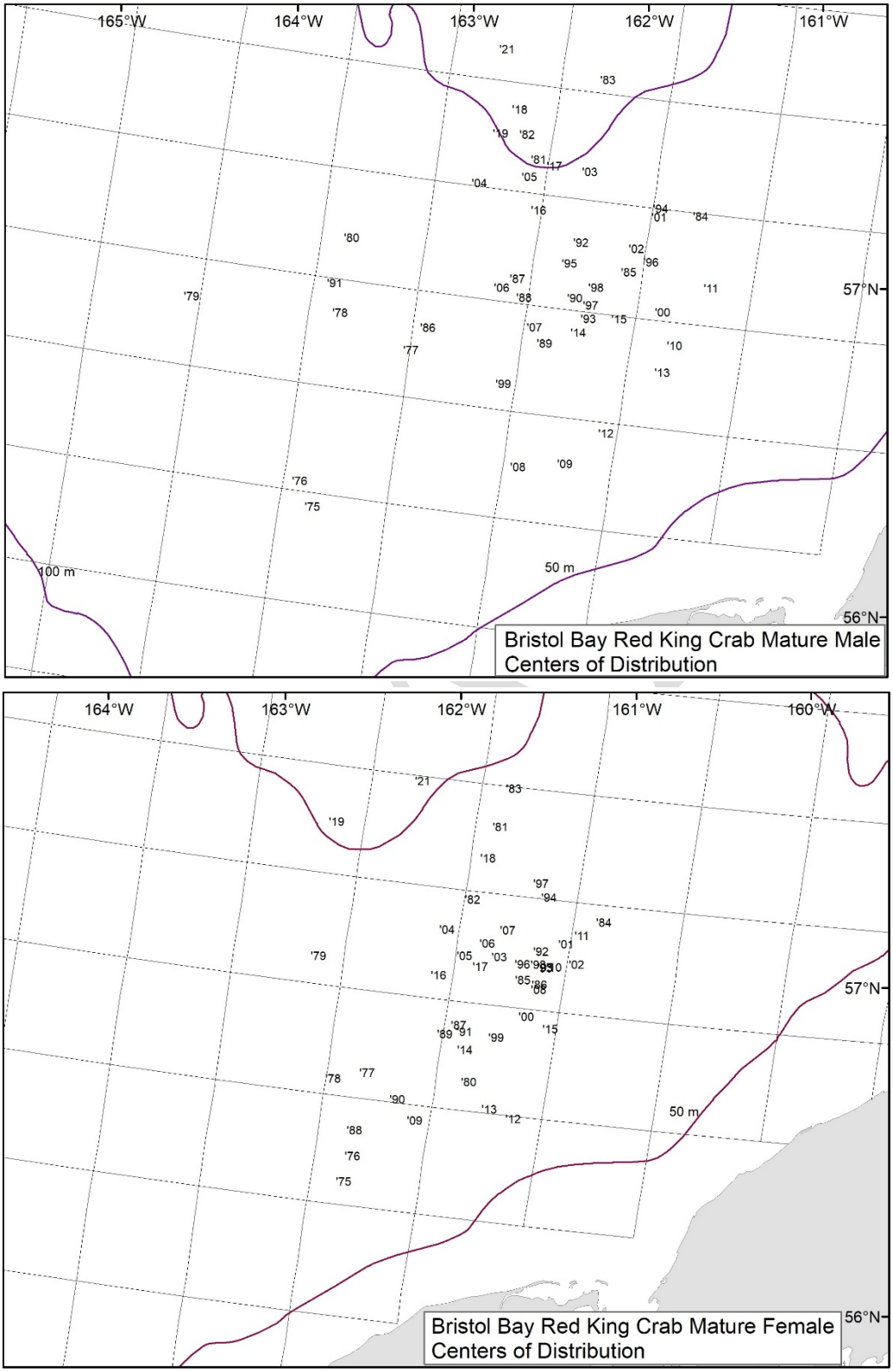

Figure 21. -- Centers of stock distribution of Bristol Bay District mature male (top) and female (bottom) red king crab (*Paralithodes camtschaticus*) from 1975 to 2021. Female data are from standard survey stations (June 2021).

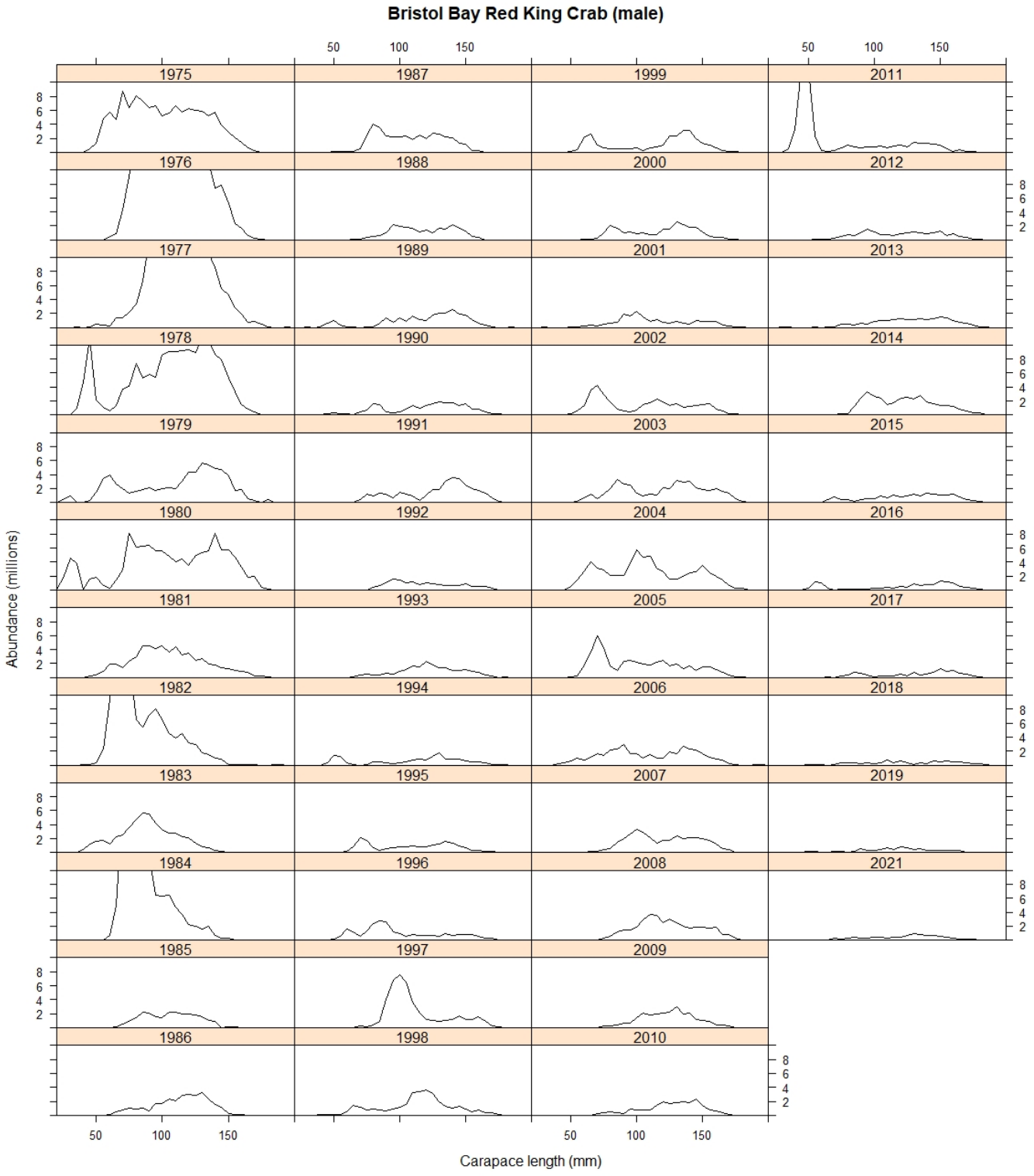

Figure 22. -- Historical size frequency by 5 mm length classes of Bristol Bay District male red king crab (*Paralithodes camtschaticus*), 1975 to 2021. Data from standard leg 1 stations.

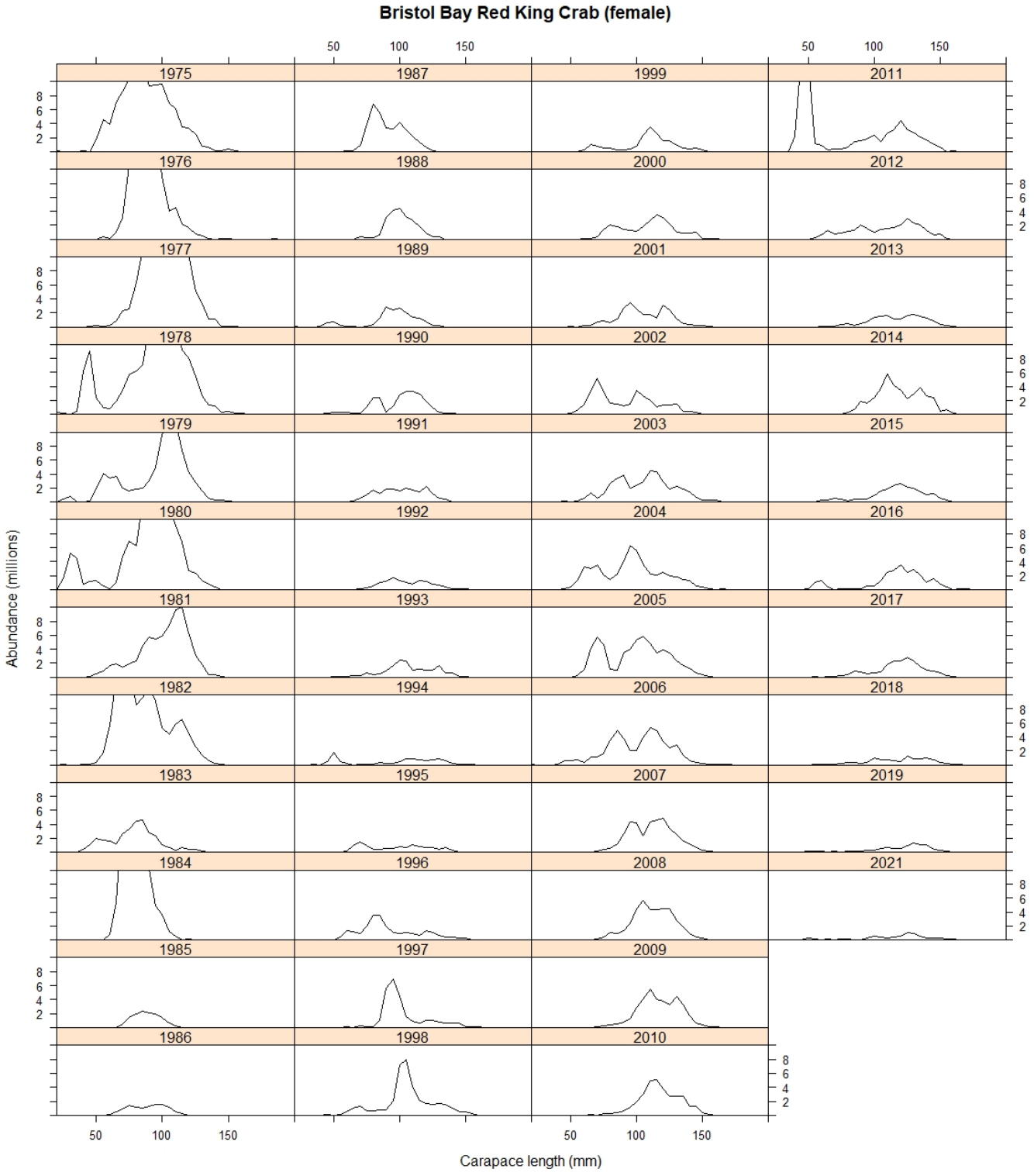

Figure 23. -- Historical size frequency by 5 mm length classes of Bristol Bay District female red king crab (*Paralithodes camtschaticus*), 1975 to 2021. Data from standard leg 1 and 20 resample stations. The 20 resample stations (August 2021) replace data from the original 20 standard stations (June 2021).

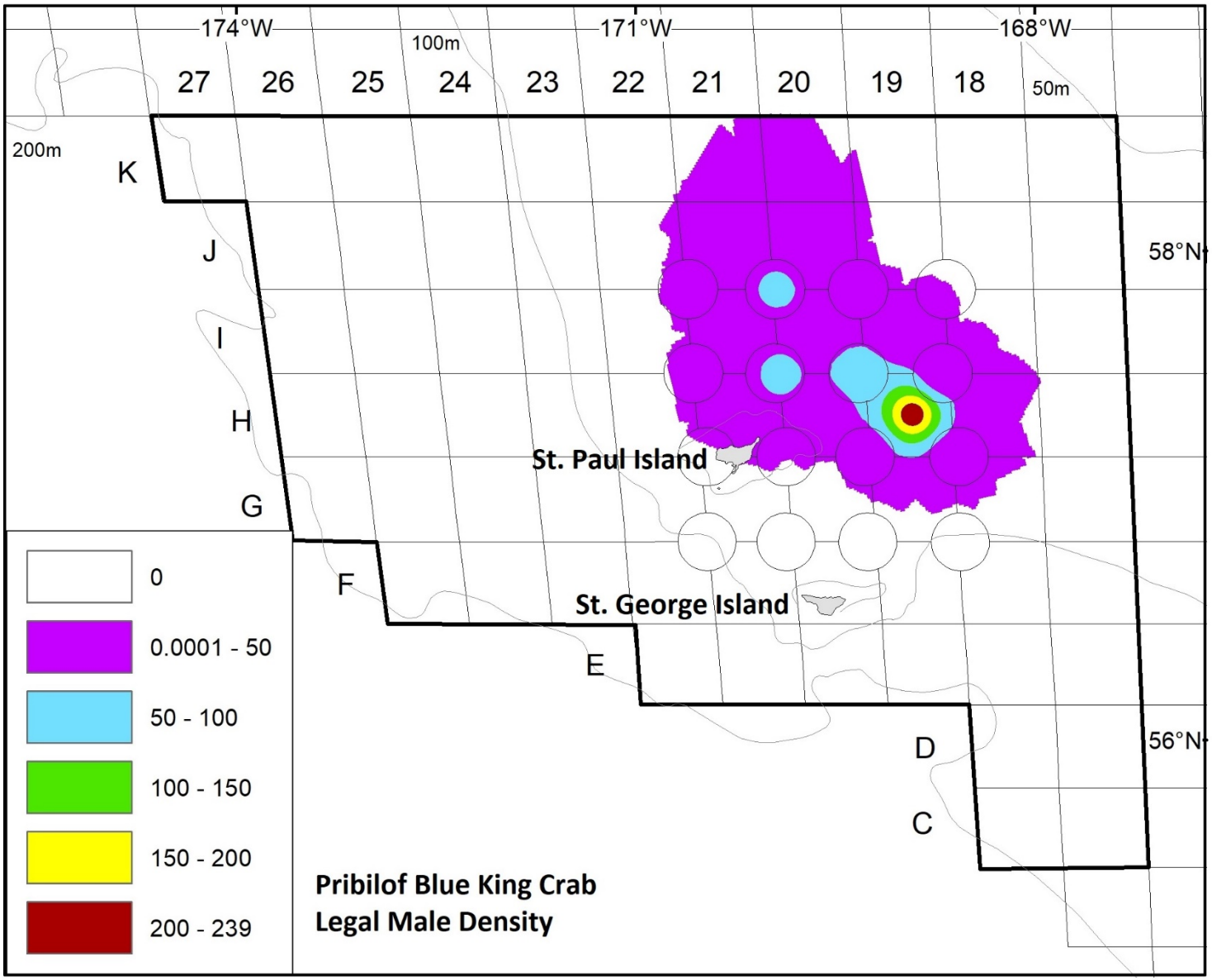

Figure 24. -- Estimated total density (number nmi^{-2}) of legal-sized male red king crab (*Paralithodes camtschaticus*) at each station sampled in the Pribilof District in 2021. The outlined area depicts stations within the management district.

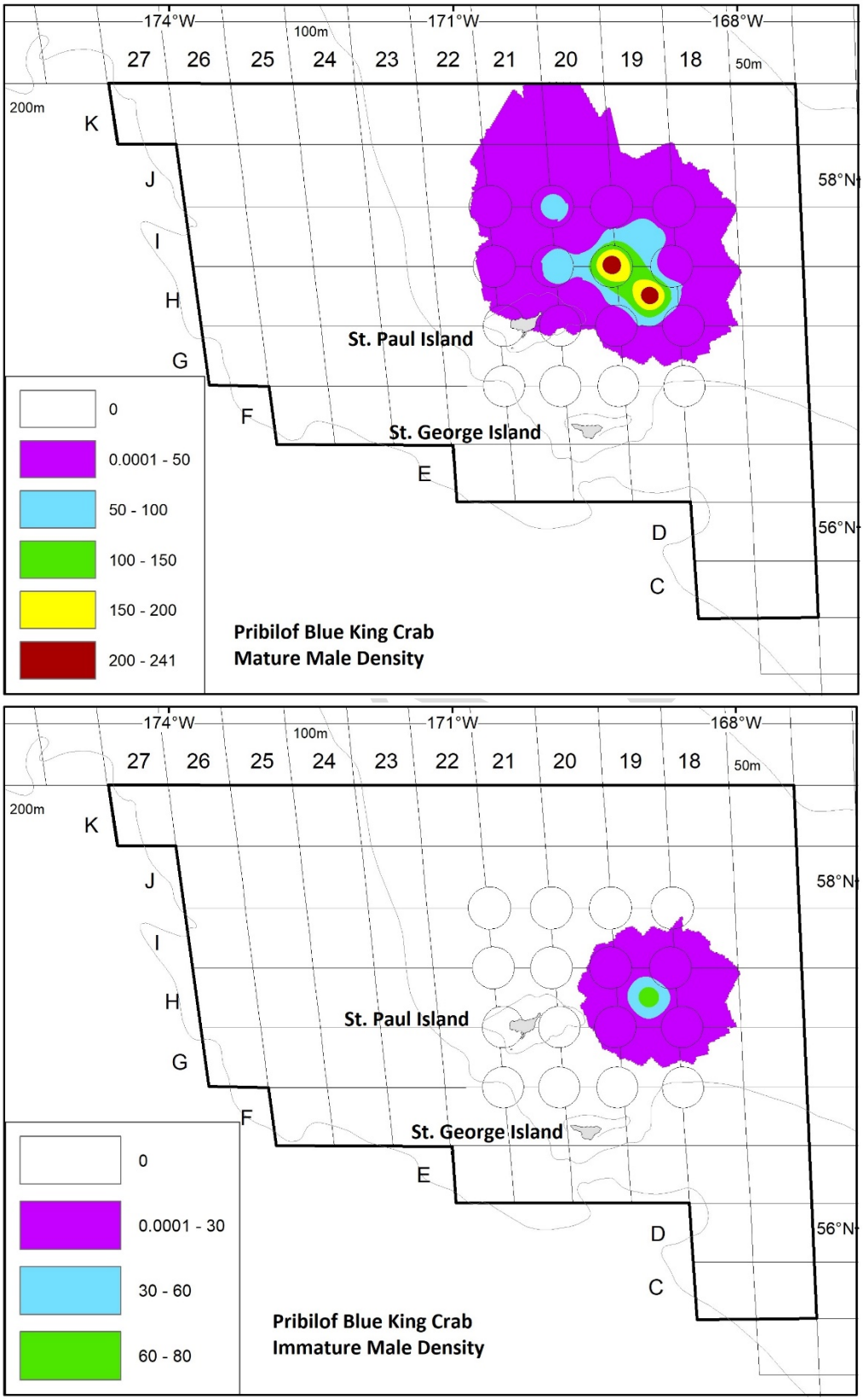

Figure 25. -- Estimated total density (number nmi^{-2}) of mature male (top) and immature male (bottom) red king crab (*Paralithodes camtschaticus*) at each station sampled in the Pribilof District in 2021. The outlined area depicts stations within the management district.

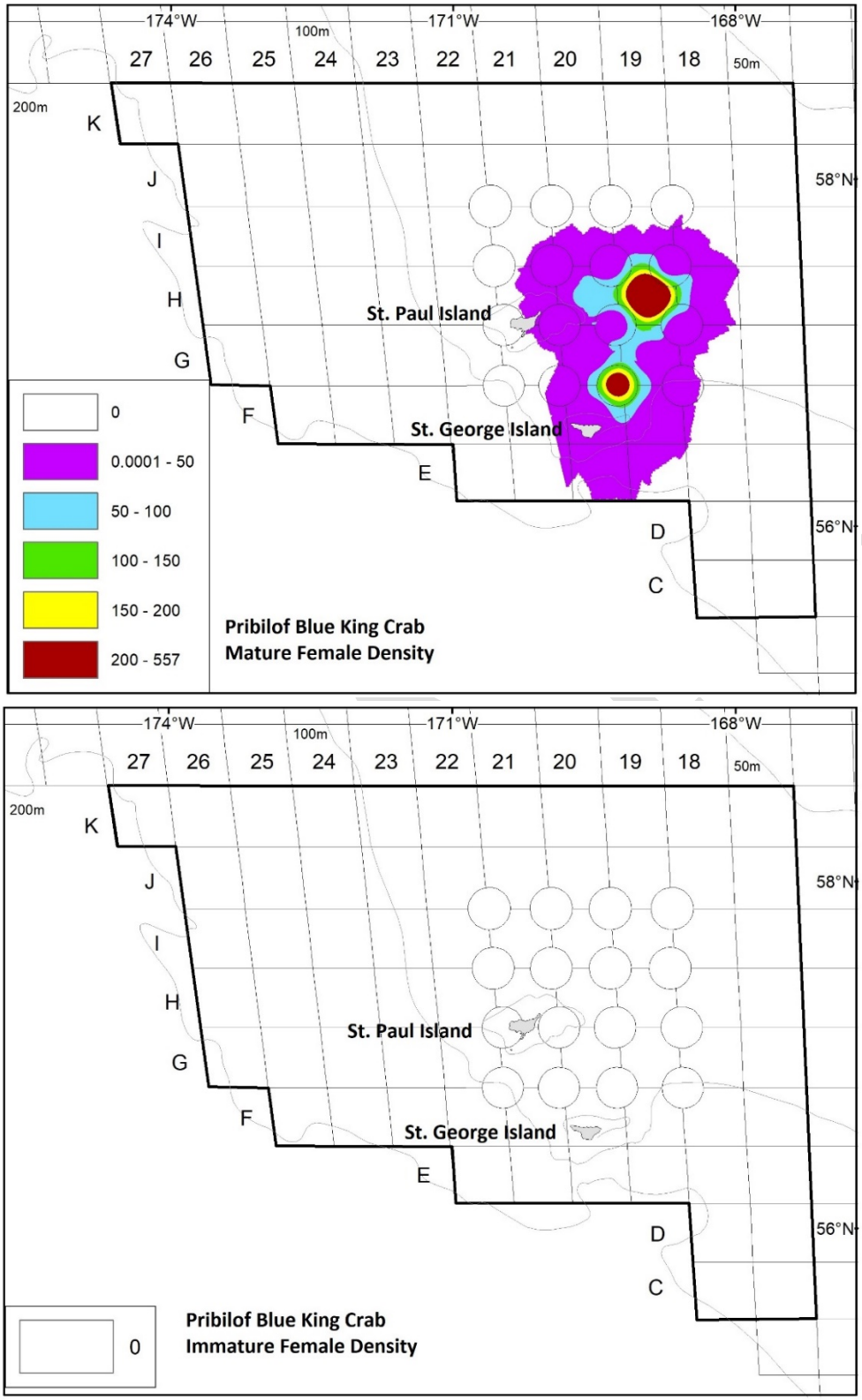

Figure 26. -- Estimated total density (number nmi^{-2}) of mature female (top) and immature female (bottom) red king crab (*Paralithodes camtschaticus*) at each station sampled in the Pribilof District in 2021. The outlined area depicts stations within the management district. Note that there were no immature female king crab caught n 2021

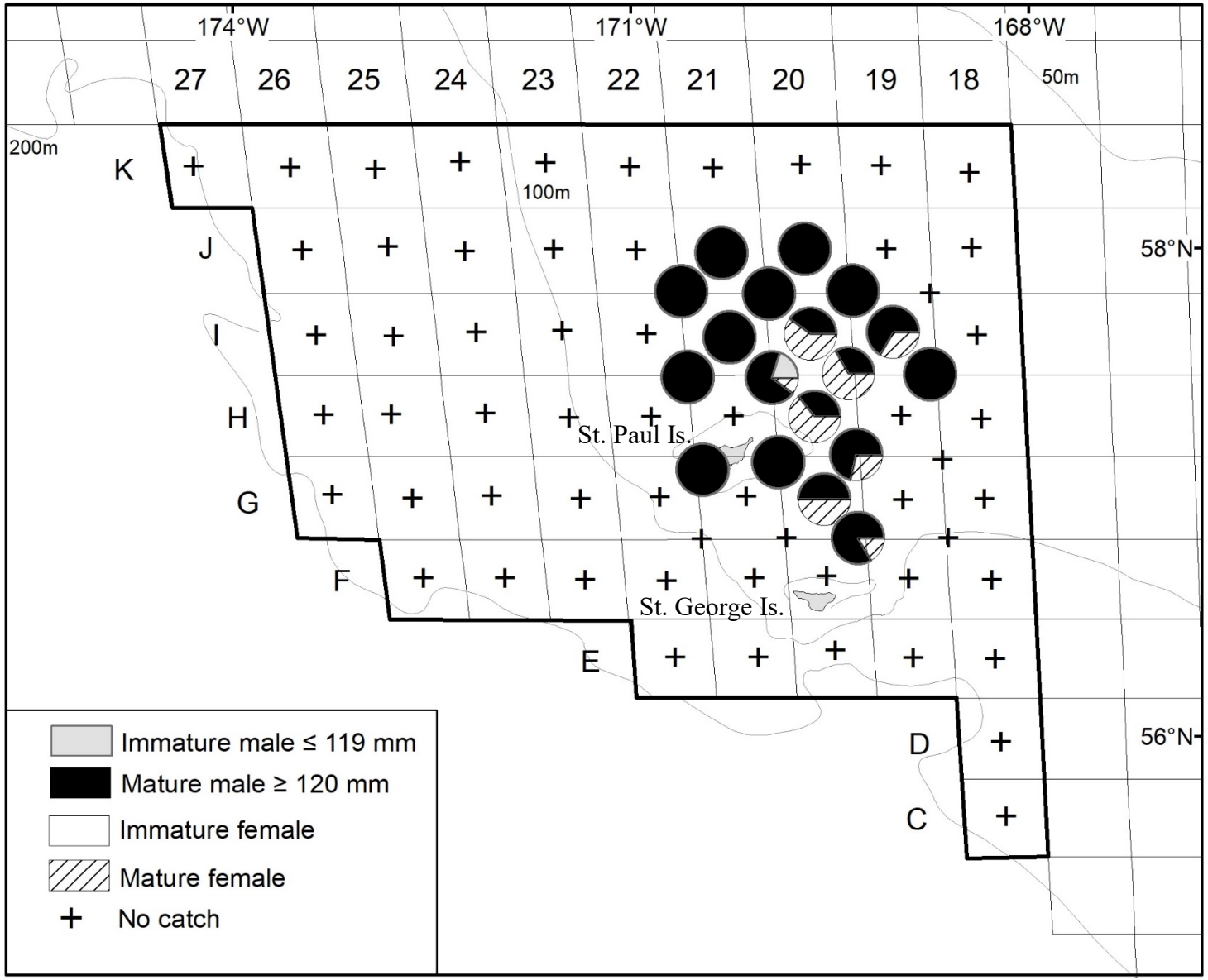

Figure 27. -- Proportion of male and female red king crab (*Paralithodes camtschaticus*) maturity classes caught at each station sampled in 2021 in the Pribilof District. The outlined area depicts stations within the management district.

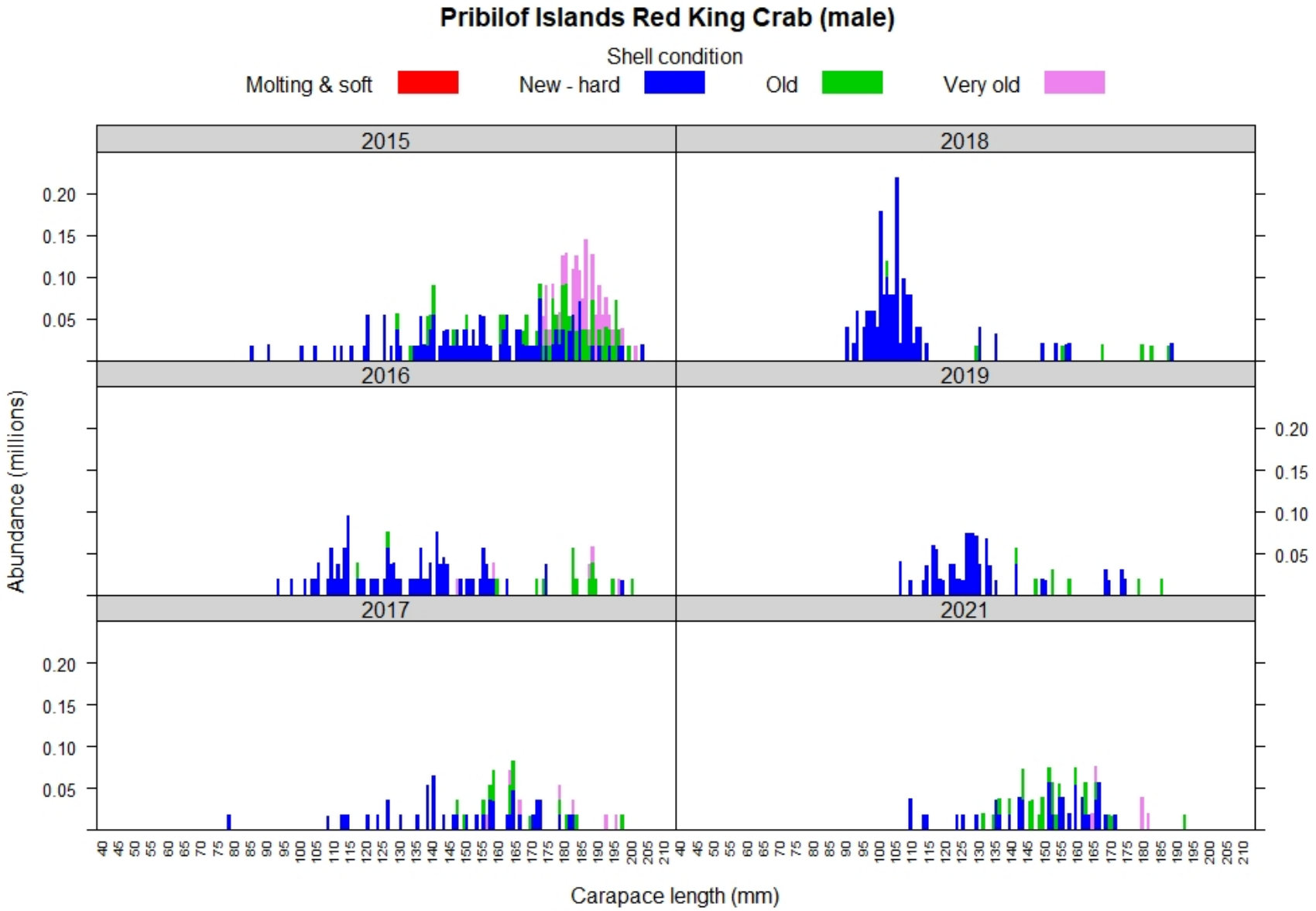

Figure 28. -- Abundance (millions) by size and shell condition of Pribilof District male red king crab (*Paralithodes camtschaticus*) using 1 mm length classes, 2015-2021.

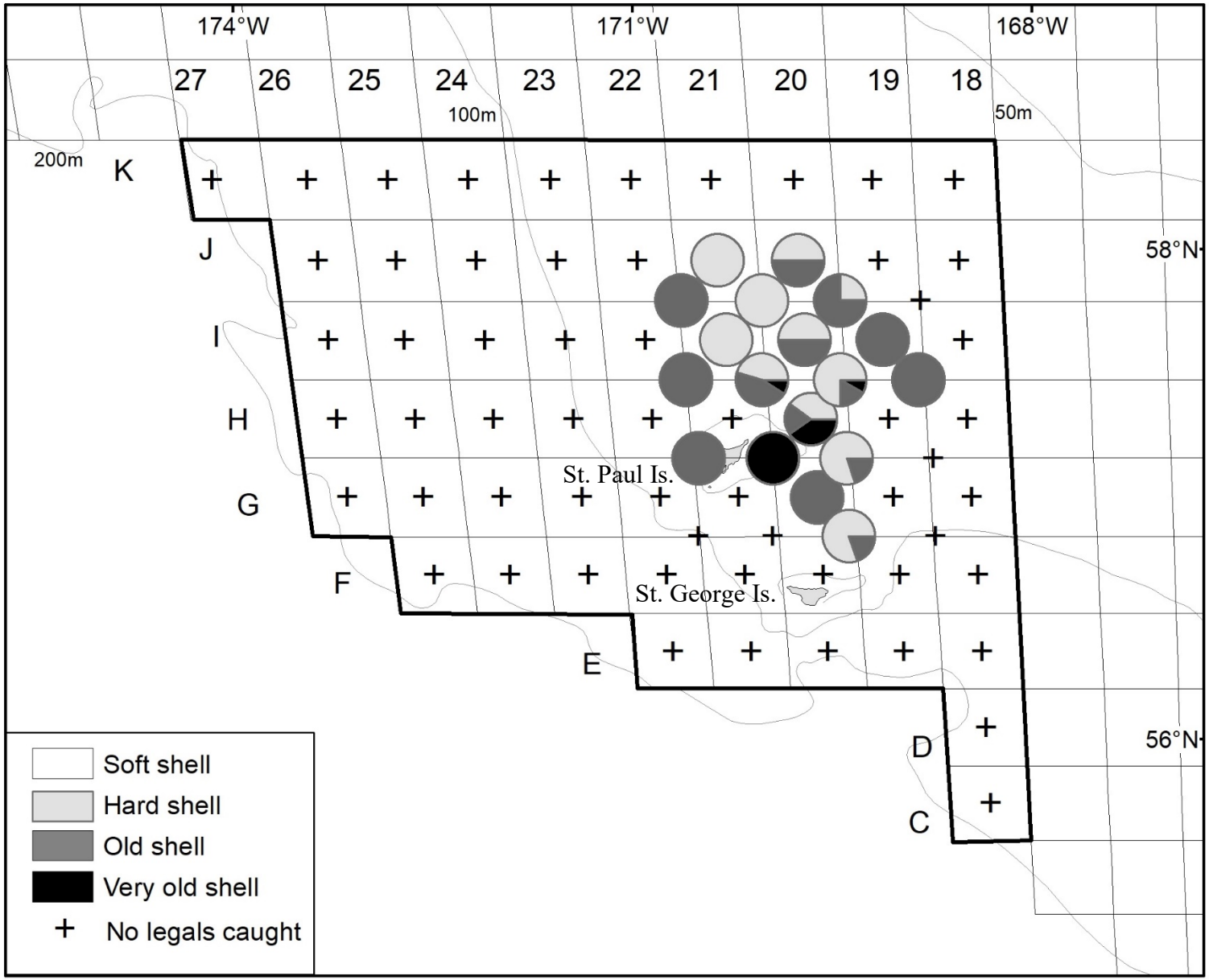

Figure 29. -- Proportion of legal-sized, male red king crab (*Paralithodes camtschaticus*) shell condition classes caught at each station sampled in 2021 in the Pribilof District. The outlined area depicts stations within the management district.

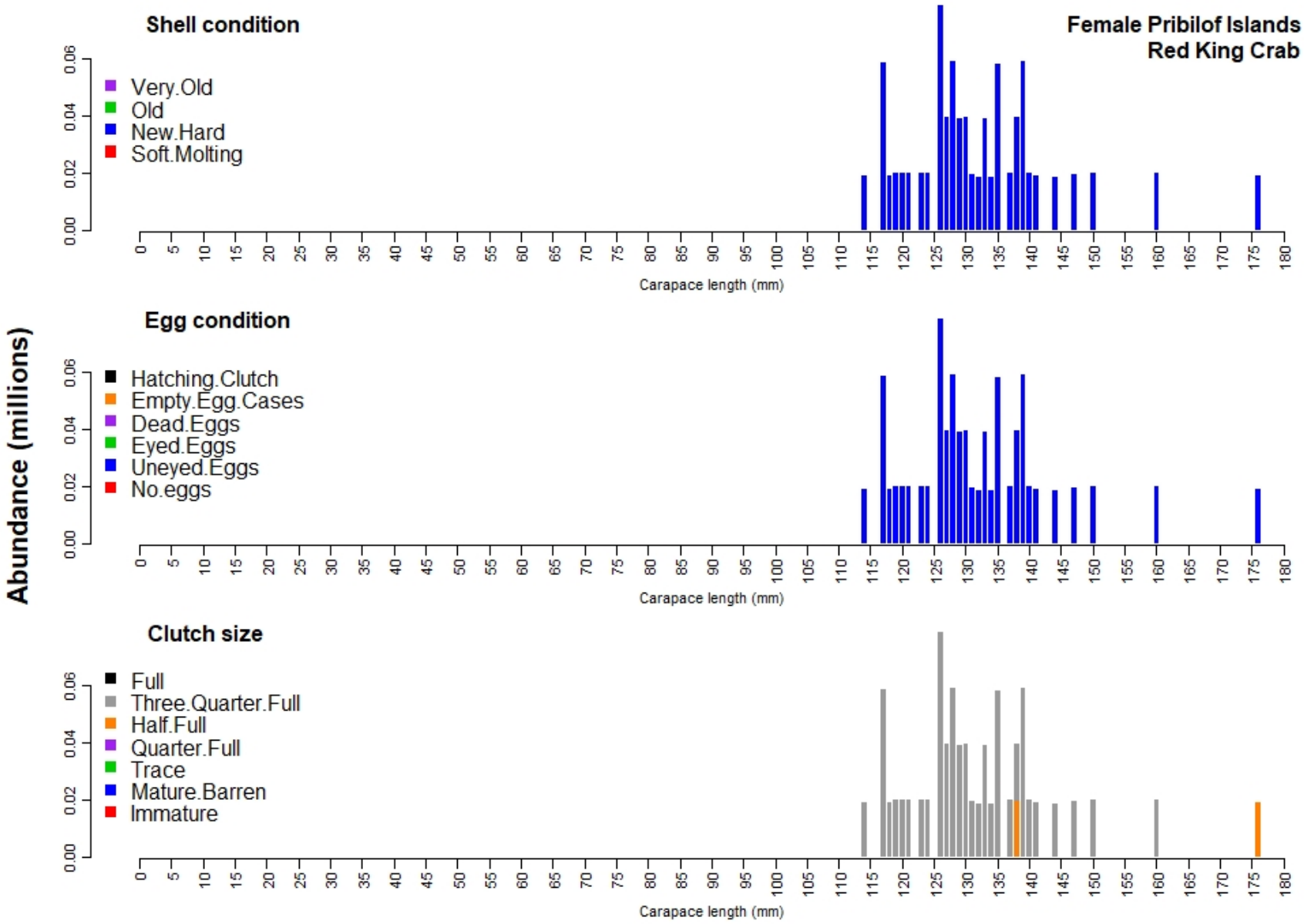

Figure 30. -- Size frequency by shell condition, egg condition, and clutch fullness of Pribilof District female red king crab (*Paralithodes camtschaticus*) by 1 mm length classes in 2021

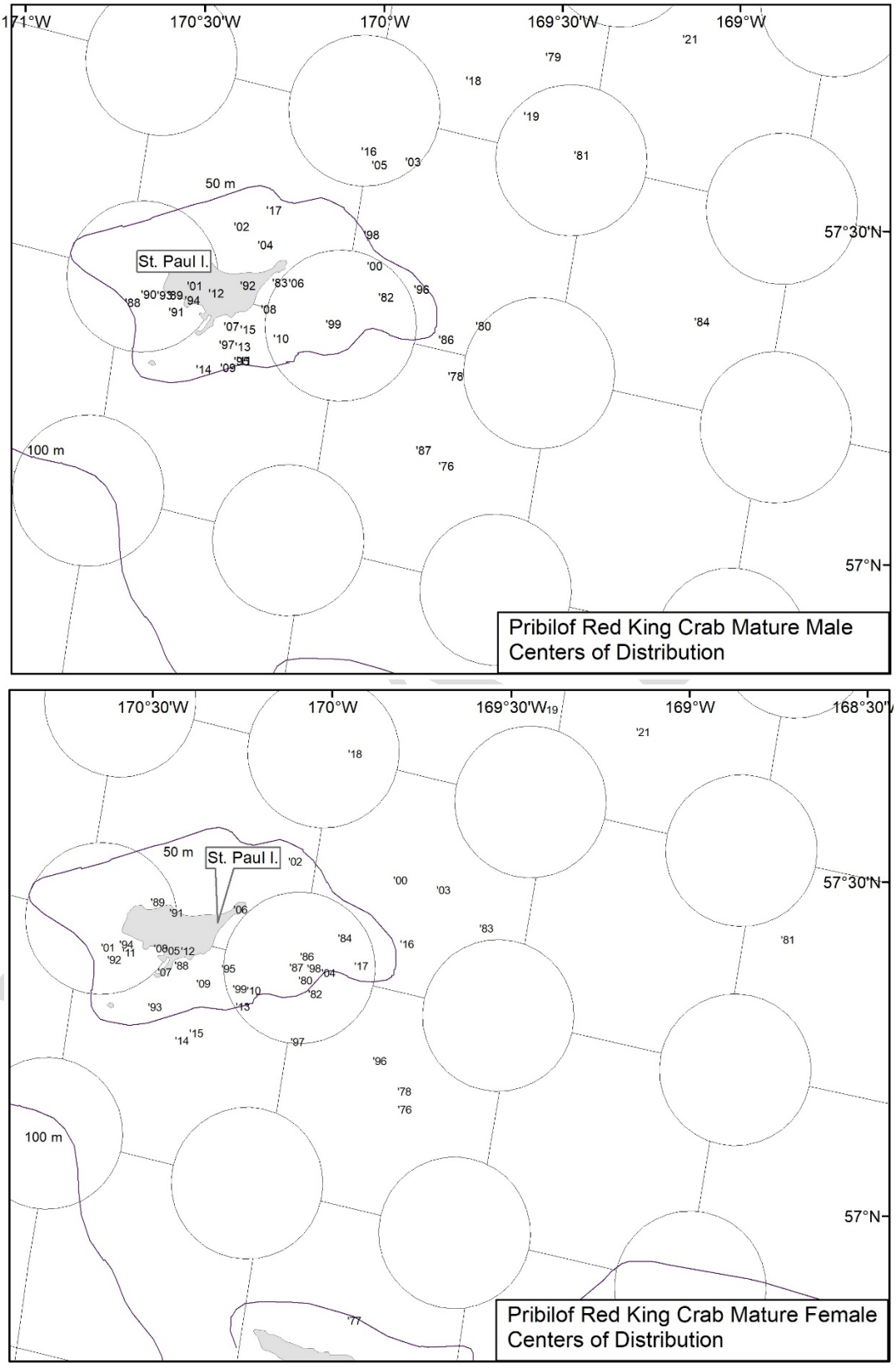

Figure 31. -- Centers of stock distribution of Pribilof Islands mature male (top) and female (bottom) red king crab (*Paralithodes camtschaticus*) from 1975 to 2021.

