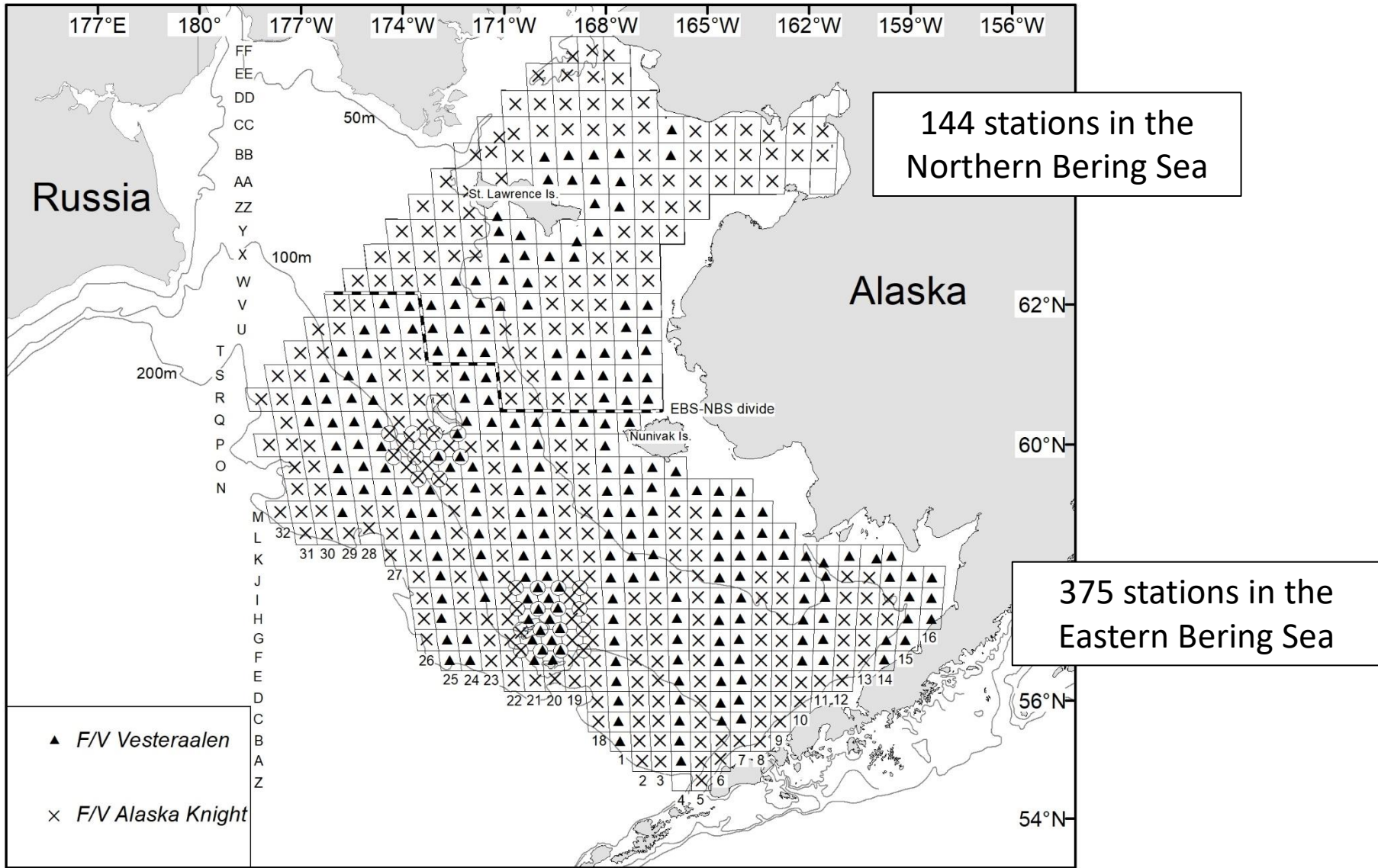


# 2022 trawl survey results: Eastern Bering Sea crab stocks

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

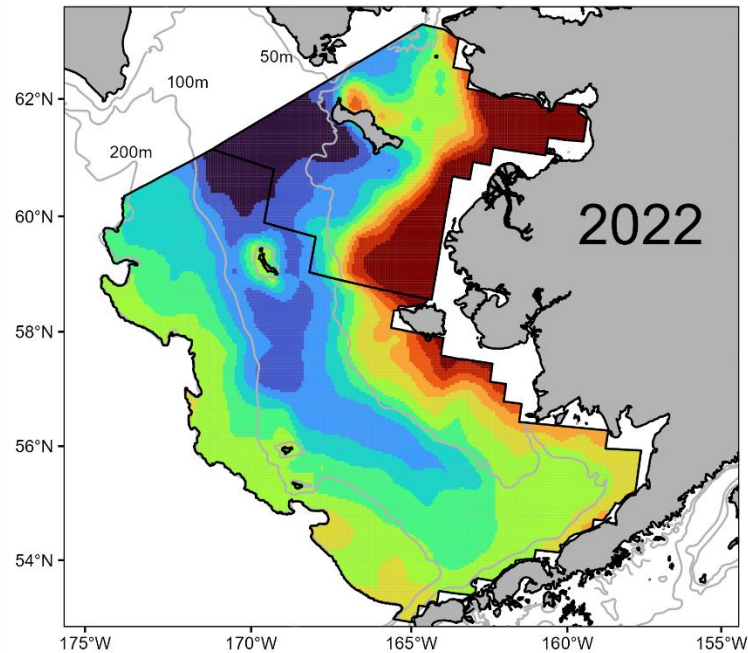
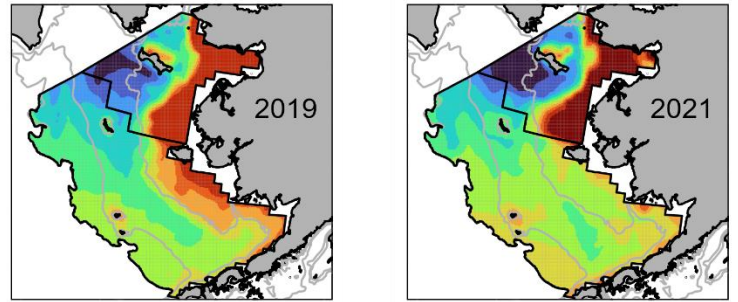
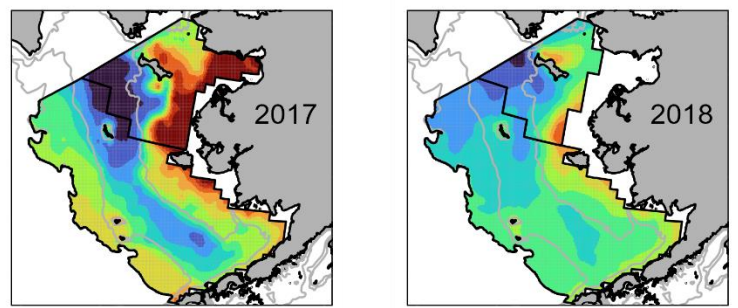
With contributions from everyone in the Shellfish Assessment Program



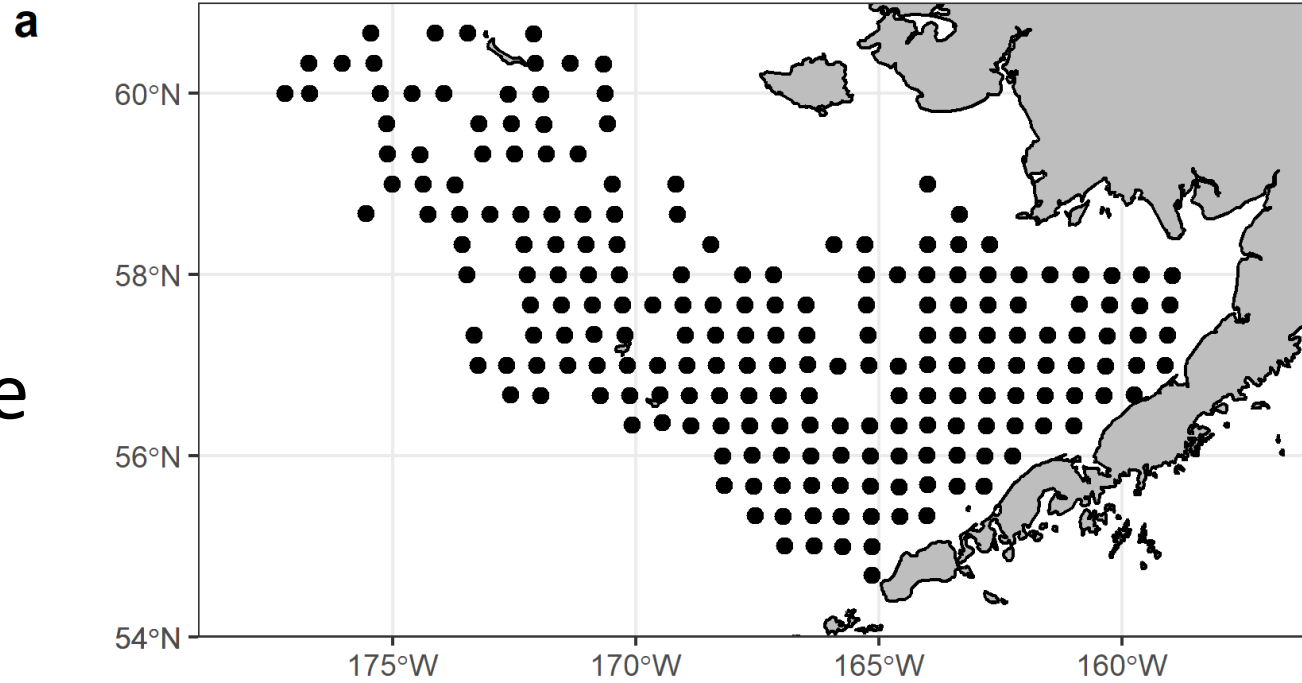
# Outline of results

- 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 Northern Bering)
- *Chionoecetes* hybrids

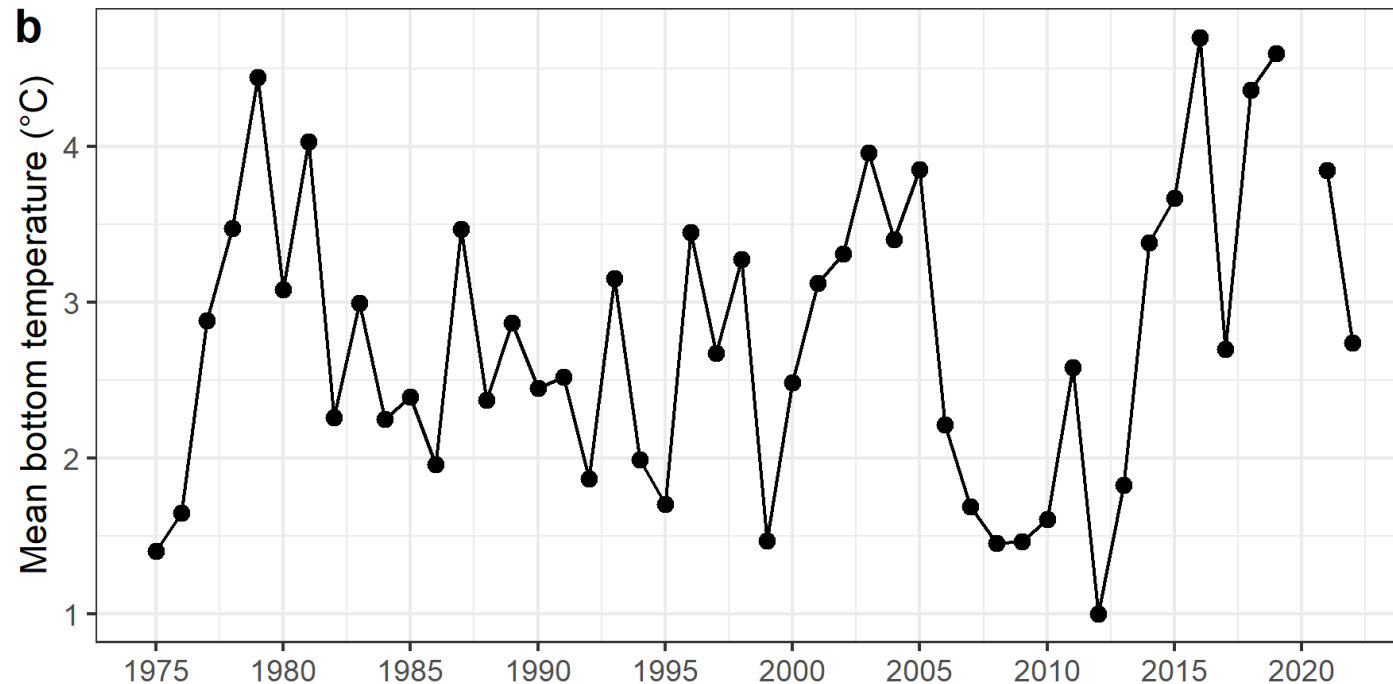
# Intermediate cold pool compared to previous four surveys



Bottom  
temperature close  
to 1975-2022  
mean



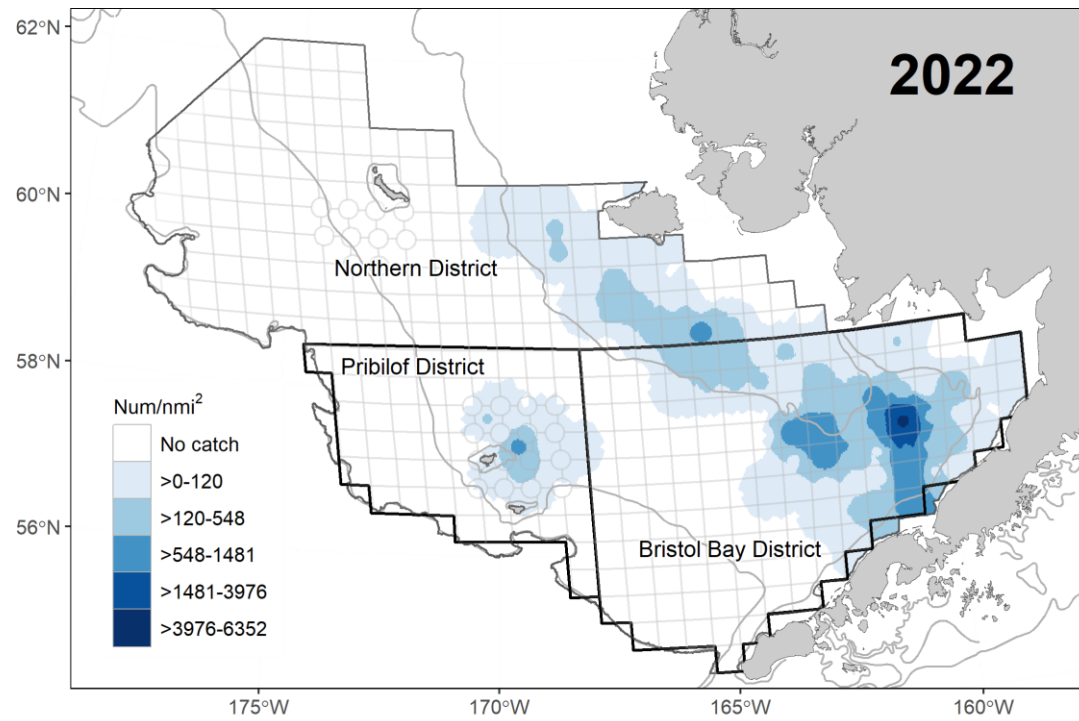
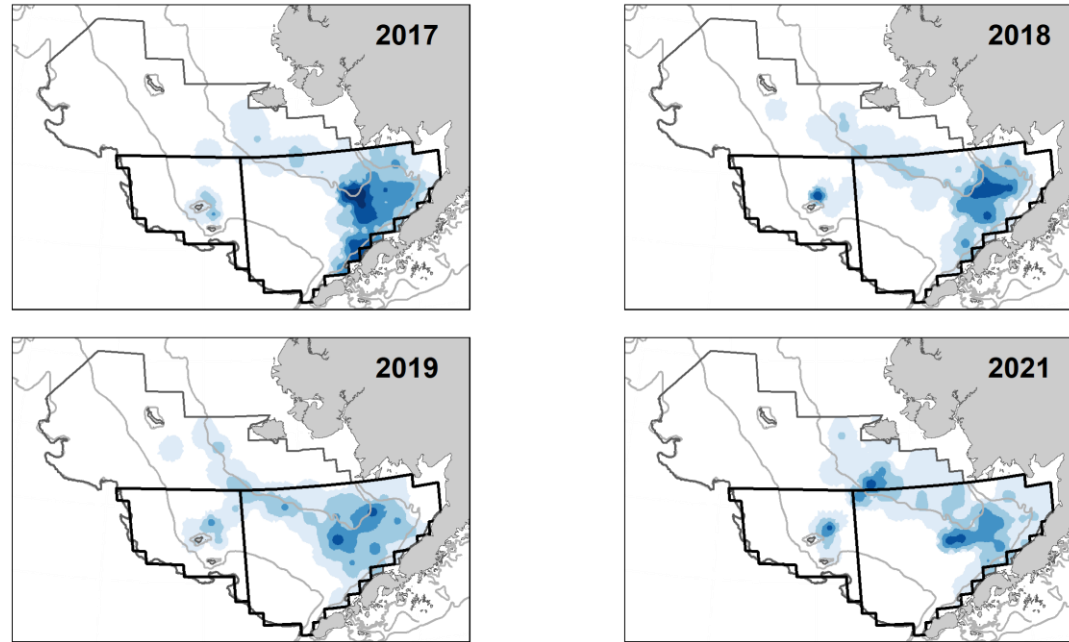
(temperatures  
controlled for  
missing values  
and sampling  
date)



Red king crab

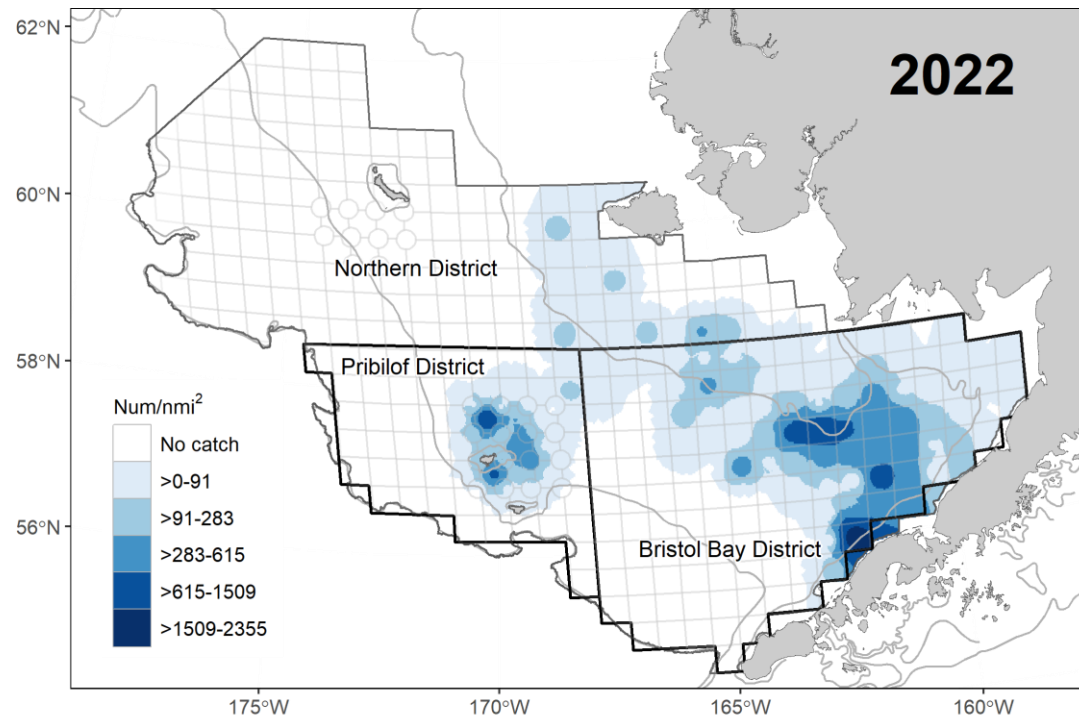
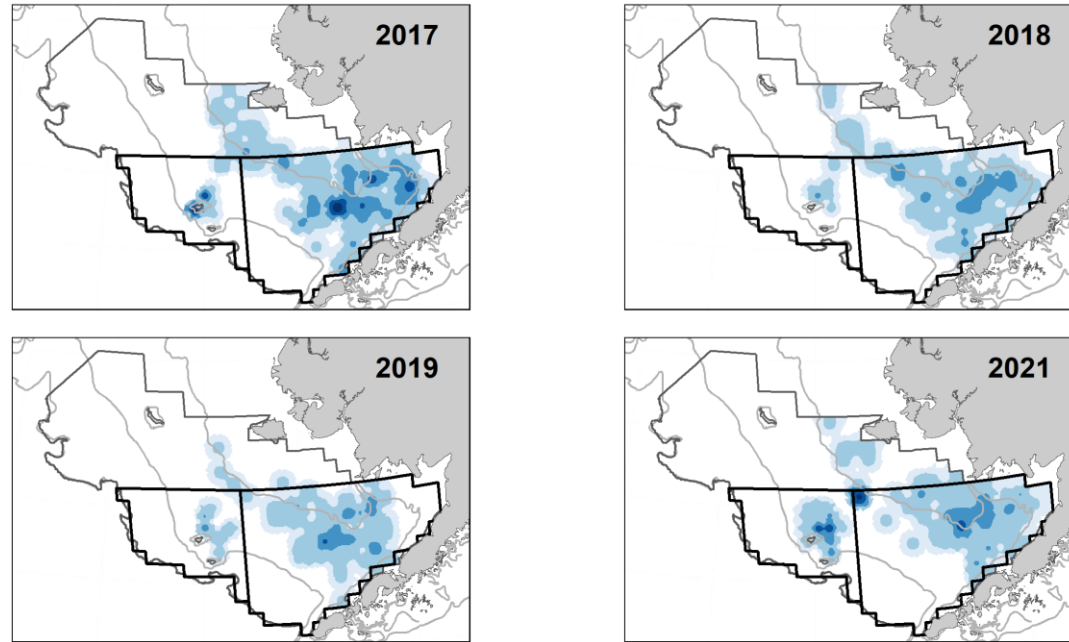
# Distribution by year

