

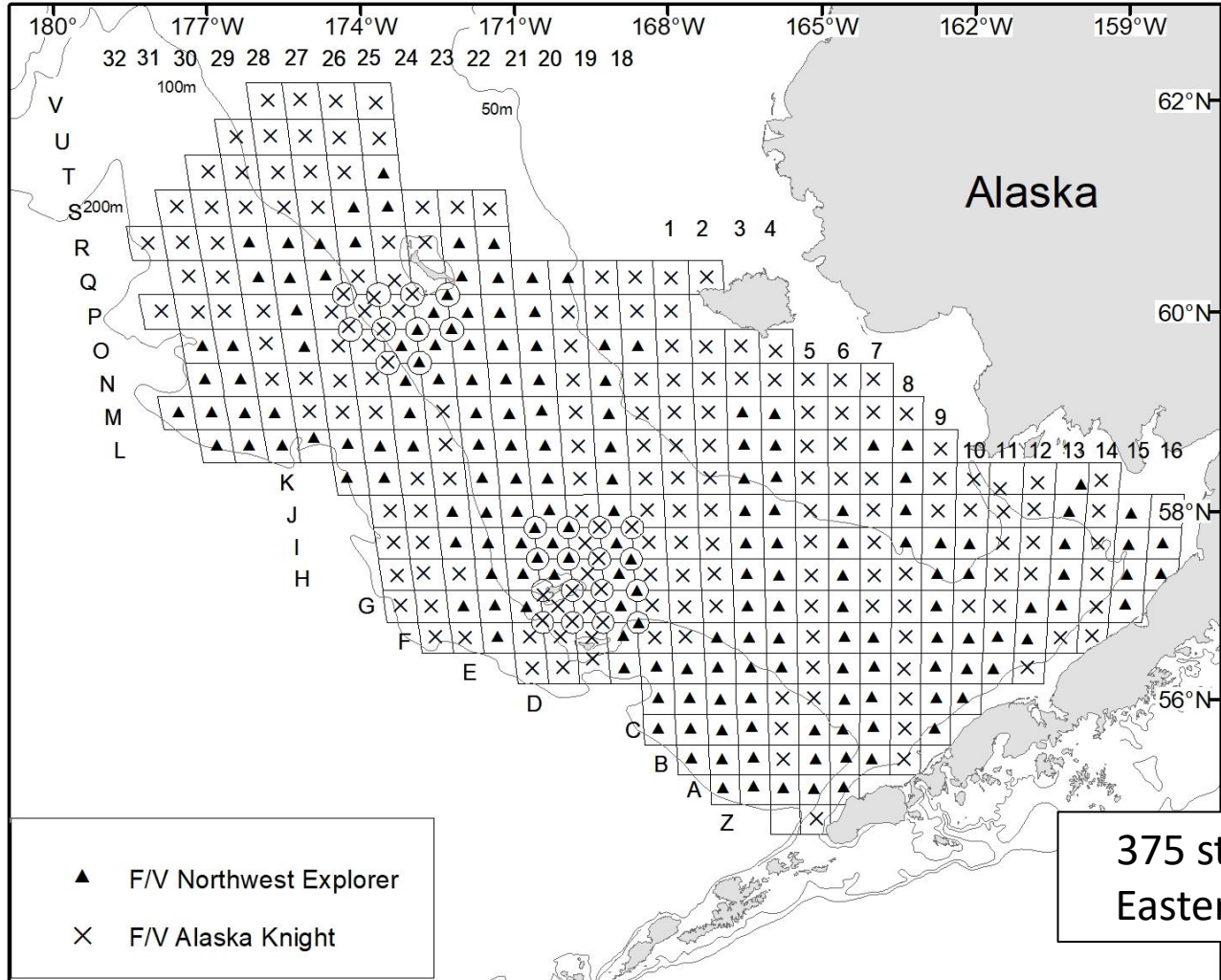
2023 trawl survey results: Eastern Bering Sea crab stocks

Leah Zacher, Jon Richar, Erin Fedewa, Emily Ryznar, and Mike Litzow

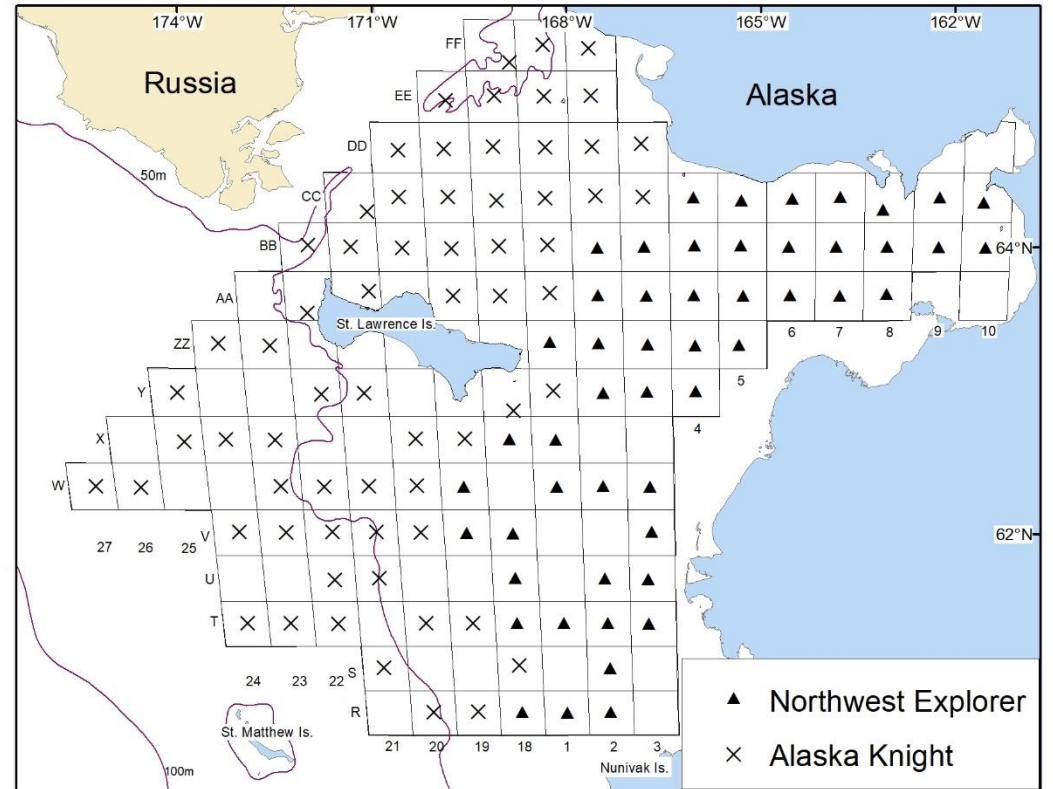
With contributions from everyone in the Shellfish Assessment Program

Outline

- Survey effort
- Bottom temperatures
- Red king crab (Bristol Bay, Pribilofs, Northern District)
- Red king crab – Bristol Bay retow decision
- Blue king crab
- Tanner Crab
- Snow crab (Eastern and preliminary Northern Bering)
- *Chionoecetes* hybrids

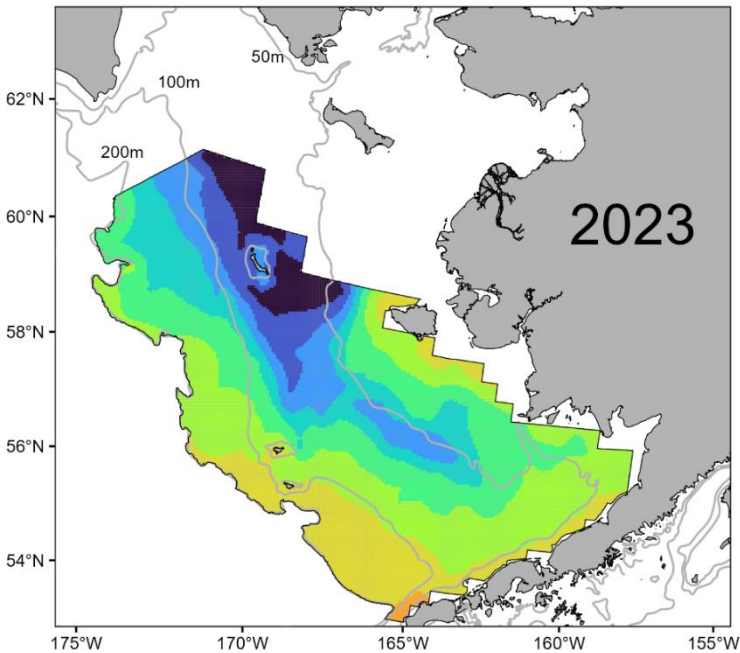
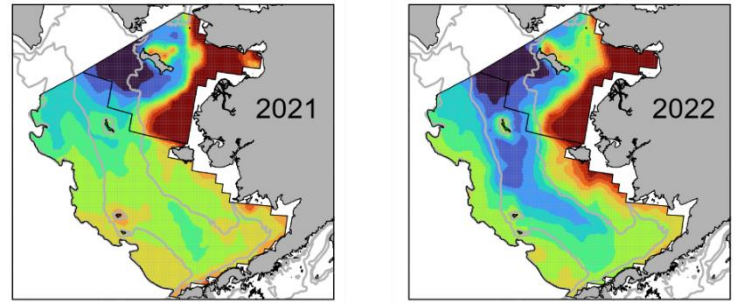
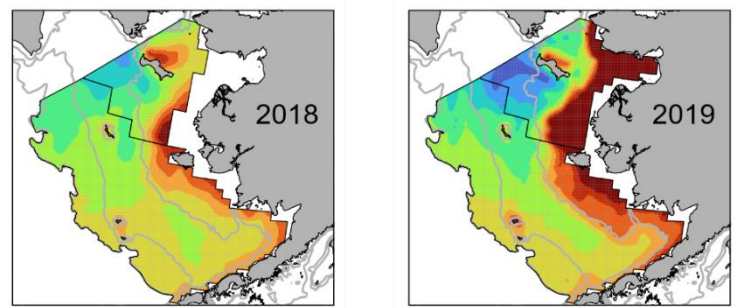


375 stations in the Eastern Bering Sea

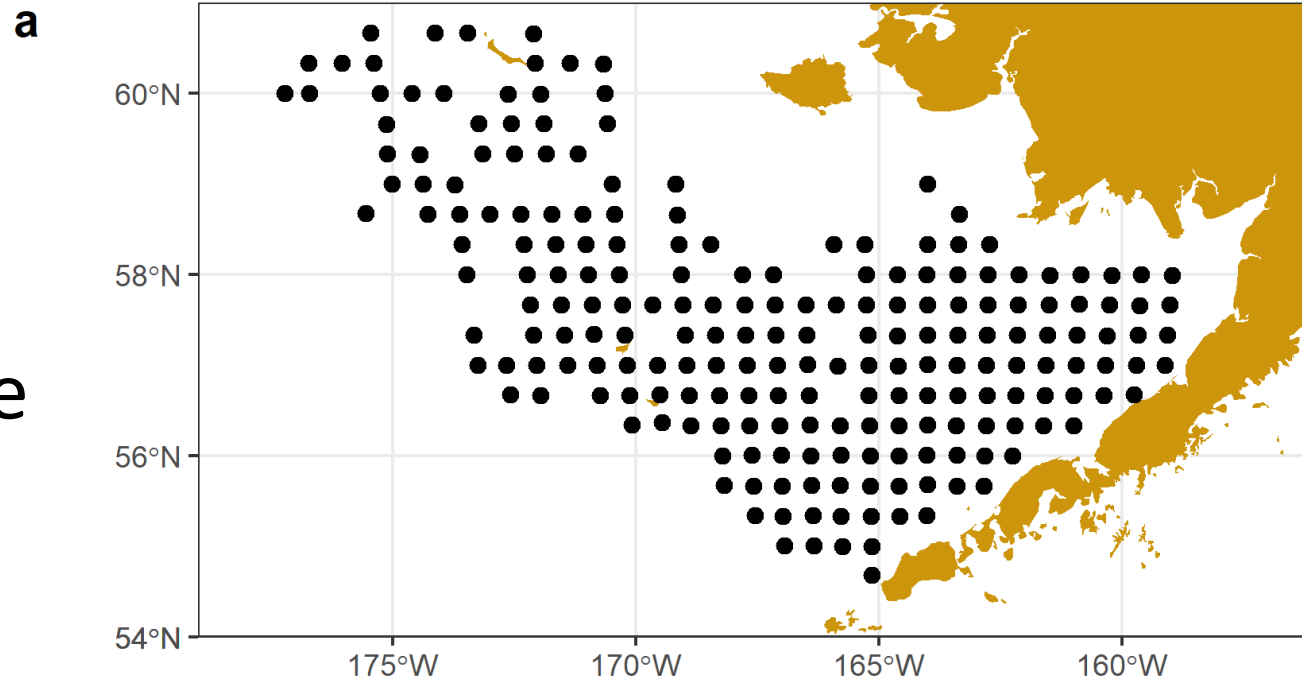


116 stations in the Northern Bering Sea out of 144

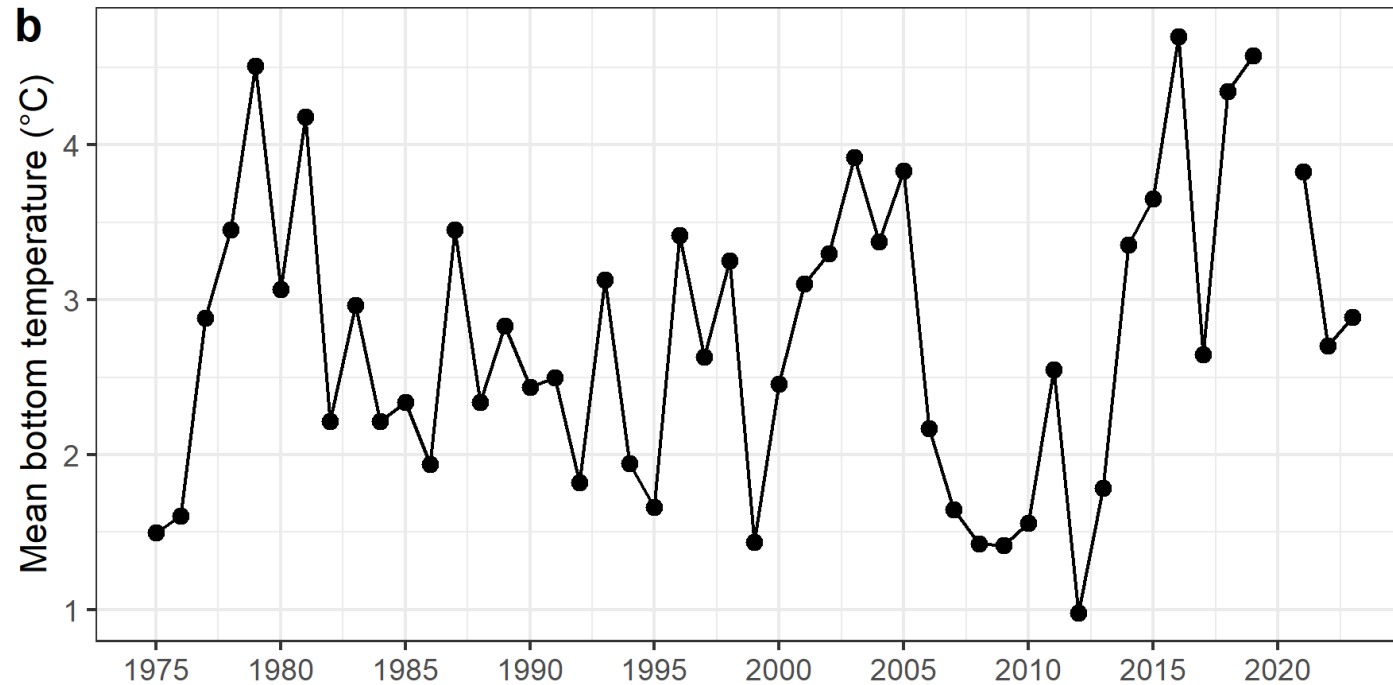
Cold pool present
in southeast
Bering Sea
(similar to 2022)



Bottom
temperature close
to 1975-2023
time series mean



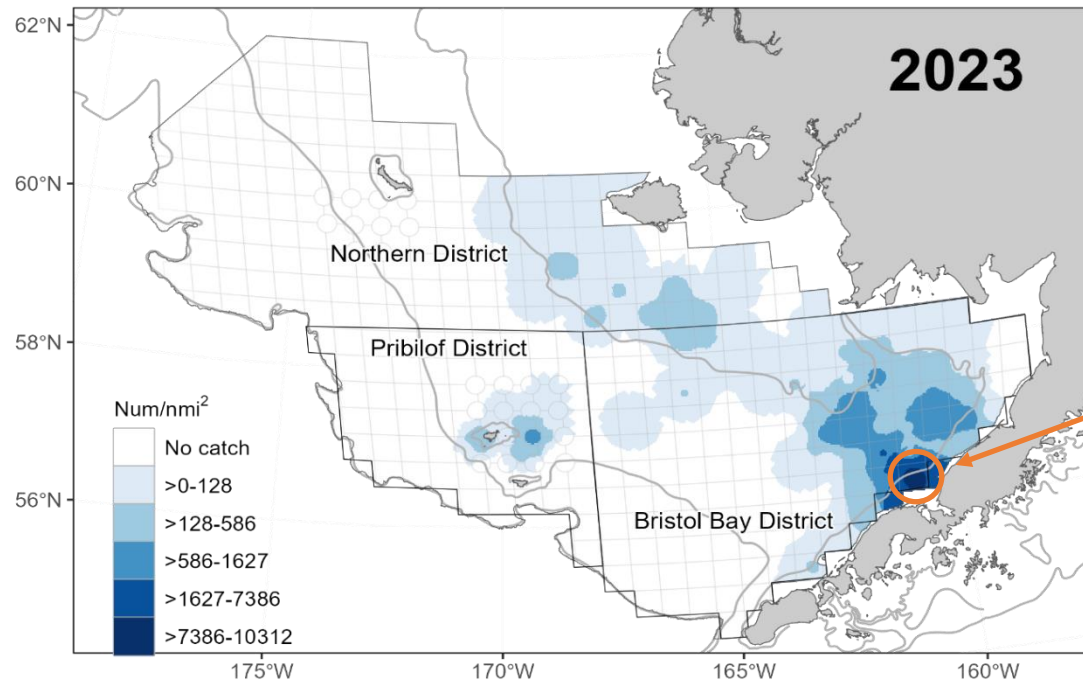
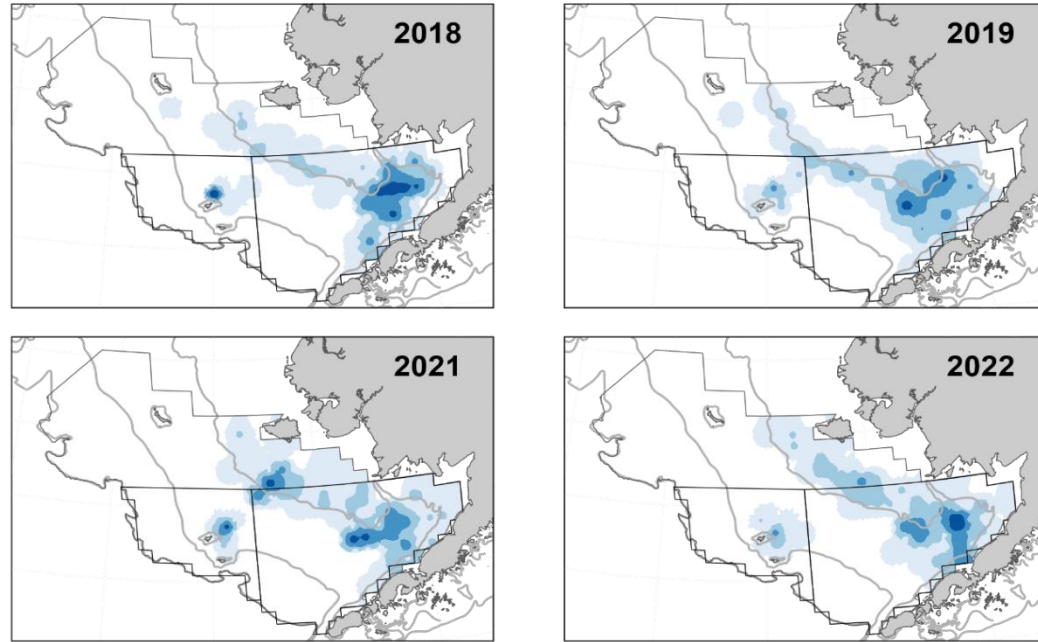
(temperatures
controlled for
missing values
and sampling
date)



