



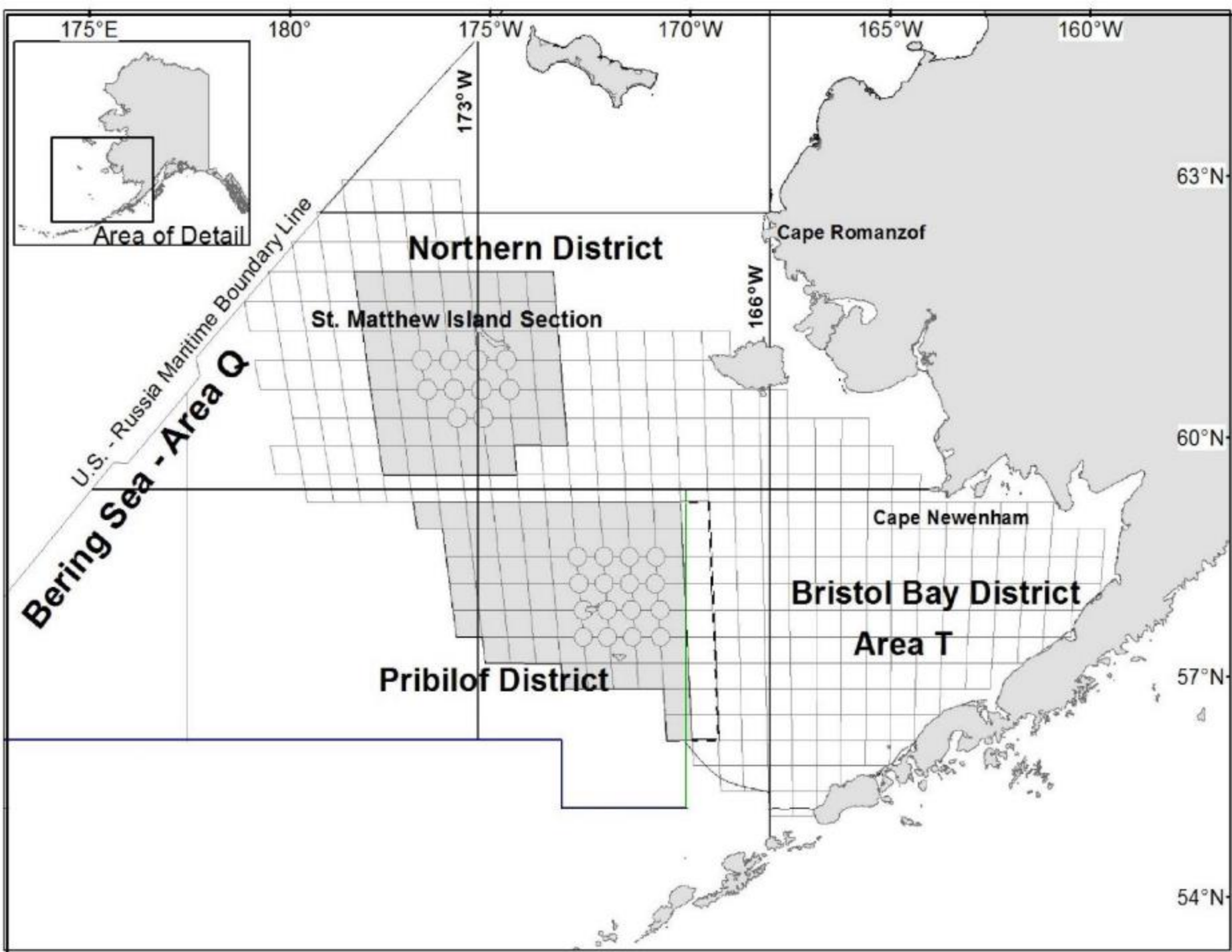
**NOAA  
FISHERIES**

Alaska Fisheries  
Science Center-  
Kodiak Lab

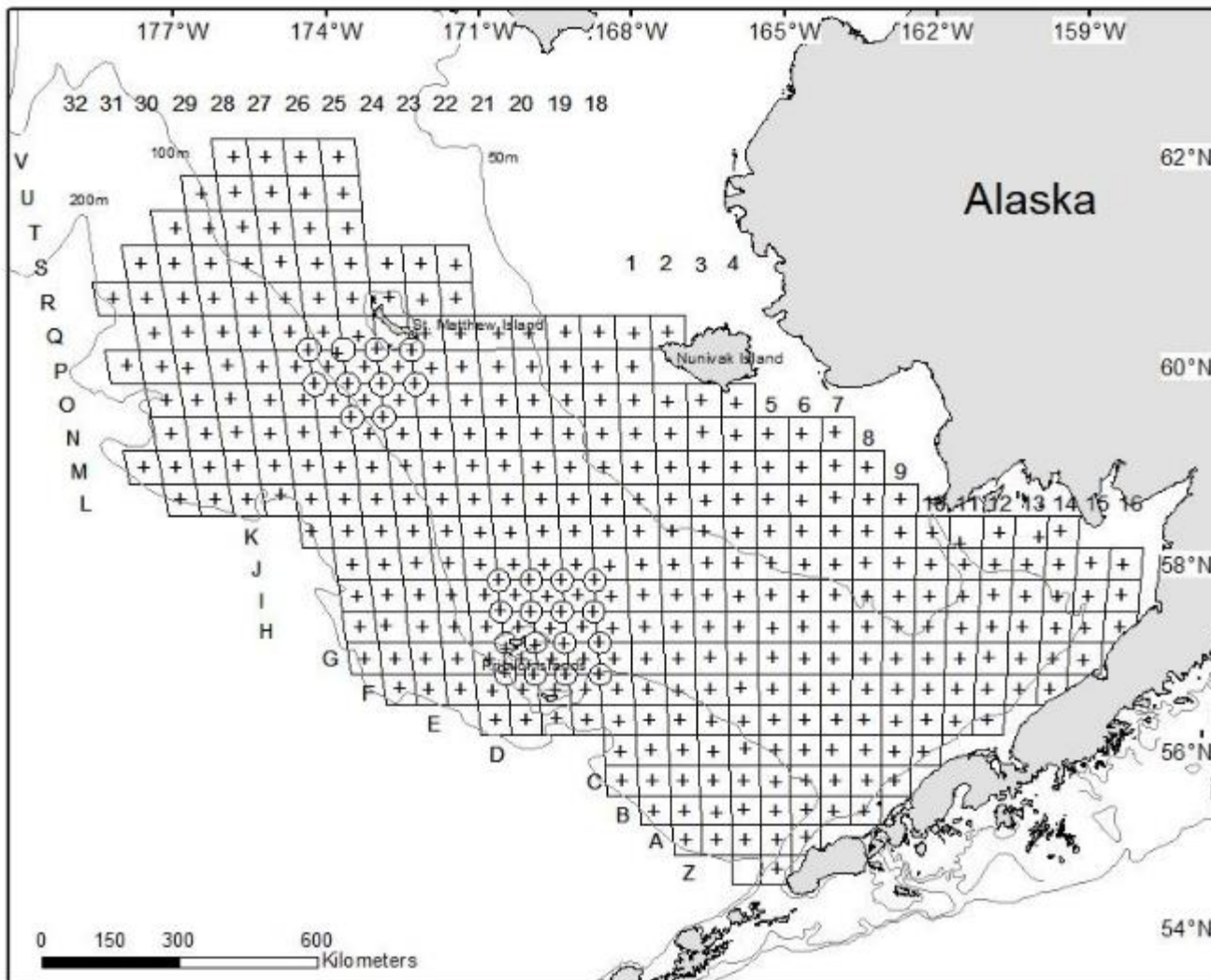
# The 2018 Eastern Bering Sea Continental Shelf Bottom Trawl Survey: Results for Commercial Crab Species

Christie Lang, Jon Richar, Robert Foy,  
AFSC SAP and GAP programs

Crab Plan Team  
September 2018



# 2018 standard Bering Sea survey



## HIGHLIGHTS

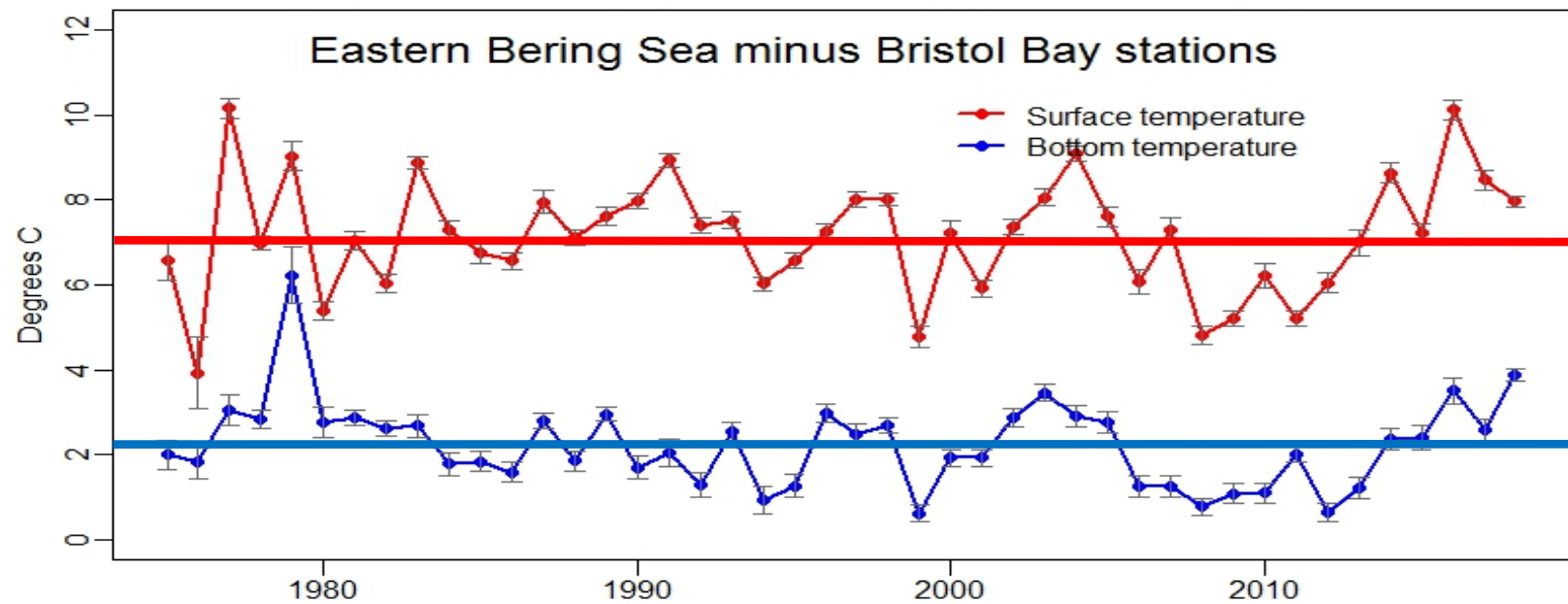
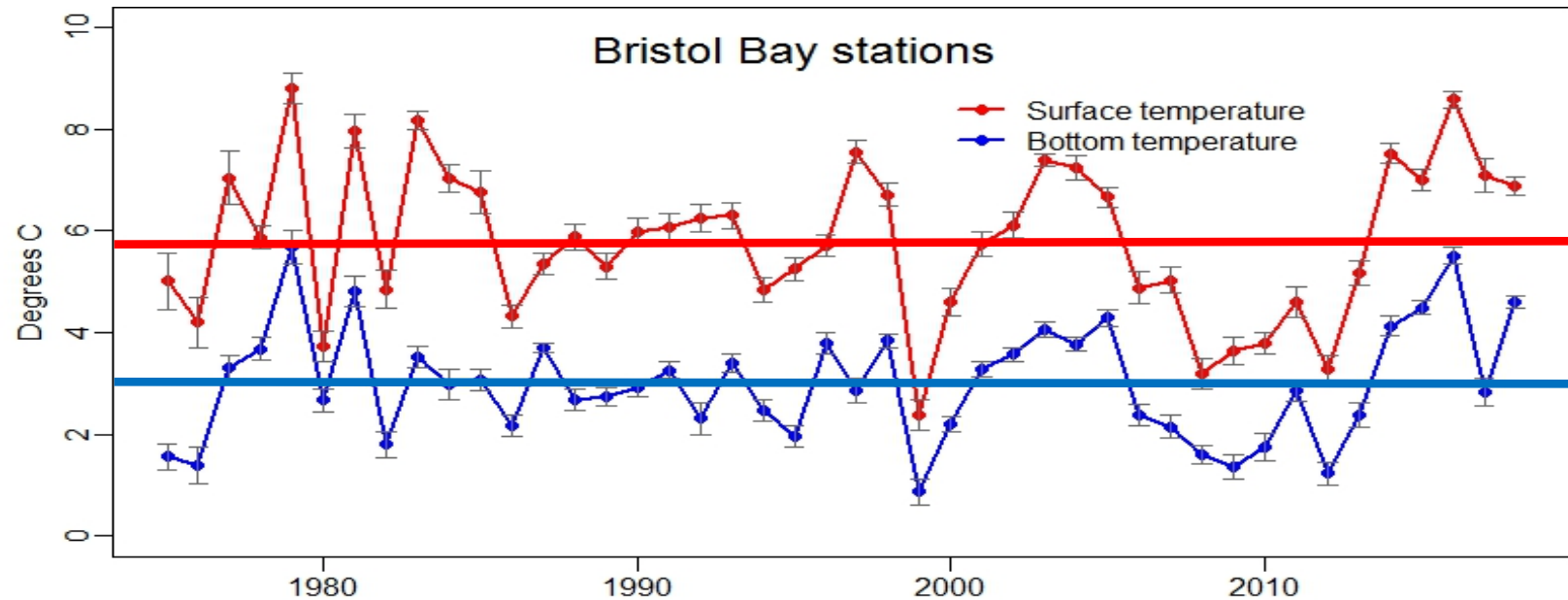
- June 3– July 31
- 375 standard stations
- 139,949 nm<sup>2</sup>
- 6 special crab projects
- Warm water
- Northern Bering Sea

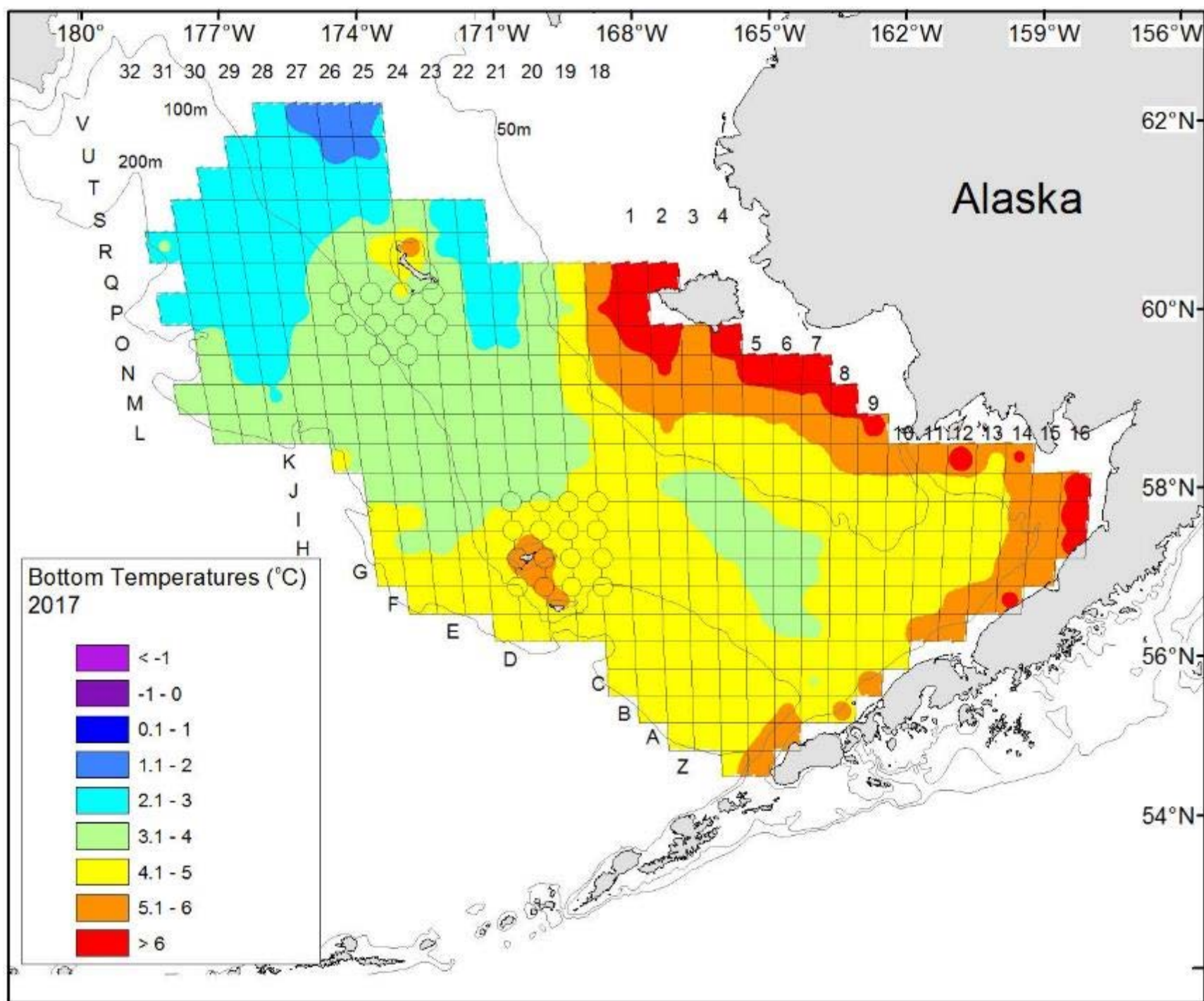
## Special projects related to crab species