## Red King Crab Mature Female



# Distribution by year

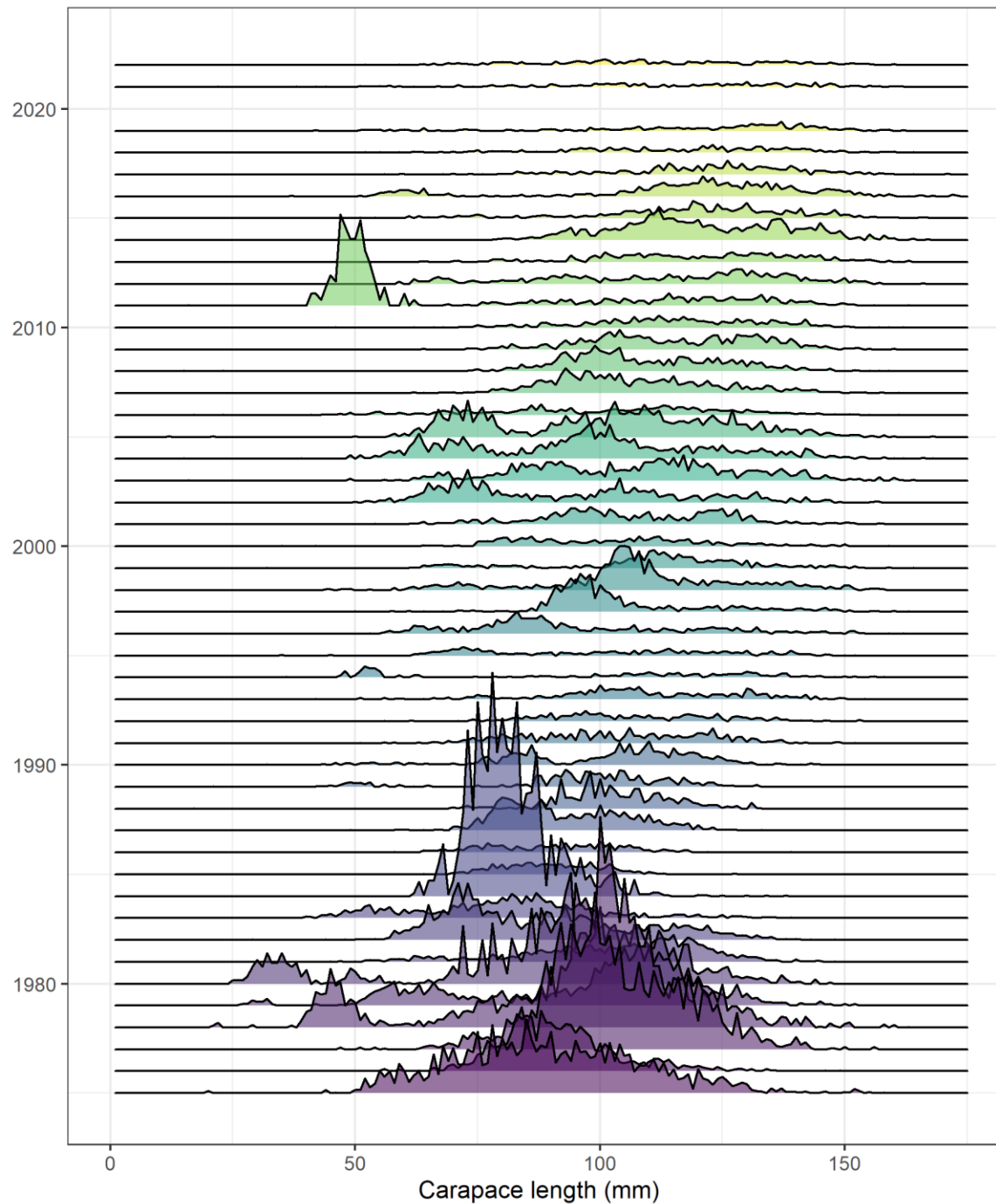
## Red King Crab Legal Male





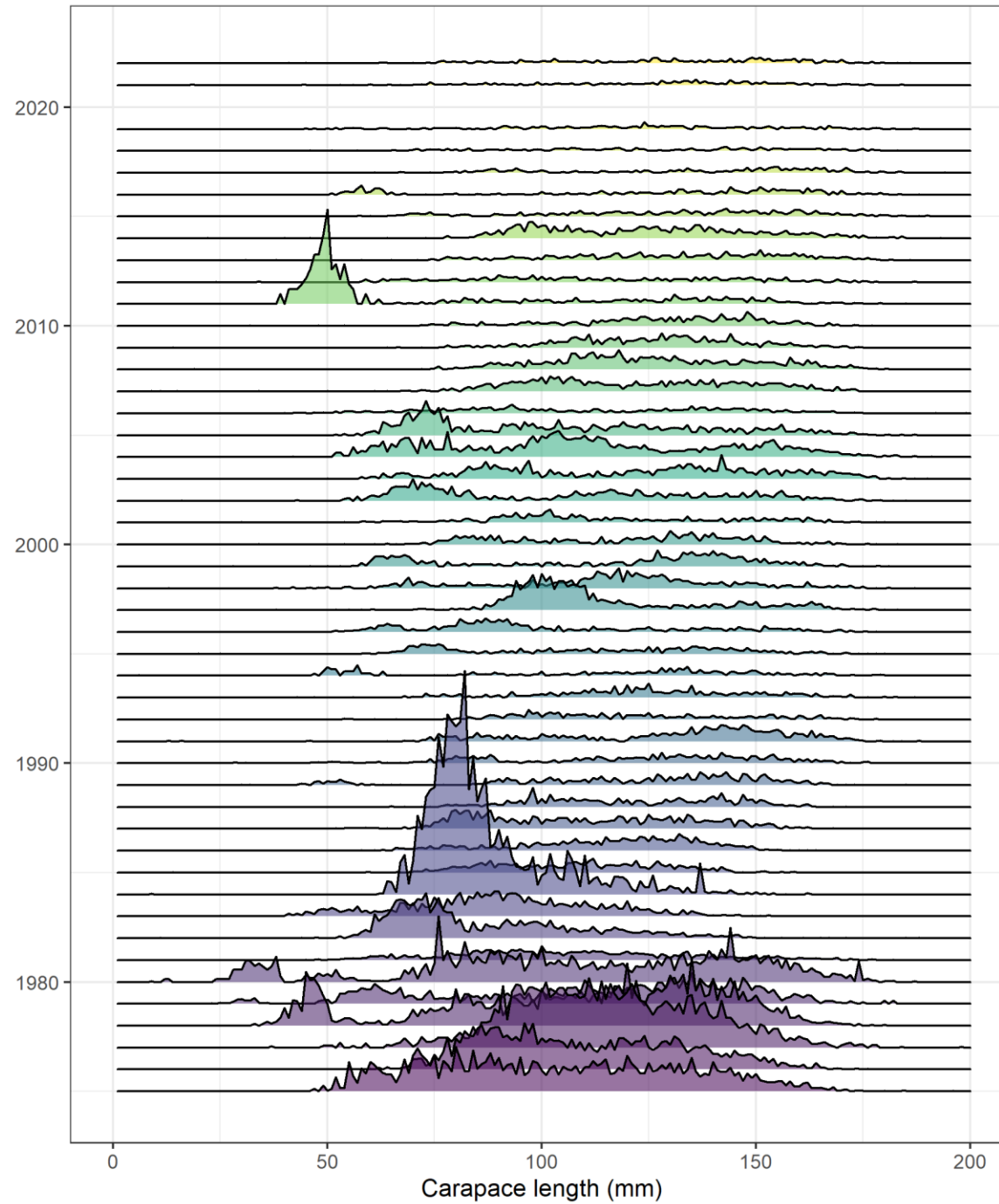
# Abundance by size, 1975-2022

Female Bristol Bay Red King Crab



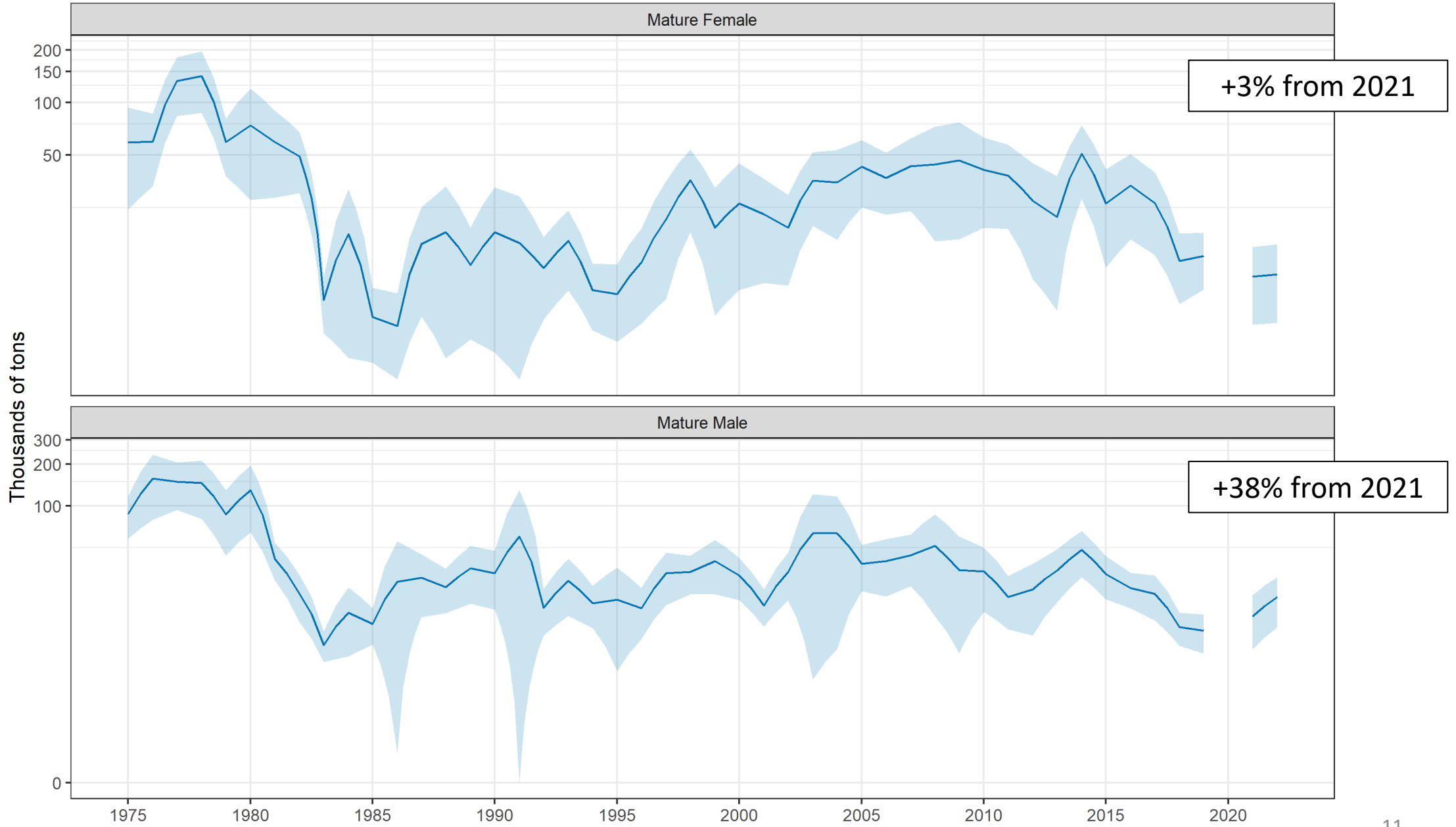
# Male Bristol Bay Red King Crab

Abundance by size,  
1975-2022



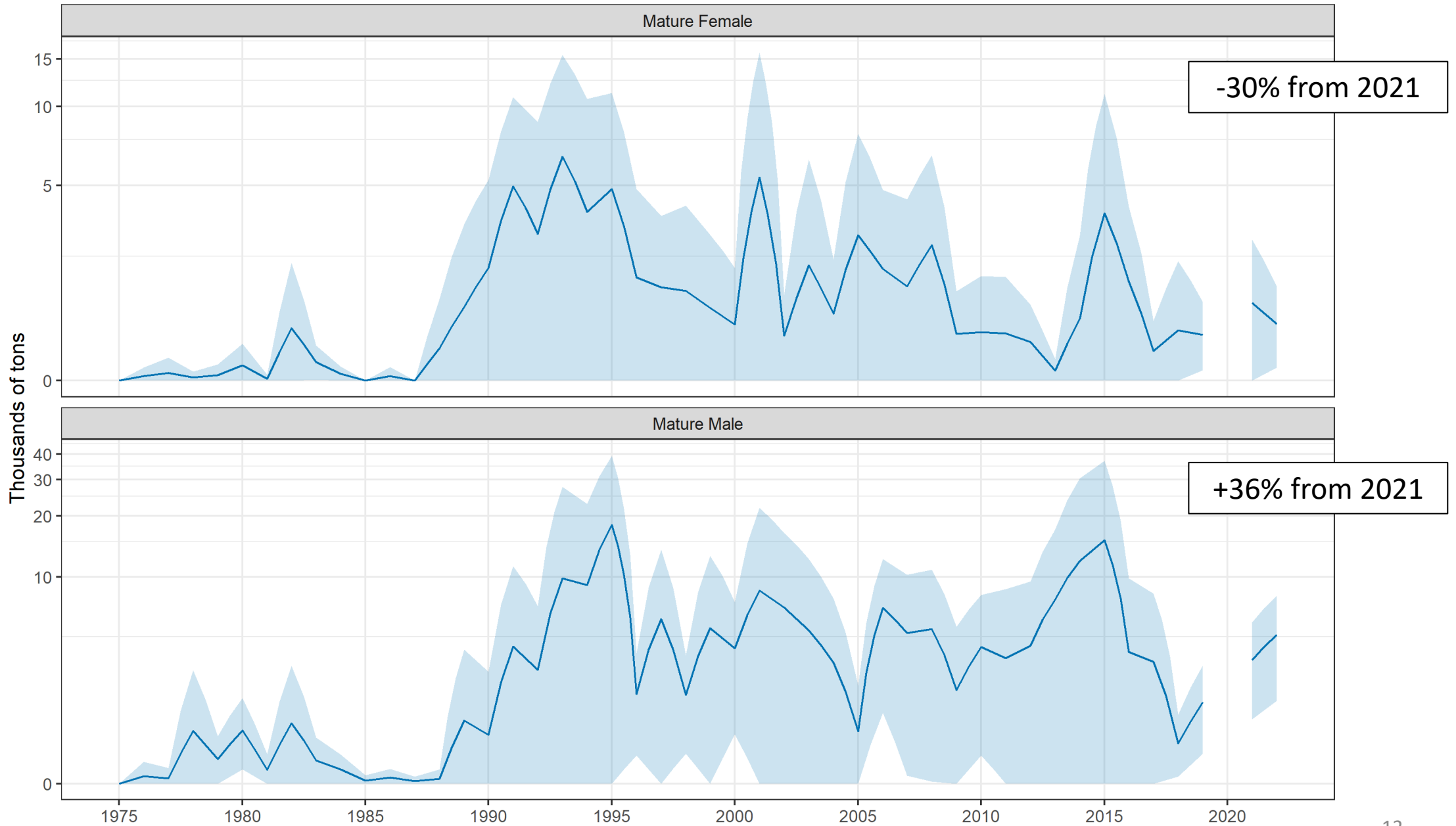
# Estimated biomass

## Bristol Bay Red King Crab



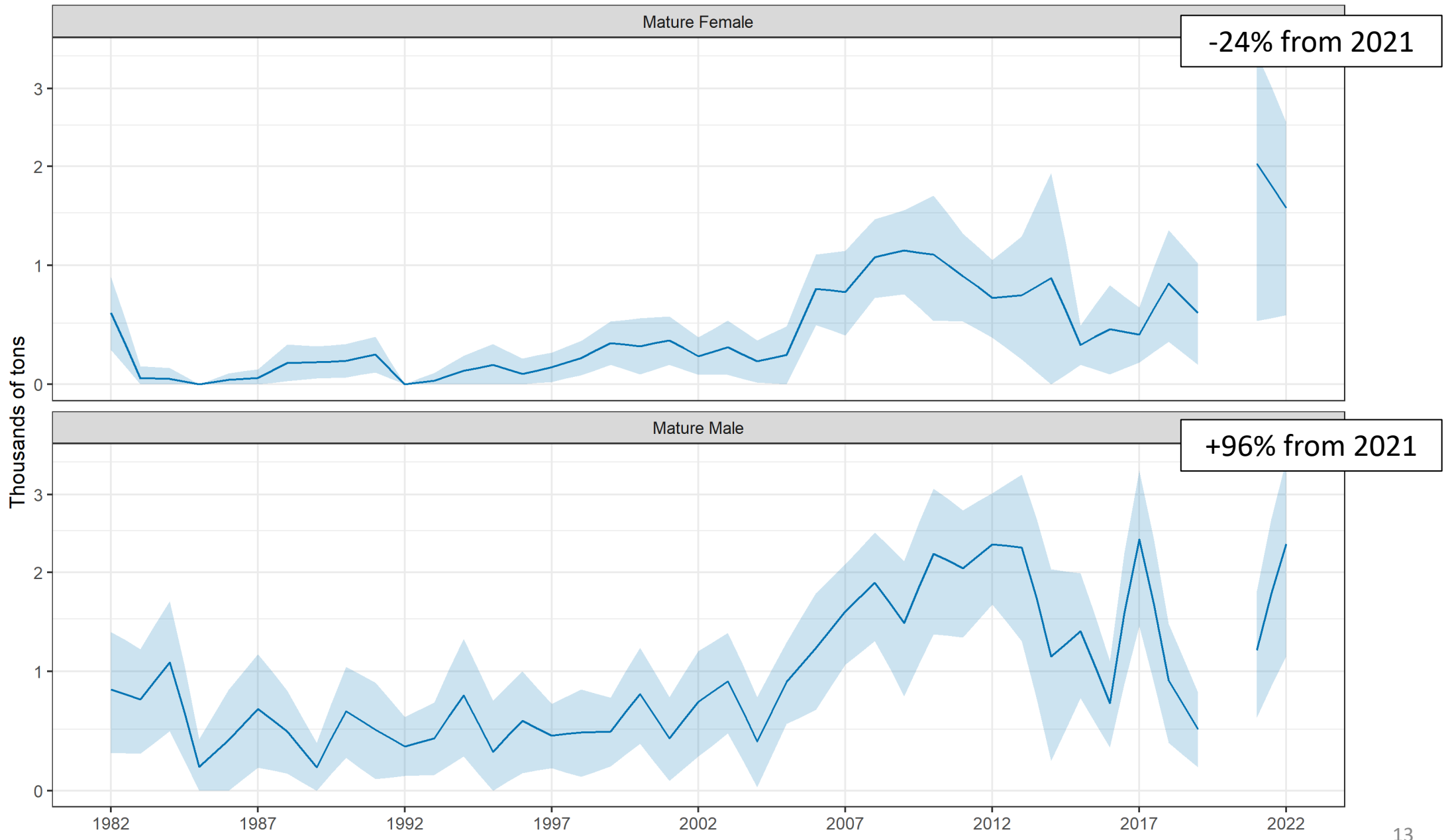
# Estimated biomass

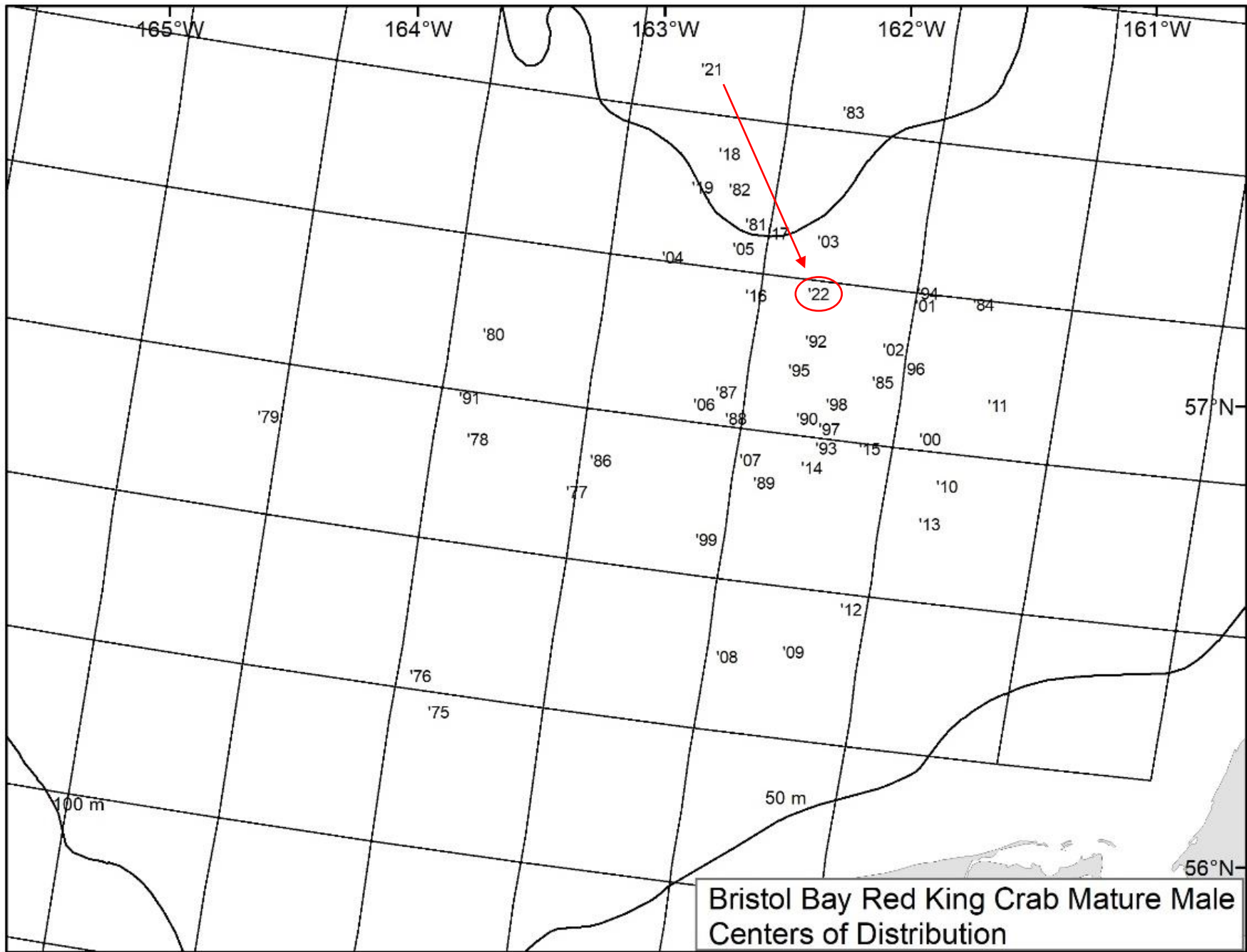