Red king crab

Distribution
by year

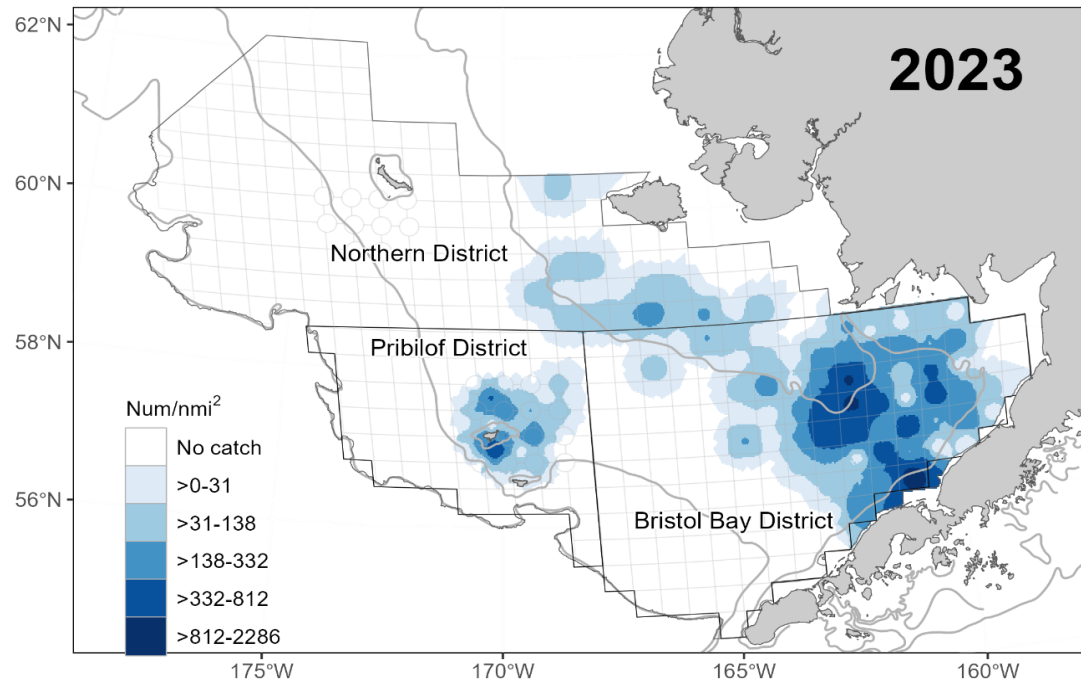
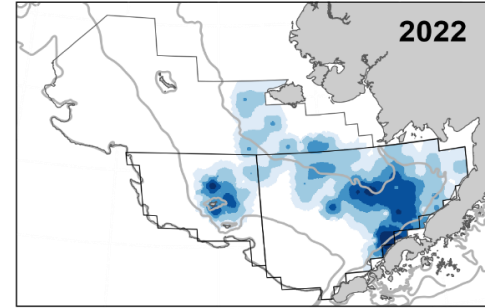
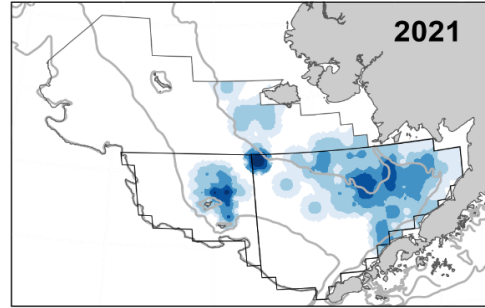
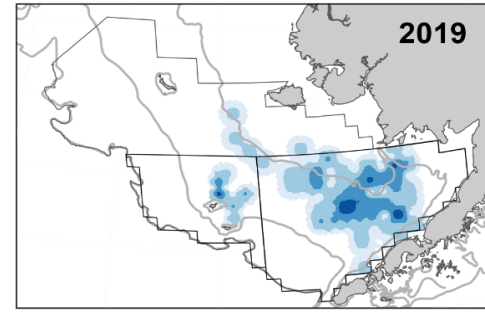
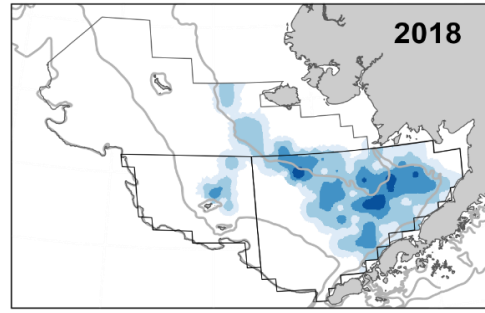
Red King Crab Mature Female