Project title	Principle Investigator	Agency
Bitter crab syndrome	P Jensen	RACE-SAP
Annual vs. biennial snow crab reproductive cycle	J Newby; R Foy	RACE-SAP
Population genomic structure of EBS Tanner crab	T Jackson	ADF&G
Genetics of mating dynamics in EBS snow crab	T Jackson	ADF&G
Crabs for outreach	L Slater	ADF&G
Population genomics of red king crab	J-I Westgaard	Inst. Mar. Res. Norway

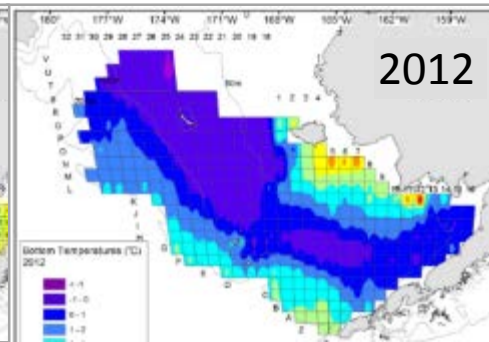
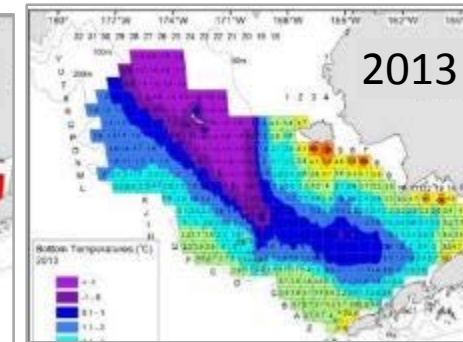
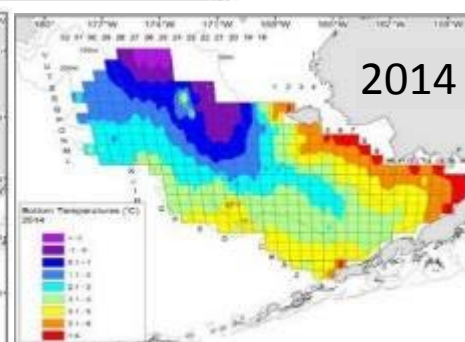
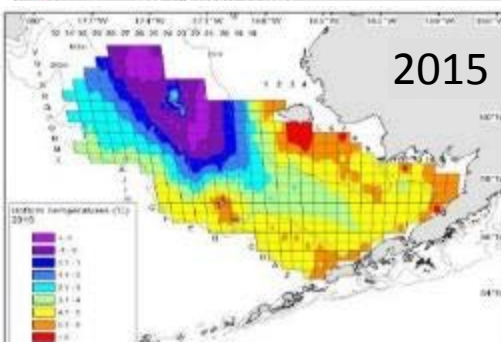
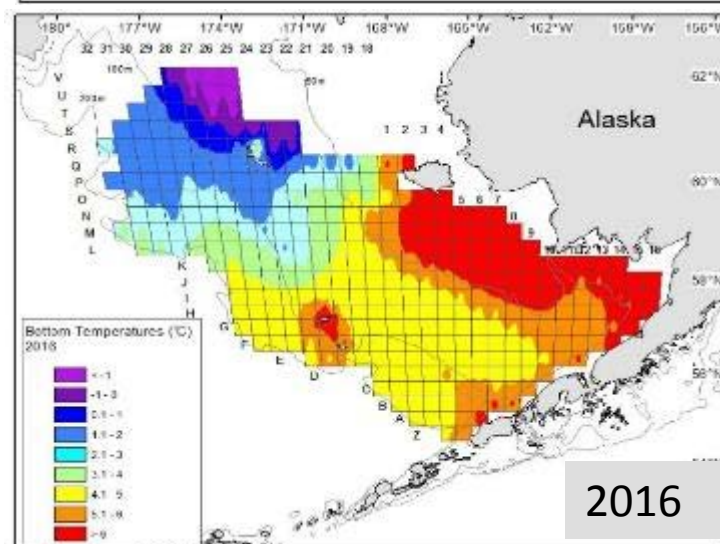
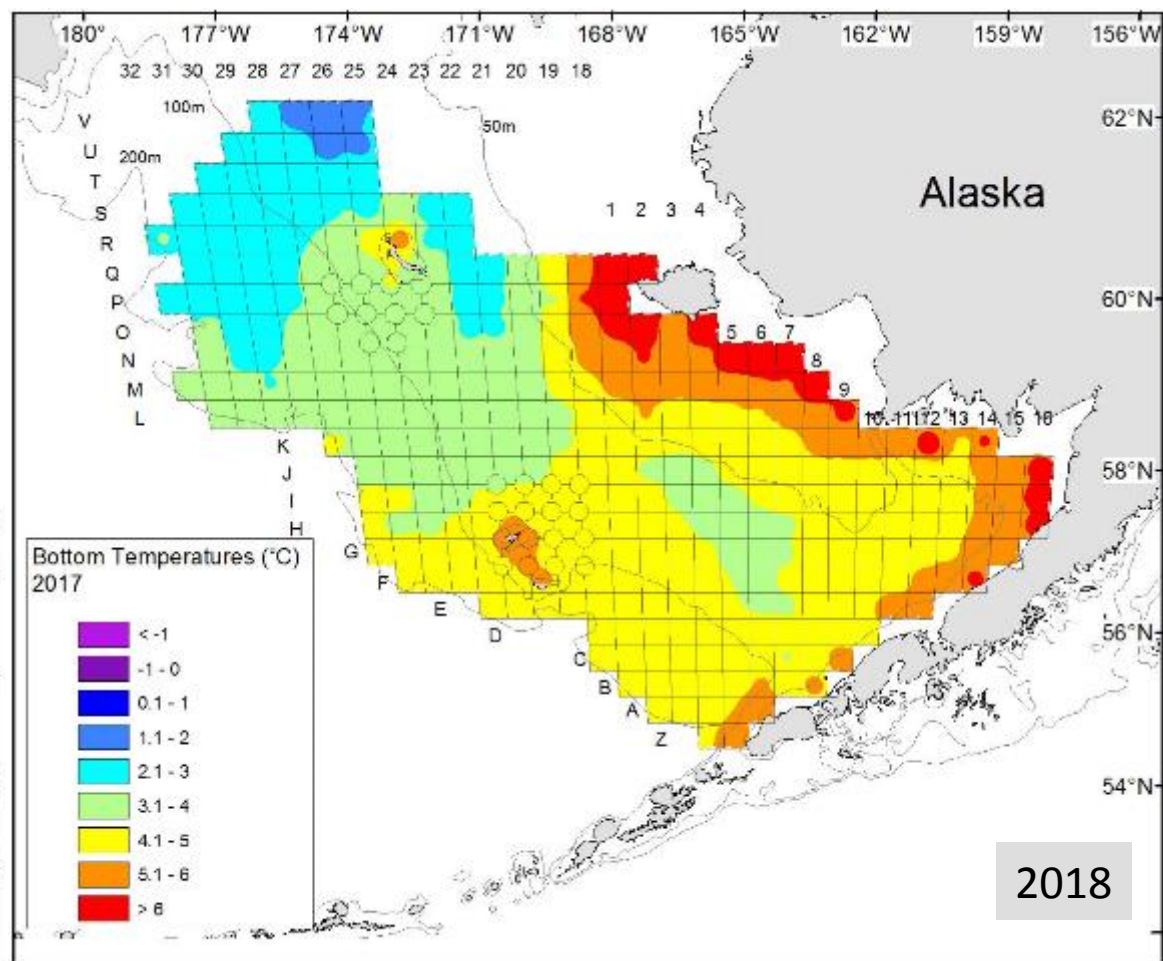
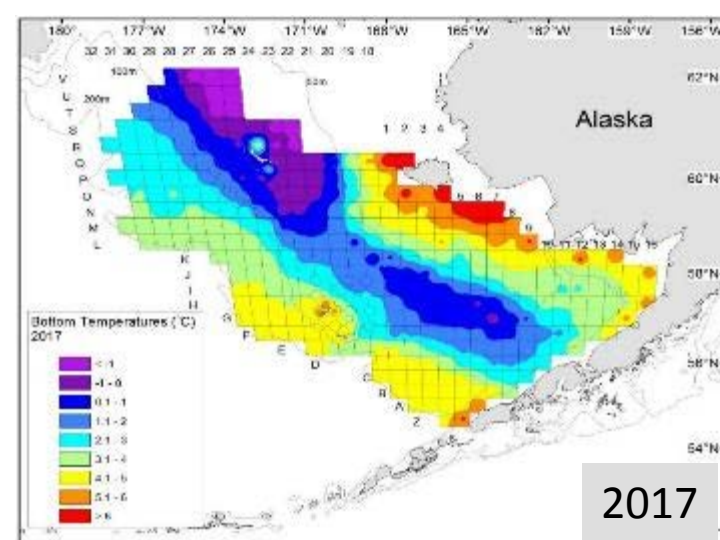


# Bristol Bay Surface (red) and Bottom (blue) temperatures

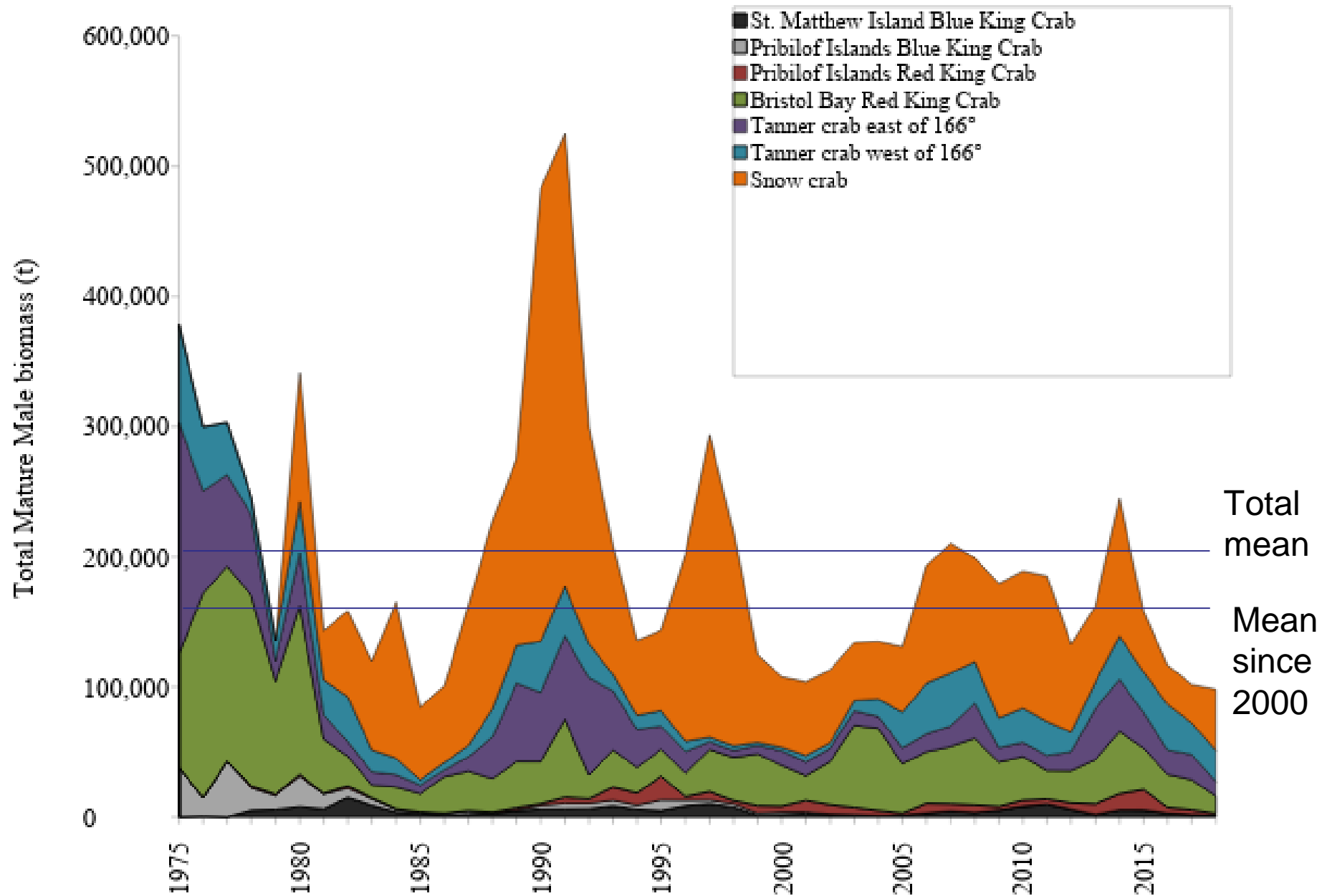






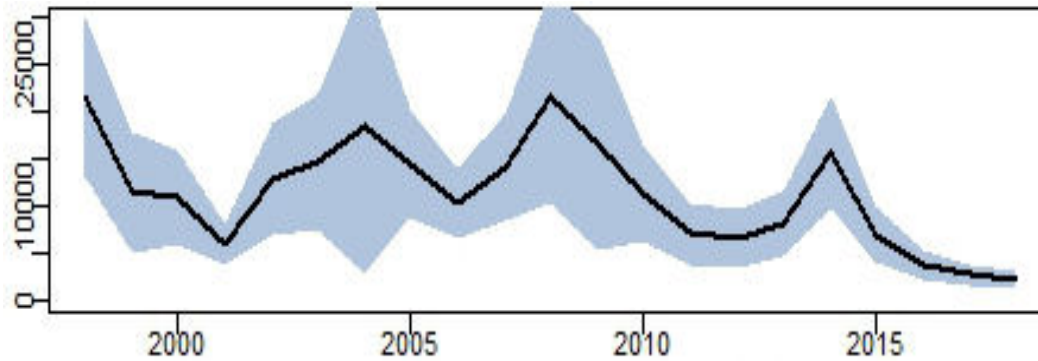
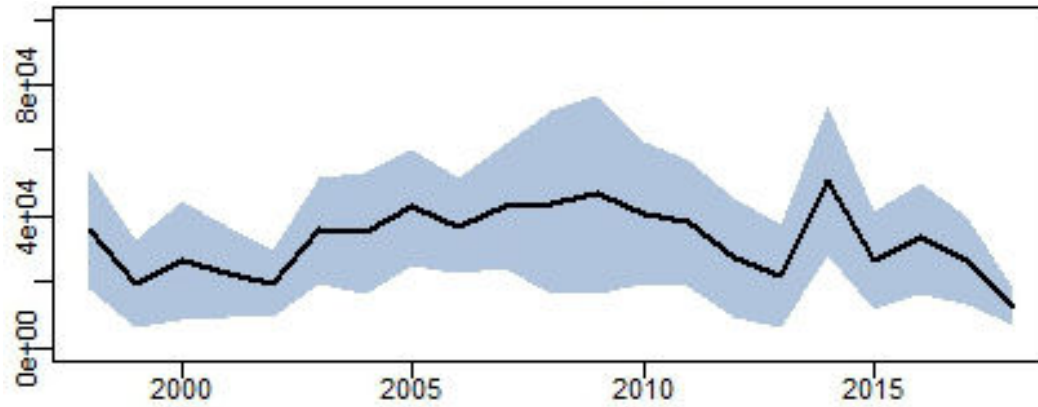
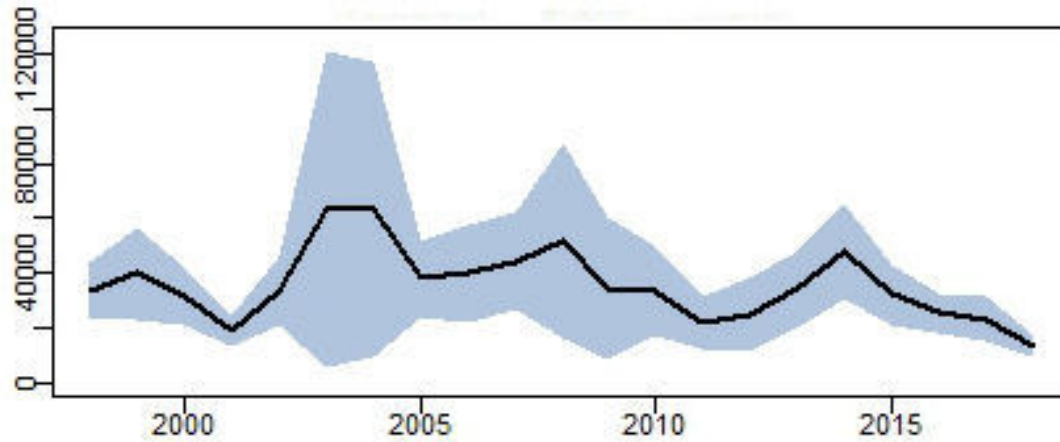