## Pribilof Islands Red King Crab



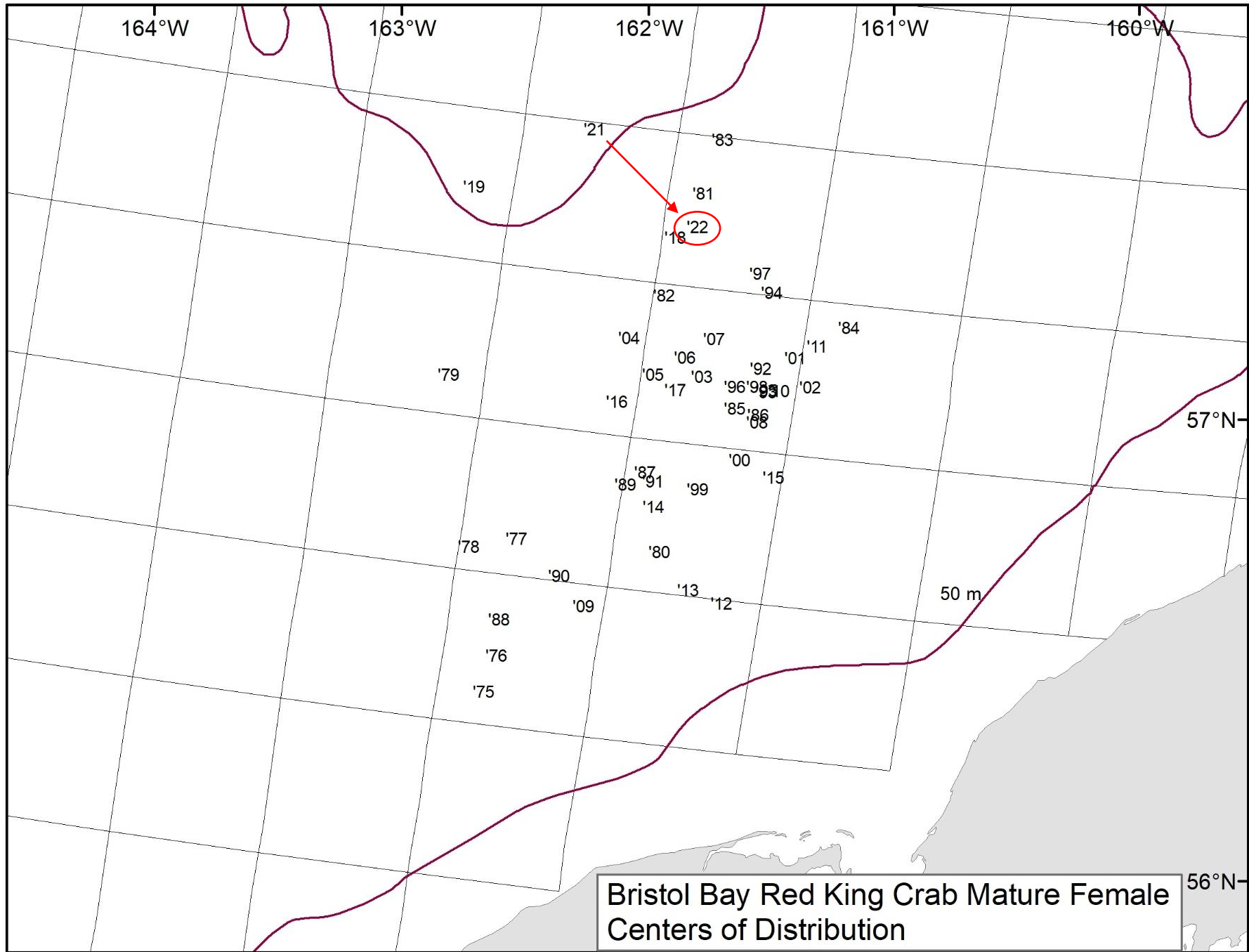
# Estimated biomass

## Northern District Red King Crab





Bristol Bay Red King Crab Mature Male Centers of Distribution



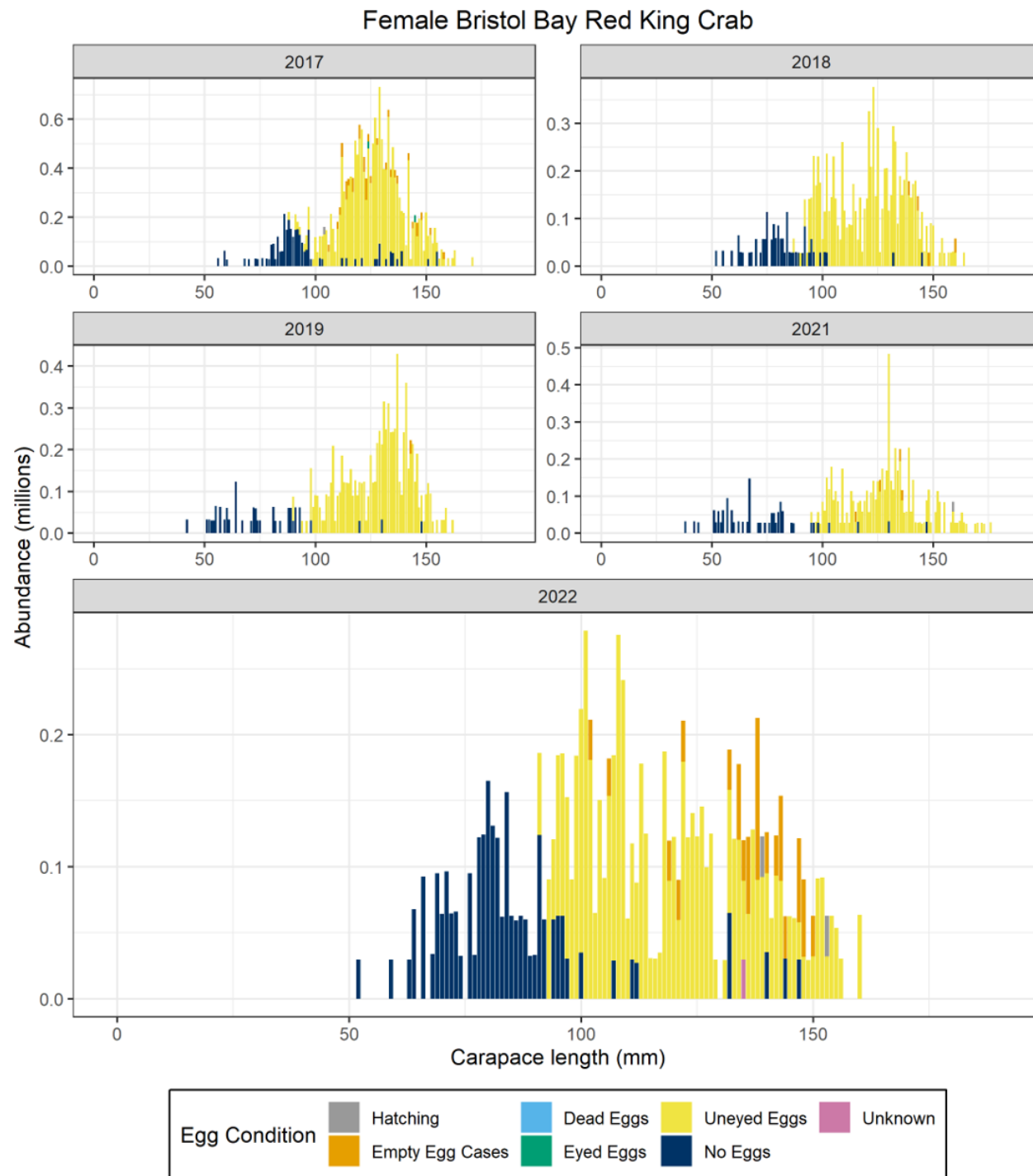
Bristol Bay Red King Crab Mature Female Centers of Distribution

Bristol bay red king  
crab retow decision

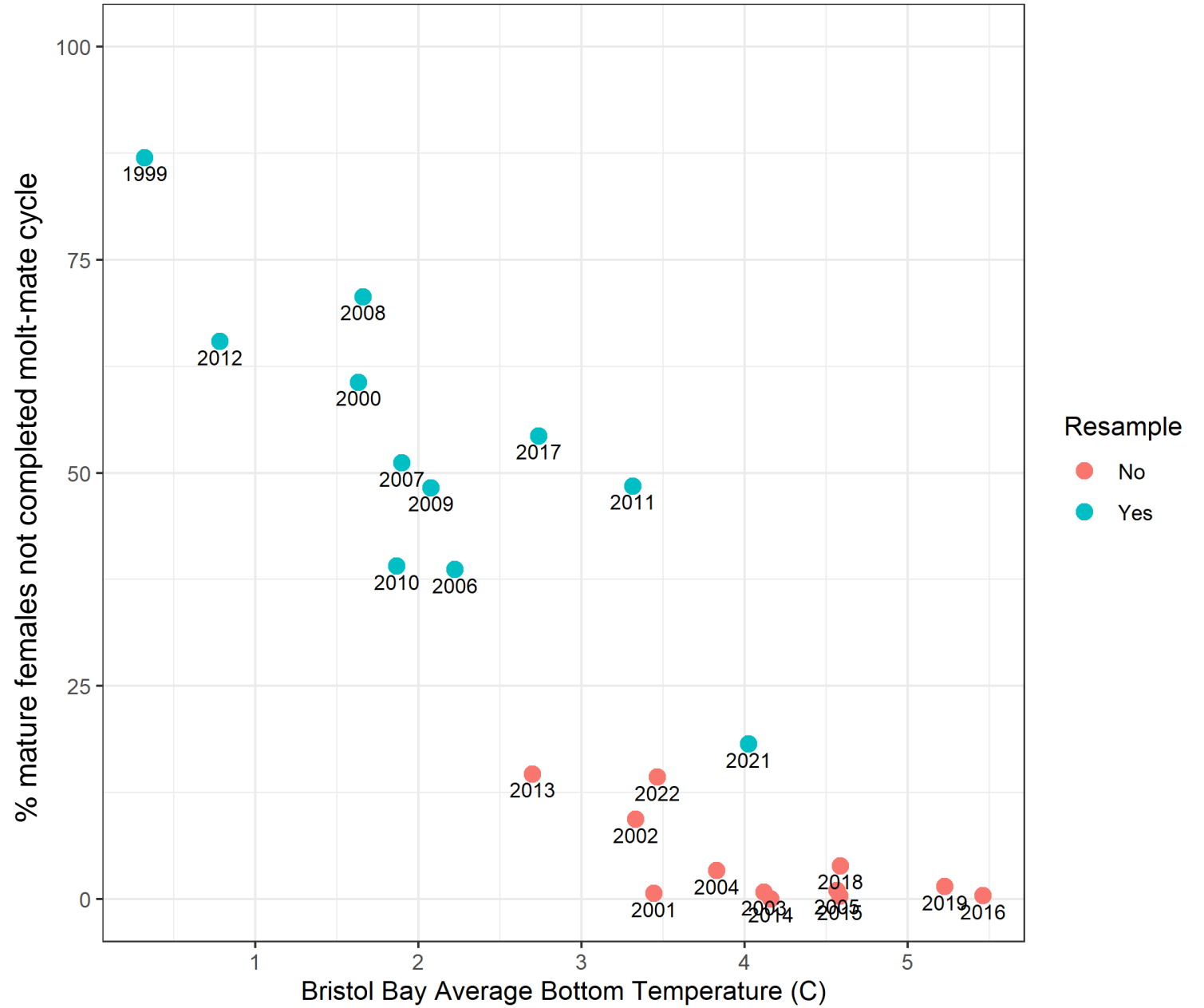


# Abundance by size and clutch category

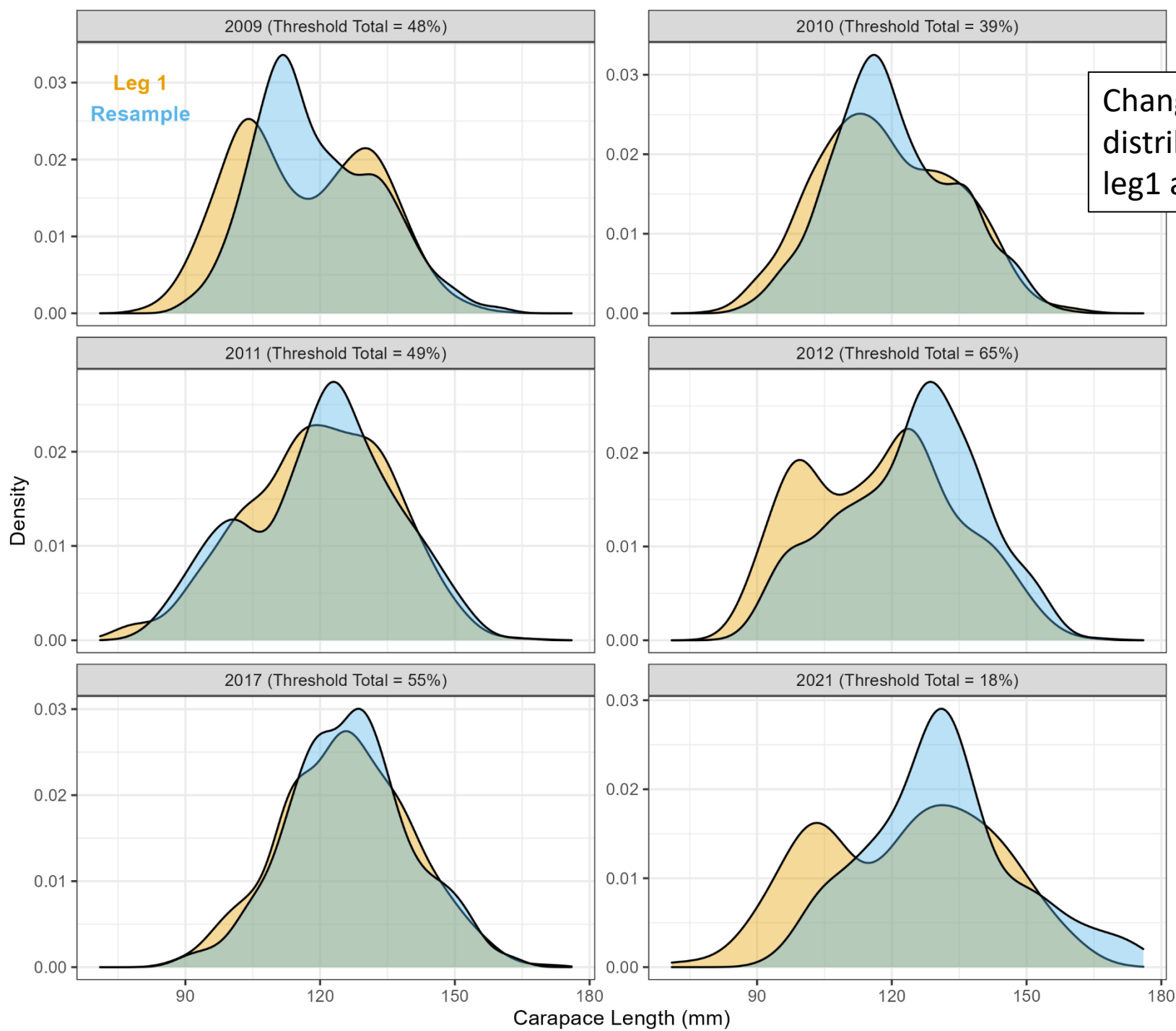
14% of Bristol Bay mature females were barren, empty egg cases, eyed eggs, or hatching