37% of BBRKC
mature
females at
station E-12

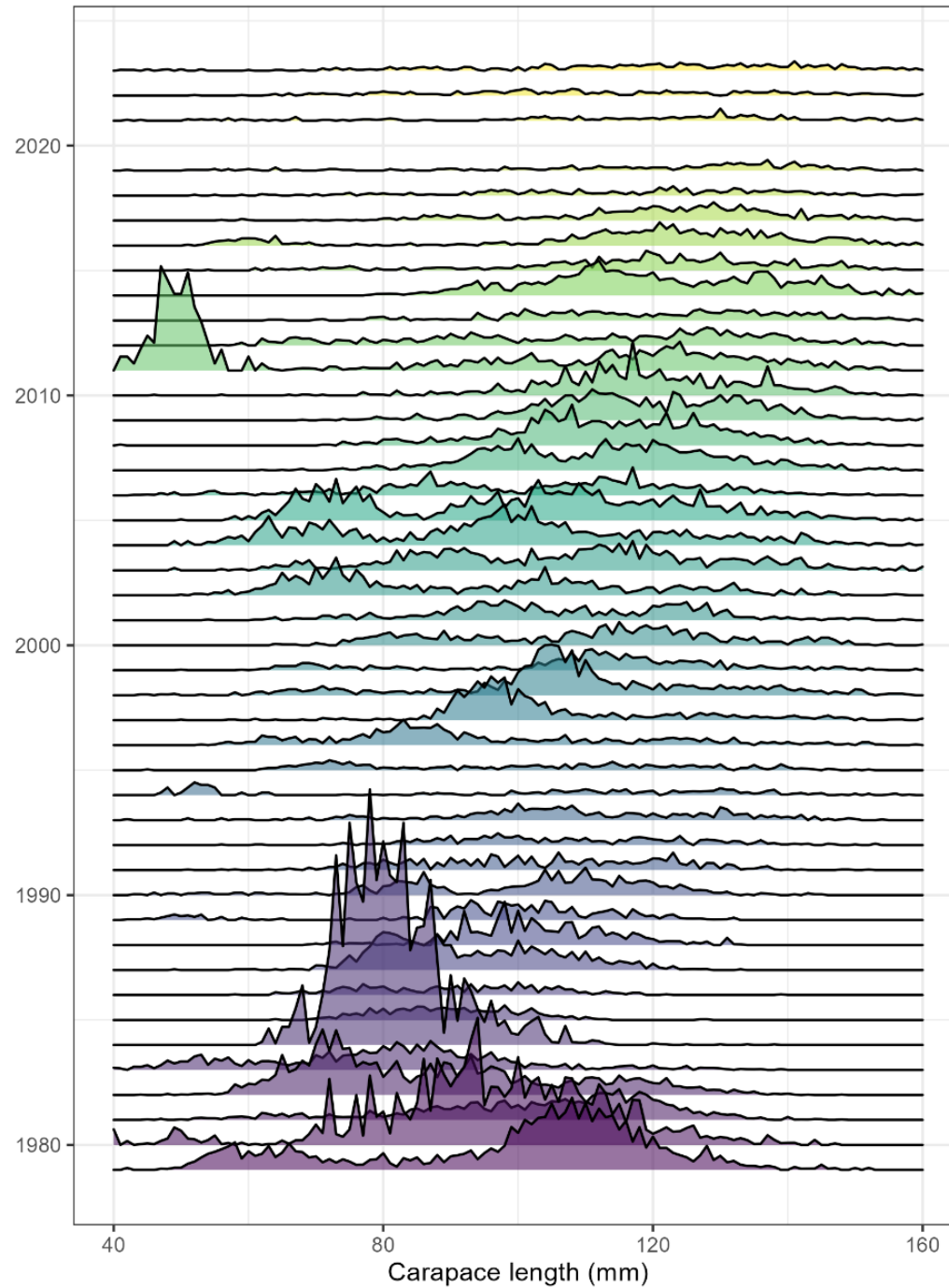
Distribution by year

Red King Crab Legal Male



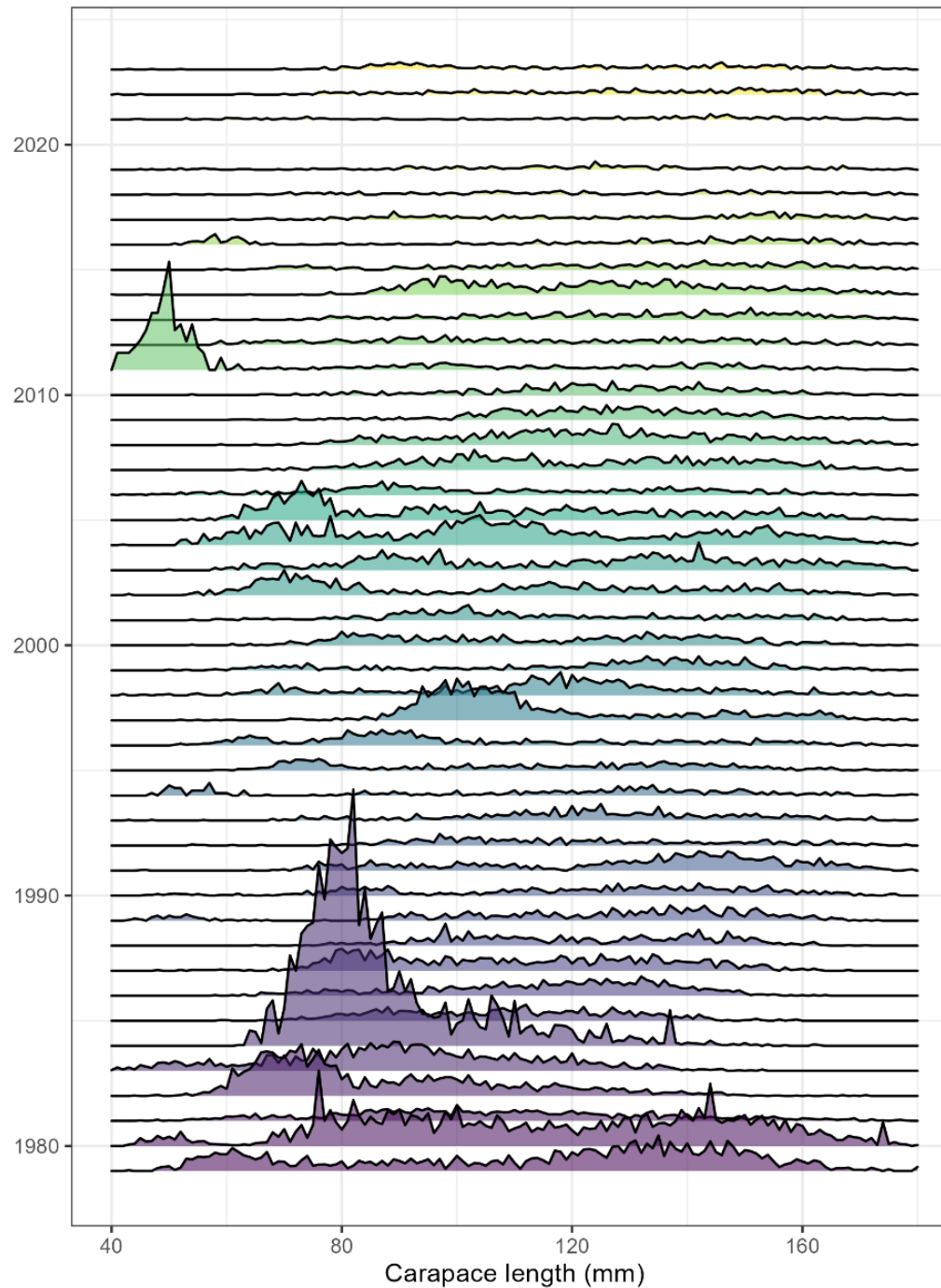
Abundance by size, 1979-2023

Female Bristol Bay Red King Crab



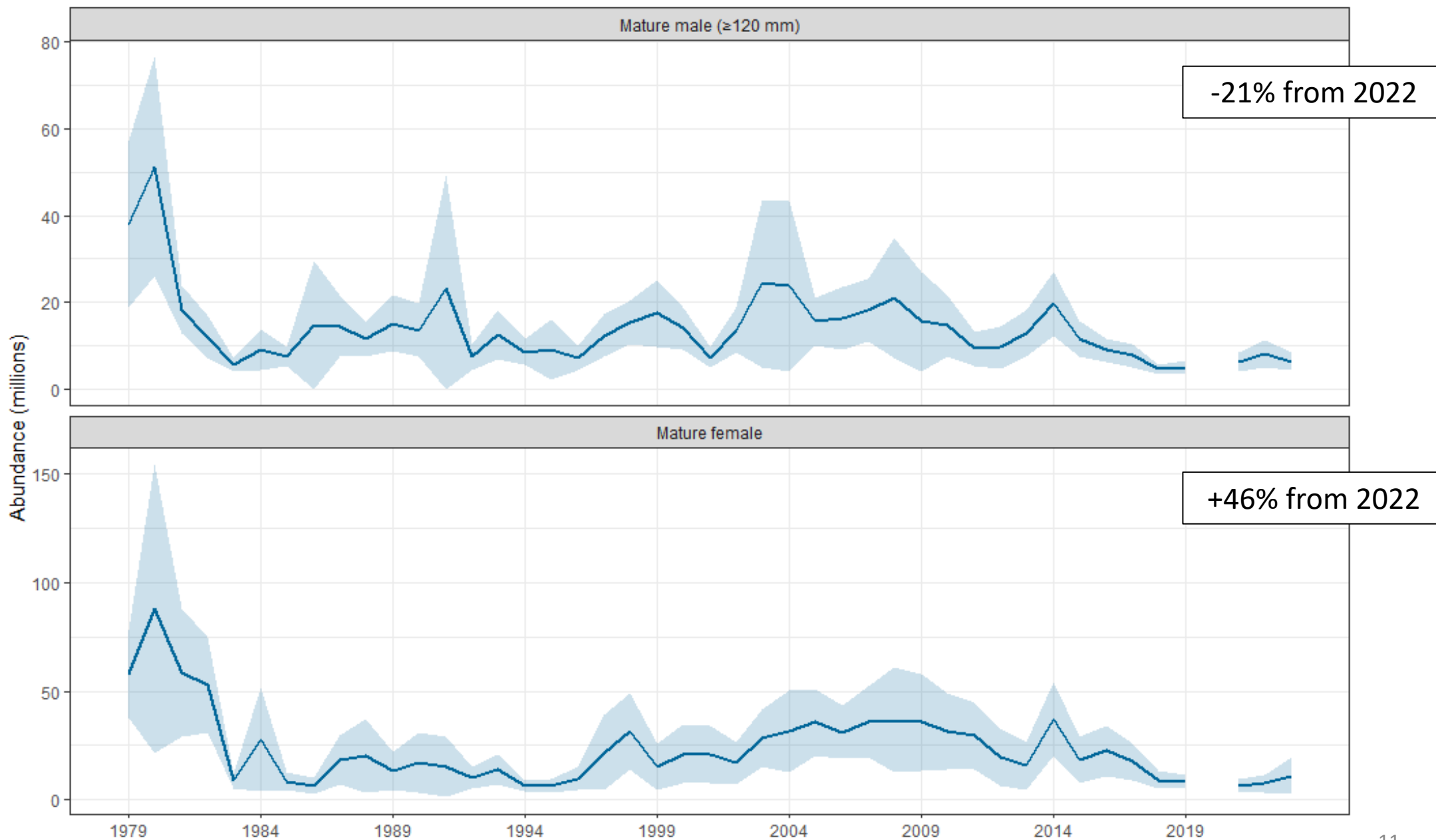
Abundance by size, 1979-2023

Male Bristol Bay Red King Crab

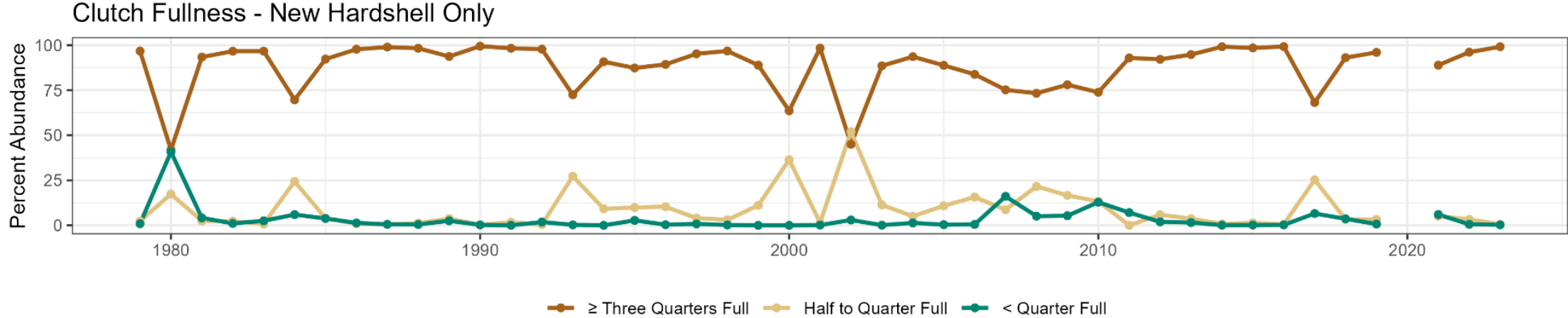


Estimated abundance

Bristol Bay Red King Crab

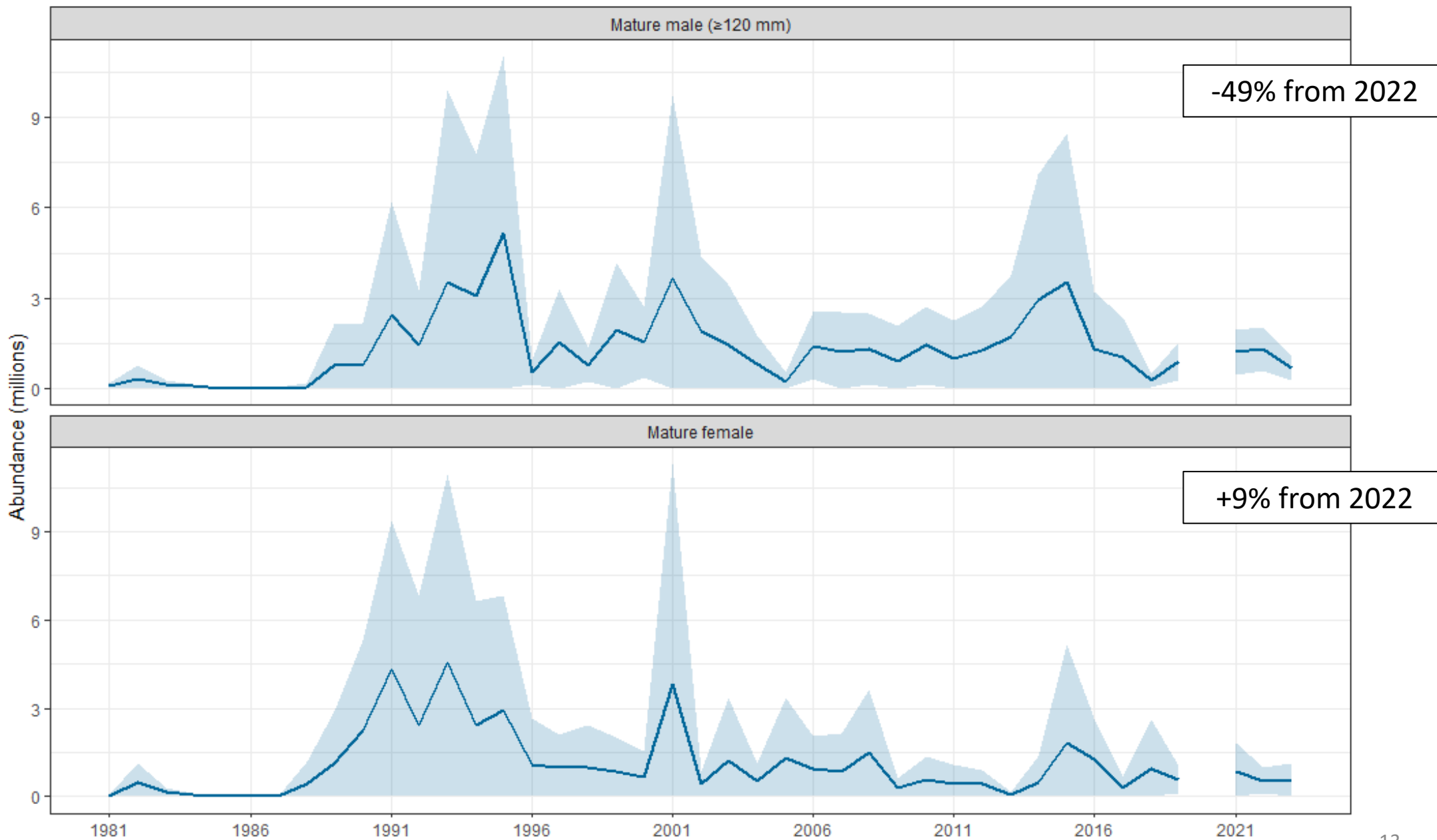


BBRKC clutch fullness



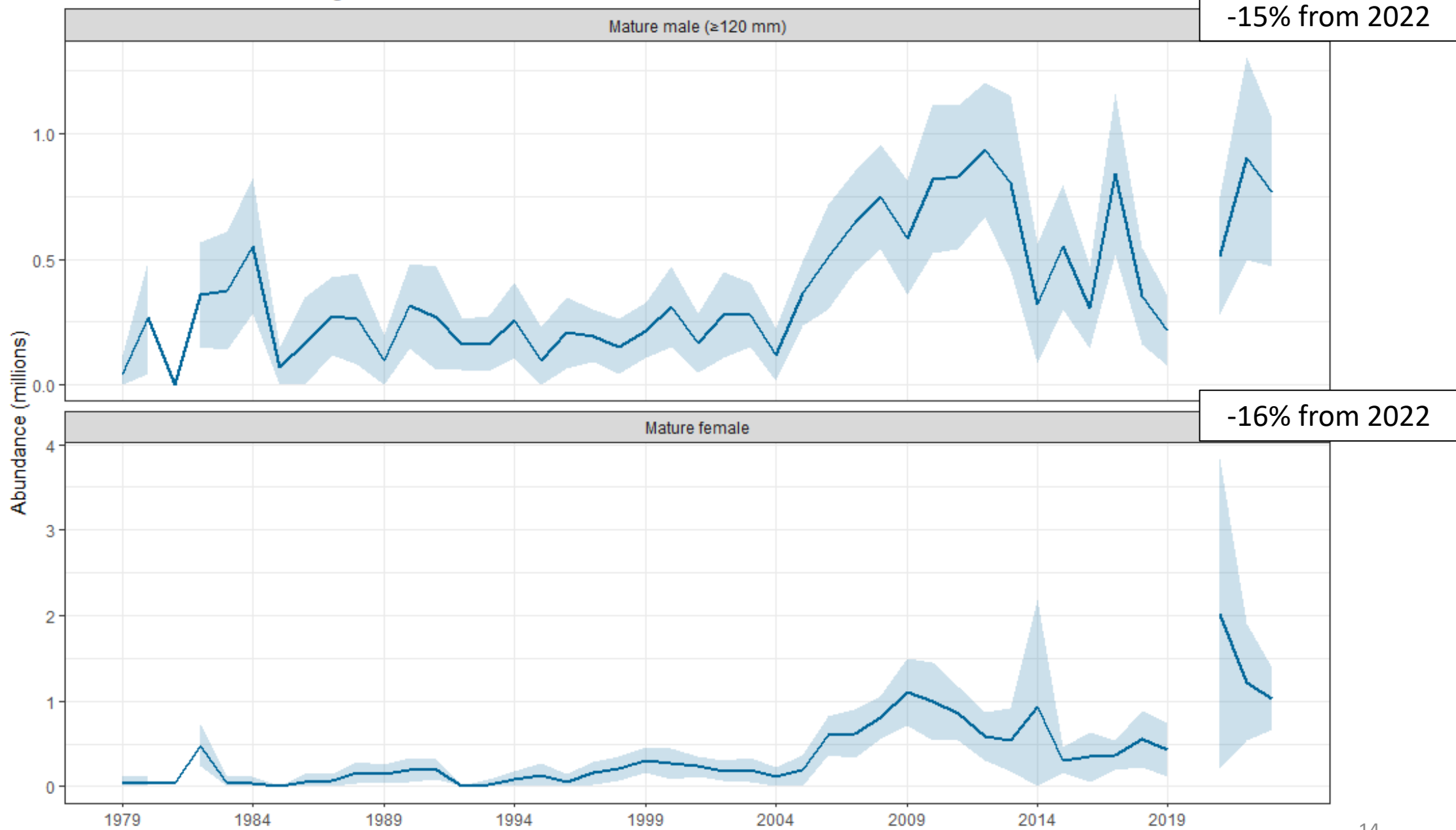
Estimated abundance

Pribilof Islands Red King Crab



Estimated abundance

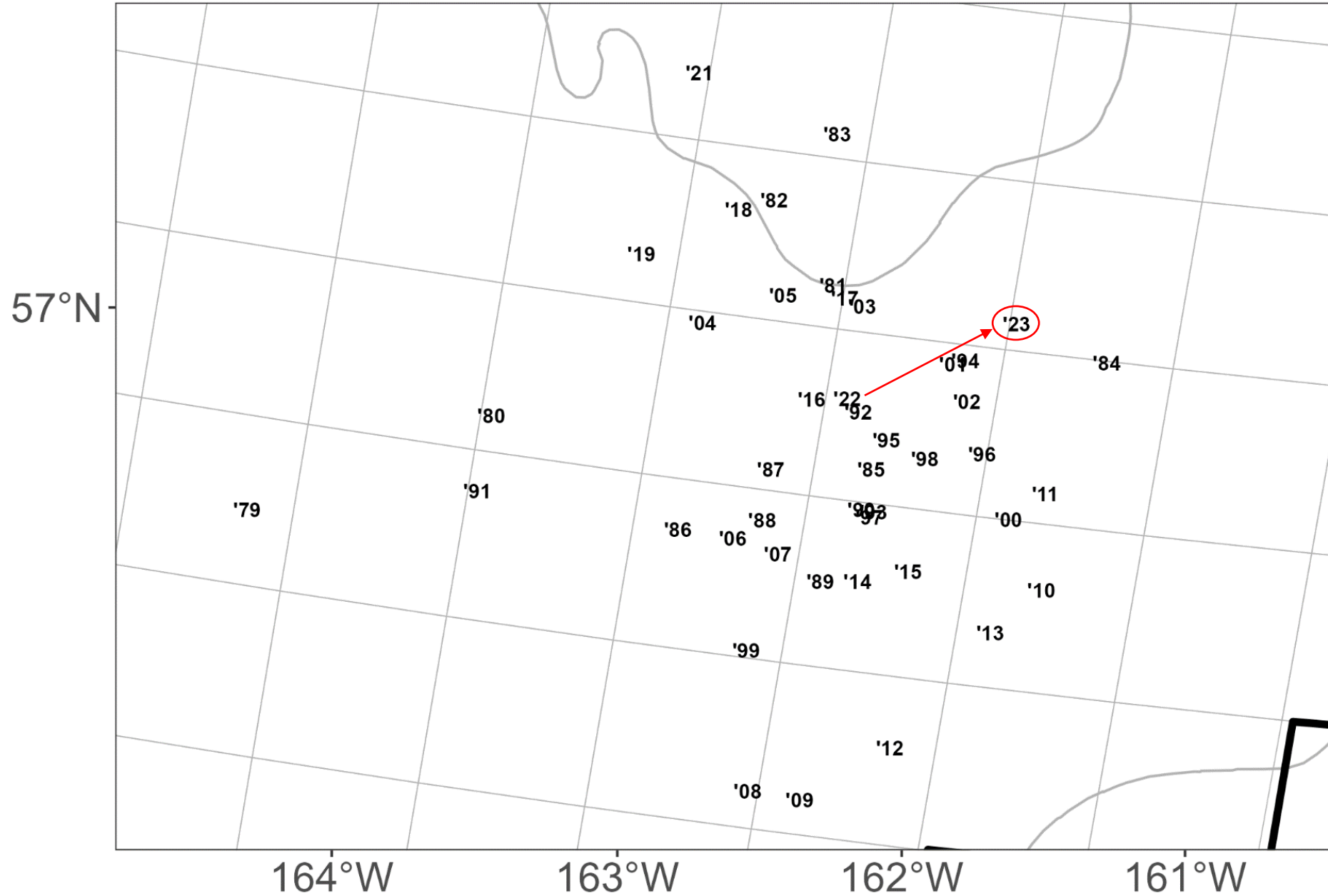
Northern District Red King Crab



Bristol Bay Red King Crab

Legal Male

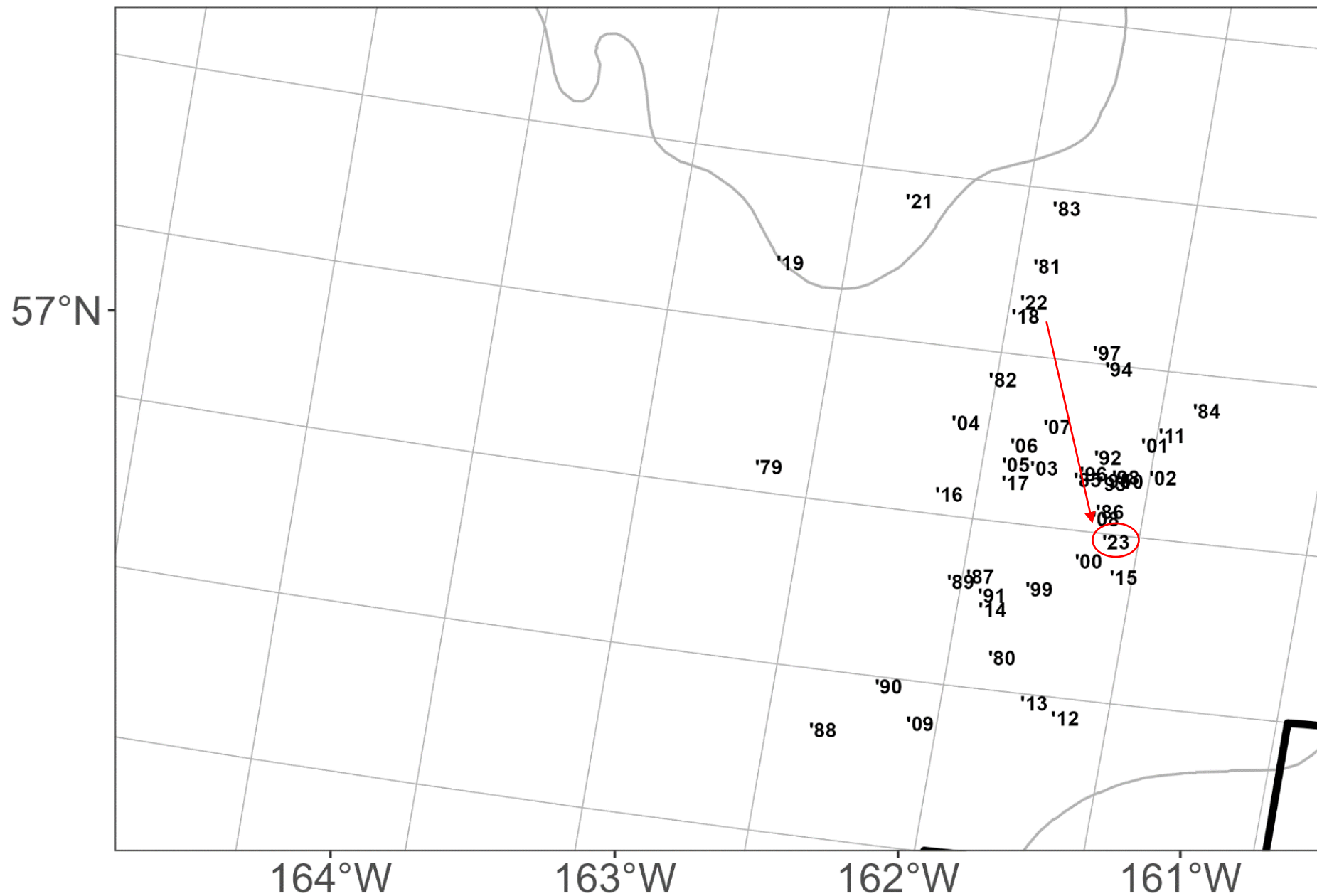
Centers of
abundance
1979-2023



Bristol Bay Red King Crab

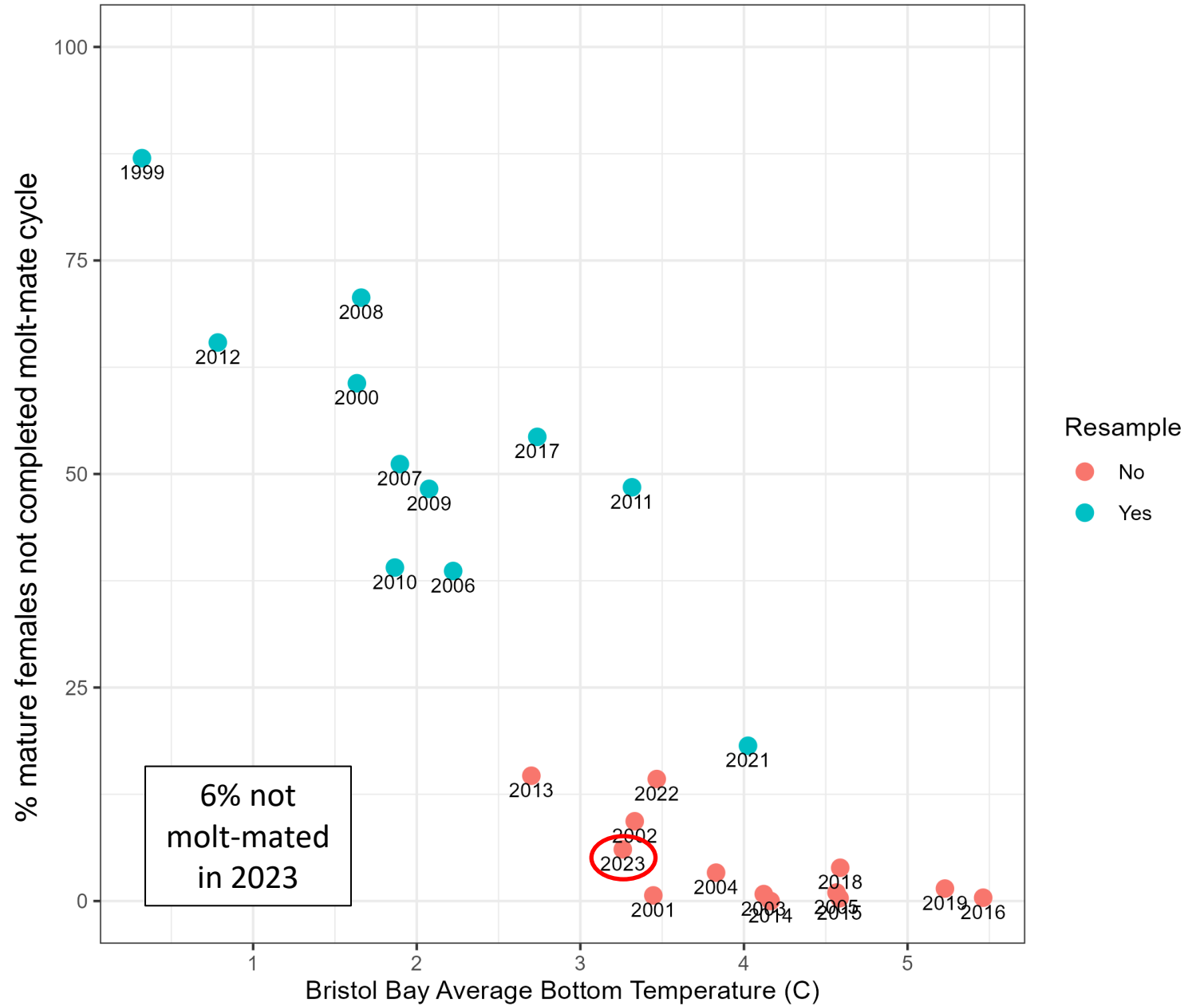
Mature Female

Centers of
abundance
1979-2023



Bristol bay red king
crab retow decision

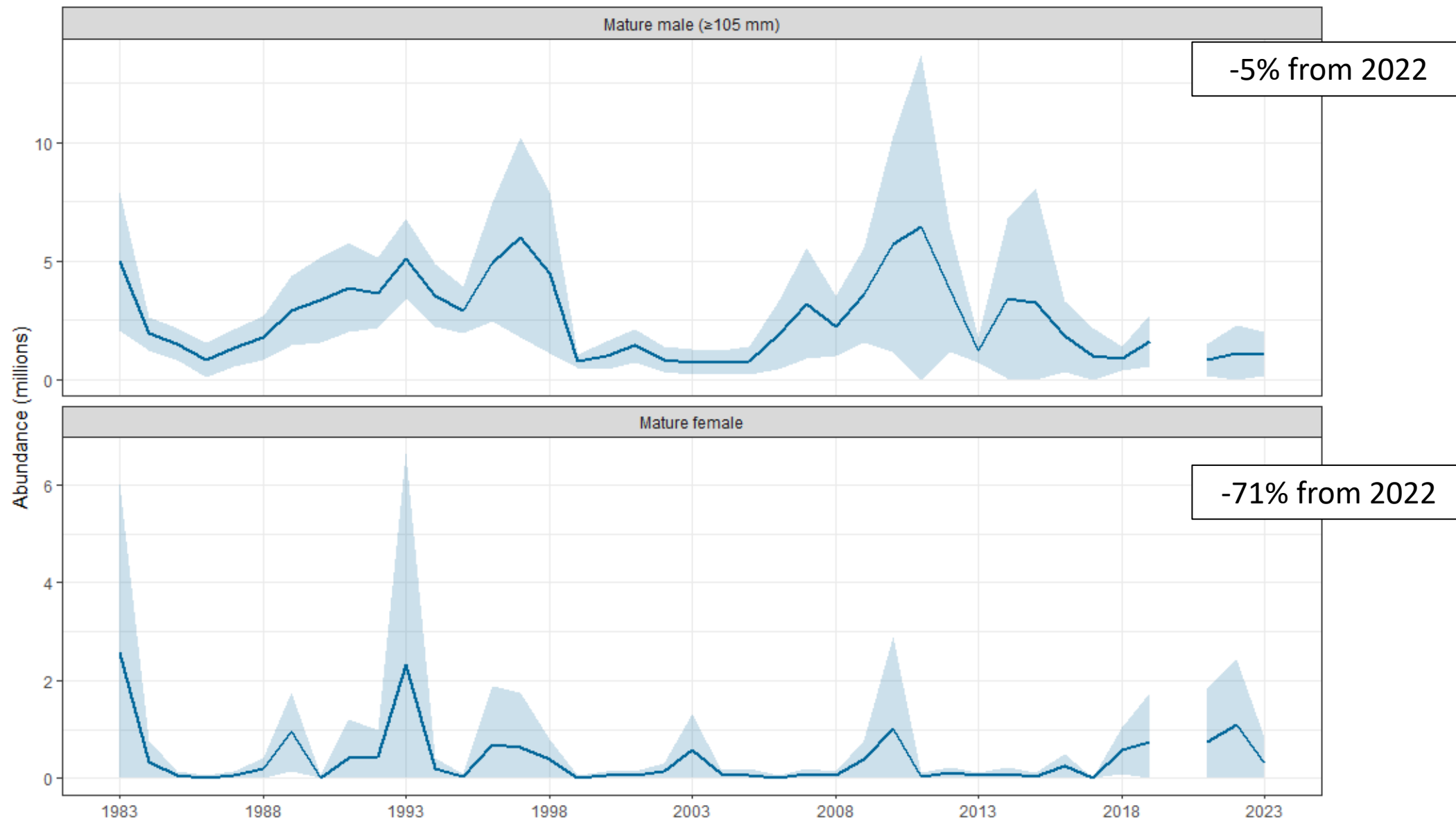
Retow history: % not molt-mated vs bottom temperature



