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The 2023 Eastern and Northern Bering Sea Continental Shelf Trawl Surveys: Results for Commercial Crab Species

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January 2024

U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Alaska Fisheries Science Center

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The 2023 Eastern and Northern Bering Sea Continental Shelf Trawl Surveys: Results for Commercial Crab Species

L. S. Zacher, J. I. Richar, E. J. Fedewa, E. R. Ryznar, and M. A. Litzow

Kodiak Laboratory
Resource Assessment and Conservation Engineering Division
Alaska Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
301 Research Court
Kodiak, AK 99615

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ABSTRACT

The eastern Bering Sea (EBS) bottom trawl survey has been conducted annually by the National Marine Fisheries Service since 1975, with the entire station grid standardized in 1988. The purpose of this survey is to collect data on the distribution and abundance of crabs, groundfish, and other benthic resources. These data are used to estimate population abundance and biomass for the management of commercially important species. In 2023, 375 total stations were sampled on the eastern Bering Sea shelf between 30 May and 3 August.

The 2023 total combined biomass of male crabs of harvestable size (legal for *Paralithodes* spp., industry-preferred size for *Chionoecetes* spp.) for all eastern Bering Sea stocks was 35,435 t, only 2% higher than the record-low estimate from 2021. Abundance estimates for industry-preferred (≥ 102 mm carapace width) male and mature female snow crab (*Chionoecetes opilio*) were 19% and 29% lower, respectively, than 2022 estimates and the lowest estimates in both time series. There was moderate recruitment into the smaller snow crab size classes; estimated abundance of small males (< 95 mm carapace width) increased by 43%, while the abundance of immature females declined by 1%. Abundance estimates for Tanner crab (*C. bairdi*) east of 166° W declined across all size/sex categories from 2022 estimates, while abundance estimates for Tanner crab west of 166° W increased across all categories. Western Tanners had the largest cohort of small juvenile crab (~30-45 mm carapace width) ever observed in the time series. Abundance estimates for Bristol Bay and Pribilof Island red king crab (*Paralithodes camtschaticus*) increased from 2022 estimates for mature females, but declined for mature males. A single station was responsible for 37% of the total catch of mature female Bristol Bay red king crab. St. Matthew Island blue king crab (*P. platypus*) abundance estimates decreased from 2022 estimates across all size-sex categories. Pribilof Islands blue king crab abundance remained low.

Following the standard eastern Bering Sea survey, 115 stations were sampled in the northern Bering Sea (NBS), encompassing the region south of the Bering Strait, and including Norton Sound. Survey effort was reduced from the standard 143 stations sampled in previous years. Sampling occurred between 29 July and 20 August. Immature snow crab continue to be abundant in the NBS, although abundance estimates declined from 2022. Compared with 2022, abundance estimates for mature female snow crab increased, while abundance estimates declined for mature

and larger-sized male snow crab. The abundance estimate for NBS mature male snow crab was higher than the estimate for the EBS, although the biomass estimate for mature males was higher in the EBS, highlighting the larger size at maturity in the EBS. For NBS blue king crab and Norton Sound red king crab, abundance estimates for mature males more than doubled, while abundance estimates declined considerably for mature females from 2022 estimates.

Biomass estimates from the 2023 survey, reported in metric tons (t) and pounds (lb) with 95% confidence intervals (± 1.96 SE) for legal and preferred-size males of each commercial crab stock in the EBS and NBS. Size classes for carapace length (CL) and carapace width (CW) are given in inches and millimeters. The legal size classes defined by Alaska Department of Fish and Game (ADF&G) are in inches and include spines, while those listed in millimeters exclude spines.

	2023 legal or preferred-size male biomass (±95% CI)		
Stock	Size	t	lb
Bristol Bay District red king crab	≥ 135 mm CL	14,127	31,144,417
Legal Size	(≥ 6.5 in. CW)	(5,125)	(11,298,544)
Pribilof District red king crab	≥ 135 mm CL	2,742	6,045,479
Legal Size	(≥ 6.5 in. CW)	(1,661)	(3,662,178)
Norton Sound red king crab	≥ 104 mm CL	2,056	4,532,110
Legal Size	(≥ 4.8 in CW)	(1,323)	(2,916,223)
Pribilof District blue king crab	≥ 135 mm CL	0	0
Legal Size	(≥ 6.5 in. CW)	(0)	(0)
St. Matthew Is. Section blue king crab	≥ 120 mm CL	1,162	2,562,489
Legal Size	(≥ 5.5 in. CW)	(1,009)	(2,224,368)
Tanner crab, east of 166° W	≥ 120 mm CW	4,702	10,366,937
Legal Size	(≥ 4.8 in. CW)	(1,617)	(3,565,646)
Preferred Size	≥ 125 mm CW	3,581	7,895,318
	(≥ 4.9 in. CW)	(1,315)	(2,898,276)
Tanner crab, west of 166° W	≥ 110 mm CW	6,473	14,270,284
Legal Size	(≥ 4.4 in. CW)	(1,569)	(3,457,989)
Preferred Size	≥ 125 mm CW	2,381	5,249,401
	(≥ 4.9 in. CW)	(775)	(1,709,214)
Snow crab	≥ 78 mm CW	20,999	46,294,555
Legal Size	(≥ 3.1 in. CW)	(5,227)	(11,522,603)
Preferred Size	≥ 102 mm CW	11,441	25,223,206
	(≥ 4.0 in. CW)	(3,365)	(7,417,483)

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INTRODUCTION

Survey History and Purpose

Foreign vessels began fishing for red king crab (*Paralithodes camtschaticus*) in Bristol Bay as early as 1930 (AFB & ADF 1954), a move which prompted the development of U.S. surveys and commercial fisheries in the Bering Sea (summarized in Zimmermann et al. 2009). Early exploratory bottom trawl surveys by U.S. government agencies began in the Bering Sea in 1940, primarily concentrated in Bristol Bay, but with some samples stretching farther north to Norton Sound and Saint Lawrence Island (Zimmermann et al. 2009). At that time red king crab were the most lucrative resource, and were thus the primary focus of surveys and developing U.S. fisheries. Surveys continued over the next two decades, often as cooperative arrangements between the private fishing industry and government agencies, with the goal of identifying distributional patterns and the best harvesting practices (Zimmermann et al. 2009). The first gridded survey was conducted in 1955 (INPFC 1956) and by 1957 a square grid, with stations spaced 20 nautical miles (nmi) apart, was adopted (USFWS 1957).

The first large-scale survey of the eastern Bering Sea (EBS) shelf was conducted in 1975, using the same square grid that was developed in 1957; the original purpose was to assess potential resource impacts from offshore oil development (Pereyra et al. 1978). Sampling was conducted over the shelf between the 20 m and 200 m isobaths from the Alaska Peninsula north to approximately 62°N. Since then the survey has been conducted annually, with the exception of 2020 due to restrictions imposed by the COVID-19 pandemic. In the early years, spatial extent varied drastically, and in 1982 the survey methods and gear were standardized (Stauffer 2004). Additional stations, called “corner stations”, were added around the Pribilof Islands and Saint Matthew Island in 1981 and 1983, respectively, to better sample blue king crab populations. The last remaining stations were added to the northwest corner of the EBS survey grid in 1988, creating the final standardized grid (Fig. 1).

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 been historically assessed during the survey include red king crab (*P. 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), "Tanner crab" will be used in this document. Given the change in survey grid area in the 1970s and 1980s, the spatial extent of the stock determines the number of years over which estimates of biomass and abundance can be directly compared. In this document we use 1988 as the start of the time series for Tanner crab, snow crab, and hair crab. The king crab stocks are more restricted to specific regions, thus we use 1979 as the start date for Bristol Bay red king crab data, 1981 for the Pribilof king crabs, 1983 for Saint Matthew Island blue king crab, and 1988 for Northern District red king crab.

Since 1988, 376 standard stations are included in the EBS trawl survey, covering approximately 140,350 square nmi^2, with station depths ranging from 20 to 200 m (Fig. 1). Station Z-04 (AZ-0504) is excluded from crab population estimations because the station has a limited area of crab habitat within a range of depths accessible to survey trawl gear. The survey begins in the northeast section of Bristol Bay between late May and early June, and eight stations are typically sampled every day across two vessels (Fig. 1). The standard survey is completed in late July to early August at the northwestern edge of the survey grid. Since 1999, in years when the Bristol Bay red king crab reproductive cycle is delayed due to colder water temperatures (1999, 2000, 2006-2012, 2017, and 2021), a subset of Bristol Bay stations are resampled (20 – 30 stations) after the conclusion of the standard survey to improve the accuracy of female size composition and abundance estimates (see Methods). In addition to the EBS survey grid, the northern Bering Sea (NBS) has been surveyed in 2010, 2017, 2018 (with reduced effort), 2019, 2021, 2022, and 2023 (with reduced effort). The NBS survey consists of 144 stations, although one station, AA-21, is excluded from crab data analysis, as much of the station is covered by St. Lawrence Island and it is an experimental station that has only been surveyed in limited years.

Bering Sea Crab Stock Assessment Process

Crab species included in the Federal Bering Sea and Aleutian Islands King and Tanner Crab Fisheries Management Plan (FMP) 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 reviewed by the North Pacific Fishery Management Council (NPFMC) provides current directed fishery catch, bycatch, and survey biomass and size composition data for commercial crab species (Bechtol et al. 2022). The procedure for setting overfishing levels and allowable biological catch is determined by NMFS, while ADF&G sets the annual total allowable catch (TAC) or guideline harvest level (GHL) for each crab stock. The NPFMC Crab Plan Team and the Scientific and Statistical Committee review each assessment and recommend biological reference points associated with the status of each crab stock.

This report summarizes the 2023 survey results for commercially important crab resources in the EBS and NBS. Readers should note that area-swept estimates in this document are indices of abundance and biomass, and are not expected to match the final modeled population estimates reported in the SAFE documents for individual stocks, as the stock assessment models include additional population dynamics information and account for fishery selectivity and survey catchability. Further details of the survey design, history, and fishing gear specifications, in addition to the number and weights of the groundfish species sampled at each standard station during the 2023 survey, will be reported in a separate NOAA Technical Memorandum.

METHODS

Survey Area and Sampling Gear

The 2023 EBS and NBS surveys were conducted on board two chartered fishing vessels, the FV *Alaska Knight* and FV *Northwest Explorer*. The vessels sampled in close proximity to each other for much of the survey, beginning in eastern Bristol Bay and moving westward and northward (Fig. 1). The EBS survey was conducted from 28 May to 3 August, while the NBS survey was conducted from 29 July to 20 August.

The survey stations are divided into strata with either standard or high-density stations. Standard-density strata have stations centered in 20 × 20 nmi (37.04 × 37.04 km) cells. High-density strata, located around the Pribilof Islands and St. Matthew Island, 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 Bering Sea.

The historical distribution of species, in combination with ADF&G management units (Fitch et al. 2012) define crab stock boundaries in this document for blue king crab, red king crab, and Tanner crab (Fig. 2). Snow crab and hair crab are considered single stocks across the entire EBS. In the EBS, red king crab stocks are split into the Bristol Bay District and Pribilof Islands District, while blue king crab are split into the Pribilof Islands District and St. Matthew Island Section of the Northern District. Northern District red king crab are not an FMP crab species and there is no stock assessment or fishery for these crab, but they are included within this report. The EBS Tanner crab population is considered a single stock, but it is split into two fishery management units defined by the ADF&G Board of Fisheries, using 166° W longitude as the boundary between the two. Norton Sound red king crab are the only FMP crab stock that are currently assessed using NBS survey data. Stock-specific stations used in this report are the same stations used in crab stock assessments, with the exception of Tanner crab and Norton Sound red king crab. Only one stock assessment is conducted for Tanner crab, combining the eastern and western portions of the stock into a single assessment. In addition, a different selection of stations is used in the Norton Sound red king crab assessment to standarize area covered by NMFS EBS surveys and ADF&G surveys in the same region.

The ADF&G king crab Registration Area T in Bristol Bay (south of 58° 39′ N and east of 168° W) covers 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 it 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. 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). Here we define Norton Sound red king crab as those crab in the ADF&G Norton Sound Section of ADF&G Registration Area Q and east of 168° W (Fig. 2).

The 2023 survey utilized an 83-112 Eastern otter trawl, which employs an 83 ft (25.3 m) headrope and a 112 ft (34.1 m) footrope (Lauth and Nichol 2013); this is the same gear used in EBS bottom trawl surveys since 1982. The codend mesh size is 8.9 cm stretched and the liner is 3.2 cm. The trawl nets on each vessel were rotated every 20-30 tows (every ~5–7 days) to mitigate potential impacts from changes in net configuration due to fishing. Tows were generally 0.5 h in duration and 1.5 nmi (2.8 km) in length and were 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 height sensor attached to the headrope, and two Marport spread sensors attached to the port and starboard dandylines to measure net height and width during trawling operations. Data on bottom contact of the footrope were combined with GPS data to calculate distance fished (while in contact with the seafloor), 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 sec 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; these instruments are calibrated annually by Sea-Bird Electronics. Bottom depth was calculated by

adding the net height from the net mensuration system to the headrope depth estimated by the SBE-39.

The survey time series is valuable for tracking decadal-scale changes in bottom temperature, but changes in the timing and spatial extent of the survey confound comparison of mean bottom temperatures across years, especially early in the time series. To construct a comparable time series of bottom temperatures, we selected a set of stations that had temperature data missing from no more than 5 years in the 48-year time series (Fig. 4a). We then used multiple imputation to estimate missing temperatures from this restricted set of stations, and used a generalized additive model to account for differences among years in the timing of sampling.

Biological Data Collection

Catch Sorting and Measurement

Following each tow, all crab were removed from the catch, sorted by species and sex, and a total catch weight was obtained for each species. Tanner and snow crab hybrids were identified by a combination of characteristics including the curve of the epistome margin, eye color, carapace shape, and the space between or shape of the rostrum horns (Karinen and Hoopes 1971, Urban et al. 2002). The total catch of crabs was randomly subsampled for biological data collection in cases when a 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 both the sampled and non-sampled crab were recorded and an expansion factor was calculated to determine the final number of each species and sex in a particular tow.

Individual crab carapaces were measured (± 0.1 mm) to provide a size-frequency distribution for each sample. Crab sizes were reported as carapace width (CW) for Tanner and snow crab, and carapace length (CL) for hair crab and all king crab species (Donaldson and Byersdorfer 2005). All size measurements excluded spines. For *Chionoecetes* spp. males, chela heights were taken to determine morphometric maturity (see Maturity Estimates below). In 2023, chela heights were

measured for ≤ 15 snow and Tanner crab per haul. Individual weights were taken for intact crab (i.e., whole, live crab without regenerating or missing limbs) to add to the existing size-weight data for estimating biomass, and to monitor interannual variability in size-weight relationships. For every haul in 2023, individual 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, and from representative size ranges throughout the spatial distribution of each species. Because of their scarcity, weight data were collected for all intact blue king crab encountered.

Shell Condition and Clutch Assessment

In the absence of reliable 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 ADF&G in setting harvest quotas. 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 (Donaldson and Byersdorfer, 2005).

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, 5 = hatching eggs), and the size of the egg clutch (0 = immature, 1 = mature female no eggs, 2 = trace to 1/8, 3 = 1/4, 4 = 1/2, 5 = 3/4, 6 = full).

For mature females, egg condition codes were used to identify a given female's stage in the reproductive cycle. Completion of the reproductive 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.

Maturity Estimates and Legal Size

Maturity for female crab was determined based on morphological characteristics, including the presence of a clutch or shape and size of the abdominal flap (Donaldson and Byersdorfer, 2005).

Mature and legal male size classes are established size cutoffs, which are based on values from the literature 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).

For *Chionoecetes* spp., male maturity size cutoffs have traditionally been set at 95 mm and 68 mm for snow crab from the EBS and NBS, respectively, and 113 mm and 103 mm for Tanner crab east and west of 166° W, respectively. However, size at maturity can vary dramatically among years (Figs. 78, 79, 103, and 104) and these static size cutoffs may result in misleading abundance and biomass estimates for both the mature and immature populations. For the 2023 survey, male biomass and abundance estimates are still presented using these size cutoffs, but we refer to them as "small" and "large" crab rather than "immature" and "mature" crab to emphasize that maturity cannot be simplistically defined for male *Chionoecetes* spp. (e.g., Tables 14 and 17).

Maturity in male *Chionoecetes* spp. can be more accurately determined by the allometric change in chela height, where morphometrically mature crab have a larger chela height relative to their carapace width (Comeau and Conan 1992, Stevens et al. 1993, Tamone et al. 2007). A distribution-based method to estimate *Chionoecetes* spp. maturity status was employed using chela height and carapace width measurements for new hardshell males (Richar et al. 2022). Maturity estimates were conducted separately for Tanner crab east of 166° W, Tanner crab west of 166° W, EBS snow crab and NBS snow crab. The minimum size cutoff for mature crab was specified as 60 mm, 50 mm, and 30 mm for all Tanner, eastern Bering Sea snow crab and northern Bering Sea snow crab, respectively. These size cutoffs were set based on the average size of mature female crab with the expectation that to mate successfully, males should generally be larger than females (Stevens et al. 1993). Maturity estimates using this method are only applicable to new hardshell males since oldshell males molted to maturity across a range of

previous years. All references to mature male *Chionoecetes* in this document will use these chela height derived maturity curves and are applied to new hardshell males only. Chela data are available starting in 1989 for snow crab and 1990 for Tanner crab, with three to four years in each time series when chela data were not collected.

Diseases

EBS 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 disease 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, chalky-pink carapace pigmentation, and white opaque hemolymph (Meyers and Burton 2009). Meat from parasitized crab is harmless to humans, but it is bitter tasting, making it unmarketable. The prevalence of bitter crab disease 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 disease. 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 eye syndrome.

Crab Biomass and Abundance 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, with the exception of hair crab (density estimates only for sub-legal and legal males, and all females). The area swept by the trawl (nmi^2) was calculated as the product of the distance traveled while the net had bottom contact and 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), and changes with the depth of the tow due to changes in scope of the trawl wire (Rose and Walters 1990). For 2023 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 2023, 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. Distance traveled by the trawl was determined from ship GPS positions recorded at the beginning and end of each tow.

All reported historical and current-year biomass estimates are calculated for male and female crab in each 1 mm size bin for each species, using the weight-size relationships developed by the AFSC Kodiak Laboratory (Table 3). The size-weight relationships are described by the expression:

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

where W is the crab weight in grams, L is either CL or CW in millimeters, log(a) is the intercept in log scale and b is the slope. Parameters a and b are estimated from a linear regression fitted to log-transformed size-weight data collected between 2000 and 2009.

The estimated weights for each 1 mm size bin were summed for each station by the size/sex categories (e.g., legal male, mature female). The crab biomass within a given district or section stratum was estimated by averaging crab densities (kg/nmi^2) across all stations within that stratum, while accounting for subsampling, and multiplying by the total area of the stratum specific to that stock. Total biomass was calculated by summing across strata using a stratified

design based on management units (standard density, high-density, ADF&G-defined districts or section stratum). 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 (i.e., assuming a normal error distribution). All biomass estimates and 95% confidence intervals 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 by 2,204.6 for comparison with ADF&G reported values of TAC and GHL. Abundance by 1 mm bin for the crab stocks were calculated using the same procedures as used for biomass calculations, except that numbers of crab were summed by size bin while accounting for subsampling.

The population biomass and abundance estimates reported in this document have substantial uncertainty due to the size of the area being sampled and the aggregative nature of the sampled stocks. These estimates are least precise for small crab due to poor catchability (Somerton et al. 2013) 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 (Vining et al. 2001). The indices here are presented without correcting for catchability; catchability is likely much lower, especially for the smaller size classes. The stock assessment models that incorporate these survey data consider catchability when estimating abundance and biomass.

In years with colder than average bottom water temperatures (1999, 2000, 2006-2012, 2017, 2021), a small number of standard Bristol Bay stations sampled at the beginning of the survey are resampled in late July/August because the Bristol Bay red king crab molt-mate cycle is delayed in colder years and is not complete at the start of the survey. The primary goal of resampling is to improve the accuracy of size composition data for post-molt Bristol Bay red king crab females. Secondary goals are to: 1) improve abundance estimates of mature females by including post-molt females potentially unavailable to survey gear early in the summer; and 2) improve the accuracy of estimates for mature female reproductive status (e.g., fullness of newly extruded clutch). Resampling efforts are considered 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 indicate an incomplete molt-mate cycle, while uneyed embryos indicate a complete cycle. Resample stations are selected based on the density of female red king crab with incomplete molt-mate cycles sampled during the original survey, with consideration of the total mature female distribution. When resampling is conducted, total population estimates for male Bristol Bay red king crabs are calculated using only standard tows from the original sampling in June. Female Bristol Bay red king crab biomass and abundance estimates are calculated by replacing data collected at the resampled stations in June with data collected during the resample event in August, while retaining all data from non-resampled stations.

Centers of Abundance and Mapping

The centers of abundance for male and female crab 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, only the data from the original tows were included. Interpolations for maps of crab density were created using inverse distance weighting, expanding on R packages *akgfmaps* and *coldpool* (Rohan 2022, Rohan et al. 2022).

Special Projects

In addition to the standard survey, there were 15 special projects to collect stock-specific biological data (Table 4):

1) Tag mature female Bristol Bay, Northern District, and Pribilof red king crab with pop-up satellite tags to elucidate seasonal movement trajectories from summer into fall, winter, and spring.
2) Tag mature male Bristol Bay and Northern District red king crab with pop-up satellite tags to elucidate movement trajectories from summer to fall.
3) Test shell condition classification error rate in snow crab.

4) Collect hepatopancreas from immature snow crab that are nearing maturity across six regions in the EBS and three regions in the NBS to assess body condition and lipid allocation.
5) Monitor the prevalence of bitter crab disease by collecting blood samples from immature snow crab in the EBS and NBS for diagnostic PCR assays.
6) Collect eye stalks, hemolymph, and hepatopancreas samples of snow crab to characterize black eye syndrome pathology, the eyestalk microbiome in healthy and diseased snow crabs, quantify eyestalk gene expression, and measure fatty acid compositions.
7) Collect live, immature snow crab to experimentally quantify the impact of temperature on bitter crab disease progression and host mortality with a pilot laboratory study.
8) Collect live, immature snow crab for laboratory experiments on the importance of temperature and dietary lipids.
9) Collect live, Tanner crab for ocean acidification laboratory experiments.
10) Collect live, snow crab for ocean acidification laboratory experiments.
11) Collect live brittle stars, *Ophiura sarsii*, for ocean acidification laboratory experiments.
12) Collect live snow crab with and without black eye syndrome for experiments on the effects of temperature and disease progression.
13) Collect live Norton Sound red king crab for male size at maturity laboratory experiments.
14) Collect frozen specimens for the ADF&G observer program.
15) Collect frozen specimens for the NMFS observer program.

Pop-up satellite tags were placed on 40 mature male and 75 mature female red king crab. Tags were set to release from male crabs and transmit location information in October 2023, while tags on females were set to release in October 2023, January 2024, and April 2024. Two-hundred and forty immature snow crab and 156 immature Tanner crab were collected and transported to AFSC's Kodiak Laboratory for ocean acidification experiments and approximately 120 immature snow crab were brought to the same lab for bitter crab disease experiments. Norton Sound red king crab and *Ophiura sarsii* collections were attempted, but unsuccessful. Forty-two snow crab were collected live and transported to ADF&G's Kodiak Laboratory for the black eye syndrome project. Approximately 300 juvenile snow crab were collected live and transported to AFSC's Newport Laboratory for experiments on temperature and diet. Preserved samples were

collected for projects on lipid condition metrics (hepatopancreas/whole crab samples from 199 snow crab in the EBS and 120 in the NBS), black eye syndrome (70 snow crab eye stocks and 55 fatty acid samples), and bitter crab disease (hemolymph samples from 170 snow crab in the EBS and 100 in the NBS). Shell condition classification error rate was measured for snow crab. For maturity estimates, chela heights were measured for 2,506 male Tanner crab and 1,544 male snow crab. Five frozen specimens were collected for the NMFS observer program and seven specimens were collected for the ADF&G observer program. All collections were completed within the guidelines stipulated by the survey's Scientific Research Permits (NOAA: 2023-4 & 2023-5) and Aquatic Resource Permit (ADF&G: CF-22-022), as well as project-specific permits (P-23-012, CF-23-047, CF-23-101, CF-23-070, CF-23-065, CF-23-068).

RESULTS

Eastern Bering Sea Survey Overview

The 2023 EBS bottom trawl survey consisted of 375 stations sampled from 28 May to 3 August (Fig. 1). The survey was conducted over a total 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 Appendix A. The mean distance fished across all tows was 1.54 nmi (SD = 0.12 nmi), with a range of 0.58 to 2.08 nmi and the mean tow duration was 30.8 minutes (SD = 2.2 min, range = 11.3 to 39.4 min) for standard stations. The fishing depth ranged from 19 to 169 m with a mean gear depth of 78.5 m (SD = 33.4 m) for standard stations. Mean net width for standard tows ranged from 12.9 to 20.3 m and the average mean net width for all 375 standard tows was 17.2 m (SD = 1.0 m). The 2023 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.

In 2023, the mean bottom water temperature was 2.2 °C (SD = 1.7), ranging from -1.6 °C to 5.4 °C (Fig. 3). Similar to 2022, a narrow cold pool of water < 2 °C extended down the middle

shelf between the 50 and 100 m isobaths, as far south as the Pribilof Islands, but not reaching into Bristol Bay. Water < -1 °C extended south of Saint Matthew Island, which is the furthest south these very cold waters have reached since 2015. For the subset of stations selected for standardizing the bottom temperature time series, the resulting estimate for mean bottom temperature in 2023 was 2.89 °C, similar to 2022 (Fig. 4b).

Population biomass of male crabs of harvestable size (legal for *Paralithodes* spp., industry-preferred size for *Chionoecetes* spp.) in the EBS has fluctuated dramatically over the 1988 – 2023 time series for the seven commercial crab stocks (Fig. 5). Biomass of harvestable crabs was high in the late 1980's and early 1990's, reaching a peak in 1991 at over 400,000 t. Throughout the 2000s and early 2010s harvestable biomass fluctuated around 100,000 t, but began to decline steadily in 2016 and has been below 50,000 t for the past three years. The 2023 total biomass of crabs of harvestable size in the EBS for all stocks was 35,435 t, only 2% higher than the record-low estimate from 2021 (Fig. 5).

Northern Bering Sea Survey Overview

The 2023 NBS trawl survey consisted of 115 total bottom trawls conducted from 29 July to 20 August, and covered an area of approximately 58,145 nmi^2 (Fig. 1). The survey occurred immediately after the eastern Bering Sea survey. In 2023 the entire northern Bering Sea grid was not completed (full grid = 143 stations; Fig. 1), and biomass and abundance estimates were calculated using the sampled stations and expanded to the entire grid area. The latitude and longitude of the midpoint of each successful tow along with the duration (hr), distance fished (km), bottom depth (m), and bottom temperatures (°C) are listed in Appendix B. The mean distance fished across all tows was 1.55 nmi (SD = 0.14 nmi) with a range of 0.71 to 1.73 nmi and the mean tow duration was 30.7 minutes (SD = 2.6 min, range = 14.0 to 32.8 min) for standard stations. The fishing depth ranged from 10 to 76 m with a mean gear depth of 34.7 m (SD = 14.6 m) for standard stations. Mean net width for standard tows ranged from 13.1 to 18.7 m and the average mean net width for all 115 standard tows was 15.3 m (SD = 1.2 m). The mean bottom water temperature during the northern Bering Sea survey was 4.0 °C (SD = 3.8), ranging from -1.6 °C to 11.1 °C (Fig. 5a). Waters less than 0 °C occurred south and west of St.

Lawrence Island (Fig. 3). Warmer bottom temperatures (> 6 °C) were evident in Norton Sound and in shallow waters along the Alaska coastline.

Bristol Bay District Red King Crab

Red king crab (*Paralithodes camtschaticus*) were caught at 66 of the 136 stations in the Bristol Bay management district during the standard survey, and 100% of these crab were measured (Table 5). Estimated biomass of legal-sized male crab (± 95% CI) in 2023 was 14,127 ± 5,125 t (4.8 ± 1.7 million crab; Tables 6 and 7; Fig. 6). This estimate is lower than the 2022 estimate and the previous 20-year average of 26,728 ± 5,880 t. The center of abundance for legal males was further to the northeast than most other years (Fig. 36). The majority of legal males were concentrated around central Bristol Bay and Port Moller, primarily occurring east of column 8 (Fig. 29). Few legal males were found along the northern Bristol Bay district boundary (Fig. 29). Forty-four percent of legal-sized males were new hardshell crab, while 40% were oldshell, and 16% were very oldshell (Fig. 13). The distribution of legal males across Bristol Bay was fairly homogeneous in regards to shell condition, with only a weak trend of new hardshell crab in deeper waters and older shell crab closer to shore around Bristol Bay (Fig. 35).

Mature and immature male Bristol Bay red king crab biomass estimates were 16,796 ± 5,683 t (6.4 ± 2.1 million crab) and 3,804 ± 1,397 t (5.8 ± 2.2 million crab), respectively (Tables 6 and 7). Both size categories were distributed throughout Bristol Bay (Figs. 30 and 31). In 2023 mature male biomass and abundance estimates decreased, while immature males increased from 2022 estimates (Tables 6 and 7; Fig. 6). Compared with historic values, the male population remains low across all size classes (Fig. 6), with no evidence of significant new recruitment (Fig. 10).

Of the 380 mature females sampled in late May through June, 94% had uneyed eggs, 1% were barren, 5% had empty egg cases and <1% had eggs in the process of hatching (Figs. 22 and 28). Ninety-three percent of mature females were carrying clutches that were either three-quarters or completely full (Figs. 25 and 28). Ninety-three percent of mature females were new hardshell, 2% had a soft shell or were in the process of molting, and 5% were oldshell (Figs. 19 and 28).

Overall, 6% of mature females had not completed the annual molt-mate cycle at the time of sampling, which was below the 10% threshold to consider resampling. The 2023 average bottom water temperature in the Bristol Bay District was 3.3°C, which was the second coldest year when resampling was not necessary (Fig. 38). Mature females with an incomplete reproductive cycle tended to occur in the two northernmost rows in the Bristol Bay District, above the 50 m isobath (Fig. 39).

The 2023 mature female red king crab biomass estimate was 16,723 ± 13,381 t (11.0 ± 8.4 million crab) and the immature female biomass estimate was 690 ± 488 t (2.1 ± 1.3 million crab; Tables 6 and 7). The mature female biomass estimate in 2023 increased by 63% from the 2022 estimate, but was well below the 20-year average of 31,304 ± 6,222 t (Table 6). In addition, the estimate for immature female biomass was less than the 2022 value (Table 6). Female abundance across all size classes remains low compared with historic values (Fig. 6), with no strong signal of new recruitment (Figs. 10 and 16). Thirty-seven percent of mature female red king crab were caught at one station north of Port Moller, but they were also found within central Bristol Bay below 50 m (Fig. 32). The 2023 center of abundance for mature females was average for the time series (Fig. 37). Immature females were generally found in shallower waters closer to shore, as well as in central Bristol Bay (Figs. 33 and 34).

Pribilof District Red King Crab

Red king crab were caught at 19 of the 77 stations in the Pribilof District in 2023, most of which were in the high-density sampling area (Fig. 34), and all of which were measured (Table 5). Legal male biomass was 2,742 ± 1,661 t (0.7 ± 0.4 million crab; Tables 8 and 9; Fig. 7), which was lower than both 2022 and the previous 20-year average of 4,880 ± 1,656 t (Table 8). Thirty-five percent of legal-sized males were new hardshell (Fig. 14). Both new hardshell and oldshell legal males were distributed around St. Paul Island (Fig. 35).

The biomass estimate for mature males was 2,742 ± 1,661 t (0.7 ± 0.4 million crab) and 3 ± 5 t (0.1 ± 0.1 million crab) for immature males (Tables 8 and 9; Fig. 7). Mature males were

distributed around most of St. Paul Island (Fig. 30), while immature males were only caught at three stations, spread throughout the Pribilof District (Fig. 31).

The biomass estimate for mature females was 1,203 ± 1,130 t (0.6 ± 0.5 million crab) and 1 ± 2 t (0.03 ± 0.05 million crab) for immature females (Tables 8 and 9; Fig. 7). Female biomass estimates are imprecise due to the limited number of tows with crab catches (Fig. 34; Appendix A), but 2023 mature female biomass was below the previous 20-year average biomass estimate (1,475 ± 474 t; Table 8). Ninety-seven percent of the mature females were new hardshell (Fig. 20) and had uneyed eggs, while 3% had empty egg cases (Fig. 23). Eighty-nine percent of mature females with eggs had clutches that were full or three-quarters full (Fig. 26). Mature females were primarily caught on the eastern side of St. Paul Island (Fig. 32).

Historically, red king crab were not abundant in the Pribilof District and landings were taken incidentally during the blue king crab fishery. The population began to increase in the 1990s and the red king crab fishery first opened in 1993, while the blue king crab fishery 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 red king crab population has remained relatively stable since the 1990s (Fig. 7), although few juveniles are observed (Figs. 11, 14, and 17).

Northern District Red King Crab

Red king crab were caught at 26 stations in the Northern District (Fig. 34), outside of the current management units where red king crab are commercially fished (Fig. 2). Since no stock assessment or fishery exists for the Northern District, we report survey results for the legal and mature male size classes that are used in the Pribilof and Bristol Bay Districts (Table 1). The 2023 biomass estimate of legal-sized males (≥ 135 mm) was 1,426 ± 733 t (0.5 ± 0.2 million crab), while the biomass estimates for mature and immature males were 1,831 ± 771 t (0.8 ± 0.3 million crab) and 224 ± 179 t (0.3 ± 0.2 million crab), respectively. The mature male abundance estimate decreased from 2022, but remains within the range observed since 2006

(Fig. 8). Northern District males occupied most survey stations above the 50 m isobath (Figs. 30 and 31).

Estimated biomass of mature and immature female red king crab was 1,283 ± 465 t (1.0 ± 0.4 million crab) and 57 ± 51 t (0.1 ± 0.1 million crab), respectively (Fig. 8). The 2023 abundance of mature females declined from 2022, but was the fourth highest value in the timeseries (Fig. 8). Northern District females were primarily found south of Nunivak Island and above the 50 m isobath (Figs. 32 and 33).

Norton Sound Red King Crab

Red king crab were caught at 24 stations in the northern Bering Sea, 23 of which were in Norton Sound (as defined in Fig. 2). Legal male Norton Sound red king crab (≥ 104 mm CL) had a biomass estimate of 2,214 ± 1,413 t (1.9 ± 1.2 million crab), resulting in a 161% increase in biomass from 2022 (Tables 34 and 35; Fig. 9). Legal males were distributed near the mouth of Norton Sound, especially along the northern shore (Fig. 29).

The biomass estimate for mature males (≥ 94 mm CL) was 2,522 ± 1,610 t (2.3 ± 1.5 million crab) and 163 ± 147 t (0.8 ± 0.6 million crab) for immature males (Tables 34 and 35; Fig. 9). Mature males were distributed throughout most of Norton Sound, especially on the northern side of the mouth of Norton Sound (Figs. 30 and 34). Immature males were most abundant along the northern edge of Norton Sound (Figs. 31 and 34). A large cohort of immature crab was first detected in the 2017 survey; throughout subsequent years this cohort moved through the size classes, with the majority of crab reaching legal size by 2022 (Fig. 12). In 2023, there was minimal growth of this cohort, likely caused by crab reaching the size that males begin skip molting for a year or more (Fig. 15). A small peak in abundance for crab around 20 mm carapace length suggests another potential recruitment pulse into this population (Fig. 12). In 2023, 59% of male Norton Sound red king crab were in a new hardshell condition, while 37% were in oldshell condition and 4% had very old shells (Fig. 15).

The biomass estimate for mature females was 406 ± 434 t (0.6 ± 0.6 million crab), which was a 65% decline from 2022 (Tables 34 and 35; Figs. 9 and 18). The biomass estimate for immature females was of 35 ± 48 t (0.7 ± 0.6 million crab) (Tables 34 and 35; Fig. 9). Mature females were found in central Norton Sound (Figs. 32 and 34), while immature females were further east and along the northern shore of Norton Sound (Figs. 33 and 34). Females primarily had new hardshells (95%; Fig. 21) and all clutches of gravid females had uneyed eggs (Fig. 24). Ninety-four percent of mature females had clutches that were full or three-quarters full, and none were barren (Fig. 27).

Red king crab had a low abundance outside Norton Sound in the northern Bering Sea. One mature male red king crab was caught outside Norton Sound, which was not included in the biomass estimates reported for Norton Sound red king crab in the previous paragraphs (Fig. 34).

Pribilof District Blue King Crab

Blue king crab (*Paralithodes platypus*) were caught at three of the 86 stations in the Pribilof stock boundary area in 2023 (Fig. 60). All individuals were caught in the high-density sampling area, and 100% of crab were measured (Table 5). Only two males were caught in the Pribilof District, both of which were of immature size. One was a very oldshell male, just below the mature size cutoff, while the other was a new hardshell crab with a carapace length of 10 mm. Immature male biomass was estimated at 24 ± 47 t (0.03 ± 0.05 million crab; Tables 10 and 11; Fig. 40). Male blue king crab were caught to the east-southeast of St. Paul Island (Fig. 57).

The biomass estimate for mature females was 118 ± 231 t (0.1 ± 0.2 million crab) and no immature females were caught (Tables 10 and 11; Fig. 40). Mature female biomass in 2023 was less than the previous 20-year average of 314 ± 135 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). One hundred percent of Pribilof District mature

female blue king crab were barren with old hardshells. All seven female blue king crab were caught at the same station, H-19, east of Saint Paul Island (Fig. 58).

The last strong cohort of Pribilof Island blue king crab moved through the population in the 1990's, but no substantial recruitment has occurred since then (Fig. 43). Male and female blue king crab abundance estimates have been extremely low in recent years, with no evidence of an increasing trend (Fig. 40).

St. Matthew Island Section, Northern District Blue King Crab

Blue king crab were caught at 13 of the 56 total stations in the St. Matthew Island Section, primarily in the high-density sampling area (Fig. 60), and all crab were measured (Table 5). Legal male crab biomass was estimated at 1,162 ± 1,009 t (0.6 ± 0.6 million crab; Tables 12 and 13; Fig. 41). The legal male biomass estimate was less than 2022 and well below the previous 20-year average of 2,378 ± 611 t. In 2023, 80% of the legal-sized males were new hardshell crab (Fig. 45). The legal males were distributed around St. Matthew Island, particularly at nearshore stations to the north and south of the island (Fig. 55).

The mature male biomass estimate was 1,719 ± 1,433 t (1.1 ± 0.9 million crab) and the immature male biomass estimate was 557 ± 536 t (0.9 ± 0.8 million crab; Tables 12 and 13; Fig. 41). One or two stations often greatly affect the population estimates for St. Matthew Island blue king crab. In 2023, 35% of mature males and 39% of immature males were caught at QP-2423. Similar to recent years, males were distributed in nearshore areas around St. Matthew Island (Figs. 56 and 57).

The mature female blue king crab biomass estimate was 181 ± 285 t (0.3 ± 0.5 million crab) and the immature female biomass estimate was 155 ± 185 t (0.4 ± 0.4 million crab; Tables 12 and 13; Figs. 41 and 47). The 2023 mature female biomass estimate is much lower than 2022, but similar to the previous 20-year average (166 ± 84 t), although estimates of female blue king crab biomass are imprecise because they prefer rocky untrawlable habitat. Seventy-five percent of mature females and 53% of immature females were caught at one station (QP-2423) to the

southeast of St. Matthew Island (Figs. 58 and 59). Twenty-two percent of mature females were new hardshell, while 78% were oldshell (Fig. 49). Seventy-eight percent had empty egg cases, 17% were barren, and 6% had a three-quarter full clutch of uneyed eggs (Figs. 51 and 53).

The St. Matthew blue king crab population has gone through several peaks in abundance (Figs. 41 and 44). 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. Biomass and abundance estimates for females and immature crab had increased over the past few surveys, but in 2023 they declined over all size/sex categories (Fig. 41).

Northern Bering Sea Blue King Crab

Blue king crab were caught at 23 of the 115 sampled northern Bering Sea stations in 2023, primarily north of St. Lawrence Island and as far north as the Bering Strait (Figs. 55 – 59). For the purposes of this document, size categories for the Norton Sound red king crab stock were applied to northern Bering Sea blue king crab, due to the lack of established size categories for this area (Table 1). Previous versions of this document used the size categories for Saint Matthew Island blue king crab, but these categories appeared to have an unrealistically large size at maturity for mature male northern Bering Sea blue king crab. Legal male blue king crab biomass was estimated at 1,291 ± 1,030 t (1.0 ± 1.6 million crab), which was a 321% increase from the 2022 value (Tables 36 and 37; Fig. 42). The biomass estimate of mature and immature males was 1,865 ± 2,483 t (1.7 ± 2.2 million crab) and 879 ± 578 t (2.4 ± 1.6 million crab), respectively (Tables 36 and 37; Fig. 42). In 2023, 93% of male blue king crab were in a new hardshell condition, 5% were in molting or softshell conditions, and 2% were in an old shell condition (Fig. 46).

Biomass estimates of mature and immature female blue king crab were 368 ± 210 t (0.7 ± 0.4 million crab) and 848 ± 628 t (2.5 ± 1.8 million crab), respectively (Tables 36 and 37; Fig. 42). Seventy-one percent of mature females were in new hardshell condition, with the remaining females being oldshell condition (Fig. 50). Of the mature females, 47% had full or

three quarters full clutches, while 53% were barren (Fig. 54). For those females with clutches, 100% had uneyed eggs (Fig. 52).

Eastern Bering Sea Tanner Crab

Tanner crab (*Chionoecetes bairdi*) were caught at 80 of the 120 stations east of 166° W (Fig. 86) and 100% of legal crab were measured (Table 5). The biomass estimate for legal male Tanner crab east of 166° W (≥ 120 mm carapace width) was 4,702 ± 1,617 t (6.8 ± 2.3 million crab; Tables 14 and 17; Fig. 61). Sixty-nine percent of legal males were of industry-preferred size (≥ 4.9 in CW), with a biomass estimate of 3,581 ± 1,315 t (4.7 ± 1.7 million crab; Tables 14 and 17). The 2023 estimated biomass of legal Tanner crab in the eastern area was lower than in 2022 and well below the previous 20-year average biomass of 12,749 ± 3,449 t. In 2023, 64% of sampled legal males east of 166° W were new hardshell, down from 75% in 2022 (Fig. 66). East of 166°W the large (≥ 113 mm CW) male Tanner crab biomass estimate was 6,382 ± 1,946 t (10.4 ± 3.0 million crab) and the small (< 113 mm CW) male biomass estimate was 3,956 ± 1,131 t (42.1 ± 16.7 million crab). Both large and small male crab biomass and abundance estimates decreased from 2022 values and remain relatively low (Fig. 61). Similarly, the 2023 biomass estimate of morphometrically mature Tanner crab east of 166°W (using chela-based maturity) was 4,435 ± 1,810 t (8.0 ± 3.2 million crab), a decline from 2022 (Tables 15 and 18). Size at 50% maturity declined for the third year and was well below the traditional maturity cutoff (≥ 113 mm CW; Fig. 78).

Estimated biomass for mature female Tanner crab east of 166° W was 1,605 ± 720 t (8.6 ± 3.8 million crab), while the immature female Tanner crab estimated biomass was 1,017 ± 522 t (36.5 ± 19.8 million crab; Tables 16 and 19; Fig. 61). Estimated mature female biomass declined from 2022 and was below the previous 20-year average of 3,697 ± 1,399 t. The proportion of the mature female population in new hardshell condition declined from near 50% in 2021 to 7% in 2023 (Figs. 70 and 76). In 2023 36% of mature females were oldshell and 55% were very oldshell (Fig. 70). Since Tanner crab have a terminal molt to maturity, a high percentage of the mature females in older shell conditions indicates an aging mature female population and little new recruitment of mature animals. Newly extruded uneyed embryos were carried by 95% of the

mature females sampled, while 3% were barren, and 2% had eyed eggs (Fig. 72). Ninety-two percent of mature females had clutches that were full or three-quarters full (Fig. 74).

Tanner crab were caught at 168 of the 255 stations west of 166° W (Fig. 86) and 100% of legal-sized crab were measured (Table 5). The 2023 biomass estimate for legal male Tanner crab west of 166° W (≥ 110 mm carapace width) was 6,473 ± 1,569 t (12.1 ± 2.9 million crab; Tables 20 and 23; Fig. 62). Twenty-eight percent of legal males were of industry preferred size, for a biomass estimate of 2,381 ± 775 t (3.4 ± 1.1 million crab; Tables 20 and 23; Fig. 62). The 2023 estimated biomass of legal Tanner crab in the western area was slightly higher than in 2022, but well below the previous 20-year average biomass of 19,483 ± 4,417 t. In 2023, 43% of sampled legal-sized males were new hardshell west of 166° W, exactly the same as in 2022 (Fig. 67). West of 166° W the large (≥ 103 mm CW) male biomass estimate was 9,001 ± 1,980 t (19.3 ± 4.1 million crab) and the small (< 103 mm CW) male biomass estimate was 14,685 ± 3,412 t (312.1 ± 79.0 million crab). Both large and small male biomass increased for western Tanner crab from 2022 values (Tables 20 and 23). The 2023 biomass estimate of morphometrically mature Tanner crab east of 166°W was 5,670 ± 1,444 t (17.5 ± 4.3 million crab), an increase from the 2022 estimate (Tables 21 and 24). Size at 50% maturity for western Tanner crabs declined from 2022 and was well below the traditional size cutoff for maturity (≥ 103 mm CW; Fig. 79).

Estimated biomass for mature female Tanner crab west of 166° W was 5,618 ± 3,094 t (40.0 ± 21.5 million crab), while the immature female Tanner crab estimated biomass was 8,096 ± 2,894 t (306.0 ± 88.1 million crab; Table 22 and 25; Fig. 62). Estimated mature female biomass increased from 2022 and was similar to the previous 20-year average of 5,752 ± 1,399 t. Forty-four percent of the mature females were new hardshell, a decline from 2022, while 42% were oldshell and 10% were very oldshell (Figs. 71 and 77). Ninety-one percent of the sampled mature females carried newly extruded embryos, 9% were barren and < 1% had eyed eggs or were in the process of hatching (Fig. 73). Sixty-two percent of mature females had clutches that were either full or three-quarters full (Fig. 75), a decline from 2022 (Fig. 77).

Legal and large-sized male Tanner crab were distributed across the outer and middle shelf, principally south and east of the Pribilof Islands. Northwest of the Pribilof Islands abundance generally declined and males were almost exclusively on the outer shelf (Figs. 80 – 82). New hardshell legal males were more dominant in shallower waters closer to the 50 m isobath, while older shell crab dominated in deeper waters and farther to the south (Fig. 87). The 2023 center of abundance for industry-preferred males shifted westward from 2022 and was near the 166° W division between the eastern and western portions of the stock (Fig. 88). Mature females were primarily found on the outer shelf, particularly south of St. George Island near the shelf break. East of the Pribilof Island they also occurred on the middle shelf, with one very high-density station to the northeast of Saint Paul Island (Fig. 84). The 2023 mature female center of abundance was approximately 40 nmi east of St. George Island, less than 20 nmi north of the 2022 centroid (Fig. 89). Small males and immature females were abundant across the outer shelf west to approximately 175° W and also on the middle shelf between 165° W and 170° W (Figs. 83 and 85).

Since 2017, Tanner crab west of 166° W have had strong recruitment into the smaller size classes (~20 – 50 mm CW), but these peaks have not progressed into the larger size classes, indicating low survival of these small juveniles (Figs. 65, 67, and 69). However, in 2023 there was an increase in 50 – 60 mm crab, indicating higher survival of the small juveniles from 2022. In addition, in 2023 the western Tanner stock had the biggest recruitment event in the time series (Figs. 65, 67, and 69). Tanner crab east of 166° W have not experienced the same strong recruitment trends as in the west, although a cohort of crab that were approximately 30 mm CW in 2022 appeared to survive and grow into approximately 45 mm crab in 2023 (Figs. 64, 66, and 68).

Northern Bering Sea Tanner Crab

Tanner Crab were rare in the northern Bering Sea, with seven crab (immature males and females) caught across five stations (Fig. 86).

Eastern Bering Sea Snow Crab

Following the highest estimated abundance in the time series in 2018, snow crab (*Chionoecetes opilio*) experienced a population collapse that resulted in rapid declines in abundance estimates in 2019 and 2021 (Szuwalski, 2022). The consequences of this collapse continued in the 2023 survey: mature females, large males, legal males, and industry-preferred males all had the lowest abundance and biomass estimates in the time series, as there are few juveniles remaining in the population to grow into these larger size classes and the large/mature crab that survived the collapse are beginning to age out of the population (Fig. 90; Tables 26 – 31). New post-collapse recruitment of juveniles was first observed in 2022 and additional recruitment was seen in 2023 (Figs. 91, 92, and 94).

During the 2023 survey, snow crab were caught at 239 of the 375 stations in the EBS (Fig. 111) and 97% of legal male crab were measured (Table 5). Legal male snow crab estimated biomass was 20,999 ± 5,227 t (50.6 ± 12.0 million crab; Tables 26 and 29; Fig. 90). This estimated biomass represents a 37% decline since 2022, and it is approximately one-fifth of the previous 20-year average of 106,758 ± 20,980 t. Fifty-four percent of the legal male biomass was comprised of industry-preferred crab (≥ 4.0 in CW), for a biomass estimate of 11,441 ± 3,365 t (20.0 ± 5.7 million crab; Tables 26 and 29). The biomass estimate for preferred-size males decreased by 15% from 2022. Legal and preferred-size males were found in greatest abundance northwest of Saint Matthew Island on the outer shelf near the U.S.-Russia border (Figs. 105 and 106). The center of abundance for industry-preferred males was slightly further south than the past two years, but still within the top five northernmost years on record (Fig. 113). Less than 1% of legal-sized male crab were in molting or softshell condition, 57% were in new hardshell condition, and 43% were oldshell or very oldshell (Fig. 92). Legal males southeast of the Pribilof Islands were almost entirely oldshell crab, while new hardshell crab were more dominant northwest of the Pribilof Islands, with the exception of an area southeast of St. Matthew Island where both shell conditions were common (Fig. 112).

The 2023 biomass estimate of morphometrically mature, new hardshell snow crab (using chela-based maturity) was 13,638 ± 3,888 t (57.2 ± 17.5 million crab), a 7% decline from 2022 (Tables

27 and 30). Size at 50% maturity was similar to 2022 (Fig. 103). Estimated large (≥ 95 mm CW) male biomass was 15,493 ± 4,188 t (30.3 ± 7.8 million crab), which was a 25% decline in biomass from 2022 (Tables 26 and 29; Fig. 90). Estimated small (< 95 mm CW) male biomass was 35,388 ± 11,672 t (862.6 ± 340.2 million crab). Small male biomass and abundance began to decline in 2019 and this pattern continued in 2021, resulting in a 96% drop in estimated abundance from 2018 to 2021 (Fig. 90). In 2022 small male biomass declined by 23% from 2021, but small male abundance increased by 138%; this difference was caused by higher catches of crab less than 50 mm carapace width. A similar result occurred in 2023, with estimated biomass declining by 6% from 2022, but estimated abundance increasing by 43% (Tables 26 and 29). The small recruitment peak of males < 50 mm CW in 2022 has resulted in a small increase in males in the 50 – 60 mm range in 2023; in addition, another juvenile cohort was observed in 2023, with a peak of crab in the ~35 mm range (Figs. 91 and 92). Large males were primarily distributed northwest of Saint Matthew Island on the outer shelf near the US-Russia border, and in some areas on the middle shelf between the Pribilofs and Saint Matthew Island (Fig. 107). Small males were most abundance north and west of St. Matthew Island near the Northern Bering Sea boundary (Fig. 108). Large males dominated the population structure at the southernmost stations and on the outer shelf, while small males were more dominant on the middle shelf (Fig. 111).

The estimated biomass of mature female snow crab was 15,010 ± 8,039 t (290.7 ± 154.8 million crab), while the estimated biomass of immature female snow crab was 22,378 ± 8,952 t (891.5 ± 335.2 million crab; Tables 28 and 31; Fig. 90). The 2023 mature female biomass estimate was 29% lower than the 2022 estimate and well below the previous 20-year average (81,795 ± 21,641 t). As with Tanner crab, shell condition can be used as a relative index of shell age post-molt. In 2021 over 99% of mature females were either oldshell or very oldshell, indicating an aging stock of mature female crab. In 2022, although the abundance declined, some new recruitment into the mature female population was observed, as 44% of mature females were new hardshell. By 2023 the oldshell females present in 2021 appear to have almost entirely senesced, as 89% of the 2023 mature population was new hardshell, 8% were oldshell, and only 3% were very oldshell (Figs. 96 and 84). Ninety-eight percent of the mature females were brooding new embryos and only 1% were barren (Fig. 98); 88% had clutches that were full or

three-quarters full, compared with 40% in 2022 (Figs. 100 and 102). Mature female snow crab were primarily distributed around St. Matthew Island (Fig. 109). The center of abundance for mature females was farther north than it has ever been observed, occurring north of St. Matthew Island (Fig. 114). Immature females were distributed around St. Matthew Island and between the 50 and 100 m isobaths north of Saint Paul Island (Fig. 110).

Northern Bering Sea Snow Crab

Snow crab were caught at 85 of the 115 sampled northern Bering Sea stations (Fig. 111), with the vast majority of the catch composed of smaller-sized and immature crabs. The biomass estimate for industry-preferred sized snow crab was 32 ± 64 t (0.04 ± 0.07 million crab), while the biomass estimate for legal sized snow crab was 65 ± 74 t (0.2 ± 0.2 million crab) (Tables 38 and 41; Fig. 90). The size at 50% maturity for new hardshell male snow crab was similar to 2022 (Fig. 104) and the biomass estimate for new hardshell morphometrically mature males (using chela-based maturity) was 3,554 ± 1,637 t (67.9 ± 33.5 million crab) (Tables 39 and 42). The biomass estimates for large (≥ 68 mm CW) and small-sized (< 68 mm CW) males was 285 ± 170 t (1.7 ± 1.1 million crab) and 65,707 ± 30,240 t (3,295.4 ± 1,457.0 million crab), respectively (Tables 38 and 41; Fig. 90). The majority of large-sized male snow crab in the northern Bering Sea were caught at stations west of Saint Lawrence Island (Fig. 107). Small-sized males were abundant around Saint Lawrence Island and along the 50 m isobath (Fig. 108). Over 99% of northern Bering Sea male snow crab were in a new hardshell condition (Fig. 93).

The biomass estimate for mature female snow crab was 6,880 ± 3,632 t (205.8 ± 114.6 million crab), while the biomass estimate for immature females was 38,610 ± 18,886 t (2,325.7 ± 1,072.7 million crab; Tables 40 and 43; Fig. 90). Mature female crab were present throughout much of the northern Bering Sea, with the exception of Norton Sound and near-shore stations (Fig. 109). Immature females were abundant at non-coastal stations, especially along the 50 m isobath and around Saint Lawrence Island (Fig. 110). Over 99% of female northern Bering Sea snow crab were new hardshell condition (Fig. 97) and 92% were immature (Fig. 95). Of the mature females, 99% had clutches that were full or three quarters full (Fig. 101). Over 99% of non-barren clutches had uneyed eggs (Fig. 99).

Eastern Bering Sea *Chionoecetes* Hybrids

Chionoecetes spp. hybrid crab were caught at 106 of the 375 stations in the EBS (Fig. 121). In this document, *Chionoecetes* spp. hybrid size classes for legal and large males are based on the size categories for snow crab (Table 1). Legal male (≥ 78 mm CW) crab had a biomass estimate of 1,294 ± 512 t (3.0 ± 1.2 million crab; Fig. 115). Sixty-three percent of the legal males were ≥ 4 inches in CW, with a biomass estimate of 813 ± 403 t (1.2 ± 0.5 million crab). The large male (≥ 95 mm CW) biomass estimate was 945 ± 430 t (1.5 ± 0.6 million crab; Fig. 115) and the small male (<95 mm CW) biomass estimate was 1,089 ± 489 t (16.4 ± 6.6 million crab). Hybrid males were distributed throughout most of the survey grid below the 50 m isobath, but they were not found as far south or east as Tanner crab, nor in the northernmost part of the survey grid, like snow crab (Figs. 116 – 118).

The 2023 mature female *Chionoecetes* spp. hybrid crab biomass estimate was 117 ± 113 t (0.8 ± 0.7 million crab; Fig. 115), and the immature female crab biomass estimate was 666 ± 426 t (19.0 ± 10.7 million crab). The distribution of mature female *Chionoecetes* spp. hybrid crab was limited to the area between Saint Paul Island and Saint Matthew Island, while immature females were found across the middle and outer shelves, with the exception of Bristol Bay, the southernmost outer shelf, and the northernmost stations (Figs. 119 – 120).

Northern Bering Sea *Chionoecetes* spp. Hybrid

Only one *Chionoecetes* hybrid crab, an immature female, was found in the northern Bering Sea in 2023 (Fig. 121).

Eastern Bering Sea 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; the female hair crab biomass estimate is presented for all sizes and maturity states combined. Hair crab were caught at 58 of the 375 stations throughout all districts combined on the survey (Fig. 126). The 2023

biomass estimate of legal males was 575 ± 245 t (1.0 ± 0.4 million crab) and 738 ± 270 t (2.2 ± 0.9 million crab) for sub-legal males (Tables 32 and 33; Fig. 122). Male hair crab primarily occurred along the 50 m isobath and into Bristol Bay (Figs. 123, 124, and 126). The female hair crab biomass estimate was 389 ± 158 t (1.2 ± 0.5 million crab; Tables 32 and 33; Fig. 122). Females were primarily distributed just below the 50 m isobath (Figs. 125 and 126).

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).

Northern Bering Sea Hair Crab

The biomass estimate for sub-legal male (< 83 mm CL) hair crab was 140 ± 103 t (0.5 ± 0.3 million crab), while the biomass estimate for legal males was 87 ± 138 t (0.2 ± 0.2 million crab). The biomass estimate for all females was 41 ± 73 t (0.2 ± 0.2 million crab). Most hair crab were in the southernmost part of the northern Bering Sea inside the 50 m isobath, although a few were found in Norton Sound (Figs. 123 – 126).

Other King and Tanner Crab

No other king or Tanner crabs were caught in 2023 while sampling the standard EBS and NBS stations. Golden king crabs (*Lithodes aequispinus*) and grooved Tanner crabs *Chionoecetes tanneri*) were caught during a special project sampling slope stations at the beginning of Leg 1.

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Table 1. -- Definition of carapace size classes for crab species caught in National Marine Fisheries Service eastern Bering Sea standard survey. Carapace length (CL) is measured for *Paralithodes* spp. and *Erimacrus isenbeckii*, while carapace width (CW excluding spines) is measured for *Chionoecetes* species. We define female maturity based on abdominal flap morphology throughout this document. A fixed cutline is used for *Paralithodes* spp. male maturity, but the traditional *Chionoecetes* spp. maturity classes are redefined as small and large, since the cutlines give misleading maturity information. The legal size classes defined by ADF&G (CW in inches) include spines.

Species	District	Sex	Immature/Small	Mature/Large	Legal Male
Paralithodes camtschaticus	Bristol Bay	male	< 120 mm	≥ 120 mm	≥ 135 mm CL or ≥ 6.5 in. CW
	Pribilof	male	< 120 mm	≥ 120 mm	≥ 135 mm CL or ≥ 6.5 in. CW
	Norton Sound	male	< 94 mm	≥ 94 mm	≥ 104 mm CL or ≥ 4.8 in. CW
Paralithodes platypus	Pribilof	male	< 120 mm	≥ 120 mm	≥ 135 mm CL or ≥ 6.5 in. CW
	St. Matthew	male	< 105 mm	≥ 105 mm	≥ 120 mm CL or ≥ 5.5 in. CW
	Northern Bering Sea	male	< 94 mm	≥ 94 mm	≥ 104 mm CL or ≥ 4.8 in. CW
Chionoecetes bairdi	East of 166° W	male	< 113 mm	≥ 113 mm	≥ 120 mm or ≥ 4.8 in. CW[1]
	West of 166° W	male	< 103 mm	≥ 103 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	≥ 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 mm or ≥ 3.1 in. CW[2]
	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		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 – 2023	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, log(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 and northern Bering Sea bottom trawl surveys in 2023.

Project Title	Principle Investigator	Agency
Female red king crab tagging	Leah Zacher	AFSC-RACE-SAP[1]
Male red king crab tagging	Leah Zacher	AFSC-RACE-SAP[1]
Snow crab shell condition classification error rate	Jonathan Richar	AFSC-RACE-SAP[1]
Snow crab body condition	Erin Fedewa	AFSC-RACE-SAP[1]
Snow crab bitter crab syndrome field monitoring	Erin Fedewa	AFSC-RACE-SAP[1]
Snow crab bitter crab syndrome lab experiments	Erin Fedewa	AFSC-RACE-SAP[1]
Tanner crab ocean acidification	Christopher Long	AFSC-RACE-SAP[1]
Snow crab ocean acidification	Christopher Long	AFSC-RACE-SAP[1]
Brittle star ocean acidification	Christopher Long	AFSC-RACE-SAP[1]
Norton Sound red king crab maturity	Leah Zacher	AFSC-RACE-SAP[1]
Snow crab temperature-diet lab studies	Louise Copeman	AFSC-RACE-FBEP[2]
Snow crab black eye syndrome lab experiments	Maya Groner	Bigelow[3]
Snow crab black eye syndrome pathology samples	Maya Groner	Bigelow[3]
ADF&G observer collections	Jared Weems	ADF&G[4]
NMFS observer collections	Adriana Myers	AFSC-FMA[5]

[1] Alaska Fisheries Science Center (AFSC), Resource Assessment and Conservation Engineering Division (RACE), Shellfish Assessment Program (SAP), Kodiak, Alaska.

[2] AFSC, RACE, Fisheries Behavioral Ecology Program (FBEP), Newport, Oregon.

[3] Bigelow Laboratory for Ocean Science, East Boothbay, Maine

[4] Alaska Department of Fish and Game

[5] AFSC, Fisheries Monitoring and Analysis Division (FMA), Seattle, Washington.

Table 5. -- Summary of 2023 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	Immature male	136	43	196	196	3,804	1,397
District	Mature male	136	50	219	219	16,796	5,683
Red King Crab	Legal	136	43	163	163	14,127	5,125
	Immature female	136	17	71	71	690	488
	Mature female	136	47	380	380	16,723	13,381
Pribilof	Immature male	77	3	3	3	3	5
District	Mature male	77	15	40	40	2,742	1,661
Red King Crab	Legal	77	15	40	40	2,742	1,661
	Immature female	77	2	2	2	1	2
	Mature female	77	8	35	35	1,203	1,130
Norton Sound	Immature male	39	8	24	24	163	147
Red King Crab	Mature male	39	17	67	67	2,522	1,610
	Legal	39	17	55	55	2,214	1,413
	Immature female	39	7	21	21	35	48
	Mature female	39	6	17	17	406	434
Pribilof	Immature male	86	2	2	2	24	47
District	Mature male	86	0	0	0	0	0
Blue King	Legal	86	0	0	0	0	0
Crab	Immature female	86	0	0	0	0	0
	Mature female	86	1	7	7	118	231
St. Matthew Is.	Immature male	56	9	44	44	557	536
Blue King	Mature male	56	12	52	52	1,719	1,433
Crab	Legal	56	10	28	28	1,162	1,009
	Immature female	56	5	19	19	155	185
	Mature female	56	3	16	16	181	285
Tanner Crab	Small male	120	74	1,527	1,348	3,956	1,131
east of 166°W	Large male	120	66	367	367	6,382	1,946
	Legal	120	62	239	239	4,702	1,617
	Preferred	120	54	167	167	3,581	1,315
	Immature female	120	42	1,342	1004	1,017	522
	Mature female	120	37	308	308	1,605	720
Tanner Crab	Small male	255	159	13,213	7,522	14,685	3,412
west of 166°W	Large male	255	122	831	829	9,001	1,980
	Legal	255	101	531	531	6,473	1,569
	Preferred	255	54	146	146	2,381	775
	Immature female	255	151	13,155	6,139	8,096	2894
	Mature female	255	102	1,775	1,104	5,605	3,094
Snow Crab	Small male	375	200	32,192	6,367	35,388	11,672
	Large male	375	159	1,270	1,233	15,493	4,188
	Legal	375	192	2,127	2,064	20,999	5,227
	Preferred	375	136	833	806	11,441	3,365
	Immature female	375	136	36,957	5,459	22,378	8,952
	Mature female	375	86	10,320	2,058	14,964	8,034

Table 6. -- Time series of biomass (t) estimates (± 95% CI) for Bristol Bay District red king crab (*Paralithodes camtschaticus*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1978 data.

Year	Immature male (<120 mm)	Mature male (≥120 mm)	Legal male (≥135 mm)	Immature female	Mature female
1979	16,886 (8,194)	86,906 (43,304)	63,107 (31,039)	5,132 (3,511)	59,165 (21,521)
1980	37,369 (26,261)	129,829 (65,411)	106,655 (55,569)	7,594 (6,351)	73,712 (46,197)
1981	27,294 (8,493)	41,520 (12,659)	27,368 (9,399)	4,215 (1,920)	59,099 (30,597)
1982	51,268 (33,481)	23,038 (8,656)	10,184 (3,541)	21,932 (21,208)	48,913 (18,738)
1983	25,675 (12,857)	9,796 (2,494)	2,867 (955)	7,257 (4,483)	7,237 (2,683)
1984	79,710 (96,405)	16,849 (8,751)	7,623 (5,419)	38,806 (66,183)	17,529 (14,374)
1985	12,823 (5,128)	14,006 (4,130)	5,356 (2,080)	1,602 (1,122)	5,723 (2,805)
1986	12,382 (11,322)	28,189 (27,164)	13,033 (11,620)	1,847 (2,351)	5,062 (2,860)
1987	16,626 (8,826)	30,197 (14,575)	18,167 (9,002)	7,074 (6,512)	15,427 (9,677)
1988	9,513 (4,576)	25,861 (9,178)	19,117 (7,348)	1,205 (981)	18,019 (14,900)
1989	7,059 (4,162)	35,503 (15,936)	27,552 (13,242)	1,322 (1,646)	11,615 (7,455)
1990	6,344 (3,081)	32,481 (14,786)	24,527 (11,626)	2,871 (3,669)	17,995 (14,579)
1991	6,395 (2,862)	60,142 (69,981)	52,119 (62,300)	1,826 (1,247)	15,553 (13,342)
1992	6,787 (2,844)	18,327 (6,835)	13,747 (4,984)	1,088 (560)	11,163 (5,657)
1993	6,939 (2,829)	28,740 (12,766)	19,839 (9,505)	1,170 (760)	16,101 (7,849)
1994	3,601 (1,668)	19,775 (6,740)	13,371 (4,695)	1,104 (722)	8,283 (3,558)
1995	6,359 (3,526)	20,939 (14,711)	15,570 (9,931)	2,992 (1,734)	7,868 (3,839)
1996	9,067 (4,579)	18,111 (7,309)	15,073 (6,582)	5,380 (3,575)	12,042 (6,829)
1997	27,126 (20,396)	32,533 (13,321)	27,403 (12,196)	3,051 (3,106)	21,365 (14,033)
1998	13,035 (5,153)	33,297 (10,450)	19,409 (6,599)	2,161 (1,200)	35,849 (17,889)
1999	5,093 (3,223)	39,870 (16,942)	30,005 (12,802)	1,163 (1,083)	19,126 (13,276)
2000	6,961 (3,026)	31,450 (10,638)	22,090 (7,197)	2,615 (1,628)	26,387 (18,086)
2001	8,942 (3,384)	19,060 (5,746)	15,360 (4,839)	1,692 (1,501)	22,866 (13,703)
2002	12,113 (6,484)	33,359 (12,655)	25,241 (9,716)	5,150 (4,588)	19,144 (10,306)
2003	11,514 (4,439)	63,271 (57,913)	51,115 (52,591)	5,642 (2,676)	35,587 (16,085)
2004	27,917 (22,267)	63,159 (54,053)	53,895 (47,440)	6,162 (5,720)	34,826 (18,589)
2005	17,036 (9,917)	38,105 (14,021)	28,373 (11,904)	8,455 (7,392)	42,715 (17,805)
2006	11,756 (4,699)	39,808 (17,766)	32,148 (15,550)	6,521 (3,883)	37,005 (14,306)
2007	14,043 (5,717)	44,115 (17,880)	34,226 (15,086)	2,257 (1,167)	42,931 (19,123)
2008	15,840 (8,783)	51,375 (35,542)	38,155 (28,262)	1,675 (1,411)	44,194 (28,234)
2009	8,926 (5,903)	34,250 (25,727)	21,996 (17,839)	760 (487)	46,616 (30,241)
2010	5,441 (2,167)	33,586 (16,497)	24,891 (13,450)	535 (490)	40,951 (21,869)
2011	7,952 (5,736)	21,990 (9,231)	16,622 (7,181)	3,515 (4,962)	38,035 (19,244)
2012	5,841 (3,441)	24,837 (13,411)	19,858 (11,804)	2,881 (3,089)	27,282 (17,713)
2013	5,515 (2,393)	34,141 (14,164)	28,358 (12,070)	547 (294)	22,031 (15,783)
2014	12,621 (9,278)	48,038 (17,559)	36,130 (13,660)	1,560 (1,902)	50,926 (22,953)
2015	4,984 (2,639)	32,121 (11,019)	27,209 (9,612)	838 (1,067)	26,296 (15,078)
2016	2,077 (1,052)	25,481 (7,302)	22,424 (6,580)	772 (871)	33,370 (17,051)
2017	2,239 (780)	23,102 (8,328)	20,842 (7,703)	1,193 (680)	26,424 (13,139)
2018	2,818 (1,309)	13,226 (3,589)	12,010 (3,442)	520 (333)	12,282 (5,437)
2019	2,793 (1,194)	12,431 (3,959)	8,965 (3,109)	351 (186)	13,088 (4,757)
2021	2,406 (1,138)	15,856 (6,757)	12,559 (6,031)	361 (281)	9,944 (4,815)
2022	3,129 (1,295)	21,832 (8,610)	18,060 (7,616)	946 (642)	10,280 (4,991)
2023	3,804 (1,397)	16,796 (5,683)	14,127 (5,125)	690 (488)	16,723 (13,381)

Table 7. -- Time series of abundance (in millions) estimates (± 95% CI) for Bristol Bay District red king crab (*Paralithodes camtschaticus*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1978 data.

Year	Immature male (<120 mm)	Mature male (≥120 mm)	Legal male (≥135 mm)	Immature female	Mature female
1979	33.4 (18.2)	38.0 (19.1)	23.6 (11.7)	22.1 (18.3)	57.9 (20.3)
1980	70.8 (50.7)	51.3 (25.3)	37.5 (18.9)	34.4 (30.9)	87.9 (66.4)
1981	41.1 (13.3)	18.4 (5.4)	9.7 (3.3)	13.1 (7.0)	58.4 (29.6)
1982	110.9 (84.5)	12.0 (4.9)	4.0 (1.5)	72.4 (67.7)	52.9 (21.8)
1983	46.2 (24.4)	5.7 (1.5)	1.3 (0.4)	23.8 (13.6)	8.7 (3.6)
1984	164.9 (232.3)	9.1 (4.7)	3.3 (2.6)	109.8 (183.7)	27.4 (23.9)
1985	16.8 (7.0)	7.6 (2.2)	2.3 (0.9)	4.3 (3.1)	8.4 (4.1)
1986	15.2 (11.7)	14.8 (14.6)	5.6 (5.1)	5.2 (6.8)	6.4 (3.6)
1987	24.4 (13.8)	14.6 (7.0)	7.3 (3.6)	17.4 (17.0)	18.5 (11.4)
1988	11.3 (5.7)	11.6 (4.0)	7.5 (2.8)	2.5 (1.8)	20.1 (17.0)
1989	10.0 (6.1)	15.1 (6.5)	10.4 (4.8)	3.9 (4.5)	13.2 (8.6)
1990	9.7 (5.0)	13.7 (6.1)	8.9 (4.1)	7.8 (8.8)	17.0 (13.8)
1991	9.7 (4.4)	23.2 (26.1)	18.5 (21.5)	4.8 (3.1)	14.9 (13.8)
1992	8.3 (3.5)	7.5 (3.0)	4.6 (1.7)	2.3 (1.2)	10.2 (4.9)
1993	8.2 (3.3)	12.5 (5.6)	7.0 (3.5)	2.8 (1.9)	14.0 (7.0)
1994	7.1 (6.6)	8.6 (2.9)	4.8 (1.7)	3.8 (5.4)	6.1 (2.5)
1995	11.0 (7.0)	9.1 (6.9)	5.9 (4.0)	6.1 (4.6)	6.3 (3.0)
1996	17.5 (11.6)	7.2 (2.8)	5.3 (2.3)	14.3 (11.1)	9.8 (5.6)
1997	32.6 (26.3)	12.3 (4.8)	9.2 (4.0)	5.1 (5.1)	21.8 (17.1)
1998	16.8 (6.7)	15.4 (5.0)	6.8 (2.2)	6.3 (3.9)	31.7 (17.5)
1999	11.3 (11.1)	17.4 (7.7)	11.7 (5.1)	4.1 (4.0)	15.4 (10.8)
2000	10.7 (5.4)	14.0 (4.9)	8.4 (2.8)	6.3 (3.8)	21.0 (13.6)
2001	12.0 (5.4)	7.4 (2.2)	5.1 (1.6)	4.3 (4.3)	20.9 (12.9)
2002	22.9 (16.1)	13.6 (5.2)	8.6 (3.3)	17.6 (16.7)	17.0 (9.7)
2003	18.8 (7.7)	24.4 (19.4)	17.1 (16.2)	13.2 (6.3)	28.3 (13.2)
2004	43.3 (34.9)	23.7 (19.8)	18.0 (15.5)	19.7 (23.5)	31.7 (18.9)
2005	31.5 (23.2)	15.6 (5.4)	9.6 (3.8)	23.6 (21.6)	35.6 (15.3)
2006	21.2 (10.3)	16.4 (7.2)	11.8 (5.8)	16.9 (10.3)	31.0 (12.2)
2007	17.5 (7.3)	18.2 (7.1)	12.3 (5.3)	4.5 (2.4)	35.8 (16.3)
2008	17.1 (9.4)	20.9 (13.8)	12.9 (9.3)	3.7 (3.0)	36.8 (24.3)
2009	9.6 (6.0)	15.6 (11.5)	8.3 (6.8)	1.7 (1.1)	35.8 (22.4)
2010	6.5 (2.7)	14.7 (7.0)	9.4 (5.2)	1.2 (1.0)	31.5 (17.4)
2011	37.5 (58.7)	9.3 (3.9)	6.1 (2.6)	33.0 (59.1)	29.3 (15.1)
2012	8.0 (5.0)	9.7 (4.9)	6.7 (3.8)	7.6 (7.7)	19.6 (13.2)
2013	6.7 (2.9)	12.9 (5.3)	9.4 (4.0)	1.3 (0.7)	15.6 (11.1)
2014	15.5 (12.9)	19.7 (7.3)	12.4 (4.8)	2.8 (3.4)	36.9 (17.0)
2015	6.7 (4.6)	11.6 (4.0)	8.7 (3.0)	2.4 (3.0)	18.4 (10.6)
2016	4.7 (4.9)	9.0 (2.6)	7.1 (2.1)	3.6 (5.4)	22.4 (11.6)
2017	3.3 (1.3)	7.7 (2.7)	6.4 (2.4)	2.5 (1.3)	17.5 (8.6)
2018	3.8 (1.8)	4.6 (1.2)	3.8 (1.1)	1.4 (0.9)	9.0 (4.0)
2019	3.7 (1.5)	5.0 (1.6)	2.9 (1.0)	1.2 (0.7)	8.4 (3.1)
2021	3.5 (1.6)	6.3 (2.3)	4.4 (1.8)	1.4 (0.9)	6.3 (2.9)
2022	4.3 (1.7)	8.2 (3.1)	5.9 (2.4)	2.5 (1.6)	7.5 (4.2)
2023	5.8 (2.2)	6.4 (2.1)	4.8 (1.7)	2.1 (1.3)	11.0 (8.4)

Table 8. -- Time series of biomass (t) estimates (± 95% CI) for Pribilof District red king crab (*Paralithodes camtschaticus*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1980 data.

Year	Immature male (<120 mm)	Mature male (≥120 mm)	Legal male (≥135 mm)	Immature female	Mature female
1981	0 (0)	312 (358)	312 (358)	0 (0)	35 (68)
1982	18 (36)	1,464 (2,002)	1,464 (2,002)	14 (27)	919 (1,402)
1983	26 (52)	527 (551)	493 (502)	0 (0)	309 (292)
1984	0 (0)	317 (341)	283 (337)	0 (0)	112 (125)
1985	0 (0)	61 (121)	61 (121)	0 (0)	0 (0)
1986	0 (0)	138 (188)	138 (188)	0 (0)	79 (154)
1987	0 (0)	54 (105)	54 (105)	31 (60)	0 (0)
1988	713 (818)	107 (209)	44 (86)	283 (518)	553 (940)
1989	675 (954)	1,529 (2,728)	871 (1,444)	924 (1,762)	1,327 (2,140)
1990	7,477 (12,930)	1,141 (2,077)	138 (271)	522 (835)	2,200 (3,048)
1991	640 (1,081)	4,430 (6,913)	1,321 (2,089)	66 (92)	4,967 (5,864)
1992	274 (484)	3,305 (3,864)	2,528 (2,683)	278 (523)	3,153 (5,620)
1993	282 (554)	9,873 (17,834)	9,189 (16,493)	7 (14)	6,471 (9,096)
1994	430 (843)	9,139 (13,748)	8,117 (11,836)	47 (92)	3,917 (6,772)
1995	431 (599)	18,056 (21,267)	16,793 (20,056)	315 (352)	4,834 (6,393)
1996	68 (93)	2,361 (1,720)	2,330 (1,697)	31 (45)	1,976 (2,867)
1997	1,510 (2,486)	6,159 (7,515)	5,940 (7,425)	218 (336)	1,744 (2,018)
1998	416 (420)	2,324 (1,639)	1,778 (1,318)	50 (99)	1,669 (2,487)
1999	3,358 (6,127)	5,523 (7,217)	4,472 (6,095)	4,117 (8,053)	1,302 (1,826)
2000	157 (218)	4,320 (3,164)	3,843 (2,773)	8 (15)	987 (1,214)
2001	2,339 (4,566)	8,603 (13,262)	5,770 (7,957)	406 (795)	5,369 (10,462)
2002	8 (15)	7,037 (9,461)	7,014 (9,462)	12 (24)	775 (803)
2003	0 (0)	5,373 (6,928)	5,275 (6,755)	1 (2)	2,268 (4,032)
2004	152 (286)	3,622 (4,183)	3,622 (4,183)	105 (206)	1,187 (1,238)
2005	55 (107)	1,238 (1,420)	1,238 (1,420)	0 (0)	3,118 (4,791)
2006	109 (149)	7,003 (5,252)	6,696 (5,070)	10 (20)	2,173 (2,627)
2007	214 (419)	5,224 (5,042)	5,007 (4,750)	50 (84)	1,760 (2,647)
2008	332 (604)	5,462 (5,418)	5,102 (5,241)	192 (343)	2,825 (3,701)
2009	44 (87)	2,500 (3,125)	2,127 (2,567)	15 (30)	811 (841)
2010	53 (65)	4,405 (3,767)	3,973 (3,326)	0 (0)	840 (1,167)
2011	44 (86)	3,834 (4,872)	3,751 (4,787)	3 (6)	814 (1,165)
2012	336 (636)	4,477 (5,031)	4,360 (4,846)	0 (0)	663 (710)
2013	104 (171)	7,749 (9,409)	7,567 (9,297)	0 (0)	169 (194)
2014	82 (129)	12,047 (18,525)	11,433 (18,242)	0 (0)	1,093 (2,015)
2015	113 (200)	15,173 (21,971)	14,788 (21,553)	0 (0)	3,859 (7,270)
2016	526 (693)	4,150 (5,700)	3,653 (4,980)	26 (50)	1,873 (2,241)
2017	88 (98)	3,658 (4,632)	3,513 (4,500)	0 (0)	505 (550)
2018	1,325 (2,526)	929 (775)	827 (697)	0 (0)	877 (1,500)
2019	293 (363)	2,086 (1,406)	1,101 (895)	13 (26)	797 (624)
2021	85 (167)	3,744 (2,176)	3,615 (2,078)	0 (0)	1,406 (1,572)
2022	0 (0)	5,105 (2,973)	5,075 (2,973)	0 (0)	989 (768)
2023	3 (5)	2,742 (1,661)	2,742 (1,661)	1 (2)	1,203 (1,130)

Table 9. -- Time series of abundance (in millions) estimates (± 95% CI) for Pribilof District red king crab (*Paralithodes camtschaticus*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1980 data.

Year	Immature male (<120 mm)	Mature male (≥120 mm)	Legal male (≥135 mm)	Immature female	Mature female
1981	0.0 (0.0)	0.1 (0.1)	0.1 (0.1)	0.0 (0.0)	0.0 (0.0)
1982	0.0 (0.0)	0.3 (0.4)	0.3 (0.4)	0.0 (0.0)	0.5 (0.7)
1983	0.0 (0.0)	0.1 (0.1)	0.1 (0.1)	0.0 (0.0)	0.2 (0.1)
1984	0.0 (0.0)	0.1 (0.1)	0.1 (0.1)	0.0 (0.0)	0.1 (0.1)
1985	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
1986	0.0 (0.0)	0.0 (0.1)	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 (0.1)	0.0 (0.0)
1988	1.9 (2.8)	0.1 (0.1)	0.0 (0.0)	1.6 (3.1)	0.4 (0.7)
1989	1.1 (1.7)	0.8 (1.4)	0.4 (0.6)	1.8 (3.4)	1.1 (1.7)
1990	7.1 (12.0)	0.8 (1.4)	0.1 (0.1)	0.7 (1.2)	2.3 (3.0)
1991	0.7 (1.0)	2.4 (3.8)	0.6 (0.9)	0.3 (0.4)	4.3 (5.1)
1992	0.4 (0.7)	1.5 (1.8)	1.0 (1.1)	0.4 (0.8)	2.4 (4.4)
1993	0.3 (0.5)	3.5 (6.4)	3.1 (5.6)	0.0 (0.1)	4.5 (6.4)
1994	0.4 (0.8)	3.1 (4.7)	2.4 (3.6)	0.1 (0.2)	2.4 (4.2)
1995	0.5 (0.7)	5.2 (5.9)	4.4 (5.2)	0.3 (0.4)	3.0 (3.9)
1996	0.1 (0.2)	0.6 (0.4)	0.5 (0.4)	0.0 (0.1)	1.1 (1.6)
1997	1.6 (2.7)	1.6 (1.7)	1.4 (1.7)	0.3 (0.5)	1.0 (1.1)
1998	0.4 (0.5)	0.8 (0.6)	0.4 (0.3)	0.1 (0.2)	1.0 (1.4)
1999	7.2 (13.6)	1.9 (2.2)	1.3 (1.5)	9.5 (18.5)	0.9 (1.1)
2000	0.1 (0.2)	1.5 (1.2)	1.3 (0.9)	0.0 (0.0)	0.7 (0.8)
2001	2.5 (4.9)	3.7 (6.1)	1.9 (2.8)	0.6 (1.1)	3.8 (7.5)
2002	0.0 (0.0)	1.9 (2.5)	1.9 (2.5)	0.0 (0.0)	0.4 (0.4)
2003	0.0 (0.0)	1.5 (2.0)	1.4 (1.9)	0.0 (0.1)	1.2 (2.1)
2004	1.4 (2.7)	0.8 (0.9)	0.8 (0.9)	1.1 (2.2)	0.5 (0.6)
2005	0.1 (0.1)	0.2 (0.3)	0.2 (0.3)	0.0 (0.0)	1.3 (2.0)
2006	0.1 (0.1)	1.4 (1.1)	1.2 (1.0)	0.0 (0.0)	1.0 (1.1)
2007	0.2 (0.4)	1.2 (1.3)	1.1 (1.1)	0.1 (0.1)	0.8 (1.3)
2008	0.4 (0.8)	1.3 (1.2)	1.1 (1.0)	0.2 (0.4)	1.5 (2.1)
2009	0.0 (0.1)	0.9 (1.2)	0.7 (0.9)	0.0 (0.0)	0.3 (0.3)
2010	0.1 (0.1)	1.4 (1.3)	1.2 (1.0)	0.0 (0.0)	0.6 (0.8)
2011	0.0 (0.1)	1.0 (1.3)	1.0 (1.2)	0.0 (0.0)	0.5 (0.6)
2012	0.4 (0.6)	1.2 (1.5)	1.2 (1.3)	0.0 (0.0)	0.4 (0.5)
2013	0.1 (0.2)	1.7 (2.0)	1.6 (1.9)	0.0 (0.0)	0.1 (0.1)
2014	0.1 (0.1)	3.0 (4.2)	2.6 (3.9)	0.0 (0.0)	0.5 (0.9)
2015	0.1 (0.2)	3.5 (4.9)	3.3 (4.7)	0.0 (0.0)	1.8 (3.3)
2016	0.5 (0.7)	1.3 (1.9)	1.0 (1.5)	0.0 (0.1)	1.3 (1.4)
2017	0.1 (0.1)	1.0 (1.3)	1.0 (1.2)	0.0 (0.0)	0.3 (0.3)
2018	1.5 (2.9)	0.3 (0.2)	0.2 (0.2)	0.0 (0.0)	0.9 (1.7)
2019	0.2 (0.3)	0.9 (0.6)	0.3 (0.3)	0.0 (0.0)	0.6 (0.5)
2021	0.1 (0.1)	1.2 (0.7)	1.1 (0.7)	0.0 (0.0)	0.9 (1.0)
2022	0.0 (0.0)	1.3 (0.7)	1.3 (0.7)	0.0 (0.0)	0.5 (0.4)
2023	0.1 (0.1)	0.7 (0.4)	0.7 (0.4)	0.0 (0.0)	0.6 (0.5)

Table 10. -- Time series of biomass (t) estimates (± 95% CI) for blue king crab (*Paralithodes platypus*) in the Pribilof District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1980 data.

Year	Immature male (<120 mm)	Mature male (≥120 mm)	Legal male (≥135 mm)	Immature female	Mature female
1981	1,704 (997)	11,628 (3,963)	10,554 (3,613)	497 (402)	5,987 (5,507)
1982	1,152 (525)	7,389 (2,712)	6,893 (2,595)	553 (621)	8,824 (11,724)
1983	962 (674)	5,409 (1,882)	4,474 (1,533)	258 (307)	9,990 (15,495)
1984	130 (92)	2,216 (993)	1,824 (884)	15 (21)	3,070 (2,292)
1985	39 (56)	1,055 (551)	755 (418)	5 (4)	520 (457)
1986	4 (7)	1,505 (893)	1,473 (887)	11 (16)	2,420 (4,272)
1987	191 (294)	2,923 (2,357)	2,781 (2,258)	119 (199)	795 (909)
1988	170 (236)	842 (873)	842 (873)	190 (294)	528 (508)
1989	1,275 (1,550)	827 (1,034)	827 (1,034)	801 (1,045)	945 (1,075)
1990	2,004 (2,598)	3,078 (3,617)	1,514 (1,529)	1,118 (2,034)	1,810 (1,803)
1991	1,377 (1,043)	4,690 (3,544)	3,326 (2,931)	343 (319)	2,433 (1,973)
1992	1,801 (1,808)	4,391 (3,637)	3,035 (2,654)	802 (1,510)	1,848 (1,737)
1993	1,088 (1,162)	4,556 (2,743)	3,203 (1,887)	444 (543)	1,647 (1,489)
1994	619 (471)	3,410 (2,305)	2,806 (1,929)	87 (97)	4,806 (4,207)
1995	968 (1,637)	8,360 (9,898)	6,787 (8,186)	331 (586)	3,948 (4,017)
1996	745 (884)	4,641 (2,444)	3,873 (2,012)	177 (144)	5,408 (5,318)
1997	381 (407)	3,233 (1,749)	2,765 (1,470)	194 (250)	2,835 (2,386)
1998	692 (561)	2,798 (1,367)	2,510 (1,253)	267 (223)	1,914 (1,654)
1999	161 (127)	1,729 (1,141)	1,426 (970)	0 (0)	2,868 (2,625)
2000	113 (151)	2,091 (1,212)	1,746 (1,044)	0 (0)	1,462 (1,319)
2001	87 (130)	1,599 (2,302)	1,461 (2,172)	0 (1)	1,816 (2,571)
2002	0 (0)	680 (674)	647 (665)	0 (0)	1,401 (2,129)
2003	19 (37)	702 (550)	671 (541)	21 (27)	1,286 (1,880)
2004	36 (46)	107 (122)	48 (95)	25 (41)	98 (114)
2005	326 (601)	344 (479)	344 (479)	477 (935)	370 (413)
2006	87 (100)	166 (196)	139 (191)	38 (45)	538 (801)
2007	197 (284)	306 (479)	206 (296)	59 (91)	223 (384)
2008	212 (395)	46 (90)	46 (90)	222 (392)	450 (560)
2009	254 (339)	497 (695)	187 (221)	80 (104)	545 (907)
2010	92 (153)	303 (274)	190 (180)	84 (95)	310 (401)
2011	0 (0)	461 (763)	399 (693)	3 (5)	34 (49)
2012	165 (323)	644 (928)	459 (579)	9 (17)	229 (296)
2013	15 (28)	250 (391)	190 (280)	12 (17)	154 (211)
2014	83 (102)	233 (320)	233 (320)	16 (32)	91 (108)
2015	82 (120)	622 (480)	428 (385)	0 (0)	160 (207)
2016	70 (67)	129 (154)	68 (133)	49 (48)	352 (340)
2017	45 (68)	253 (254)	223 (250)	55 (54)	204 (237)
2018	94 (99)	152 (170)	152 (170)	13 (25)	108 (154)
2019	114 (121)	204 (241)	204 (241)	0 (0)	407 (685)
2021	15 (29)	401 (395)	295 (333)	0 (0)	260 (322)
2022	0 (0)	111 (152)	111 (152)	0 (0)	145 (189)
2023	24 (47)	0 (0)	0 (0)	0 (0)	118 (231)

Table 11. -- Time series of abundance (in millions) estimates (± 95% CI) for blue king crab (*Paralithodes platypus*) in the Pribilof District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1980 data.

Year	Immature male (<120 mm)	Mature male (≥120 mm)	Legal male (≥135 mm)	Immature female	Mature female
1981	2.1 (1.3)	3.8 (1.3)	3.2 (1.1)	0.8 (0.7)	5.4 (4.7)
1982	1.4 (0.8)	2.4 (0.8)	2.1 (0.8)	0.9 (0.9)	7.8 (10.0)
1983	1.0 (0.7)	1.9 (0.7)	1.3 (0.4)	0.5 (0.5)	9.3 (14.2)
1984	0.5 (0.4)	0.8 (0.3)	0.6 (0.3)	0.5 (0.5)	2.8 (2.1)
1985	0.1 (0.1)	0.4 (0.2)	0.3 (0.2)	0.3 (0.3)	0.5 (0.4)
1986	0.0 (0.0)	0.5 (0.3)	0.5 (0.3)	0.0 (0.1)	2.1 (3.7)
1987	0.6 (1.0)	0.9 (0.7)	0.8 (0.7)	0.4 (0.6)	0.7 (0.8)
1988	1.2 (2.0)	0.2 (0.2)	0.2 (0.2)	0.9 (1.5)	0.5 (0.4)
1989	3.5 (4.0)	0.2 (0.3)	0.2 (0.3)	2.6 (3.8)	1.1 (1.5)
1990	2.4 (2.9)	1.5 (1.8)	0.6 (0.6)	2.2 (3.9)	2.0 (2.2)
1991	1.9 (1.4)	2.0 (1.4)	1.2 (1.1)	0.8 (0.7)	2.8 (2.3)
1992	2.4 (2.8)	1.9 (1.6)	1.2 (1.0)	1.8 (3.3)	2.1 (2.1)
1993	1.5 (1.5)	1.9 (1.1)	1.1 (0.7)	0.9 (1.0)	1.8 (1.6)
1994	0.6 (0.5)	1.3 (0.9)	0.9 (0.6)	0.1 (0.2)	5.0 (4.4)
1995	1.1 (2.0)	3.1 (3.6)	2.2 (2.6)	0.7 (1.2)	4.0 (4.1)
1996	0.7 (0.9)	1.7 (0.9)	1.3 (0.7)	0.3 (0.2)	5.0 (4.8)
1997	0.5 (0.5)	1.2 (0.7)	0.9 (0.5)	0.3 (0.4)	2.6 (2.2)
1998	0.9 (0.9)	1.0 (0.5)	0.8 (0.4)	0.5 (0.4)	1.8 (1.6)
1999	0.2 (0.1)	0.6 (0.4)	0.5 (0.3)	0.0 (0.0)	2.8 (2.6)
2000	0.2 (0.2)	0.7 (0.4)	0.5 (0.3)	0.0 (0.0)	1.4 (1.2)
2001	0.1 (0.1)	0.5 (0.7)	0.4 (0.7)	0.0 (0.0)	1.7 (2.5)
2002	0.0 (0.0)	0.2 (0.2)	0.2 (0.2)	0.0 (0.0)	1.2 (1.9)
2003	0.0 (0.1)	0.2 (0.2)	0.2 (0.2)	0.1 (0.1)	1.1 (1.7)
2004	0.1 (0.1)	0.0 (0.1)	0.0 (0.0)	0.1 (0.1)	0.1 (0.1)
2005	2.0 (3.7)	0.1 (0.1)	0.1 (0.1)	2.3 (4.4)	0.3 (0.3)
2006	0.1 (0.1)	0.1 (0.1)	0.0 (0.1)	0.1 (0.1)	0.4 (0.6)
2007	0.2 (0.3)	0.1 (0.2)	0.1 (0.1)	0.1 (0.2)	0.2 (0.3)
2008	0.2 (0.4)	0.0 (0.0)	0.0 (0.0)	0.3 (0.6)	0.4 (0.6)
2009	0.3 (0.3)	0.2 (0.4)	0.1 (0.1)	0.2 (0.2)	0.5 (0.8)
2010	0.1 (0.2)	0.1 (0.1)	0.1 (0.1)	0.2 (0.2)	0.2 (0.3)
2011	0.0 (0.0)	0.2 (0.3)	0.1 (0.2)	0.0 (0.0)	0.0 (0.0)
2012	0.2 (0.4)	0.3 (0.4)	0.2 (0.2)	0.0 (0.1)	0.3 (0.5)
2013	0.1 (0.1)	0.1 (0.2)	0.1 (0.1)	0.0 (0.1)	0.2 (0.2)
2014	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	0.0 (0.1)	0.1 (0.1)
2015	0.1 (0.1)	0.2 (0.2)	0.1 (0.1)	0.0 (0.0)	0.2 (0.3)
2016	0.1 (0.1)	0.1 (0.1)	0.0 (0.0)	0.1 (0.1)	0.4 (0.4)
2017	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	0.2 (0.3)
2018	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	0.0 (0.0)	0.1 (0.1)
2019	0.2 (0.1)	0.1 (0.1)	0.1 (0.1)	0.0 (0.0)	0.3 (0.5)
2021	0.0 (0.0)	0.2 (0.2)	0.1 (0.1)	0.0 (0.0)	0.2 (0.3)
2022	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.1 (0.1)
2023	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.1 (0.2)

Table 12. -- Time series of biomass (t) estimates (± 95% CI) for blue king crab (*Paralithodes platypus*) in the St. Matthew Island Section sampling stratum of the Northern District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1978-1982 data.