# Mature male biomass



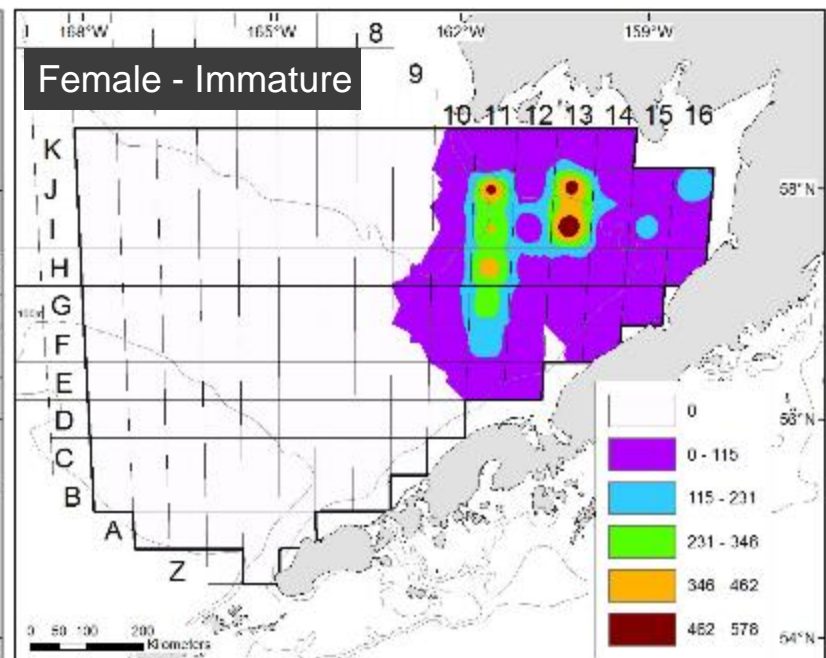
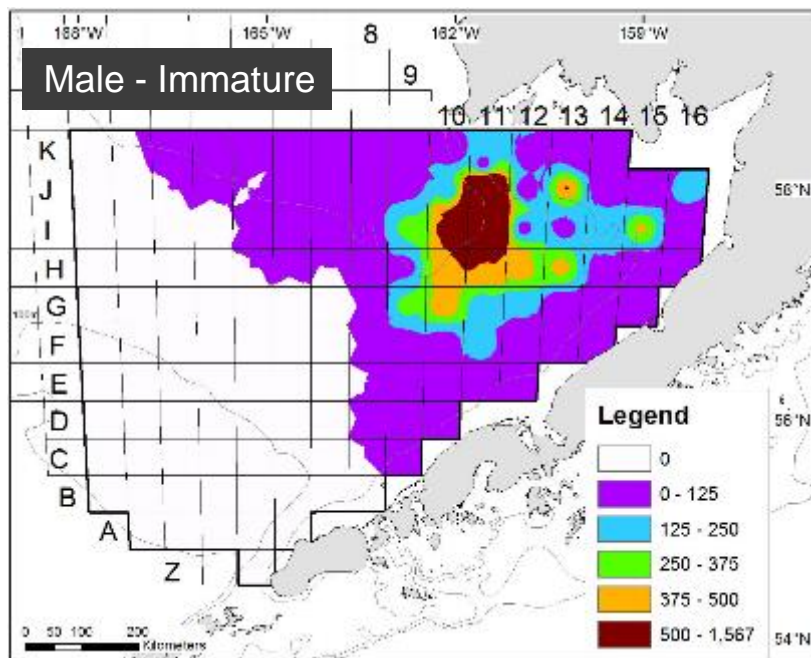
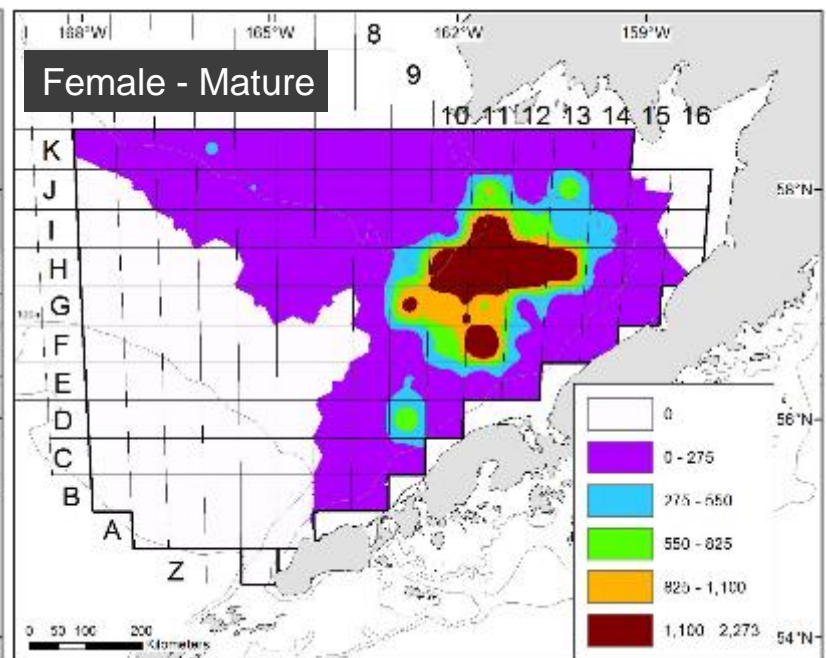
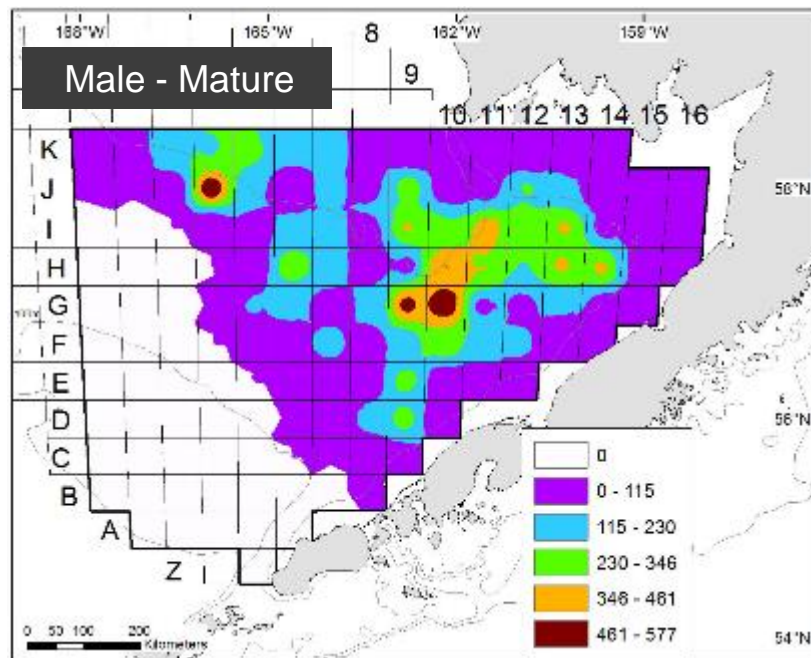
# Bristol Bay red king crab

Biomass (t)