Blue king crab

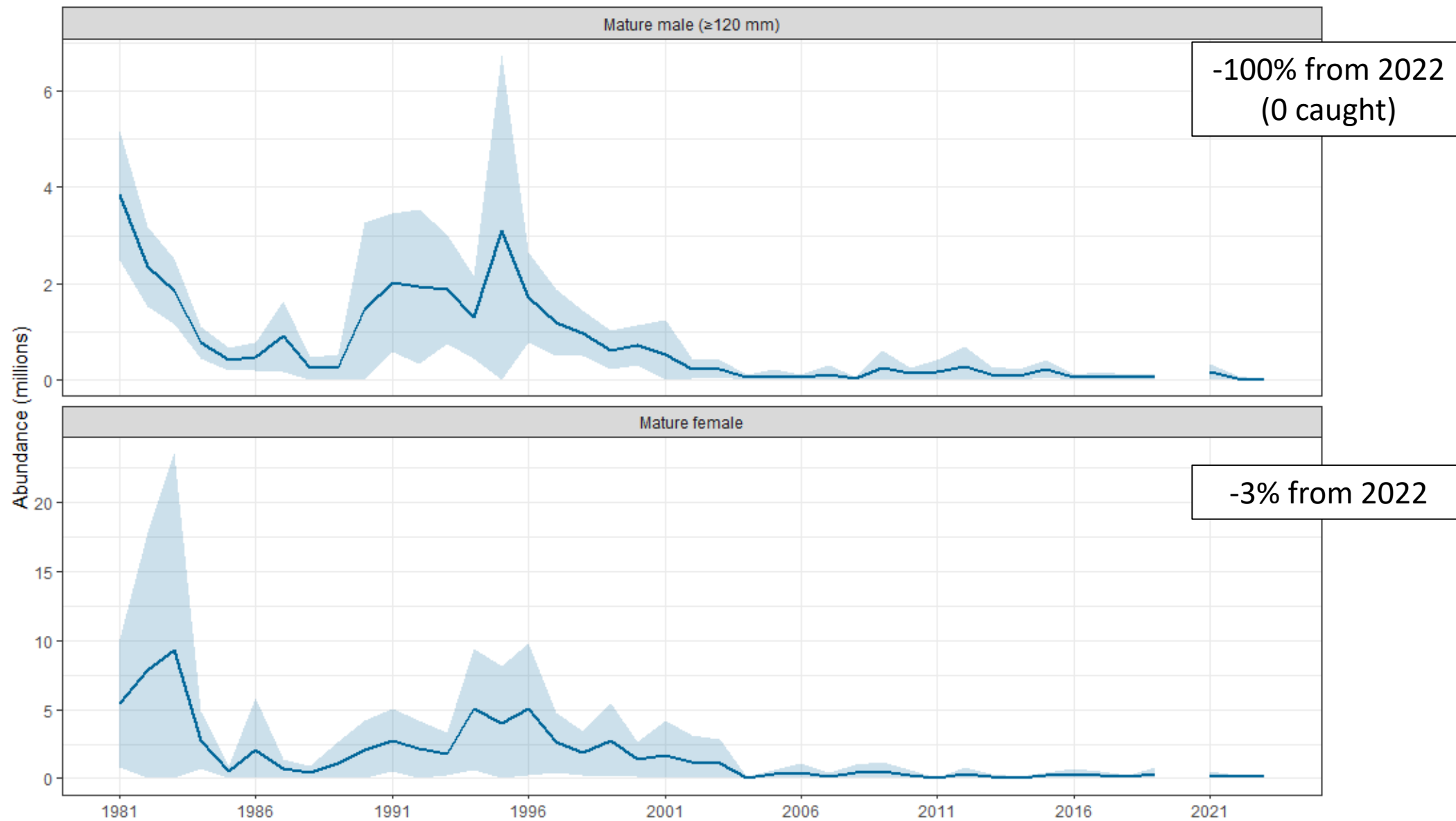
Estimated abundance

St. Matthew Island Blue King Crab



Estimated abundance

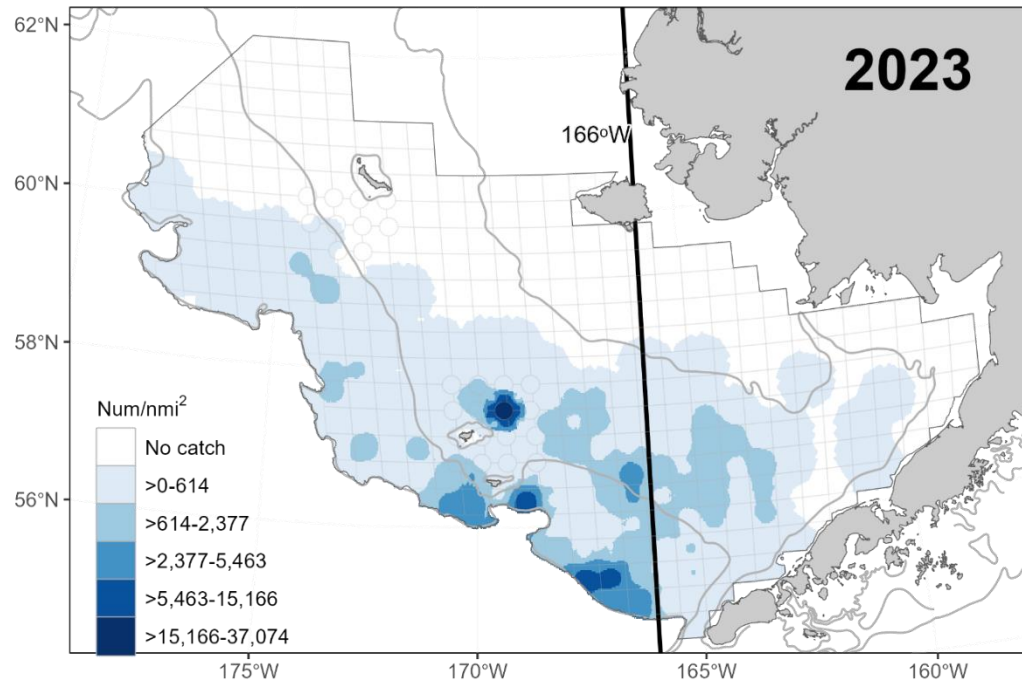
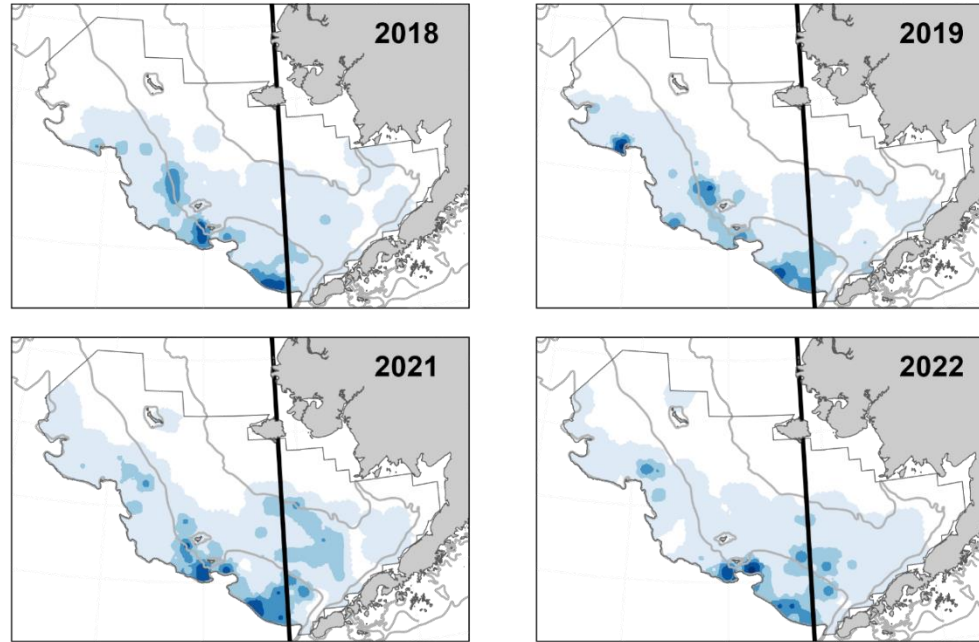
Pribilof Islands Blue King Crab



Tanner crab

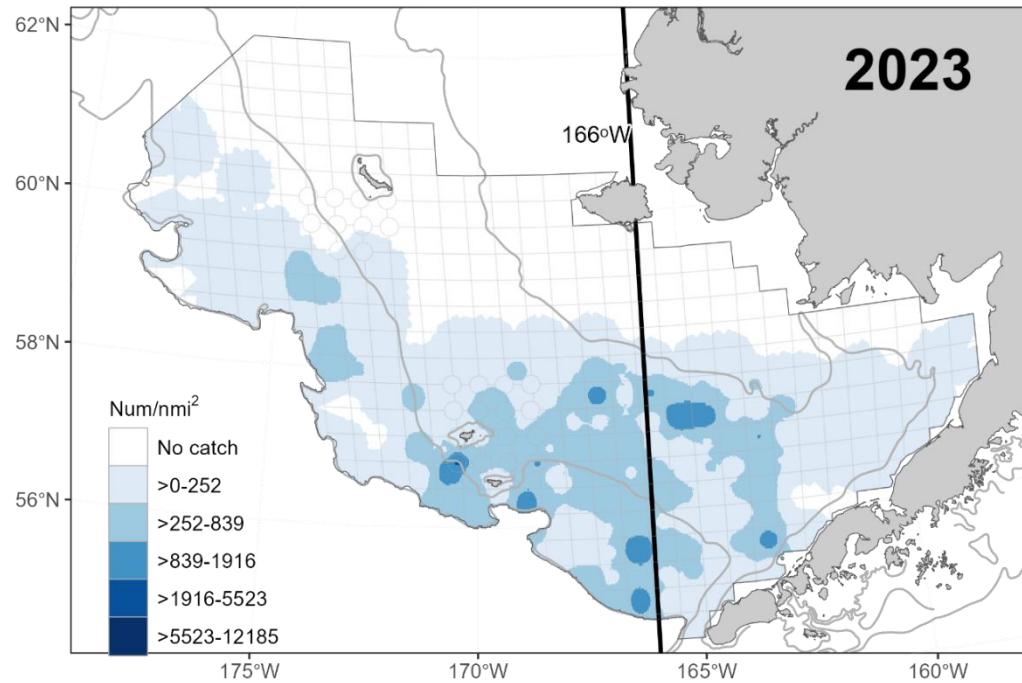
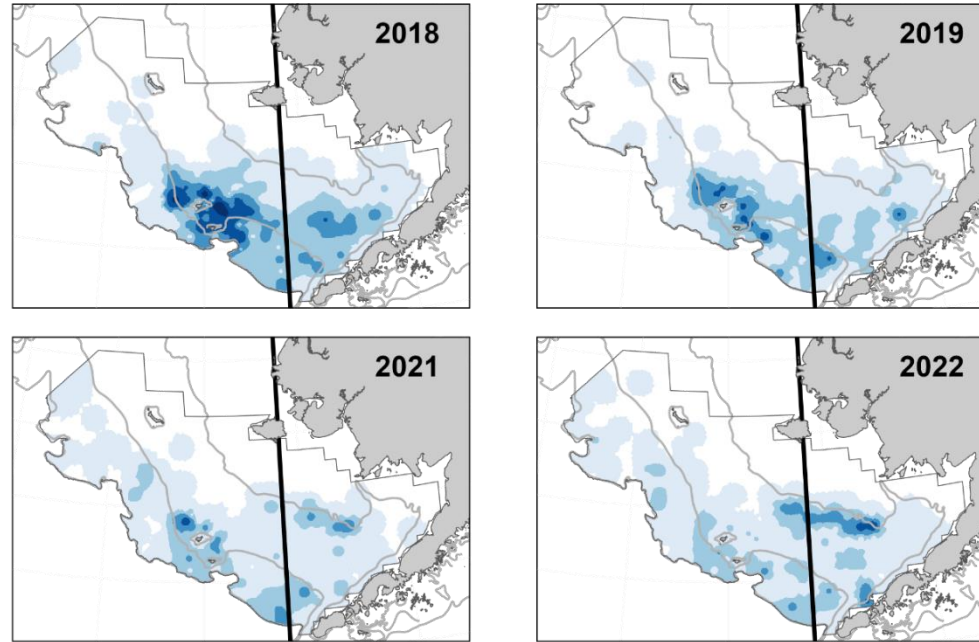
Distribution by year

Tanner Crab Mature Female

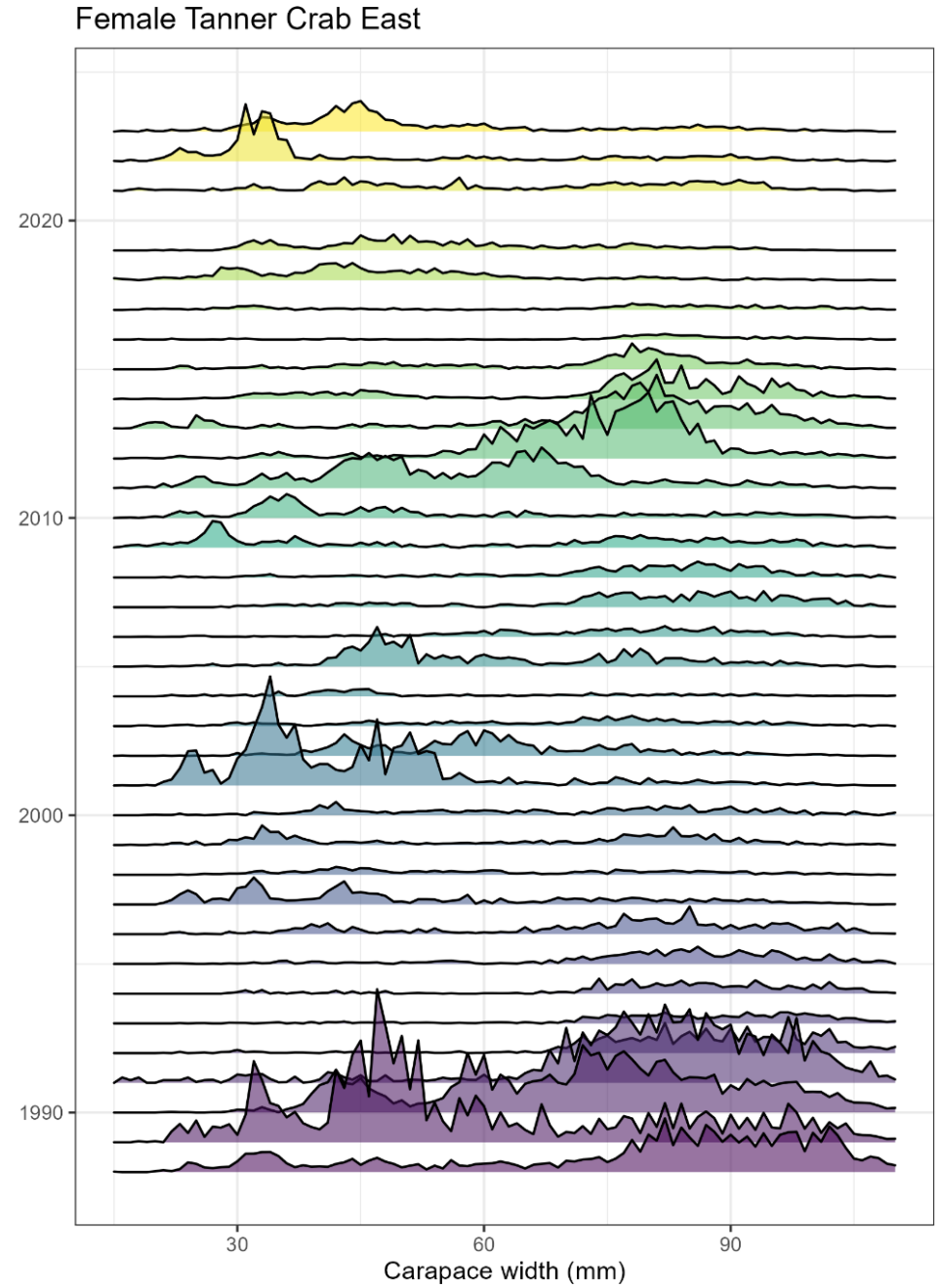
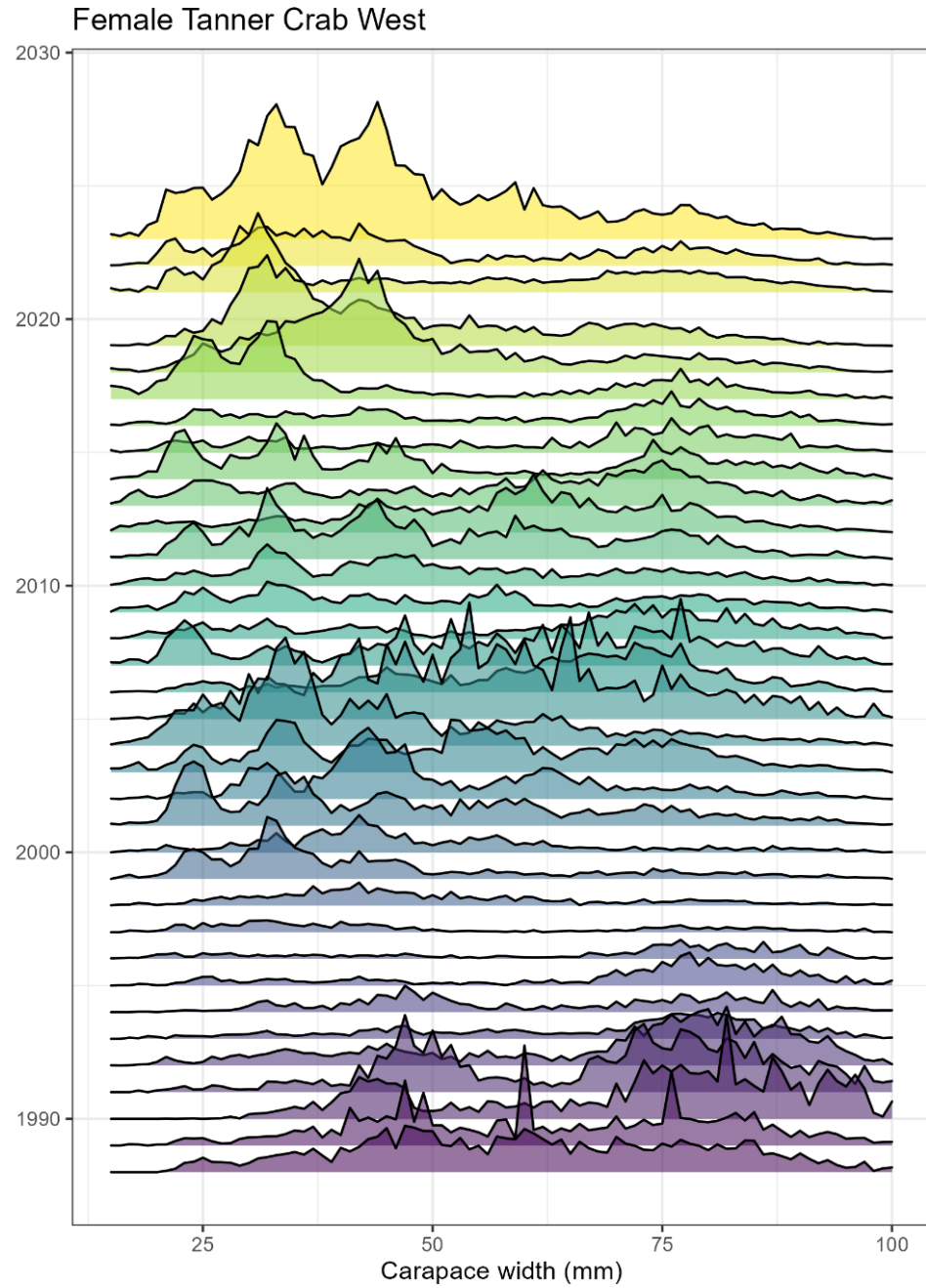