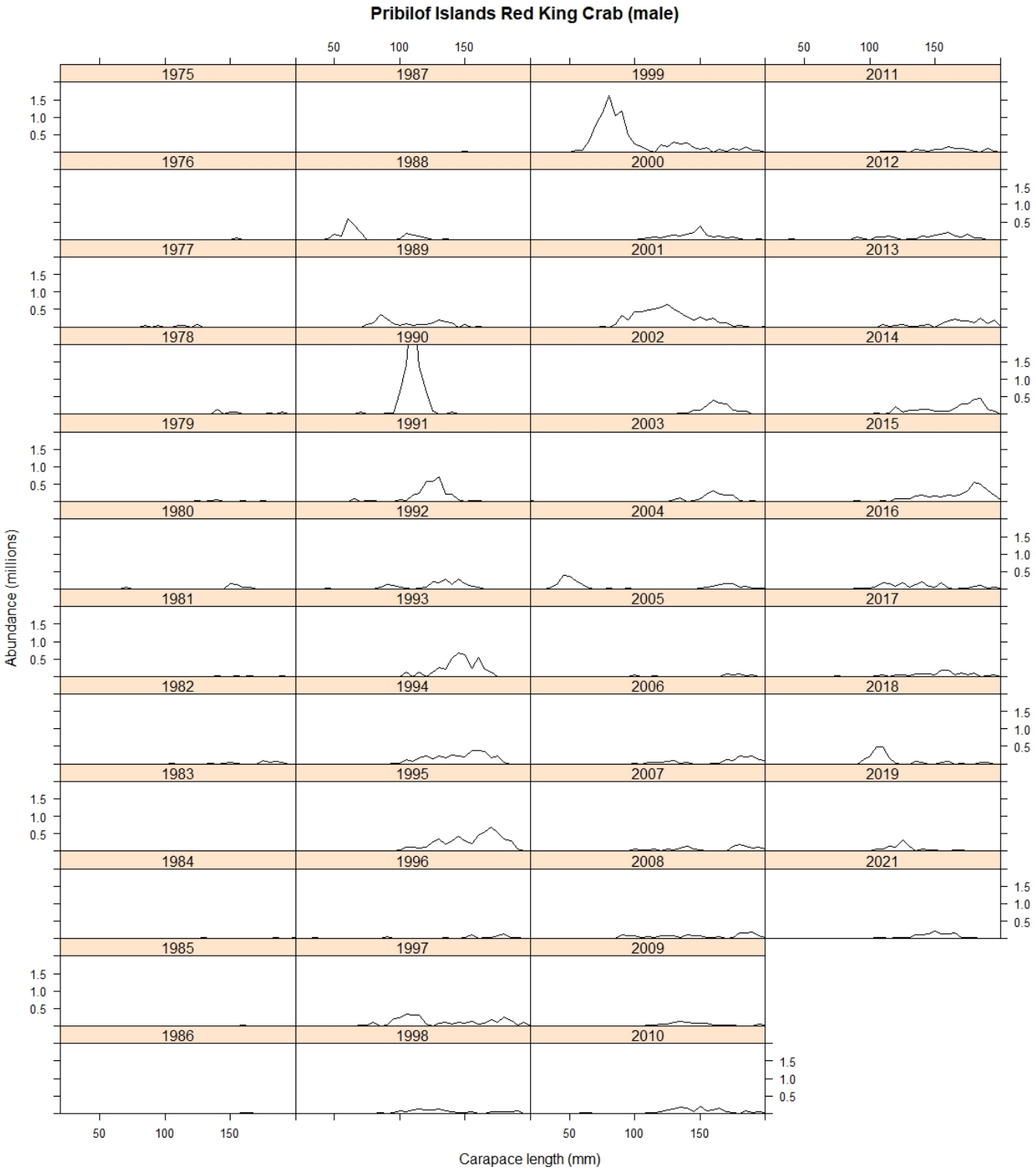

Figure 32. -- Size frequency by 5 mm length classes of Pribilof Islands male red king crab (*Paralithodes camtschaticus*) from 1975 to 2021.

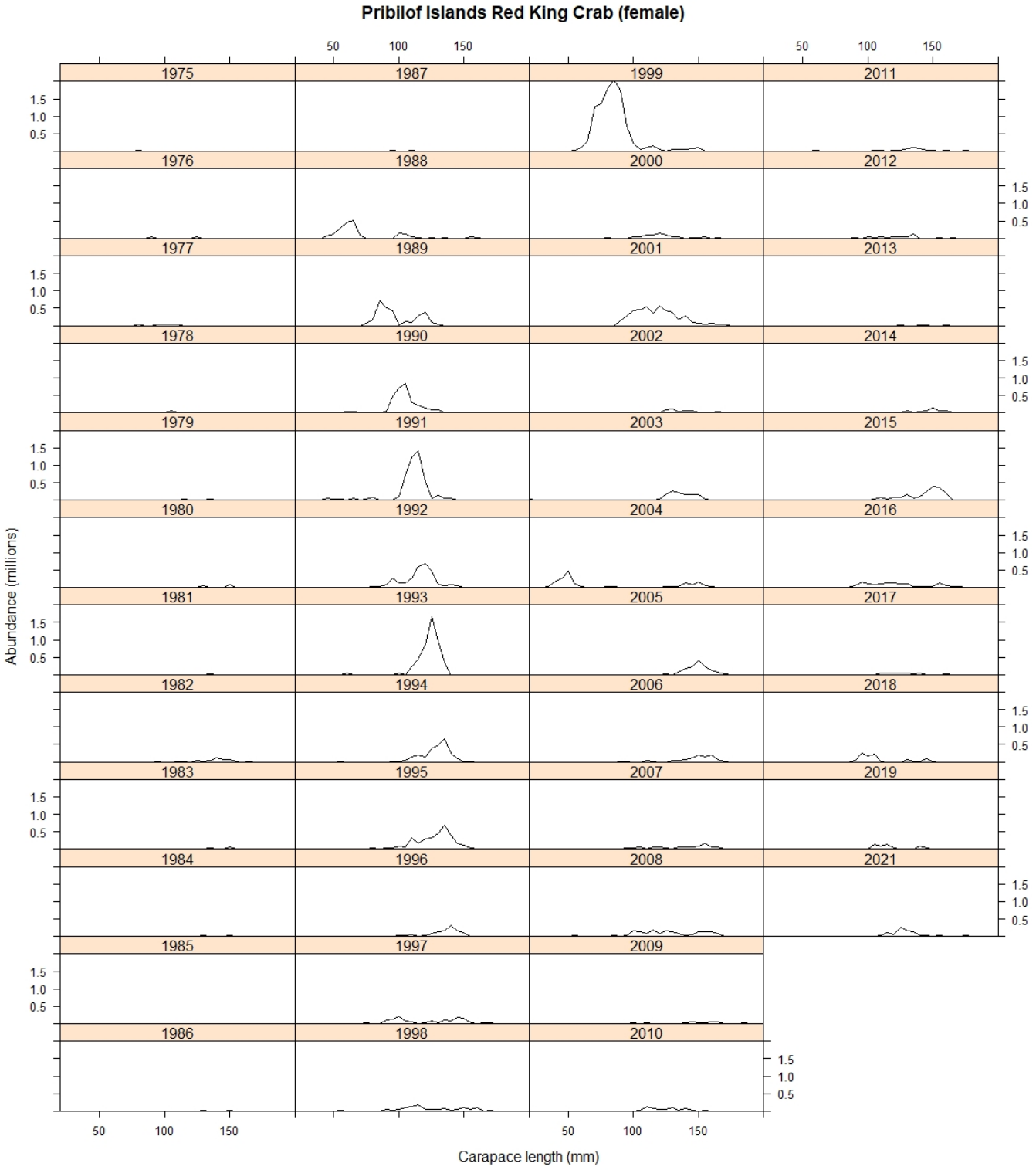

Figure 33. -- Size frequency by 5 mm length classes of Pribilof Islands female red king crab (*Paralithodes camtschaticus*) from 1975 to 2021.

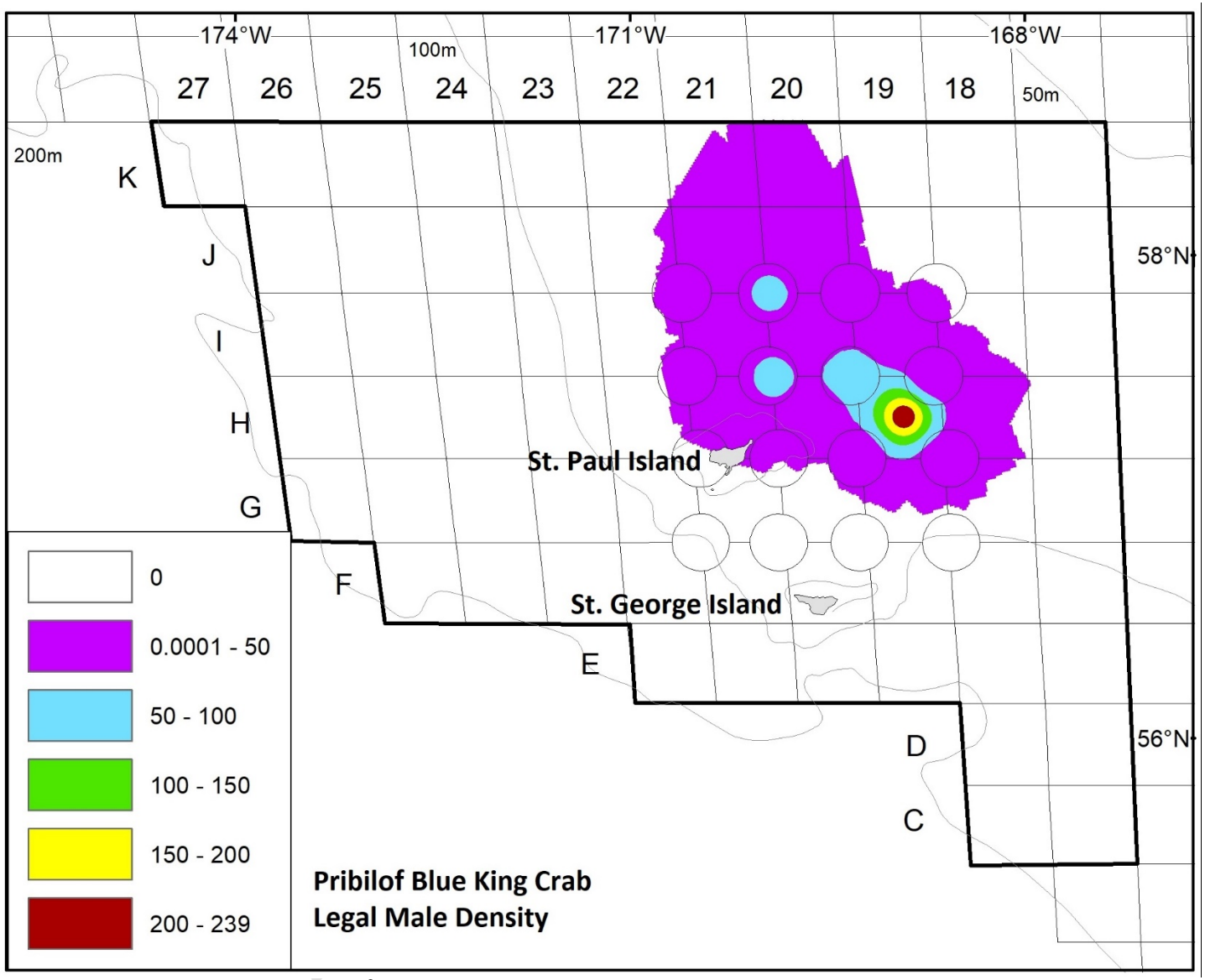

Figure 34. -- Estimated total density (number nmi^{-2}) of legal-sized male blue king crab (*Paralithodes platypus*) at each station sampled in the Pribilof District in 2021. The outlined area depicts the management district as defined by ADF&G.

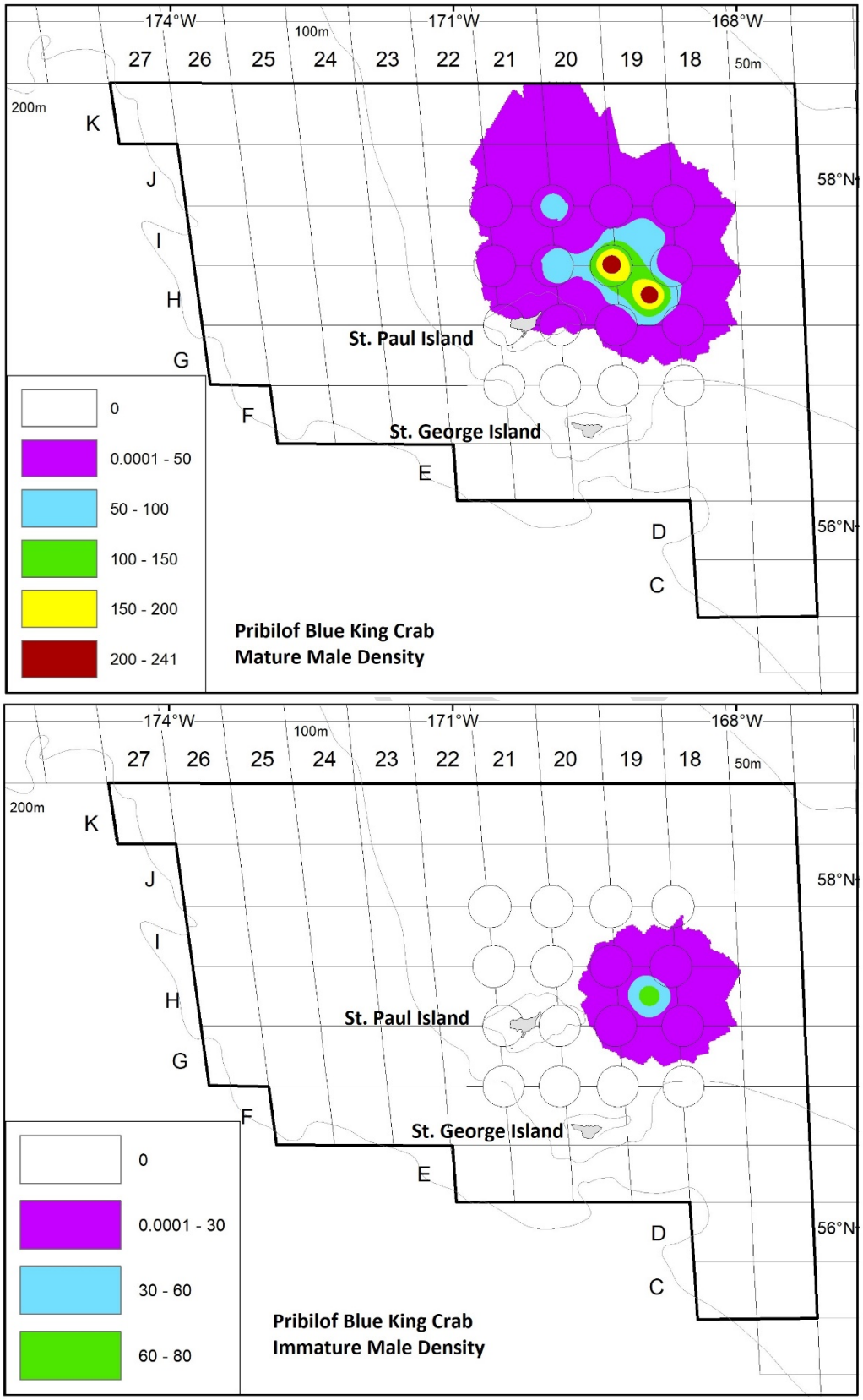

Figure 35. -- Estimated total density (number nmi^{-2}) of mature male (top) and immature male (bottom) blue king crab (*Paralithodes platypus*) at each station sampled in the Pribilof District in 2021. The outlined area depicts the management district as defined by ADF&G.

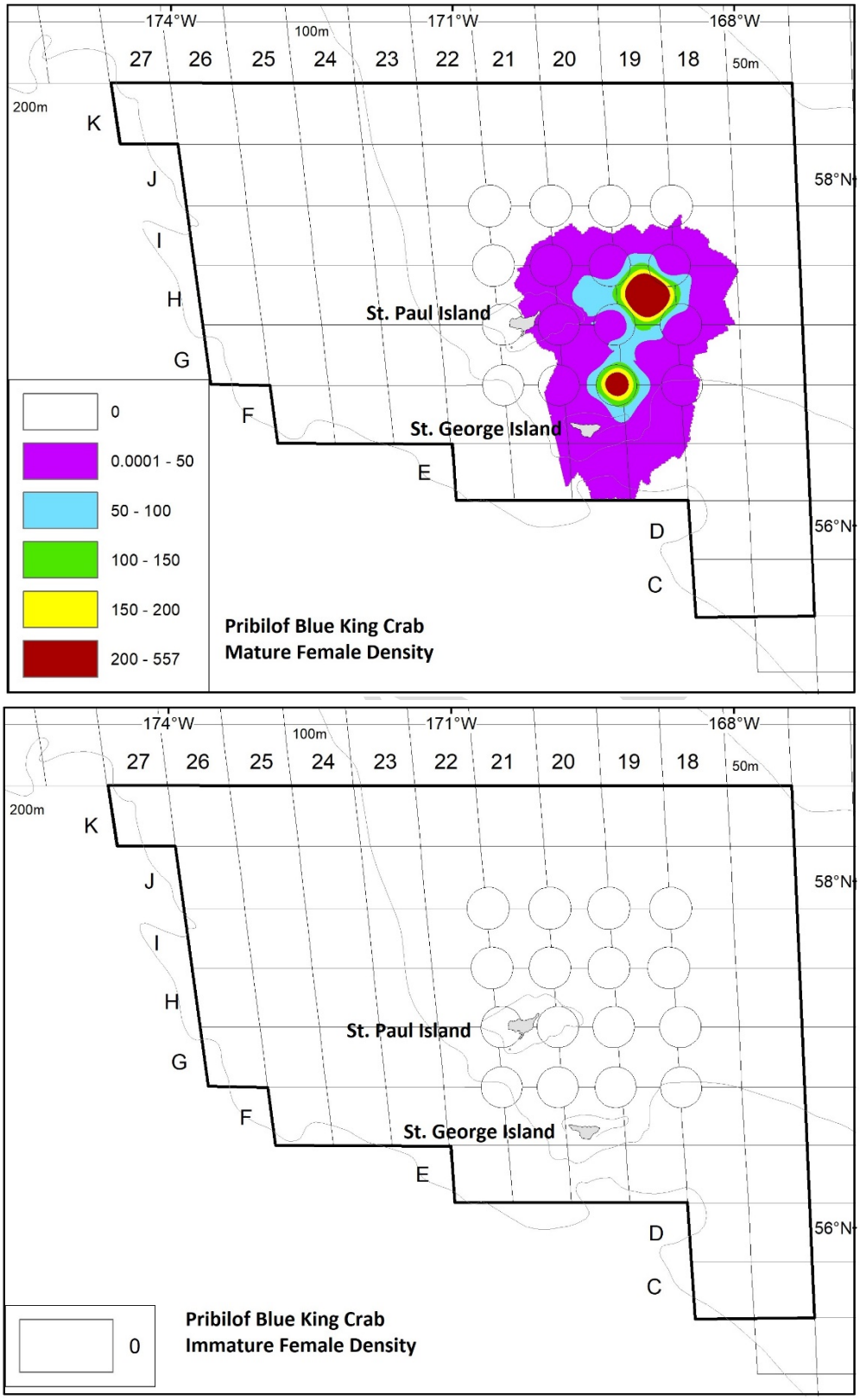

Figure 36. -- Estimated total density (number nmi^{-2}) of mature female (top) and immature female (bottom) blue king crab (*Paralithodes platypus*) at each station sampled in the Pribilof District in 2021. The outlined area depicts the management district as defined by ADF&G. Note that there were no immature female blue king crab caught in 2021.

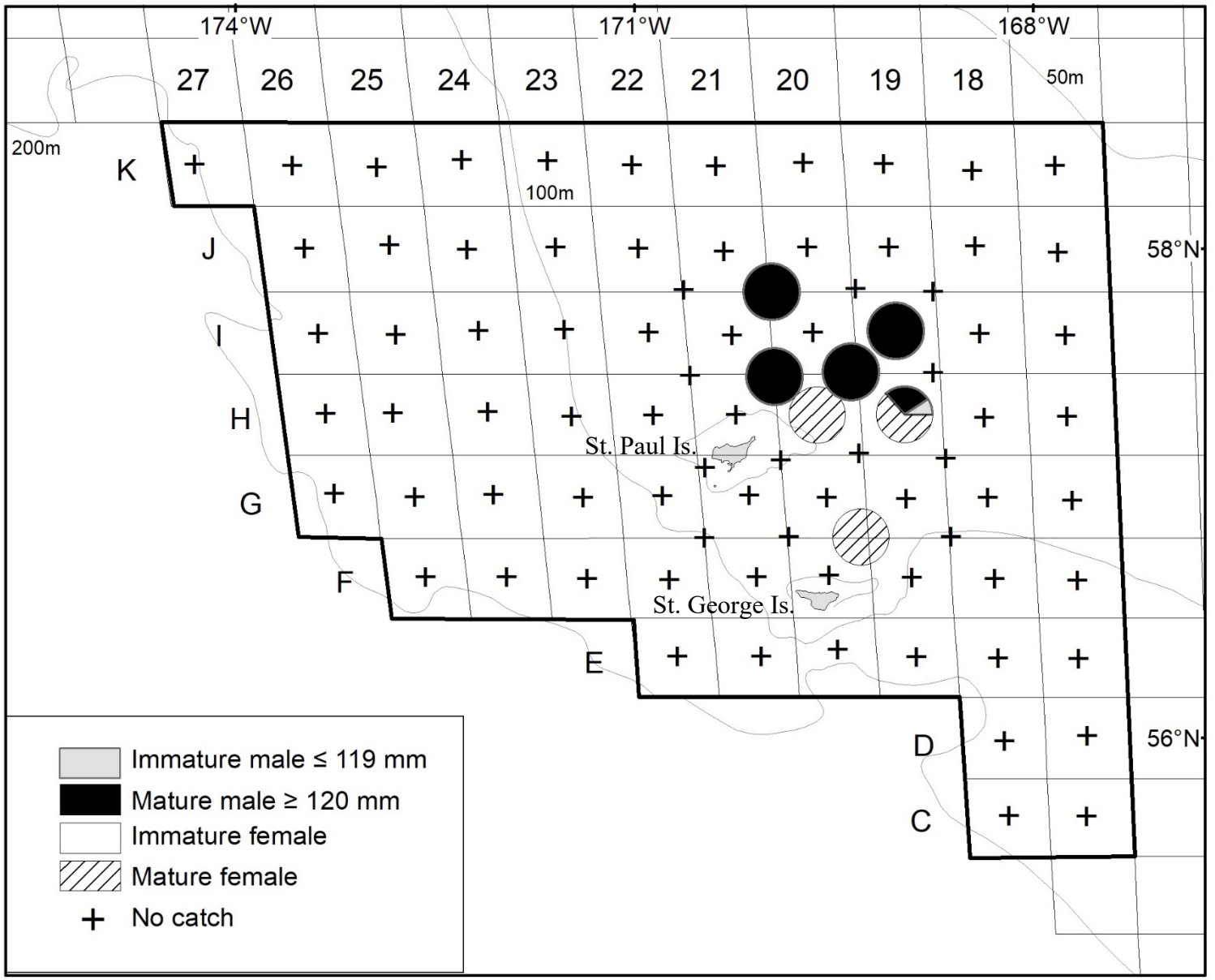

Figure 37. -- Proportion of male and female blue king crab (*Paralithodes platypus*) maturity classes caught at each station sampled in 2021 in the Pribilof District. The outlined area depicts the management district as defined by ADF&G.

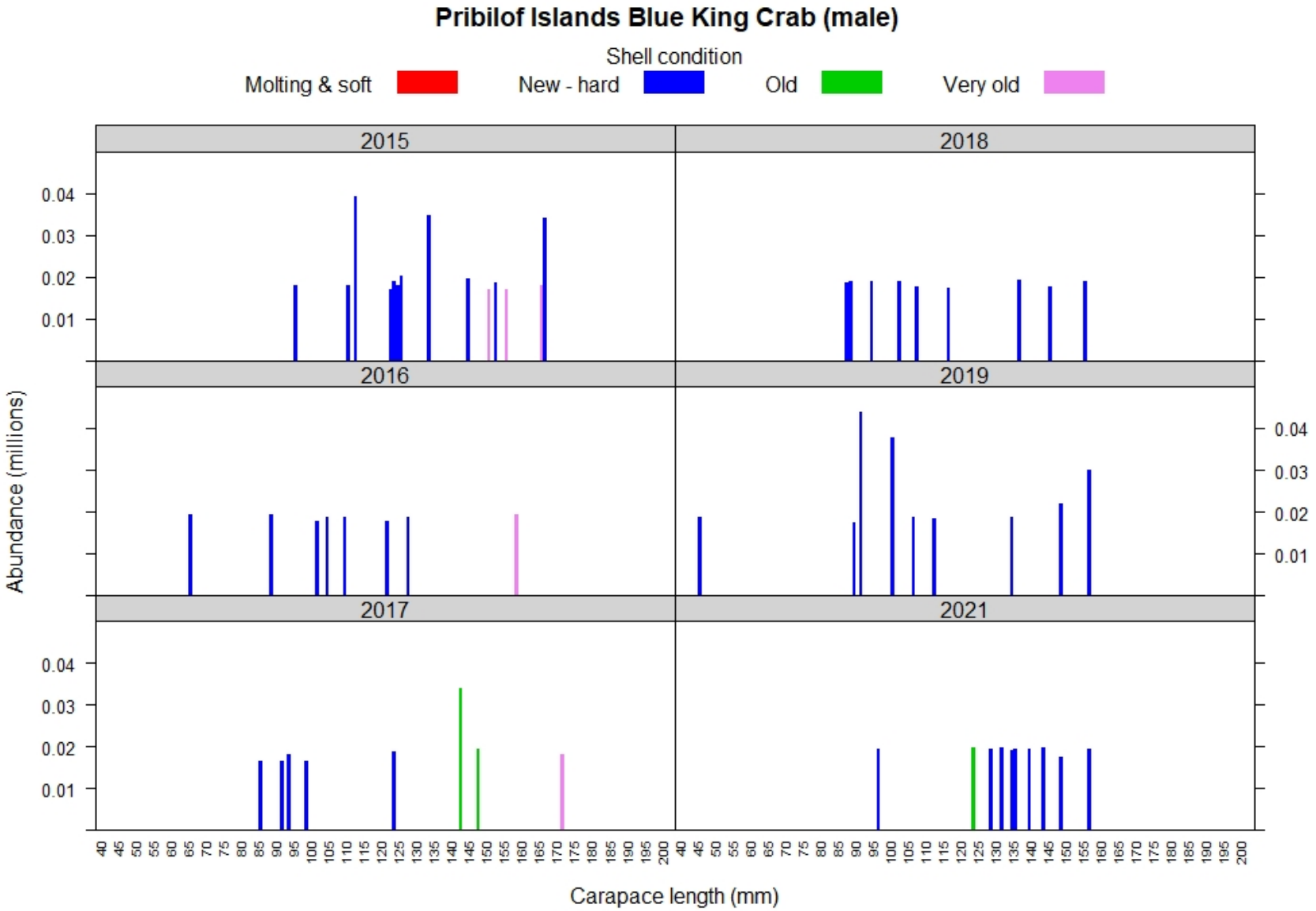

Figure 38. -- Abundance (millions) by size and shell condition of Pribilof District male blue king crab (*Paralithodes platypus*) using 1 mm length classes, 2015-2021.

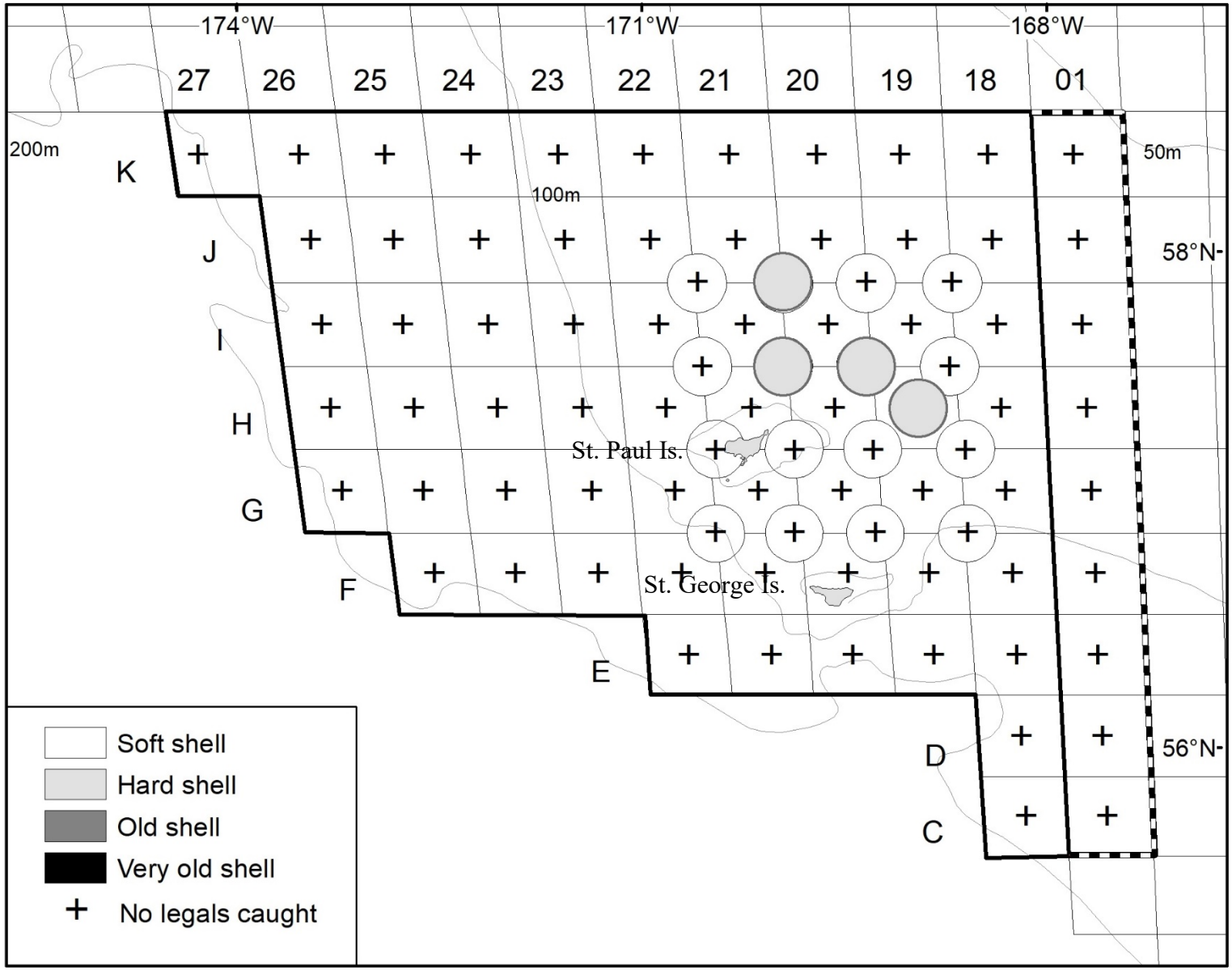

Figure 39. -- Proportion of legal-sized, male blue king crab (*Paralithodes platypus*) shell condition classes caught at each station sampled in 2021 in the Pribilof District. The outlined area depicts the management district as defined by ADF&G.

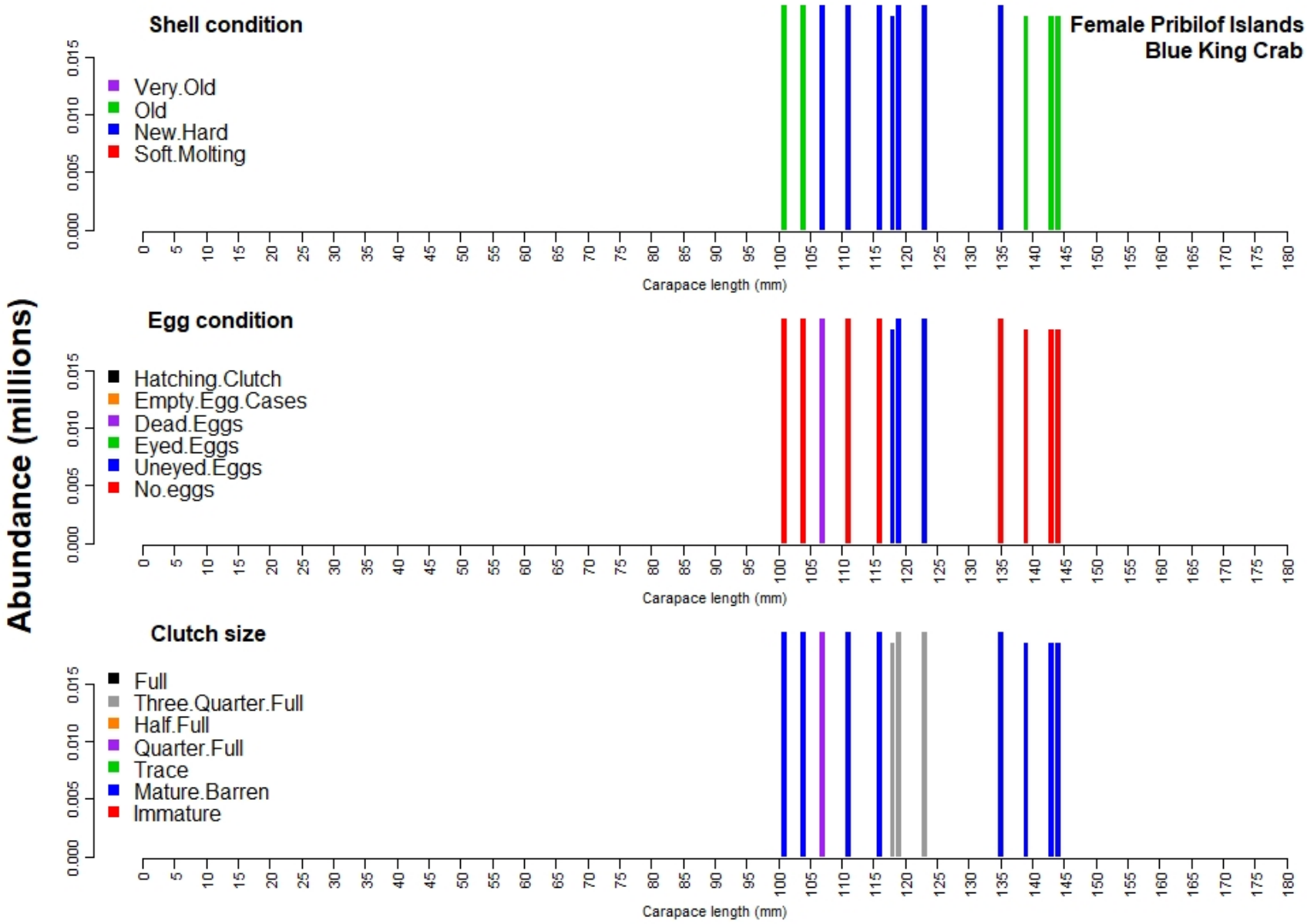

Figure 40. -- Size frequency by shell condition, egg condition, and clutch fullness of Pribilof District female blue king crab (*Paralithodes platypus*) by 1 mm length classes in 2021.

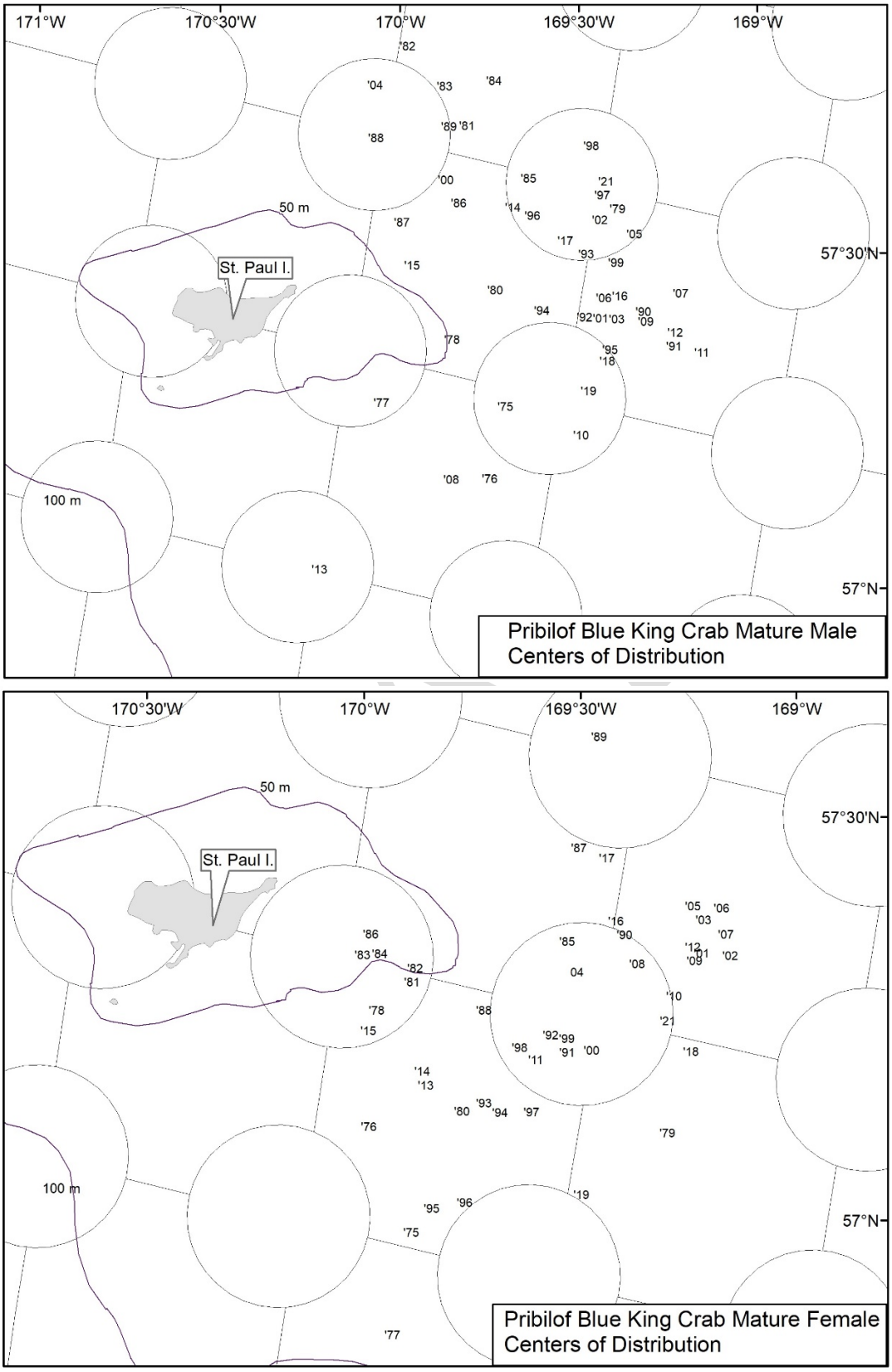

Figure 41. -- Centers of stock distribution of Pribilof Islands mature male (top) and female (bottom) blue king crab (*Paralithodes platypus*) from 1975 to 2021.

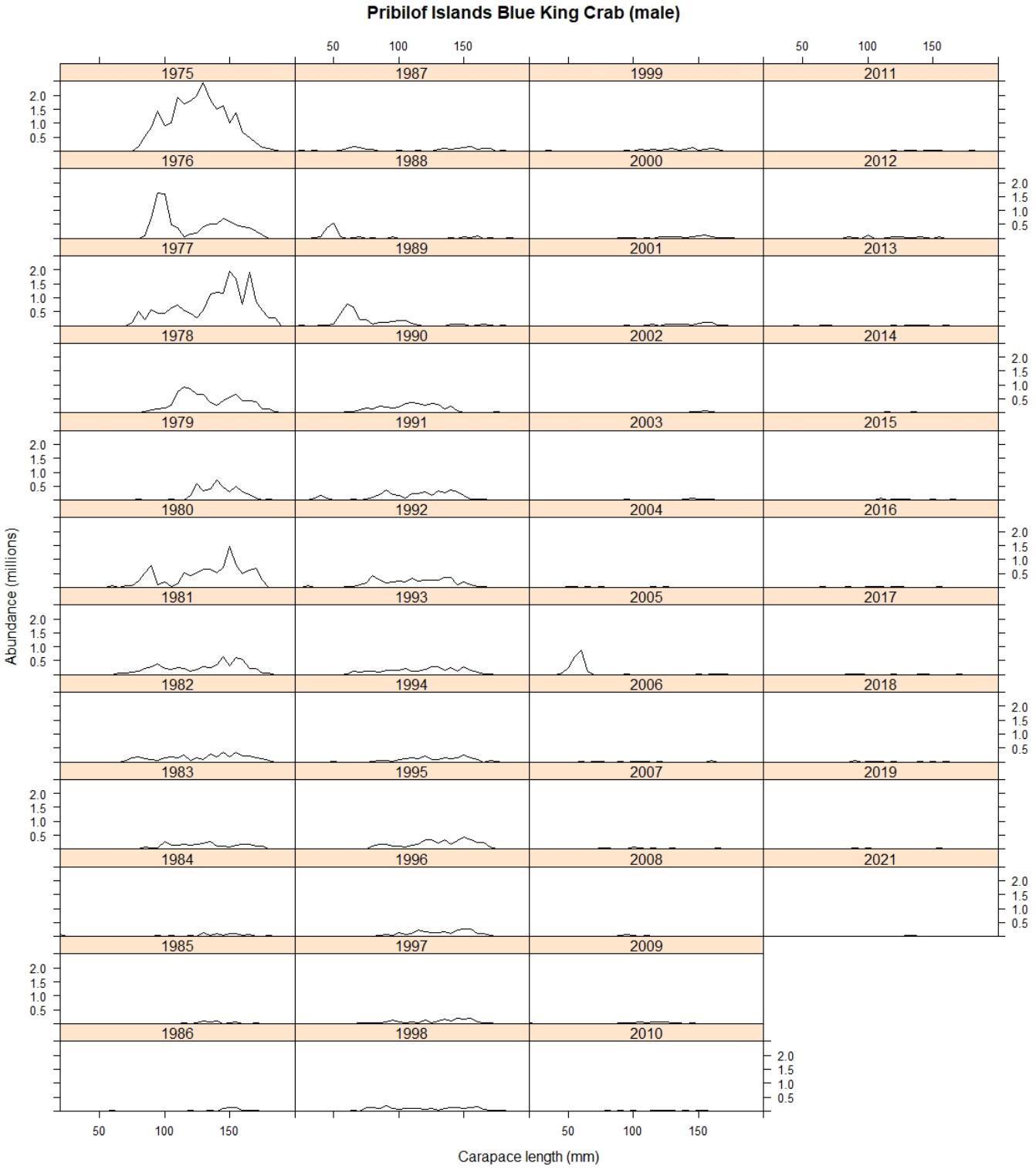

Figure 42. -- Size frequency by 5 mm length classes of Pribilof Islands male blue king crab (*Paralithodes platypus*) from 1975 to 2021.

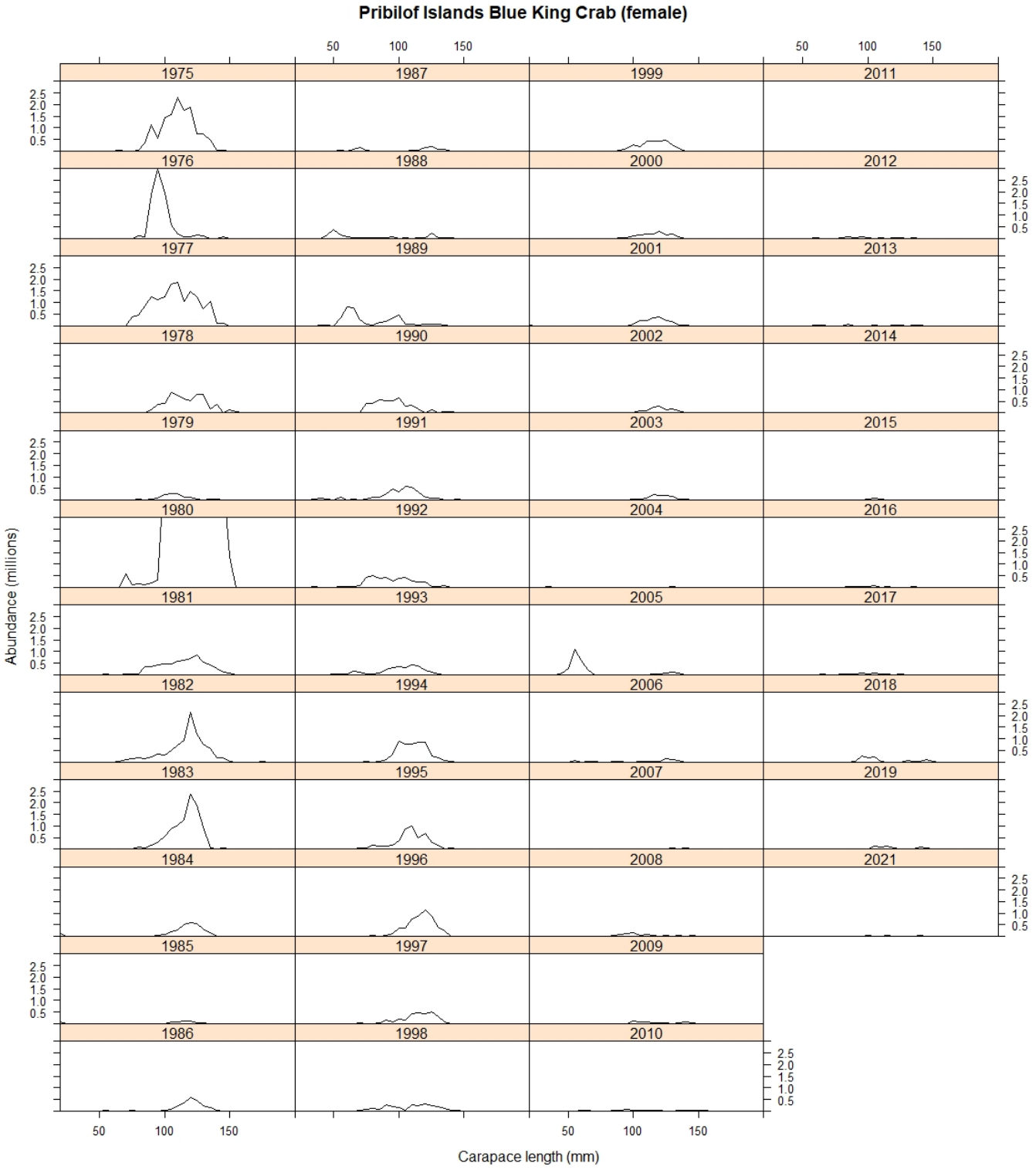

Figure 43. -- Size frequency by 5 mm length classes of Pribilof Islands female blue king crab (*Paralithodes platypus*) from 1975 to 2021.