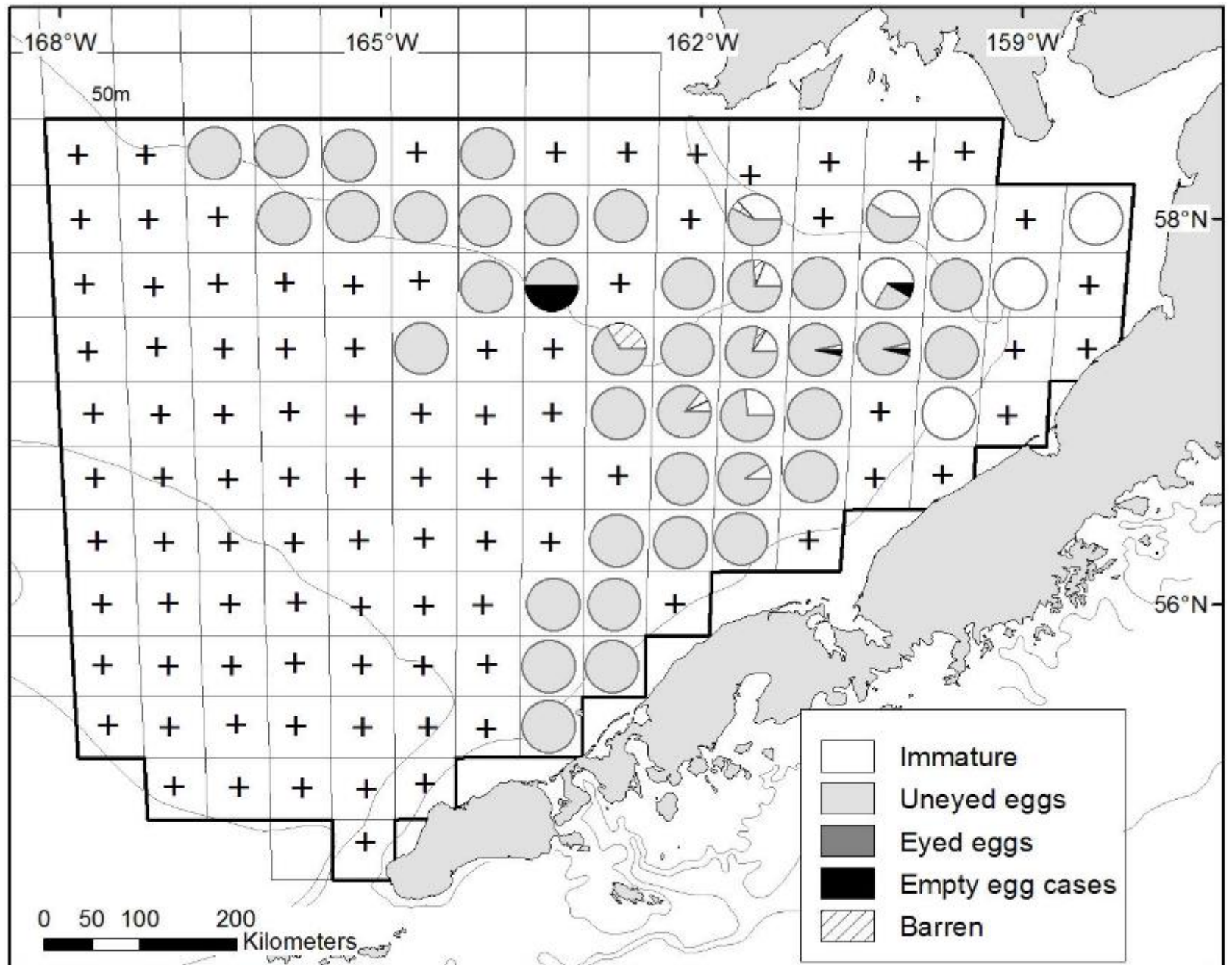


# Bristol Bay red king crab

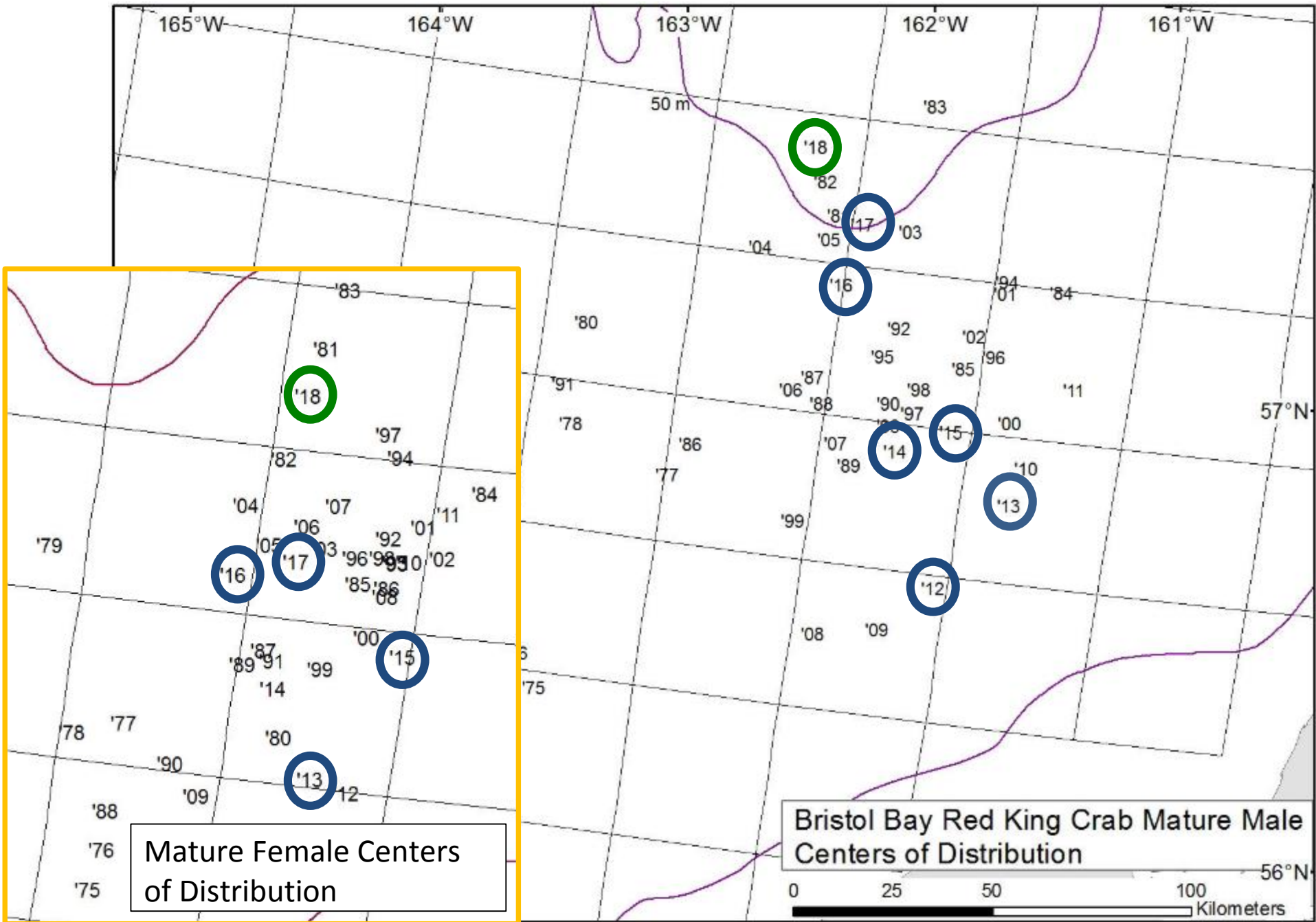




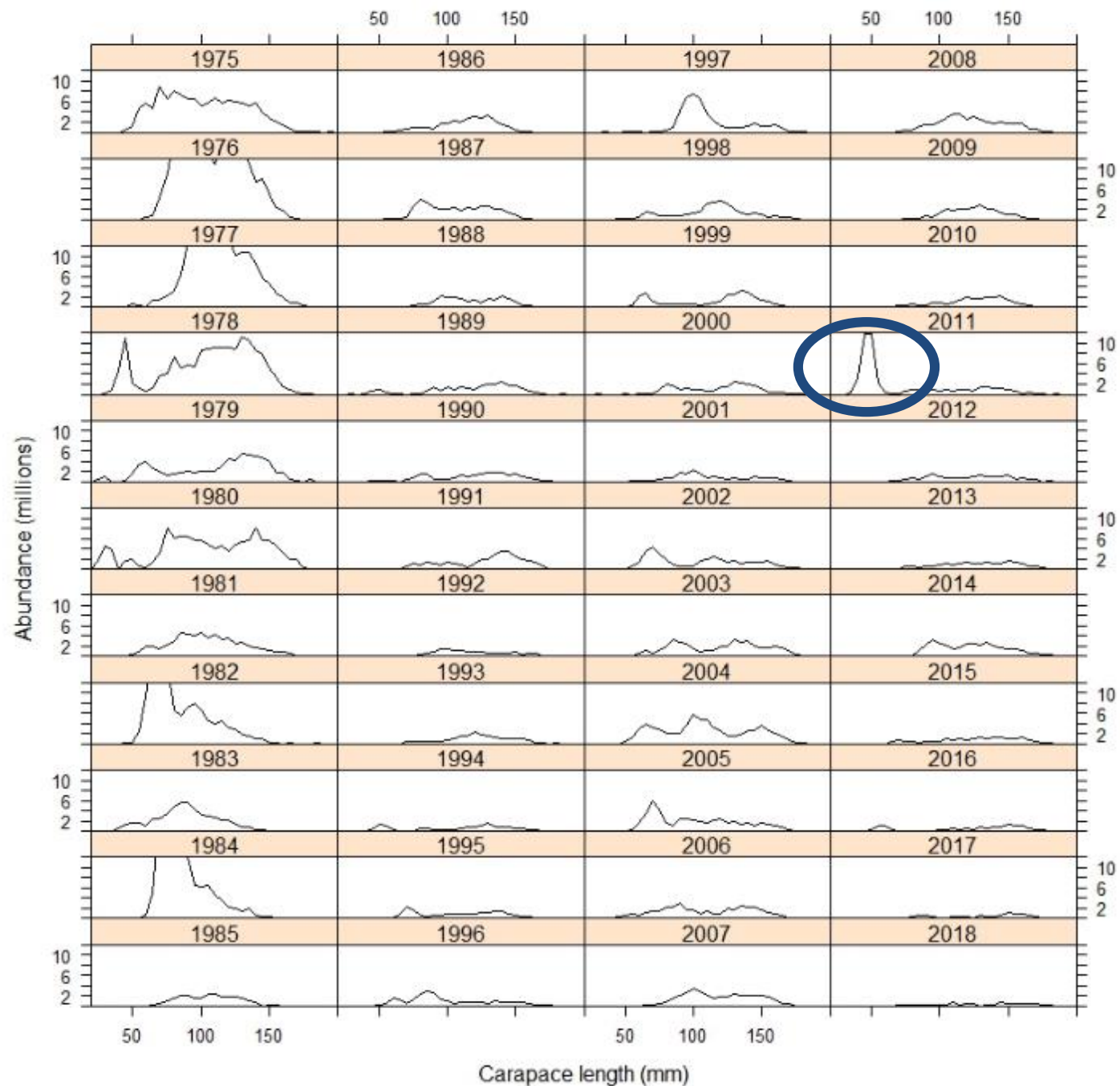
# Bristol Bay red king crab



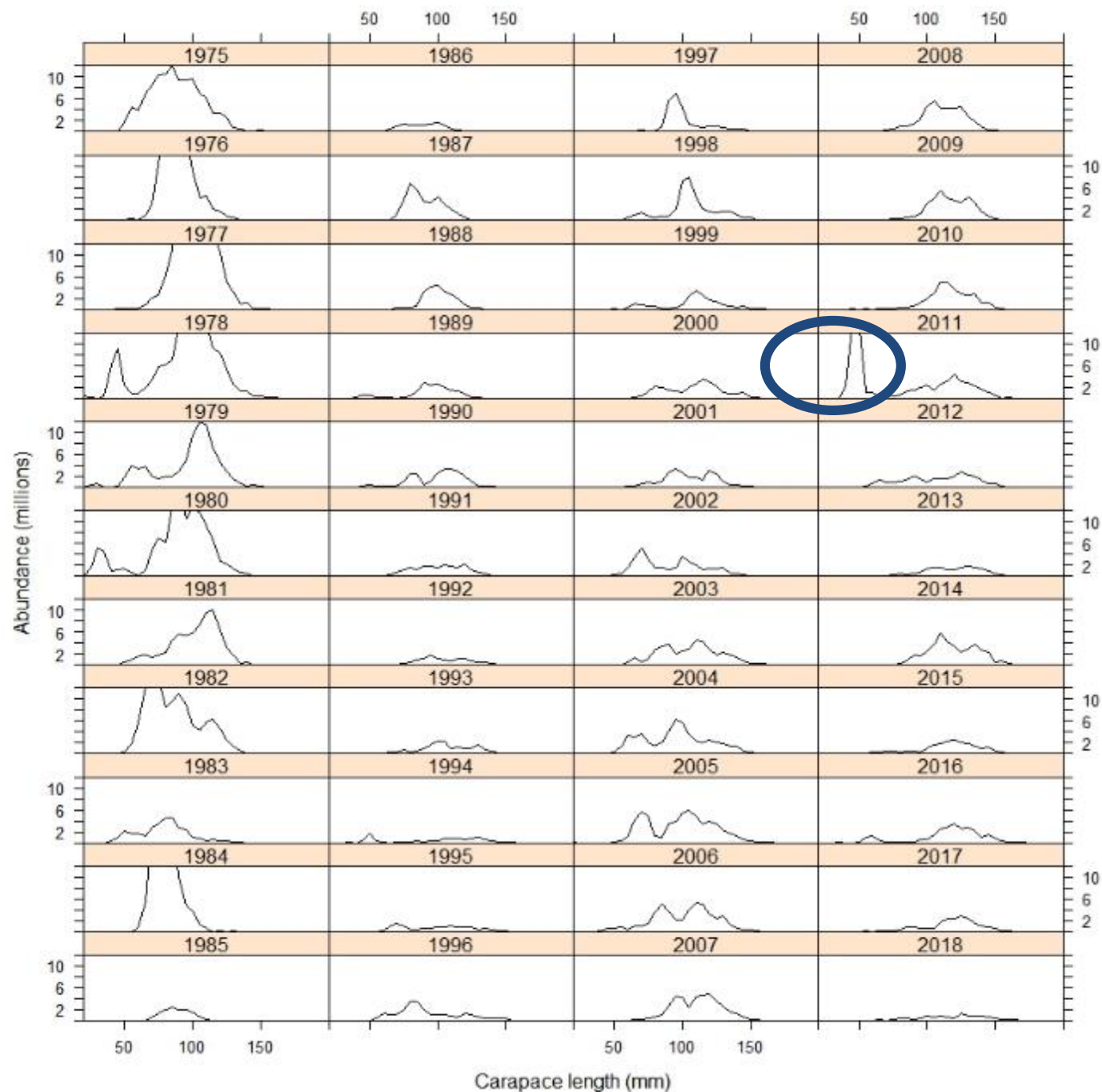
# Bristol Bay red king crab



# Bristol Bay Red King Crab (male)

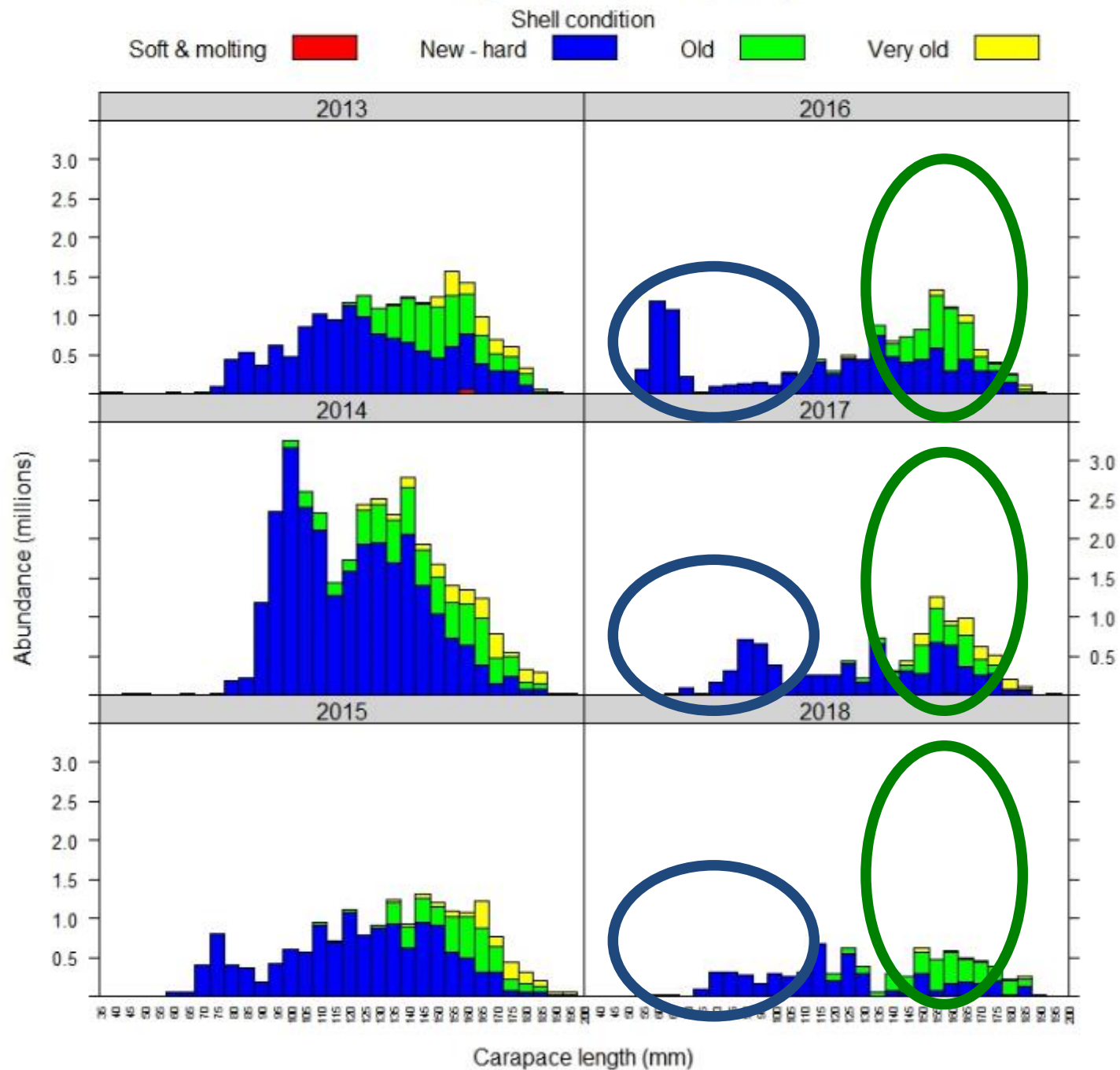


# Bristol Bay Red King Crab (female)

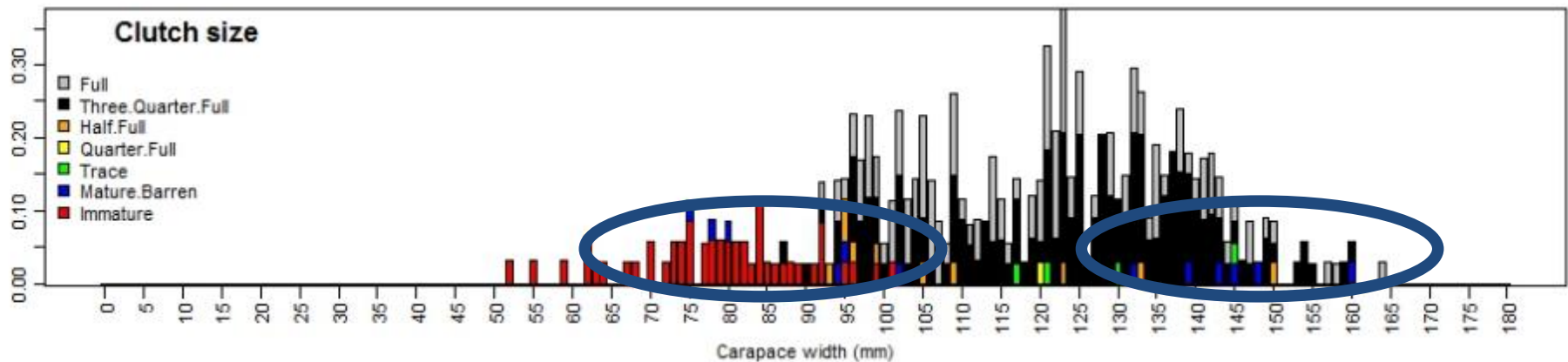
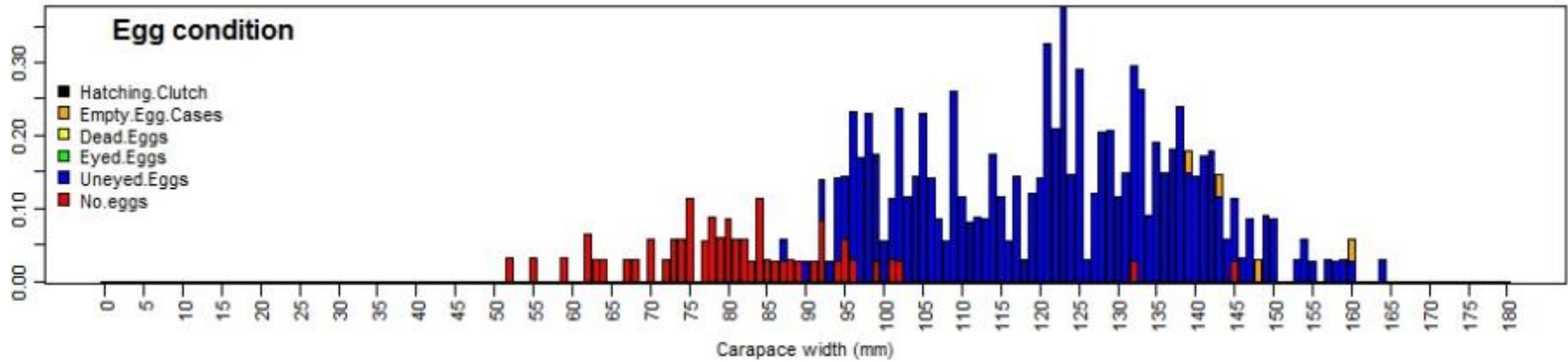
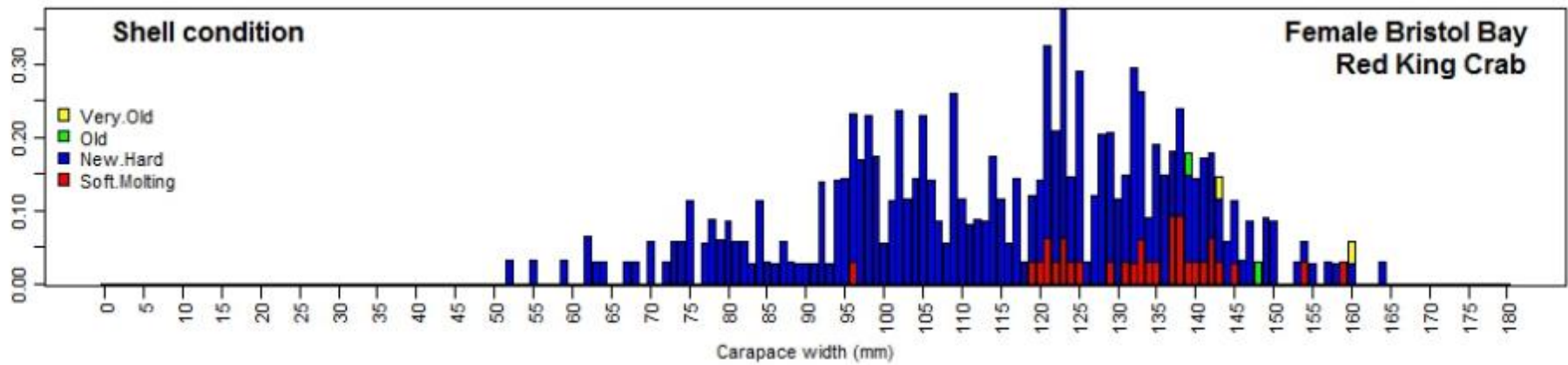