Distribution
by year

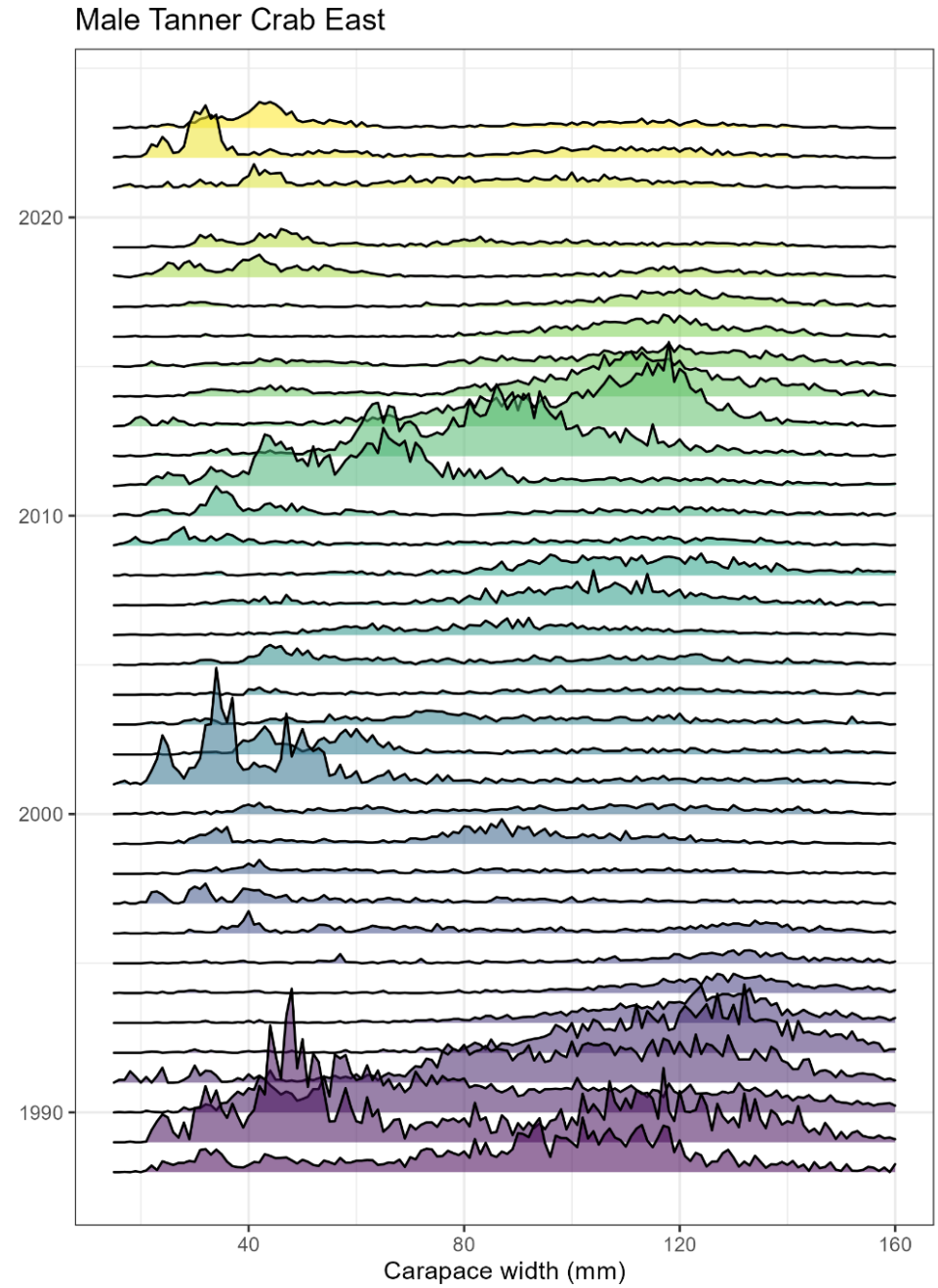
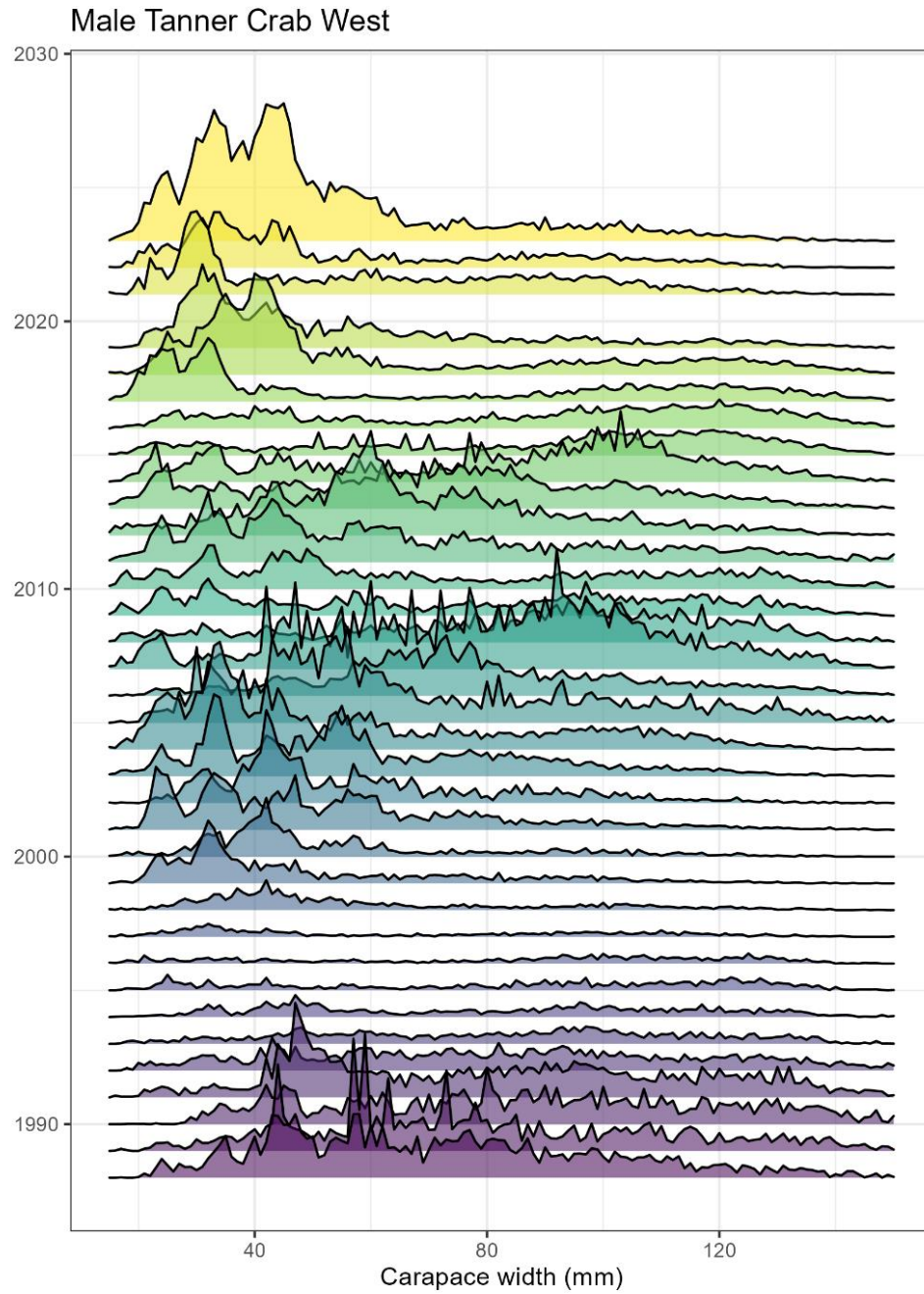
Tanner Crab Legal Male



Abundance
by size,
1988-2023

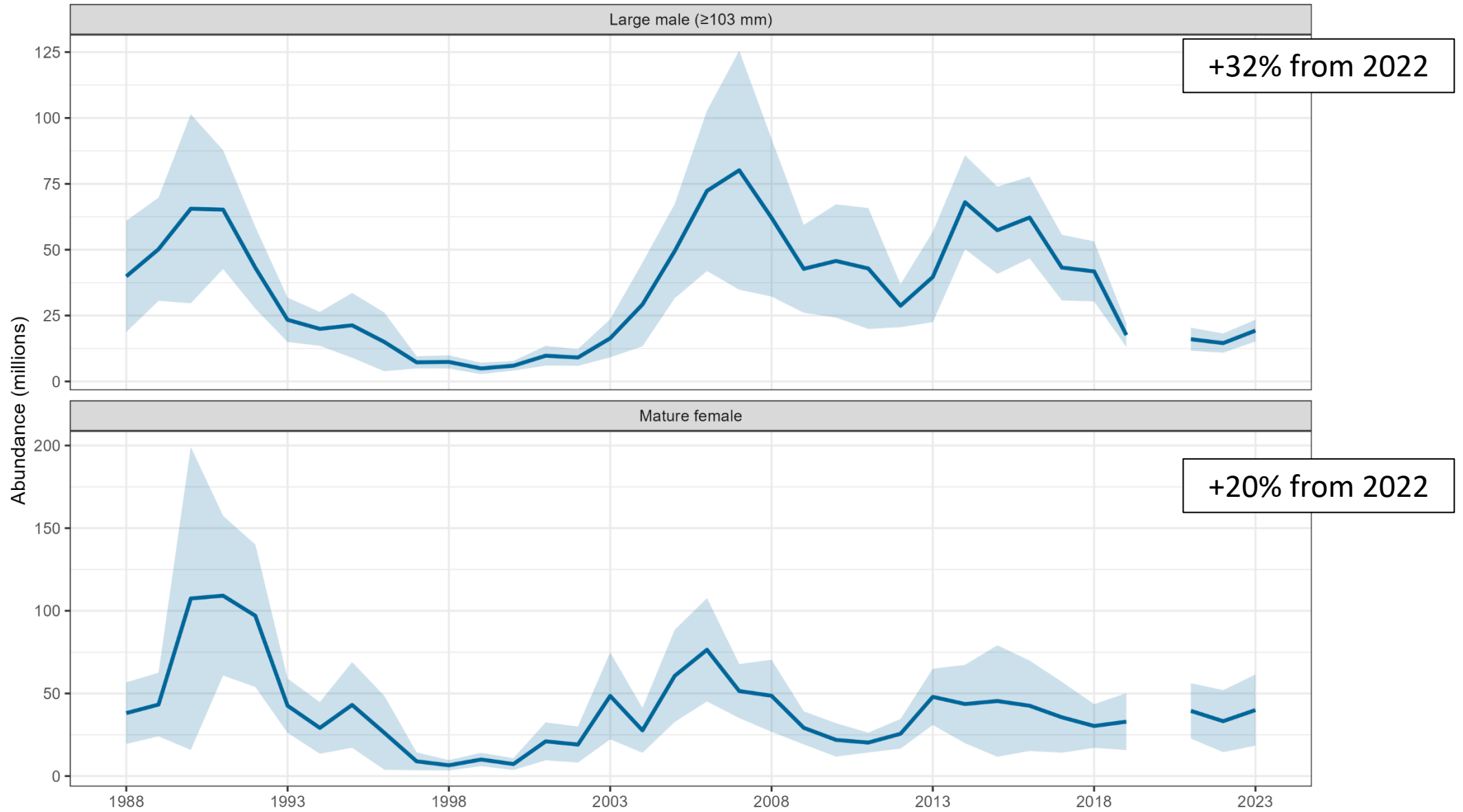


Abundance
by size,
1988-2023



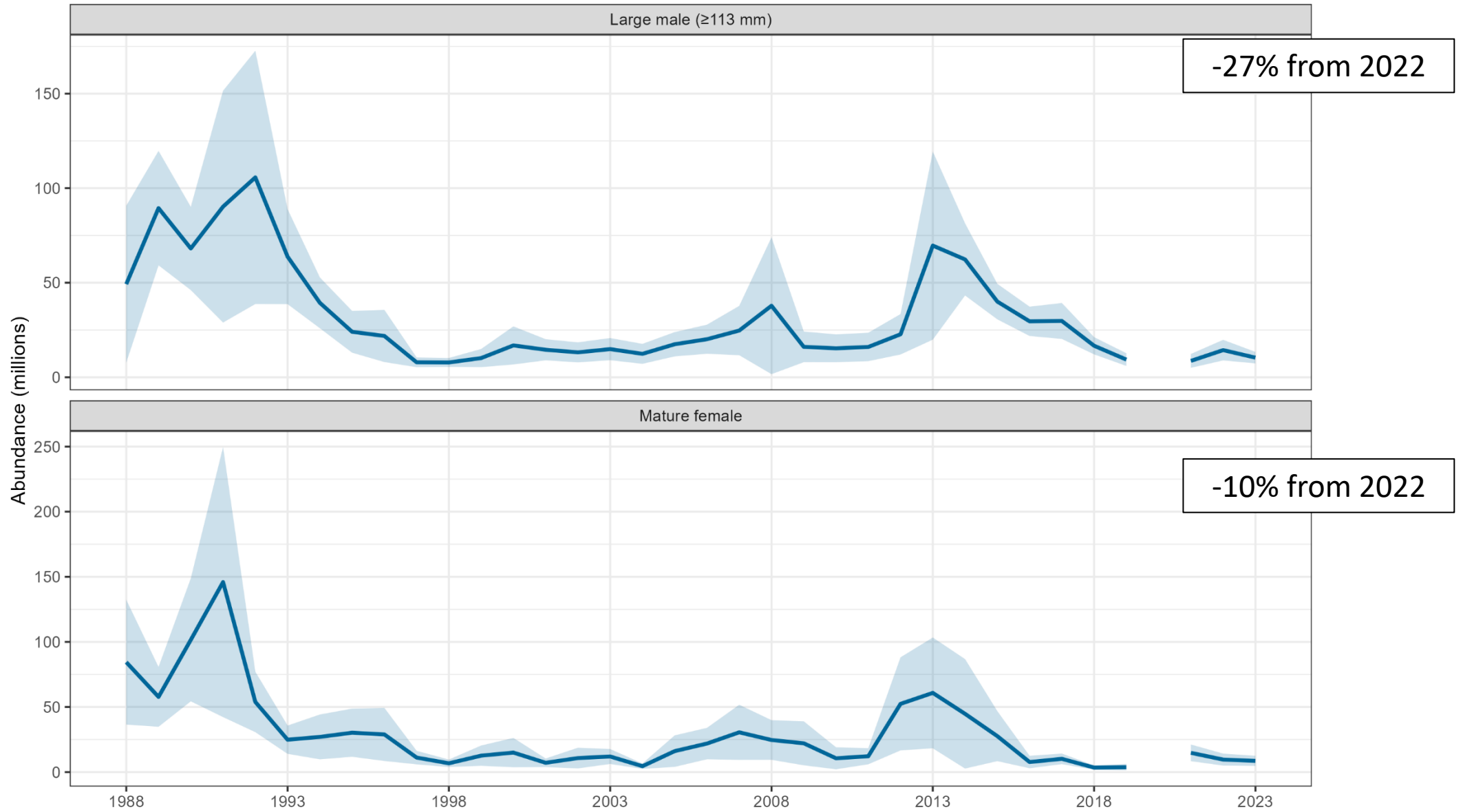
Estimated abundance

Tanner Crab West



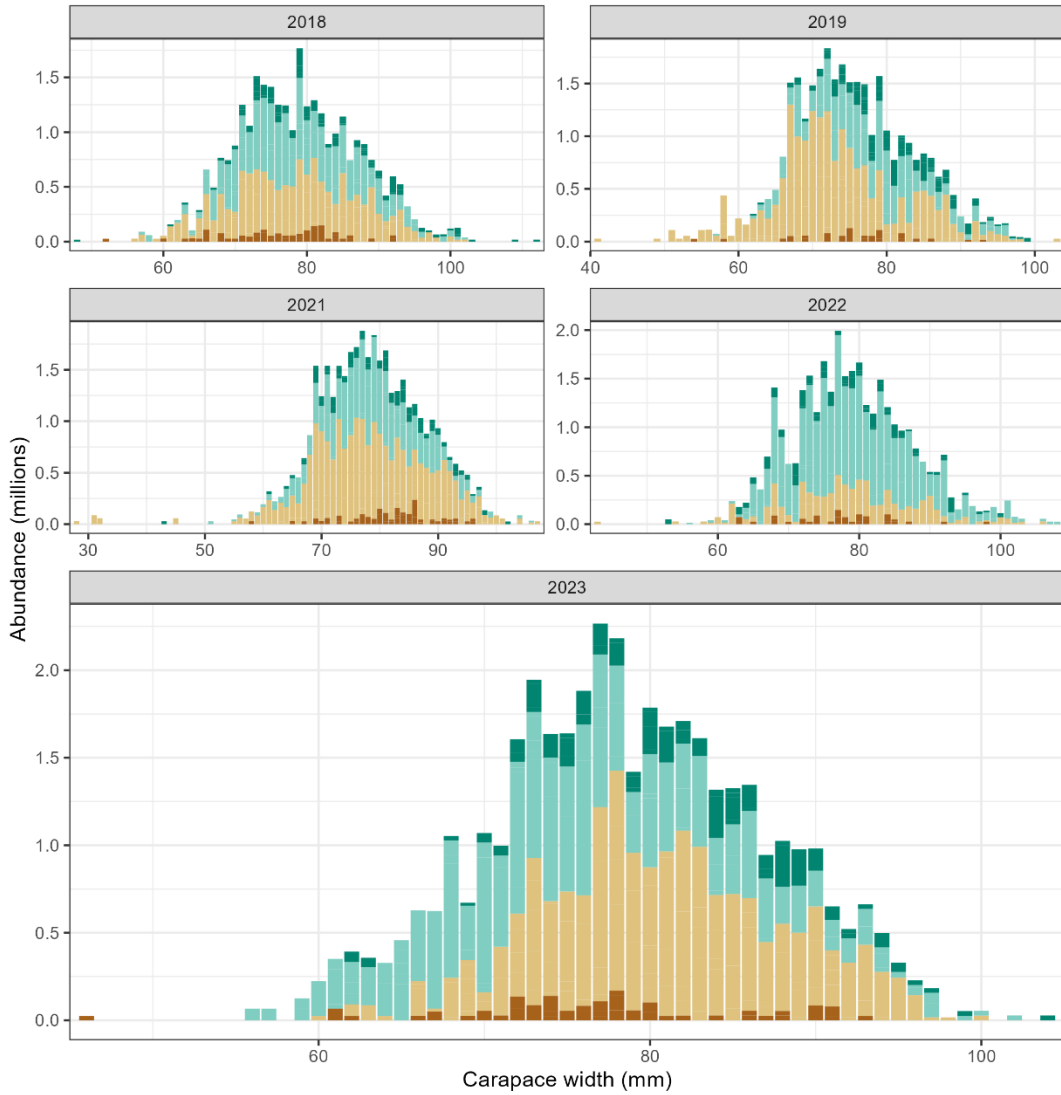
Estimated abundance

Tanner Crab East



Abundance by size and shell condition

Mature Female Tanner Crab West



Shell Condition ■ Very Old ■ Old ■ New Hard ■ Soft Molting

Mature Female Tanner Crab East

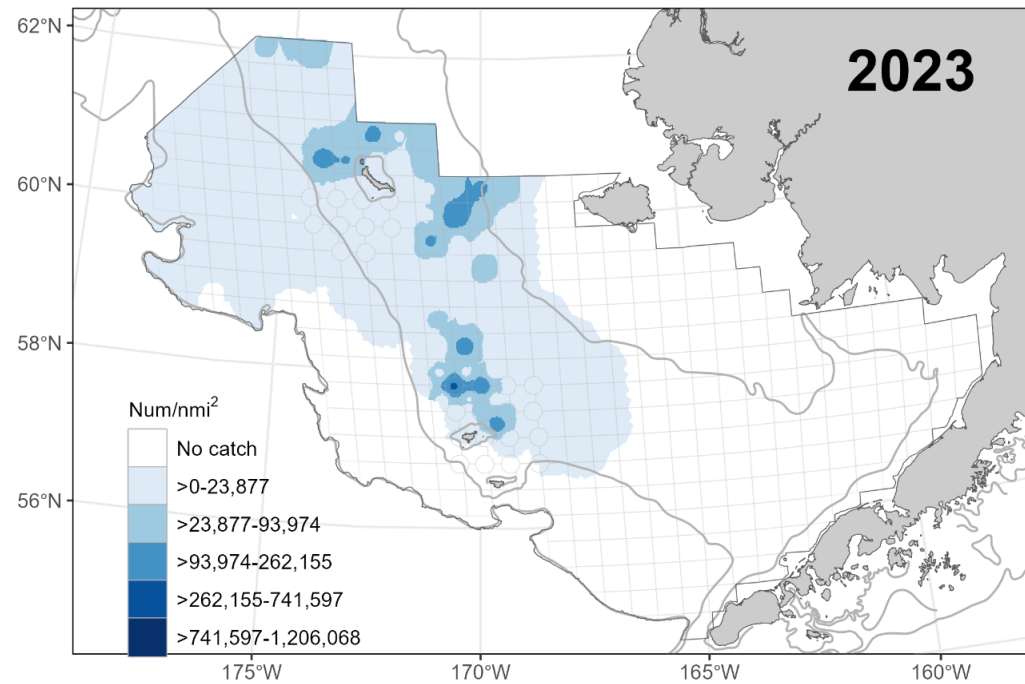
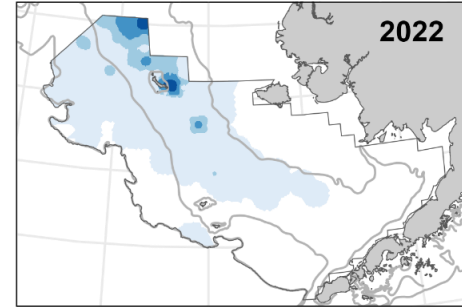
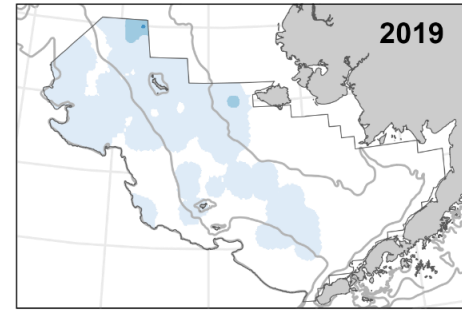
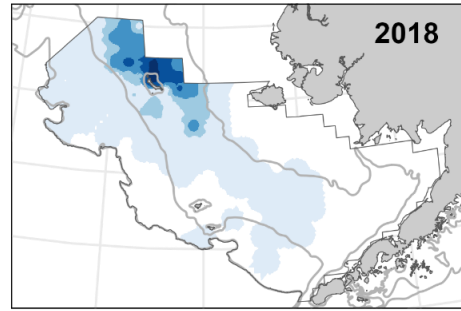