Year	Immature male (<105 mm)	Mature male (≥105 mm)	Legal male (≥120 mm)	Immature female	Mature female
1983	1,162 (1,108)	8,834 (4,907)	6,919 (3,631)	78 (95)	1,597 (2,183)
1984	539 (328)	3,737 (1,358)	3,145 (1,219)	42 (81)	216 (285)
1985	404 (273)	2,831 (1,208)	2,405 (987)	95 (93)	38 (60)
1986	252 (238)	1,267 (971)	725 (442)	99 (112)	13 (25)
1987	495 (379)	2,022 (1,130)	1,284 (687)	205 (212)	35 (49)
1988	702 (558)	2,830 (1,346)	1,880 (821)	612 (494)	123 (147)
1989	3,041 (2,696)	4,790 (2,344)	3,415 (1,727)	1,219 (1,027)	504 (448)
1990	1,122 (1,153)	5,931 (3,073)	4,707 (2,436)	336 (351)	13 (25)
1991	1,664 (1,662)	6,073 (2,918)	4,099 (1,901)	521 (749)	270 (506)
1992	1,250 (942)	6,279 (2,513)	4,608 (1,814)	280 (377)	216 (250)
1993	2,106 (1,673)	8,425 (2,685)	6,258 (2,002)	643 (843)	1,635 (3,026)
1994	916 (403)	5,812 (2,008)	4,246 (1,450)	99 (92)	128 (131)
1995	1,038 (589)	4,889 (1,653)	3,448 (1,288)	182 (151)	21 (28)
1996	1,291 (891)	8,494 (4,013)	6,218 (2,772)	364 (421)	432 (770)
1997	1,342 (1,093)	10,005 (6,471)	7,341 (4,082)	287 (419)	407 (707)
1998	902 (661)	7,478 (5,269)	5,487 (3,564)	210 (265)	243 (261)
1999	272 (239)	1,423 (507)	1,163 (462)	93 (121)	14 (28)
2000	315 (212)	1,880 (1,136)	1,534 (993)	52 (60)	37 (52)
2001	483 (415)	2,512 (1,254)	1,937 (1,058)	145 (251)	43 (48)
2002	119 (144)	1,640 (1,033)	1,371 (971)	1 (2)	89 (120)
2003	542 (677)	1,233 (765)	918 (495)	94 (151)	339 (430)
2004	443 (508)	1,341 (754)	1,139 (597)	194 (230)	66 (82)
2005	449 (394)	1,396 (987)	1,016 (699)	93 (105)	52 (76)
2006	1,050 (946)	3,223 (2,262)	2,460 (1,464)	145 (149)	14 (28)
2007	2,618 (2,331)	4,564 (3,113)	2,217 (1,334)	247 (281)	47 (47)
2008	1,972 (1,729)	3,655 (2,059)	2,701 (1,548)	214 (280)	40 (45)
2009	1,891 (942)	5,079 (2,630)	2,571 (1,201)	218 (181)	192 (191)
2010	3,974 (5,873)	8,141 (5,955)	4,317 (2,165)	112 (169)	456 (856)
2011	1,699 (2,064)	9,516 (10,167)	5,701 (5,504)	122 (143)	32 (46)
2012	907 (777)	5,652 (3,668)	3,313 (1,915)	52 (60)	74 (64)
2013	446 (320)	2,022 (860)	1,485 (702)	85 (130)	27 (38)
2014	796 (733)	5,472 (4,750)	3,568 (2,472)	40 (43)	62 (75)
2015	825 (1,310)	5,134 (7,656)	3,592 (5,468)	5 (9)	24 (35)
2016	509 (632)	3,072 (2,273)	2,305 (1,612)	0 (0)	129 (104)
2017	122 (155)	1,721 (1,968)	1,333 (1,482)	61 (94)	0 (0)
2018	434 (497)	1,612 (879)	1,358 (735)	312 (305)	316 (267)
2019	765 (831)	2,879 (1,892)	2,304 (1,483)	525 (670)	389 (481)
2021	804 (1,170)	1,620 (1,249)	1,426 (1,091)	404 (435)	346 (461)
2022	1,352 (1,354)	1,902 (2,036)	1,467 (1,734)	360 (511)	549 (612)
2023	557 (536)	1,719 (1,433)	1,162 (1,009)	155 (185)	181 (285)

Table 13. -- Time series of abundance (in millions) estimates (± 95% CI) for blue king crab (*Paralithodes platypus*) in the St. Matthew Island Section sampling stratum of the Northern District from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1978-1982 data.

Year	Immature male (<105 mm)	Mature male (≥105 mm)	Legal male (≥120 mm)	Immature female	Mature female
1983	2.0 (2.0)	5.0 (2.9)	3.3 (1.7)	0.4 (0.5)	2.6 (3.5)
1984	1.3 (1.1)	1.9 (0.7)	1.5 (0.6)	0.2 (0.4)	0.3 (0.4)
1985	0.7 (0.5)	1.5 (0.7)	1.1 (0.5)	0.3 (0.3)	0.1 (0.1)
1986	0.6 (0.5)	0.8 (0.7)	0.4 (0.2)	0.3 (0.3)	0.0 (0.0)
1987	1.0 (0.8)	1.3 (0.8)	0.7 (0.4)	0.6 (0.6)	0.1 (0.1)
1988	1.5 (1.2)	1.8 (0.9)	1.0 (0.4)	1.6 (1.3)	0.2 (0.2)
1989	6.2 (5.6)	2.9 (1.5)	1.8 (0.9)	3.2 (2.8)	1.0 (0.8)
1990	1.9 (1.9)	3.4 (1.8)	2.3 (1.2)	0.8 (0.9)	0.0 (0.0)
1991	3.3 (3.7)	3.9 (1.9)	2.2 (1.0)	1.4 (2.1)	0.4 (0.8)
1992	2.2 (2.0)	3.7 (1.5)	2.3 (0.9)	0.8 (1.0)	0.5 (0.5)
1993	4.2 (3.8)	5.1 (1.7)	3.3 (1.1)	1.7 (2.2)	2.3 (4.3)
1994	1.4 (0.6)	3.6 (1.3)	2.3 (0.8)	0.2 (0.2)	0.2 (0.2)
1995	1.7 (1.1)	2.9 (1.0)	1.7 (0.6)	0.6 (0.5)	0.0 (0.1)
1996	2.4 (1.8)	5.0 (2.5)	3.1 (1.4)	1.1 (1.4)	0.7 (1.2)
1997	2.3 (2.0)	6.0 (4.2)	3.8 (2.2)	0.8 (1.2)	0.6 (1.1)
1998	2.1 (2.0)	4.5 (3.4)	2.8 (2.0)	0.6 (0.8)	0.4 (0.4)
1999	0.5 (0.5)	0.8 (0.3)	0.6 (0.2)	0.3 (0.4)	0.0 (0.0)
2000	0.5 (0.4)	1.0 (0.6)	0.7 (0.5)	0.1 (0.2)	0.1 (0.1)
2001	0.8 (0.7)	1.4 (0.7)	0.9 (0.5)	0.4 (0.6)	0.1 (0.1)
2002	0.2 (0.2)	0.9 (0.5)	0.6 (0.4)	0.0 (0.0)	0.1 (0.2)
2003	1.2 (1.6)	0.7 (0.5)	0.5 (0.3)	0.3 (0.5)	0.6 (0.7)
2004	0.9 (1.1)	0.7 (0.5)	0.6 (0.3)	0.5 (0.6)	0.1 (0.1)
2005	0.9 (0.8)	0.8 (0.6)	0.5 (0.4)	0.3 (0.3)	0.1 (0.1)
2006	1.8 (1.8)	1.9 (1.4)	1.2 (0.8)	0.3 (0.3)	0.0 (0.0)
2007	4.5 (3.9)	3.2 (2.3)	1.2 (0.7)	0.8 (1.0)	0.1 (0.1)
2008	3.8 (3.5)	2.3 (1.3)	1.5 (0.8)	0.7 (0.9)	0.1 (0.1)
2009	3.4 (2.0)	3.6 (2.0)	1.4 (0.7)	0.6 (0.5)	0.4 (0.4)
2010	6.2 (9.1)	5.7 (4.6)	2.5 (1.3)	0.4 (0.6)	1.0 (1.9)
2011	2.6 (2.9)	6.5 (7.2)	3.2 (3.2)	0.4 (0.4)	0.1 (0.1)
2012	1.6 (1.4)	3.8 (2.6)	1.8 (1.0)	0.2 (0.2)	0.1 (0.1)
2013	0.8 (0.7)	1.3 (0.5)	0.8 (0.4)	0.3 (0.4)	0.1 (0.1)
2014	1.3 (1.1)	3.4 (3.4)	1.8 (1.4)	0.1 (0.1)	0.1 (0.1)
2015	1.2 (1.8)	3.2 (4.8)	2.0 (3.1)	0.0 (0.0)	0.1 (0.1)
2016	0.8 (1.0)	1.8 (1.5)	1.2 (0.9)	0.0 (0.0)	0.3 (0.2)
2017	0.2 (0.2)	1.0 (1.2)	0.7 (0.8)	0.1 (0.2)	0.0 (0.0)
2018	1.1 (1.3)	0.9 (0.5)	0.7 (0.3)	1.0 (1.0)	0.6 (0.5)
2019	1.9 (2.2)	1.7 (1.1)	1.2 (0.8)	1.5 (1.9)	0.8 (1.0)
2021	1.7 (2.5)	0.8 (0.7)	0.7 (0.5)	1.1 (1.1)	0.8 (1.1)
2022	3.2 (3.7)	1.1 (1.2)	0.8 (0.9)	1.1 (1.6)	1.1 (1.3)
2023	0.9 (0.8)	1.1 (0.9)	0.6 (0.6)	0.4 (0.4)	0.3 (0.5)

Table 14. -- Time series of biomass (t) estimates (± 95% CI) for male Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. Listed sizes are carapace width. See authors for 1975-1987 data.

Year	Small male (<113 mm)	Large male (≥113 mm)	Legal male (≥120 mm)	Industry preferred male (≥125 mm)
1988	26,460 (10,877)	31,670 (29,201)	22,482 (23,678)	18,413 (20,791)
1989	27,575 (10,304)	60,142 (20,624)	49,413 (17,768)	41,104 (15,600)
1990	23,938 (8,095)	52,942 (18,111)	47,567 (17,313)	42,987 (16,387)
1991	25,932 (9,567)	63,893 (40,349)	54,968 (34,298)	47,449 (28,066)
1992	15,381 (9,945)	74,538 (47,450)	66,517 (43,193)	57,665 (37,452)
1993	8,056 (3,514)	45,337 (17,552)	40,826 (16,127)	34,932 (13,503)
1994	3,217 (1,179)	29,086 (9,786)	26,534 (9,202)	23,912 (8,525)
1995	1,985 (712)	17,687 (8,332)	16,321 (7,999)	14,757 (7,503)
1996	3,435 (1,402)	16,545 (10,642)	15,562 (10,219)	14,242 (9,667)
1997	3,301 (1,402)	5,787 (2,014)	5,026 (1,876)	4,561 (1,816)
1998	3,175 (858)	5,229 (1,580)	4,259 (1,330)	3,605 (1,157)
1999	8,470 (7,770)	6,365 (3,007)	4,498 (2,142)	3,483 (1,723)
2000	5,297 (2,546)	11,131 (6,847)	8,913 (5,700)	7,529 (5,210)
2001	5,780 (2,937)	10,451 (4,498)	9,036 (4,185)	8,073 (3,986)
2002	4,359 (1,802)	10,043 (4,434)	9,030 (4,172)	8,046 (3,934)
2003	6,281 (2,582)	10,883 (4,939)	9,175 (4,643)	7,991 (4,366)
2004	3,444 (1,122)	9,011 (5,060)	7,773 (4,961)	6,513 (4,801)
2005	5,325 (1,725)	12,118 (5,182)	10,289 (4,831)	8,190 (4,386)
2006	15,136 (15,088)	13,500 (5,467)	10,921 (4,711)	8,927 (4,229)
2007	12,137 (7,936)	15,802 (8,749)	11,884 (6,510)	9,457 (5,598)
2008	10,424 (7,257)	26,753 (28,996)	22,447 (26,113)	18,764 (23,837)
2009	3,849 (1,499)	10,937 (5,728)	8,947 (5,020)	7,783 (4,470)
2010	3,674 (1,177)	10,752 (5,420)	9,137 (4,827)	7,582 (4,347)
2011	11,865 (6,540)	11,525 (6,302)	9,814 (5,862)	8,500 (5,372)
2012	30,882 (21,123)	14,485 (6,790)	10,602 (4,896)	8,378 (4,101)
2013	25,423 (16,036)	39,157 (25,944)	23,823 (13,353)	14,397 (6,421)
2014	18,262 (5,903)	39,934 (12,430)	30,404 (10,151)	24,210 (8,920)
2015	7,853 (2,614)	27,241 (6,936)	22,853 (6,247)	19,301 (5,771)
2016	6,997 (3,949)	18,523 (4,755)	14,143 (3,707)	10,695 (2,992)
2017	4,565 (1,860)	19,387 (6,292)	15,675 (5,221)	12,470 (4,399)
2018	2,711 (873)	11,058 (3,127)	8,861 (2,600)	7,355 (2,333)
2019	4,414 (3,692)	6,377 (2,347)	5,521 (2,138)	4,769 (1,939)
2021	7,704 (2,630)	5,023 (2,120)	3,514 (1,538)	2,403 (1,073)
2022	6,036 (2,165)	8,725 (3,457)	6,450 (2,805)	4,676 (2,142)
2023	3,956 (1,131)	6,382 (1,946)	4,702 (1,617)	3,581 (1,315)

Table 15. -- Time series of biomass (t) estimates (± 95% CI) for new hardshell male Tanner crab (*Chionoecetes bairdi*) east of 166° W using the traditional size cutoff for maturity (≥ 113 mm) and maturity based on chela measurements from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Mature Male New hardshell ≥ 113 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
1990	37,831 (15,585)	34,402 (13,925)	56,997 (18,786)
1991	41,896 (38,949)	29,501 (24,780)	61,851 (44,482)
1992	49,258 (44,560)	38,966 (34,849)	60,184 (53,045)
1993	27,694 (16,229)	19,972 (11,060)	31,679 (18,091)
1994	9,442 (4,718)	9,639 (4,743)	10,574 (5,137)
1995	620 (473)	693 (521)	1,246 (728)
1996	354 (212)	549 (266)	2,787 (1,296)
1997	793 (396)	736 (366)	3,553 (1,614)
1998	1,756 (901)	2,131 (905)	3,892 (1,317)
1999	2,626 (2,013)	2,741 (2,113)	9,564 (9,498)
2000	5,156 (5,393)	4,628 (4,603)	8,279 (7,143)
2001	5,073 (3,248)	4,403 (2,804)	9,116 (4,201)
2002	1,086 (815)	1,136 (795)	3,394 (1,547)
2003	2,588 (1,492)	2,543 (1,418)	7,575 (3,599)
2004	2,515 (1,327)	3,084 (1,403)	4,417 (1,765)
2005	4,135 (1,640)	4,847 (1,662)	7,424 (2,424)
2006	3,319 (2,694)	5,979 (6,878)	14,954 (17,557)
2007	6,908 (7,536)	7,950 (7,918)	15,623 (13,692)
2008	18,726 (28,480)	20,018 (29,170)	25,860 (35,398)
2009	3,510 (1,679)	na	na
2010	4,196 (3,771)	3,610 (2,998)	6,128 (4,147)
2011	2,040 (990)	na	na
2012	4,778 (3,345)	7,333 (4,838)	31,508 (21,308)
2013	33,647 (25,902)	na	na
2014	24,073 (10,302)	22,753 (9,246)	36,423 (13,594)
2015	11,732 (4,328)	na	na
2016	4,155 (1,920)	4,685 (2,650)	6,828 (5,492)
2017	2,160 (3,233)	1,802 (2,648)	3,264 (4,667)
2018	225 (142)	305 (172)	1,547 (673)
2019	625 (477)	706 (613)	4,407 (3,943)
2021	2,715 (1,689)	3,220 (1,807)	8,558 (3,686)
2022	6,540 (3,326)	6,951 (3,359)	11,391 (4,878)
2023	4,018 (1,677)	4,435 (1,810)	6,430 (2,275)

Table 16. -- Time series of biomass (t) estimates (± 95% CI) for female Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. See authors for 1975-1987 data.

Year	Immature female	Mature female
1988	3,703 (1,574)	19,182 (11,150)
1989	6,666 (3,722)	12,309 (4,797)
1990	5,990 (3,260)	19,032 (8,996)
1991	3,633 (1,680)	27,708 (17,830)
1992	346 (197)	11,013 (4,847)
1993	153 (106)	5,171 (2,167)
1994	65 (42)	5,268 (3,096)
1995	250 (123)	5,732 (3,442)
1996	1,015 (557)	5,533 (3,885)
1997	967 (708)	1,947 (857)
1998	550 (228)	1,202 (492)
1999	1,089 (840)	2,272 (1,486)
2000	729 (432)	2,885 (2,197)
2001	2,617 (2,200)	1,314 (618)
2002	1,768 (970)	1,701 (1,106)
2003	705 (328)	2,090 (940)
2004	267 (201)	863 (341)
2005	1,673 (1,290)	2,820 (2,022)
2006	2,451 (2,410)	4,025 (2,318)
2007	696 (447)	5,916 (4,373)
2008	622 (639)	4,457 (2,665)
2009	533 (355)	4,021 (3,045)
2010	795 (483)	2,115 (1,752)
2011	4,390 (3,137)	2,225 (1,174)
2012	5,694 (4,988)	8,550 (5,264)
2013	2,344 (1,718)	11,054 (7,122)
2014	489 (193)	8,159 (7,538)
2015	628 (372)	4,675 (3,126)
2016	50 (32)	1,429 (850)
2017	158 (122)	1,986 (769)
2018	990 (492)	598 (269)
2019	1,481 (956)	652 (437)
2021	1,063 (575)	2,816 (1,190)
2022	690 (509)	1,800 (811)
2023	1,017 (522)	1,605 (720)

Table 17. -- Time series of abundance (in millions) estimates (± 95% CI) for male Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. Listed sizes are carapace width. See authors for 1975-1987 data.

Year	Small male (<113 mm)	Large male (≥113 mm)	Legal male (≥120 mm)	Industry preferred male (≥125 mm)
1988	138.2 (43.6)	49.3 (41.4)	29.6 (29.6)	22.1 (24.3)
1989	243.7 (118.7)	89.5 (30.2)	66.4 (23.3)	51.1 (18.9)
1990	167.4 (60.3)	68.1 (22.0)	56.7 (19.8)	48.3 (17.9)
1991	123.4 (43.9)	90.2 (61.3)	71.3 (48.3)	57.5 (36.7)
1992	54.7 (32.2)	105.7 (67.0)	88.5 (57.3)	72.3 (46.4)
1993	30.0 (12.5)	63.8 (25.1)	54.2 (22.0)	43.5 (17.0)
1994	12.8 (4.2)	39.4 (13.4)	34.0 (12.1)	29.2 (10.8)
1995	10.6 (3.8)	24.0 (11.0)	21.2 (10.3)	18.3 (9.4)
1996	29.3 (13.6)	21.8 (13.8)	19.8 (12.9)	17.3 (11.8)
1997	36.5 (23.8)	7.9 (2.6)	6.3 (2.2)	5.4 (2.1)
1998	24.9 (7.8)	7.8 (2.4)	5.8 (1.8)	4.6 (1.4)
1999	50.1 (39.8)	10.1 (4.8)	6.1 (2.8)	4.3 (2.0)
2000	32.7 (13.2)	16.8 (10.0)	12.1 (7.5)	9.6 (6.6)
2001	118.0 (76.5)	14.5 (5.6)	11.5 (4.9)	9.8 (4.5)
2002	45.8 (22.0)	13.2 (5.3)	11.0 (4.6)	9.2 (4.2)
2003	41.8 (17.7)	14.9 (5.8)	11.2 (5.1)	9.1 (4.5)
2004	18.2 (8.1)	12.4 (5.3)	9.7 (4.9)	7.4 (4.6)
2005	41.9 (19.5)	17.5 (6.4)	13.5 (5.6)	9.7 (4.6)
2006	84.0 (71.2)	20.1 (7.7)	14.6 (5.8)	10.9 (4.8)
2007	52.2 (29.7)	24.7 (13.0)	16.2 (8.1)	11.8 (6.4)
2008	42.1 (27.7)	37.8 (36.2)	28.7 (30.0)	21.9 (25.8)
2009	32.8 (15.3)	16.1 (8.1)	11.8 (6.5)	9.7 (5.4)
2010	39.1 (18.3)	15.3 (7.3)	11.9 (6.1)	9.1 (5.1)
2011	135.2 (77.2)	16.0 (7.5)	12.4 (6.4)	10.0 (5.5)
2012	167.6 (120.5)	22.7 (10.7)	14.4 (6.4)	10.3 (4.8)
2013	110.0 (60.5)	69.6 (49.7)	37.0 (22.5)	19.6 (9.2)
2014	75.5 (21.3)	62.3 (19.0)	41.9 (13.4)	30.5 (10.9)
2015	40.2 (13.7)	40.0 (9.4)	30.7 (7.8)	24.1 (6.8)
2016	24.6 (13.6)	29.6 (7.7)	20.2 (5.3)	13.9 (3.8)
2017	20.6 (8.7)	29.8 (9.5)	21.8 (7.1)	15.9 (5.5)
2018	40.8 (17.3)	16.7 (4.5)	12.0 (3.4)	9.2 (2.9)
2019	37.6 (22.8)	9.3 (3.3)	7.5 (2.8)	6.1 (2.4)
2021	50.6 (19.6)	8.6 (3.6)	5.4 (2.4)	3.4 (1.5)
2022	60.7 (36.9)	14.3 (5.4)	9.5 (4.0)	6.3 (2.8)
2023	42.1 (16.7)	10.4 (3.0)	6.8 (2.3)	4.7 (1.7)

Table 18. -- Time series of abundance (millions) estimates (± 95% CI) for new hardshell male Tanner crab (*Chionoecetes bairdi*) east of 166° W using the traditional size cutoff for maturity (≥ 113 mm) and maturity based on chela measurements from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Mature Male New hardshell ≥ 113 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
1990	47.0 (18.6)	46.6 (17.1)	194.3 (62.4)
1991	58.8 (59.4)	38.3 (34.7)	160.8 (83.7)
1992	69.0 (63.4)	52.7 (47.4)	108.6 (92.2)
1993	37.2 (23.2)	24.4 (14.2)	53.0 (30.1)
1994	11.6 (5.9)	12.8 (6.4)	17.6 (7.6)
1995	0.9 (0.7)	1.1 (0.9)	7.3 (3.2)
1996	0.4 (0.3)	1.2 (0.6)	26.1 (13.0)
1997	1.5 (0.7)	1.5 (0.7)	35.0 (22.3)
1998	3.0 (1.5)	4.7 (1.8)	23.5 (7.4)
1999	4.7 (3.7)	5.9 (4.8)	49.3 (42.6)
2000	7.7 (8.1)	8.0 (7.6)	32.3 (17.4)
2001	6.4 (3.8)	5.9 (3.2)	115.8 (73.0)
2002	1.4 (1.0)	1.9 (1.1)	39.9 (20.4)
2003	4.0 (2.2)	4.8 (2.4)	41.3 (18.2)
2004	4.0 (2.1)	6.3 (2.6)	16.8 (7.5)
2005	6.5 (2.6)	10.2 (3.3)	40.7 (18.7)
2006	5.3 (4.6)	15.4 (19.9)	77.6 (74.6)
2007	10.7 (11.0)	15.8 (14.3)	51.1 (36.0)
2008	24.7 (35.1)	31.7 (41.3)	55.4 (61.4)
2009	5.1 (2.3)	na	na
2010	6.1 (5.4)	5.9 (4.3)	39.0 (18.6)
2011	2.9 (1.4)	na	na
2012	8.8 (6.2)	21.9 (14.6)	160.9 (116.8)
2013	61.2 (49.7)	na	na
2014	37.5 (15.5)	39.7 (15.3)	92.0 (29.0)
2015	16.8 (5.6)	na	na
2016	6.4 (3.6)	8.1 (5.9)	17.5 (16.4)
2017	3.2 (4.9)	2.9 (4.3)	13.0 (12)
2018	0.4 (0.3)	0.7 (0.4)	36.3 (16.3)
2019	1.1 (0.9)	1.6 (1.6)	36.5 (23.0)
2021	4.8 (2.9)	6.9 (3.6)	48.1 (19.8)
2022	10.5 (5.2)	13.4 (6.1)	66.2 (36.6)
2023	6.3 (2.5)	8.0 (3.2)	42.6 (16.4)

Table 19. -- Time series of abundance (in millions) estimates (± 95% CI) for female Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, east of 166° W. See authors for 1975-1987 data.

Year	Immature female	Mature female
1988	56.3 (21.9)	84.4 (47.9)
1989	183.1 (118.5)	57.8 (22.9)
1990	98.7 (53.0)	101.5 (47.2)
1991	41.8 (21.3)	145.9 (103.7)
1992	5.1 (3.0)	53.9 (23.2)
1993	2.9 (1.9)	24.9 (10.8)
1994	2.7 (1.7)	27.0 (17.2)
1995	5.6 (2.9)	30.2 (18.5)
1996	18.1 (9.4)	28.9 (20.4)
1997	34.7 (31.1)	11.1 (5.2)
1998	13.4 (5.9)	6.7 (2.9)
1999	21.3 (12.5)	12.6 (7.8)
2000	16.6 (11.1)	15.0 (11.2)
2001	112.2 (77.7)	7.1 (3.3)
2002	36.4 (19.3)	10.8 (7.9)
2003	13.6 (6.1)	12.0 (5.7)
2004	8.6 (8.3)	4.5 (2.1)
2005	39.3 (32.9)	16.1 (12.1)
2006	29.1 (22.0)	21.9 (12.0)
2007	11.5 (6.7)	30.5 (21.1)
2008	8.9 (5.9)	24.6 (15.2)
2009	23.9 (17.8)	22.1 (16.9)
2010	29.7 (19.7)	10.6 (8.4)
2011	88.8 (54.5)	12.2 (6.2)
2012	65.8 (53.9)	52.4 (35.7)
2013	33.2 (20.9)	60.8 (42.5)
2014	15.1 (7.5)	44.7 (42.0)
2015	14.5 (7.2)	27.6 (19.2)
2016	1.4 (0.9)	7.7 (4.7)
2017	5.3 (3.4)	10.2 (4.0)
2018	35.0 (16.9)	3.5 (1.6)
2019	30.3 (20.1)	3.7 (2.5)
2021	22.8 (16.1)	14.8 (6.4)
2022	38.9 (33.9)	9.6 (4.6)
2023	36.5 (19.8)	8.6 (3.8)

Table 20. -- Time series of biomass (t) estimates (± 95% CI) for male Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. Listed sizes are carapace width. See authors for 1975-1987 data.

Year	Small male (<103 mm)	Large male (≥103 mm)	Legal male (≥110 mm)	Industry preferred male (≥125 mm)
1988	19,282 (8,875)	21,812 (12,530)	17,868 (11,084)	10,618 (7,664)
1989	15,988 (7,018)	29,119 (12,768)	24,883 (11,849)	16,499 (9,483)
1990	16,029 (4,485)	39,509 (22,820)	35,175 (21,125)	24,356 (15,534)
1991	17,926 (4,953)	38,059 (13,836)	34,230 (13,156)	21,816 (8,843)
1992	11,419 (3,303)	26,255 (11,787)	23,410 (11,528)	16,311 (10,235)
1993	7,226 (1,721)	12,651 (4,912)	10,873 (4,634)	6,312 (3,196)
1994	5,070 (1,263)	10,962 (3,745)	9,526 (3,507)	5,391 (2,223)
1995	3,553 (903)	11,757 (6,911)	10,592 (6,584)	5,761 (3,688)
1996	2,927 (822)	7,863 (6,170)	6,682 (5,686)	3,680 (3,383)
1997	1,986 (499)	3,575 (1,185)	2,873 (1,048)	1,121 (505)
1998	3,041 (1,044)	3,563 (1,227)	2,602 (944)	1,085 (438)
1999	4,409 (2,218)	2,311 (961)	1,679 (624)	612 (285)
2000	4,116 (1,230)	2,787 (850)	2,003 (645)	627 (290)
2001	8,171 (2,675)	4,918 (2,069)	3,943 (1,847)	1,780 (1,111)
2002	8,691 (2,905)	4,318 (1,595)	3,029 (1,294)	1,222 (604)
2003	12,528 (4,085)	8,133 (3,789)	6,424 (3,270)	2,661 (1,609)
2004	13,064 (3,188)	13,404 (7,012)	9,732 (5,032)	2,805 (1,191)
2005	18,964 (4,626)	27,348 (10,511)	23,655 (9,595)	13,839 (6,964)
2006	33,861 (10,098)	39,045 (19,584)	32,859 (18,617)	19,083 (15,673)
2007	35,745 (14,696)	40,540 (25,656)	31,673 (23,484)	16,281 (15,172)
2008	15,705 (3,798)	32,031 (17,342)	26,351 (15,780)	13,145 (10,291)
2009	9,673 (3,109)	22,980 (9,143)	19,770 (8,080)	10,812 (4,492)
2010	8,305 (1,931)	26,296 (14,128)	23,372 (13,573)	14,460 (9,924)
2011	13,198 (4,047)	26,123 (17,353)	23,259 (16,712)	15,660 (13,658)
2012	19,737 (6,712)	15,027 (4,271)	11,928 (3,618)	6,365 (2,405)
2013	18,417 (5,941)	20,423 (9,311)	15,939 (7,394)	8,220 (4,684)
2014	17,345 (7,484)	33,394 (8,146)	24,859 (6,016)	11,766 (3,233)
2015	8,036 (2,261)	31,122 (9,281)	27,067 (8,461)	14,306 (5,040)
2016	8,196 (2,624)	35,119 (8,671)	31,252 (7,757)	18,326 (5,168)
2017	5,417 (1,395)	24,268 (7,812)	21,288 (7,339)	12,553 (5,631)
2018	8,786 (2,277)	23,948 (6,999)	21,572 (6,662)	12,871 (4,589)
2019	7,691 (1,776)	9,813 (2,616)	8,749 (2,452)	5,001 (1,563)
2021	10,920 (3,425)	7,491 (2,043)	5,301 (1,534)	2,006 (755)
2022	7,676 (2,510)	6,816 (1,715)	5,131 (1,330)	1,576 (517)
2023	14,685 (3,412)	9,001 (1,980)	6,473 (1,569)	2,381 (775)

Table 21. -- Time series of biomass (t) estimates (± 95% CI) for new hardshell male Tanner crab (*Chionoecetes bairdi*) west of 166° W using the traditional size cutoff for maturity (≥ 103 mm) and maturity based on chela measurements from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Mature Male New hardshell ≥ 103 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
1990	32,385 (21,927)	33,305 (20,520)	46,583 (23,180)
1991	18,279 (10,760)	18,119 (9,829)	31,036 (12,959)
1992	7,719 (3,273)	7,504 (3,059)	16,300 (4,982)
1993	6,869 (3,620)	8,066 (3,529)	12,279 (4,250)
1994	2,590 (1,572)	3,109 (1,639)	5,517 (2,114)
1995	960 (503)	1,377 (579)	2,698 (842)
1996	628 (306)	982 (416)	2,074 (769)
1997	987 (370)	784 (283)	2,218 (602)
1998	1,326 (683)	1,491 (691)	3,506 (1,324)
1999	1,093 (710)	1,540 (1,219)	4,658 (2,803)
2000	1,089 (491)	1,293 (533)	4,599 (1,471)
2001	1,928 (900)	2,203 (994)	9,077 (3,300)
2002	1,457 (801)	2,177 (1,106)	8,172 (3,168)
2003	2,070 (809)	3,500 (1,409)	12,413 (4,302)
2004	7,427 (6,479)	5,830 (4,172)	17,158 (7,904)
2005	15,874 (7,815)	17,423 (7,787)	31,090 (9,906)
2006	9,103 (6,706)	10,804 (6,054)	35,444 (13,216)
2007	7,999 (3,851)	10,655 (3,963)	28,335 (8,291)
2008	19,384 (15,329)	20,457 (14,975)	30,360 (18,004)
2009	11,163 (6,957)	na	na
2010	15,274 (10,697)	15,590 (10,426)	21,185 (11,268)
2011	13,053 (16,472)	12,594 (15,233)	24,063 (17,428)
2012	6,024 (2,777)	5,320 (2,293)	23,705 (8,073)
2013	13,743 (8,537)	na	na
2014	21,224 (6,417)	21,060 (6,493)	35,744 (12,359)
2015	16,860 (7,716)	na	na
2016	10,569 (3,693)	12,089 (4,295)	15,570 (5,204)
2017	2,318 (816)	2,625 (889)	5,074 (1,586)
2018	3,003 (915)	4,164 (1,216)	9,269 (2,473)
2019	1,207 (393)	2,422 (622)	7,545 (1,795)
2021	3,163 (1,153)	4,060 (1,415)	11,931 (3,625)
2022	3,077 (1,151)	3,485 (1,138)	8,621 (2,587)
2023	3,940 (1,102)	5,670 (1,444)	16,246 (3,723)

Table 22. -- Time series of biomass (t) estimates (± 95% CI) for female Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. See authors for 1975-1987 data.

Year	Immature female	Mature female
1988	6,484 (3,079)	6,184 (3,169)
1989	5,165 (2,347)	7,090 (3,186)
1990	3,869 (1,541)	18,663 (17,538)
1991	3,390 (1,647)	17,056 (7,234)
1992	1,644 (626)	15,213 (6,889)
1993	913 (373)	6,470 (2,484)
1994	1,137 (764)	4,579 (2,492)
1995	808 (297)	6,667 (4,052)
1996	424 (175)	4,047 (3,539)
1997	442 (196)	1,451 (884)
1998	1,413 (695)	1,076 (505)
1999	1,793 (696)	1,554 (635)
2000	1,753 (604)	1,246 (622)
2001	3,741 (1,279)	3,247 (1,915)
2002	3,733 (1,472)	2,766 (1,375)
2003	3,984 (2,172)	6,313 (3,007)
2004	3,866 (1,161)	3,865 (1,569)
2005	8,710 (3,773)	8,759 (3,745)
2006	10,808 (5,313)	10,914 (4,484)
2007	4,944 (2,461)	7,521 (2,312)
2008	2,238 (968)	7,206 (3,191)
2009	2,039 (1,314)	4,456 (1,569)
2010	3,008 (1,112)	3,358 (1,567)
2011	6,001 (2,254)	3,189 (983)
2012	5,982 (2,274)	3,805 (1,338)
2013	4,071 (1,473)	6,795 (2,393)
2014	2,023 (986)	6,705 (3,547)
2015	1,038 (415)	6,536 (4,526)
2016	1,057 (462)	6,076 (3,664)
2017	1,255 (493)	5,019 (3,069)
2018	3,921 (1,565)	4,293 (1,926)
2019	3,339 (1,212)	4,113 (1,984)
2021	2,238 (657)	5,604 (2,197)
2022	1,975 (910)	4,767 (2,490)
2023	8,096 (2,894)	5,618 (3,094)

Table 23. -- Time series of abundance (in millions) estimates (± 95% CI) for male Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. Listed sizes are carapace width. See authors for 1975-1987 data.

Year	Small male (<103 mm)	Large male (≥103 mm)	Legal male (≥110 mm)	Industry preferred male (≥125 mm)
1988	198.0 (88.1)	39.9 (21.1)	28.8 (16.8)	13.5 (9.4)
1989	156.4 (72.0)	50.2 (19.6)	38.3 (16.7)	20.7 (11.4)
1990	130.0 (36.9)	65.5 (35.9)	53.4 (31.1)	30.9 (19.5)
1991	162.7 (61.4)	65.2 (22.5)	54.4 (20.5)	28.6 (11.5)
1992	101.9 (31.5)	43.2 (15.5)	35.1 (14.6)	20.5 (11.7)
1993	58.1 (16.1)	23.4 (8.4)	18.4 (7.6)	8.8 (4.5)
1994	46.8 (15.1)	20.0 (6.4)	15.9 (5.7)	7.3 (3.0)
1995	32.4 (11.4)	21.3 (12.3)	18.1 (11.4)	8.2 (5.4)
1996	24.3 (6.7)	15.0 (11.1)	11.7 (9.7)	5.4 (5.1)
1997	24.6 (7.1)	7.3 (2.3)	5.3 (1.9)	1.5 (0.7)
1998	49.1 (17.7)	7.4 (2.5)	4.7 (1.7)	1.5 (0.6)
1999	83.4 (31.1)	5.0 (2.2)	3.2 (1.2)	0.9 (0.4)
2000	71.5 (25.0)	6.0 (1.8)	3.8 (1.2)	0.9 (0.4)
2001	145.2 (45.2)	9.8 (3.7)	7.0 (3.1)	2.4 (1.4)
2002	128.8 (51.0)	9.1 (3.2)	5.5 (2.2)	1.7 (0.8)
2003	171.5 (64.8)	16.4 (7.2)	11.6 (5.7)	3.6 (2.2)
2004	207.5 (46.1)	29.2 (15.9)	18.9 (10.2)	4.1 (1.7)
2005	241.1 (73.8)	49.5 (17.8)	39.2 (15.1)	18.7 (9.3)
2006	287.0 (91.2)	72.3 (30.4)	54.8 (26.8)	25.9 (20.3)
2007	279.4 (102.0)	80.2 (45.3)	55.1 (38.1)	22.6 (21.0)
2008	110.8 (27.2)	62.2 (29.9)	46.2 (25.5)	18.5 (14.1)
2009	98.3 (34.0)	42.7 (16.6)	33.7 (13.7)	15.0 (6.1)
2010	114.2 (31.7)	45.7 (21.5)	37.5 (19.8)	19.1 (12.4)
2011	186.6 (59.3)	42.9 (22.9)	34.8 (21.1)	18.9 (14.5)
2012	223.8 (76.2)	28.7 (8.1)	20.0 (5.9)	8.3 (2.9)
2013	183.9 (52.2)	39.7 (17.1)	27.0 (11.7)	10.8 (5.8)
2014	140.4 (54.3)	68.0 (17.8)	43.8 (10.6)	16.1 (4.3)
2015	67.7 (17.0)	57.4 (16.5)	46.0 (14.1)	19.6 (7.0)
2016	75.2 (24.9)	62.2 (15.5)	51.3 (12.6)	24.7 (6.7)
2017	99.0 (35.2)	43.2 (12.4)	34.9 (10.9)	16.8 (7.1)
2018	173.0 (58.9)	41.8 (11.4)	35.1 (10.4)	17.2 (6.0)
2019	143.4 (45.3)	17.6 (4.5)	14.6 (4.0)	6.9 (2.1)
2021	139.2 (61.5)	16.0 (4.4)	9.9 (2.8)	2.9 (1.1)
2022	118.8 (53.6)	14.6 (3.6)	9.8 (2.5)	2.3 (0.8)
2023	312.1 (79.0)	19.3 (4.1)	12.1 (2.9)	3.4 (1.1)

Table 24. -- Time series of abundance (millions) estimates (± 95% CI) for new hardshell male Tanner crab (*Chionoecetes bairdi*) west of 166° W using the traditional size cutoff for maturity (≥ 103 mm) and maturity based on chela measurements from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Mature Male New hardshell ≥ 103 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
1990	53.5 (34.2)	65.5 (32.3)	174.3 (52.6)
1991	31.4 (17.6)	37.9 (17.2)	165.3 (63.2)
1992	14.8 (5.7)	16.4 (5.7)	103.2 (31.5)
1993	12.6 (6.0)	19.8 (6.6)	62.6 (17.5)
1994	4.8 (2.6)	7.7 (3.1)	41.7 (14.2)
1995	1.9 (0.9)	4.0 (1.3)	26.0 (10.4)
1996	1.5 (0.7)	3.1 (1.3)	18.1 (5.4)
1997	2.2 (0.8)	1.8 (0.6)	23.2 (6.7)
1998	2.9 (1.4)	3.8 (1.6)	46.5 (17.0)
1999	2.4 (1.7)	4.6 (3.9)	79.6 (30.1)
2000	2.4 (1.1)	3.6 (1.5)	69.3 (24.2)
2001	4.2 (2.0)	6.7 (3.0)	141.4 (45.1)
2002	3.1 (1.6)	7.2 (3.4)	117.9 (47.5)
2003	4.6 (1.8)	12.5 (5.1)	162.7 (62.7)
2004	17.0 (14.9)	15.5 (9.7)	188.1 (44.8)
2005	27.9 (12.9)	38.2 (14.1)	250.0 (77.2)
2006	19.4 (14.4)	35.1 (15.4)	271.0 (91.9)
2007	18.4 (8.4)	36.4 (11.4)	217.2 (70.2)
2008	37.5 (26.1)	47.3 (27.5)	125.9 (43.5)
2009	21.1 (13.2)	na	na
2010	26.2 (16.6)	29.9 (16.4)	128.6 (36.4)
2011	19.6 (21.3)	21.7 (19.1)	195.1 (61.3)
2012	12.9 (6.1)	12.5 (5.2)	224.4 (75.4)
2013	27.4 (15.5)	na	na
2014	44.7 (14.7)	50.7 (17.9)	170.4 (63.1)
2015	30.3 (13.4)	na	na
2016	18.3 (6.8)	25.4 (9.8)	79.8 (26.1)
2017	4.7 (1.7)	6.5 (2.3)	90.4 (34.2)
2018	6.1 (1.8)	12.0 (3.7)	165.7 (57.9)
2019	2.6 (0.8)	8.0 (2.0)	138.3 (45.0)
2021	7.5 (2.7)	12.8 (4.4)	136.3 (60.8)
2022	6.6 (2.4)	10.0 (2.9)	113.0 (49.3)
2023	8.3 (2.2)	17.5 (4.3)	305.0 (76.8)

Table 25. -- Time series of abundance (in millions) estimates (± 95% CI) for female Tanner crab (*Chionoecetes bairdi*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys, west of 166° W. See authors for 1975-1987 data.

Year	Immature female	Mature female
1988	129.9 (59.1)	38.1 (18.6)
1989	101.9 (41.8)	43.3 (19.2)
1990	75.1 (27.1)	107.5 (91.6)
1991	84.1 (50.0)	109.2 (48.3)
1992	48.6 (19.0)	97.0 (43.1)
1993	26.4 (10.4)	42.6 (16.4)
1994	34.3 (24.4)	29.2 (15.6)
1995	20.6 (9.6)	43.1 (25.9)
1996	15.0 (6.6)	26.2 (22.3)
1997	22.6 (9.1)	9.0 (5.4)
1998	44.7 (18.7)	6.6 (3.1)
1999	79.7 (31.2)	10.1 (4.0)
2000	57.0 (20.2)	7.3 (3.6)
2001	127.2 (42.9)	21.0 (11.5)
2002	111.6 (52.0)	19.1 (10.9)
2003	123.8 (57.6)	48.5 (26.2)
2004	169.9 (44.1)	27.7 (13.5)
2005	215.7 (91.1)	60.7 (27.9)
2006	178.1 (66.1)	76.4 (31.2)
2007	114.3 (43.7)	51.5 (16.3)
2008	53.4 (22.2)	48.6 (21.8)
2009	71.4 (33.9)	29.2 (10.0)
2010	91.6 (30.0)	21.9 (10.1)
2011	157.6 (58.4)	20.3 (6.0)
2012	122.0 (40.4)	25.6 (8.9)
2013	97.2 (32.7)	48.0 (17.0)
2014	90.4 (51.6)	43.6 (23.7)
2015	36.3 (12.0)	45.4 (33.7)
2016	42.1 (19.4)	42.6 (27.3)
2017	101.2 (46.0)	35.6 (21.4)
2018	166.2 (62.2)	30.3 (13.2)
2019	146.0 (60.2)	32.9 (17.2)
2021	93.4 (57.5)	39.5 (16.8)
2022	91.2 (42.6)	33.2 (18.7)
2023	306.0 (88.1)	40.0 (21.5)

Table 26. -- Time series of biomass (t) estimates (± 95% CI) for male snow crab (*Chionoecetes opilio*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width. See authors for 1975-1987 data.

Year	Small male (<95 mm)	Large male (≥95 mm)	Legal male (≥78 mm)	Industry preferred male (≥102 mm)
1988	331,332 (77,462)	144,135 (53,992)	246,515 (72,221)	105,695 (44,749)
1989	372,788 (80,047)	143,216 (29,275)	291,753 (61,461)	92,421 (18,741)
1990	306,733 (66,006)	347,750 (102,169)	521,713 (141,936)	225,142 (64,920)
1991	293,255 (99,055)	347,976 (105,727)	477,618 (137,409)	278,678 (94,038)
1992	179,621 (52,285)	166,483 (35,962)	223,585 (40,979)	139,020 (31,867)
1993	273,570 (90,020)	98,857 (22,246)	143,013 (29,441)	77,228 (17,233)
1994	289,633 (64,249)	57,386 (12,134)	109,683 (17,990)	44,637 (10,149)
1995	368,026 (70,390)	61,758 (20,003)	158,155 (39,496)	38,179 (11,419)
1996	341,043 (59,711)	143,856 (52,118)	312,771 (76,612)	89,015 (37,186)
1997	209,131 (35,350)	232,388 (57,042)	362,928 (67,573)	171,516 (49,713)
1998	100,536 (21,626)	164,119 (32,216)	219,422 (38,546)	127,490 (26,940)
1999	44,127 (6,928)	67,352 (13,850)	87,096 (15,304)	52,043 (12,390)
2000	77,782 (19,349)	53,942 (16,022)	76,830 (20,501)	41,129 (11,813)
2001	167,671 (57,241)	56,449 (11,370)	106,070 (24,180)	39,995 (7,463)
2002	83,002 (32,008)	55,907 (26,886)	100,734 (44,771)	37,172 (18,146)
2003	81,606 (25,752)	44,423 (10,558)	72,396 (16,838)	31,535 (7,495)
2004	89,330 (25,616)	44,162 (14,554)	61,726 (16,673)	35,580 (13,206)
2005	184,025 (57,268)	50,072 (10,120)	105,971 (23,400)	39,847 (8,491)
2006	124,579 (36,645)	90,152 (61,487)	141,960 (72,442)	72,344 (51,891)
2007	140,003 (35,592)	99,875 (36,249)	162,108 (46,841)	74,720 (31,130)
2008	114,297 (33,499)	79,600 (16,993)	123,530 (24,642)	60,329 (14,198)
2009	98,468 (20,841)	103,188 (30,883)	149,588 (37,618)	77,510 (25,596)
2010	146,025 (40,919)	105,278 (27,471)	134,170 (31,968)	87,099 (24,776)
2011	149,214 (43,758)	111,662 (25,824)	145,916 (32,651)	94,381 (22,016)
2012	123,683 (29,548)	67,476 (18,910)	104,438 (24,275)	53,152 (15,620)
2013	100,506 (21,386)	58,389 (14,779)	99,733 (23,090)	43,126 (11,824)
2014	140,092 (67,735)	105,441 (41,571)	151,453 (48,668)	79,510 (34,884)
2015	85,434 (26,159)	46,410 (14,071)	71,550 (16,480)	35,838 (12,682)
2016	103,747 (37,836)	29,961 (6,869)	51,670 (10,928)	21,997 (5,482)
2017	188,851 (59,034)	29,363 (7,302)	52,272 (13,399)	20,740 (5,817)
2018	458,901 (137,343)	47,054 (18,589)	130,474 (43,554)	27,018 (10,163)
2019	284,181 (95,099)	54,550 (19,151)	175,907 (59,240)	28,955 (10,145)
2021	49,158 (13,873)	24,387 (7,637)	60,095 (15,753)	12,437 (4,500)
2022	37,727 (14,414)	20,403 (7,374)	33,447 (9,780)	13,494 (5,731)
2023	35,388 (11,672)	15,493 (4,188)	20,999 (5,227)	11,441 (3,365)

Table 27. -- Time series of biomass (t) estimates (± 95% CI) for new hardshell male snow crab (*Chionoecetes opilio*) using the traditional size cutoff for maturity (≥ 95 mm) and maturity based on chela measurements from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Large Male New hardshell ≥ 95 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
1989	107,524 (26,824)	154,518 (35,947)	425,030 (88,954)
1990	283,087 (96,495)	270,015 (83,380)	544,000 (145,485)
1991	167,244 (56,883)	169,705 (57,039)	413,060 (126,648)
1992	103,936 (30,172)	126,692 (29,106)	255,265 (58,569)
1993	51,193 (12,014)	107,097 (22,440)	301,016 (90,589)
1994	24,656 (8,444)	72,904 (15,040)	270,450 (61,761)
1995	39,208 (16,534)	117,491 (28,119)	350,804 (70,096)
1996	93,487 (29,346)	169,874 (38,146)	380,900 (71,897)
1997	121,715 (42,622)	124,198 (37,798)	243,691 (54,510)
1998	83,162 (18,850)	88,583 (18,392)	150,566 (30,131)
1999	22,138 (8,997)	26,049 (8,362)	45,959 (11,133)
2000	10,962 (4,654)	19,703 (5,872)	66,412 (18,592)
2001	17,969 (6,397)	47,427 (16,108)	159,229 (55,877)
2002	26,355 (20,141)	37,353 (23,471)	82,754 (42,013)
2003	31,248 (9,343)	35,613 (9,718)	101,338 (29,050)
2004	27,981 (13,299)	41,706 (14,568)	102,454 (29,051)
2005	27,531 (7,801)	73,607 (19,168)	196,144 (57,385)
2006	13,364 (8,330)	39,795 (15,135)	101,072 (34,560)
2007	56,218 (20,016)	82,419 (22,923)	168,424 (41,553)
2008	46,544 (13,800)	na	na
2009	50,209 (16,686)	52,551 (13,622)	123,776 (25,145)
2010	76,187 (24,400)	99,268 (26,363)	191,342 (40,726)
2011	61,162 (19,162)	83,700 (23,189)	188,190 (51,291)
2012	19,174 (7,627)	na	na
2013	38,648 (12,169)	66,492 (17,157)	124,918 (27,066)
2014	81,617 (39,963)	na	na
2015	26,623 (11,624)	42,155 (12,819)	95,093 (28,200)
2016	14,108 (4,420)	na	na
2017	18,595 (6,366)	51,834 (17,407)	192,756 (59,281)
2018	35,173 (16,233)	175,181 (53,721)	469,193 (138,370)
2019	47,195 (18,675)	133,988 (45,374)	311,936 (104,322)
2021	16,526 (6,659)	34,494 (11,908)	44,813 (15,495)
2022	10,733 (6,775)	15,973 (7,205)	37,923 (14,826)
2023	9,622 (3,368)	13,638 (3,888)	41,735 (12,263)

Table 28. -- Time series of biomass (t) estimates (± 95% CI) for female snow crab (*Chionoecetes opilio*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. See authors for 1975-1987 data.

Year	Immature female	Mature female
1988	36,803 (14,464)	165,619 (57,314)
1989	23,265 (11,455)	256,728 (163,114)
1990	38,213 (32,263)	174,942 (72,149)
1991	68,925 (25,227)	199,020 (94,676)
1992	49,374 (16,347)	123,479 (48,802)
1993	74,921 (33,072)	127,081 (41,412)
1994	68,240 (27,549)	122,604 (33,649)
1995	31,019 (11,981)	164,959 (44,039)
1996	9,274 (6,444)	104,429 (31,008)
1997	5,452 (5,167)	101,393 (39,142)
1998	13,324 (12,479)	70,183 (38,534)
1999	6,160 (2,262)	29,849 (13,945)
2000	12,480 (5,179)	93,882 (99,120)
2001	17,033 (10,960)	74,840 (43,557)
2002	4,388 (2,387)	29,508 (18,448)
2003	14,838 (6,973)	38,761 (30,847)
2004	30,472 (16,182)	47,743 (26,154)
2005	55,125 (25,384)	62,603 (27,395)
2006	28,090 (12,645)	50,592 (20,186)
2007	27,875 (14,435)	54,449 (34,546)
2008	8,994 (3,449)	49,352 (22,756)
2009	29,660 (19,350)	50,002 (22,623)
2010	90,479 (35,476)	94,956 (34,177)
2011	41,232 (13,238)	169,117 (63,699)
2012	41,425 (13,450)	143,268 (65,922)
2013	31,364 (10,921)	125,672 (50,923)
2014	54,523 (47,116)	111,362 (46,704)
2015	35,701 (17,247)	81,628 (29,256)
2016	53,788 (28,983)	52,022 (21,010)
2017	66,242 (24,910)	103,422 (44,445)
2018	83,164 (42,474)	161,573 (63,268)
2019	5,125 (4,349)	106,799 (41,236)
2021	298 (139)	29,844 (25,907)
2022	26,219 (17,548)	20,941 (14,162)
2023	22,378 (8,952)	15,010 (8,039)

Table 29. -- Time series of abundance (in millions) estimates (± 95% CI) for male snow crab (*Chionoecetes opilio*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width. See authors for 1975-1987 data.

Year	Small male (<95 mm)	Large male (≥95 mm)	Legal male (≥78 mm)	Industry preferred male (≥102 mm)
1988	3,677.9 (991.7)	276.9 (94.8)	683.8 (182.3)	178.5 (70.2)
1989	3,111.0 (691.5)	292.3 (60.6)	882.5 (197.3)	162.0 (32.6)
1990	2,263.9 (582.7)	710.4 (214.0)	1,348.1 (361.5)	395.1 (115.5)
1991	3,331.8 (1,197.1)	618.3 (179.4)	1,093.8 (325.8)	439.7 (144.1)
1992	2,776.2 (1,253.0)	293.2 (62.7)	512.9 (89.4)	223.3 (51.7)
1993	4,805.5 (1,712.8)	182.8 (41.9)	355.8 (72.2)	127.6 (28.9)
1994	4,116.9 (1,240.9)	106.4 (22.2)	320.6 (52.7)	73.8 (16.7)
1995	3,635.3 (766.0)	128.0 (43.9)	515.7 (128.1)	67.3 (20.6)
1996	2,309.8 (431.9)	302.4 (105.2)	958.6 (211.7)	161.4 (65.2)
1997	1,204.4 (256.9)	447.1 (100.4)	945.8 (157.0)	290.8 (78.3)
1998	778.2 (251.7)	308.4 (59.3)	514.6 (87.4)	214.9 (44.7)
1999	422.4 (102.9)	124.9 (23.9)	198.8 (30.6)	85.7 (19.7)
2000	971.1 (309.0)	102.4 (31.8)	191.1 (49.5)	69.8 (20.7)
2001	1,529.4 (585.8)	111.3 (24.1)	312.7 (80.8)	69.3 (13.5)
2002	596.3 (253.5)	114.7 (54.8)	284.5 (121.8)	66.6 (32.3)
2003	1,073.7 (459.3)	88.1 (21.3)	196.0 (47.2)	55.0 (13.1)
2004	1,491.2 (505.6)	79.9 (24.2)	147.8 (34.3)	58.0 (20.5)
2005	1,890.3 (612.7)	89.2 (17.6)	312.5 (80.8)	63.0 (12.9)
2006	1,178.4 (365.7)	171.9 (119.4)	377.6 (167.9)	126.4 (95.1)
2007	1,260.8 (409.9)	196.7 (67.0)	435.0 (117.6)	132.5 (53.4)
2008	1,008.8 (326.7)	154.3 (31.6)	325.2 (66.8)	105.1 (23.8)
2009	1,055.4 (310.5)	195.7 (57.9)	371.5 (89.3)	129.9 (42.7)
2010	2,460.5 (807.9)	184.4 (45.1)	293.7 (68.2)	138.3 (37.0)
2011	1,829.8 (530.7)	194.1 (45.7)	330.8 (77.8)	150.1 (34.9)
2012	1,384.9 (376.8)	123.5 (34.3)	274.1 (60.9)	87.0 (25.7)
2013	1,055.9 (249.4)	112.6 (27.6)	280.0 (67.2)	73.6 (19.6)
2014	1,527.8 (899.9)	204.2 (76.8)	385.3 (109.6)	138.5 (58.5)
2015	1,504.2 (708.7)	84.2 (22.3)	183.8 (36.2)	57.2 (18.0)
2016	2,361.9 (1,255.0)	57.8 (13.2)	143.2 (32.2)	37.4 (9.3)
2017	3,541.7 (1,158.0)	58.0 (14.0)	151.9 (43.6)	36.0 (9.9)
2018	5,773.1 (1,972.5)	100.6 (41.2)	437.8 (147.9)	49.4 (19.0)
2019	2,018.0 (712.7)	119.7 (42.8)	611.1 (213.6)	53.7 (19.1)
2021	253.6 (67.8)	54.2 (16.6)	192.1 (51.9)	23.5 (8.5)
2022	602.5 (260.1)	42.2 (14.6)	92.6 (26.0)	24.6 (10.3)
2023	862.6 (340.2)	30.3 (7.8)	50.6 (12.0)	20.0 (5.7)

Table 30. -- Time series of abundance (millions) estimates (± 95% CI) for new hardshell male snow crab (*Chionoecetes opilio*) using the traditional size cutoff for maturity (≥ 95 mm) and maturity based on chela measurements from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Large Male New hardshell ≥ 95 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
1989	218.6 (55.7)	485.5 (110.7)	2,944.4 (666.3)
1990	583.9 (203.5)	712.3 (201.3)	2,593.6 (656.5)
1991	308.6 (104.3)	412.2 (136.6)	3,396.6 (1,213.8)
1992	183.6 (52.0)	366.2 (75.1)	2,803.4 (1,244.3)
1993	95.2 (22.4)	544.3 (157.7)	4,740.8 (1,691.4)
1994	45.5 (15.4)	436.2 (104.7)	3,820.8 (1,210.3)
1995	83.0 (36.8)	599.4 (126.5)	3,274.9 (732.4)
1996	206.9 (65.6)	627.0 (122.7)	2,135.9 (409.2)
1997	230.3 (69.8)	301.1 (68.8)	989.1 (251.4)
1998	163.2 (36.5)	231.0 (46.7)	766.9 (247.5)
1999	39.7 (14.6)	80.2 (18.3)	358.7 (103.1)
2000	19.8 (8.0)	92.7 (25.8)	853.1 (298.0)
2001	38.2 (14.8)	226.1 (82.0)	1,397.8 (560.8)
2002	55.5 (40.6)	121.9 (64.3)	512.9 (253.1)
2003	61.5 (18.7)	113.5 (32.3)	1,076.7 (459.1)
2004	48.5 (21.7)	175.3 (55.7)	1,436.1 (492.6)
2005	48.3 (13.0)	360.9 (115.6)	1,849.0 (603.1)
2006	27.2 (17.5)	202.8 (70.5)	999.2 (345.2)
2007	114.4 (38.9)	326.1 (79.8)	1,222.7 (393.4)
2008	89.8 (24.9)	na	na
2009	94.8 (28.8)	154.7 (31.0)	1,016.7 (304.9)
2010	133.0 (40.4)	318.6 (67.3)	2,362.7 (741.0)
2011	106.0 (33.7)	304.3 (92.1)	1,787.6 (528.3)
2012	37.3 (14.5)	na	na
2013	75.8 (23.0)	242.5 (56.7)	1,038.5 (246.7)
2014	158.0 (73.1)	na	na
2015	45.7 (17.0)	157.2 (47.8)	1,451.1 (706.9)
2016	26.7 (8.3)	na	na
2017	36.8 (12.0)	326.8 (122.1)	3,483.0 (1,148.0)
2018	77.0 (36.6)	1,135.2 (344.4)	5,631.0 (1,942.5)
2019	104.4 (41.8)	577.1 (195.4)	1,944.8 (708.5)
2021	37.0 (14.5)	117.9 (42.4)	177.3 (59.9)
2022	21.2 (13.2)	61.6 (26.6)	567.4 (253.6)
2023	17.9 (6.1)	57.2 (17.5)	864.8 (339.8)

Table 31. -- Time series of abundance (in millions) estimates (± 95% CI) for female snow crab (*Chionoecetes opilio*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. See authors for 1975-1987 data.

Year	Immature female	Mature female
1988	1,045.8 (461.3)	2,795.6 (975.4)
1989	564.7 (262.1)	4,625.9 (3,417.8)
1990	1,043.9 (776.1)	3,008.7 (1,392.7)
1991	2,270.7 (780.9)	3,545.4 (1,930.8)
1992	1,862.2 (616.9)	2,068.9 (849.0)
1993	2,909.2 (1,128.3)	2,396.3 (818.2)
1994	2,684.2 (1,287.0)	2,204.8 (552.4)
1995	1,021.7 (436.3)	3,109.1 (825.9)
1996	258.4 (186.9)	2,107.2 (680.4)
1997	142.9 (133.9)	2,001.0 (813.2)
1998	336.0 (276.7)	1,386.7 (791.2)
1999	187.6 (73.8)	551.0 (270.0)
2000	391.9 (170.5)	1,649.1 (1,711.0)
2001	470.9 (376.3)	1,243.8 (727.5)
2002	121.1 (66.4)	502.8 (342.5)
2003	542.4 (264.6)	680.2 (601.4)
2004	1,375.9 (810.4)	931.9 (525.2)
2005	1,512.2 (732.0)	1,110.9 (498.3)
2006	765.7 (352.3)	744.3 (304.8)
2007	620.4 (328.5)	839.6 (623.2)
2008	395.9 (203.3)	747.7 (445.2)
2009	1,059.9 (573.4)	747.2 (356.6)
2010	3,027.6 (1,163.2)	1,777.8 (654.1)
2011	1,175.4 (395.7)	3,137.0 (1,190.0)
2012	1,165.5 (418.5)	2,656.1 (1,309.6)
2013	1,029.4 (388.2)	2,222.2 (994.7)
2014	1,590.8 (1,175.2)	1,815.6 (894.7)
2015	1,461.0 (794.1)	1,238.6 (497.4)
2016	2,131.6 (1,146.9)	818.4 (347.2)
2017	2,494.8 (978.4)	2,086.9 (923.7)
2018	2,588.7 (1,369.7)	3,282.0 (1,341.3)
2019	117.3 (100.6)	2,040.9 (785.5)
2021	22.6 (18.0)	609.8 (543.4)
2022	903.8 (519.6)	408.7 (280.4)
2023	891.5 (335.2)	290.7 (154.8)

Table 32. -- Time series of biomass (t) estimates (± 95% CI) for hair crab (*Erimacrus isenbeckii*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1987 data.

Year	Sublegal male (<83 mm)	Legal male (≥83 mm)	Female
1988	631 (837)	618 (354)	168 (89)
1989	2,955 (5,105)	404 (240)	43 (40)
1990	2,540 (3,299)	783 (453)	255 (155)
1991	1,393 (1,086)	795 (434)	230 (130)
1992	778 (408)	591 (300)	80 (53)
1993	1,111 (503)	2,296 (1,588)	217 (148)
1994	1,324 (551)	2,413 (1,253)	194 (133)
1995	1,396 (770)	4,326 (2,791)	158 (84)
1996	1,152 (596)	3,163 (1,738)	277 (132)
1997	584 (252)	3,103 (1,289)	92 (56)
1998	213 (96)	1,984 (798)	361 (241)
1999	196 (109)	1,735 (510)	308 (125)
2000	180 (123)	2,873 (1,259)	331 (180)
2001	132 (96)	1,287 (521)	565 (243)
2002	65 (45)	1,375 (529)	101 (64)
2003	357 (319)	659 (275)	83 (49)
2004	204 (229)	491 (191)	83 (71)
2005	328 (252)	212 (132)	273 (134)
2006	357 (236)	661 (415)	877 (954)
2007	575 (298)	1,278 (519)	357 (168)
2008	623 (280)	1,346 (631)	387 (174)
2009	1,104 (426)	1,916 (731)	464 (250)
2010	903 (401)	1,610 (677)	469 (186)
2011	1,752 (868)	2,129 (935)	377 (162)
2012	3,626 (1,536)	2,878 (1,128)	534 (234)
2013	3,357 (1,287)	6,469 (2,626)	1,055 (433)
2014	1,144 (715)	3,391 (1,298)	304 (139)
2015	616 (424)	1,338 (511)	127 (74)
2016	213 (102)	716 (307)	71 (50)
2017	208 (140)	1,084 (364)	71 (45)
2018	332 (228)	886 (338)	195 (105)
2019	459 (382)	552 (238)	147 (89)
2021	597 (292)	544 (244)	589 (311)
2022	392 (149)	523 (227)	268 (134)
2023	738 (270)	575 (245)	389 (158)

Table 33. -- Time series of abundance (in millions) estimates (± 95% CI) for hair crab (*Erimacrus isenbeckii*) from National Marine Fisheries Service eastern Bering Sea bottom trawl surveys. Listed sizes are carapace length. See authors for 1975-1987 data.

Year	Sublegal male (<83 mm)	Legal male (≥83 mm)	Female
1988	3.9 (6.1)	0.8 (0.4)	0.9 (0.7)
1989	12.6 (21.8)	0.5 (0.3)	0.1 (0.1)
1990	10.1 (13.4)	1.2 (0.8)	1.0 (0.6)
1991	4.8 (3.5)	1.3 (0.7)	1.2 (0.7)
1992	2.5 (1.2)	1.1 (0.6)	0.5 (0.4)
1993	3.8 (1.9)	3.9 (2.6)	1.3 (1.0)
1994	5.0 (2.7)	4.0 (2.1)	1.3 (1.1)
1995	5.0 (2.9)	6.6 (4.3)	0.7 (0.3)
1996	3.6 (1.8)	5.1 (2.7)	1.0 (0.5)
1997	1.7 (0.7)	4.6 (1.8)	0.4 (0.2)
1998	0.6 (0.3)	2.9 (1.1)	1.3 (0.8)
1999	0.6 (0.3)	2.4 (0.7)	1.2 (0.4)
2000	0.5 (0.3)	4.1 (1.7)	1.2 (0.7)
2001	0.5 (0.3)	1.8 (0.7)	2.2 (1.0)
2002	0.3 (0.2)	2.0 (0.8)	0.5 (0.3)
2003	1.3 (1.0)	0.9 (0.4)	0.5 (0.3)
2004	0.6 (0.6)	0.8 (0.3)	0.3 (0.2)
2005	1.0 (0.7)	0.3 (0.2)	0.8 (0.5)
2006	1.2 (0.8)	1.0 (0.7)	3.6 (4.6)
2007	2.3 (1.3)	1.9 (0.7)	1.3 (0.9)
2008	2.3 (1.1)	2.2 (1.0)	1.4 (0.6)
2009	3.6 (1.4)	3.1 (1.1)	1.7 (0.9)
2010	3.3 (1.3)	2.5 (1.0)	2.2 (1.1)
2011	6.9 (3.8)	3.5 (1.4)	1.6 (0.6)
2012	11.8 (5.3)	4.6 (1.8)	2.2 (0.8)
2013	10.3 (3.9)	10.7 (4.6)	4.0 (1.7)
2014	3.3 (2.2)	5.4 (2.0)	1.0 (0.4)
2015	1.8 (1.3)	2.1 (0.8)	0.6 (0.3)
2016	0.6 (0.3)	1.2 (0.5)	0.3 (0.3)
2017	0.6 (0.4)	1.6 (0.6)	0.3 (0.2)
2018	1.1 (0.8)	1.4 (0.5)	0.8 (0.5)
2019	1.8 (1.6)	0.8 (0.3)	0.5 (0.3)
2021	2.2 (1.3)	0.8 (0.3)	1.8 (1.0)
2022	1.1 (0.4)	0.8 (0.4)	0.6 (0.3)
2023	2.2 (0.9)	1.0 (0.4)	1.2 (0.5)

Table 34. -- Time series of biomass estimates (t) for Norton Sound red king crab (*Paralithodes camtschaticus*) from the National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace length.

Year	Immature male (<94 mm)	Mature male (≥94 mm)	Legal male (≥104 mm)	Immature female	Mature female
2010	257 (217)	1,618 (1,560)	1,006 (970)	35 (37)	266 (188)
2017	337 (289)	1,158 (906)	1,021 (797)	62 (56)	136 (150)
2019	1,272 (688)	759 (526)	587 (457)	386 (299)	236 (163)
2021	687 (637)	926 (772)	516 (416)	189 (349)	1,916 (1,080)
2022	126 (100)	1,121 (1,001)	847 (739)	3 (6)	1,144 (914)
2023	163 (147)	2,522 (1,610)	2,214 (1,413)	35 (48)	406 (434)

Table 35. -- Time series of abundance estimates (in millions) for Norton Sound red king crab (*Paralithodes camtschaticus*) from the National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace length.

Year	Immature male (<94 mm)	Mature male (≥94 mm)	Legal male (≥104 mm)	Immature female	Mature female
2010	1.1 (0.7)	1.7 (1.6)	0.8 (0.8)	0.3 (0.2)	0.5 (0.4)
2017	2.1 (1.5)	1.0 (0.8)	0.8 (0.6)	1.6 (1.5)	0.2 (0.3)
2019	4.5 (2.4)	0.6 (0.4)	0.4 (0.3)	2.4 (2.2)	0.5 (0.4)
2021	1.6 (1.6)	1.1 (0.9)	0.5 (0.4)	0.7 (1.2)	3.8 (2.2)
2022	0.4 (0.3)	1.1 (1.0)	0.8 (0.7)	0.1 (0.1)	2.2 (1.8)
2023	0.8 (0.6)	2.3 (1.5)	1.9 (1.2)	0.7 (0.6)	0.6 (0.6)

Table 36. -- Time series of biomass estimates (t) for northern Bering Sea blue king crab (*Paralithodes platypus*) from National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace length.

Year	Immature male (<94 mm)	Mature male (≥94 mm)	Legal male (≥104 mm)	Immature female	Mature female
2010	325 (220)	847 (495)	715 (413)	390 (228)	601 (345)
2017	616 (539)	2,911 (2,033)	2,360 (1,745)	805 (631)	1,458 (1,314)
2018	251 (290)	1,533 (2,142)	1,096 (1,490)	44 (85)	1,111 (1,385)
2019	141 (190)	542 (430)	460 (381)	51 (55)	471 (358)
2021	185 (154)	304 (314)	258 (287)	190 (147)	361 (292)
2022	713 (768)	654 (771)	307 (388)	545 (553)	1,103 (1,022)
2023	879 (578)	1,865 (2,483)	1,291 (2,030)	848 (628)	368 (210)

*2018 rapid assessment had fewer stations and a different survey grid.

** male mature and legal size cutoffs changed from previous technical memorandum

Table 37. -- Time series of abundance estimates (in millions) for northern Bering Sea blue king crab (*Paralithodes platypus*) from National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace length.

Year	Immature male (<94 mm)	Mature male (≥94 mm)	Legal male (≥104 mm)	Immature female	Mature female
2010	1.1 (0.9)	0.8 (0.4)	0.6 (0.3)	1.3 (0.8)	0.9 (0.5)
2017	1.7 (1.5)	2.4 (1.7)	1.7 (1.3)	2.3 (2.2)	2.4 (2.1)
2018	0.7 (0.7)	1.4 (2.0)	0.8 (1.1)	0.1 (0.2)	1.8 (2.3)
2019	0.5 (0.6)	0.4 (0.3)	0.3 (0.3)	0.2 (0.2)	0.8 (0.7)
2021	0.7 (0.5)	0.2 (0.2)	0.2 (0.2)	0.7 (0.5)	0.6 (0.4)
2022	2.5 (2.7)	0.6 (0.8)	0.2 (0.3)	1.9 (1.9)	2.0 (2.2)
2023	2.4 (1.6)	1.7 (2.2)	1.0 (1.6)	2.5 (1.8)	0.7 (0.4)

*2018 rapid assessment had fewer stations and a different survey grid.
** male mature and legal size cutoffs changed from previous technical memorandum

Table 38. -- Time series of biomass estimates (t) for male snow crab (*Chionoecetes opilio)* from National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Small male (<68 mm)	Large male (≥68 mm)	Legal male (≥78 mm)	Industry preferred male (≥102 mm)
2010	180,388 (47,482)	729 (517)	8 (15)	0 (0)
2017	134,866 (51,629)	347 (205)	74 (77)	38 (54)
2018	115,491 (74,894)	3,799 (6,528)	1,195 (2,156)	0 (0)
2019	100,266 (43,587)	36,761 (22,085)	16,389 (13,149)	734 (1,033)
2021	36,390 (11,547)	2,095 (1,621)	1,140 (947)	144 (146)
2022	84,229 (26,534)	815 (842)	80 (69)	0 (0)
2023	65,707 (30,241)	285 (170)	65 (74)	32 (64)

*2018 rapid assessment had fewer stations and a different survey grid.
*A methodology change caused values for large/small males to differ slightly from values reported in 2022 tech memo

Table 39. -- Time series of biomass (t) estimates (± 95% CI) for new hardshell male snow crab (*Chionoecetes opilio*) using the traditional size cutoff for maturity (≥ 68 mm) and maturity based on chela measurements from National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Large Male New hardshell ≥ 68 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
2010	549 (385)	1,795 (713)	178,153 (46,757)
2017	341 (203)	6,674 (2,302)	134,839 (51,642)
2018	3,733 (6,433)	6,198 (5,831)	118,647 (76,214)
2019	36,652 (22,054)	25,147 (13,509)	133,901 (58,588)
2021	1,663 (1,360)	3,149 (1,380)	37,925 (11,892)
2022	770 (840)	5,068 (2,924)	84,455 (26,834)
2023	285 (170)	3,554 (1,637)	65,532 (30,255)

Table 40. -- Time series of biomass estimates (t) for female snow crab (*Chionoecetes opilio*) from National Marine Fisheries Service northern Bering Sea bottom trawl surveys.

Year	Immature female	Mature female
2010	129,613 (36,053)	21,410 (8,531)
2017	80,360 (34,265)	6,105 (2,539)
2018	56,667 (41,473)	3,265 (3,111)
2019	20,492 (7,339)	8,445 (4,748)
2021	31,619 (10,758)	2,377 (987)
2022	67,442 (21,934)	6,217 (2,770)
2023	38,610 (18,886)	6,880 (3,632)

Table 41. -- Time series of abundance estimates (in millions) for male snow crab (*Chionoecetes opilio*) from National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace length.

Year	Small male (<68 mm)	Large male (≥68 mm)	Legal male (≥78 mm)	Industry preferred male (≥102 mm)
2010	6,787.0 (1,739.2)	5.6 (4.0)	0.0 (0.1)	0.0 (0.0)
2017	7,314.4 (3,235.5)	2.1 (1.3)	0.2 (0.2)	0.1 (0.1)
2018	4,318.7 (3,043.8)	22.8 (38.7)	4.9 (8.8)	0.0 (0.0)
2019	2,196.4 (762.3)	199.5 (112.3)	65.5 (50.0)	1.4 (2.0)
2021	2,234.2 (759.4)	10.5 (8.1)	4.2 (3.5)	0.3 (0.3)
2022	3,886.0 (1,173.5)	5.7 (6.5)	0.3 (0.3)	0.0 (0.0)
2023	3,295.5 (1,457.0)	1.7 (1.1)	0.2 (0.2)	0.0 (0.1)

*2018 rapid assessment had fewer stations and a different survey grid.

*A methodology change caused values for large/small males to differ slightly from values reported in 2022 tech memo

Table 42. -- Time series of abundance (millions) estimates (± 95% CI) for new hardshell male snow crab (*Chionoecetes opilio*) using the traditional size cutoff for maturity (≥ 68 mm) and maturity based on chela measurements from National Marine Fisheries Service northern Bering Sea bottom trawl surveys. Listed sizes are carapace width.

Year	Large Male New hardshell ≥ 68 mm	Mature Male New hardshell Chela-based maturity	Total Males New hardshell
2010	4.2 (2.9)	17.6 (6.8)	6,733.2 (1,720.6)
2017	2.1 (1.3)	150.1 (52.9)	7,308.3 (3,235.5)
2018	22.3 (38.0)	104.4 (67.8)	4,331.7 (3,044.9)
2019	198.7 (112.1)	214.9 (100.9)	2,351.7 (818.3)
2021	8.7 (7.2)	51.5 (18.9)	2,239.2 (760.3)
2022	5.5 (6.5)	97.2 (42.5)	3,875.3 (1,173.6)
2023	1.7 (1.1)	67.9 (33.5)	3,283.5 (1,457.1)

Table 43. -- Time series of abundance estimates (in millions) for female snow crab (*Chionoecetes opilio*) from National Marine Fisheries Service northern Bering Sea bottom trawl surveys.

Year	Immature female	Mature female
2010	5,959.9 (1,585.1)	458.9 (180.9)
2017	4,731.7 (2,202.0)	151.2 (64.8)
2018	2,290.4 (1,658.7)	92.8 (94.2)
2019	868.6 (295.6)	176.8 (98.5)
2021	1,962.7 (669.7)	47.2 (19.7)
2022	3,246.5 (996.0)	150.9 (69.5)
2023	2,325.7 (1,072.7)	205.8 (114.6)

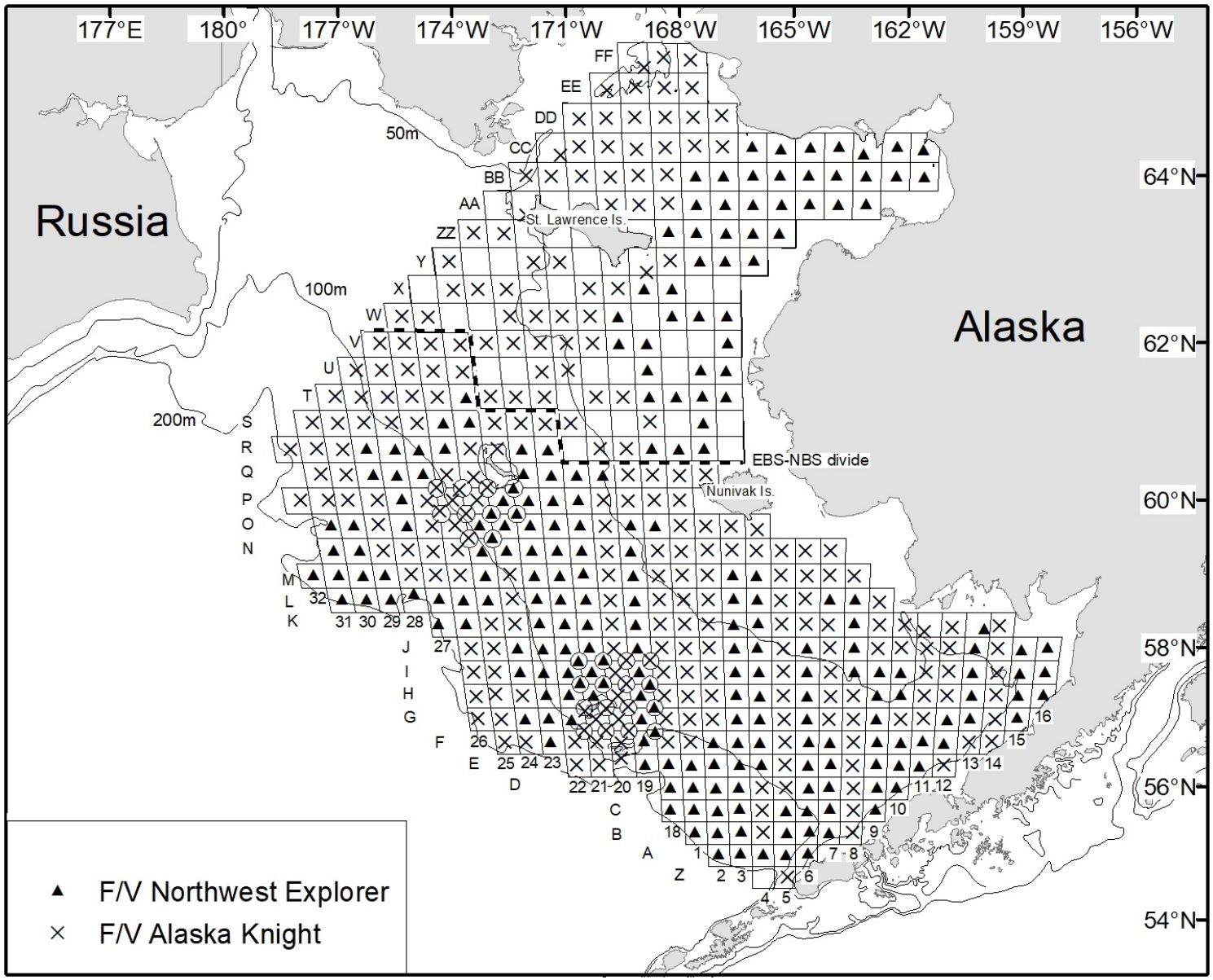

Figure 1. -- National Marine Fisheries Service eastern and northern Bering Sea standard bottom trawl area surveyed by the FV *Alaska Knight* and the FV *Northwest Explorer* from 28 May to 20 August 2023. Note missing stations in the Northern Bering Sea.

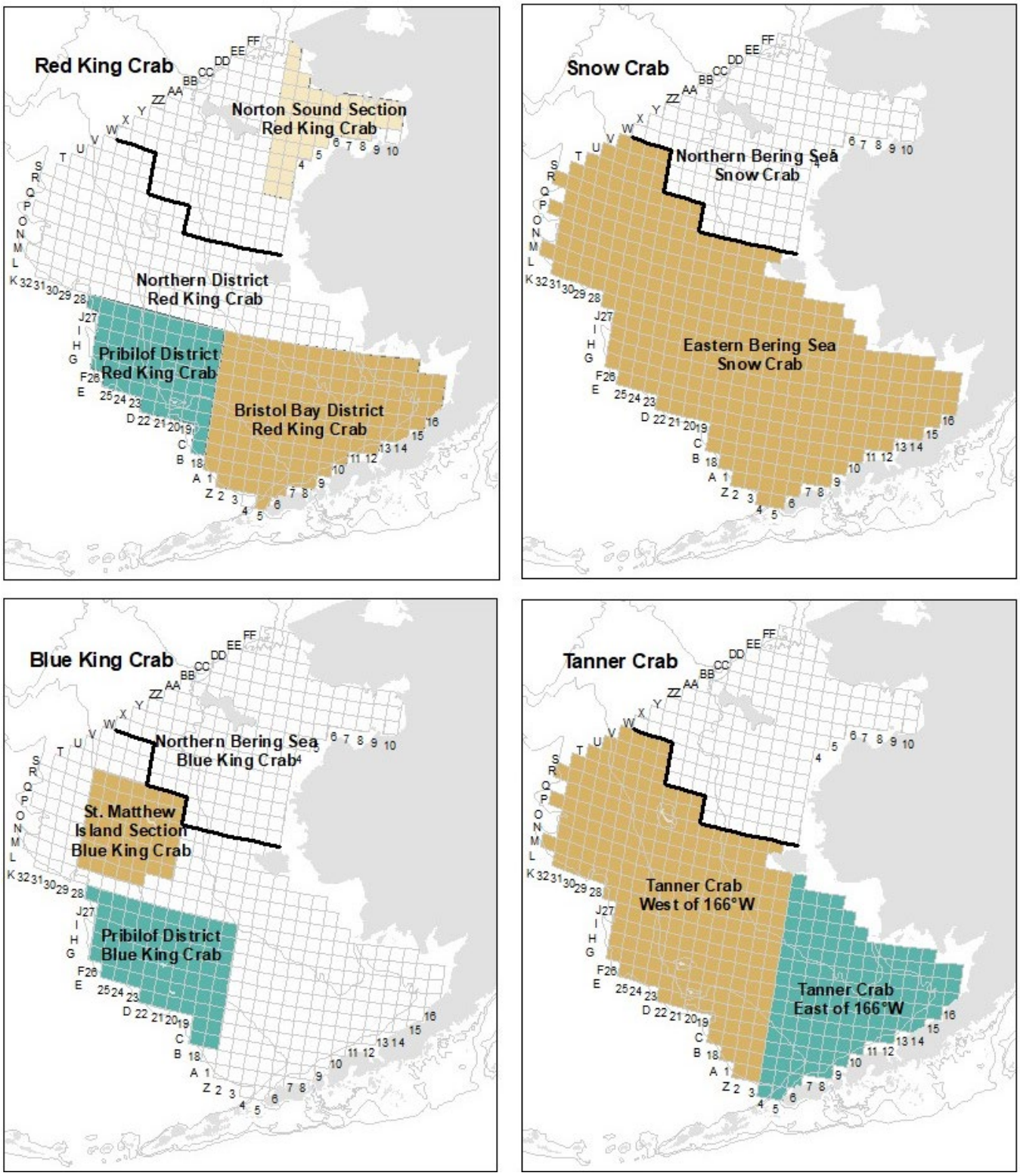

Figure 2. -- Stock boundaries used in this report for red king crab, blue king crab, Tanner crab, and snow crab. Stocks in color are Fisheries Management Plan stocks, with stock assessments evaluated by the North Pacific Fisheries Management Council. Stations used in this report are the same stations used in stock assessments, except for Norton Sound red king crab and Tanner crab.

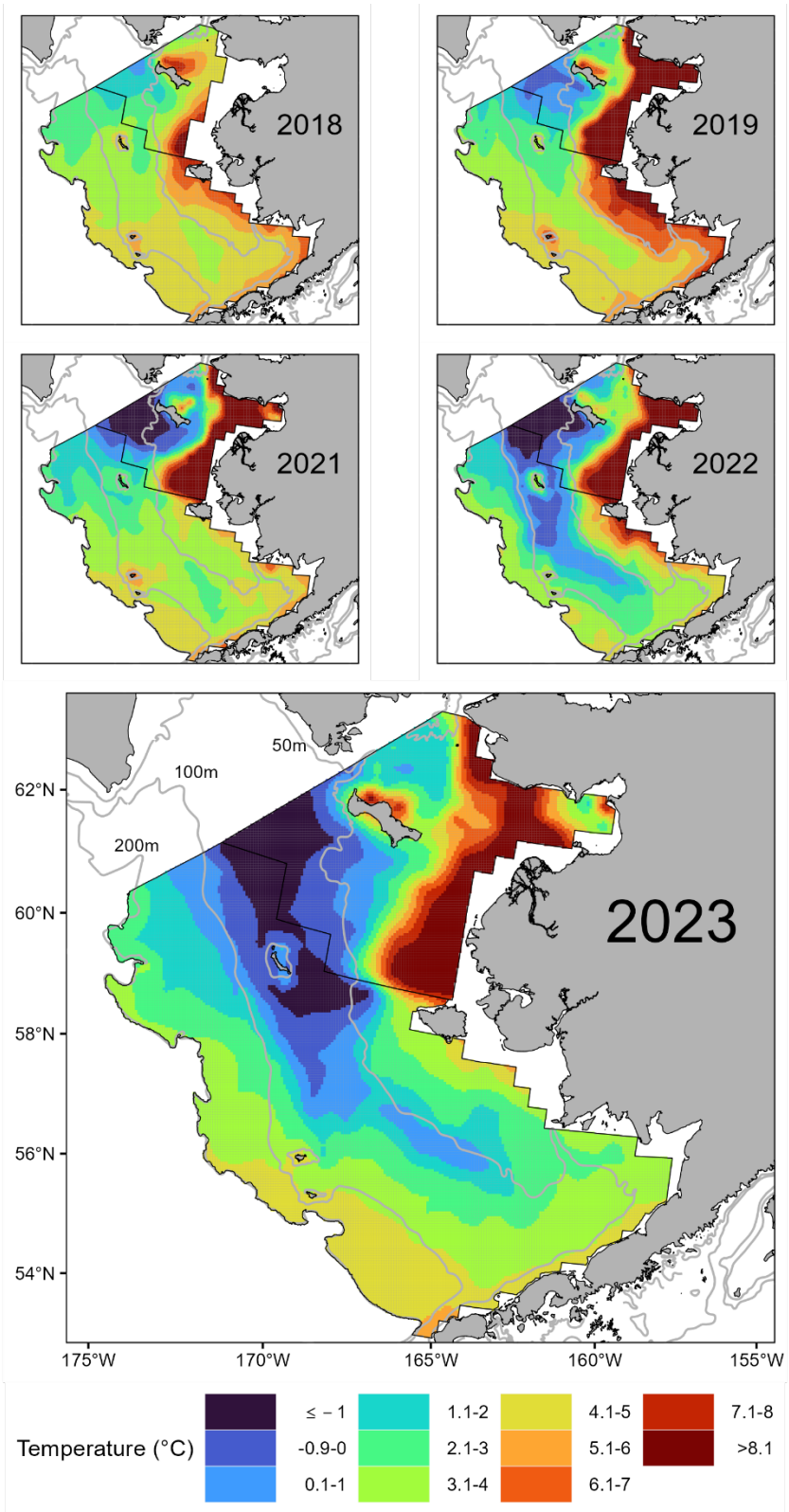

Figure 3. -- Bottom temperatures (°C) measured at stations from the National Marine Fisheries Service eastern and northern Bering Sea bottom trawl surveys for the past five surveys. Surveys begin in Bristol Bay in late May to early June in each year and proceed north and west, concluding in August.

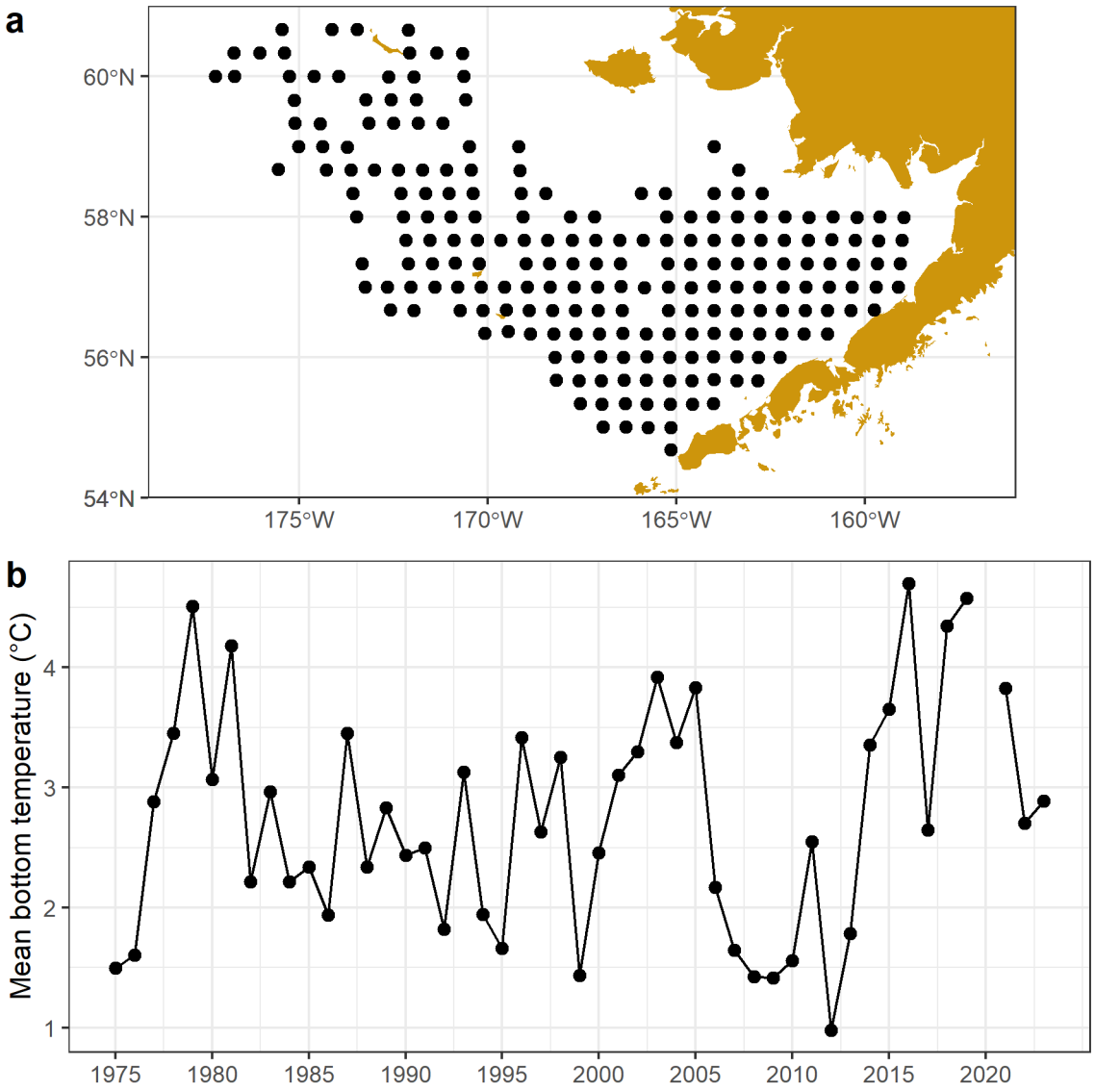

Figure 4. -- Eastern Bering Sea bottom temperature time series. (a) Stations with at least 43 bottom temperature measurements during the 48-year time series (n = 212). (b) Mean bottom temperature from these 212 stations, corrected for missing values and sampling date.

