

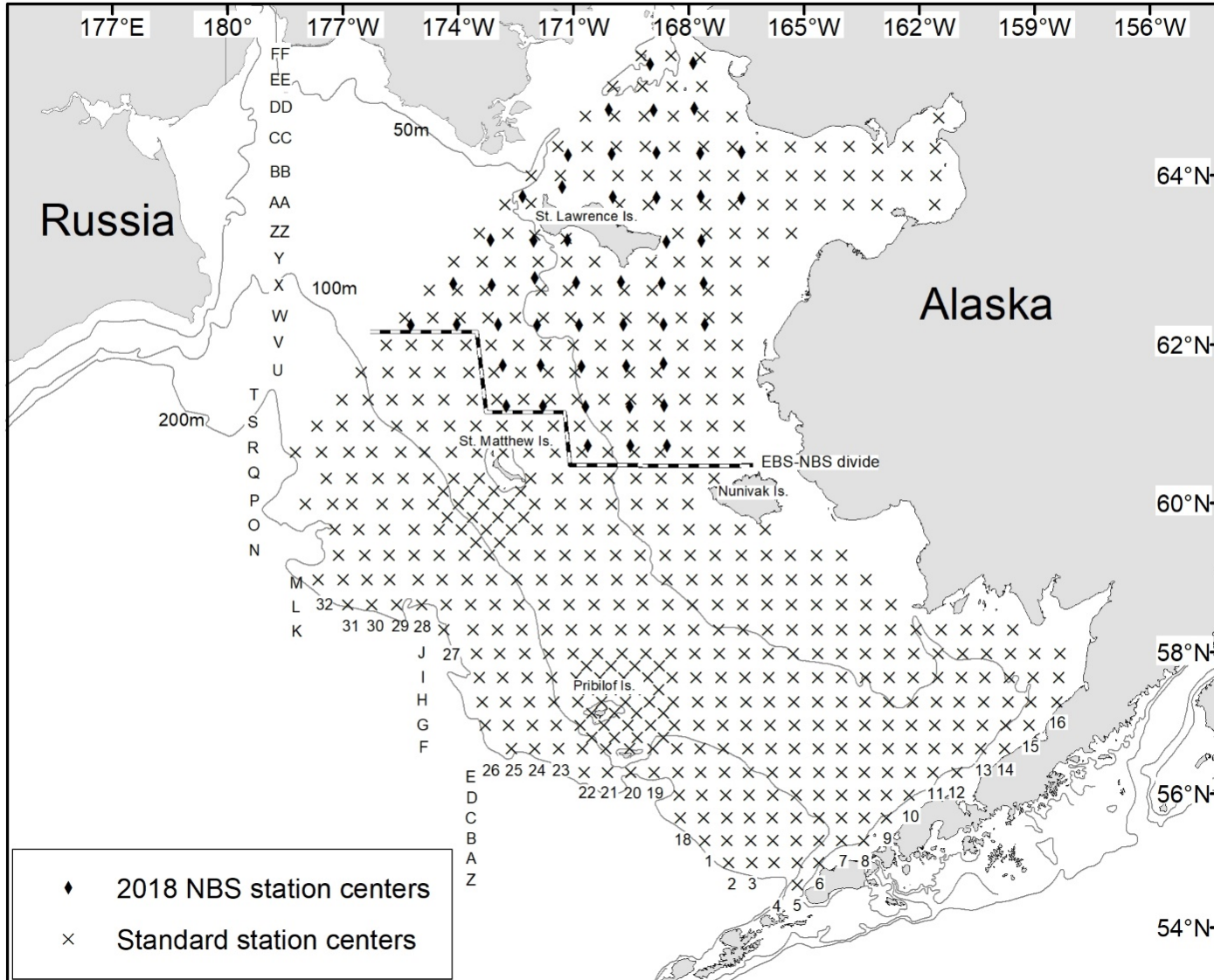
Bering Sea Crab Bottom Trawl Survey Results

September 30, 2021

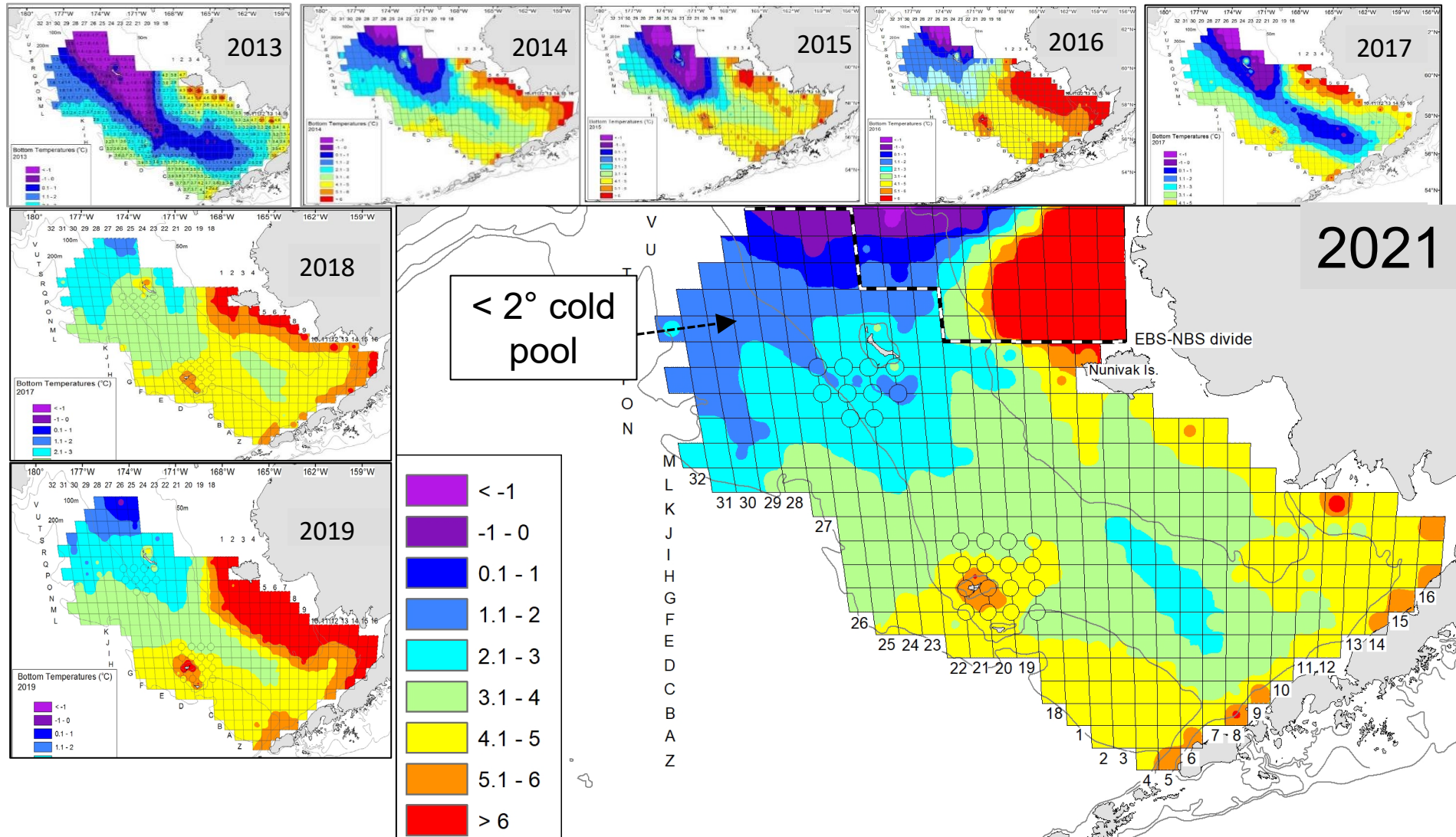
Mike Litzow, Jon Richar, Leah Zacher,
and everyone in the NMFS - AFSC Shellfish Assessment Program