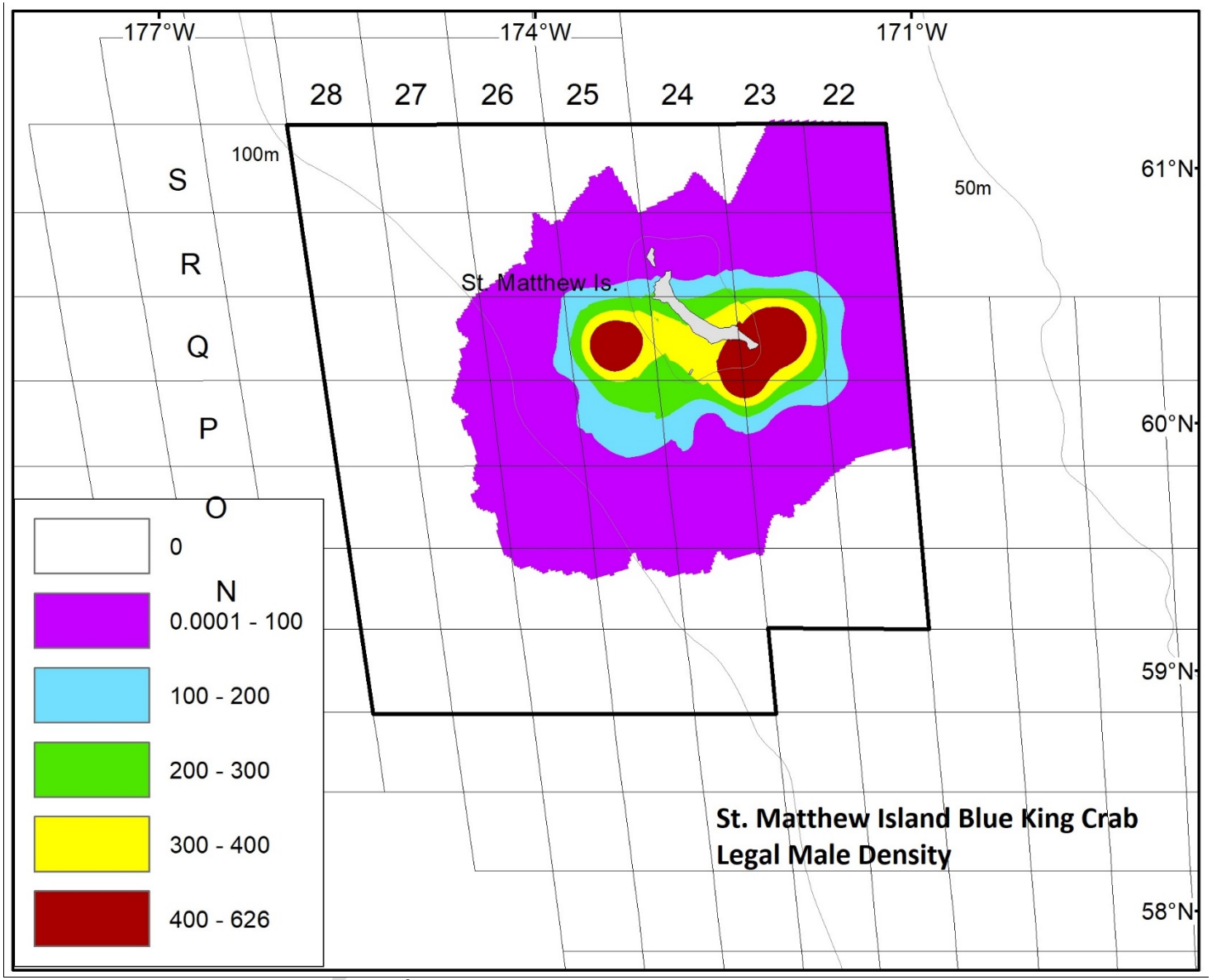

Figure 44. – Estimated total density (number nmi^{-2}) of legal-sized male blue king crab (*Paralithodes platypus*) at each station sampled in the St. Matthew Island Section of the Northern District in 2021. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

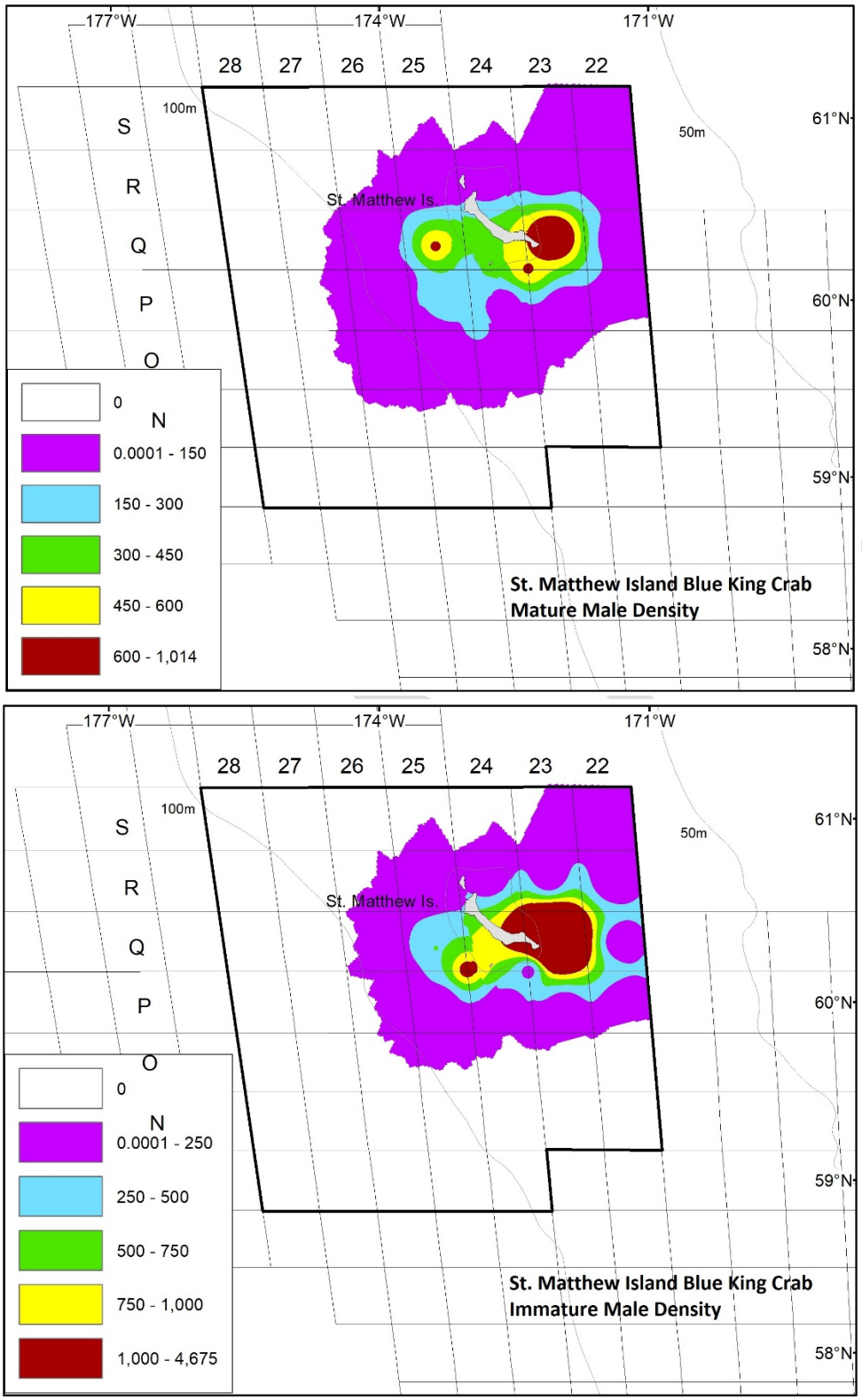

Figure 45. – Estimated total density (number nmi^{-2}) of mature male (top) and immature male (bottom) blue king crab (*Paralithodes platypus*) at each station sampled in the St. Matthew Island Section of the Northern District in 2021. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

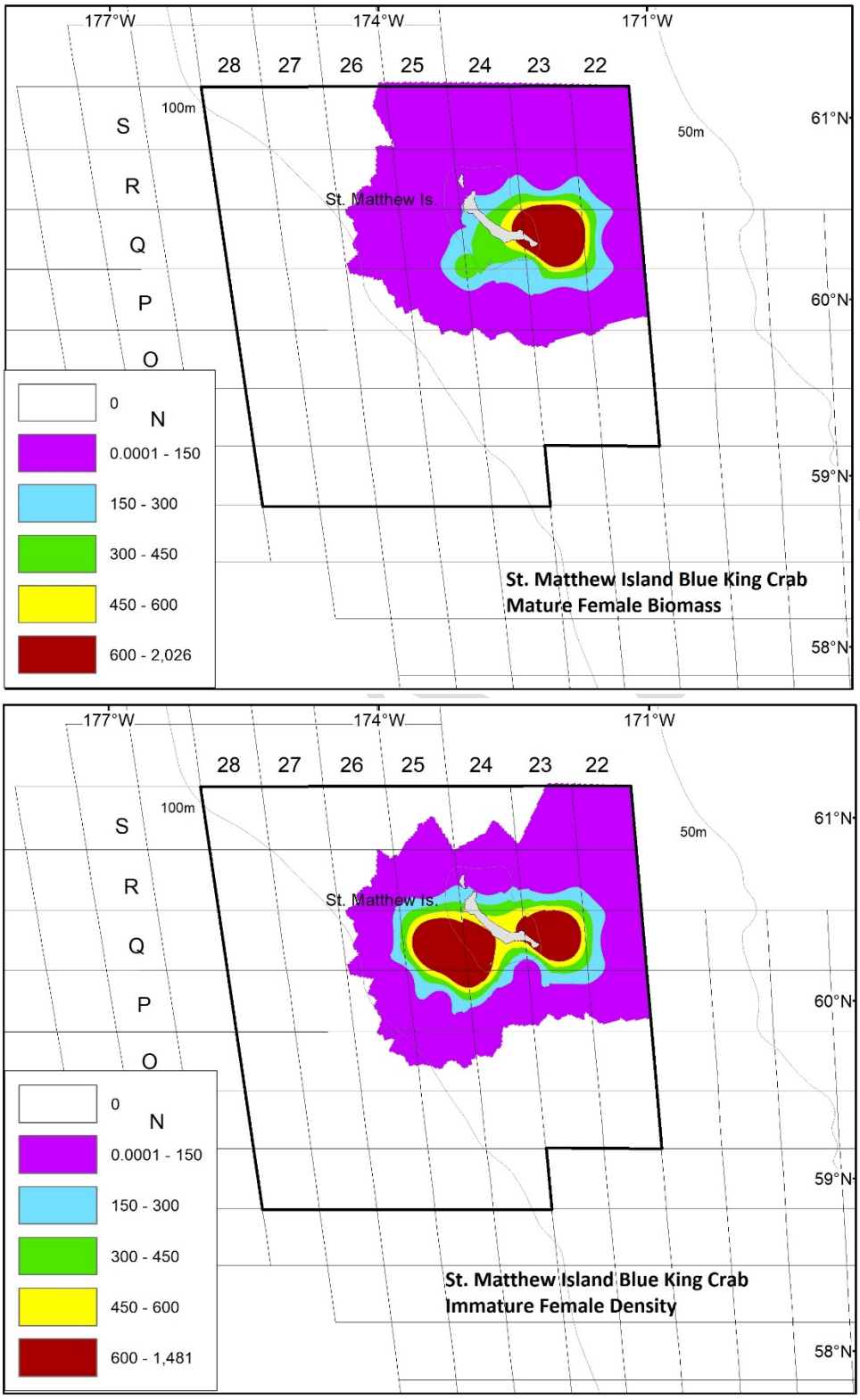

Figure 46. – Estimated total density (number nmi^{-2}) of mature female (top) and immature female (bottom) blue king crab (*Paralithodes platypus*) at each station sampled in the St. Matthew Island Section of the Northern District in 2021. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

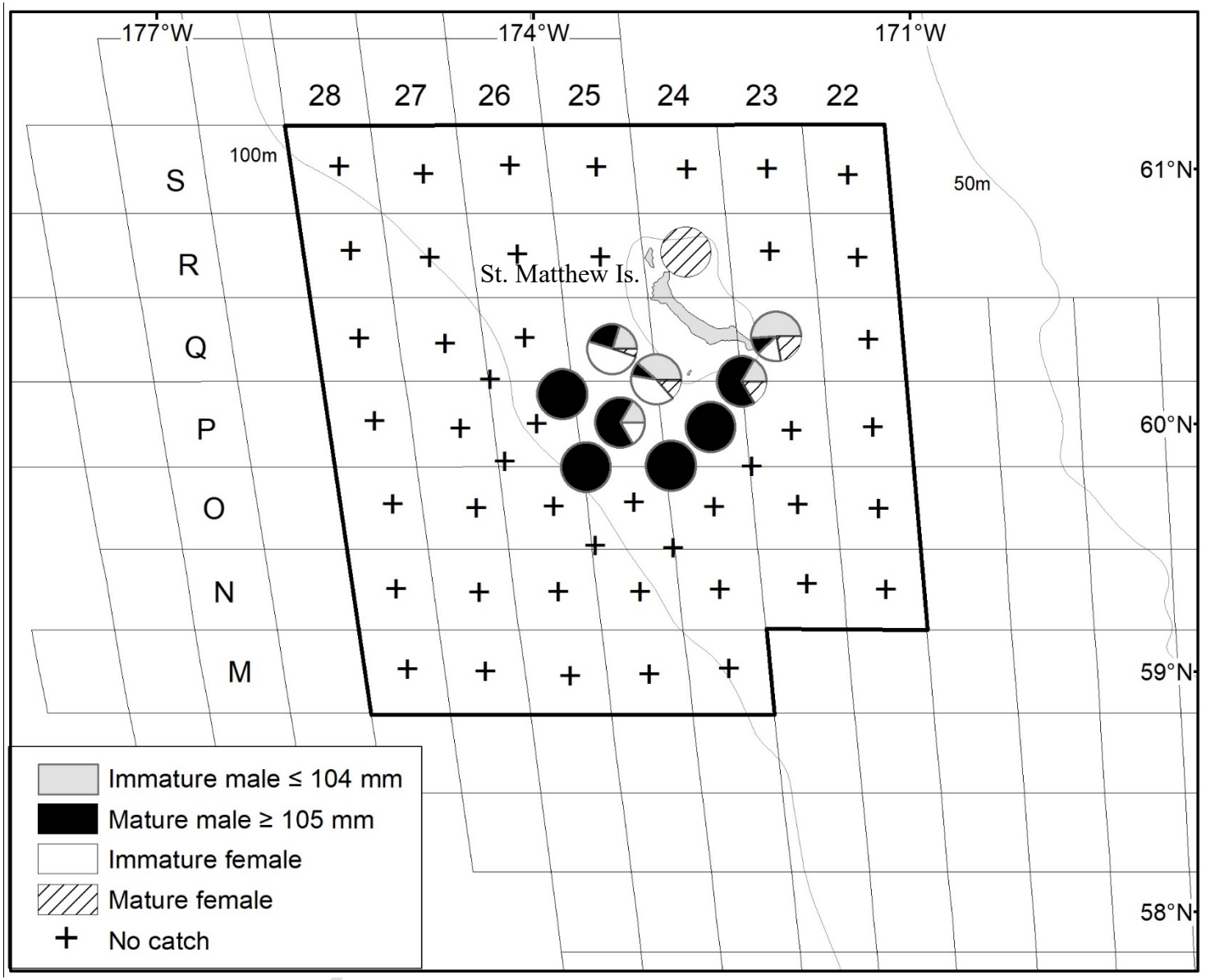

Figure 47. -- Proportion of male and female blue king crab (*Paralithodes platypus*) maturity classes caught at each station sampled in 2021 in the St. Matthew Island Section of the Northern District. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

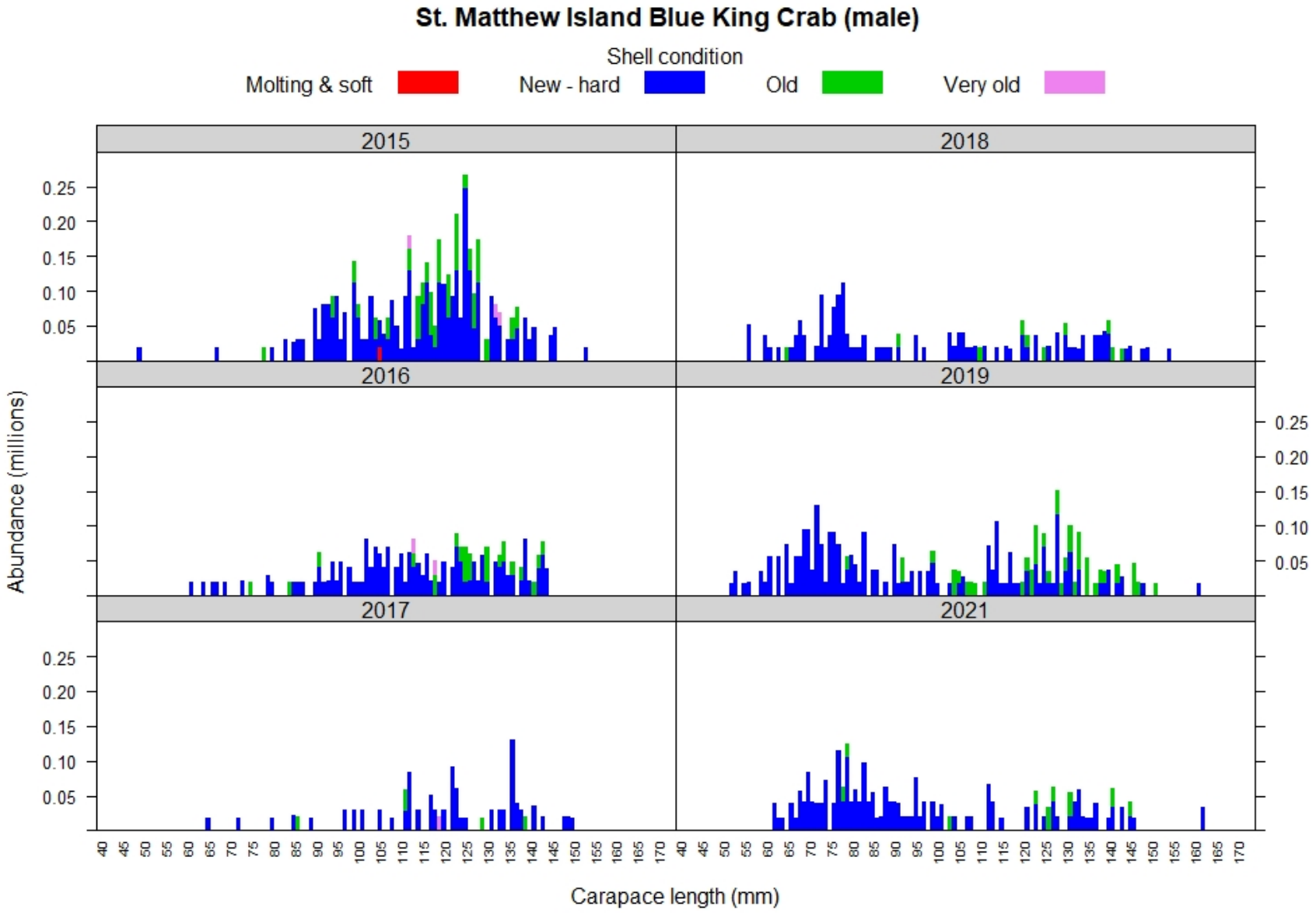

Figure 48. -- Abundance (millions) by size and shell condition of St. Matthew Island Section male blue king crab (*Paralithodes platypus*) using 1 mm length classes, 2015-2021.

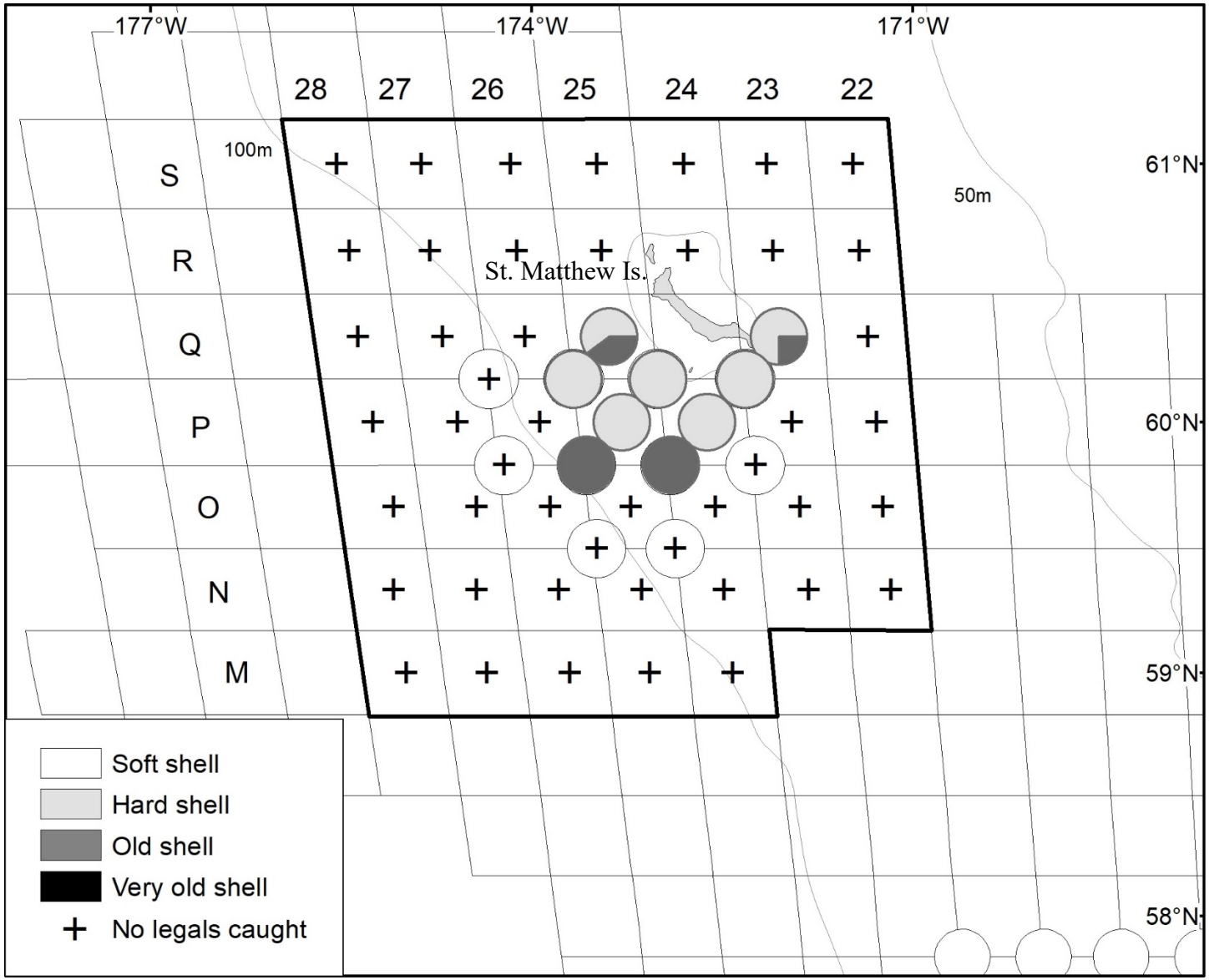

Figure 49. -- Proportion of legal-sized, male blue king crab (*Paralithodes platypus*) shell condition classes caught at each station sampled in 2021 in the St. Matthew Island Section of the Northern District. The outlined area depicts stations within the St. Matthew Island Section sampling strata.

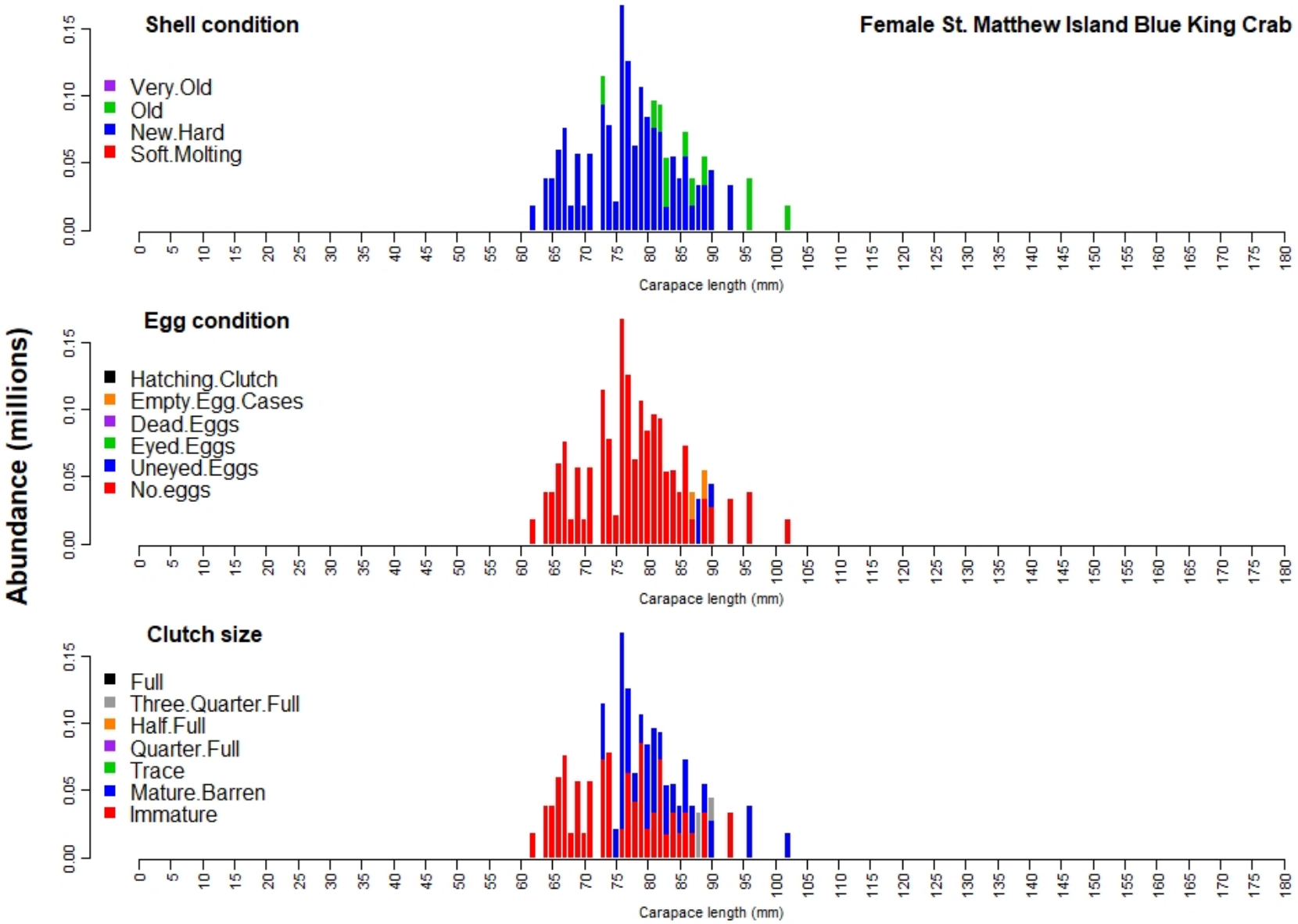

Figure 50. -- Size frequency by shell condition, egg condition, and clutch size of St. Matthew Island Section female blue king crab (*Paralithodes platypus*) by 1 mm length classes in 202

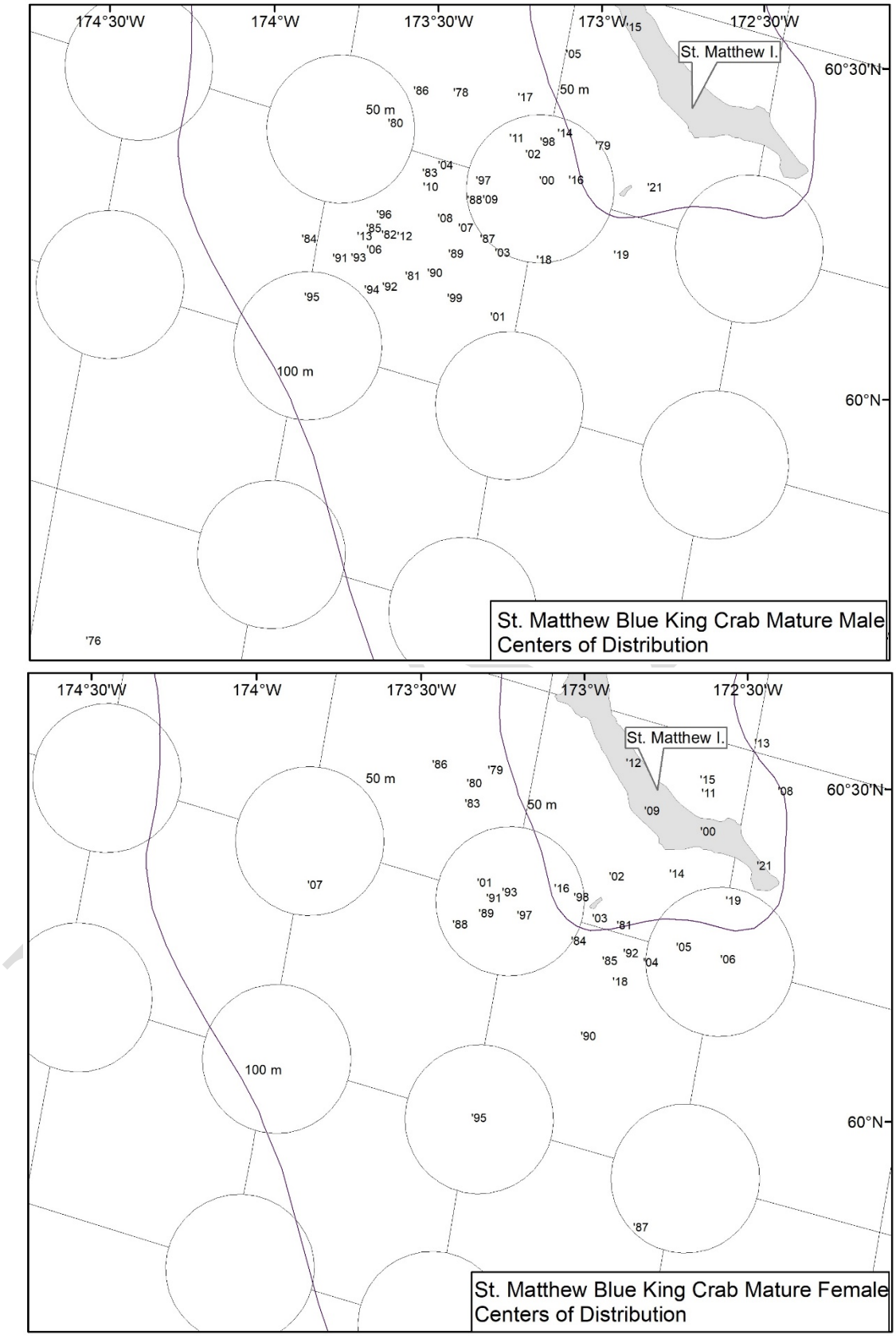

Figure 51. -- Centers of stock distribution of St. Matthew Island mature male (top) and female (bottom) blue king crab (*Paralithodes platypus*) from 1975 to 2021.

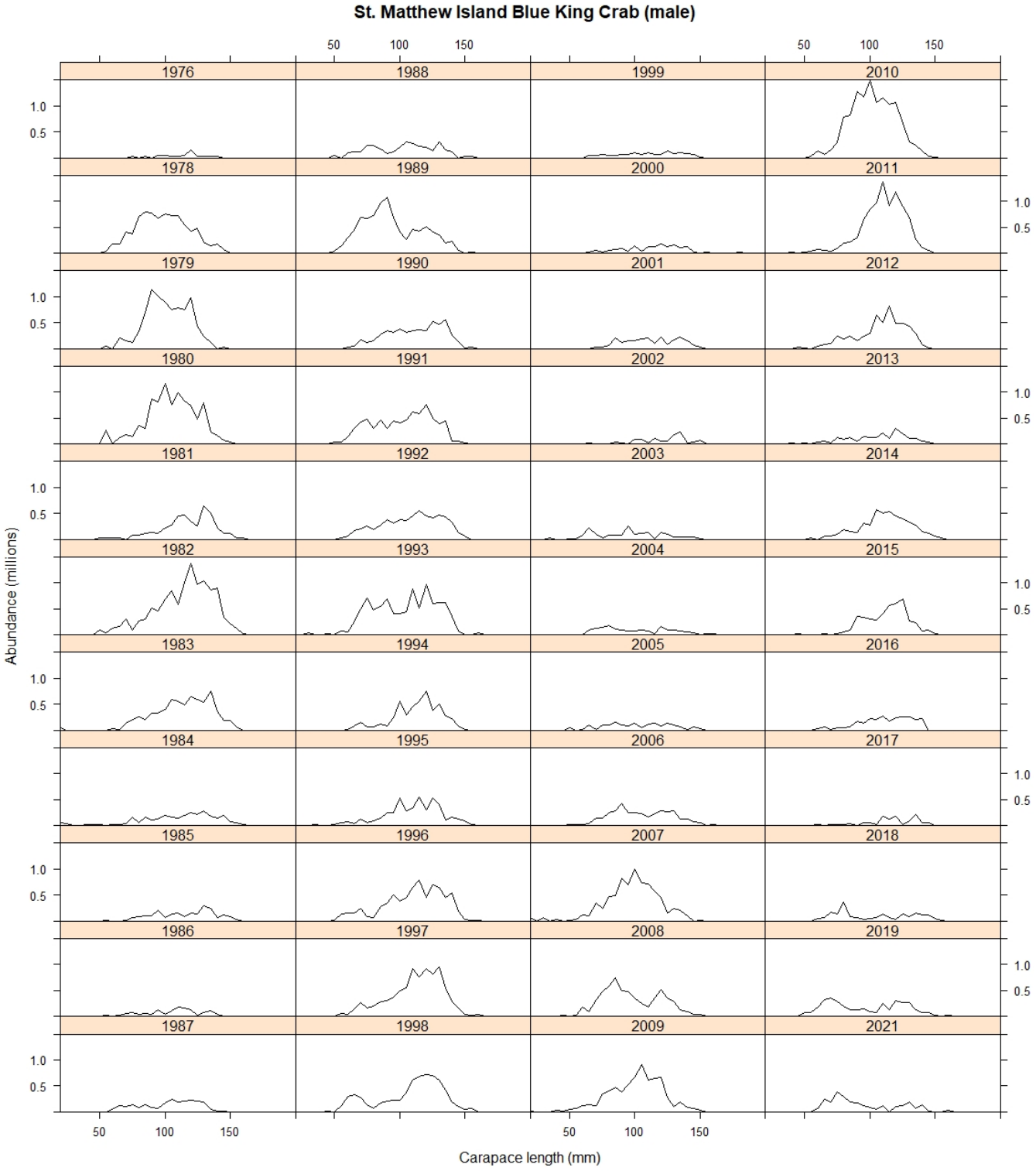

Figure 52. -- Size frequency by 5 mm length classes of St. Matthew Island Section male blue king crab (*Paralithodes platypus*) from 1976 to 2021.

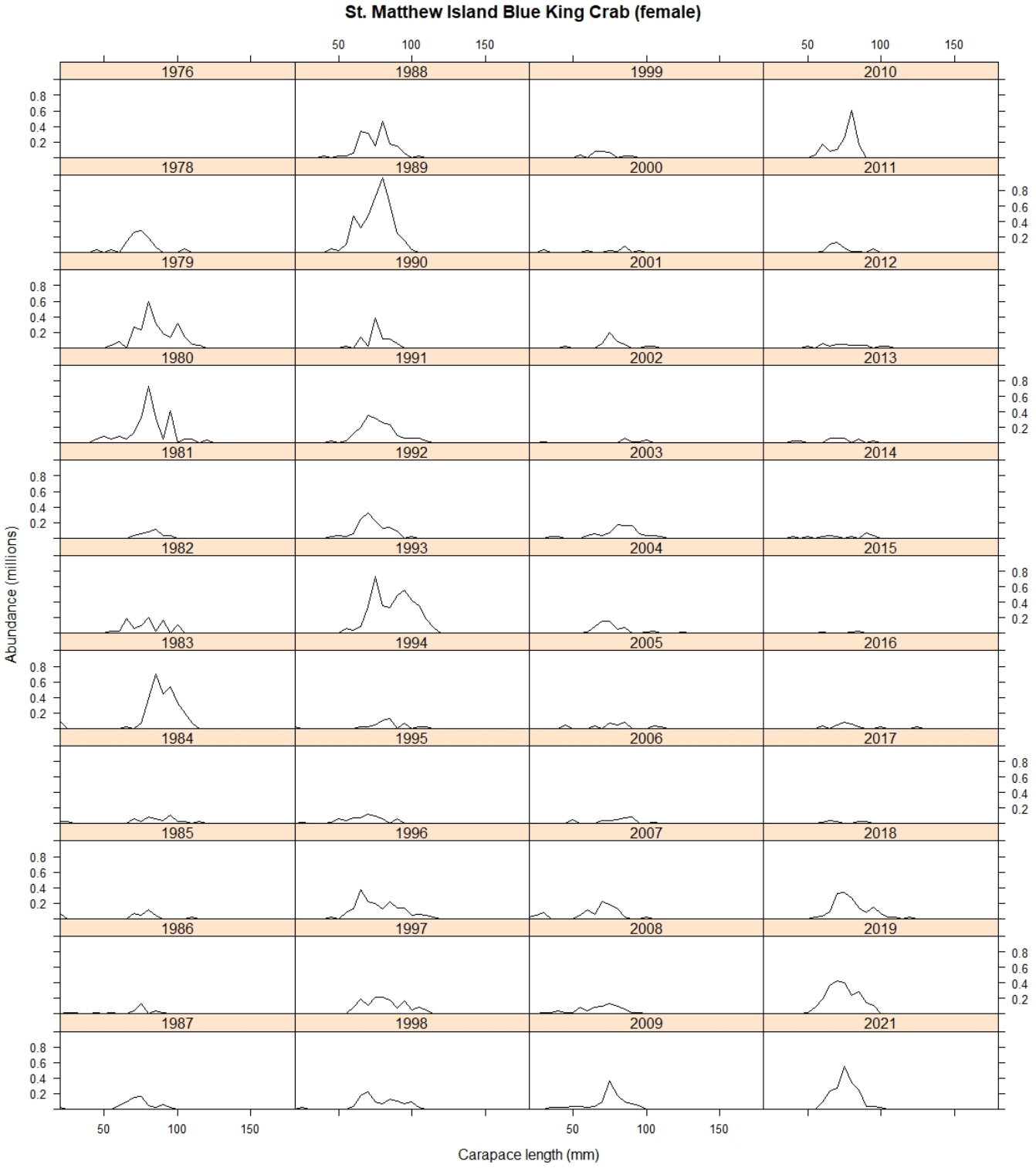

Figure 53. -- Size frequency by 5 mm length classes of St. Matthew Island Section female blue king crab (*Paralithodes platypus*) from 1976 to 2021.

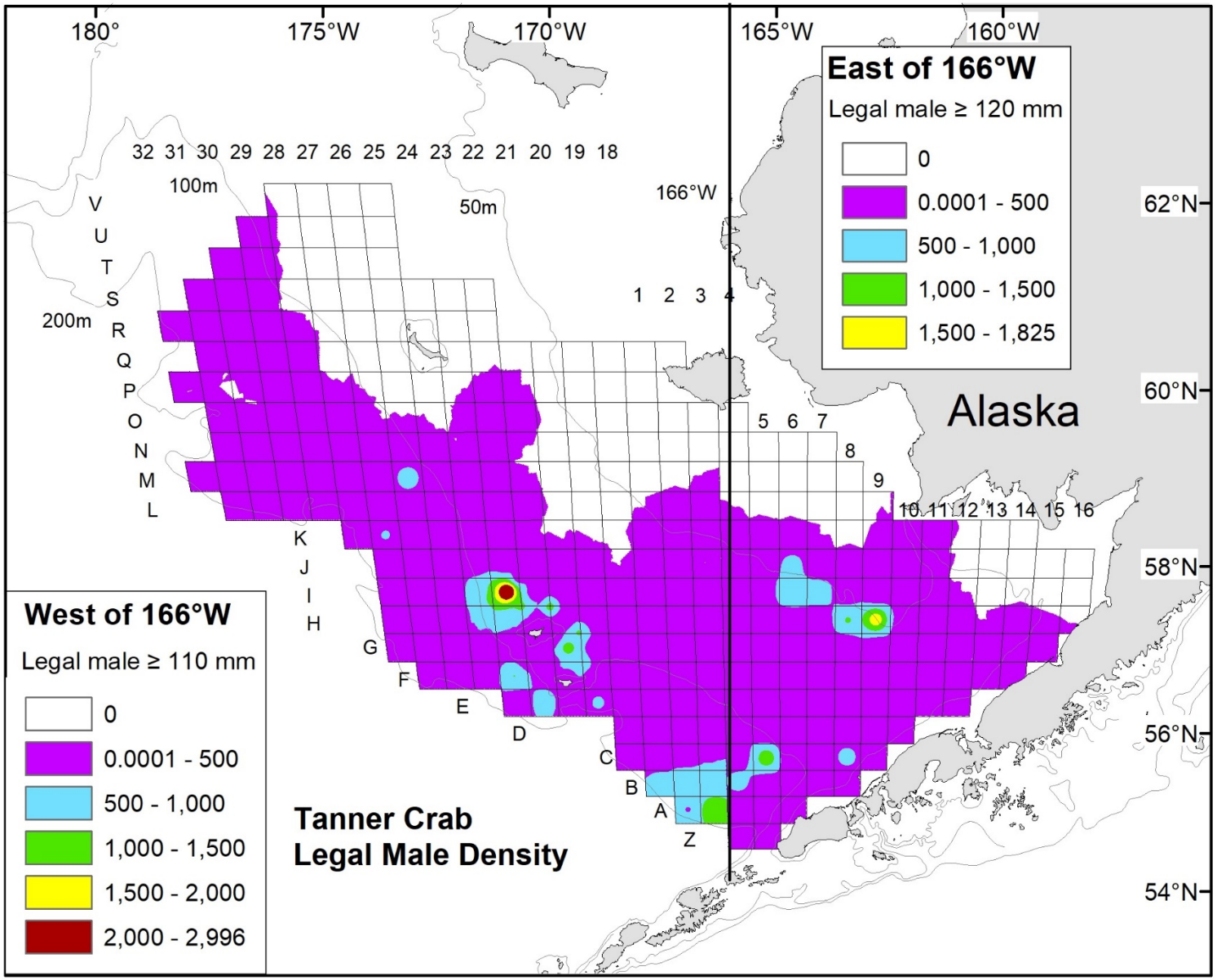

Figure 54. -- Estimated total density (number nmi^{-2}) of legal-sized male Tanner crab (*Chionoecetes bairdi*) at each station sampled in 2021. Note the size definition of legal males differs between the two management areas.