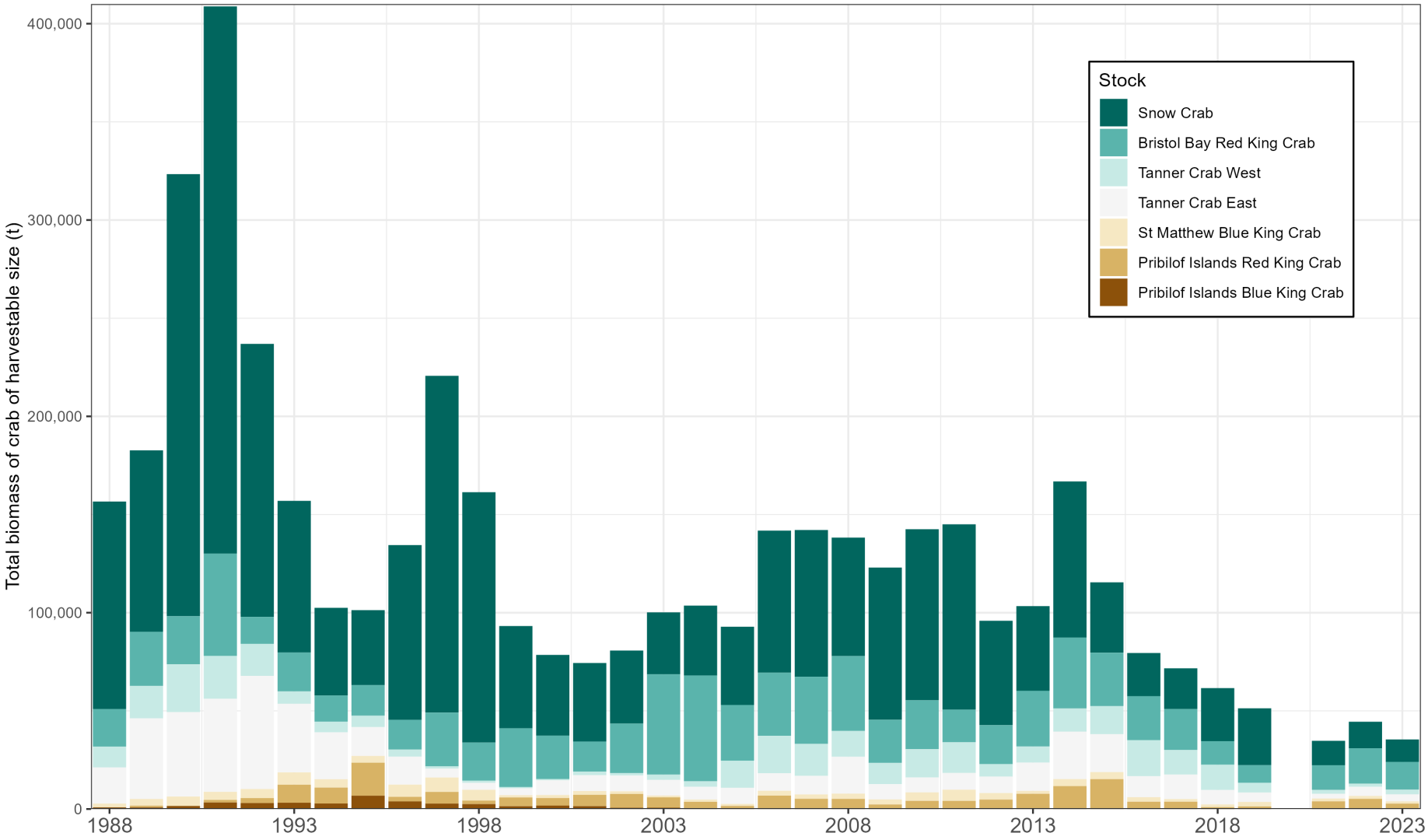

Figure 5. -- Biomass (t) of crab of harvestable size for four commercial species caught on National Marine Fisheries Service eastern Bering Sea bottom trawl surveys from 1975 through 2023, by stock. Harvestable size is defined by the legal size for *Paralithodes* species and the industry-preferred size for *Chionoecetes* species.

Red King Crab
Figures

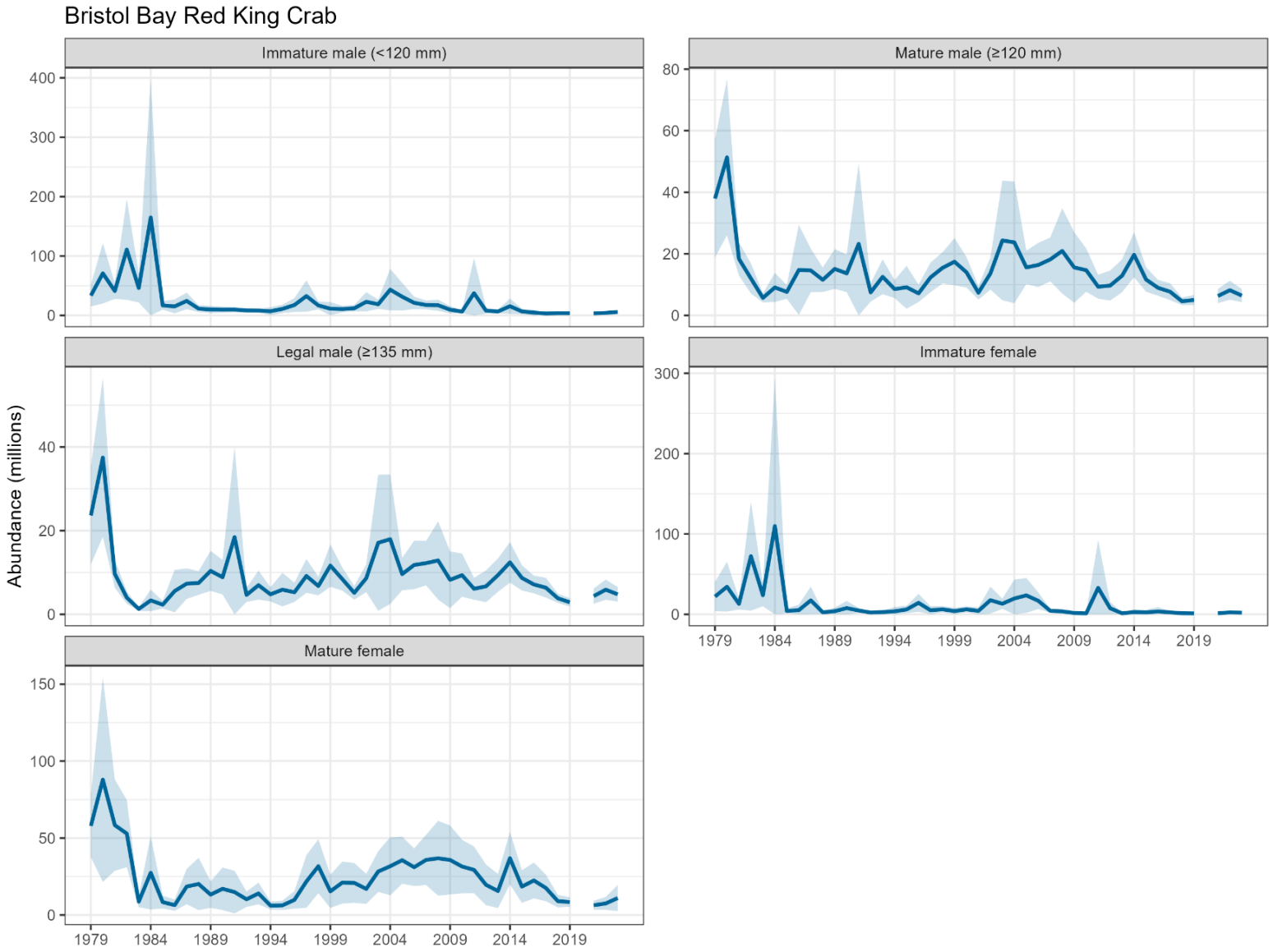

Figure 6. -- Historical abundance of red king crab (*Paralithodes camtschaticus*) in the Bristol Bay District. In years when a subset of stations in Bristol Bay were resampled, the resample stations replace data from the original stations for females only. Light blue area indicates ± 95% CI.

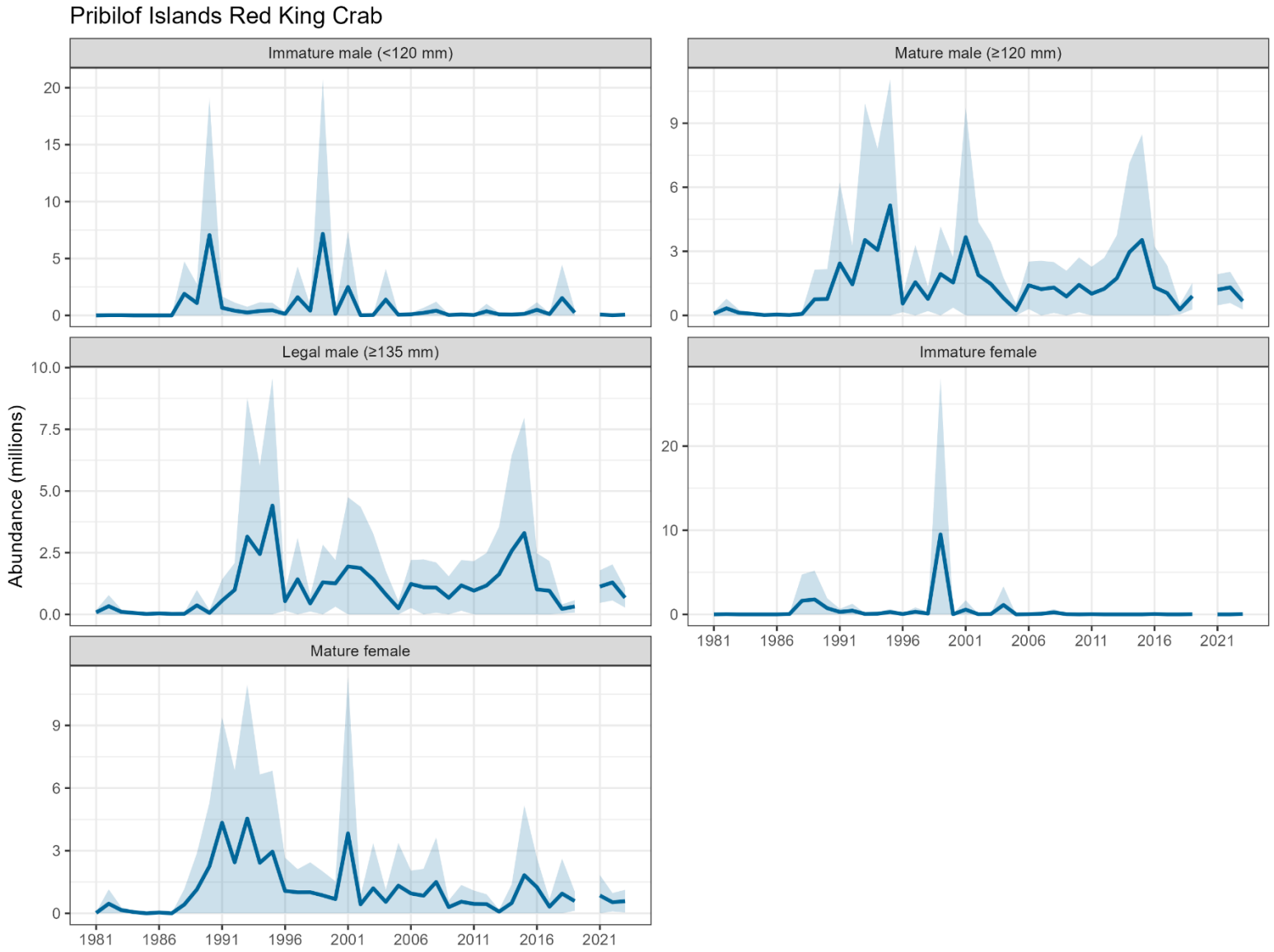

Figure 7. -- Historical abundance of red king crab (*Paralithodes camtschaticus*) in the Pribilof District. Light blue area indicates ± 95% CI.

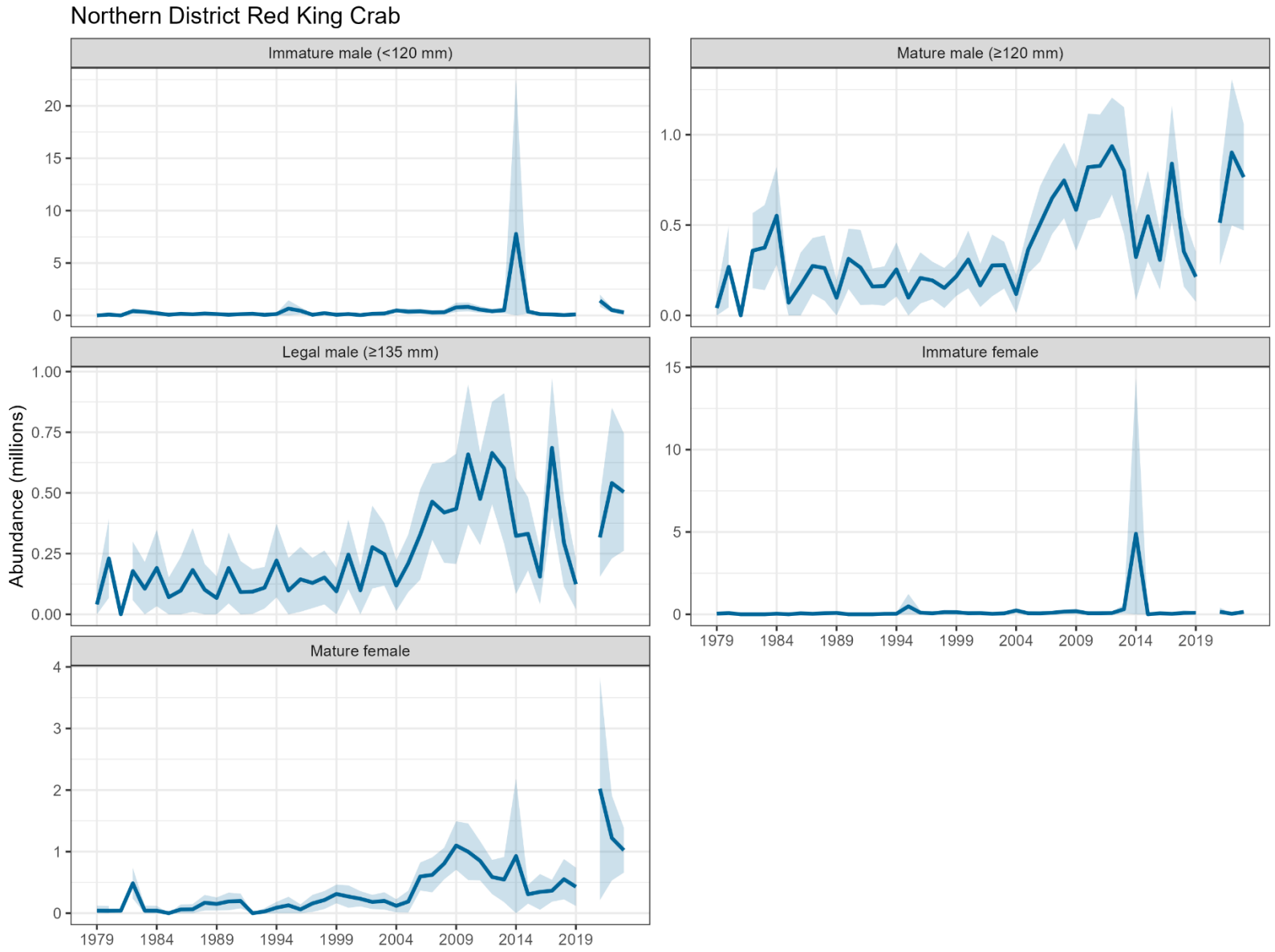

Figure 8. -- Historical abundance of red king crab (*Paralithodes camtschaticus*) in the Northern District. Light blue area indicates ± 95% CI.

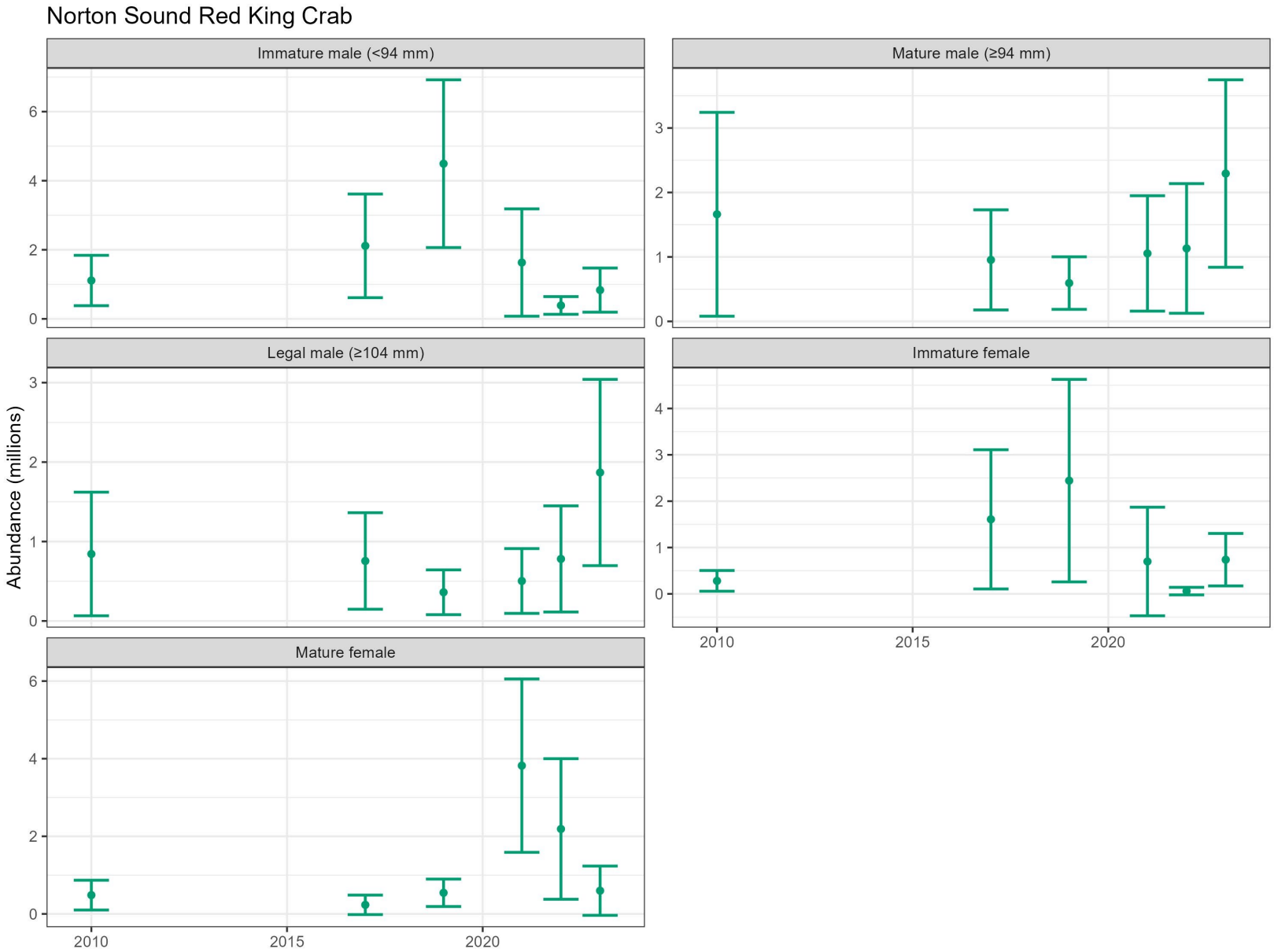

Figure 9. -- Historical abundance of red king crab (*Paralithodes camtschaticus*) in Norton Sound. Error bars indicate ± 95% CI.

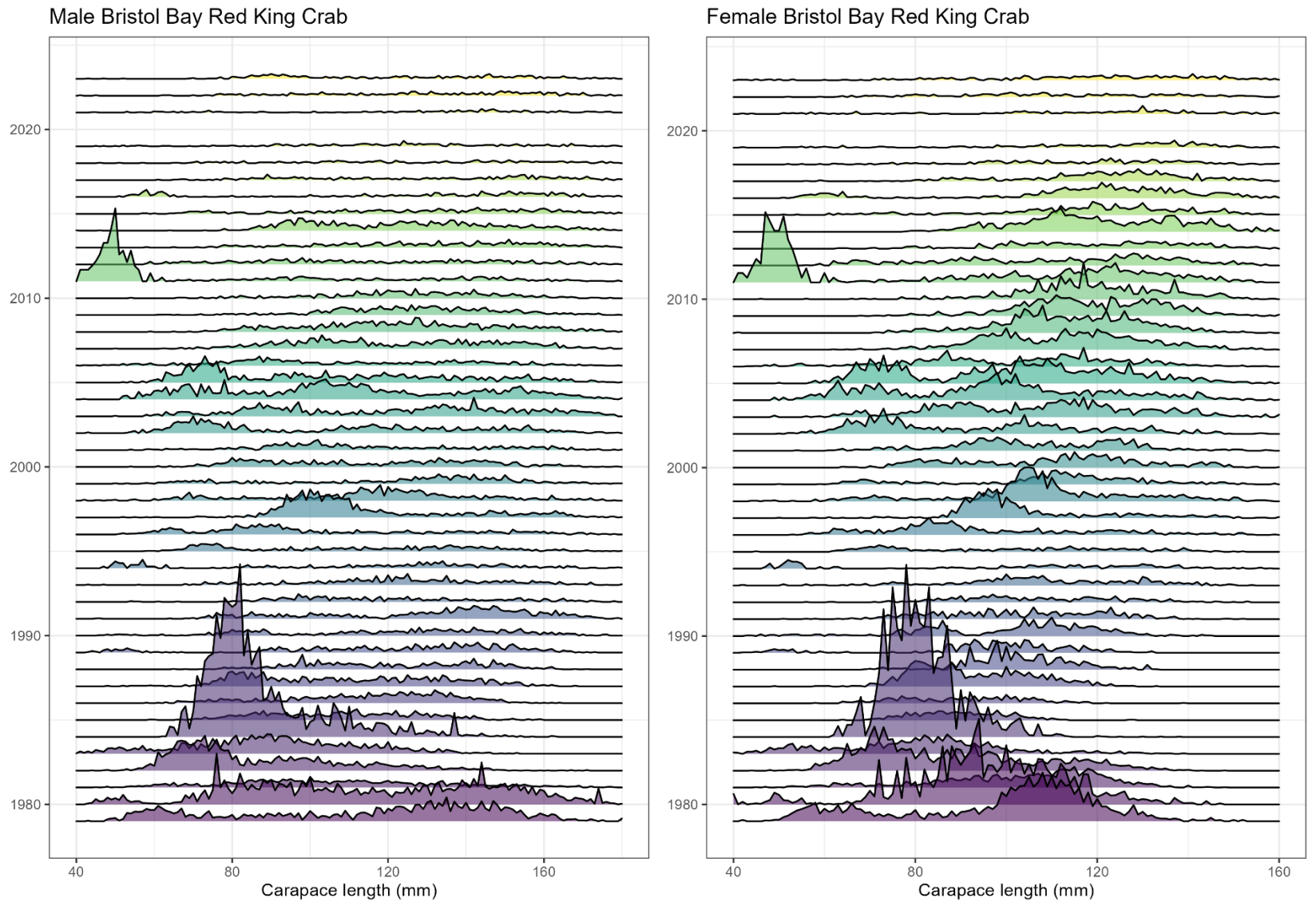

Figure 10. -- Historical size frequency for Bristol Bay District red king crab (*Paralithodes camtschaticus*). For females only, in years when a subset of stations in Bristol Bay were resampled later in the summer the resample stations replace data from the original stations.

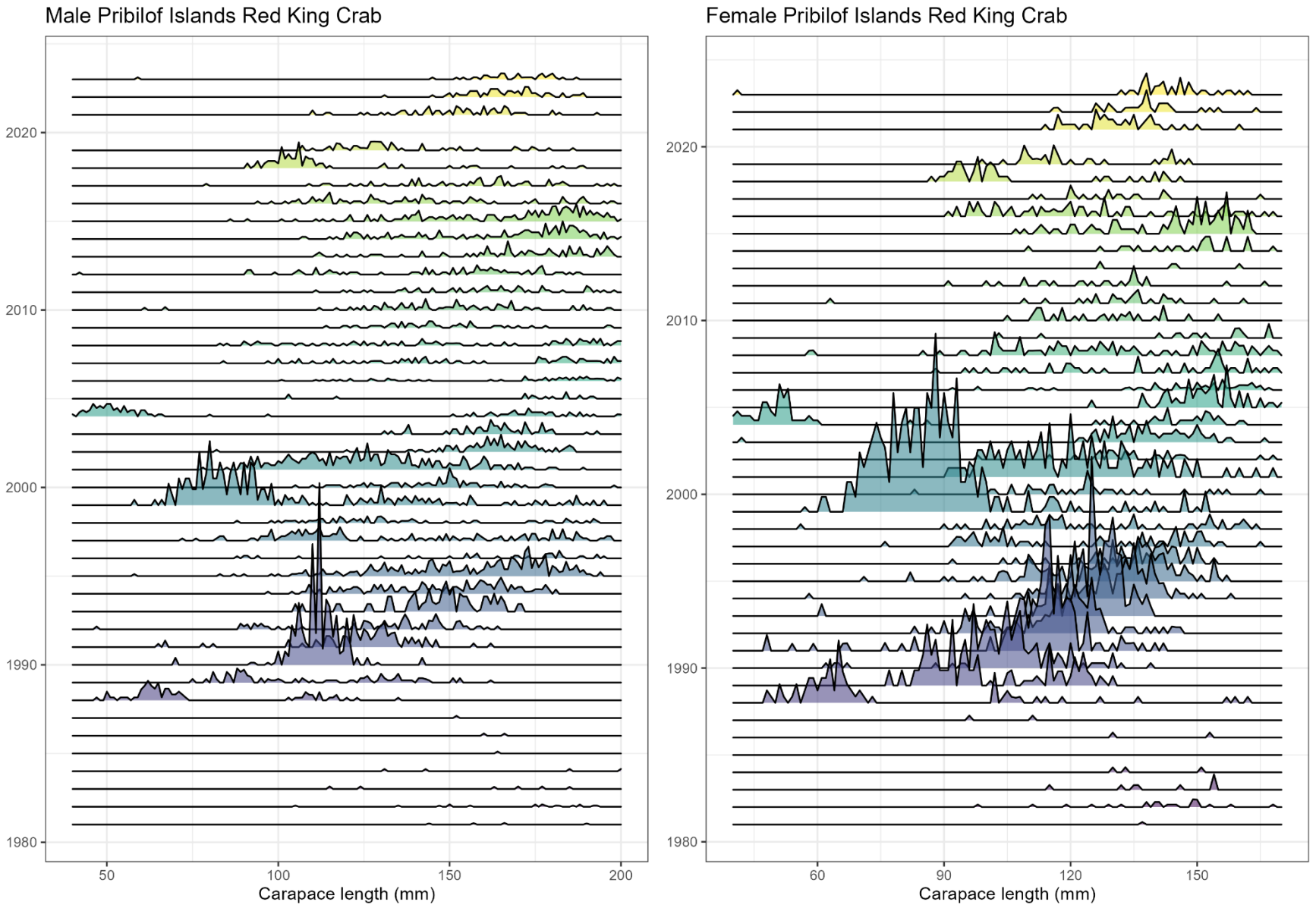

Figure 11. -- Historical size frequency for Pribilof District red king crab (*Paralithodes camtschaticus*).

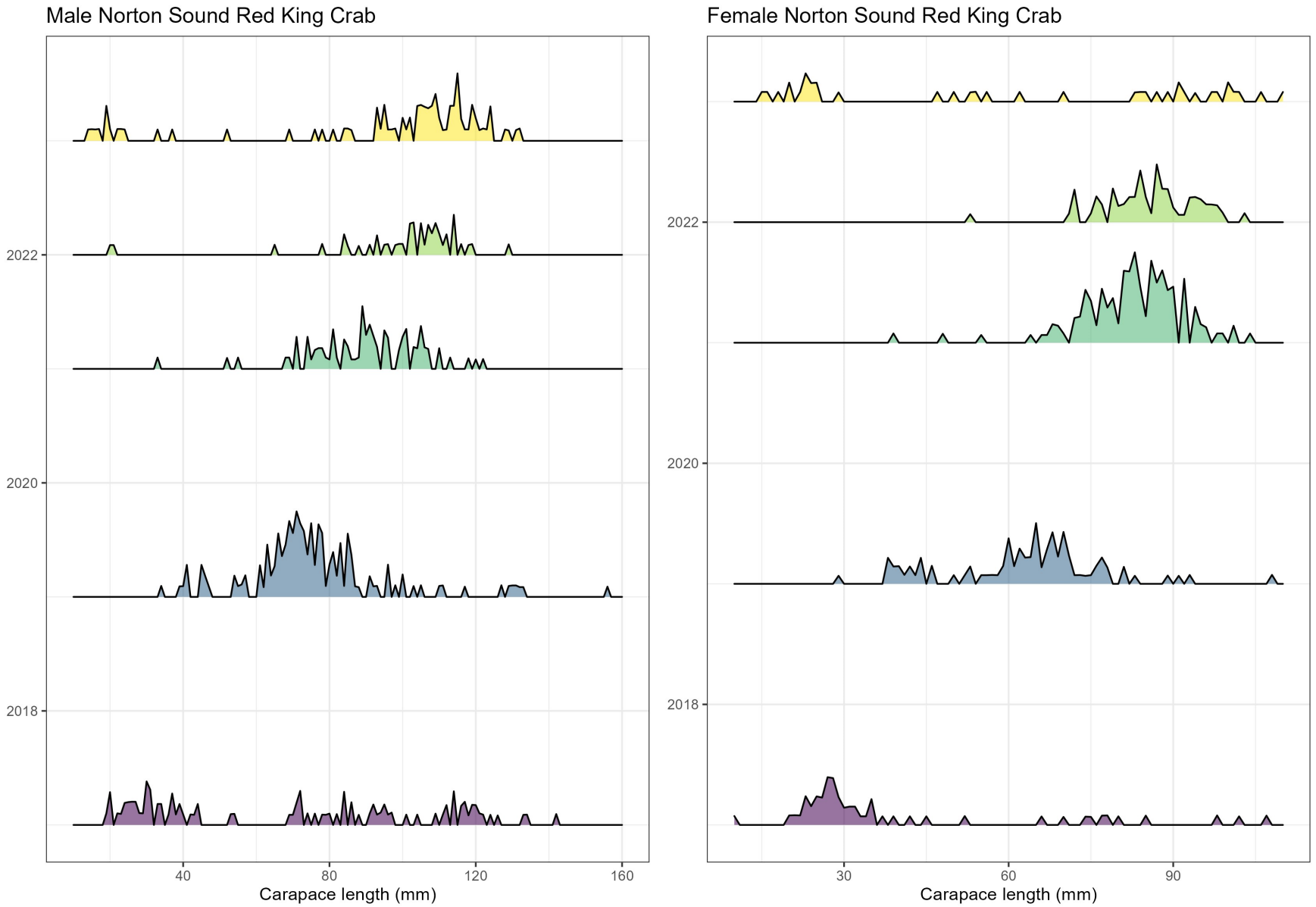

Figure 12. -- Historical size frequency for Norton Sound red king crab (*Paralithodes camtschaticus*).

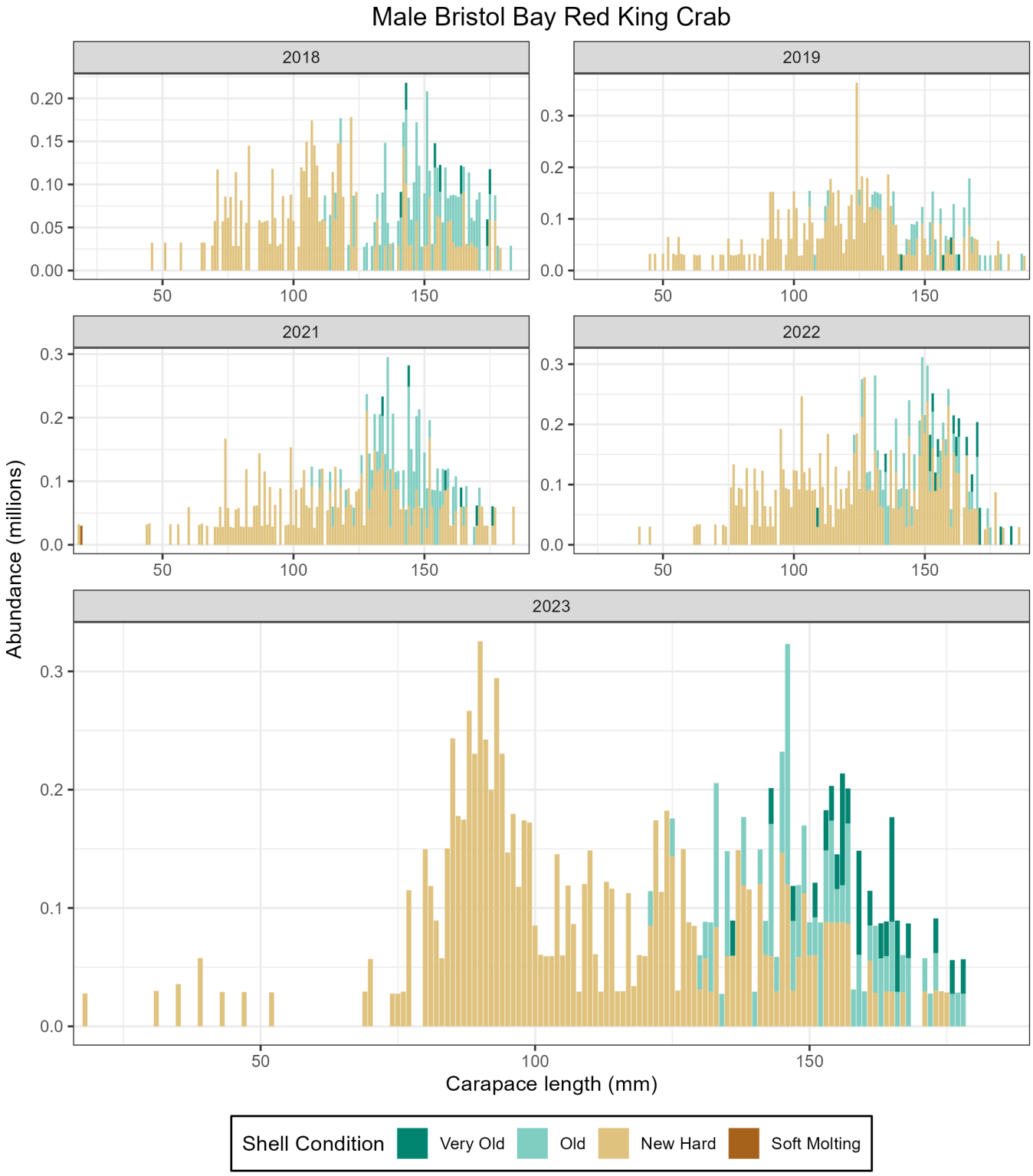

Figure 13. -- Abundance (millions) by size and shell condition of Bristol Bay District male red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

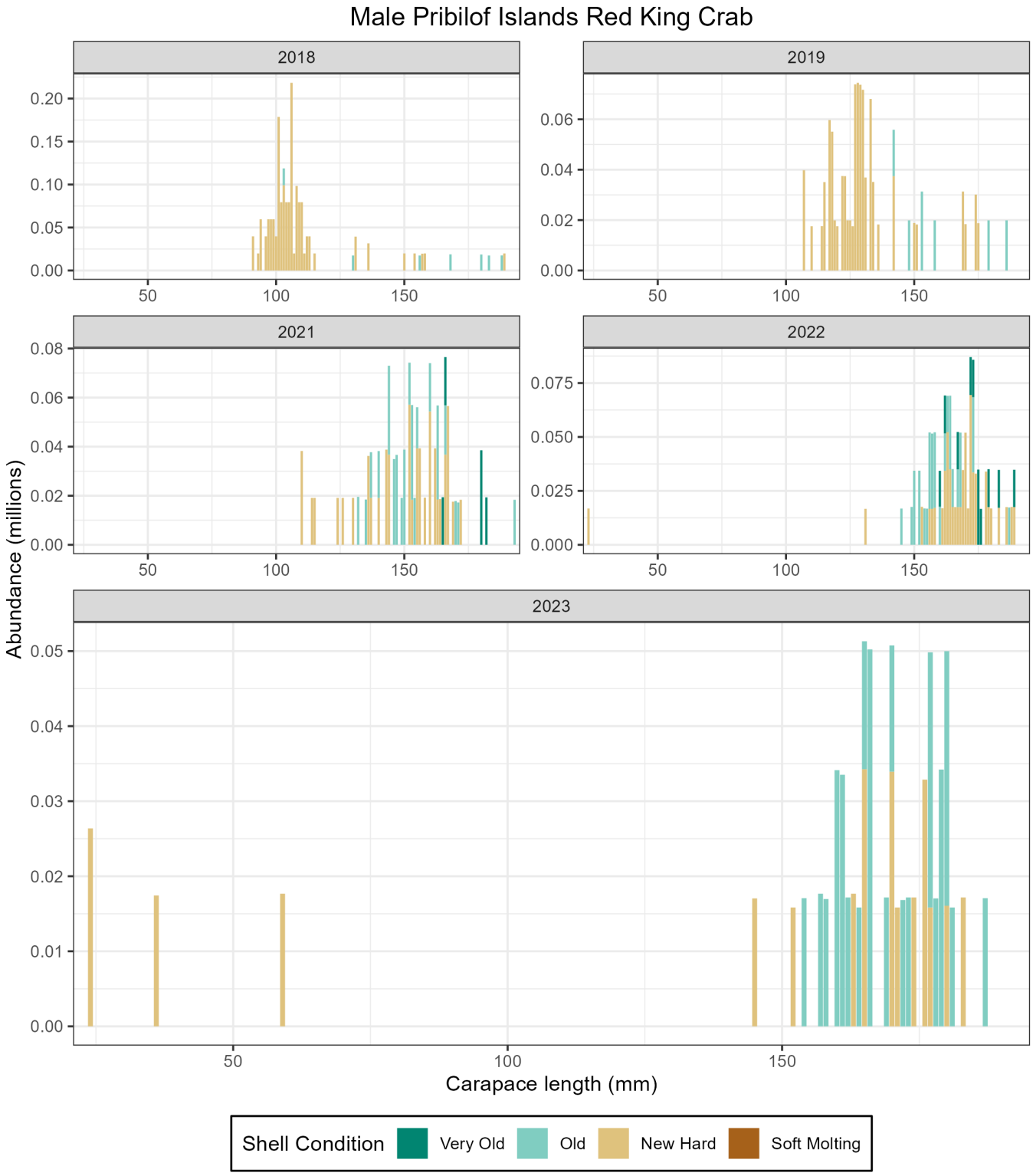

Figure 14. -- Abundance (millions) by size and shell condition of Pribilof District male red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

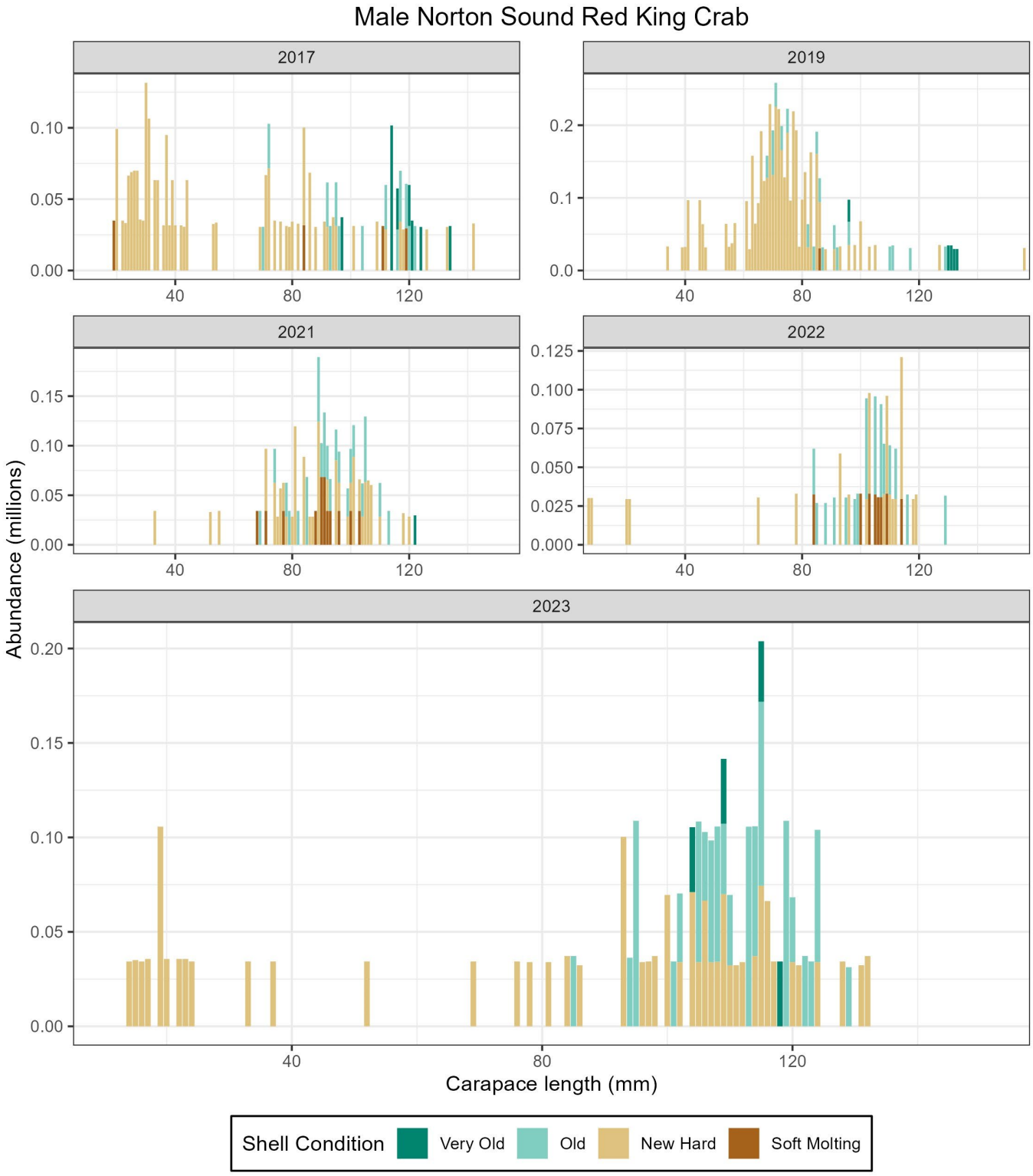

Figure 15. -- Abundance (millions) by size and shell condition of male Norton Sound red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

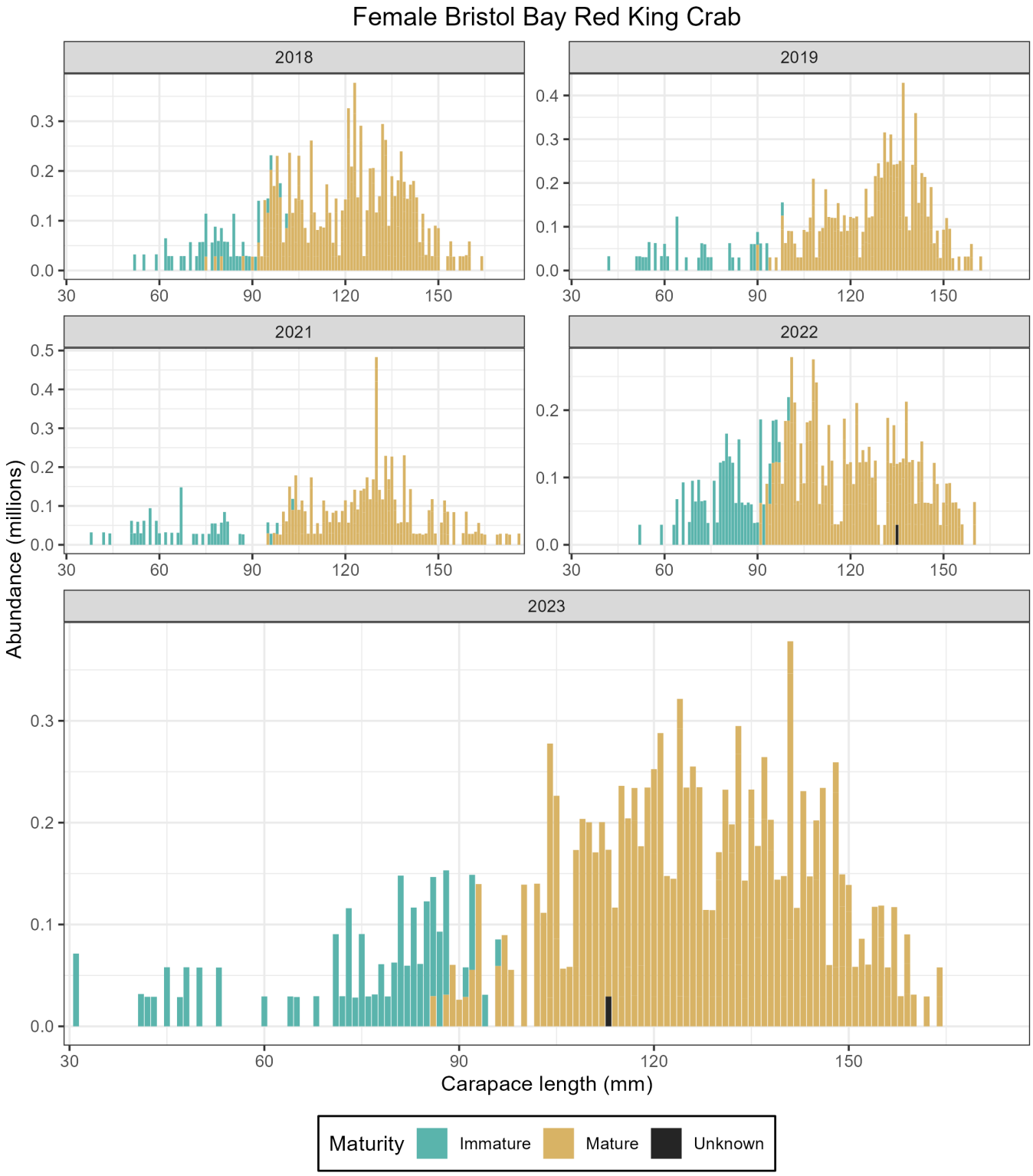

Figure 16. -- Abundance (millions) by maturity class of Bristol Bay District female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. In years when a subset of stations in Bristol Bay were resampled later in the summer, the resample stations replace data from the original stations. **Note that Y-axis scale varies among years.**

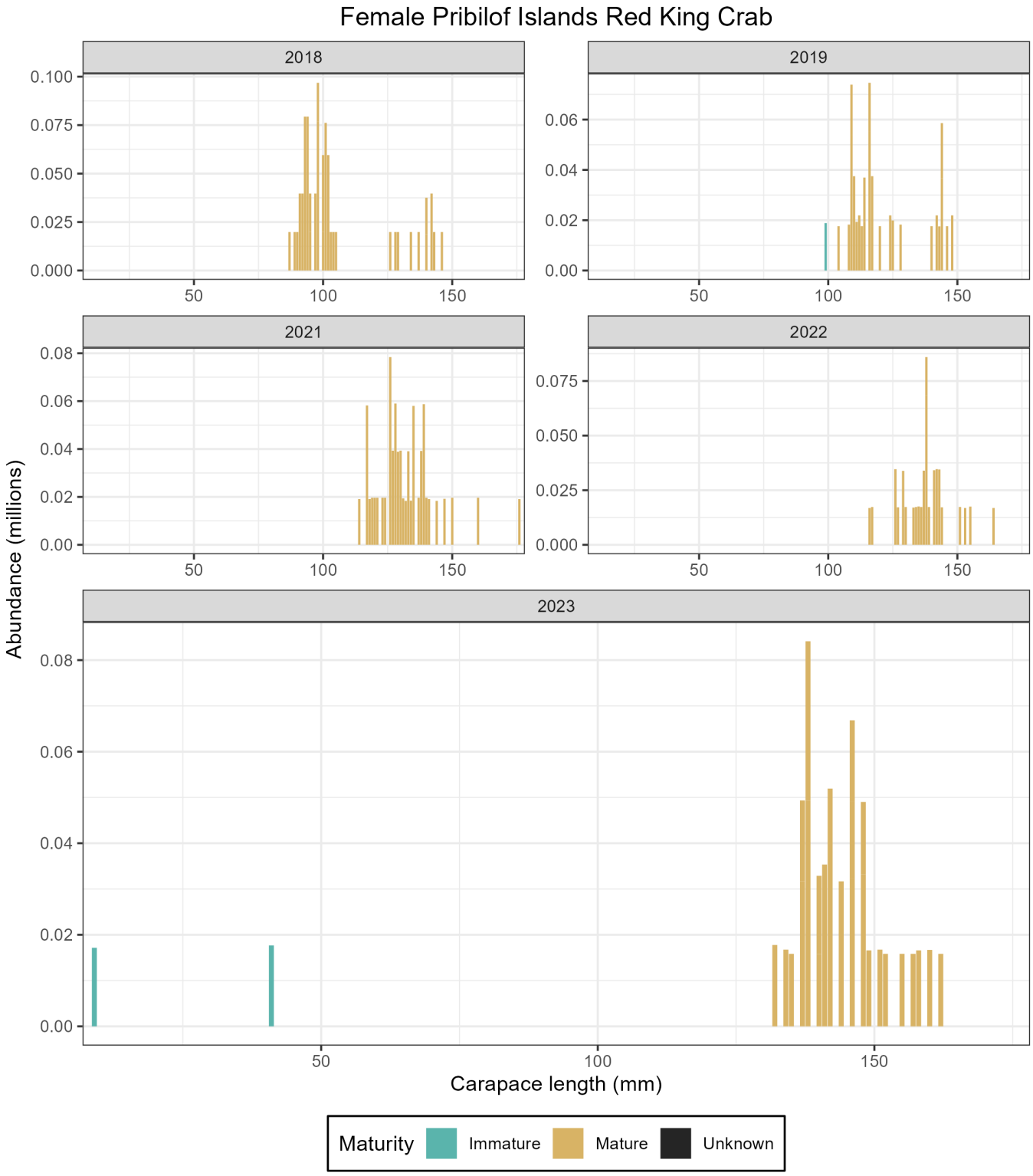

Figure 17. -- Abundance (millions) by maturity class of Pribilof District female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

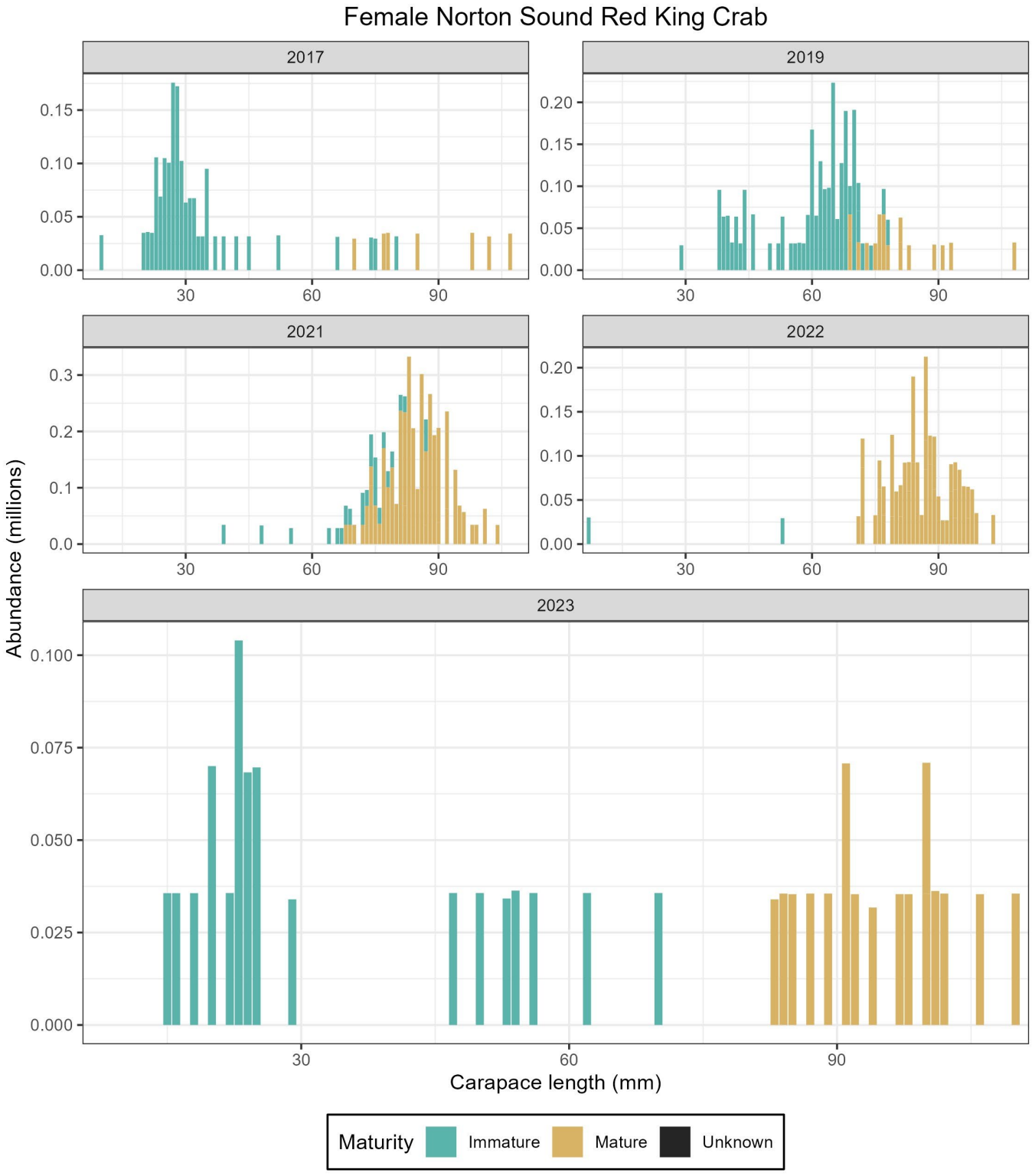

Figure 18. -- Abundance (millions) by maturity class of female Norton Sound red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

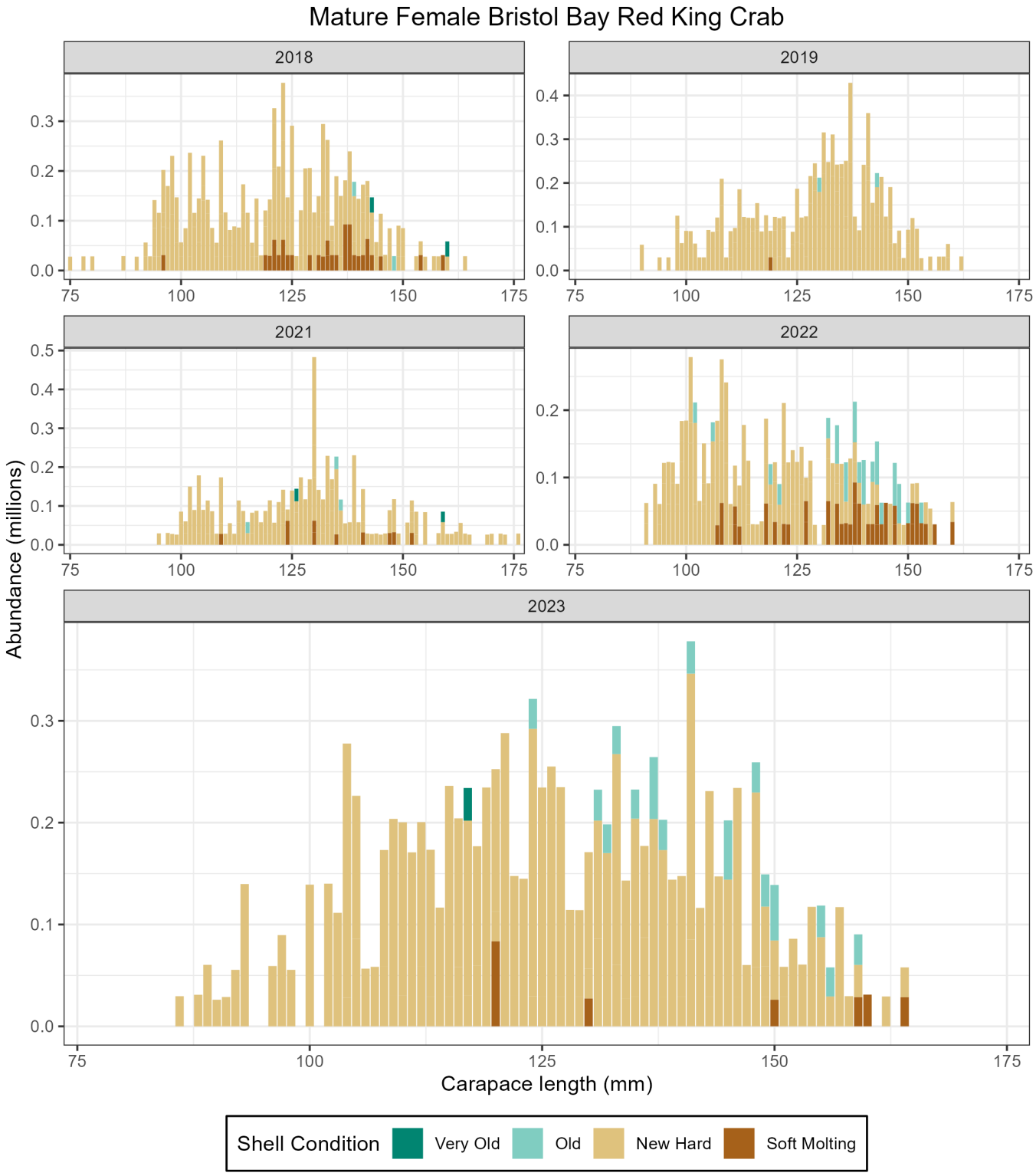

Figure 19. -- Abundance (millions) by size and shell condition of Bristol Bay District mature female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. In years when a subset of stations in Bristol Bay were resampled later in the summer, the resample stations replace data from the original stations. **Note that Y-axis scale varies among years.**

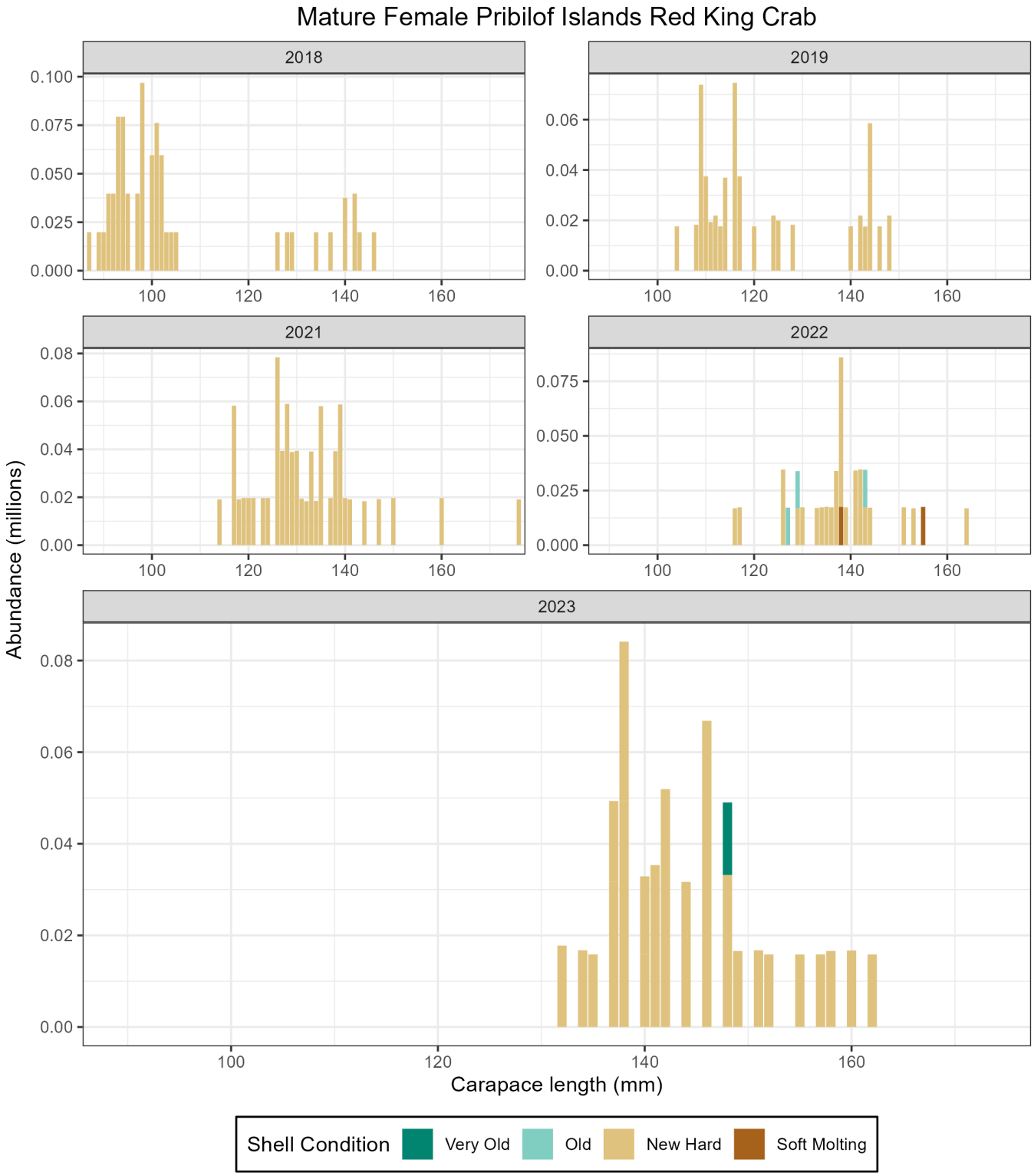

Figure 20. -- Abundance (millions) by size and shell condition of Pribilof District mature female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

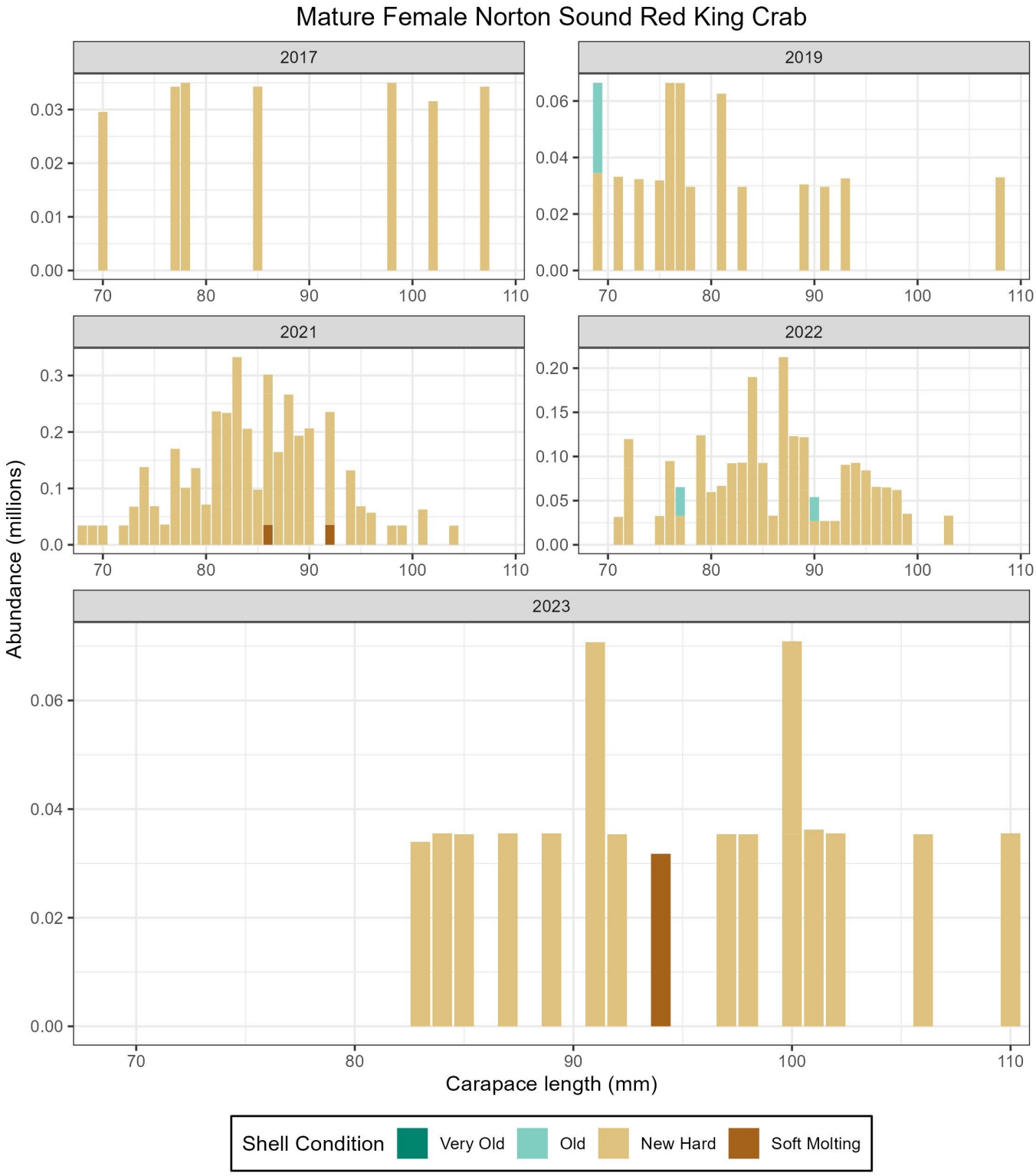

Figure 21. -- Abundance (millions) by size and shell condition of mature female Norton Sound red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

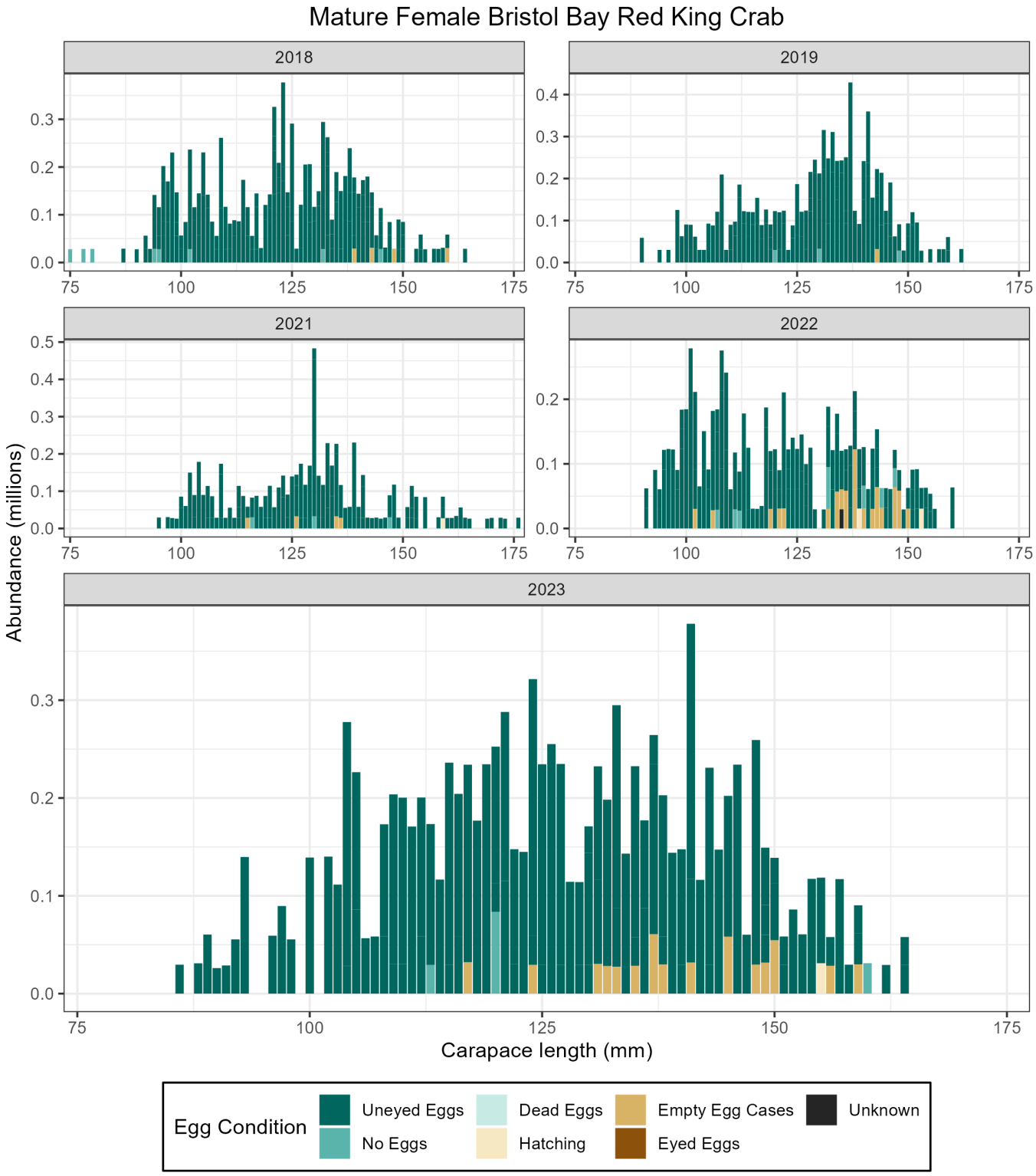

Figure 22. -- Abundance (millions) by size and egg condition of Bristol Bay District mature female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. In years when a subset of stations in Bristol Bay were resampled later in the summer, the resample stations replace data from the original stations. **Note that Y-axis scale varies among years.**

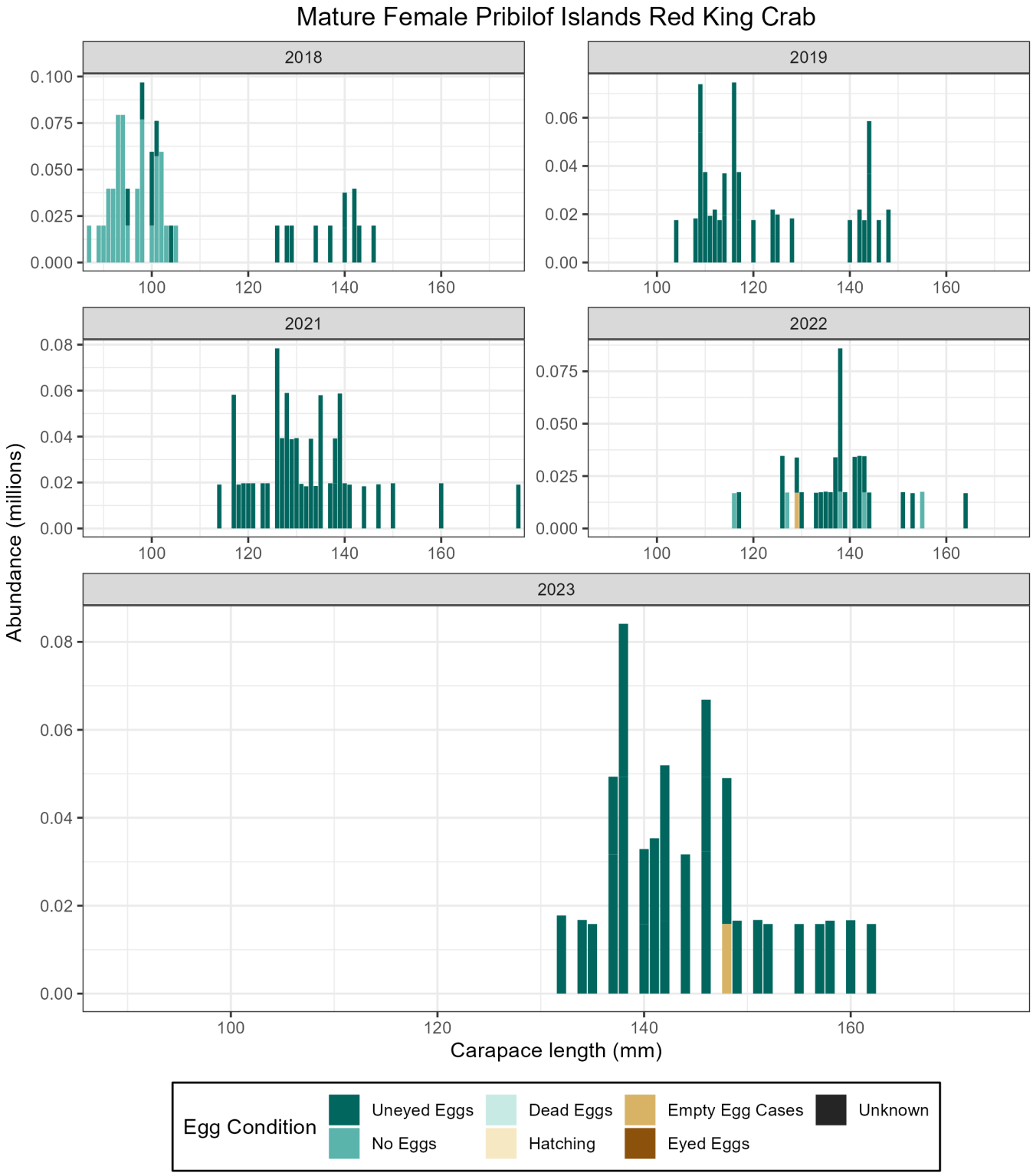

Figure 23. -- Abundance (millions) by size and egg condition of Pribilof District mature female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

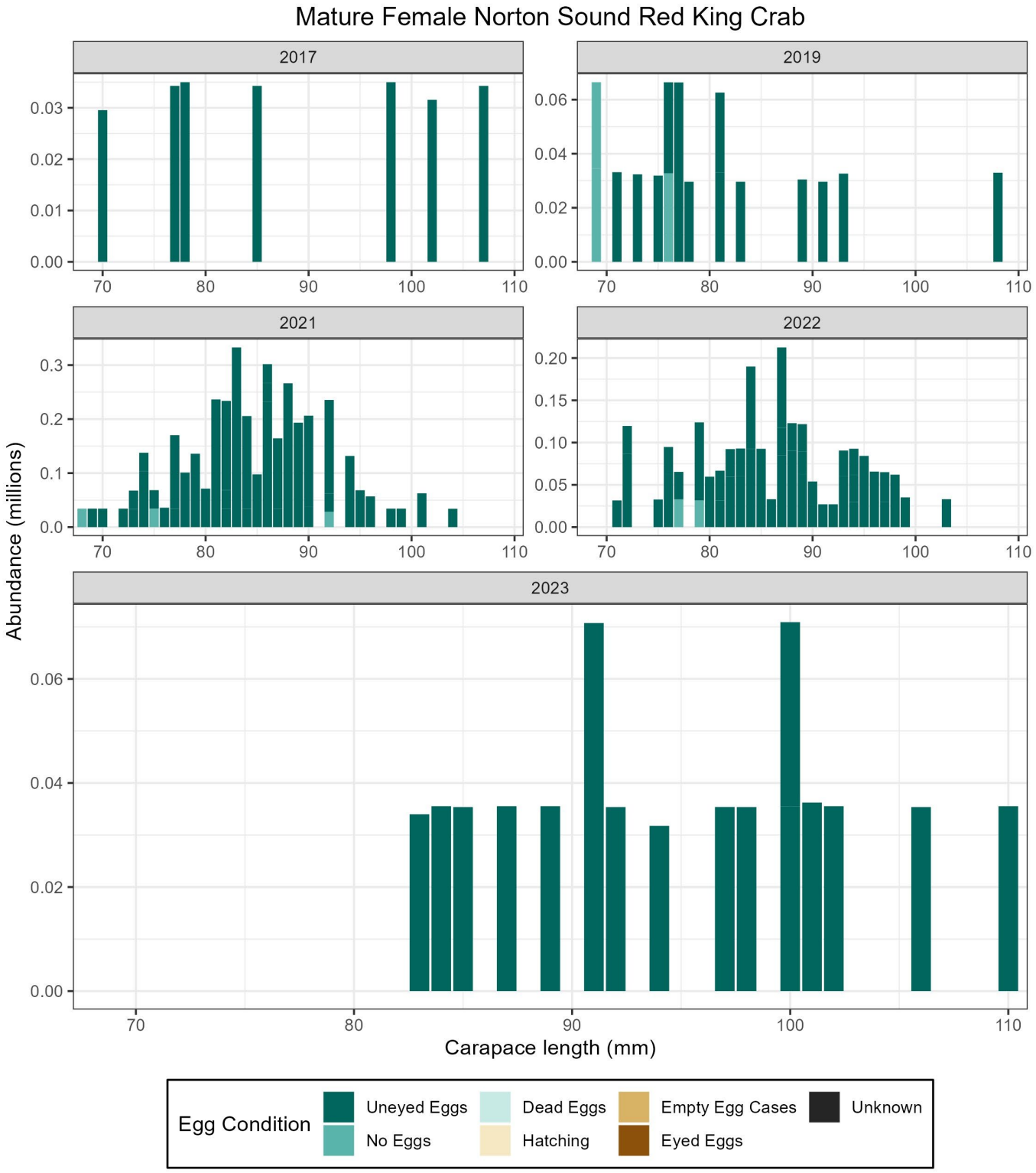

Figure 24. -- Abundance (millions) by size and egg condition of mature female Norton Sound red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

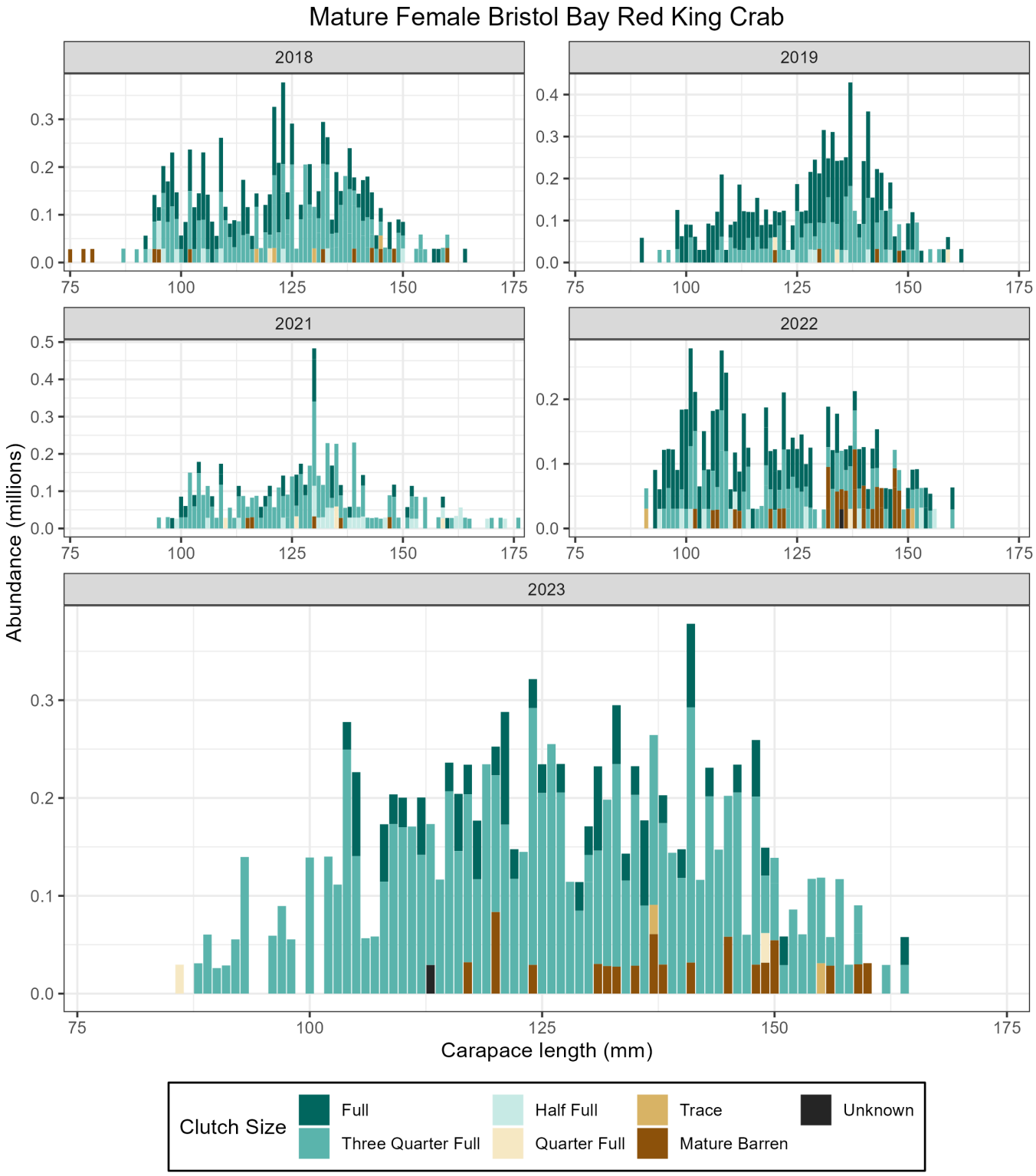

Figure 25. -- Abundance (millions) by size and clutch fullness of Bristol Bay District mature female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. In years when a subset of stations in Bristol Bay were resampled later in the summer, the resample stations replace data from the original stations. **Note that Y-axis scale varies among years.**

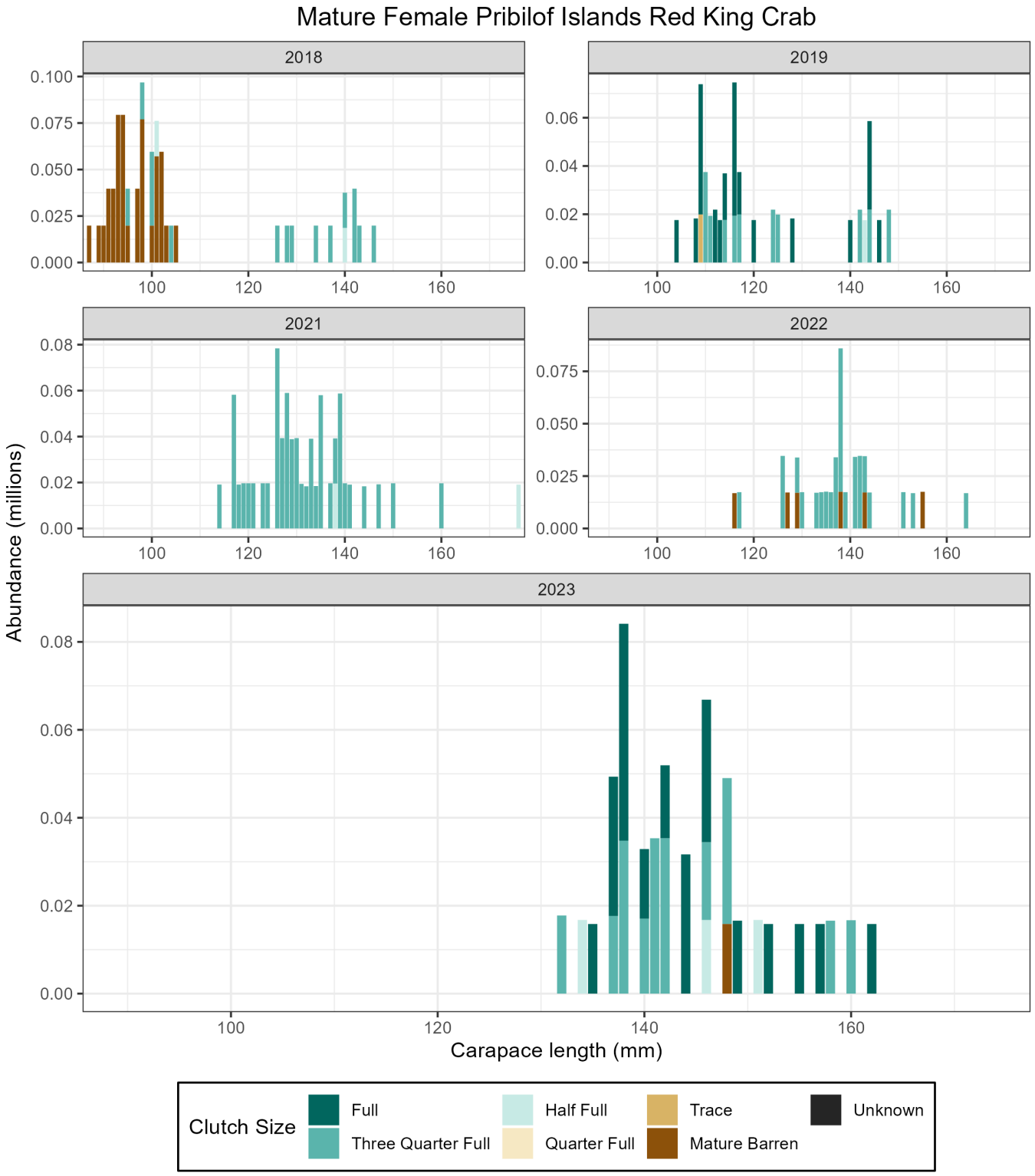

Figure 26. -- Abundance (millions) by size and clutch fullness of Pribilof District mature female red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

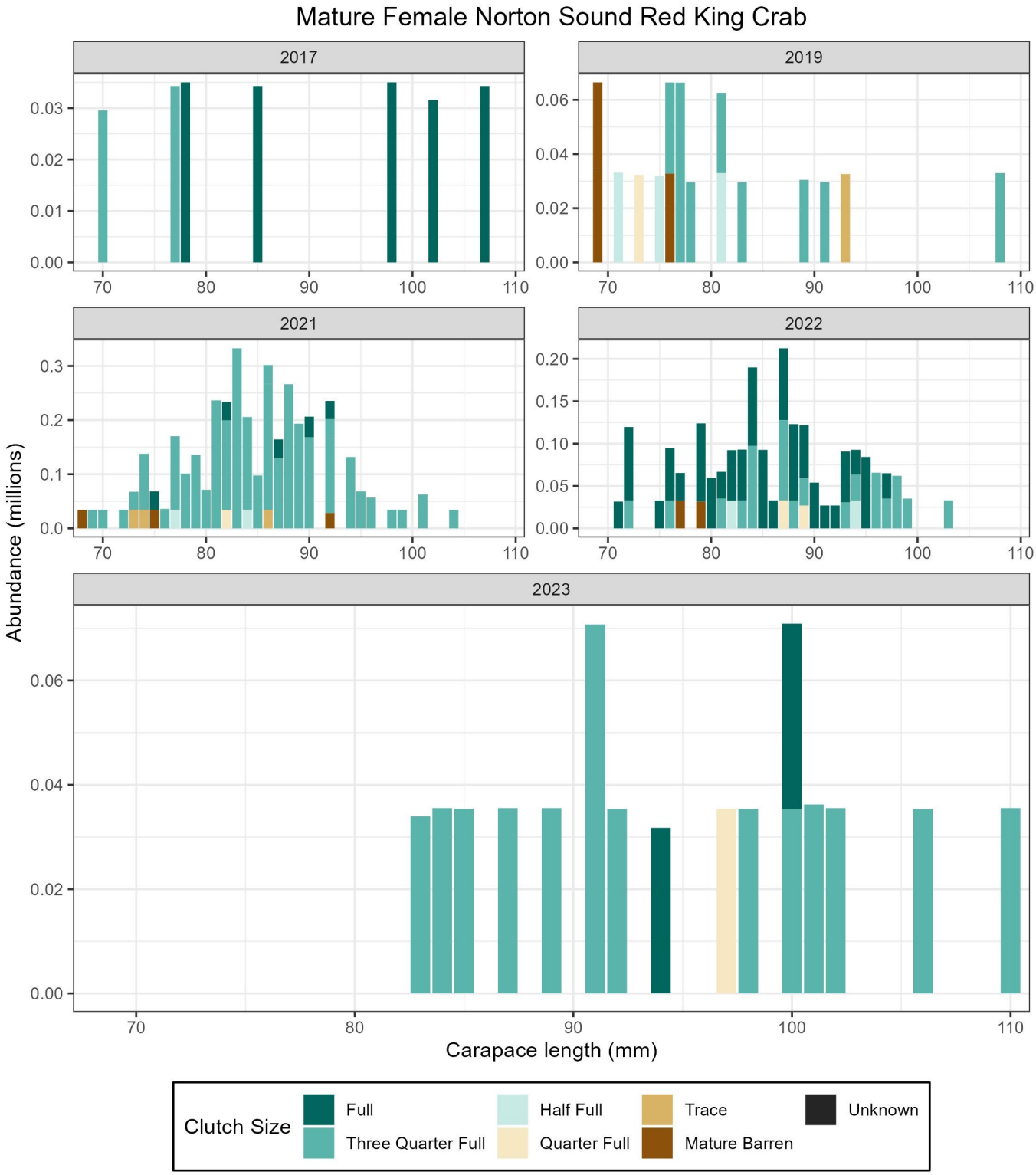

Figure 27. -- Abundance (millions) by size and clutch fullness of mature female Norton Sound red king crab (*Paralithodes camtschaticus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

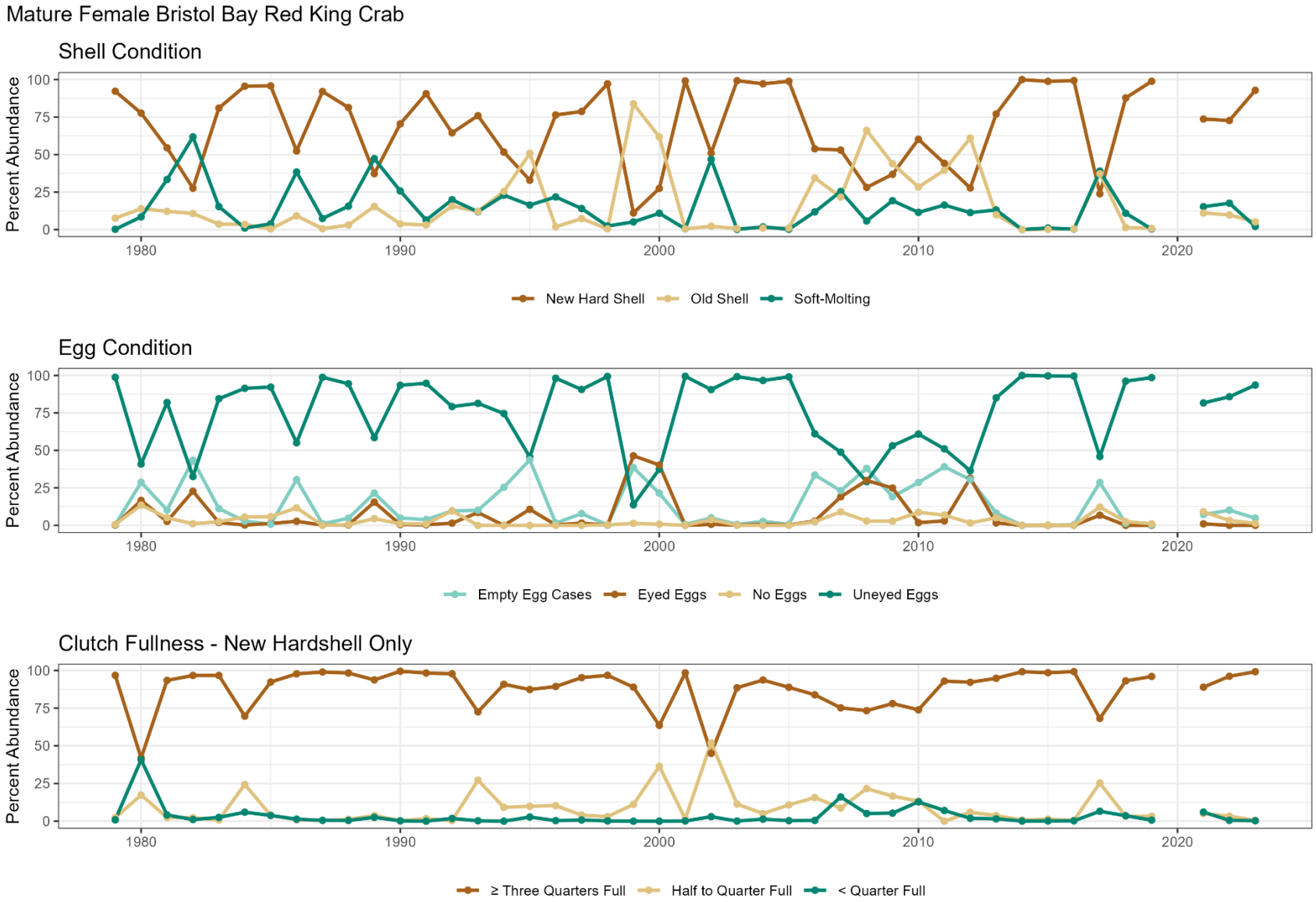

Figure 28. -- Time series of shell condition, egg condition, and clutch fullness for mature female Bristol Bay red king crab (*Paralithodes camtschaticus*). Data from stations that are resampled later in the survey are **not** included.

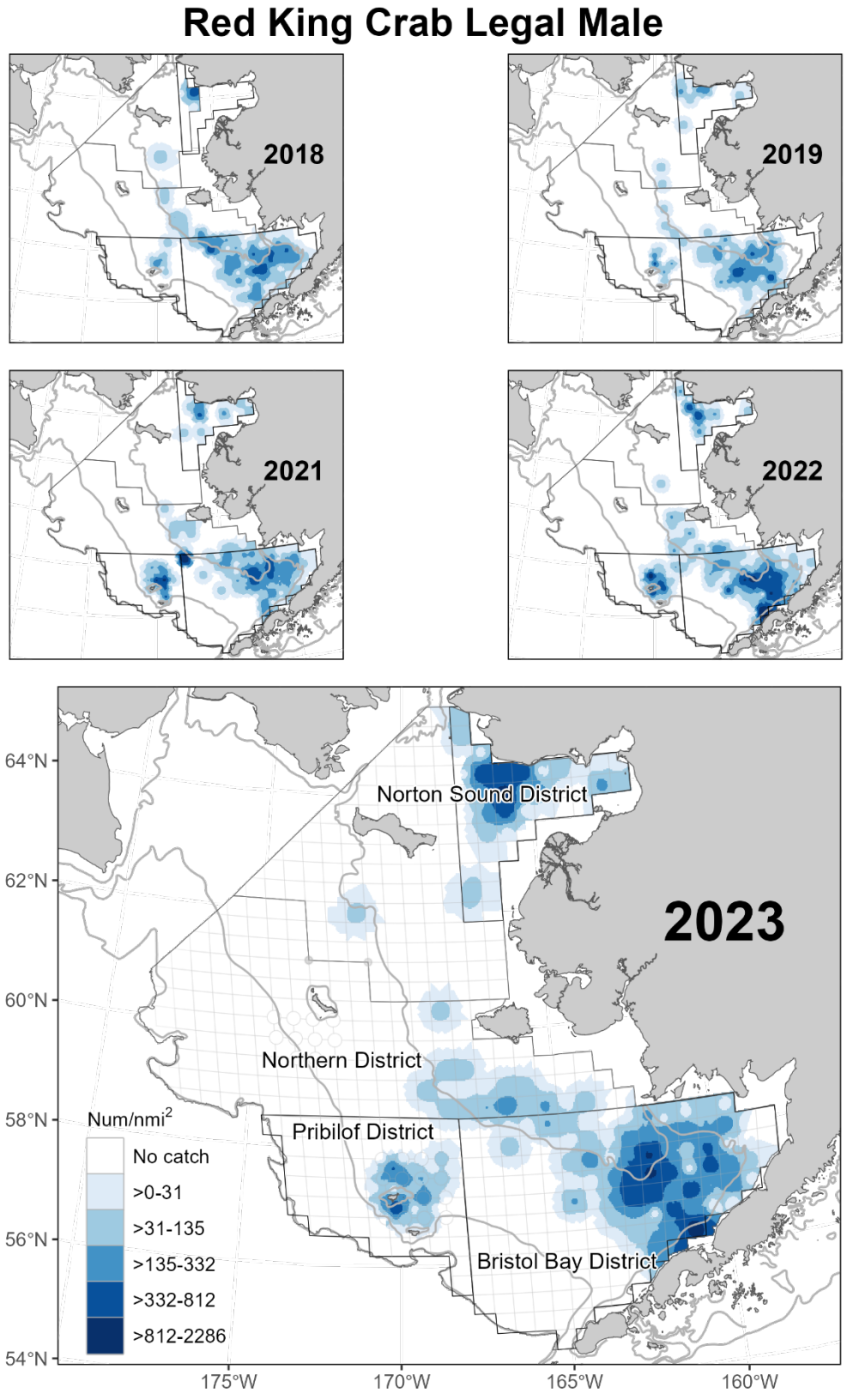

Figure 29. -- Estimated total density of legal-sized (carapace length ≥ 135 mm carapace length in EBS; carapace length ≥ 104 mm in NBS) male red king crab (*Paralithodes camtschaticus*) for the past five survey years. Outlined areas depict management districts.