2021 – Full Eastern Bering / Northern Bering survey grids



Continuing trend: Cold pool reduced or absent from EBS shelf

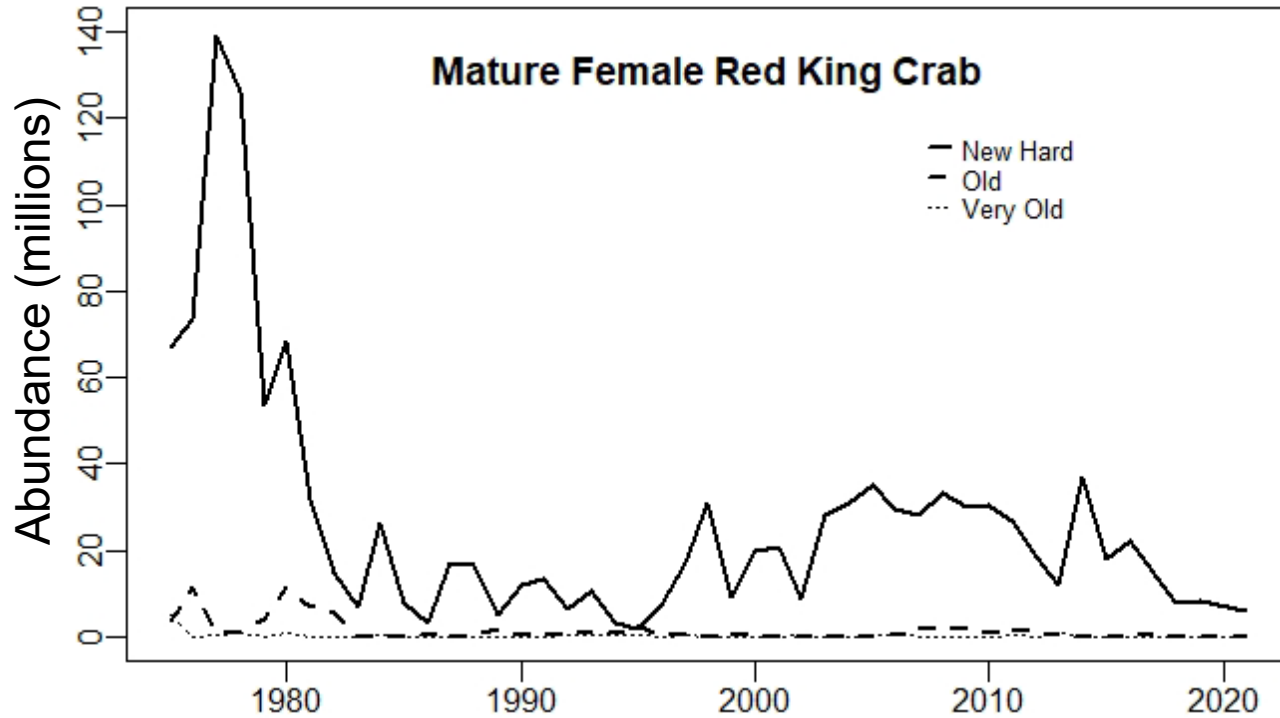


Bristol Bay Red King Crab



Bristol Bay Red King Crab

Mature female abundance

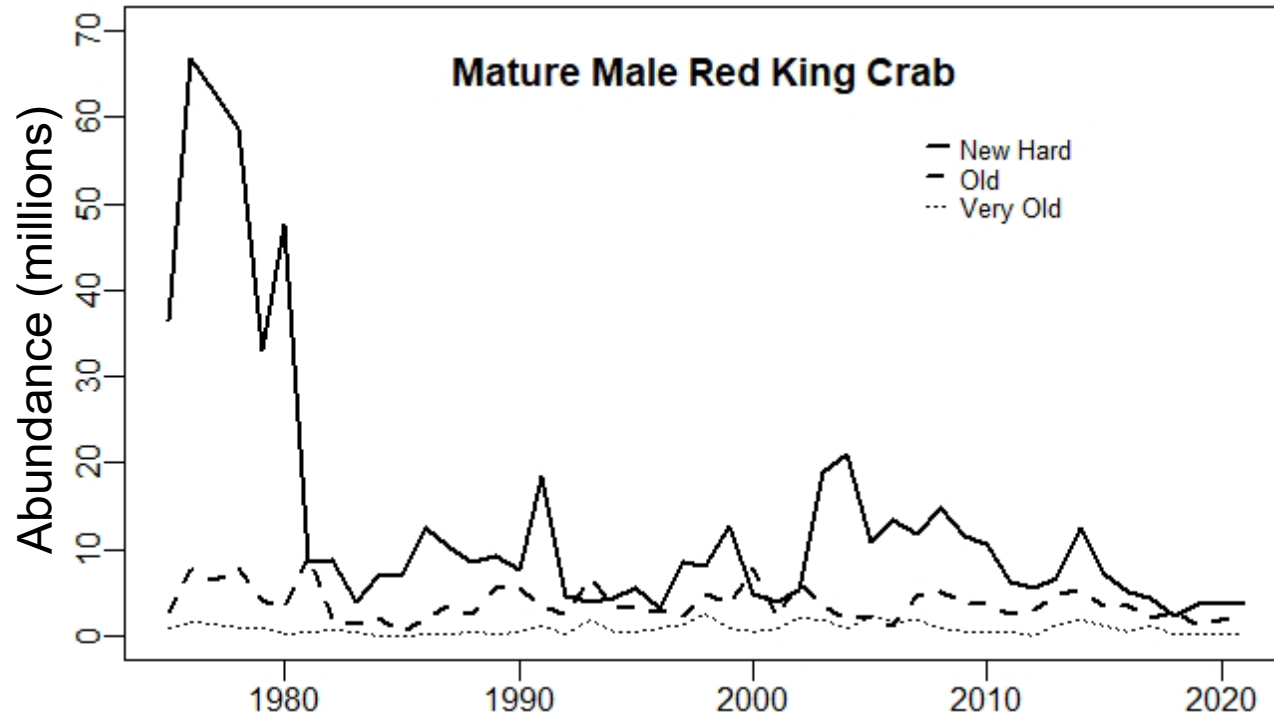


- Estimated abundance: 6.3 ± 2.9 million (95% CI)
- 25% decline from 2019



Bristol Bay Red King Crab

Mature male abundance

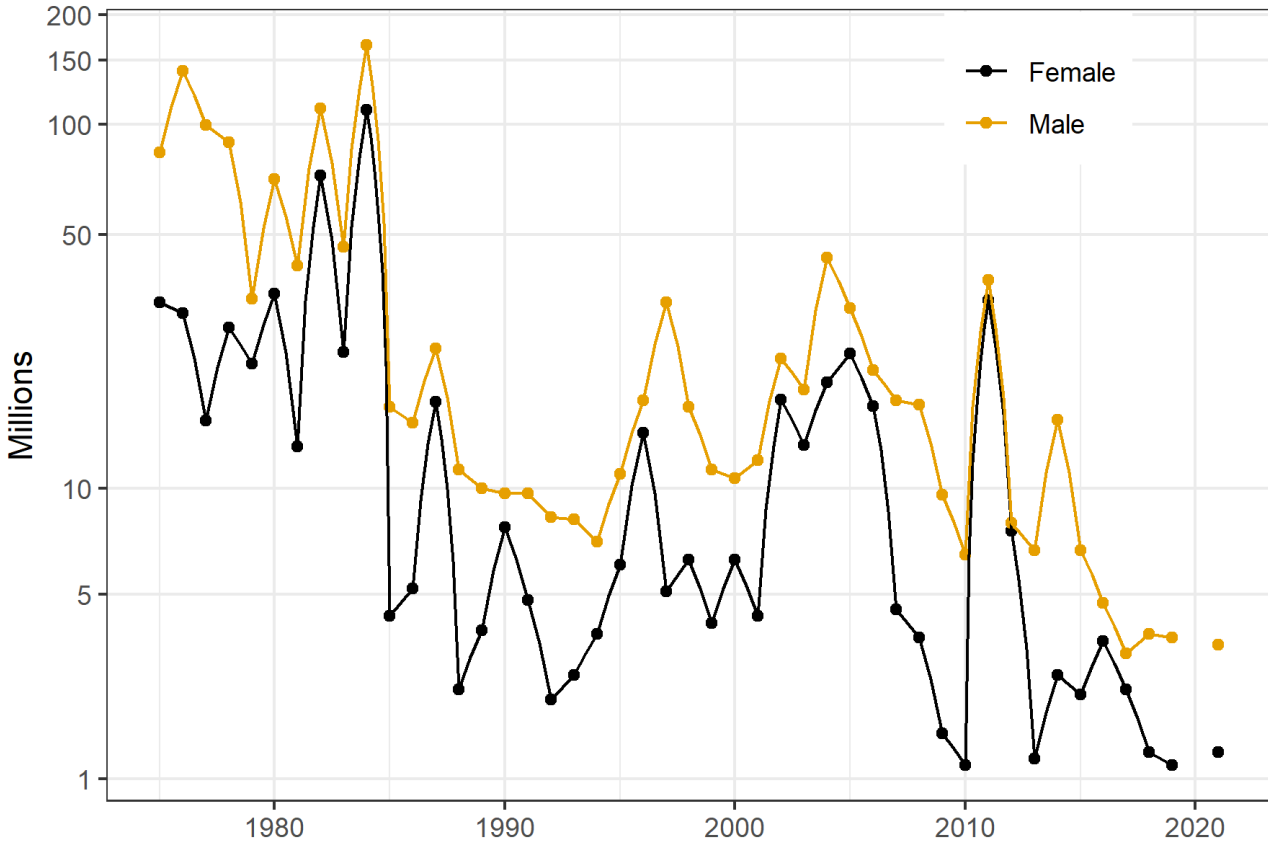


- Estimated abundance: 6.3 ± 2.3 million (95% CI)
- 26% increase from 2019



Bristol Bay Red King Crab

Immature abundance

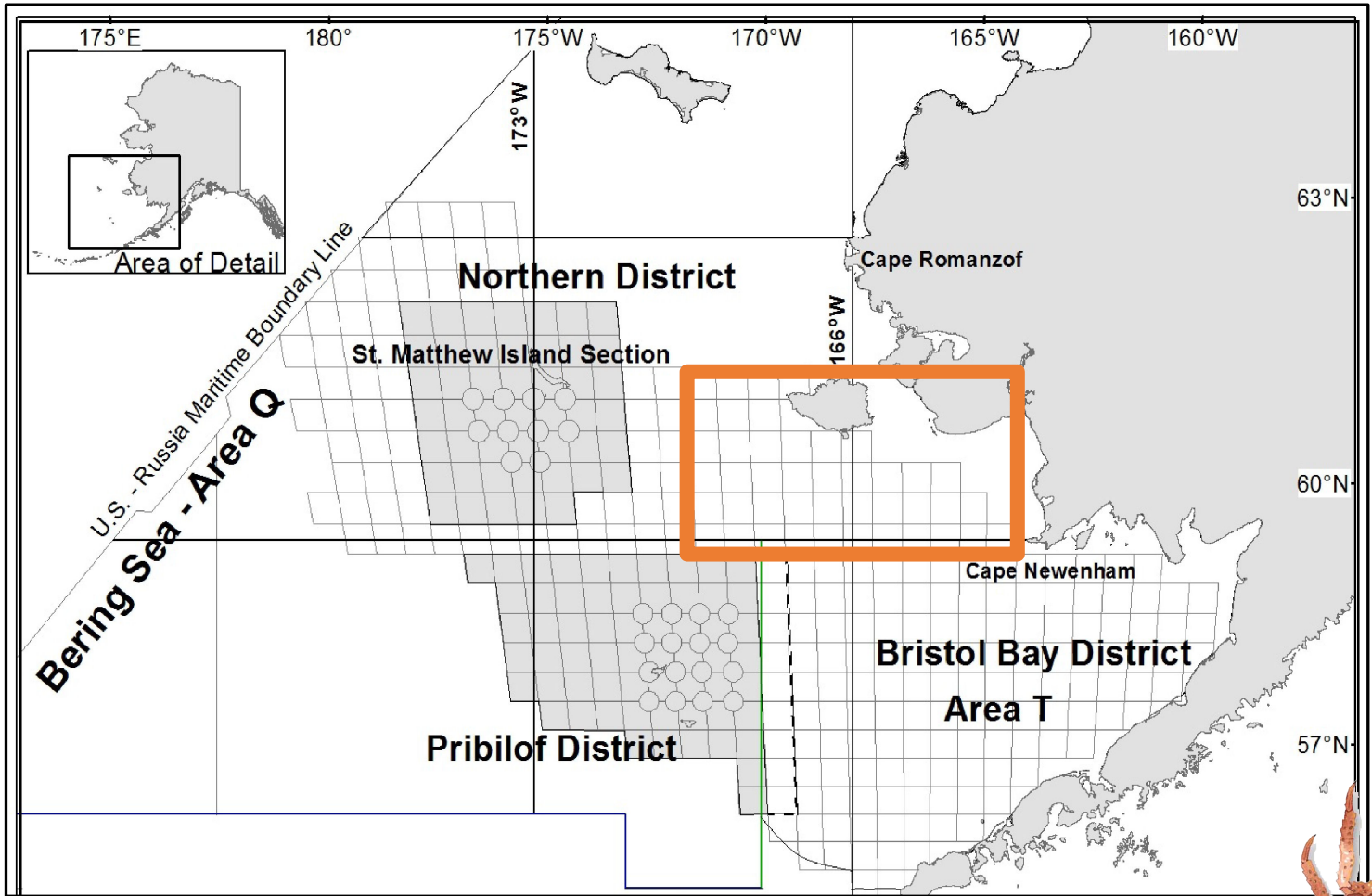


- Estimated immature female abundance: 1.4 million
- Estimated immature male abundance: 3.5 million



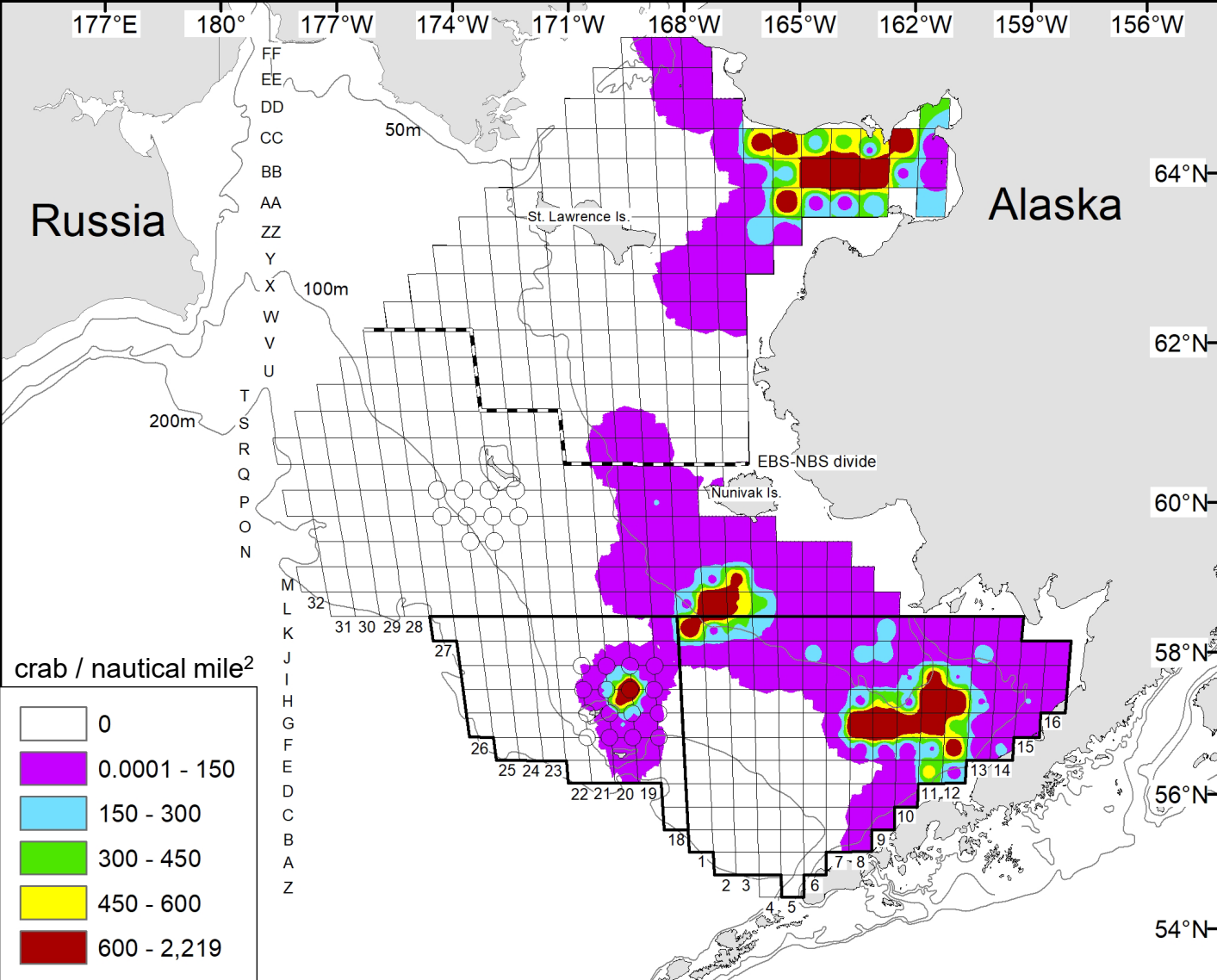
Red King Crab

Northern District results



Red King Crab

Mature female abundance



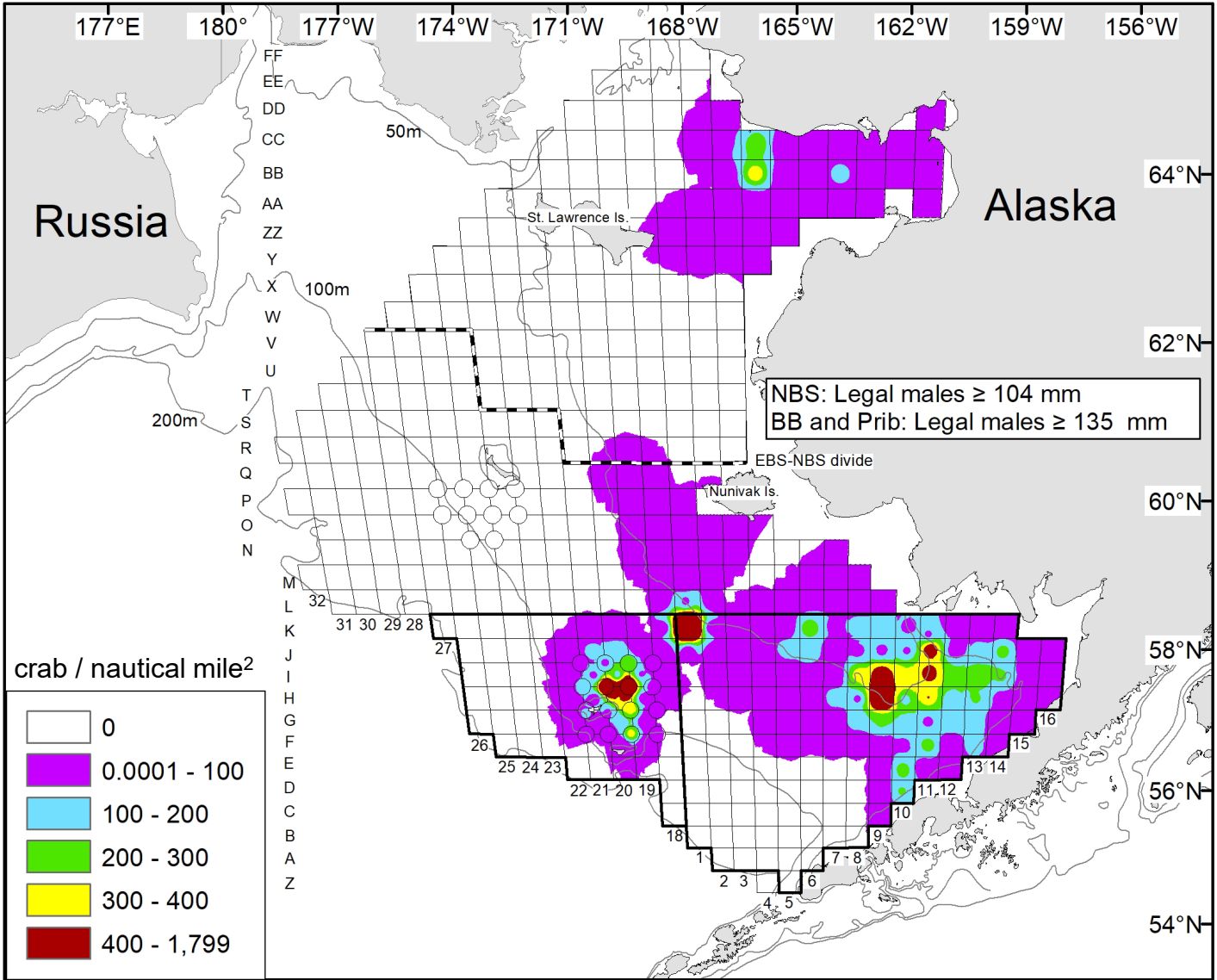
Northern District

- Estimated mature female abundance: 2.0 ± 1.8 million
- Roughly double the previous maximum