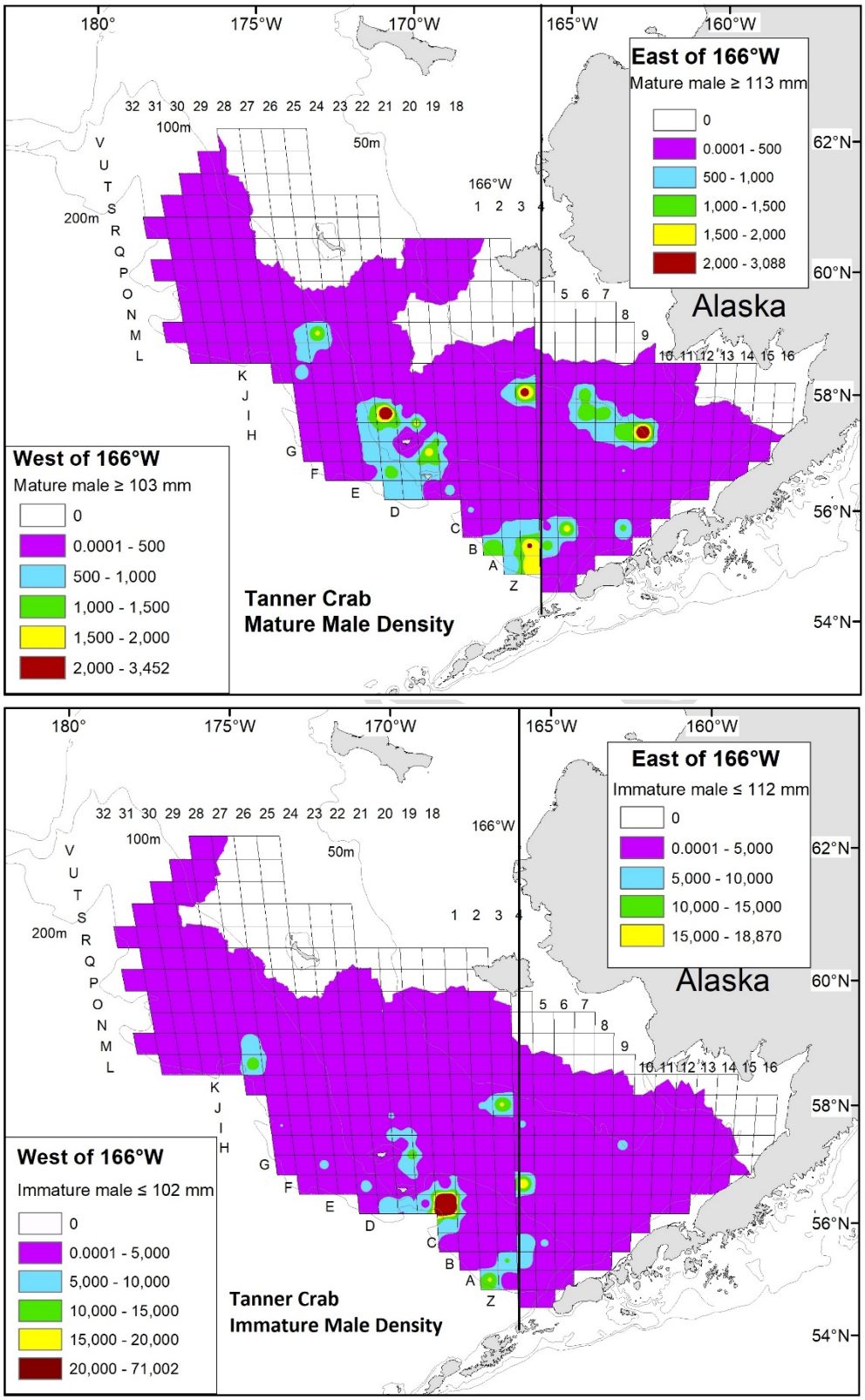

Figure 55. -- Estimated total density (number nmi^{-2}) of mature male (top) and immature male (bottom) Tanner crab (*Chionoecetes bairdi*) at each station sampled in 2021. Note the size definition of immature and mature males differs between the two management areas.

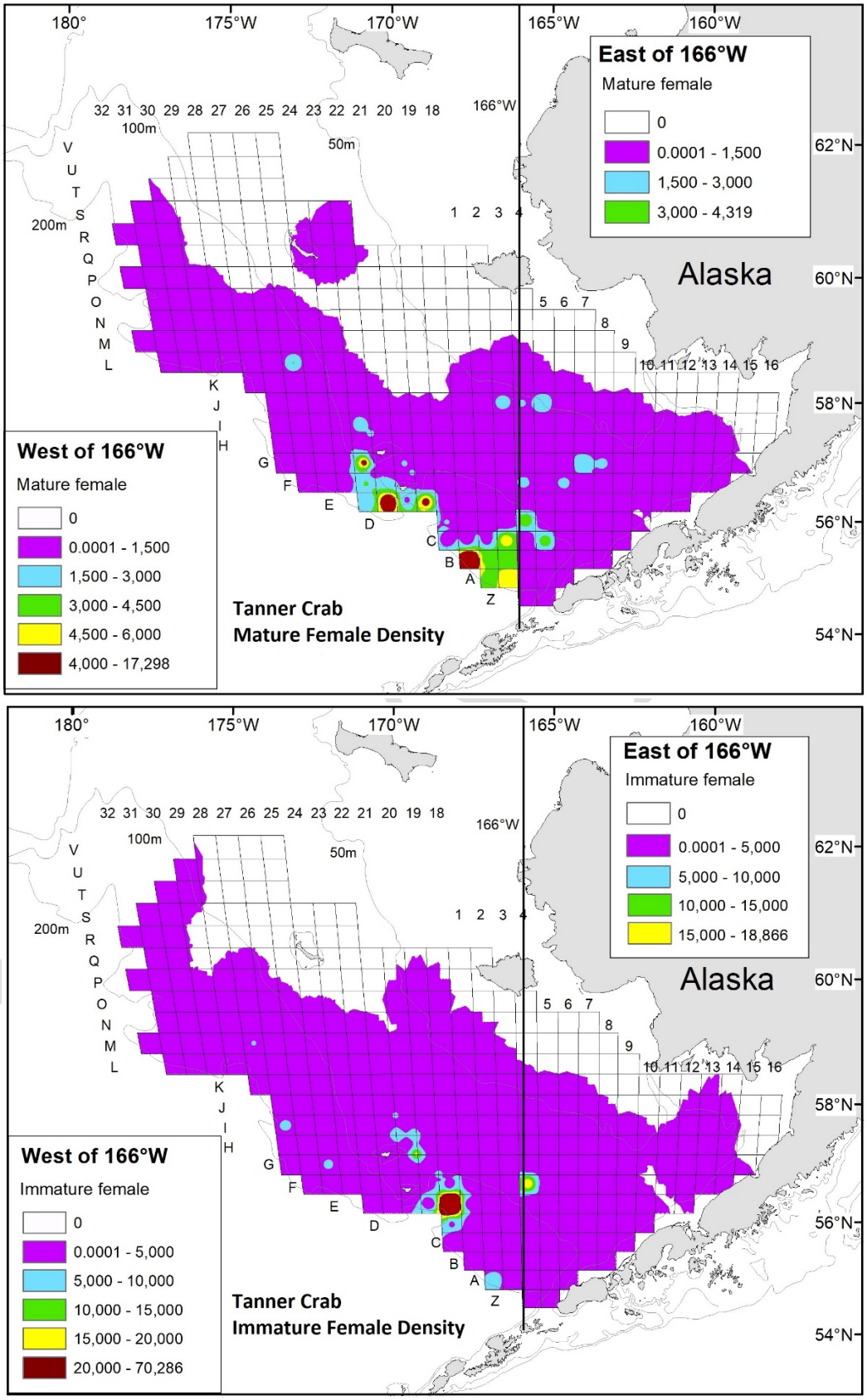

Figure 56. -- Estimated total density (number nmi^{-2}) of mature female (top) and immature female (bottom) Tanner crab (*Chionoecetes bairdi*) at each station sampled in 2021.

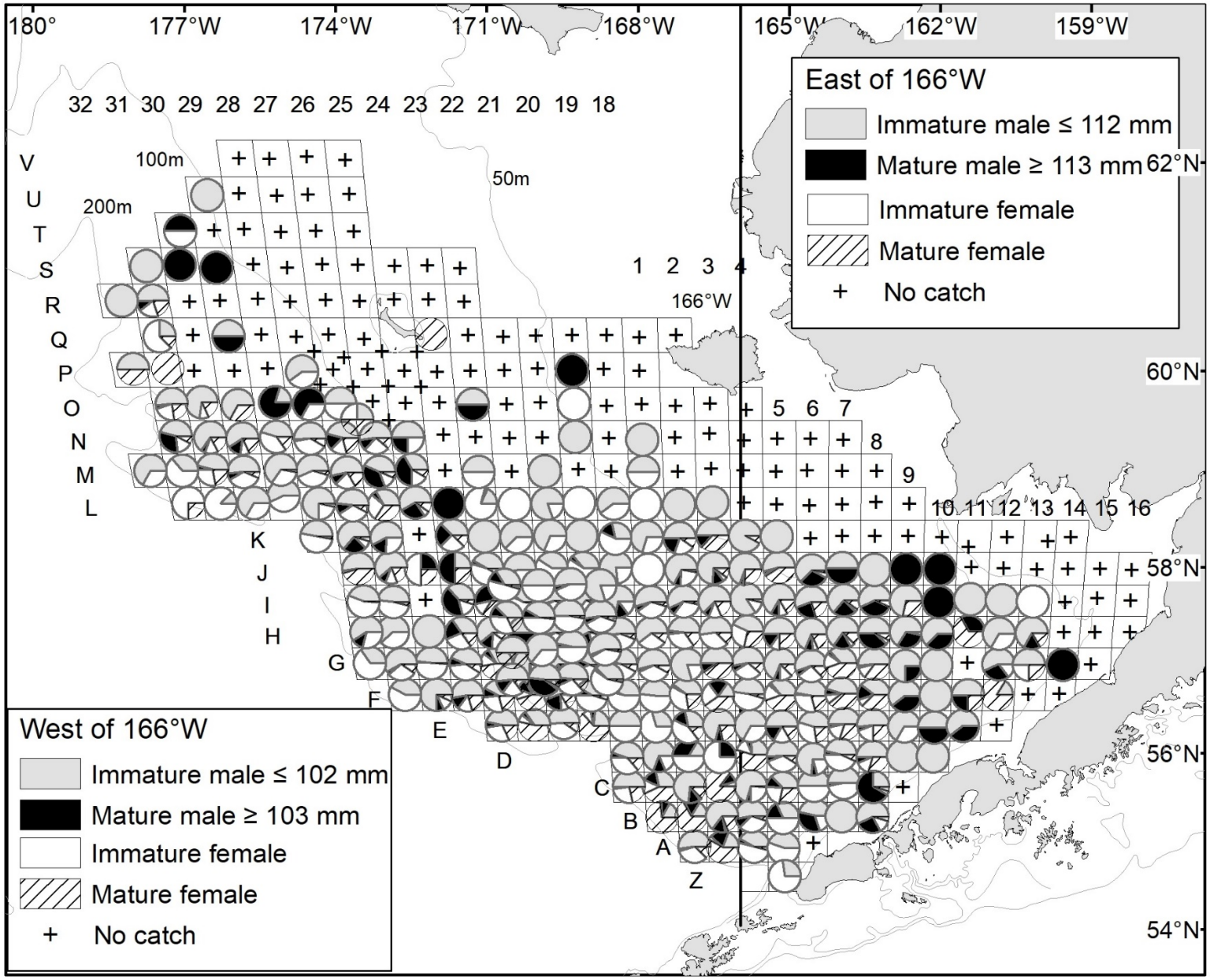

Figure 57. -- Proportion of male and female Tanner crab (*Chionoecetes bairdi*) maturity classes caught at each station sampled in 2021.

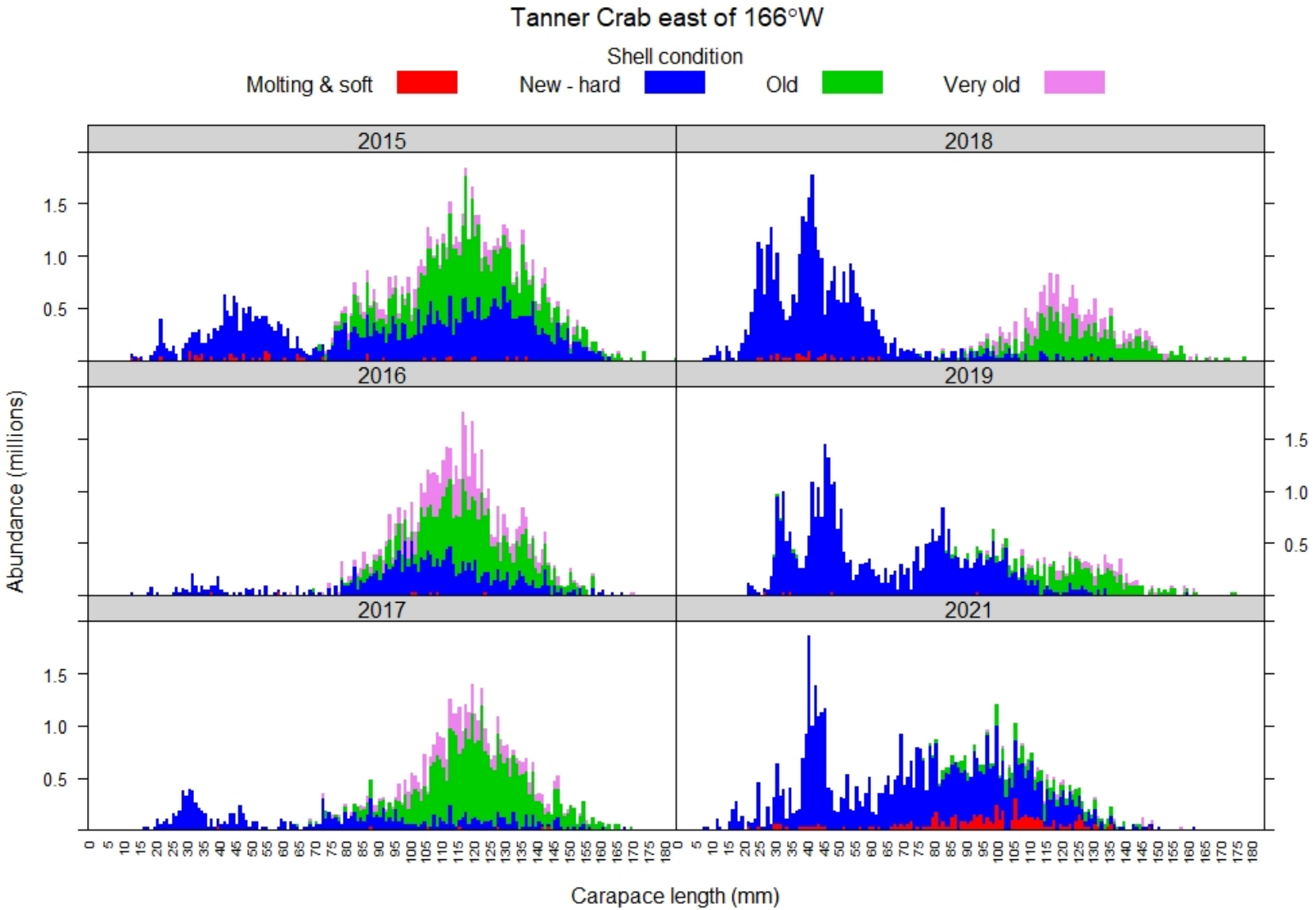

Figure 58. -- Abundance (millions) by size and shell condition of male Tanner crab (*Chionoecetes bairdi*) east of 166° W using 1 mm width classes of all districts combined, 2015-2021.

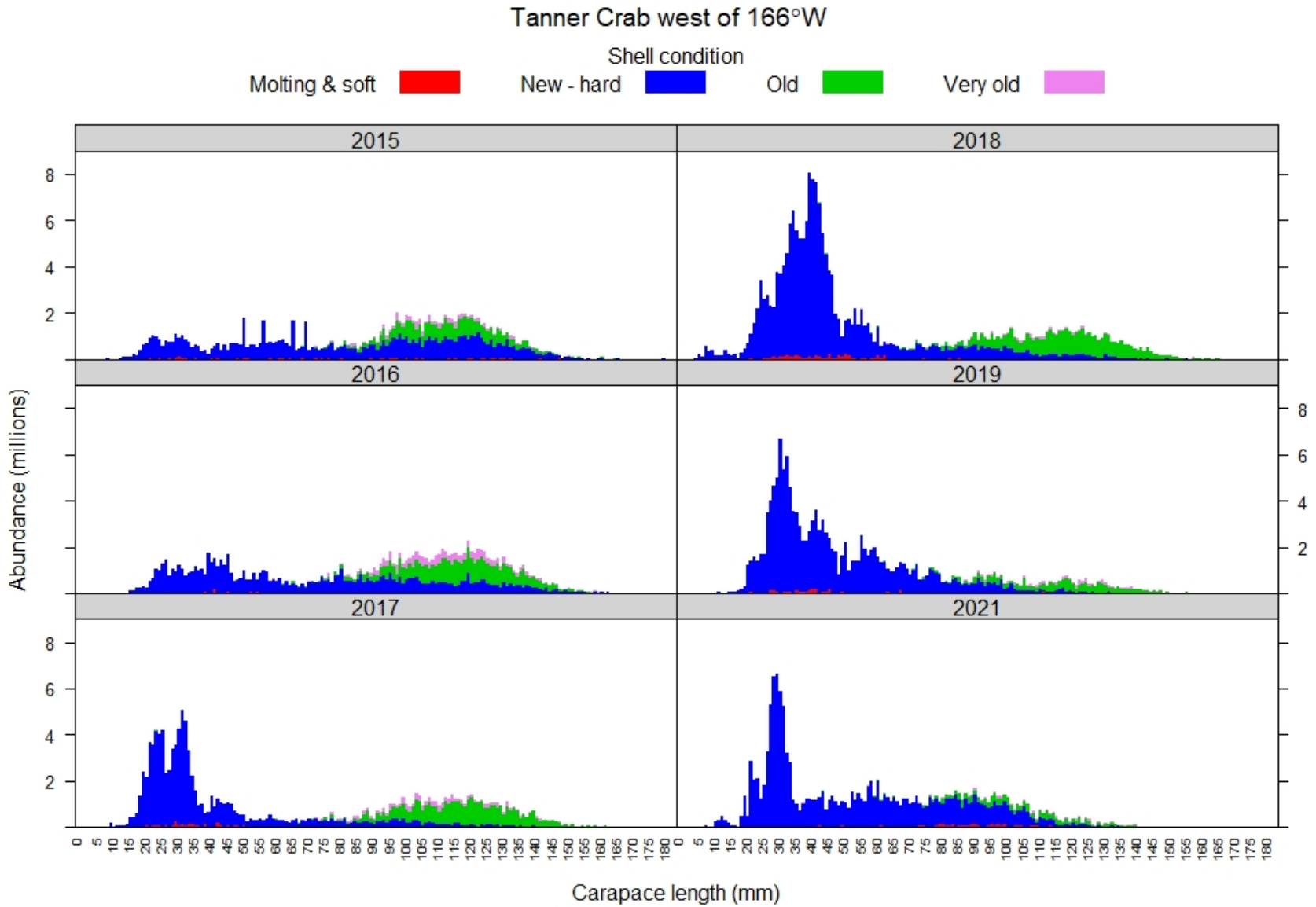

Figure 59. -- Abundance (millions) by size and shell condition of male Tanner crab (*Chionoecetes bairdi*) west of 166° W using 1 mm width classes of all districts combined, 2015-2021.

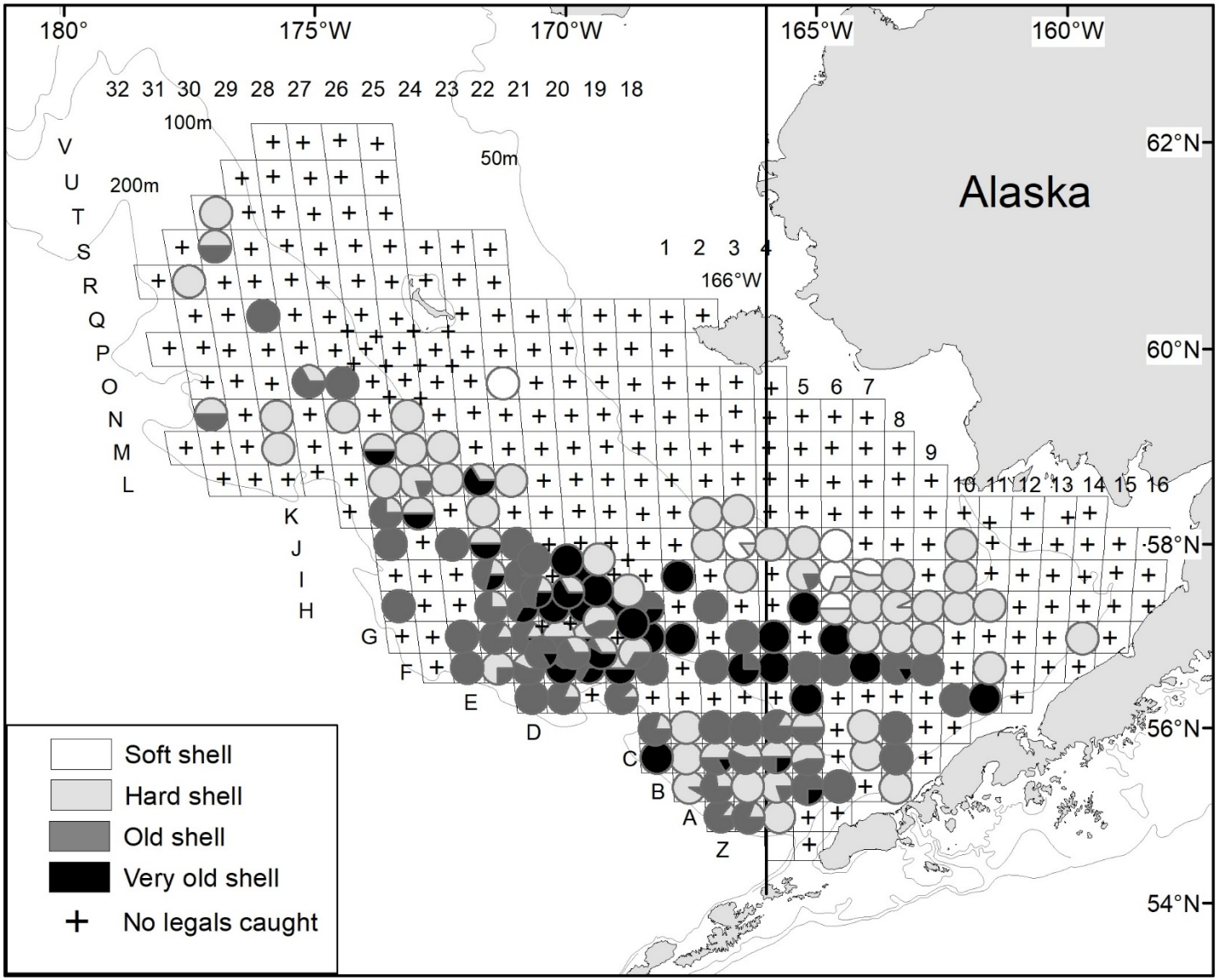

Figure 60. -- Proportion of legal-sized, male Tanner crab (*Chionoecetes bairdi*) shell condition classes caught at each station sampled in 2021. Tanner male crab ≥ 120 mm and ≥ 110 mm CW are the legal-size categories for east and west of 166° W, respectively.

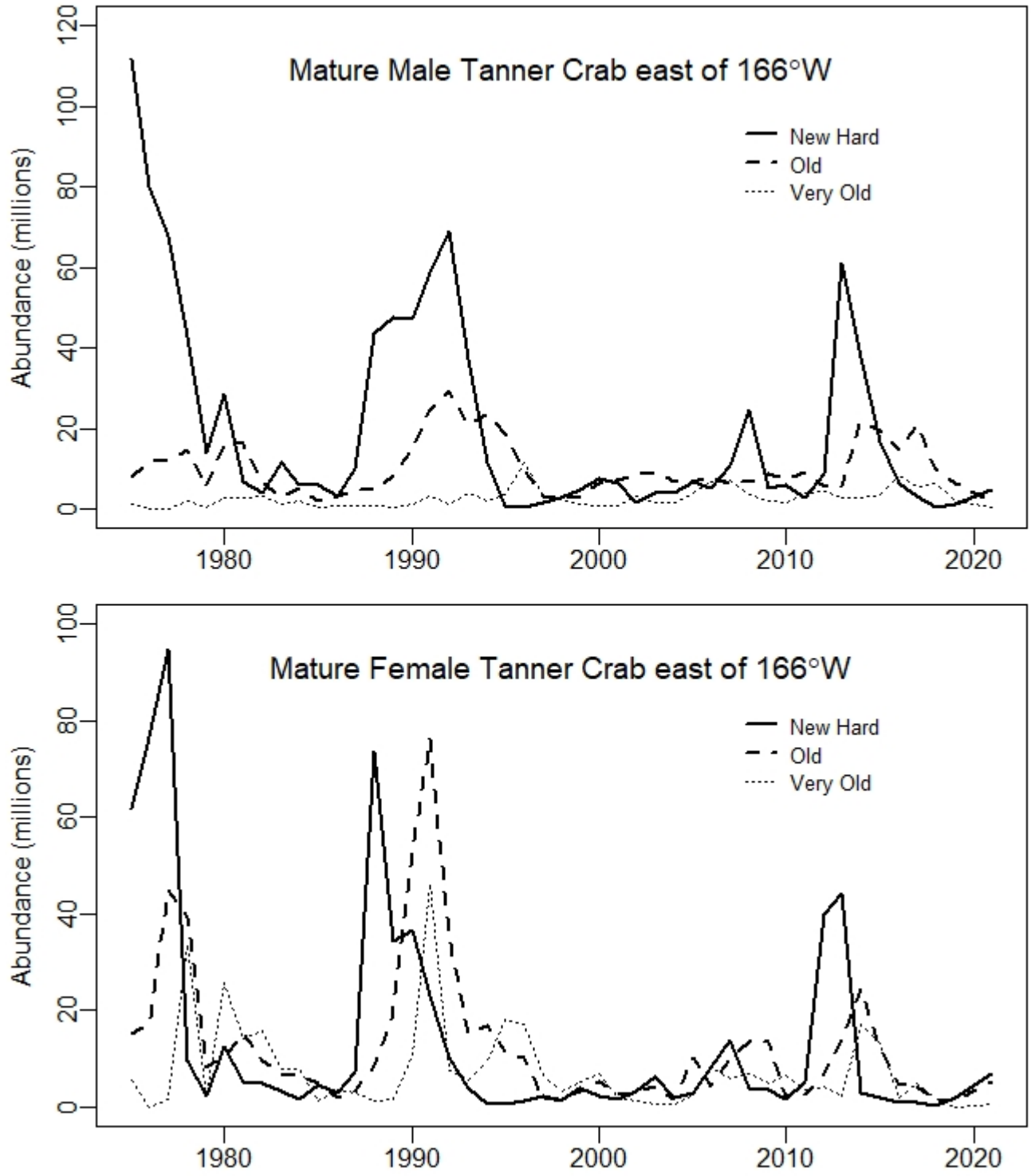

Figure 61. -- Time series of mature male (≥ 113 mm CW) and female (actual maturity) Tanner crab (*Chionoecetes bairdi*) abundance east of 166° W by shell condition, 1975-2021. New- Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined.

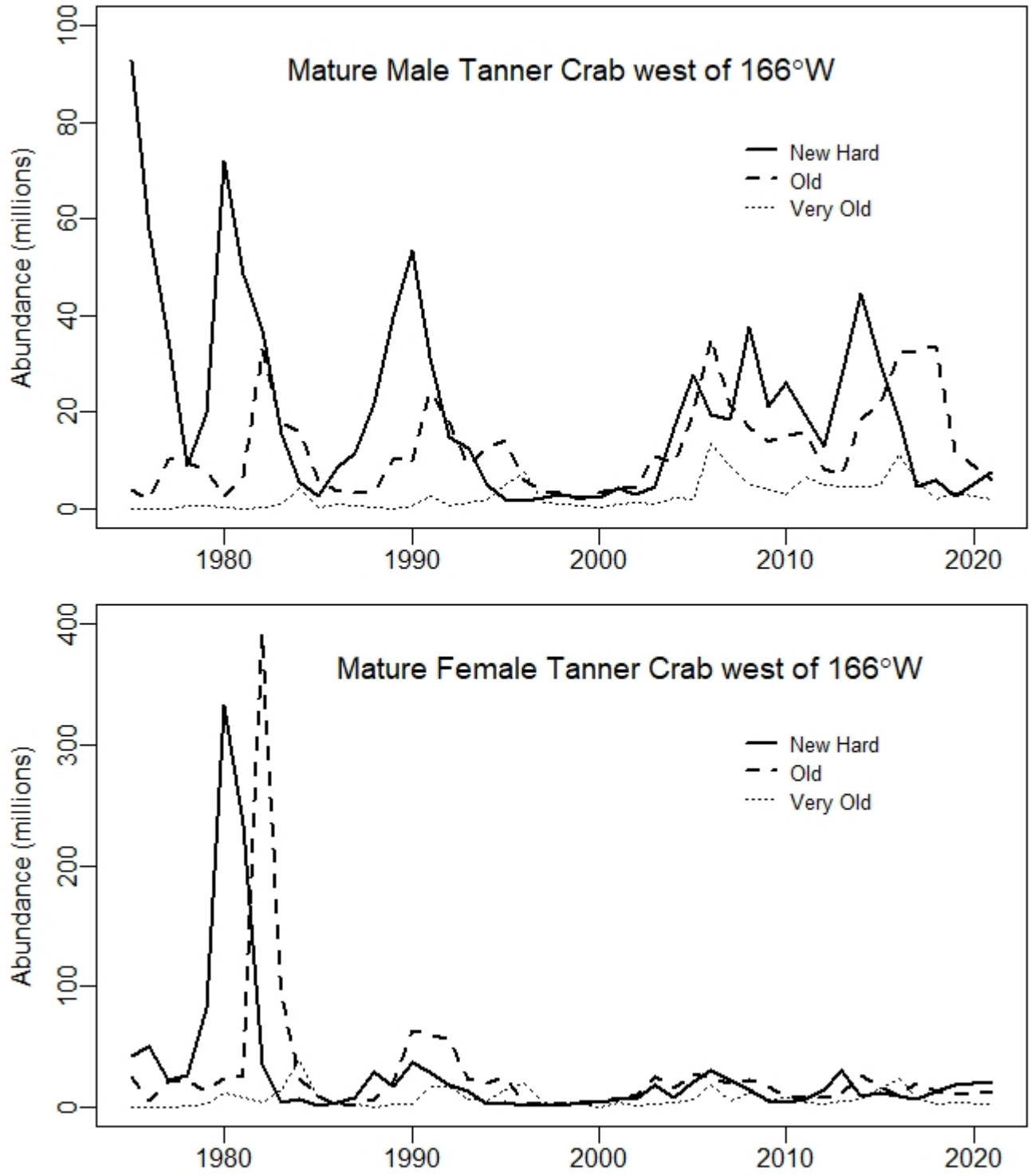

Figure 62. -- Time series of mature male (≥ 103 mm CW) and female (actual maturity) Tanner crab (*Chionoecetes bairdi*) abundance west of 166° W by shell condition, 1975-2021. New- Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined.

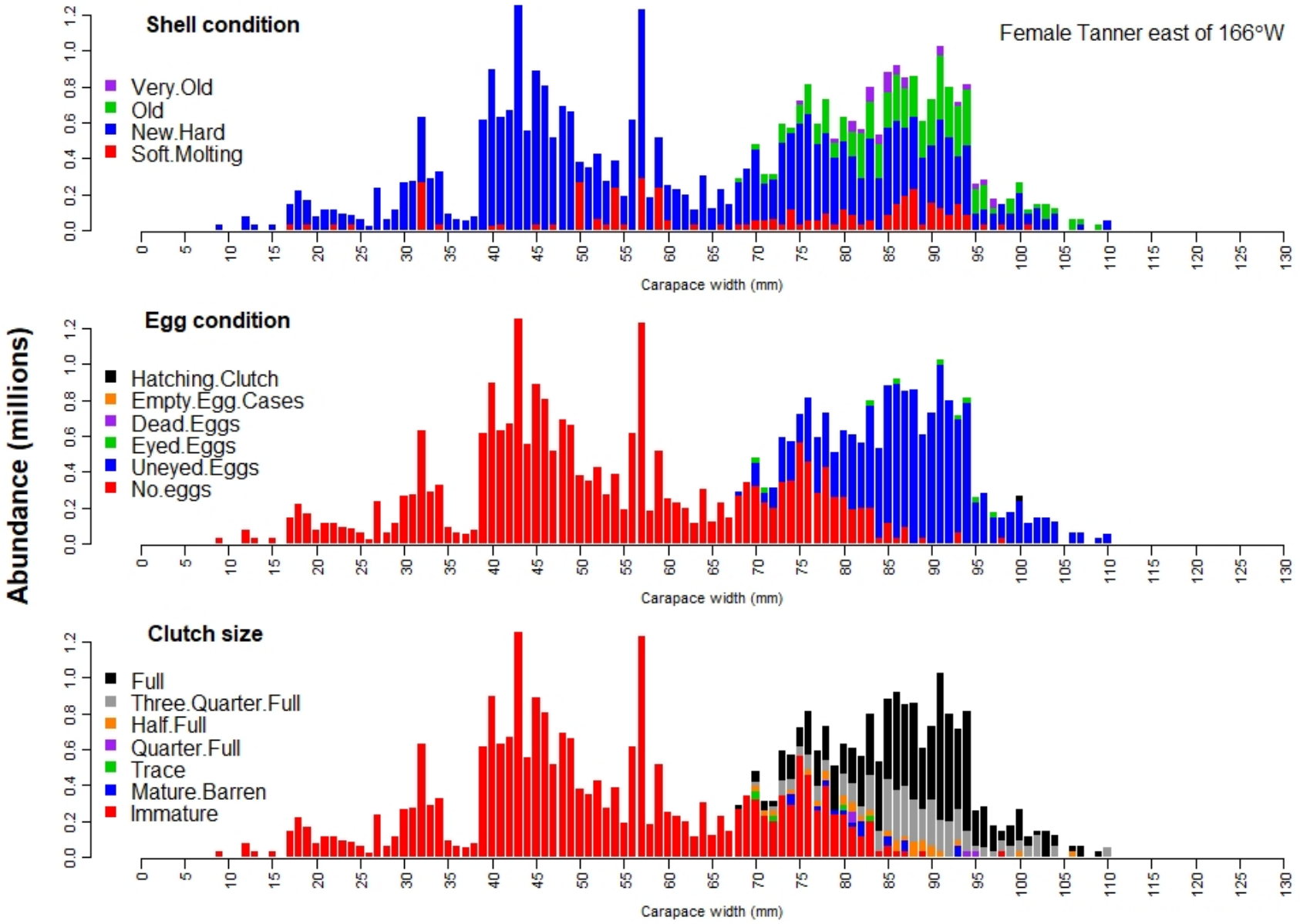

Figure 63. -- Size frequency by shell condition, egg condition, and clutch fullness of female Tanner crab (*Chionoecetes bairdi*) east of 166° W by 1 mm width classes for all districts combined in 2021.

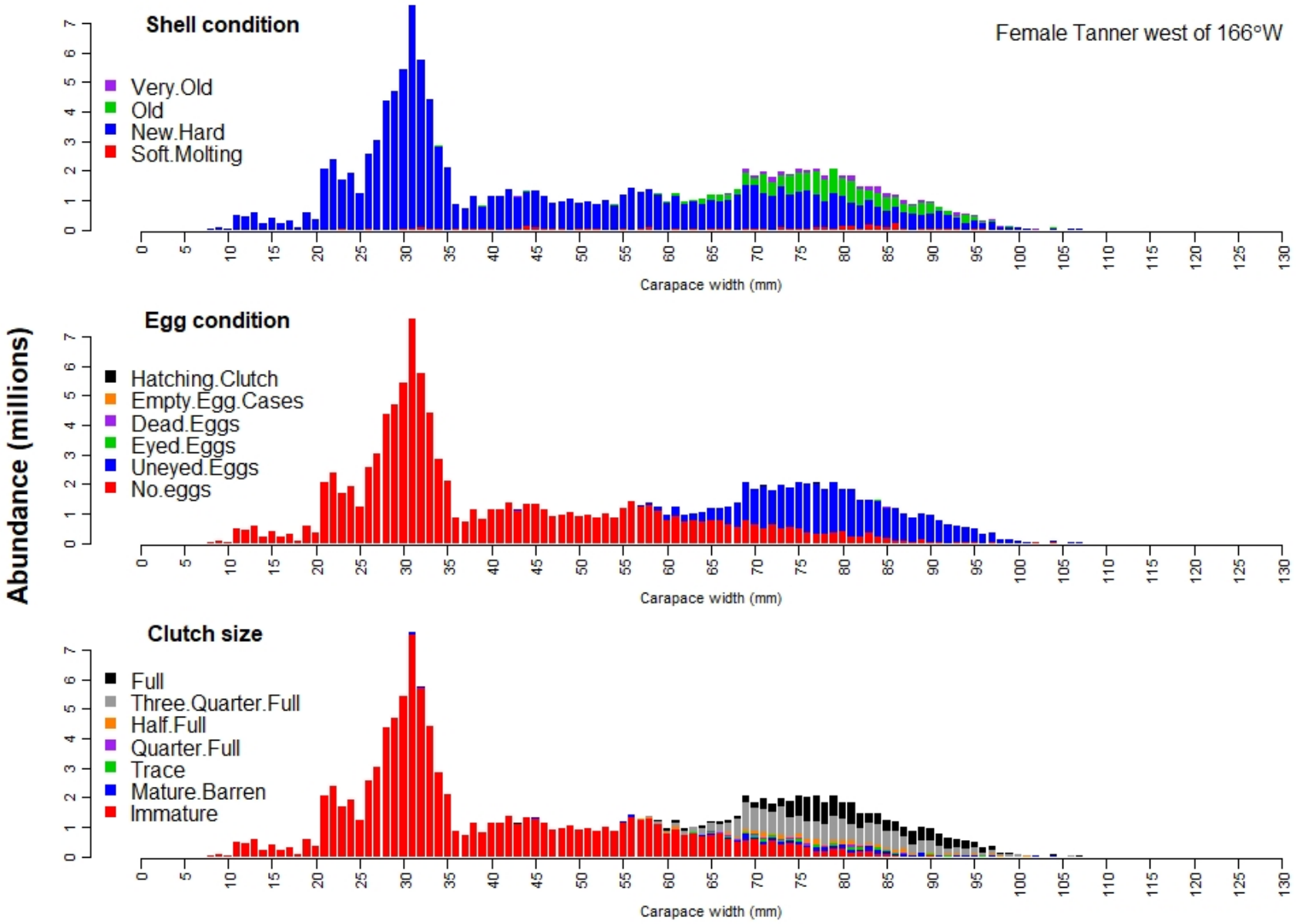

Figure 64. -- Size frequency by shell condition, egg condition, and clutch fullness of female Tanner crab (*Chionoecetes bairdi*) west of 166° W by 1 mm width classes for all districts combined in 2021.

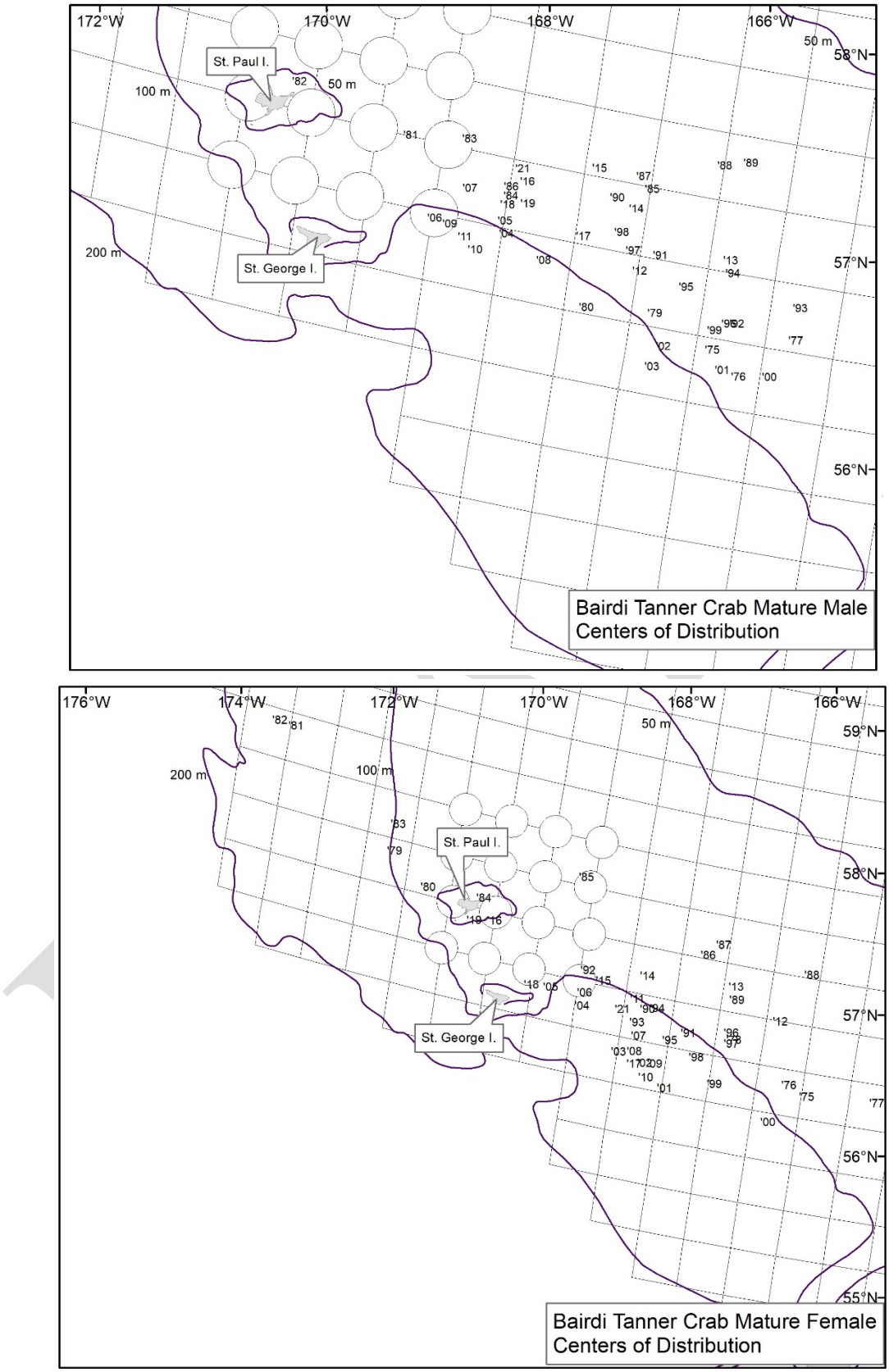

Figure 65. -- Centers of stock distribution of mature male (top) and female (bottom) Tanner crab (*Chionoecetes bairdi*) from 1975 to 2021.