Shell Condition ■ Very Old ■ Old ■ New Hard ■ Soft Molting

Snow crab

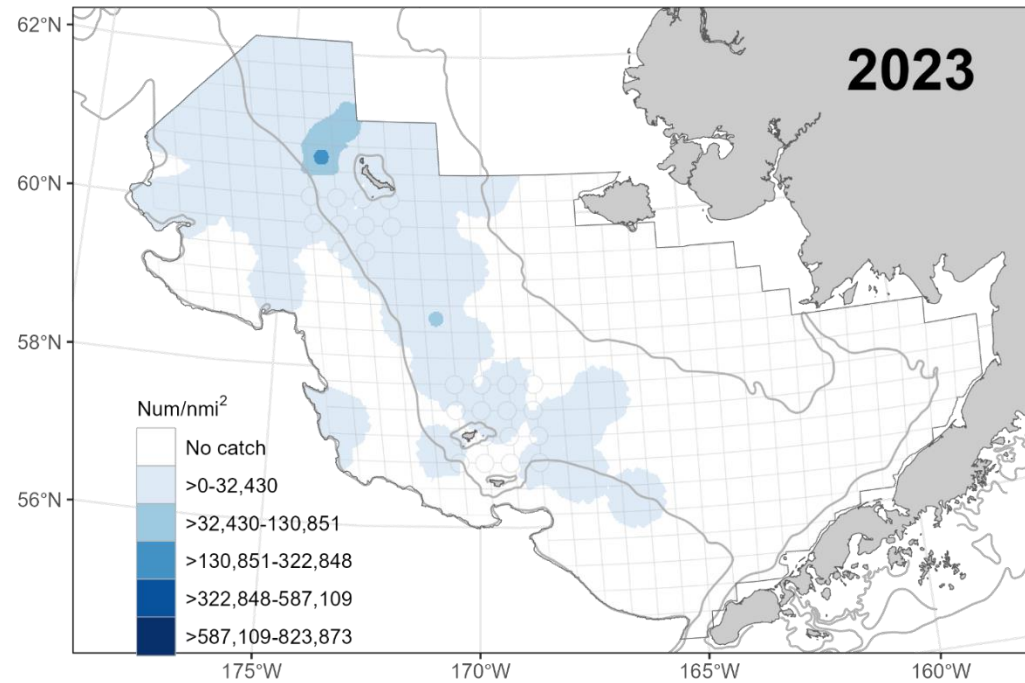
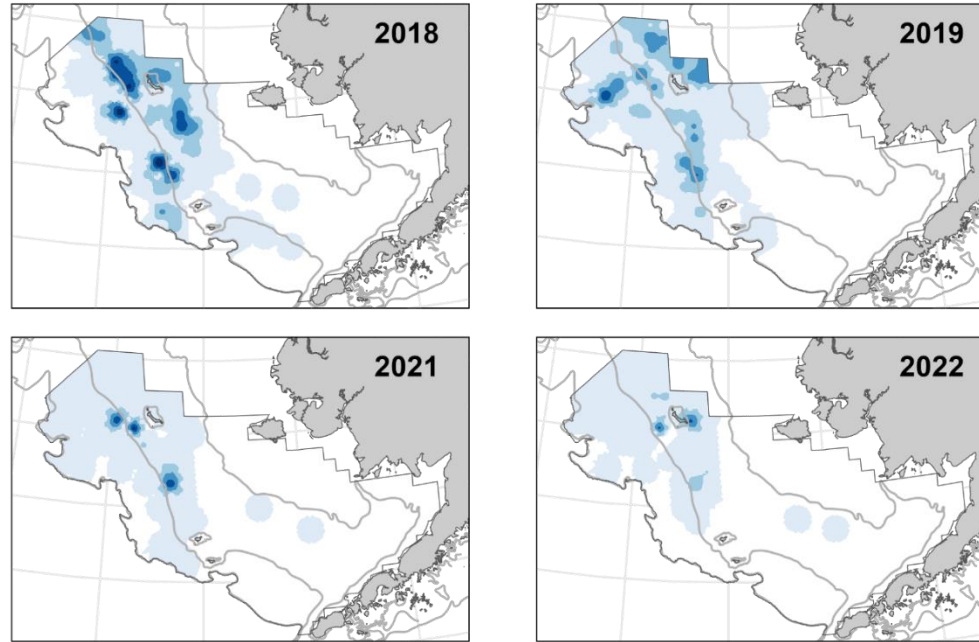
Distribution by year

Snow Crab Immature Female



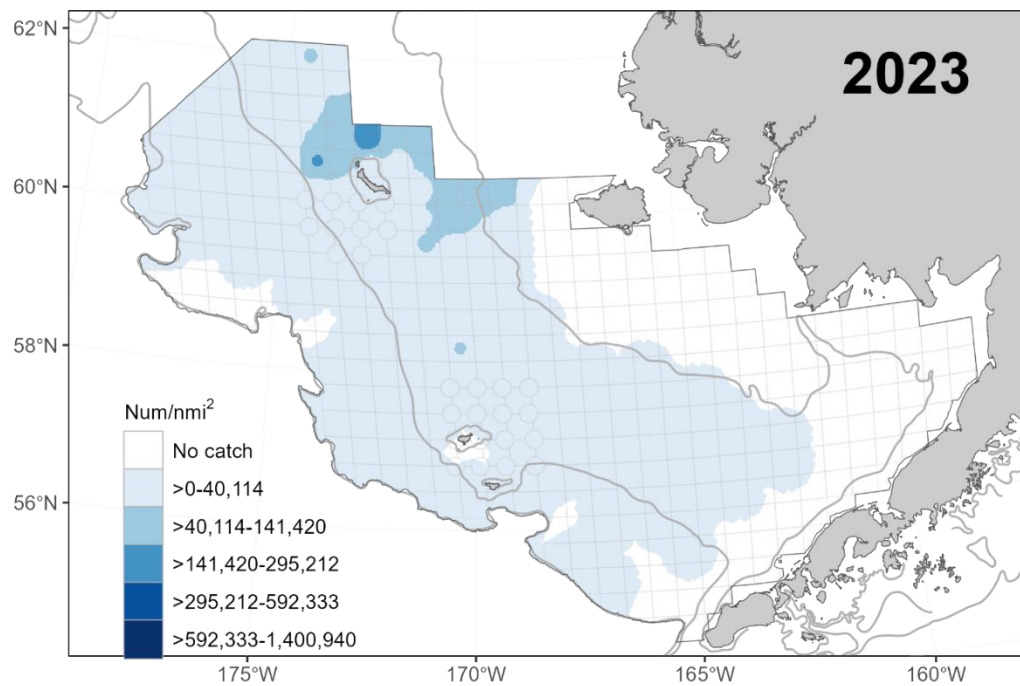
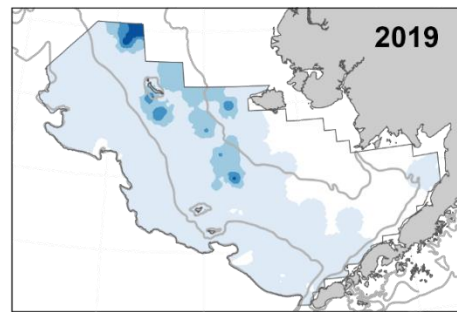
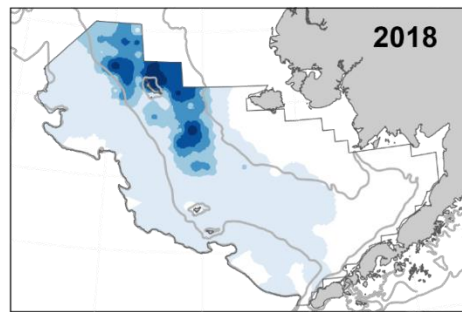
Distribution by year

Snow Crab Mature Female



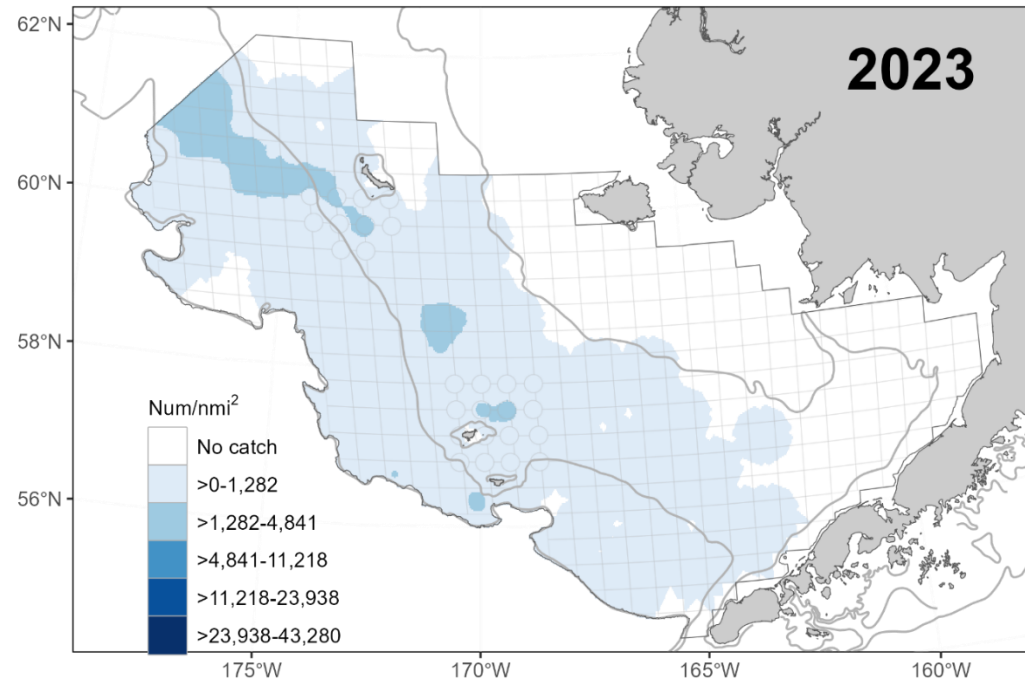
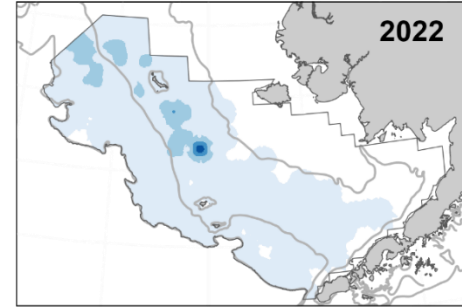
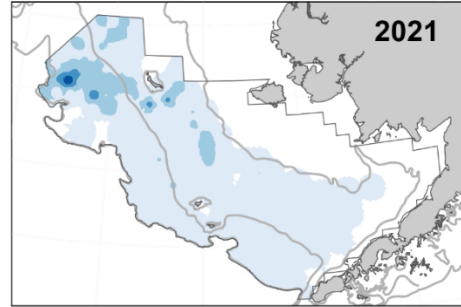
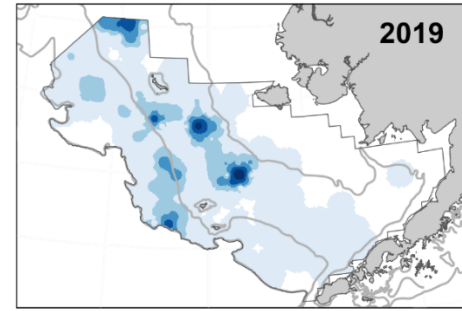
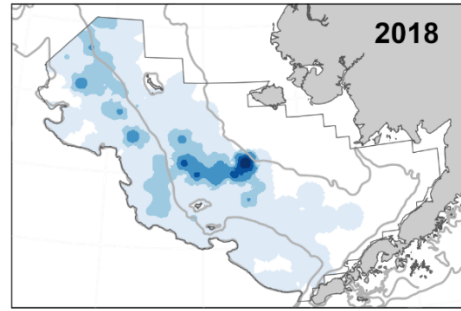
Snow Crab Small Male (< 95 mm)

Distribution
by year



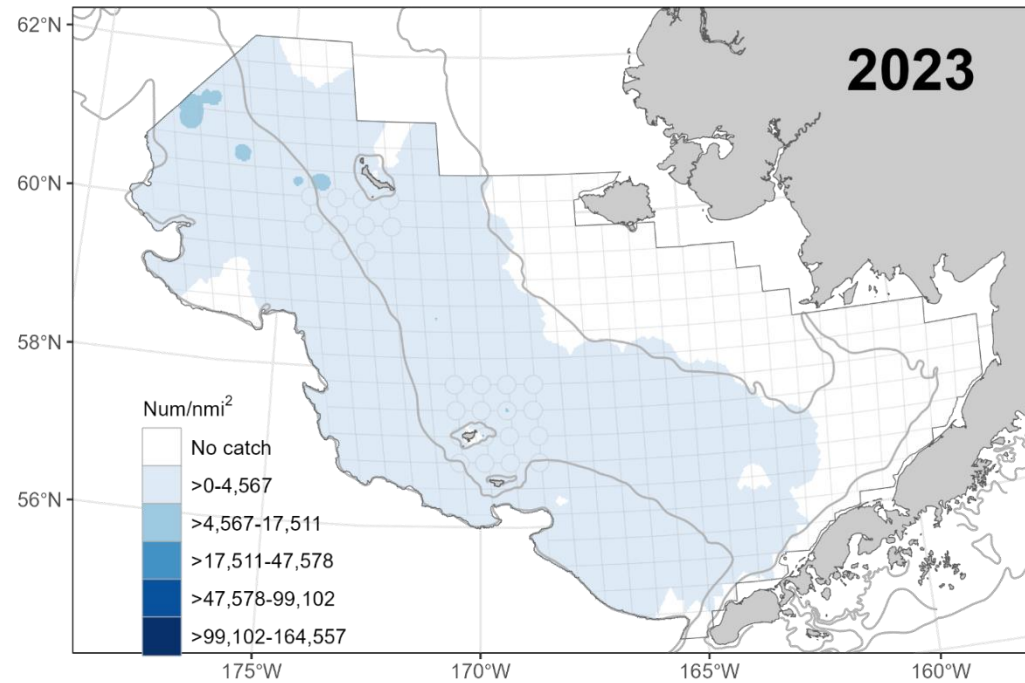
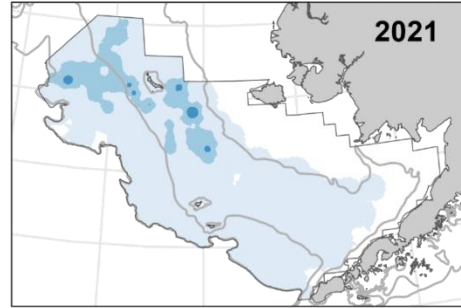
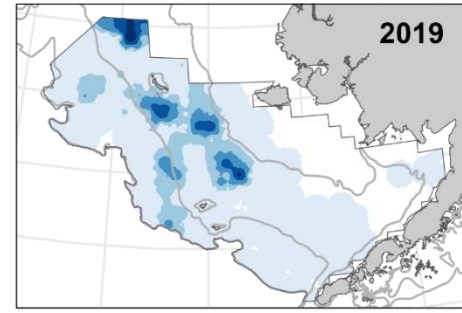
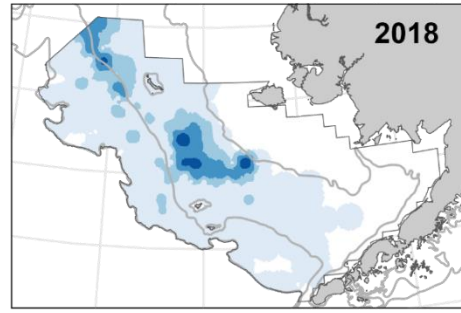
Distribution
by year

Snow Crab Large Male (≥ 95 mm)



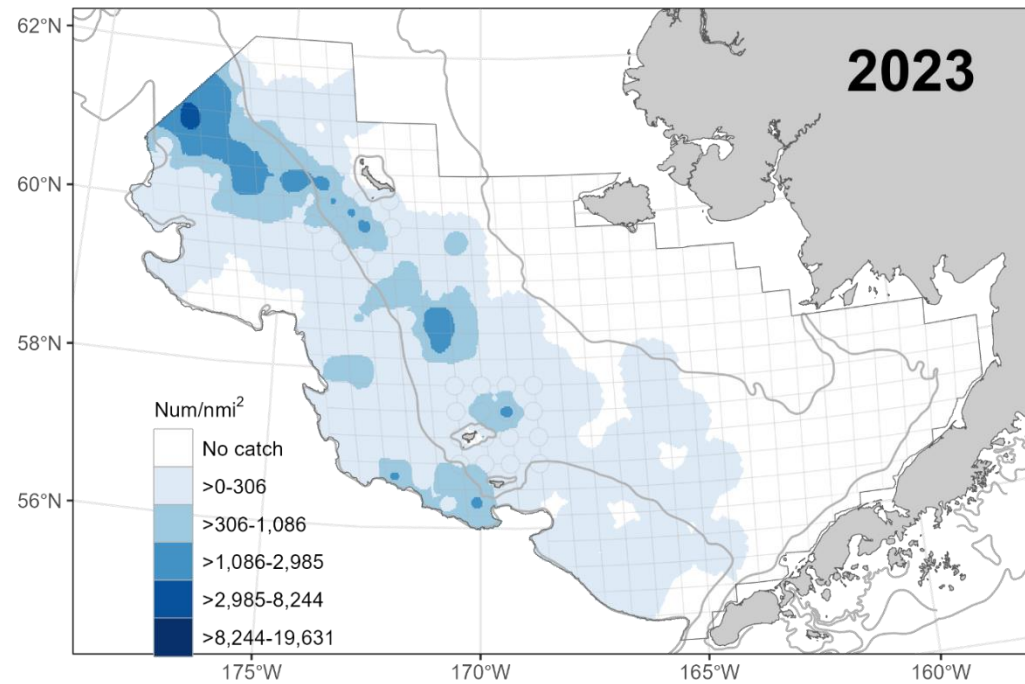
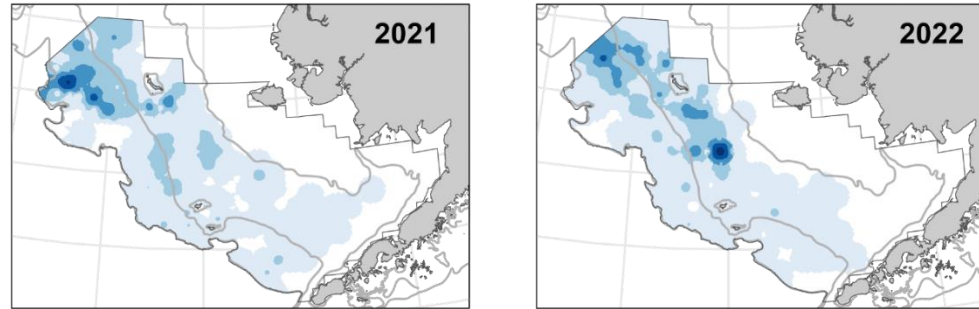
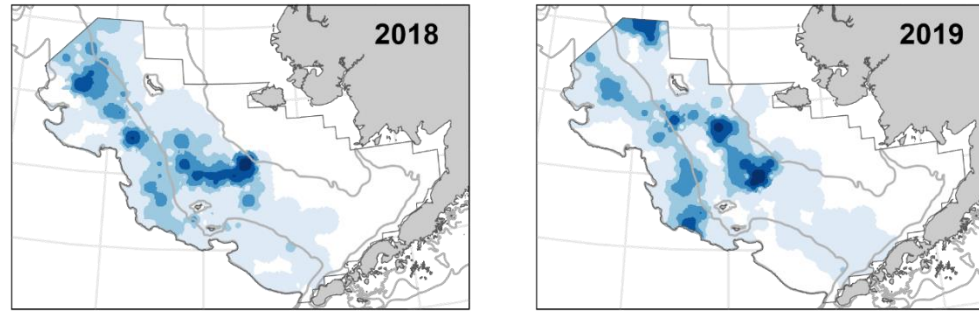
Distribution
by year