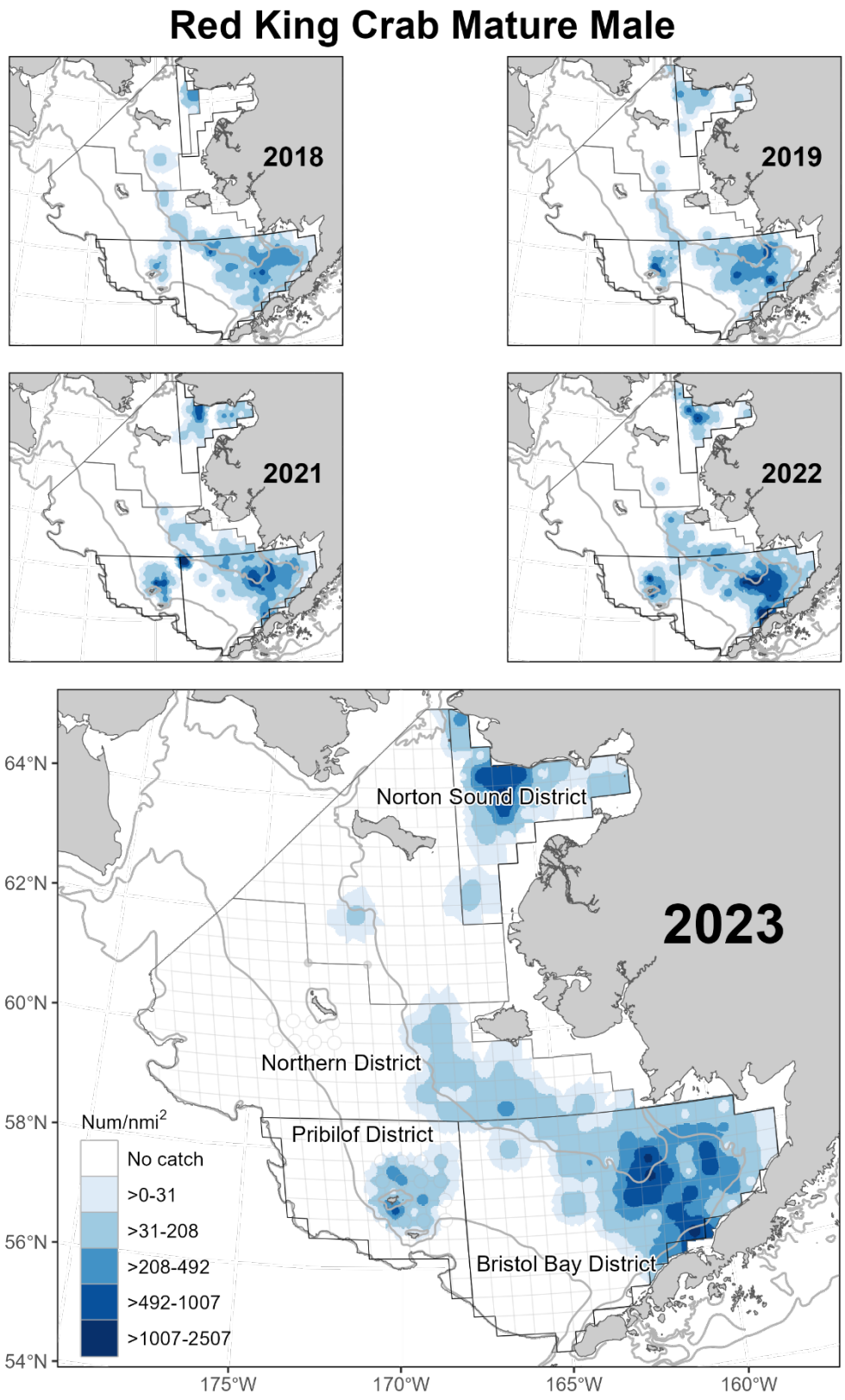

Figure 30. -- Estimated total density of mature-sized (carapace length ≥ 120 mm carapace length in EBS; carapace length ≥ 94 mm in NBS) male red king crab (*Paralithodes camtschaticus*) for the past five survey years. Outlined areas depict management districts.

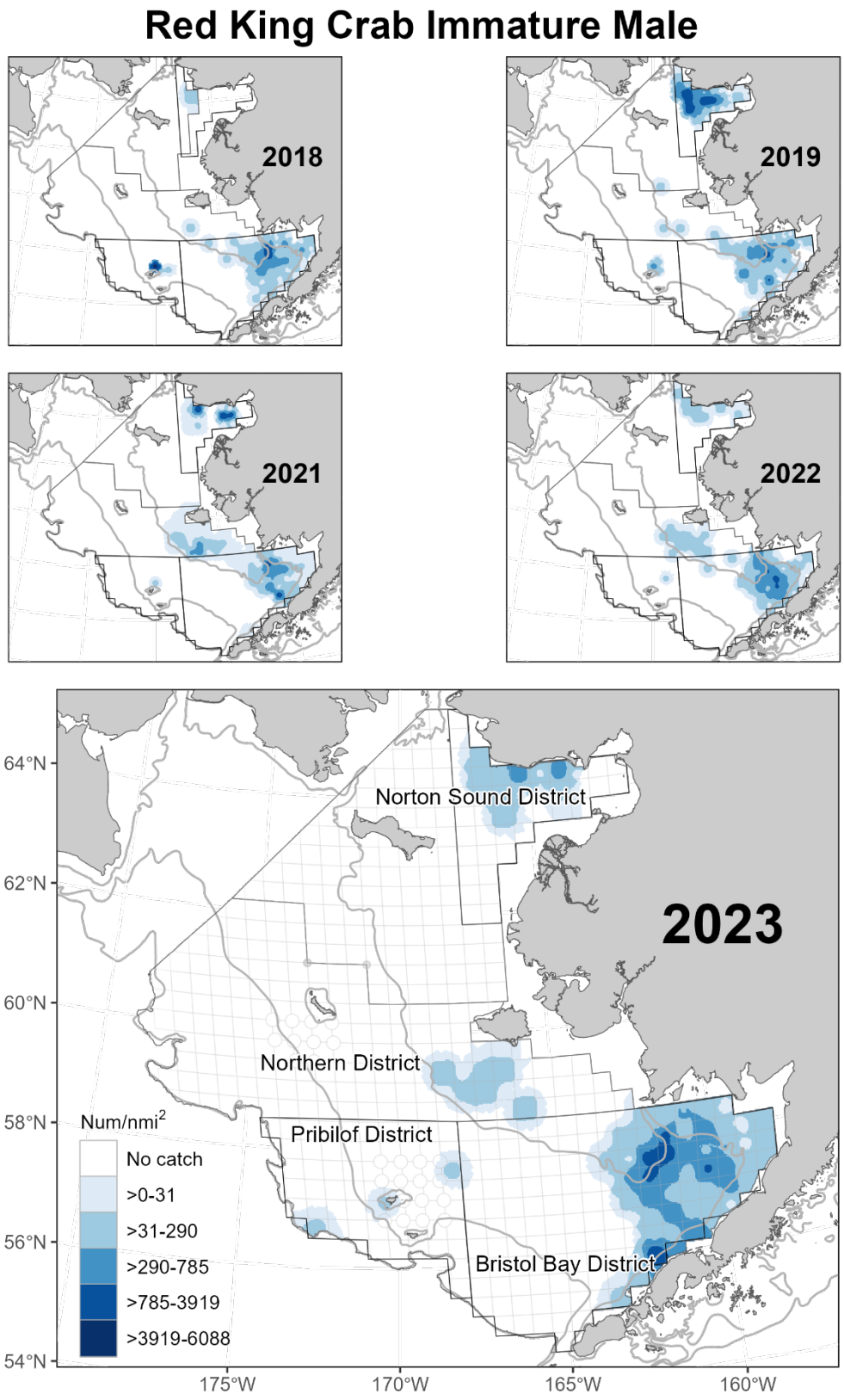

Figure 31. -- Estimated total density of immature-sized (carapace length < 120 mm carapace length in EBS; carapace length < 94 mm in NBS) male red king crab (*Paralithodes camtschaticus*) for the past five survey years. Outlined areas depict management districts.

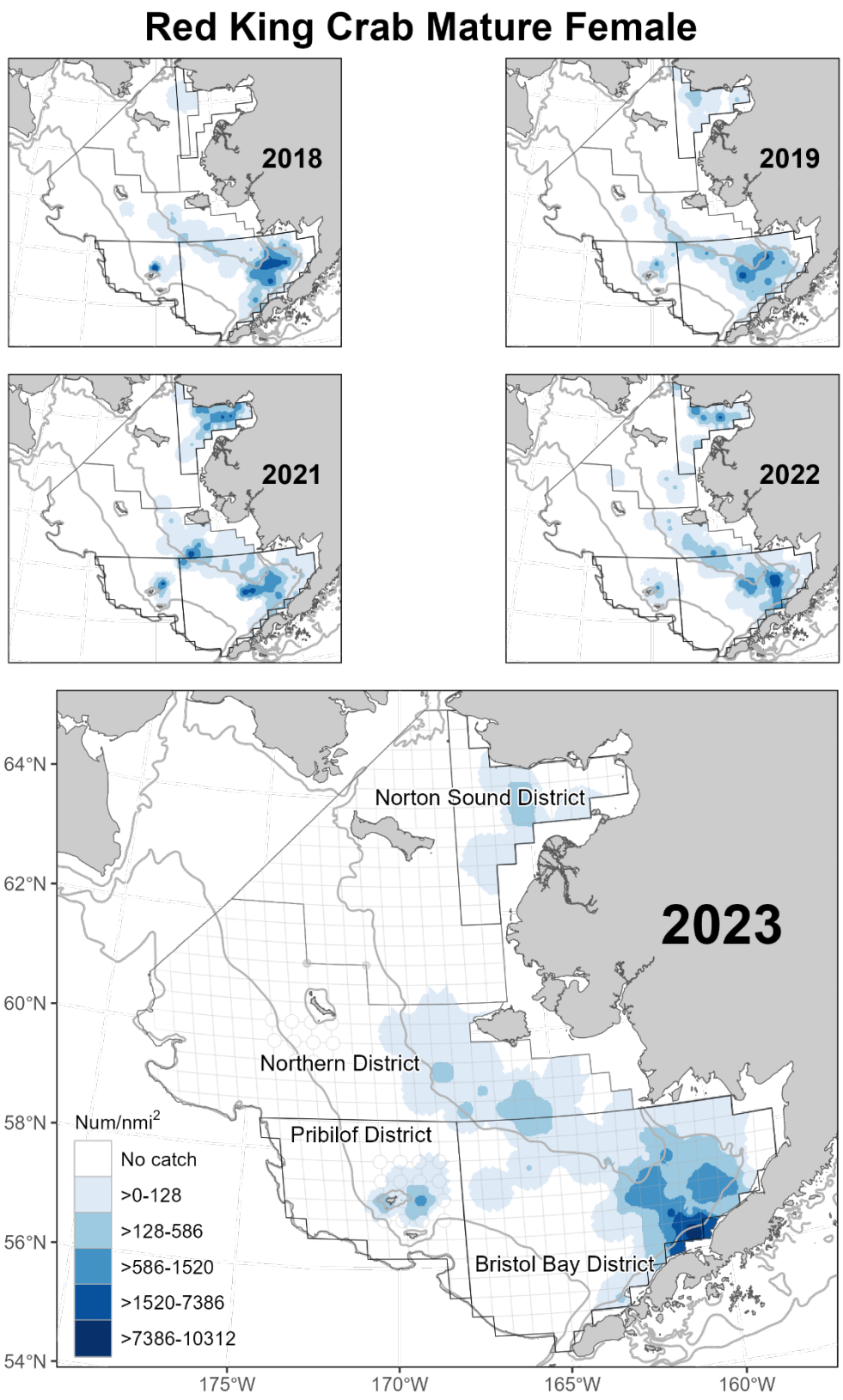

Figure 32. -- Estimated total density of mature female red king crab (*Paralithodes camtschaticus*) for the past five survey years. Outlined areas depict management districts. In years when a subset of stations were resampled, the resample stations replace data from the original stations.

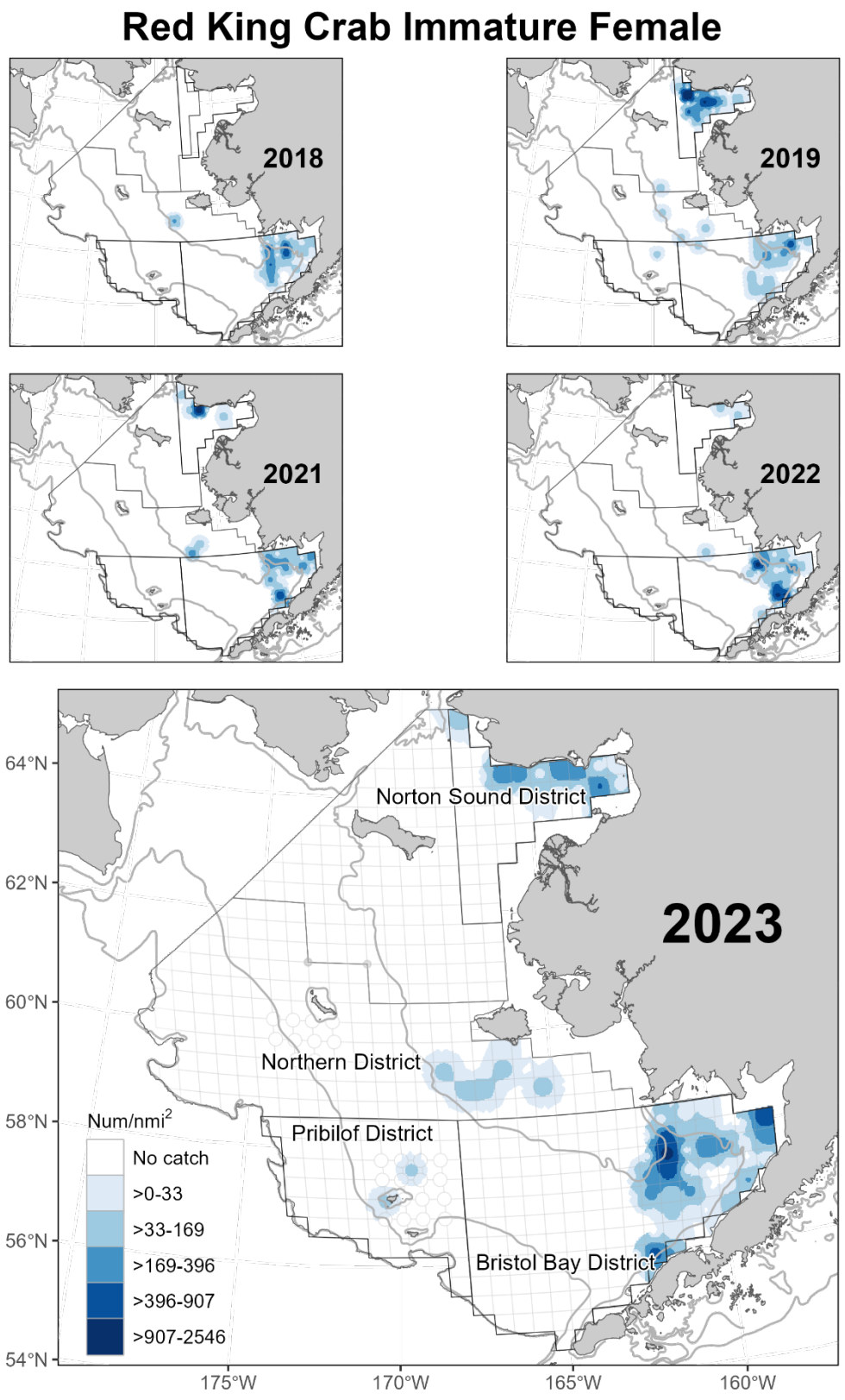

Figure 33. -- Estimated total density of immature female red king crab (*Paralithodes camtschaticus*) for the past five survey years. Outlined areas depict management districts. In years when a subset of stations were resampled, the resample stations replace data from original stations.

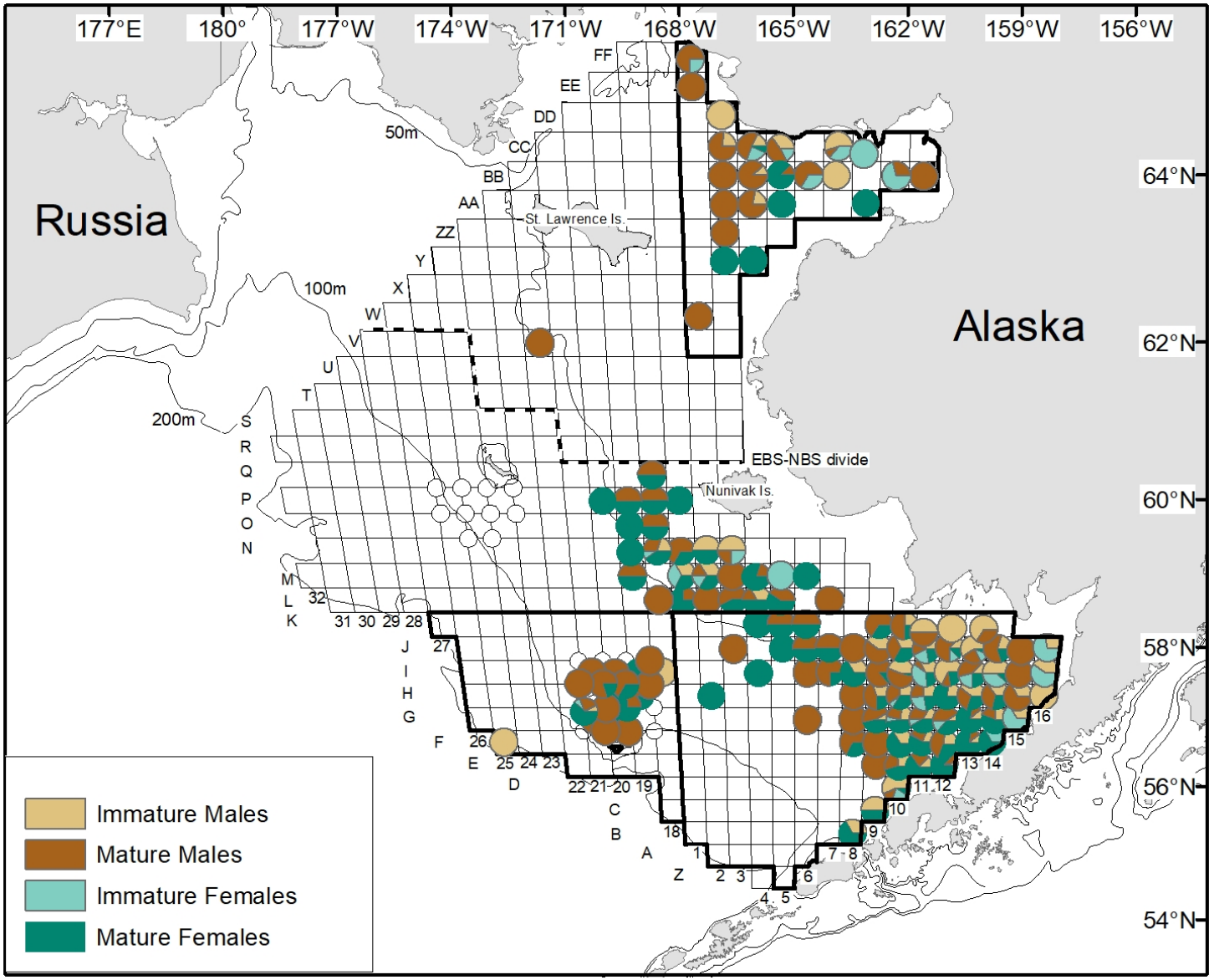

Figure 34. -- Proportion of male and female red king crab (*Paralithodes camtschaticus*) maturity classes caught at each station sampled in 2023. Males are categorized as mature at ≥ 120 mm carapace length in the EBS and ≥ 94 mm carapace length in the NBS. Outlined areas depict management districts.

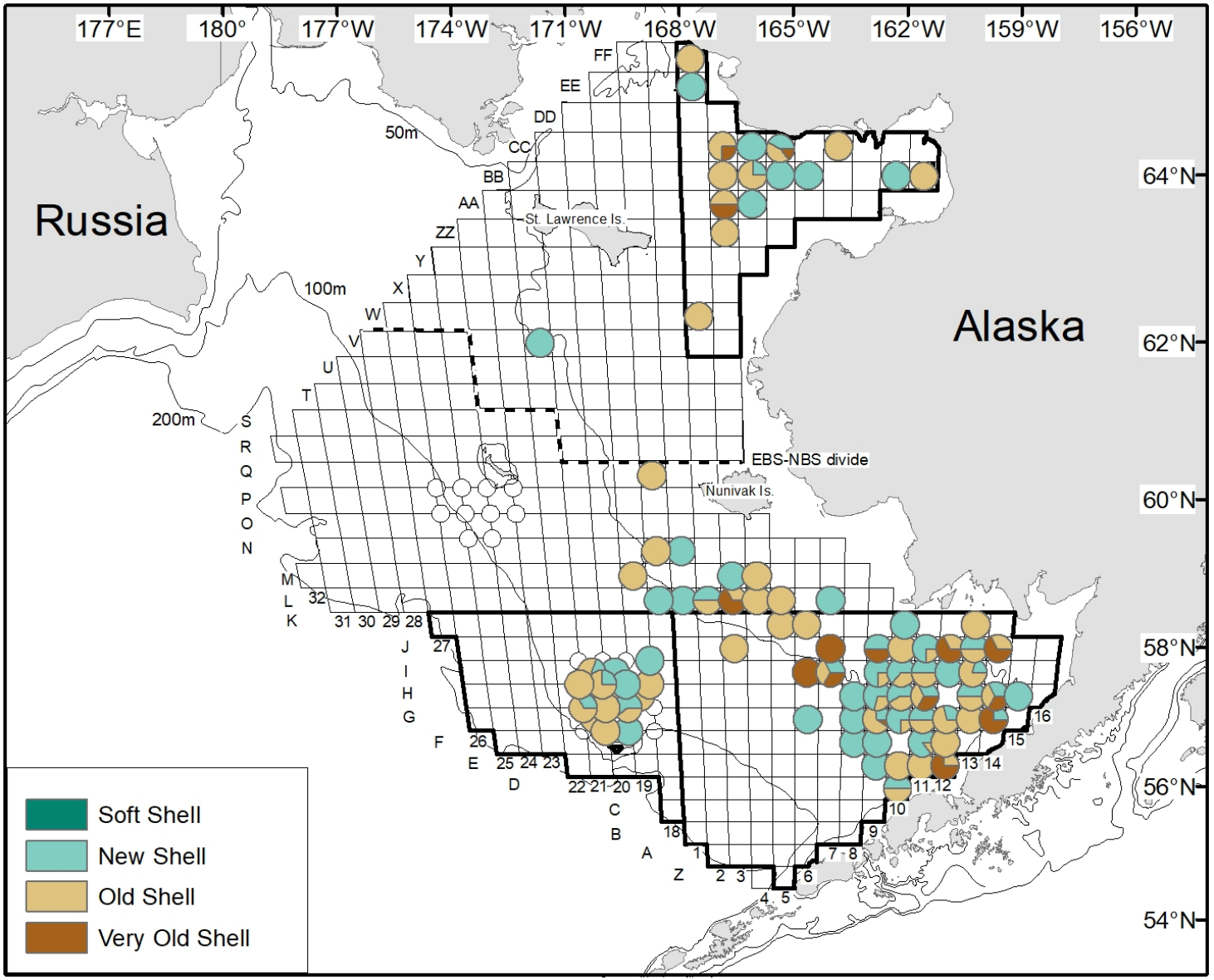

Figure 35. -- Proportion of legal-sized (≥ 135 mm carapace length in EBS; ≥ 104 mm carapace length in NBS), male red king crab (*Paralithodes camtschaticus*) shell condition classes caught at each station sampled in 2023. Outlined areas depict management districts.

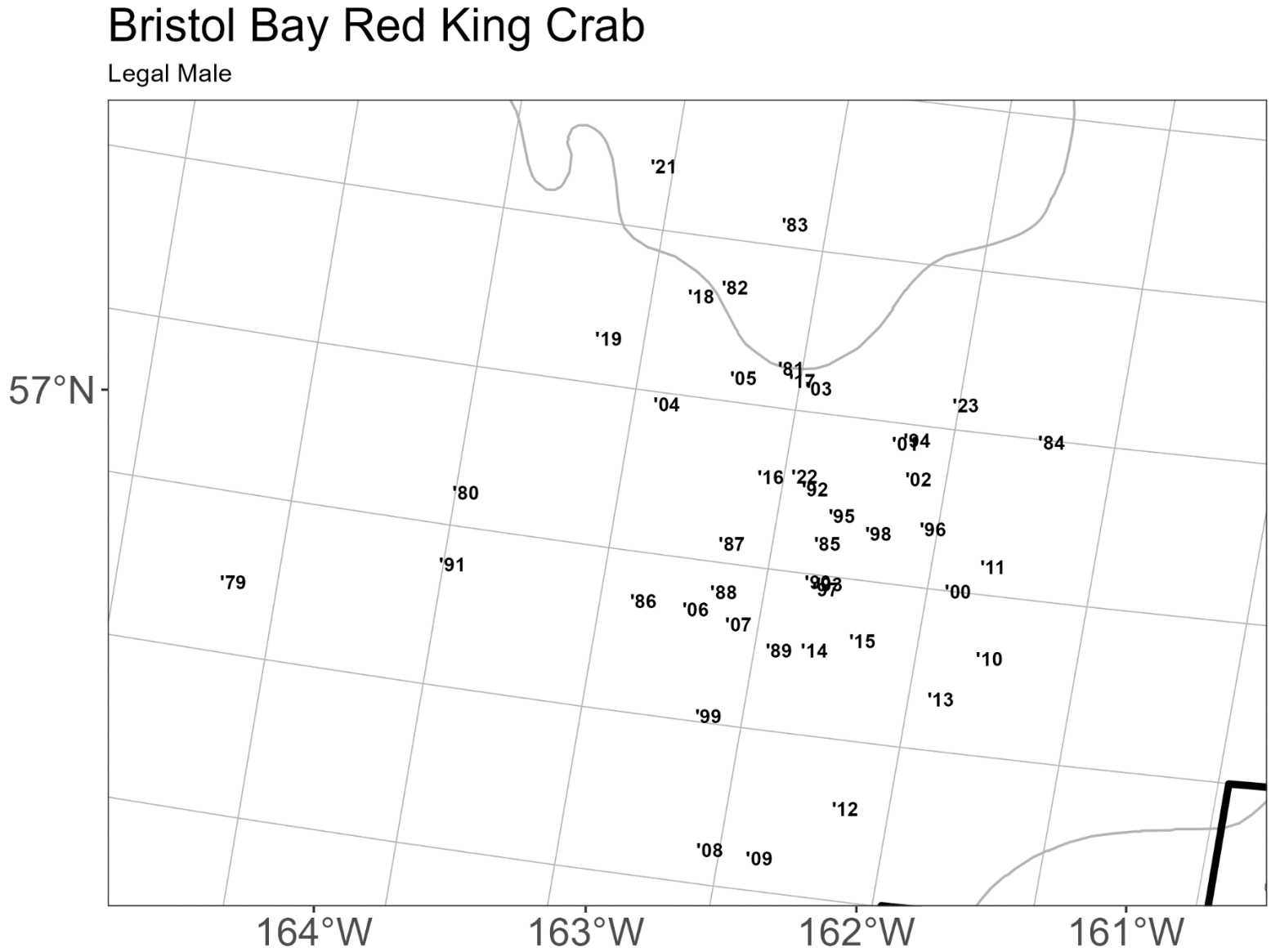

Figure 36. -- Centers of stock abundance of Bristol Bay District legal male red king crab (*Paralithodes camtschaticus*) from 1979 to 2023. Data are from standard survey stations only (resampled stations **do not** replace data from original stations).

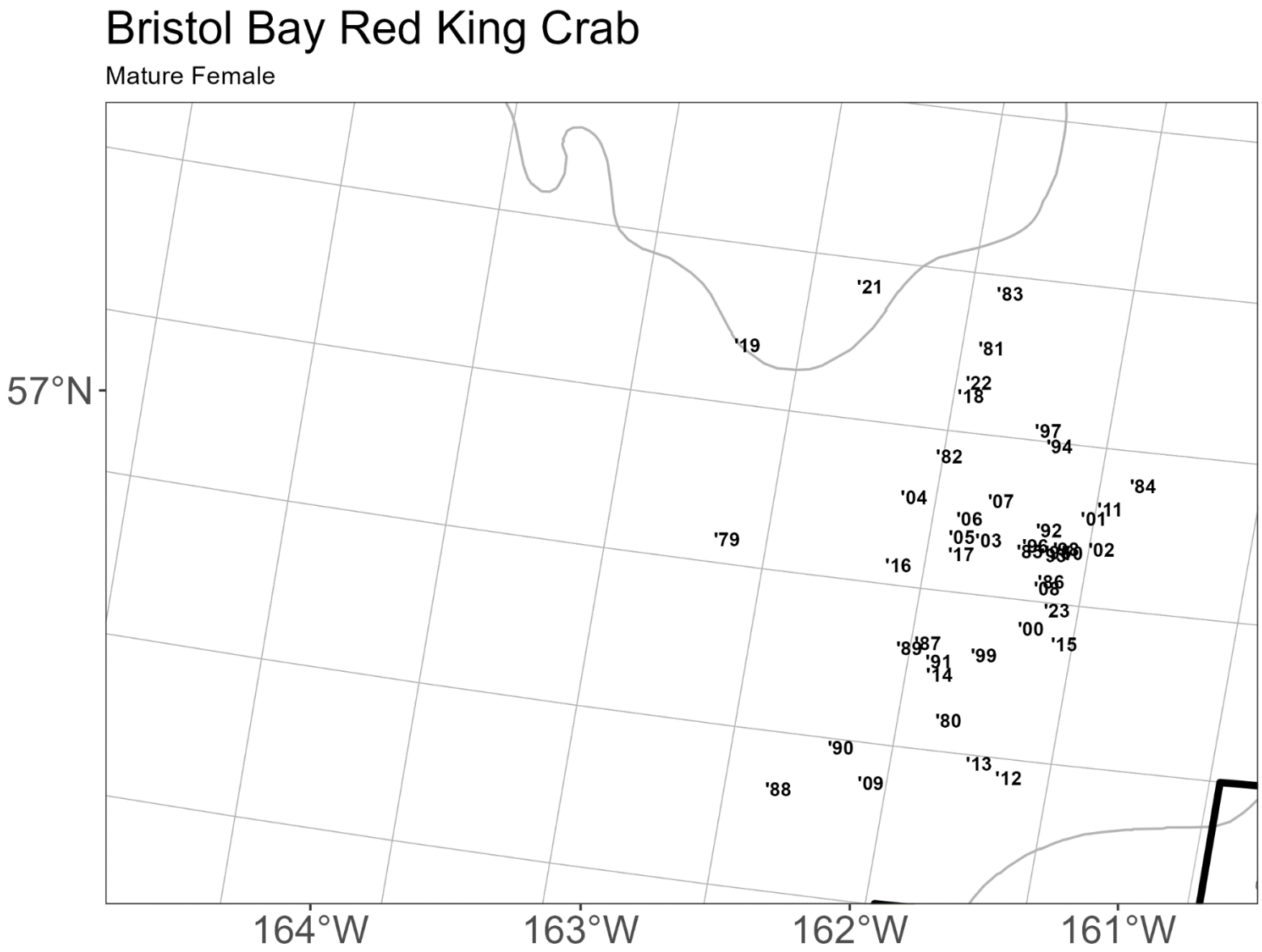

Figure 37. -- Centers of stock abundance of Bristol Bay District mature female red king crab (*Paralithodes camtschaticus*) from 1979 to 2023. Data are from standard survey stations only (resampled stations **do not** replace data from original stations).

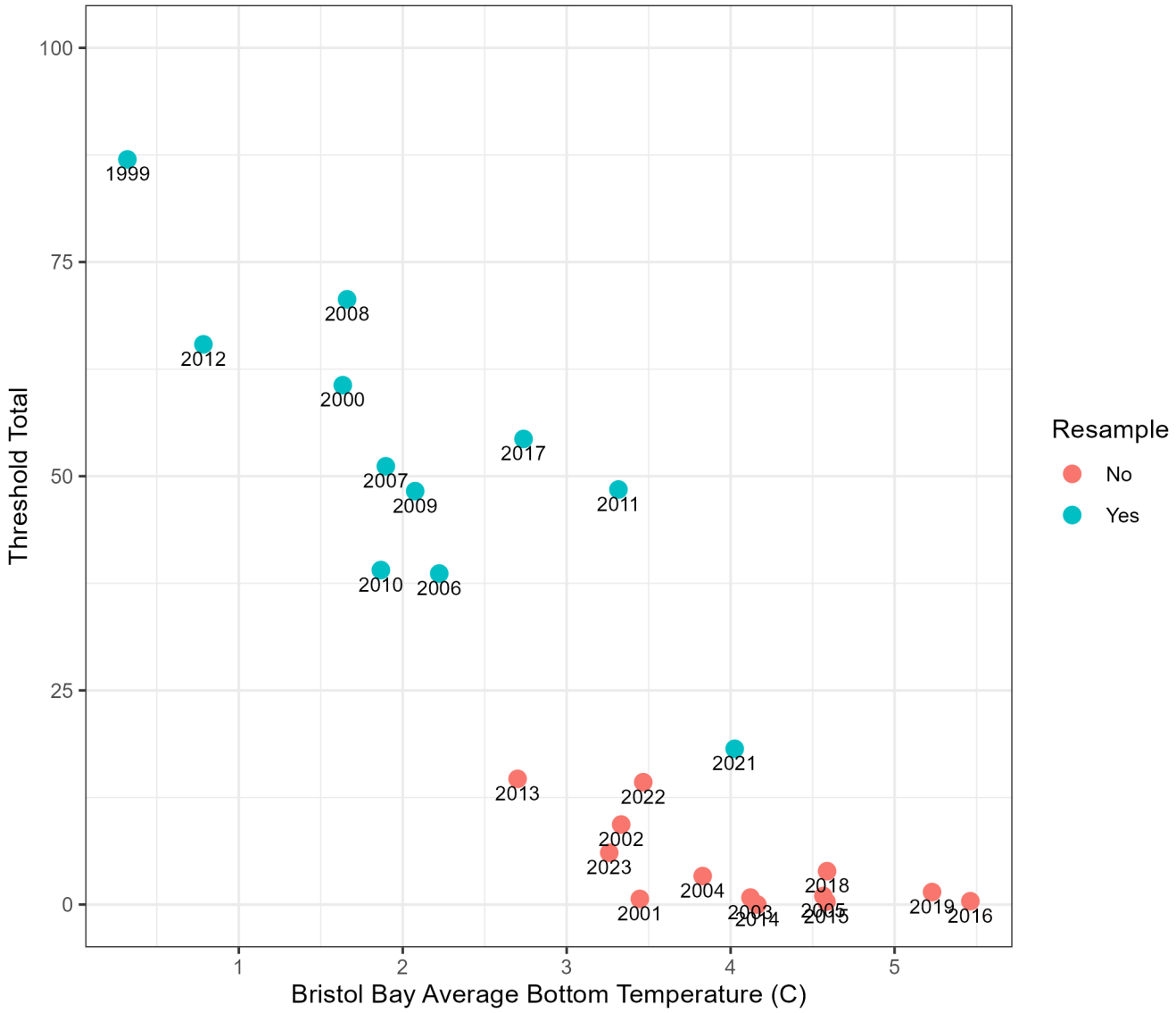

Figure 38. -- Relationship between Bristol Bay average bottom water temperature and the status of the female red king crab reproductive cycle relative to whether resampling was conducted in Bristol Bay. Average bottom water temperature is spatially subset for the Bristol Bay District during the standard National Marine Fisheries Service eastern Bering Sea trawl survey. Females are considered to have an incomplete reproductive cycle if they have eggs with eyed embryos, hatching eggs, empty egg cases, or no clutch (barren).

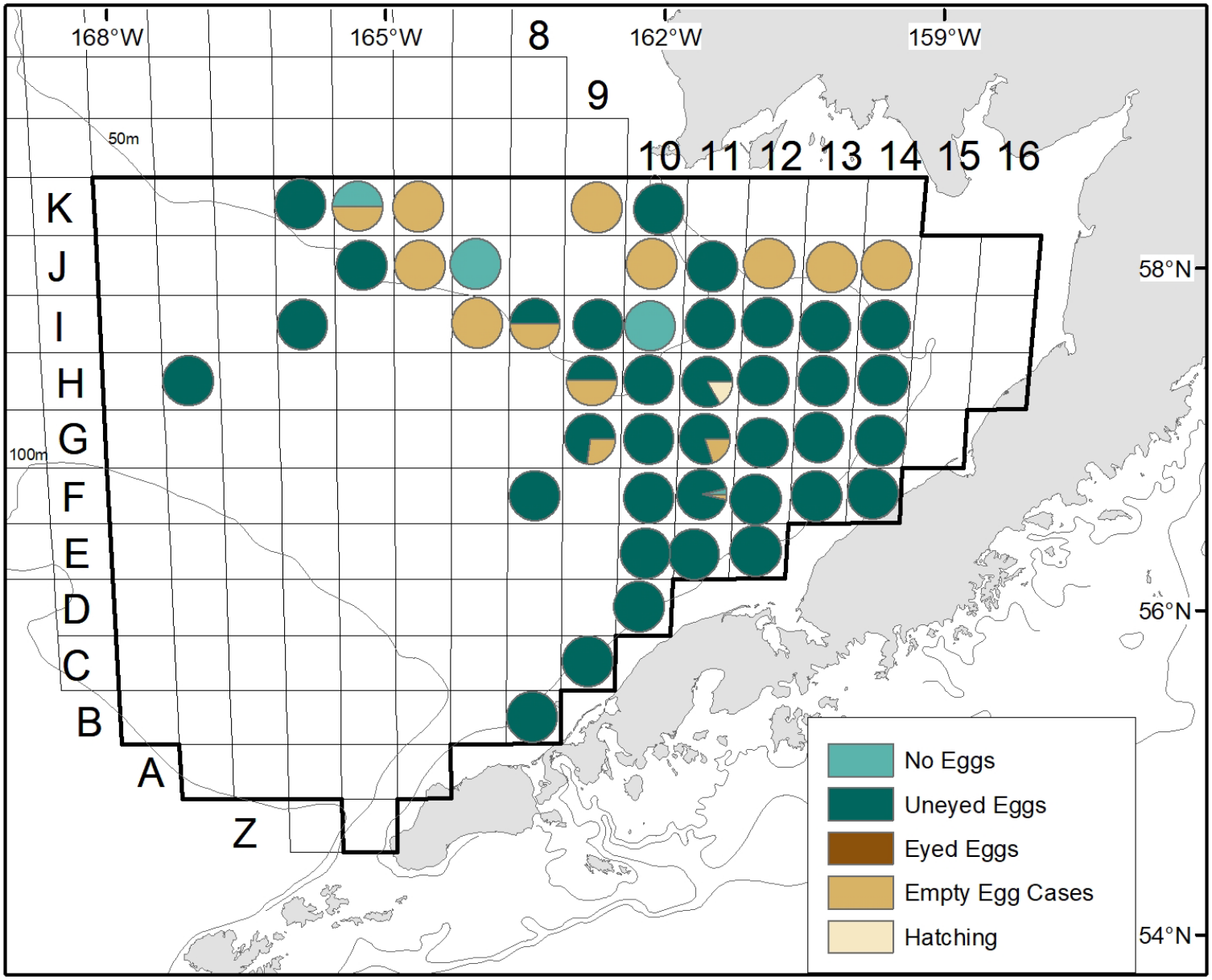

Figure 39. -- Proportion of female red king crab (*Paralithodes camtschaticus)* egg condition classes caught at each station sampled in 2023 in the Bristol Bay District. The black outlined area depicts the management district.

Blue King Crab
Figures

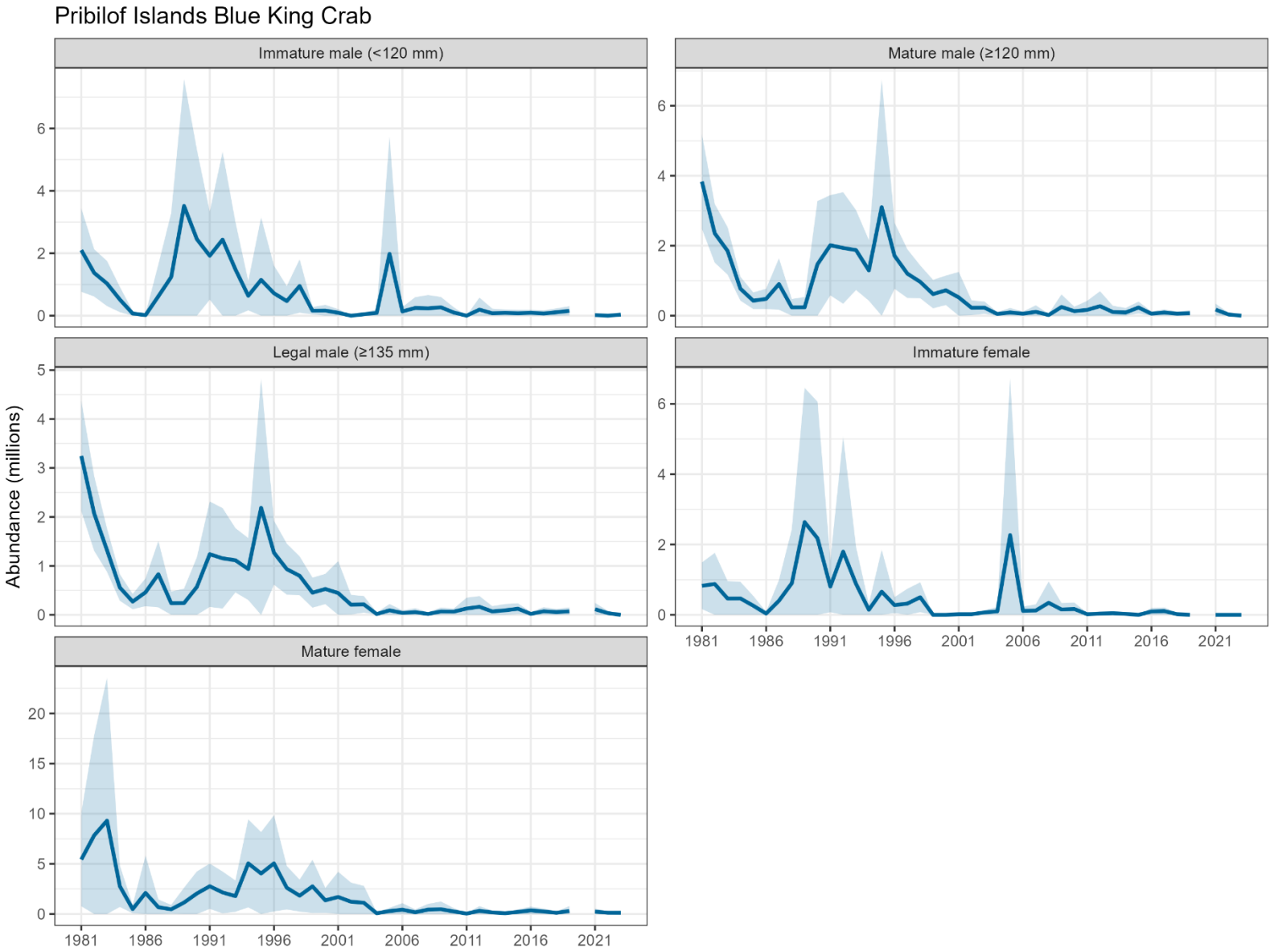

Figure 40. -- Historical abundance of blue king crab (*Paralithodes platypus*) in the Pribilof District. Light blue area indicates ± 95% CI.

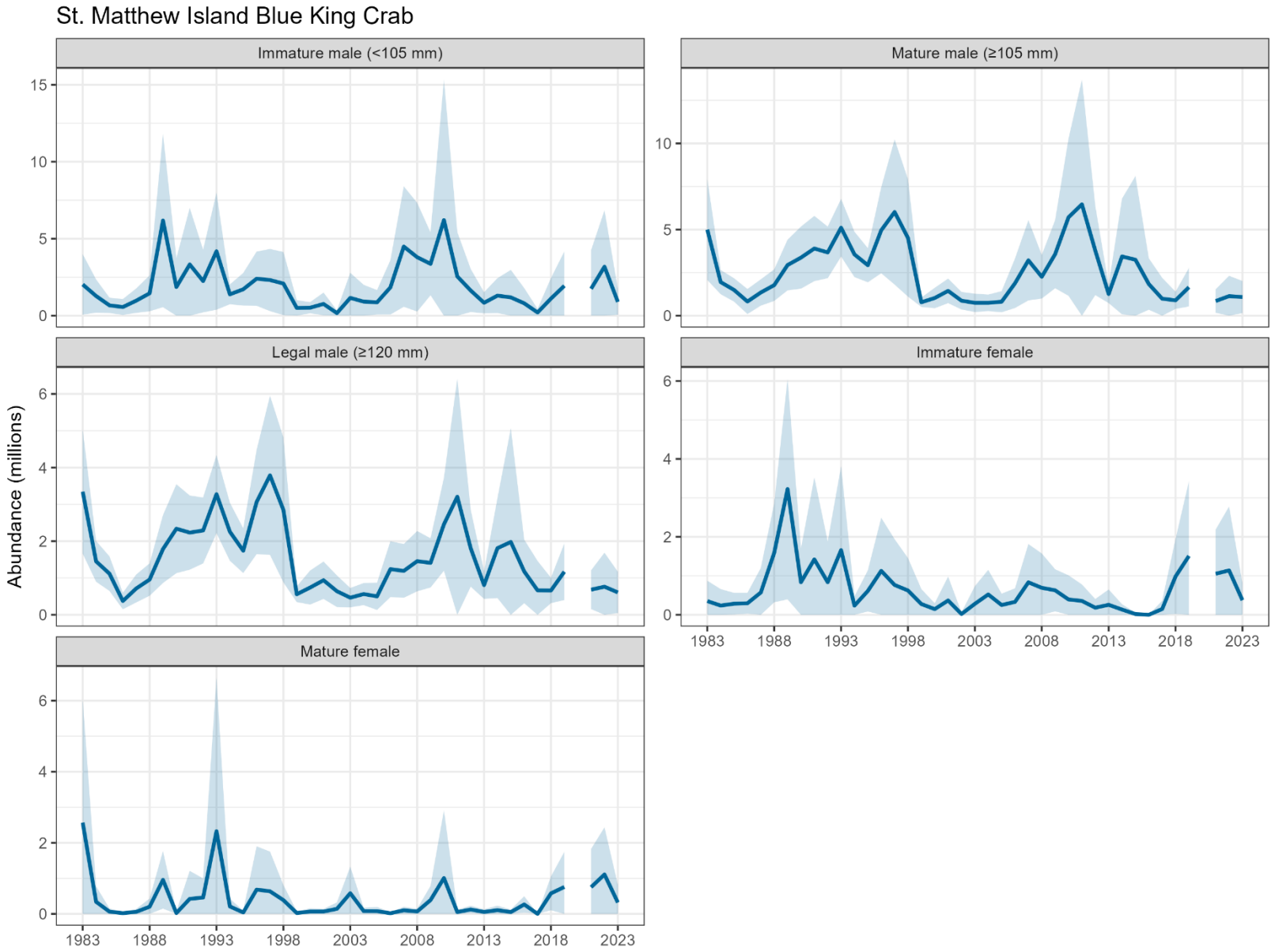

Figure 41. -- Historical abundance of blue king crab (*Paralithodes platypus*) in the Saint Matthew Island Section. Light blue area indicates ± 95% CI.

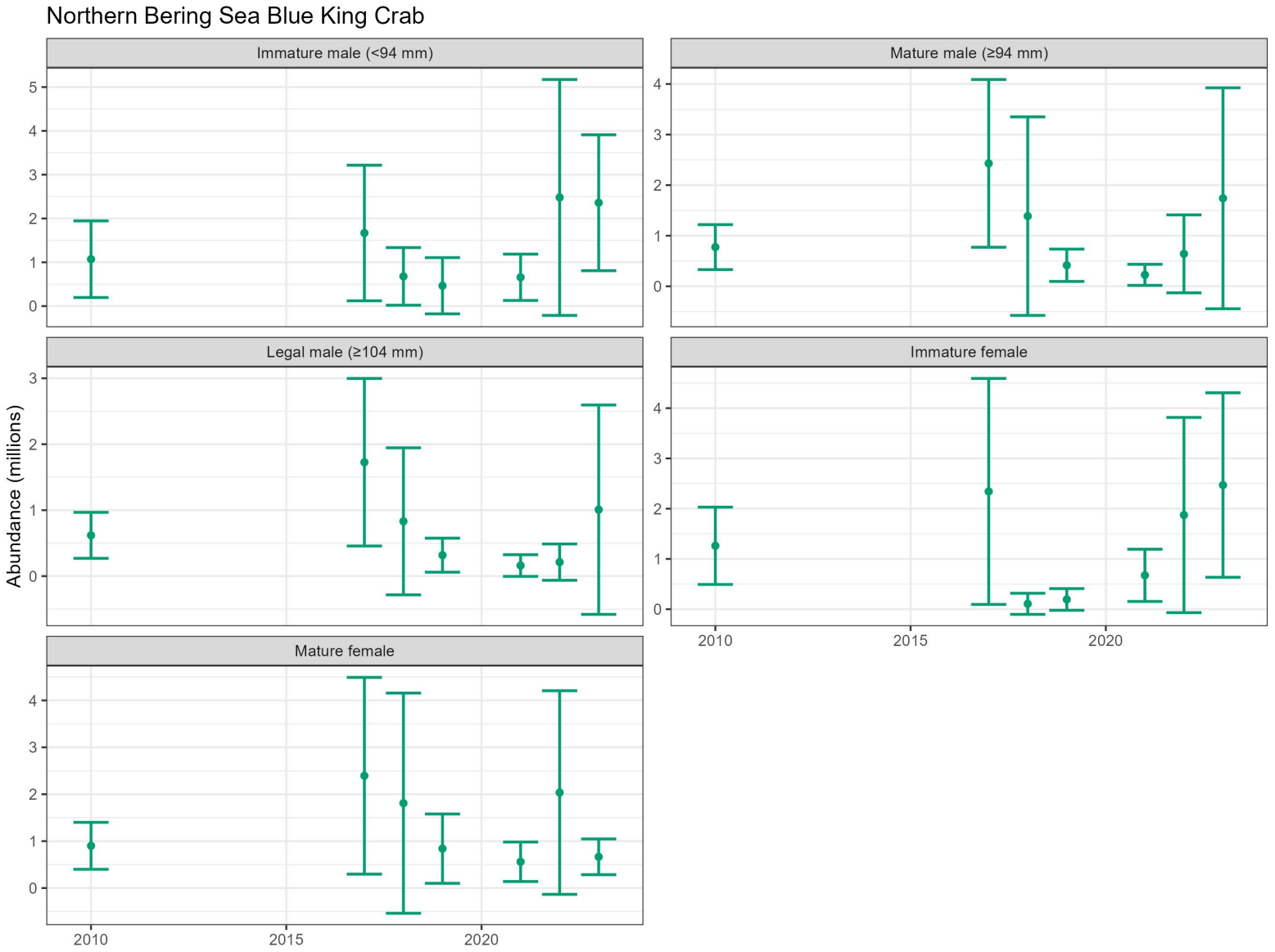

Figure 42. -- Historical abundance of blue king crab (*Paralithodes platypus*) in the northern Bering Sea. Error bars indicate ± 95% CI.

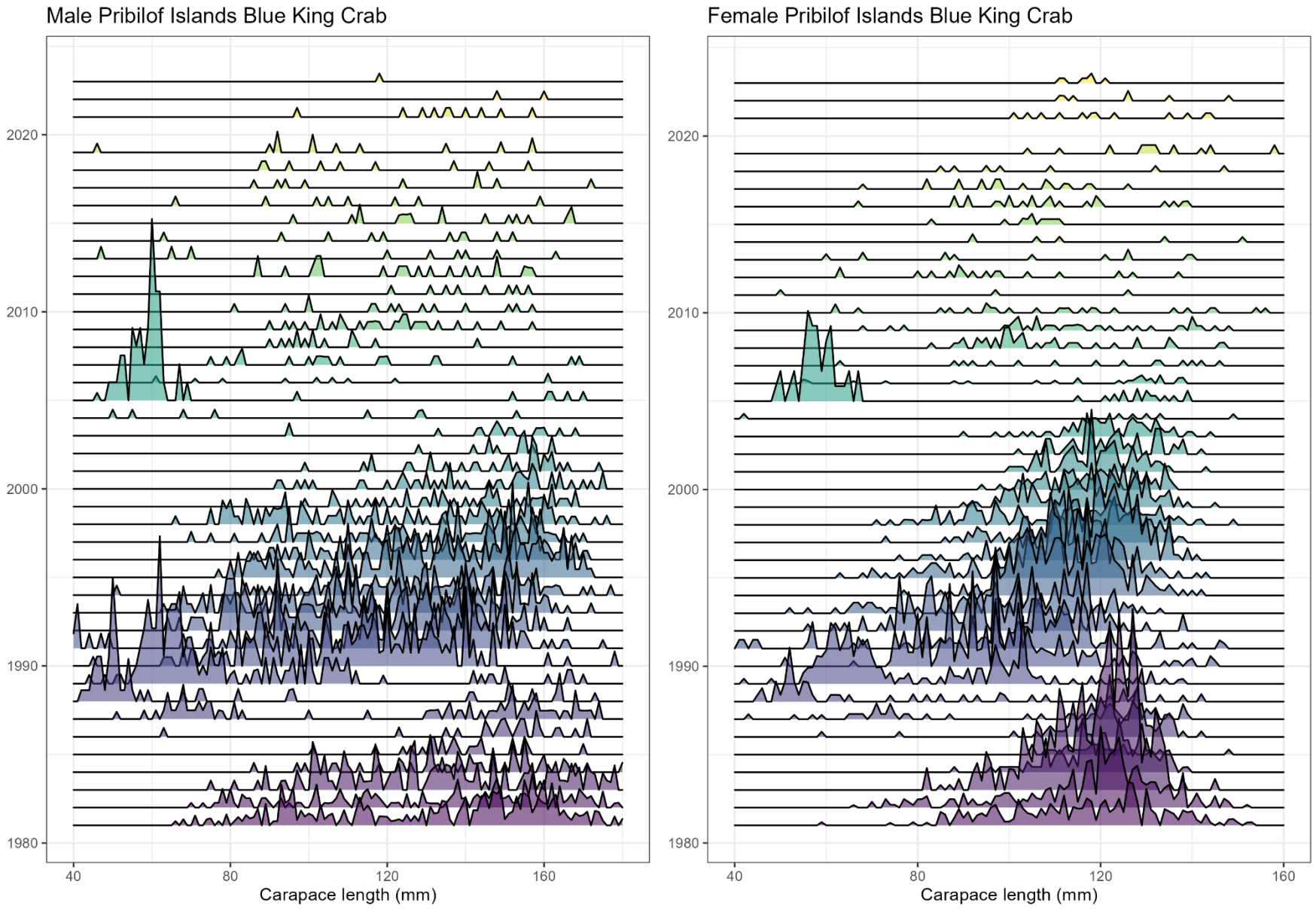

Figure 43. -- Historical size frequency for Pribilof District blue king crab (*Paralithodes platypus*).

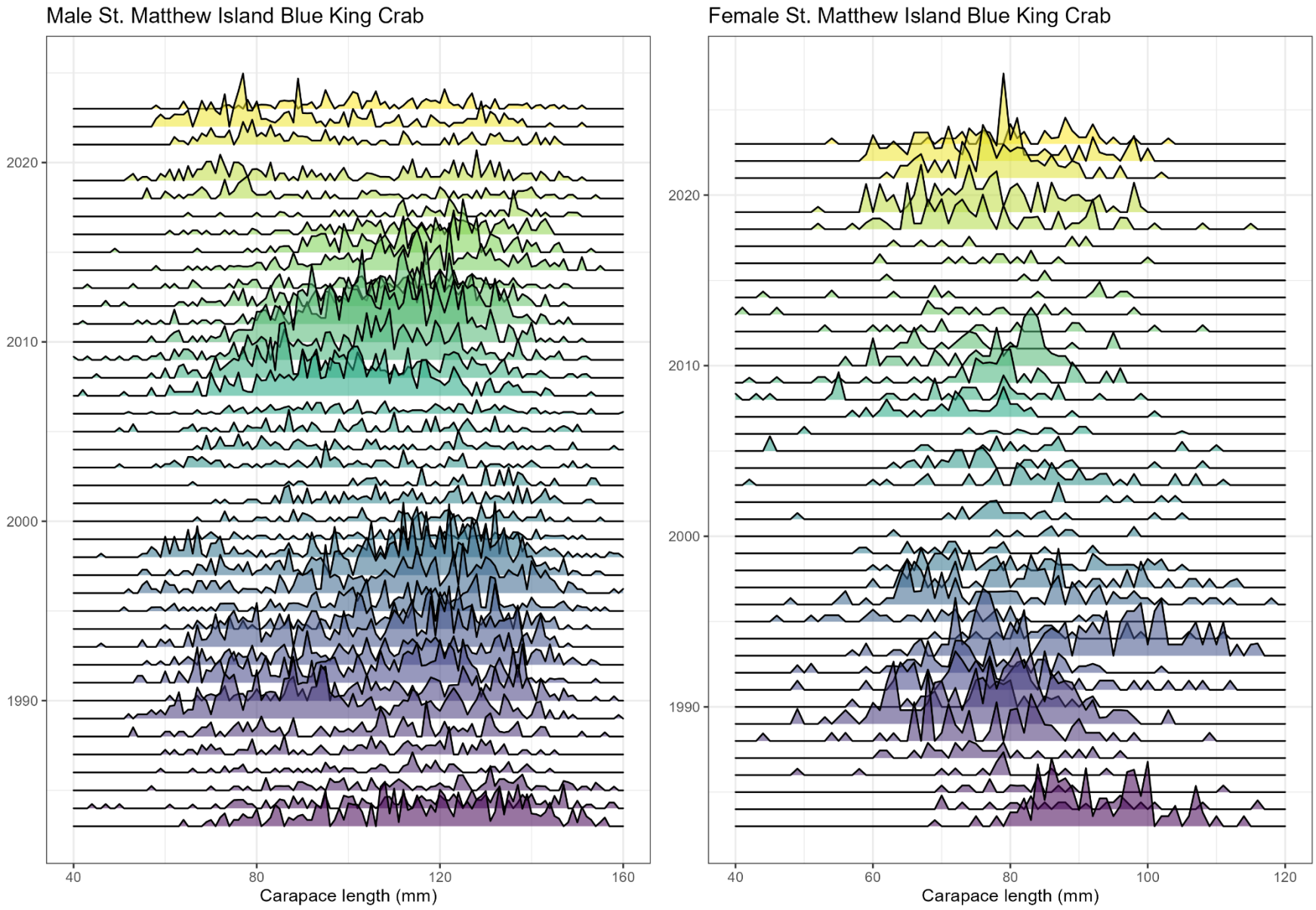

Figure 44. -- Historical size frequency for Saint Matthew Island Section blue king crab (*Paralithodes platypus*).

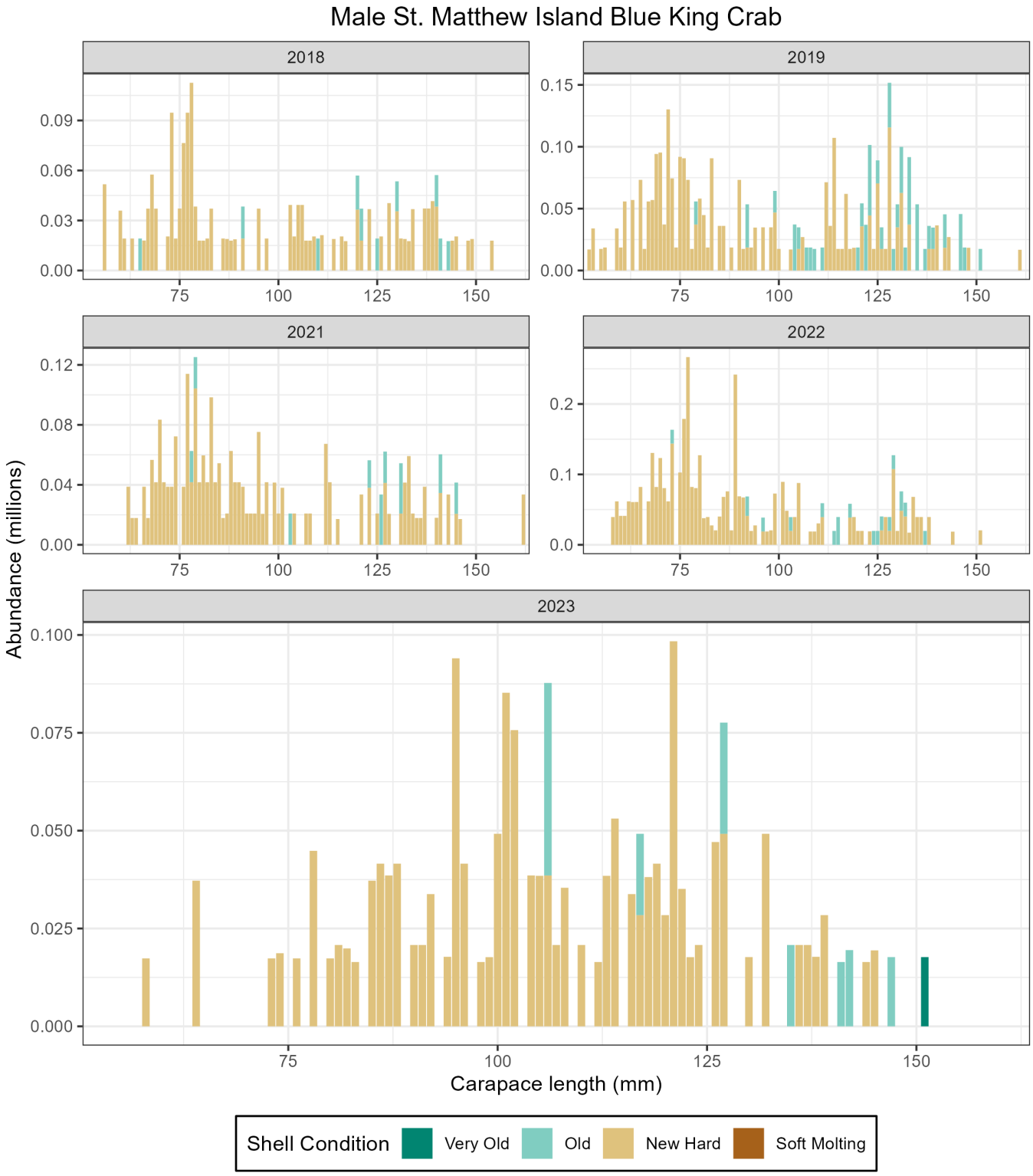

Figure 45. -- Abundance (millions) by size and shell condition of Saint Matthew Island Section male blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

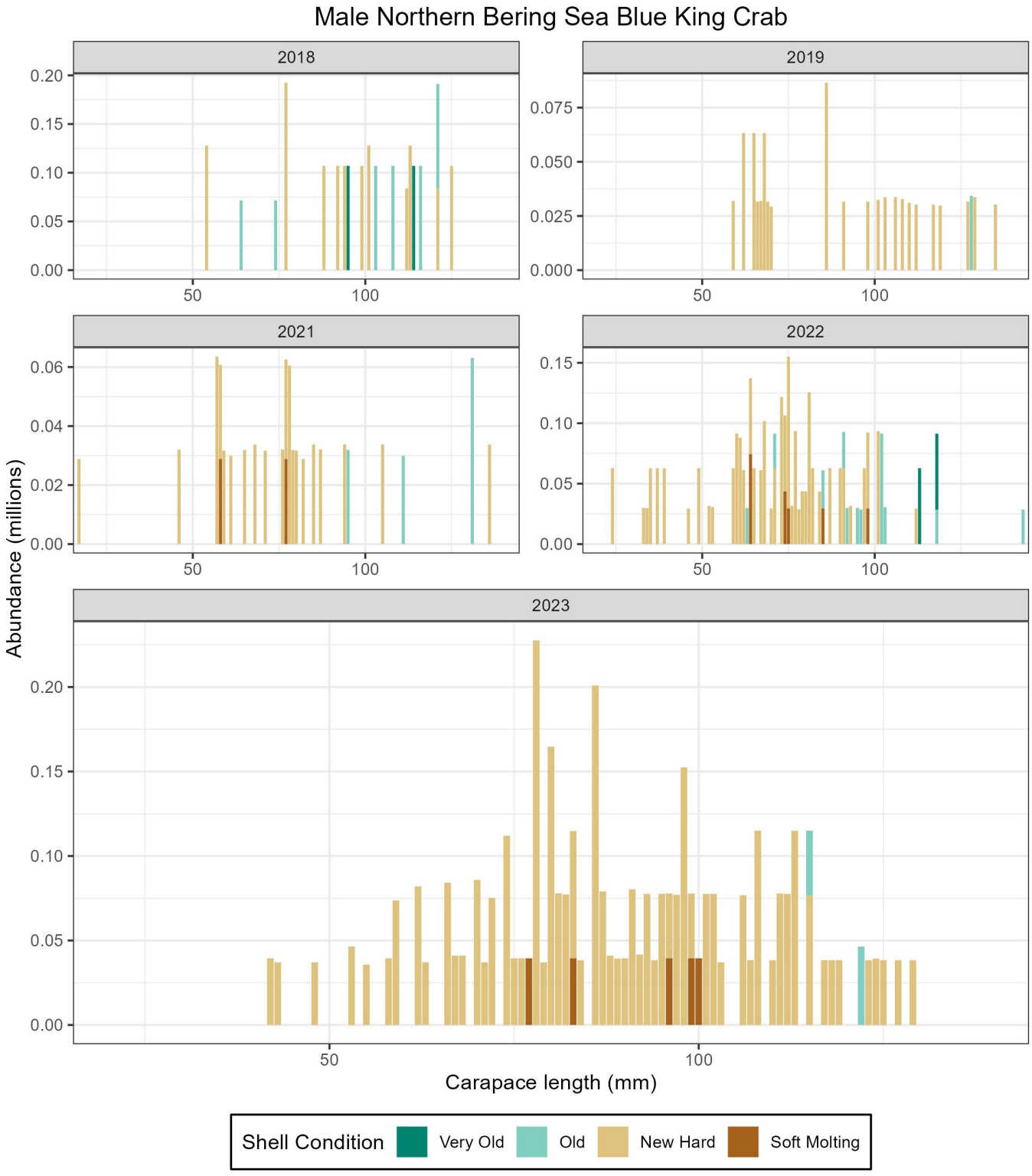

Figure 46. -- Abundance (millions) by size and shell condition of northern Bering Sea male blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

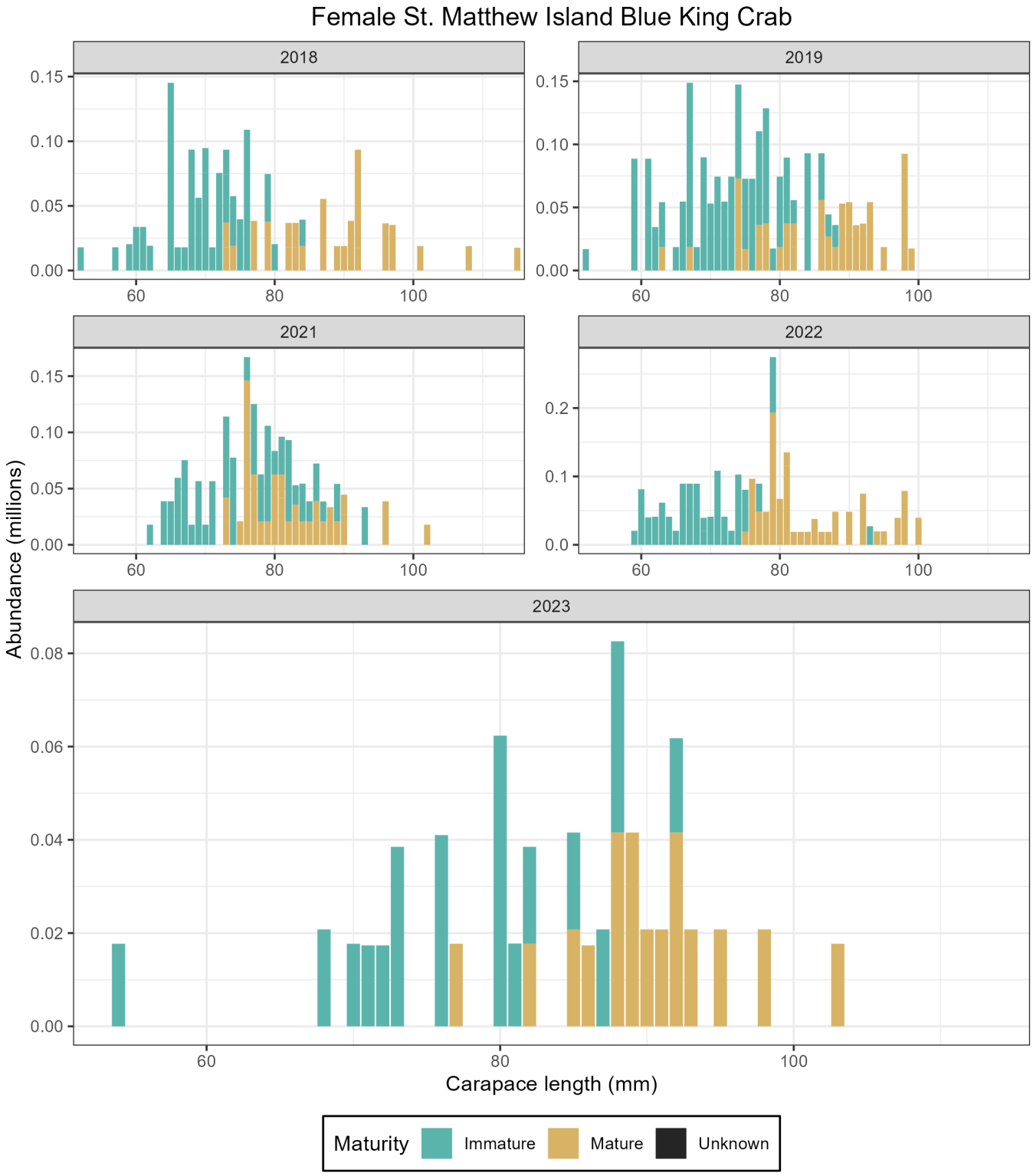

Figure 47. -- Abundance (millions) by size and maturity status of Saint Matthew Island Section female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

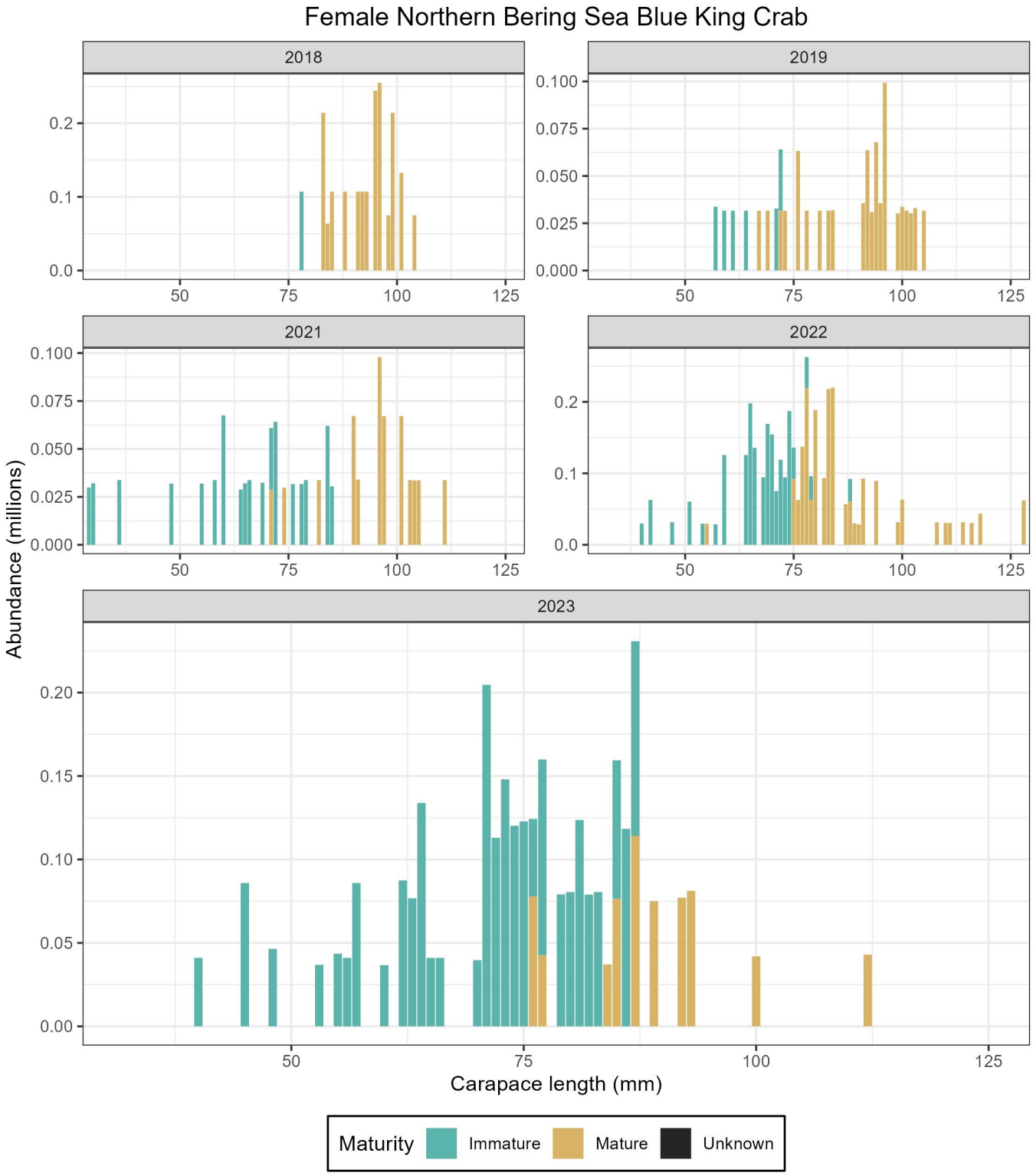

Figure 48. -- Abundance (millions) by size and maturity status of northern Bering Sea female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

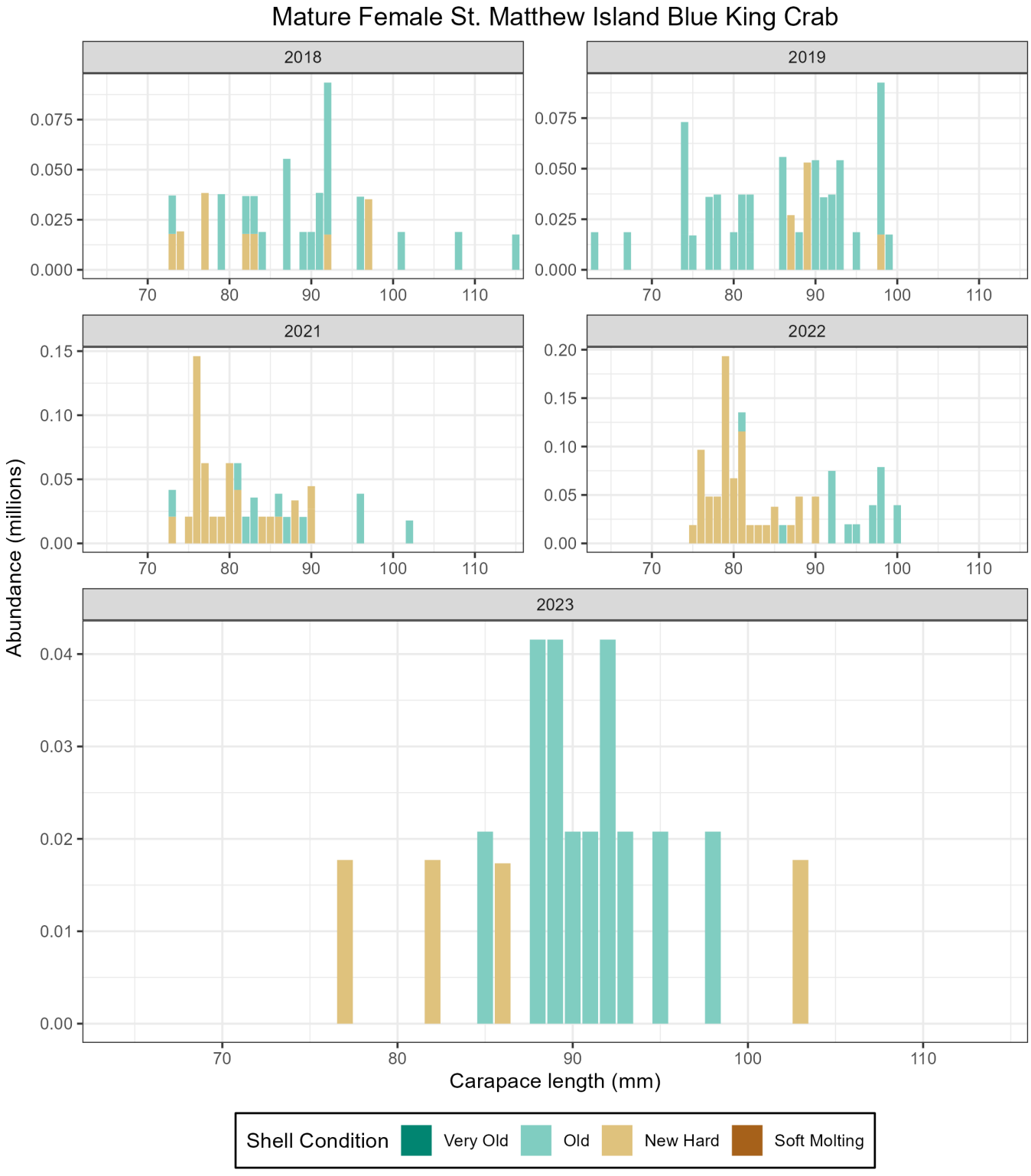

Figure 49. -- Abundance (millions) by size and shell condition of Saint Matthew Island Section mature female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

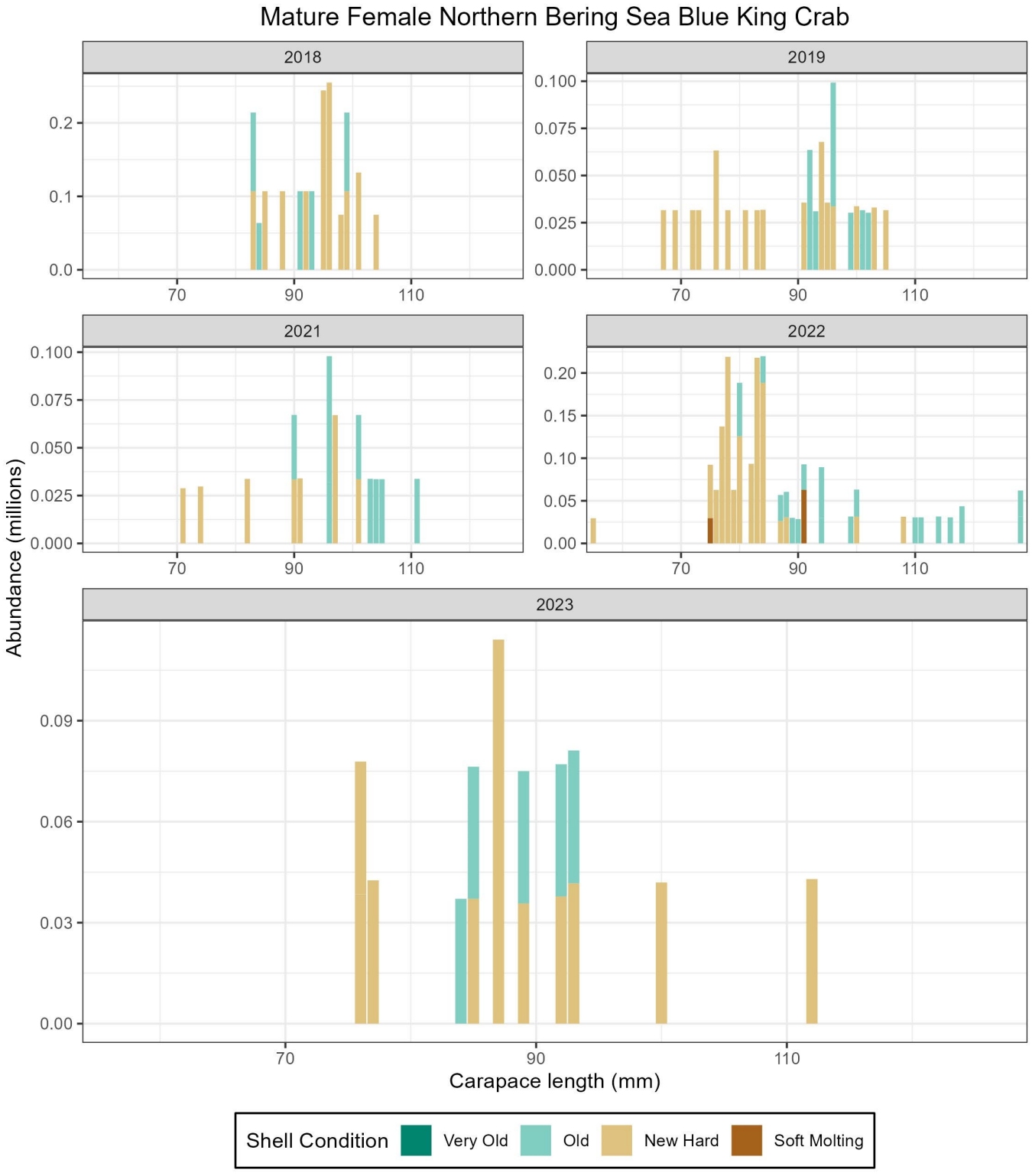

Figure 50. -- Abundance (millions) by size and shell condition of northern Bering Sea mature female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

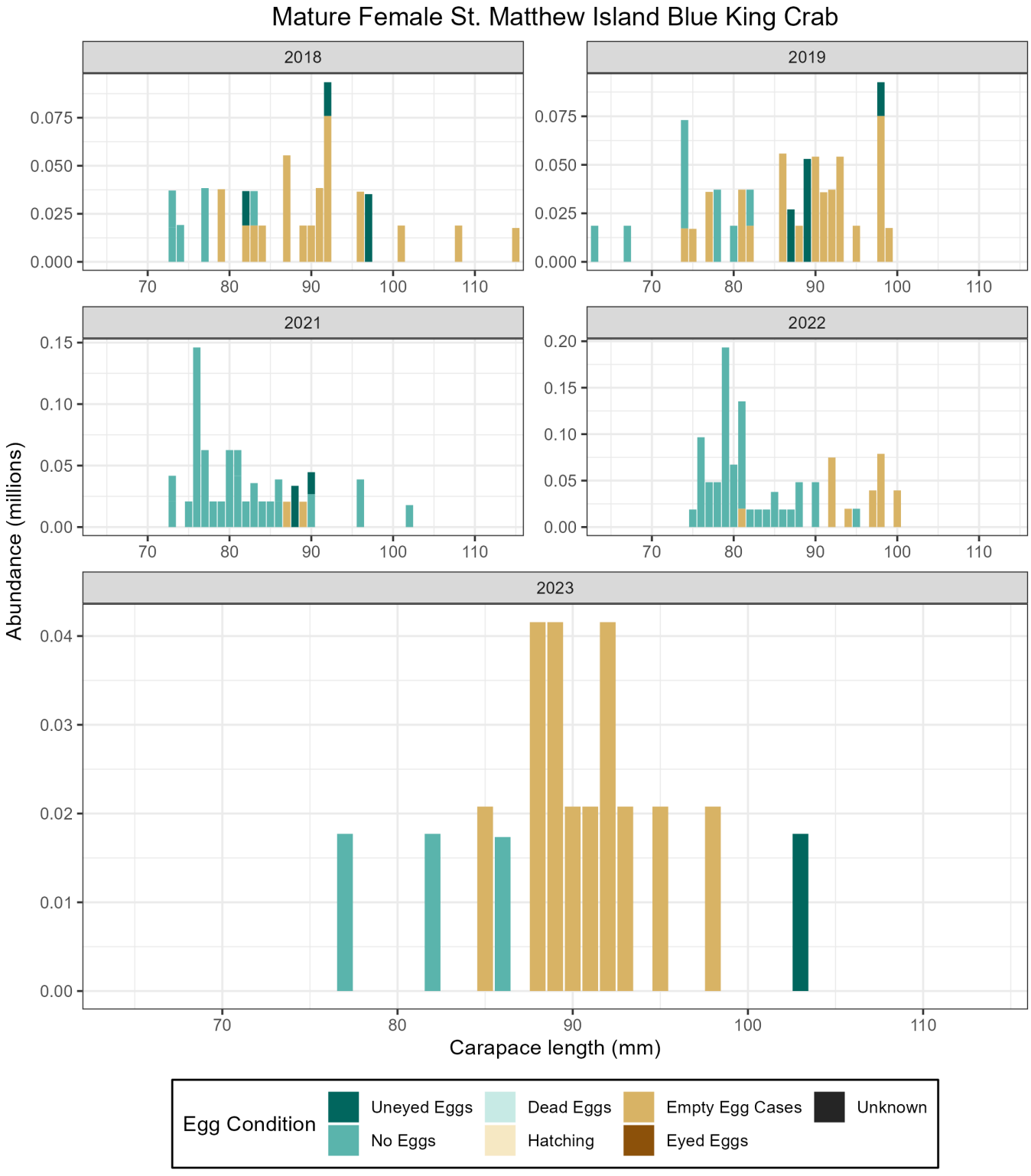

Figure 51. -- Abundance (millions) by size and egg condition of Saint Matthew Island Section mature female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

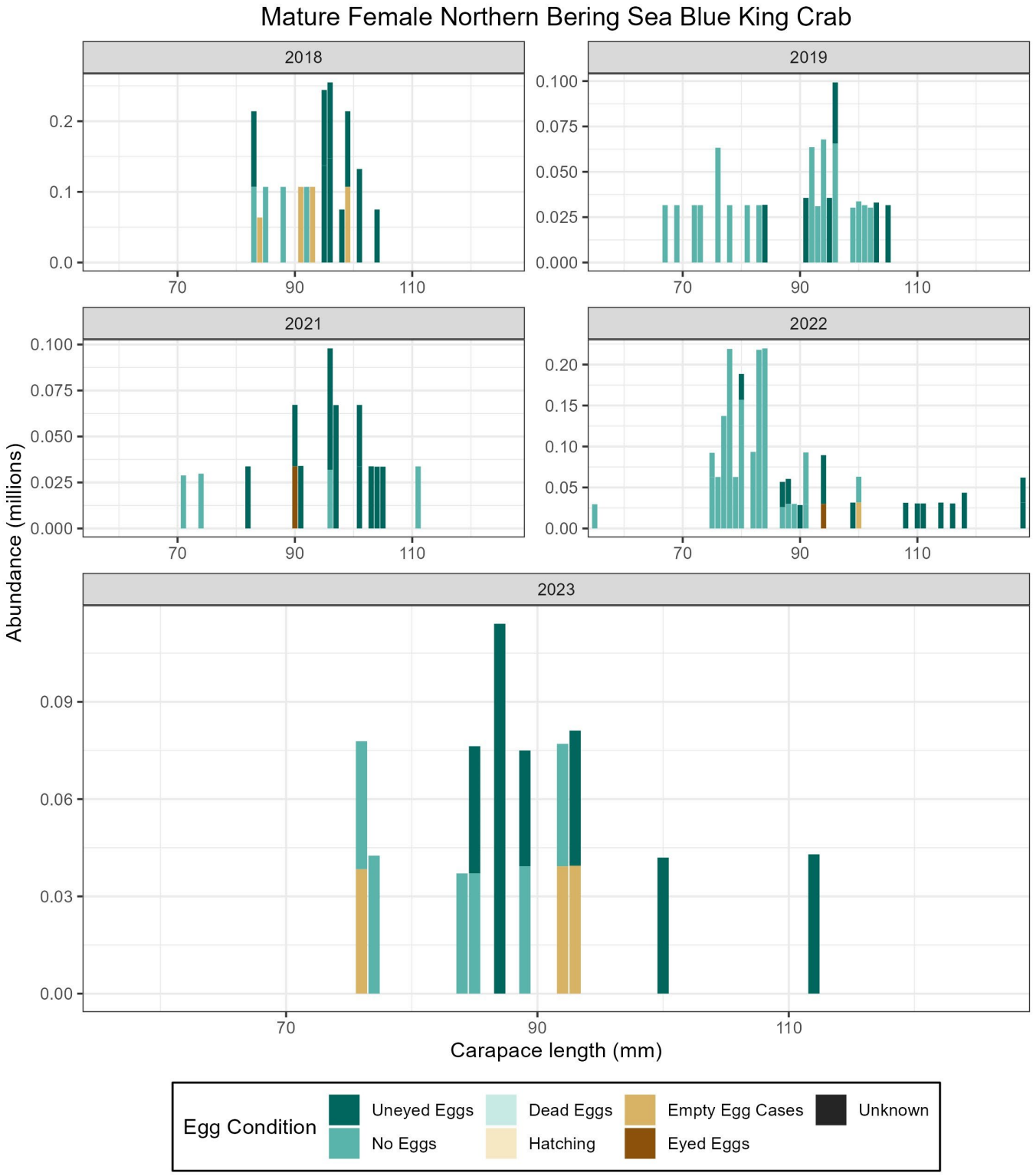

Figure 52. -- Abundance (millions) by size and egg condition of northern Bering Sea mature female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

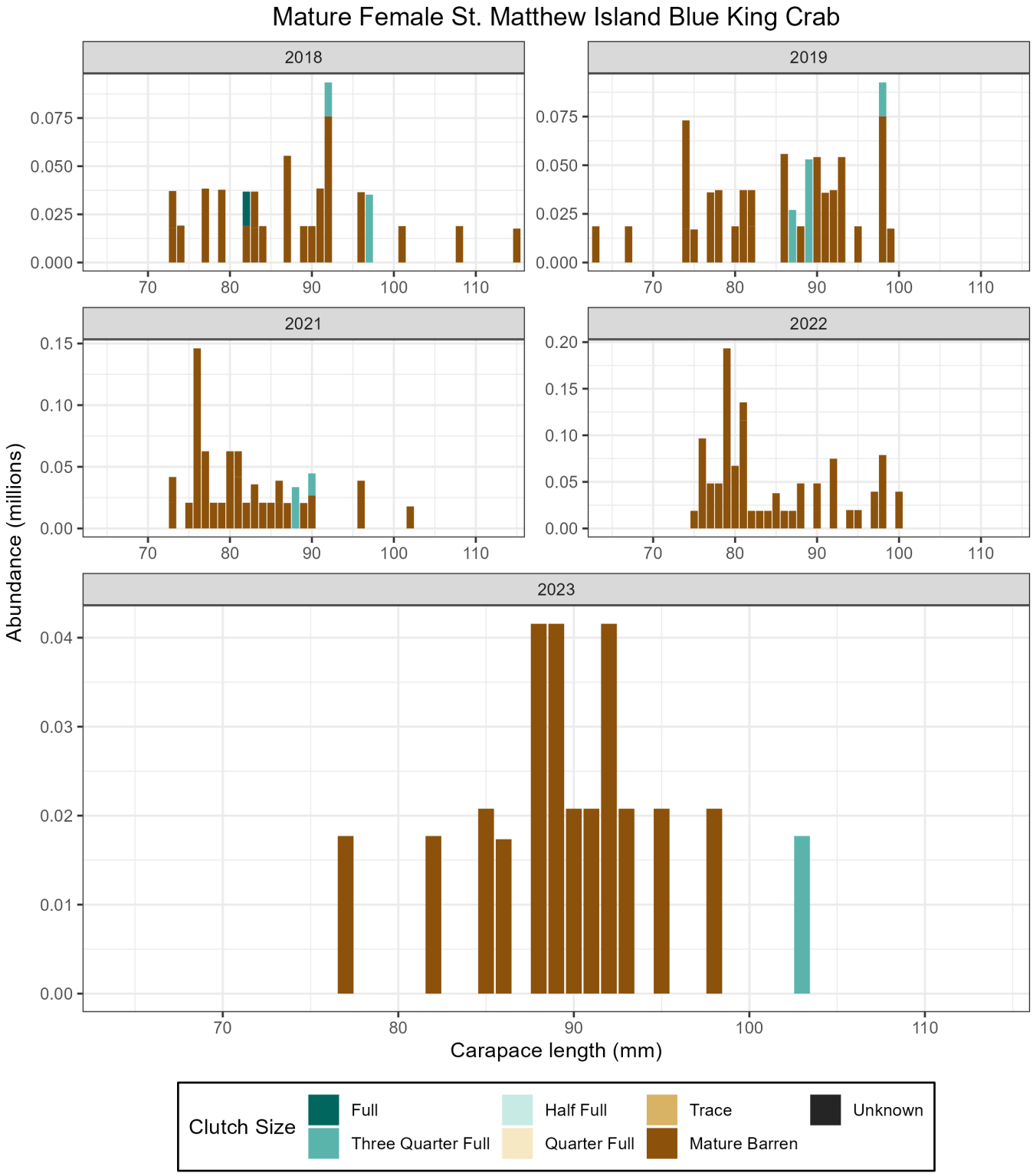

Figure 53 -- Abundance (millions) by size and clutch fullness of Saint Matthew Island Section mature female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

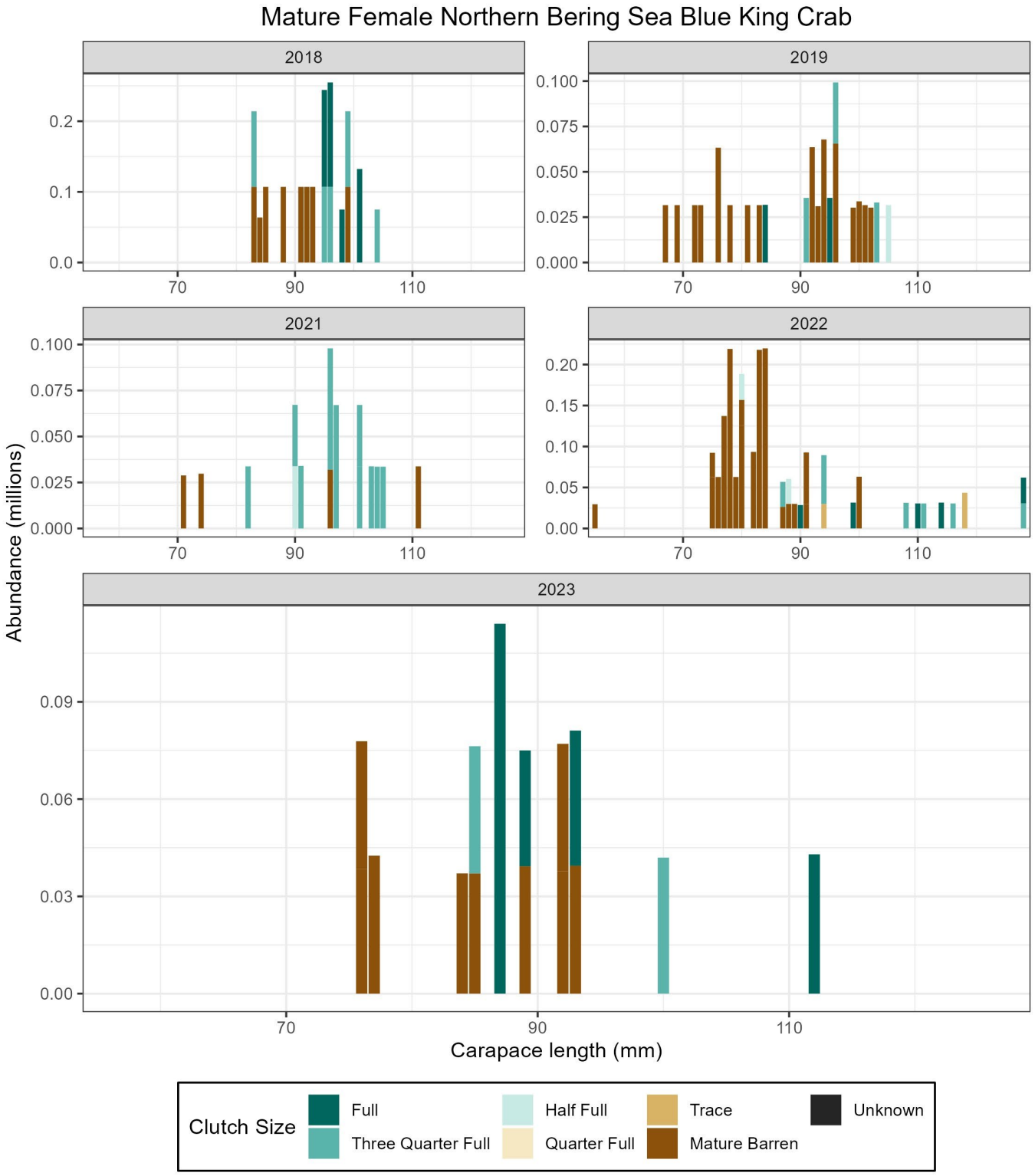

Figure 54 -- Abundance (millions) by size and clutch fullness of northern Bering Sea mature female blue king crab (*Paralithodes platypus*) using 1 mm length classes. **Note that Y-axis scale varies among years.**

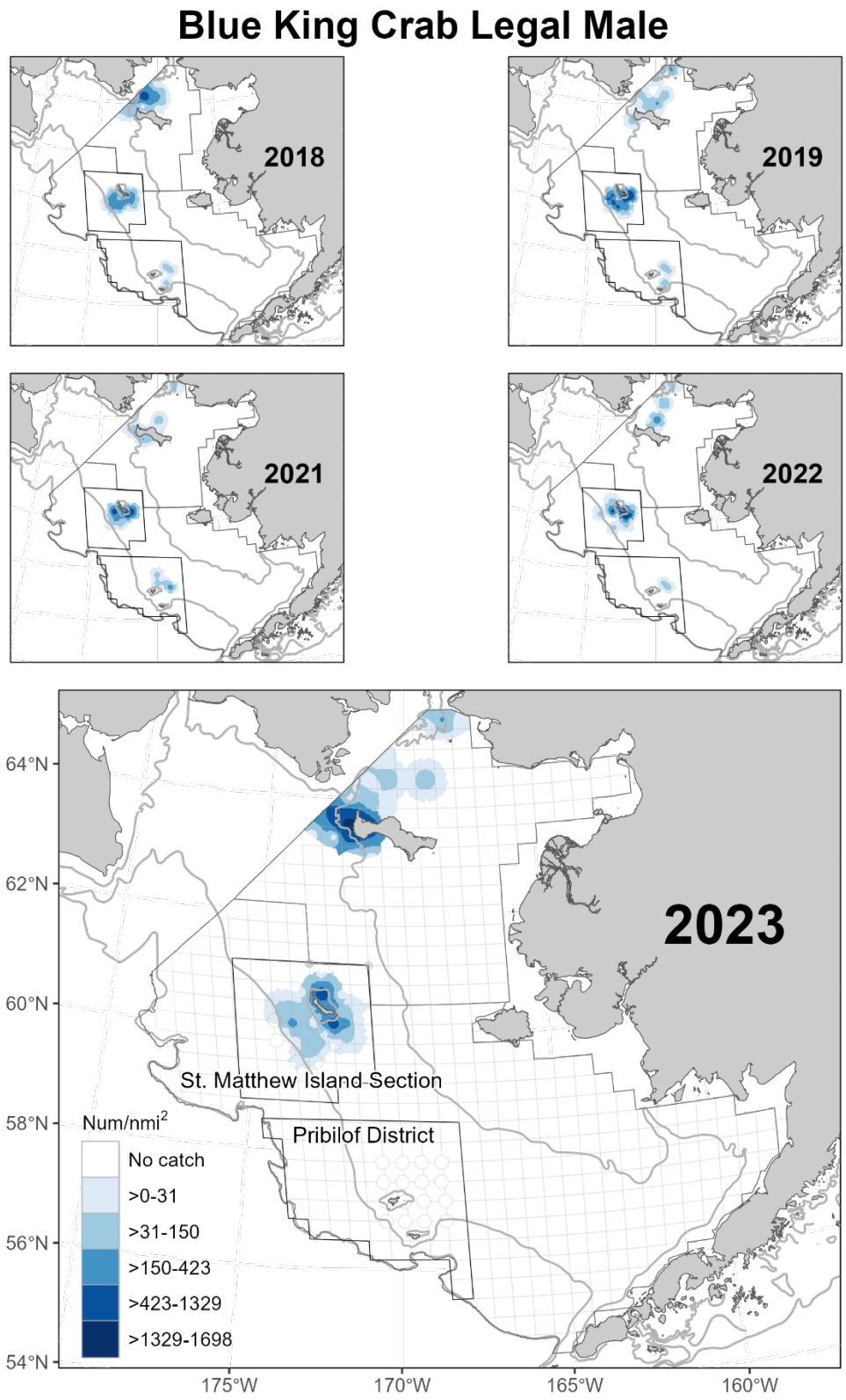

Figure 55. -- Estimated total density of legal-sized (carapace length ≥ 135 mm for Pribilof District; carapace length ≥ 120 mm for Saint Matthew Island Section; carapace length ≥ 104 mm for NBS) male blue king crab (*Paralithodes platypus*) for the past five survey years. Outlined areas depict management districts.