Red King Crab

Legal male abundance



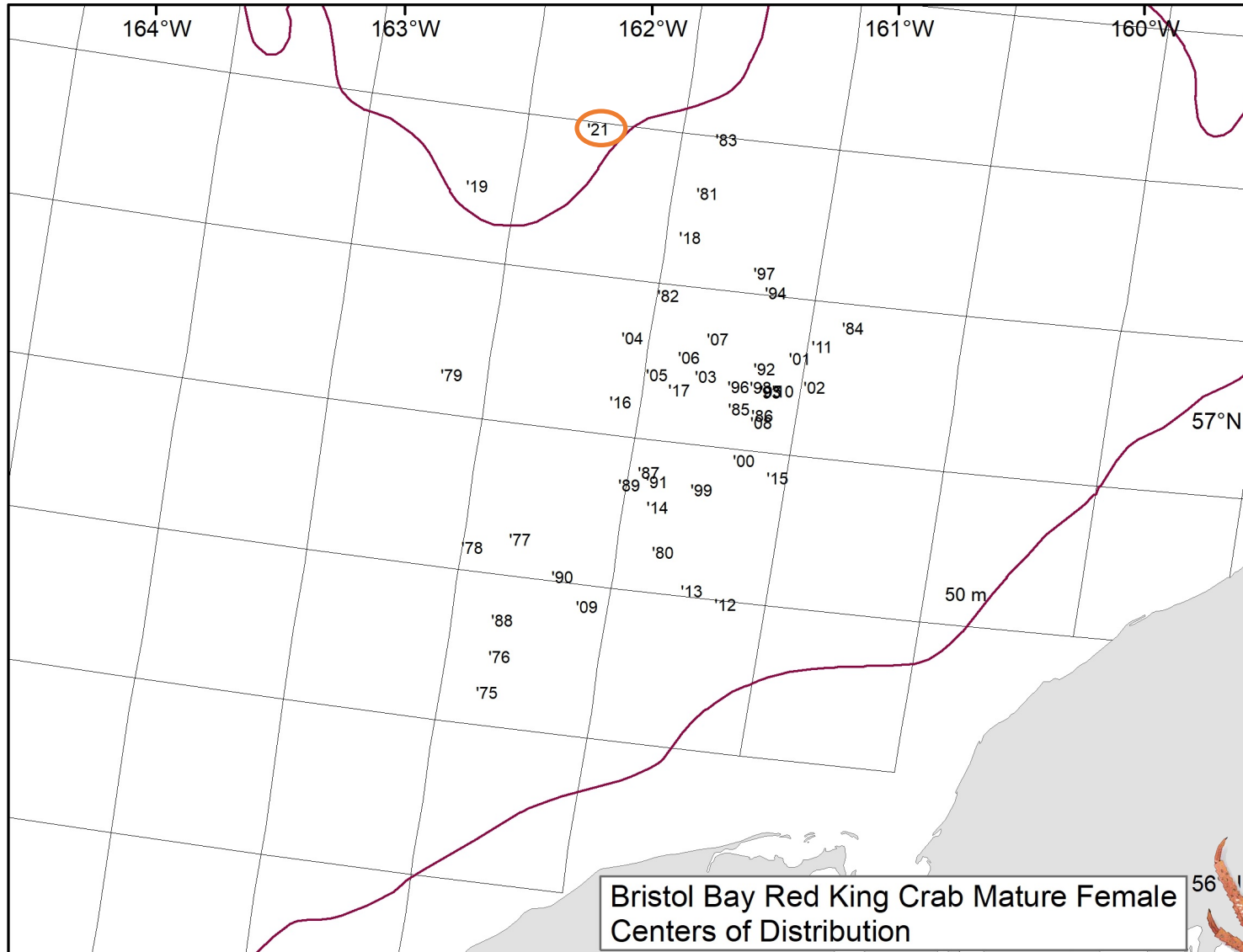
Northern District

- Estimated legal male abundance: 0.3 ± 0.2 million



Red King Crab

Mature female center of distribution

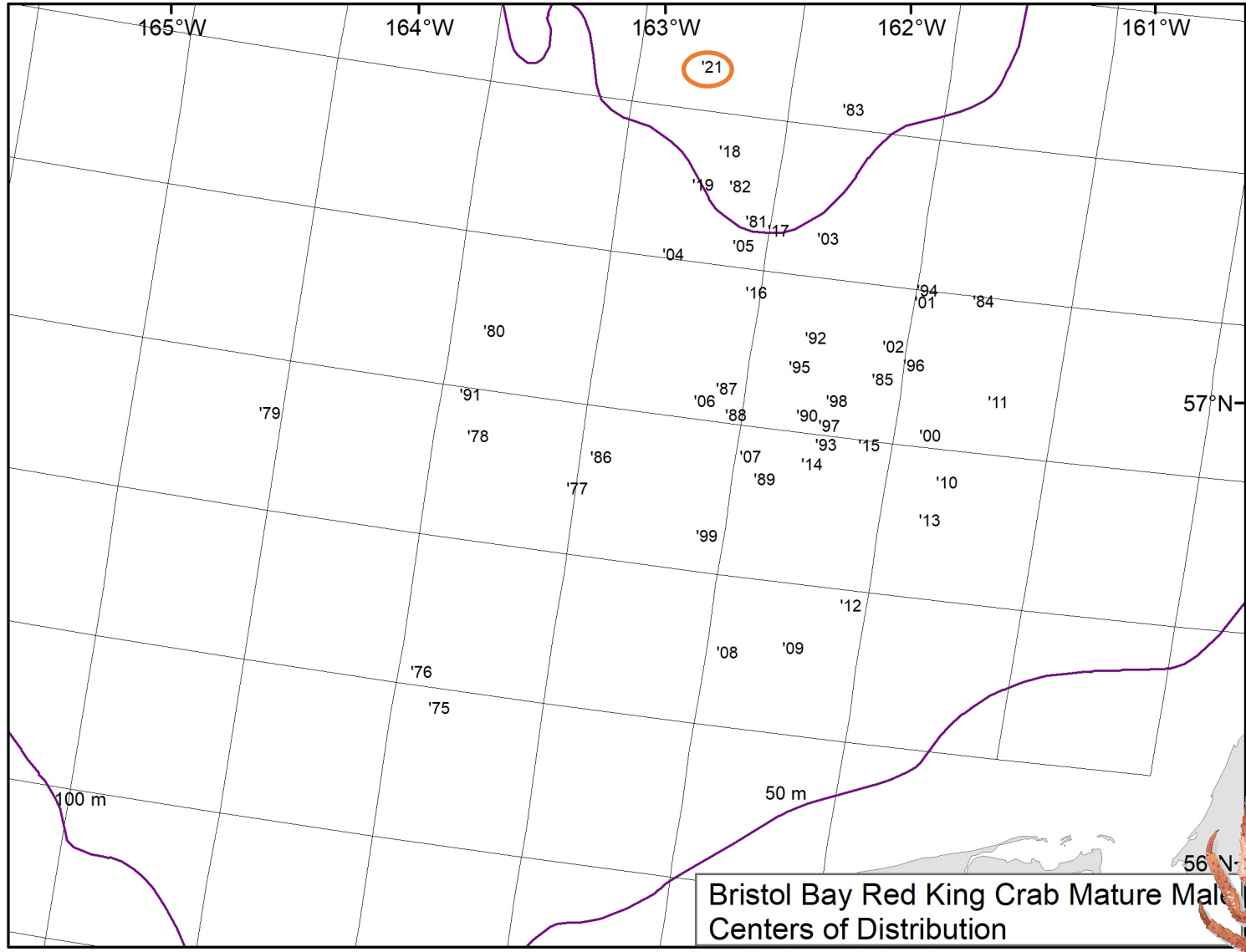


Bristol Bay Red King Crab Mature Female Centers of Distribution



Red King Crab

Mature male center of distribution



Bristol Bay Red King Crab Mature Male Centers of Distribution

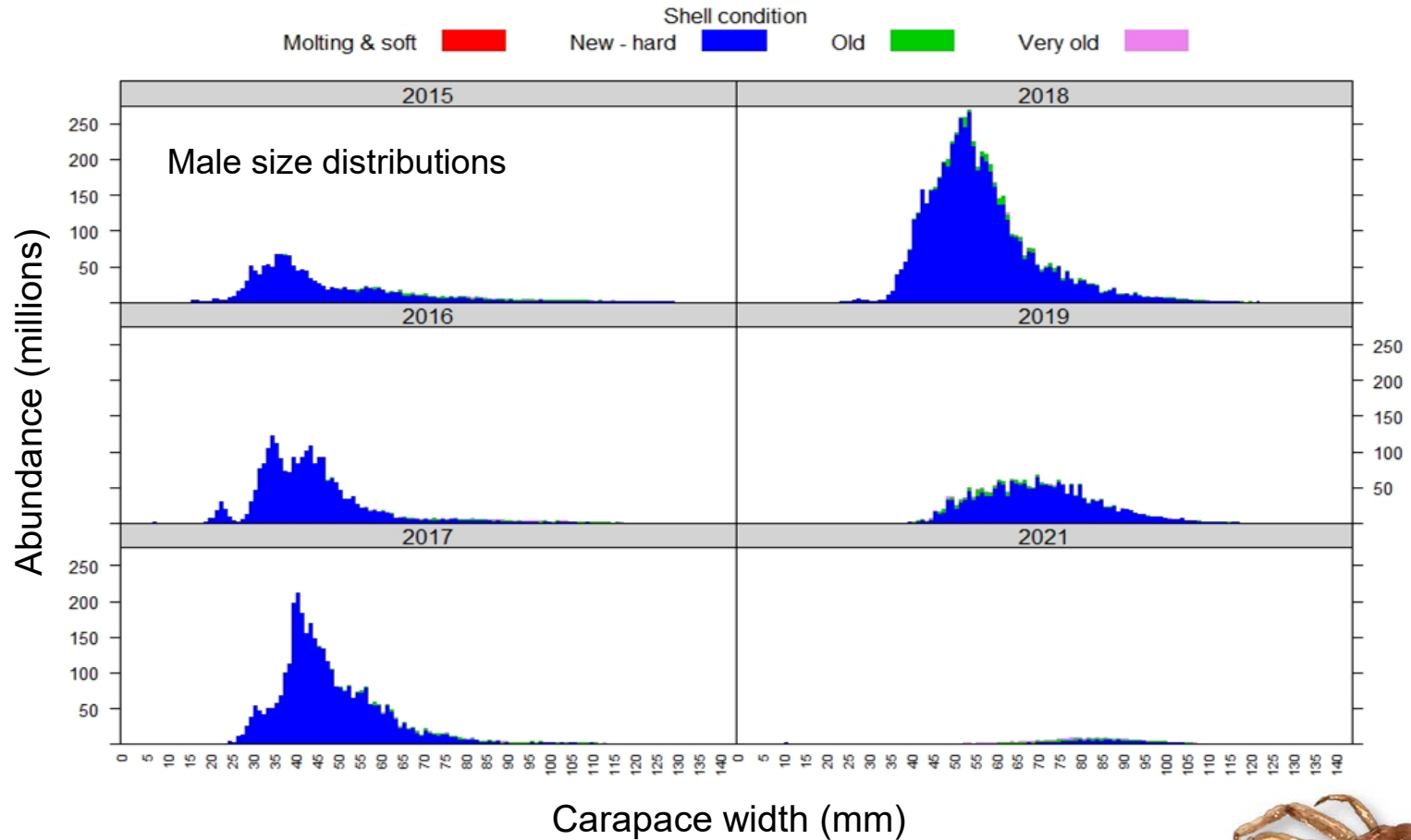


Snow Crab



Snow Crab

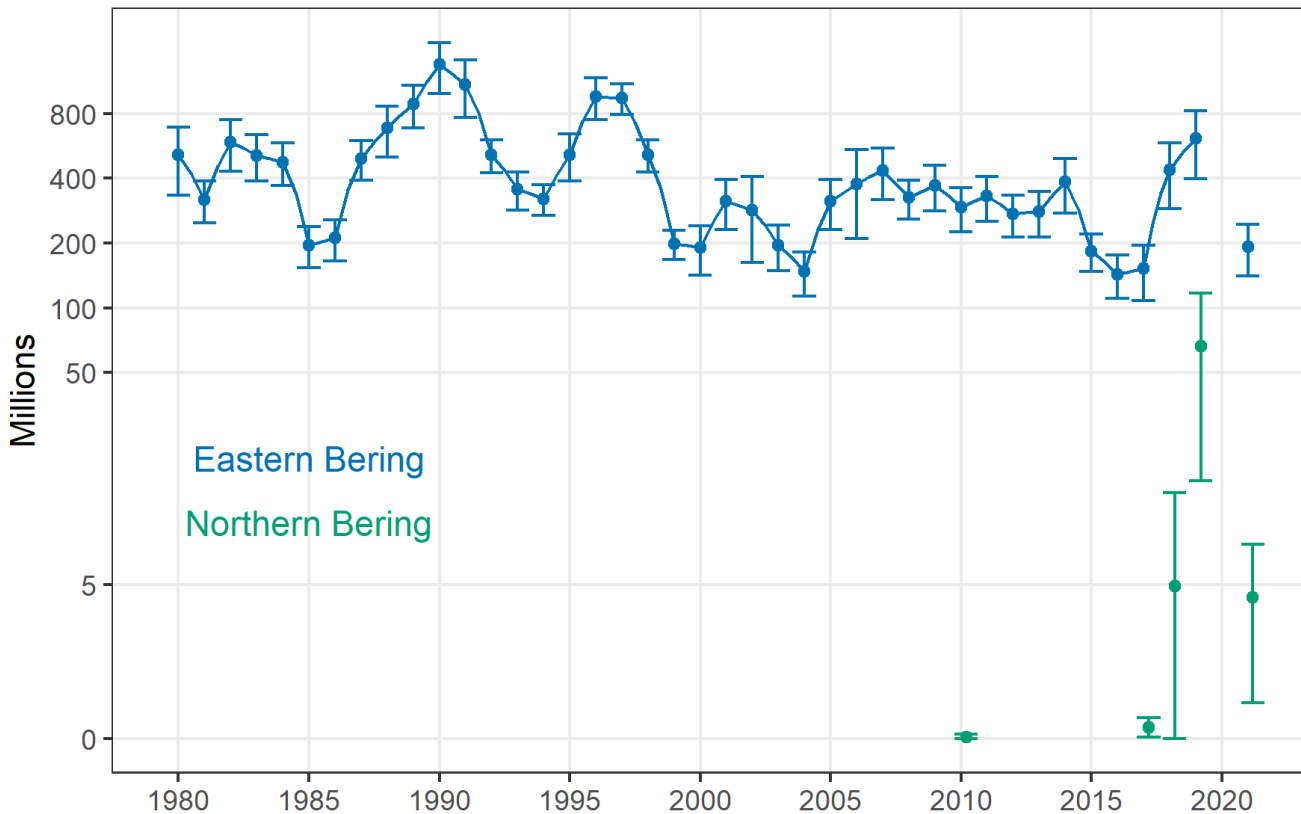
Survey catches 2015-2021



Snow Crab

Legal male abundance

Abundance and 95% CI



Eastern Bering results

- Abundance down 69% from 2019