Snow Crab Legal Male



Distribution
by year

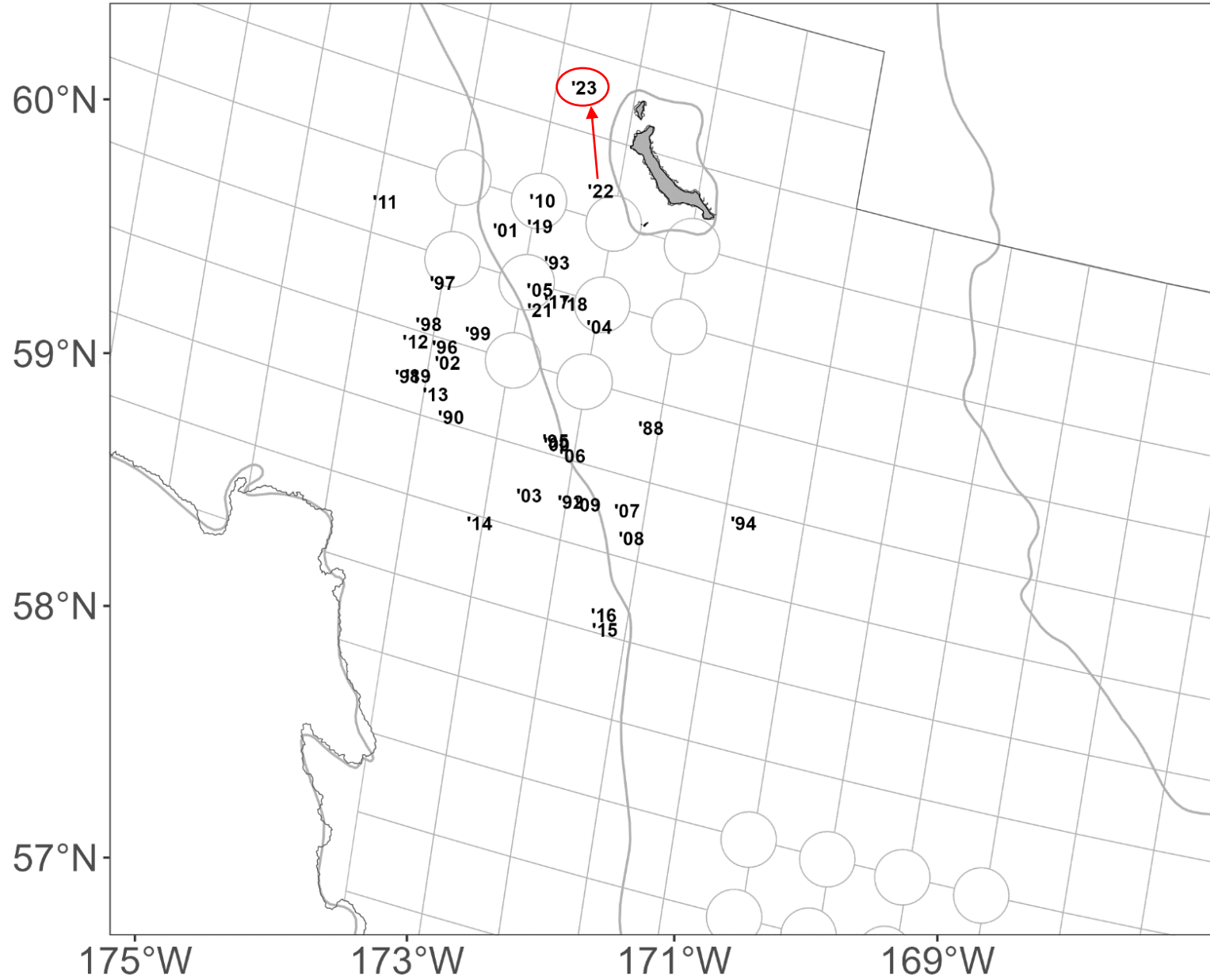
Snow Crab Industry Preferred Male



Centers of
abundance
1988-2023

Snow Crab

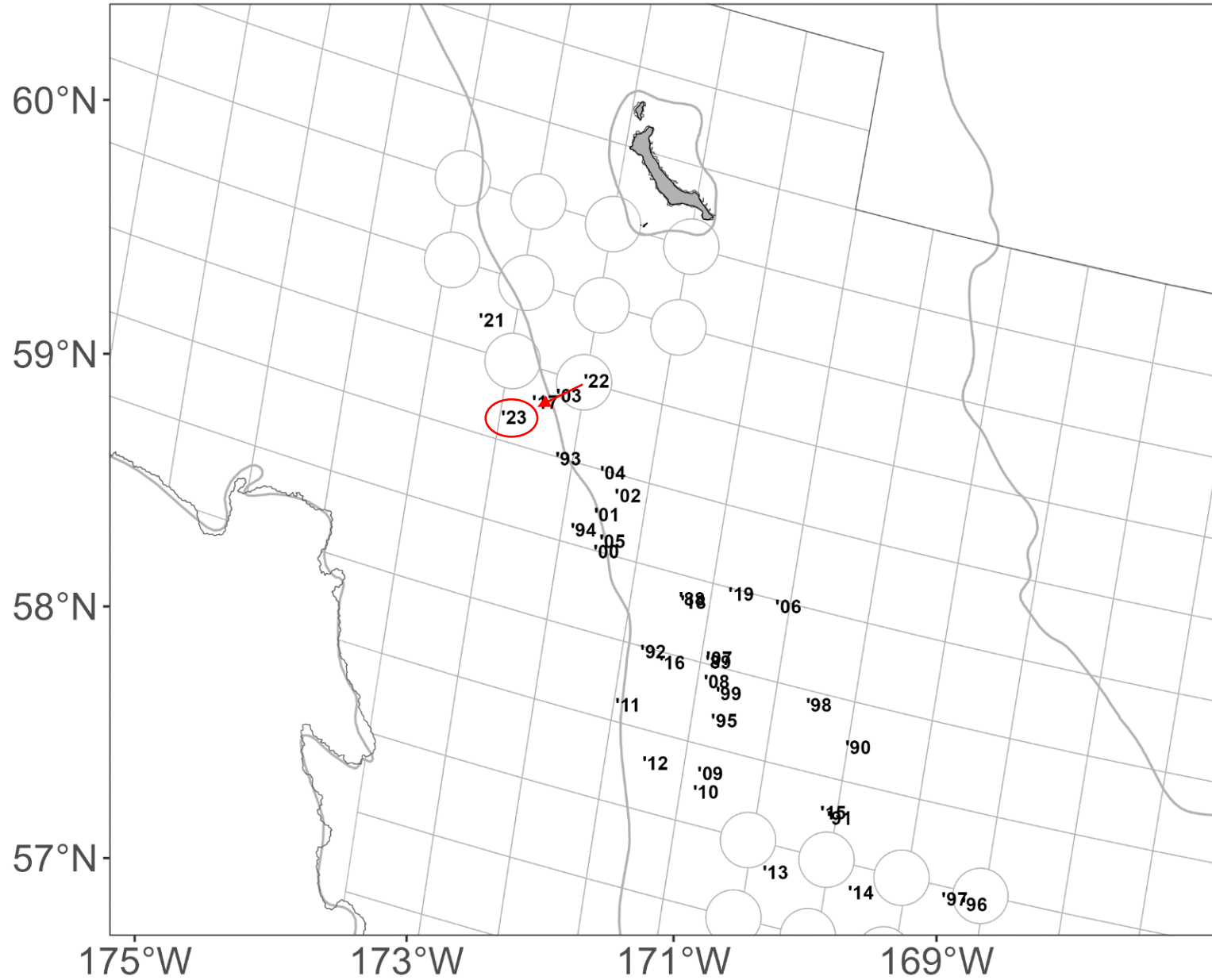
Mature Female



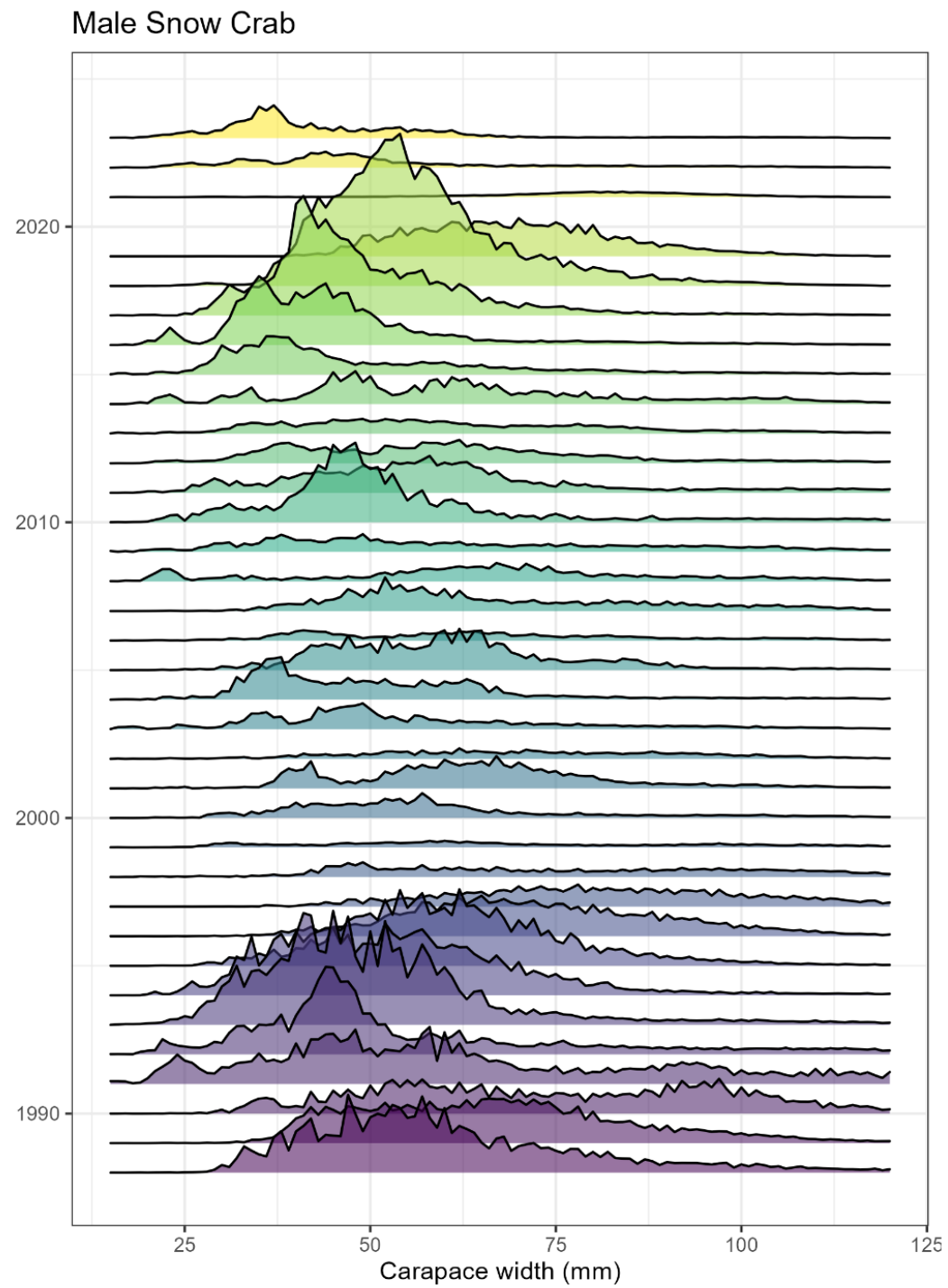
Centers of
abundance
1988-2023

Snow Crab

Industry Preferred

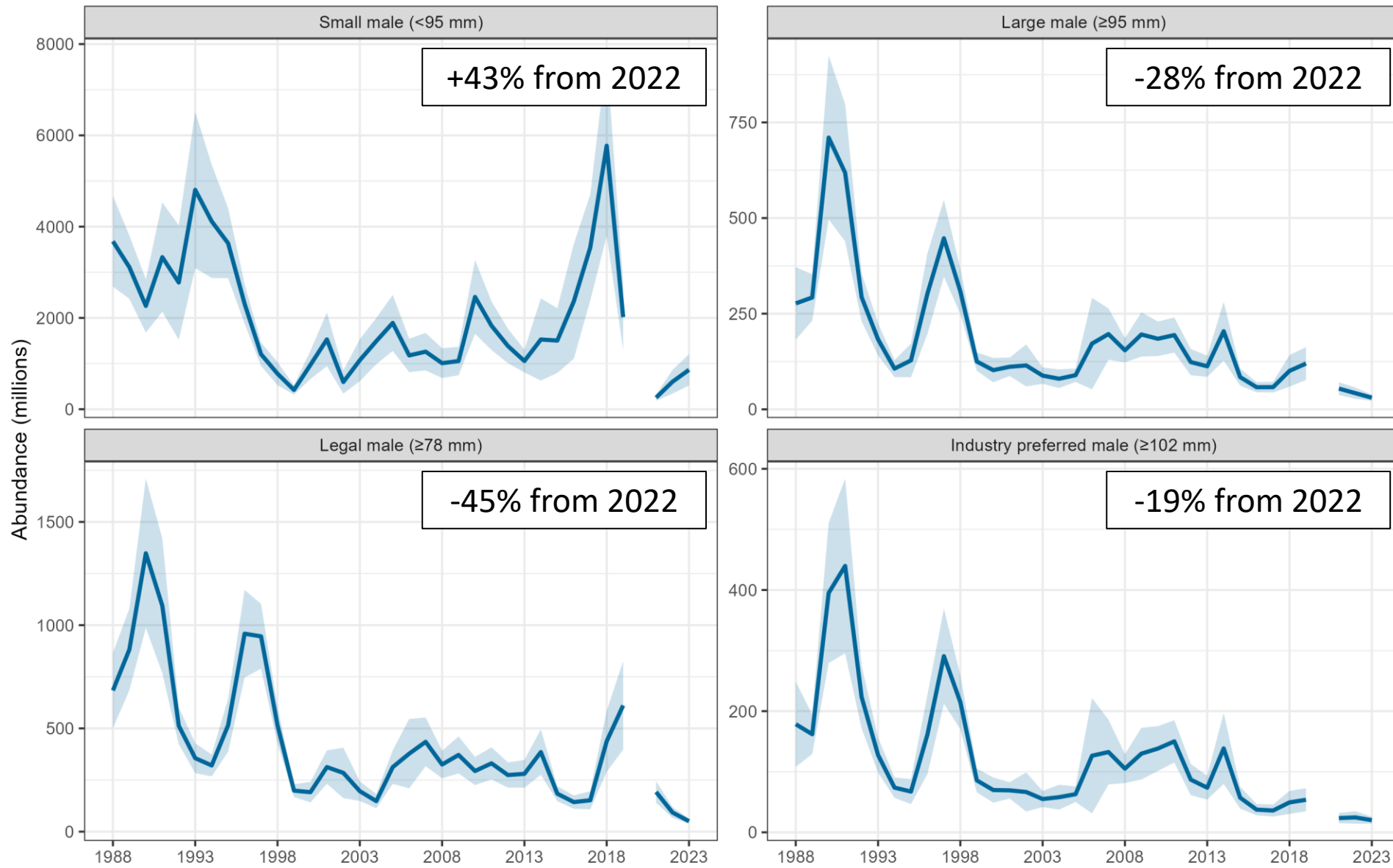


Abundance by size, 1988-2023 (EBS only)



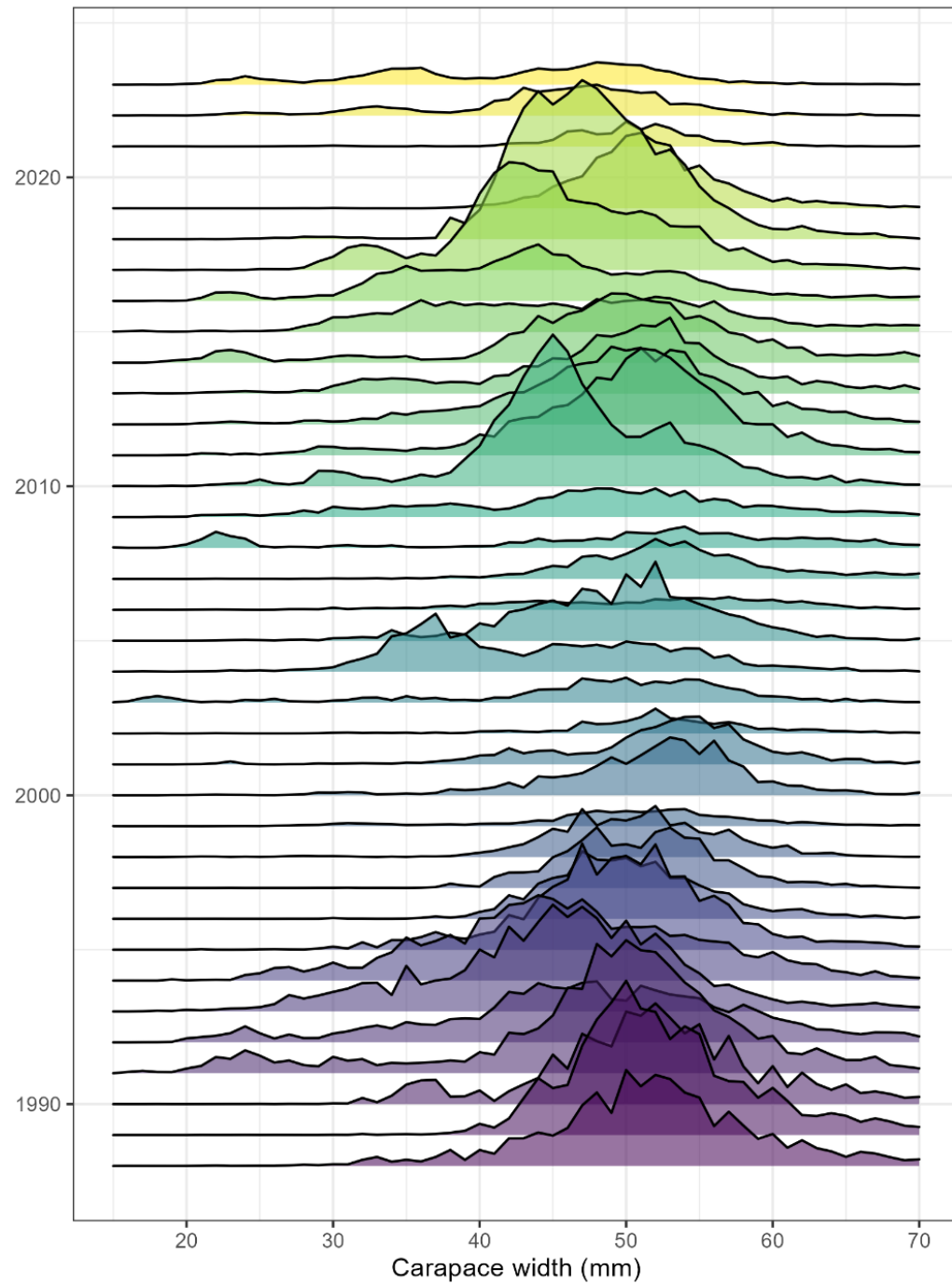
Estimated abundance (EBS only)