# Bristol Bay Red King Crab (male)

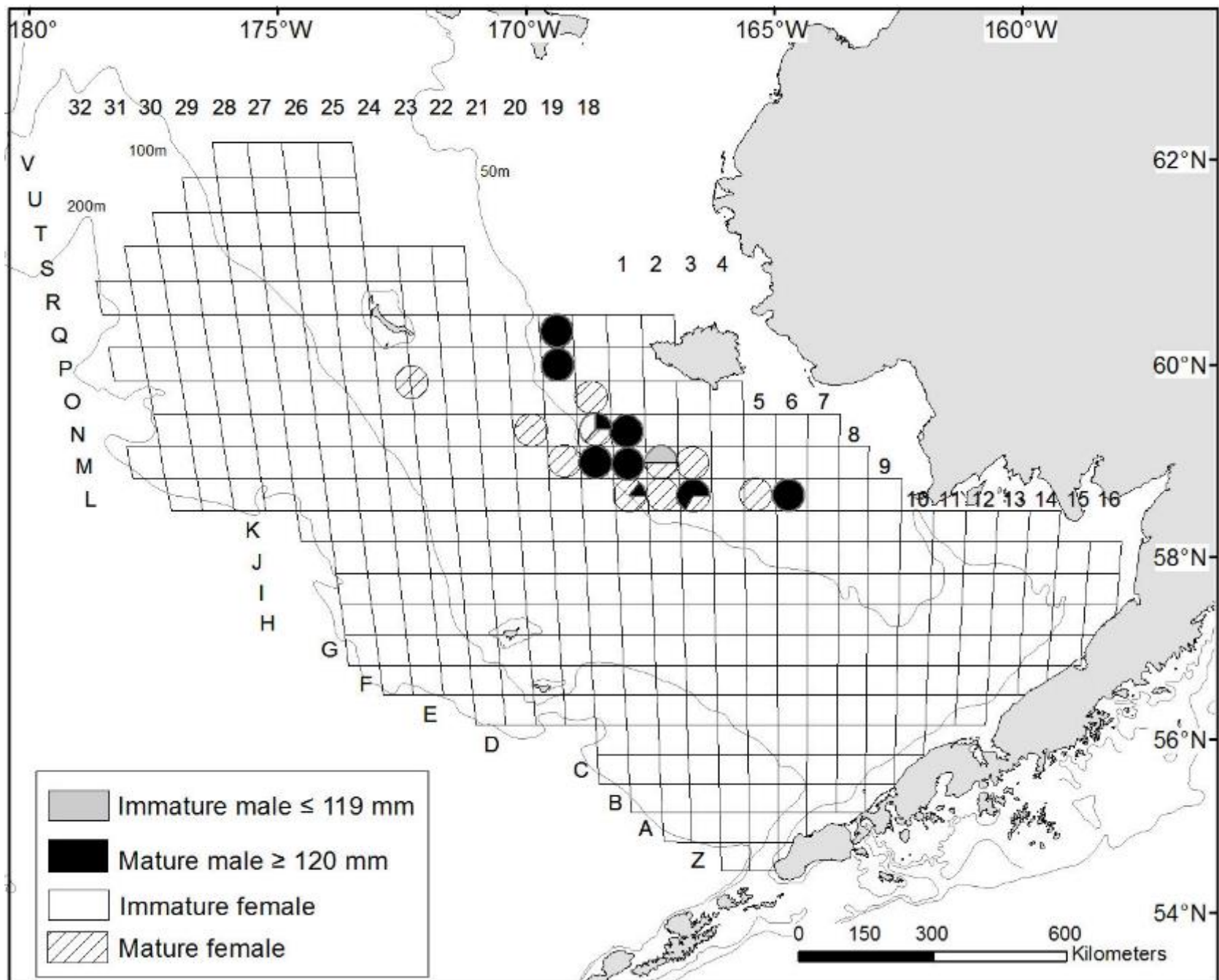


# Bristol Bay red king crab

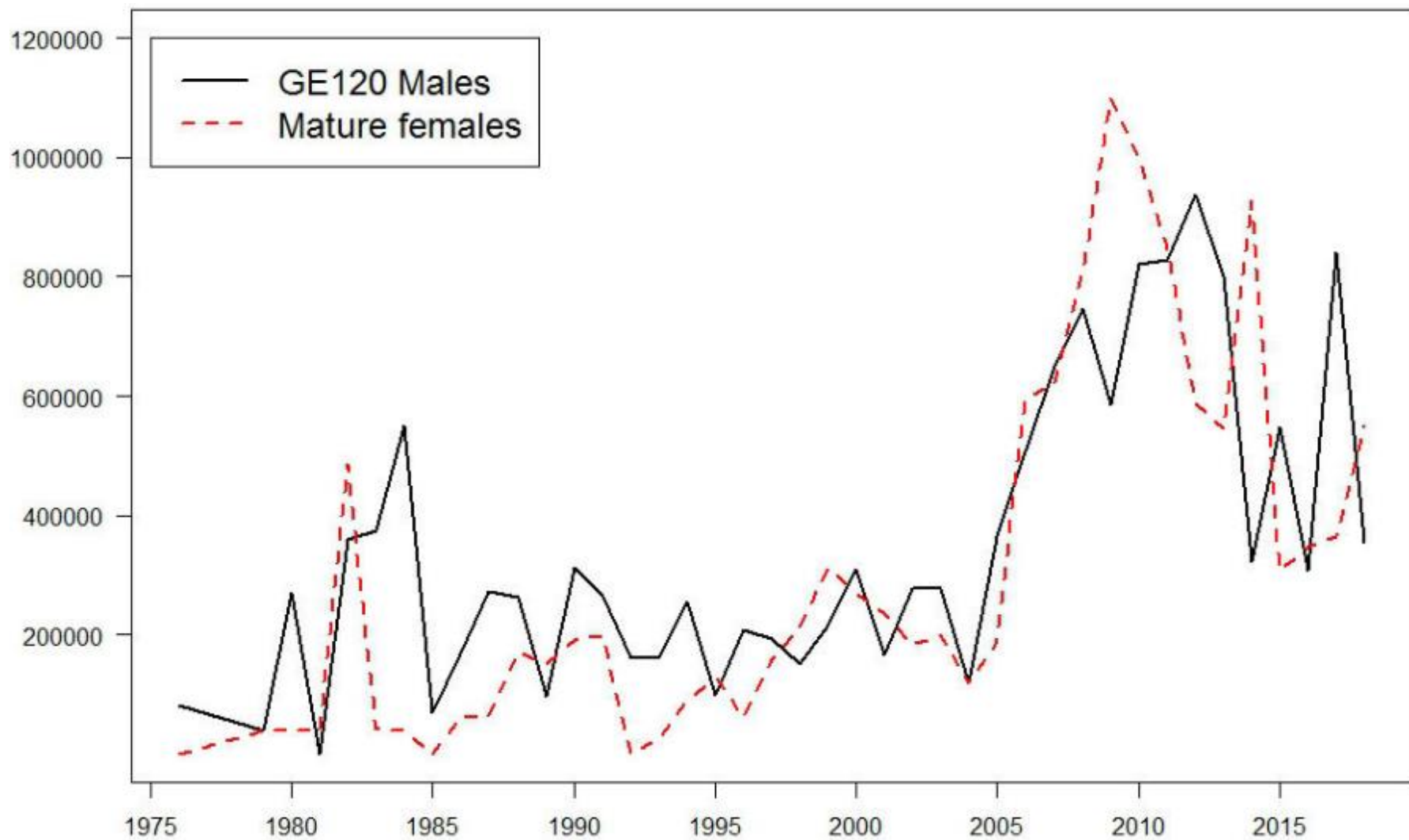




# Unstratified red king crab

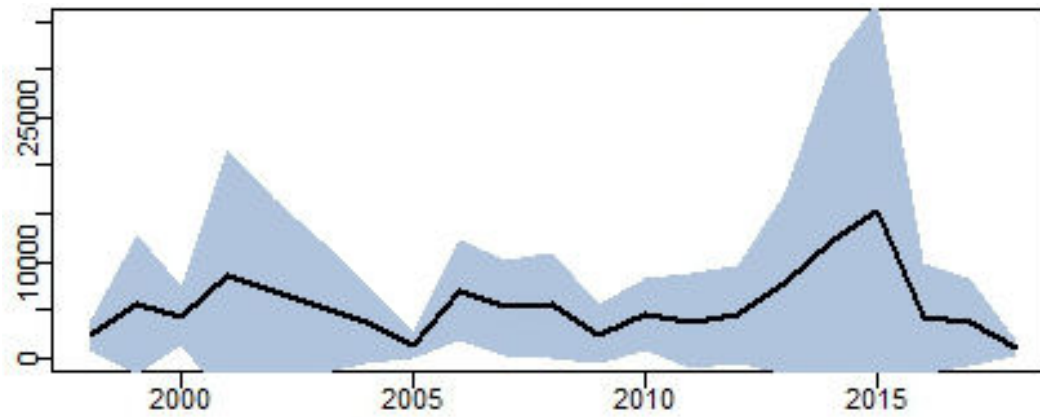


# Unstratified red king crab



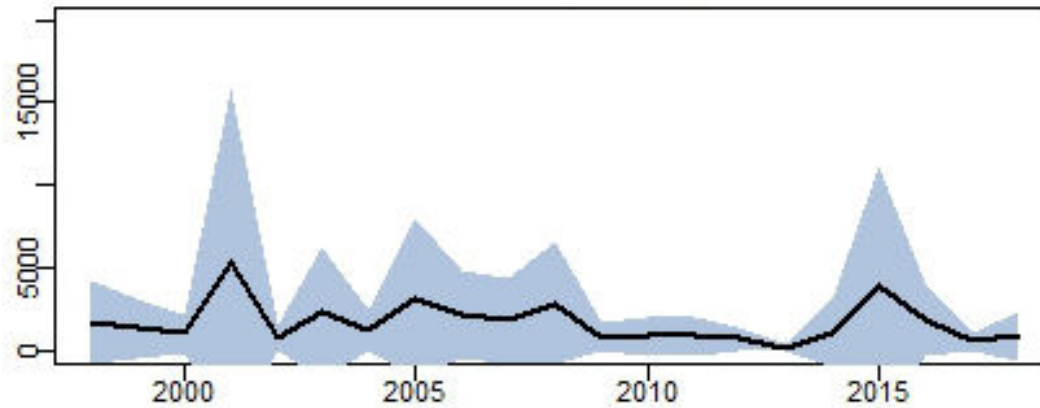
# Pribilof Islands red king crab

Biomass (t)