- Decline of ≈ 419 million individuals
- Approximately half of the 20-year mean, not the lowest in time series

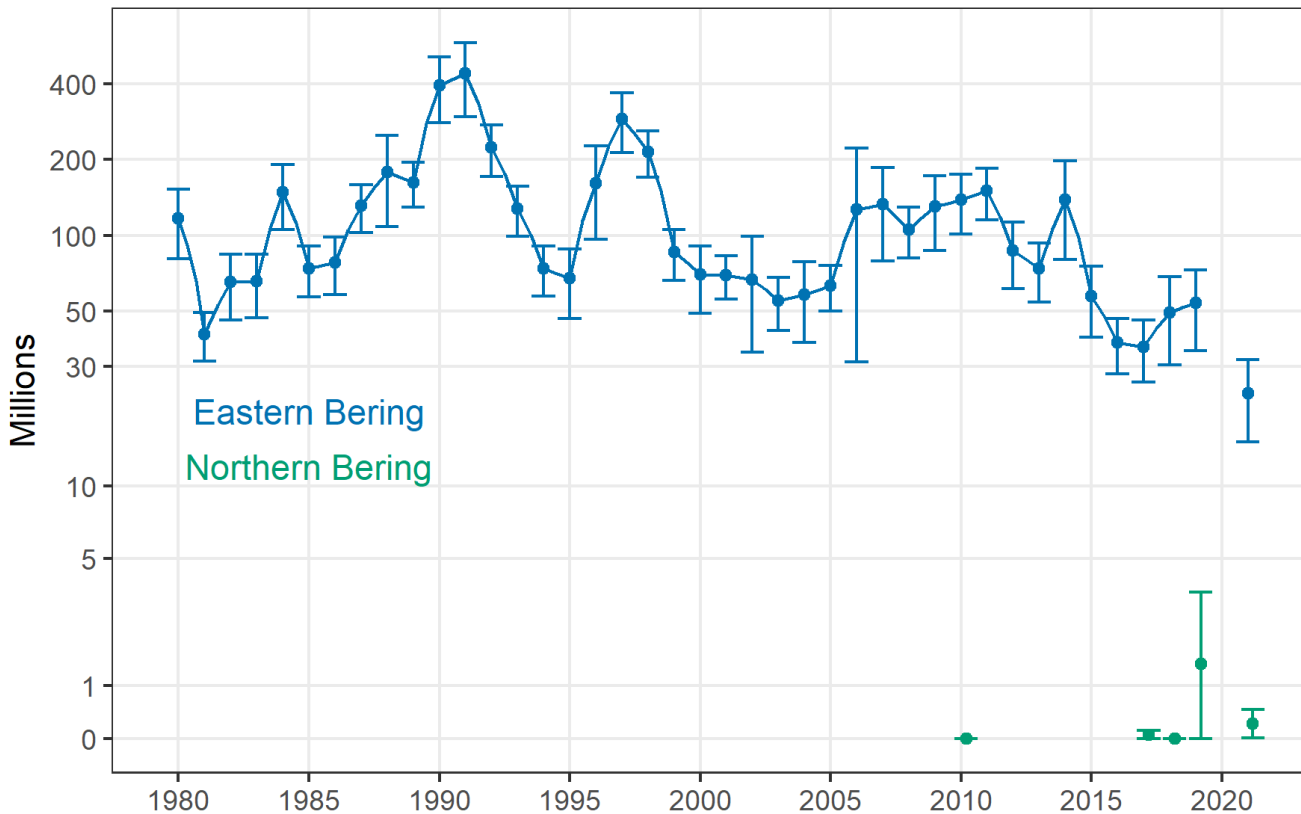


Snow Crab

Preferred-size male abundance

(≥ 102 mm carapace width)

Abundance and 95% CI



Eastern Bering results

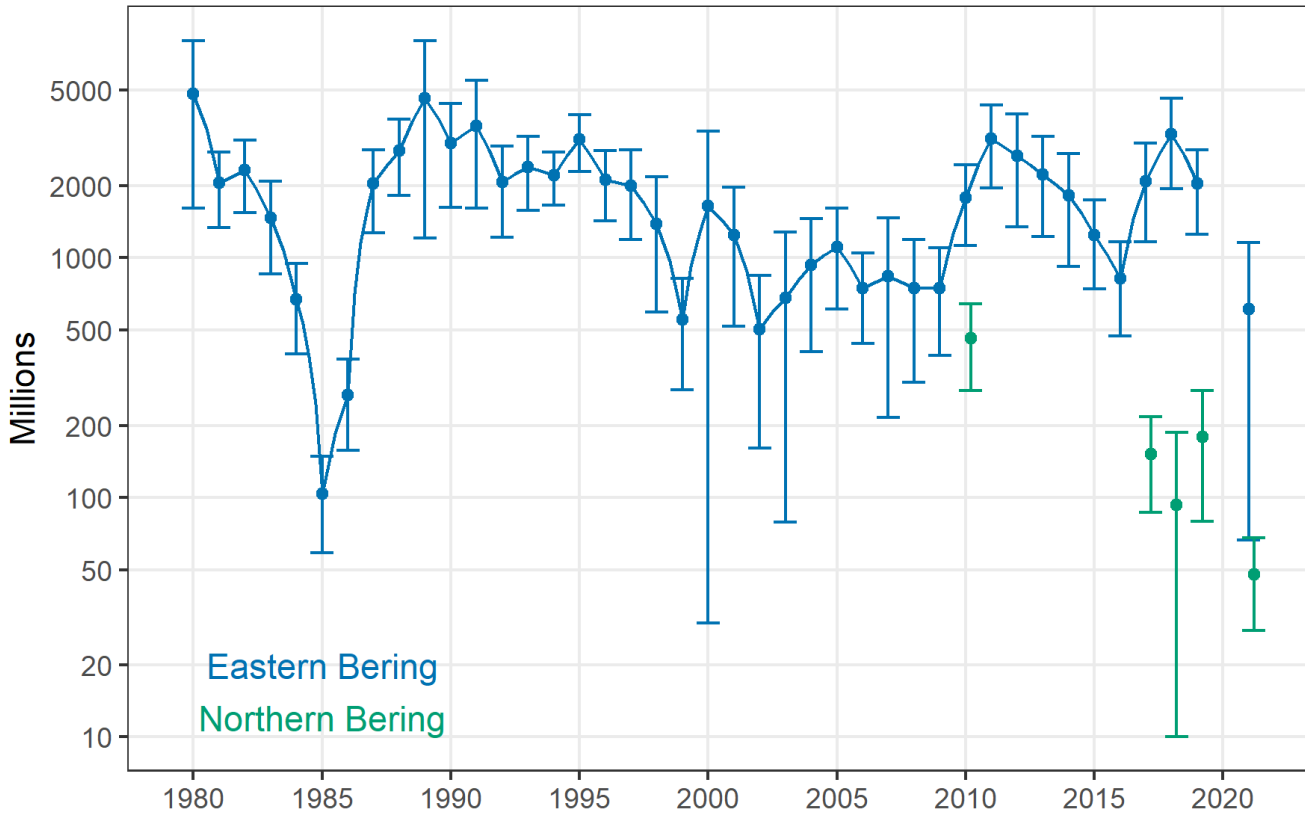
- Abundance down 56% from 2019
- Decline of ≈ 30 million individuals
- Lowest estimate in 1980-2021 time series



Snow Crab

Mature female abundance

Abundance and 95% CI



Eastern Bering results

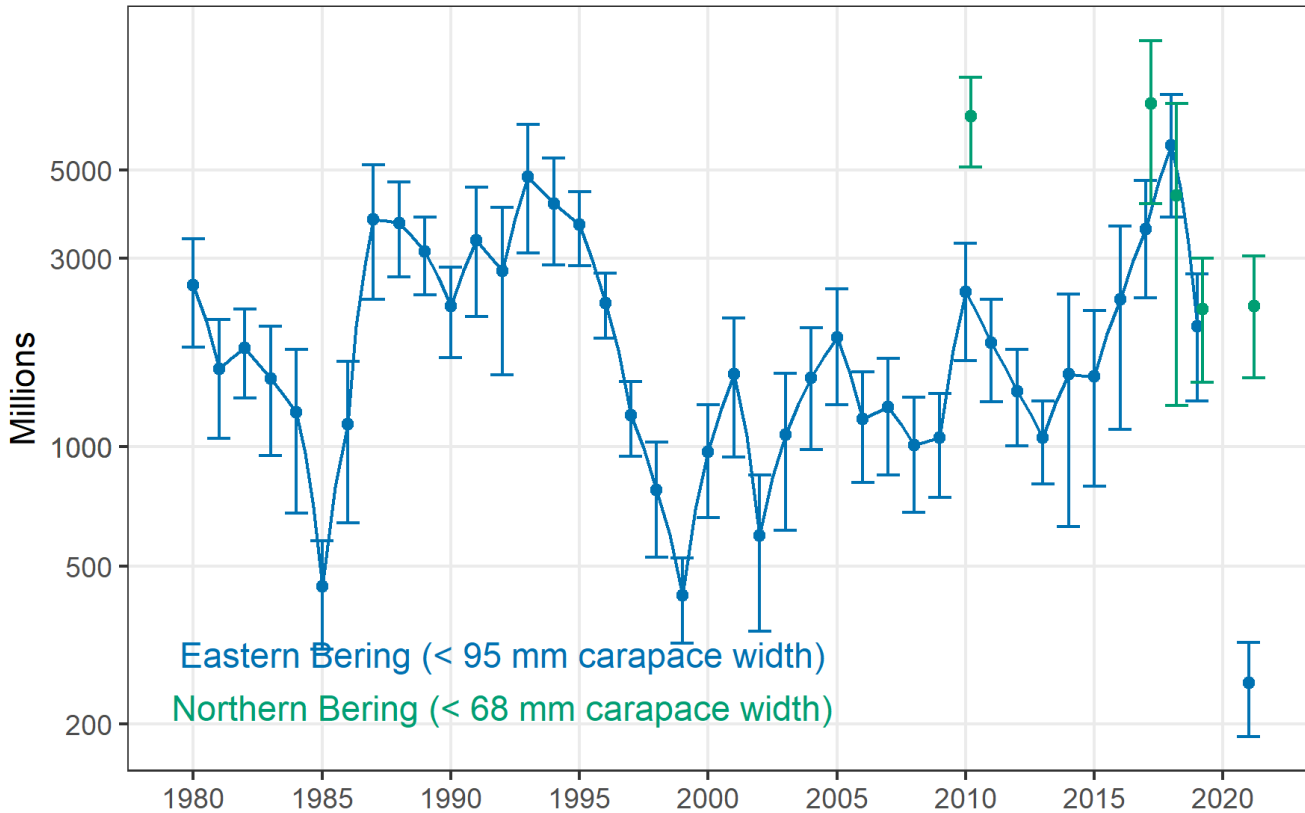
- Abundance down 70% from 2018
- Decline of ≈ 2.7 billion individuals
- Not the lowest value in time series