# Retow history: % not molt-mated vs bottom temperature

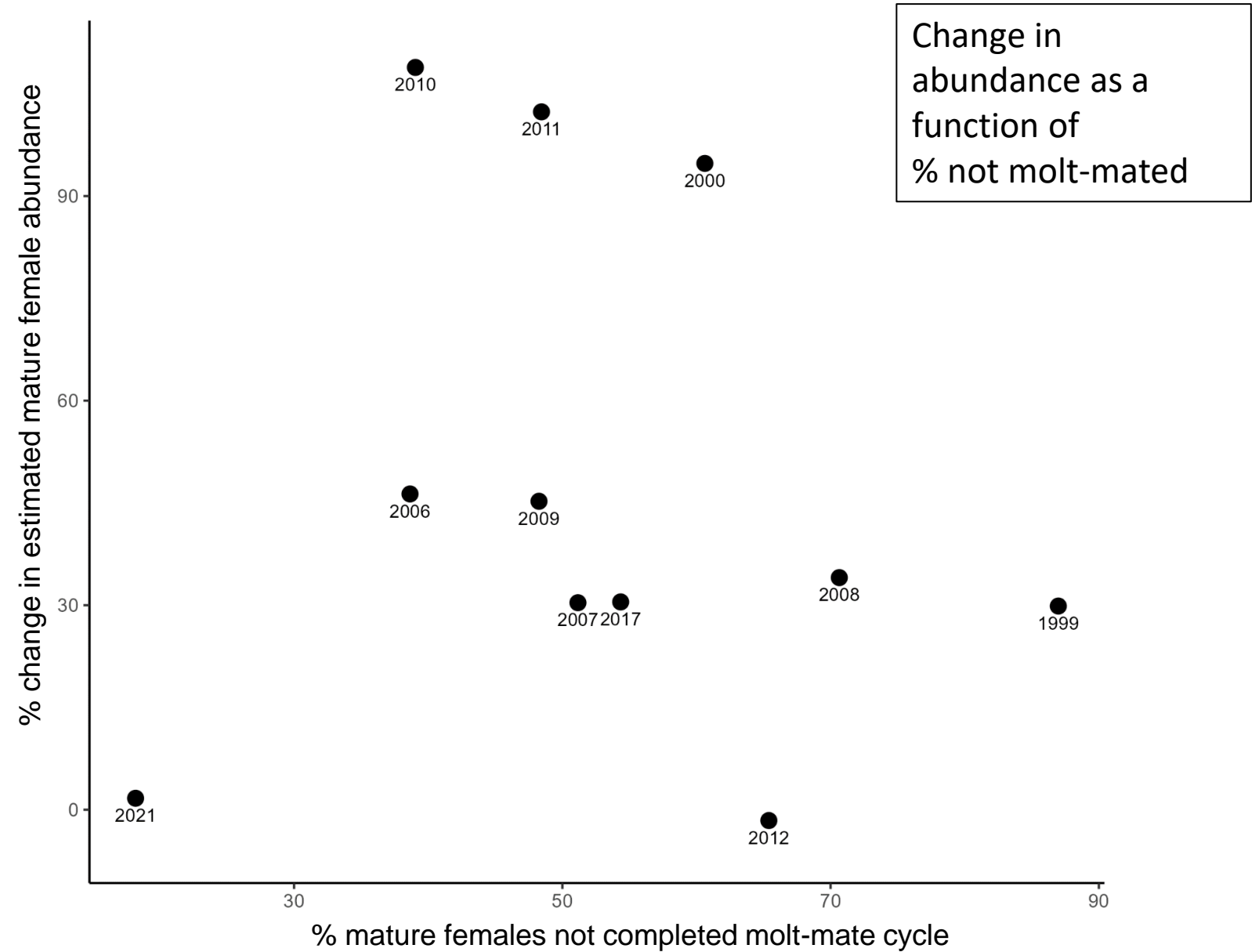


Primary goal:  
Improve size  
composition  
estimates for  
mature  
females



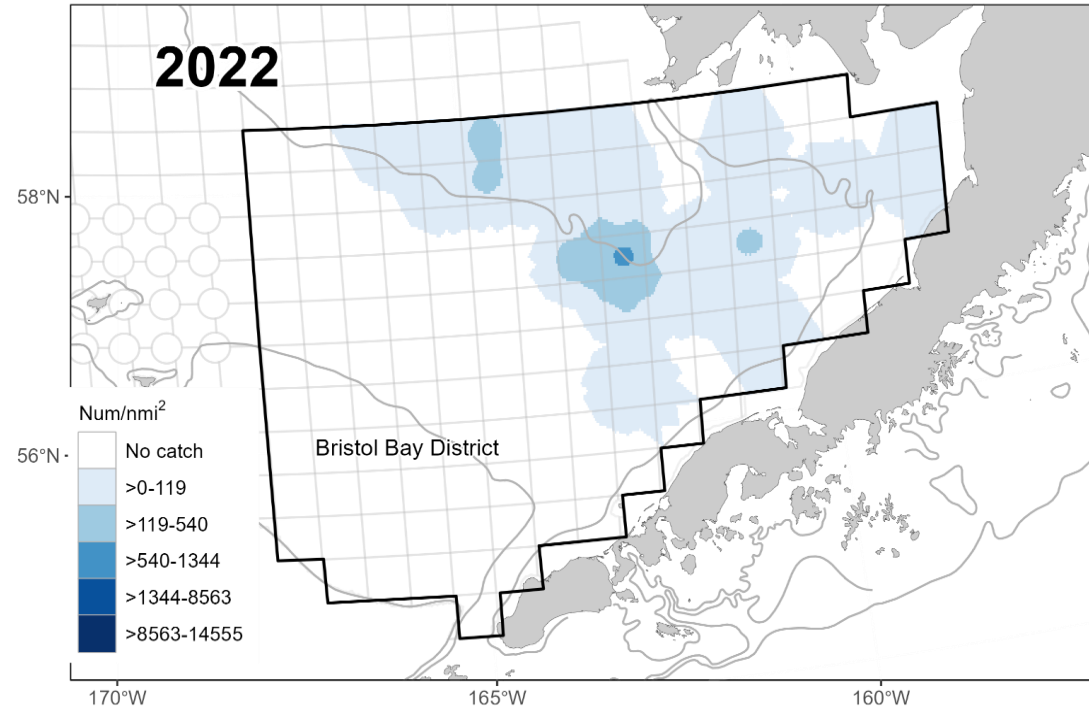
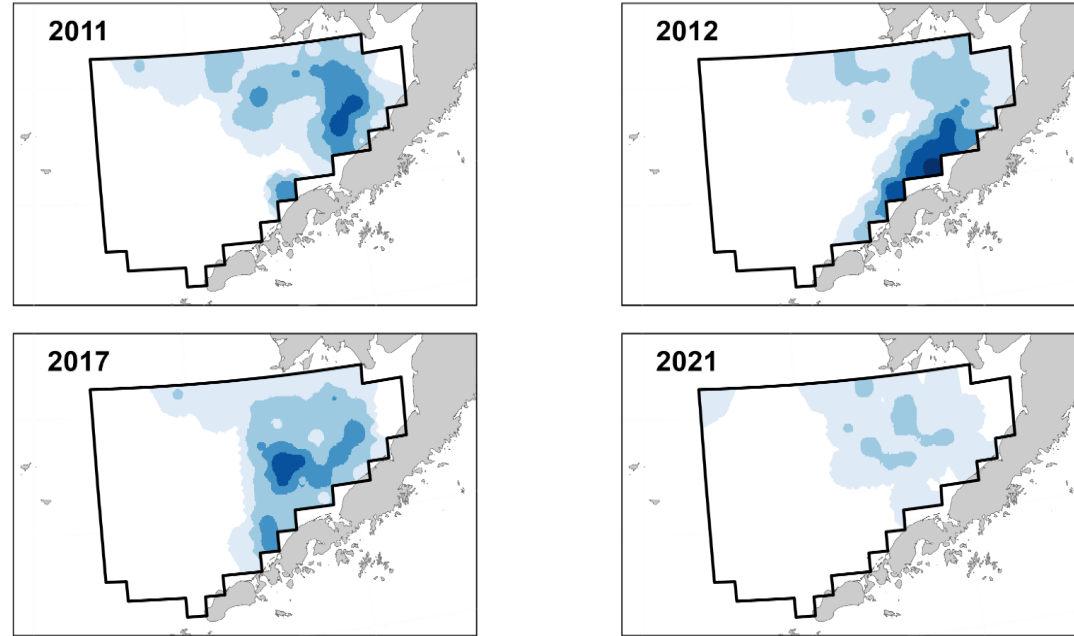
Change in size  
distribution between  
leg1 and resample

Secondary goal:  
estimate post-  
molt/mate  
abundance



Distribution of  
mature / not molt-  
mated: 2022 vs  
recent retow years

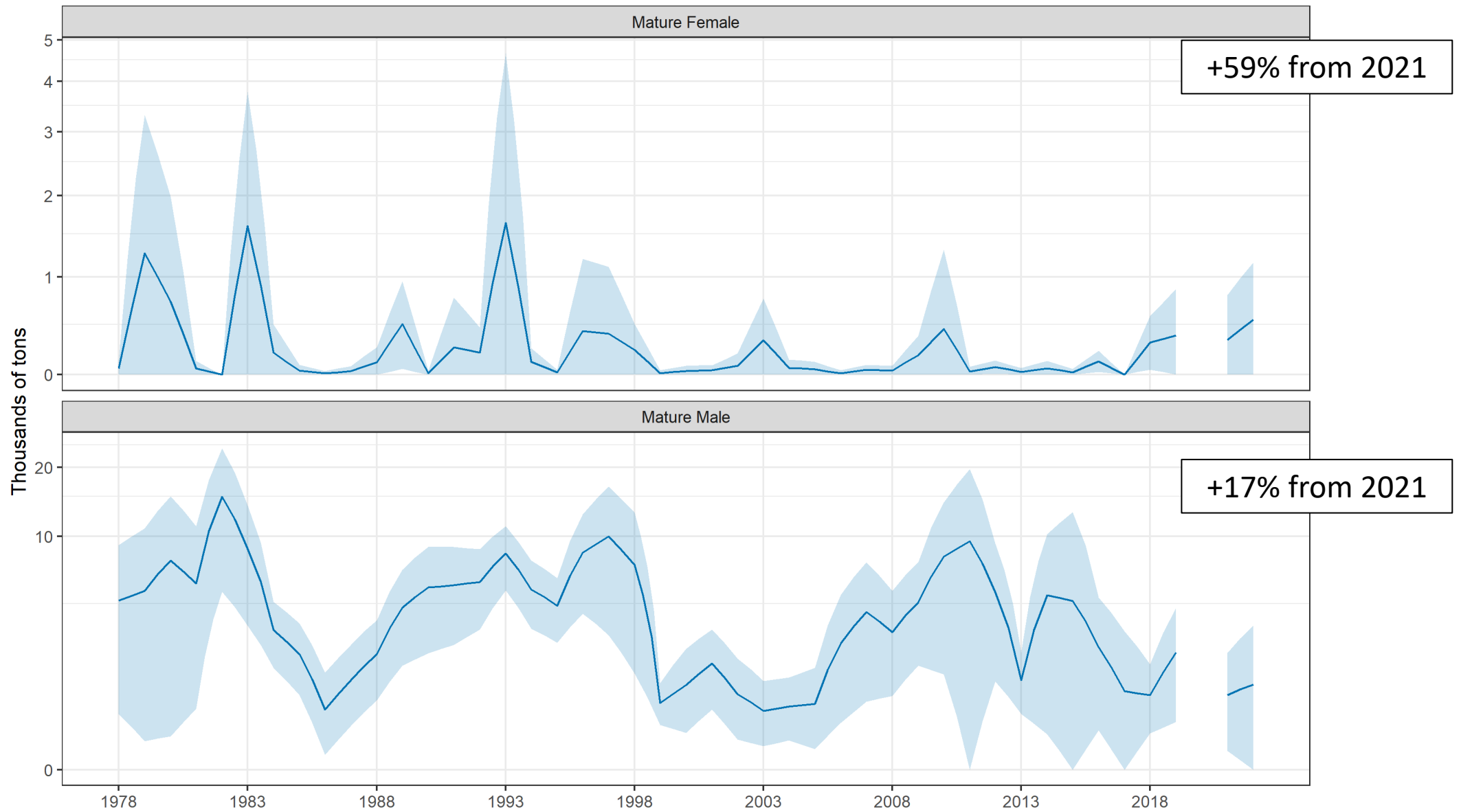
## Red King Crab Mature Female



Blue king crab

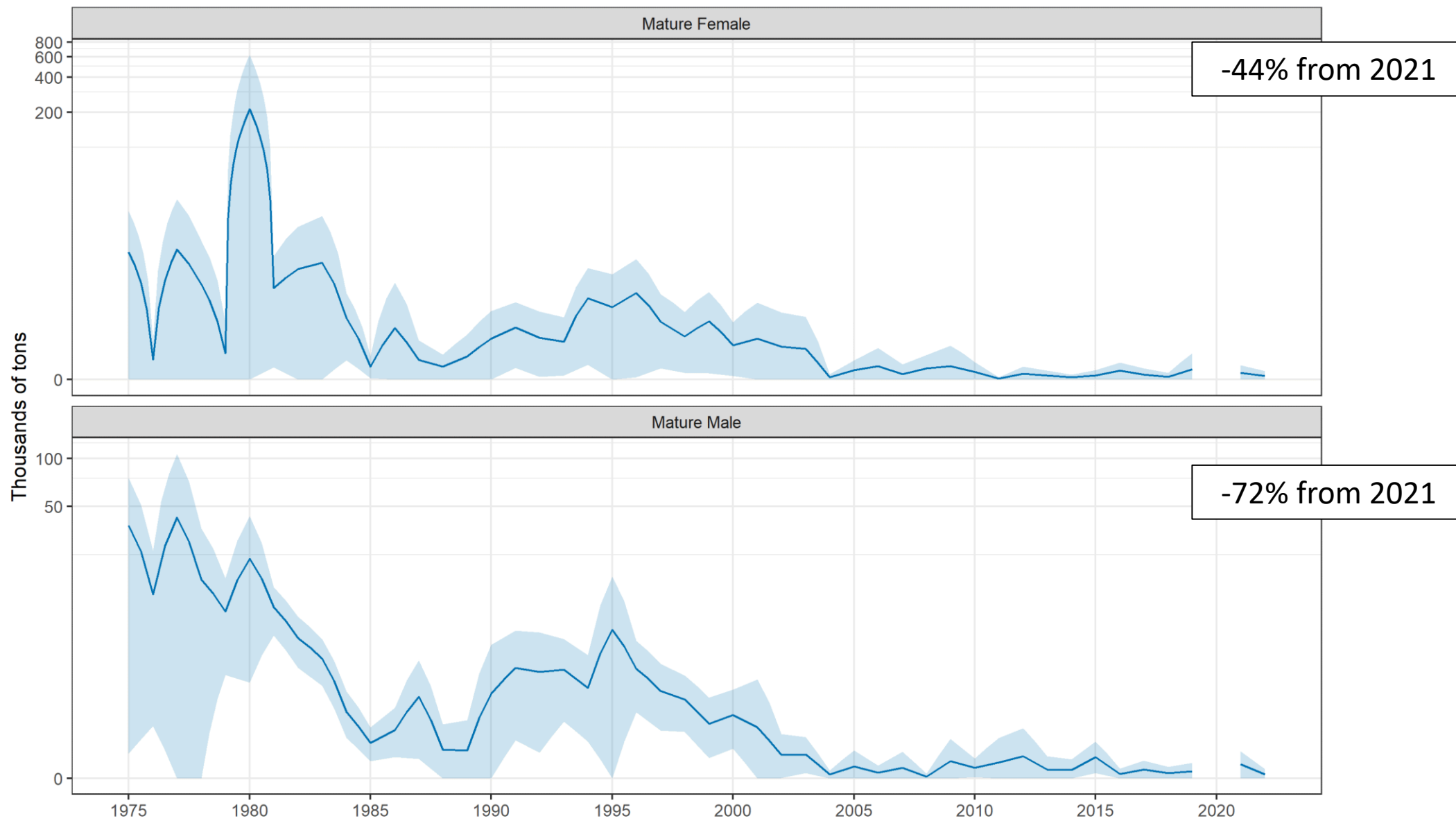
# Estimated biomass

## St. Matthew Island Blue King Crab



# Estimated biomass

## Pribilof Islands Blue King Crab

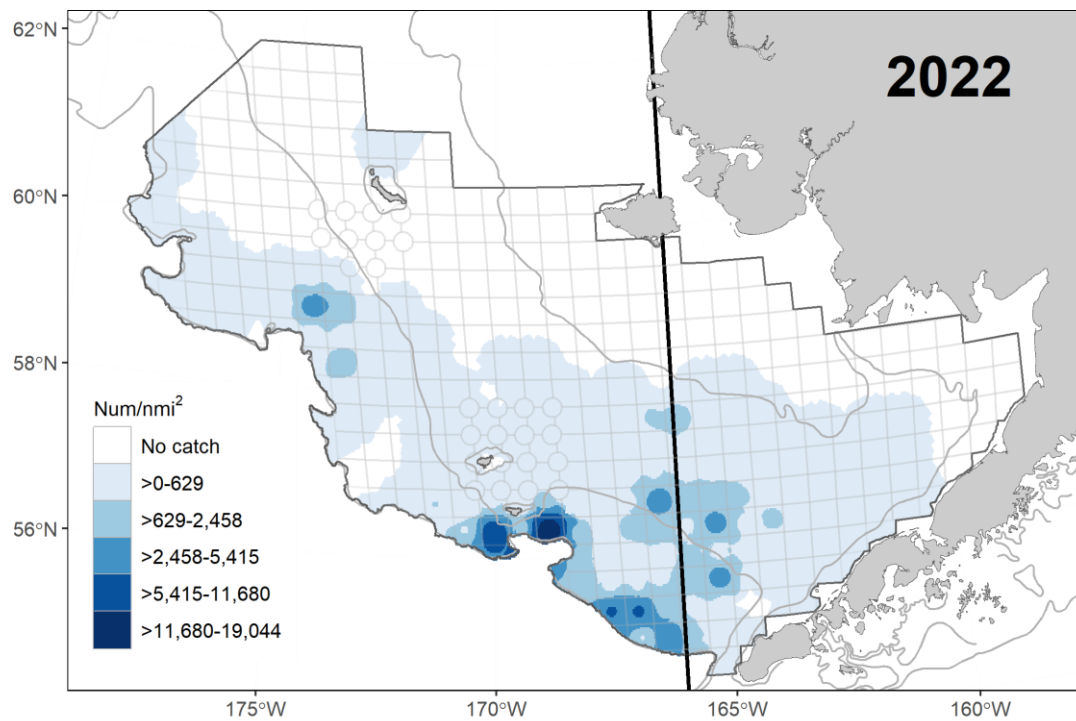
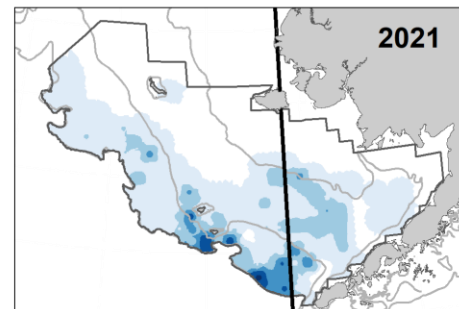
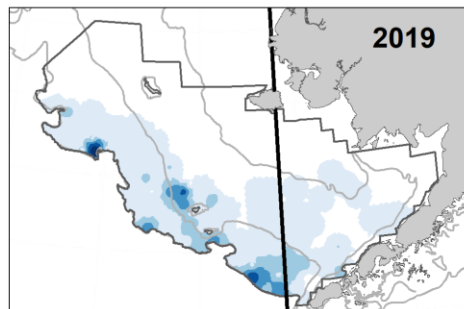
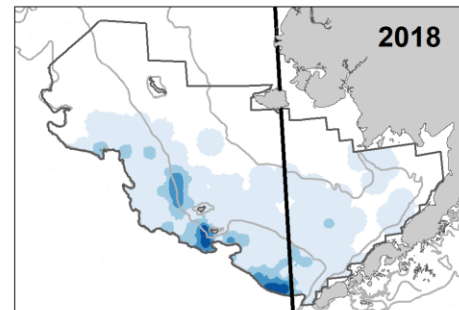
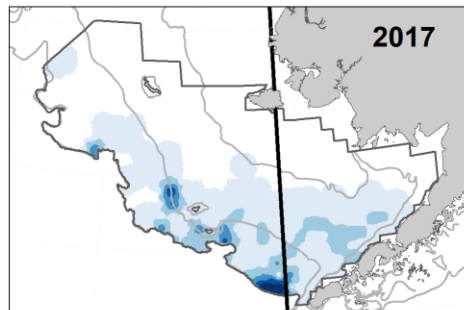