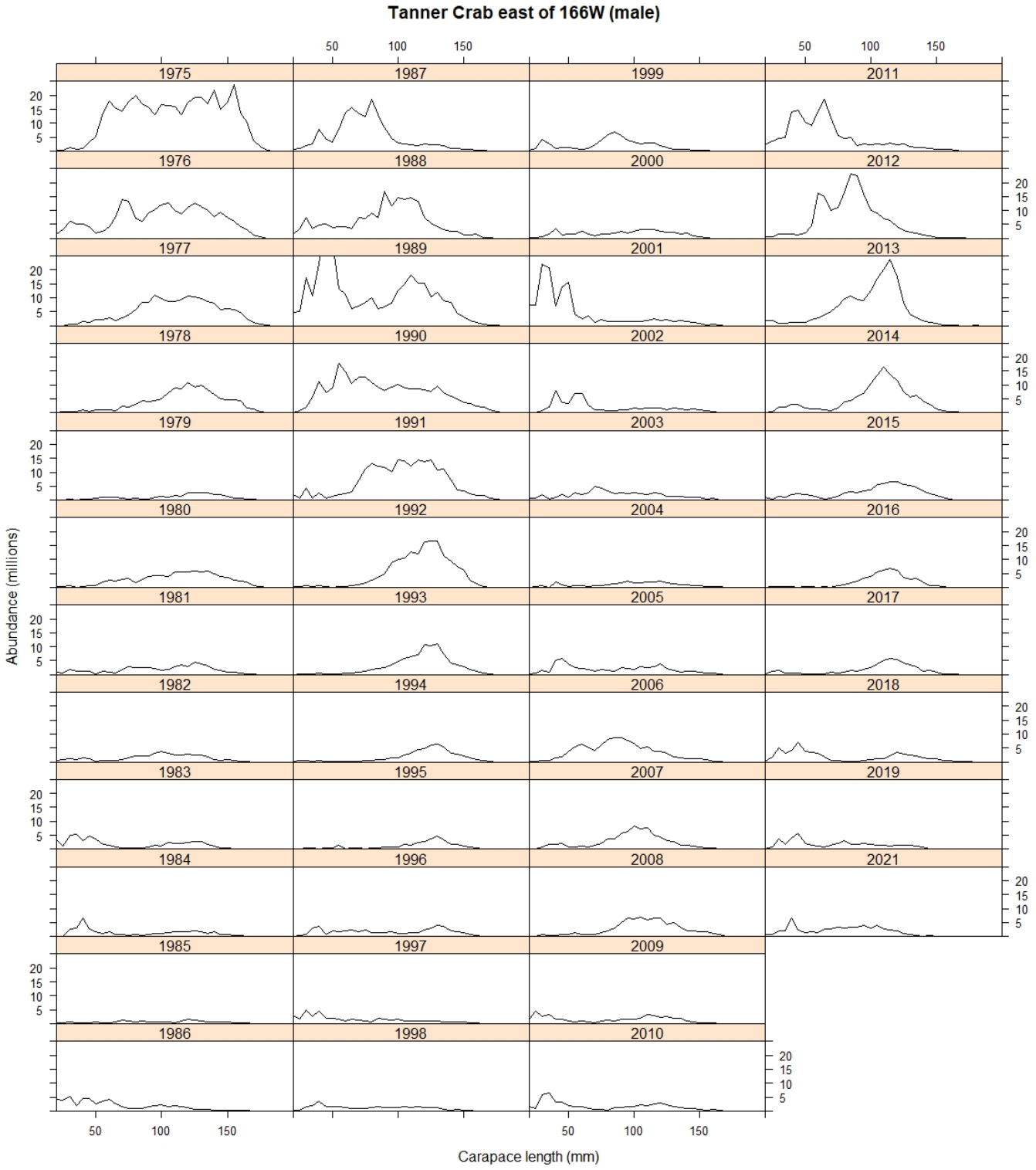

Figure 66. -- Historical size frequency by 5 mm width classes of male Tanner crab (*Chionoecetes bairdi*) east of 166° W, 1975 to 2021.

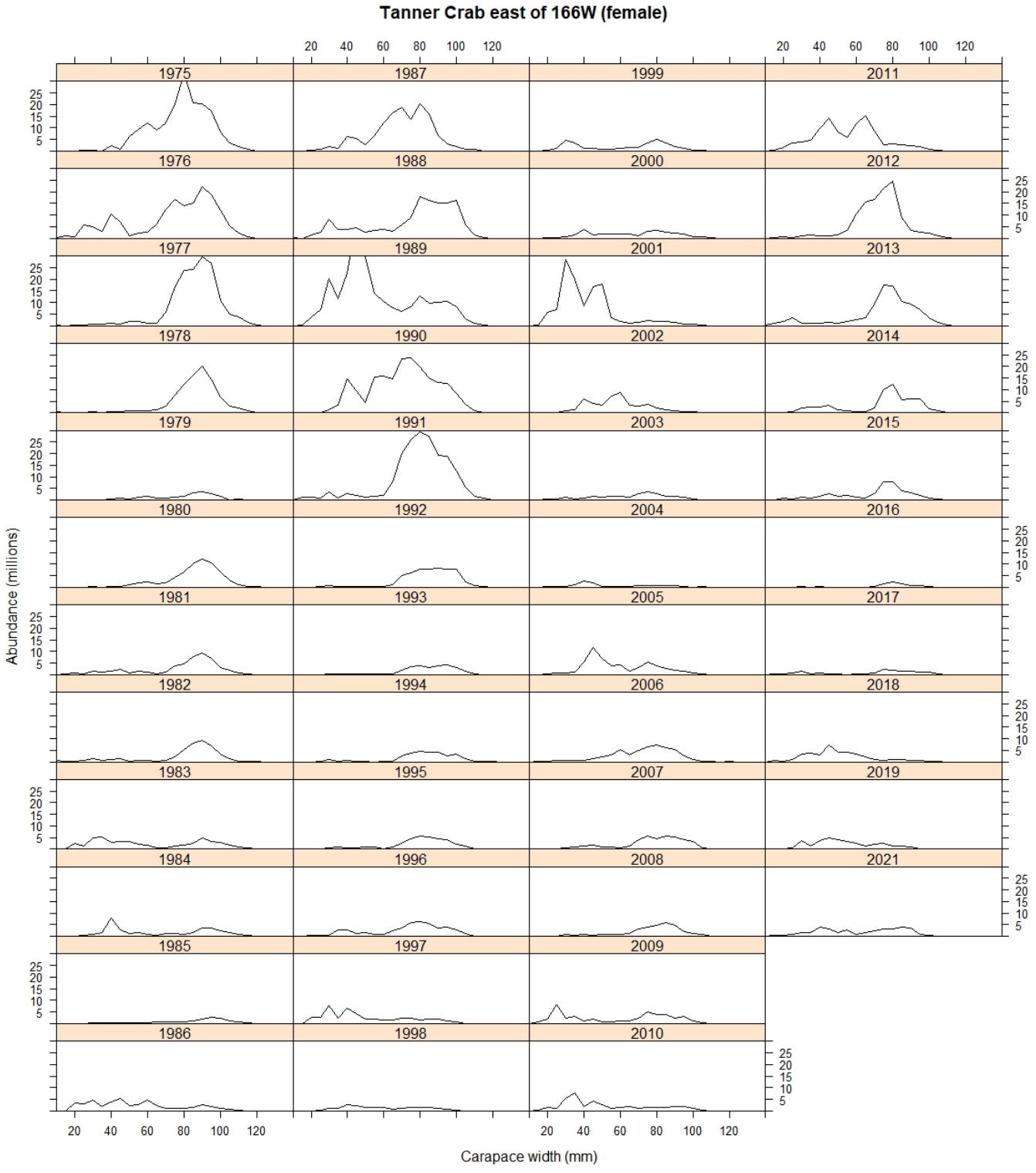

Figure 67. -- Historical size frequency by 5 mm width classes of female Tanner crab (*Chionoecetes bairdi*) east of 166° W, 1975 to 2021.

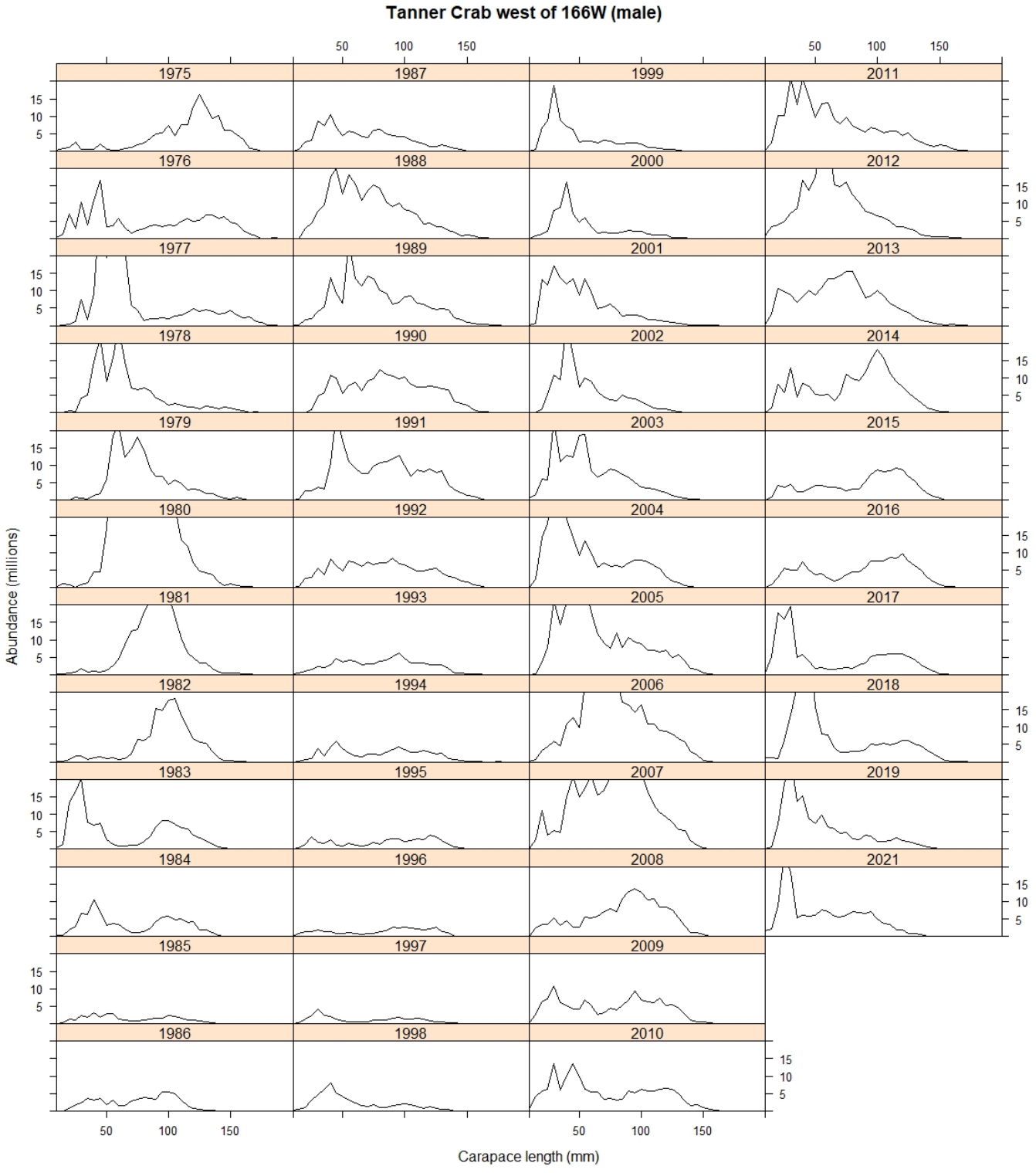

Figure 68. -- Historical size frequency by 5 mm width classes of male Tanner crab (*Chionoecetes bairdi*) west of 166° W, 1975 to 2021.

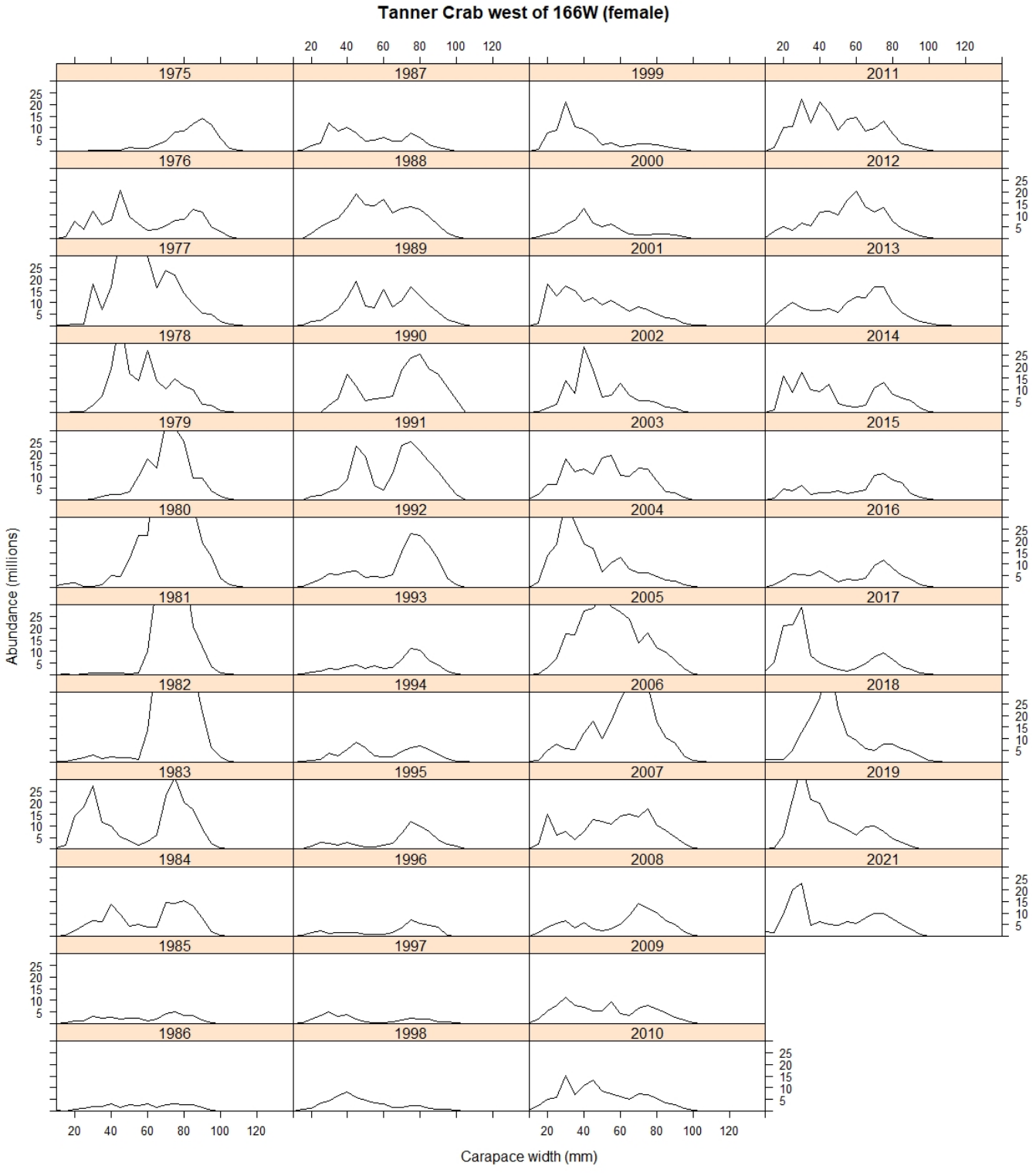

Figure 69. -- Historical size frequency by 5 mm width classes of female Tanner crab (*Chionoecetes bairdi*) west of 166° W, 1975 to 2021.

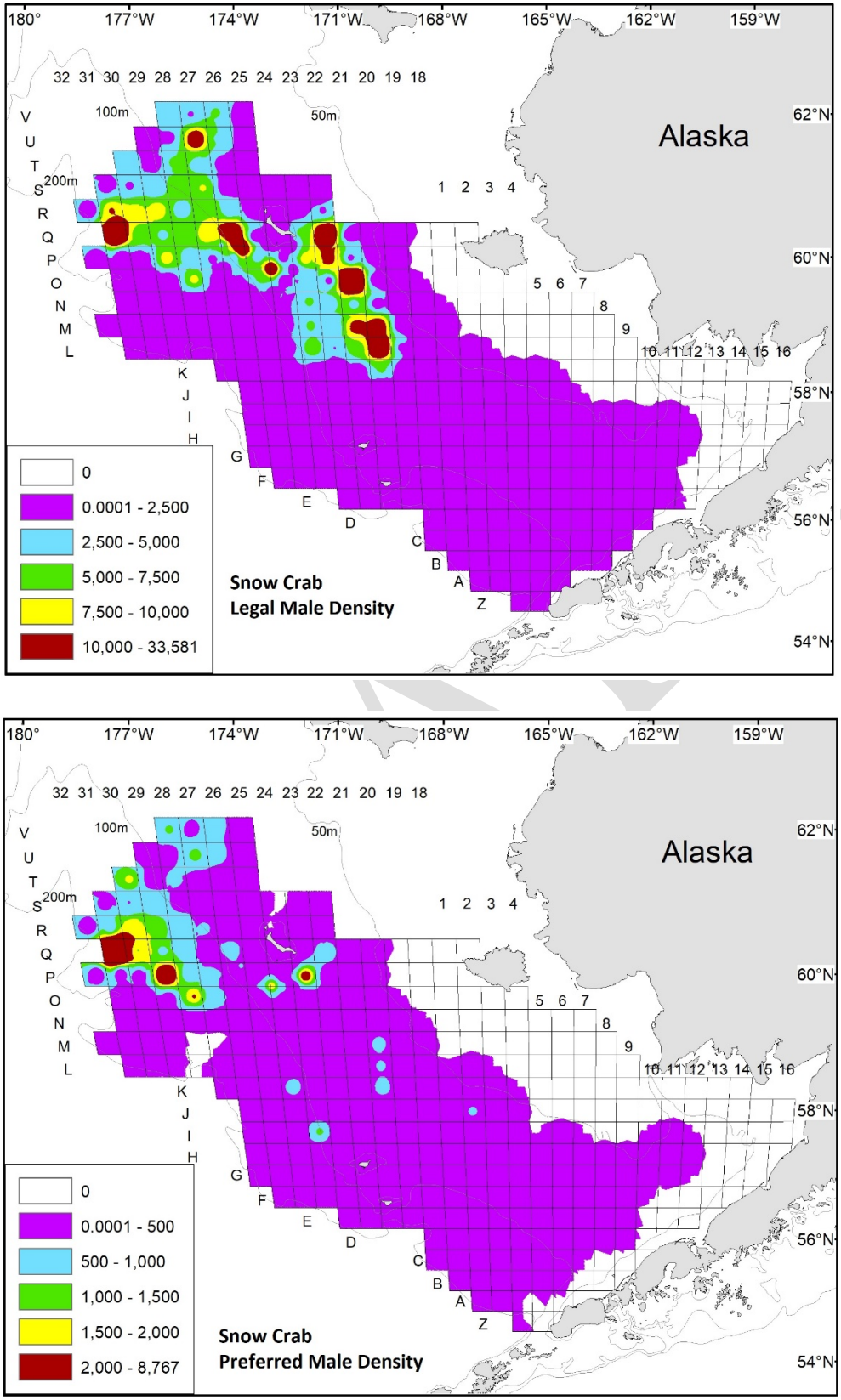

Figure 70. -- Estimated total density (number nmi^{-2}) of legal-sized male snow crab (*Chionoecetes opilio*) at each station sampled in 2021.

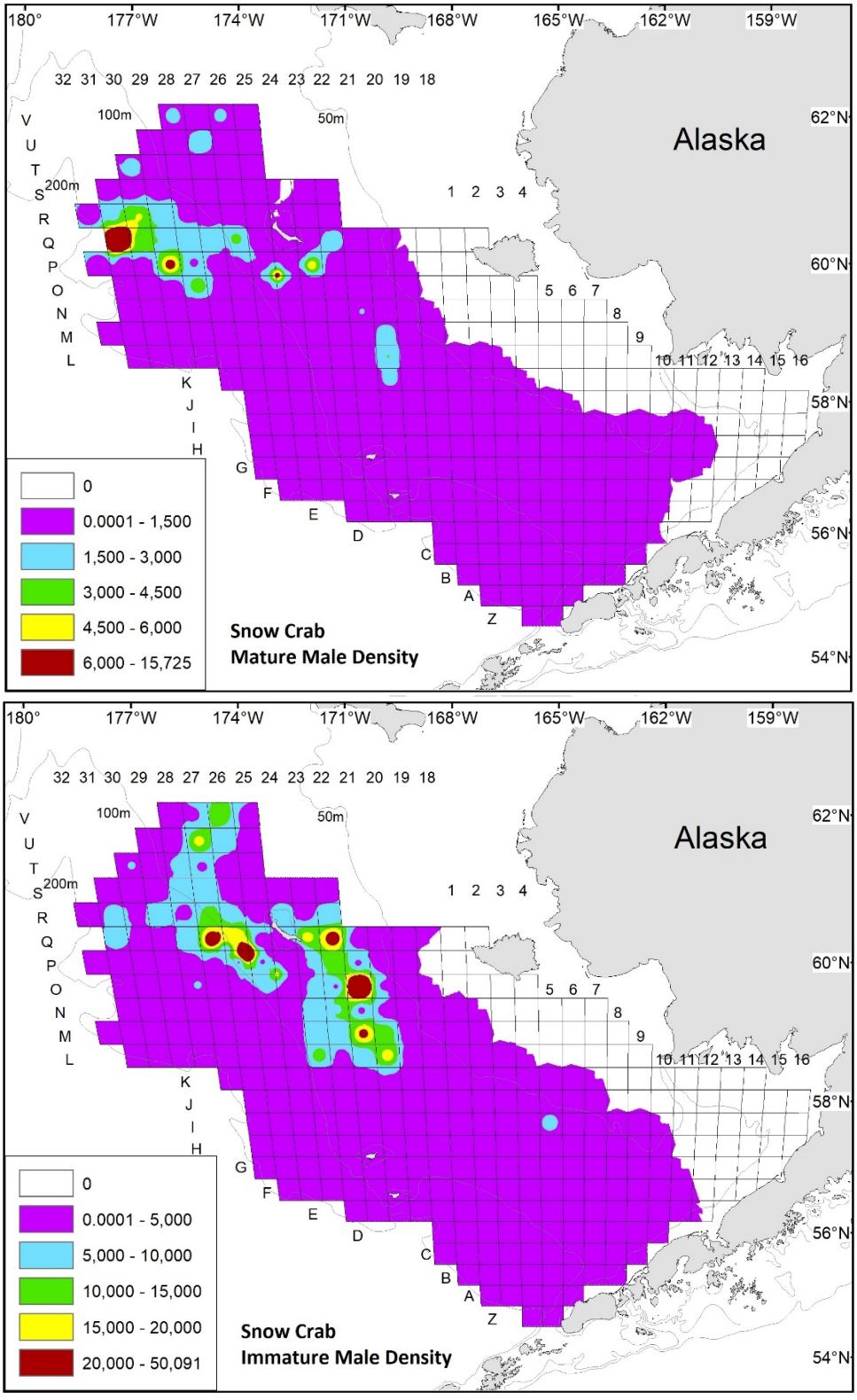

Figure 71. -- Estimated total density (number nmi^{-2}) of mature male (top) and immature male (bottom) snow crab (*Chionoecetes opilio*) at each station sampled in 2021.

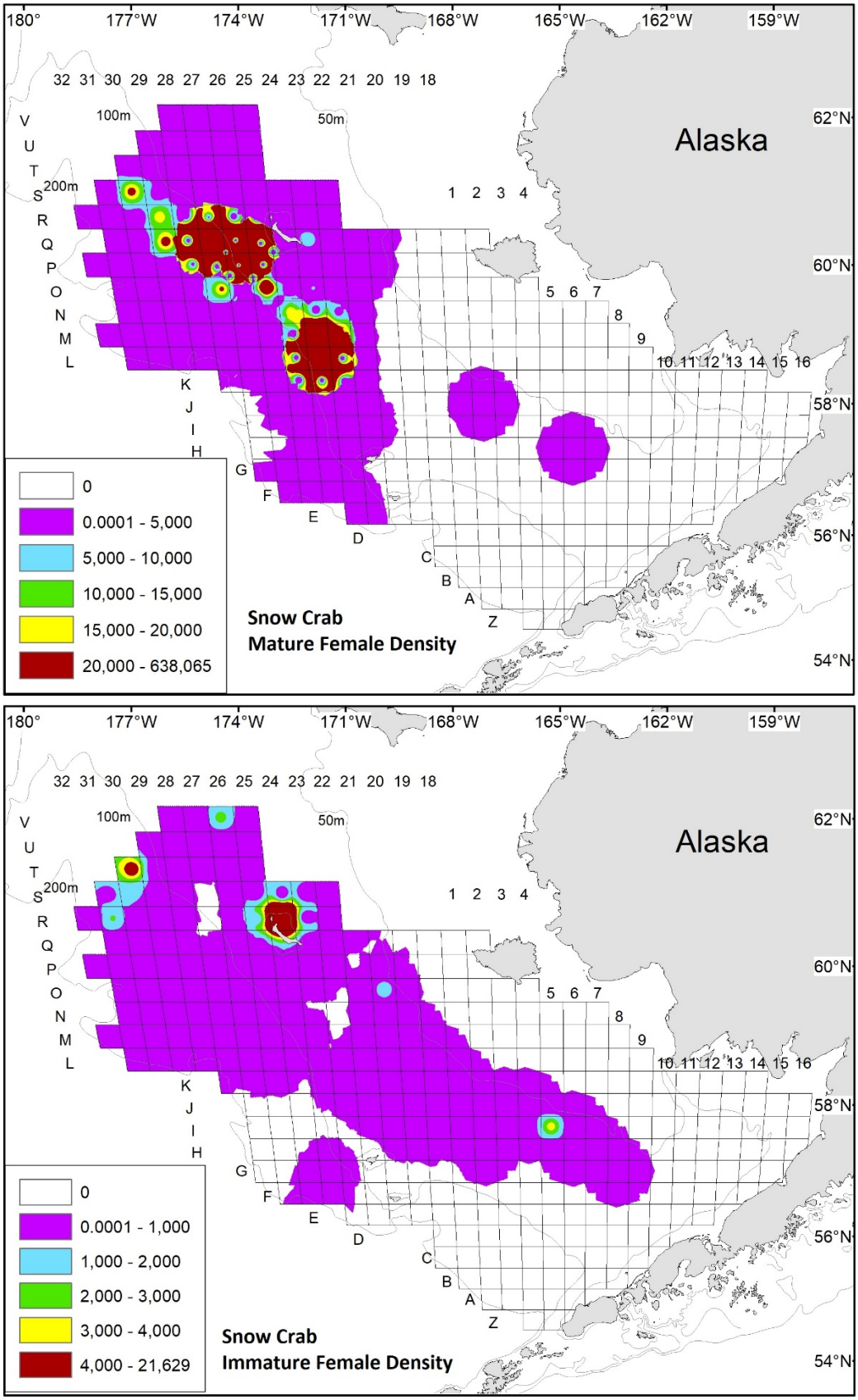

Figure 72. -- Estimated total density (number nmi^{-2}) of mature female (top) and immature female (bottom) snow crab (*Chionoecetes opilio*) at each station sampled in 2021.

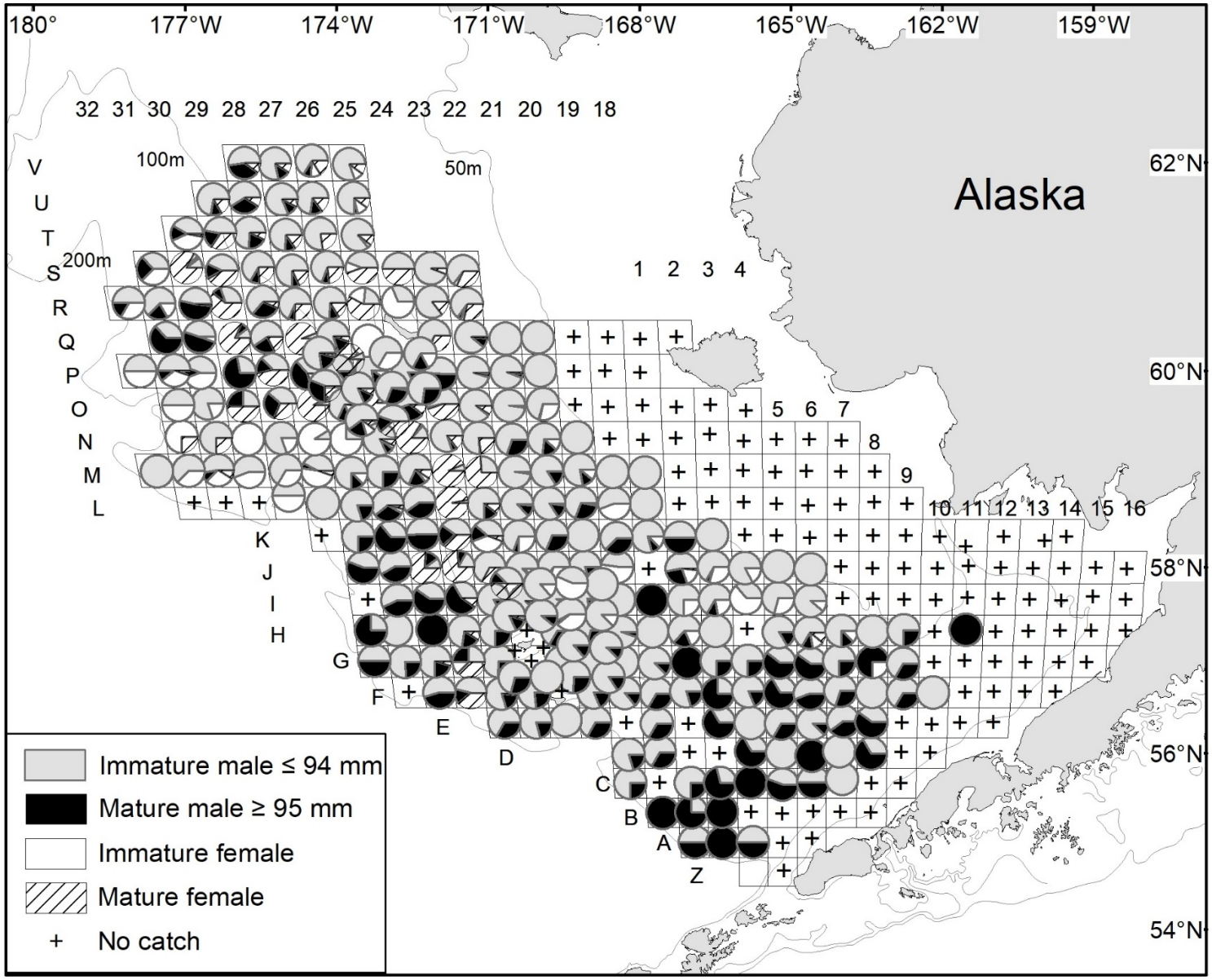

Figure 73. -- Proportion of male and female snow crab (*Chionoecetes opilio*) maturity classes caught at each station sampled in 2021.

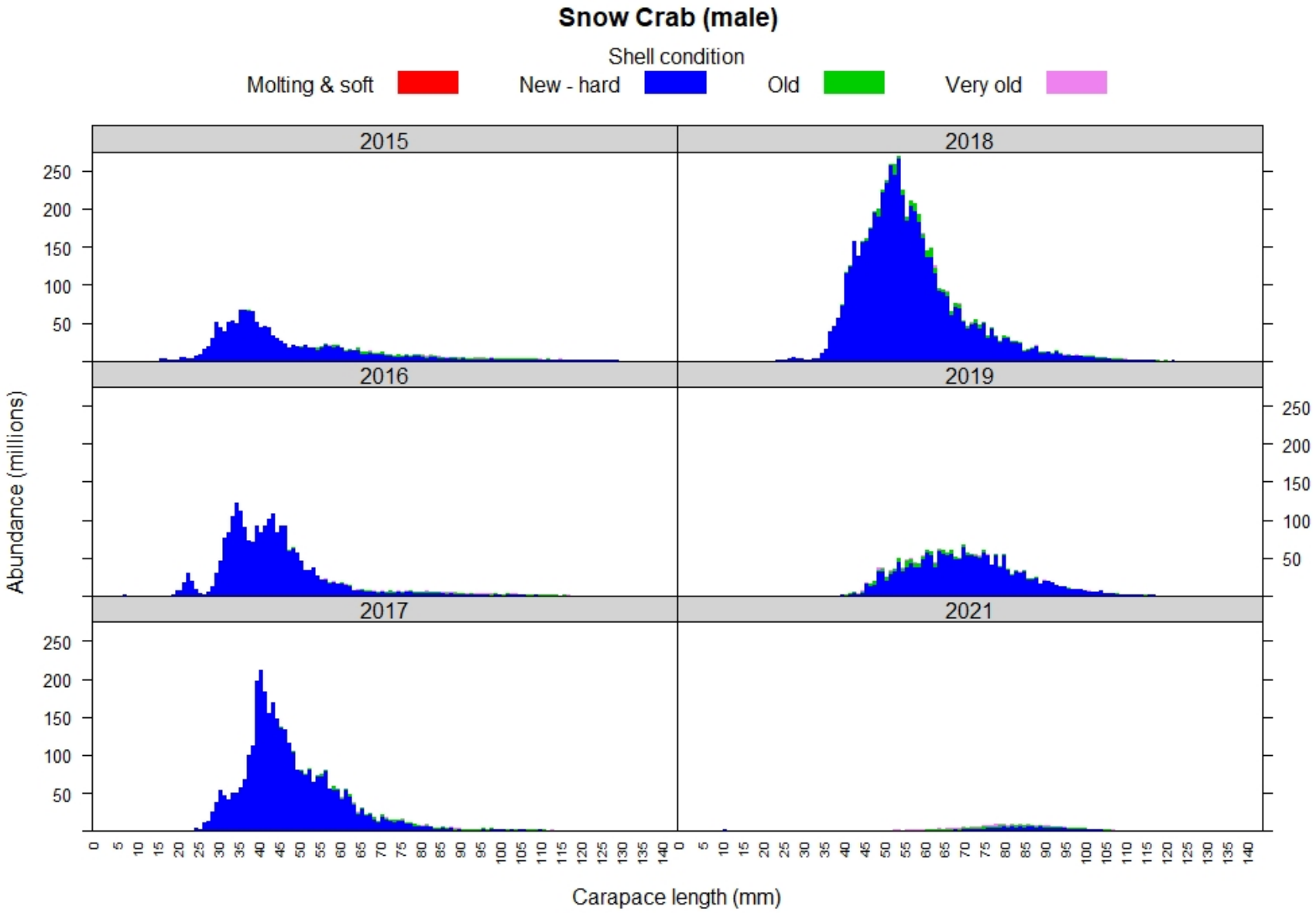

Figure 74. -- Abundance (millions) by size and shell condition of male snow crab (*Chionoecetes opilio*) using 1 mm width classes of all districts combined, 2015-2021.

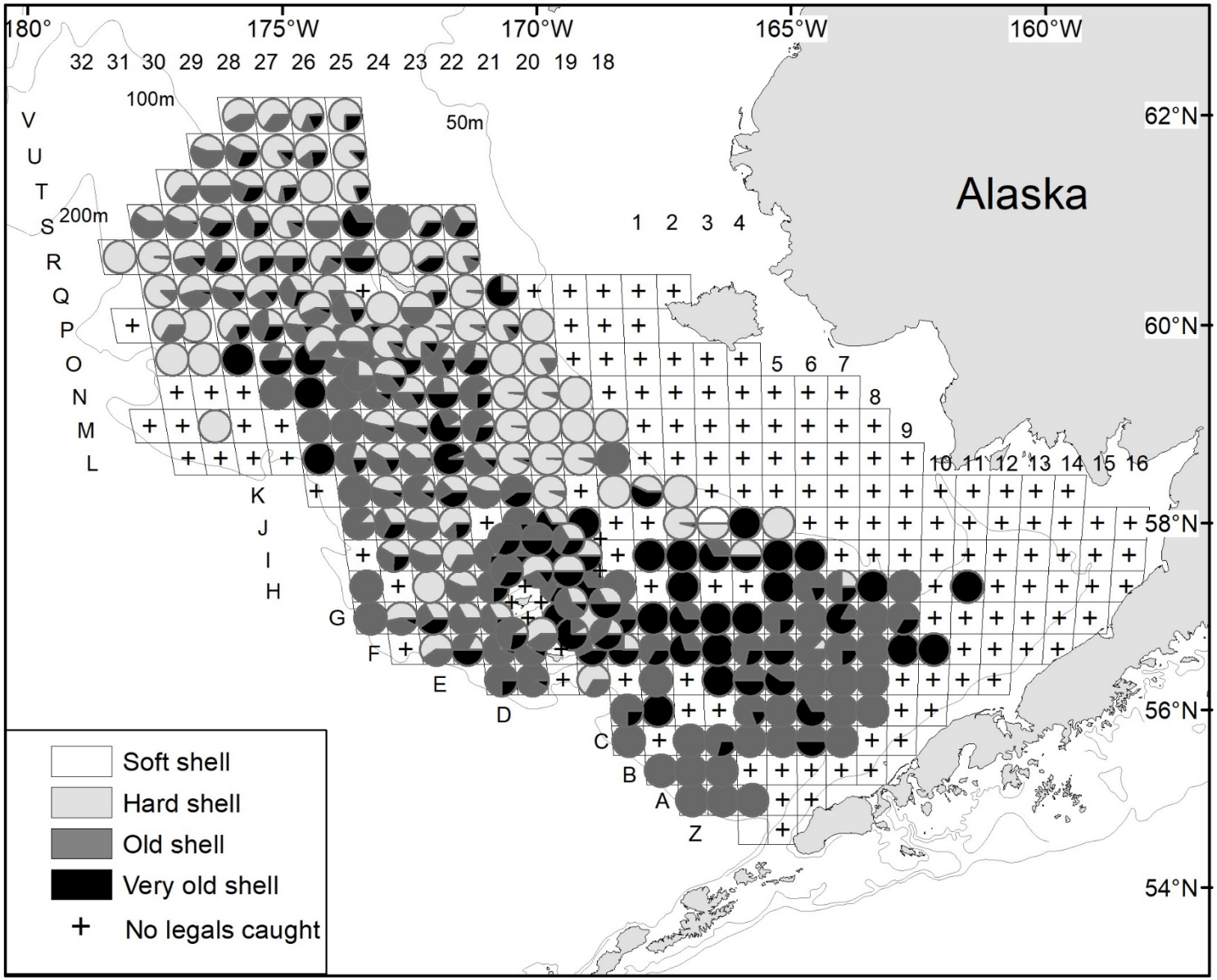

Figure 75. -- Proportion of legal-sized, male snow crab (*Chionoecetes opilio*) shell condition classes caught at each station sampled in 2021.

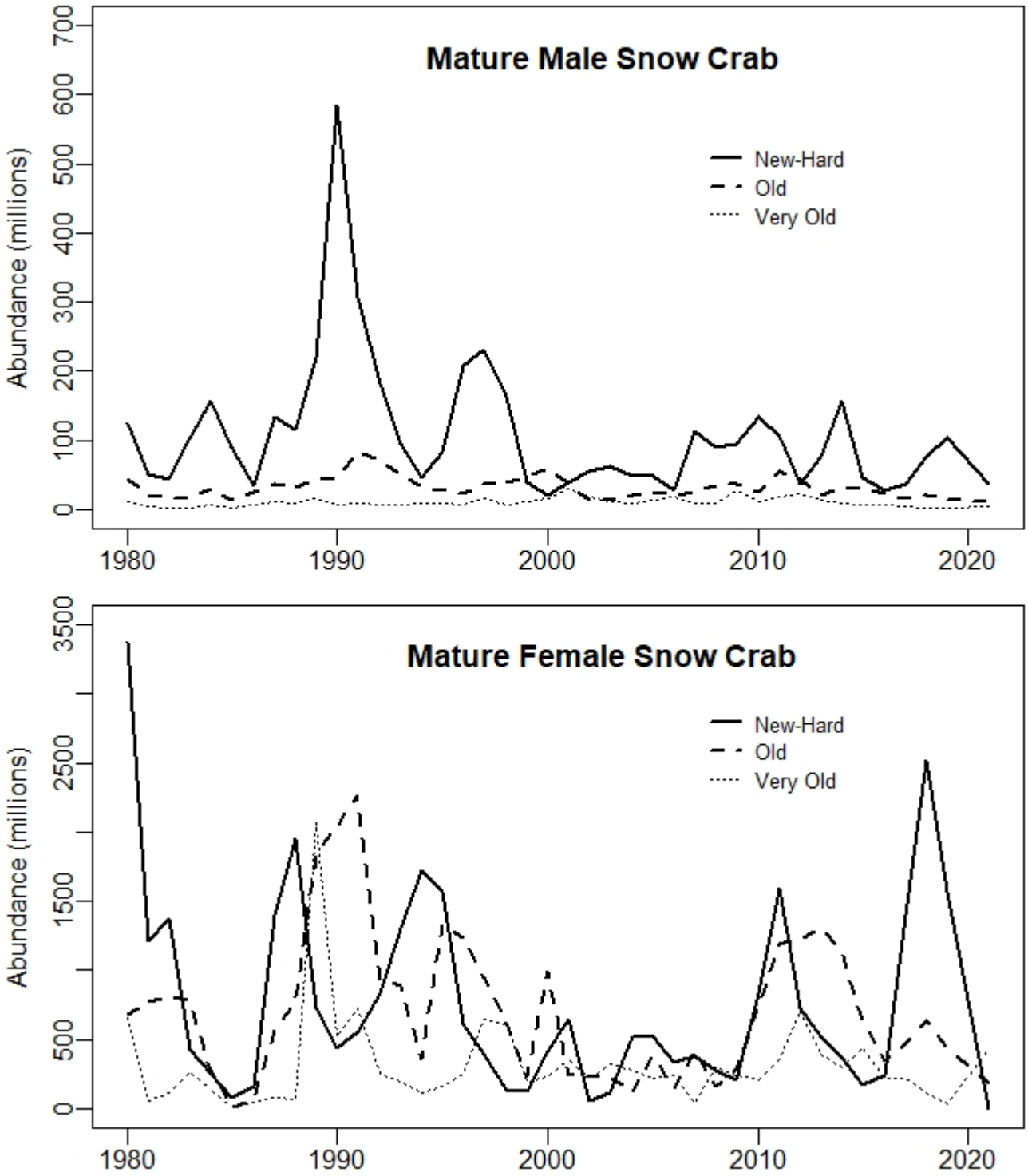

Figure 76. -- Time series of mature male (≥ 95 mm CW) and female (actual maturity) snow crab (*Chionoecetes opilio*) abundance by shell condition, 1980-2021. New- Hard = shell condition 2; Old = shell condition 3; Very Old = shell condition 4 and 5 combined.

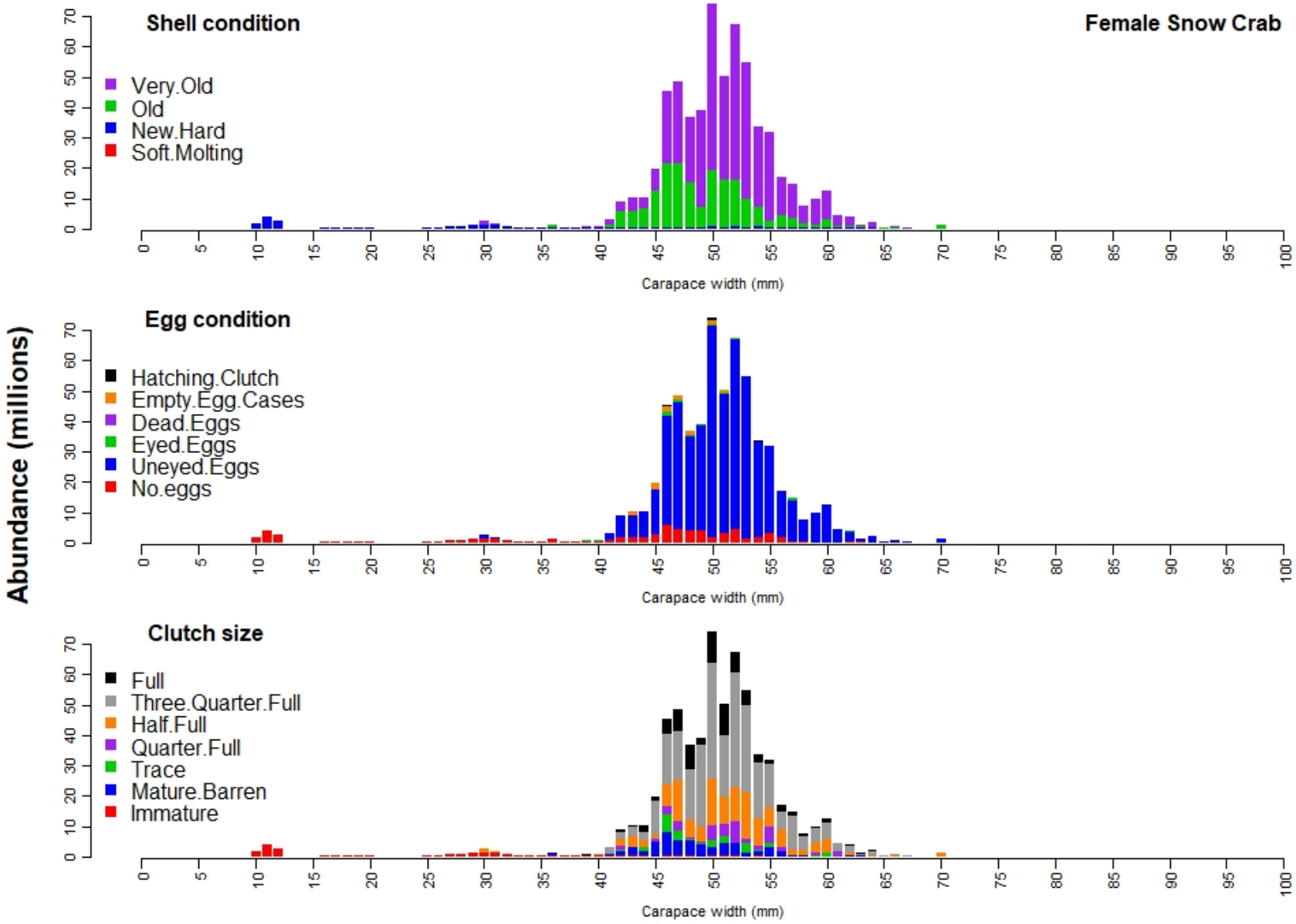

Figure 77a. -- Size frequency by shell condition, egg condition, and clutch fullness of female snow crab (*Chionoecetes opilio*) by 1 mm width classes for all districts combined in 2021.