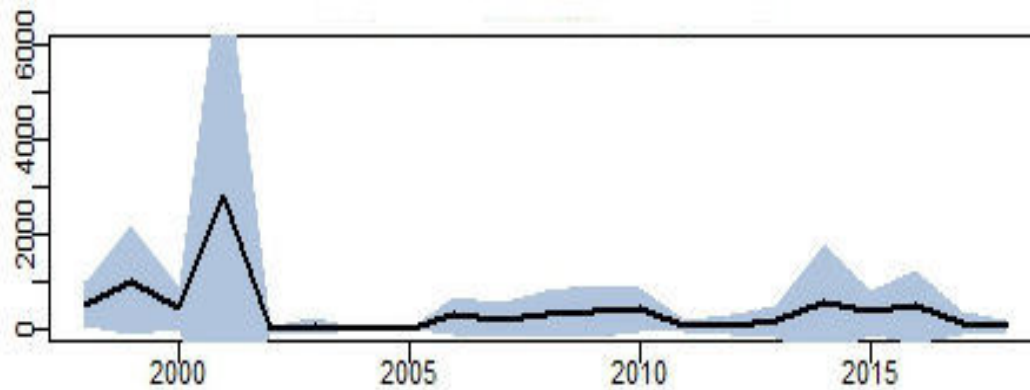
Mature male

-75%



Mature female

+74%

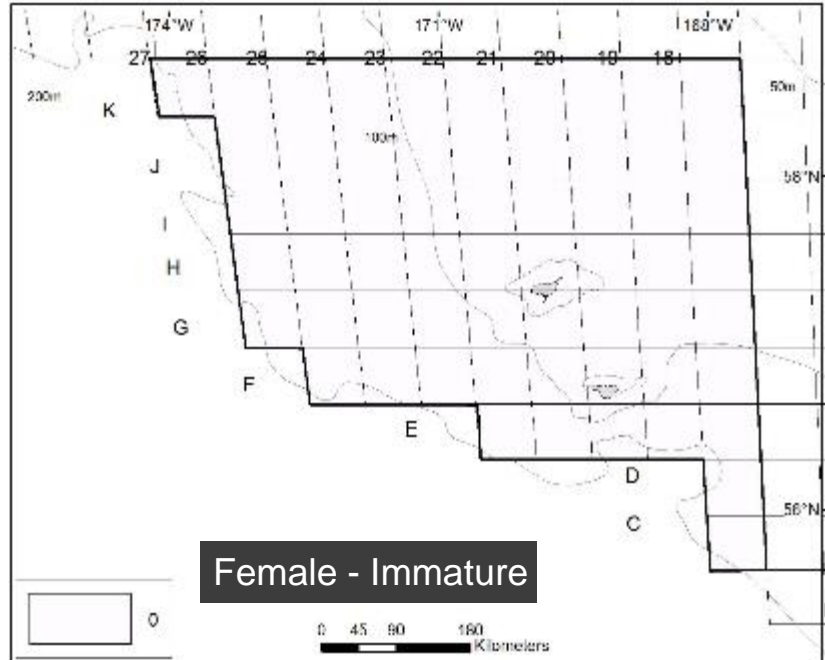
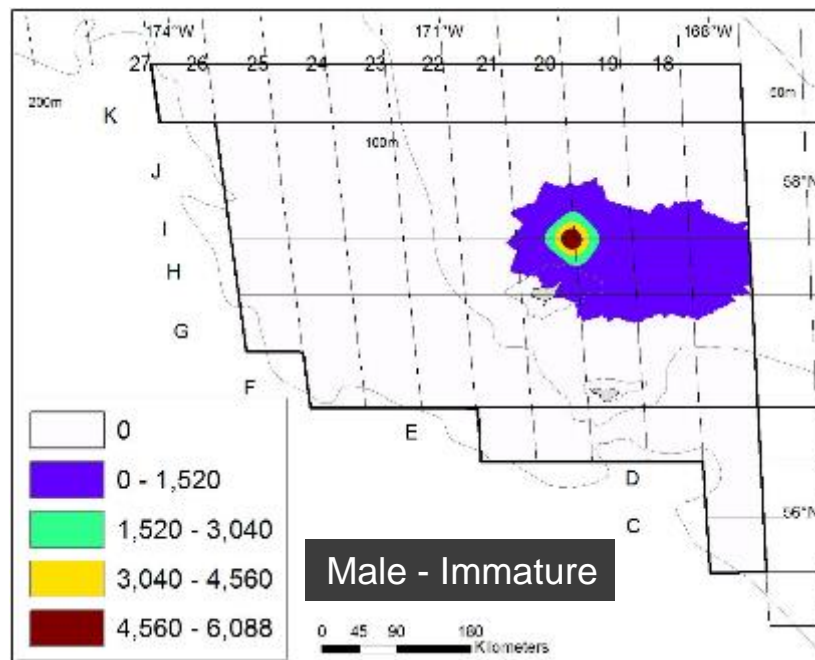
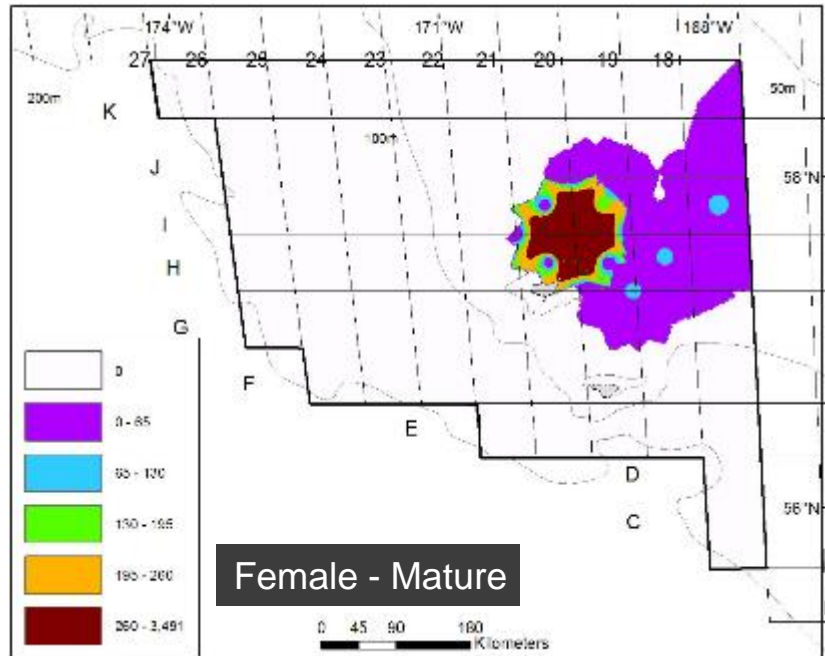
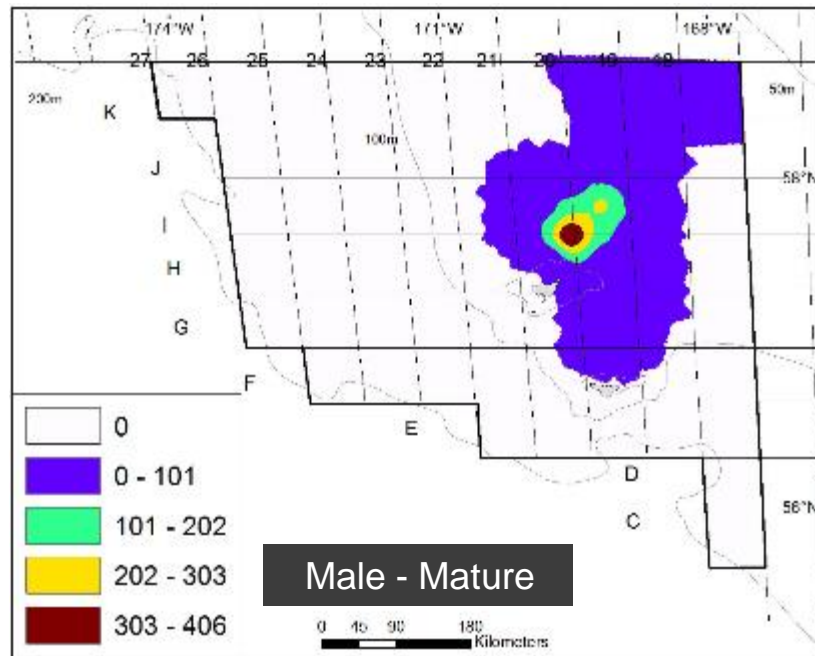


Juveniles

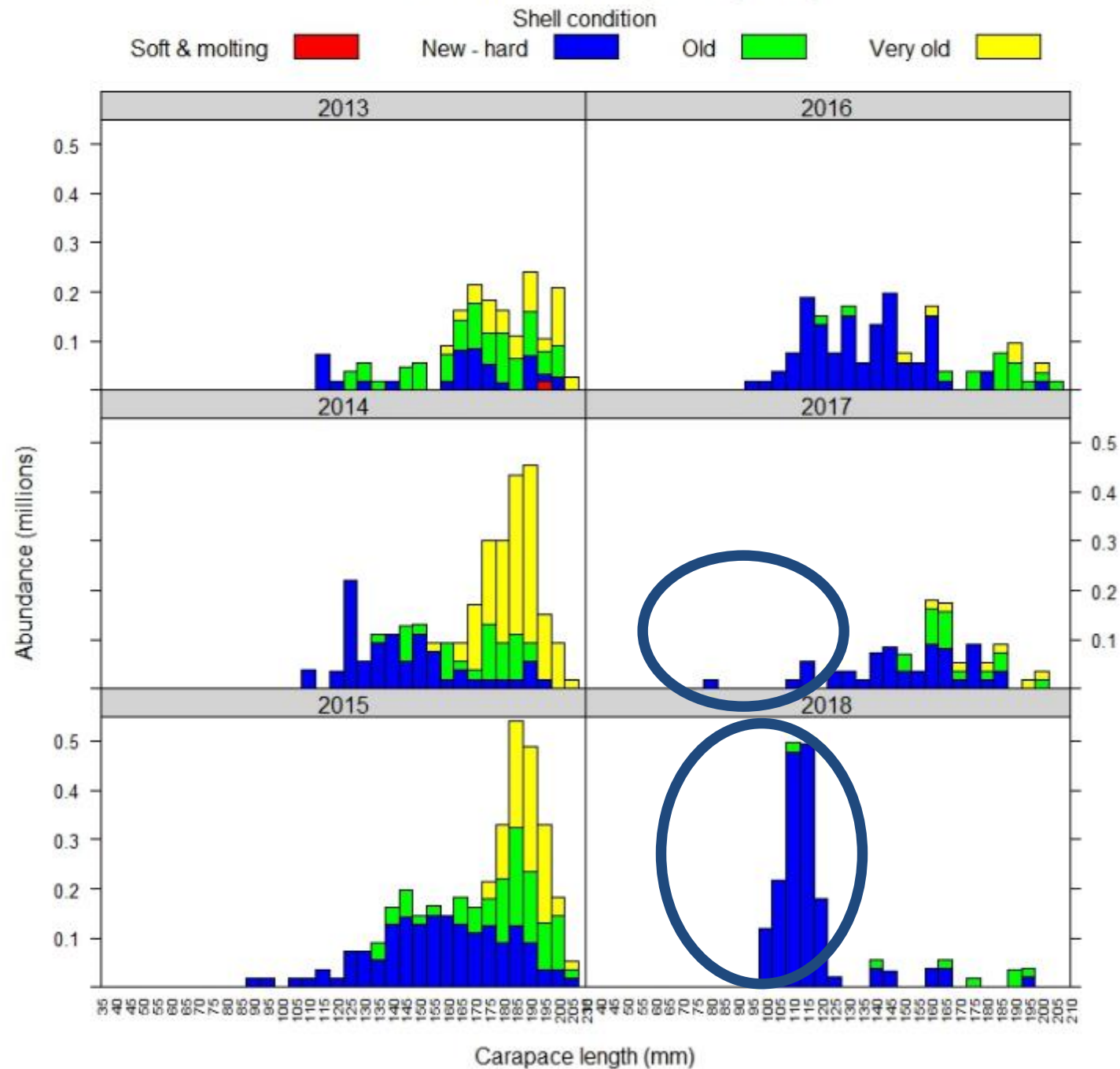
Male +1406%

Female zero caught

# Pribilof Islands red king crab



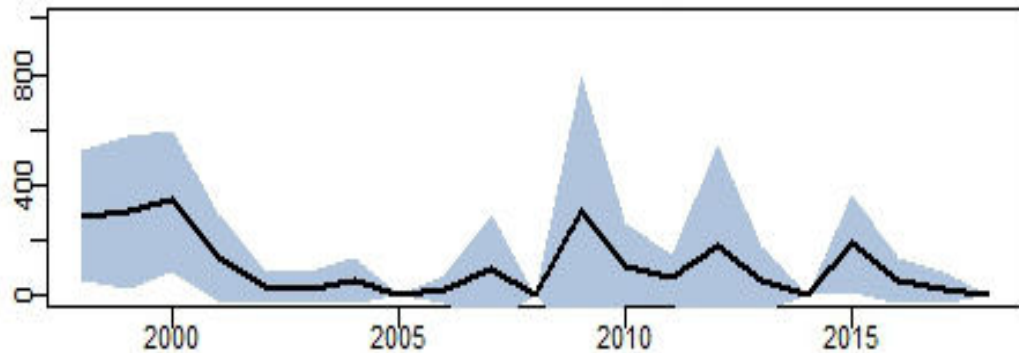
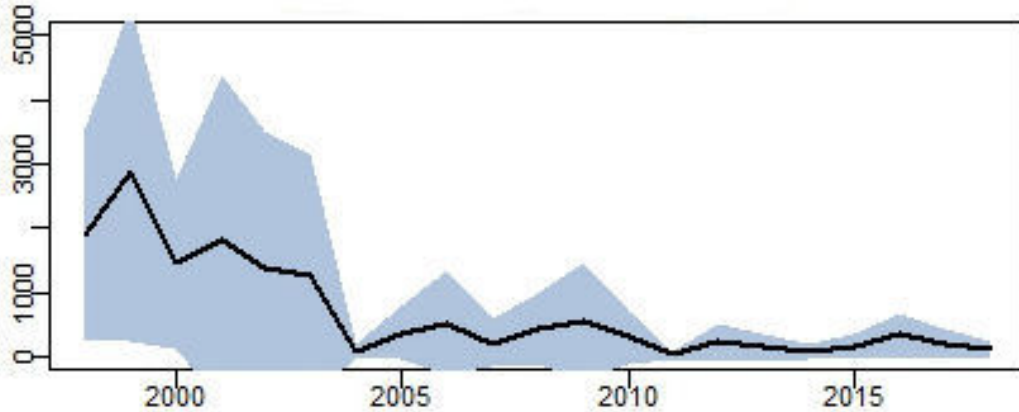
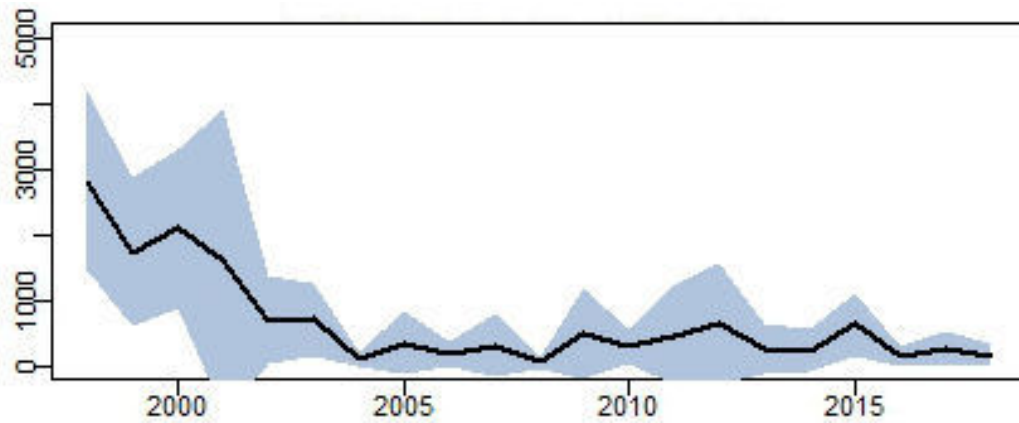
# Pribilof Islands Red King Crab (male)





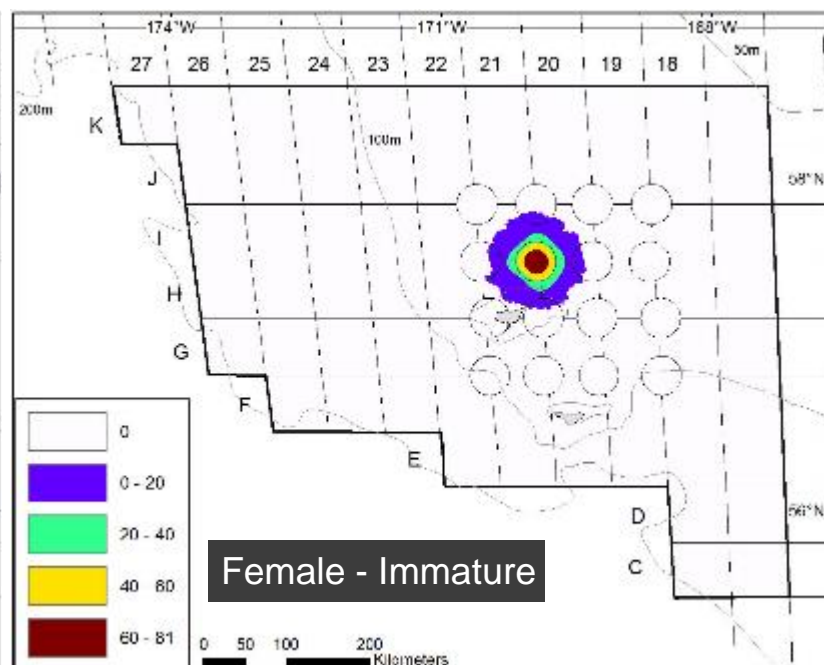
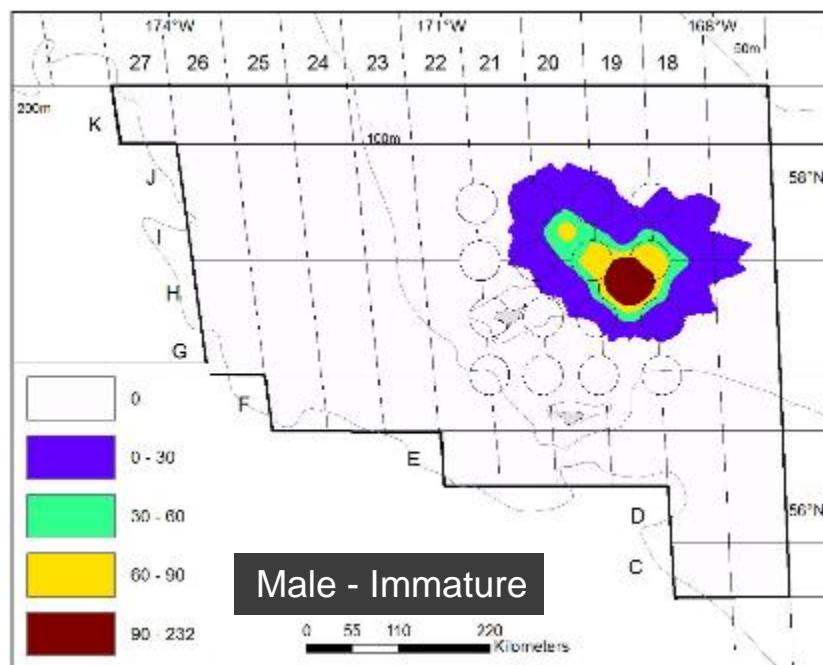
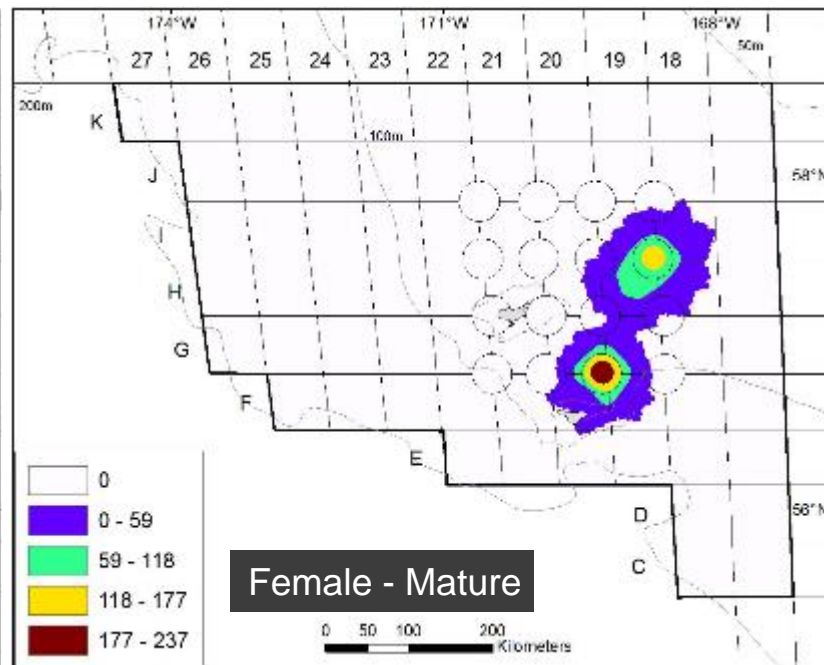
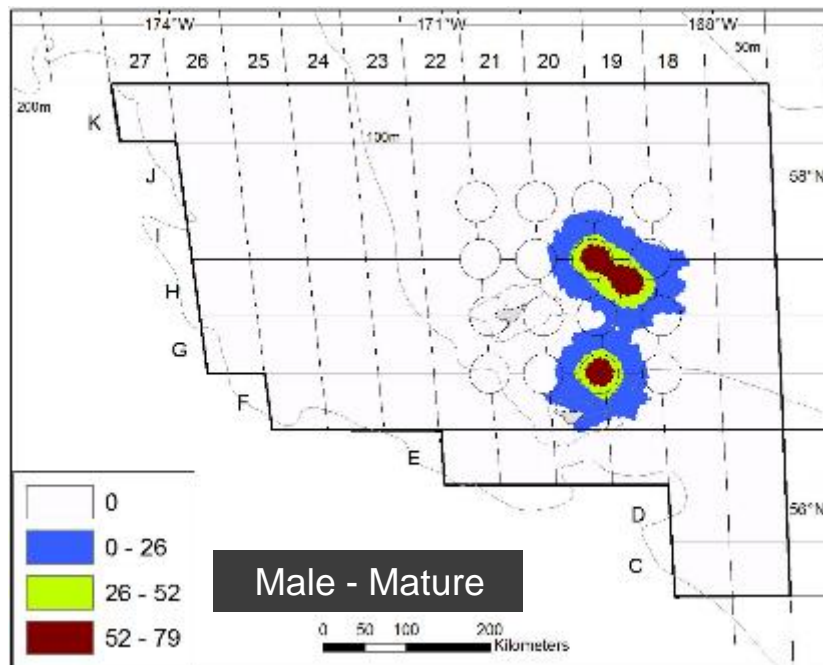
# Pribilof Islands blue king crab