Snow Crab

Immature male abundance

Abundance and 95% CI



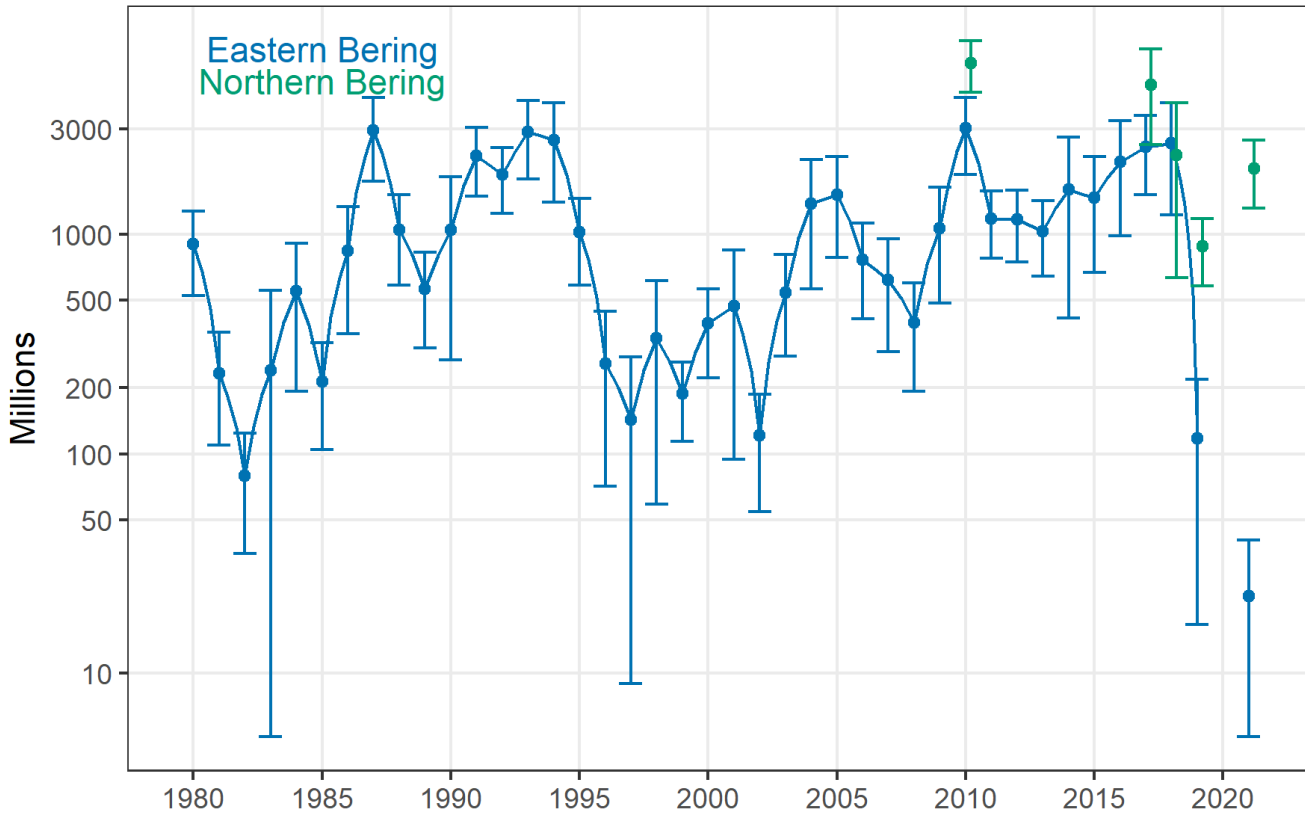
Eastern Bering results

- Abundance down 96% from 2018
- Decline of ≈ 5.5 billion individuals
- Lowest estimate in 1980-2021 time series



Immature female abundance

Abundance and 95% CI



Eastern Bering results

- Abundance down >99% from 2018
- Decline of ≈ 2.6 billion individuals
- Lowest estimate in 1980-2021 time series



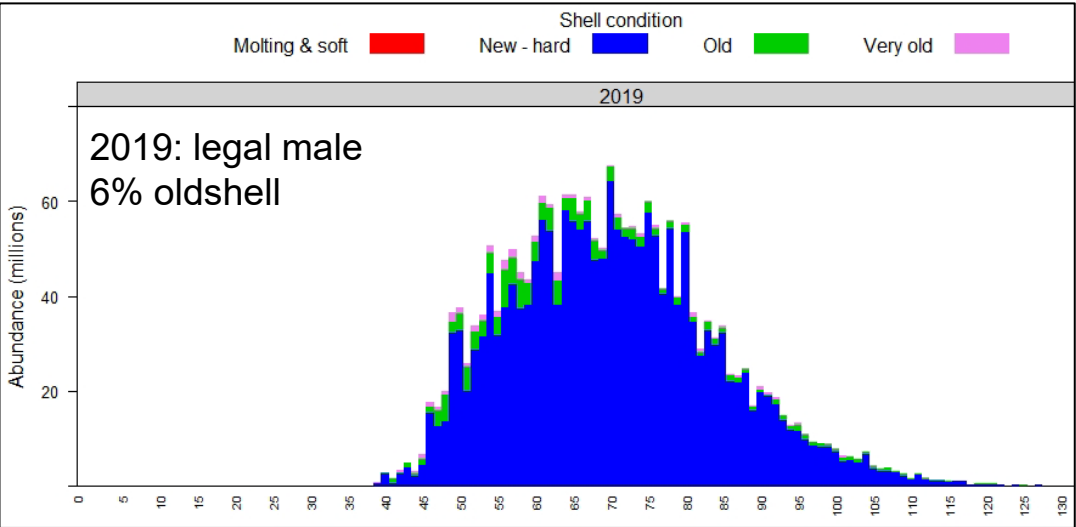
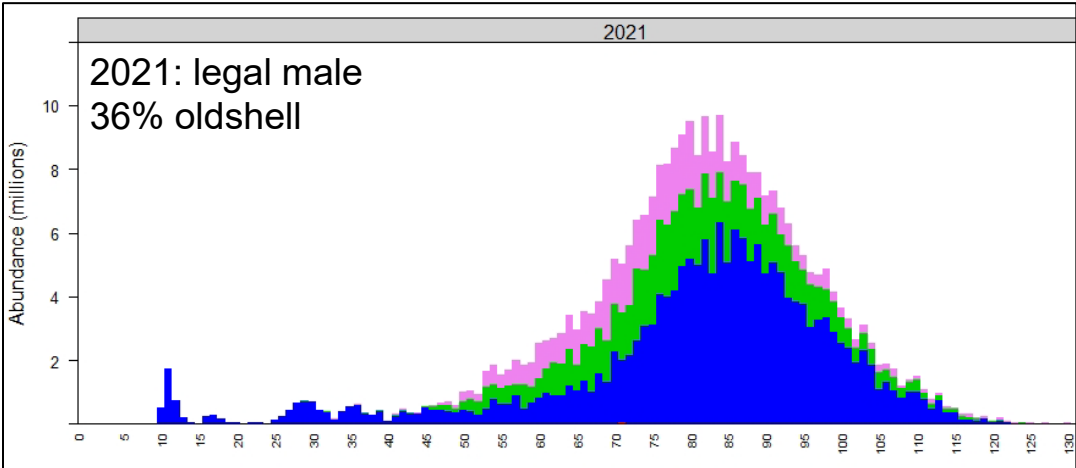
Snow Crab

Increased proportion oldshell Male

2021

2019

Abundance (millions)



Carapace width (mm)

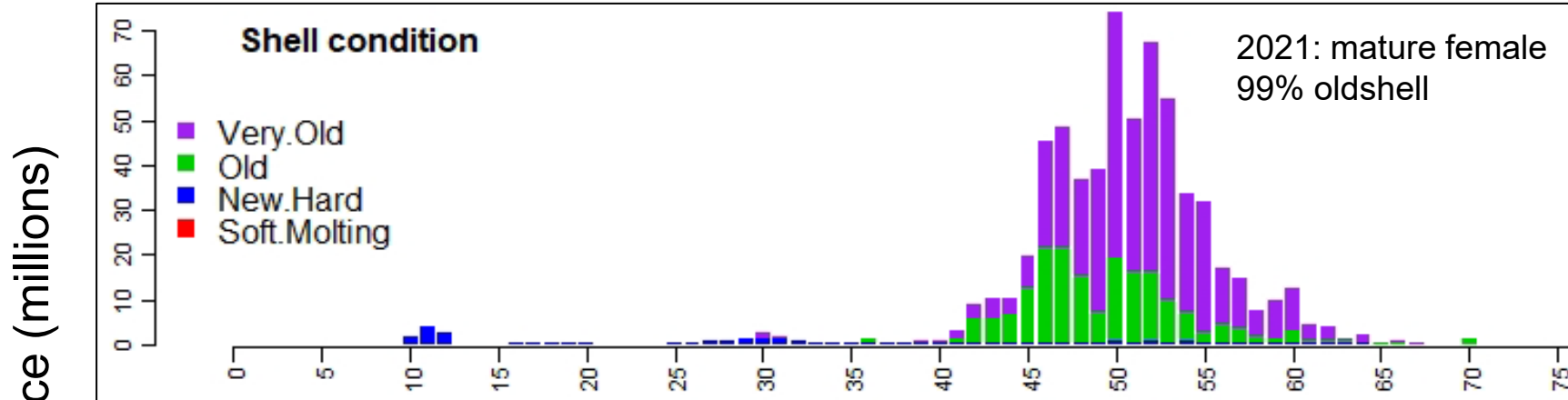




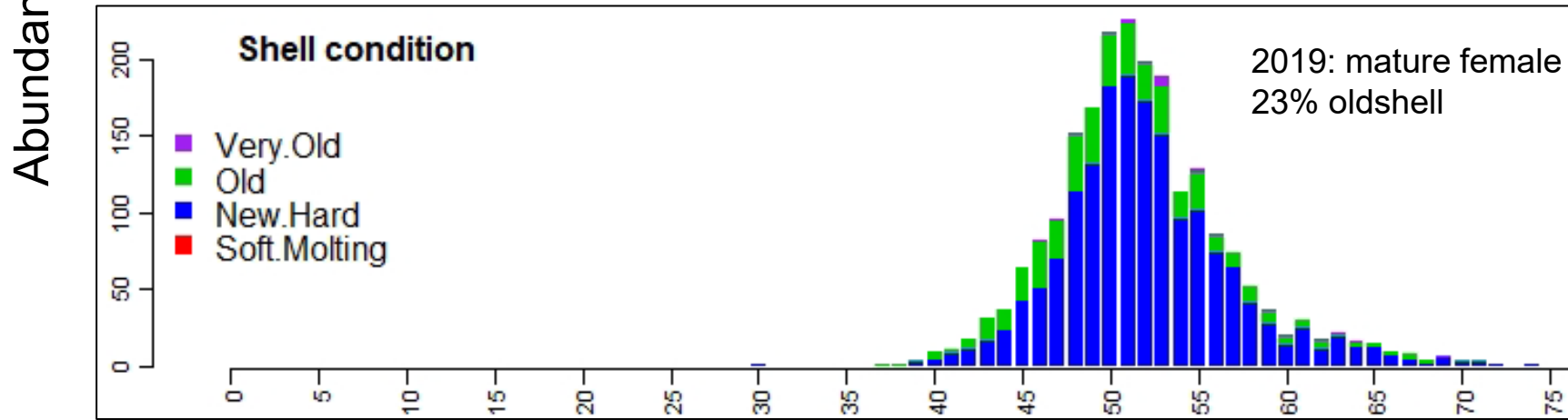
Increased proportion oldshell

Female

2021



2019



Carapace width (mm)

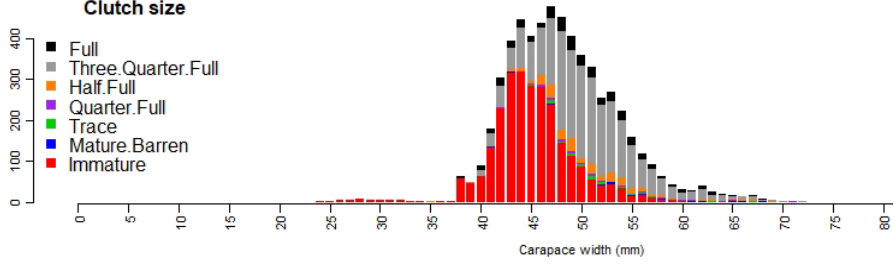
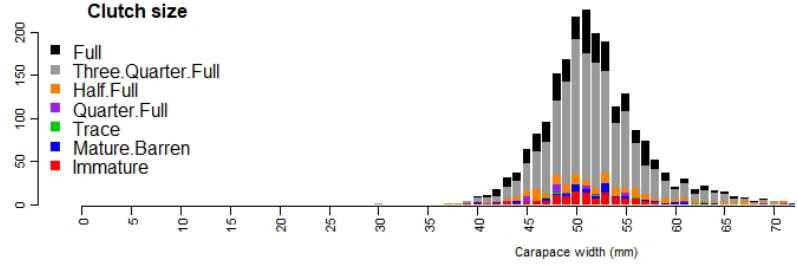
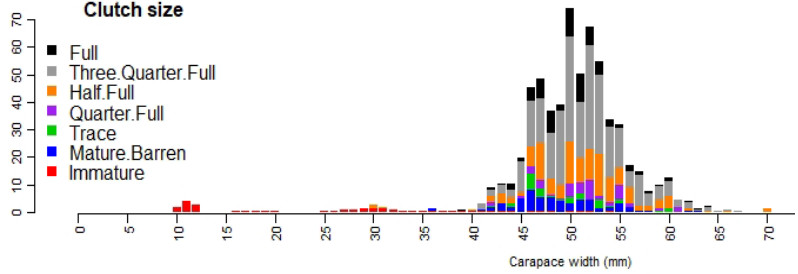
Snow Crab