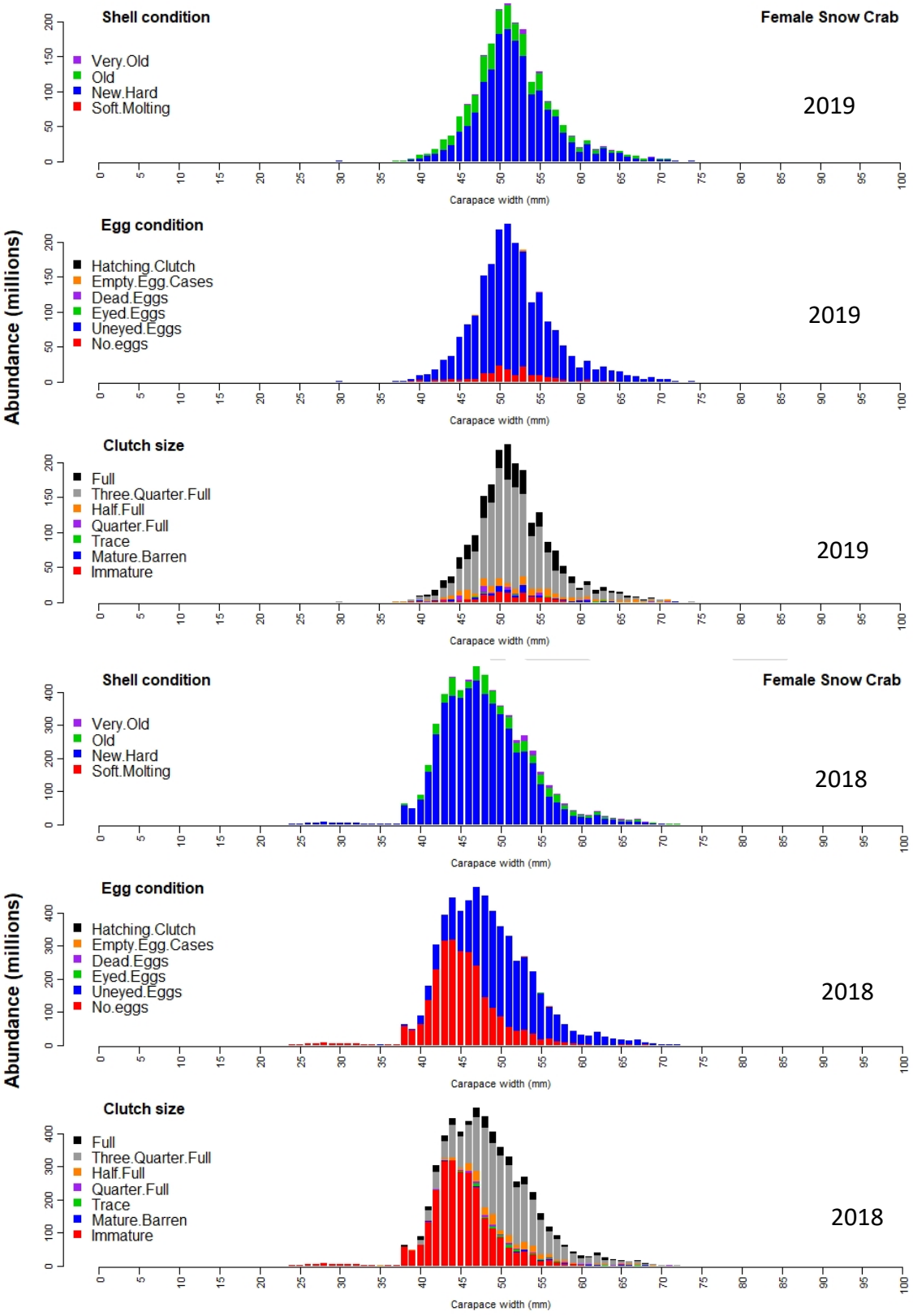

Figure 77b. -- Size frequency by shell condition, egg condition, and clutch fullness of female snow crab (*Chionoecetes opilio*) by 1 mm width classes for all districts combined in 2018 (bottom) and 2019 (top).

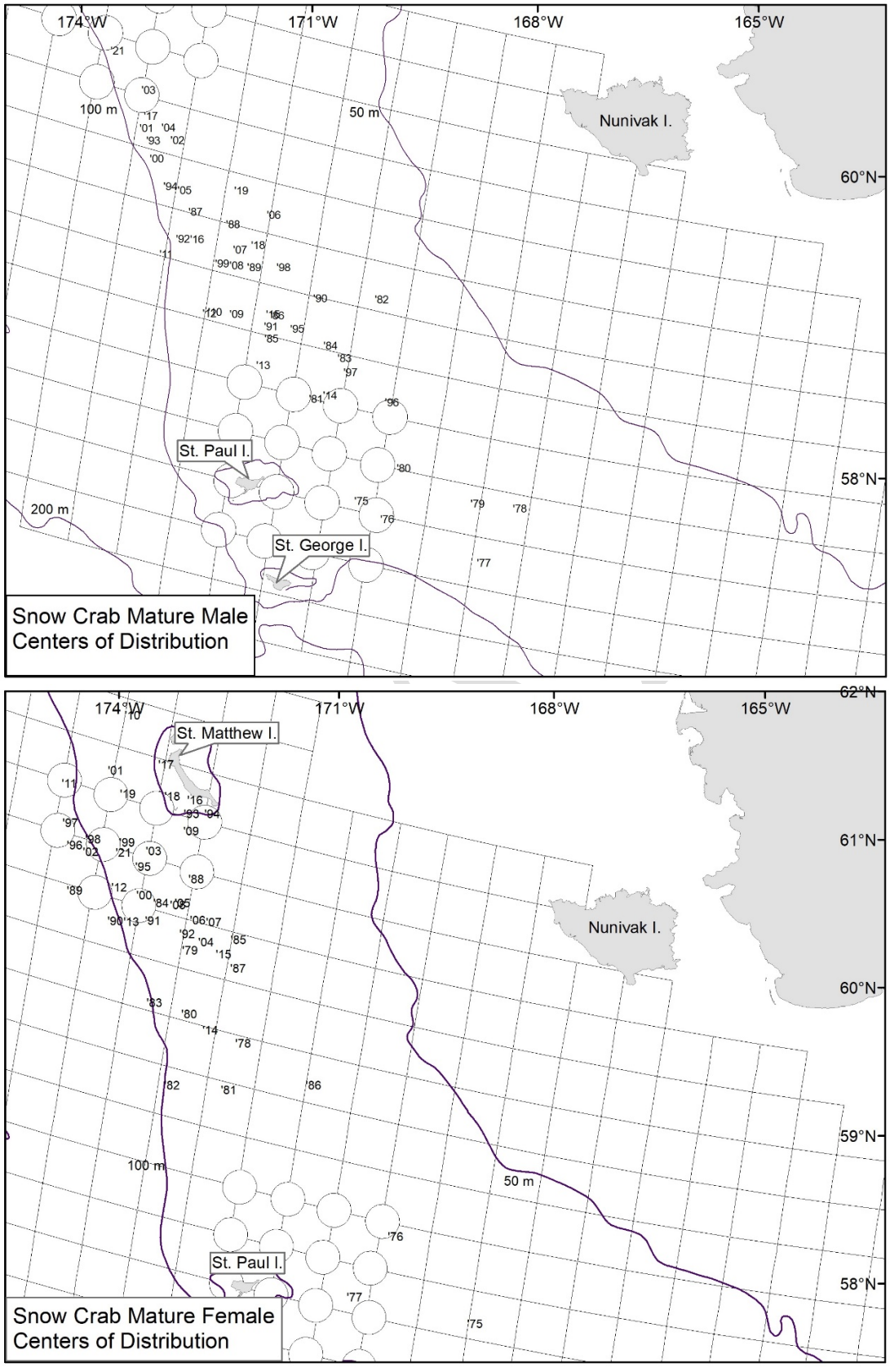

Figure 78. -- Centers of stock distribution of mature male (top) and female (bottom) snow crab (*Chionoecetes opilio*) from 1975 to 2021.

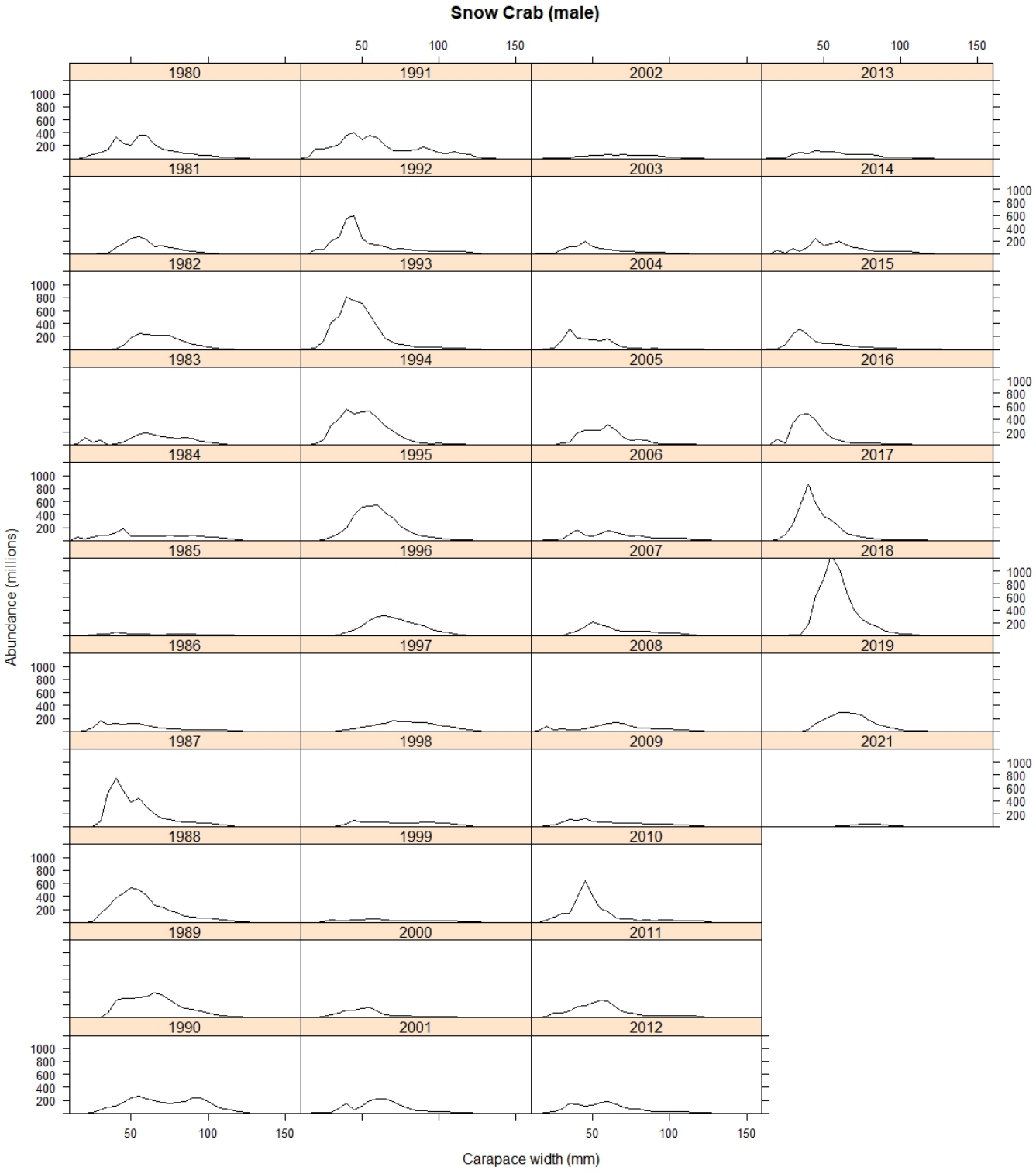

Figure 79. -- Historical size frequency by 5 mm width classes of male snow crab (*Chionoecetes opilio*), 1980 to 2021.

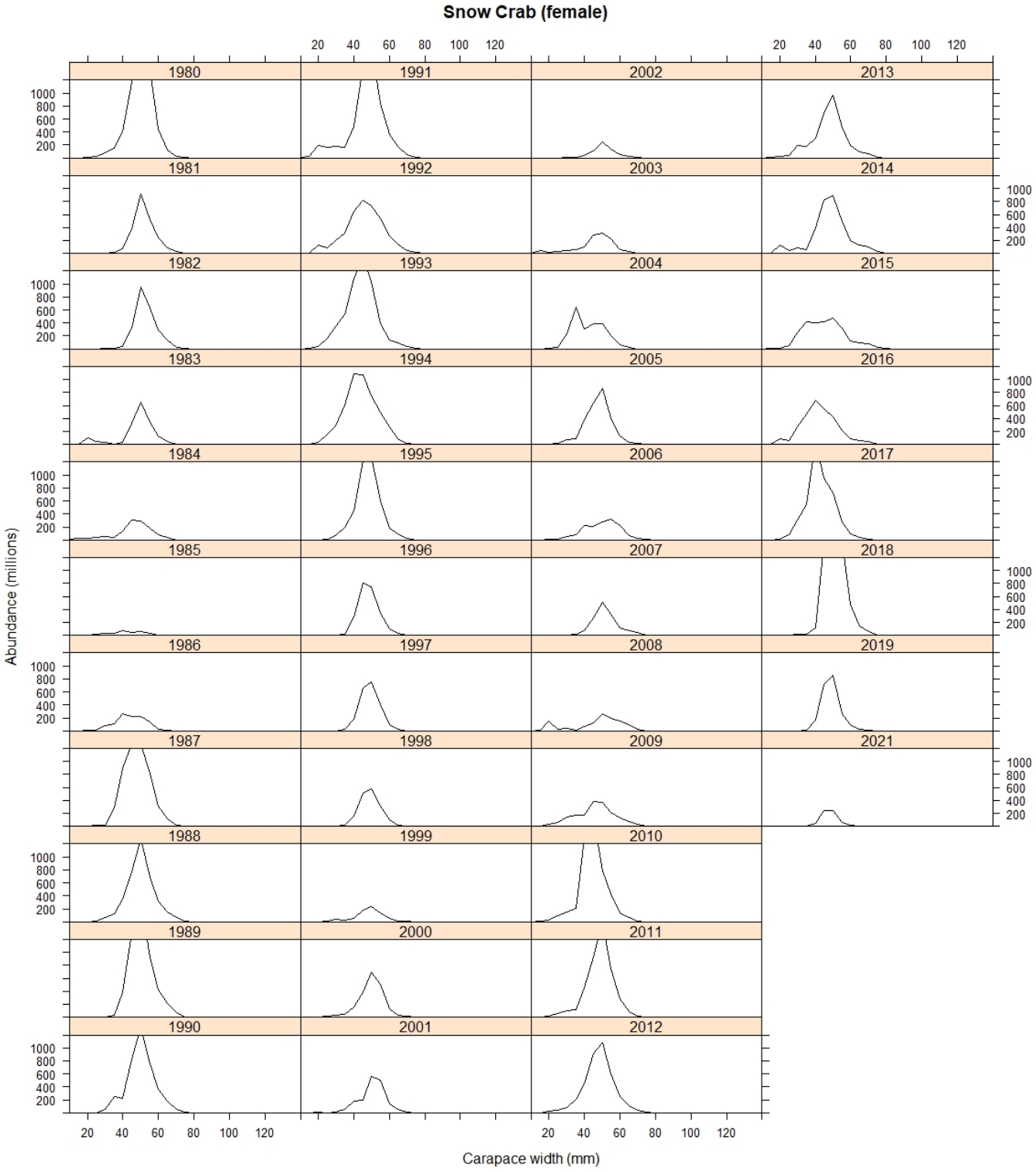

Figure 80. -- Historical size frequency by 5 mm width classes of female snow crab (*Chionoecetes opilio*), 1980 to 2021.

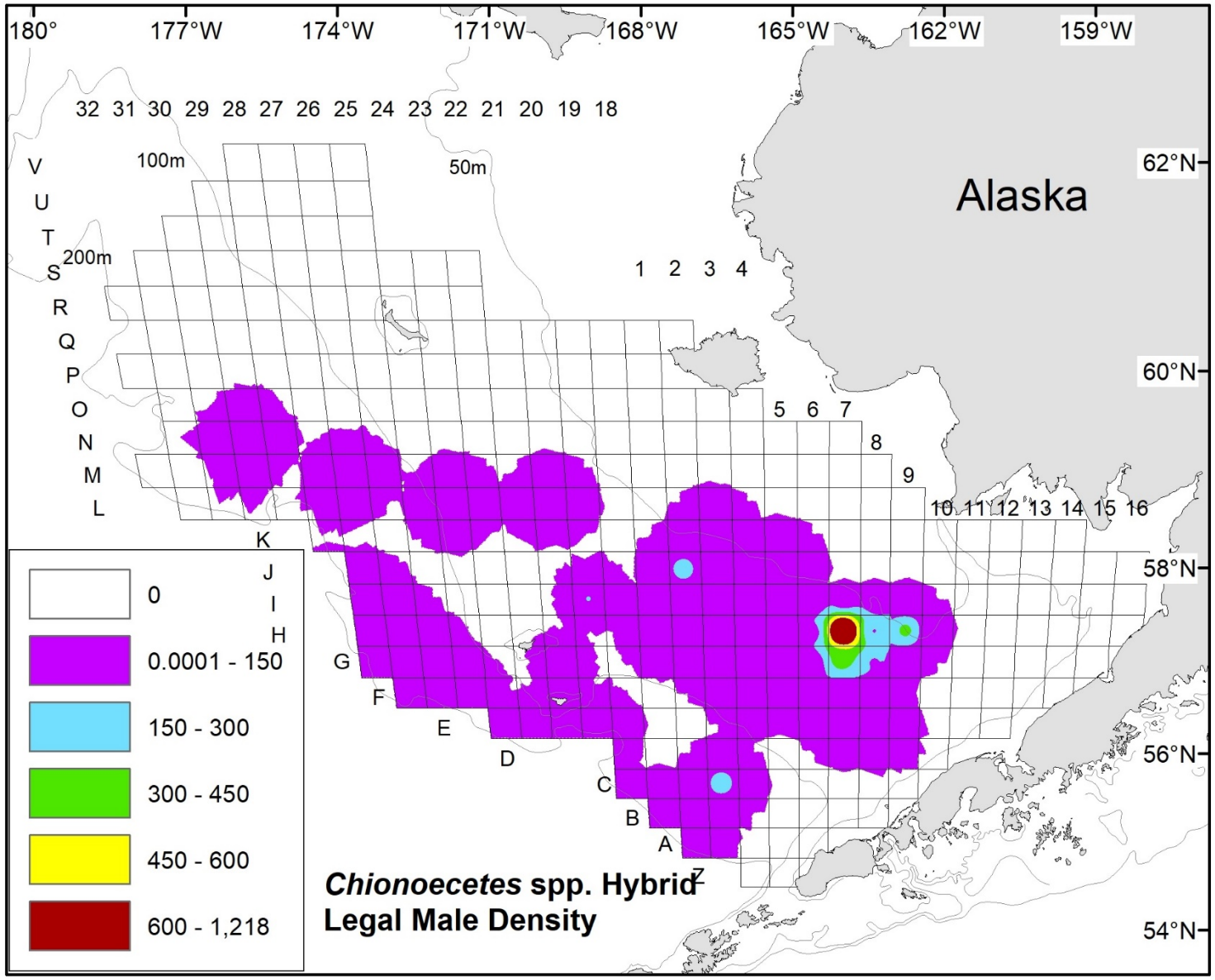

Figure 81. -- Estimated total density (number nmi^{-2}) of legal-sized male *Chionoecetes* spp. hybrid crab at each station sampled in 2021 using *C. opilio* legal size definition (legal size ≥ 78 mm).

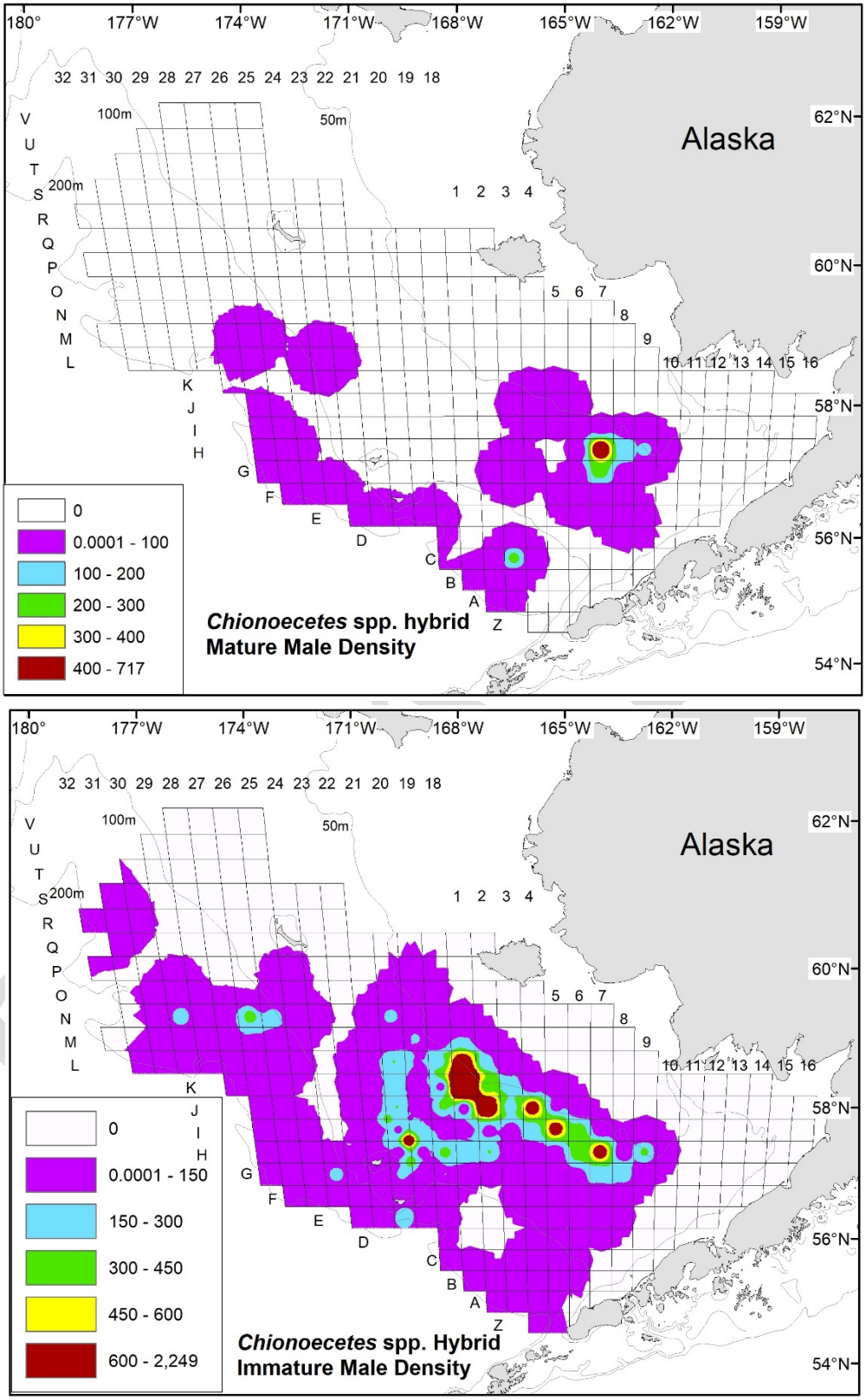

Figure 82. -- Estimated total density (number nmi^{-2}) of mature male (top) and immature male (bottom) *Chionoecetes* spp. hybrid crab at each station sampled in 2021 using *C. opilio* mature size definitions (mature male ≥ 95 mm).

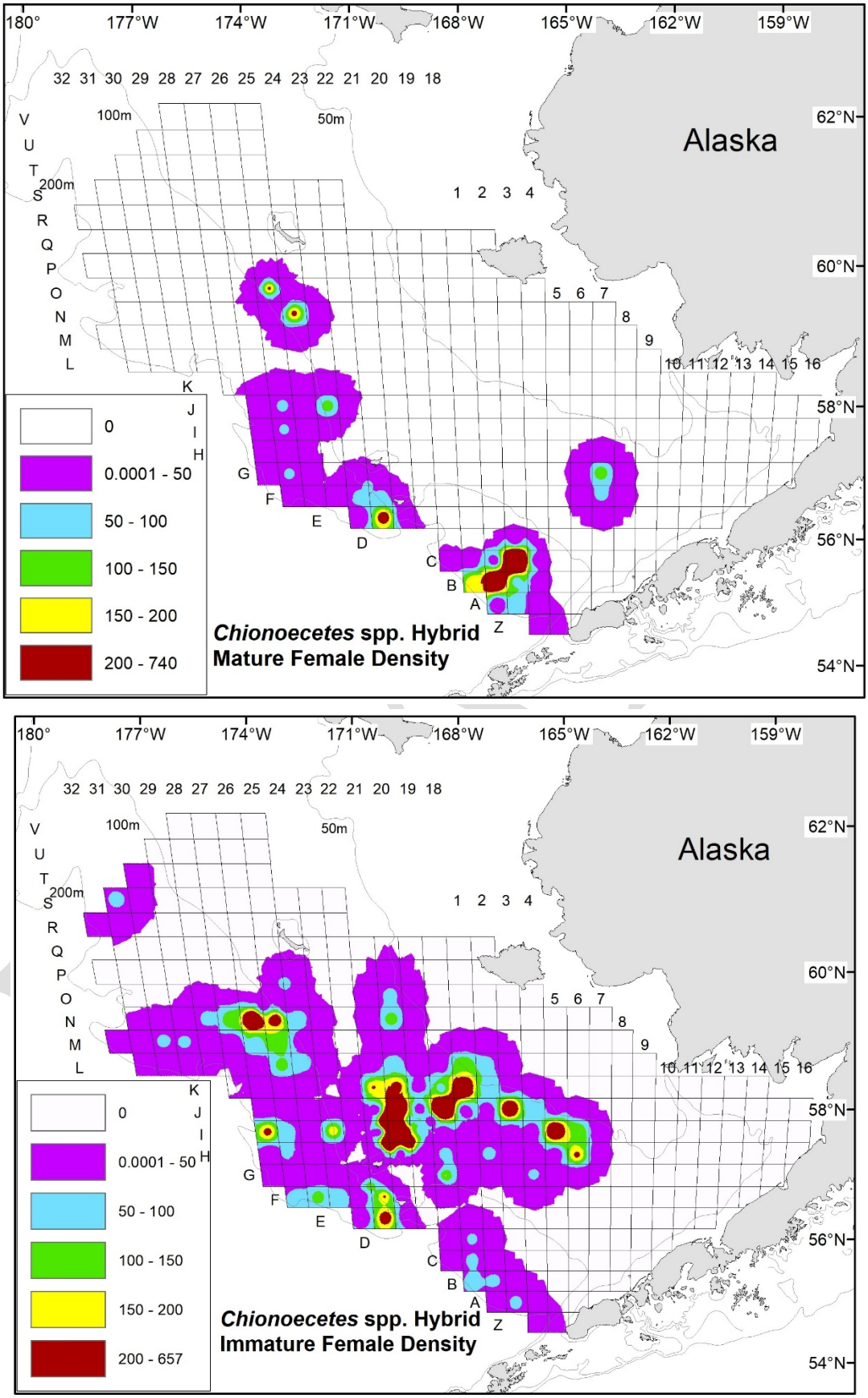

Figure 83. -- Estimated total density (number nmi^{-2}) of mature female (top) and immature female (bottom) *Chionoecetes* spp. hybrid crab at each station sampled in 2021.

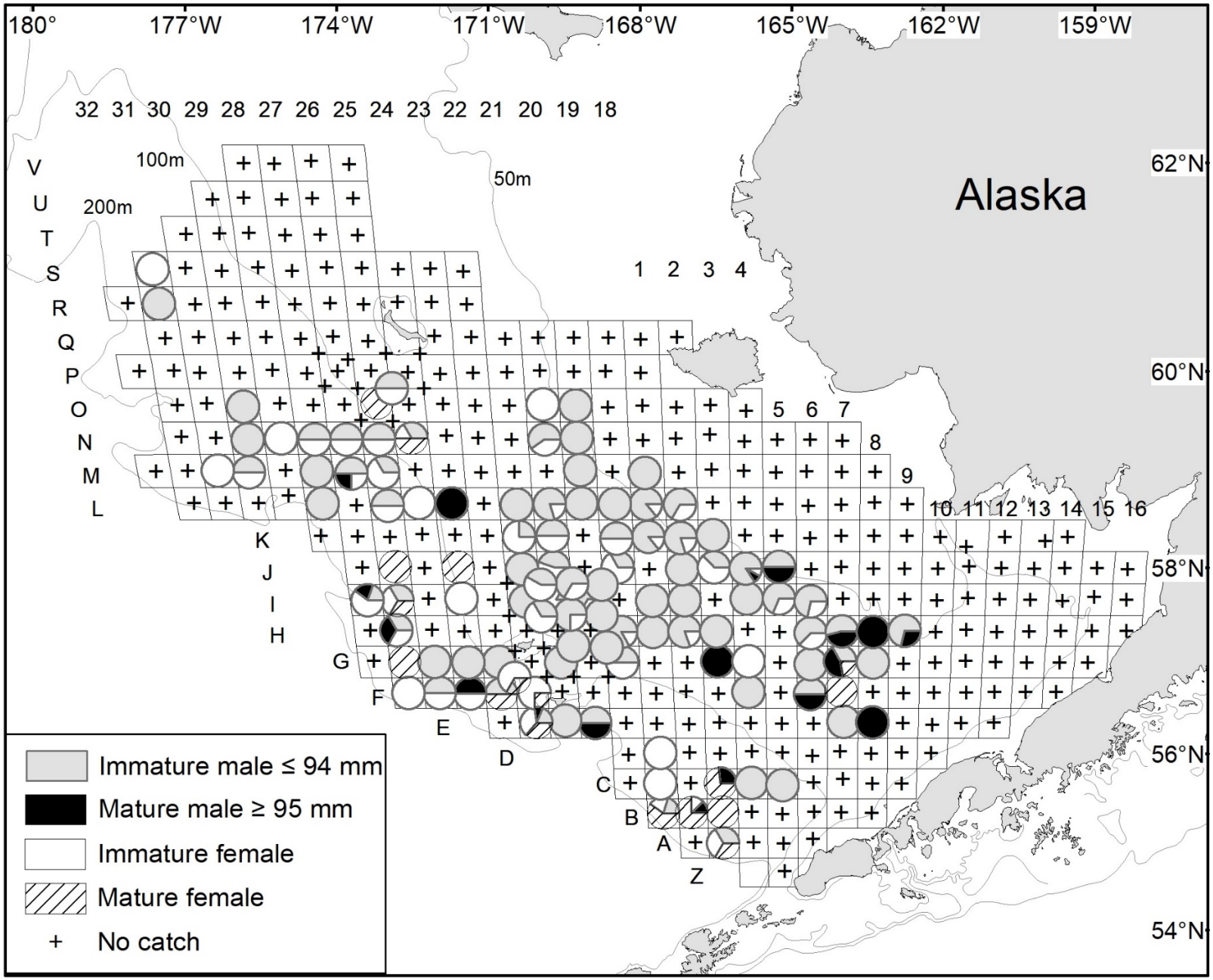

Figure 84. -- Proportion of male and female *Chionoecetes* spp. hybrid crab maturity classes caught at each station sampled in 2021.

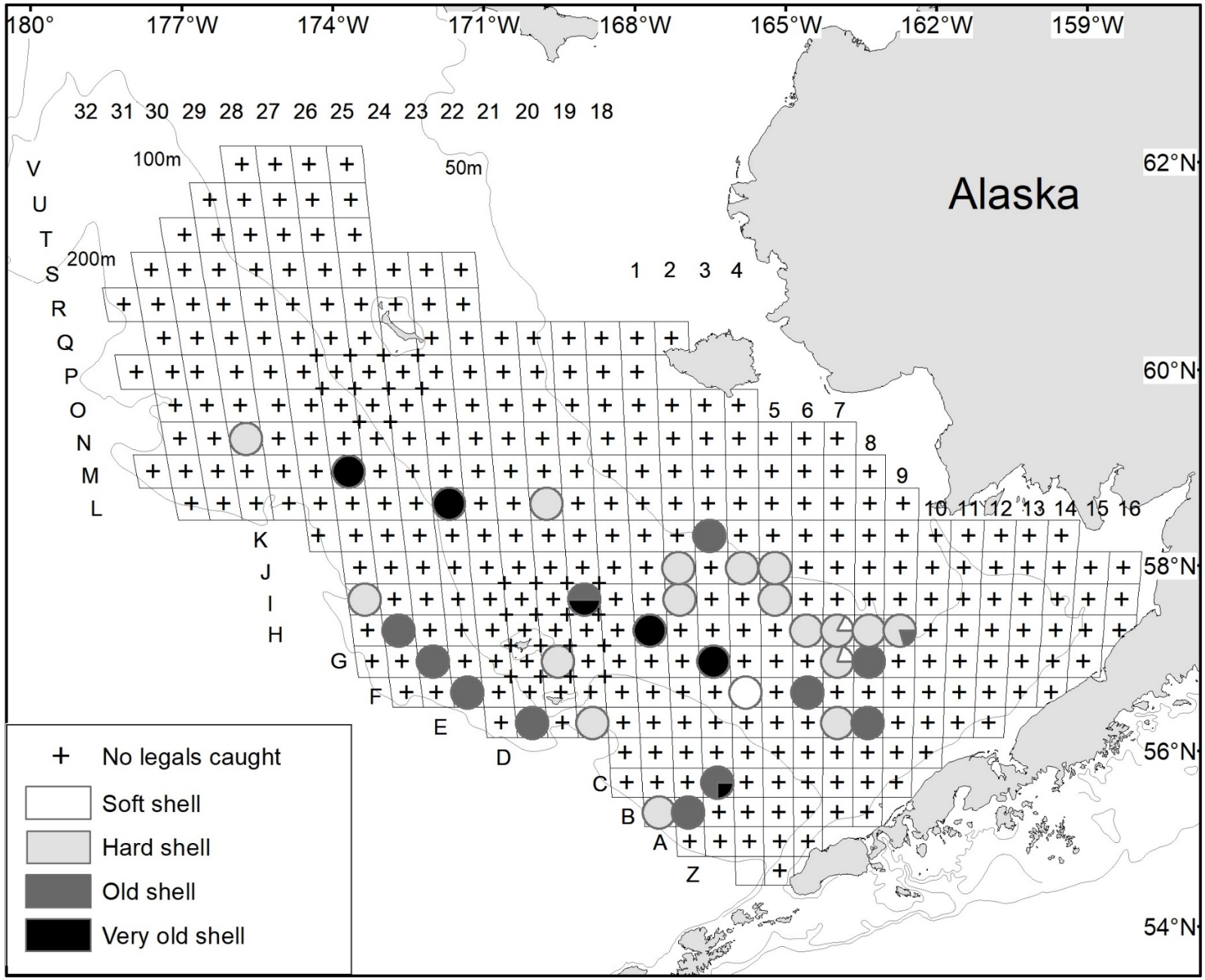

Figure 85. -- Proportion of legal-sized, male *Chionoecetes* spp. hybrid crab shell condition classes caught at each station sampled in 2021 using the *C. opilio* legal size definition (legal size ≥ 78 mm).

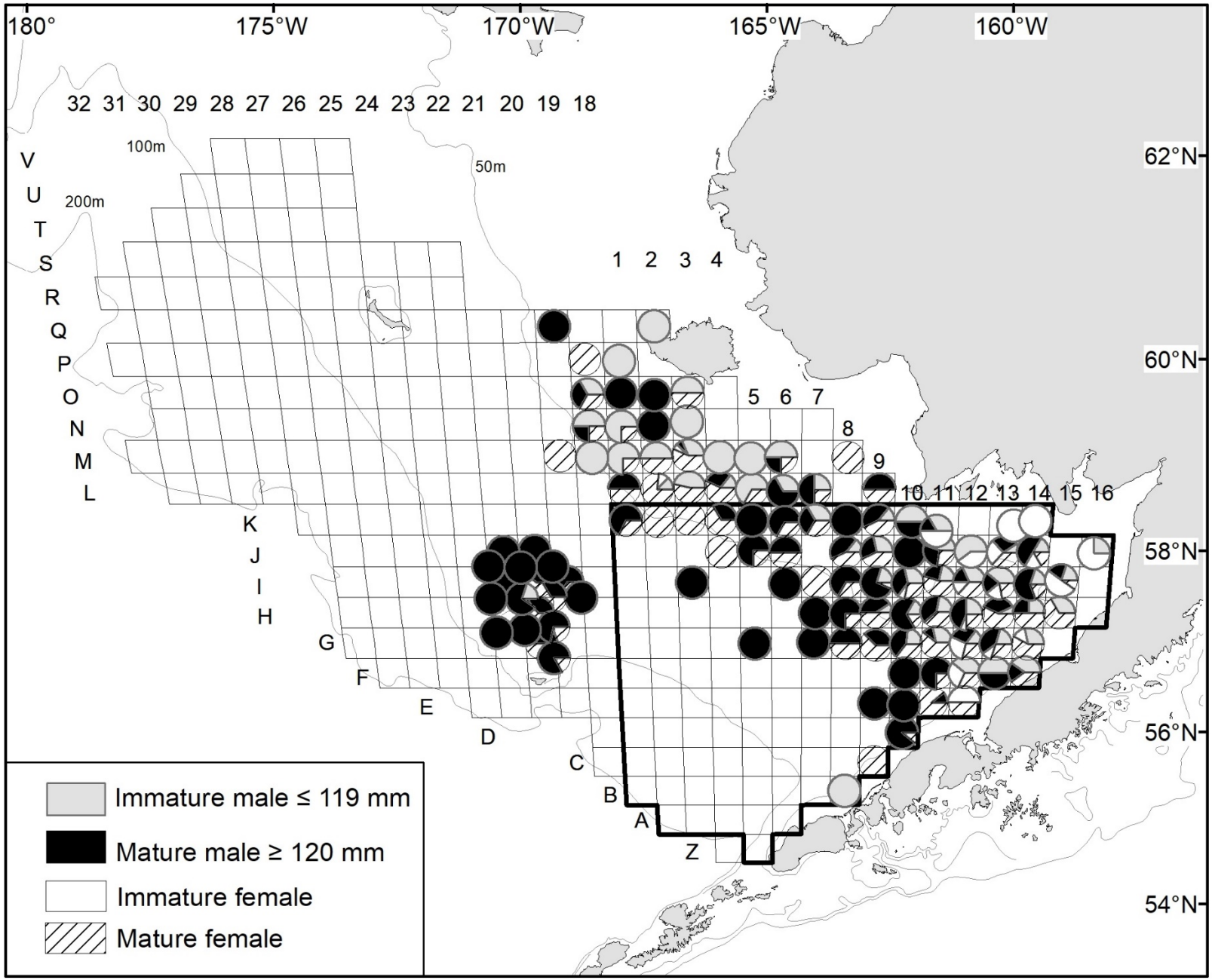

Figure 86. -- Proportion of male and female red king crab (*Paralithodes camtschaticus*) maturity classes caught at all EBS stations sampled in 2021, including the Bristol Bay District, Pribilof District, and Northern District.

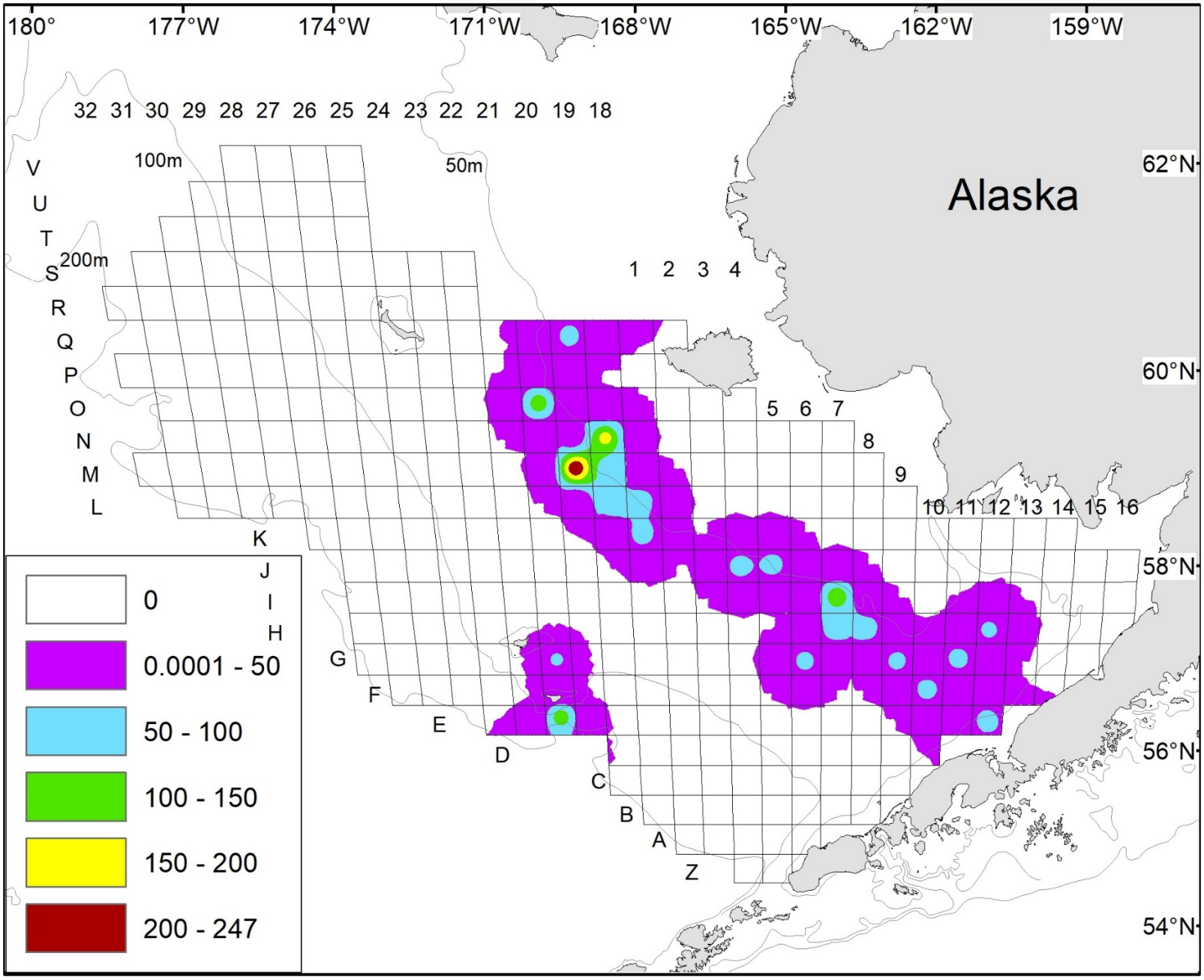

Figure 87. -- Estimated total density (number nmi^{-2}) of legal-sized male hair crab (*Erimacrus isenbeckii*) at each station sampled in 2021.