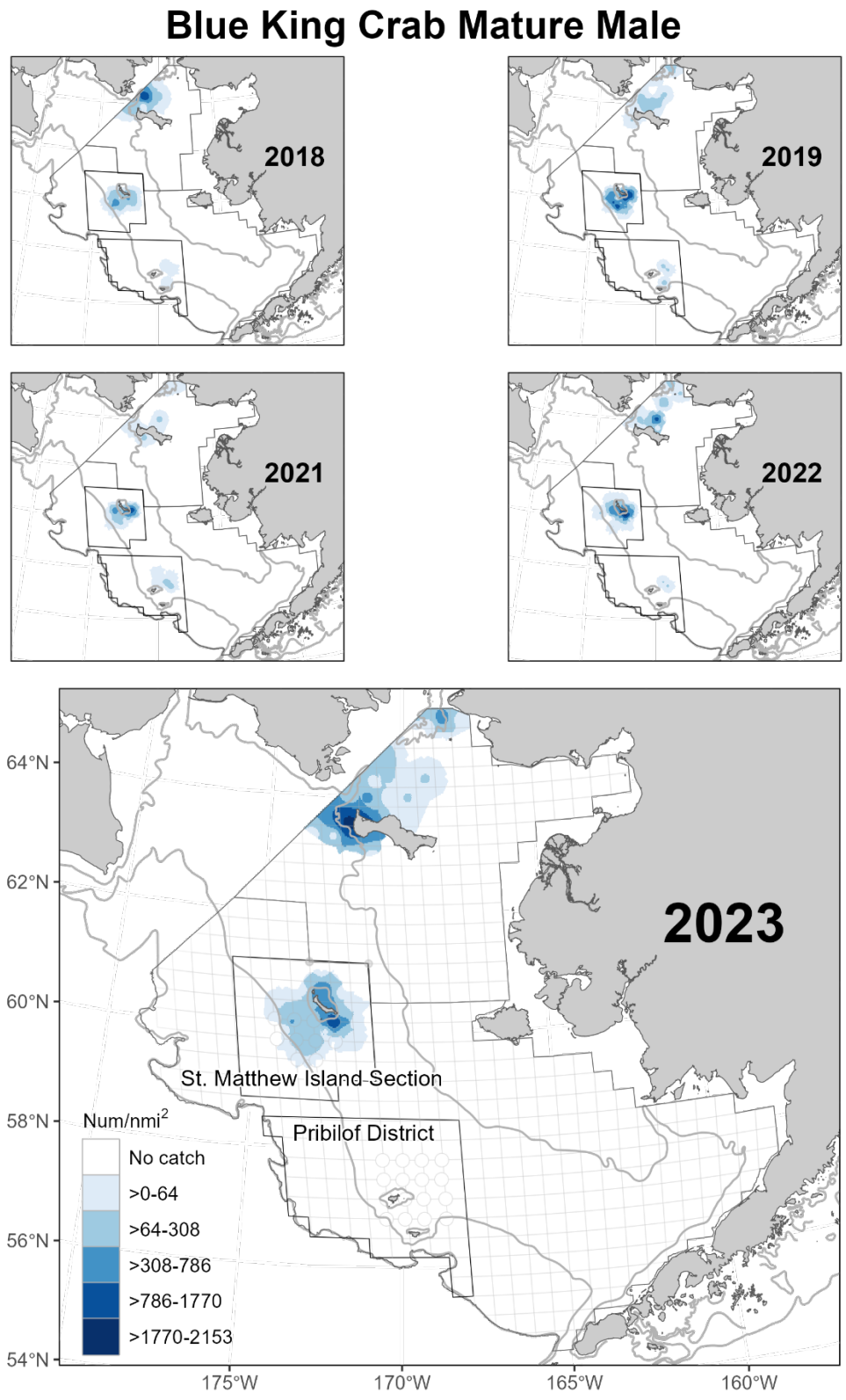

Figure 56. -- Estimated total density of mature-sized (carapace length ≥ 120 mm for Pribilof District; carapace length ≥ 105 mm for Saint Matthew Island Section; carapace length ≥ 94 for NBS) male blue king crab (*Paralithodes platypus*) for the past five survey years. Outlined areas depict management districts.

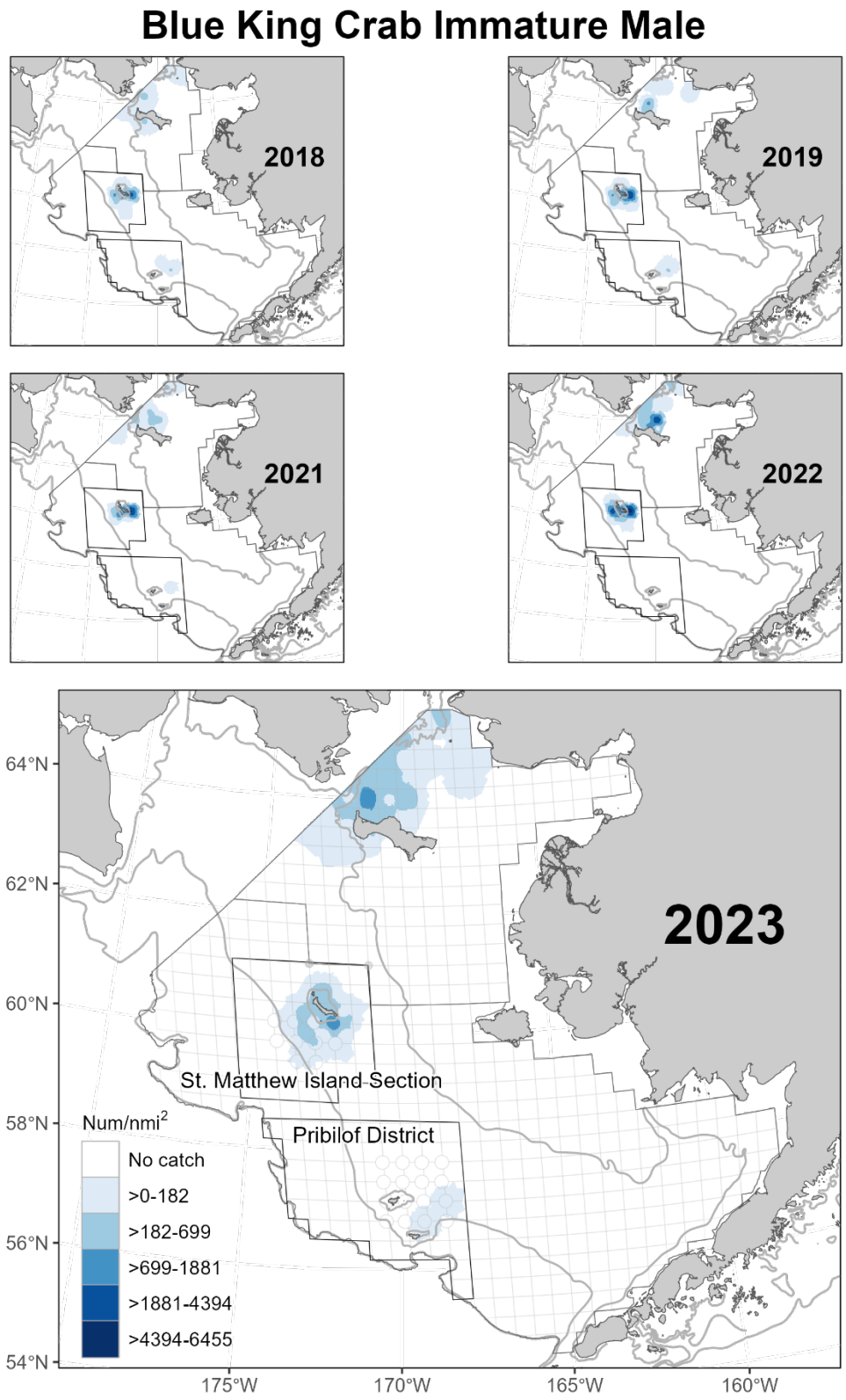

Figure 57. -- Estimated total density of immature-sized (carapace length <120 mm for Pribilof District; carapace length <105 mm for Saint Matthew Island Section; carapace length < 94 mm for NBS) male blue king crab (*Paralithodes platypus*) for the past five survey years. Outlined areas depict management districts.

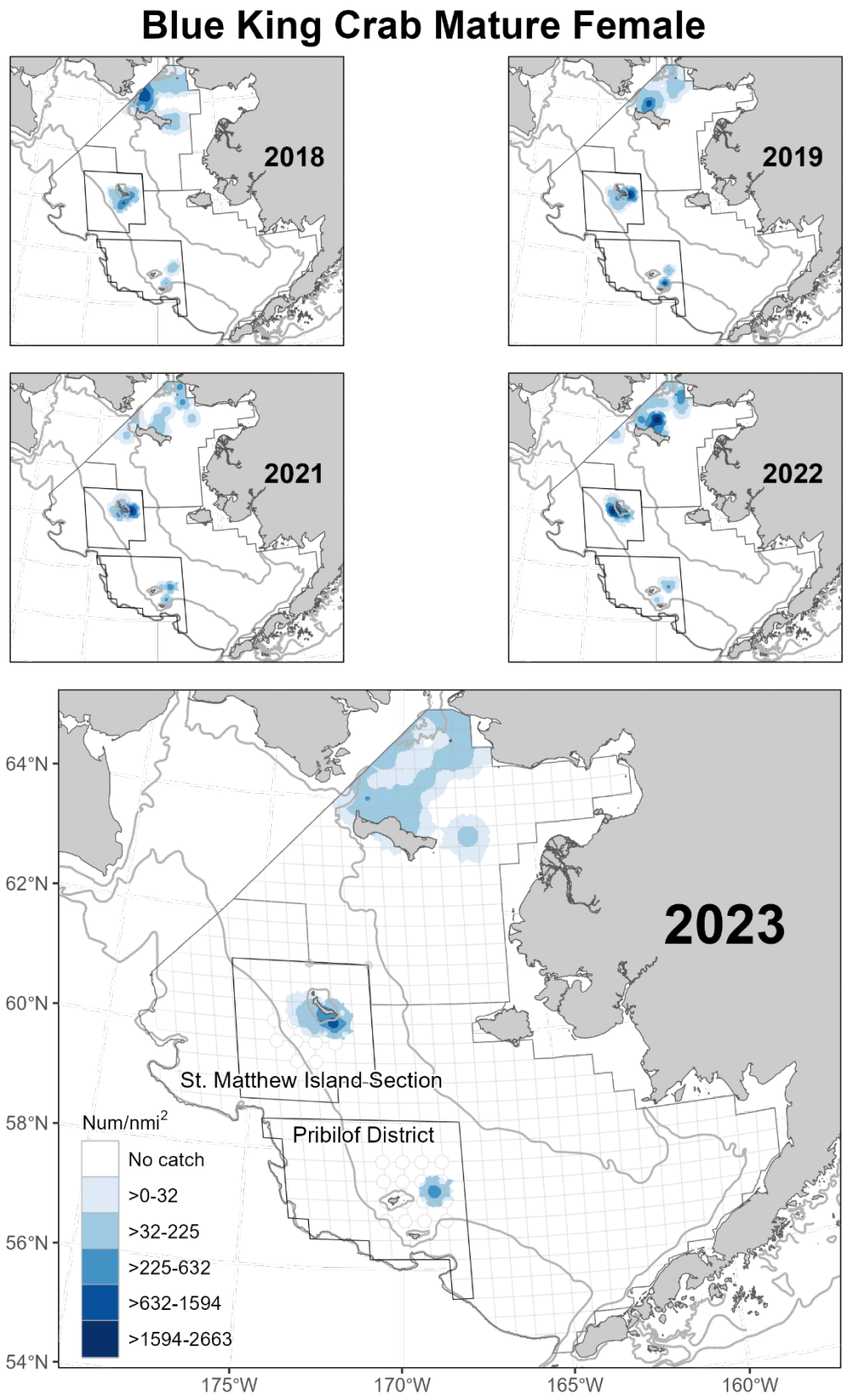

Figure 58. -- Estimated total density of mature female blue king crab (*Paralithodes platypus*) for the past five survey years. Outlined areas depict management districts.

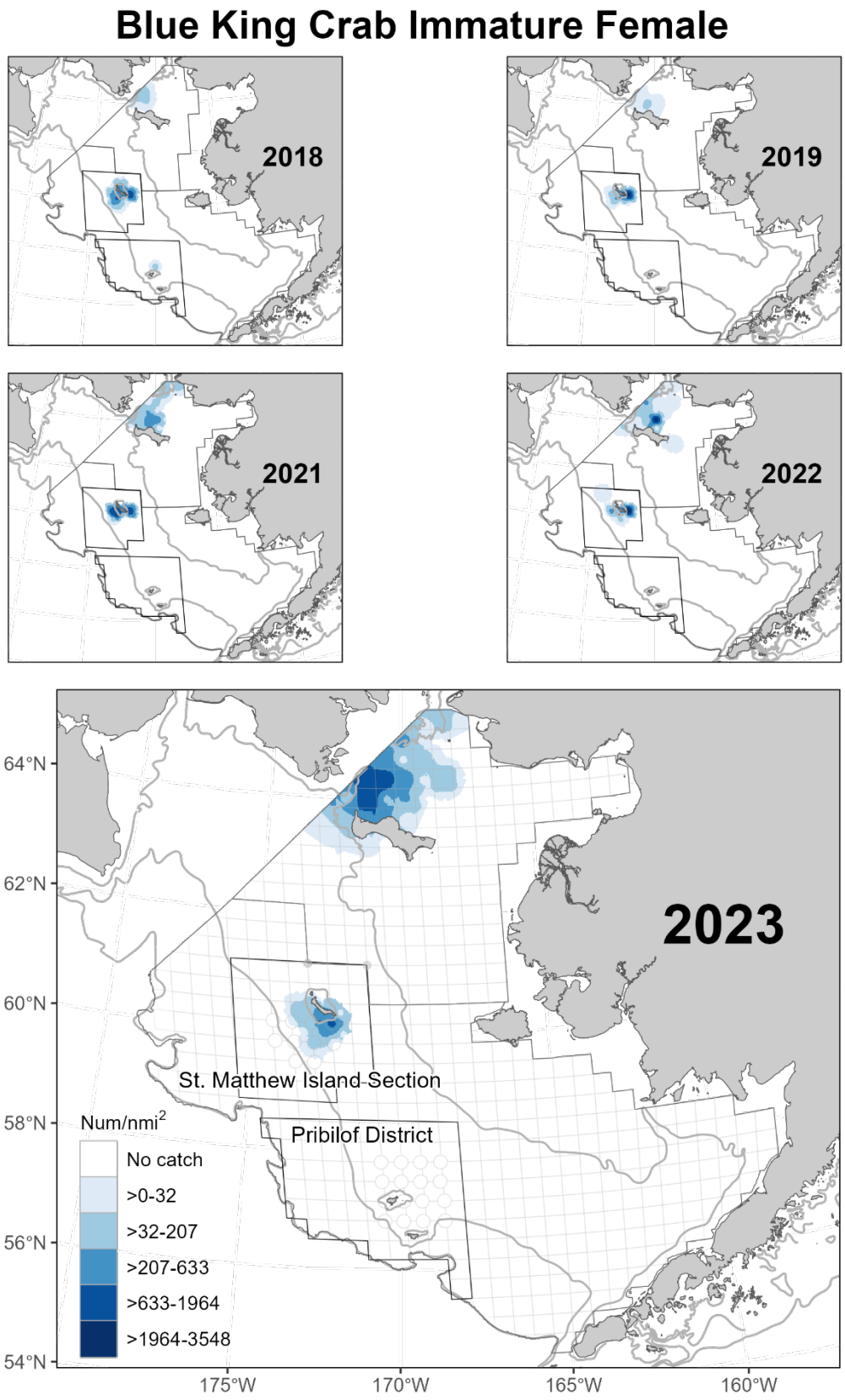

Figure 59. -- Estimated total density of immature female blue king crab (*Paralithodes platypus*) for the past five survey years. Outlined areas depict management districts.

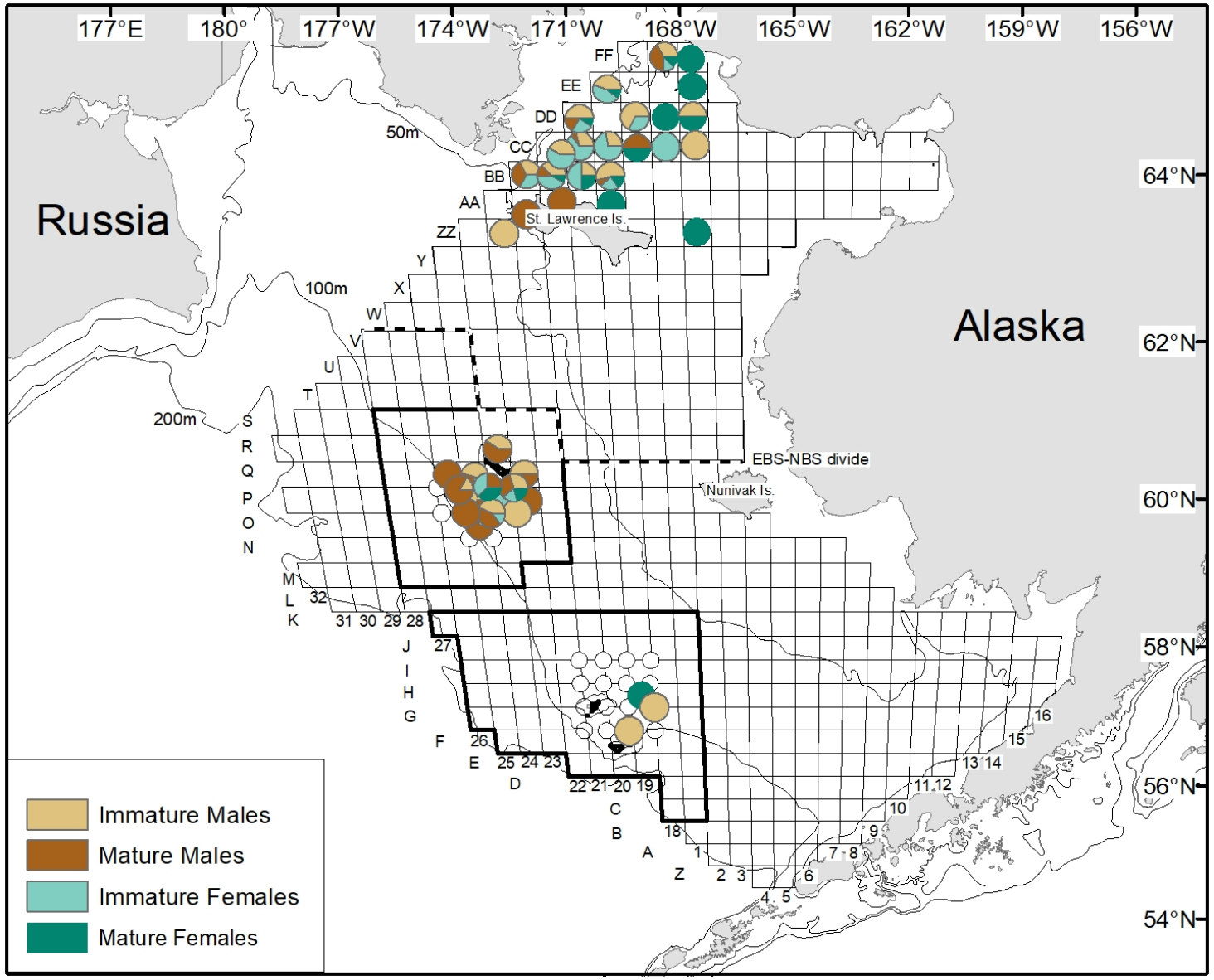

Figure 60. -- Proportion of male and female blue king crab (*Paralithodes platypus*) maturity classes caught at each station sampled in 2023. Males are categorized as mature at carapace lengths ≥ 120 mm for the Pribilof District, ≥ 105 mm for the Saint Matthew Island Section, and ≥ 94 mm for the NBS. Outlined areas depict management districts.

Tanner Crab
Figures

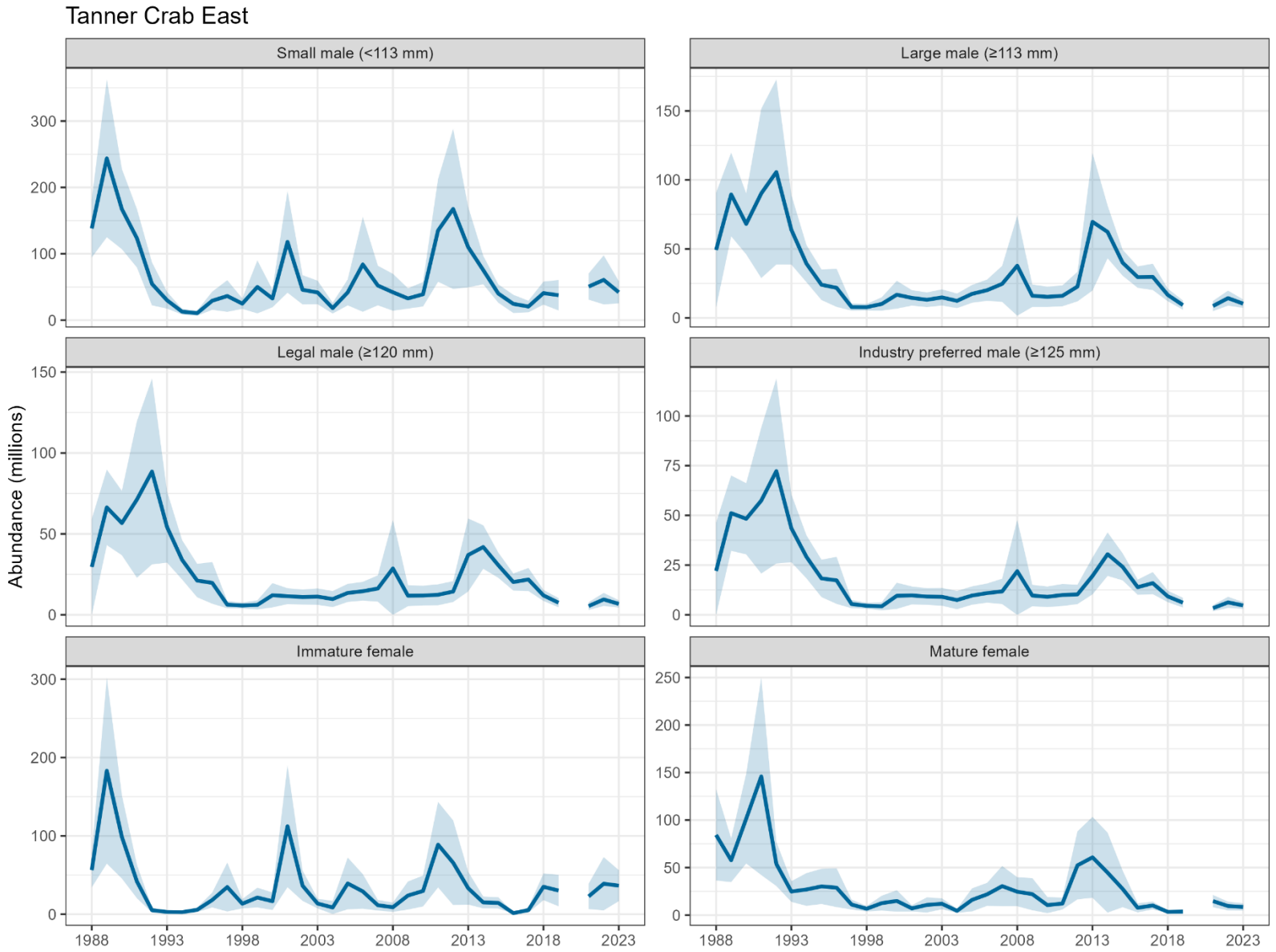

Figure 61. -- Historical abundance of Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea. Light blue area indicates ± 95% CI.

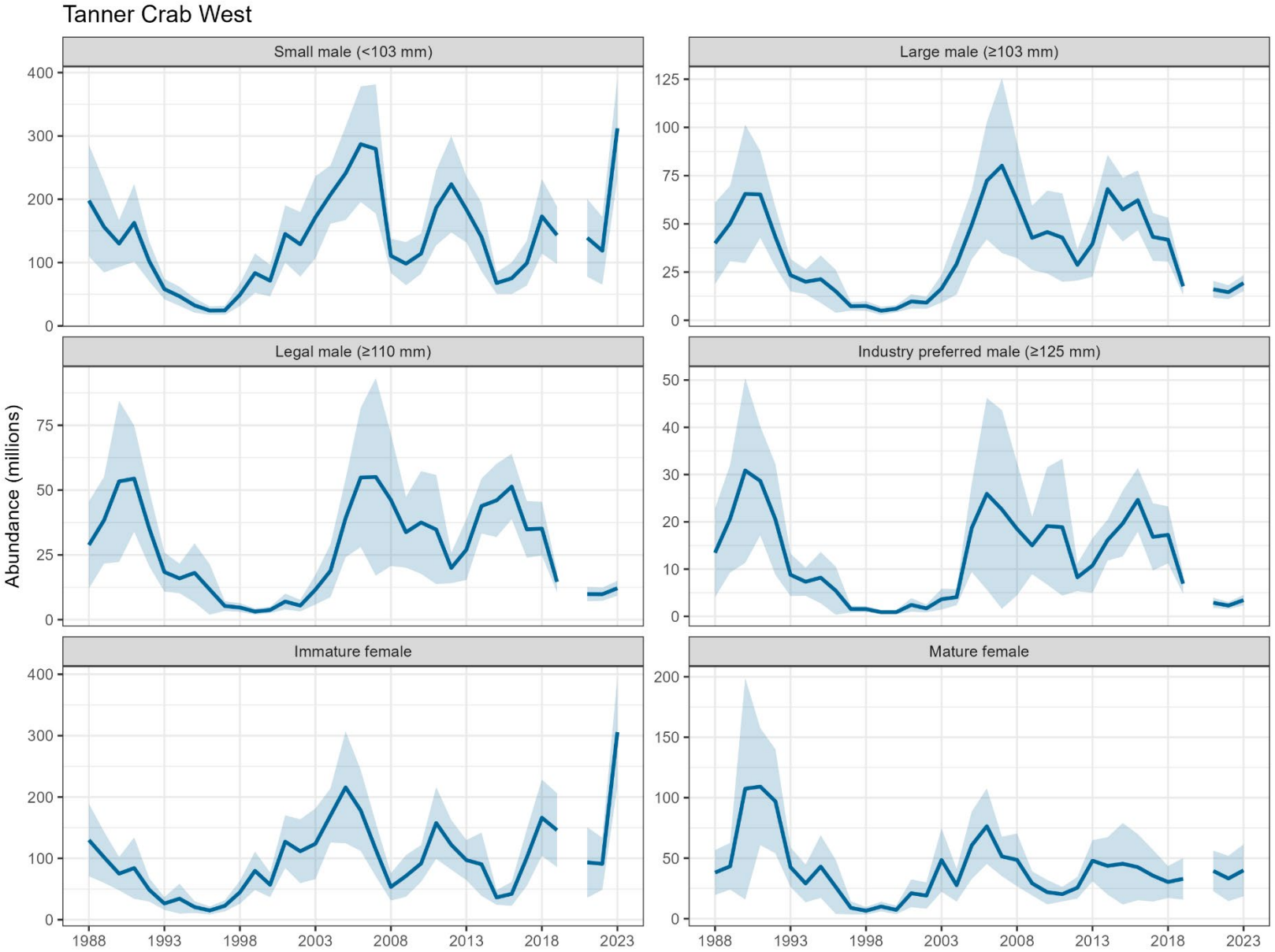

Figure 62. -- Historical abundance of Tanner crab (*Chionoecetes bairdi*) west of 166ºW in the eastern Bering Sea. Light blue area indicates ± 95% CI.

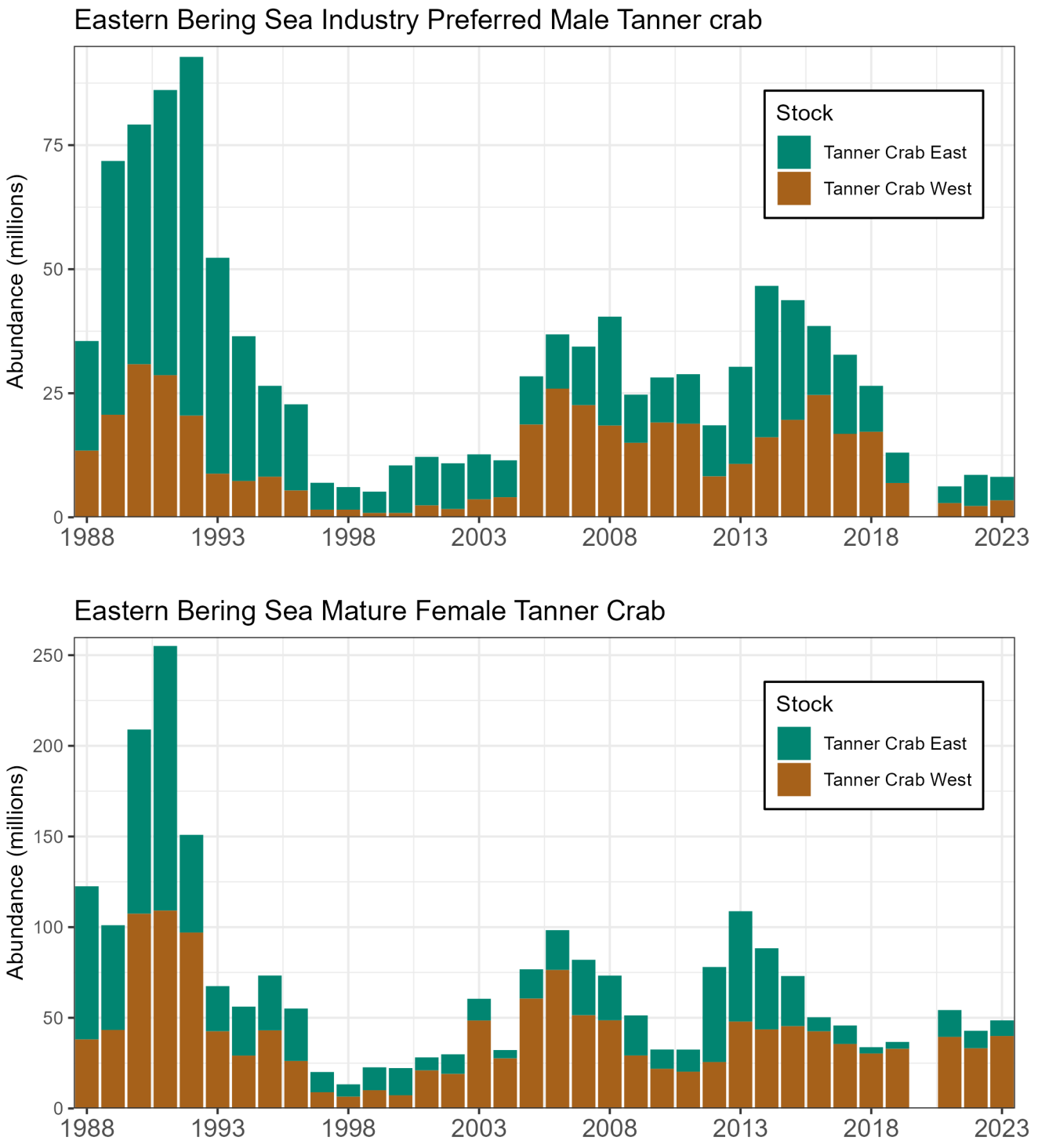

Figure 63. -- Combined historical abundance of mature female and industry preferred size male (carapace width ≥ 125 mm) Tanner crab (*Chionoecetes bairdi*) in the eastern Bering Sea.

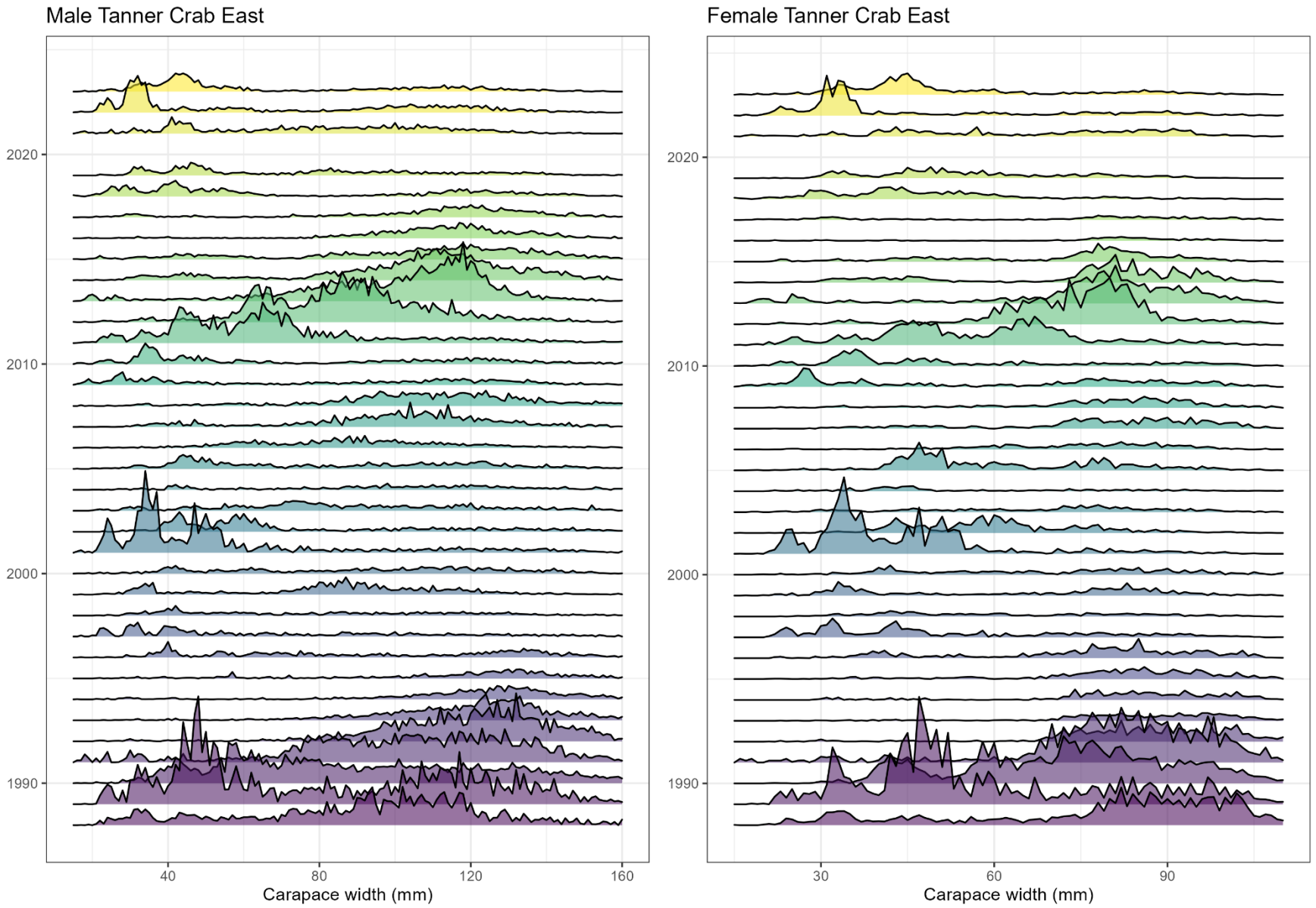

Figure 64. -- Historical size frequency for Tanner crab (*Chionoecetes bairdi*) east of 166ºW in the eastern Bering Sea.

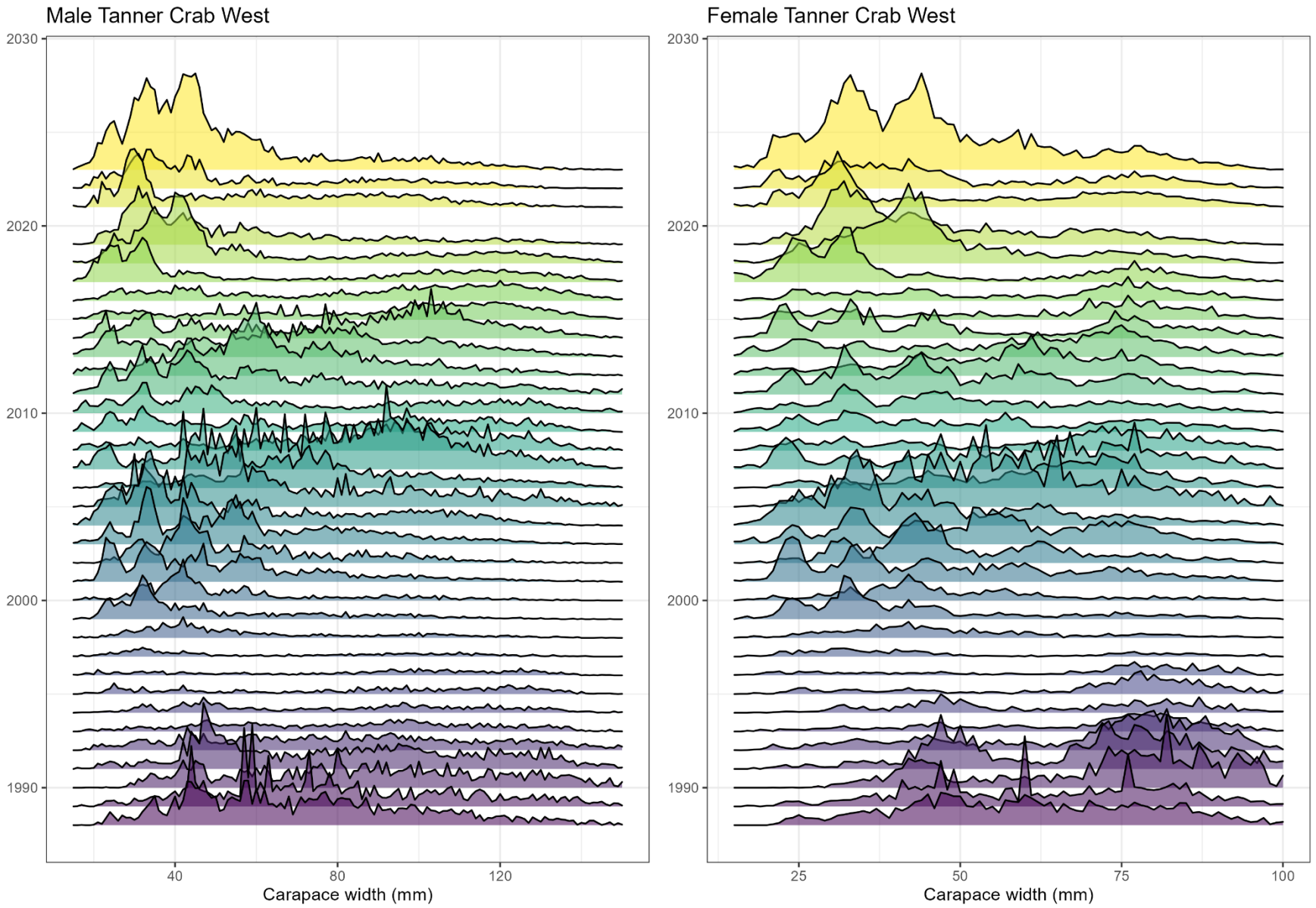

Figure 65. -- Historical size frequency for Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea.

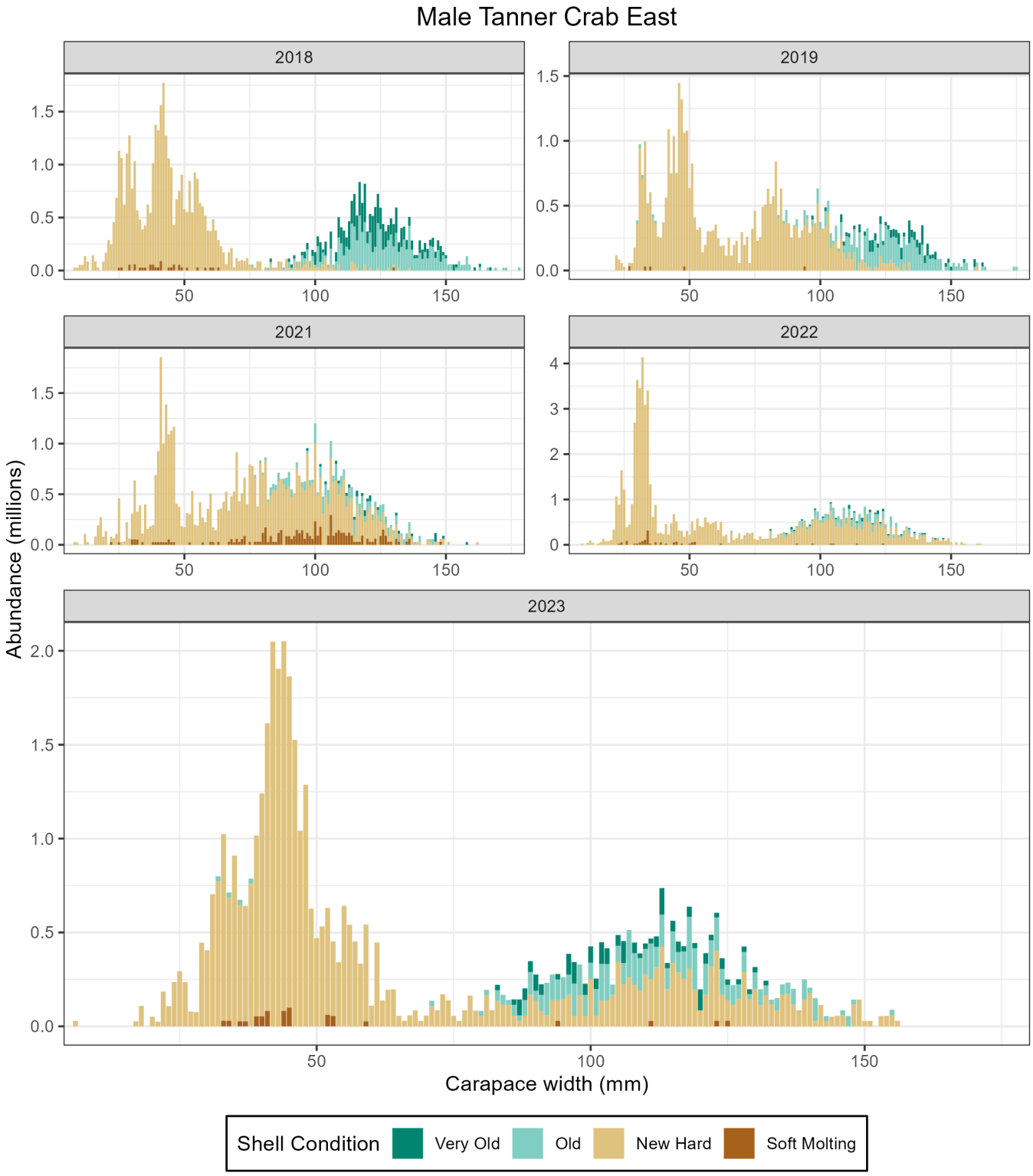

Figure 66. -- Abundance (millions) by size and shell condition of male Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

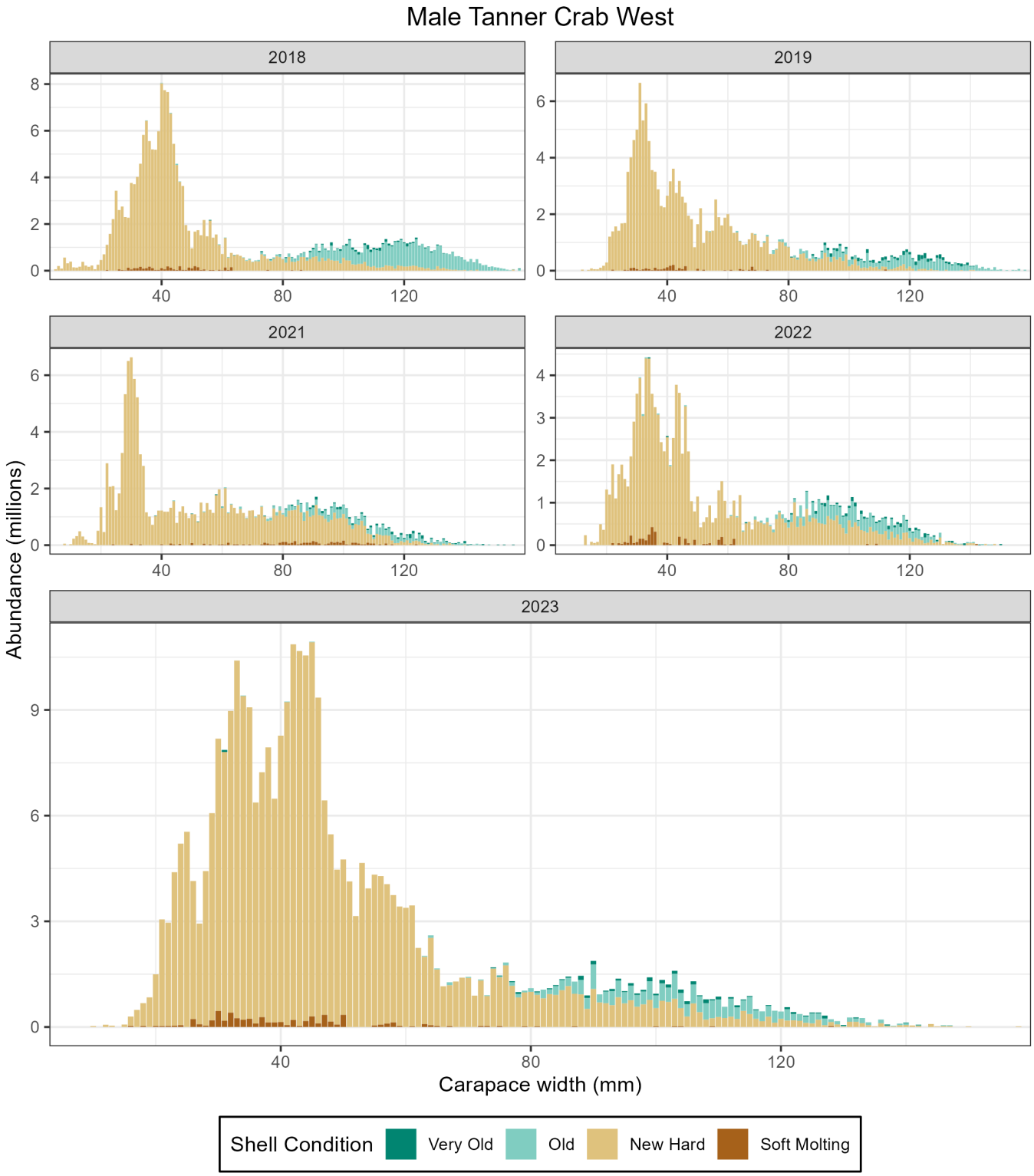

Figure 67. -- Abundance (millions) by size and shell condition of male Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

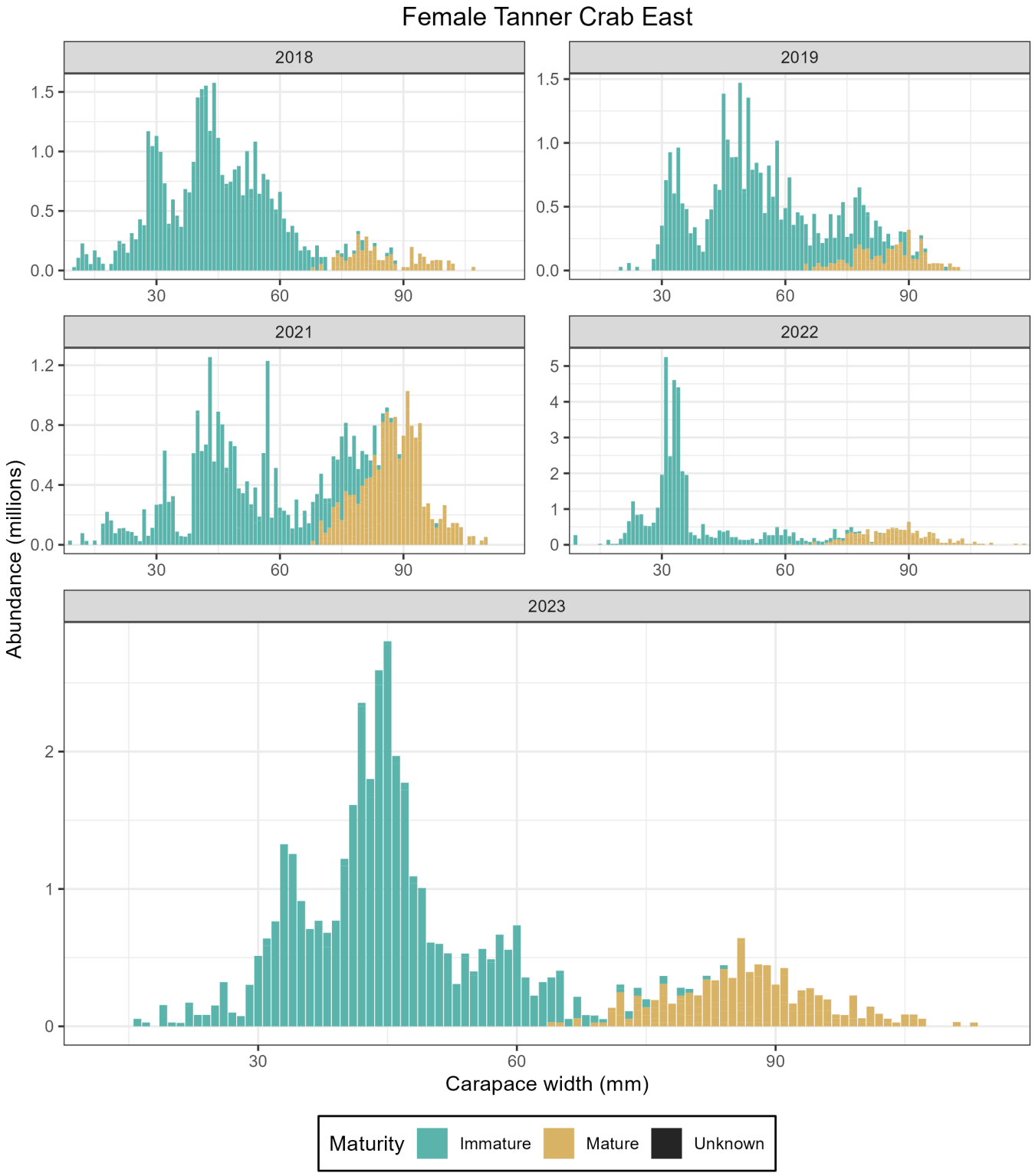

Figure 68. -- Abundance (millions) by size and maturity status of Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

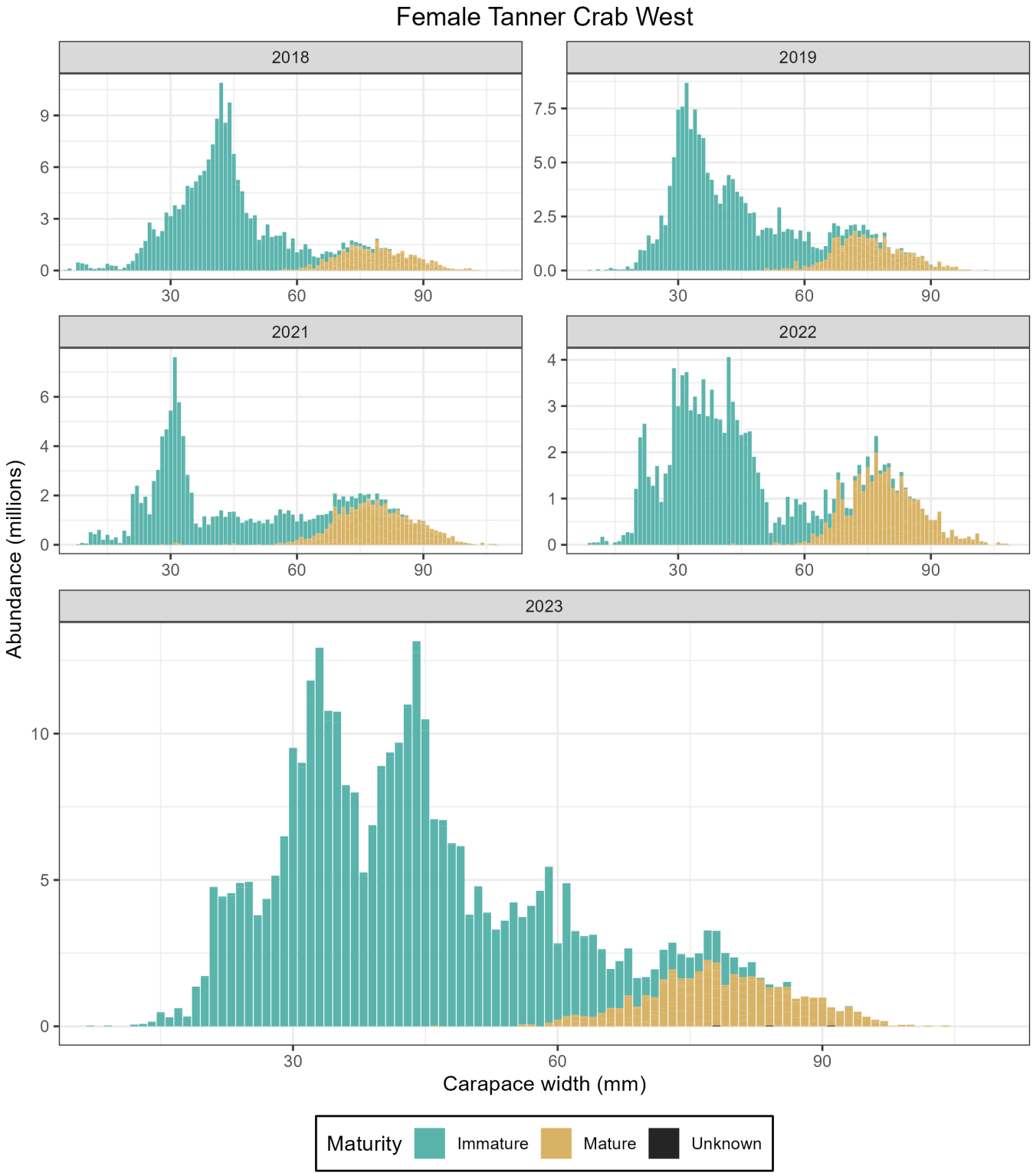

Figure 69. -- Abundance (millions) by size and maturity status of Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

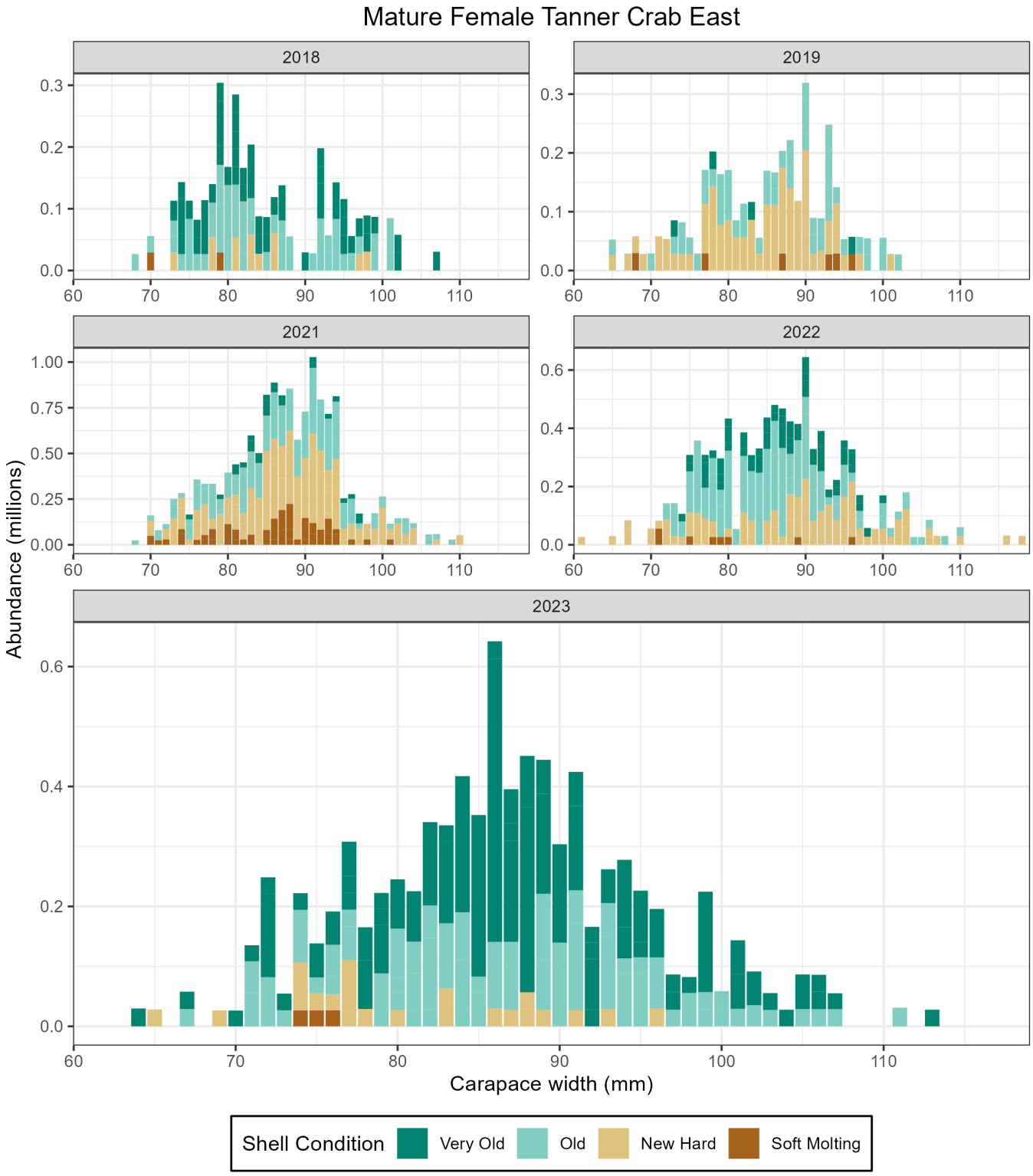

Figure 70. -- Abundance (millions) by size and shell condition of mature female Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

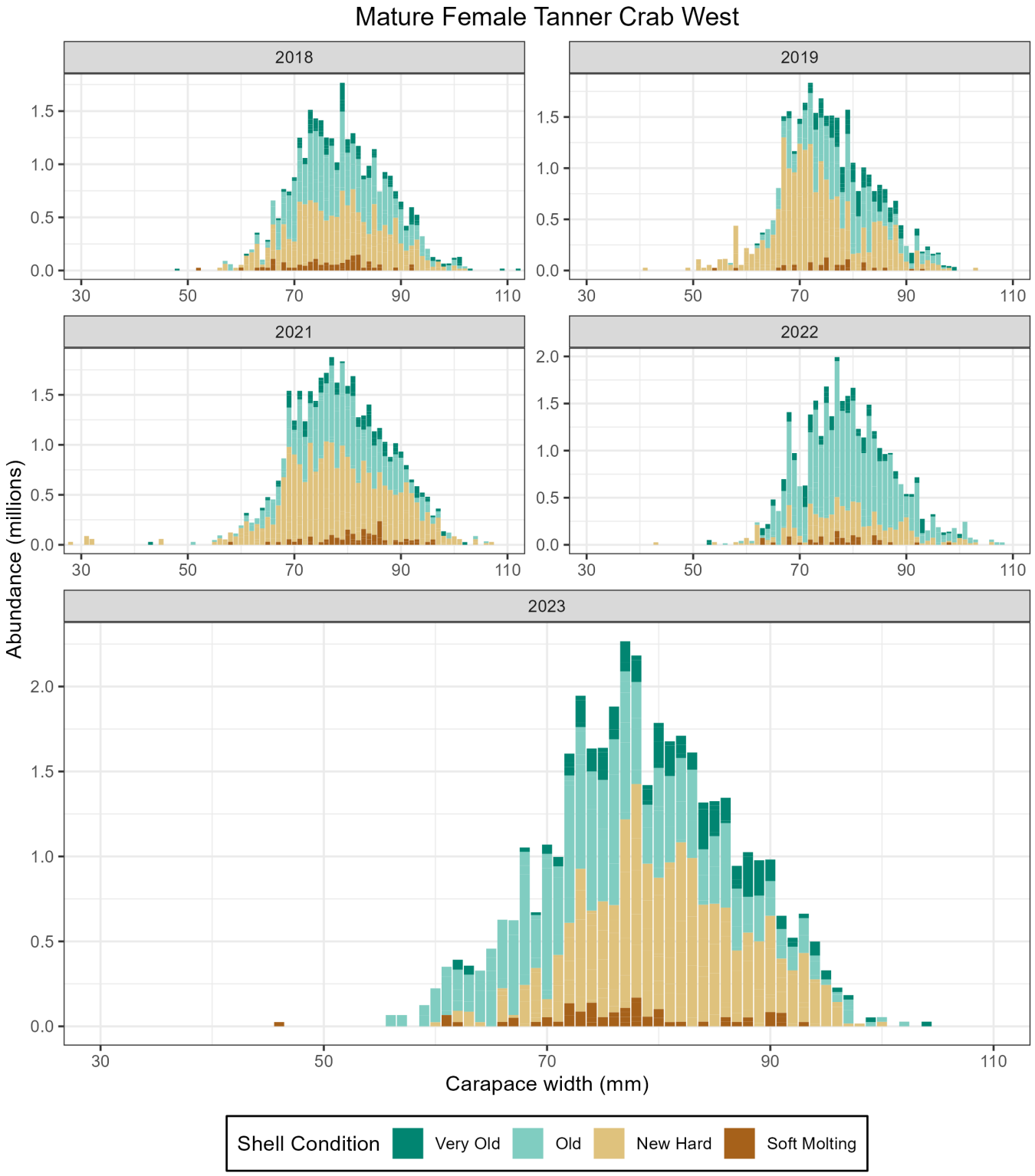

Figure 71. -- Abundance (millions) by size and shell condition of mature female Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

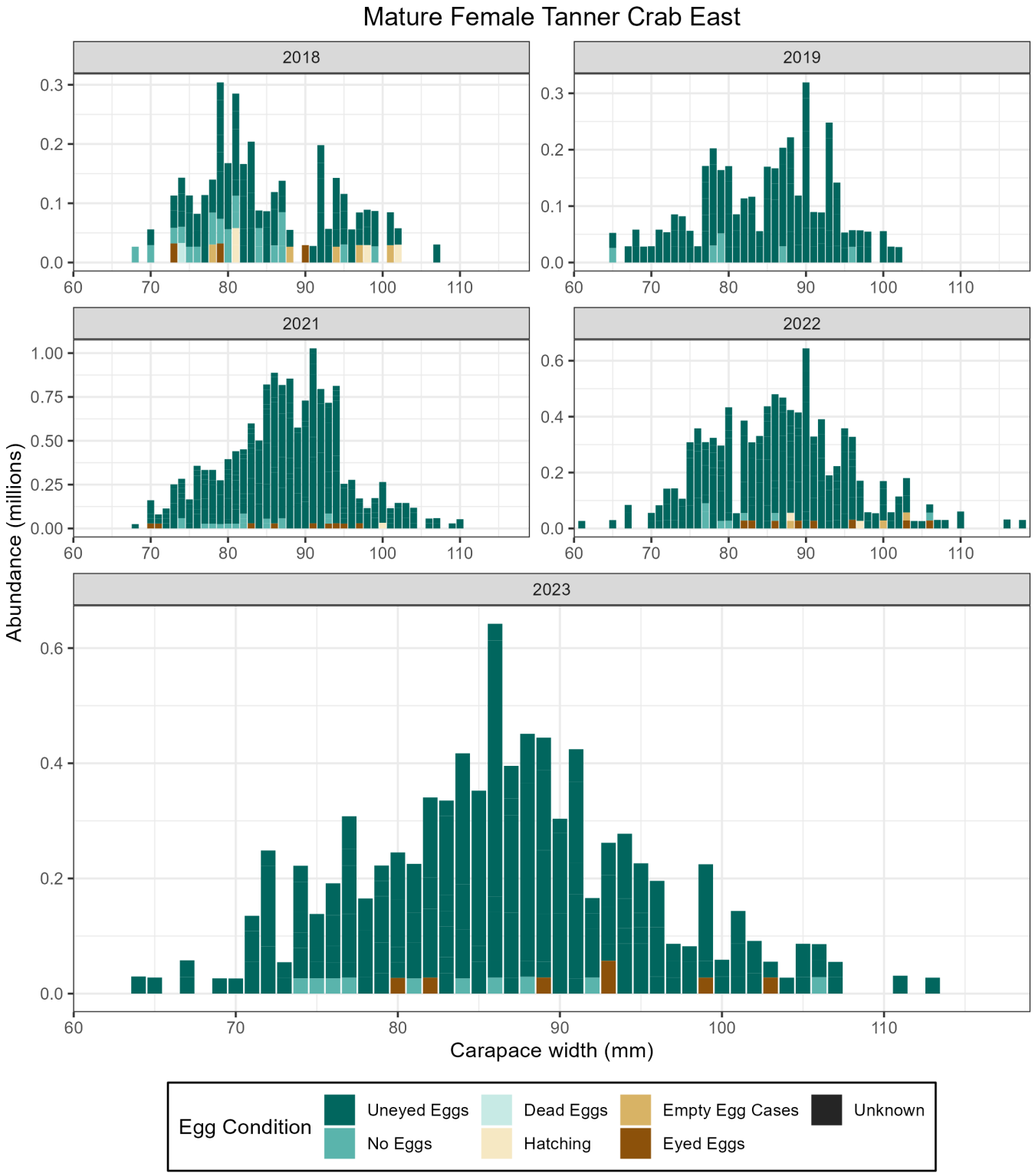

Figure 72. -- Abundance (millions) by size and egg condition of mature female Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

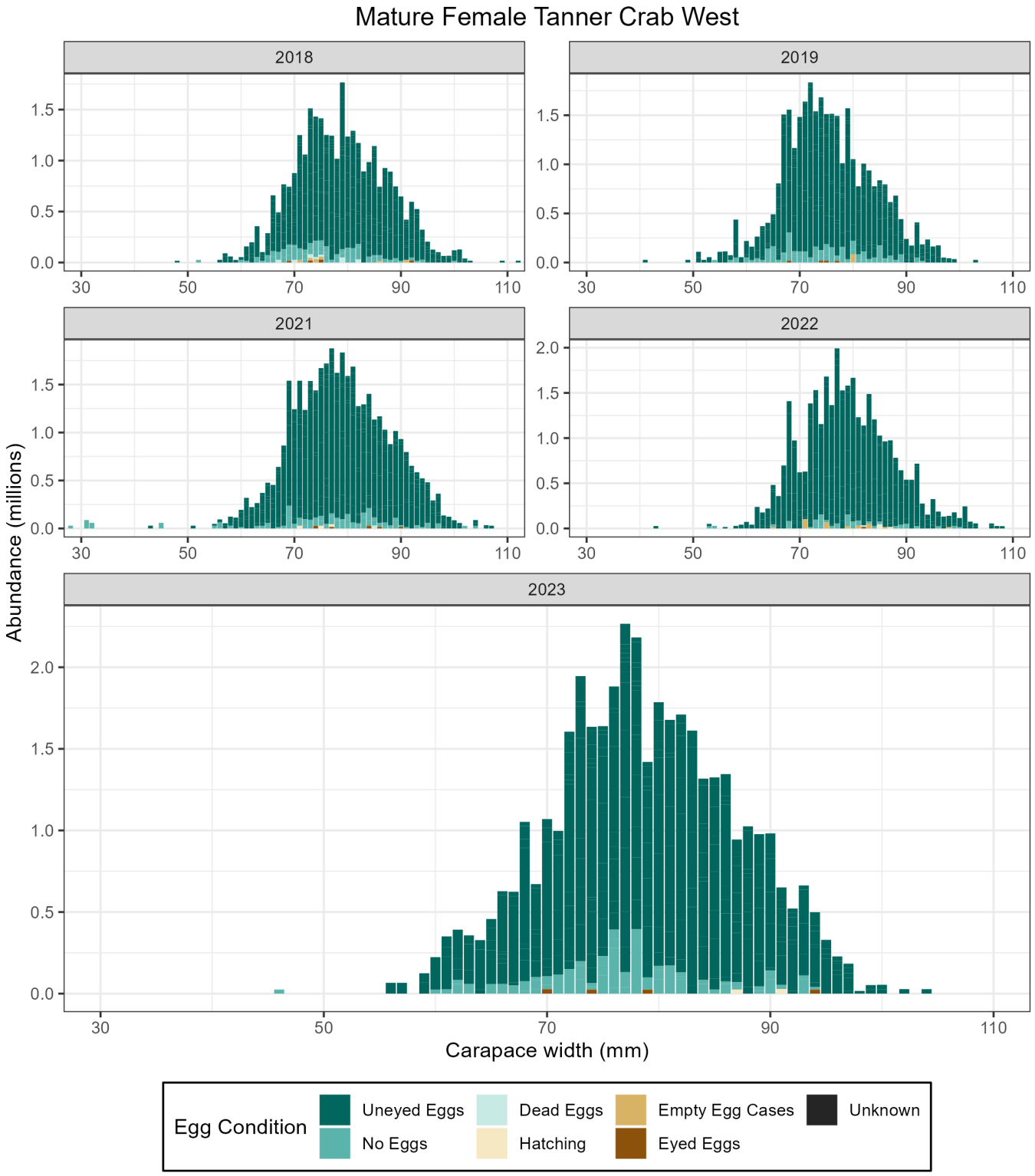

Figure 73. -- Abundance (millions) by size and egg condition of mature female Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

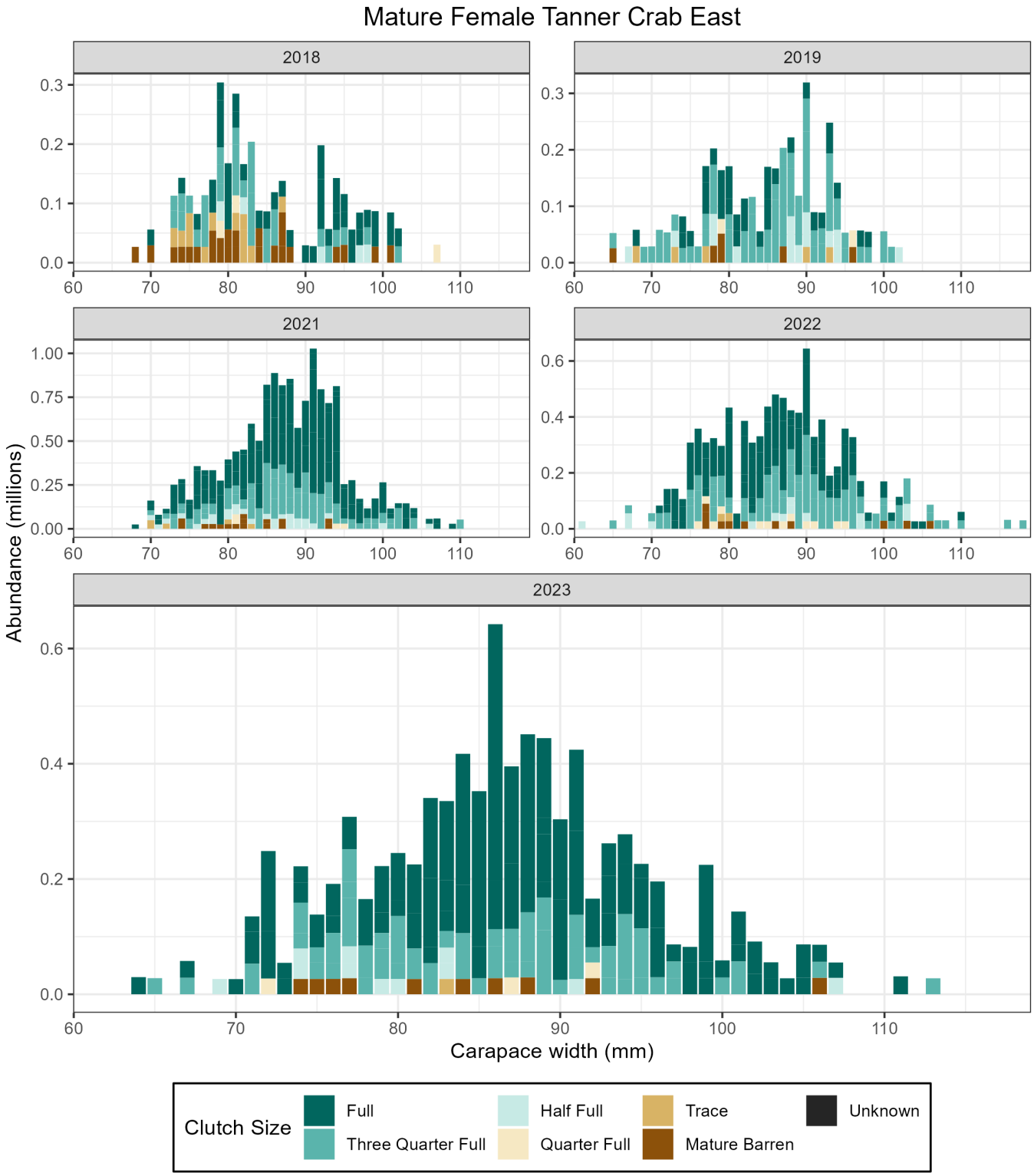

Figure 74. -- Abundance (millions) by size and clutch fullness of mature female Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

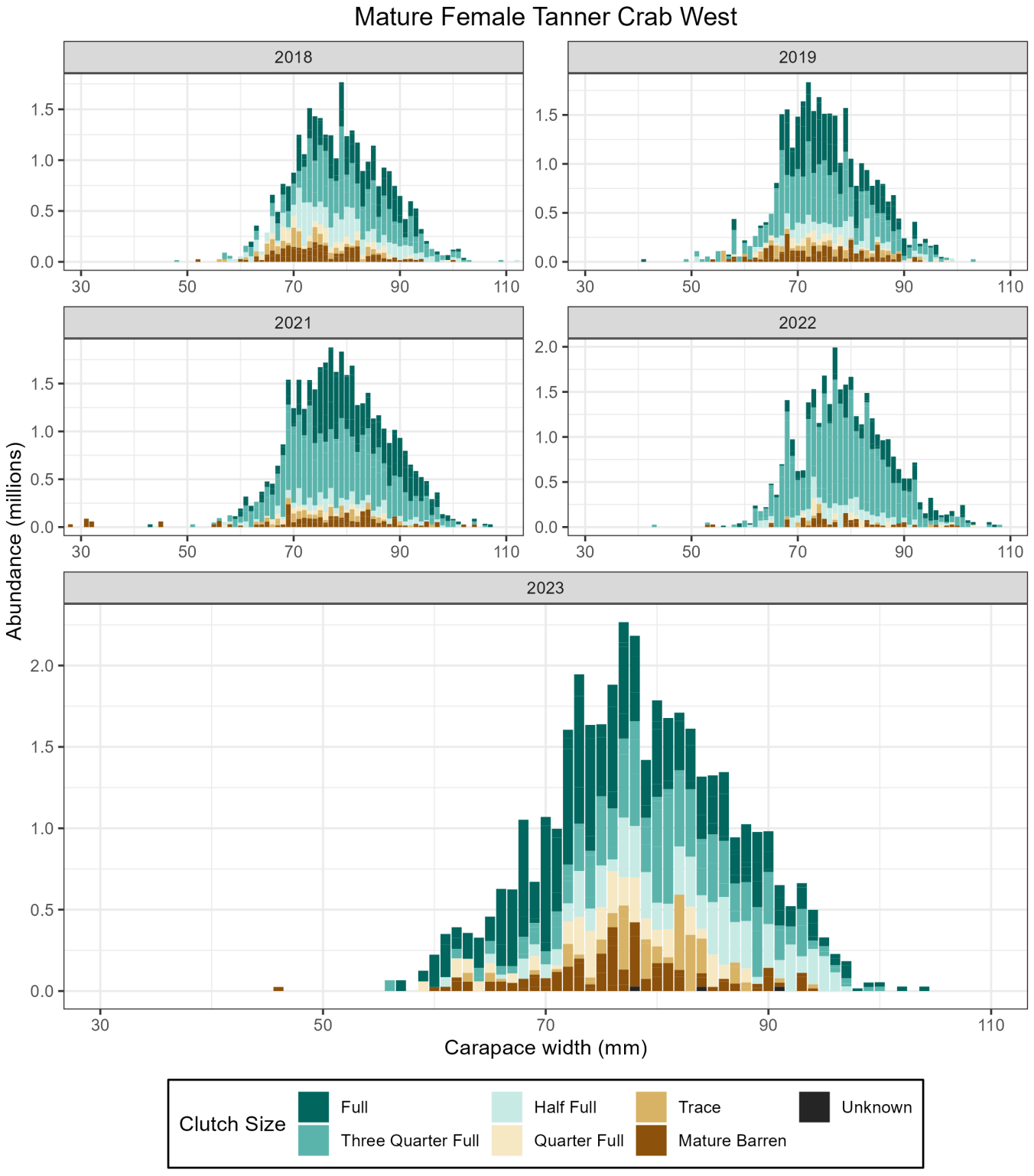

Figure 75. -- Abundance (millions) by size and clutch fullness of mature female Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

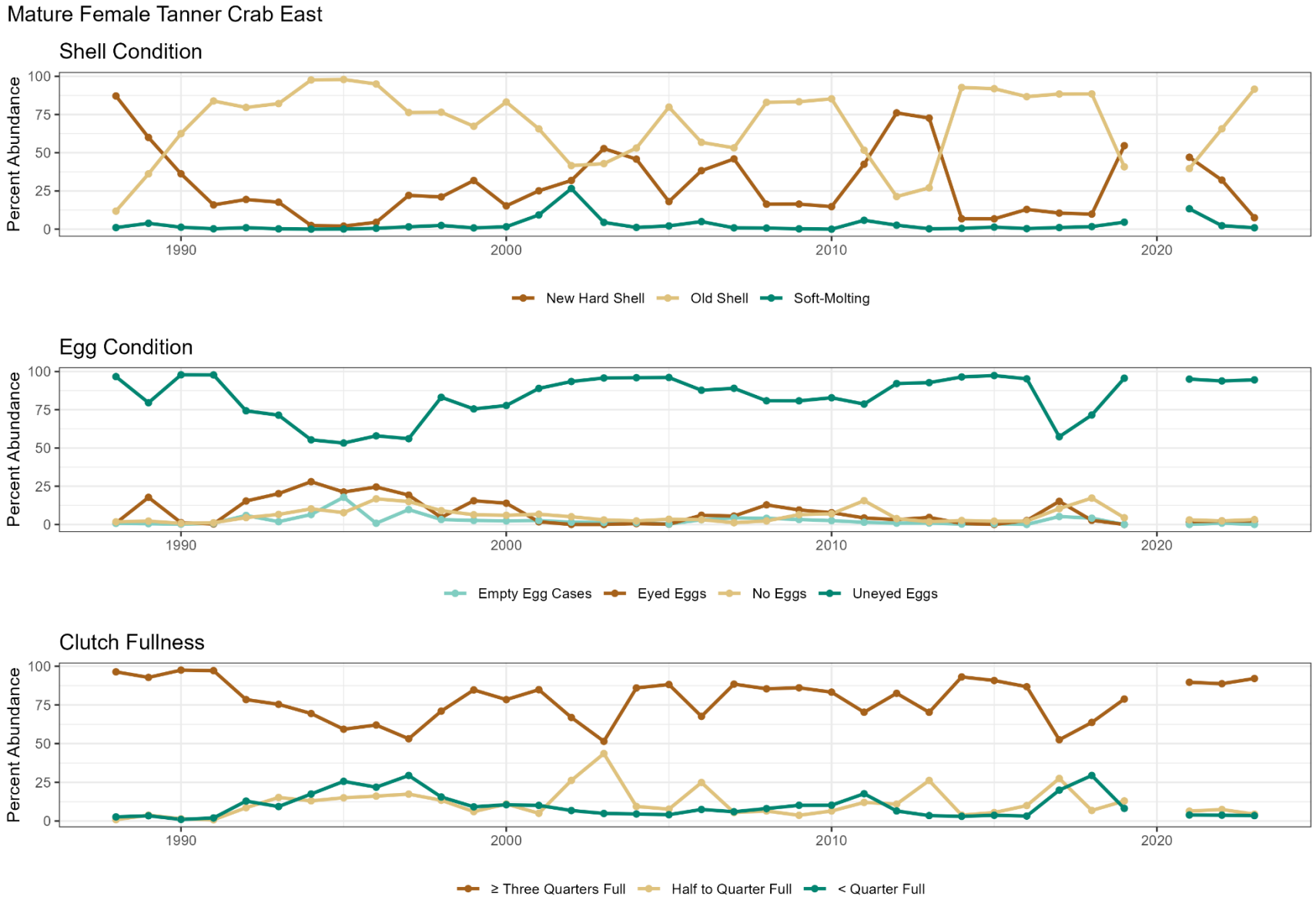

Figure 76. -- Time series of shell condition, egg condition, and clutch fullness for mature female Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea.

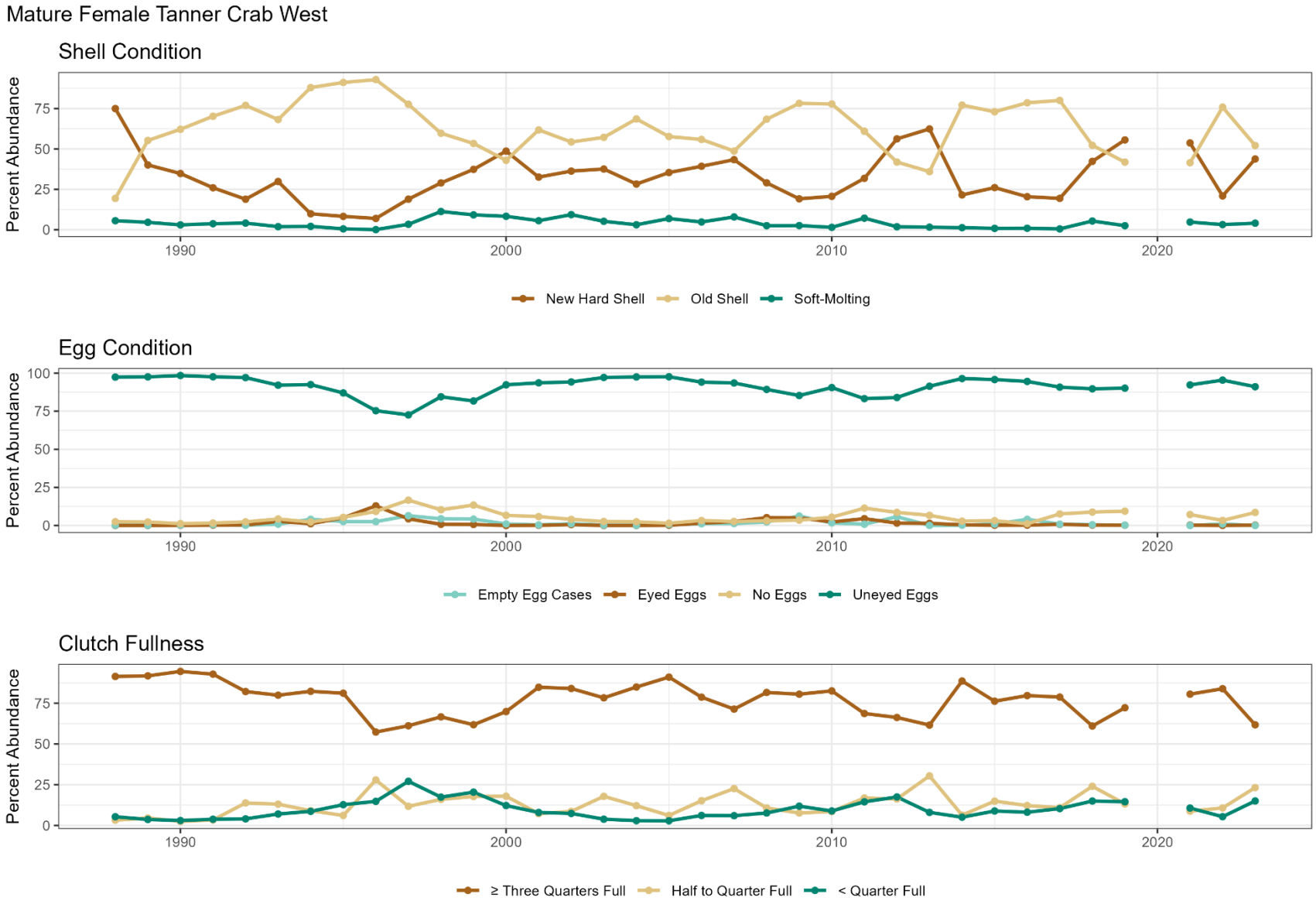

Figure 77. – Time series of shell condition, egg condition, and clutch fullness for mature female Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea.

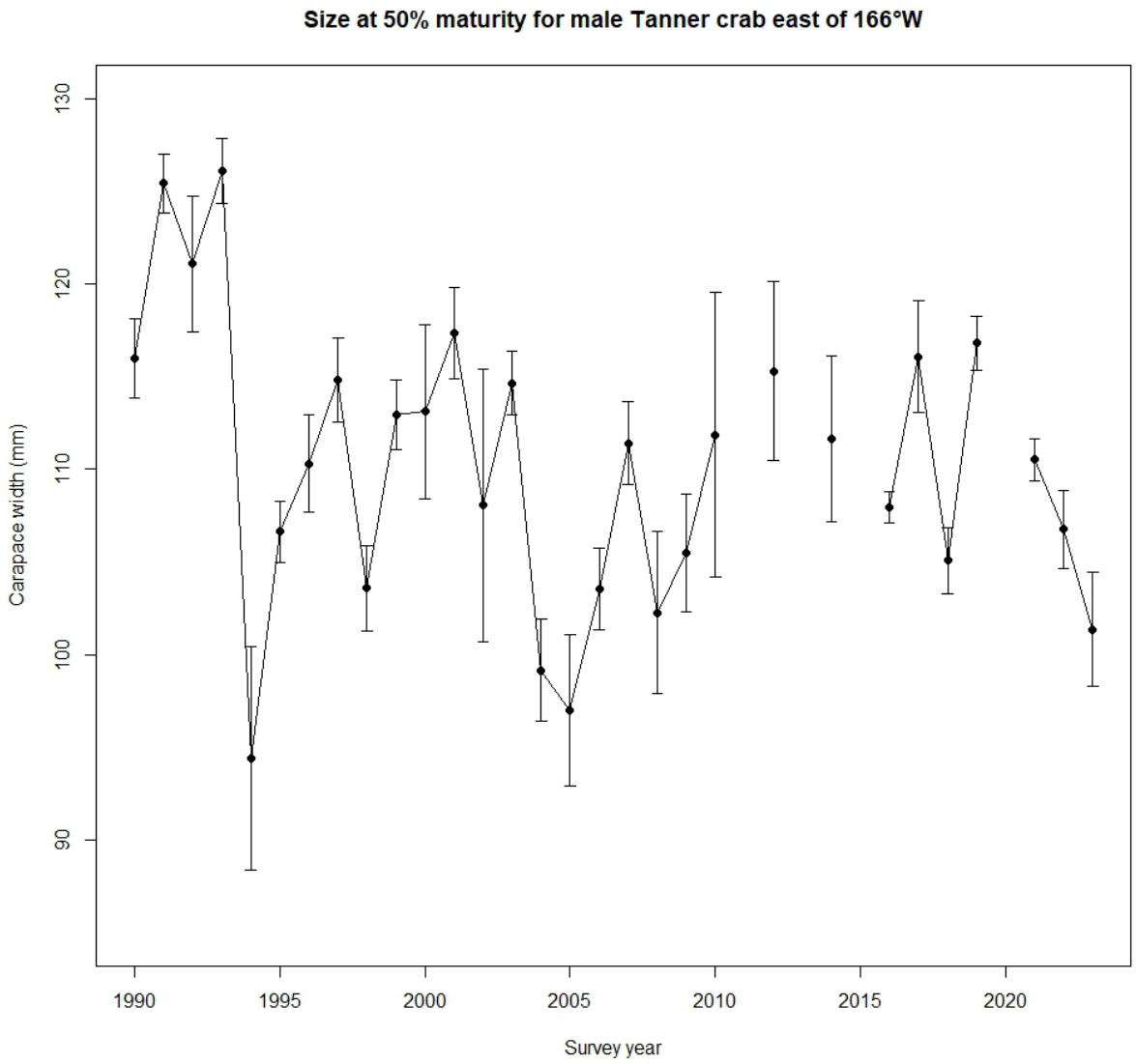

Figure 78. -- Size at which 50% of new hardshell Tanner crab (*Chionoecetes bairdi*) east of 166°W in the eastern Bering Sea are mature by year using chela morphometrics (± 95% CI).