Biomass (t)



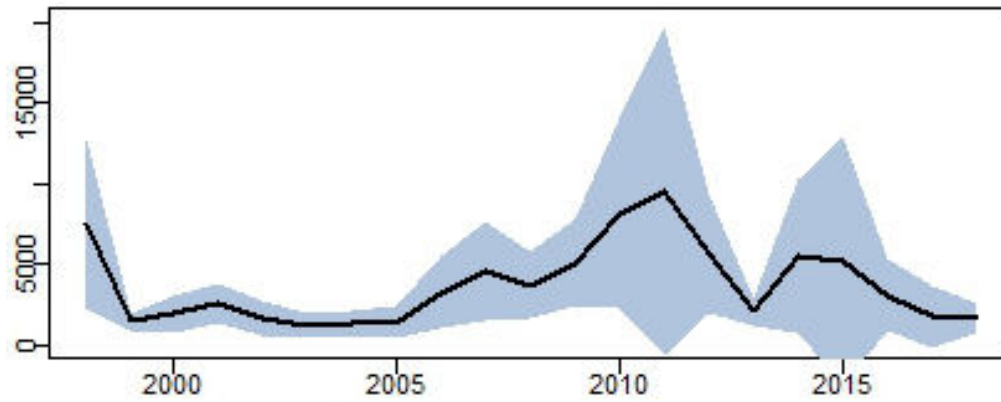


# Pribilof Islands blue king crab



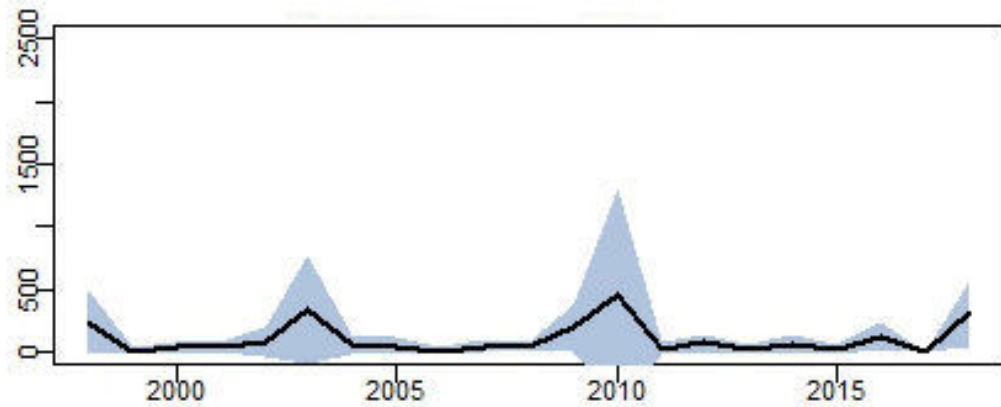
# St. Matthew Island blue king crab

Biomass (t)

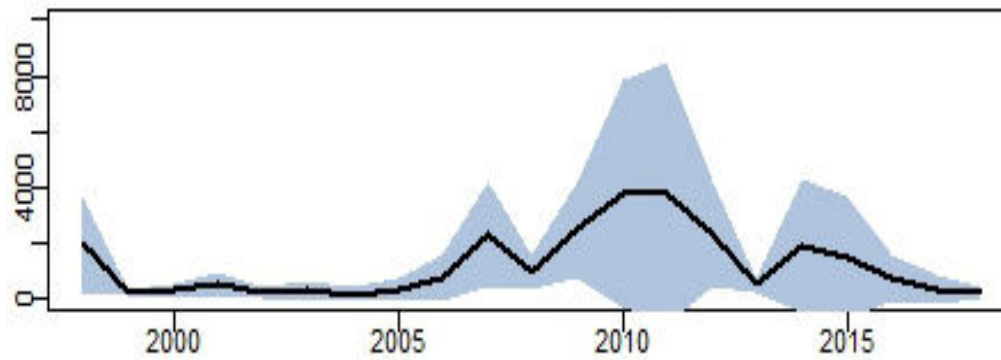


Mature male

-6%

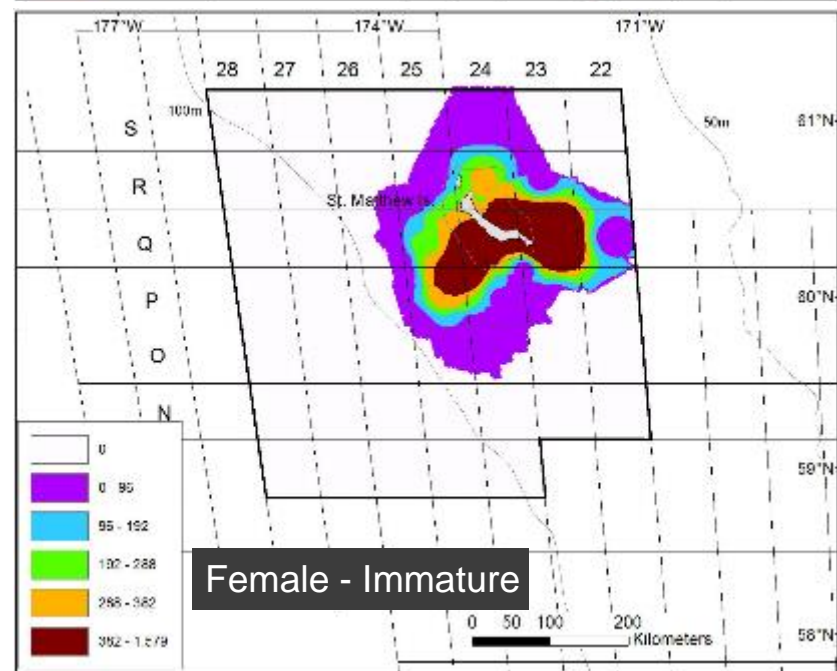
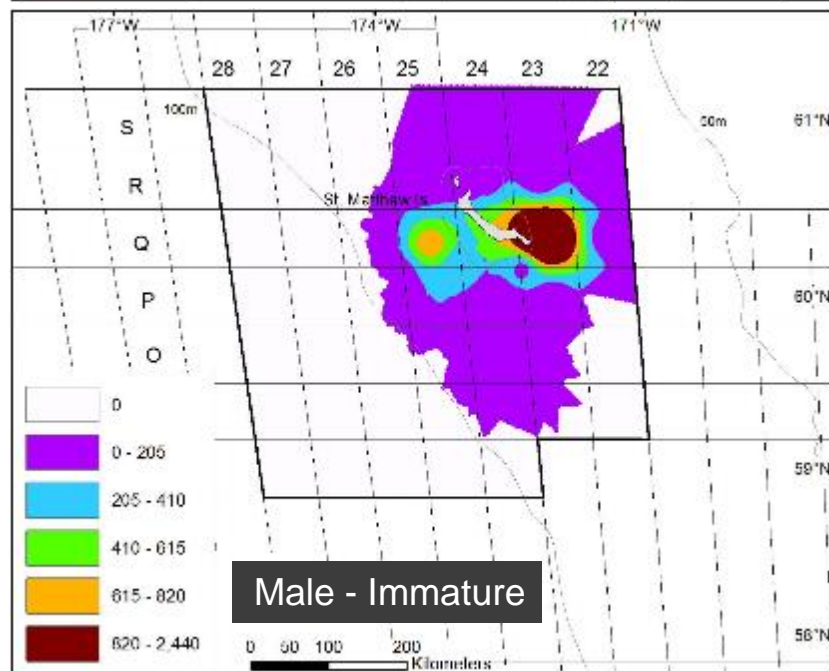
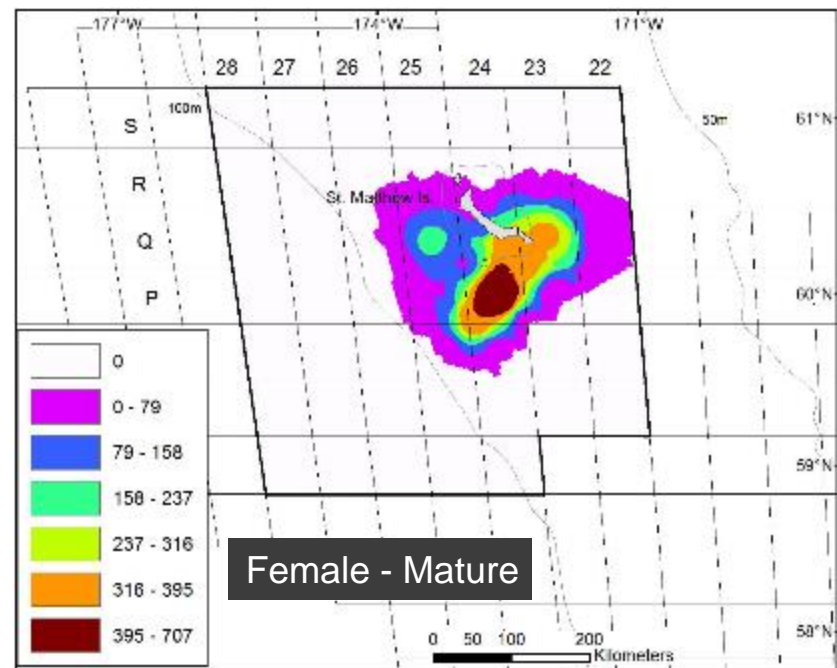
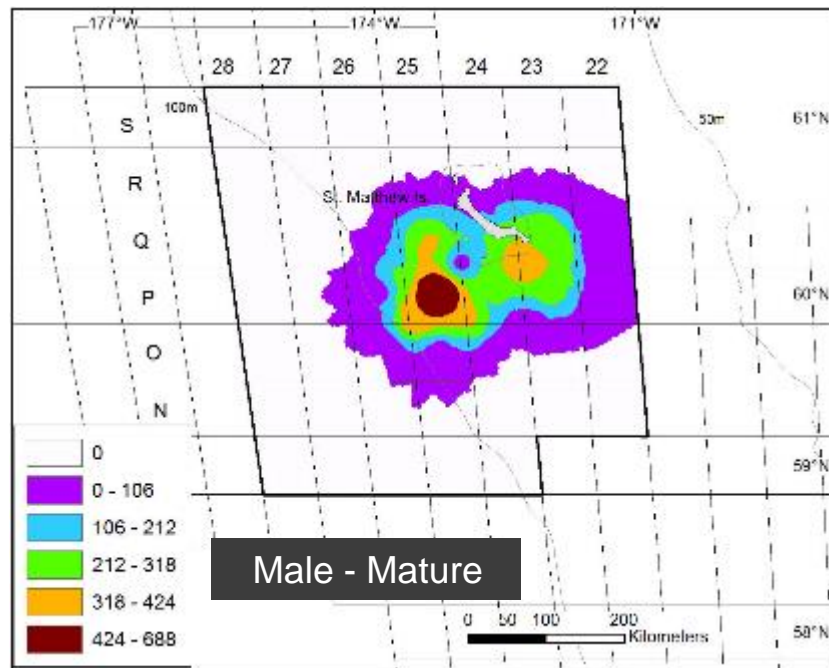