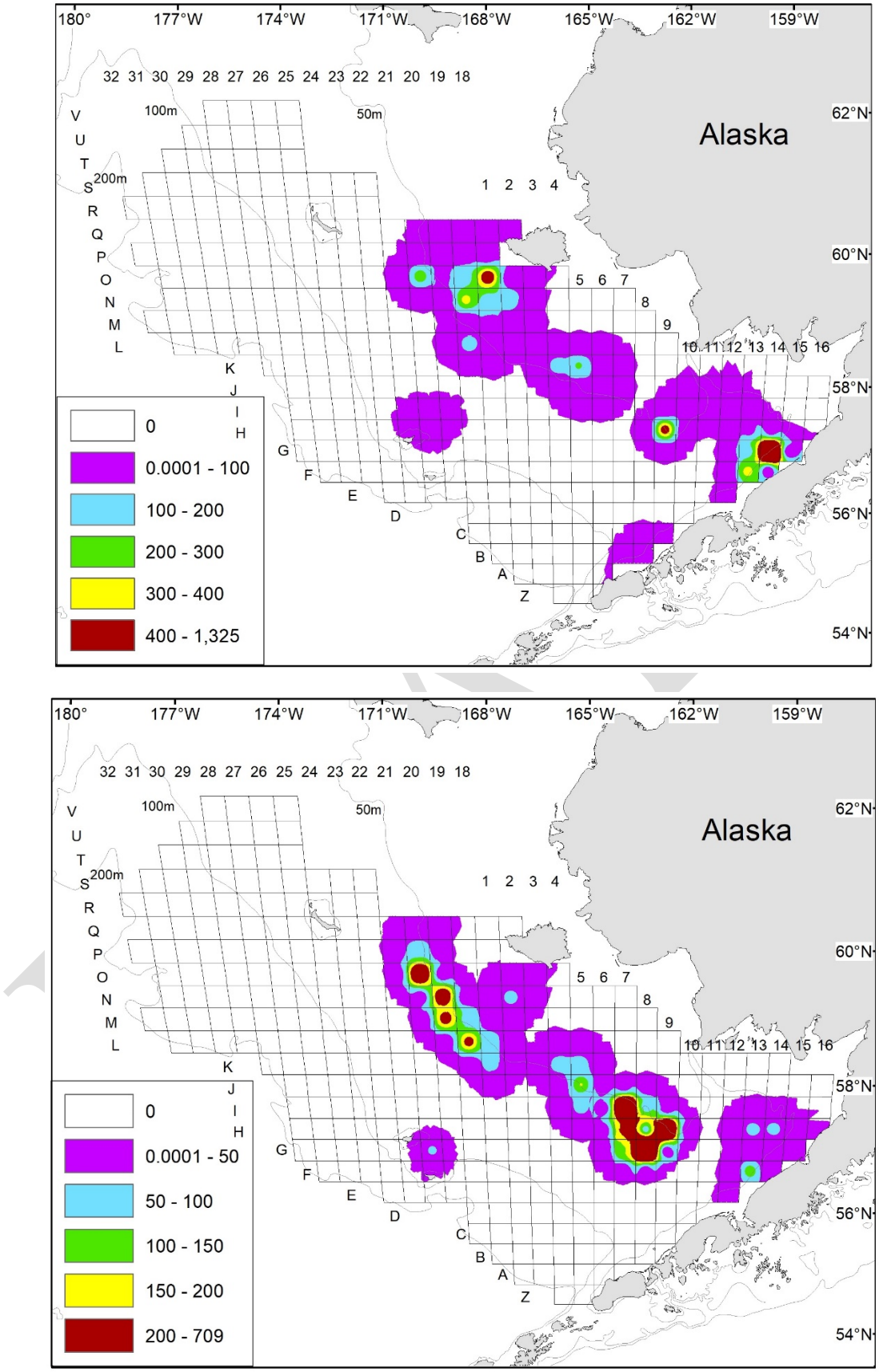

Figure 88. -- Estimated total density (number nmi^{-2}) of sublegal male sized (top) and female (bottom) hair crab (*Erimacrus isenbeckii*) at each station sampled in 2021.

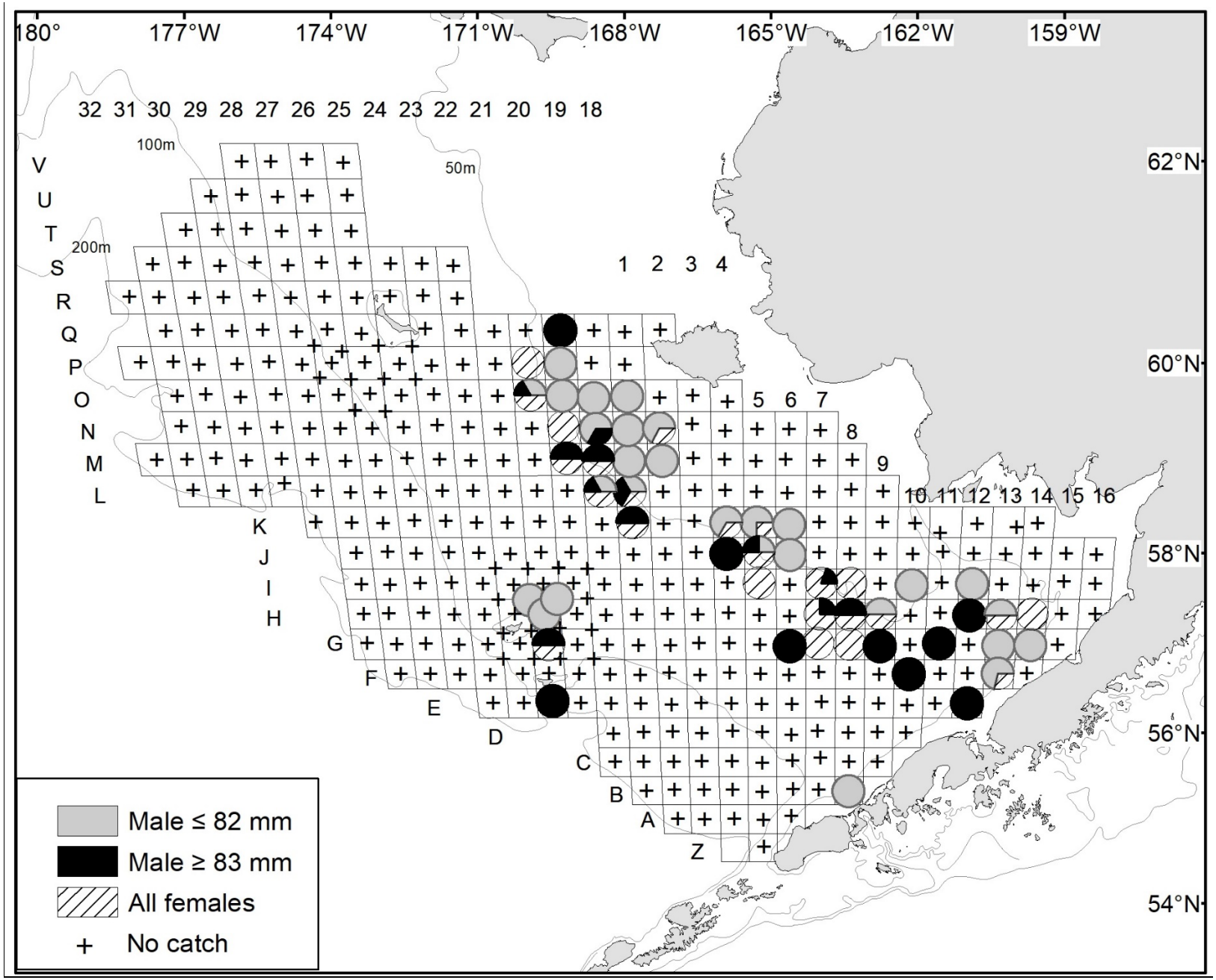

Figure 89. -- Proportion of male and female hair crab (*Erimacrus isenbeckii*) size classes caught at each station sampled in 2021.

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	A-02	A-03	A-04	A-05	A-06	B-01	B-02	B-03	B-04	B-05	B-06
Start Date	6/18/2021	6/18/2021	6/15/2021	6/10/2021	6/9/2021	6/19/2021	6/17/2021	6/17/2021	6/15/2021	6/10/2021	6/9/2021
Duration (hour)	0.5	0.49	0.54	0.46	0.52	0.54	0.51	0.51	0.54	0.53	0.52
Distance Fished (km)	2.72	2.71	3.02	2.49	2.83	2.84	2.79	2.83	2.99	2.92	2.83
Mid-Latitude (ºN)	55.01	55	55	54.99	55.04	55.33	55.34	55.35	55.35	55.32	55.35
Mid-Longitude (ºW)	-166.9	-166.36	-165.75	-165.16	-164.58	-167.54	-166.98	-166.37	-165.79	-165.17	-164.55
Bottom Depth (m)	154	144	129	110	64	148	139	132	120	111	100
Bottom Temperature (ºC)	4.1	4.1	4.2	4.7	5.3	4	4.1	4.1	4.2	4.3	4.3
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	15521	1927	3101	3020	0	3029	871	10468	7000	459	496
Mature males	627	1927	304	0	0	1482	871	2080	1176	262	354
Legal	487	1445	122	0	0	773	737	832	619	262	354
Immature females	9749	344	3710	3735	0	326	67	485	4372	721	212
Mature females	3552	5851	304	0	0	13030	3687	3050	681	0	0
Total weight (kg)	38.37	32.85	7.91	1.38	0	45.54	17.48	49.34	31	5.19	5.09
Snow Crab											
Immature males	139	0	61	0	0	0	134	0	0	0	0
Mature males	139	138	61	0	0	129	402	208	0	0	0
Legal	209	138	61	0	0	129	536	208	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)	1.36	0.88	0.49	0	0	0.97	4.08	1.14	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	69	0	0	0	64	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	67	0	0	0	0
Immature females	0	69	0	0	0	64	67	0	0	0	0
Mature females	0	69	0	0	0	193	402	69	0	0	0
Total weight (kg)	0	0.21	0	0	0	0.54	1.42	0.11	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	B-07	B-08	C-01	C-02	C-03	C-04	C-05	C-06	C-07	C-08	C-09
Start Date	6/9/2021	6/9/2021	6/19/2021	6/17/2021	6/17/2021	6/15/2021	6/10/2021	6/8/2021	6/8/2021	6/8/2021	6/5/2021
Duration (hour)	0.53	0.52	0.53	0.5	0.49	0.53	0.52	0.52	0.53	0.52	0.53
Distance Fished (km)	2.96	2.76	2.93	2.76	2.72	2.9	2.86	2.88	2.92	2.86	2.94
Mid-Latitude (ºN)	55.34	55.33	55.67	55.67	55.67	55.68	55.65	55.68	55.71	55.67	55.66
Mid-Longitude (ºW)	-164.02	-163.41	-167.6	-166.99	-166.41	-165.8	-165.18	-164.56	-163.99	-163.41	-162.82
Bottom Depth (m)	79	54	135	135	127	118	109	95	93	81	53
Bottom Temperature (ºC)	4.3	6.2	4.2	4.2	4.3	4.4	4.6	4.1	3.5	3.9	5.7
Red King Crab	0	78	0	0	0	0	0	0	0	0	0
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	70
Mature females	0	0.25	0	0	0	0	0	0	0	0	2.65
Total weight (kg)											
Blue King Crab	0	0	0	0	0	0	0	0	0	0	0
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)											
Tanner Crab	68	1017	379	4142	336	7295	5539	74	2709	430	0
Immature males	0	469	189	657	673	448	1710	0	139	1147	0
Mature males	0	78	126	394	471	256	1368	0	69	789	0
Legal	0	235	189	131	67	2560	3351	74	2501	72	0
Immature females	0	78	568	723	5720	128	4240	0	0	72	0
Mature females	0.13	5.94	3.85	19.26	18.2	25.92	41.19	0.4	3.69	12.32	0
Total weight (kg)											
Snow Crab	0	0	0	197	269	0	274	74	69	0	0
Immature males	0	0	0	66	673	64	342	74	0	0	0
Mature males	0	0	0	197	942	64	479	147	69	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	1.32	6.22	0.64	3.2	0.8	0.39	0	0
Total weight (kg)											
Chionoecetes spp. Hybrid	0	0	0	0	0	64	68	0	0	0	0
Males ≤ 77 mm	0	0	0	0	269	0	0	0	0	0	0
Males ≥ 78 mm	0	0	63	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	740	0	0	0	0	0	0
Mature females	0	0	0.05	0	3.78	0.21	0.11	0	0	0	0
Total weight (kg)											

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	C-18	D-01	D-02	D-03	D-04	D-05	D-06	D-07	D-08	D-09	D-10
Start Date	6/21/2021	6/19/2021	6/16/2021	6/17/2021	6/15/2021	6/11/2021	6/8/2021	6/8/2021	6/8/2021	6/5/2021	6/4/2021
Duration (hour)	0.5	0.53	0.51	0.49	0.52	0.53	0.52	0.53	0.52	0.54	0.52
Distance Fished (km)	2.78	2.87	2.83	2.73	2.9	2.92	2.94	2.92	2.85	2.96	2.82
Mid-Latitude (ºN)	55.67	56.01	56.01	56	56.02	56.01	55.97	56.02	56	56.01	56
Mid-Longitude (ºW)	-168.18	-167.6	-167.01	-166.41	-165.78	-165.17	-164.59	-164.04	-163.42	-162.82	-162.24
Bottom Depth (m)	136	133	132	125	106	96	93	90	88	79	72
Bottom Temperature (ºC)	4.1	4.3	4.3	4.2	4.4	4.3	3.1	3	3.5	3.8	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	574
Legal	0	0	0	0	0	0	0	0	0	0	215
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	72
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	17.27
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	2093	710	68	0	2061	1485	949	964	1901	259	72
Mature males	75	129	137	70	399	129	68	69	219	0	0
Legal	75	129	68	70	399	129	0	69	146	0	0
Immature females	1047	194	205	211	1130	1033	271	895	512	0	0
Mature females	897	0	0	0	4322	258	0	138	1097	0	0
Total weight (kg)	5.42	3.2	1.51	1.02	19.24	2.97	1.85	1.82	8.1	0.82	0.17
Snow Crab											
Immature males	224	129	0	0	133	194	0	207	73	0	0
Mature males	75	65	0	0	266	0	203	0	146	0	0
Legal	299	129	0	0	332	129	203	69	219	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)	1.52	0.89	0	0	2.27	0.56	1.62	0.58	1.11	0	0
Chionoecetes spp. Hybrid											
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	65	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	0.04	0	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	D-18	E-01	E-02	E-03	E-04	E-05	E-06	E-07	E-08	E-09	E-10
Start Date	6/21/2021	6/19/2021	6/16/2021	6/16/2021	6/14/2021	6/11/2021	6/9/2021	6/8/2021	6/7/2021	6/5/2021	6/4/2021
Duration (hour)	0.48	0.54	0.51	0.51	0.53	0.51	0.52	0.51	0.52	0.53	0.55
Distance Fished (km)	2.68	2.85	2.85	2.75	2.88	2.79	2.94	2.83	2.83	2.9	3.08
Mid-Latitude (ºN)	55.99	56.33	56.32	56.34	56.33	56.33	56.33	56.35	56.34	56.33	56.31
Mid-Longitude (ºW)	-168.22	-167.66	-167.03	-166.42	-165.8	-165.19	-164.57	-163.97	-163.4	-162.8	-162.21
Bottom Depth (m)	149	130	114	103	92	87	87	86	85	78	76
Bottom Temperature (ºC)	4	4.2	4.1	4.1	3.4	3.2	3	2.9	3.1	3.5	4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	67	331
Legal	0	0	0	0	0	0	0	0	0	0	265
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	0	0	0	0	0	0	0	0	1.7	11.92
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	5029	352	138	742	388	215	1327	1005	1930	134	66
Mature males	542	0	69	74	0	72	0	67	143	0	66
Legal	387	0	0	0	0	72	0	0	0	0	66
Immature females	4100	845	208	0	194	72	929	335	715	67	0
Mature females	1547	0	69	223	0	72	663	603	929	0	0
Total weight (kg)	10.06	0.38	0.73	2.43	0.16	1.1	3.38	3.97	6.26	0.44	1.02
Snow Crab											
Immature males	309	141	0	74	194	287	464	201	143	0	0
Mature males	77	70	0	148	0	144	66	134	214	0	0
Legal	309	141	0	223	129	359	265	268	214	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)	1.56	0.81	0	1.1	0.69	2.09	2.11	1.66	1.51	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	67	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	71	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	0	0	0	0	0	0	0.25	0.51	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	E-11	E-12	E-18	E-19	E-20	E-21	E-22	F-01	F-02	F-03	F-04
Start Date	6/4/2021	6/4/2021	6/21/2021	6/27/2021	6/27/2021	6/28/2021	6/28/2021	6/20/2021	6/15/2021	6/16/2021	6/14/2021
Duration (hour)	0.52	0.52	0.35	0.5	0.25	0.52	0.52	0.52	0.52	0.5	0.53
Distance Fished (km)	2.99	2.87	1.93	2.78	1.43	2.84	2.89	2.81	2.85	2.74	2.93
Mid-Latitude (ºN)	56.33	56.34	56.33	56.34	56.37	56.34	56.34	56.66	56.68	56.65	56.68
Mid-Longitude (ºW)	-161.65	-160.99	-168.26	-168.88	-169.47	-170.05	-170.68	-167.67	-167.08	-166.45	-165.85
Bottom Depth (m)	64	55	155	129	129	109	121	105	95	85	78
Bottom Temperature (ºC)	4.3	4.8	4.2	4.2	4.1	4.2	4.2	3.5	3.1	3.3	3.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	70	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	73	0	0	0	0	0	0	0	0	0
Mature females	562	73	0	0	0	0	0	0	0	0	0
Total weight (kg)	14.55	1.32	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	211	0	71082	2600	6281	6580	4528	988	1136	231	18876
Mature males	141	0	104	578	0	921	518	0	71	309	69
Legal	70	0	0	578	0	724	194	0	71	309	69
Immature females	0	0	70365	939	4811	1382	2911	1059	994	386	18873
Mature females	0	0	0	7078	1203	10330	1747	0	639	617	1867
Total weight (kg)	2.34	0	11	19.5	4	50.7	17.88	0.27	2.33	4.73	20.78
Snow Crab											
Immature males	0	0	0	144	134	1711	388	282	852	77	899
Mature males	0	0	0	72	0	461	194	141	213	231	207
Legal	0	0	0	217	0	1711	518	212	710	309	484
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	0	0	1.18	0.1	10.6	2.92	1.72	3.93	1.61	3.92
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	72	267	132	0	0	0	0	69
Males ≥ 78 mm	0	0	0	72	0	66	0	0	0	0	0
Immature females	0	0	0	0	0	263	0	0	0	0	0
Mature females	0	0	0	0	0	263	0	0	0	0	0
Total weight (kg)	0	0	0	1.02	0.03	1.41	0	0	0	0	0.13

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	F-05	F-06	F-07	F-08	F-09	F-10	F-11	F-12	F-13	F-14	F-18
Start Date	6/11/2021	6/9/2021	6/7/2021	6/7/2021	6/5/2021	6/4/2021	6/4/2021	6/3/2021	6/1/2021	5/31/2021	6/21/2021
Duration (hour)	0.52	0.52	0.53	0.51	0.52	0.52	0.27	0.53	0.54	0.51	0.49
Distance Fished (km)	2.83	2.8	2.79	2.79	2.86	2.73	1.42	2.91	3.08	2.75	2.7
Mid-Latitude (ºN)	56.67	56.66	56.69	56.67	56.66	56.66	56.67	56.67	56.67	56.68	56.66
Mid-Longitude (ºW)	-165.22	-164.63	-164.03	-163.39	-162.78	-162.18	-161.55	-160.98	-160.37	-159.76	-168.29
Bottom Depth (m)	76	75	72	75	72	72	91	69	61	37	108
Bottom Temperature (ºC)	3.1	2.6	3.1	3	3.5	3.6	3.7	3.9	4.1	5.3	3.5
Red King Crab											
Immature males	0	0	0	0	0	0	0	1125	134	168	0
Mature males	0	0	0	0	0	151	394	0	134	84	0
Legal	0	0	0	0	0	75	263	0	134	84	0
Immature females	0	0	0	0	0	0	0	844	0	0	0
Mature females	0	0	0	0	0	0	131	914	0	168	0
Total weight (kg)	0	0	0	0	0	3.64	8.47	27.56	6.96	6.52	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	910	4192	1427	1320	209	75	263	70	0	0	1415
Mature males	70	147	204	513	139	0	131	0	0	0	74
Legal	70	147	68	440	139	0	131	0	0	0	74
Immature females	420	2721	272	220	0	0	0	0	0	0	1787
Mature females	1120	1839	1223	1247	0	0	131	352	0	0	0
Total weight (kg)	5.41	13.73	7.45	11.22	2.29	0.21	1.29	1.53	0	0	1.15
Snow Crab											
Immature males	210	368	476	440	139	75	0	0	0	0	447
Mature males	420	294	204	0	70	0	0	0	0	0	74
Legal	560	588	544	220	139	75	0	0	0	0	298
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)	3.24	3.02	2.93	1.58	0.92	0.26	0	0	0	0	1.57
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	74	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	74	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	68	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.64	0.12	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	F-19	F-20	F-21	F-22	F-23	F-24	F-25	G-01	G-02	G-03	G-04
Start Date	6/27/2021	6/27/2021	6/28/2021	6/29/2021	7/10/2021	7/12/2021	7/12/2021	6/20/2021	6/15/2021	6/15/2021	6/14/2021
Duration (hour)	0.51	0.52	0.53	0.53	0.5	0.31	0.53	0.53	0.52	0.52	0.52
Distance Fished (km)	2.81	2.88	2.92	2.94	2.73	1.61	2.85	2.89	2.86	2.88	2.87
Mid-Latitude (ºN)	56.67	56.68	56.67	56.66	56.66	56.67	56.67	56.98	56.99	57.01	57.01
Mid-Longitude (ºW)	-168.92	-169.53	-170.08	-170.74	-171.35	-171.96	-172.57	-167.71	-167.05	-166.47	-165.85
Bottom Depth (m)	100	79	96	115	120	126	136	78	74	74	72
Bottom Temperature (ºC)	3.7	5	4.4	3.9	4.2	4.1	4	3.7	3.8	3.4	3.5
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	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	1832	2160	1711	6222	1565	2598	1598	3421	626	363	616
Mature males	352	792	547	1383	373	247	0	214	0	73	68
Legal	282	432	342	1006	298	124	0	143	0	73	68
Immature females	1973	288	547	4085	447	371	2197	2209	157	0	342
Mature females	211	648	2326	3080	596	247	0	499	0	290	137
Total weight (kg)	3.88	10.92	14.47	29.72	6.16	2.89	0.73	6.8	0.59	1.89	2.99
Snow Crab											
Immature males	634	0	1574	2765	447	742	0	499	0	218	205
Mature males	141	0	479	629	149	619	0	71	235	73	68
Legal	493	0	1642	2388	447	1237	0	214	235	218	137
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	63	373	0	0	0	0	0	0
Total weight (kg)	2.96	0	9.67	14.61	2.76	4	0	1.81	1.76	1.38	0.96
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	63	0	124	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	75	0	0	0	0	73	0
Immature females	0	0	205	0	75	124	67	0	0	0	68
Mature females	0	0	68	63	0	0	0	0	0	0	0
Total weight (kg)	0	0	0.28	0.17	0.42	0.02	0.01	0	0	0.37	0.04

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	G-05	G-06	G-07	G-08	G-09	G-10	G-11	G-12	G-13	G-14	G-15
Start Date	6/11/2021	6/9/2021	6/7/2021	6/7/2021	6/5/2021	6/4/2021	6/3/2021	6/3/2021	6/1/2021	5/31/2021	5/31/2021
Duration (hour)	0.51	0.52	0.52	0.52	0.53	0.51	0.51	0.54	0.53	0.51	0.53
Distance Fished (km)	2.78	2.82	2.83	2.88	2.94	2.69	2.83	3.02	2.95	2.71	2.93
Mid-Latitude (ºN)	56.99	56.98	57.01	57	56.98	56.99	57.01	56.99	56.99	56.99	56.99
Mid-Longitude (ºW)	-165.23	-164.62	-164.04	-163.39	-162.78	-162.16	-161.56	-160.96	-160.35	-159.69	-159.14
Bottom Depth (m)	70	69	67	65	62	61	69	63	63	55	34
Bottom Temperature (ºC)	2.6	2.4	3	3.1	3.8	4.6	3.9	4	4.3	4.9	5.5
Red King Crab											
Immature males	0	0	0	0	0	311	600	70	148	166	0
Mature males	74	0	73	142	206	544	225	140	295	0	0
Legal	74	0	73	142	206	155	75	140	148	0	0
Immature females	0	0	0	0	0	0	0	140	74	83	0
Mature females	0	0	0	142	344	466	1275	140	221	332	0
Total weight (kg)	3.46	0	2.47	8.18	17.68	24.88	25.04	9.48	14.92	8.3	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	811	1578	2051	2627	413	78	0	279	148	0	0
Mature males	74	150	220	142	138	0	0	140	0	83	0
Legal	0	75	73	71	69	0	0	0	0	83	0
Immature females	147	751	806	568	0	0	0	70	74	0	0
Mature females	147	376	2490	1775	0	0	0	0	74	0	0
Total weight (kg)	3.34	6.93	14.09	13.26	2.66	0.3	0	2.23	0.9	0.45	0
Snow Crab											
Immature males	147	150	439	0	275	0	0	0	0	0	0
Mature males	221	225	146	213	138	0	0	0	0	0	0
Legal	295	301	439	213	413	0	0	0	0	0	0
Immature females	0	0	0	71	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	1.62	1.95	2.3	1.57	2.12	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	75	220	284	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	293	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	146	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.13	2.35	0.78	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	G-18	G-19	G-20	G-21	G-22	G-23	G-24	G-25	G-26	GF1918	GF2019
Start Date	6/22/2021	6/26/2021	6/27/2021	6/28/2021	6/29/2021	7/10/2021	7/12/2021	7/12/2021	7/15/2021	6/27/2021	6/27/2021
Duration (hour)	0.51	0.52	0.53	0.52	0.54	0.51	0.52	0.52	0.49	0.51	0.53
Distance Fished (km)	2.81	2.81	2.82	2.87	2.95	2.83	2.85	2.76	2.7	2.8	2.91
Mid-Latitude (ºN)	57	56.99	56.99	57	57	57	57.01	57	57.01	56.83	56.84
Mid-Longitude (ºW)	-168.34	-168.96	-169.55	-170.14	-170.79	-171.39	-172.06	-172.65	-173.26	-168.62	-169.3
Bottom Depth (m)	81	80	60	68	96	110	117	122	143	97	79
Bottom Temperature (ºC)	3.8	4.2	5.4	5.8	4.3	4	4.1	4	4	3.4	4.3
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	377
Legal	0	0	156	0	0	0	0	0	0	0	377
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	156	0	0	0	0	0	0	0	75
Total weight (kg)	0	0	9.56	0	0	0	0	0	0	0	21.33
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	302
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	8.3
Tanner Crab											
Immature males	2726	526	8586	3705	4863	3721	6001	1203	2305	4134	6340
Mature males	151	150	1951	222	947	702	140	67	0	356	1132
Legal	151	0	1249	148	379	421	70	0	0	214	906
Immature females	2499	451	1717	741	1958	3370	6281	601	4303	6272	3925
Mature females	454	75	1795	296	7010	772	140	200	0	356	1736
Total weight (kg)	5.82	1.7	31.04	9.19	37.38	11.72	4.12	3.36	2.28	4.86	23.8
Snow Crab											
Immature males	1212	376	546	0	2147	140	1047	869	77	784	1283
Mature males	0	0	0	0	758	140	279	267	77	143	453
Legal	227	75	156	0	1895	211	1047	869	154	356	906
Immature females	0	0	0	0	0	70	0	0	0	0	0
Mature females	0	0	0	0	0	211	70	0	0	0	0
Total weight (kg)	2.3	0.84	1.28	0	12.8	3.45	5.34	5.31	0.59	2.64	6.7
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	151	0	234	0	126	211	70	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	151	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	67	0	0	0
Total weight (kg)	0.27	0	0.39	0	0.07	0.11	0.26	0.08	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	GF2120	GF2221	H-01	H-02	H-03	H-04	H-05	H-06	H-07	H-08	H-09
Start Date	6/28/2021	6/29/2021	6/20/2021	6/15/2021	6/15/2021	6/14/2021	6/11/2021	6/9/2021	6/7/2021	6/7/2021	6/6/2021
Duration (hour)	0.52	0.52	0.52	0.51	0.5	0.52	0.52	0.52	0.52	0.52	0.53
Distance Fished (km)	2.78	2.86	2.81	2.82	2.78	2.76	2.87	2.89	2.88	2.87	2.92
Mid-Latitude (ºN)	56.83	56.83	57.33	57.33	57.33	57.35	57.32	57.31	57.33	57.33	57.34
Mid-Longitude (ºW)	-169.84	-170.48	-167.75	-167.11	-166.49	-165.87	-165.24	-164.62	-164	-163.38	-162.77
Bottom Depth (m)	73	102	73	71	71	68	67	65	62	54	50
Bottom Temperature (ºC)	4.9	4.5	4	3.5	3.3	3	2.5	2.8	3	4.2	4.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	281
Mature males	0	0	0	0	0	0	0	0	143	221	1194
Legal	0	0	0	0	0	0	0	0	143	74	843
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	74	1475
Total weight (kg)	0	0	0	0	0	0	0	0	6.48	7.22	76.3
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	1351	2300	1387	3695	1027	215	711	3607	3010	1913	6671
Mature males	1126	591	0	231	0	0	213	433	788	1398	3090
Legal	450	394	0	154	0	0	213	144	215	1030	1826
Immature females	75	920	694	2540	711	143	142	289	215	147	351
Mature females	225	657	231	1155	237	143	356	938	573	294	0
Total weight (kg)	10.11	12.28	1.8	8.76	1.86	0.71	3.8	15.22	16.36	19.26	46.41
Snow Crab											
Immature males	600	657	385	539	158	0	356	433	430	74	211
Mature males	0	263	0	154	0	0	71	72	72	0	70
Legal	375	723	0	154	0	0	71	361	287	74	281
Immature females	0	0	0	154	0	0	0	72	72	0	0
Mature females	0	0	0	0	0	0	0	72	0	0	0
Total weight (kg)	1.83	4.38	0.51	1.7	0.11	0	1.12	2.09	1.93	0.27	1.3
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	231	308	79	0	0	361	860	0	351
Males ≥ 78 mm	0	0	0	0	0	0	0	0	717	147	140
Immature females	0	131	0	77	0	0	0	216	0	0	0
Mature females	0	66	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.24	0.36	0.32	0.05	0	0	0.47	4.64	0.6	0.97

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	H-10	H-11	H-12	H-13	H-14	H-15	H-16	H-18	H-19	H-20	H-21
Start Date	6/4/2021	6/3/2021	6/3/2021	6/1/2021	6/2/2021	5/31/2021	6/1/2021	6/22/2021	6/26/2021	6/27/2021	6/29/2021
Duration (hour)	0.51	0.51	0.54	0.54	0.54	0.52	0.49	0.52	0.5	0.52	0.52
Distance Fished (km)	2.79	2.79	3.12	2.99	3.05	2.83	2.6	2.83	2.72	2.79	2.75
Mid-Latitude (ºN)	57.32	57.35	57.32	57.32	57.33	57.33	57.33	57.32	57.34	57.33	57.33
Mid-Longitude (ºW)	-162.15	-161.54	-160.94	-160.3	-159.67	-159.06	-158.37	-168.37	-168.97	-169.63	-170.24
Bottom Depth (m)	51	56	63	63	58	50	31	73	71	62	56
Bottom Temperature (ºC)	4.9	3.9	4.1	4.5	4.7	4.5	5.4	4.1	4.2	4.4	6.1
Red King Crab											
Immature males	79	323	267	70	70	79	0	0	0	0	0
Mature males	317	564	467	352	70	0	0	0	0	397	0
Legal	158	403	133	211	70	0	0	0	0	397	0
Immature females	0	0	67	0	0	0	0	0	0	0	0
Mature females	79	564	267	563	139	158	0	0	0	714	0
Total weight (kg)	12.39	26.96	22.3	19.42	7.94	3.84	0	0	0	29.45	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	80	0	0
Mature males	0	0	0	0	0	0	0	0	239	0	0
Legal	0	0	0	0	0	0	0	0	239	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	557	79	0
Total weight (kg)	0	0	0	0	0	0	0	0	16.38	1.72	0
Tanner Crab											
Immature males	396	0	133	281	0	0	0	4613	1113	714	83
Mature males	238	161	0	70	0	0	0	235	398	79	83
Legal	238	161	0	0	0	0	0	235	318	79	83
Immature females	0	0	67	0	0	0	0	3440	318	476	0
Mature females	0	323	0	70	0	0	0	547	80	79	0
Total weight (kg)	3.55	2.02	0.56	1.44	0	0	0	9.22	4.36	2.74	0.49
Snow Crab											
Immature males	0	0	0	0	0	0	0	1407	398	159	0
Mature males	0	242	0	0	0	0	0	78	159	79	0
Legal	0	242	0	0	0	0	0	469	239	238	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	1.5	0	0	0	0	0	3.76	1.44	0.95	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	391	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	78	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0.51	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	H-22	H-23	H-24	H-25	H-26	HG1918	HG2019	HG2120	HG2221	I-01	I-02
Start Date	6/29/2021	7/9/2021	7/9/2021	7/13/2021	7/15/2021	6/26/2021	6/27/2021	6/29/2021	6/29/2021	6/20/2021	6/14/2021
Duration (hour)	0.53	0.5	0.5	0.53	0.5	0.52	0.53	0.52	0.53	0.52	0.52
Distance Fished (km)	2.94	2.72	2.72	2.82	2.66	2.87	2.76	2.77	2.87	2.83	2.83
Mid-Latitude (ºN)	57.33	57.33	57.34	57.34	57.34	57.16	57.18	57.15	57.12	57.65	57.66
Mid-Longitude (ºW)	-170.86	-171.47	-172.1	-172.81	-173.32	-168.66	-169.31	-169.9	-170.47	-167.76	-167.12
Bottom Depth (m)	82	101	109	117	120	75	73	48	50	69	68
Bottom Temperature (ºC)	4.6	3.9	3.4	3.6	3.9	4.1	4.1	6	6	3.7	3.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	375	79	146	0	0
Legal	0	0	0	0	0	0	375	79	146	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	150	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	23.3	5.65	6.28	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	3835	1160	71	3598	784	3199	14952	712	146	859	1188
Mature males	831	725	0	0	157	149	1201	0	0	78	148
Legal	575	580	0	0	157	74	1050	0	0	78	0
Immature females	1023	943	0	2224	392	2232	16022	395	0	546	668
Mature females	639	508	0	0	0	149	225	0	146	78	74
Total weight (kg)	15.16	7.88	0.29	2.45	2.71	4.62	14.6	0.81	0.71	2.13	2.3
Snow Crab											
Immature males	383	580	0	65	78	1042	1951	0	0	0	223
Mature males	128	145	284	0	235	149	300	0	0	78	0
Legal	256	508	284	0	235	446	750	0	0	78	148
Immature females	0	0	0	0	0	0	0	0	0	0	74
Mature females	0	73	0	0	0	0	0	0	0	0	0
Total weight (kg)	1.84	2.73	1.83	0.16	1.68	2.76	5.52	0	0	0.38	0.89
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	65	0	74	411	0	0	78	74
Males ≥ 78 mm	0	0	0	65	0	0	0	0	0	0	0
Immature females	0	0	0	65	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0.55	0	0.03	0.06	0	0	0.01	0.13

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	I-03	I-04	I-05	I-06	I-07	I-08	I-09	I-10	I-11	I-12	I-13
Start Date	6/14/2021	6/14/2021	6/12/2021	6/10/2021	6/7/2021	6/7/2021	6/6/2021	6/4/2021	6/3/2021	6/3/2021	6/2/2021
Duration (hour)	0.52	0.53	0.52	0.51	0.53	0.53	0.53	0.51	0.51	0.52	0.52
Distance Fished (km)	2.81	2.67	2.88	2.91	2.9	2.9	2.93	2.84	2.83	2.99	2.95
Mid-Latitude (ºN)	57.66	57.68	57.68	57.65	57.67	57.67	57.66	57.66	57.68	57.67	57.66
Mid-Longitude (ºW)	-166.51	-165.89	-165.25	-164.62	-163.98	-163.37	-162.76	-162.12	-161.5	-160.89	-160.28
Bottom Depth (m)	67	64	58	54	51	47	44	46	53	57	55
Bottom Temperature (ºC)	3.2	2.2	2.9	3.7	4	4	4.2	4.2	4.1	4.3	4.4
Red King Crab											
Immature males	0	0	0	0	0	0	206	308	709	485	503
Mature males	73	0	0	74	0	425	754	385	788	277	287
Legal	73	0	0	74	0	354	549	308	473	208	287
Immature females	0	0	0	0	0	0	0	77	0	208	216
Mature females	0	0	0	0	73	212	69	308	1811	554	287
Total weight (kg)	3.25	0	0	2.98	1.08	21.44	30.7	22.33	50.79	23.12	19.38
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	735	5376	3520	3179	3343	567	343	0	79	69	0
Mature males	73	0	440	1331	1235	354	0	77	0	0	0
Legal	73	0	367	961	799	71	0	77	0	0	0
Immature females	147	788	440	0	145	0	0	0	0	0	72
Mature females	220	215	880	1183	509	71	137	0	0	0	0
Total weight (kg)	2.43	13.09	13.89	22.95	21.16	4.17	1.78	0.95	0.24	0.15	0.22
Snow Crab											
Immature males	441	287	8580	591	0	0	0	0	0	0	0
Mature males	73	0	73	0	0	0	0	0	0	0	0
Legal	220	143	293	74	0	0	0	0	0	0	0
Immature females	147	502	3520	74	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	1.52	0.91	6.45	0.54	0	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	215	807	370	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	367	148	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.16	0.97	0.2	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	I-14	I-15	I-16	I-18	I-19	I-20	I-21	I-22	I-23	I-24	I-25
Start Date	6/2/2021	6/1/2021	6/1/2021	6/22/2021	6/26/2021	6/26/2021	7/1/2021	7/1/2021	7/7/2021	7/9/2021	7/13/2021
Duration (hour)	0.52	0.53	0.52	0.51	0.5	0.52	0.52	0.52	0.53	0.5	0.54
Distance Fished (km)	2.91	2.9	2.71	2.79	2.77	2.7	2.72	2.87	2.84	2.7	3
Mid-Latitude (ºN)	57.65	57.69	57.66	57.66	57.67	57.67	57.65	57.66	57.68	57.67	57.66
Mid-Longitude (ºW)	-159.64	-159.02	-158.37	-168.4	-169.03	-169.66	-170.27	-170.89	-171.53	-172.17	-172.8
Bottom Depth (m)	52	46	37	70	69	71	72	85	99	108	120
Bottom Temperature (ºC)	4.5	4.4	4.7	4.4	3.6	3.9	3.9	4	3.6	3.4	3.6
Red King Crab											
Immature males	149	148	0	0	0	0	0	0	0	0	0
Mature males	446	148	0	0	160	157	70	0	0	0	0
Legal	223	74	0	0	80	157	70	0	0	0	0
Immature females	0	370	0	0	0	0	0	0	0	0	0
Mature females	149	74	0	0	80	236	0	0	0	0	0
Total weight (kg)	18.98	6.33	0	0	6.27	10.26	2.27	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	80	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	0	0	0	1.73	0	0	0	0	0	0
Tanner Crab											
Immature males	0	0	0	396	719	4479	1049	977	869	0	4500
Mature males	0	0	0	79	0	314	70	3452	993	0	0
Legal	0	0	0	0	0	236	0	2996	869	0	0
Immature females	0	0	0	79	320	3064	1399	1107	373	0	4438
Mature females	0	0	0	0	80	314	70	2800	124	0	370
Total weight (kg)	0	0	0	0.86	1.1	5.92	1.85	42.85	11.13	0	3.71
Snow Crab											
Immature males	0	0	0	79	799	1100	839	2149	869	286	740
Mature males	0	0	0	0	160	79	70	456	1490	429	555
Legal	0	0	0	0	160	314	280	1237	2297	644	1171
Immature females	0	0	0	0	80	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	70	0	248	0	0
Total weight (kg)	0	0	0	0.01	2.26	2.58	2.47	9.3	13.92	3.68	7.2
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	160	79	70	0	0	0	62
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	80	393	0	0	186	0	62
Mature females	0	0	0	0	0	0	0	0	0	0	62
Total weight (kg)	0	0	0	0	0.54	0.12	0.01	0	0.05	0	0.12

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	I-26	IH1918	IH2019	IH2120	IH2221	J-01	J-02	J-03	J-04	J-05	J-06
Start Date	7/15/2021	6/26/2021	6/26/2021	6/29/2021	7/1/2021	6/20/2021	6/21/2021	6/13/2021	6/13/2021	6/12/2021	6/10/2021
Duration (hour)	0.49	0.5	0.52	0.52	0.52	0.52	0.53	0.53	0.51	0.52	0.52
Distance Fished (km)	2.66	2.74	2.67	2.75	2.79	2.8	2.77	2.76	2.81	2.87	2.87
Mid-Latitude (ºN)	57.66	57.5	57.51	57.49	57.49	57.99	57.99	58.01	57.99	58.01	57.99
Mid-Longitude (ºW)	-173.38	-168.75	-169.37	-169.95	-170.58	-167.81	-167.16	-166.53	-165.91	-165.25	-164.61
Bottom Depth (m)	144	72	69	68	75	68	64	61	56	50	46
Bottom Temperature (ºC)	3.8	4.2	4.2	4.2	4.4	3.6	3.3	2.4	3	3.7	3.9
Red King Crab											
Immature males	0	0	0	313	0	0	0	0	0	0	0
Mature males	0	82	965	1095	141	0	0	0	0	229	228
Legal	0	82	965	860	141	0	0	0	0	153	152
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	1930	156	0	0	0	0	77	76	228
Total weight (kg)	0	3.38	73.52	44.86	5.38	0	0	0	0.99	8.9	11.27
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	241	78	0	0	0	0	0	0	0
Legal	0	0	80	78	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	0	6.22	2.36	0	0	0	0	0	0	0
Tanner Crab											
Immature males	5075	821	8765	8681	3739	0	5318	15670	4297	3968	2966
Mature males	0	82	80	1799	1129	0	532	2361	230	229	1369
Legal	0	82	80	1173	1058	0	228	501	77	76	761
Immature females	6287	575	8283	9854	3316	149	1823	1002	77	153	228
Mature females	152	82	482	391	1764	0	228	2218	1611	2976	152
Total weight (kg)	2.32	1.62	10.06	16.31	18.04	0.03	14.67	54.62	17.36	20.04	19.97
Snow Crab											
Immature males	0	575	1287	3832	1270	0	2431	1288	2225	687	76
Mature males	0	0	80	469	212	0	1291	72	0	0	0
Legal	0	0	161	1642	423	0	1975	143	77	76	0
Immature females	0	82	885	0	0	0	836	572	460	0	0
Mature females	0	0	0	0	71	0	76	0	0	0	0
Total weight (kg)	0	1.02	2.55	10.52	3.97	0	11.58	2.69	1.6	0.56	0.23
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	76	246	965	235	0	0	1140	215	844	76	0
Males ≥ 78 mm	76	0	0	0	0	0	0	0	77	76	0
Immature females	227	0	322	469	0	0	0	358	77	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.54	0.09	0.48	0.22	0	0	1.5	0.53	0.91	0.35	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	J-07	J-08	J-09	J-10	J-11	J-12	J-13	J-14	J-15	J-16	J-18
Start Date	6/6/2021	6/6/2021	6/6/2021	6/5/2021	6/3/2021	6/3/2021	6/2/2021	6/2/2021	6/1/2021	6/1/2021	6/22/2021
Duration (hour)	0.52	0.53	0.54	0.51	0.51	0.54	0.53	0.51	0.51	0.52	0.5
Distance Fished (km)	2.8	2.93	3.06	2.75	2.75	3.07	3.01	2.88	2.79	2.87	2.7
Mid-Latitude (ºN)	58.01	57.99	57.99	57.99	58.01	58	57.99	57.99	58	57.98	58.01
Mid-Longitude (ºW)	-164.01	-163.38	-162.76	-162.1	-161.49	-160.85	-160.2	-159.59	-158.96	-158.35	-168.44
Bottom Depth (m)	47	44	41	38	54	45	50	43	41	35	70
Bottom Temperature (ºC)	3.4	3.9	3.9	3.9	3.8	3.7	3.7	4.4	4.9	5.4	3.8
Red King Crab											
Immature males	0	67	133	0	1036	401	71	81	0	80	0
Mature males	0	202	133	79	637	0	212	243	0	0	0
Legal	0	67	67	79	558	0	141	243	0	0	0
Immature females	0	0	0	0	0	267	212	81	0	240	0
Mature females	0	202	200	0	637	0	282	81	0	0	0
Total weight (kg)	0	11.38	10.84	2.68	40.25	4.42	15.78	10.18	0	0.23	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	74	202	0	0	0	0	0	0	0	0	2962
Mature males	74	0	67	79	0	0	0	0	0	0	0
Legal	0	0	0	79	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	905
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.58	0.66	0.5	0.46	0	0	0	0	0	0	2.6
Snow Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	823
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	905
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	0.76
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	329
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	658
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	0.34