Clutch Fullness

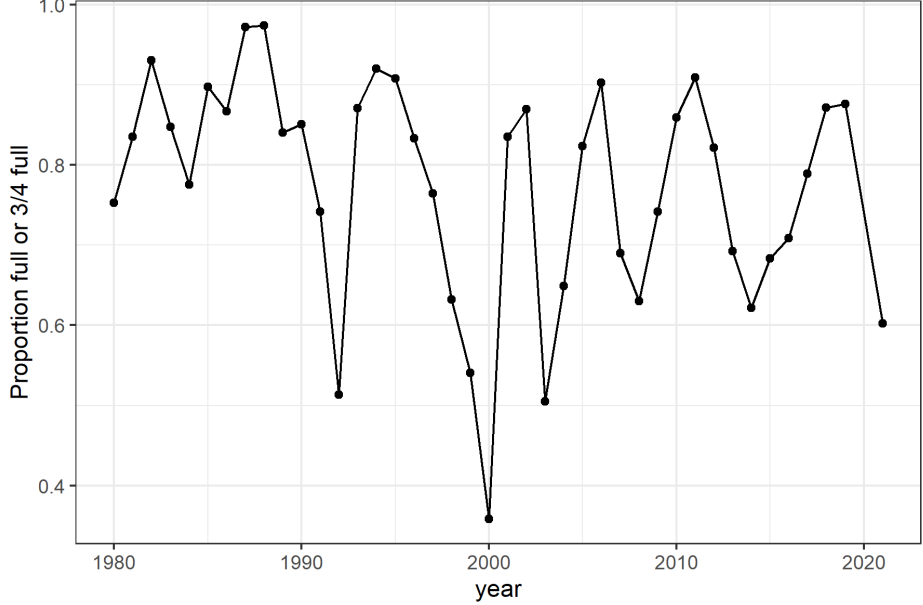
2021
2019
2018

Abundance (millions)



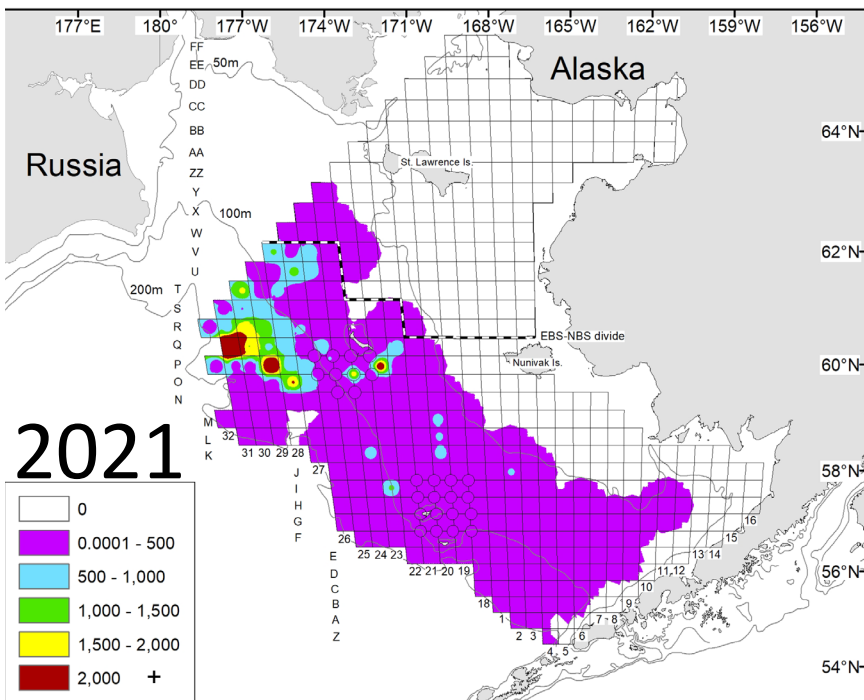
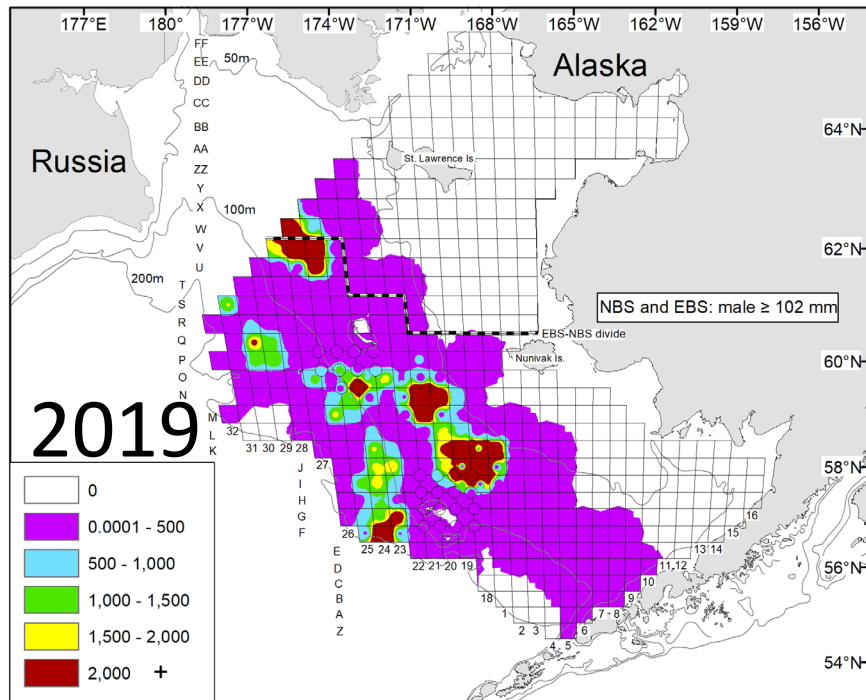
Carapace width (mm)

Mature females – proportion full or 3/4 full



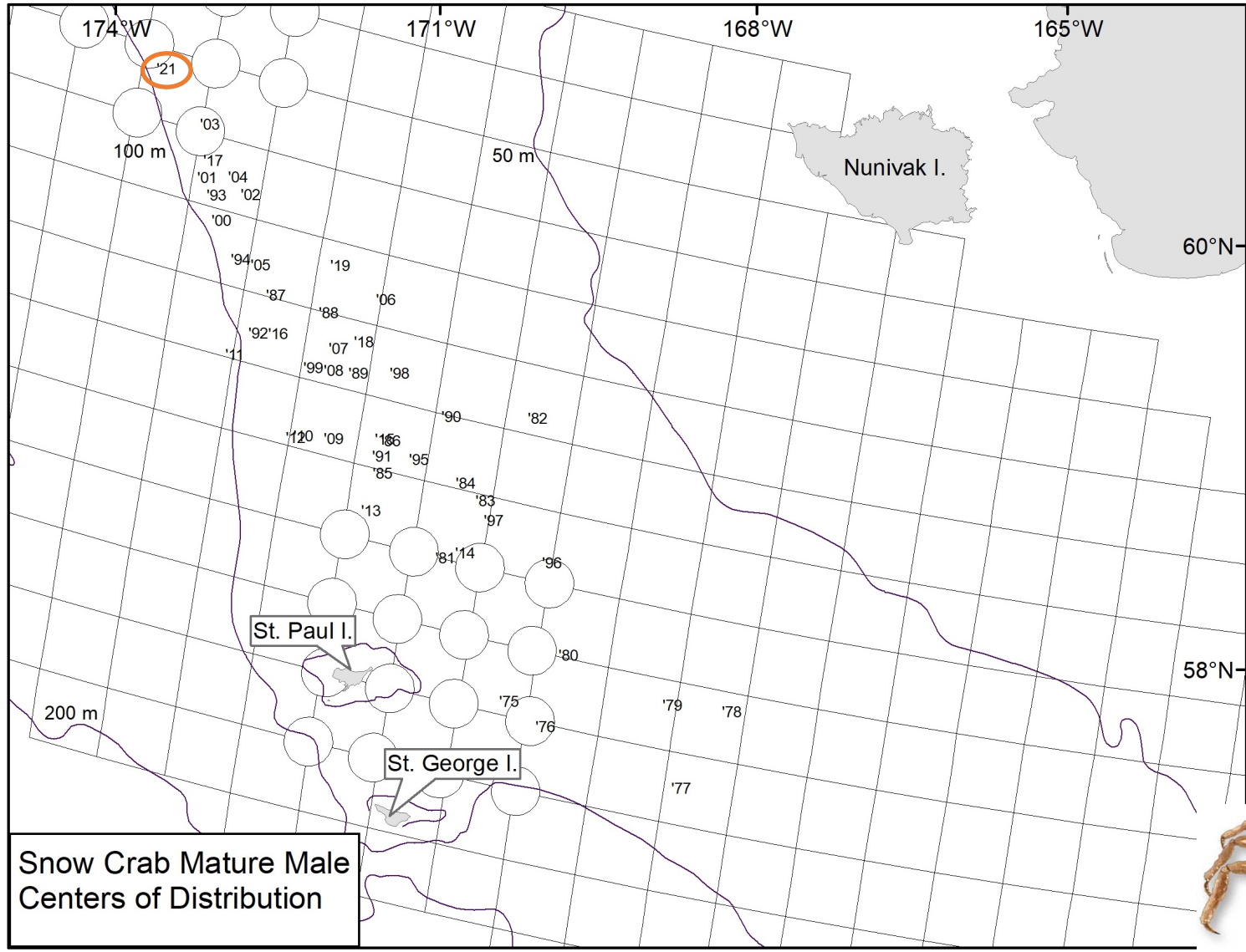
Snow Crab

Preferred-size male CPUE shifted NW (carapace width ≥ 102 mm)