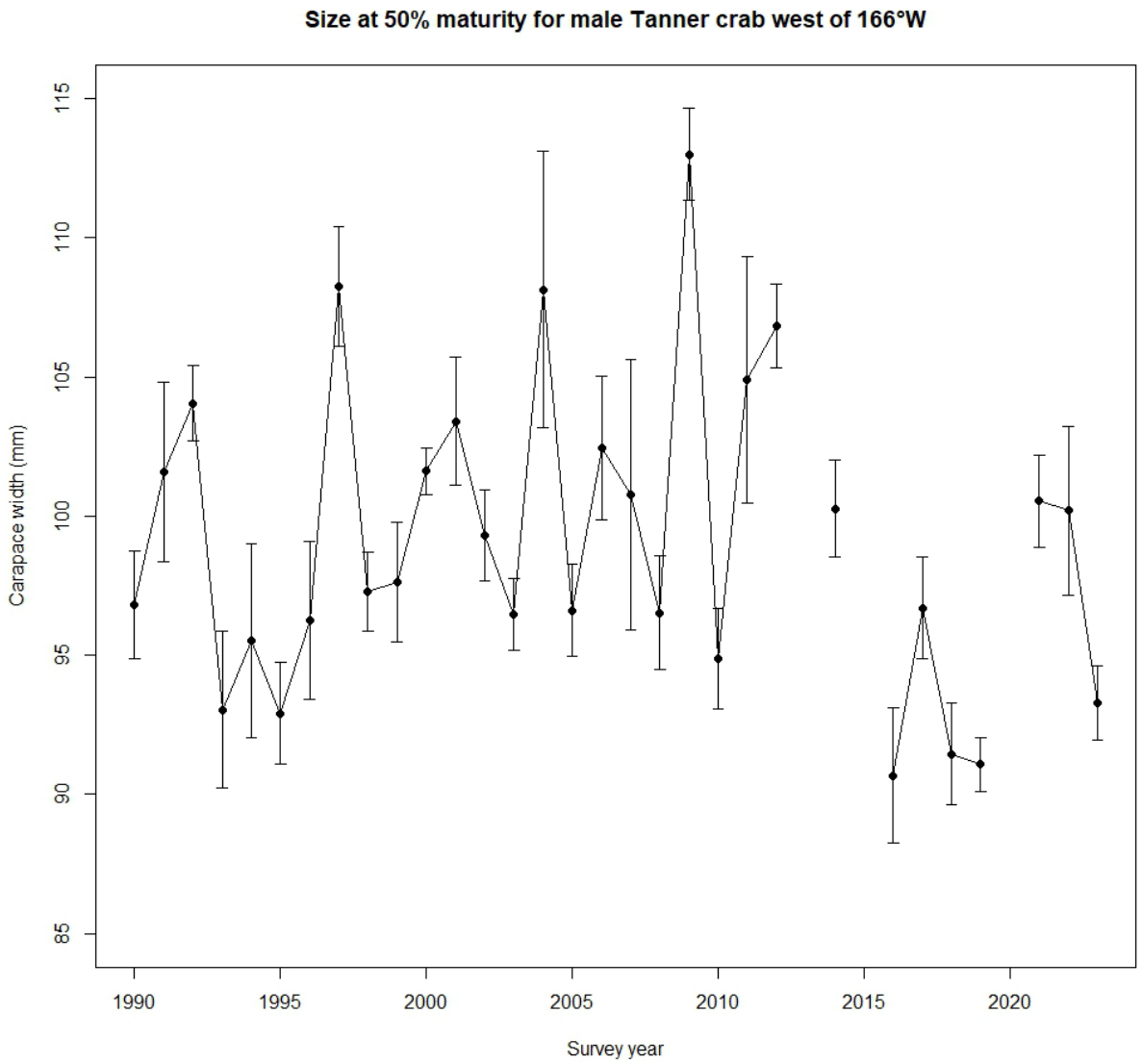

Figure 79. -- Size at which 50% of new hardshell Tanner crab (*Chionoecetes bairdi*) west of 166°W in the eastern Bering Sea are mature by year using chela morphometrics (± 95% CI).

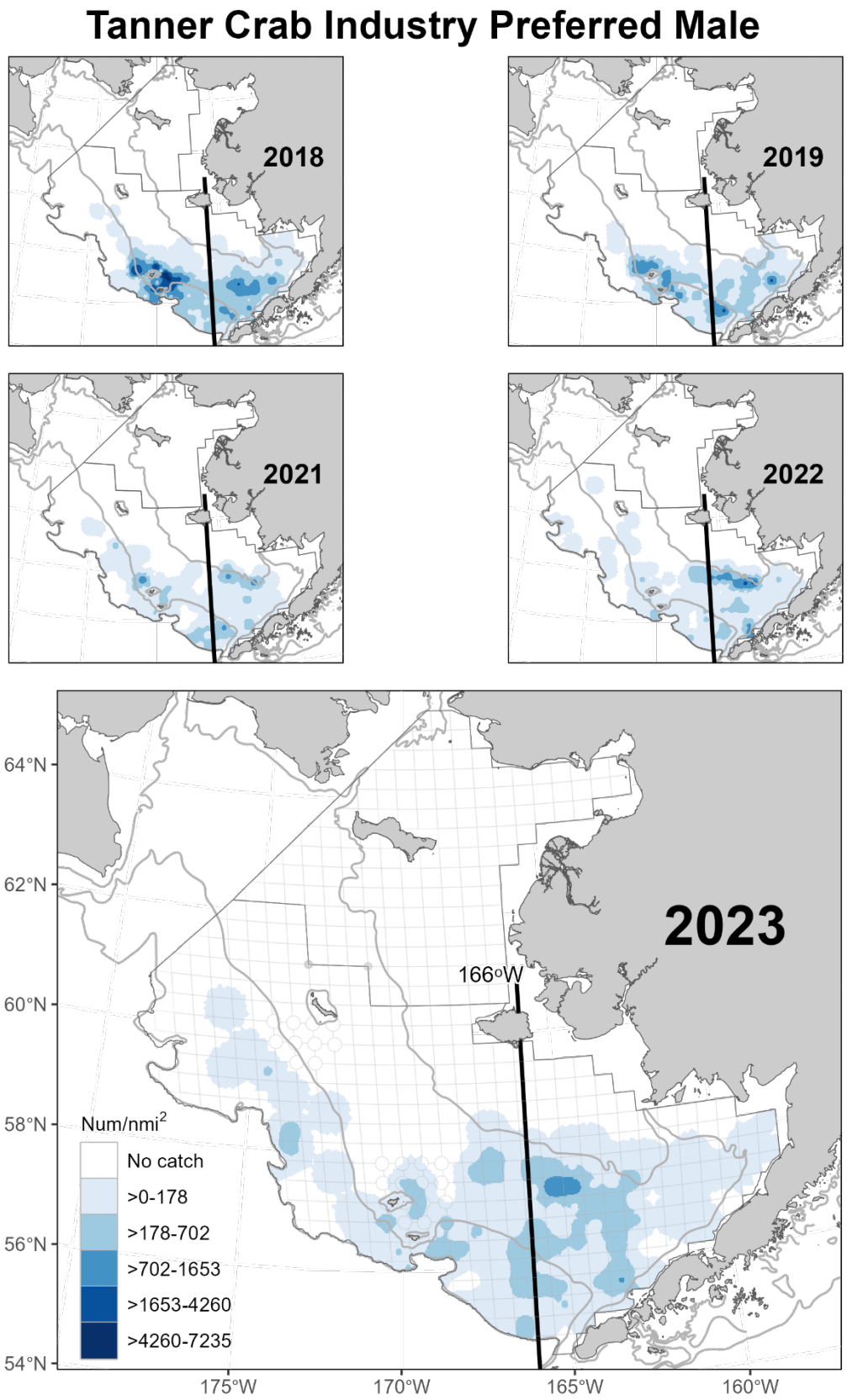

Figure 80. -- Estimated total density of industry preferred-sized (carapace width ≥ 125 mm) male Tanner crab (*Chionoecetes bairdi*) for the past five survey years.

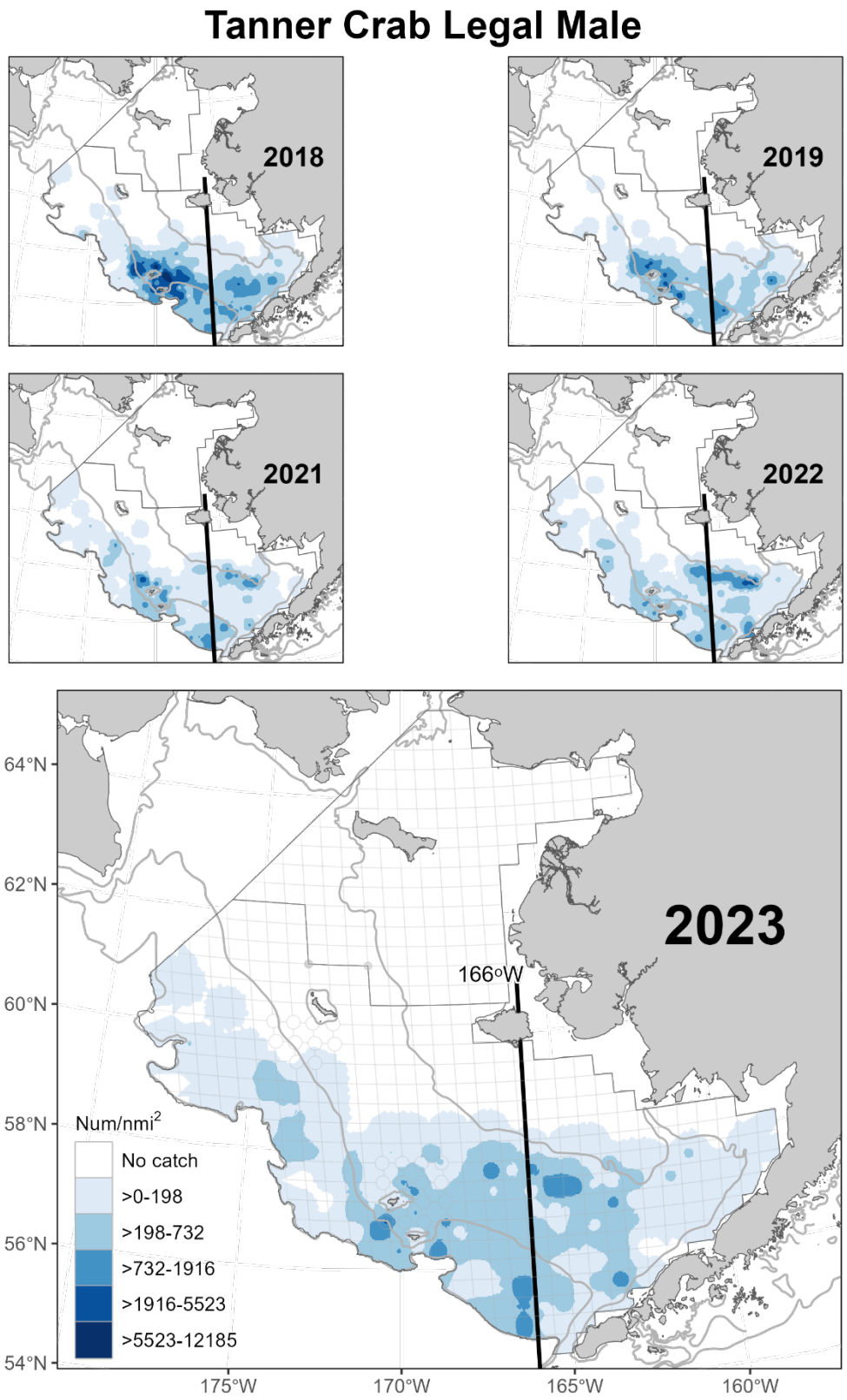

Figure 81. -- Estimated total density of legal-sized (carapace width ≥ 120 mm east of 166°W in EBS; carapace width ≥ 110 mm west of 166°W in EBS and in NBS) male Tanner crab (*Chionoecetes bairdi*) for the past five survey years.

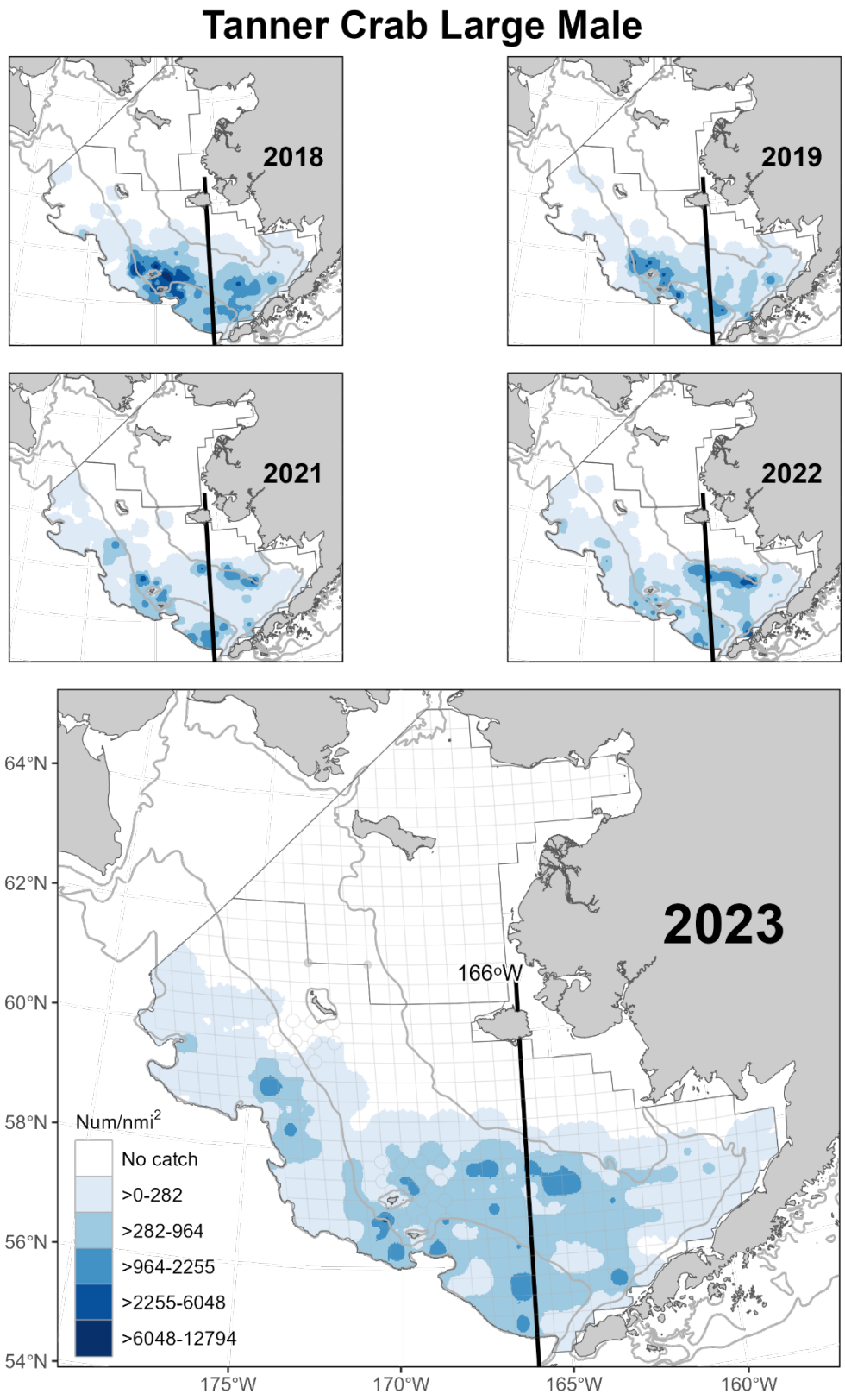

Figure 82. -- Estimated total density of large-sized (carapace width ≥ 113 mm east of 166°W in EBS; carapace width ≥ 103 mm west of 166°W in EBS and in NBS) male Tanner crab (*Chionoecetes bairdi*) for the past five survey years.

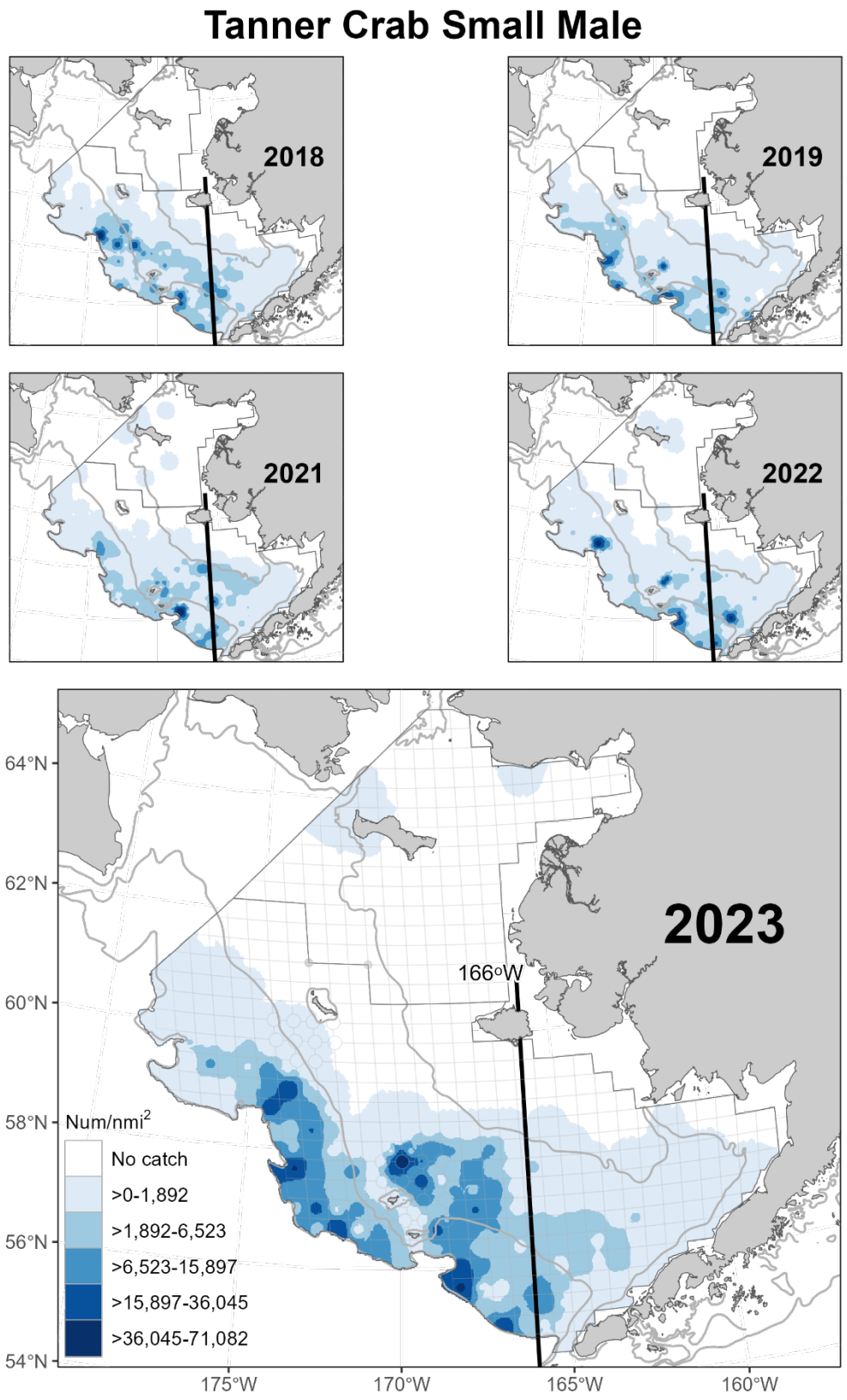

Figure 83. -- Estimated total density of small-sized (carapace width < 113 mm east of 166°W in EBS; carapace width < 103 mm west of 166°W in EBS and in NBS) male Tanner crab (*Chionoecetes bairdi*) for the past five survey years.

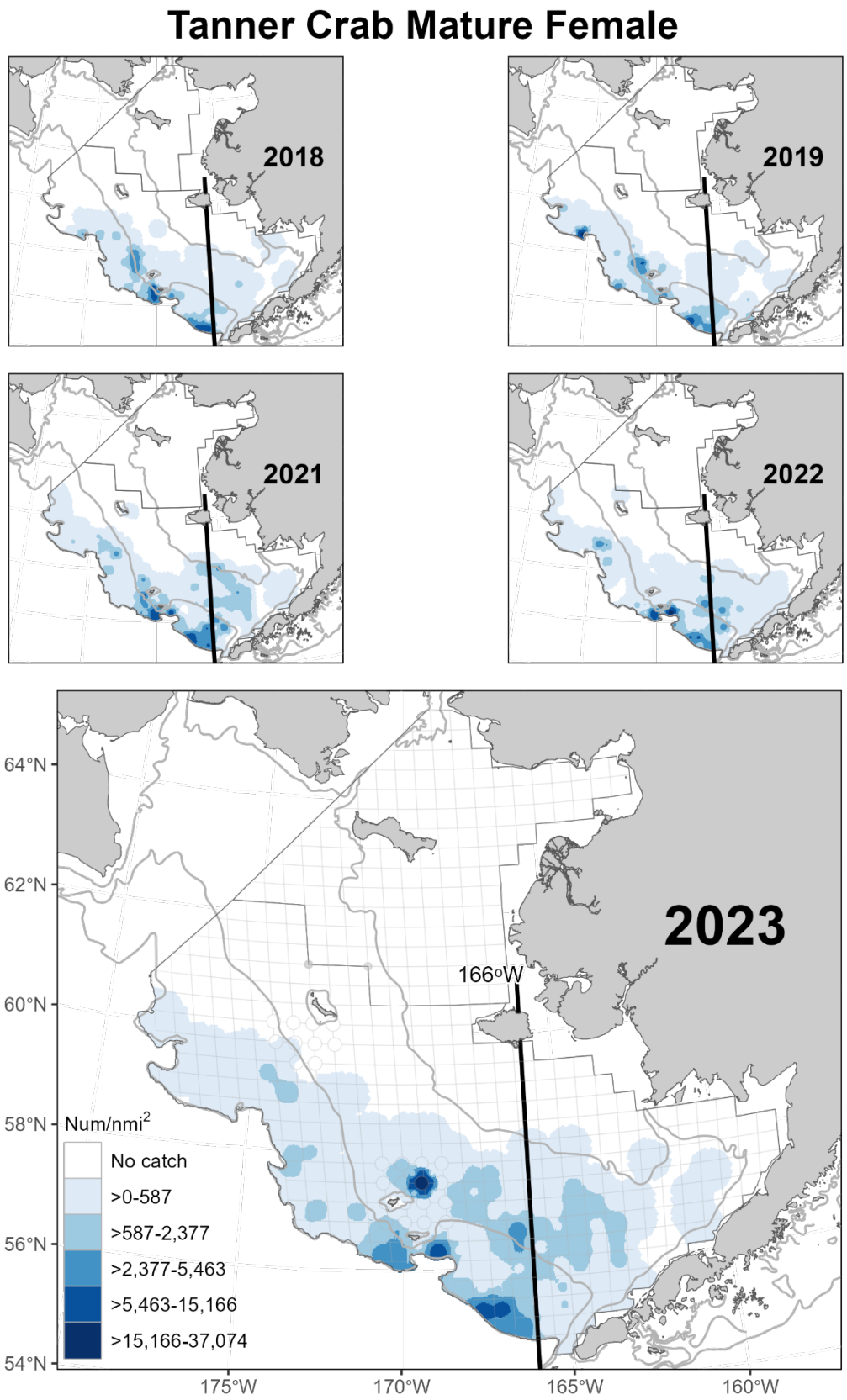

Figure 84. -- Estimated total density of mature female Tanner crab (*Chionoecetes bairdi*) for the past five survey years.

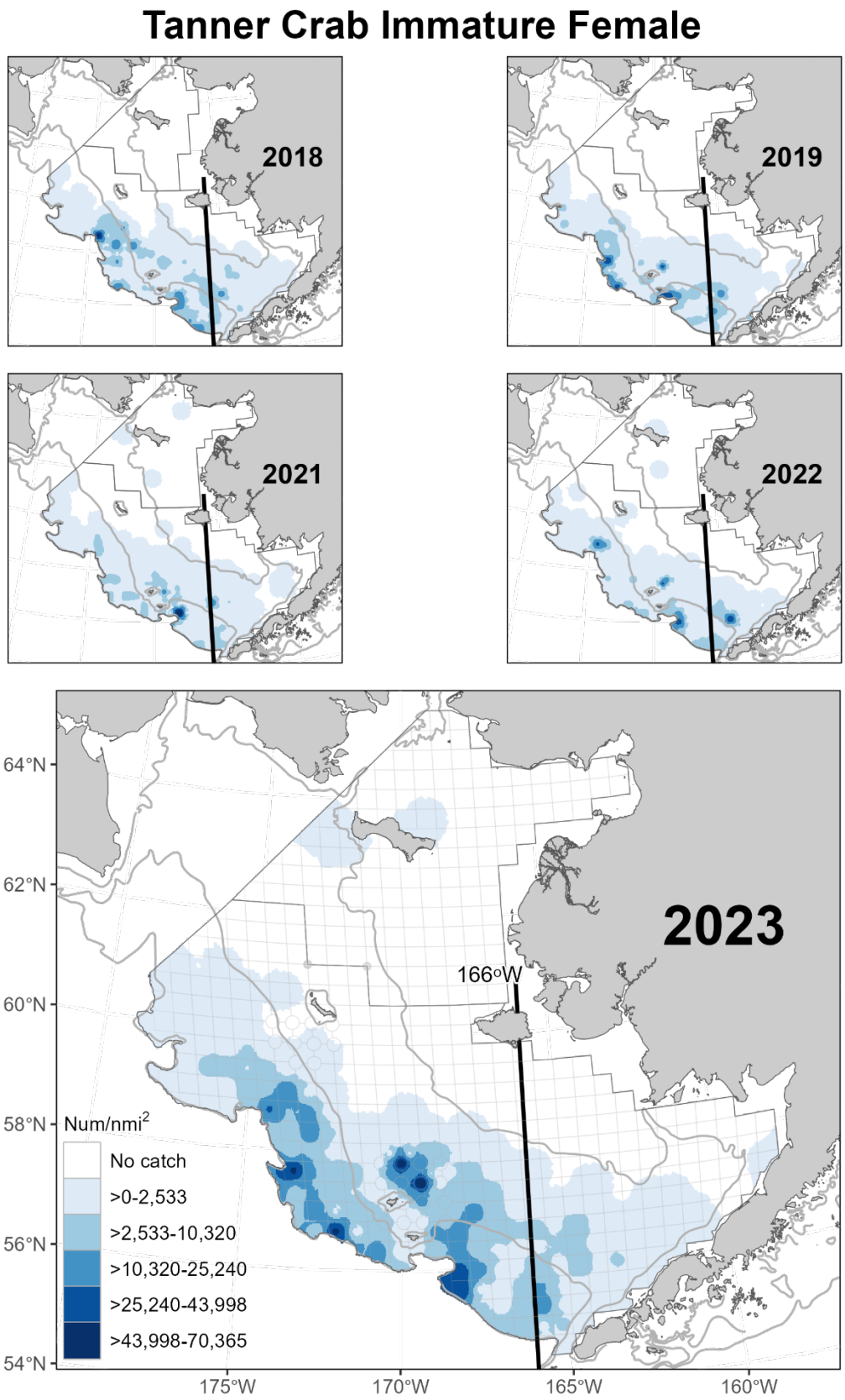

Figure 85. -- Estimated total density of immature female Tanner crab (*Chionoecetes bairdi*) for the past five survey years.

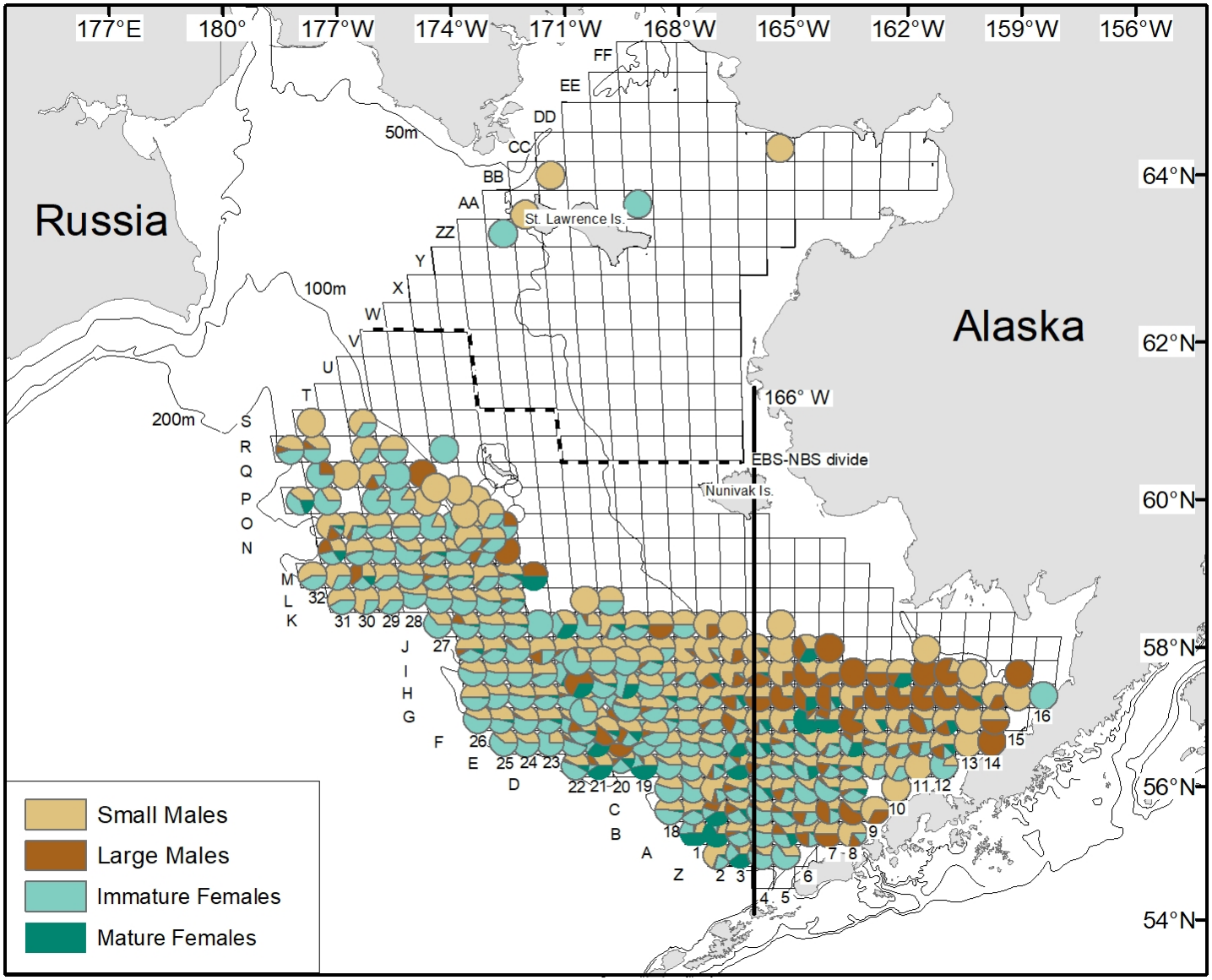

Figure 86. -- Proportion of male and female Tanner crab (*Chionoecetes bairdi*) maturity/size classes caught at each station sampled in 2023. Males are considered large with carapace widths ≥ 113 mm east of 166°W in the EBS and carapace widths ≥ 103 mm west of 166°W in the EBS and throughout the NBS.

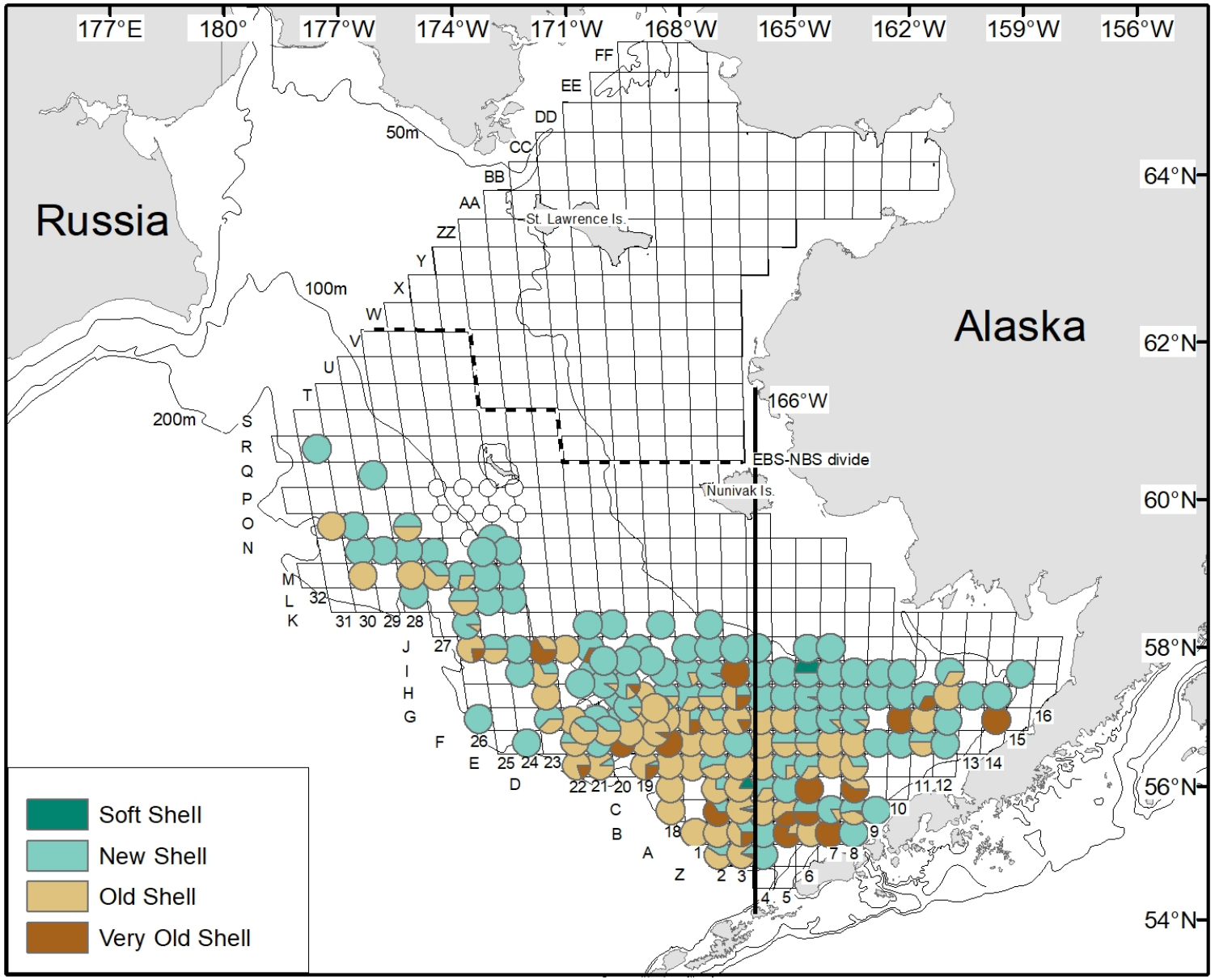

Figure 87. -- Proportion of legal-sized (carapace width ≥ 120 mm east of 166°W in EBS; carapace width ≥ 110 mm west of 166°W in EBS and throughout NBS) male Tanner crab (*Chionoecetes bairdi*) shell condition classes caught at each station sampled in 2023.

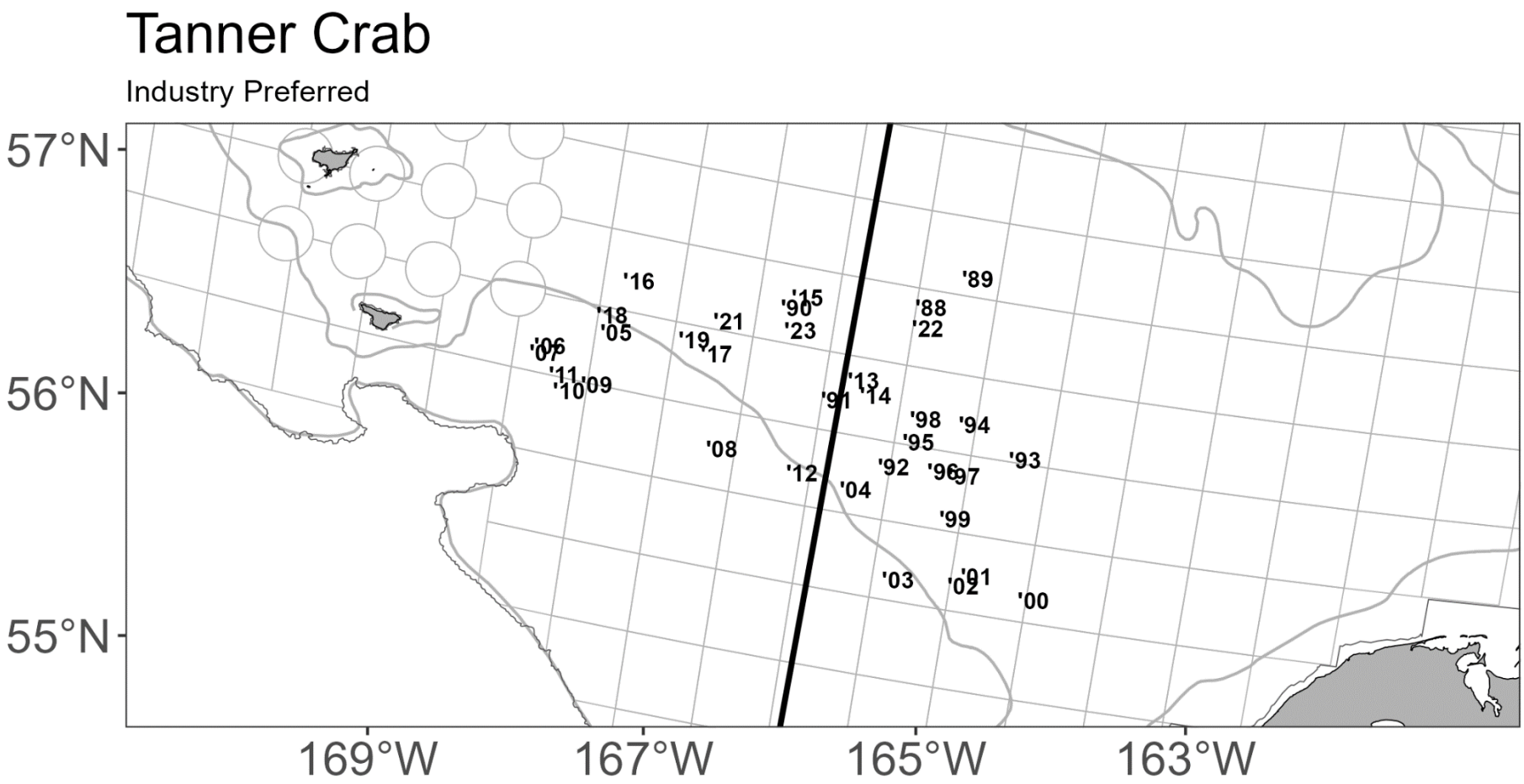

Figure 88. -- Centers of stock abundance of industry preferred size male Tanner crab (*Chionoecetes bairdi*) from 1988 to 2023 in the eastern Bering Sea.

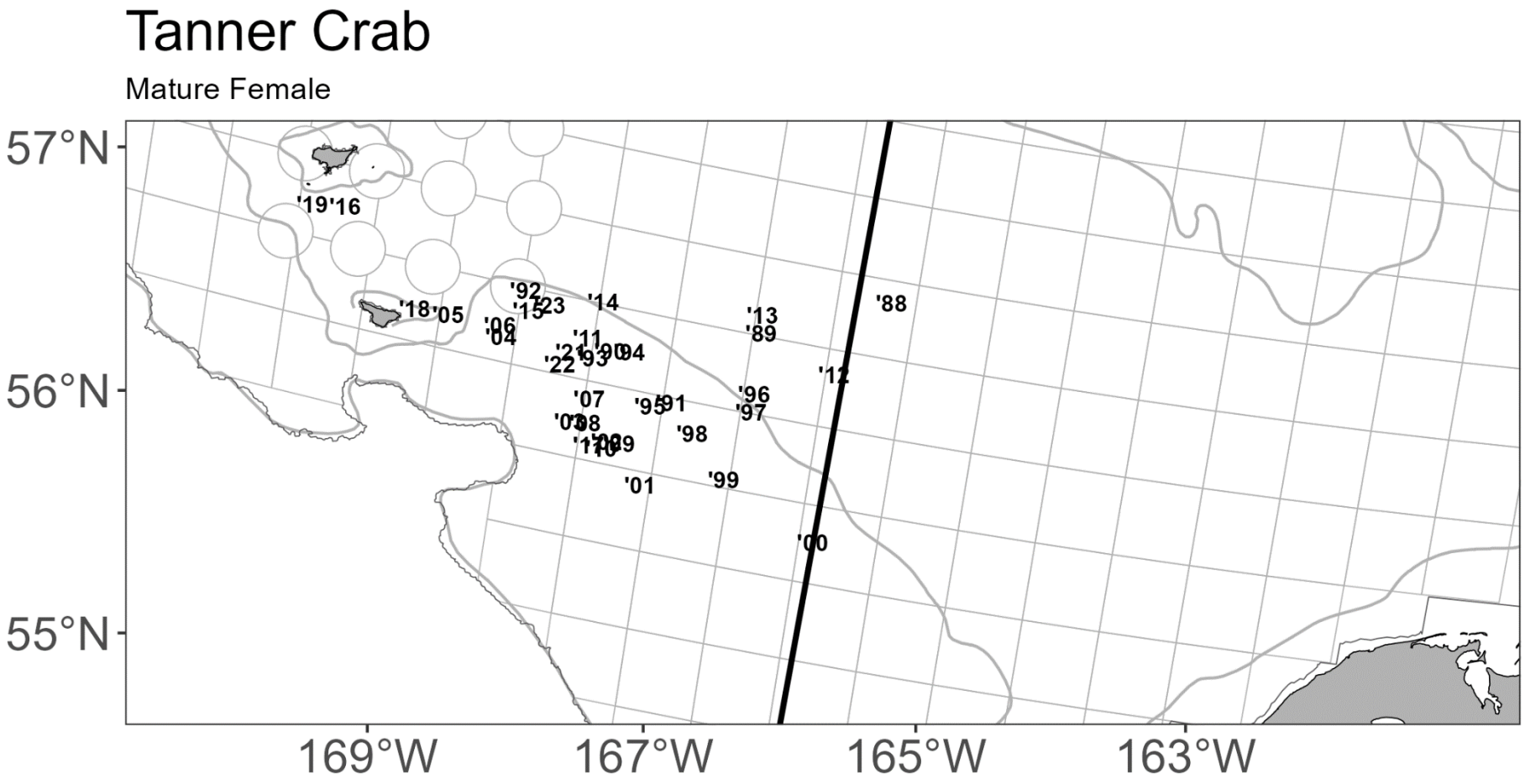

Figure 89. -- Centers of stock abundance of mature female Tanner crab (*Chionoecetes bairdi*) from 1988 to 2023 in the eastern Bering Sea.

Snow Crab
Figures

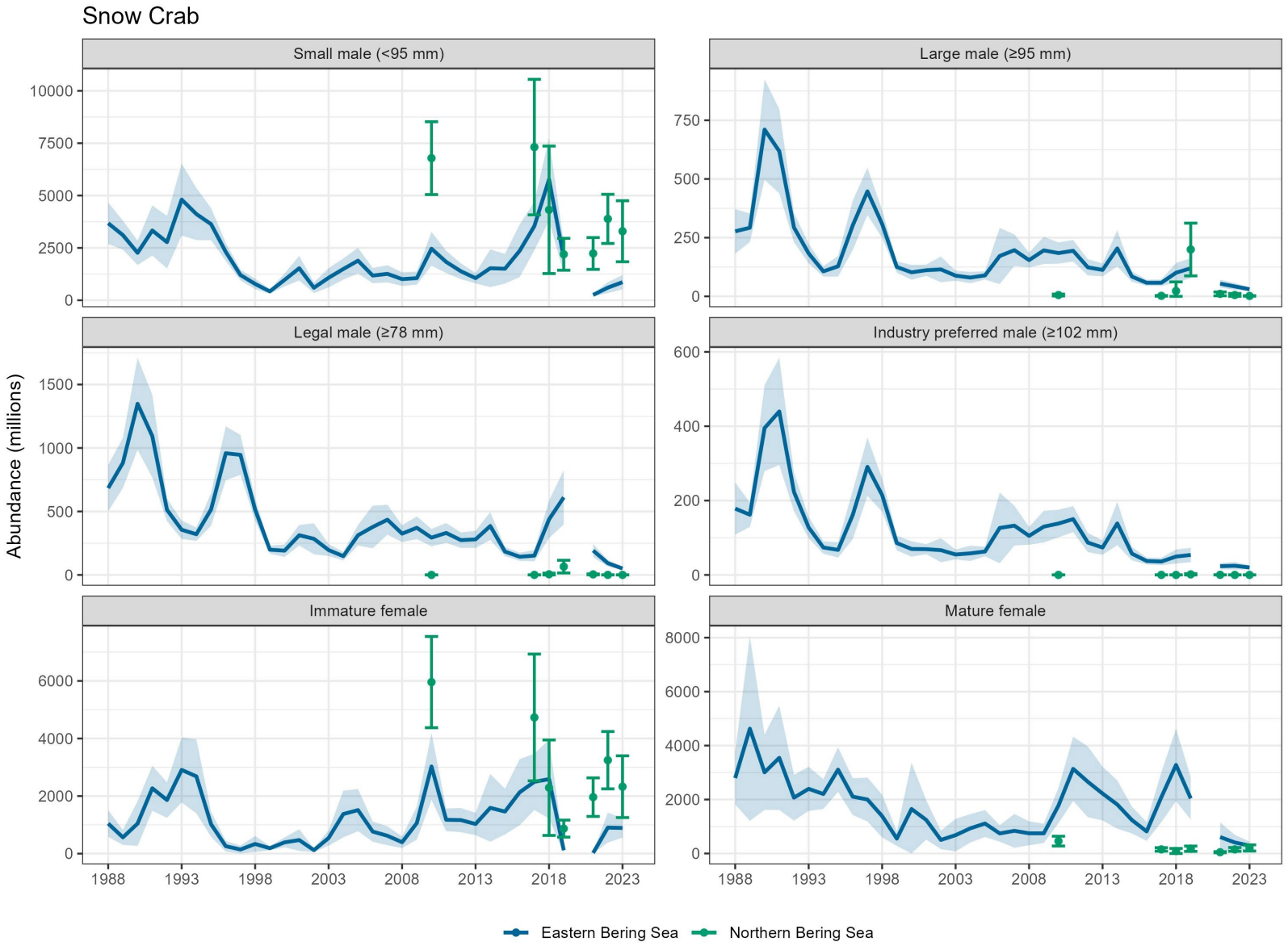

Figure 90. -- Historical abundance of snow crab (*Chionoecetes opilio*) in the eastern and northern Bering Sea. Light blue area and green error bars indicate ± 95% CI.

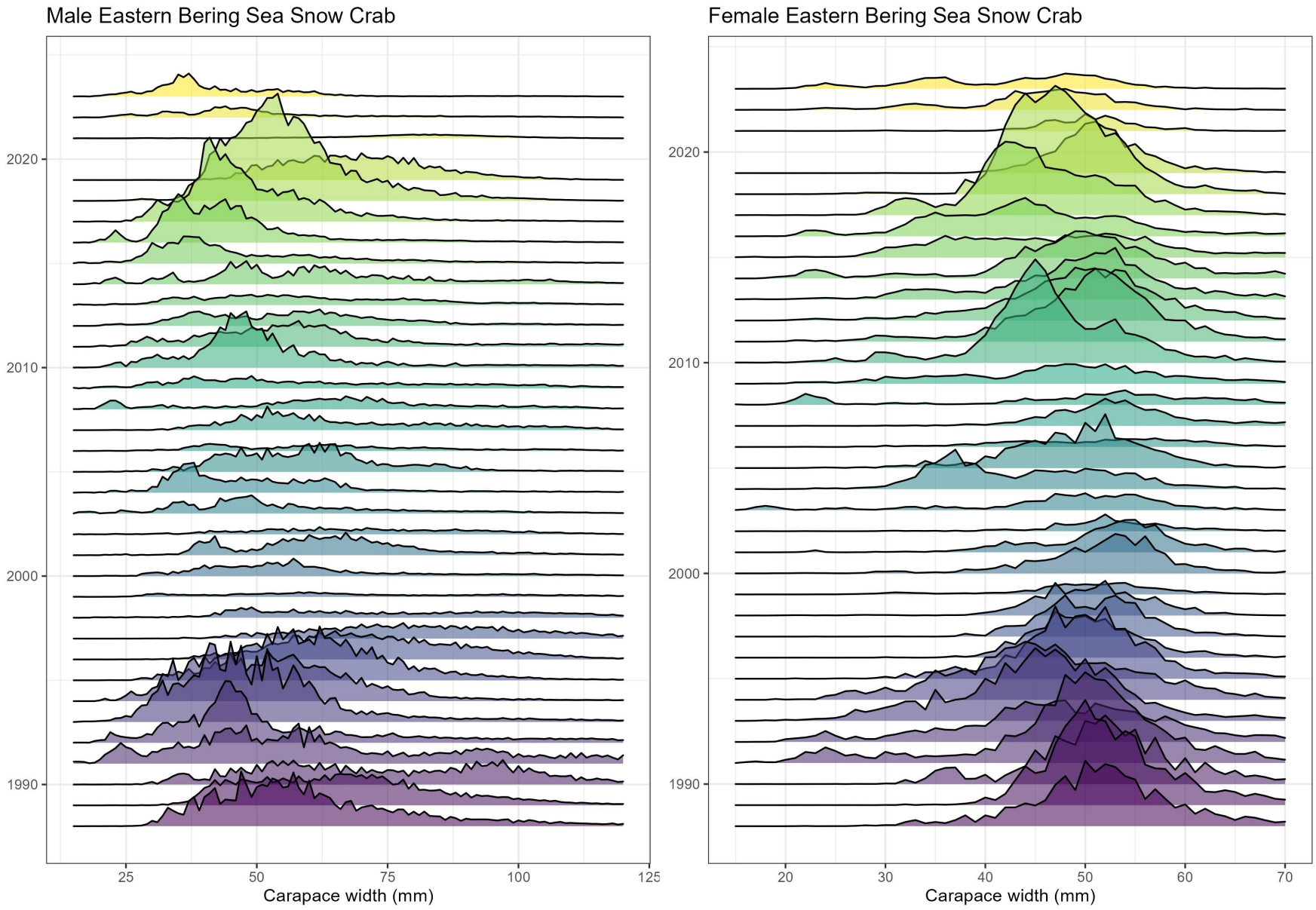

Figure 91. -- Historical size frequency for snow crab (*Chionoecetes opilio*) in the eastern Bering Sea.

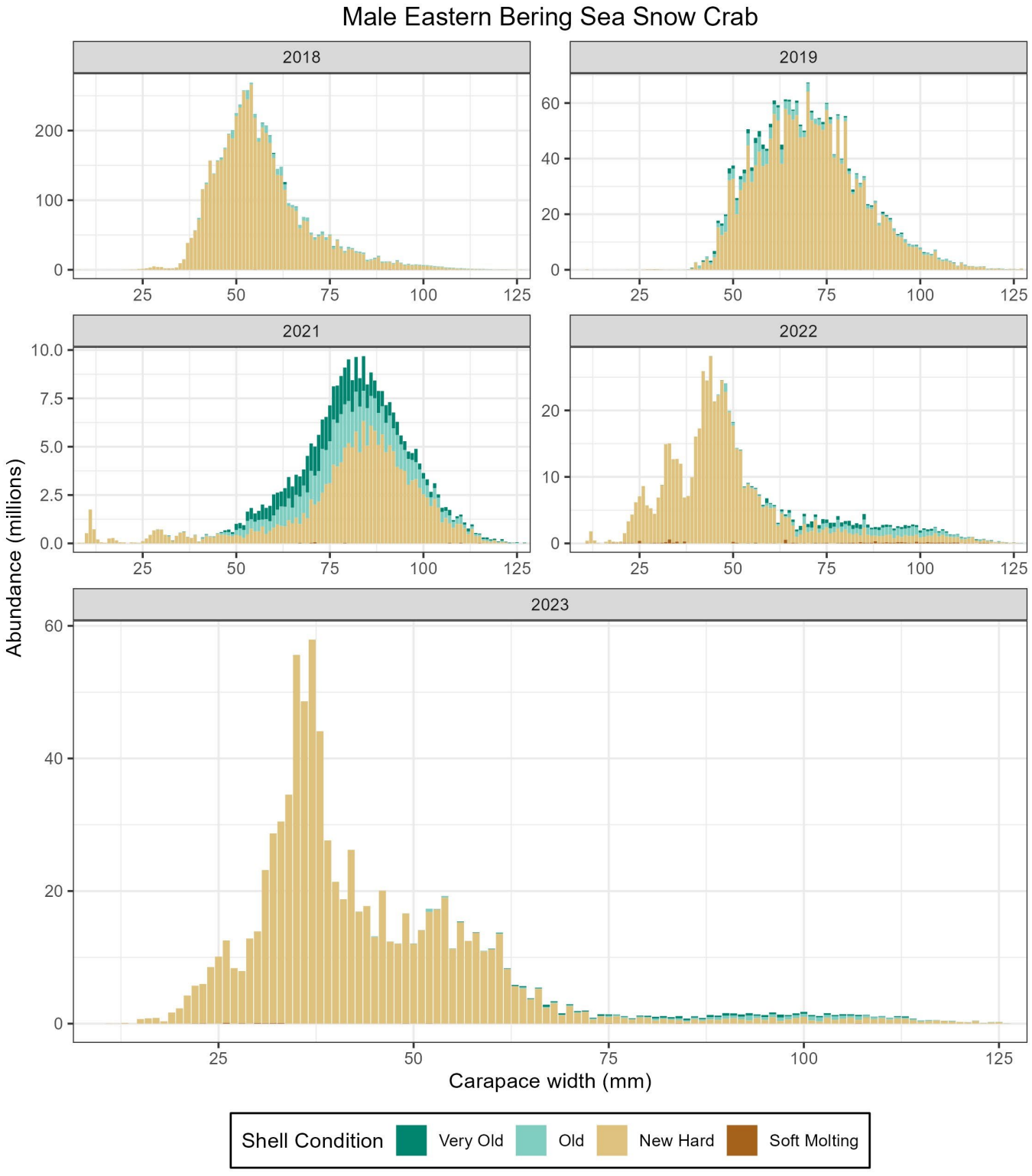

Figure 92. -- Abundance (millions) by size and shell condition of male snow crab (*Chionoecetes opilio*) in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

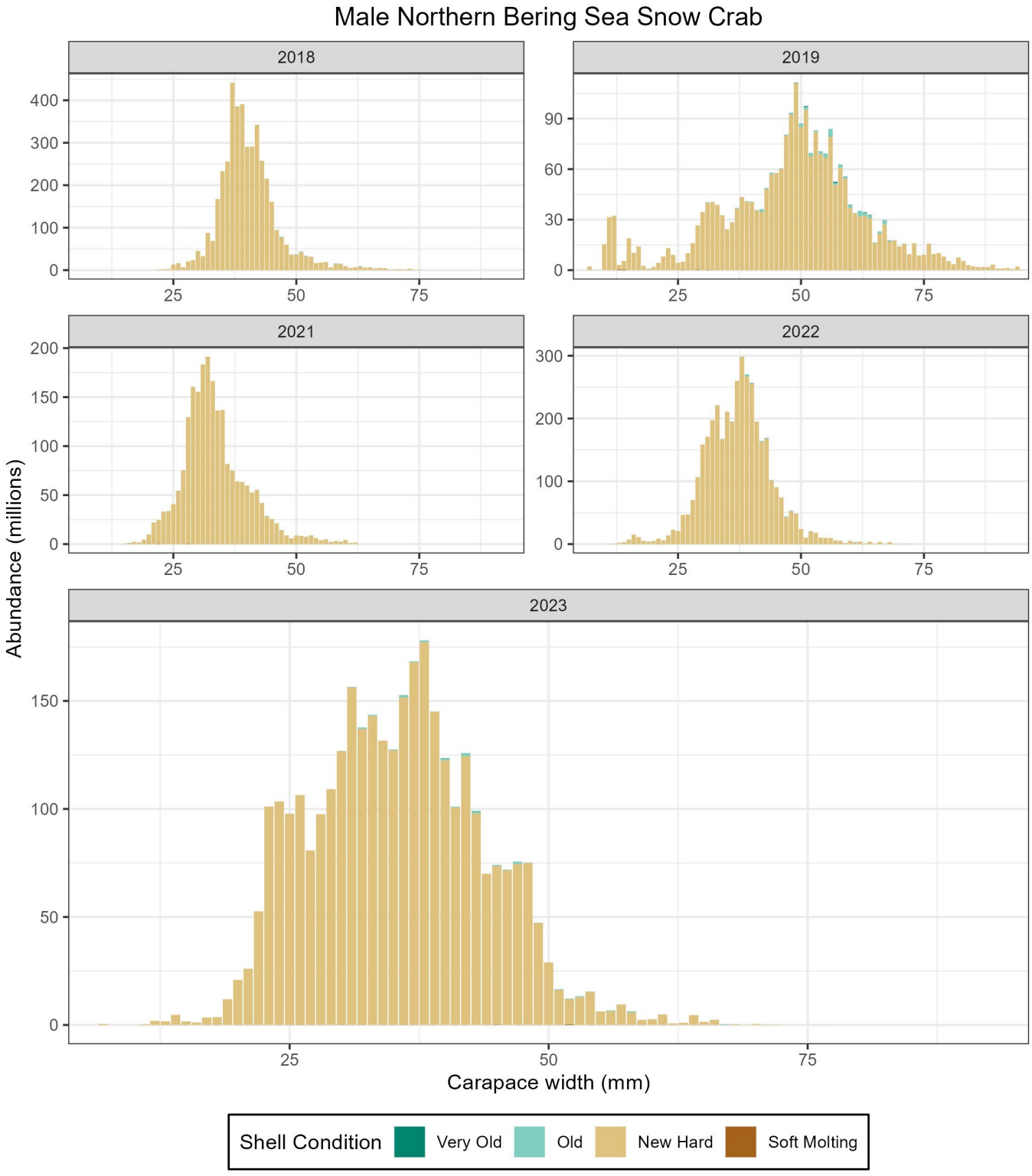

Figure 93. -- Abundance (millions) by size and shell condition of male snow crab (*Chionoecetes opilio*) in the northern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

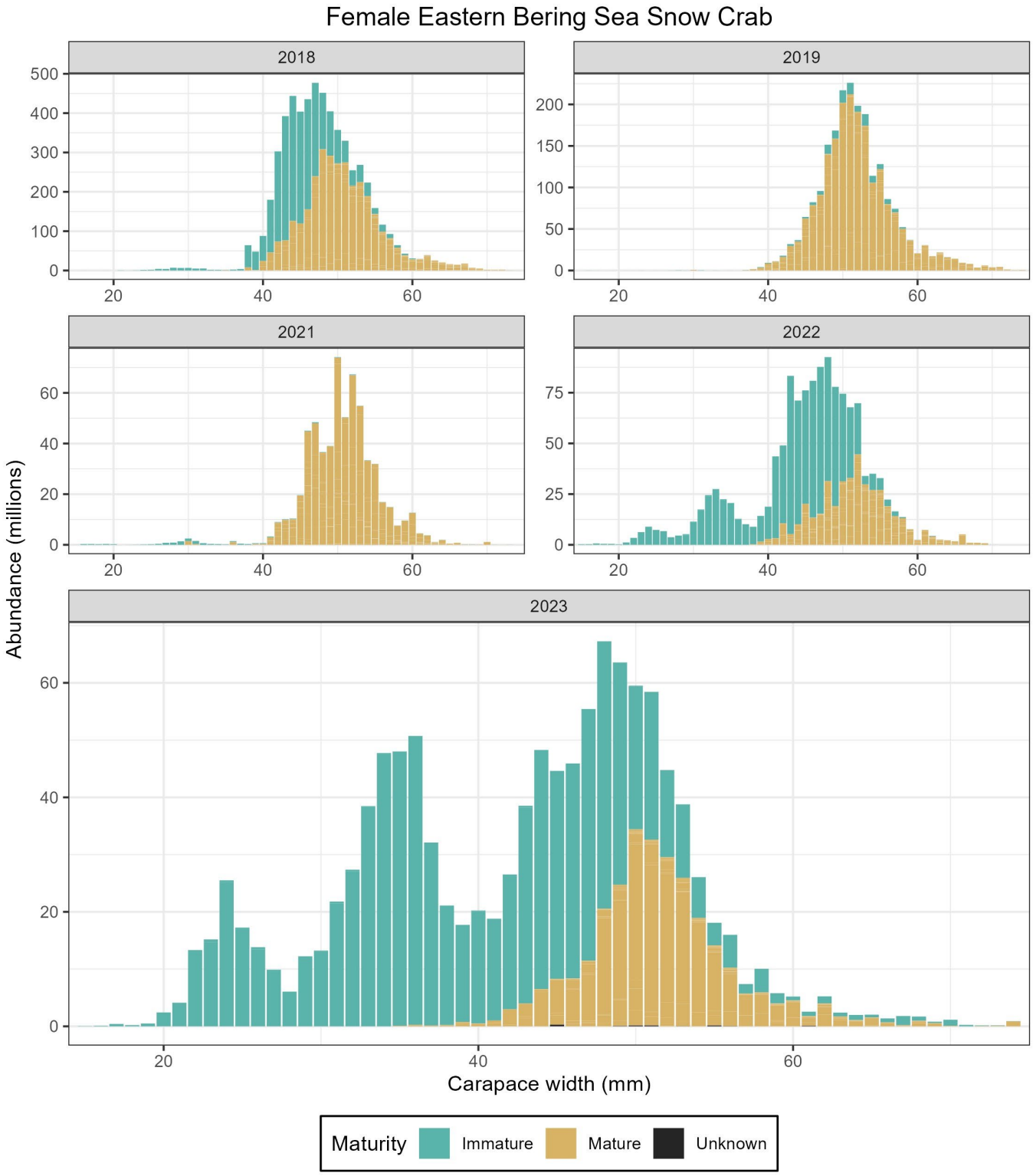

Figure 94. -- Abundance (millions) by size and maturity status of female snow crab (*Chionoecetes opilio*) in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

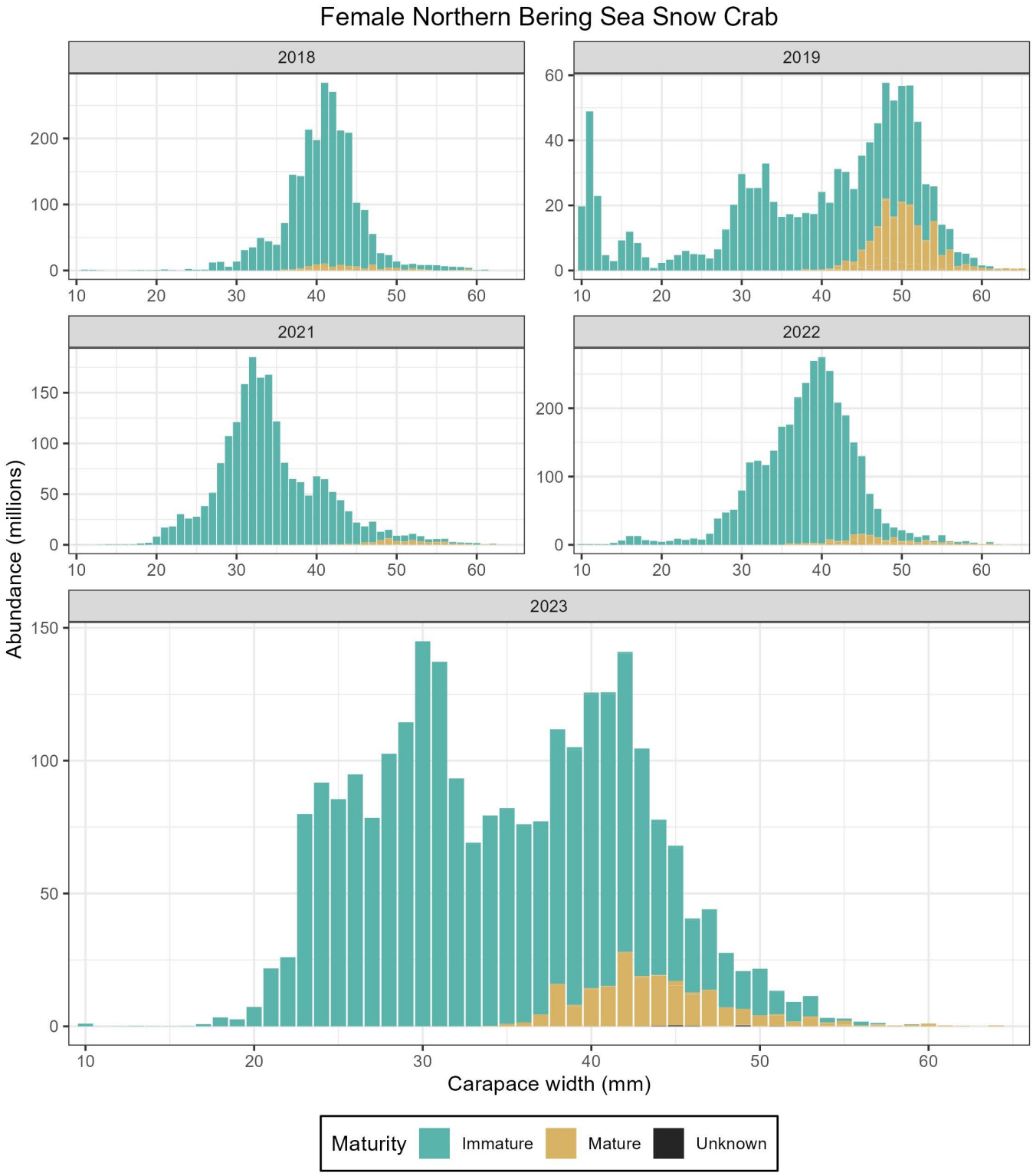

Figure 95. -- Abundance (millions) by size and maturity status of female snow crab (*Chionoecetes opilio*) in the northern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

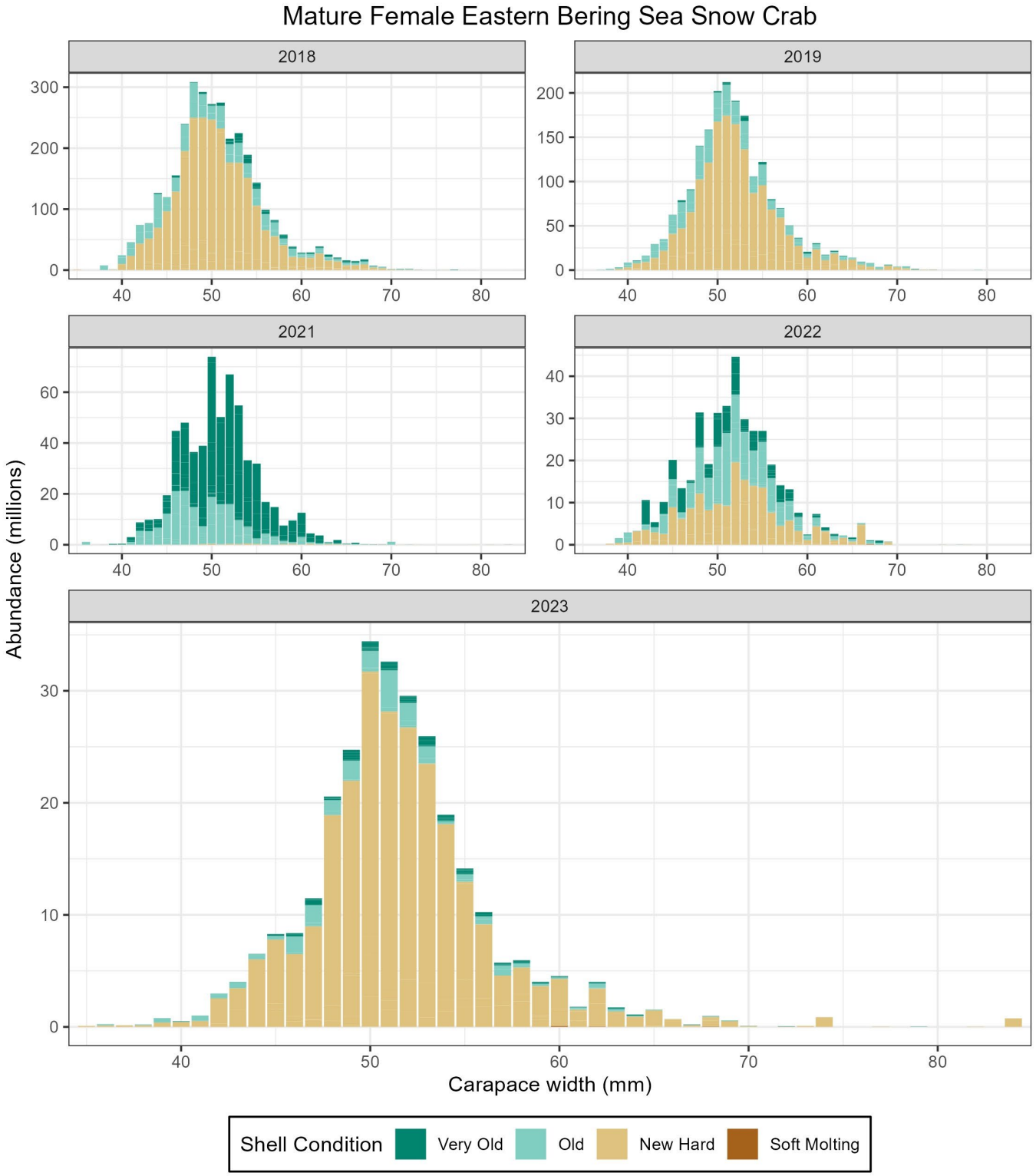

Figure 96. -- Abundance (millions) by size and shell condition of mature female snow crab (*Chionoecetes opilio*) in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

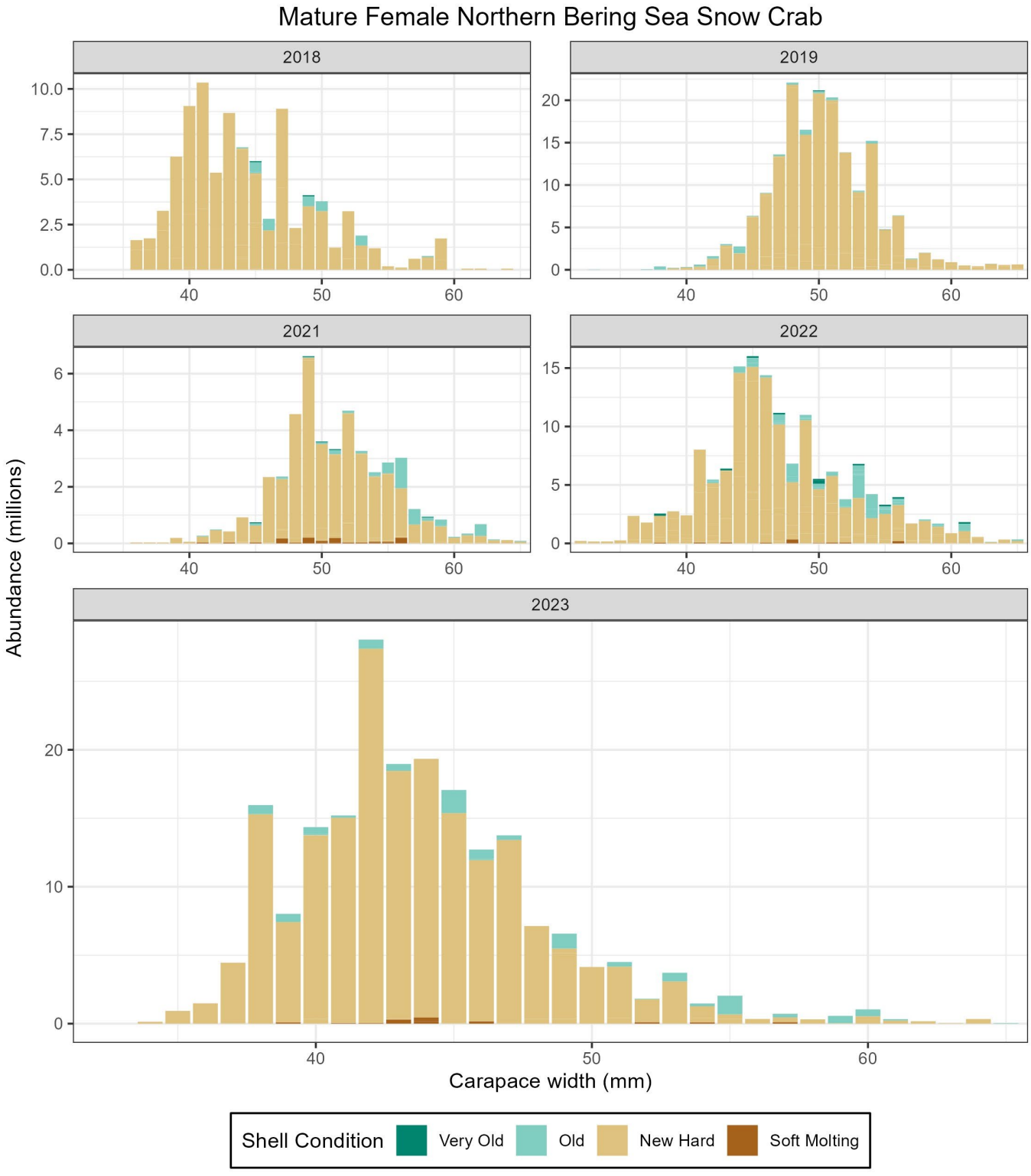

Figure 97. -- Abundance (millions) by size and shell condition of mature female snow crab (*Chionoecetes opilio*) in the northern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

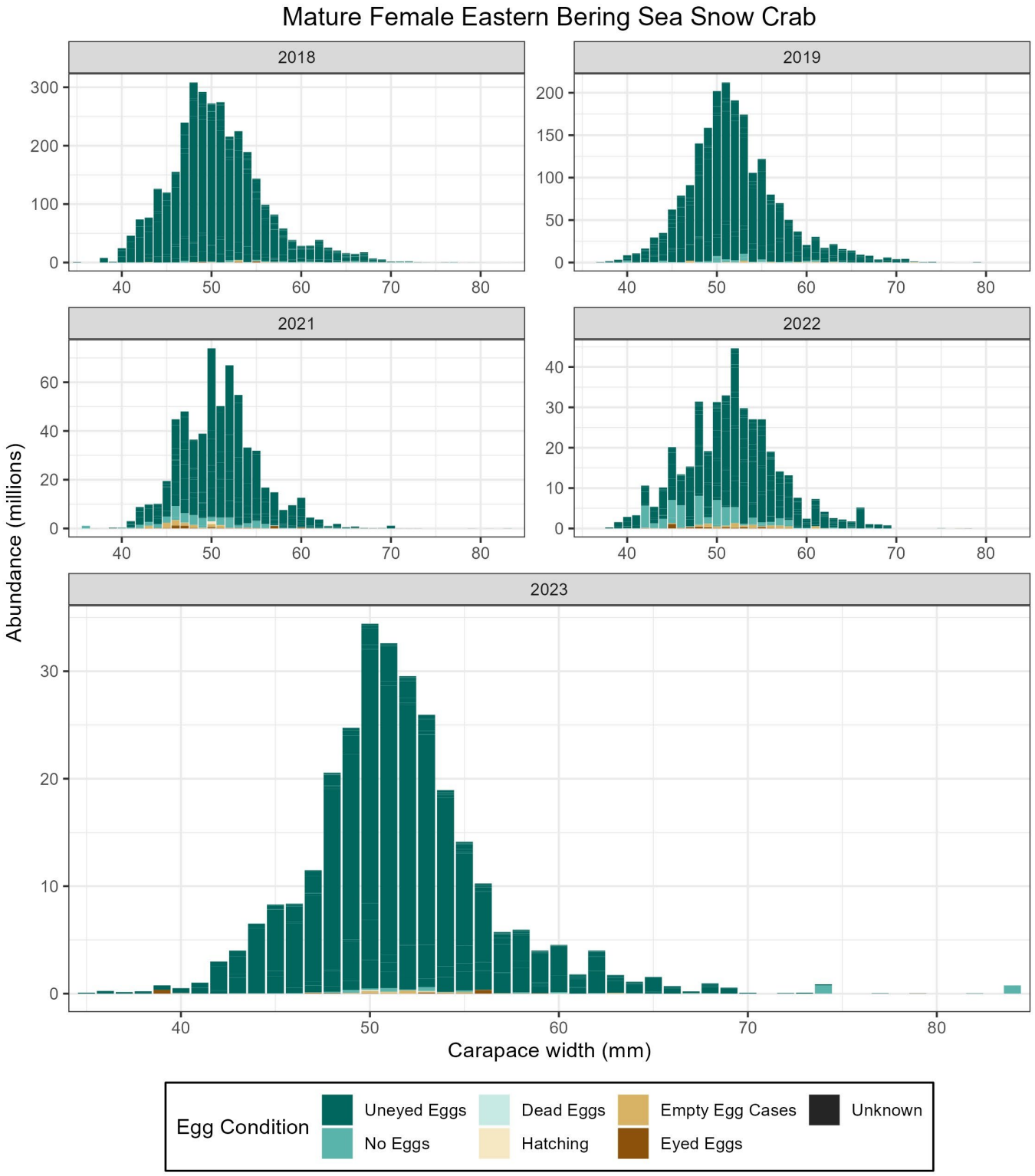

Figure 98. -- Abundance (millions) by size and egg condition of mature female snow crab (*Chionoecetes opilio*) in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

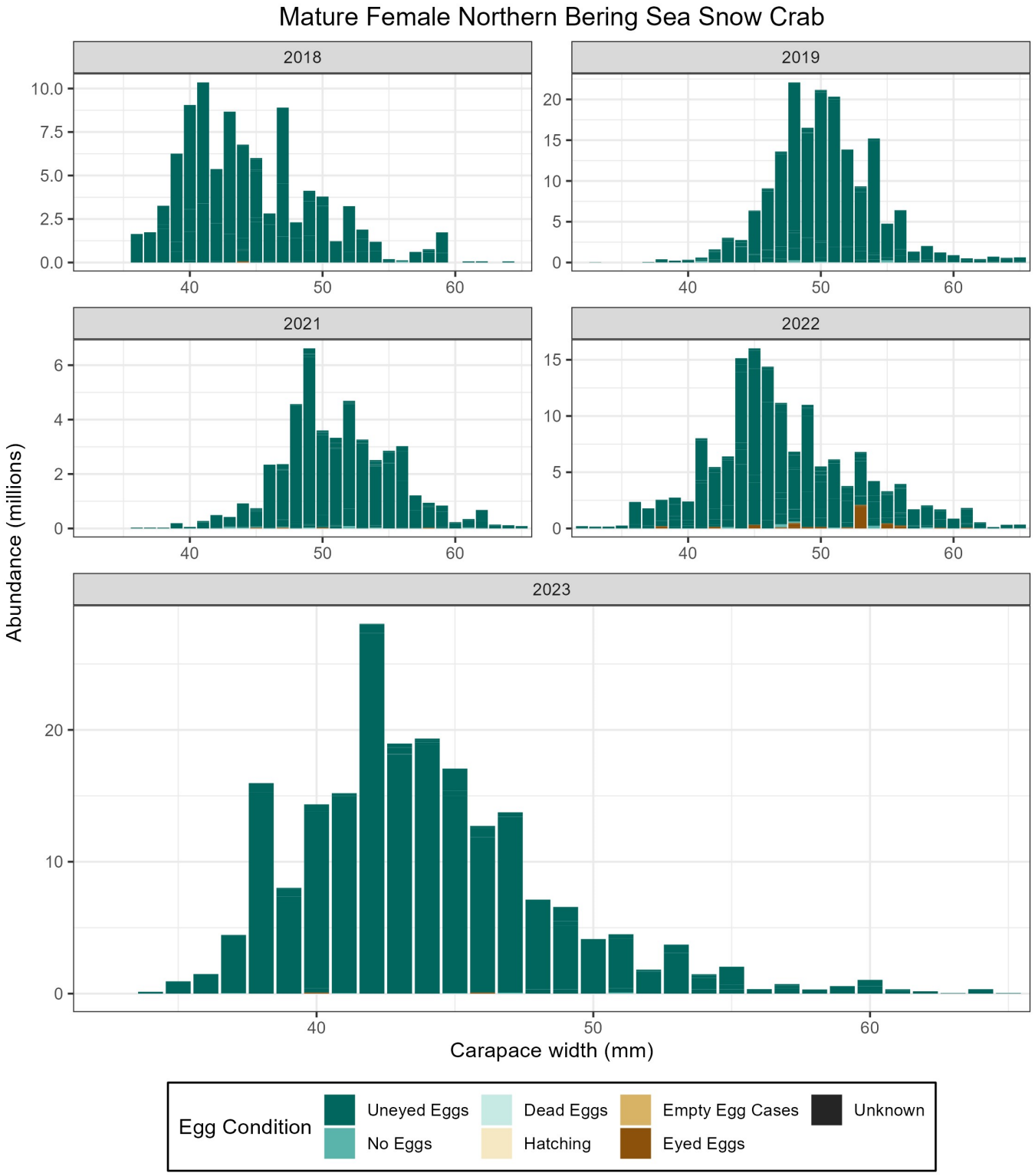

Figure 99. -- Abundance (millions) by size and egg condition of mature female snow crab (*Chionoecetes opilio*) in the northern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

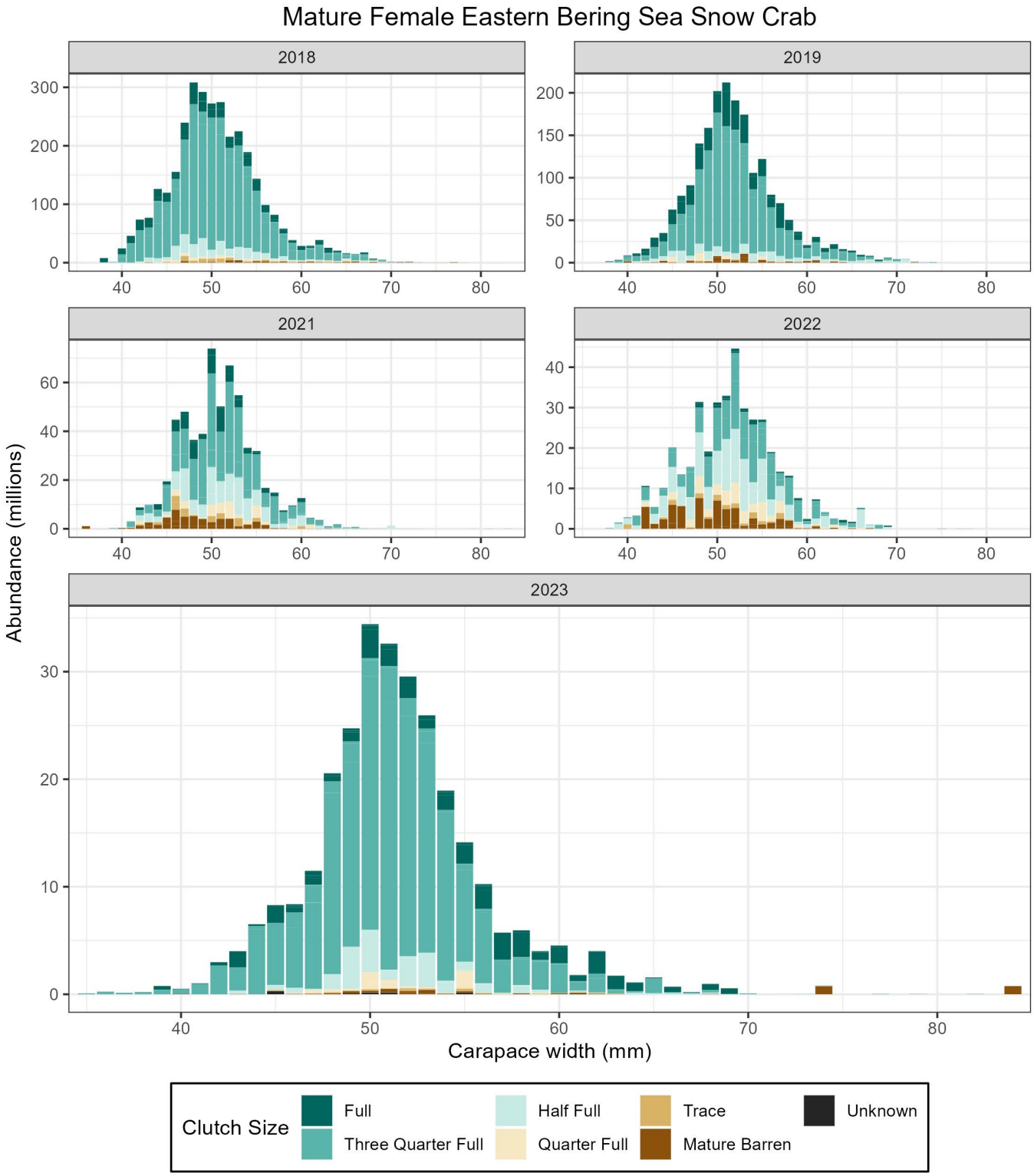

Figure 100. -- Abundance (millions) by size and clutch fullness of mature female snow crab (*Chionoecetes opilio*) in the eastern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

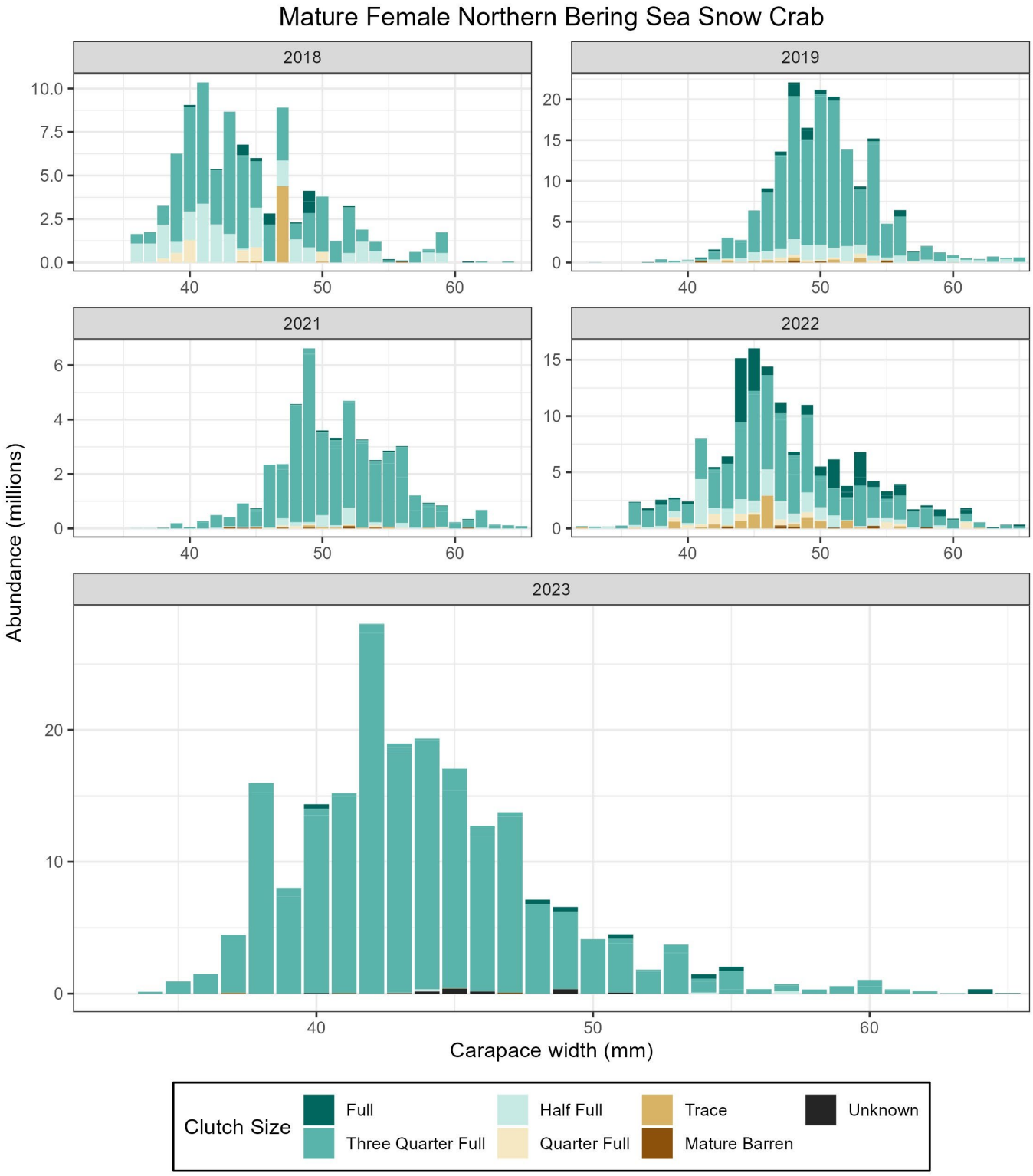

Figure 101. -- Abundance (millions) by size and clutch fullness of mature female snow crab (*Chionoecetes opilio*) in the northern Bering Sea using 1 mm width classes. **Note that Y-axis scale varies among years.**

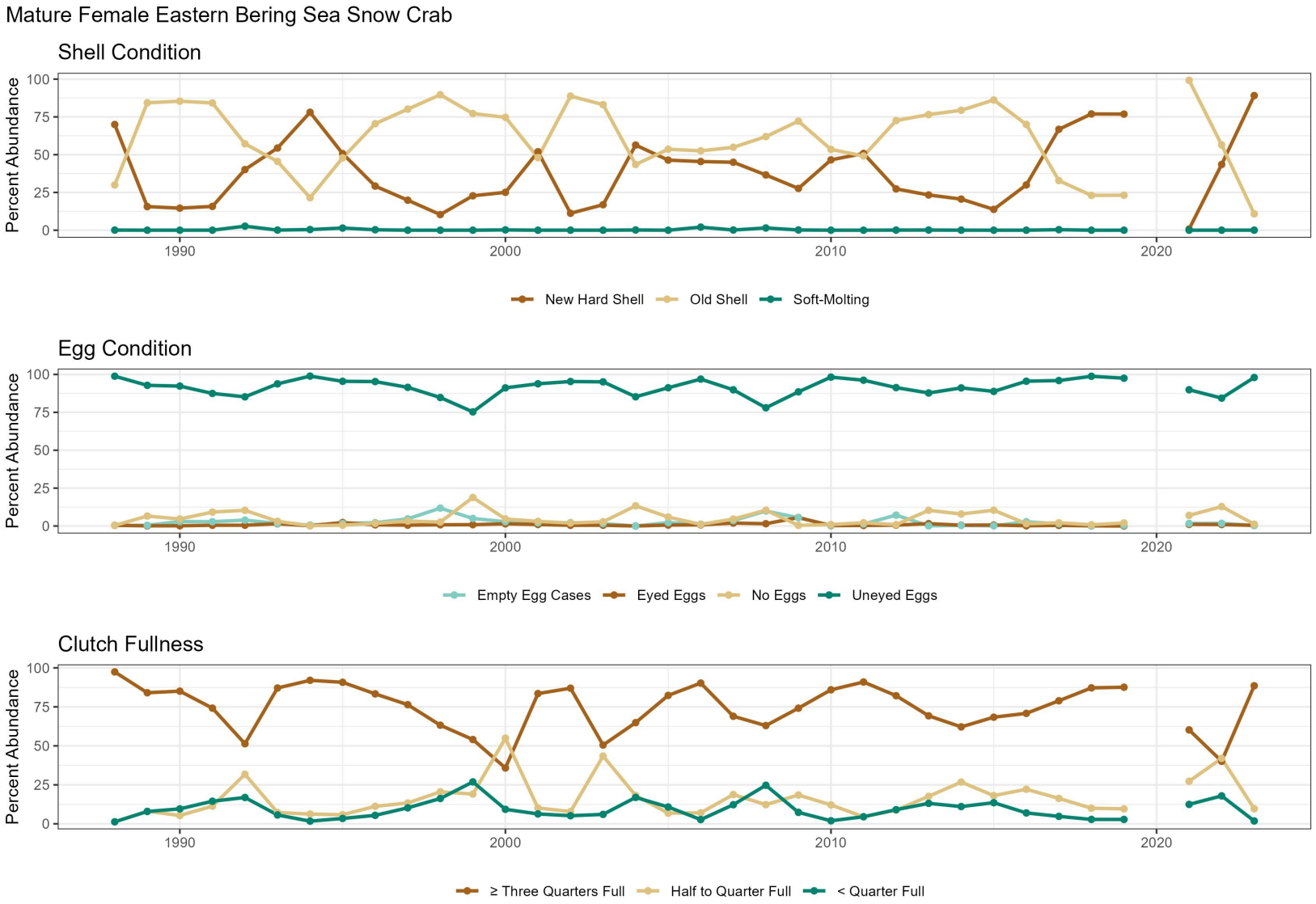

Figure 102. -- Time series of shell condition, egg condition, and clutch fullness for mature female snow crab (*Chionoecetes opilio*) in the eastern Bering Sea.