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	J-19	J-20	J-21	J-22	J-23	J-24	J-25	J-26	JI1918	JI2019	JI2120
Start Date	6/25/2021	6/26/2021	7/1/2021	7/1/2021	7/6/2021	7/9/2021	7/13/2021	7/16/2021	6/25/2021	6/26/2021	7/1/2021
Duration (hour)	0.5	0.52	0.54	0.52	0.52	0.49	0.52	0.51	0.5	0.52	0.51
Distance Fished (km)	2.73	2.78	2.88	2.78	2.83	2.69	2.95	2.72	2.75	2.84	2.73
Mid-Latitude (ºN)	58.01	58.01	57.99	58	58.01	58	58.01	58	57.83	57.84	57.83
Mid-Longitude (ºW)	-169.09	-169.7	-170.33	-170.97	-171.59	-172.26	-172.84	-173.48	-168.75	-169.34	-169.97
Bottom Depth (m)	69	73	75	87	98	106	108	117	70	67	73
Bottom Temperature (ºC)	3.6	3.8	3.6	3.4	3.3	3.2	3.3	3.5	4.1	3.3	3.7
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	152	144	0	0	0	0	0	0	280	72
Legal	0	152	144	0	0	0	0	0	0	280	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	6.11	6.78	0	0	0	0	0	0	11.12	4.12
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	72
Legal	0	0	0	0	0	0	0	0	0	0	72
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	3.17
Tanner Crab											
Immature males	617	990	1365	684	67	0	1055	1679	630	839	5699
Mature males	77	0	0	68	135	76	132	73	0	70	72
Legal	0	0	0	68	135	76	0	73	0	70	72
Immature females	1003	1446	1221	752	0	151	198	0	157	699	5627
Mature females	0	0	0	137	67	76	330	1460	0	0	0
Total weight (kg)	1.38	0.93	1.1	2.46	1.4	0.97	3.56	4.08	0.31	1.96	5.07
Snow Crab											
Immature males	309	1218	1365	137	1080	378	461	292	157	489	1803
Mature males	77	76	72	0	540	529	330	365	0	0	0
Legal	154	228	359	0	1417	831	593	584	0	210	289
Immature females	0	609	144	0	0	0	0	0	0	629	289
Mature females	0	0	0	68	4657	2872	0	0	0	0	0
Total weight (kg)	1.02	1.83	3.46	0.27	10.3	6.28	3.68	2.76	0.19	1.2	3.31
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	304	72	0	0	0	0	0	79	140	361
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	381	0	0	0	0	0	0	0	70	505
Mature females	0	0	0	0	135	0	66	0	0	0	0
Total weight (kg)	0	0.08	0	0	0.19	0	0.08	0	0.01	0.03	0.3

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	JI2221	K-01	K-02	K-03	K-04	K-05	K-06	K-07	K-08	K-09	K-10
Start Date	7/1/2021	6/21/2021	6/21/2021	6/13/2021	6/13/2021	6/12/2021	6/10/2021	6/6/2021	6/6/2021	6/5/2021	6/5/2021
Duration (hour)	0.53	0.53	0.52	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52
Distance Fished (km)	2.87	2.89	2.84	2.93	2.94	2.92	2.91	2.85	2.94	2.88	2.78
Mid-Latitude (ºN)	57.84	58.33	58.32	58.35	58.34	58.33	58.31	58.33	58.33	58.33	58.32
Mid-Longitude (ºW)	-170.63	-167.84	-167.2	-166.56	-165.92	-165.29	-164.63	-164.01	-163.37	-162.72	-162.05
Bottom Depth (m)	79	60	53	47	45	46	44	41	37	32	47
Bottom Temperature (ºC)	3.7	3.2	3.1	3.5	3.8	3.6	3.4	3.2	3.6	4.2	4.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	75	0	81	150
Mature males	68	2026	0	0	75	73	297	75	228	242	150
Legal	68	1801	0	0	75	0	297	75	152	161	75
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	976	76	279	151	0	148	75	0	242	0
Total weight (kg)	2.3	95.18	1.82	2.51	4.25	1.52	12.19	5.41	6.29	12.85	4.45
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	959	2851	378	767	904	145	0	0	0	0	0
Mature males	342	0	151	209	0	0	0	0	0	0	0
Legal	205	0	76	70	0	0	0	0	0	0	0
Immature females	1370	1201	151	0	0	0	0	0	0	0	0
Mature females	137	0	76	558	75	0	0	0	0	0	0
Total weight (kg)	3.96	2.12	1.77	5	2.7	0.43	0	0	0	0	0
Snow Crab											
Immature males	205	1426	76	139	0	0	0	0	0	0	0
Mature males	68	150	76	0	0	0	0	0	0	0	0
Legal	205	525	76	0	0	0	0	0	0	0	0
Immature females	0	225	0	0	0	0	0	0	0	0	0
Mature females	274	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	1.38	3.54	0.37	0.26	0	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	2251	302	209	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	375	76	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	0.58	0.24	0.32	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	K-11	K-12	K-13	K-14	K-18	K-19	K-20	K-21	K-22	K-23	K-24
Start Date	6/3/2021	6/2/2021	6/2/2021	6/2/2021	6/22/2021	6/25/2021	6/25/2021	7/1/2021	7/1/2021	7/6/2021	7/8/2021
Duration (hour)	0.52	0.49	0.53	0.54	0.5	0.51	0.52	0.52	0.52	0.53	0.5
Distance Fished (km)	2.8	2.65	2.88	2.97	2.73	2.81	2.72	2.78	2.74	2.85	2.67
Mid-Latitude (ºN)	58.22	58.32	58.28	58.32	58.31	58.34	58.34	58.33	58.33	58.35	58.35
Mid-Longitude (ºW)	-161.54	-160.78	-159.98	-159.54	-168.46	-169.12	-169.73	-170.39	-171.02	-171.65	-172.3
Bottom Depth (m)	40	25	41	27	67	68	69	74	85	96	102
Bottom Temperature (ºC)	4.7	6.9	4.1	4.9	3.4	3.4	3.1	3.4	3.3	3.2	3
Red King Crab											
Immature males	161	0	0	0	0	0	0	0	0	0	0
Mature males	80	0	0	0	0	0	0	0	0	0	0
Legal	80	0	0	0	0	0	0	0	0	0	0
Immature females	241	0	79	84	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	3.88	0	0.4	0.17	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	0	0	0	157	76	1695	341	137	201	0
Mature males	0	0	0	0	79	0	0	0	0	134	0
Legal	0	0	0	0	0	0	0	0	0	67	0
Immature females	0	0	0	0	315	0	770	205	0	134	0
Mature females	0	0	0	0	0	0	0	0	0	67	0
Total weight (kg)	0	0	0	0	0.82	0.06	1.86	0.2	0.05	1.3	0
Snow Crab											
Immature males	0	0	0	0	394	151	4854	750	481	1271	1396
Mature males	0	0	0	0	236	0	2234	68	206	669	1323
Legal	0	0	0	0	236	0	5239	341	619	1606	2425
Immature females	0	0	0	0	0	0	0	273	481	0	0
Mature females	0	0	0	0	0	0	0	0	69	1204	0
Total weight (kg)	0	0	0	0	1.55	0.22	24.02	2.43	3.25	9.87	13.76
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	79	0	231	68	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	79	0	231	205	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0.03	0	0.19	0.06	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	K-25	K-26	K-27	L-01	L-02	L-03	L-04	L-05	L-06	L-07	L-08
Start Date	7/13/2021	7/16/2021	7/16/2021	6/21/2021	6/21/2021	6/13/2021	6/13/2021	6/12/2021	6/10/2021	6/10/2021	6/6/2021
Duration (hour)	0.53	0.51	0.51	0.54	0.53	0.52	0.52	0.51	0.51	0.53	0.53
Distance Fished (km)	2.93	2.81	2.77	2.95	2.87	2.89	2.8	2.77	2.76	2.91	3.05
Mid-Latitude (ºN)	58.32	58.33	58.33	58.66	58.66	58.68	58.68	58.66	58.64	58.65	58.68
Mid-Longitude (ºW)	-172.94	-173.57	-174.31	-167.88	-167.21	-166.56	-165.93	-165.29	-164.66	-164.02	-163.35
Bottom Depth (m)	108	115	163	47	44	42	37	41	38	35	32
Bottom Temperature (ºC)	3.2	3.4	3.8	3.7	3.8	3.7	3.6	3.5	3.5	3.8	4
Red King Crab											
Immature males	0	0	0	0	383	521	84	165	82	80	0
Mature males	0	0	0	74	0	0	168	0	165	161	0
Legal	0	0	0	74	0	0	0	0	82	80	0
Immature females	0	0	0	0	306	0	0	0	0	0	0
Mature females	0	0	0	74	2221	596	335	83	0	80	0
Total weight (kg)	0	0	0	3.42	28.98	12.97	8.4	4.28	5.08	8.29	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	726	1789	1143	0	77	74	0	0	0	0	0
Mature males	198	688	0	0	0	0	0	0	0	0	0
Legal	132	550	0	0	0	0	0	0	0	0	0
Immature females	330	206	1214	74	0	0	0	0	0	0	0
Mature females	0	138	71	0	0	0	0	0	0	0	0
Total weight (kg)	3.68	10.14	0.66	0.17	0.2	0.24	0	0	0	0	0
Snow Crab											
Immature males	330	413	0	74	0	0	0	0	0	0	0
Mature males	594	138	0	0	0	0	0	0	0	0	0
Legal	858	482	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)	5.12	2.37	0	0.03	0	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	887	153	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	148	77	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0.69	0.2	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	L-09	L-18	L-19	L-20	L-21	L-22	L-23	L-24	L-25	L-26	L-27
Start Date	6/5/2021	6/23/2021	6/25/2021	6/25/2021	7/1/2021	7/2/2021	7/6/2021	7/8/2021	7/14/2021	7/14/2021	7/16/2021
Duration (hour)	0.59	0.55	0.52	0.52	0.51	0.53	0.52	0.51	0.54	0.42	0.52
Distance Fished (km)	3.27	2.96	2.85	2.71	2.7	2.84	2.71	2.72	2.9	2.28	2.79
Mid-Latitude (ºN)	58.66	58.67	58.67	58.67	58.66	58.67	58.67	58.68	58.65	58.65	58.67
Mid-Longitude (ºW)	-162.7	-168.5	-169.16	-169.79	-170.43	-171.09	-171.72	-172.37	-172.99	-173.6	-174.27
Bottom Depth (m)	23	54	63	67	74	83	92	101	112	125	156
Bottom Temperature (ºC)	4.2	3.5	3.1	3.7	3.1	3	3.1	2.8	3.1	3.5	3.6
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	82	0	0	0	0	0	0	0	0	0	0
Legal	82	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	82	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	4.59	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	240	0	304	0	399	0	820	2988	2315	13677
Mature males	0	0	0	0	0	67	209	373	445	534	71
Legal	0	0	0	0	0	67	209	75	318	178	0
Immature females	0	160	75	76	147	1729	0	75	2353	1603	4060
Mature females	0	0	0	0	0	0	0	149	3052	356	641
Total weight (kg)	0	0.38	0.1	0.22	0.08	0.47	1.41	5.18	17.19	6.91	15.82
Snow Crab											
Immature males	0	400	1865	18311	6695	2860	13395	1342	890	356	71
Mature males	0	0	746	3039	883	532	1256	894	445	89	0
Legal	0	80	1791	20059	5665	2461	7395	1938	1081	445	71
Immature females	0	320	75	532	147	0	0	0	64	0	0
Mature females	0	0	0	0	0	399	449610	0	64	0	0
Total weight (kg)	0	0.55	8.23	69.49	23.55	12.3	354.29	10.06	6.57	1.51	0.31
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	240	149	304	147	0	0	0	127	0	71
Males ≥ 78 mm	0	0	0	0	0	0	70	0	0	0	0
Immature females	0	0	0	76	0	0	0	75	127	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.05	0.03	0.35	0.04	0	0.34	0.01	0.07	0	0.07

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	L-28	L-29	L-30	L-31	M-01	M-02	M-03	M-04	M-05	M-06	M-07
Start Date	7/17/2021	7/17/2021	7/17/2021	7/18/2021	6/22/2021	6/22/2021	6/13/2021	6/13/2021	6/12/2021	6/11/2021	6/11/2021
Duration (hour)	0.5	0.52	0.51	0.52	0.52	0.52	0.53	0.53	0.53	0.52	0.53
Distance Fished (km)	2.81	2.86	2.81	2.83	2.9	2.71	2.85	2.9	2.97	2.84	2.79
Mid-Latitude (ºN)	58.75	58.67	58.67	58.67	58.99	58.99	59.01	59	58.99	59	58.99
Mid-Longitude (ºW)	-174.95	-175.53	-176.19	-176.82	-167.9	-167.23	-166.58	-165.95	-165.31	-164.7	-164.01
Bottom Depth (m)	141	135	140	135	42	40	34	30	28	28	29
Bottom Temperature (ºC)	3.3	3.4	2.3	2.6	3.9	4.2	3.6	3.7	3.8	4.1	4.1
Red King Crab											
Immature males	0	0	0	0	226	84	385	316	158	161	0
Mature males	0	0	0	0	0	0	77	0	0	80	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	77	0	0	0	0
Mature females	0	0	0	0	75	84	694	0	0	80	0
Total weight (kg)	0	0	0	0	3.56	1.54	13.88	3.94	2.02	5.29	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	570	135	67	0	75	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	427	68	472	198	75	0	0	0	0	0	0
Mature females	0	0	0	66	0	0	0	0	0	0	0
Total weight (kg)	0.27	0.07	0.16	0.21	0.08	0	0	0	0	0	0
Snow Crab											
Immature males	71	0	0	0	150	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	71	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)	0.02	0	0	0	0.08	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	150	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	0	0	0	0.13	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	M-08	M-18	M-19	M-20	M-21	M-22	M-23	M-24	M-25	M-26	M-27
Start Date	6/6/2021	6/23/2021	6/24/2021	6/25/2021	7/2/2021	7/2/2021	7/6/2021	7/8/2021	7/14/2021	7/14/2021	7/17/2021
Duration (hour)	0.54	0.52	0.5	0.53	0.5	0.53	0.51	0.51	0.52	0.53	0.52
Distance Fished (km)	2.94	2.82	2.75	2.83	2.76	2.92	2.86	2.79	2.78	2.87	2.89
Mid-Latitude (ºN)	58.99	58.99	59.01	59	58.99	58.99	59	59.01	58.99	58.98	59
Mid-Longitude (ºW)	-163.34	-168.54	-169.18	-169.84	-170.48	-171.14	-171.78	-172.44	-173.08	-173.71	-174.38
Bottom Depth (m)	23	47	54	63	72	77	87	97	107	118	127
Bottom Temperature (ºC)	4.3	3.6	3.1	3.5	2.8	2.7	3	2.5	2.7	3	3.1
Red King Crab											
Immature males	0	82	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	75	0	82	0	0	0	0	0	0	0	0
Total weight (kg)	1.01	0.39	1.21	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	0	0	73	0	65	0	281	1868	3223	7661
Mature males	0	0	0	0	0	0	0	352	1591	537	0
Legal	0	0	0	0	0	0	0	70	830	134	0
Immature females	0	0	0	0	0	65	0	141	553	1276	5288
Mature females	0	0	0	0	0	0	0	70	277	1007	610
Total weight (kg)	0	0	0	0.07	0	0.02	0	3.17	17.81	9.96	8.94
Snow Crab											
Immature males	0	165	575	12986	22808	7413	8714	2109	830	403	542
Mature males	0	0	82	2481	458	195	811	562	277	67	68
Legal	0	82	82	14081	12052	2601	5269	1828	899	269	203
Immature females	0	0	82	146	0	0	0	141	0	67	610
Mature females	0	0	0	0	0	21329	125751	281	0	0	68
Total weight (kg)	0	0.34	0.87	50.53	55.67	36.64	131.32	10.42	4.55	1.6	1.06
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	164	0	0	0	0	0	69	134	68
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	67	0
Immature females	0	0	0	0	0	0	0	0	138	67	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0.07	0	0	0	0	0	0.01	0.58	0.05

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	M-28	M-29	M-30	M-31	M-32	N-01	N-02	N-03	N-04	N-05	N-06
Start Date	7/17/2021	7/18/2021	7/18/2021	7/18/2021	7/18/2021	6/22/2021	6/22/2021	6/13/2021	6/12/2021	6/11/2021	6/11/2021
Duration (hour)	0.53	0.52	0.5	0.5	0.52	0.52	0.53	0.54	0.54	0.53	0.55
Distance Fished (km)	2.9	2.82	2.76	2.74	2.83	2.86	2.98	2.9	3.07	3.02	3.12
Mid-Latitude (ºN)	59.01	58.99	59.01	59	59	59.31	59.33	59.37	59.3	59.32	59.32
Mid-Longitude (ºW)	-175	-175.73	-176.35	-176.94	-177.56	-167.93	-167.28	-166.61	-165.93	-165.29	-164.64
Bottom Depth (m)	129	132	135	137	135	40	33	27	25	21	23
Bottom Temperature (ºC)	3.2	2.1	1.9	2.8	2.9	3.8	4.4	3.3	3.7	4.3	5.2
Red King Crab											
Immature males	0	0	0	0	0	233	0	76	0	0	0
Mature males	0	0	0	0	0	0	77	0	0	0	0
Legal	0	0	0	0	0	0	77	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	78	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	4.71	2.42	0.14	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	1750	971	1464	277	133	78	0	0	0	0	0
Mature males	0	129	139	0	0	0	0	0	0	0	0
Legal	0	65	0	0	0	0	0	0	0	0	0
Immature females	875	647	906	486	66	0	0	0	0	0	0
Mature females	67	129	697	0	0	0	0	0	0	0	0
Total weight (kg)	1.96	2.95	5.24	0.65	0.03	0.22	0	0	0	0	0
Snow Crab											
Immature males	269	324	1185	347	66	0	0	0	0	0	0
Mature males	0	0	209	0	0	0	0	0	0	0	0
Legal	0	0	209	0	0	0	0	0	0	0	0
Immature females	135	259	628	208	0	0	0	0	0	0	0
Mature females	0	0	209	0	0	0	0	0	0	0	0
Total weight (kg)	0.05	0.16	2.13	0.06	0.01	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	65	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	65	70	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	0.02	0.1	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	N-07	N-18	N-19	N-20	N-21	N-22	N-23	N-24	N-25	N-26	N-27
Start Date	6/11/2021	6/23/2021	6/24/2021	6/25/2021	7/2/2021	7/2/2021	7/6/2021	7/8/2021	7/14/2021	7/15/2021	7/15/2021
Duration (hour)	0.55	0.51	0.51	0.53	0.51	0.54	0.53	0.5	0.53	0.53	0.53
Distance Fished (km)	2.95	2.83	2.78	2.91	2.87	2.96	2.79	2.73	2.85	2.86	2.9
Mid-Latitude (ºN)	59.31	59.32	59.34	59.33	59.32	59.33	59.36	59.33	59.33	59.33	59.32
Mid-Longitude (ºW)	-163.99	-168.59	-169.24	-169.89	-170.53	-171.19	-171.82	-172.52	-173.15	-173.81	-174.43
Bottom Depth (m)	24	42	50	61	68	76	80	88	100	111	120
Bottom Temperature (ºC)	5	3.9	3.1	3.1	3.7	2.4	2.4	2.4	2.3	2.6	2.9
Red King Crab											
Immature males	0	172	0	0	0	0	0	0	0	0	0
Mature males	0	86	0	0	0	0	0	0	0	0	0
Legal	0	86	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	86	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	5.62	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	0	155	0	0	0	0	146	942	738	3915
Mature males	0	0	0	0	0	0	0	73	202	268	133
Legal	0	0	0	0	0	0	0	0	67	0	66
Immature females	0	0	0	0	0	0	0	73	471	268	2986
Mature females	0	0	0	0	0	0	0	0	202	335	663
Total weight (kg)	0	0	0.03	0	0	0	0	0.95	5.07	4.1	9.74
Snow Crab											
Immature males	0	0	77	2069	3629	9648	9631	2990	1548	67	66
Mature males	0	0	0	414	1575	130	678	656	135	0	0
Legal	0	0	77	1241	3766	3497	5426	2333	740	67	66
Immature females	0	0	0	345	0	0	0	0	67	201	663
Mature females	0	0	0	0	0	2849	1696	19105	135	0	0
Total weight (kg)	0	0	0.18	6.62	18.48	30.01	33.17	24.92	5.97	0.48	0.34
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	77	207	0	0	0	146	269	402	133
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	138	0	0	0	73	269	402	133
Mature females	0	0	0	0	0	0	0	219	0	0	0
Total weight (kg)	0	0	0.02	0.05	0	0	0	0.21	0.14	0.38	0.08

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	N-28	N-29	N-30	N-31	O-01	O-02	O-03	O-04	O-18	O-19	O-20
Start Date	7/17/2021	7/18/2021	7/19/2021	7/19/2021	6/23/2021	6/23/2021	6/12/2021	6/12/2021	6/23/2021	6/24/2021	6/25/2021
Duration (hour)	0.52	0.52	0.52	0.55	0.53	0.54	0.53	0.54	0.51	0.52	0.54
Distance Fished (km)	2.75	2.83	2.85	2.95	2.9	2.89	3.05	2.95	2.84	2.85	3.04
Mid-Latitude (ºN)	59.34	59.32	59.33	59.35	59.66	59.64	59.67	59.6	59.64	59.67	59.67
Mid-Longitude (ºW)	-175.1	-175.76	-176.39	-177.06	-167.94	-167.27	-166.6	-165.89	-168.63	-169.27	-169.92
Bottom Depth (m)	132	136	135	148	36	31	29	26	39	48	57
Bottom Temperature (ºC)	3	1.8	1.6	2.4	4.1	4.6	3.7	4.3	3.7	3.1	3.1
Red King Crab											
Immature males	0	0	0	0	0	0	74	0	83	0	0
Mature males	0	0	0	0	77	78	0	0	83	0	0
Legal	0	0	0	0	77	78	0	0	83	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	74	0	83	0	0
Total weight (kg)	0	0	0	0	2.8	1.38	1.55	0	3.77	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	597	821	1016	397	0	0	0	0	0	0	0
Mature males	0	190	68	265	0	0	0	0	0	0	0
Legal	0	63	0	132	0	0	0	0	0	0	0
Immature females	531	126	203	132	0	0	0	0	0	76	0
Mature females	199	253	271	66	0	0	0	0	0	0	0
Total weight (kg)	1.85	4.48	2.46	2.96	0	0	0	0	0	0.01	0
Snow Crab											
Immature males	265	0	406	0	0	0	0	0	0	0	4076
Mature males	0	0	0	0	0	0	0	0	0	0	68
Legal	265	0	0	0	0	0	0	0	0	0	408
Immature females	66	63	0	198	0	0	0	0	0	0	1631
Mature females	0	0	135	66	0	0	0	0	0	0	0
Total weight (kg)	1.14	0.03	0.21	0.18	0	0	0	0	0	0	6.33
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	253	0	0	0	0	0	0	0	76	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	66	0	0	0	0	0	0	0	0	0	68
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.1	0.61	0	0	0	0	0	0	0	0.01	0.02

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	O-21	O-22	O-23	O-24	O-25	O-26	O-27	O-28	O-29	O-30	O-31
Start Date	7/2/2021	7/2/2021	7/5/2021	7/5/2021	7/7/2021	7/7/2021	7/15/2021	7/17/2021	7/18/2021	7/19/2021	7/19/2021
Duration (hour)	0.52	0.52	0.53	0.53	0.51	0.5	0.53	0.51	0.52	0.51	0.5
Distance Fished (km)	2.69	2.85	2.9	2.75	2.76	2.72	2.87	2.65	2.79	2.77	2.72
Mid-Latitude (ºN)	59.66	59.66	59.68	59.67	59.69	59.67	59.66	59.68	59.65	59.68	59.66
Mid-Longitude (ºW)	-170.58	-171.25	-171.89	-172.56	-173.2	-173.84	-174.46	-175.12	-175.85	-176.56	-177.14
Bottom Depth (m)	67	73	77	84	94	104	115	125	137	136	175
Bottom Temperature (ºC)	3.5	2.4	2	2.3	2.2	2.1	2.5	2.8	2.3	1.6	1.8
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	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	67	0	0	0	213	0	71	411	572	1129
Mature males	0	67	0	0	0	0	133	284	0	0	71
Legal	0	67	0	0	0	0	133	213	0	0	0
Immature females	0	0	0	0	0	213	66	0	0	72	494
Mature females	0	0	0	0	0	0	0	0	205	143	494
Total weight (kg)	0	0.49	0	0	0	0.7	1.62	2.22	2.02	1.2	4.9
Snow Crab											
Immature males	50119	4452	6233	752	9271	2552	995	5601	68	572	423
Mature males	1314	67	260	479	1132	496	929	4254	68	0	0
Legal	33601	1484	2597	752	5520	1701	1724	8578	68	143	71
Immature females	0	0	0	0	0	638	0	0	0	143	423
Mature females	0	472	5194	137	46712	71	21470	4537	137	0	0
Total weight (kg)	160.82	12.29	23.81	5.32	72.88	10.95	24.62	54.18	1.13	0.64	0.67
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	68	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	212	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0.14	0	0	0	0.12	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	ON2524	ON2625	P-01	P-18	P-19	P-20	P-21	P-22	P-23	P-24	P-25
Start Date	7/8/2021	7/7/2021	6/23/2021	6/24/2021	6/24/2021	6/24/2021	7/2/2021	7/2/2021	7/3/2021	7/3/2021	7/3/2021
Duration (hour)	0.5	0.5	0.54	0.53	0.52	0.52	0.52	0.52	0.46	0.53	0.54
Distance Fished (km)	2.78	2.74	2.92	2.95	2.86	2.76	2.89	2.81	2.56	2.94	2.99
Mid-Latitude (ºN)	59.5	59.51	59.99	60	60	60.01	59.99	59.99	59.97	59.99	60.01
Mid-Longitude (ºW)	-172.89	-173.51	-167.99	-168.68	-169.3	-169.97	-170.63	-171.3	-171.94	-172.59	-173.31
Bottom Depth (m)	94	103	26	40	46	54	65	70	68	66	75
Bottom Temperature (ºC)	2.1	2.2	5.1	3.9	2.9	2.9	3.3	2.3	1.8	1.7	1.9
Red King Crab											
Immature males	0	0	79	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	159	0	0	0	0	0	0	0
Total weight (kg)	0	0	0.08	2.92	0	0	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	64
Mature males	0	0	0	0	0	0	0	0	0	65	257
Legal	0	0	0	0	0	0	0	0	0	65	193
Immature females	0	0	0	0	0	0	0	0	0	0	64
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	2.25	7.78
Tanner Crab											
Immature males	0	70	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	76	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	70	0	0	0	0	0	0	0	0	0
Mature females	0	140	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.17	0	0	0.35	0	0	0	0	0	0
Snow Crab											
Immature males	1541	420	0	0	0	250	4212	14455	5430	1495	4178
Mature males	560	140	0	0	0	0	204	271	5731	325	771
Legal	1471	280	0	0	0	166	1834	11129	9502	1235	2764
Immature females	0	70	0	0	0	0	0	0	75	0	450
Mature females	1331	70	0	0	0	0	68	475	0	0	0
Total weight (kg)	9.89	2.11	0	0	0	0.59	10.83	41.04	43.04	6.6	13.78
Chionoecetes spp. Hybrid											
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	0	0	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	P-26	P-27	P-28	P-29	P-30	P-31	P-32	PO2423	PO2524	PO2625	PO2726
Start Date	7/6/2021	7/15/2021	7/17/2021	7/18/2021	7/19/2021	7/20/2021	7/20/2021	7/5/2021	7/5/2021	7/7/2021	7/6/2021
Duration (hour)	0.52	0.53	0.52	0.53	0.5	0.51	0.51	0.45	0.36	0.51	0.49
Distance Fished (km)	2.82	2.8	2.59	2.9	2.72	2.76	2.72	1.63	1.95	2.81	2.7
Mid-Latitude (ºN)	60	59.98	60.01	59.99	59.99	60.01	60	59.83	59.84	59.83	59.85
Mid-Longitude (ºW)	-173.98	-174.58	-175.27	-175.92	-176.7	-177.22	-177.89	-172.26	-172.91	-173.58	-174.23
Bottom Depth (m)	100	109	117	130	142	136	141	74	79	95	106
Bottom Temperature (ºC)	1.9	2.1	2.3	2.5	1.9	1.9	1.9	1.7	2	2	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	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	0	0	0	0	0	0	0	0	0	0
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	193	69	0
Legal	0	0	0	0	0	0	0	0	97	69	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	0	0	0	0	0	0	0	3.82	1.54	0
Tanner Crab											
Immature males	0	205	0	0	0	0	75	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	137	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	75	75	0	0	0	0
Total weight (kg)	0	0.09	0	0	0	0.24	0.43	0	0	0	0
Snow Crab											
Immature males	4588	1093	2839	2768	292	673	225	997	16120	8232	510
Mature males	834	1230	1238	7082	73	150	0	374	6661	1166	365
Legal	2989	1982	3276	9271	73	224	0	997	17954	5763	583
Immature females	0	68	0	64	292	449	225	0	676	0	0
Mature females	0	547	3567	0	0	75	0	0	97	686	292
Total weight (kg)	19.14	13.51	20.35	66.7	0.57	1.87	0.17	3.02	61.55	33.61	4.41
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	97	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	97	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0.04	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	Q-01	Q-02	Q-18	Q-19	Q-20	Q-21	Q-22	Q-23	Q-25	Q-26	Q-27
Start Date	6/23/2021	6/23/2021	6/24/2021	6/24/2021	6/24/2021	7/3/2021	7/3/2021	7/4/2021	7/3/2021	7/6/2021	7/16/2021
Duration (hour)	0.54	0.54	0.53	0.54	0.52	0.52	0.53	0.52	0.28	0.52	0.53
Distance Fished (km)	2.92	3.07	2.91	2.99	2.91	2.8	3	2.65	1.52	2.85	2.85
Mid-Latitude (ºN)	60.31	60.33	60.33	60.33	60.33	60.32	60.33	60.35	60.3	60.34	60.32
Mid-Longitude (ºW)	-167.98	-167.27	-168.62	-169.3	-170.01	-170.65	-171.33	-172.07	-173.37	-174.07	-174.7
Bottom Depth (m)	31	31	36	43	52	63	67	60	63	90	103
Bottom Temperature (ºC)	5.1	5.3	4.3	2.6	2.4	2.8	2.3	2.1	2.9	2.1	1.9
Red King Crab											
Immature males	0	71	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	70	0	0	0	0	0	0	0
Legal	0	0	0	70	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	0.07	0	4.26	0	0	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	4683	502	0	0
Mature males	0	0	0	0	0	0	0	1015	627	0	0
Legal	0	0	0	0	0	0	0	624	627	0	0
Immature females	0	0	0	0	0	0	0	1483	1255	0	0
Mature females	0	0	0	0	0	0	0	2029	125	0	0
Total weight (kg)	0	0	0	0	0	0	0	61.88	15.76	0	0
Tanner Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	78	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0.1	0	0	0
Snow Crab											
Immature males	0	0	0	0	71	726	25828	17718	0	19519	29259
Mature males	0	0	0	0	0	0	2693	468	0	3698	1865
Legal	0	0	0	0	0	290	20931	5308	0	19313	9466
Immature females	0	0	0	0	0	0	0	0	125	0	0
Mature females	0	0	0	0	0	0	490	8118	0	1164	451237
Total weight (kg)	0	0	0	0	0.09	1.74	85.51	40.41	0	81.88	469.03
Chionoecetes spp. Hybrid											
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	0	0	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	Q-28	Q-29	Q-30	Q-31	QP2423	QP2524	QP2625	QP2726	R-22	R-23	R-24
Start Date	7/17/2021	7/19/2021	7/19/2021	7/20/2021	7/4/2021	7/3/2021	7/4/2021	7/6/2021	7/3/2021	7/4/2021	7/4/2021
Duration (hour)	0.52	0.52	0.52	0.51	0.53	0.53	0.52	0.51	0.52	0.52	0.54
Distance Fished (km)	2.79	2.78	2.82	2.83	2.71	2.98	2.83	2.75	2.81	2.82	3
Mid-Latitude (ºN)	60.34	60.32	60.34	60.32	60.17	60.18	60.12	60.18	60.65	60.68	60.68
Mid-Longitude (ºW)	-175.39	-176.03	-176.72	-177.38	-172.34	-173.02	-173.77	-174.35	-171.42	-172.11	-172.79
Bottom Depth (m)	111	121	136	146	58	60	89	99	63	61	44
Bottom Temperature (ºC)	2	2.3	1.7	1.5	3.3	2.5	2.2	1.9	2	1.9	3.1
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	0	0	0	0	0	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	154	1137	0	0	0	0	0
Mature males	0	0	0	0	618	268	67	0	0	0	0
Legal	0	0	0	0	541	268	67	0	0	0	0
Immature females	0	0	0	0	0	1137	0	0	0	0	0
Mature females	0	0	0	0	154	401	0	0	0	0	67
Total weight (kg)	0	0	0	0	17.27	22.68	1.76	0	0	0	0.69
Tanner Crab											
Immature males	0	70	0	139	0	0	0	0	0	0	0
Mature males	0	70	0	0	0	0	0	0	0	0	0
Legal	0	70	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	348	0	0	0	0	0	0	0
Mature females	0	0	0	70	0	0	0	0	0	0	0
Total weight (kg)	0	0.83	0	0.74	0	0	0	0	0	0	0
Snow Crab											
Immature males	5866	2992	2919	9050	309	134	48544	5966	6007	1647	9748
Mature males	2305	2157	3244	15733	77	0	2582	1366	349	0	0
Legal	6914	4592	5709	24226	154	67	21218	4528	2235	358	67
Immature females	0	0	324	209	77	67	0	0	279	0	21653
Mature females	1676	23626	0	0	0	0	638318	359	2654	286	0
Total weight (kg)	38.15	45.85	37.3	152.15	0.99	0.28	641.28	25.97	17.55	3.96	0.9
Chionoecetes spp. Hybrid											
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	0	0	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	R-25	R-26	R-27	R-28	R-29	R-30	R-31	R-32	S-22	S-23	S-24
Start Date	7/4/2021	7/6/2021	7/16/2021	7/16/2021	7/19/2021	7/19/2021	7/20/2021	7/20/2021	7/3/2021	7/4/2021	7/5/2021
Duration (hour)	0.53	0.5	0.52	0.52	0.52	0.53	0.52	0.5	0.51	0.53	0.51
Distance Fished (km)	2.87	2.77	2.84	2.82	2.84	2.89	2.82	2.77	2.79	2.91	2.85
Mid-Latitude (ºN)	60.66	60.67	60.66	60.68	60.67	60.66	60.66	60.67	60.98	61	61
Mid-Longitude (ºW)	-173.47	-174.13	-174.83	-175.46	-176.2	-176.79	-177.51	-178.12	-171.5	-172.14	-172.78
Bottom Depth (m)	66	87	98	107	119	129	147	159	61	64	67
Bottom Temperature (ºC)	2.6	2.3	1.8	1.7	1.9	1.9	1.8	2.1	1.7	1.7	1.7
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	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	0	0	0	0	0	354	283	0	0	0
Mature males	0	0	0	0	0	0	71	0	0	0	0
Legal	0	0	0	0	0	0	71	0	0	0	0
Immature females	0	0	0	0	0	0	141	0	0	0	0
Mature females	0	0	0	0	0	0	141	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	1.2	0.49	0	0	0
Snow Crab											
Immature males	1702	5178	11638	2579	8954	4107	7851	212	2326	1199	211
Mature males	0	719	1164	1190	2802	4613	2546	71	0	0	0
Legal	393	3236	7188	2910	9774	7898	10256	141	399	212	141
Immature females	1440	0	0	0	68	63	2122	141	133	0	0
Mature females	4189	1151	4381	265	17922	126	71	0	1130	71	211
Total weight (kg)	4.9	18.34	47.99	18.7	66.42	51.63	40.84	0.64	5.89	2.26	0.82
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	71	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	0	0	0	0	0	0.11	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	S-25	S-26	S-27	S-28	S-29	S-30	S-31	T-25	T-26	T-27	T-28
Start Date	7/5/2021	7/5/2021	7/16/2021	7/16/2021	7/19/2021	7/21/2021	7/21/2021	7/5/2021	7/5/2021	7/20/2021	7/20/2021
Duration (hour)	0.52	0.51	0.48	0.51	0.52	0.51	0.5	0.52	0.51	0.5	0.41
Distance Fished (km)	2.84	2.77	2.63	2.77	2.69	2.76	2.73	2.85	2.82	2.72	2.18
Mid-Latitude (ºN)	61.01	61.01	60.98	61.01	60.98	61.01	61	61.32	61.33	61.32	61.34
Mid-Longitude (ºW)	-173.5	-174.19	-174.88	-175.55	-176.27	-176.98	-177.64	-173.58	-174.32	-175.01	-175.73
Bottom Depth (m)	75	84	92	102	113	122	135	74	79	87	98
Bottom Temperature (ºC)	1.5	1.8	1.7	1.5	1.6	1.6	1.5	0.2	0.5	1.2	1.5
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	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	0	0	0	0	0	73	0	0	0	0
Mature males	0	0	0	0	71	140	0	0	0	0	0
Legal	0	0	0	0	0	140	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	0	0	0	0.39	0.98	0.31	0	0	0	0
Snow Crab											
Immature males	292	637	9700	7958	2928	2803	729	1695	2606	4371	5660
Mature males	0	71	1013	1187	1000	771	511	0	0	635	1458
Legal	219	425	7890	7191	2999	2172	1094	353	1197	3737	5317
Immature females	73	0	0	0	71	1119	729	71	0	0	0
Mature females	292	212	2389	2862	2857	22804	0	212	775	917	515
Total weight (kg)	1.13	2.38	39.28	36.83	19.1	35	5.92	2.99	6.08	19.11	23.33
Chionoecetes spp. Hybrid											
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	73	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0.13	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	T-29	T-30	U-25	U-26	U-27	U-28	U-29	V-25	V-26	V-27	V-28
Start Date	7/22/2021	7/21/2021	7/21/2021	7/20/2021	7/20/2021	7/22/2021	7/22/2021	7/21/2021	7/21/2021	7/22/2021	7/22/2021
Duration (hour)	0.53	0.52	0.51	0.51	0.51	0.51	0.49	0.51	0.51	0.5	0.5
Distance Fished (km)	2.83	2.79	2.84	2.78	2.8	2.82	2.69	2.67	2.85	2.71	2.74
Mid-Latitude (ºN)	61.33	61.33	61.67	61.67	61.66	61.67	61.66	61.98	62.02	61.99	62
Mid-Longitude (ºW)	-176.31	-176.97	-173.66	-174.48	-175.09	-175.83	-176.45	-173.75	-174.5	-175.23	-175.83
Bottom Depth (m)	106	117	69	77	85	95	104	63	73	82	92
Bottom Temperature (ºC)	1.4	1.3	0.3	-0.2	0.3	0.9	1.1	-0.3	-0.6	-0.3	0
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	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0
Tanner Crab											
Immature males	0	0	0	0	0	0	70	0	0	0	0
Mature males	0	71	0	0	0	0	0	0	0	0	0
Legal	0	71	0	0	0	0	0	0	0	0	0
Immature females	0	71	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	0.49	0	0	0	0	0.23	0	0	0	0
Snow Crab											
Immature males	997	5346	1524	8137	17333	1261	907	3015	14708	3890	2395
Mature males	399	1996	69	1415	2411	664	140	0	1673	604	1730
Legal	931	3991	554	4882	15379	1726	628	294	5158	2280	3327
Immature females	0	5274	208	0	65	0	0	368	2370	0	0
Mature females	731	356	208	1698	1629	199	209	368	3485	469	466
Total weight (kg)	6.65	22.63	3.49	31.56	74.56	9.18	3.59	6.05	42.06	13.26	21.05
Chionoecetes spp. Hybrid											
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	0	0	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 eastern Bering Sea bottom trawl survey stations.

Station	Z-05
Start Date	6/10/2021
Duration (hour)	0.52
Distance Fished (km)	2.86
Mid-Latitude (ºN)	54.68
Mid-Longitude (ºW)	-165.14
Bottom Depth (m)	82
Bottom Temperature (ºC)	5.8
Red King Crab	
Immature males	0
Mature males	0
Legal	0
Immature females	0
Mature females	0
Total weight (kg)	0
Blue King Crab	
Immature males	0
Mature males	0
Legal	0
Immature females	0
Mature females	0
Total weight (kg)	0
Tanner Crab	
Immature males	214
Mature males	0
Legal	0
Immature females	571
Mature females	0
Total weight (kg)	0.11
Snow Crab	
Immature males	0
Mature males	0
Legal	0
Immature females	0
Mature females	0
Total weight (kg)	0
Chionoecetes spp. Hybrid	
Males ≤ 77 mm	0
Males ≥ 78 mm	0
Immature females	0
Mature females	0
Total weight (kg)	0

Appendix B. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 Bristol Bay retow stations.

Station	G-08	G-09	G-10	G-11	G-12	G-13	G-14	H-09	H-10	H-11	H-12
Start Date	8/7/2021	8/7/2021	8/7/2021	8/8/2021	8/8/2021	8/9/2021	8/9/2021	8/11/2021	8/10/2021	8/10/2021	8/8/2021
Duration (hour)	0.53	0.53	0.53	0.52	0.52	0.53	0.52	0.53	0.52	0.53	0.53
Distance Fished (km)	2.73	3.06	2.93	2.82	2.83	2.84	2.82	2.88	2.87	2.87	2.83
Mid-Latitude (ºN)	56.99	57.02	57	56.99	57	57.01	56.99	57.33	57.33	57.33	57.32
Mid-Longitude (ºW)	-163.42	-162.8	-162.19	-161.58	-160.97	-160.33	-159.7	-162.75	-162.16	-161.54	-160.94
Bottom Depth (m)	65	60	59	69	63	64	53	47	51	56	64
Bottom Temperature (ºC)	4.4	5.3	5.4	6.4	6.1	6.7	8.5	6.9	7.6	5.6	5.8
Red King Crab											
Immature males	145	65	150	0	0	0	0	0	71	285	72
Mature males	436	851	526	143	287	0	0	72	353	285	144
Legal	364	720	450	72	215	0	0	72	283	285	72
Immature females	0	0	0	0	72	0	0	0	0	214	0
Mature females	2,036	1,898	751	859	359	0	0	435	71	1,281	1,154
Total weight (kg)	56.84	70.93	28.74	18.09	16.58	0	0	13.75	13.63	31.05	24.45
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	0	0	0	0	0	0	0	0	0	0
Bairdi Tanner Crab											
Immature males	655	131	450	0	0	148	0	290	71	71	72
Mature males	145	196	225	72	0	0	0	362	71	71	72
Legal	0	196	75	72	0	0	0	145	71	71	72
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	75	0	0	0	0	0	0	0	0
Total weight (kg)	3.78	2.69	4.27	0.72	0	0	0.49	3.39	1.58	1.22	0.97
Opilio Tanner Crab											
Immature males	0	0	75	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	0	0.43	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0	0

Appendix B. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 Bristol Bay retow stations.

Station	H-13	I-08	I-09	I-10	I-11	I-12	I-13	I-14	J-11
Start Date	8/9/2021	8/11/2021	8/11/2021	8/10/2021	8/10/2021	8/8/2021	8/8/2021	8/9/2021	8/10/2021
Duration (hour)	0.53	0.53	0.54	0.54	0.52	0.53	0.52	0.53	0.52
Distance Fished (km)	2.8	2.79	2.92	2.94	2.83	2.86	2.82	2.88	2.75
Mid-Latitude (ºN)	57.34	57.66	57.66	57.65	57.66	57.66	57.68	57.67	58
Mid-Longitude (ºW)	-160.28	-163.37	-162.75	-162.13	-161.52	-160.88	-160.28	-159.64	-161.48
Bottom Depth (m)	61	47	44	47	52	56	53	50	54
Bottom Temperature (ºC)	7.2	7.3	6.9	6.7	6.4	7	8	8.7	7
Red King Crab									
Immature males	0	0	0	0	147	0	370	217	542
Mature males	0	75	0	141	74	0	0	0	0
Legal	0	75	0	141	74	0	0	0	0
Immature females	0	0	0	0	147	0	222	0	309
Mature females	143	150	0	141	735	142	0	0	0
Total weight (kg)	3.85	6.92	0	8.06	14.84	3.70	1.25	0.41	2.32
Blue King Crab									
Immature males	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0
Bairdi Tanner Crab									
Immature males	0	150	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.52	0	0	0	0	0	0	0
Opilio Tanner Crab									
Immature males	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0
Hybrid Tanner Crab									
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0

Appendix B. – Tow details, crab density (number nmi-^{2}), and catch weight at 2021 Bristol Bay retow stations.