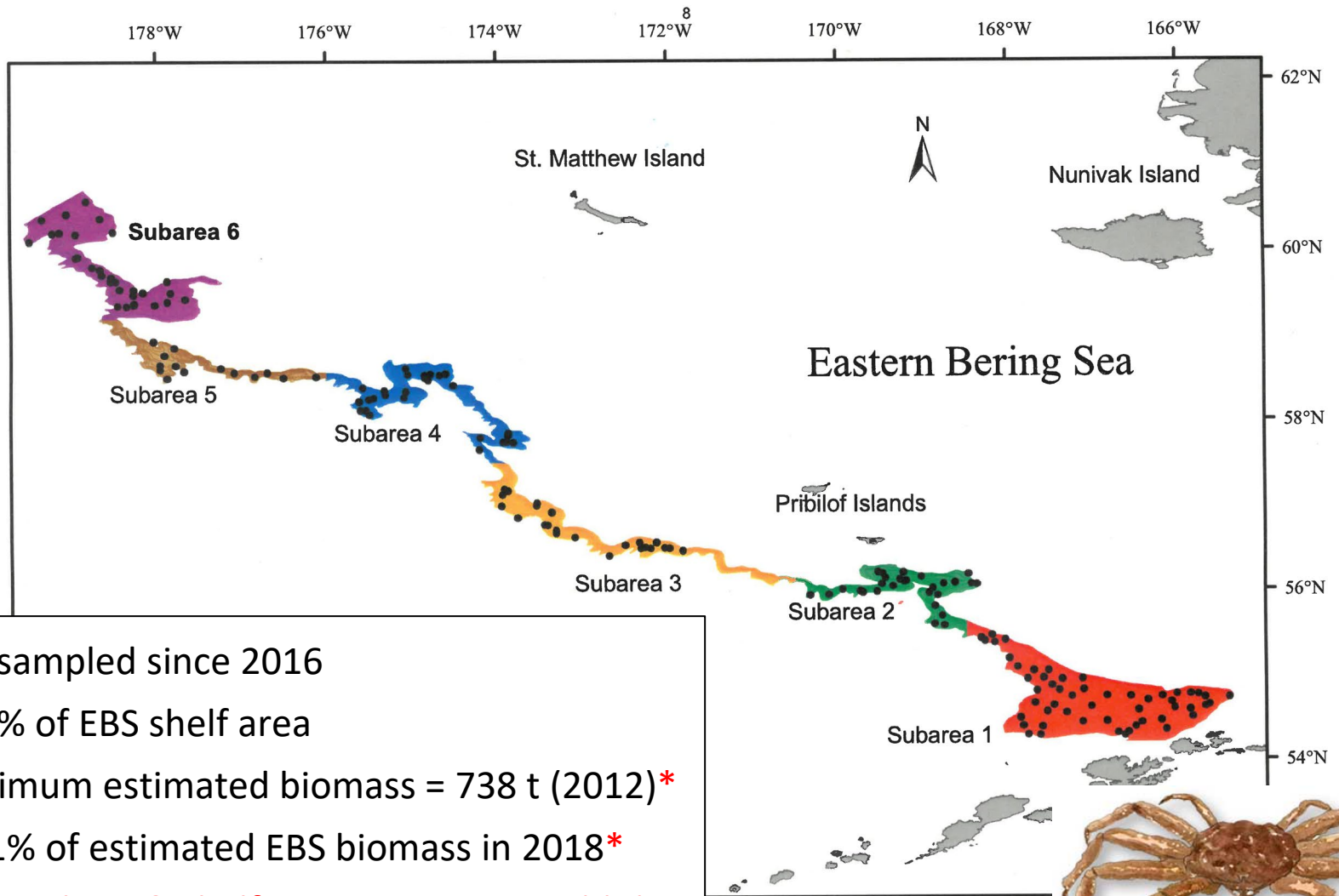


Snow Crab

Mature male center of distribution



Bering Sea slope surveys



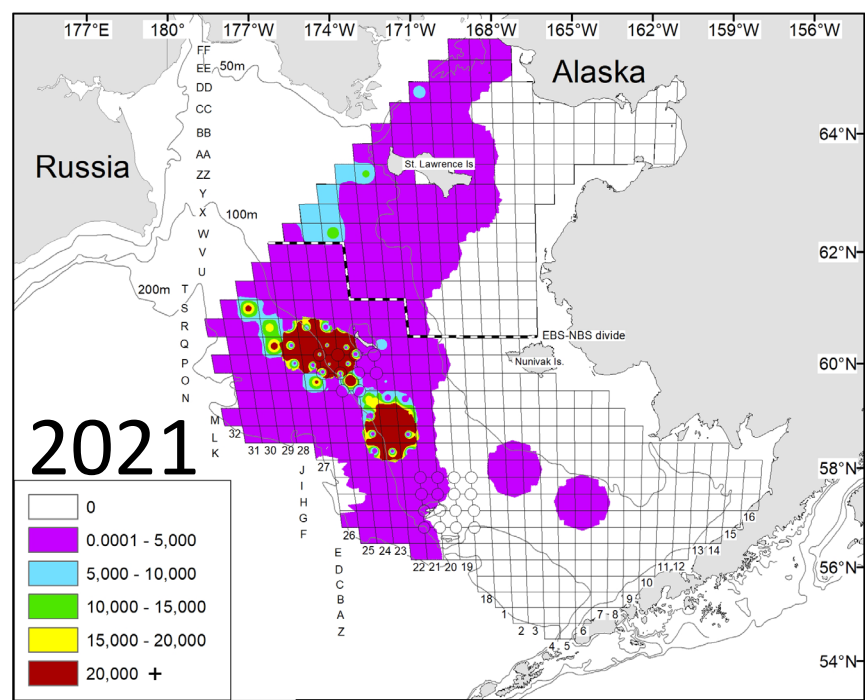
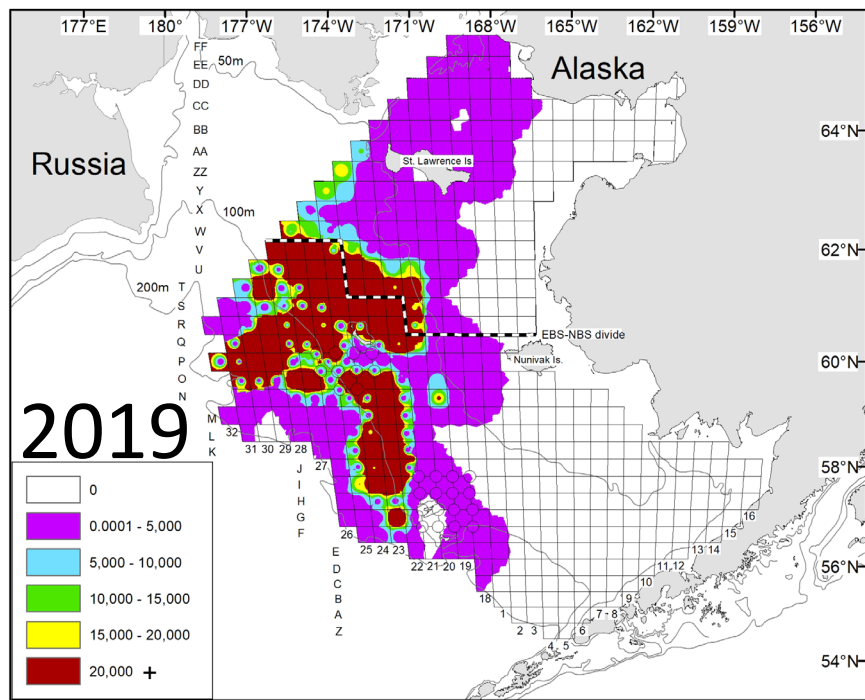
- Not sampled since 2016
- < 10% of EBS shelf area
- Maximum estimated biomass = 738 t (2012)*
- < 0.1% of estimated EBS biomass in 2018*

* Note – slope & shelf gears not comparable!



Snow Crab

Mature female CPUE not shifted

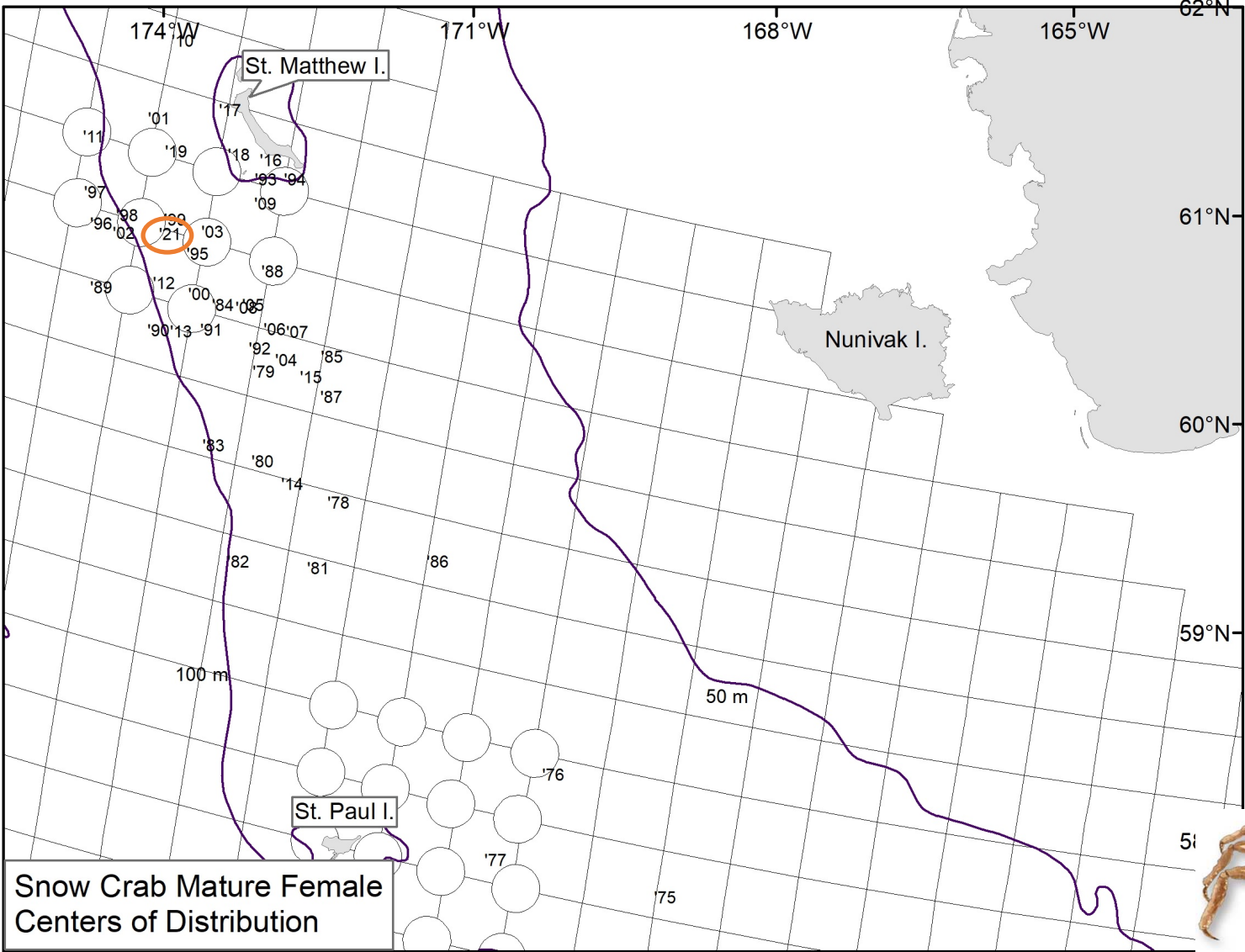


crab / nautical mile²



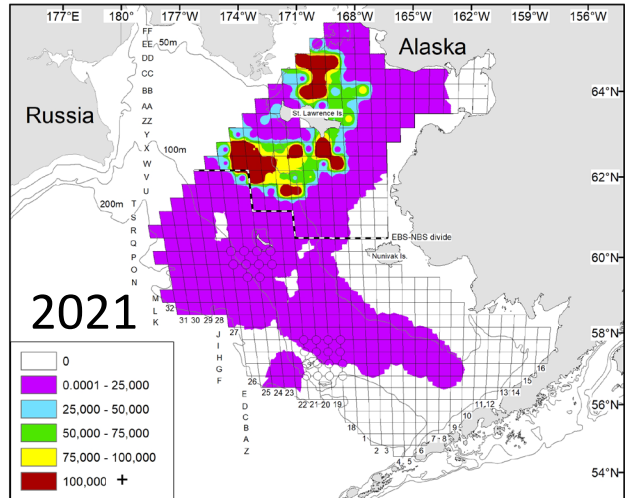
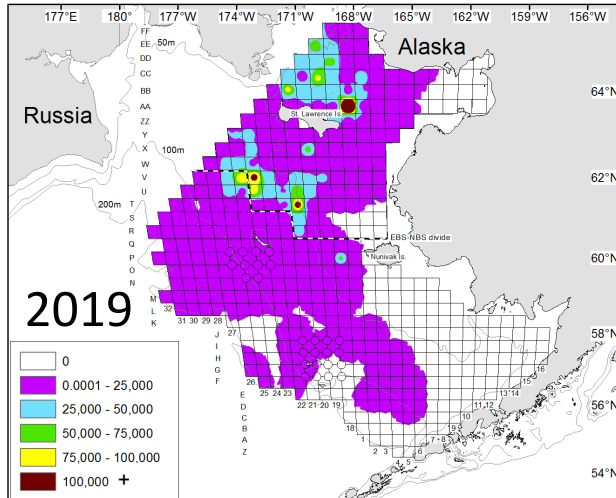
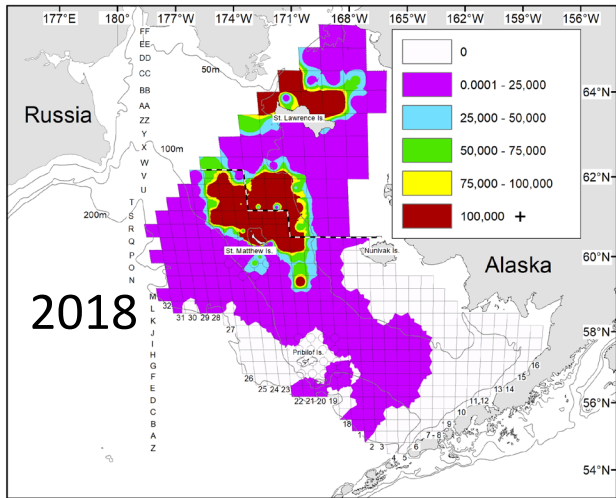
Snow Crab

Mature female center of distribution



Snow Crab

Immature female CPUE shifted north

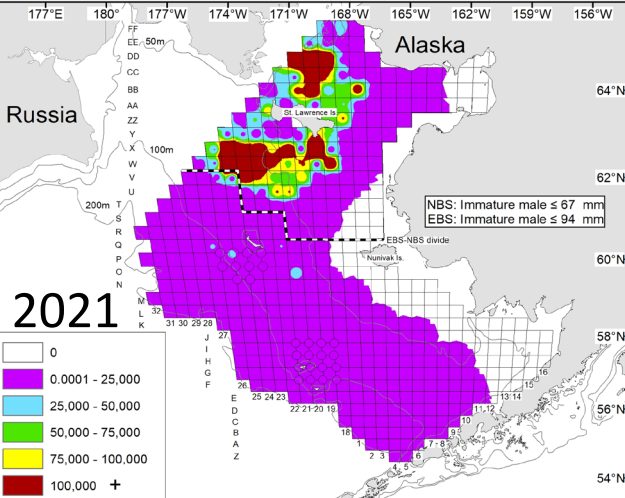
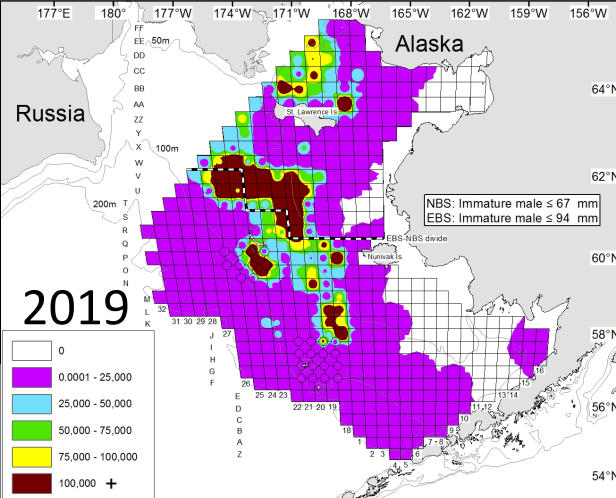
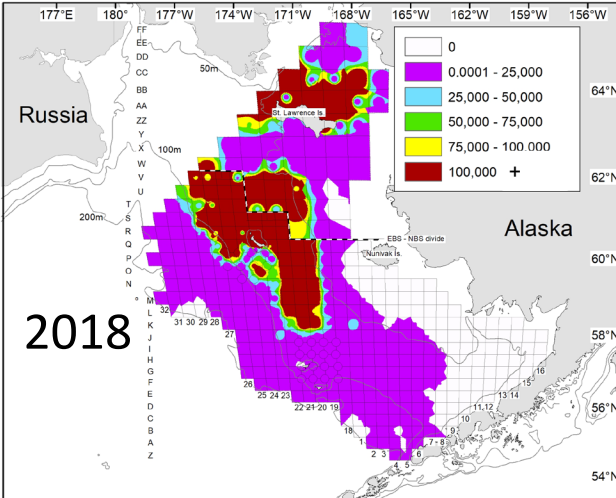