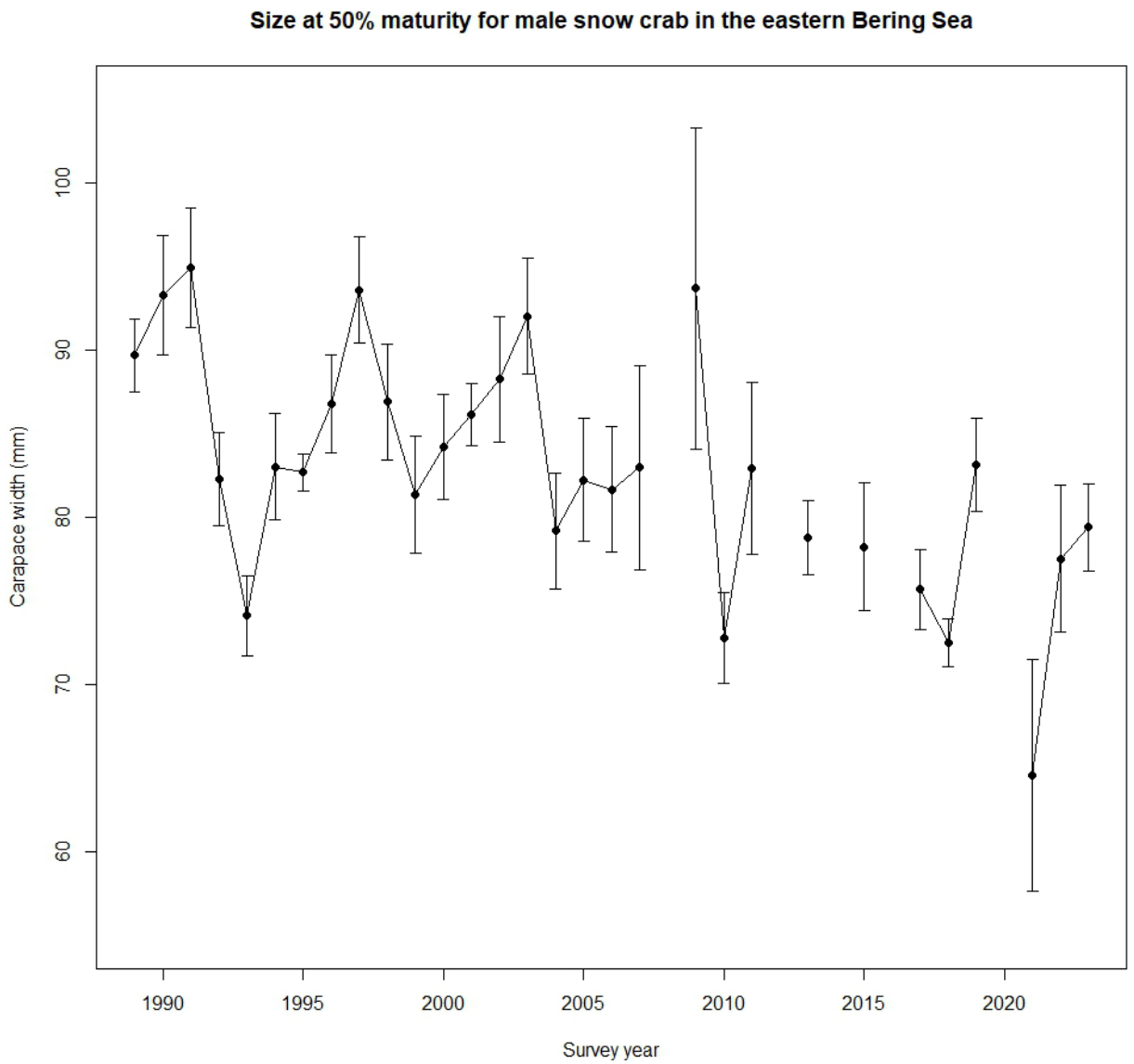

Figure 103. -- Size at which 50% of new hardshell snow crab (*Chionoecetes opilio*) in the eastern Bering Sea are mature by year using chela morphometrics (± 95% CI).

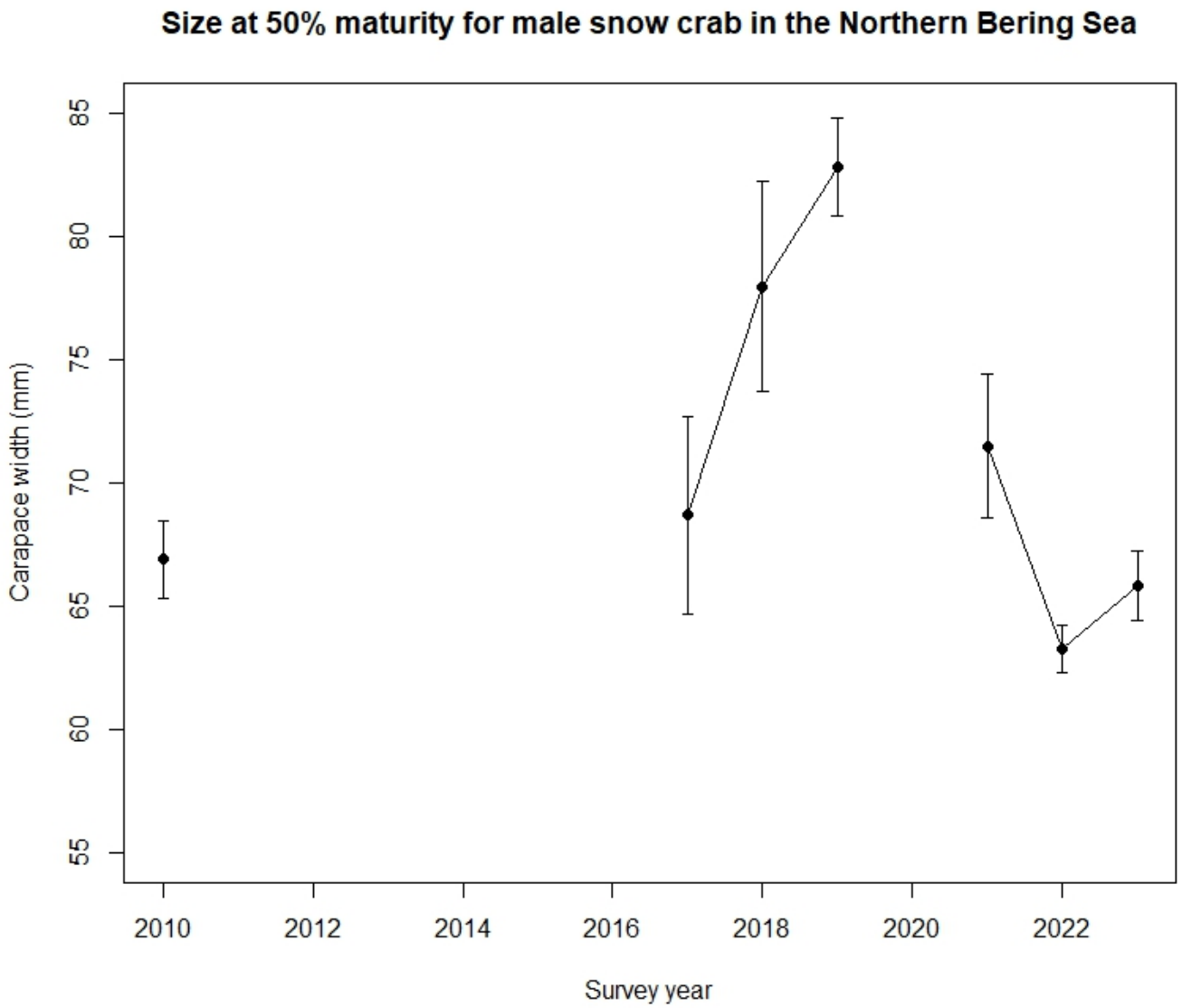

Figure 104. -- Size at which 50% of new hardshell snow crab (*Chionoecetes opilio*) in the northern Bering Sea are mature by year using chela morphometrics (± 95% CI).

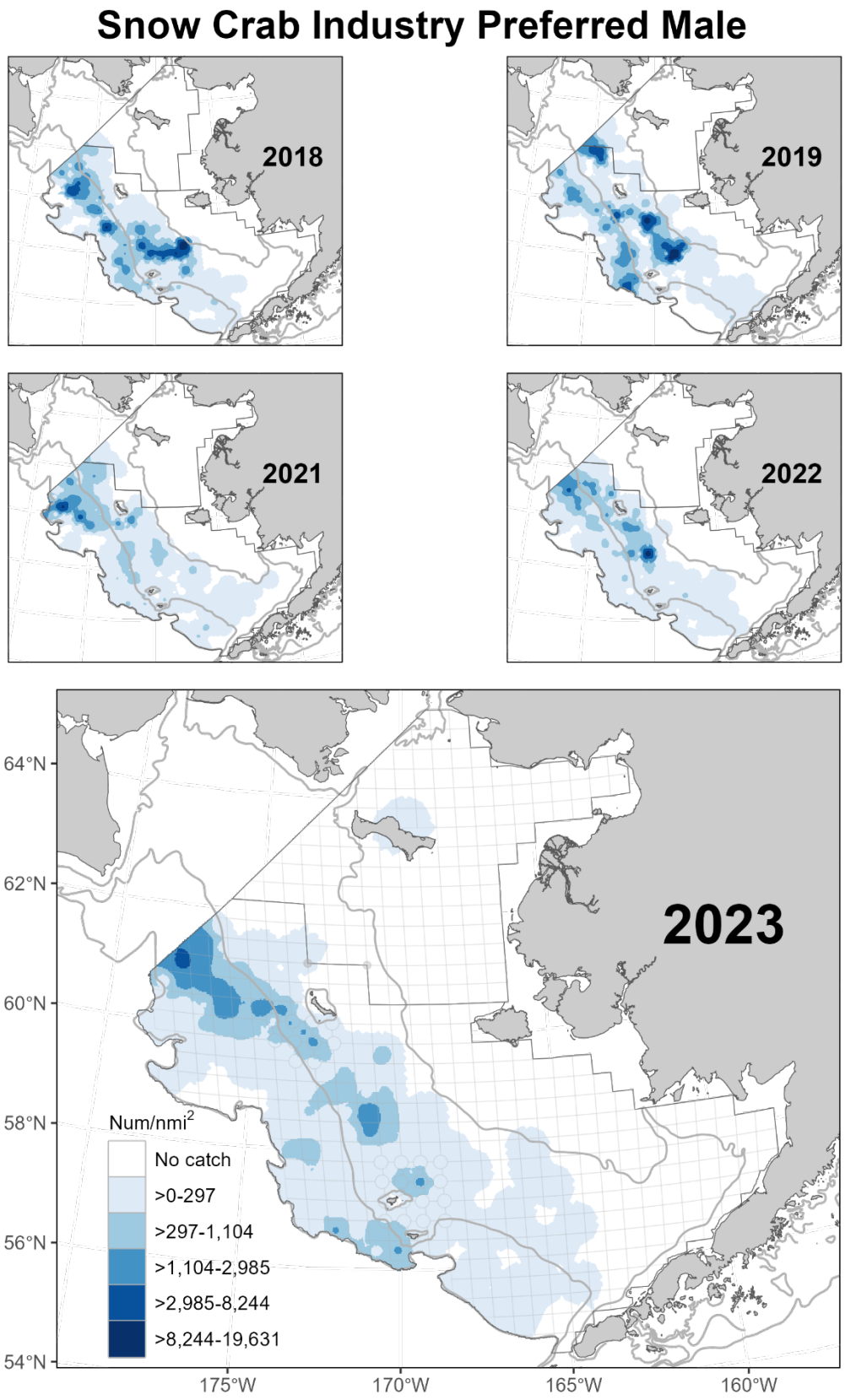

Figure 105. -- Estimated total density of industry preferred-sized (carapace width ≥ 102 mm) snow crab (*Chionoecetes opilio*) for the past five survey years.

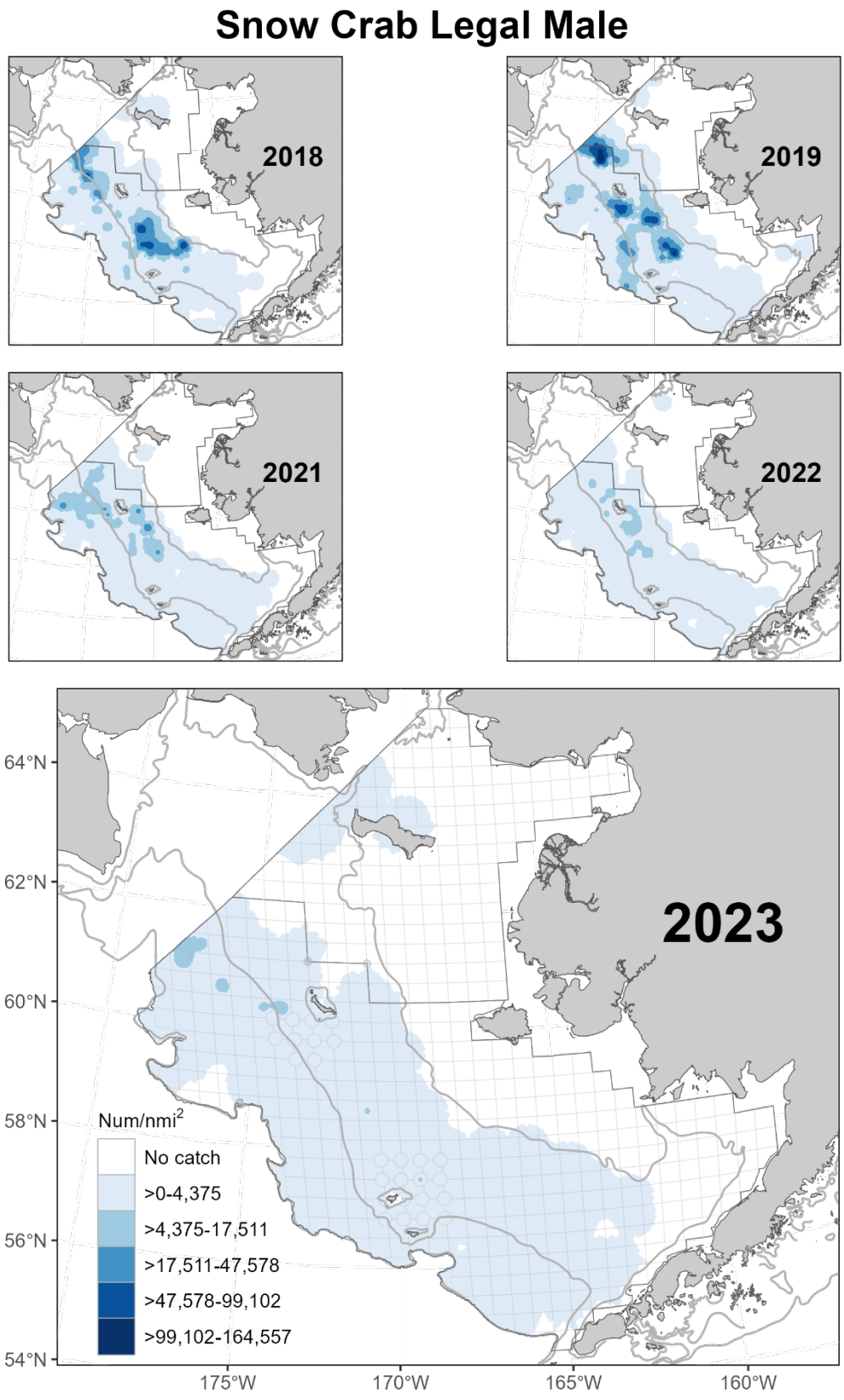

Figure 106. -- Estimated total density of legal-sized (carapace width ≥ 78 mm) snow crab (*Chionoecetes opilio*) for the past five survey years.

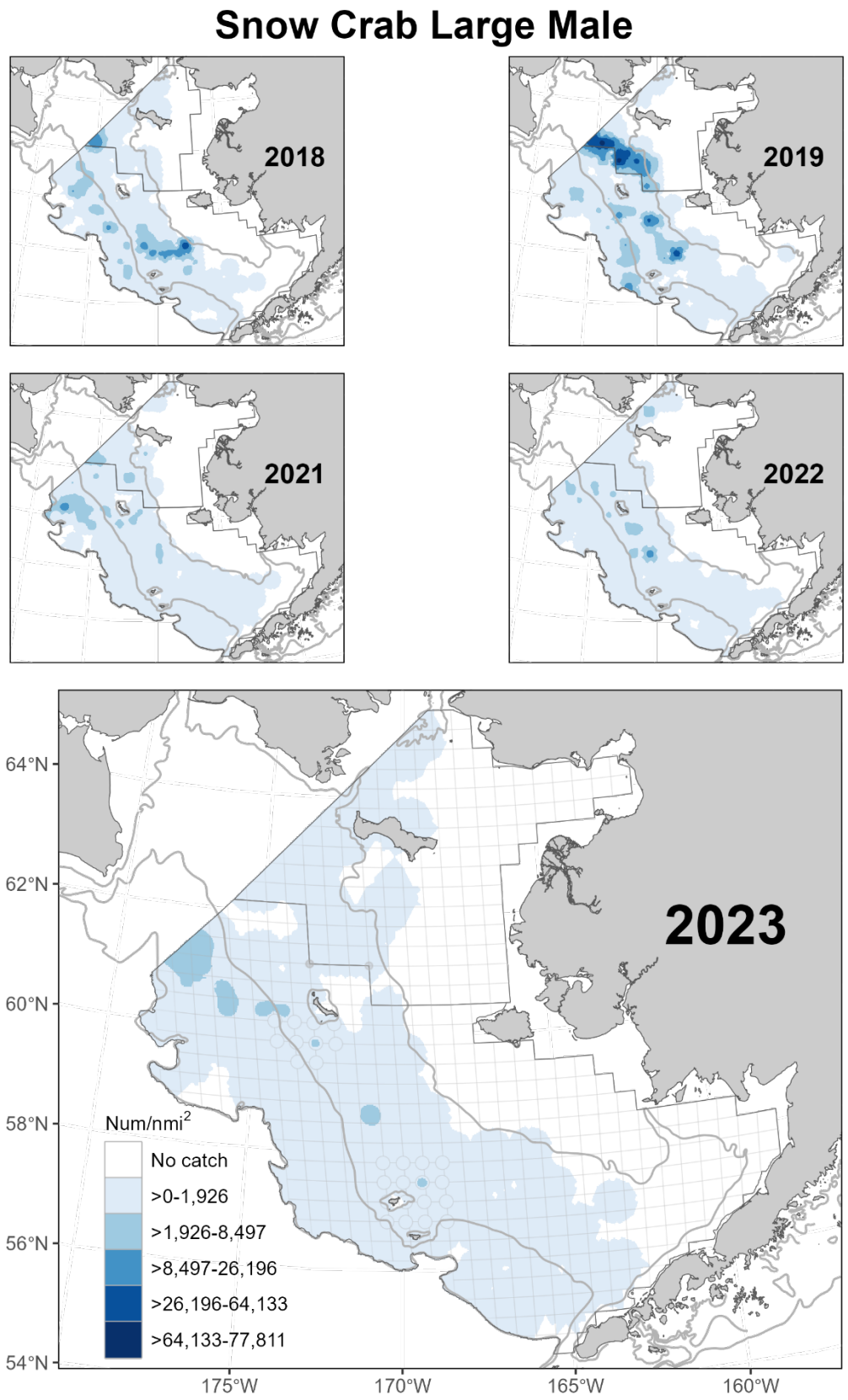

Figure 107. -- Estimated total density of large-sized (carapace width ≥ 95 mm in EBS; carapace width ≥ 68 mm in NBS) male snow crab (*Chionoecetes opilio*) for the past five survey years.

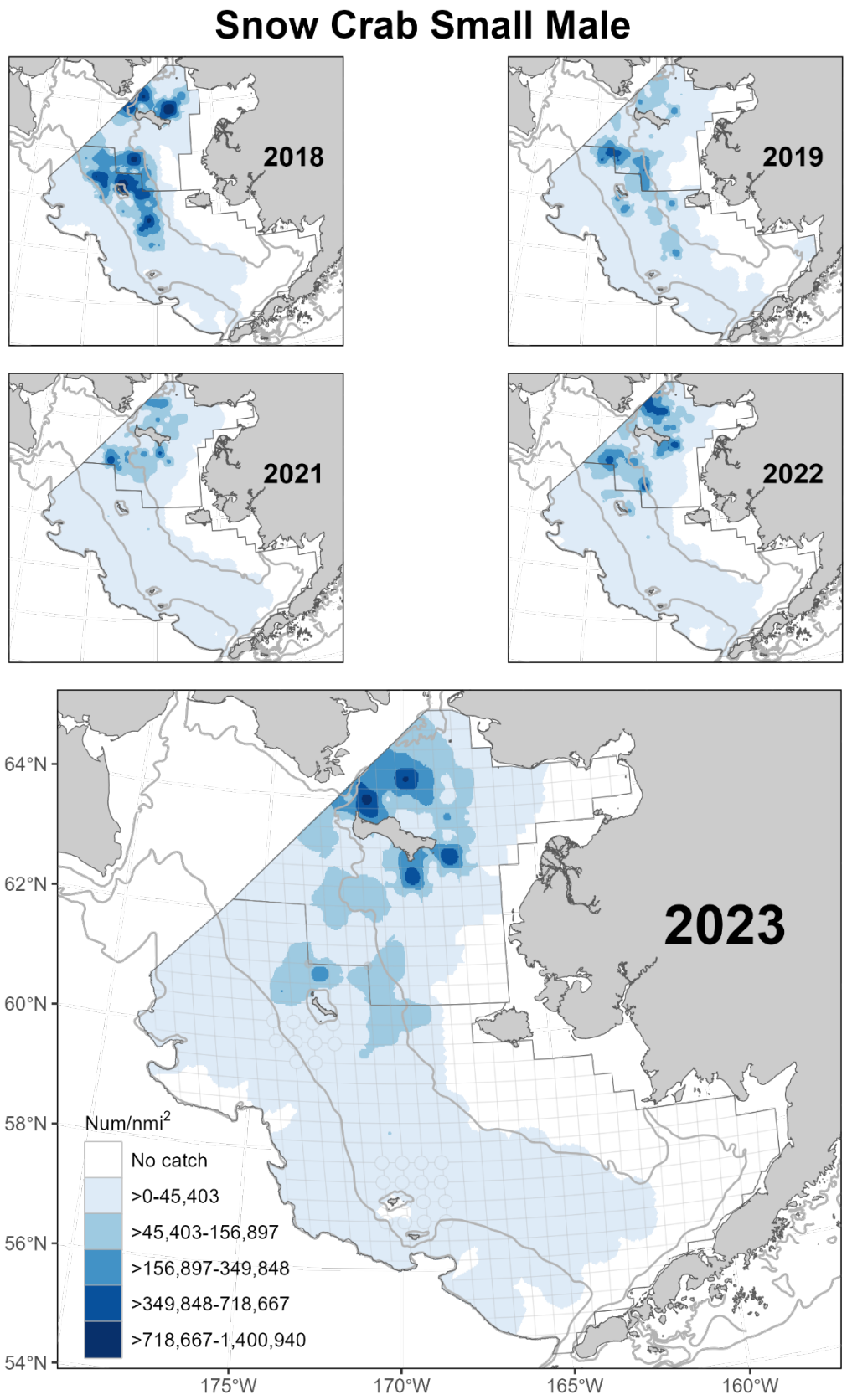

Figure 108. -- Estimated total density of small-sized (carapace width < 95 mm in EBS; carapace width < 68 mm in NBS) male snow crab (*Chionoecetes opilio*) for the past five survey years.

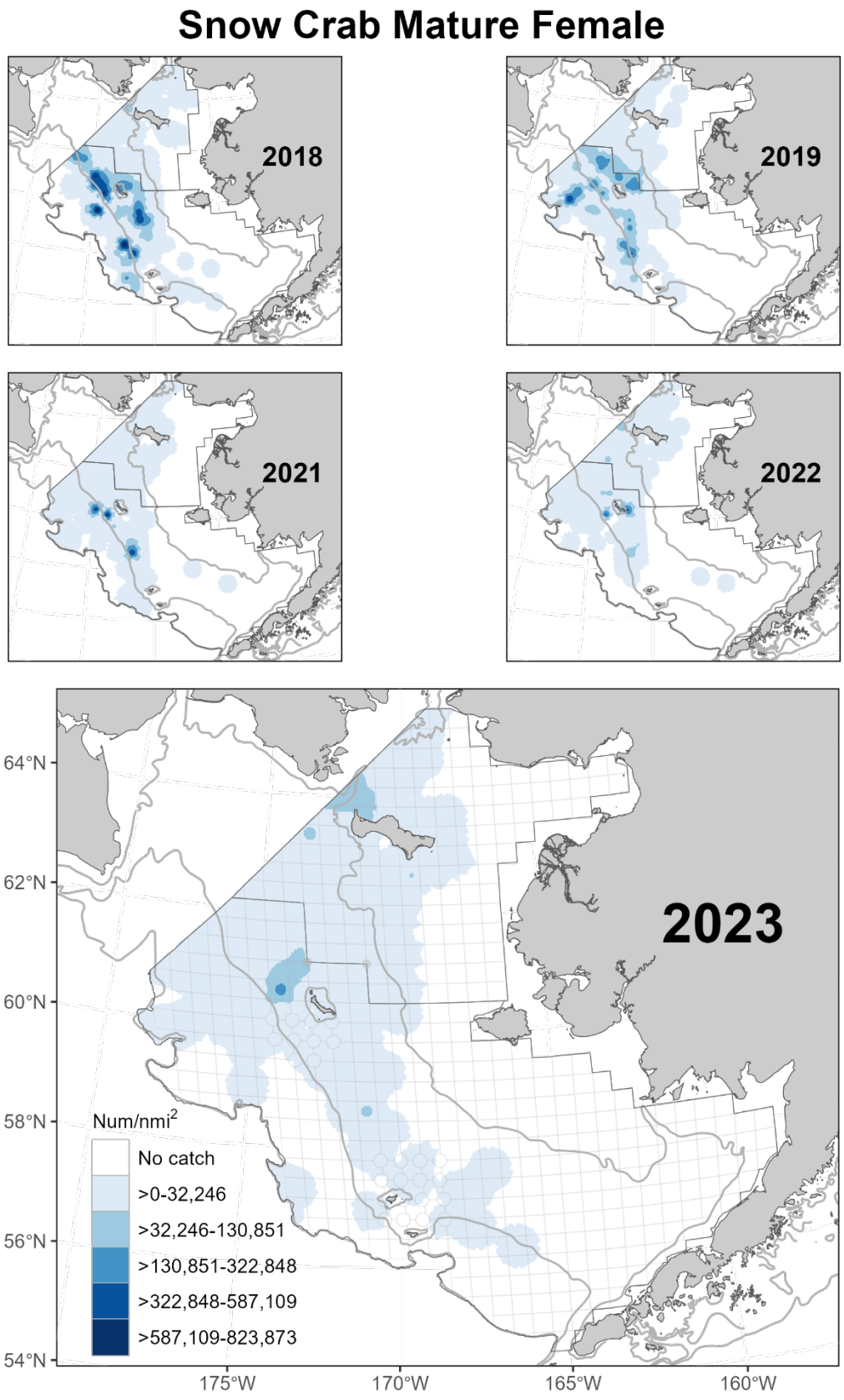

Figure 109. -- Estimated total density of mature female snow crab (*Chionoecetes opilio*) for the past five survey years.

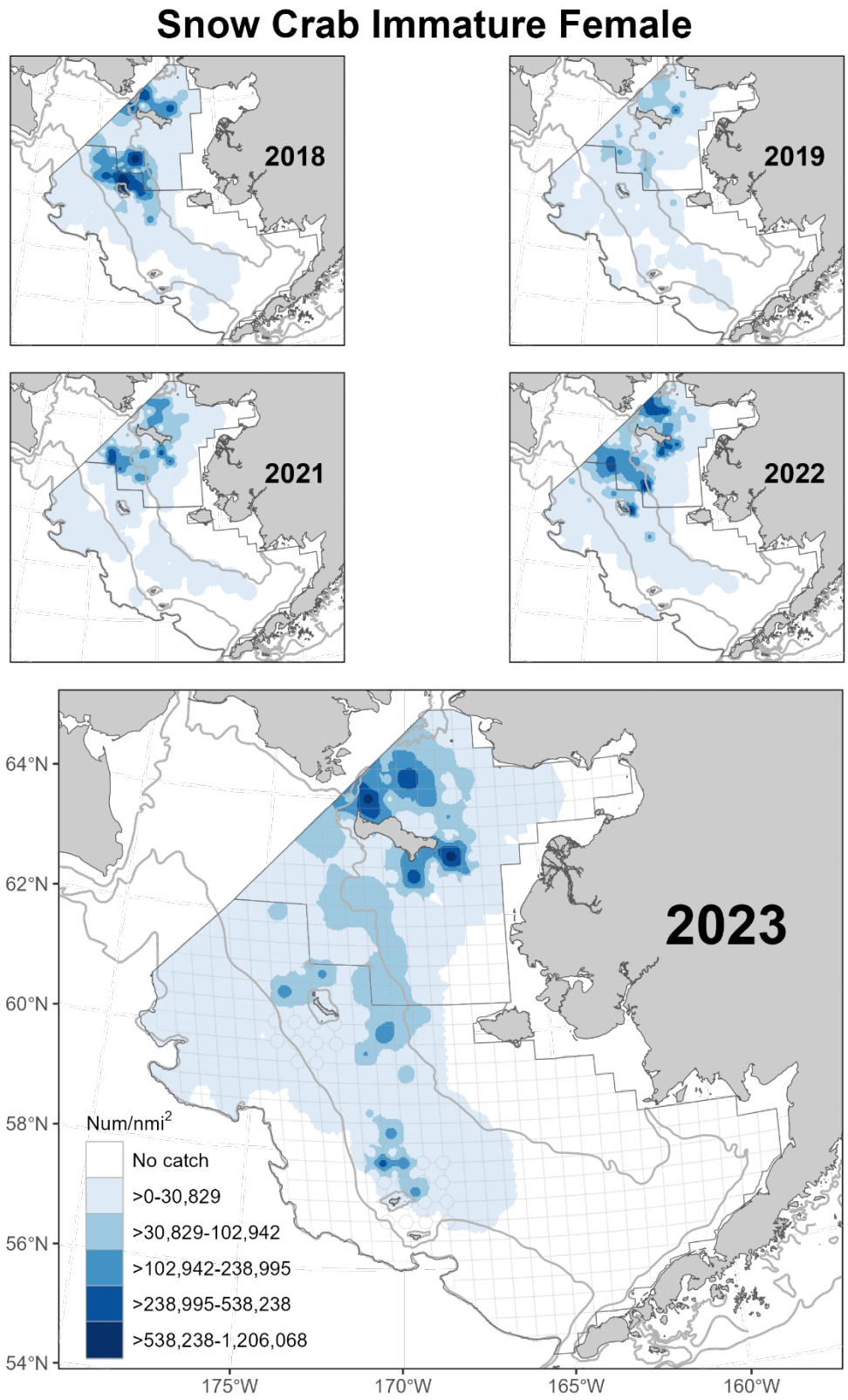

Figure 110. -- Estimated total density of immature female snow crab (*Chionoecetes opilio*) for the past five survey years.

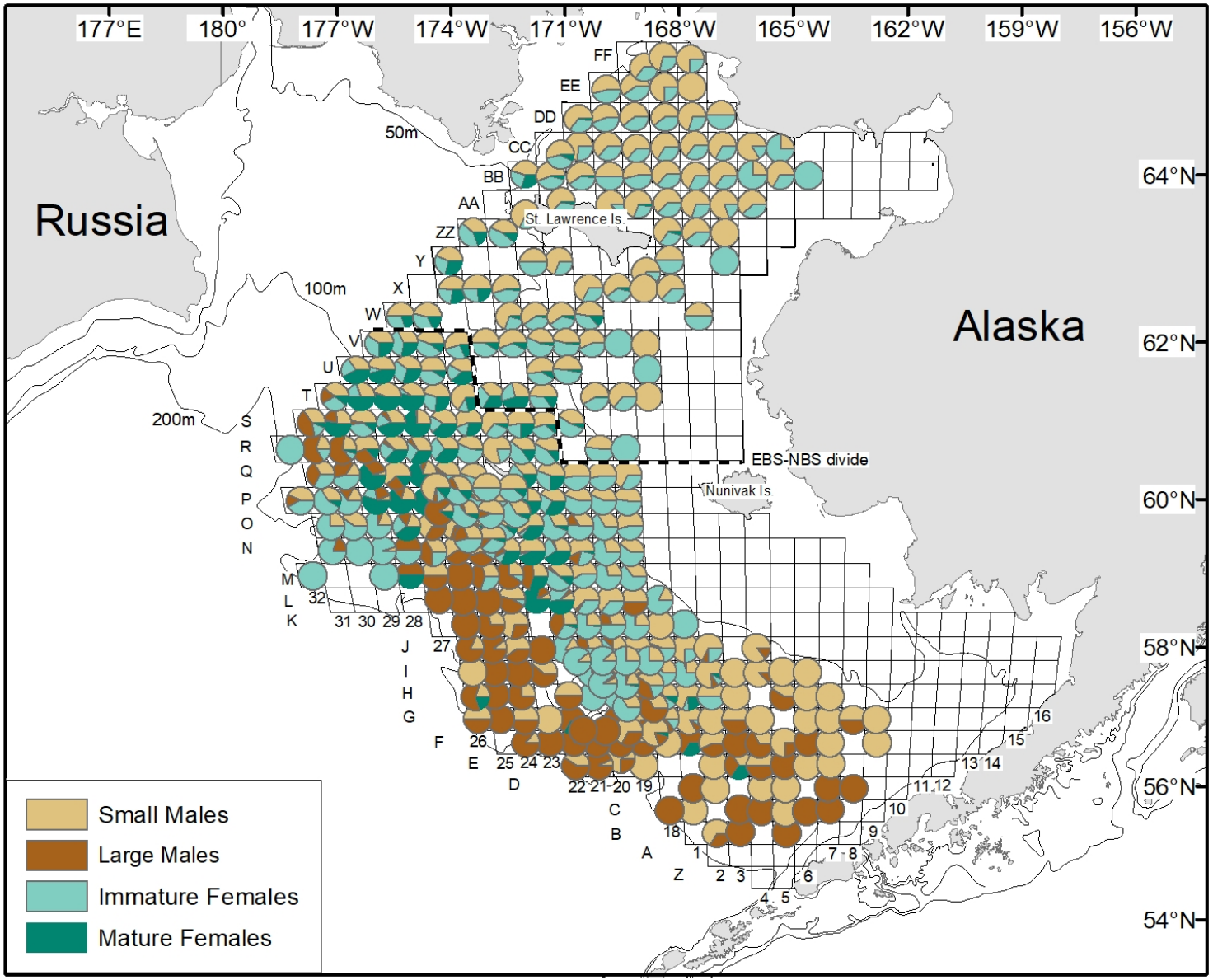

Figure 111. -- Proportion of male and female snow crab (*Chionoecetes opilio*) maturity/size classes caught at each station sampled in 2023. Males are considered large with carapace widths ≥ 95 mm in the EBS and ≥ 68 mm in the NBS.

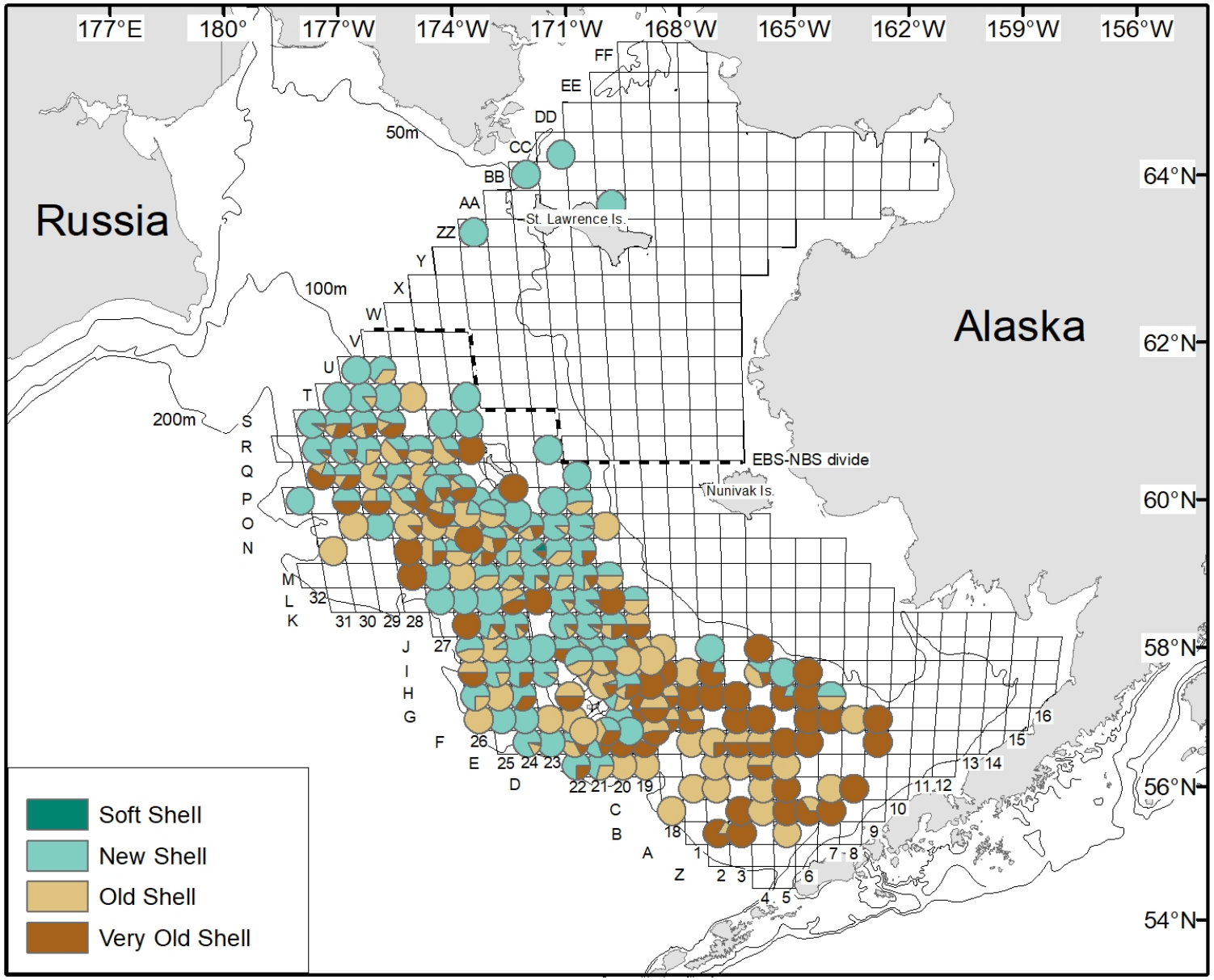

Figure 112. -- Proportion of legal-sized (carapace width ≥ 78) male snow crab (*Chionoecetes opilio*) shell condition classes caught at each station sampled in 2023.

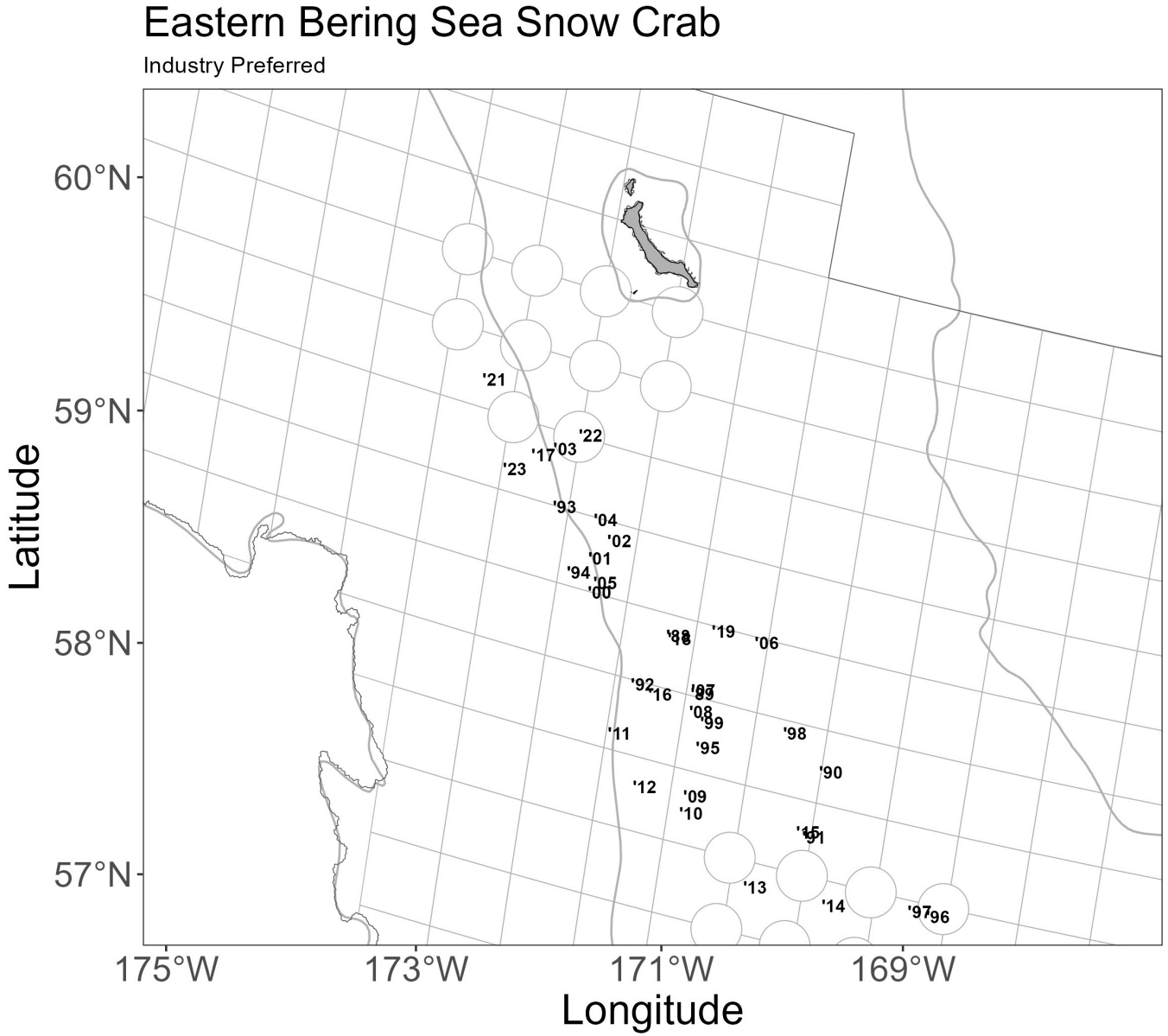

Figure 113. -- Centers of stock abundance of industry preferred size male snow crab (*Chionoecetes opilio*) from 1988 to 2023 in the eastern Bering Sea.

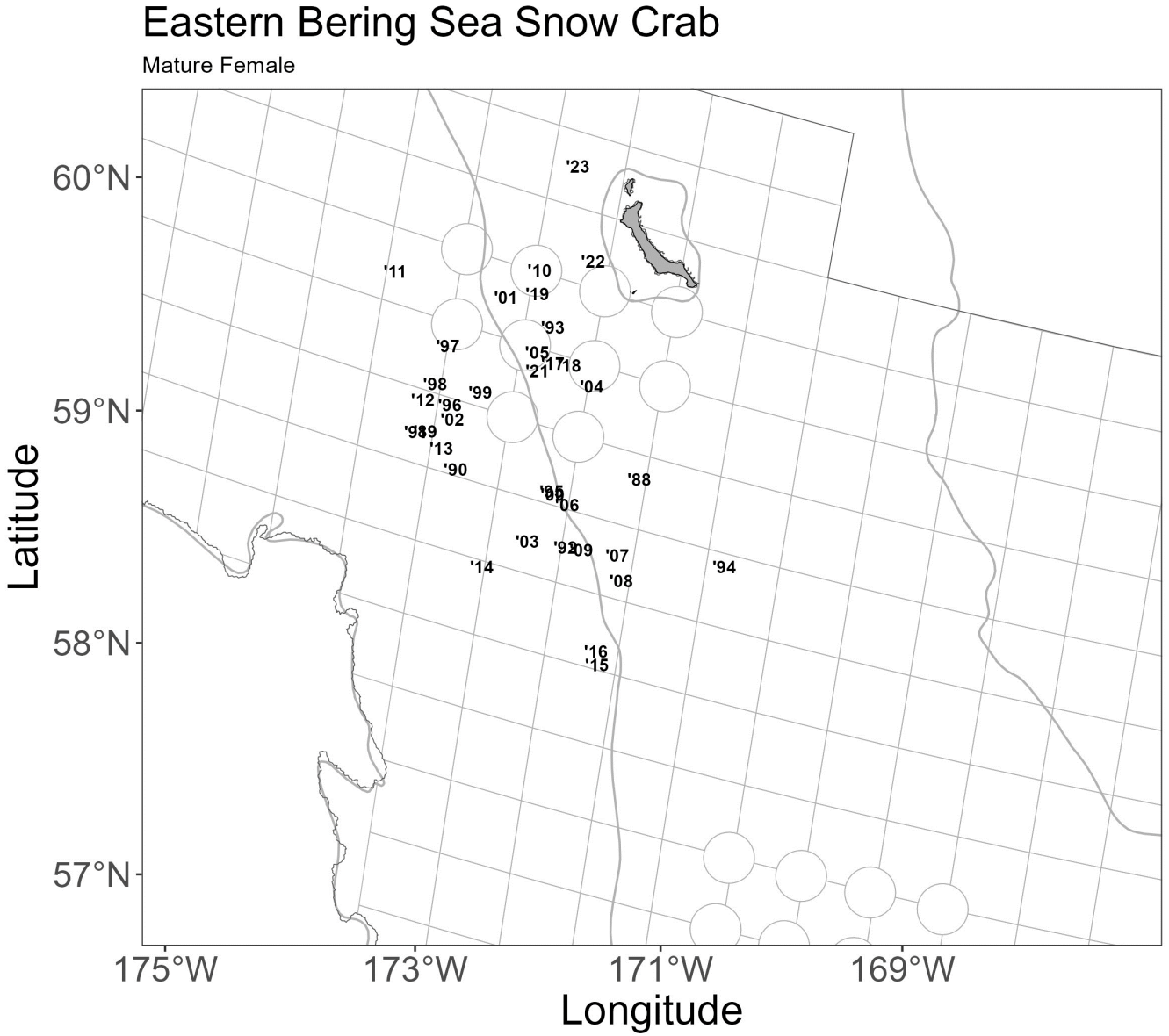

Figure 114. -- Centers of stock abundance of mature female snow crab (*Chionoecetes opilio*) from 1988 to 2023 in the eastern Bering Sea.

Chionoecetes spp. Hybrid
Figures

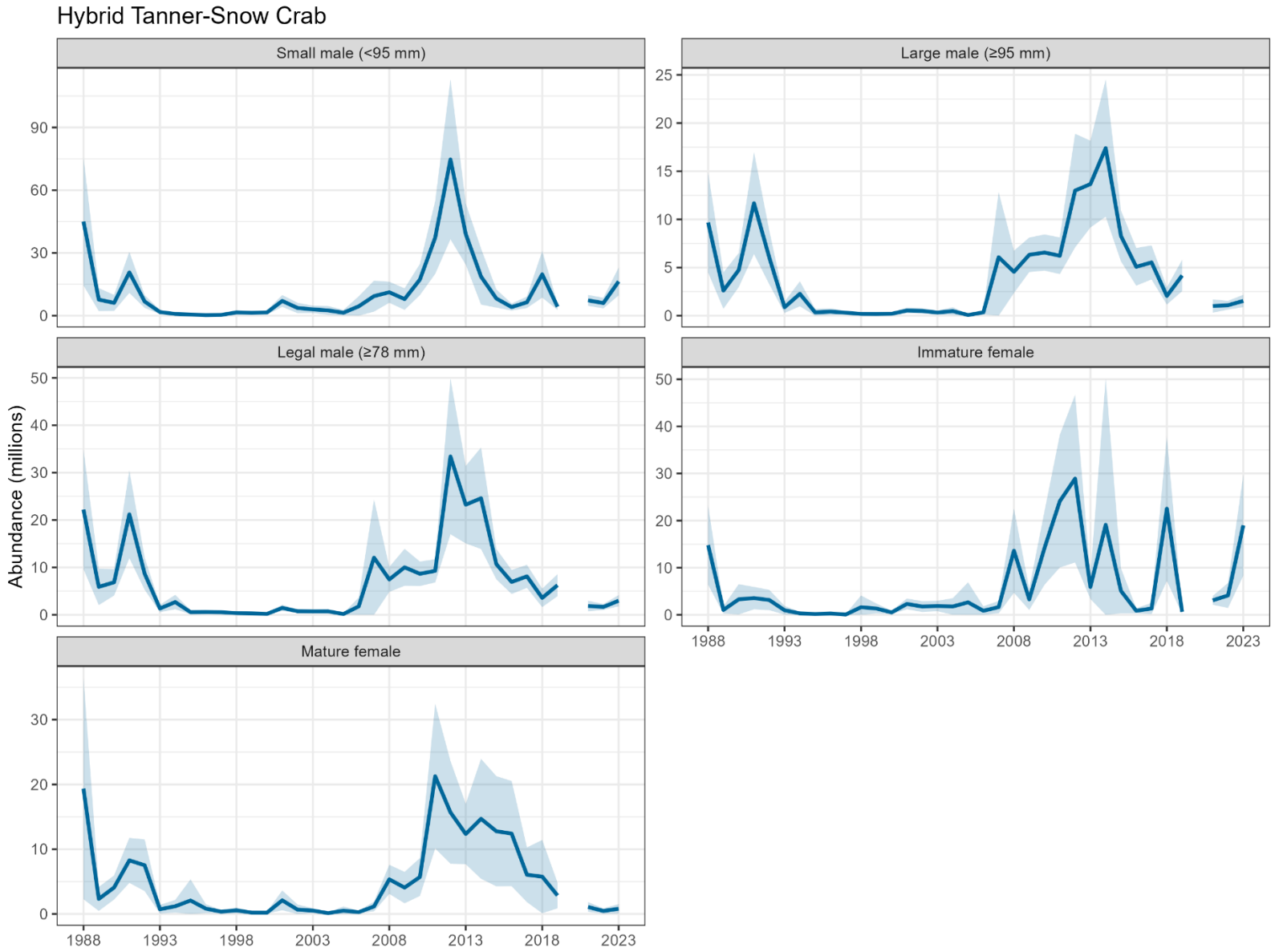

Figure 115. -- Historical abundance of hybrid *Chionoecetes* spp. in the eastern Bering Sea. Light blue area indicates ± 95% CI.

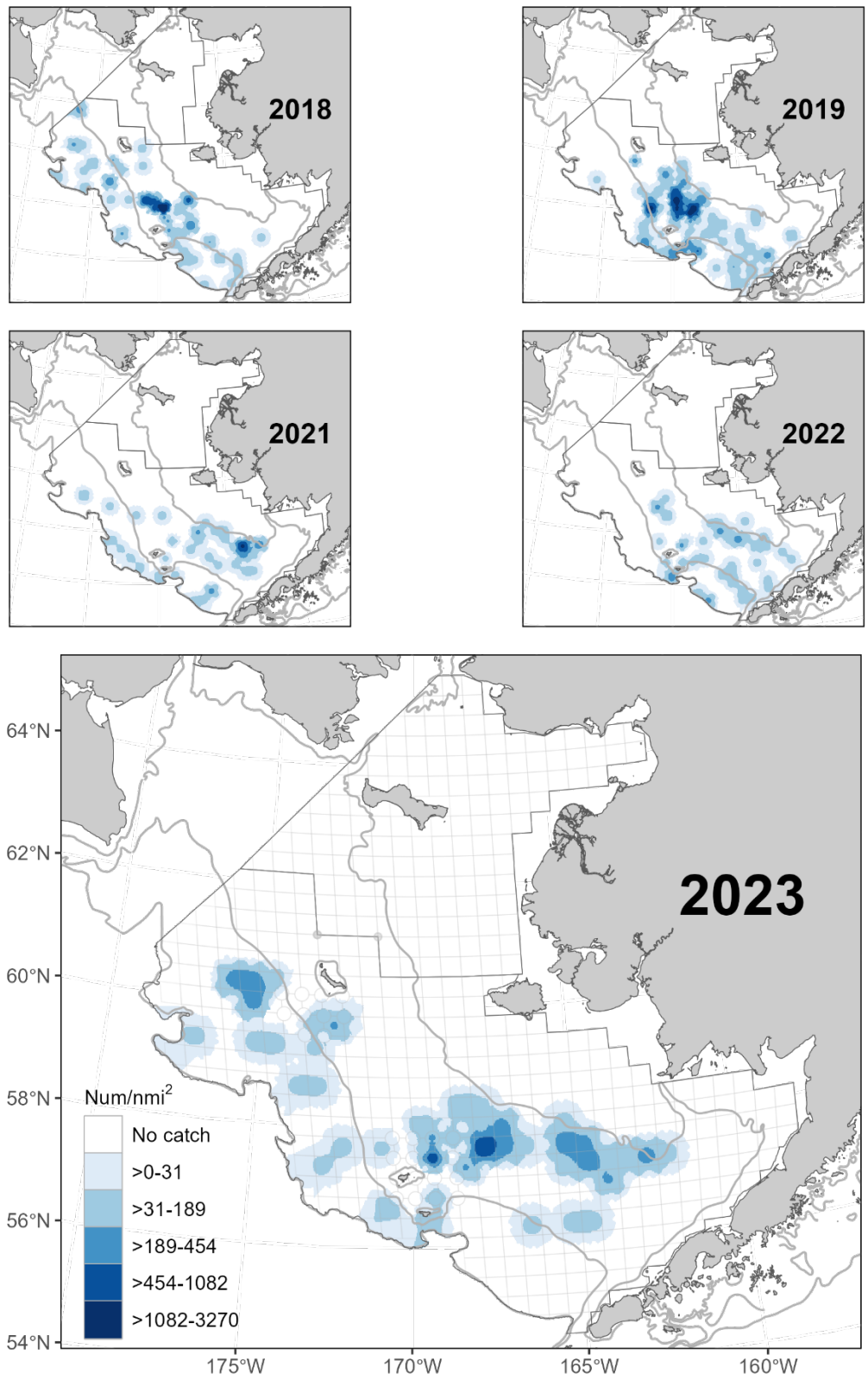

Figure 116. -- Estimated total density of legal-sized (≥ 102 mm carapace width) male hybrid *Chionoecetes* spp. for the past five survey years.

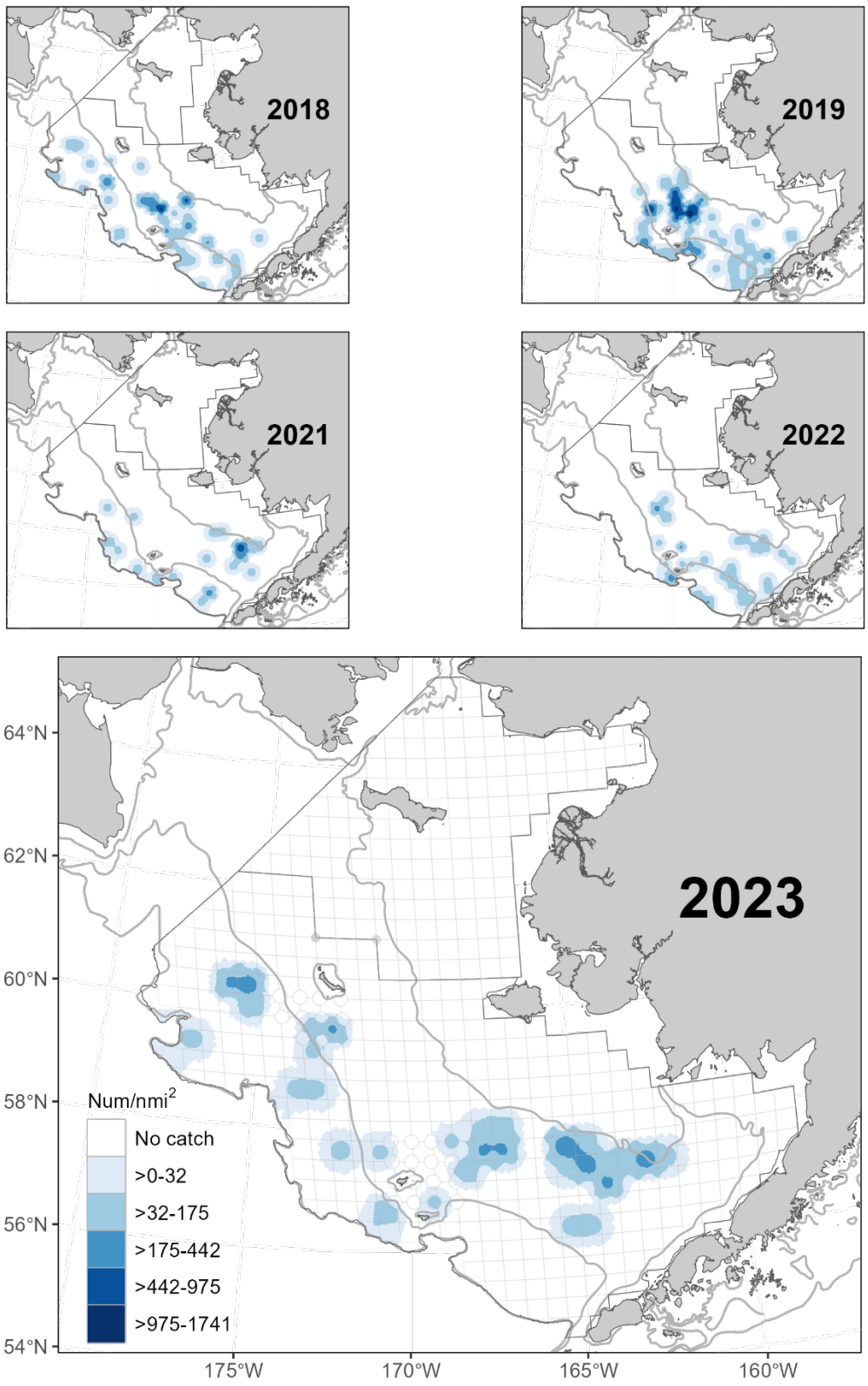

Figure 117. -- Estimated total density of large-sized (carapace width ≥ 95 mm in EBS; carapace width ≥ 68 mm in NBS) male hybrid *Chionoecetes* spp. for the past five survey years.

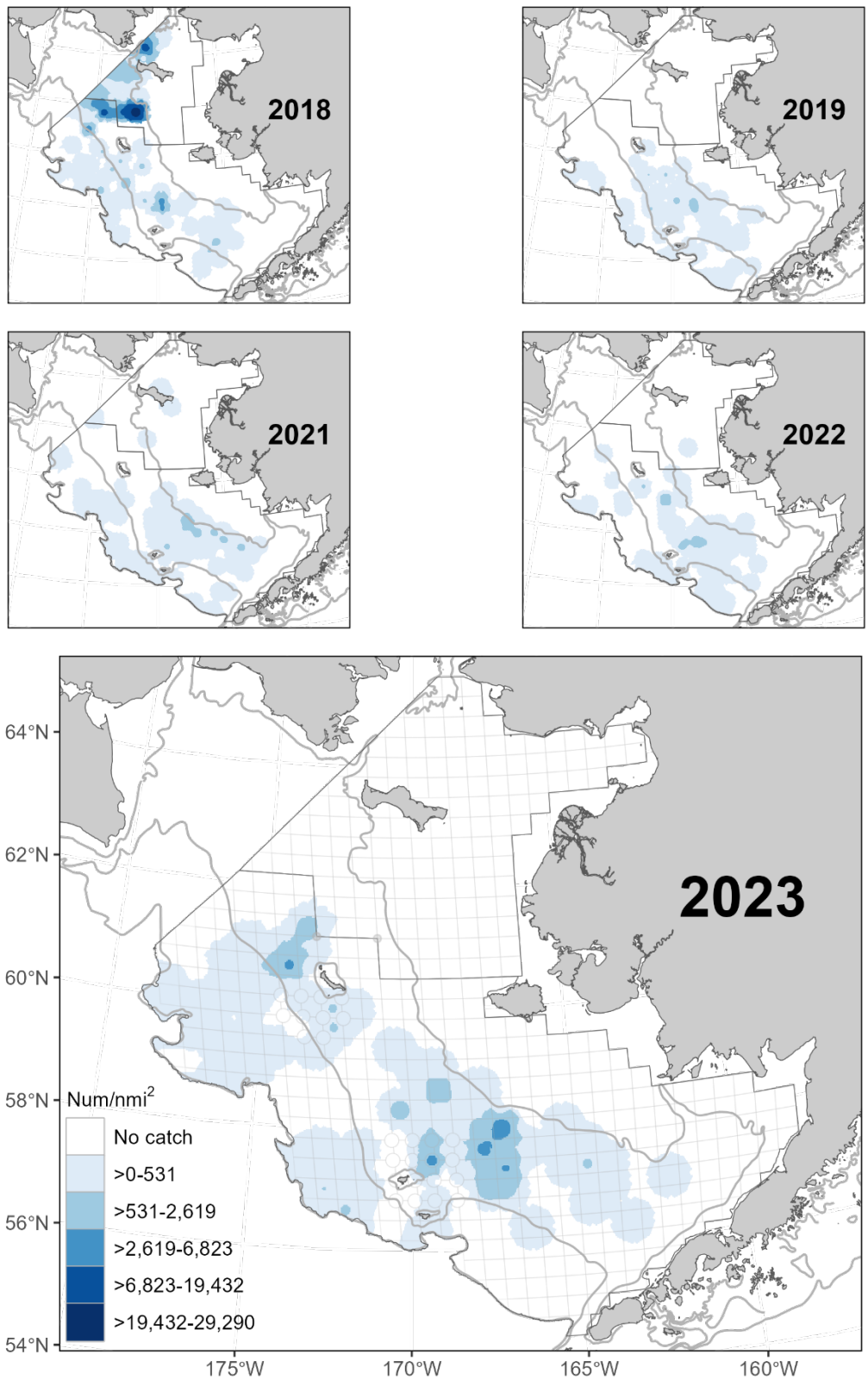

Figure 118. -- Estimated total density of small-sized (carapace width < 95 mm in EBS; carapace width < 68 mm in NBS) male hybrid *Chionoecetes* for the past five survey years.

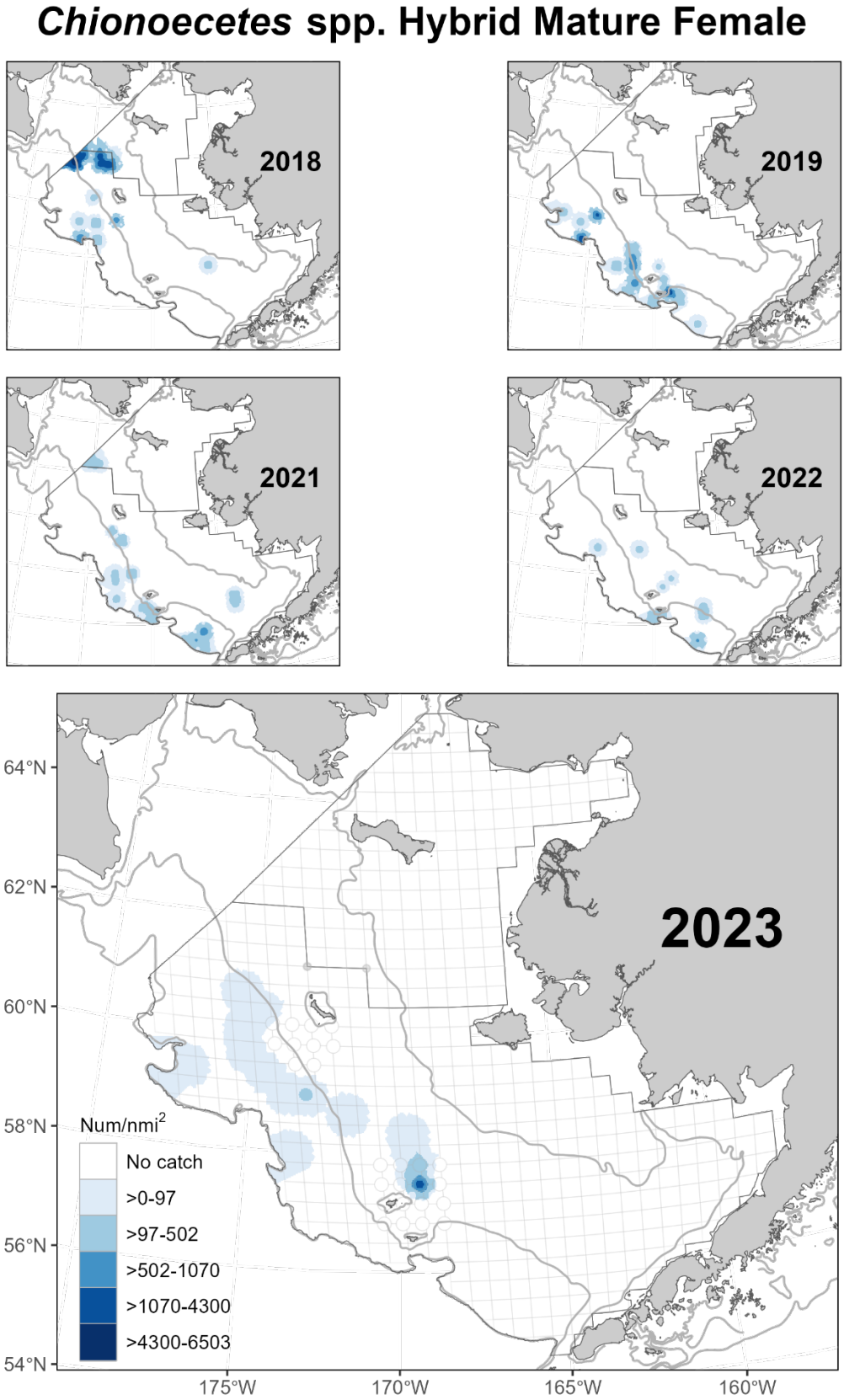

Figure 119. -- Estimated total density of mature female hybrid *Chionoecetes* spp. for the past five survey years.

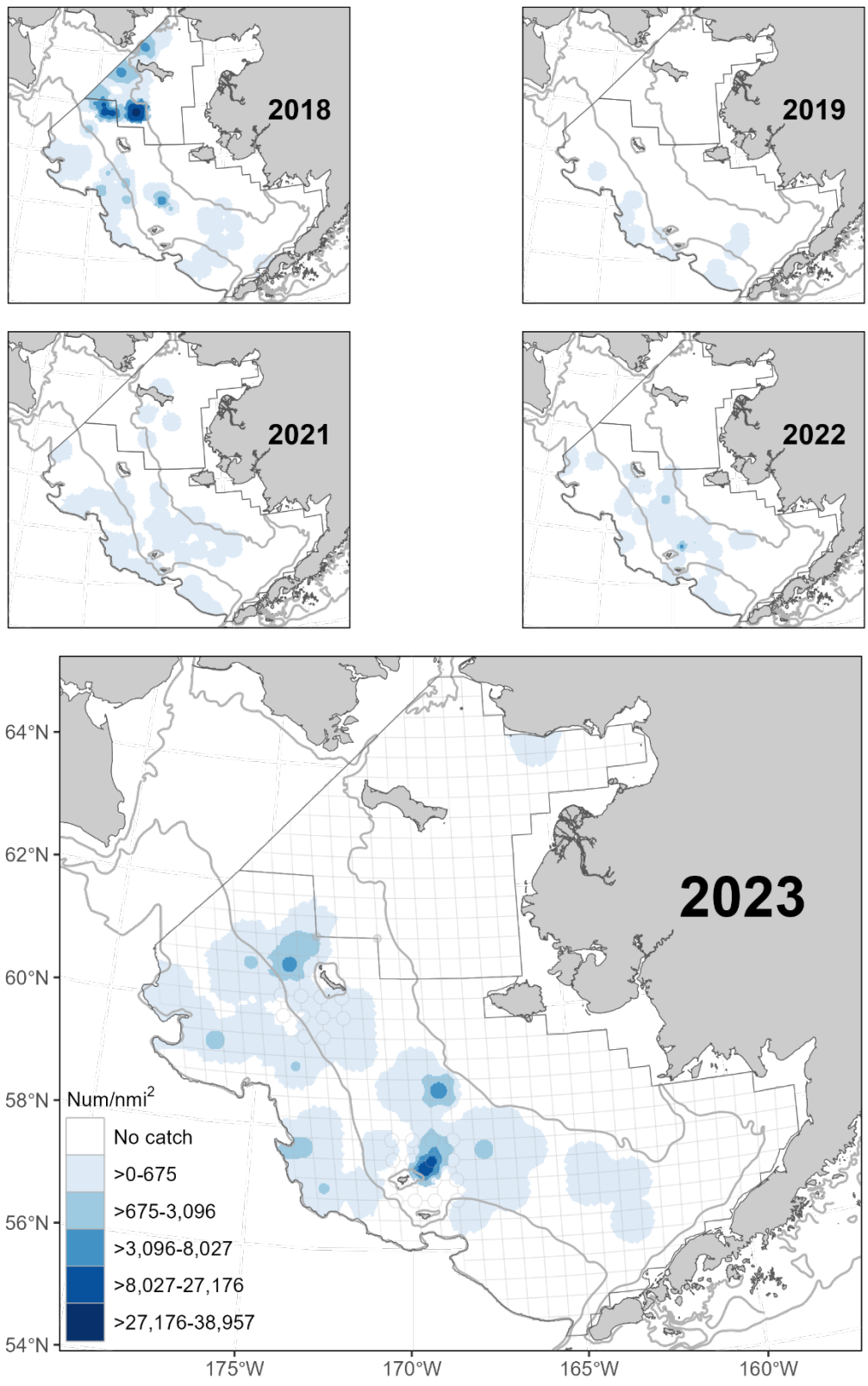

Figure 120. -- Estimated total density of immature female hybrid *Chionoecetes* spp. for the past five survey years.

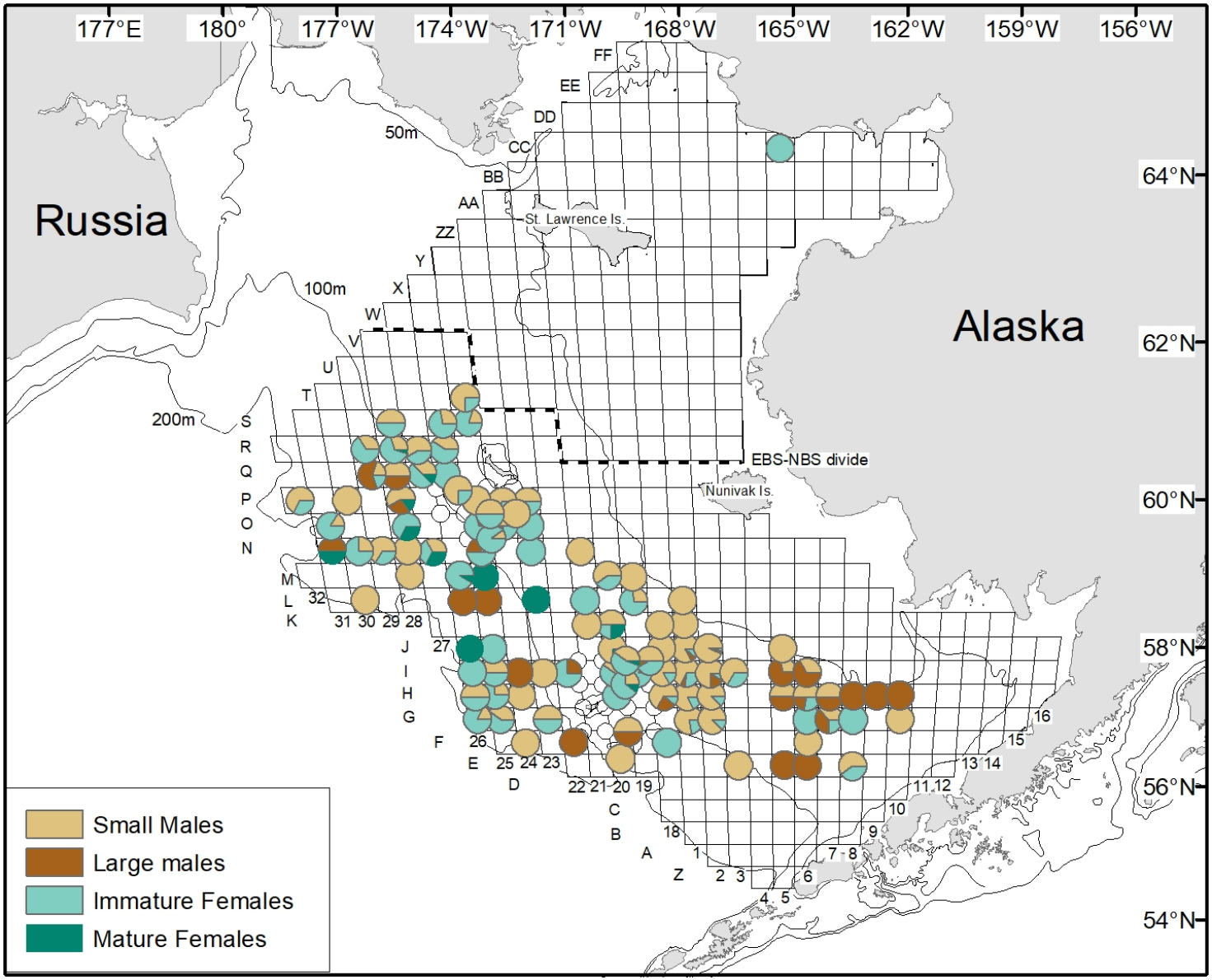

Figure 121. -- Proportion of male and female hybrid *Chionoecetes* spp. maturity/size classes caught at each station sampled in 2023. Males are considered large with carapace widths ≥ 95 mm in the EBS and ≥ 68 mm in the NBS.

Hair Crab
Figures

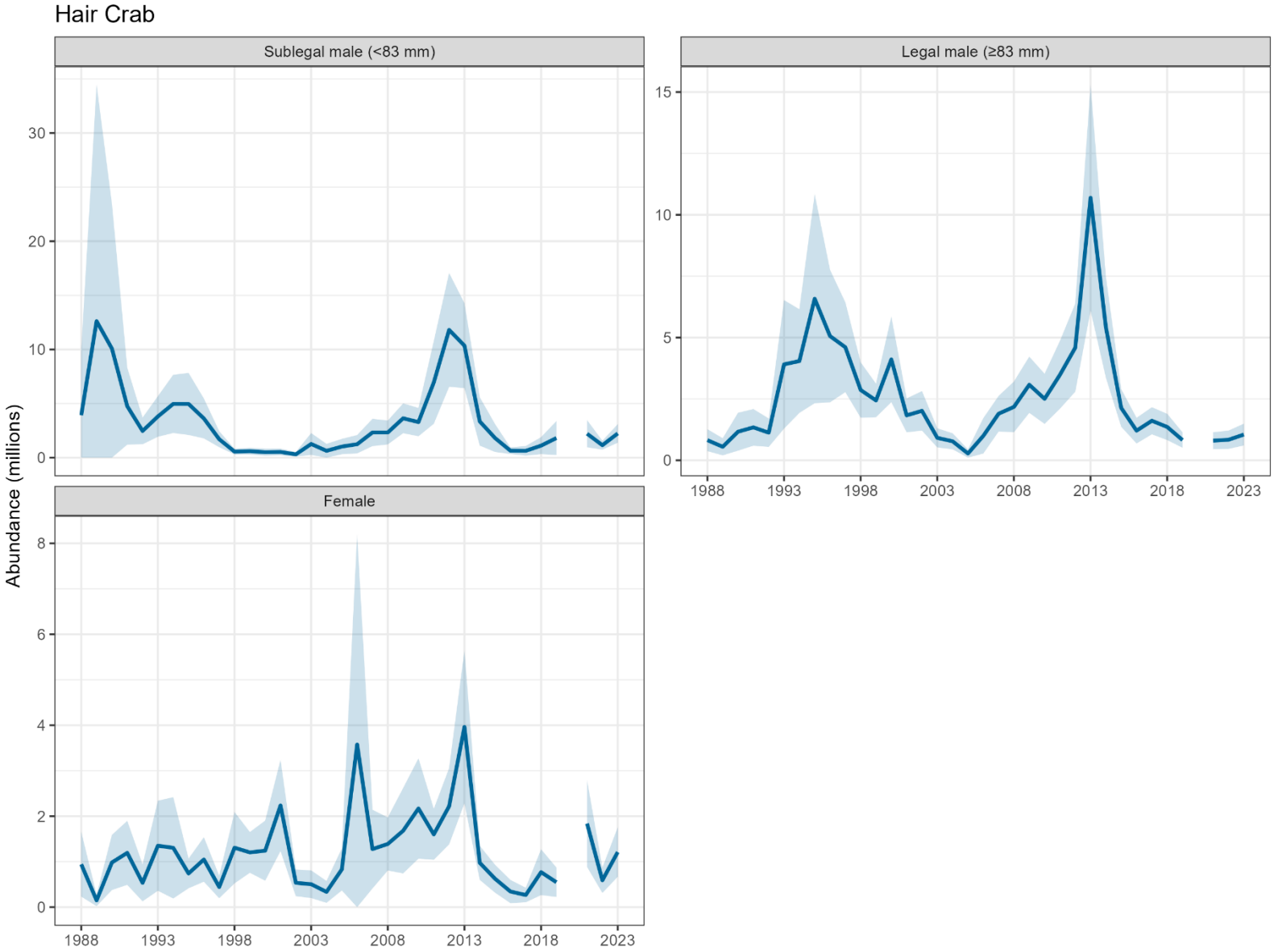

Figure 122. -- Historical abundance of hair crab (*Erimacrus isenbeckii*) in the eastern Bering Sea. Light blue area indicates ± 95% CI.

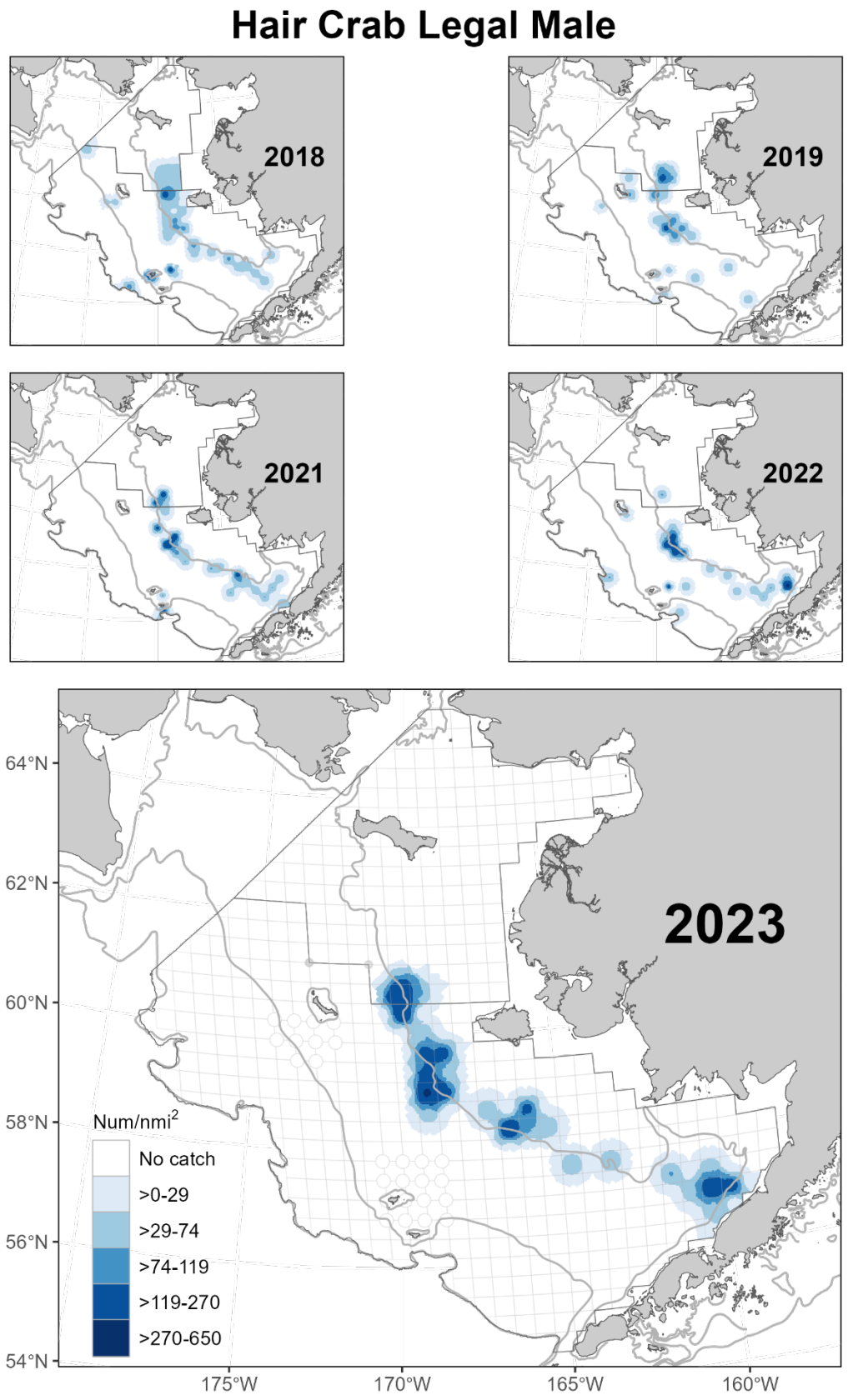

Figure 123. -- Estimated total density of legal-sized (≥ 83 mm carapace length) male hair crab (*Erimacrus isenbeckii*) for the past five survey years.

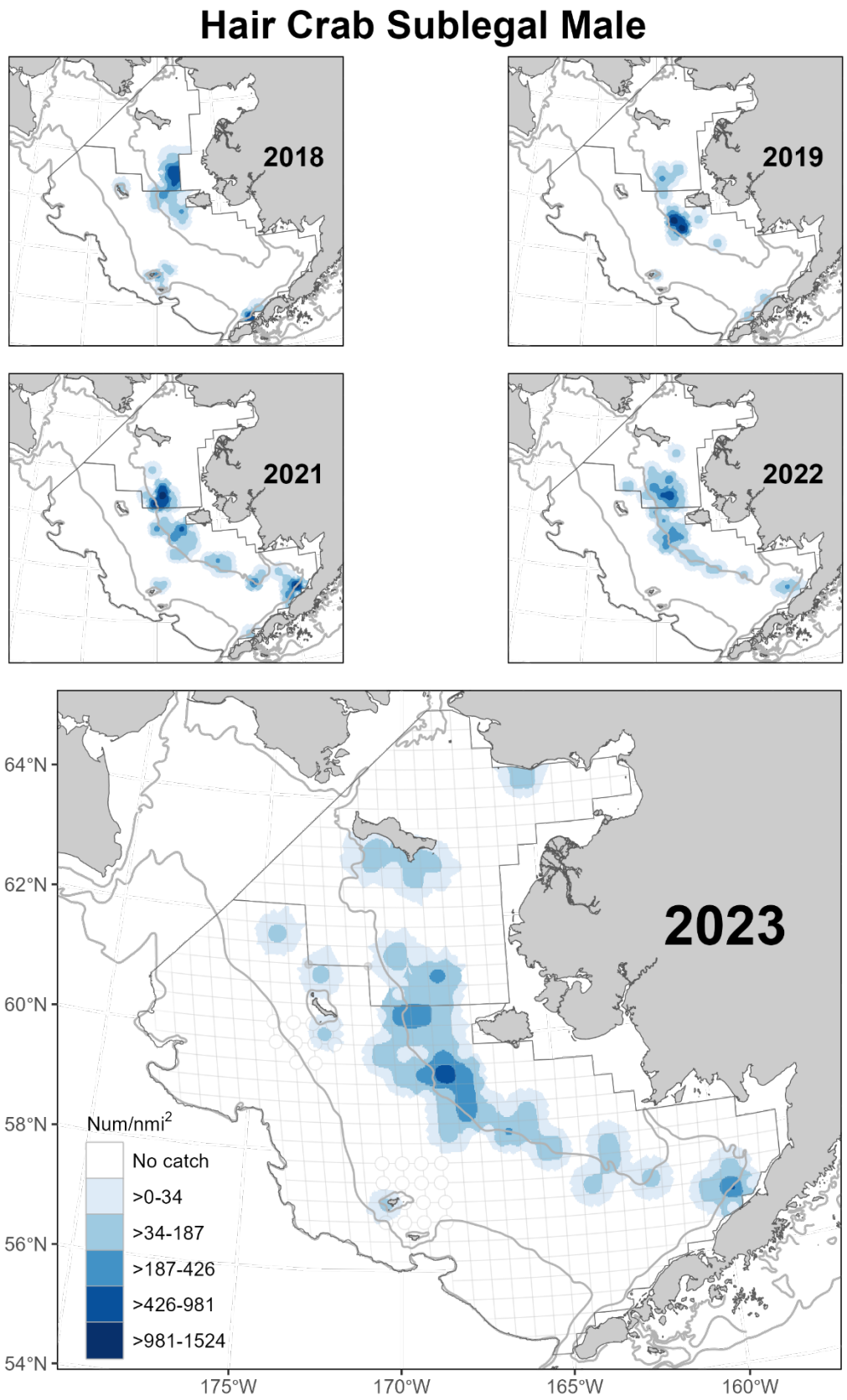

Figure 124. -- Estimated total density of sublegal-sized (< 83 mm carapace length) male hair crab (*Erimacrus isenbeckii*) for the past five survey years.

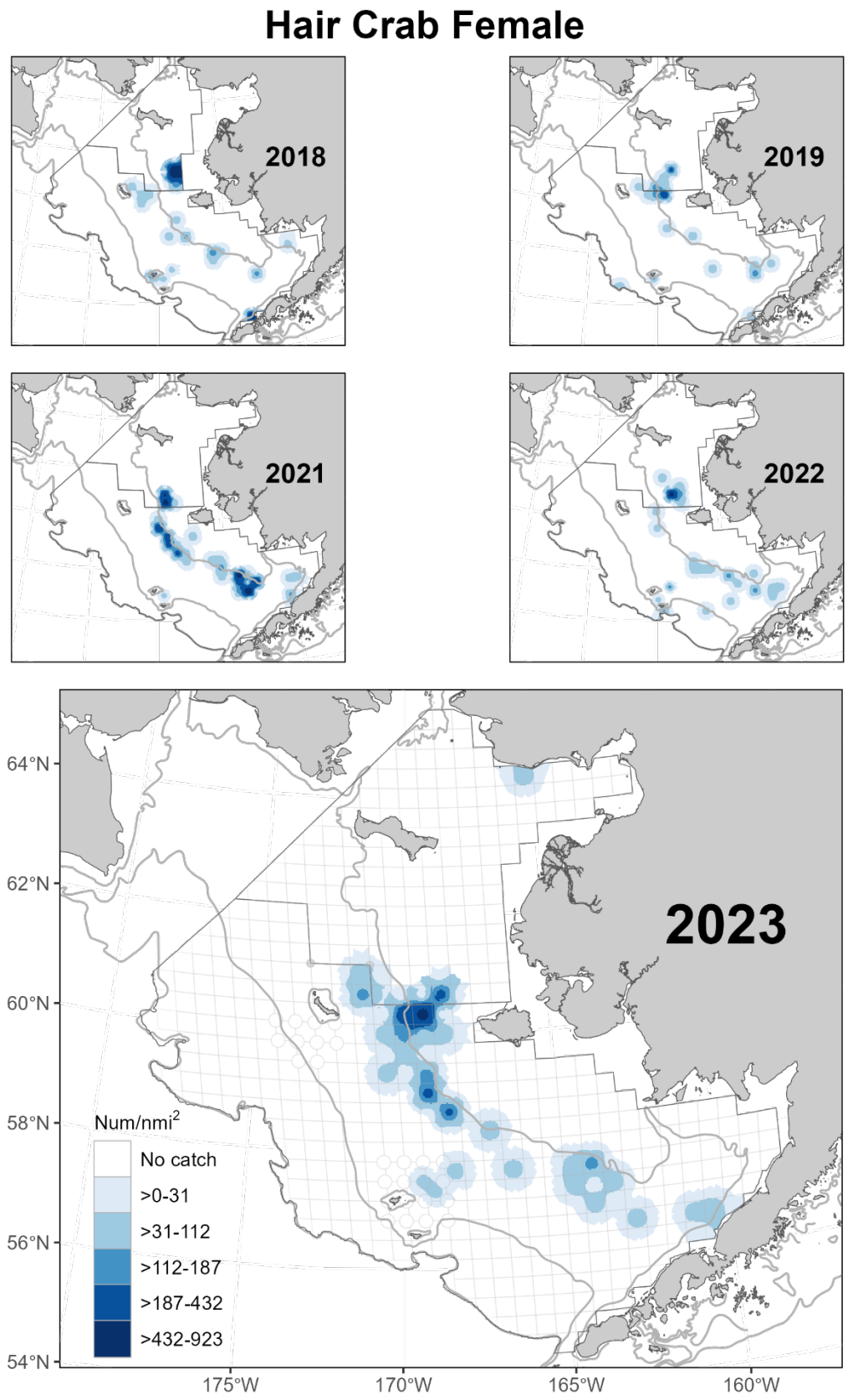

Figure 125. -- Estimated total density of female hair crab (*Erimacrus isenbeckii*) for the past five survey years.

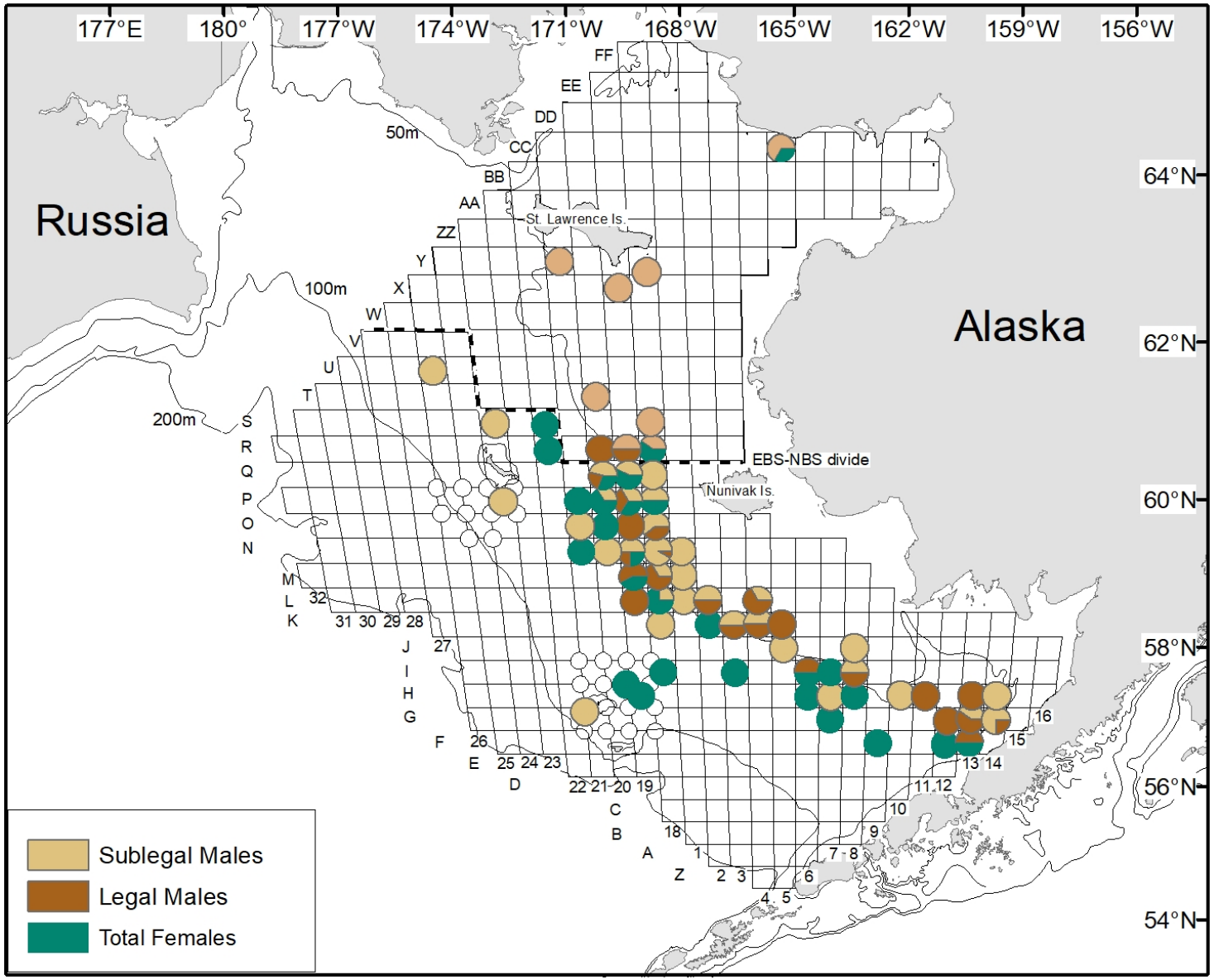

Figure 126. -- Proportion of male and female hair crab (*Erimacrus isenbeckii*) size/sex classes caught at each station sampled in 2023.