Snow Crab

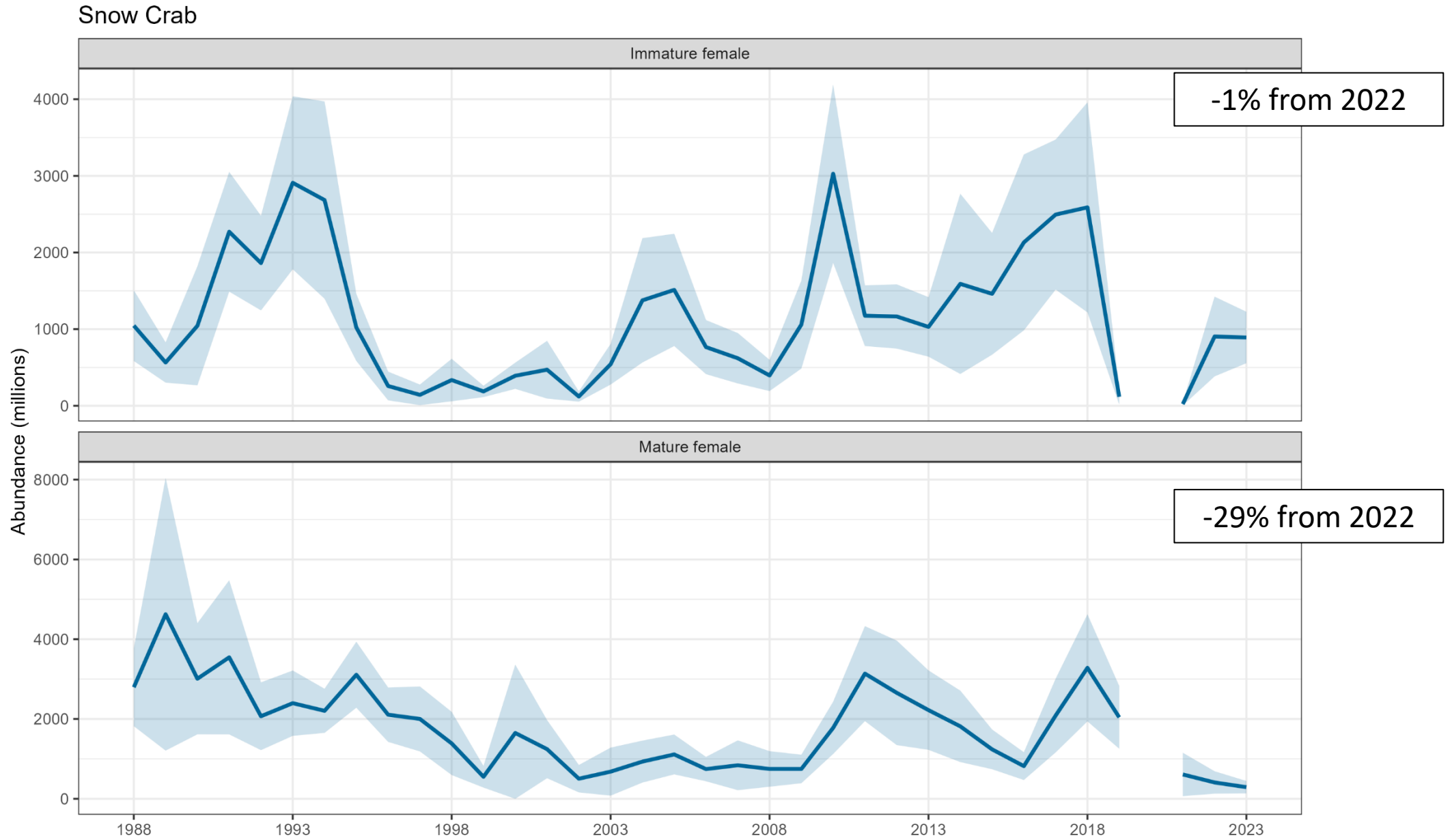


Female Snow Crab

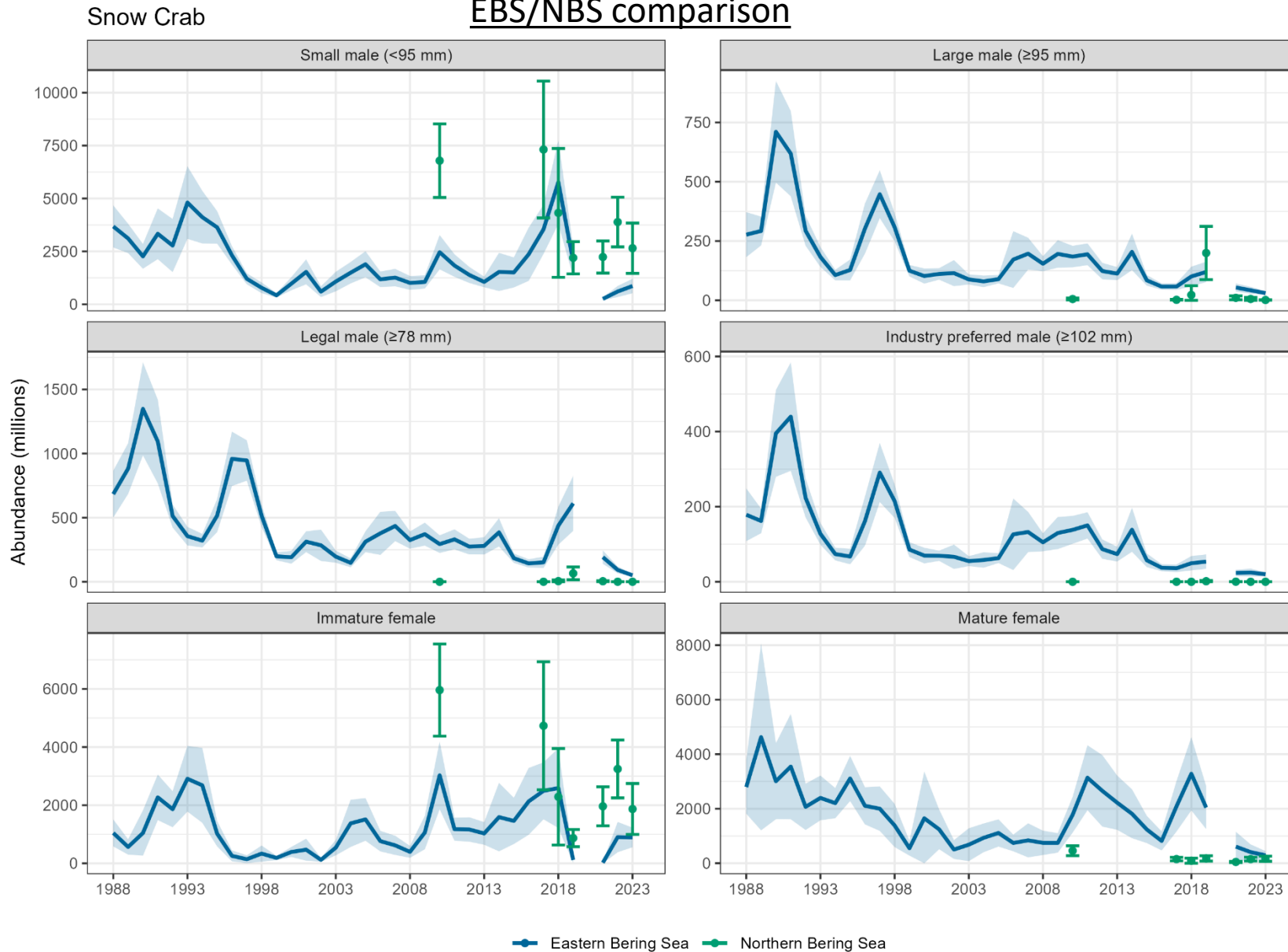
Abundance by size,
1988-2023 (EBS only)



Estimated abundance (EBS only)

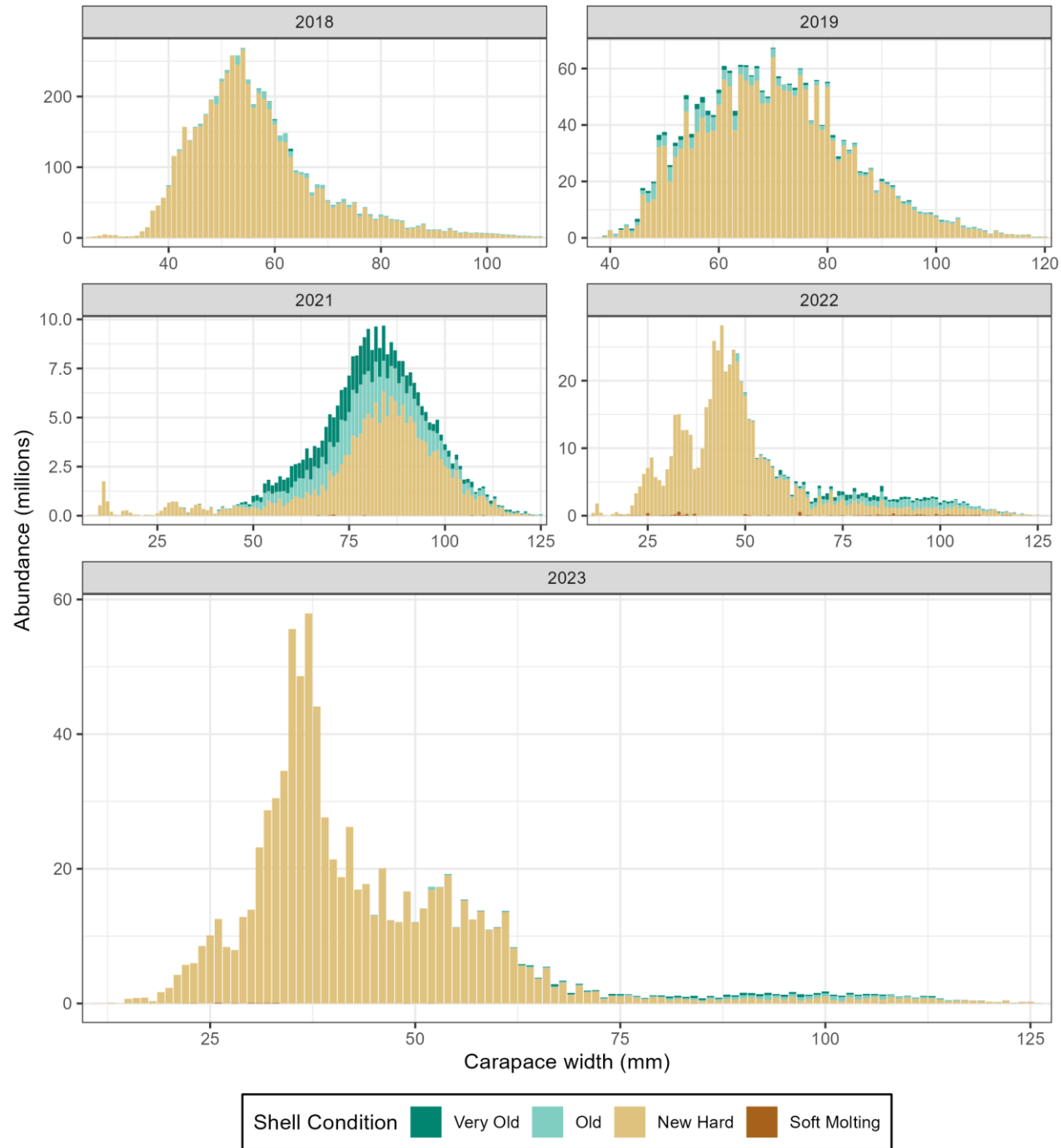


Estimated abundance: EBS/NBS comparison

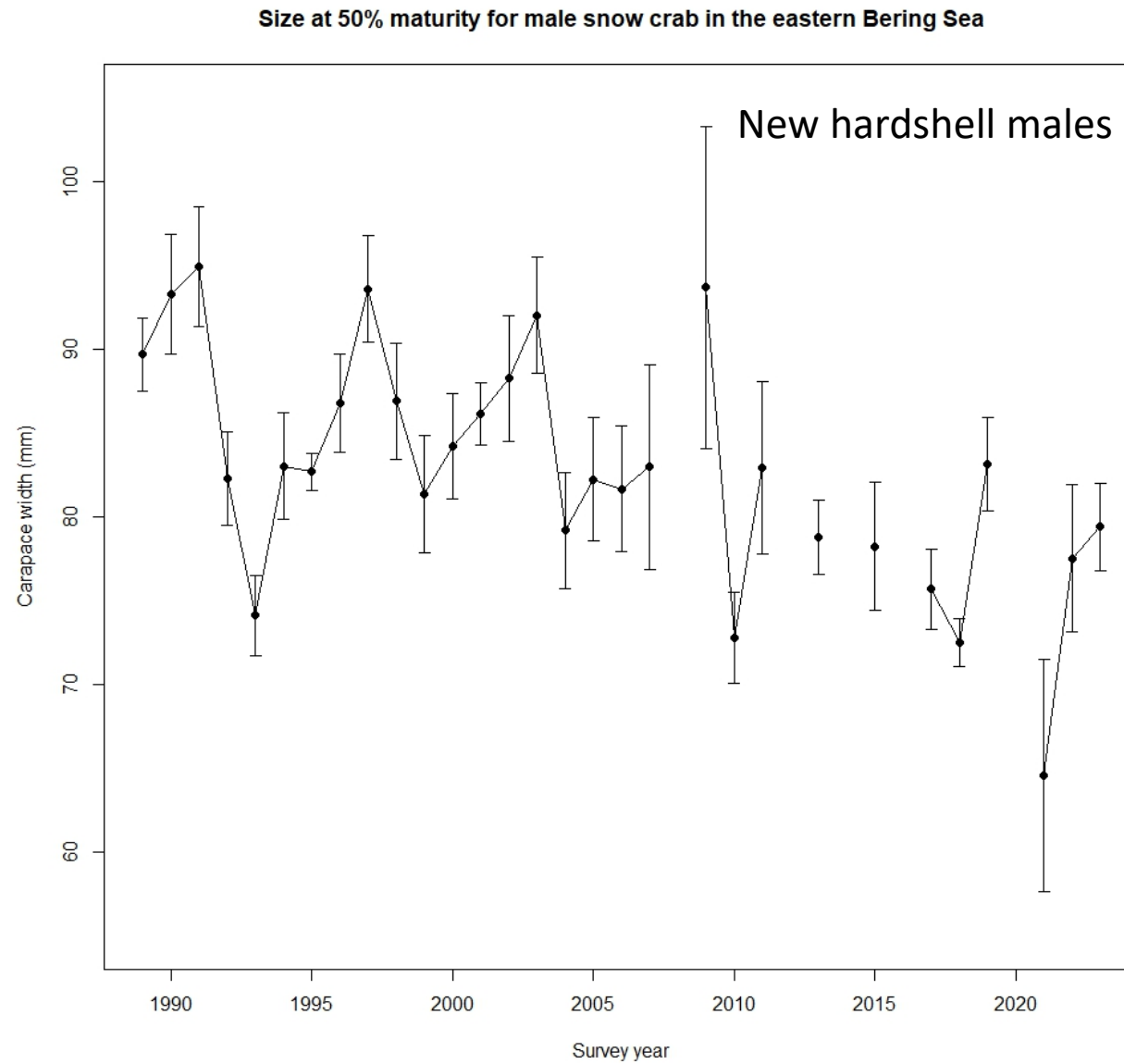


Male Snow Crab

Abundance by size and shell condition

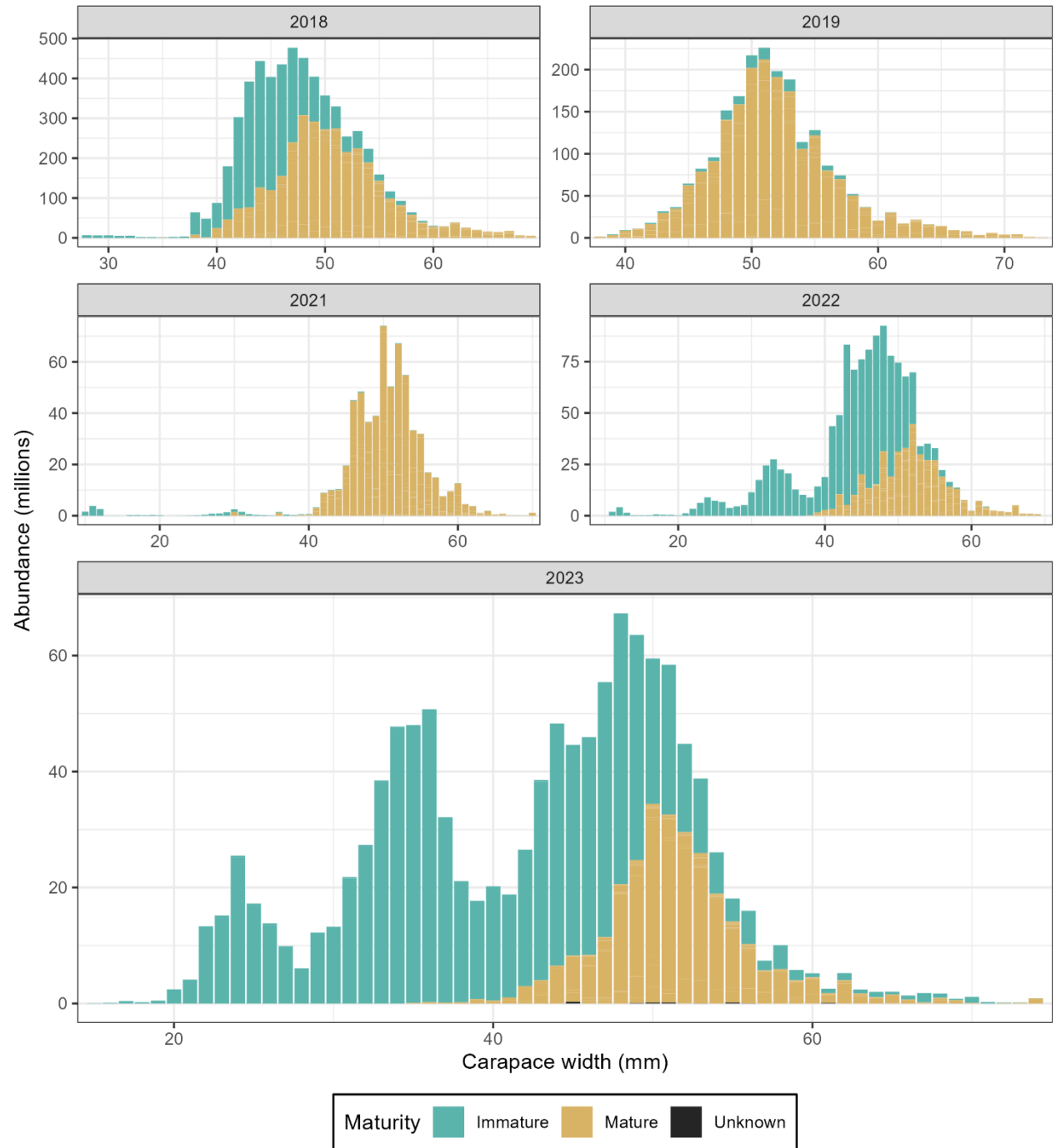


Male size at 50%
maturity,
1988-2023

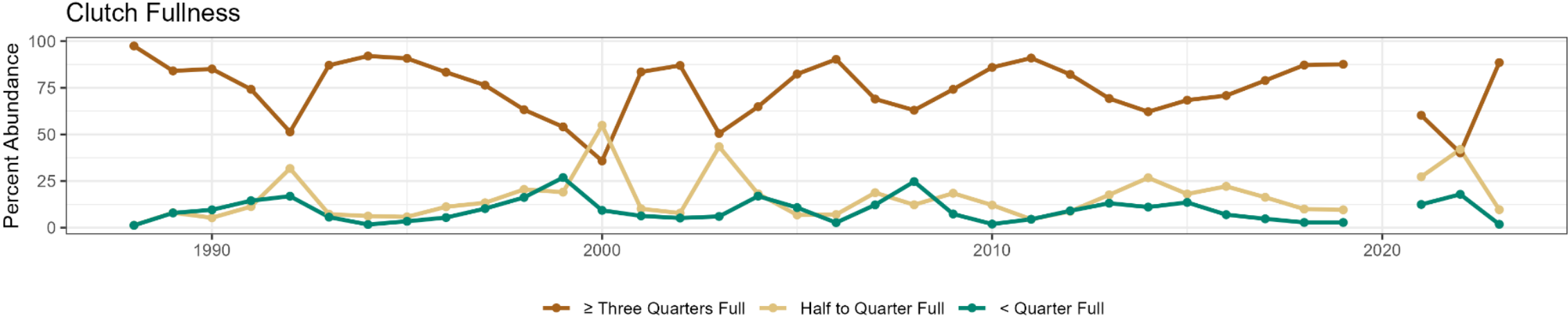


Female Snow Crab

Abundance by size and shell condition



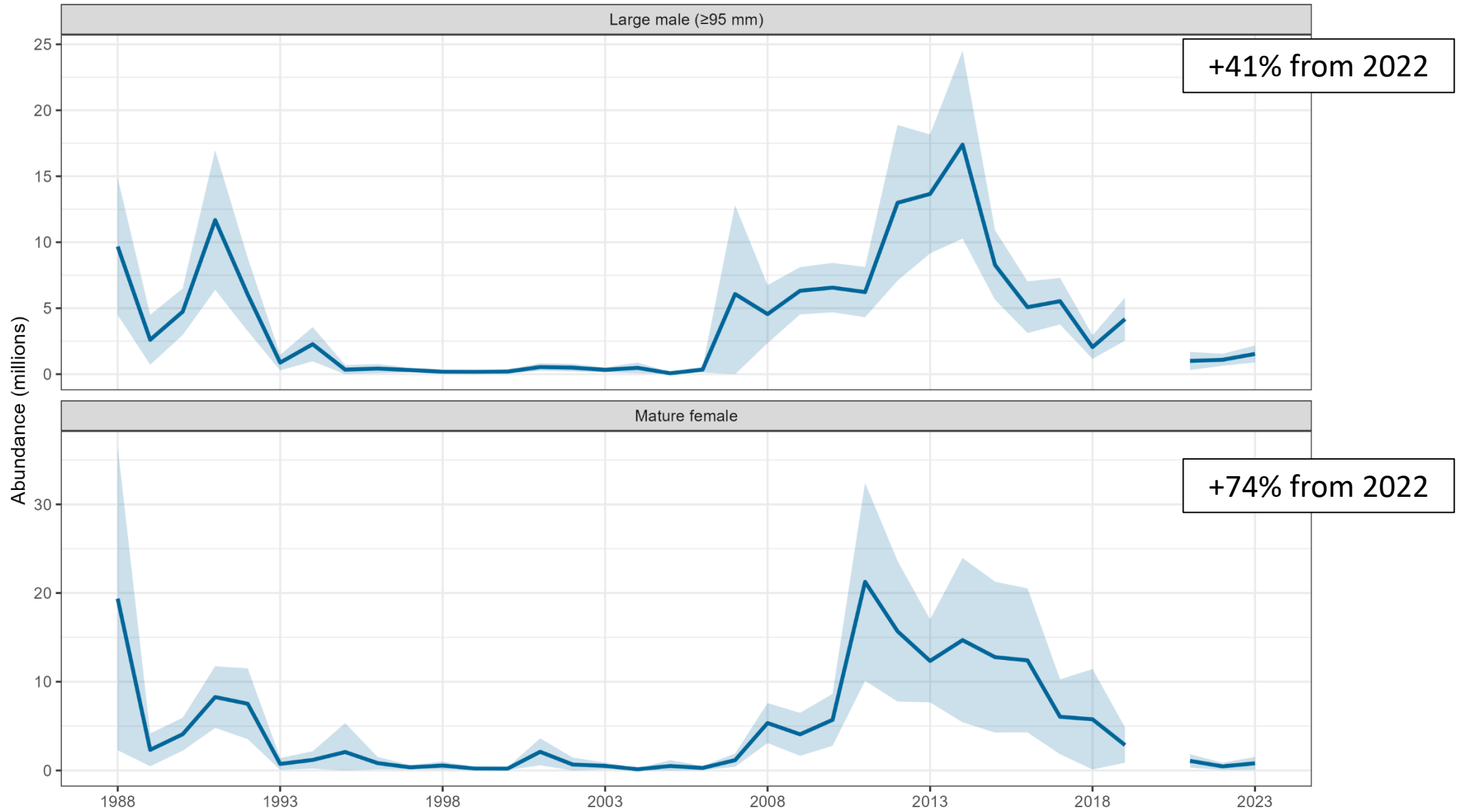
Snow crab clutch fullness, 1988-2023



Chionoecetes hybrids

Estimated abundance

Hybrid Tanner-Snow Crab



Acknowledgments

Thanks to the many people and programs who make the annual bottom trawl survey a success.

- RACE net loft & RSST program
- RACE groundfish program
- ADF&G collaborators
- Captains and crew of the *Northwest Explorer* and *Alaska Knight*