crab / nautical mile²



Snow Crab

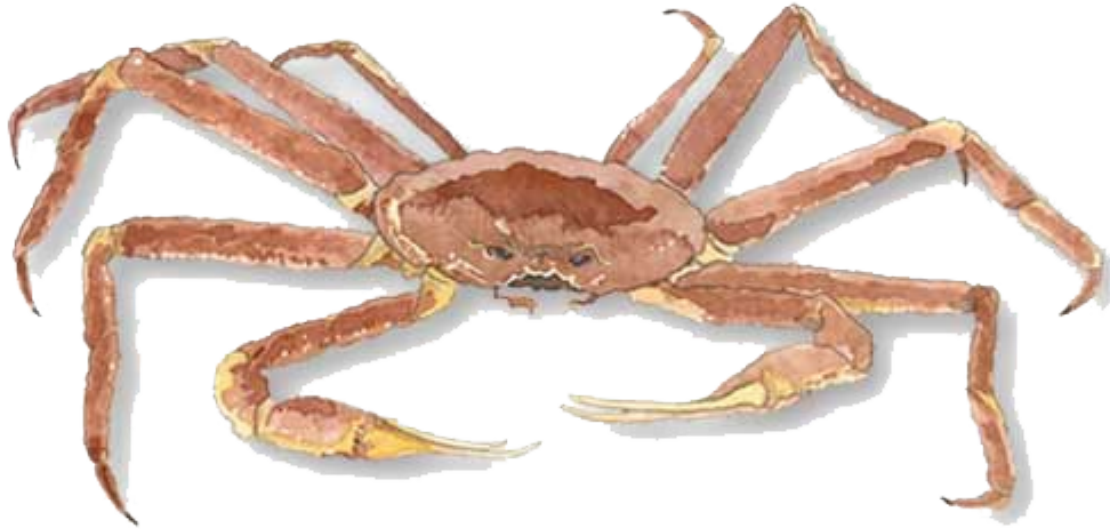
Immature male CPUE shifted north



crab / nautical mile²



Tanner Crab



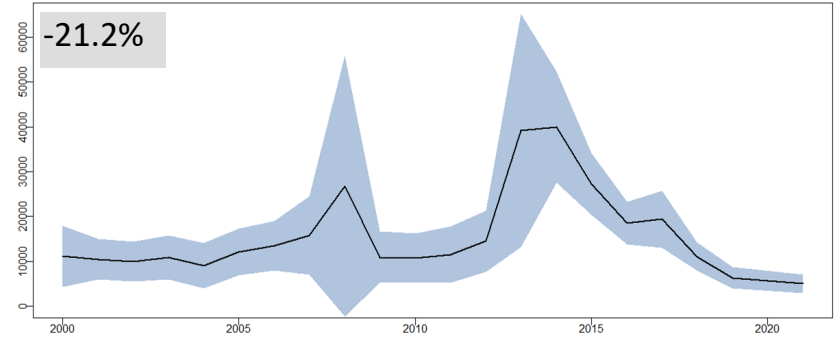
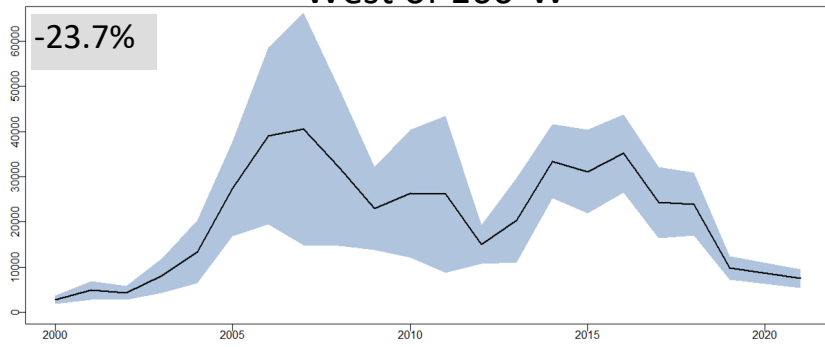
Tanner Crab

Abundance changes from 2019

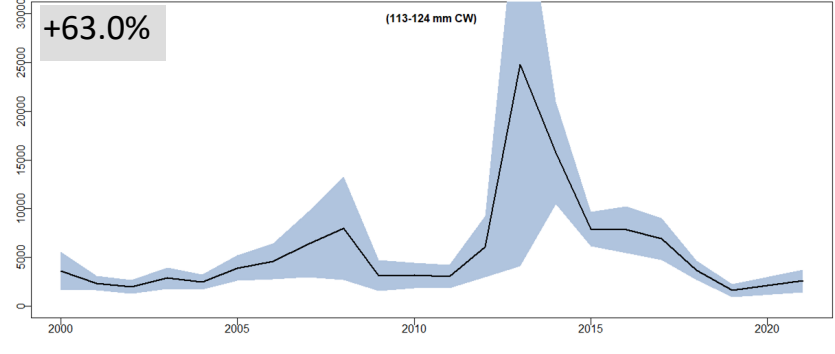
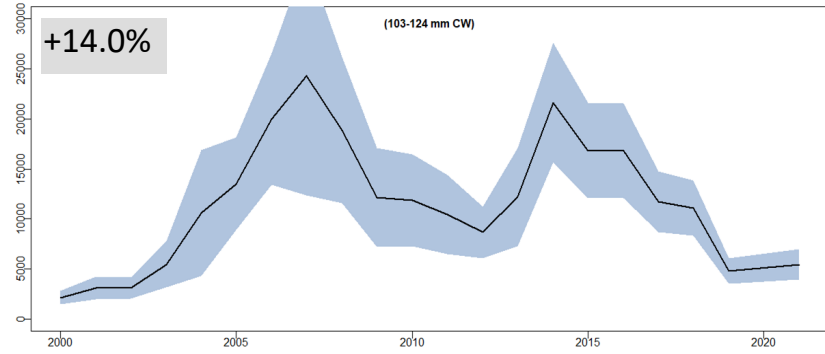
West of 166°W

East of 166°W

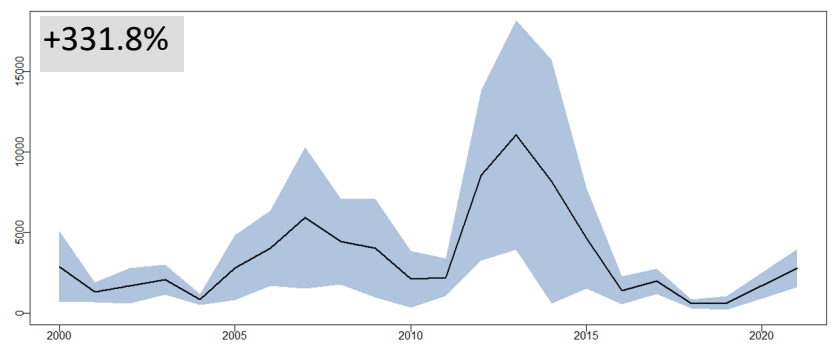
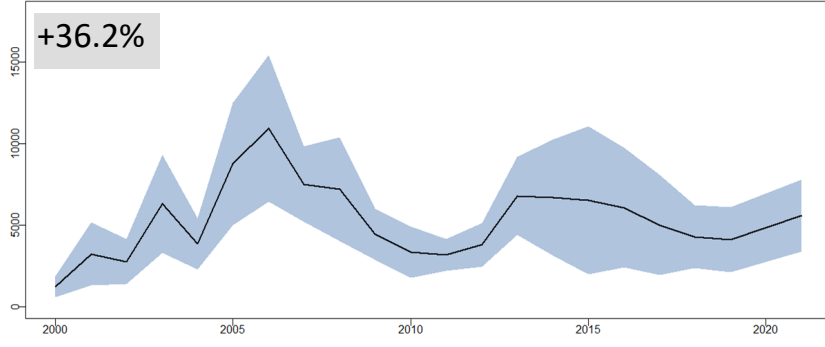
Abundance (millions)



Mature male



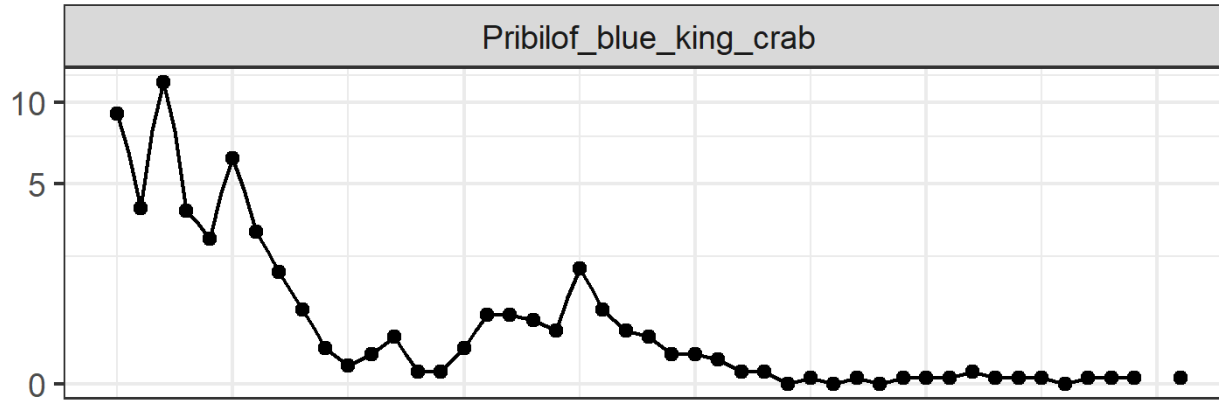
Pre-recruit male



Mature female

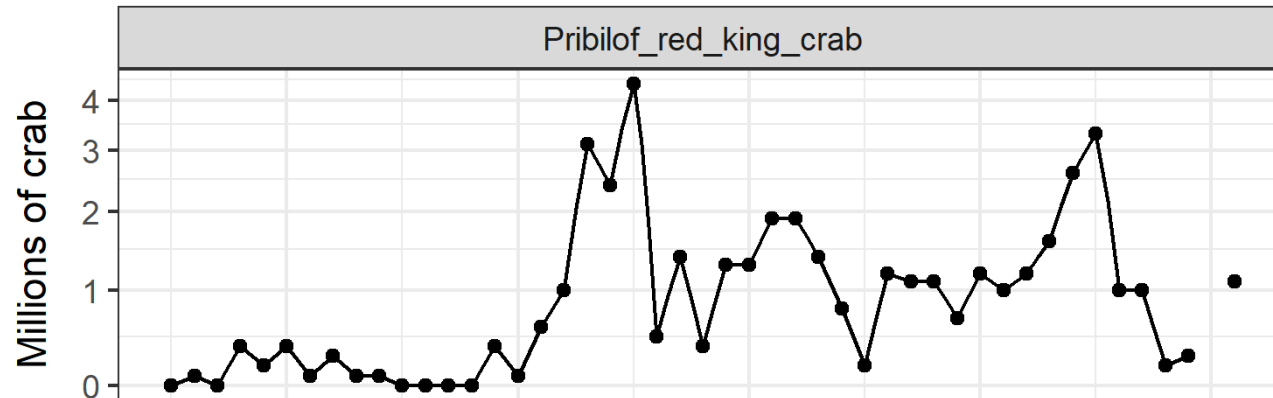


Other Stocks: legal male abundance

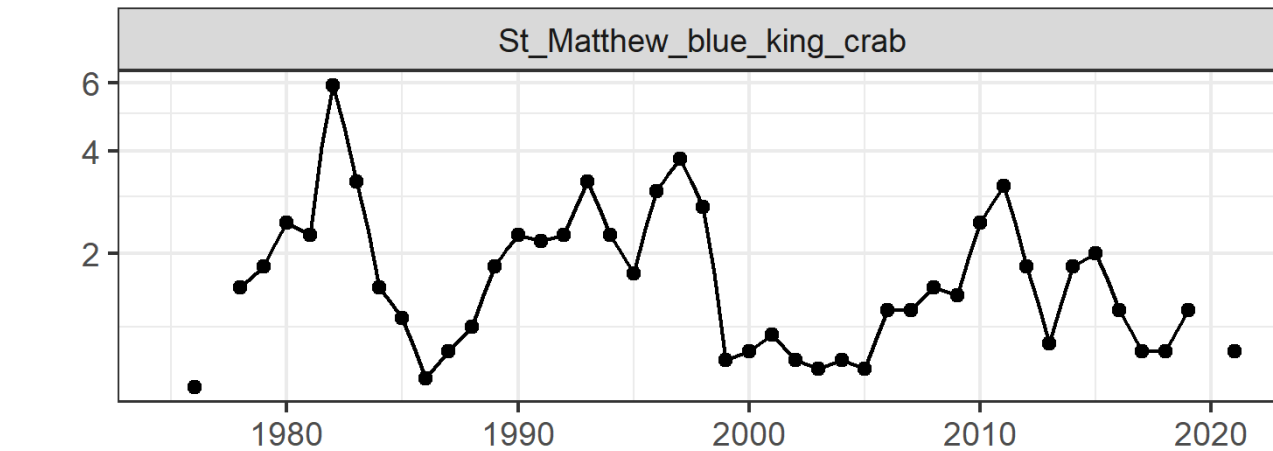


2021 estimates (95% CI)

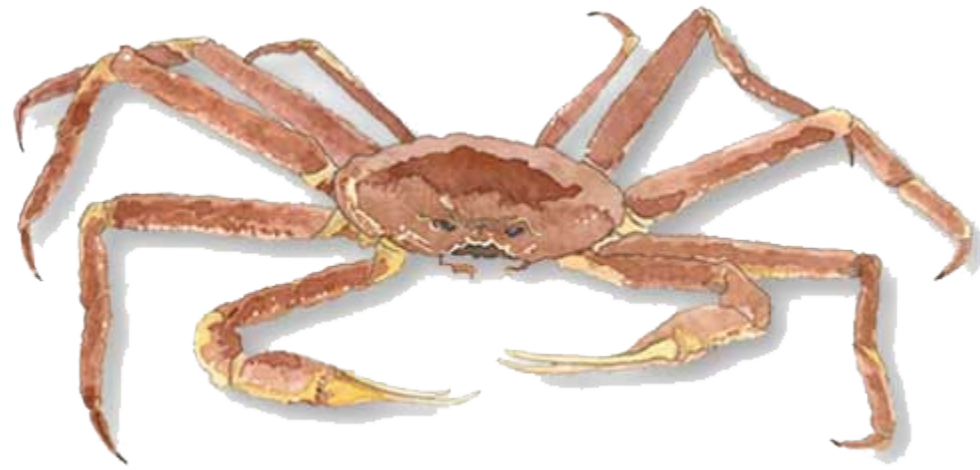
0.1 ± 0.1 million



1.1 ± 0.7 million



0.7 ± 0.5 million



Questions