# Tanner crab

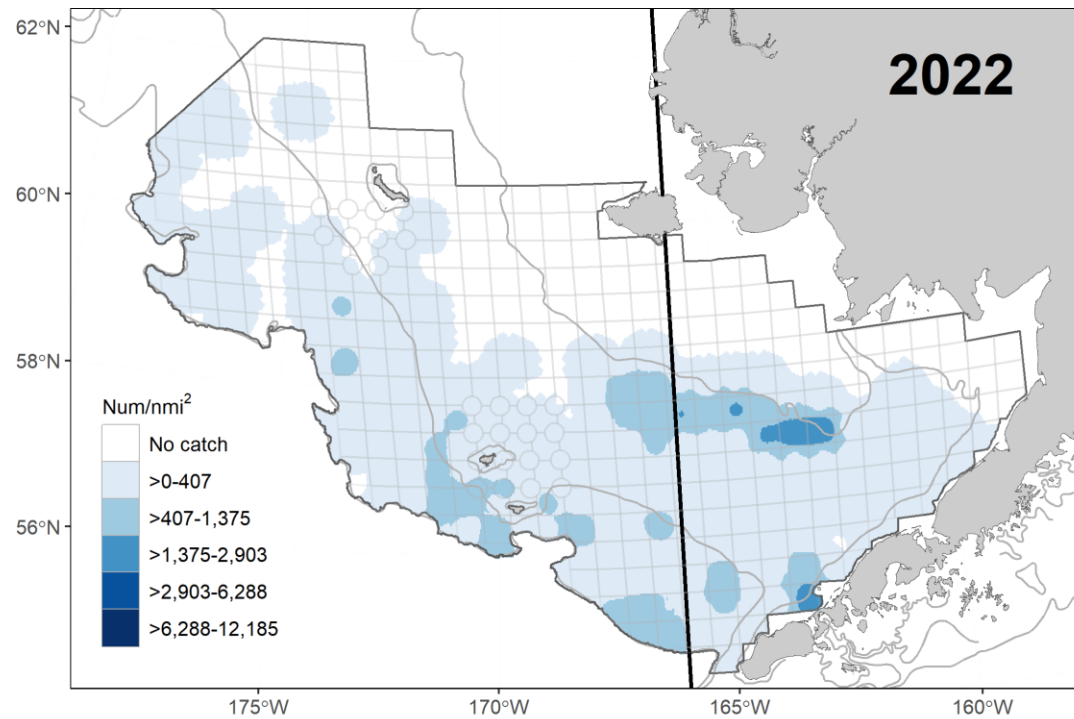
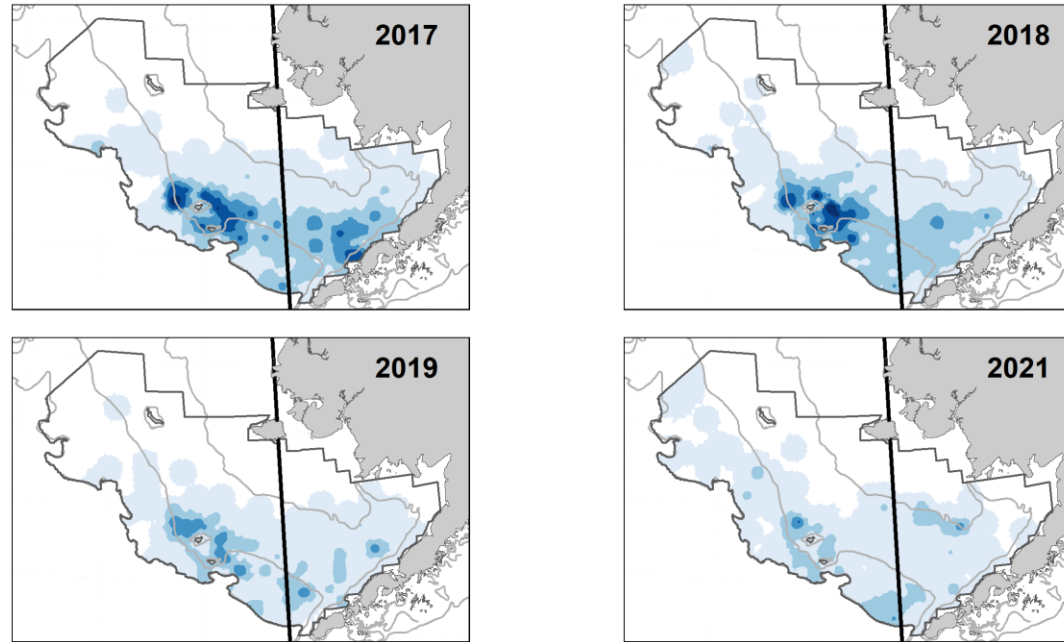
# Tanner Crab Mature Female