APPENDICES

Appendix A. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 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	6/21/2023	6/14/2023	6/11/2023	6/11/2023	6/11/2023	6/21/2023	6/21/2023	6/14/2023	6/12/2023	6/10/2023	6/10/2023
Duration (hour)	0.53	0.52	0.52	0.52	0.52	0.52	0.51	0.52	0.52	0.53	0.52
Distance Fished (km)	2.91	2.92	2.95	2.89	2.81	2.99	2.83	2.95	2.78	2.84	2.87
Mid-Latitude (°N)	55.01	55.03	55.01	55	55.02	55.34	55.33	55.36	55.34	55.33	55.35
Mid-Longitude (°W)	-166.96	-166.36	-165.78	-165.18	-164.6	-167.57	-166.98	-166.36	-165.78	-165.15	-164.54
Bottom Depth (m)	157	142	130	112	63	148	140	132	120	111	101
Bottom Temperature (°C)	4.3	4.3	4.4	4.8	5.2	4.4	4.3	4.3	4.4	4.4	4.7
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											
Small males	26074	2645	1038	1882	0	2883	2129	6264	14923	1185	814
Large males	703	1134	195	70	0	786	399	940	336	437	339
Legal	319	1134	65	0	0	524	200	752	134	312	68
Immature females	8125	2583	1492	3486	0	3473	1197	4761	17955	998	271
Mature females	2556	4094	0	70	0	6766	7300	877	0	624	136
Total weight (kg)	50.58	23.28	2.54	1.73	0	23.57	20.44	15.44	16.33	7.89	5.44
Snow Crab											
Small males	0	0	0	0	0	0	399	0	0	0	0
Large males	0	0	0	0	0	0	200	63	0	62	0
Legal	0	0	0	0	0	0	399	63	0	62	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	2.68	0.57	0	0.38	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	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 2023 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	6/9/2023	6/9/2023	6/21/2023	6/20/2023	6/14/2023	6/13/2023	6/10/2023	6/10/2023	6/9/2023	6/9/2023	6/2/2023
Duration (hour)	0.52	0.53	0.51	0.52	0.52	0.51	0.52	0.52	0.52	0.53	0.52
Distance Fished (km)	2.92	2.95	2.97	2.9	2.95	2.81	2.89	2.94	2.95	2.94	2.8
Mid-Latitude (°N)	55.33	55.34	55.68	55.65	55.69	55.67	55.65	55.66	55.69	55.67	55.68
Mid-Longitude (°W)	-164.05	-163.42	-167.59	-166.98	-166.39	-165.8	-165.17	-164.62	-164.01	-163.4	-162.82
Bottom Depth (m)	79	54	135	135	127	118	109	96	96	82	53
Bottom Temperature (°C)	4.2	4.5	4.4	4.4	4.3	4.3	4.3	4.6	3.9	3.7	4.6
Red King Crab											
Immature males	0	72	0	0	0	0	0	0	0	0	76
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	144	0	0	0	0	0	0	0	0	76
Total weight (kg)	0	6.07	0	0	0	0	0	0	0	0	2.4
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											
Small males	70	360	992	259	5621	7633	2524	1062	409	965	152
Large males	70	72	62	388	2016	913	531	398	613	1484	76
Legal	70	72	0	194	1466	652	332	133	409	1113	76
Immature females	0	72	620	194	3910	10892	2325	597	273	74	0
Mature females	0	0	124	582	1894	0	664	0	68	74	0
Total weight (kg)	0.56	1.69	2.21	5.51	32.38	16.9	9.52	6.1	7.51	16.62	1.03
Snow Crab											
Small males	0	0	62	0	0	0	66	0	0	0	0
Large males	0	0	0	0	61	65	0	199	68	0	0
Legal	0	0	0	0	61	65	66	199	68	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	0.11	0	0.59	0.55	0.36	1.42	0.36	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	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 2023 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	6/22/2023	6/20/2023	6/20/2023	6/14/2023	6/13/2023	6/13/2023	6/9/2023	6/9/2023	6/9/2023	6/2/2023	6/2/2023
Duration (hour)	0.52	0.19	0.53	0.52	0.53	0.54	0.52	0.52	0.53	0.52	0.52
Distance Fished (km)	2.88	1.07	2.91	2.9	2.9	2.97	2.98	2.85	2.94	2.76	2.83
Mid-Latitude (°N)	55.68	56.01	55.99	56.01	56.01	56.01	55.99	56.01	56	56.01	56.01
Mid-Longitude (°W)	-168.21	-167.61	-167.01	-166.41	-165.79	-165.18	-164.58	-164.05	-163.39	-162.79	-162.27
Bottom Depth (m)	136	133	134	125	107	96	93	90	88	78	72
Bottom Temperature (°C)	4.4	4.5	4.5	4.3	4.3	4.2	3.8	3.6	3.3	3.5	4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	1365
Mature males	0	0	0	0	0	0	0	0	0	0	287
Legal	0	0	0	0	0	0	0	0	0	0	287
Immature females	0	0	0	0	0	0	0	0	0	0	503
Mature females	0	0	0	0	0	0	0	0	0	0	215
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	28.08
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											
Small males	38608	10033	4041	2395	5948	462	5202	1282	5354	0	72
Large males	207	170	373	614	330	132	67	142	651	0	0
Legal	138	0	249	368	198	66	67	0	362	0	0
Immature females	38257	15475	1057	2026	6807	198	7136	1994	3183	0	0
Mature females	1929	170	187	368	2115	66	869	214	868	0	0
Total weight (kg)	33.22	3.8	10.58	11.15	16.6	2.7	9.96	3.09	18.48	0	0.38
Snow Crab											
Small males	0	0	62	0	66	132	0	0	0	0	0
Large males	69	340	0	0	0	0	0	71	72	0	0
Legal	69	340	62	0	66	66	0	71	72	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)	0.69	1.08	0.22	0	0.38	0.42	0	0.33	0.4	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	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
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	6/22/2023	6/20/2023	6/20/2023	6/15/2023	6/15/2023	6/13/2023	6/8/2023	6/8/2023	6/8/2023	6/3/2023	6/2/2023
Duration (hour)	0.53	0.52	0.52	0.52	0.53	0.52	0.51	0.5	0.44	0.53	0.53
Distance Fished (km)	2.99	2.93	2.89	2.89	2.97	2.9	2.94	2.83	2.43	2.93	2.93
Mid-Latitude (°N)	56.01	56.33	56.35	56.34	56.34	56.34	56.33	56.35	56.33	56.35	56.33

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 eastern Bering Sea bottom trawl survey stations.

Mid-Longitude (°W)	-168.22	-167.65	-167.06	-166.4	-165.82	-165.2	-164.61	-163.99	-163.42	-162.8	-162.2
Bottom Depth (m)	151	129	111	104	91	87	86	86	84	78	74
Bottom Temperature (°C)	4.3	4.6	4.5	4	3.1	3.5	3.5	3	3.1	3.3	3.5
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	206
Mature males	0	0	0	0	0	0	0	0	0	68	206
Legal	0	0	0	0	0	0	0	0	0	68	137
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	343
Total weight (kg)	0	0	0	0	0	0	0	0	0	2.66	15.82
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											
Small males	27649	3319	6471	1309	1935	3729	3528	1191	3787	341	275
Large males	328	313	719	981	624	276	277	420	616	0	0
Legal	197	313	588	589	499	276	208	280	528	0	0
Immature females	33356	4322	1699	1243	1498	3176	2975	630	2466	136	137
Mature females	131	63	784	2617	125	967	1868	210	793	0	0
Total weight (kg)	22.68	5.71	19.95	18.71	9.02	9.38	11.91	8.15	10.46	1.55	0.78
Snow Crab											
Small males	0	0	131	65	62	0	69	70	0	0	0
Large males	0	0	0	65	62	69	0	0	0	0	0
Legal	0	0	65	65	125	69	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	65	0	0	0	0	0	0	0
Total weight (kg)	0	0	0.38	0.92	0.92	0.53	0.14	0.17	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	65	0	0	0	0	264	0	0
Males ≥ 78 mm	0	0	0	0	0	69	69	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	176	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0.16	0	0.77	0.57	0	0.2	0	0

Appendix A. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 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	6/1/2023	5/28/2023	6/22/2023	6/22/2023	6/30/2023	6/30/2023	6/30/2023	6/21/2023	6/19/2023	6/19/2023	6/15/2023
Duration (hour)	0.53	0.52	0.52	0.52	0.23	0.54	0.52	0.51	0.53	0.52	0.52
Distance Fished (km)	2.95	2.92	2.96	2.97	1.33	3.04	2.85	2.84	2.9	2.98	2.94
Mid-Latitude (°N)	56.32	56.34	56.35	56.33	56.44	56.34	56.33	56.67	56.66	56.66	56.66
Mid-Longitude (°W)	-161.68	-161.02	-168.25	-168.89	-169.5	-170.08	-170.68	-167.69	-167.07	-166.44	-165.86
Bottom Depth (m)	63	54	150	129	102	109	121	102	95	84	78
Bottom Temperature (°C)	3.7	4	4.2	4.3	4.2	4.2	4.2	3.8	3.4	3.2	3
Red King Crab											
Immature males	143	512	0	0	0	0	0	0	0	0	0
Mature males	285	1170	0	0	0	0	0	0	0	0	0
Legal	214	1097	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	784	10311	0	0	0	0	0	0	0	0	0
Total weight (kg)	27.88	249.59	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											
Small males	143	146	9414	5176	598	3126	14200	6727	6702	2869	5168
Large males	0	0	409	1362	149	1250	870	272	547	410	596
Legal	0	0	273	1158	0	750	334	272	342	205	398
Immature females	0	585	13029	3678	299	938	15996	8018	7180	3279	4704
Mature females	0	0	205	8933	149	3689	2609	408	889	3553	1789
Total weight (kg)	0.8	1.43	5.53	29.86	0.99	29.69	23	5.68	11.38	14.38	17.18
Snow Crab											
Small males	0	0	0	68	448	125	134	0	274	0	66
Large males	0	0	0	0	149	1626	201	136	205	273	133
Legal	0	0	0	68	149	1688	268	136	274	273	133
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	68	0	0	0
Total weight (kg)	0	0	0	0.2	0.94	15.03	2.39	1.17	2.25	2.1	1.05
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	149	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	0.17	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/14/2023	6/8/2023	6/8/2023	6/8/2023	6/3/2023	6/1/2023	5/31/2023	5/31/2023	5/29/2023	5/29/2023	6/21/2023
Duration (hour)	0.54	0.52	0.52	0.52	0.51	0.52	0.54	0.52	0.53	0.51	0.52
Distance Fished (km)	2.95	2.99	2.83	2.86	2.84	2.9	2.98	2.97	2.9	2.79	2.88
Mid-Latitude (°N)	56.67	56.67	56.66	56.67	56.67	56.66	56.67	56.65	56.67	56.68	56.67
Mid-Longitude (°W)	-165.2	-164.58	-164.02	-163.4	-162.78	-162.17	-161.59	-161.02	-160.37	-159.76	-168.28
Bottom Depth (m)	76	75	75	75	72	73	89	66	59	37	107
Bottom Temperature (°C)	3.2	2.9	3	3.3	3	3.3	3.1	3.6	3.7	4.6	4.2
Red King Crab											
Immature males	0	0	0	0	0	142	521	205	69	0	0
Mature males	0	0	0	148	215	0	651	411	69	0	0
Legal	0	0	0	74	143	0	456	137	0	0	0
Immature females	0	0	0	0	0	0	65	0	0	79	0
Mature females	0	0	0	74	0	284	1693	274	481	158	0
Total weight (kg)	0	0	0	6.79	9.41	5.26	57.6	21.97	12.1	3.92	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											
Small males	2154	5835	3500	1109	2148	1421	716	616	69	0	15077
Large males	431	594	286	518	501	355	260	205	0	79	67
Legal	144	264	143	518	215	142	130	68	0	0	67
Immature females	1795	7889	1428	1183	1934	781	391	137	0	0	16972
Mature females	503	1585	286	1257	286	0	0	137	0	0	67
Total weight (kg)	5.76	16.16	7.44	9.34	8.67	4.88	3.52	4.73	0.25	0.33	5.06
Snow Crab											
Small males	215	0	71	0	72	0	0	0	0	0	67
Large males	72	198	0	0	0	0	0	0	0	0	0
Legal	287	198	0	0	72	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	1.01	1.55	0.21	0	0.36	0	0	0	0	0	0.12
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	344	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	134
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.13	0	0	0	0	0	0	0	0	0.04

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/23/2023	6/30/2023	7/1/2023	7/1/2023	7/9/2023	7/8/2023	7/8/2023	6/20/2023	6/20/2023	6/19/2023	6/15/2023
Duration (hour)	0.51	0.55	0.53	0.54	0.5	0.66	0.52	0.53	0.53	0.52	0.53
Distance Fished (km)	2.82	3.08	2.92	2.99	2.79	3.85	2.88	2.96	2.93	2.98	3
Mid-Latitude (°N)	56.68	56.66	56.67	56.67	56.67	56.66	56.67	56.99	57	57	56.99
Mid-Longitude (°W)	-168.91	-169.51	-170.13	-170.73	-171.36	-171.99	-172.57	-167.7	-167.1	-166.47	-165.86
Bottom Depth (m)	99	79	97	114	119	127	137	77	73	74	72
Bottom Temperature (°C)	4.1	4	4.1	4.1	4.1	4.1	4.1	3.4	3.3	3	3
Red King Crab											
Immature males	0	0	0	0	0	0	66	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	0.01	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											
Small males	19947	64	2812	7332	69	34422	2302	16807	7516	1056	1182
Large males	741	64	262	893	0	108	0	814	1074	726	131
Legal	606	64	262	893	0	54	0	543	644	726	66
Immature females	15828	0	1243	8862	206	47719	3552	15273	4581	594	197
Mature females	337	0	2485	893	0	108	0	1153	286	198	263
Total weight (kg)	11.21	0.66	13.72	16.14	0.07	31.51	0.57	22.47	12.18	8.58	4.62
Snow Crab											
Small males	472	0	458	383	0	215	0	678	72	66	263
Large males	472	64	916	765	69	1346	0	68	0	66	0
Legal	808	64	1308	1084	69	1508	0	203	0	132	263
Immature females	0	0	0	0	0	0	0	68	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	4.9	0.45	9.71	7.82	0.52	14.78	0	2.29	0.16	0.8	1.19
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	636	0	1153	1002	0	0
Males ≥ 78 mm	0	0	0	128	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	339	143	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	1.26	0	0.24	0	0.72	0.5	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/14/2023	6/7/2023	6/7/2023	6/8/2023	6/4/2023	6/1/2023	6/1/2023	5/31/2023	5/31/2023	5/29/2023	5/29/2023
Duration (hour)	0.52	0.51	0.52	0.49	0.52	0.52	0.51	0.52	0.53	0.51	0.52
Distance Fished (km)	2.8	2.77	2.85	2.7	2.9	2.94	2.76	2.86	2.98	2.81	2.86
Mid-Latitude (°N)	57	56.99	57	57	57	57	57	56.98	57.01	56.99	57.02
Mid-Longitude (°W)	-165.22	-164.61	-164.03	-163.4	-162.79	-162.17	-161.56	-160.95	-160.34	-159.68	-159.11
Bottom Depth (m)	70	69	67	66	60	60	68	68	65	54	36
Bottom Temperature (°C)	2.6	2.8	2.8	2.7	2	3	3.3	3.1	3.3	3.7	4.4
Red King Crab											
Immature males	0	0	0	0	142	726	151	141	202	443	89
Mature males	0	148	0	154	783	726	303	634	202	369	0
Legal	0	148	0	154	783	581	151	493	134	295	0
Immature females	0	0	0	0	0	218	76	211	0	0	178
Mature females	0	0	0	0	783	1452	378	564	1478	1034	0
Total weight (kg)	0	6.44	0	5.82	49.39	60.84	17.36	34.72	38.15	38.75	0.07
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											
Small males	777	369	728	231	356	1089	151	211	67	74	0
Large males	141	296	728	999	0	73	151	70	0	74	0
Legal	71	222	583	846	0	73	76	70	0	74	0
Immature females	212	74	218	0	0	436	76	0	0	0	0
Mature females	0	1995	1602	77	71	0	0	70	0	0	0
Total weight (kg)	3.7	8.73	13.52	10.16	2.01	3.02	1.86	1.38	0.44	0.88	0
Snow Crab											
Small males	0	148	73	77	71	0	0	0	0	0	0
Large males	0	0	0	77	0	0	0	0	0	0	0
Legal	0	148	73	154	71	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	0.63	0.3	0.92	0.23	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	218	0	0	73	0	0	0	0	0
Males ≥ 78 mm	0	0	218	0	0	0	0	0	0	0	0
Immature females	0	74	146	77	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	1.97	0.18	0	0.13	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/21/2023	6/24/2023	7/2/2023	7/2/2023	7/2/2023	7/9/2023	7/9/2023	7/8/2023	7/9/2023	6/23/2023	6/30/2023
Duration (hour)	0.52	0.53	0.53	0.51	0.52	0.49	0.51	0.5	0.51	0.52	0.53
Distance Fished (km)	2.83	2.95	2.95	2.82	2.92	2.74	2.78	2.73	2.81	2.83	2.98
Mid-Latitude (°N)	57.01	57	56.99	56.99	56.99	57	57	57	57.01	56.82	56.83
Mid-Longitude (°W)	-168.33	-168.96	-169.57	-170.17	-170.8	-171.41	-172.02	-172.66	-173.26	-168.61	-169.3
Bottom Depth (m)	81	80	61	70	96	110	118	122	142	98	80
Bottom Temperature (°C)	3.5	3.7	3.1	3.7	3.9	4	3.9	3.6	4	3.9	3.8
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	632	0	0	0	0	0	0	131
Legal	0	0	0	632	0	0	0	0	0	0	131
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	407	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	11.58	39.14	0	0	0	0	0	0	8.92
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	66
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											
Small males	8348	3006	407	1966	4436	8900	1350	19057	5355	5936	657
Large males	348	334	814	421	457	695	142	0	69	1092	394
Legal	209	267	746	351	196	556	0	0	69	887	329
Immature females	8172	2538	68	1053	5871	7092	1777	18275	7084	5459	329
Mature females	835	67	0	0	130	1043	0	1565	69	136	197
Total weight (kg)	8.46	5.28	8.21	8.18	7.56	17.71	1.41	13.6	3.56	16.38	5.87
Snow Crab											
Small males	278	735	0	0	0	70	71	0	69	1092	131
Large males	139	401	68	0	130	0	71	427	69	205	66
Legal	209	735	68	0	130	70	71	427	69	1023	66
Immature females	70	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	65	0	0	0	0	68	0
Total weight (kg)	1.71	5.54	0.87	0	1.25	0.32	0.85	3.22	0.61	5.75	0.76
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	70	0	546	69	0	66
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	66
Immature females	0	0	0	0	0	70	0	818	317	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0.19	0	0.75	0.13	0	1.16

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/1/2023	7/1/2023	6/20/2023	6/20/2023	6/19/2023	6/16/2023	6/14/2023	6/7/2023	6/7/2023	6/8/2023	6/4/2023
Duration (hour)	0.54	0.53	0.54	0.52	0.52	0.54	0.53	0.52	0.52	0.49	0.51
Distance Fished (km)	3.07	2.91	3.01	2.83	2.86	3.12	2.94	2.94	2.89	2.71	2.88
Mid-Latitude (°N)	56.84	56.84	57.33	57.34	57.34	57.32	57.33	57.33	57.32	57.34	57.34
Mid-Longitude (°W)	-169.9	-170.48	-167.75	-167.12	-166.49	-165.86	-165.24	-164.61	-164.01	-163.39	-162.78
Bottom Depth (m)	72	100	74	71	70	69	66	66	62	53	48
Bottom Temperature (°C)	3.1	4.1	3.1	2.6	2.6	2.6	2.2	2.2	1.6	1.7	2.3
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	369
Mature males	64	0	0	0	0	0	0	0	0	151	517
Legal	64	0	0	0	0	0	0	0	0	151	517
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	70	0	0	0	0	0	0	295
Total weight (kg)	4.04	0	0	1.48	0	0	0	0	0	6.04	30.75
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											
Small males	382	6411	5409	11280	758	58	832	1397	214	454	222
Large males	445	2551	267	211	344	58	2010	1536	428	151	517
Legal	318	2028	200	141	276	58	1663	1257	143	76	443
Immature females	64	6869	4006	5287	138	0	0	0	71	0	0
Mature females	64	1308	534	846	207	0	69	1048	143	0	0
Total weight (kg)	4.31	33.76	9.64	13.34	5.58	1.01	20.94	22.26	5.04	2.72	5.34
Snow Crab											
Small males	0	0	601	564	276	0	139	140	143	0	0
Large males	191	327	0	0	0	0	208	0	0	0	0
Legal	191	327	334	70	69	0	347	70	143	0	0
Immature females	0	0	67	564	0	0	0	0	0	0	0
Mature females	0	0	200	0	0	0	0	0	0	0	0
Total weight (kg)	1.65	3.14	2.57	1.16	0.61	0	2.18	0.52	0.56	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	868	2820	0	0	69	629	71	0	0
Males ≥ 78 mm	0	0	0	0	0	0	69	279	71	151	295
Immature females	0	0	200	423	0	0	0	349	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0.61	1.88	0	0	0.7	3.13	0.62	1.07	2.16

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/5/2023	6/1/2023	6/1/2023	5/30/2023	5/30/2023	5/29/2023	5/28/2023	6/21/2023	6/24/2023	6/29/2023	7/1/2023
Duration (hour)	0.52	0.5	0.53	0.53	0.51	0.53	0.53	0.53	0.52	0.53	0.51
Distance Fished (km)	2.93	2.77	2.94	2.91	2.81	3	2.95	2.95	2.97	2.9	2.93
Mid-Latitude (°N)	57.34	57.33	57.34	57.34	57.34	57.33	57.34	57.33	57.34	57.34	57.33
Mid-Longitude (°W)	-162.16	-161.53	-160.94	-160.29	-159.65	-159.07	-158.4	-168.37	-168.98	-169.59	-170.24
Bottom Depth (m)	51	56	62	61	56	49	30	73	70	64	53
Bottom Temperature (°C)	2.7	3.1	3	3.4	3.6	4	4.1	3.1	3	1.7	4
Red King Crab											
Immature males	878	541	141	870	377	68	75	0	0	0	0
Mature males	1098	541	0	653	377	136	0	0	68	69	0
Legal	878	464	0	435	226	68	0	0	68	69	0
Immature females	220	541	0	0	0	0	0	0	0	0	0
Mature females	1098	464	492	653	302	0	0	0	68	206	0
Total weight (kg)	67.93	34.42	9.21	41.78	20.44	5.6	0.02	0	4.54	8.58	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	478	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	8.33	0	0
Tanner Crab											
Small males	146	77	70	290	151	68	0	7521	6419	10692	235
Large males	366	387	141	363	75	0	0	851	546	1165	0
Legal	146	232	70	73	75	0	0	497	205	822	0
Immature females	0	0	0	0	0	0	149	6598	3756	15396	157
Mature females	0	0	0	73	0	0	0	1277	205	959	0
Total weight (kg)	2.94	3.52	1.43	4.82	1.33	0.28	0.01	18.87	10.73	43.6	0.35
Snow Crab											
Small males	0	0	0	0	0	0	0	568	410	10896	0
Large males	0	0	0	0	0	0	0	213	410	1267	0
Legal	0	0	0	0	0	0	0	426	546	2362	0
Immature females	0	0	0	0	0	0	0	568	0	148463	78
Mature females	0	0	0	0	0	0	0	142	0	1165	0
Total weight (kg)	0	0	0	0	0	0	0	3.68	4.27	114.51	0.04
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	426	0	1536	0
Males ≥ 78 mm	73	0	0	0	0	0	0	142	0	0	0
Immature females	0	0	0	0	0	0	0	71	0	15396	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.41	0	0	0	0	0	0	1.04	0	11.97	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/2/2023	7/10/2023	7/9/2023	7/9/2023	7/9/2023	6/24/2023	6/29/2023	7/2/2023	7/2/2023	6/19/2023	6/19/2023
Duration (hour)	0.51	0.49	0.49	0.53	0.5	0.53	0.55	0.53	0.53	0.53	0.53
Distance Fished (km)	2.94	2.77	2.69	2.92	2.76	2.94	3	2.95	2.91	2.93	2.97
Mid-Latitude (°N)	57.34	57.34	57.34	57.35	57.33	57.16	57.18	57.16	57.11	57.67	57.65
Mid-Longitude (°W)	-170.86	-171.48	-172.1	-172.81	-173.31	-168.63	-169.33	-169.89	-170.46	-167.78	-167.15
Bottom Depth (m)	83	101	108	117	121	76	72	49	50	69	67
Bottom Temperature (°C)	3	3.6	3.4	3.2	3.3	3.5	2.6	4.1	4.5	2.6	2.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	72	0	0
Mature males	0	0	0	0	0	0	324	139	217	0	0
Legal	0	0	0	0	0	0	324	139	217	0	0
Immature females	0	0	0	0	0	0	0	0	72	0	0
Mature females	0	0	0	0	0	0	907	0	578	0	0
Total weight (kg)	0	0	0	0	0	0	46.35	7.78	23.18	0	0
Blue King Crab											
Immature males	0	0	0	0	0	70	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	1.53	0	0	0	0	0
Tanner Crab											
Small males	397	2987	2767	9736	6941	4769	11313	0	145	11491	3828
Large males	66	356	73	66	70	842	712	0	0	1148	1452
Legal	0	213	0	0	0	491	583	0	0	338	1122
Immature females	397	2418	2913	10786	6339	4138	13942	0	361	6549	132
Mature females	0	213	146	0	279	210	389	0	0	743	792
Total weight (kg)	0.66	5.66	2.3	3.86	8.44	13.05	25.59	0	0.46	27.45	21.44
Snow Crab											
Small males	66	0	73	0	70	70	65	0	0	810	660
Large males	66	0	218	66	209	140	0	0	0	135	66
Legal	132	0	218	66	279	140	0	0	0	203	330
Immature females	0	0	0	0	0	0	130	0	0	2296	66
Mature females	0	0	0	0	70	0	0	0	0	0	66
Total weight (kg)	0.94	0	1.82	0.41	1.99	0.91	0.23	0	0	3.22	2.27
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	73	66	104	0	0	0	0	3308	1056
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	203	198
Immature females	0	0	0	186	104	0	0	0	0	1283	132
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0.02	0.19	0.04	0	0	0	0	5.44	2.37

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/18/2023	6/16/2023	6/14/2023	6/7/2023	6/7/2023	6/5/2023	6/5/2023	6/5/2023	6/2/2023	5/31/2023	5/30/2023
Duration (hour)	0.52	0.52	0.54	0.51	0.49	0.52	0.52	0.51	0.5	0.49	0.52
Distance Fished (km)	2.89	3	3.03	2.79	2.75	3.04	3.03	2.82	2.73	2.66	2.88
Mid-Latitude (°N)	57.66	57.66	57.68	57.67	57.67	57.67	57.66	57.65	57.67	57.67	57.65
Mid-Longitude (°W)	-166.51	-165.89	-165.25	-164.61	-164.01	-163.39	-162.71	-162.15	-161.5	-160.9	-160.28
Bottom Depth (m)	66	64	60	53	49	46	44	47	53	56	55
Bottom Temperature (°C)	1.2	1.2	0.6	0.6	1	1.8	2.9	2.8	3.1	3	3.4
Red King Crab											
Immature males	0	0	0	0	0	71	0	932	1015	469	221
Mature males	0	0	0	146	218	0	445	1087	234	78	738
Legal	0	0	0	73	218	0	297	854	156	78	369
Immature females	0	0	0	0	0	0	0	0	1171	0	369
Mature females	0	136	0	0	73	142	74	78	703	156	443
Total weight (kg)	0	2.38	0	5.16	13.89	3.17	14.52	46.08	32.14	7.8	32.8
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											
Small males	553	2314	1814	511	218	0	74	233	0	78	74
Large males	138	1361	605	949	146	354	74	78	78	312	0
Legal	69	885	336	292	146	283	74	78	0	234	0
Immature females	69	68	0	0	0	0	0	0	0	0	0
Mature females	0	204	0	0	0	0	0	155	0	0	0
Total weight (kg)	1.97	19.3	11.74	6.47	1.94	2.46	1.14	2.02	0.55	3.18	0.45
Snow Crab											
Small males	69	476	806	73	0	0	0	0	0	0	0
Large males	0	68	0	0	0	0	0	0	0	0	0
Legal	0	340	67	73	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)	0.09	1.8	1.51	0.28	0	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	138	0	134	73	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	336	146	0	0	0	0	0	0	0
Immature females	69	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)	0.35	0	1.74	0.68	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	5/30/2023	5/29/2023	5/28/2023	6/22/2023	6/25/2023	6/29/2023	7/1/2023	7/2/2023	7/10/2023	7/10/2023	7/10/2023
Duration (hour)	0.52	0.53	0.52	0.52	0.51	0.52	0.52	0.51	0.51	0.5	0.46
Distance Fished (km)	2.87	2.91	3.08	2.83	2.8	2.83	2.94	2.94	2.84	2.77	2.56
Mid-Latitude (°N)	57.66	57.65	57.67	57.67	57.66	57.66	57.67	57.66	57.66	57.67	57.67
Mid-Longitude (°W)	-159.63	-159.04	-158.37	-168.4	-169.04	-169.65	-170.27	-170.89	-171.54	-172.17	-172.82
Bottom Depth (m)	50	47	36	71	69	71	73	86	99	108	119
Bottom Temperature (°C)	3.5	3.1	3.6	2.7	2.4	1.8	2.3	2.9	3.1	3.2	3.3
Red King Crab											
Immature males	293	0	143	71	0	0	0	0	0	0	0
Mature males	0	70	0	0	0	70	344	0	0	0	0
Legal	0	0	0	0	0	70	344	0	0	0	0
Immature females	220	0	215	0	0	70	0	0	0	0	0
Mature females	73	0	0	0	73	0	0	0	0	0	0
Total weight (kg)	4.82	1.58	0.38	0.03	1.16	3.86	20.92	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											
Small males	0	0	0	4064	2326	6946	20260	66	8922	5528	9589
Large males	0	70	0	214	73	912	275	0	632	69	0
Legal	0	70	0	143	0	561	69	0	422	69	0
Immature females	0	0	0	1925	2398	11249	19503	66	6885	5528	10864
Mature females	0	0	0	71	73	772	1204	66	211	0	75
Total weight (kg)	0	0.81	0	6.38	2.78	30.22	32	0.34	11.38	3.3	6.09
Snow Crab											
Small males	0	0	0	499	291	1824	4816	0	632	0	0
Large males	0	0	0	71	145	421	206	0	984	276	374
Legal	0	0	0	71	291	982	413	0	1616	276	374
Immature females	0	0	0	927	0	2245	19263	0	0	0	0
Mature females	0	0	0	0	0	70	0	0	0	0	0
Total weight (kg)	0	0	0	1.45	1.75	9.47	16.49	0	7.82	1.84	2.27
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	357	145	772	0	0	70	0	178
Males ≥ 78 mm	0	0	0	0	0	0	0	66	0	69	0
Immature females	0	0	0	71	2398	912	0	198	0	0	178
Mature females	0	0	0	0	0	210	0	0	0	0	0
Total weight (kg)	0	0	0	0.23	1.36	1.79	0	0.35	0	0.65	0.06

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/10/2023	6/24/2023	6/29/2023	7/1/2023	7/1/2023	6/19/2023	6/19/2023	6/18/2023	6/16/2023	6/15/2023	6/7/2023
Duration (hour)	0.53	0.52	0.54	0.52	0.52	0.52	0.52	0.53	0.52	0.52	0.52
Distance Fished (km)	2.98	2.91	2.94	2.94	2.9	2.86	2.86	2.96	2.9	2.85	2.8
Mid-Latitude (°N)	57.67	57.49	57.5	57.51	57.51	58	58.01	58	58.01	58	58
Mid-Longitude (°W)	-173.39	-168.75	-169.38	-169.96	-170.58	-167.81	-167.19	-166.53	-165.94	-165.25	-164.62
Bottom Depth (m)	145	71	70	68	74	67	64	61	53	51	44
Bottom Temperature (°C)	3.9	2.7	2.3	2.3	2.9	1.9	1.2	0.3	0.2	0.5	1
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	70	140	279	140	0	0	69	0	0	73
Legal	0	70	140	279	140	0	0	69	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	70	70	0	0	0	0	0	72	73
Total weight (kg)	0	4.35	9.24	15.77	8.56	0	0	3.95	0	0.81	3.55
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											
Small males	37668	696	27079	10403	0	3251	7882	1099	869	217	73
Large males	192	0	840	1046	279	277	612	412	72	0	73
Legal	0	0	560	767	70	208	408	275	72	0	73
Immature females	46997	904	65320	13925	0	138	1155	0	0	0	0
Mature females	770	0	37074	1266	140	0	0	0	72	0	73
Total weight (kg)	38.57	0.81	192.74	27.78	2	6.28	15.32	5.53	3.62	0.73	1.03
Snow Crab											
Small males	128	139	12964	4207	0	208	544	0	435	0	0
Large males	0	139	2519	1882	0	0	68	0	72	0	0
Legal	128	278	4664	2789	0	0	136	0	72	0	0
Immature females	0	70	46960	47603	0	69	204	0	0	0	0
Mature females	0	0	1765	560	0	0	0	0	0	0	0
Total weight (kg)	0.56	1.78	85.26	48.14	0	0.35	1.55	0	0.9	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	3717	0	0	969	4757	0	0	144	0
Males ≥ 78 mm	0	0	0	0	0	69	136	0	0	0	0
Immature females	1593	0	9180	0	0	138	204	0	0	0	0
Mature females	0	0	1412	0	0	0	0	0	0	0	0
Total weight (kg)	0.44	0	16.18	0	0	1.59	5.04	0	0	0.32	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/7/2023	6/6/2023	6/3/2023	6/3/2023	6/2/2023	5/31/2023	5/30/2023	5/30/2023	5/29/2023	5/28/2023	6/22/2023
Duration (hour)	0.52	0.51	0.5	0.5	0.5	0.51	0.52	0.51	0.53	0.52	0.51
Distance Fished (km)	2.8	2.91	2.68	2.81	2.75	2.8	2.94	2.76	2.92	2.95	2.79
Mid-Latitude (°N)	58.01	58.01	58	58.01	57.99	58.01	57.99	58	57.97	58.01	58
Mid-Longitude (°W)	-164.03	-163.39	-162.75	-162.13	-161.48	-160.87	-160.21	-159.61	-158.99	-158.3	-168.43
Bottom Depth (m)	46	44	42	40	54	45	51	42	38	36	69
Bottom Temperature (°C)	1.5	2.3	2.5	2.9	2.7	2.6	3	3	3.3	3.4	2
Red King Crab											
Immature males	0	0	170	158	897	74	688	79	0	217	0
Mature males	73	155	254	158	299	371	275	237	74	0	0
Legal	73	0	170	158	299	222	138	237	0	0	0
Immature females	0	0	0	0	448	74	138	0	0	579	0
Mature females	73	0	0	158	448	74	69	79	0	0	0
Total weight (kg)	5.84	3.09	9.82	13.68	26.4	15.02	17.44	12.22	1.58	0.74	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											
Small males	0	0	0	0	75	0	0	0	0	0	7141
Large males	73	0	0	0	0	0	0	0	0	0	74
Legal	73	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	2576
Mature females	0	0	0	0	0	0	0	0	0	0	74
Total weight (kg)	0.64	0	0	0	0.38	0	0	0	0	0	9.46
Snow Crab											
Small males	0	0	0	0	0	0	0	0	0	0	515
Large males	0	0	0	0	0	0	0	0	0	0	74
Legal	0	0	0	0	0	0	0	0	0	0	74
Immature females	0	0	0	0	0	0	0	0	0	0	589
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	1.18
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	442
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	0.4

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/25/2023	6/28/2023	6/30/2023	6/30/2023	7/11/2023	7/10/2023	7/10/2023	7/10/2023	6/22/2023	6/28/2023	6/30/2023
Duration (hour)	0.52	0.51	0.53	0.51	0.5	0.49	0.51	0.53	0.53	0.52	0.52
Distance Fished (km)	2.96	2.8	2.95	2.89	2.81	2.7	2.86	2.9	2.89	2.83	2.86
Mid-Latitude (°N)	58	58	58	57.99	57.98	57.99	58	58	57.83	57.83	57.83
Mid-Longitude (°W)	-169.08	-169.71	-170.34	-170.97	-171.57	-172.23	-172.86	-173.45	-168.74	-169.37	-169.97
Bottom Depth (m)	69	70	74	86	97	105	109	117	71	66	72
Bottom Temperature (°C)	0.9	1.2	0.4	2.3	3	3.1	3	3.3	2	1.9	1.4
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	69	0	0
Legal	0	0	0	0	0	0	0	0	69	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	2.96	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											
Small males	14699	3249	1259	869	628	633	11476	4550	4468	16123	59649
Large males	740	0	331	134	209	70	544	815	550	286	642
Legal	404	0	199	67	209	70	272	611	206	143	143
Immature females	8456	1554	795	602	279	1055	7575	3056	2681	19267	57509
Mature females	538	71	66	67	0	0	747	679	412	571	777
Total weight (kg)	37.53	4.55	4.72	2.2	2	1.32	16.58	15.45	12.8	36.7	57.49
Snow Crab											
Small males	538	706	530	2540	0	211	68	136	412	5858	24171
Large males	0	353	464	0	70	141	612	611	0	357	357
Legal	202	353	663	134	70	352	679	611	69	500	856
Immature females	404	1766	861	13461	0	0	0	0	1169	18540	178958
Mature females	0	0	0	296	0	0	0	0	0	71	0
Total weight (kg)	1.28	4.18	4.24	10.03	0.34	1.78	5.02	4.8	0.83	16.36	113
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	212	0	0	0	0	0	0	412	2000	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	69	0	0
Immature females	0	0	0	0	0	0	172	0	344	2715	0
Mature females	0	71	0	0	0	0	0	68	0	286	0
Total weight (kg)	0	0.63	0	0	0	0	0.09	0.06	0.73	4	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/30/2023	6/18/2023	6/18/2023	6/18/2023	6/17/2023	6/15/2023	6/6/2023	6/6/2023	6/6/2023	6/4/2023	6/2/2023
Duration (hour)	0.52	0.54	0.54	0.52	0.53	0.53	0.51	0.5	0.52	0.5	0.52
Distance Fished (km)	2.87	3	2.96	3.02	3	2.91	2.78	2.78	2.94	2.72	2.87
Mid-Latitude (°N)	57.82	58.34	58.34	58.33	58.35	58.34	58.33	58.33	58.34	58.33	58.32
Mid-Longitude (°W)	-170.64	-167.84	-167.21	-166.55	-165.91	-165.29	-164.64	-164.06	-163.38	-162.72	-162.06
Bottom Depth (m)	78	60	51	48	44	45	44	44	38	33	47
Bottom Temperature (°C)	2.5	0.6	0.4	1.5	2.2	2.2	1.6	1.9	2.5	2.7	2.7
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	76
Mature males	0	0	0	0	0	141	75	0	0	160	152
Legal	0	0	0	0	0	141	75	0	0	0	152
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	224	141	75	0	0	80	76
Total weight (kg)	0	0	0	0	3.32	10.67	7.05	0	0	5.16	7.96
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											
Small males	639	67	213	414	0	70	0	0	0	0	0
Large males	71	0	71	0	0	0	0	0	0	0	0
Legal	0	0	71	0	0	0	0	0	0	0	0
Immature females	1674	67	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)	3.87	0.41	0.71	0.41	0	0.37	0	0	0	0	0
Snow Crab											
Small males	36087	0	0	0	0	0	0	0	0	0	0
Large males	142	0	0	0	0	0	0	0	0	0	0
Legal	497	0	0	0	0	0	0	0	0	0	0
Immature females	292151	267	0	0	0	0	0	0	0	0	0
Mature females	3698	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	190.51	0.26	0	0	0	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	334	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	0.59	0	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/2/2023	5/31/2023	5/30/2023	5/30/2023	6/22/2023	6/25/2023	6/28/2023	6/29/2023	6/29/2023	7/11/2023	7/11/2023
Duration (hour)	0.47	0.25	0.54	0.54	0.51	0.52	0.52	0.53	0.52	0.51	0.52
Distance Fished (km)	2.6	1.4	3	2.96	2.79	2.91	2.91	3.02	2.85	2.9	2.92
Mid-Latitude (°N)	58.23	58.28	58.27	58.31	58.33	58.32	58.33	58.33	58.33	58.34	58.33
Mid-Longitude (°W)	-161.55	-160.81	-159.97	-159.57	-168.47	-169.12	-169.74	-170.39	-170.99	-171.65	-172.3
Bottom Depth (m)	41	32	42	25	65	68	69	74	83	96	102
Bottom Temperature (°C)	3	3.4	2.8	3.1	1.4	0.6	0.9	-0.2	1.6	2.3	2.8
Red King Crab											
Immature males	82	300	138	0	0	0	0	0	0	0	0
Mature males	82	0	69	0	0	0	0	0	0	0	0
Legal	0	0	69	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	2.78	1.34	4.82	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											
Small males	0	0	0	0	71	895	1495	779	69	0	3404
Large males	0	0	0	0	71	0	68	260	0	0	267
Legal	0	0	0	0	71	0	68	195	0	0	0
Immature females	0	0	0	0	0	619	476	2140	69	66	3270
Mature females	0	0	0	0	0	69	204	0	69	0	267
Total weight (kg)	0	0	0	0	0.32	0.82	4.17	4.4	0.21	0.01	7.92
Snow Crab											
Small males	0	0	0	0	143	1514	204	46183	1166	0	1802
Large males	0	0	0	0	0	138	136	649	1715	0	734
Legal	0	0	0	0	0	275	272	1168	2401	0	2536
Immature females	0	0	0	0	0	4955	340	135018	1235	0	0
Mature females	0	0	0	0	0	0	0	3803	206	0	0
Total weight (kg)	0	0	0	0	0.28	2.88	1.97	101.09	15.4	0	11.05
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	143	0	136	1070	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	68	0	0	0	0
Mature females	0	0	0	0	0	0	68	0	0	0	0
Total weight (kg)	0	0	0	0	0.34	0	0.36	0.23	0	0	0

Appendix A. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 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	7/11/2023	7/19/2023	7/19/2023	6/18/2023	6/17/2023	6/18/2023	6/17/2023	6/15/2023	6/6/2023	6/6/2023	6/6/2023
Duration (hour)	0.52	0.53	0.52	0.53	0.55	0.51	0.51	0.52	0.5	0.51	0.53
Distance Fished (km)	2.83	2.99	2.94	2.96	3.02	2.78	2.88	2.83	2.76	2.85	2.97
Mid-Latitude (°N)	58.33	58.34	58.34	58.67	58.67	58.68	58.67	58.66	58.68	58.67	58.67
Mid-Longitude (°W)	-172.92	-173.57	-174.3	-167.87	-167.23	-166.55	-165.93	-165.31	-164.66	-164.02	-163.35
Bottom Depth (m)	108	116	160	45	44	41	37	40	38	35	32
Bottom Temperature (°C)	2.9	3.5	4	2	1.8	2.1	2.3	2.3	1.8	2	2.5
Red King Crab											
Immature males	0	0	0	0	0	0	144	0	0	0	0
Mature males	0	0	0	70	136	316	72	153	0	82	0
Legal	0	0	0	70	136	237	72	153	0	82	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	211	0	237	215	229	0	0	0
Total weight (kg)	0	0	0	6.12	8.36	15.08	9.68	8.6	0	2.81	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											
Small males	16297	2514	3490	0	0	0	0	0	0	0	0
Large males	138	1194	0	0	0	0	0	0	0	0	0
Legal	0	691	0	0	0	0	0	0	0	0	0
Immature females	18406	3708	5947	0	0	0	0	0	0	0	0
Mature females	0	251	0	0	0	0	0	0	0	0	0
Total weight (kg)	9.91	13.13	1.95	0	0	0	0	0	0	0	0
Snow Crab											
Small males	138	0	0	0	0	0	0	0	0	0	0
Large males	346	63	0	0	0	0	0	0	0	0	0
Legal	484	63	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)	3.25	0.51	0	0	0	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	70	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	0.09	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/4/2023	6/23/2023	6/25/2023	6/28/2023	6/29/2023	6/29/2023	7/11/2023	7/11/2023	7/18/2023	7/18/2023	7/19/2023
Duration (hour)	0.51	0.52	0.53	0.53	0.53	0.52	0.51	0.52	0.53	0.51	0.52
Distance Fished (km)	2.78	2.88	2.95	2.91	3.03	2.91	2.83	2.89	3.01	2.89	2.96
Mid-Latitude (°N)	58.64	58.67	58.65	58.66	58.67	58.67	58.68	58.68	58.66	58.66	58.69
Mid-Longitude (°W)	-162.71	-168.5	-169.15	-169.78	-170.43	-171.09	-171.72	-172.37	-173.01	-173.65	-174.28
Bottom Depth (m)	27	52	63	67	73	82	93	101	112	126	154
Bottom Temperature (°C)	2.9	0.9	0.4	0.6	-0.5	0.6	2.1	2.3	2.8	3.1	3.3
Red King Crab											
Immature males	0	0	0	0	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	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	2.62	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											
Small males	0	0	0	337	271	0	0	1005	10836	7776	24704
Large males	0	0	0	0	0	0	0	201	318	255	0
Legal	0	0	0	0	0	0	0	134	191	127	0
Immature females	0	0	0	337	0	0	0	804	14447	9584	26682
Mature females	0	0	0	0	0	0	0	67	381	255	187
Total weight (kg)	0	0	0	0.33	0.1	0	0	1.97	9.06	5.35	17.04
Snow Crab											
Small males	0	349	66	606	30490	9051	274	402	0	0	0
Large males	0	0	66	0	1328	3489	480	402	381	64	62
Legal	0	0	133	67	1897	4587	754	804	381	64	62
Immature females	0	1604	0	337	16808	34405	0	67	0	0	0
Mature females	0	0	0	0	0	42051	2809	0	0	0	0
Total weight (kg)	0	0.38	0.65	1.2	37	103.03	7	4.88	3.35	0.58	0.43
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	2120	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	64	64	0
Immature females	0	0	5499	0	271	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	69	0	0	0	0
Total weight (kg)	0	0	1	0	0.09	0	0.1	0	0.52	0.37	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/20/2023	7/20/2023	7/20/2023	7/20/2023	6/18/2023	6/17/2023	6/17/2023	6/17/2023	6/15/2023	6/6/2023	6/5/2023
Duration (hour)	0.52	0.51	0.51	0.51	0.55	0.53	0.52	0.53	0.54	0.51	0.52
Distance Fished (km)	2.87	2.88	2.94	2.87	2.99	2.89	2.98	3.05	3.02	2.84	2.89
Mid-Latitude (°N)	58.75	58.67	58.67	58.67	59	59	59	58.99	59	59	59.01
Mid-Longitude (°W)	-174.95	-175.56	-176.2	-176.83	-167.9	-167.24	-166.57	-165.95	-165.3	-164.63	-164.01
Bottom Depth (m)	142	135	139	135	42	40	33	30	27	27	29
Bottom Temperature (°C)	2.9	3.1	3.2	3.1	2	2.2	2.5	2.9	3.2	2.9	3
Red King Crab											
Immature males	0	0	0	0	69	149	0	0	0	0	0
Mature males	0	0	0	0	0	75	74	77	0	0	0
Legal	0	0	0	0	0	0	74	77	0	0	0
Immature females	0	0	0	0	69	75	0	0	74	0	0
Mature females	0	0	0	0	69	149	0	310	0	74	0
Total weight (kg)	0	0	0	0	1.19	4.94	2.17	7.07	0.66	2.62	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											
Small males	3257	1323	519	535	0	0	0	0	0	0	0
Large males	66	0	0	0	0	0	0	0	0	0	0
Legal	66	0	0	0	0	0	0	0	0	0	0
Immature females	3722	728	195	401	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	1.99	0.98	0.41	0.09	0	0	0	0	0	0	0
Snow Crab											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	65	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	0.03	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/5/2023	6/23/2023	6/26/2023	6/27/2023	6/28/2023	7/12/2023	7/11/2023	7/11/2023	7/18/2023	7/22/2023	7/22/2023
Duration (hour)	0.51	0.52	0.51	0.52	0.52	0.51	0.5	0.51	0.51	0.49	0.43
Distance Fished (km)	2.81	2.87	2.77	2.91	2.86	2.82	2.81	2.75	2.91	2.72	2.48
Mid-Latitude (°N)	58.99	59	58.99	59	59.02	58.99	59	59.01	58.99	59	59
Mid-Longitude (°W)	-163.37	-168.53	-169.19	-169.84	-170.49	-171.12	-171.78	-172.43	-173.07	-173.73	-174.39
Bottom Depth (m)	20	47	54	63	71	78	88	98	107	117	126
Bottom Temperature (°C)	3.8	2.3	0.7	0.3	0.1	-0.6	0.7	2	2.3	2.6	2.4
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	74	0	0	0	0	0	0	0	0
Legal	0	0	74	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	74	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	3.47	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											
Small males	0	0	0	0	0	0	0	421	2402	30193	7444
Large males	0	0	0	0	0	0	69	70	133	951	1649
Legal	0	0	0	0	0	0	0	70	67	512	628
Immature females	0	0	0	0	0	0	0	351	1334	22603	5953
Mature females	0	0	0	0	0	0	69	70	0	1390	393
Total weight (kg)	0	0	0	0	0	0	0.44	1.45	1.69	30.73	15.99
Snow Crab											
Small males	0	0	589	1596	29508	2896	554	211	200	0	79
Large males	0	0	0	69	418	282	901	562	267	73	79
Legal	0	0	0	139	837	706	1456	772	467	73	157
Immature females	0	0	1104	4024	21592	3743	0	70	200	0	0
Mature females	0	0	0	0	0	847	624	0	0	0	0
Total weight (kg)	0	0	0.2	1.76	27.42	7.37	9.1	4.85	2.97	0.49	0.77
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	74	208	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	139	0	0	0	0	0	807	0
Mature females	0	0	0	0	0	0	0	0	133	73	0
Total weight (kg)	0	0	0.03	0.09	0	0	0	0	0.33	0.57	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/22/2023	7/21/2023	7/21/2023	7/21/2023	7/21/2023	6/24/2023	6/17/2023	6/17/2023	6/16/2023	6/16/2023	6/5/2023
Duration (hour)	0.49	0.52	0.52	0.5	0.51	0.51	0.53	0.55	0.54	0.53	0.54
Distance Fished (km)	2.71	2.86	2.78	2.8	2.89	2.82	2.97	3.02	3	2.99	3
Mid-Latitude (°N)	59.01	59	59	59	59	59.33	59.35	59.35	59.33	59.34	59.33
Mid-Longitude (°W)	-175.03	-175.71	-176.29	-176.94	-177.59	-167.93	-167.25	-166.59	-165.95	-165.3	-164.66
Bottom Depth (m)	129	133	135	137	135	39	32	28	25	21	23
Bottom Temperature (°C)	2.4	2.7	2.2	2.8	3.3	2.7	2.8	3.8	3.7	4.3	3.5
Red King Crab											
Immature males	0	0	0	0	0	0	74	146	0	0	0
Mature males	0	0	0	0	0	153	0	73	0	0	0
Legal	0	0	0	0	0	76	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	73	0	0	0
Mature females	0	0	0	0	0	76	74	0	0	0	0
Total weight (kg)	0	0	0	0	0	4.63	2.18	3.71	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											
Small males	4578	736	137	748	1628	0	0	0	0	0	0
Large males	143	0	206	0	0	0	0	0	0	0	0
Legal	72	0	69	0	0	0	0	0	0	0	0
Immature females	5826	468	137	340	1172	0	0	0	0	0	0
Mature females	72	0	69	0	0	0	0	0	0	0	0
Total weight (kg)	4.62	0.84	1.52	1.36	0.63	0	0	0	0	0	0
Snow Crab											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large males	72	0	0	0	0	0	0	0	0	0	0
Legal	72	0	0	0	0	0	0	0	0	0	0
Immature females	0	134	0	0	65	0	0	0	0	0	0
Mature females	72	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.43	0.02	0	0	0	0	0	0	0	0	0
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	99	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)	0.07	0	0	0	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/5/2023	6/24/2023	6/26/2023	6/27/2023	6/28/2023	7/12/2023	7/15/2023	7/15/2023	7/18/2023	7/21/2023	7/21/2023
Duration (hour)	0.53	0.55	0.52	0.53	0.51	0.51	0.5	0.5	0.52	0.52	0.5
Distance Fished (km)	2.97	3.07	2.95	2.88	2.87	2.86	2.82	2.73	2.95	2.86	2.72
Mid-Latitude (°N)	59.34	59.33	59.32	59.33	59.33	59.33	59.33	59.34	59.32	59.35	59.32
Mid-Longitude (°W)	-164.01	-168.55	-169.25	-169.88	-170.55	-171.19	-171.85	-172.51	-173.16	-173.8	-174.44
Bottom Depth (m)	23	42	50	60	68	75	80	88	101	110	120
Bottom Temperature (°C)	4.8	2.3	1.3	0.2	-0.3	-0.4	-0.8	0.9	1.9	1.8	2
Red King Crab											
Immature males	0	134	0	0	0	0	0	0	0	0	0
Mature males	0	200	0	0	0	0	0	0	0	0	0
Legal	0	67	0	0	0	0	0	0	0	0	0
Immature females	0	67	0	0	0	0	0	0	0	0	0
Mature females	0	267	70	0	0	0	0	0	0	0	0
Total weight (kg)	0	12.82	1.24	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											
Small males	0	0	0	0	0	0	0	0	589	802	9508
Large males	0	0	0	0	0	0	0	73	262	67	920
Legal	0	0	0	0	0	0	0	73	65	0	495
Immature females	0	0	0	0	0	0	0	0	393	802	5338
Mature females	0	0	0	0	0	0	0	0	0	0	991
Total weight (kg)	0	0	0	0	0	0	0	0.51	2.61	0.66	17.88
Snow Crab											
Small males	0	0	139	22865	1072	2239	12085	878	393	200	283
Large males	0	0	0	0	268	280	497	366	262	134	354
Legal	0	0	0	0	871	560	1421	878	524	267	566
Immature females	0	0	209	55714	469	2029	805	219	65	0	212
Mature females	0	0	0	0	67	3149	9982	658	0	0	0
Total weight (kg)	0	0	0.06	10.74	4.24	8.91	30.69	5.15	3.3	1.59	3.75
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	67	0	0	0	65	0	71
Males ≥ 78 mm	0	0	0	0	0	0	0	0	65	0	0
Immature females	0	0	0	0	0	0	322	0	131	0	71
Mature females	0	0	0	0	0	0	0	0	0	0	71
Total weight (kg)	0	0	0	0	0.02	0	0.43	0	0.75	0	0.41

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/22/2023	7/23/2023	7/22/2023	7/22/2023	6/24/2023	6/24/2023	6/16/2023	6/16/2023	6/26/2023	6/26/2023	6/27/2023
Duration (hour)	0.5	0.49	0.51	0.52	0.53	0.53	0.54	0.54	0.52	0.53	0.54
Distance Fished (km)	2.72	2.67	2.85	2.9	2.89	2.89	3.06	3.02	2.88	2.95	3.02
Mid-Latitude (°N)	59.34	59.34	59.33	59.34	59.67	59.66	59.67	59.61	59.67	59.67	59.66
Mid-Longitude (°W)	-175.1	-175.76	-176.37	-177.07	-167.95	-167.28	-166.61	-165.93	-168.61	-169.27	-169.93
Bottom Depth (m)	132	136	136	150	36	31	27	26	39	47	57
Bottom Temperature (°C)	2.1	2.1	2	2.7	3	4	3	4.6	2.3	0.7	-0.1
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	73	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	73	70	0
Total weight (kg)	0	0	0	0	0	0	0	0	2.1	2	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											
Small males	1597	3892	7510	262	0	0	0	0	0	0	0
Large males	73	147	266	196	0	0	0	0	0	0	0
Legal	73	73	67	0	0	0	0	0	0	0	0
Immature females	2468	4479	5977	262	0	0	0	0	0	0	0
Mature females	73	73	266	131	0	0	0	0	0	0	0
Total weight (kg)	1.79	4.1	7	1.97	0	0	0	0	0	0	0
Snow Crab											
Small males	0	73	0	0	0	0	0	0	0	1254	5988
Large males	73	0	0	65	0	0	0	0	0	0	66
Legal	73	0	0	65	0	0	0	0	0	0	66
Immature females	73	1469	67	262	0	0	0	0	0	1045	11910
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.54	0.28	0.01	0.6	0	0	0	0	0	0.32	2.38
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	145	147	466	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	65	0	0	0	0	0	0	0
Immature females	0	73	1397	0	0	0	0	0	0	0	0
Mature females	0	0	0	65	0	0	0	0	0	0	0
Total weight (kg)	0.23	0.23	0.31	0.71	0	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/28/2023	7/12/2023	7/15/2023	7/17/2023	7/17/2023	7/20/2023	7/21/2023	7/23/2023	7/23/2023	7/22/2023	7/22/2023
Duration (hour)	0.52	0.49	0.49	0.52	0.52	0.49	0.32	0.5	0.5	0.53	0.51
Distance Fished (km)	2.95	2.73	2.78	2.92	2.9	2.7	1.65	2.87	2.74	2.92	2.78
Mid-Latitude (°N)	59.67	59.67	59.67	59.67	59.67	59.68	59.67	59.66	59.69	59.67	59.67
Mid-Longitude (°W)	-170.59	-171.25	-171.9	-172.57	-173.23	-173.87	-174.46	-175.12	-175.88	-176.53	-177.12
Bottom Depth (m)	66	72	78	85	95	104	115	126	136	135	171
Bottom Temperature (°C)	-0.6	-1	-1	-0.1	1.3	0.9	1.4	1.7	2	1.8	3.2
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	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	66	0	0	0	0	0	0
Mature males	0	0	0	0	132	0	0	0	0	0	0
Legal	0	0	0	0	66	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	4.21	0	0	0	0	0	0
Tanner Crab											
Small males	0	0	0	0	132	140	228	3143	714	1679	1970
Large males	0	0	0	223	0	0	0	134	0	129	476
Legal	0	0	0	0	0	0	0	134	0	65	204
Immature females	0	0	0	670	66	281	1028	3009	572	646	204
Mature females	0	0	0	0	0	70	0	67	0	65	136
Total weight (kg)	0	0	0	1.32	0.03	0.21	0.42	2.78	0.24	1.37	8.27
Snow Crab											
Small males	2512	54791	3596	21799	1918	491	228	334	214	387	68
Large males	1095	302	72	736	1190	140	114	267	71	0	0
Legal	1739	1357	360	1405	2447	140	228	535	71	129	0
Immature females	3800	107023	288	23427	1256	70	0	401	857	581	204
Mature females	0	8989	2014	6031	595	0	0	669	0	0	0
Total weight (kg)	9.6	69.82	7.15	36.85	15.76	1.14	0.75	3.94	0.79	0.82	0.09
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	670	0	0	0	0	0	0	68
Males ≥ 78 mm	0	0	0	223	132	0	0	0	0	0	0
Immature females	0	0	72	447	331	0	0	134	0	0	340
Mature females	0	0	0	0	0	0	0	67	0	0	0
Total weight (kg)	0	0	0.05	2.9	1.18	0	0	0.13	0	0	0.15

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/17/2023	7/21/2023	6/25/2023	6/25/2023	6/26/2023	6/27/2023	6/28/2023	7/12/2023	7/14/2023	7/14/2023	7/18/2023
Duration (hour)	0.53	0.3	0.55	0.52	0.53	0.51	0.52	0.5	0.5	0.5	0.56
Distance Fished (km)	3.01	1.57	3.06	2.85	2.91	2.82	2.94	2.79	2.84	2.72	3.15
Mid-Latitude (°N)	59.5	59.5	60.01	60	60	60	60	59.99	59.99	59.99	60.01
Mid-Longitude (°W)	-172.89	-173.51	-167.97	-168.64	-169.33	-169.97	-170.63	-171.3	-171.95	-172.61	-173.29
Bottom Depth (m)	94	102	25	39	46	54	64	70	67	66	74
Bottom Temperature (°C)	0.9	1.6	3.9	2	-0.2	-1	-1.5	-1.2	-1.5	-1.3	-0.8
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	72	70	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	71	72	70	73	0	0	0	0	0
Total weight (kg)	0	0	1.38	2.42	2.87	0.93	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	492
Mature males	0	0	0	0	0	0	0	0	73	0	246
Legal	0	0	0	0	0	0	0	0	73	0	123
Immature females	0	0	0	0	0	0	0	0	0	227	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	2.36	1.56	11.26
Tanner Crab											
Small males	255	625	0	0	0	0	0	0	0	0	232
Large males	64	0	0	0	0	0	0	0	0	0	0
Legal	64	0	0	0	0	0	0	0	0	0	0
Immature females	191	375	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)	0.81	0.39	0	0	0	0	0	0	0	0	0.39
Snow Crab											
Small males	2042	500	0	0	1186	40735	136142	25550	8423	14906	9738
Large males	510	375	0	0	0	0	328	0	0	76	1475
Legal	574	625	0	0	0	0	591	486	0	76	1537
Immature females	1340	750	0	0	1326	54991	173013	15646	6971	13681	16669
Mature females	191	0	0	0	0	0	0	20978	19443	151	0
Total weight (kg)	5.79	2.34	0	0	0.47	14.95	66.3	49.67	20.23	6.02	21.04
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	64	0	0	0	0	0	0	0	145	690	463
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	574	0	0	0	0	0	0	0	145	345	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.24	0	0	0	0	0	0	0	0.12	0.37	0.63

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/19/2023	7/20/2023	7/23/2023	7/23/2023	7/23/2023	7/24/2023	7/24/2023	7/14/2023	7/17/2023	7/20/2023	7/20/2023
Duration (hour)	0.52	0.49	0.51	0.5	0.49	0.52	0.49	0.51	0.52	0.52	0.5
Distance Fished (km)	2.85	2.72	2.84	2.75	2.69	2.89	2.74	2.75	2.93	2.92	2.77
Mid-Latitude (°N)	60.01	60	60.01	60	60.01	60	60	59.83	59.83	59.83	59.86
Mid-Longitude (°W)	-173.94	-174.6	-175.27	-175.92	-176.69	-177.2	-177.92	-172.25	-172.92	-173.58	-174.26
Bottom Depth (m)	96	107	117	128	140	136	141	75	80	95	104
Bottom Temperature (°C)	0.4	1.1	1.6	1.8	1.7	1.8	2	-1.3	-0.6	1.2	1.1
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	74	199	0	0
Mature males	0	0	0	0	0	0	0	0	199	132	0
Legal	0	0	0	0	0	0	0	0	133	0	0
Immature females	0	0	0	0	0	0	0	0	66	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	0.47	6.99	1.96	0
Tanner Crab											
Small males	0	72	135	70	0	68	144	0	133	132	0
Large 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	743	420	0	135	144	0	66	0	0
Mature females	0	0	0	0	0	0	72	0	0	0	0
Total weight (kg)	0	0.23	0.17	0.1	0	0.31	0.35	0	0.11	0.06	0
Snow Crab											
Small males	2939	429	1419	210	430	270	215	9705	9303	2975	70
Large males	802	429	1081	700	430	0	72	149	2259	595	560
Legal	1269	787	2095	841	430	0	72	149	3655	926	630
Immature females	735	0	0	560	1578	473	215	17136	9167	5884	0
Mature females	1804	3576	4326	1821	0	68	0	2159	0	793	70
Total weight (kg)	13.6	7.13	16.44	7.77	4.13	0.24	0.54	8.52	24.91	11.11	4.57
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	270	0	143	0	144	74	66	0	0
Males ≥ 78 mm	0	0	135	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	72	0	66	0	0
Mature females	0	0	68	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	1.99	0	0.02	0	0.08	0.18	0.39	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	6/26/2023	6/26/2023	6/26/2023	6/26/2023	6/27/2023	6/27/2023	7/13/2023	7/13/2023	7/18/2023	7/19/2023	7/24/2023
Duration (hour)	0.52	0.54	0.56	0.53	0.52	0.53	0.5	0.5	0.54	0.46	0.51
Distance Fished (km)	2.93	3.03	3.08	2.98	2.91	3.03	2.75	2.68	3.01	2.58	2.74
Mid-Latitude (°N)	60.33	60.33	60.34	60.34	60.33	60.33	60.33	60.34	60.31	60.34	60.35
Mid-Longitude (°W)	-167.97	-167.27	-168.68	-169.32	-169.99	-170.68	-171.34	-172.06	-173.37	-174.08	-174.71
Bottom Depth (m)	31	31	37	43	52	62	67	60	61	89	102
Bottom Temperature (°C)	4.1	4.6	1.9	-1.1	-1.5	-1.6	-1.6	-1.1	-0.9	-0.1	0.8
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	68	0	0	0	0	0	0	0	0
Legal	0	0	68	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	4.26	0	0	0	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	70	325	0	0
Mature males	0	0	0	0	0	0	0	70	195	73	0
Legal	0	0	0	0	0	0	0	70	65	73	0
Immature females	0	0	0	0	0	0	0	0	130	0	0
Mature females	0	0	0	0	0	0	0	0	65	0	0
Total weight (kg)	0	0	0	0	0	0	0	2.18	6.5	2.08	0
Tanner Crab											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large males	0	0	0	0	0	0	0	0	0	0	71
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	0.35
Snow Crab											
Small males	0	0	0	125699	115631	93817	24028	8526	2726	18682	6645
Large males	0	0	0	0	0	125	0	0	0	2550	2757
Legal	0	0	0	0	0	249	0	0	0	6048	4807
Immature females	0	0	0	59964	101806	83422	16320	9265	3311	24557	778
Mature females	0	0	0	0	68	0	13839	5166	0	729	22799
Total weight (kg)	0	0	0	35.16	46.41	46.51	40.47	12.46	1.3	54.63	53.5
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0	212
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	227	283
Mature females	0	0	0	0	0	0	0	0	0	0	71
Total weight (kg)	0	0	0	0	0	0	0	0	0	0.31	1.06

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/23/2023	7/23/2023	7/24/2023	7/24/2023	7/14/2023	7/18/2023	7/19/2023	7/19/2023	7/13/2023	7/13/2023	7/17/2023
Duration (hour)	0.52	0.51	0.52	0.5	0.49	0.53	0.51	0.5	0.51	0.51	0.53
Distance Fished (km)	2.88	2.87	2.88	2.74	2.76	2.94	2.85	2.79	2.87	2.85	2.93
Mid-Latitude (°N)	60.33	60.33	60.34	60.34	60.17	60.18	60.14	60.17	60.65	60.66	60.67
Mid-Longitude (°W)	-175.4	-176.03	-176.73	-177.39	-172.34	-173.02	-173.77	-174.36	-171.43	-172.11	-172.76
Bottom Depth (m)	112	121	136	147	58	59	87	99	63	61	44
Bottom Temperature (°C)	1.3	1.6	1.7	1.8	1.1	-0.8	0	0.5	-1.1	-1.2	1.1
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	1322	0	66	0	0	0	496
Mature males	0	0	0	0	1399	133	331	0	0	0	709
Legal	0	0	0	0	622	0	199	0	0	0	567
Immature females	0	0	0	0	777	199	0	0	0	0	0
Mature females	0	0	0	0	933	199	0	0	0	0	0
Total weight (kg)	0	0	0	0	47.16	4.17	10.84	0	0	0	20.72
Tanner Crab											
Small males	0	267	132	0	0	0	66	68	0	0	0
Large males	0	67	0	71	0	0	0	0	0	0	0
Legal	0	67	0	0	0	0	0	0	0	0	0
Immature females	66	67	0	212	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.69	0.03	0.37	0	0	0.18	0.04	0	0	0
Snow Crab											
Small males	4322	468	132	212	700	66	4501	8509	44108	8320	1559
Large males	1596	3075	329	212	0	0	1655	681	0	0	0
Legal	3391	3543	395	353	78	0	2978	2519	474	0	0
Immature females	0	0	395	212	544	66	5946	1157	45968	9505	425
Mature females	997	6310	0	0	155	0	1810	1566	15072	3209	0
Total weight (kg)	24.12	33.32	4.09	2.22	0.75	0.03	26.88	22.96	57.69	9.99	0.68
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	266	67	0	0	0	0	199	0	0	0	0
Males ≥ 78 mm	266	201	0	0	0	0	0	0	0	0	0
Immature females	0	67	0	0	0	0	66	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	2.31	1.96	0	0	0	0	0.42	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/18/2023	7/25/2023	7/24/2023	7/24/2023	7/24/2023	7/26/2023	7/25/2023	7/25/2023	7/17/2023	7/17/2023	7/17/2023
Duration (hour)	0.52	0.34	0.52	0.51	0.51	0.51	0.54	0.5	0.34	0.53	0.54
Distance Fished (km)	2.91	2	2.9	2.78	2.79	2.78	3.02	2.77	1.9	2.94	2.98
Mid-Latitude (°N)	60.67	60.67	60.66	60.67	60.67	60.67	60.67	60.67	60.99	61	61
Mid-Longitude (°W)	-173.48	-174.13	-174.83	-175.45	-176.21	-176.82	-177.5	-178.19	-171.5	-172.14	-172.82
Bottom Depth (m)	65	86	98	107	119	128	145	160	60	63	66
Bottom Temperature (°C)	-1.2	-0.5	0	0.4	1.1	1.6	1.5	2.7	-0.2	-1.2	-1.1
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	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											
Small males	0	0	0	69	274	0	252	340	0	0	0
Large males	0	0	0	0	0	0	63	68	0	0	0
Legal	0	0	0	0	0	0	63	0	0	0	0
Immature females	0	1545	0	69	137	0	314	340	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0.34	0	0.02	0.06	0	1.47	0.8	0	0	0
Snow Crab											
Small males	73322	158219	6188	9095	4387	556	692	0	64827	44883	252339
Large males	68	396	932	1245	2399	1668	2138	0	0	0	0
Legal	137	1782	1264	2213	5553	2015	2390	0	0	0	0
Immature females	96844	131367	5057	5208	137	208	566	136	40517	20079	117096
Mature females	1983	167182	6263	8585	960	139	0	0	12523	20079	24914
Total weight (kg)	36.58	184.06	20.92	34.23	31.33	15.89	19.72	0.02	34.68	44.94	166.96
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	0	3091	665	415	69	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	0	4636	466	899	137	0	0	0	0	0	0
Mature females	0	0	0	69	0	0	0	0	0	0	0
Total weight (kg)	0	1.28	0.61	1.13	0.03	0	0	0	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	7/25/2023	7/25/2023	7/26/2023	7/26/2023	7/26/2023	7/25/2023	7/25/2023	7/25/2023	7/31/2023	8/1/2023	8/1/2023
Duration (hour)	0.52	0.51	0.36	0.5	0.52	0.49	0.49	0.5	0.52	0.5	0.52
Distance Fished (km)	2.87	2.9	2.03	2.75	2.91	2.73	2.68	2.69	2.85	2.79	2.89
Mid-Latitude (°N)	61.01	61	61	61.01	61.01	61	61.01	61.32	61.33	61.34	61.34
Mid-Longitude (°W)	-173.5	-174.17	-174.86	-175.53	-176.27	-176.94	-177.62	-173.58	-174.34	-175	-175.65
Bottom Depth (m)	76	83	91	101	111	121	134	74	79	87	96
Bottom Temperature (°C)	-1.1	-0.8	-0.2	0.2	0.6	1.2	1.4	-1.3	-1	-0.4	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											
Small males	0	0	0	0	131	0	72	0	0	0	0
Large 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	66	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	0.33	0	0.01	0	0	0	0
Snow Crab											
Small males	91203	52963	754	3868	5457	3546	3324	107546	17080	10813	4298
Large males	0	0	0	860	525	2340	4191	69	0	64	0
Legal	205	128	0	1433	920	3333	5636	208	0	64	63
Immature females	27522	25553	94	2077	4253	426	1517	21641	10839	1864	212
Mature females	44072	48518	2262	5432	1182	6677	578	34298	9854	14914	5187
Total weight (kg)	121.25	74.61	1.66	17.79	12.93	30.42	41.04	89.79	20.49	26.56	12.24
Chionoecetes spp. Hybrid											
Males ≤ 77 mm	459	601	0	72	0	0	0	1225	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0	0
Immature females	1835	1503	0	72	0	0	0	408	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.66	0.79	0	0.05	0	0	0	0.35	0	0	0

Appendix A. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 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	8/1/2023	8/1/2023	7/31/2023	7/31/2023	8/2/2023	8/2/2023	8/2/2023	7/31/2023	8/2/2023	8/3/2023	8/3/2023
Duration (hour)	0.51	0.51	0.51	0.51	0.52	0.54	0.53	0.52	0.53	0.53	0.53
Distance Fished (km)	2.79	2.84	2.78	2.79	2.83	2.93	2.96	2.87	3	2.91	2.97
Mid-Latitude (°N)	61.34	61.34	61.65	61.66	61.68	61.67	61.67	61.98	62	62.01	62.01
Mid-Longitude (°W)	-176.33	-177.01	-173.67	-174.45	-175.11	-175.79	-176.46	-173.73	-174.51	-175.2	-175.84
Bottom Depth (m)	108	117	69	76	85	95	105	62	74	81	91
Bottom Temperature (°C)	0.3	0.5	-1.4	-1.6	-1.1	0.1	0.5	-1.4	-1.6	-1.6	-1.3
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											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Snow Crab											
Small males	5428	8491	21659	13874	11987	7823	3346	33627	44090	19487	35300
Large males	201	3813	0	0	0	0	0	0	0	0	0
Legal	940	5021	0	0	0	409	129	0	0	0	0
Immature females	3330	6676	9658	11991	9752	1679	2195	16541	44531	24326	29314
Mature females	9265	2225	19765	2649	9142	7834	4158	11337	10141	16570	22164
Total weight (kg)	19.28	52.87	27.02	12.61	22.44	16.29	11.29	32.4	43.7	31.33	73.06
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 2023 eastern Bering Sea bottom trawl survey stations.

Station	Z-05
Start Date	6/12/2023
Duration (hour)	0.52
Distance Fished (km)	2.9
Mid-Latitude (°N)	54.67
Mid-Longitude (°W)	-165.14
Bottom Depth (m)	81
Bottom Temperature (°C)	5.4
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	
Small males	0
Large males	0
Legal	0
Immature females	0
Mature females	0
Total weight (kg)	0
Snow Crab	
Small males	0
Large 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 2023 northern Bering Sea bottom trawl survey stations.

Station	AA-01	AA-02	AA-03	AA-04	AA-05	AA-06	AA-07	AA-08	AA-18	AA-19	AA-22
Start Date	8/11/2023	8/9/2023	8/10/2023	8/3/2023	8/2/2023	8/1/2023	8/1/2023	7/31/2023	8/6/2023	8/6/2023	8/4/2023
Duration (hour)	0.51	0.52	0.53	0.53	0.52	0.53	0.53	0.53	0.52	0.52	0.53
Distance Fished (km)	2.81	2.92	3.05	3.02	2.95	3.08	2.98	3	2.87	2.89	2.92
Mid-Latitude (°N)	63.69	63.67	63.66	63.67	63.67	63.67	63.67	63.68	63.67	63.66	63.55
Mid-Longitude (°W)	-168.27	-167.52	-166.78	-166.05	-165.28	-164.56	-163.79	-163.08	-169.04	-169.76	-172.01
Bottom Depth (m)	33	28	29	28	19	12	15	16	36	40	37
Bottom Temperature (°C)	2.8	6.4	5.9	5.9	9	11.1	10.4	7.7	2.7	7.7	2.7
Red King Crab											
Immature males	0	0	0	150	0	0	0	0	0	0	0
Mature males	0	0	148	524	0	0	0	0	0	0	0
Legal	0	0	148	449	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	494	0	0	82	0	0	0
Total weight (kg)	0	0	2.5	9.72	3.87	0	0	0.63	0	0	0
Blue King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	692
Mature males	0	0	0	0	0	0	0	0	0	0	1614
Legal	0	0	0	0	0	0	0	0	0	0	307
Immature females	0	0	0	0	0	0	0	0	0	0	77
Mature females	0	0	0	0	0	0	0	0	0	76	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0.62	32.05
Tanner Crab											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large males	0	0	0	0	0	0	0	0	0	0	77
Legal	0	0	0	0	0	0	0	0	0	0	77
Immature females	0	0	0	0	0	0	0	0	74	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	0.17
Snow Crab											
Small males	174727	42027	296	374	0	0	0	0	7518	3427	1614
Large males	0	0	0	0	0	0	0	0	0	76	0
Legal	0	0	0	0	0	0	0	0	0	76	0
Immature females	105884	18008	74	225	0	0	0	0	3126	533	615
Mature females	661	0	0	0	0	0	0	0	223	0	154
Total weight (kg)	66.11	11.67	0.07	0.18	0	0	0	0	3.75	0.55	0.48
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 B. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	BB-01	BB-02	BB-03	BB-04	BB-05	BB-06	BB-07	BB-08	BB-09	BB-10	BB-18
Start Date	8/11/2023	8/9/2023	8/9/2023	8/3/2023	8/1/2023	8/1/2023	7/31/2023	7/31/2023	7/31/2023	7/30/2023	8/6/2023
Duration (hour)	0.51	0.52	0.52	0.52	0.53	0.52	0.52	0.52	0.52	0.52	0.52
Distance Fished (km)	2.78	2.94	2.99	2.91	2.99	3	3.04	2.99	2.91	2.94	2.89
Mid-Latitude (°N)	64.01	63.99	64	64.01	64.01	64	64	64	64	63.99	64
Mid-Longitude (°W)	-168.3	-167.54	-166.82	-166.04	-165.33	-164.58	-163.85	-163.07	-162.27	-161.55	-169.05
Bottom Depth (m)	36	34	33	23	18	19	20	21	18	17	36
Bottom Temperature (°C)	1.6	3.8	6.2	6.5	9.6	8.4	6	4.7	3.8	2.3	2.4
Red King Crab											
Immature males	0	0	0	172	0	0	79	0	0	0	0
Mature males	0	0	145	1293	82	158	0	0	165	84	0
Legal	0	0	145	1034	82	158	0	0	165	84	0
Immature females	0	0	0	0	0	79	0	0	413	0	0
Mature females	0	0	0	0	573	0	0	0	0	0	0
Total weight (kg)	0	0	3.08	18.97	5.24	2.19	0.44	0	2.62	1.1	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											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Snow Crab											
Small males	1392	65227	1957	86	164	0	0	0	0	0	225679
Large 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	819	32720	1087	259	82	79	0	0	0	0	195981
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0.42	21.76	0.92	0.09	0.01	0.05	0	0	0	0	71.99
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 B. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	BB-19	BB-20	BB-21	BB-22	CC-01	CC-02	CC-03	CC-04	CC-05	CC-06	CC-07
Start Date	8/5/2023	8/5/2023	8/4/2023	8/4/2023	8/11/2023	8/11/2023	8/10/2023	8/3/2023	7/29/2023	7/29/2023	7/29/2023
Duration (hour)	0.53	0.55	0.53	0.53	0.51	0.53	0.52	0.52	0.54	0.54	0.53
Distance Fished (km)	2.94	3.05	2.99	2.93	2.79	2.9	2.91	2.99	3.13	3.03	3.01
Mid-Latitude (°N)	63.99	63.99	64	64.01	64.33	64.34	64.34	64.33	64.31	64.32	64.34
Mid-Longitude (°W)	-169.79	-170.54	-171.34	-172	-168.34	-167.56	-166.83	-166.06	-165.31	-164.53	-163.78
Bottom Depth (m)	34	30	28	53	39	31	30	24	23	15	18
Bottom Temperature (°C)	3.2	1.6	1.4	-0.1	1.3	6.2	7.5	7.3	8.4	8.5	5.5
Red King Crab											
Immature males	0	0	0	0	0	0	239	236	477	0	496
Mature males	0	0	0	0	0	0	795	629	636	0	83
Legal	0	0	0	0	0	0	636	472	556	0	83
Immature females	0	0	0	0	0	0	0	315	238	0	330
Mature females	0	0	0	0	0	0	0	79	0	0	0
Total weight (kg)	0	0	0	0	0	0	11.9	11.24	11.56	0	1.38
Blue King Crab											
Immature males	595	74	1424	148	0	83	0	0	0	0	0
Mature males	0	0	79	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	223	147	1187	74	174	0	0	0	0	0	0
Mature females	149	74	237	0	0	0	0	0	0	0	0
Total weight (kg)	4.01	1.03	12.66	1.18	0.64	0.35	0	0	0	0	0
Tanner Crab											
Small males	0	0	0	0	0	0	0	0	79	0	0
Large males	0	0	79	0	0	0	0	0	0	0	0
Legal	0	0	79	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	0.17	0	0	0	0	0	0.34	0	0
Snow Crab											
Small males	94151	37542	885517	118411	26608	111148	159	3383	79	0	0
Large males	0	0	79	444	0	0	0	0	0	0	0
Legal	0	0	0	148	0	0	0	0	0	0	0
Immature females	96627	25549	639658	65093	13906	62501	80	629	238	0	0
Mature females	0	662	65944	76928	0	0	0	0	0	0	0
Total weight (kg)	42.69	18.08	438.71	94.54	4.96	34.88	0.01	0.57	0.06	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	0	0	0	0	0	0	0	79	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	0.01	0	0

Appendix B. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	CC-08	CC-09	CC-10	CC-18	CC-19	CC-20	CC-21	DD-01	DD-02	DD-03	DD-18
Start Date	7/30/2023	7/30/2023	7/30/2023	8/6/2023	8/7/2023	8/7/2023	8/7/2023	8/10/2023	8/10/2023	8/10/2023	8/7/2023
Duration (hour)	0.53	0.53	0.54	0.51	0.51	0.45	0.5	0.51	0.52	0.53	0.54
Distance Fished (km)	3.01	2.96	3.19	2.81	2.83	2.44	2.75	2.8	2.88	2.86	2.96
Mid-Latitude (°N)	64.25	64.33	64.3	64.31	64.34	64.34	64.24	64.67	64.67	64.69	64.67
Mid-Longitude (°W)	-163.13	-162.25	-161.57	-169.1	-169.84	-170.6	-171.09	-168.34	-167.62	-166.86	-169.14
Bottom Depth (m)	21	20	16	40	40	37	40	39	31	24	43
Bottom Temperature (°C)	4	1.7	8	1.5	0.7	1	2.6	1.7	7	9.9	1.3
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	81	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	248	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)	0.01	0	0	0	0	0	0	0	0	0	0
Blue King Crab											
Immature males	0	0	0	0	159	465	658	0	84	0	147
Mature males	0	0	0	77	0	93	0	0	0	0	0
Legal	0	0	0	0	0	93	0	0	0	0	0
Immature females	0	0	0	0	397	1024	905	0	0	0	74
Mature females	0	0	0	77	0	0	0	85	84	0	0
Total weight (kg)	0	0	0	1.32	2.6	4.63	4.88	0.39	1.33	0	0.77
Tanner Crab											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Snow Crab											
Small males	0	0	0	271200	759735	211019	204068	126040	4515	81	140159
Large males	0	0	0	0	0	0	82	0	0	0	0
Legal	0	0	0	0	0	0	82	0	0	0	0
Immature females	0	0	0	158888	441559	79455	146628	84027	1839	81	91102
Mature females	0	0	0	0	238	465	26360	0	0	0	74
Total weight (kg)	0	0	0	51.51	182.43	71.47	101.95	36.13	1.21	0.01	25.33
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	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 2023 northern Bering Sea bottom trawl survey stations.

Station	DD-19	DD-20	EE-01	EE-02	EE-18	EE-19	FF-01	FF-02	FF-18	R-01	R-02
Start Date	8/7/2023	8/8/2023	8/9/2023	8/9/2023	8/8/2023	8/8/2023	8/9/2023	8/9/2023	8/8/2023	8/18/2023	8/17/2023
Duration (hour)	0.53	0.51	0.53	0.51	0.51	0.51	0.51	0.51	0.25	0.54	0.52
Distance Fished (km)	2.95	2.8	2.91	2.83	2.82	2.86	2.82	2.78	1.38	3.13	2.93
Mid-Latitude (°N)	64.66	64.65	65	65	65.01	64.98	65.33	65.31	65.22	60.67	60.67
Mid-Longitude (°W)	-169.91	-170.61	-168.36	-167.63	-169.12	-169.87	-168.38	-167.67	-168.89	-168	-167.33
Bottom Depth (m)	47	48	45	34	49	48	53	38	53	28	25
Bottom Temperature (°C)	1.7	2.1	2.2	7.7	1.3	1.2	4	8.7	2.2	9	9.9
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	172	0	0	0	252	0	0	0
Legal	0	0	0	86	0	0	0	84	0	0	0
Immature females	0	0	0	0	0	0	0	84	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	2.06	0	0	0	2.82	0	0	0
Blue King Crab											
Immature males	0	606	0	0	0	287	709	0	0	0	0
Mature males	0	0	0	0	0	0	158	0	0	0	0
Legal	0	0	0	0	0	0	79	0	0	0	0
Immature females	0	227	0	0	0	287	158	0	0	0	0
Mature females	0	76	0	86	0	72	158	84	0	0	0
Total weight (kg)	0	4.99	0	1.04	0	2.59	10.57	0.88	0	0	0
Tanner Crab											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Snow Crab											
Small males	186263	176955	45924	258	71851	80135	20872	505	50178	0	0
Large males	140	227	0	0	914	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	150799	97844	14744	0	47924	66299	8584	168	28426	0	0
Mature females	841	4724	0	0	523	573	0	0	456	0	0
Total weight (kg)	85.75	74.95	11.74	0.01	28.83	25.92	7.08	0.03	9.26	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	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 2023 northern Bering Sea bottom trawl survey stations.

Station	R-18	R-19	R-20	S-02	S-18	S-21	T-01	T-02	T-03	T-18	T-19
Start Date	8/18/2023	8/20/2023	8/20/2023	8/17/2023	8/19/2023	8/19/2023	8/16/2023	8/17/2023	8/15/2023	8/16/2023	8/19/2023
Duration (hour)	0.52	0.52	0.51	0.53	0.51	0.5	0.53	0.53	0.54	0.53	0.5
Distance Fished (km)	2.89	2.88	2.8	3.02	2.82	2.75	3.07	3.03	3.02	3.06	2.76
Mid-Latitude (°N)	60.67	60.68	60.67	61	61.02	61	61.33	61.34	61.33	61.33	61.34
Mid-Longitude (°W)	-168.7	-169.37	-170.05	-167.34	-168.74	-170.82	-168.05	-167.38	-166.74	-168.78	-169.45
Bottom Depth (m)	37	43	49	24	36	54	30	24	14	35	40
Bottom Temperature (°C)	7.6	4.1	1.6	9.4	7.9	-0.8	8.1	9.2	11	7.3	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	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											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Snow Crab											
Small males	0	0	39039	0	0	73024	0	0	0	66	568
Large 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	448	42998	0	0	89667	0	0	0	0	324
Mature females	0	0	151	0	0	11420	0	0	0	0	0
Total weight (kg)	0	0.08	23.87	0	0	66.43	0	0	0	0.01	0.12
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 B. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	T-20	T-22	T-23	T-24	U-02	U-03	U-18	U-21	U-22	V-03	V-18
Start Date	8/19/2023	8/18/2023	8/18/2023	8/18/2023	8/15/2023	8/15/2023	8/16/2023	8/18/2023	8/18/2023	8/14/2023	8/13/2023
Duration (hour)	0.51	0.5	0.51	0.51	0.55	0.4	0.52	0.5	0.5	0.53	0.51
Distance Fished (km)	2.81	2.77	2.84	2.8	3.2	2.25	2.94	2.75	2.72	2.96	2.89
Mid-Latitude (°N)	61.33	61.33	61.33	61.34	61.66	61.66	61.67	61.67	61.65	62	61.99
Mid-Longitude (°W)	-170.17	-171.53	-172.26	-172.93	-167.42	-166.75	-168.8	-170.9	-171.58	-166.7	-168.84
Bottom Depth (m)	47	56	63	69	26	21	36	50	55	21	37
Bottom Temperature (°C)	0.1	-0.3	-0.8	-1	9.3	10.2	5	0.3	-0.1	10.9	3.7
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											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Snow Crab											
Small males	71773	15167	6207	22717	0	0	0	35041	24096	0	75
Large males	0	73	67	73	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	50622	12141	5452	17420	0	0	74	35380	17635	0	0
Mature females	1264	4363	9595	20770	0	0	0	2201	4008	0	0
Total weight (kg)	36.6	17.28	12.87	35.21	0	0	0.02	23.18	19.56	0	0.01
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 B. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	V-19	V-20	V-21	V-22	V-23	V-24	W-01	W-02	W-03	W-19	W-20
Start Date	8/13/2023	8/16/2023	8/17/2023	8/17/2023	8/17/2023	8/17/2023	8/12/2023	8/14/2023	8/14/2023	8/13/2023	8/16/2023
Duration (hour)	0.51	0.51	0.52	0.5	0.54	0.52	0.53	0.54	0.53	0.52	0.5
Distance Fished (km)	2.89	2.84	2.84	2.74	2.99	2.87	3.02	3.14	2.97	3.01	2.73
Mid-Latitude (°N)	62	62	62.01	62	62	62.01	62.33	62.33	62.33	62.33	62.34
Mid-Longitude (°W)	-169.56	-170.26	-170.94	-171.62	-172.34	-173.05	-168.16	-167.45	-166.72	-169.6	-170.32
Bottom Depth (m)	42	46	50	52	55	58	31	26	22	36	40
Bottom Temperature (°C)	1.5	0.6	0.3	-0.2	-0.8	-1.1	6.8	7.9	10.4	1.9	0.9
Red King Crab											
Immature males	0	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	74	0	0	0	74	0	0	0
Legal	0	0	0	74	0	0	0	74	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	2.72	0	0	0	1.15	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											
Small males	0	0	0	0	0	0	0	0	0	0	0
Large 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
Snow Crab											
Small males	0	35400	51360	29748	65265	35824	0	147	0	0	31954
Large males	0	0	72	0	66	70	0	0	0	0	86
Legal	0	0	0	0	0	0	0	0	0	0	0
Immature females	307	27638	58446	38252	44055	28677	0	147	0	0	26358
Mature females	0	449	2536	1633	8678	6582	0	0	0	0	9117
Total weight (kg)	0.16	13.36	30.09	20.88	54.75	37.08	0	0.02	0	0	22.38
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 B. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	W-21	W-22	W-23	W-26	W-27	X-01	X-18	X-19	X-20	X-23
Start Date	8/16/2023	8/16/2023	8/16/2023	8/3/2023	8/3/2023	8/12/2023	8/12/2023	8/12/2023	8/12/2023	8/15/2023
Duration (hour)	0.53	0.51	0.5	0.52	0.54	0.39	0.51	0.52	0.54	0.54
Distance Fished (km)	2.95	2.83	2.78	2.93	3.01	2.21	2.9	2.85	3	2.98
Mid-Latitude (°N)	62.33	62.33	62.33	62.32	62.33	62.66	62.67	62.67	62.67	62.67
Mid-Longitude (°W)	-171.06	-171.75	-172.42	-174.58	-175.27	-168.18	-168.89	-169.58	-170.34	-172.51
Bottom Depth (m)	42	47	54	70	78	34	36	40	42	54
Bottom Temperature (°C)	0.2	-0.4	-0.7	-1.6	-1.6	3.2	2.3	0.8	0.2	-1.1
Red King Crab										
Immature males	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	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
Mature males	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0
Tanner Crab										
Small males	0	0	0	0	0	0	0	0	0	0
Large males	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0
Snow Crab										
Small males	137777	90616	110676	30991	16342	524	349	563358	4742	54356
Large males	0	0	0	0	324	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	84467	59053	42942	24103	10355	314	0	339918	2301	42333
Mature females	7202	2153	6974	11891	6634	0	0	33513	0	2509
Total weight (kg)	68.55	50.69	52.67	35.77	17.31	0.14	0.05	369.1	2.37	27.32
Chionoecetes spp. Hybrid										
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0

Appendix B. – Tow details, crab density (number nmi^{-2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	X-25	Y-01	Y-02	Y-03	Y-04	Y-18	Y-21	Y-22	Y-25	ZZ-01
Start Date	8/14/2023	8/12/2023	8/11/2023	8/11/2023	8/2/2023	8/12/2023	8/13/2023	8/13/2023	8/14/2023	8/11/2023
Duration (hour)	0.51	0.5	0.52	0.53	0.52	0.51	0.51	0.52	0.52	0.53
Distance Fished (km)	2.82	2.77	2.97	3.07	2.98	2.82	2.83	2.88	2.85	3.01
Mid-Latitude (°N)	62.65	63.01	62.99	63	63.01	62.87	62.99	62.98	63	63.35
Mid-Longitude (°W)	-173.91	-168.22	-167.45	-166.77	-166.02	-168.83	-171.13	-171.8	-174.02	-168.27
Bottom Depth (m)	68	39	36	29	21	39	47	52	74	31
Bottom Temperature (°C)	-1.6	3	5.5	8.7	9.1	2.1	0	-0.8	-1.5	4.3
Red King Crab										
Immature males	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	74	84	0	0	0	0	0
Total weight (kg)	0	0	0	0.64	0.5	0	0	0	0	0
Blue King Crab										
Immature males	0	0	0	0	0	0	0	0	0	0
Mature males	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0
Tanner Crab										
Small males	0	0	0	0	0	0	0	0	0	0
Large males	0	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0
Snow Crab										
Small males	17090	646249	0	0	0	6016	8140	71	18275	1368
Large males	72	0	0	0	0	0	0	0	0	0
Legal	0	0	0	0	0	0	0	0	0	0
Immature females	8429	659774	0	294	0	3047	3585	71	12129	644
Mature females	10035	824	0	0	0	78	0	0	12466	80
Total weight (kg)	15.5	206.74	0	0.05	0	1.88	1.02	0	19.56	0.61
Chionoecetes spp. Hybrid										
Males ≤ 77 mm	0	0	0	0	0	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0	0	0	0	0	0
Immature females	0	0	0	0	0	0	0	0	0	0
Mature females	0	0	0	0	0	0	0	0	0	0
Total weight (kg)	0	0	0	0	0	0	0	0	0	0

Appendix B. – Tow details, crab density (number nmi-^{2}), and catch weight at 2023 northern Bering Sea bottom trawl survey stations.

Station	ZZ-03	ZZ-04	ZZ-05	ZZ-23	ZZ-24
Start Date	8/10/2023	8/2/2023	8/2/2023	8/13/2023	8/13/2023
Duration (hour)	0.54	0.5	0.43	0.51	0.5
Distance Fished (km)	3.15	2.81	2.53	2.82	2.76
Mid-Latitude (°N)	63.33	63.32	63.33	63.33	63.34
Mid-Longitude (°W)	-166.76	-166.03	-165.35	-172.58	-173.38
Bottom Depth (m)	28	24	17	63	70
Bottom Temperature (°C)	6.4	7.9	10.6	0	-1.3
Red King Crab					
Immature males	0	0	0	0	0
Mature males	70	0	0	0	0
Legal	70	0	0	0	0
Immature females	0	0	0	0	0
Mature females	0	0	0	0	0
Total weight (kg)	0.92	0	0	0	0
Blue King Crab					
Immature males	0	0	0	72	0
Mature males	0	0	0	0	0
Legal	0	0	0	0	0
Immature females	0	0	0	0	0
Mature females	0	0	0	0	0
Total weight (kg)	0	0	0	0.31	0
Tanner Crab					
Small males	0	0	0	0	0
Large males	0	0	0	0	0
Legal	0	0	0	0	0
Immature females	0	0	0	216	0
Mature females	0	0	0	0	0
Total weight (kg)	0	0	0	0.52	0
Snow Crab					
Small males	209	0	0	53163	70958
Large males	0	0	0	360	73
Legal	0	0	0	0	73
Immature females	0	0	0	58433	77944
Mature females	0	0	0	13878	35974
Total weight (kg)	0.02	0	0	43.08	52.27
Chionoecetes spp. Hybrid					
Males ≤ 77 mm	0	0	0	0	0
Males ≥ 78 mm	0	0	0	0	0
Immature females	0	0	0	0	0
Mature females	0	0	0	0	0
Total weight (kg)	0	0	0	0	0

U.S. Secretary of Commerce
Gina M. Raimondo

Under Secretary of Commerce for Oceans and Atmosphere
Dr. Richard W. Spinrad

Assistant Administrator, National Marine Fisheries Service.
Janet Coit

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www.nmfs.noaa.gov

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National Marine Fisheries Service
Alaska Fisheries Science Center
7600 Sand Point Way N.E.
Seattle, WA 98115-6349