Distribution  
by year

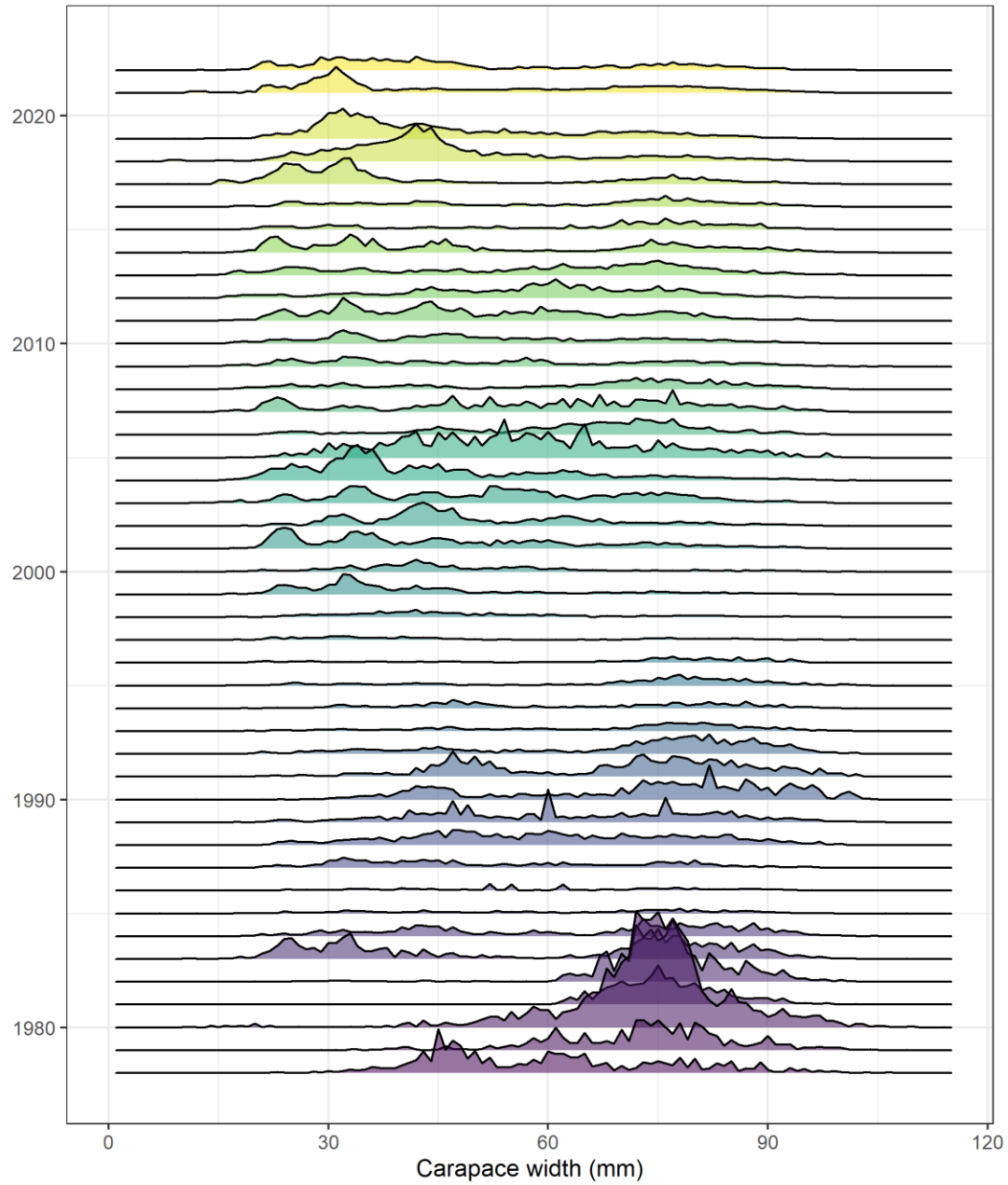


# Distribution by year

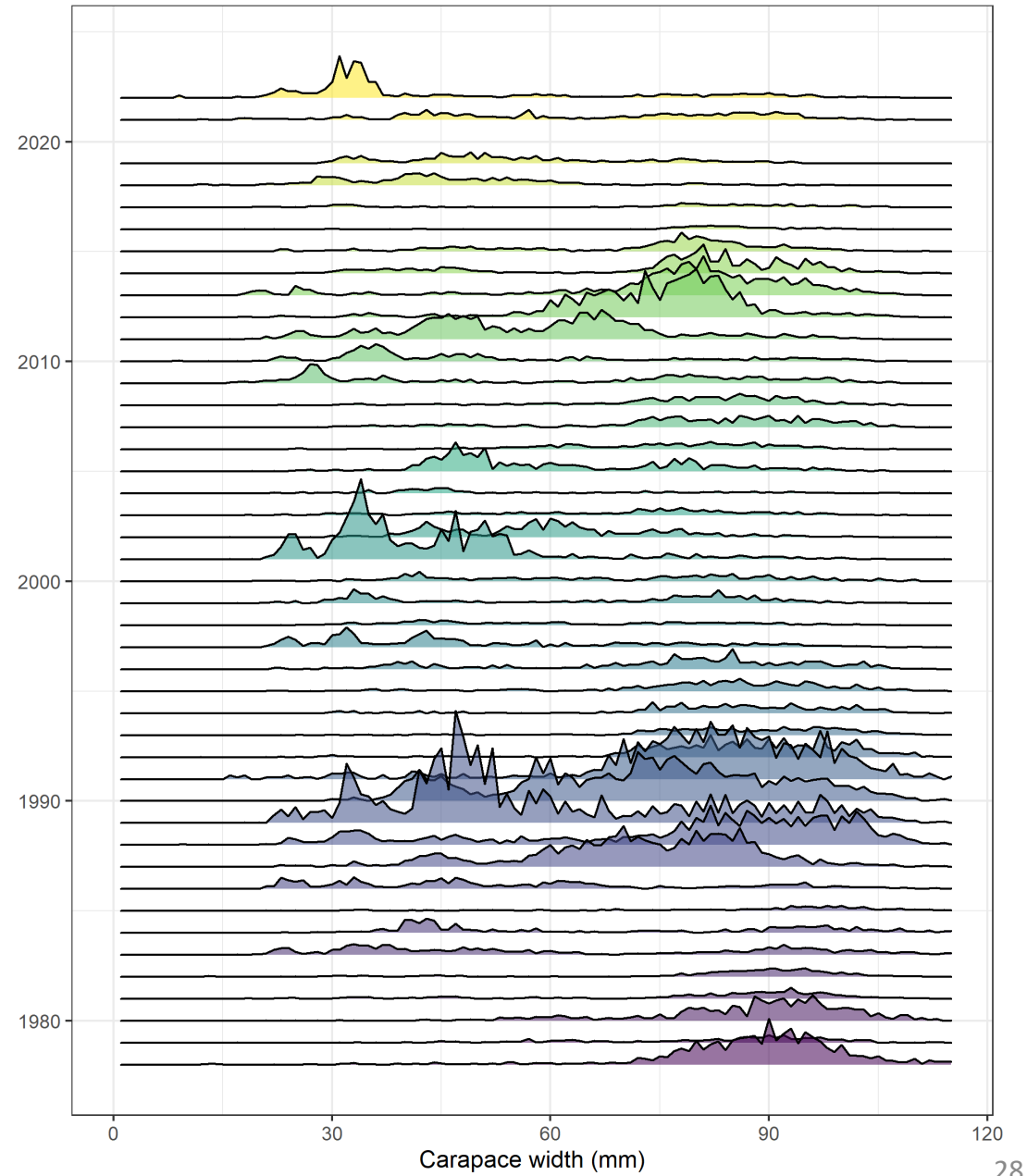
## Tanner Crab Legal Male



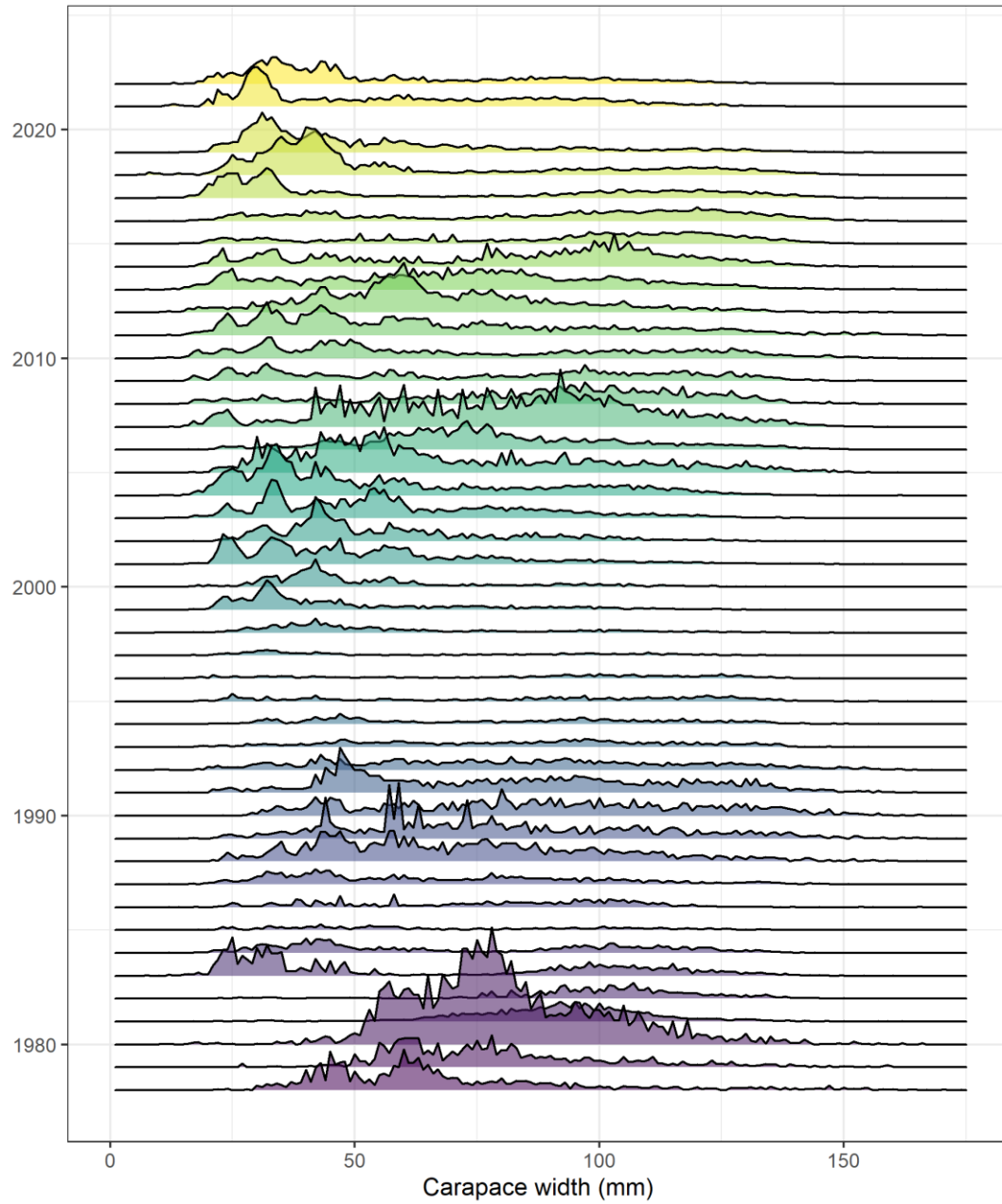
Female Tanner Crab West



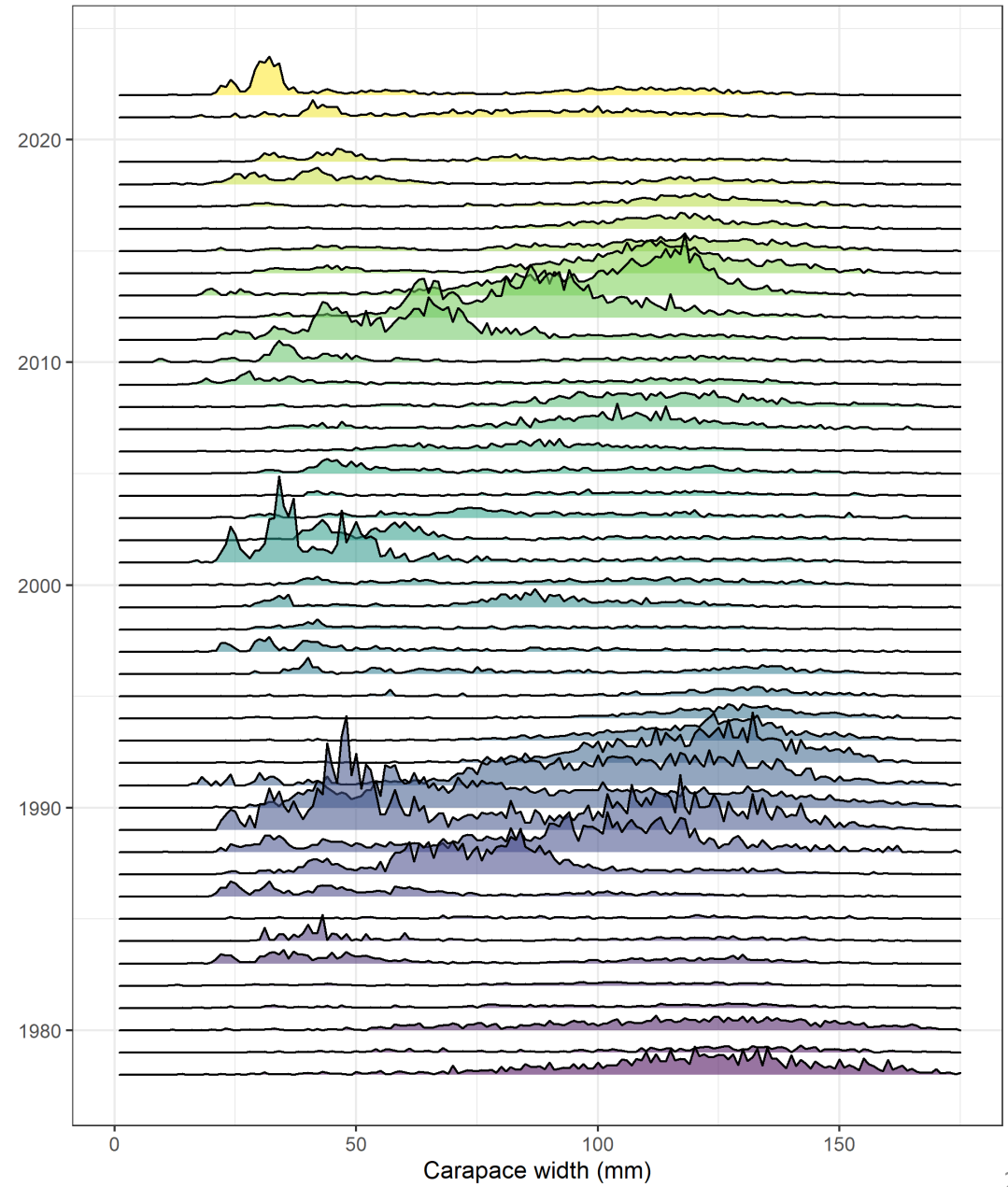
Female Tanner Crab East



Male Tanner Crab West

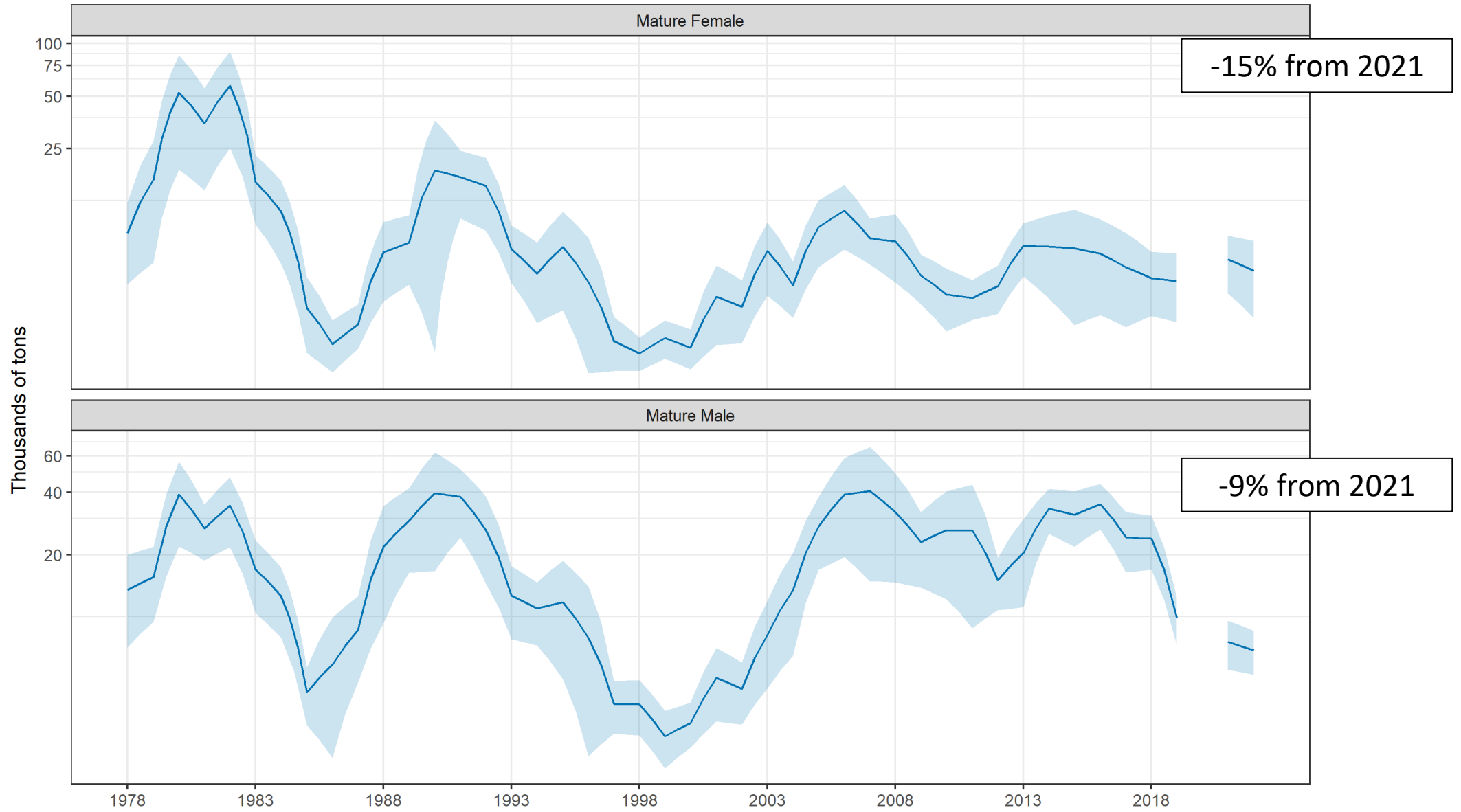


Male Tanner Crab East



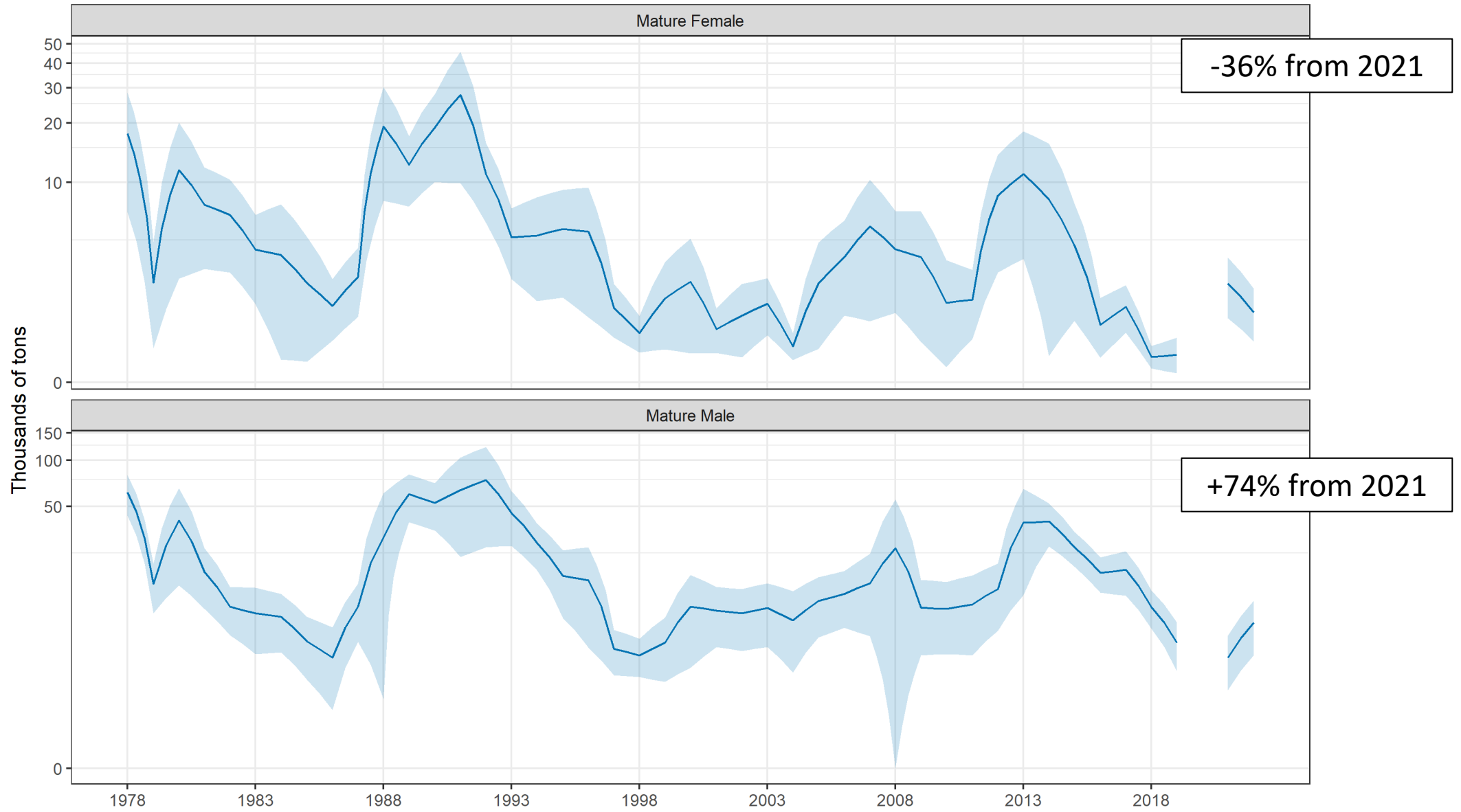
# Estimated biomass

## Tanner Crab West



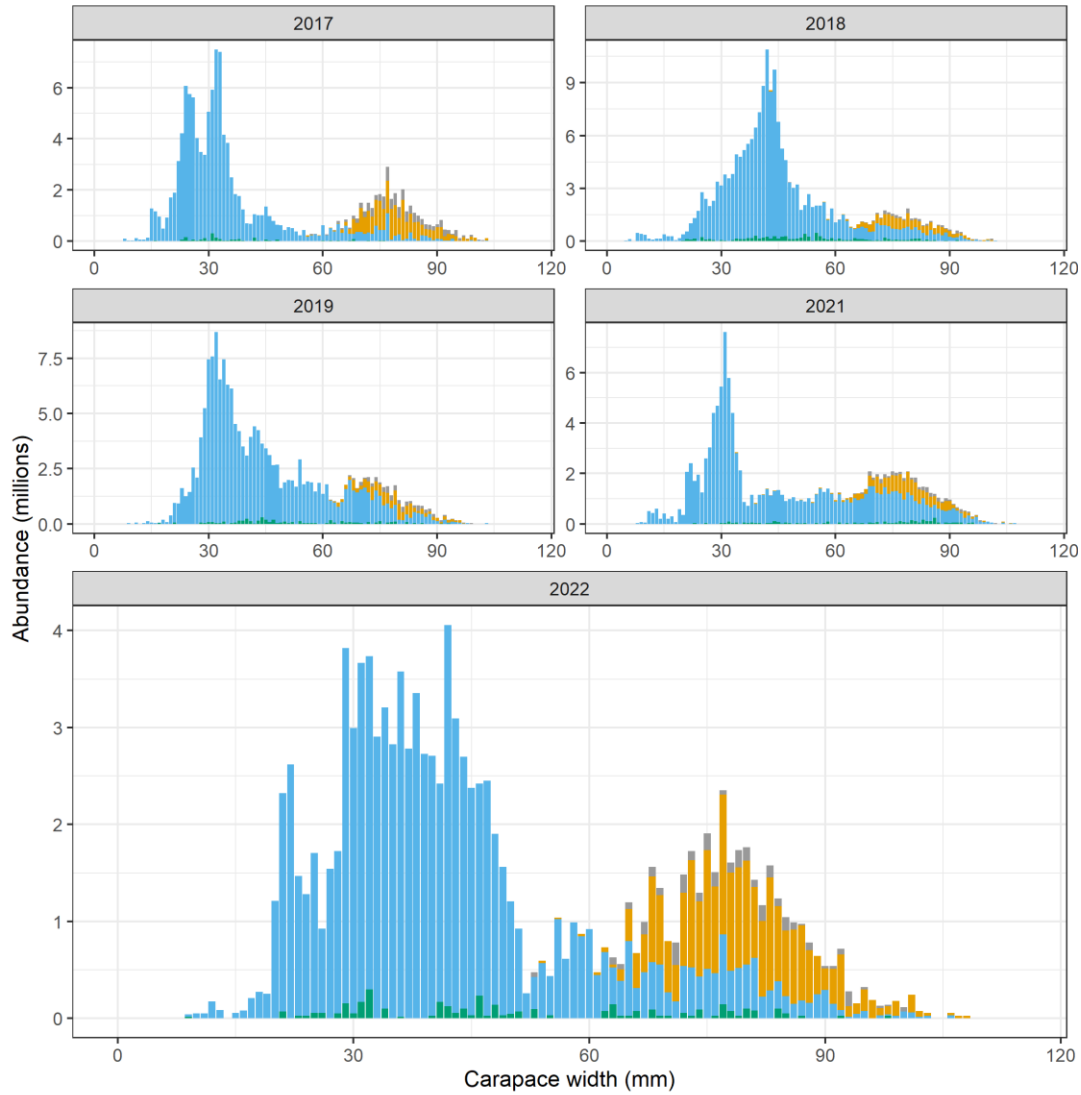
# Estimated biomass

## Tanner Crab East



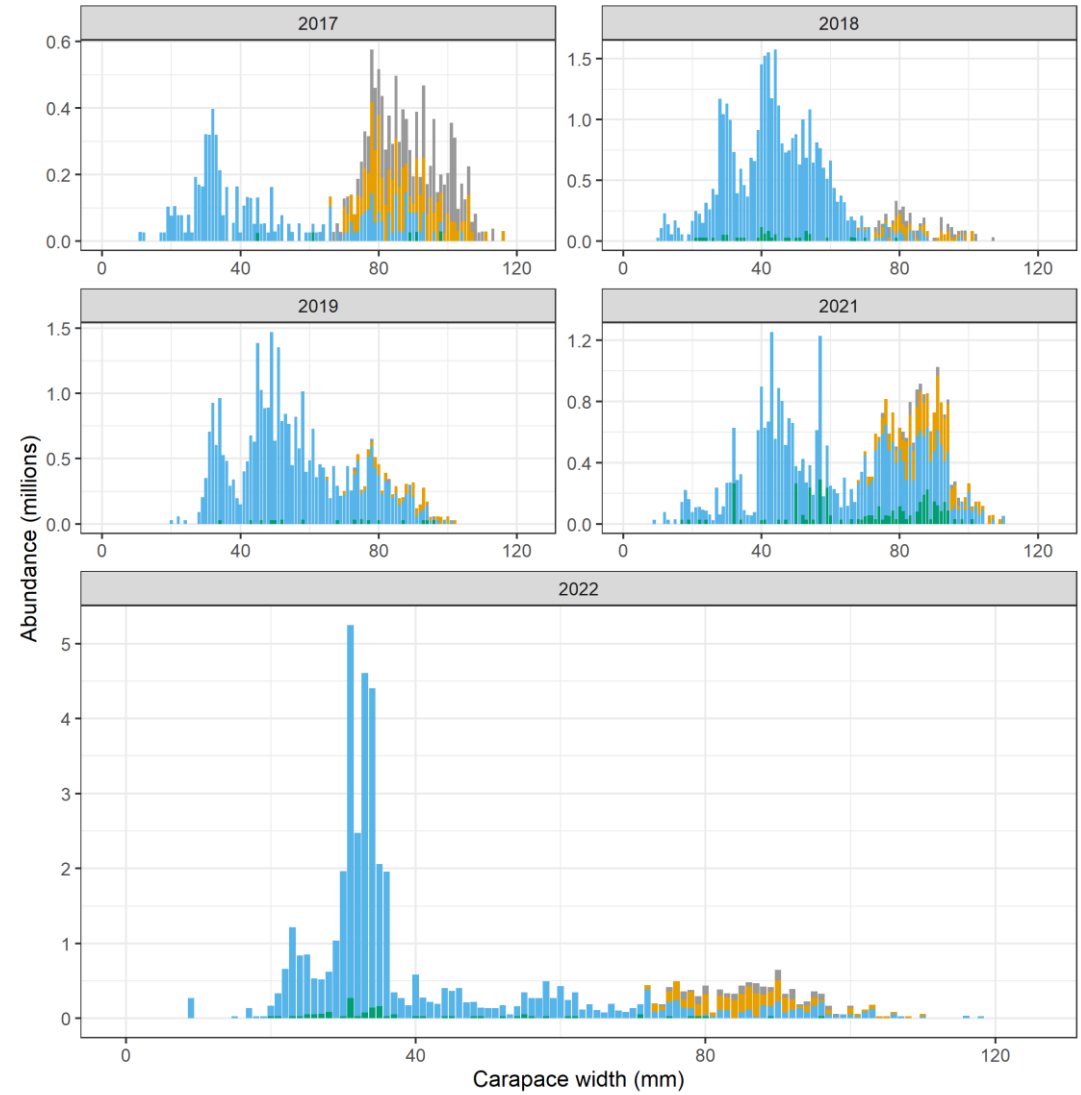
# Abundance by size and shell condition

## Female Tanner Crab West



Shell Condition    Very Old    Old    New Hard    Soft Molting

## Female Tanner Crab East



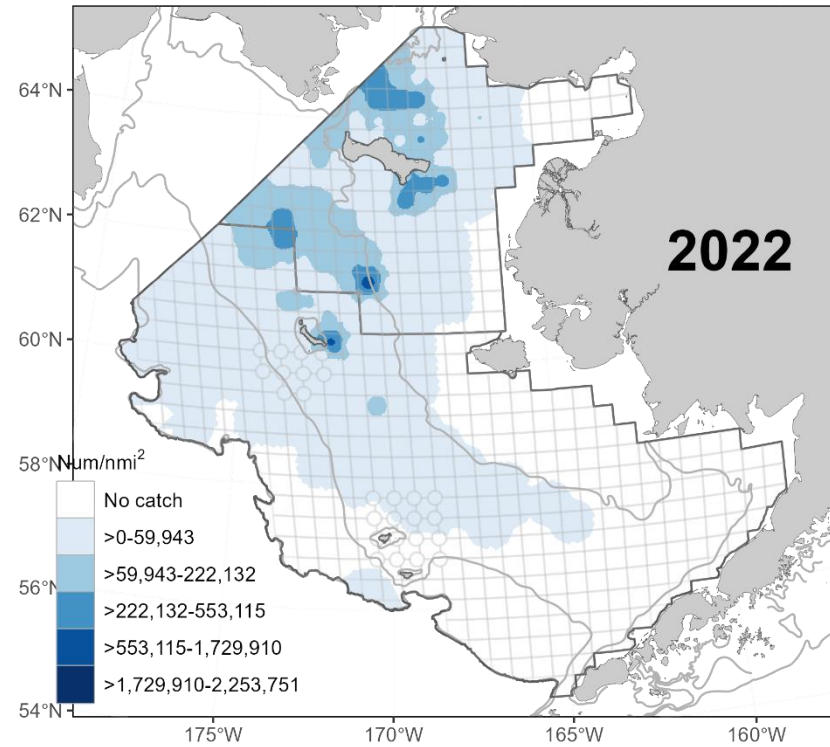
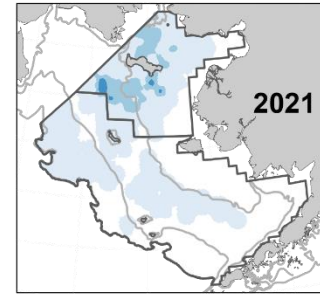
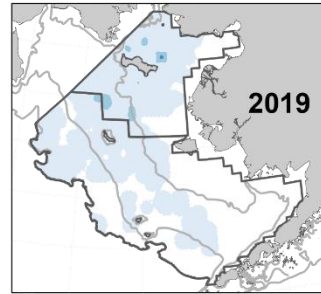
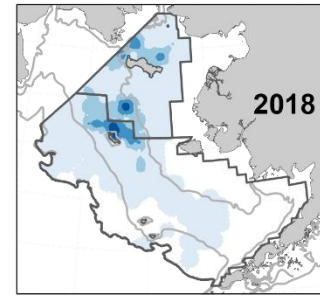
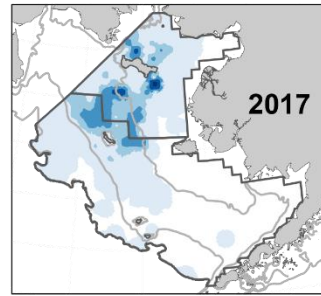
Shell Condition    Very Old    Old    New Hard    Soft Molting



Snow crab

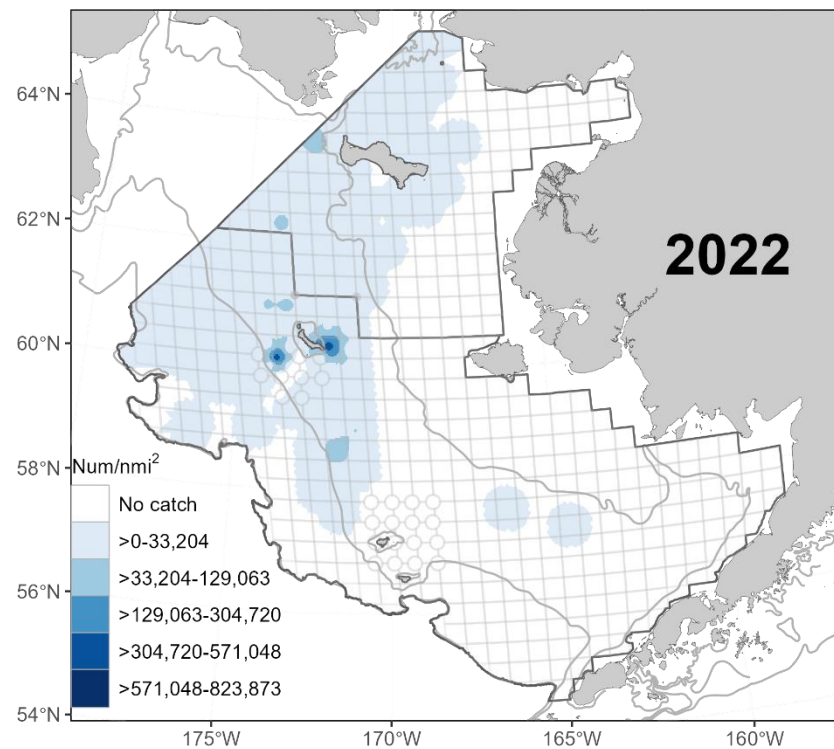
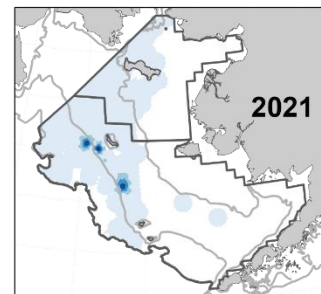
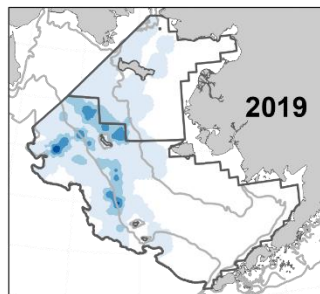
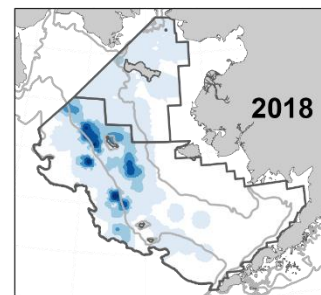
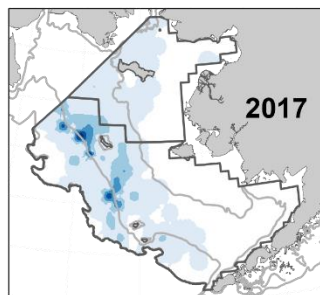
# Snow Crab Immature Female

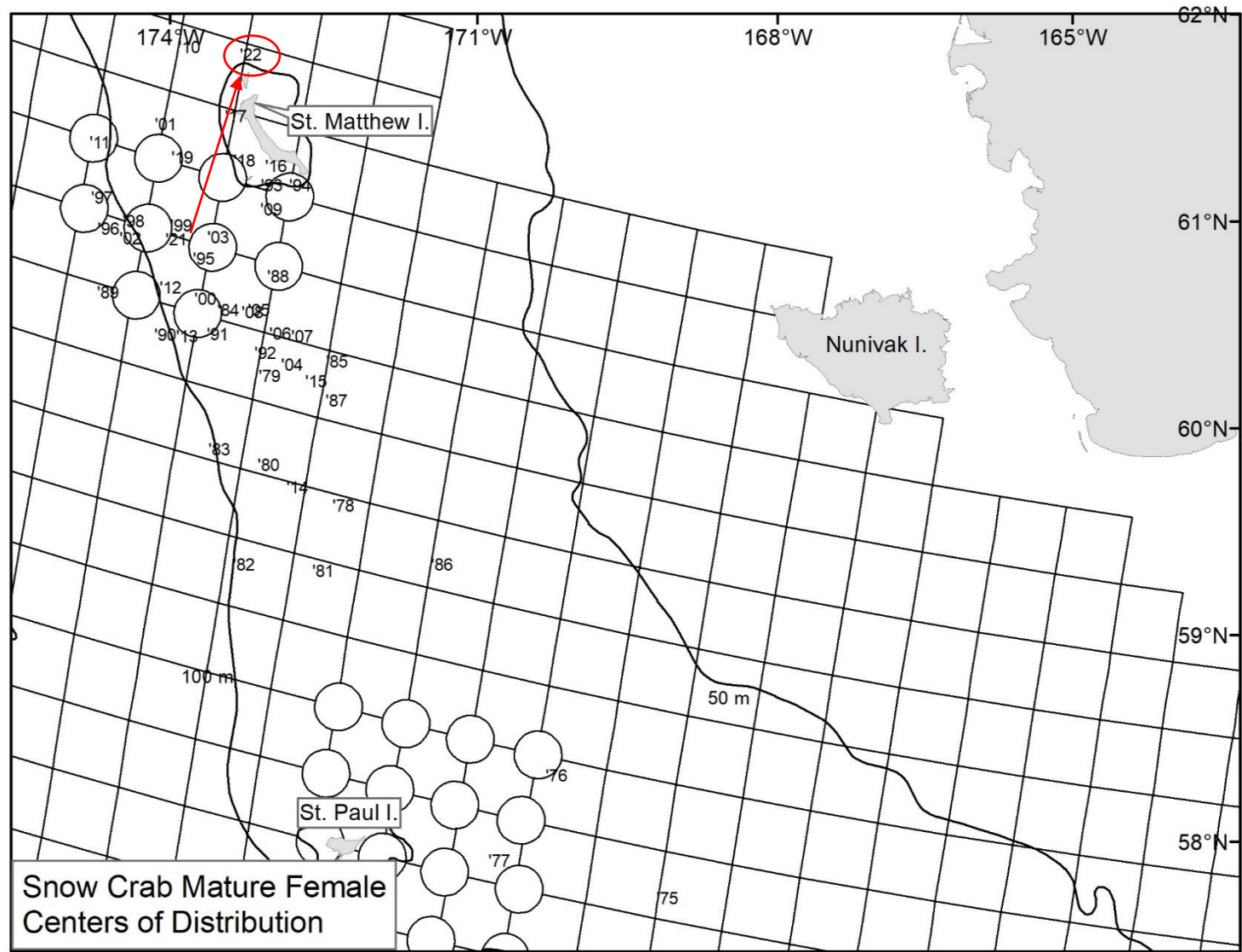
Distribution  
by year



# Snow Crab Mature Female

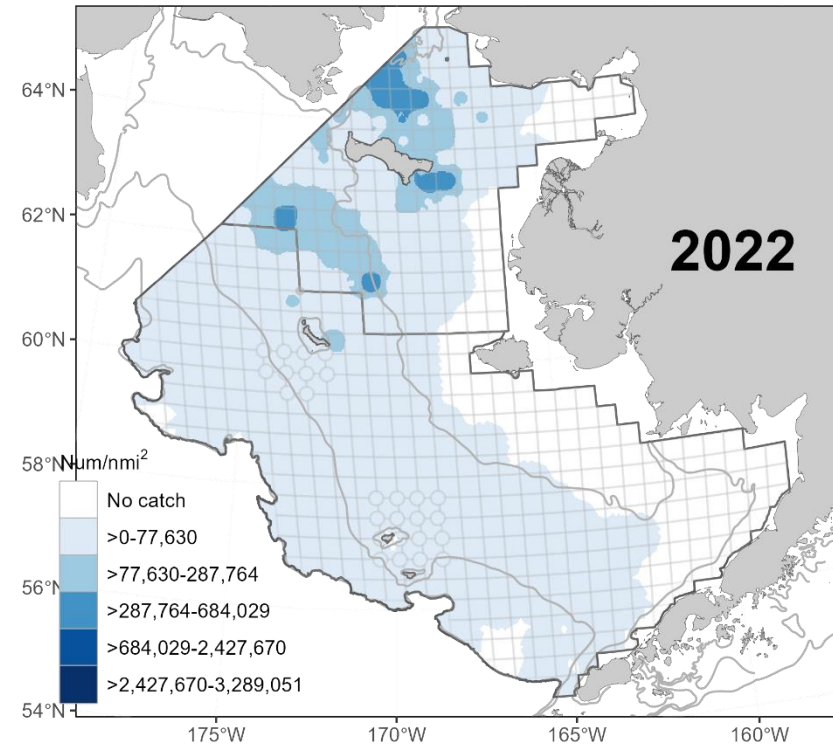
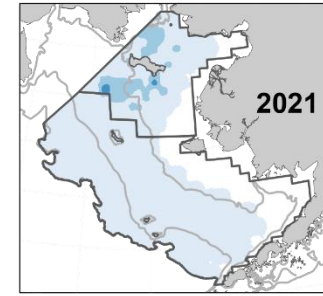
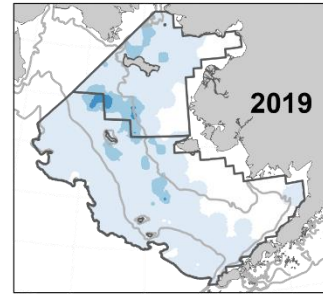
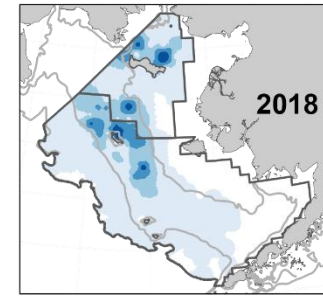
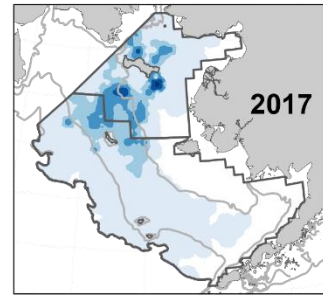
Distribution  
by year





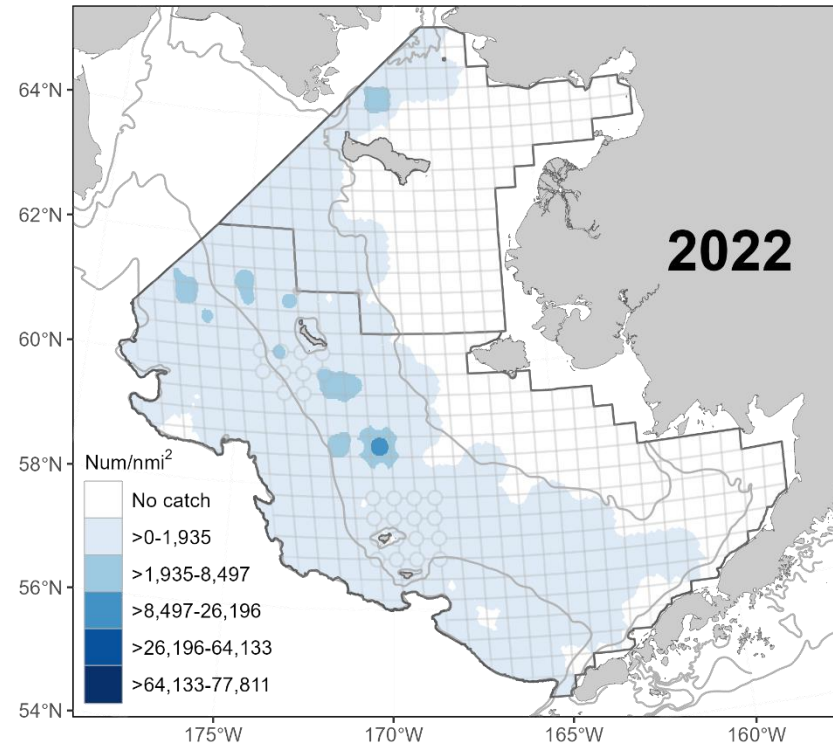
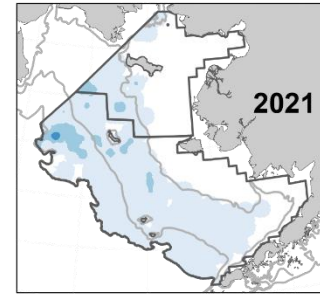
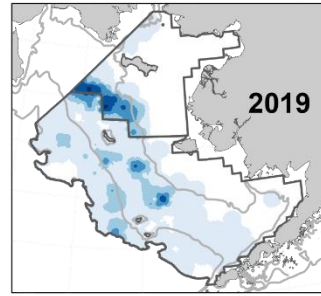
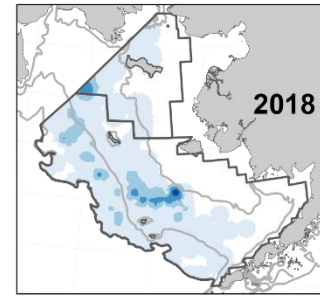
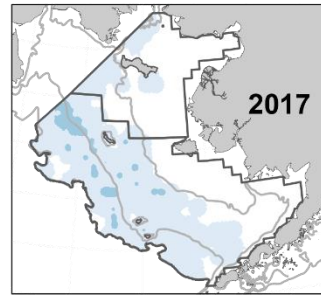
# Snow Crab Immature Male

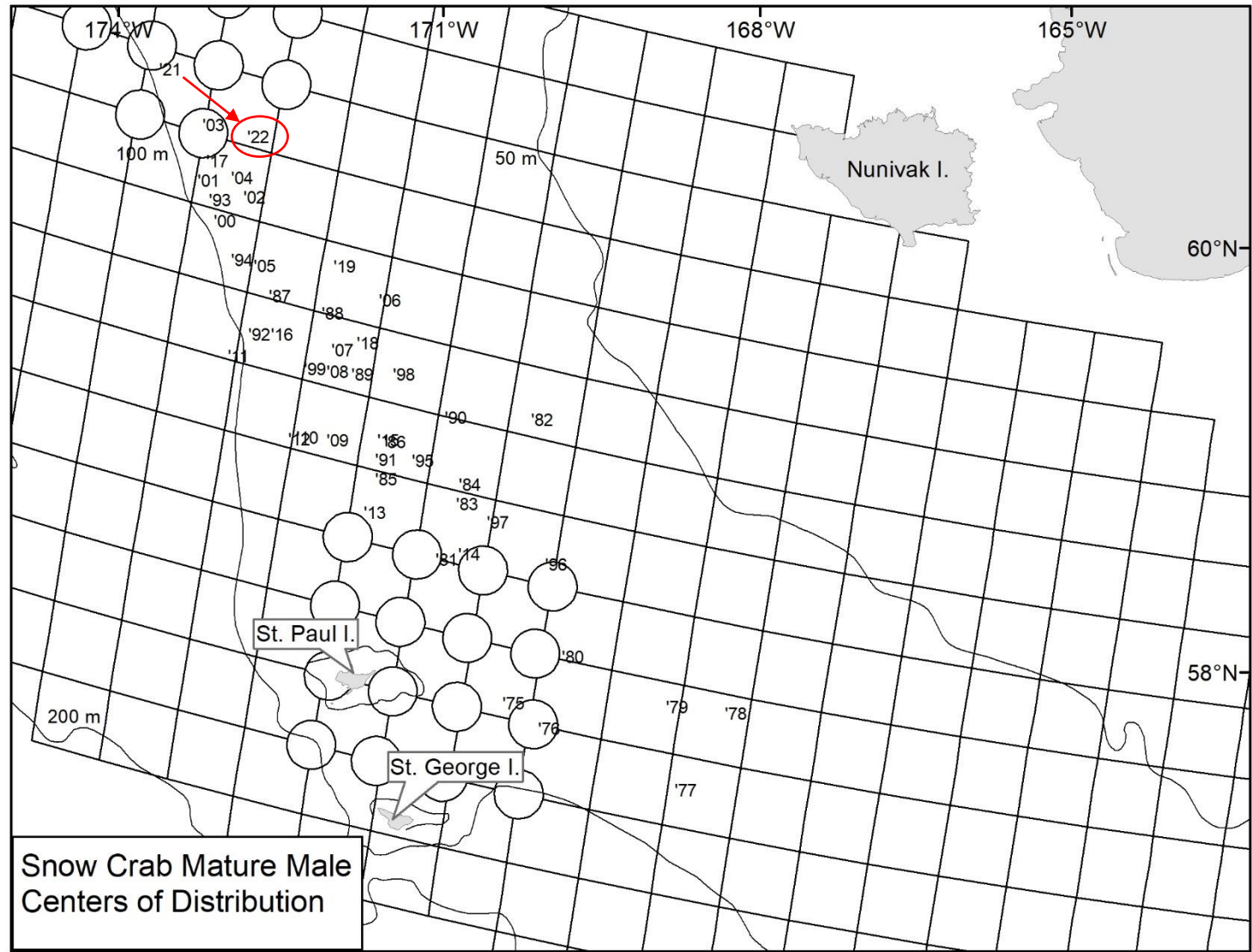
Distribution  
by year



# Snow Crab Mature Male

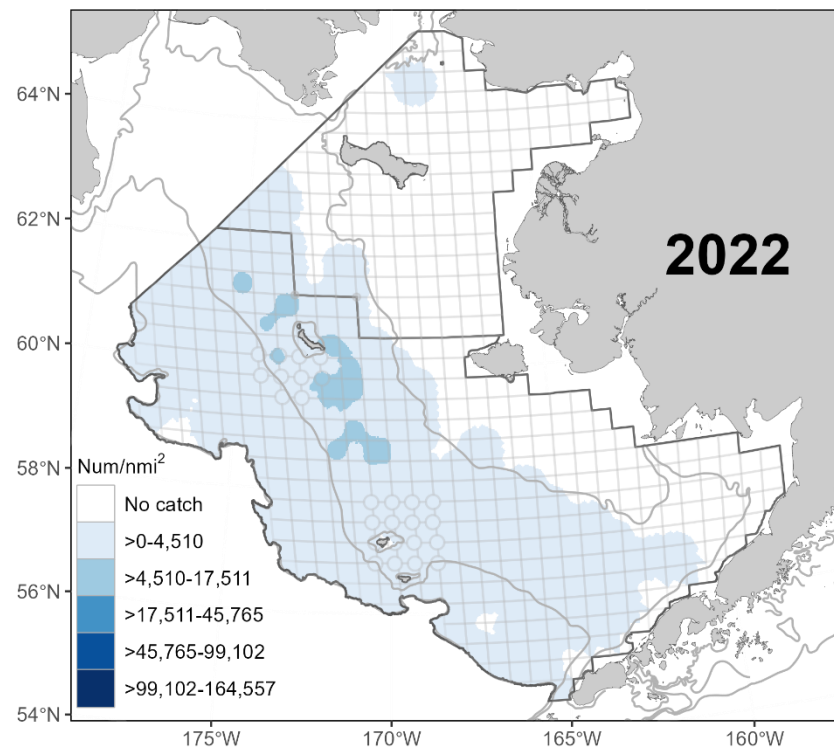
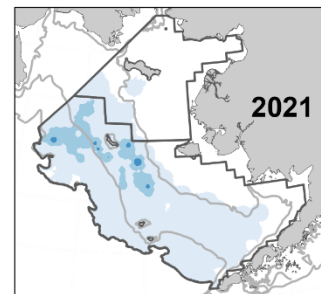
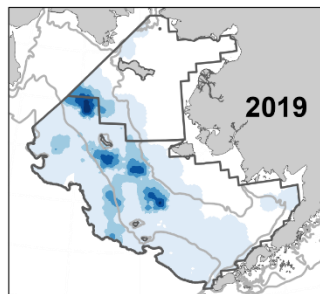
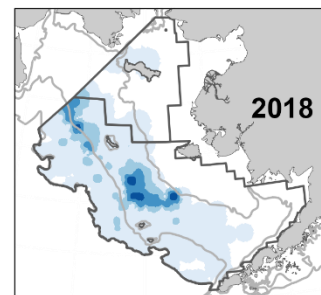
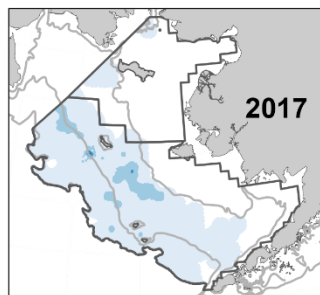
Distribution  
by year





# Snow Crab Legal Male

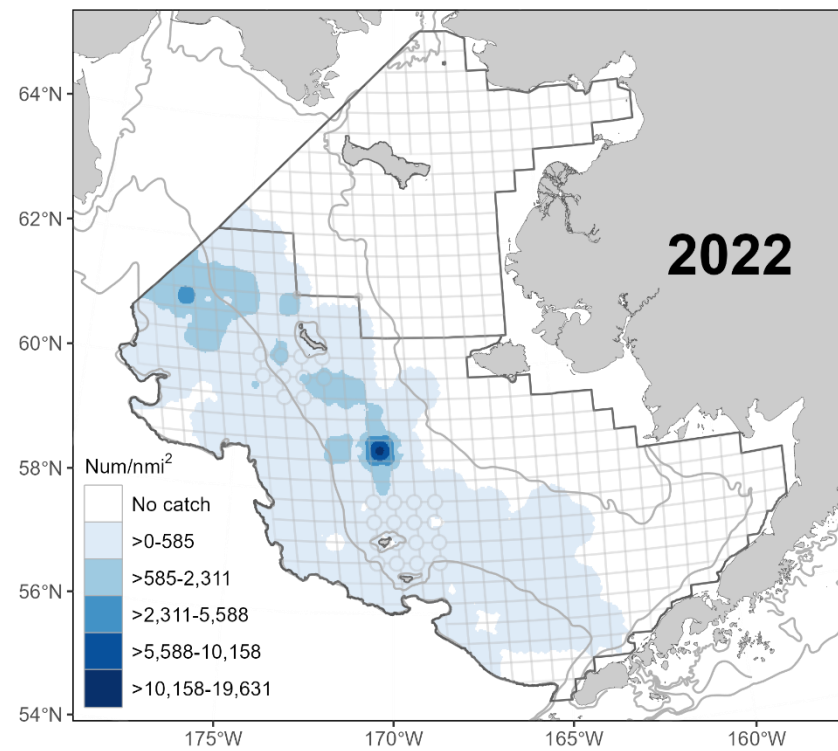
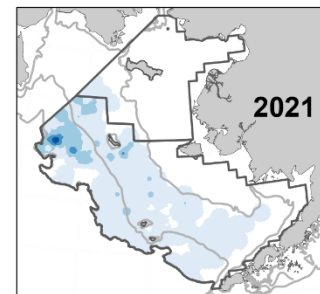
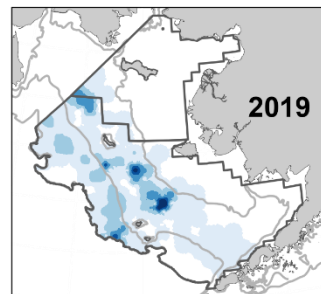
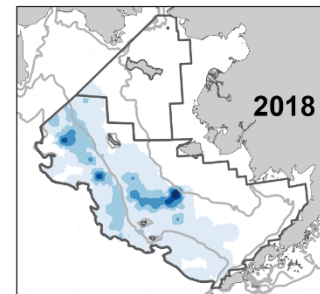
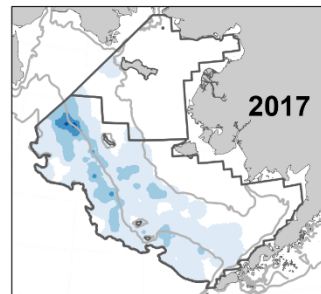
Distribution  
by year



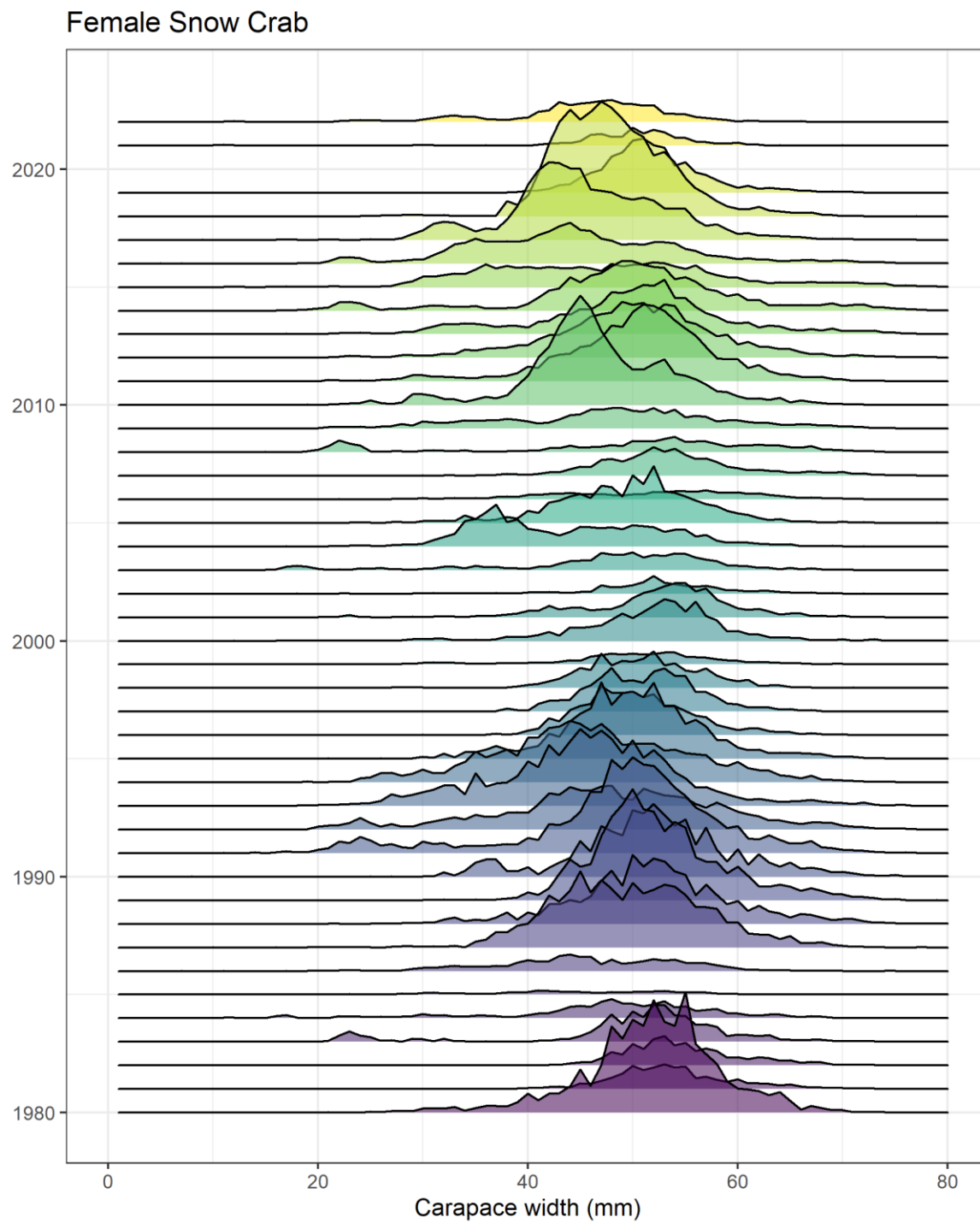


# Snow Crab Industry Preferred Male

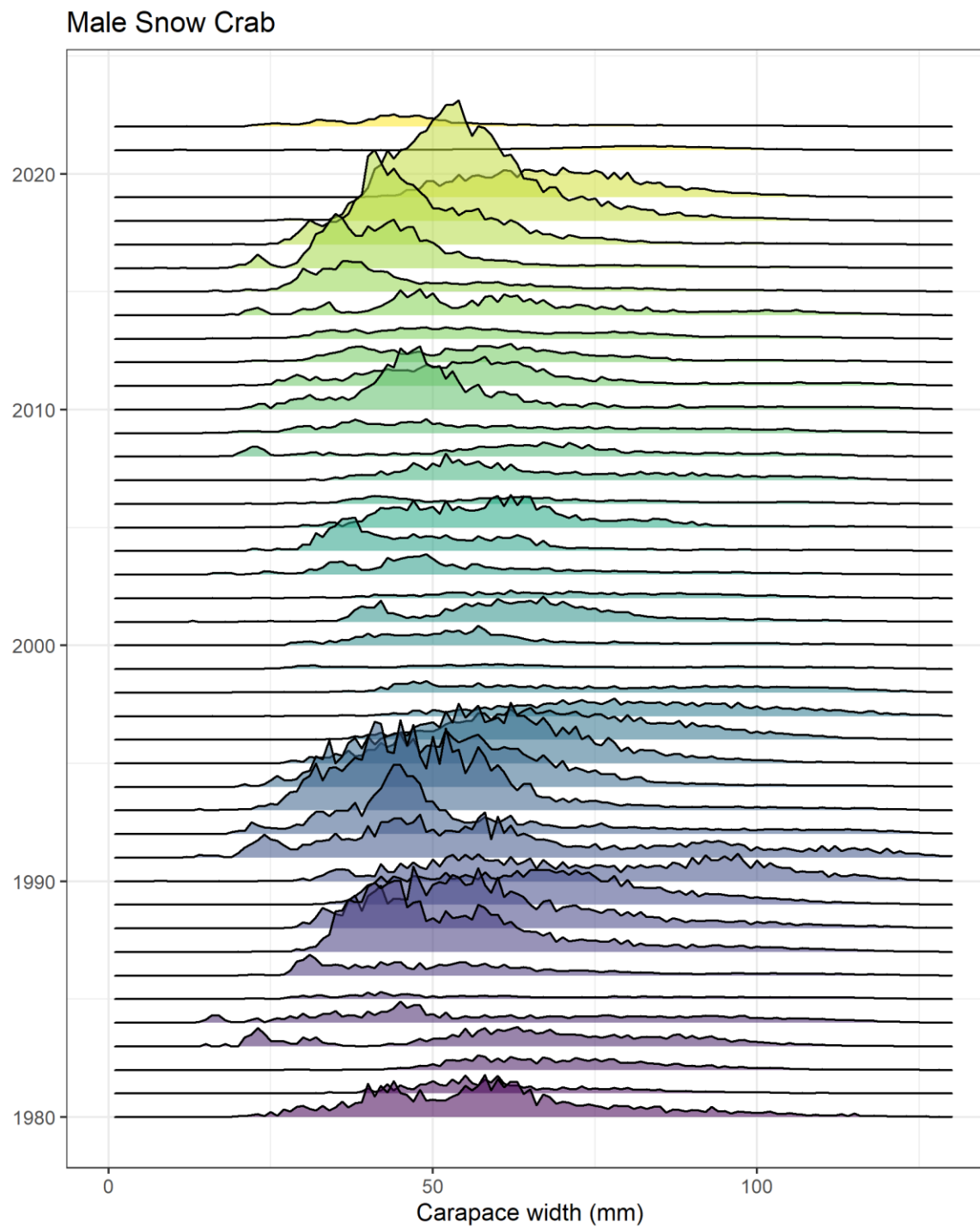
Distribution  
by year



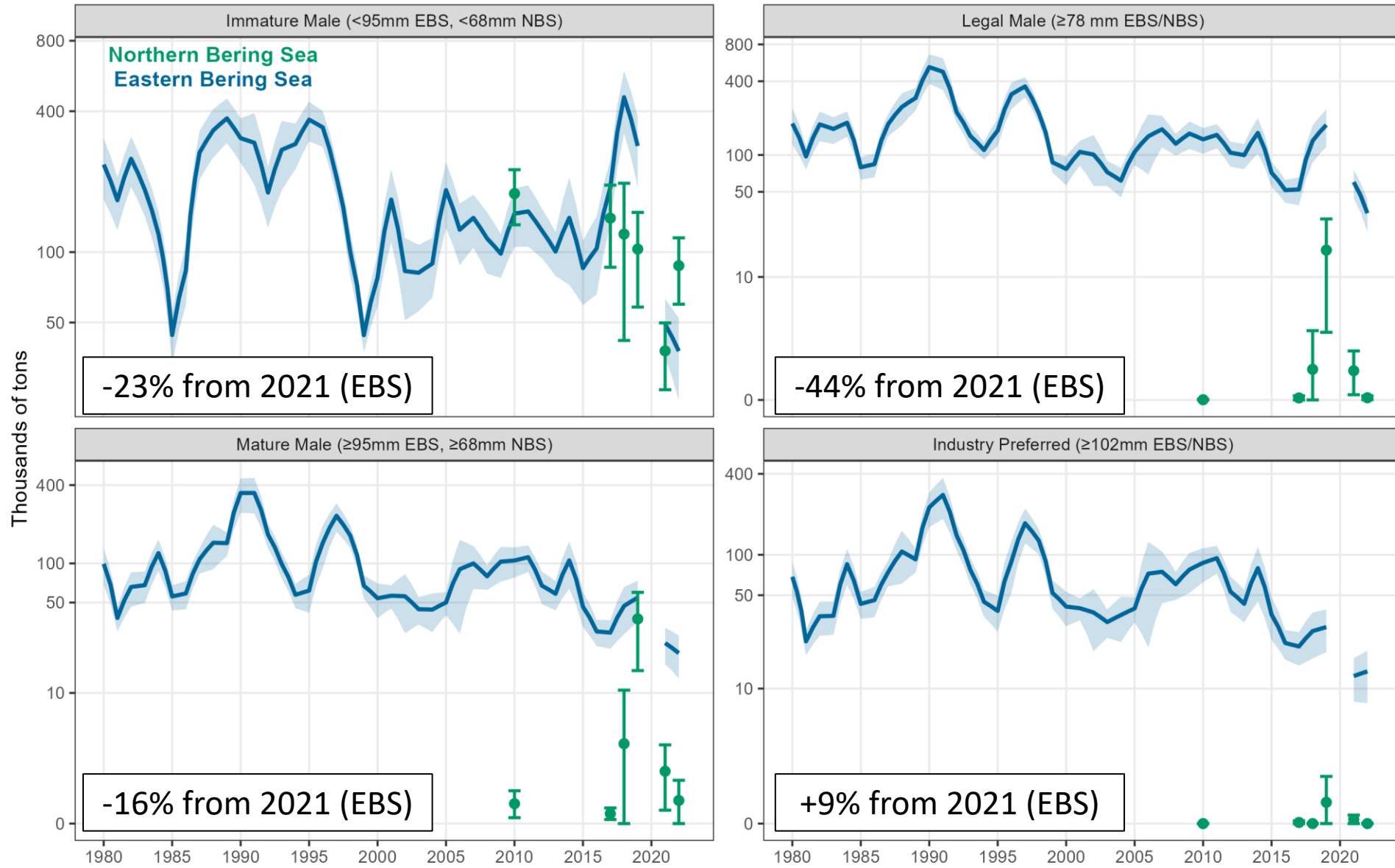
# Abundance by size, 1980-2022 (EBS only)



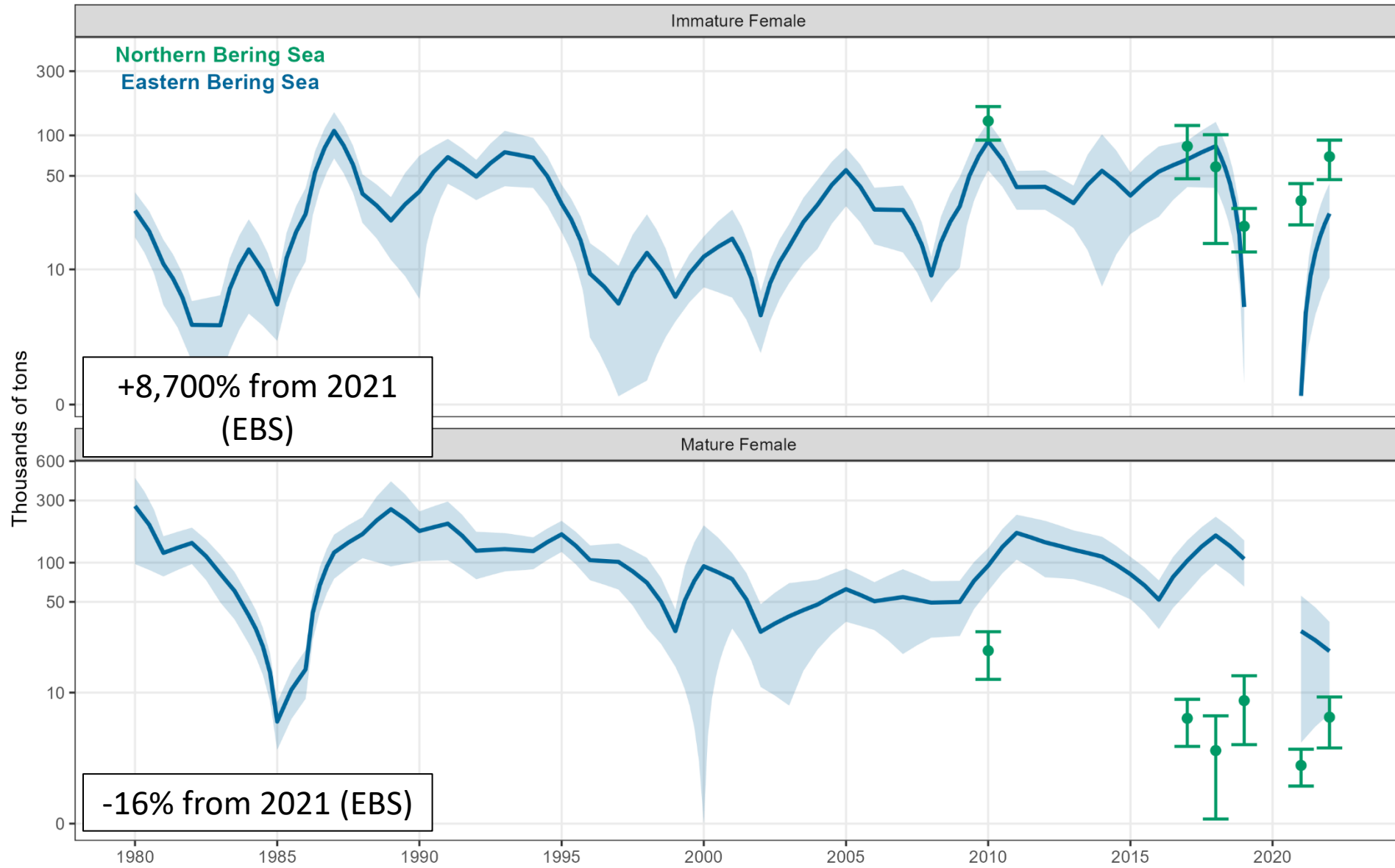
# Abundance by size, 1980-2022 (EBS only)



## Snow crab biomass and 95% CI

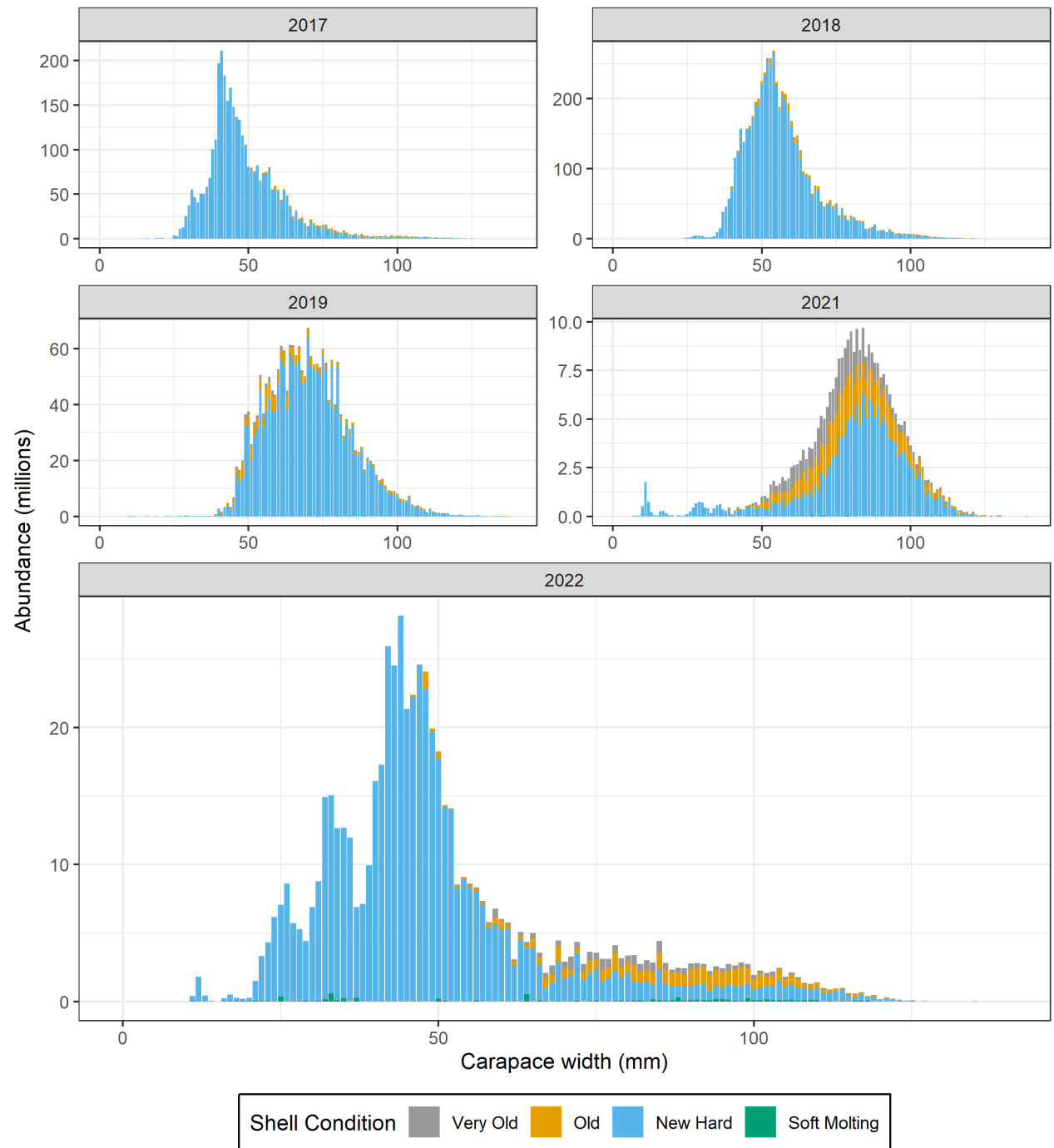


Snow crab biomass and 95% CI



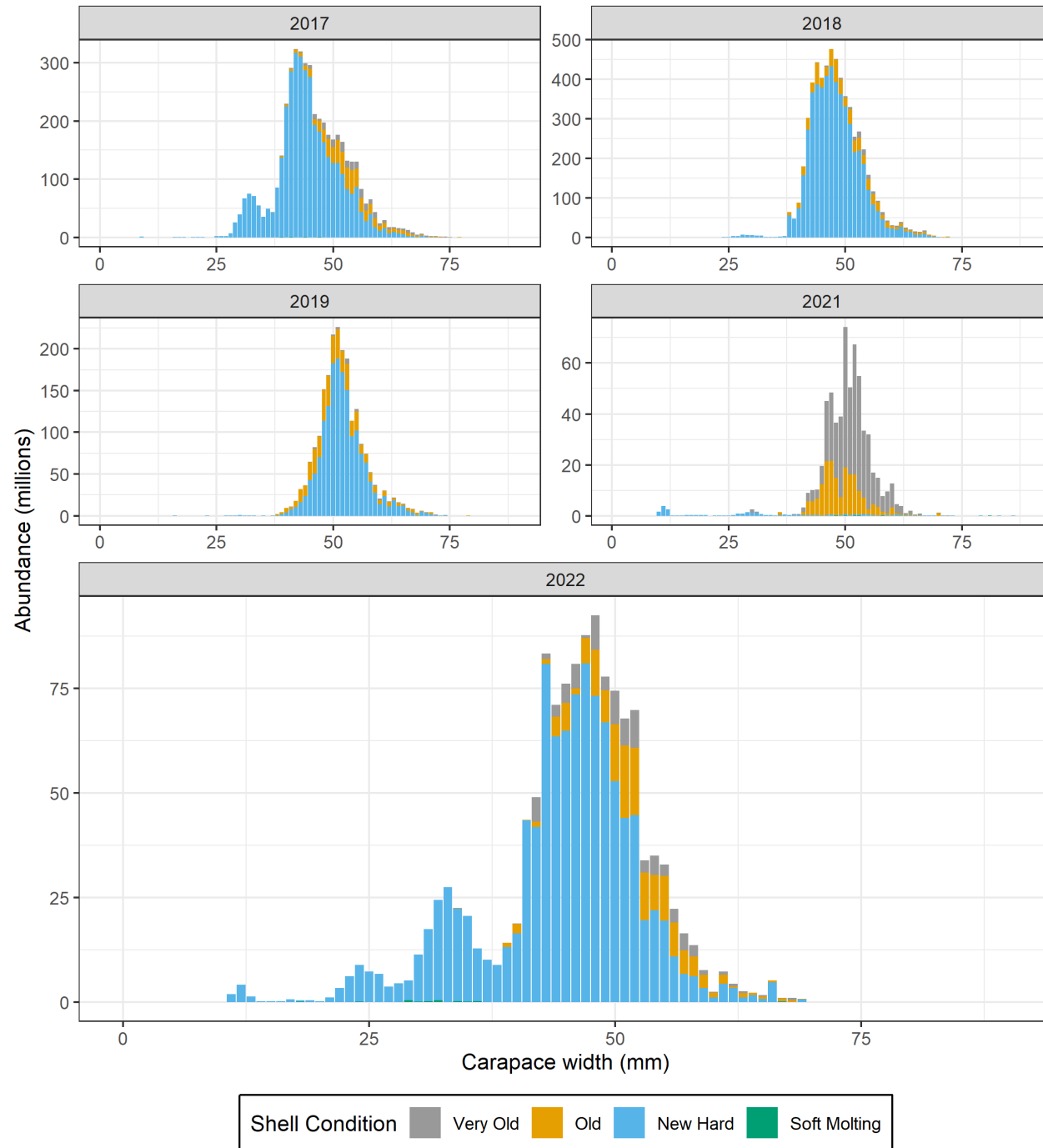
# Male Snow Crab

Abundance by size and shell condition



# Female Snow Crab

Abundance by size and shell condition



*Chionoecetes* hybrids



# Estimated biomass

## Hybrid Tanner-Snow Crab