Mature female



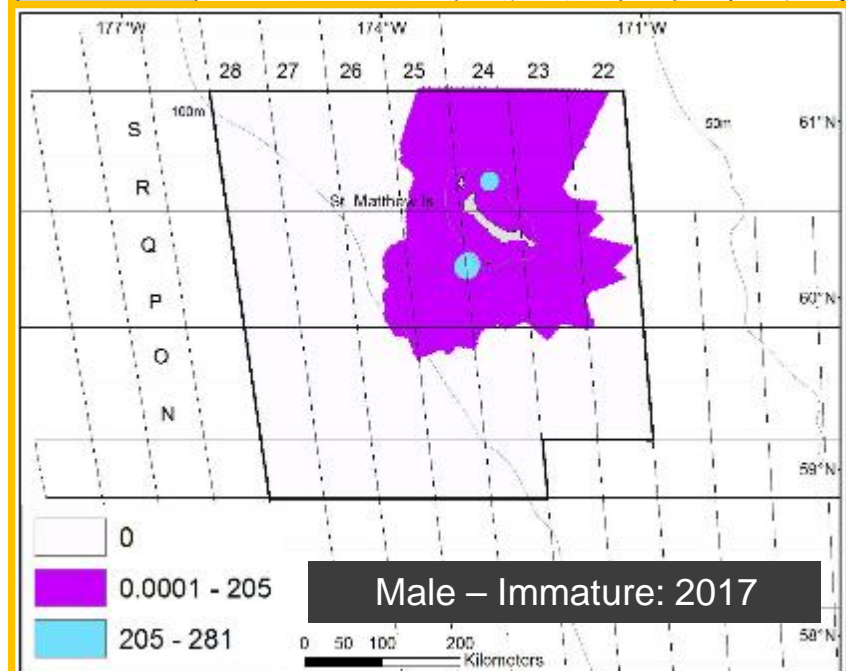
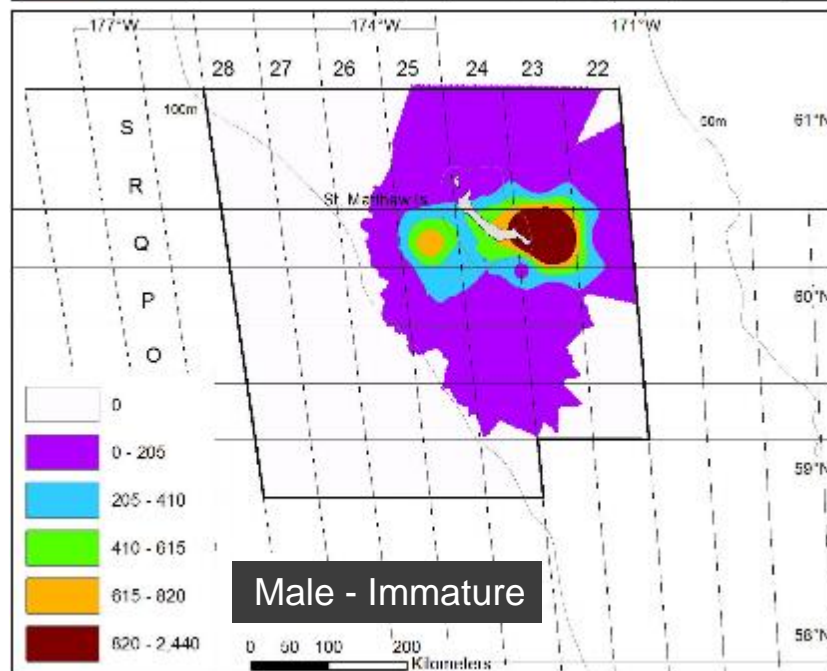
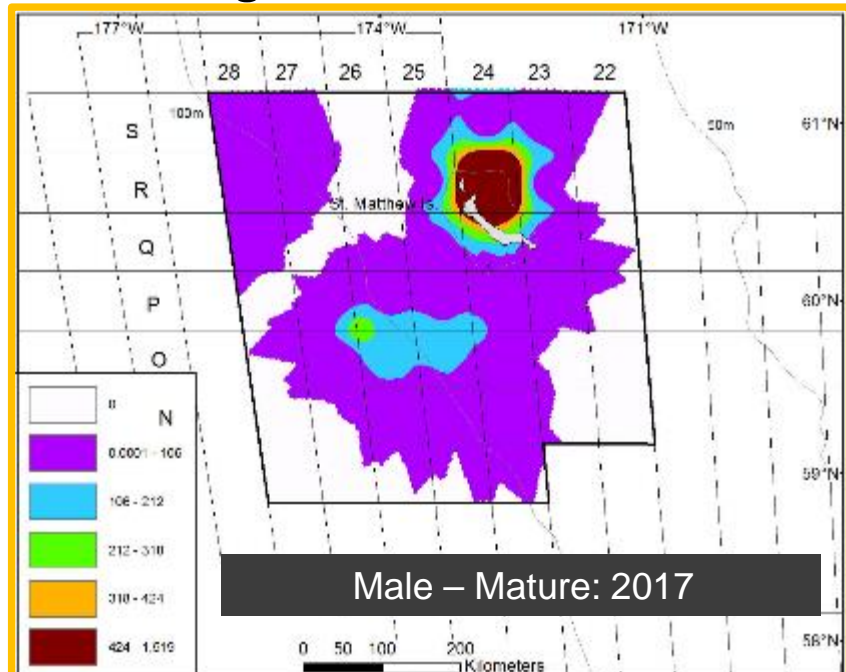
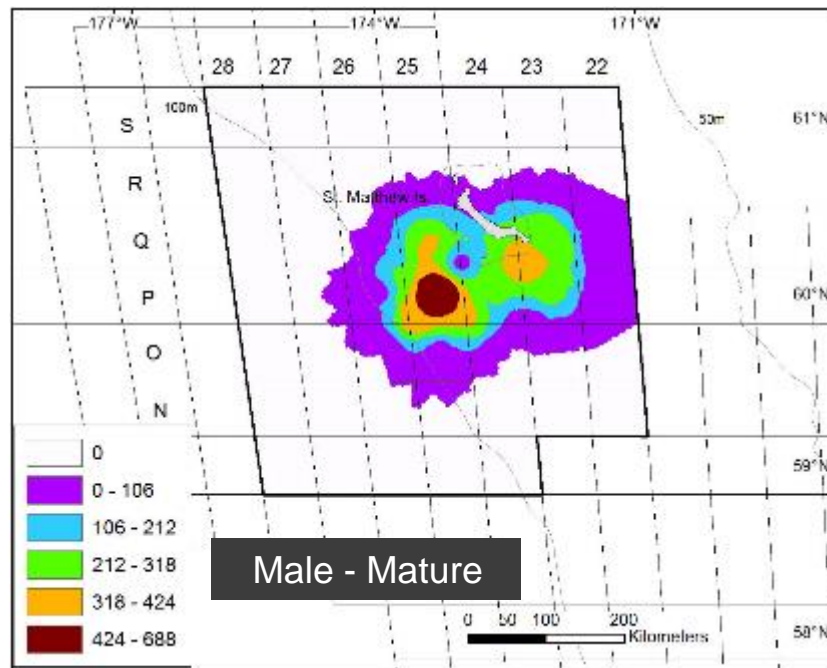
Juveniles

# St. Matthew Island blue king crab

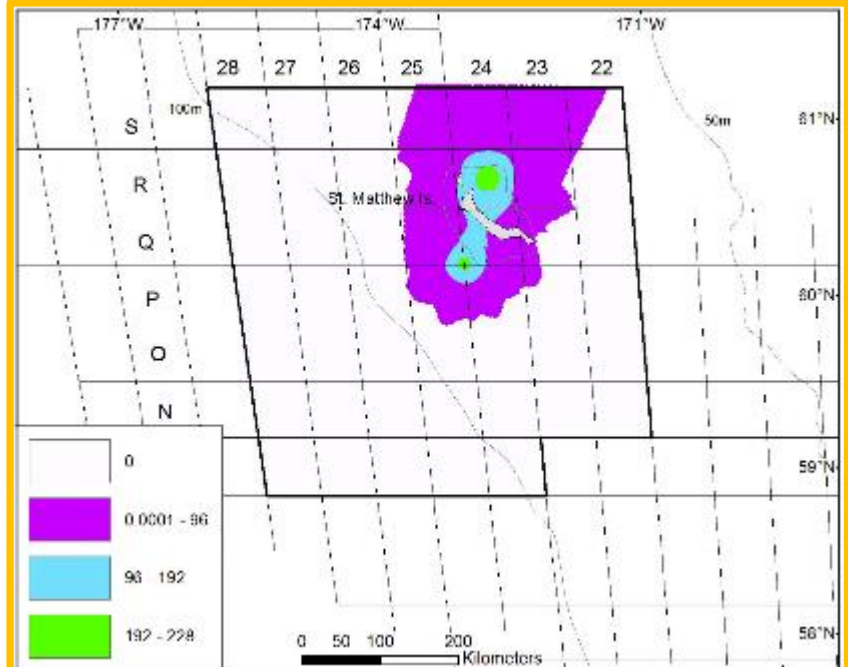
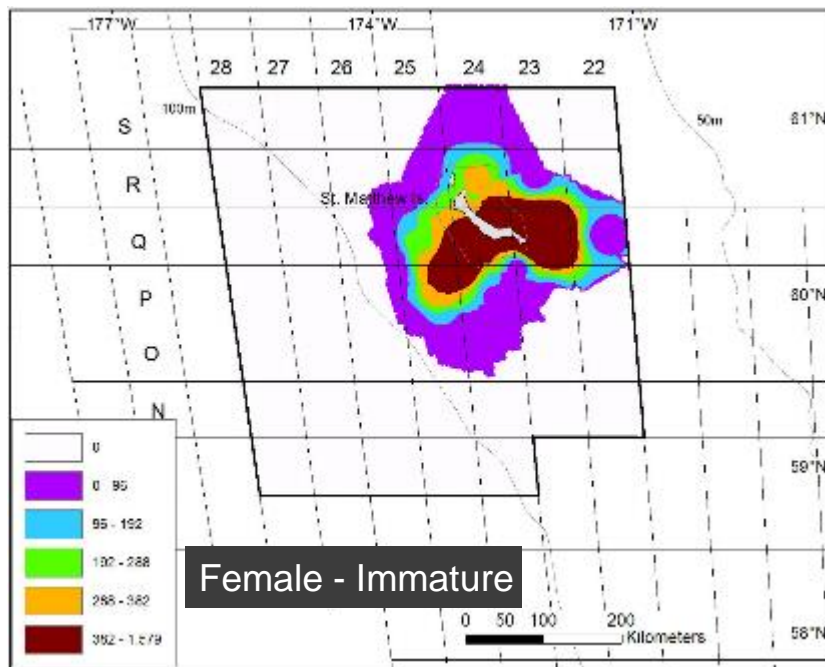
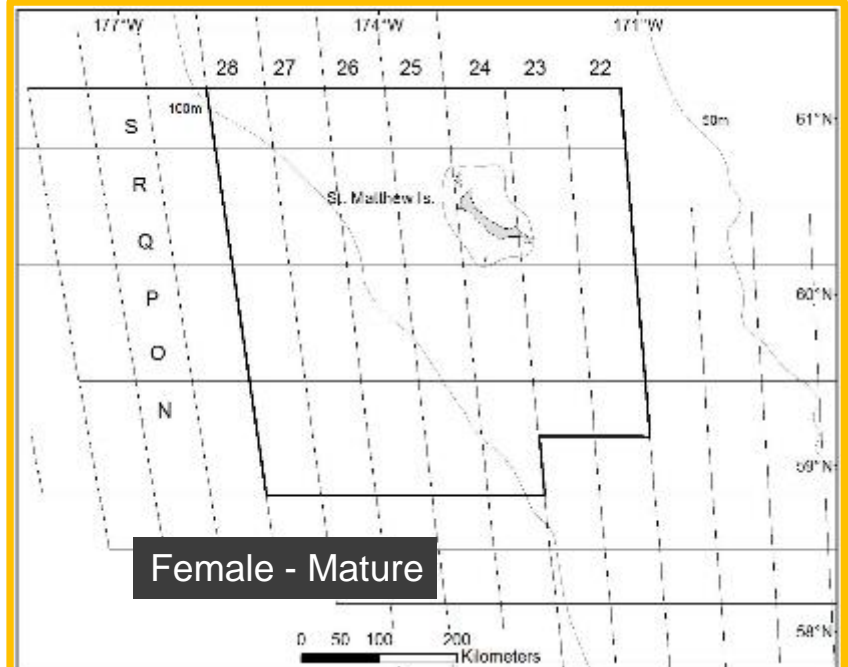
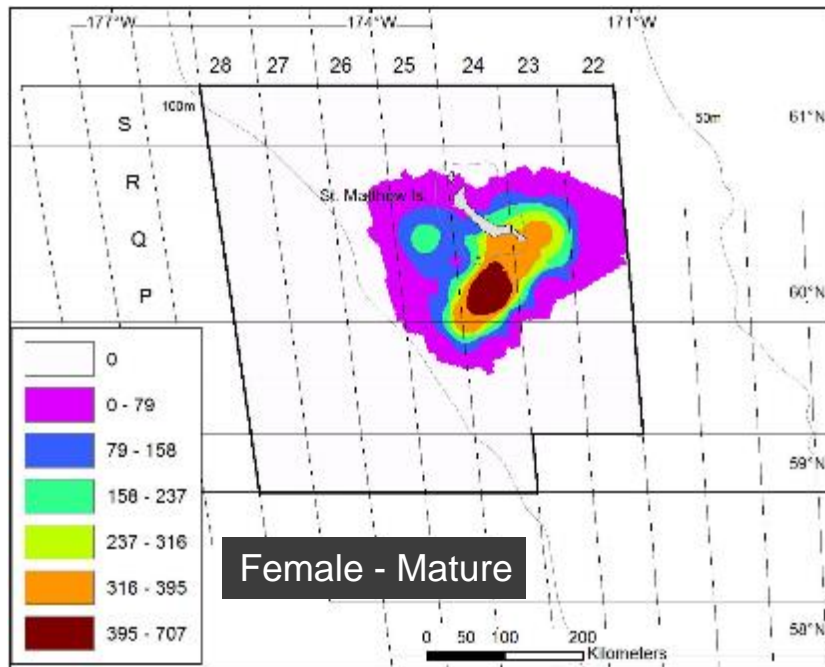




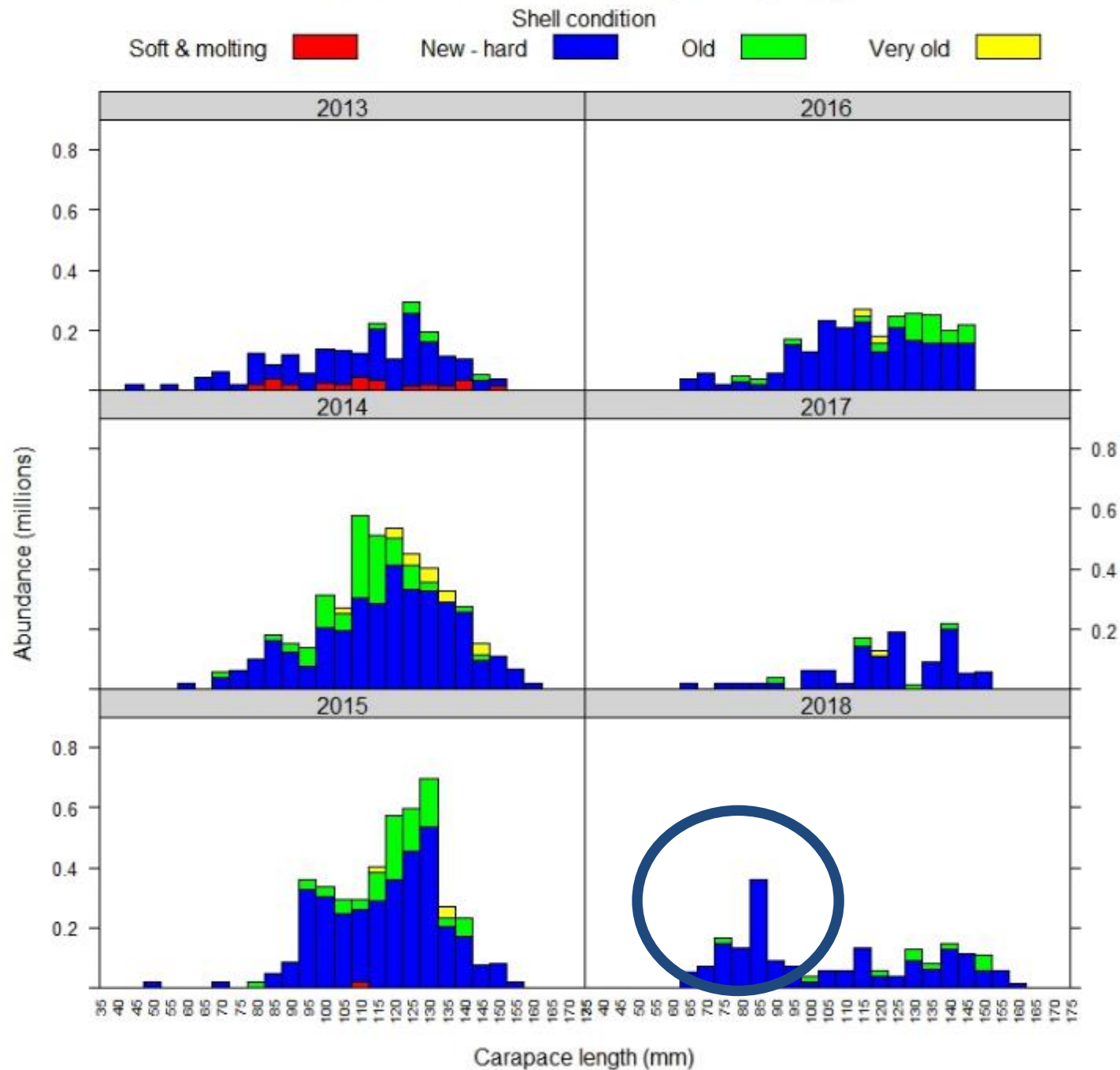
# St. Matthew Island blue king crab



# St. Matthew Island blue king crab



# St. Matthew Island Blue King Crab (male)

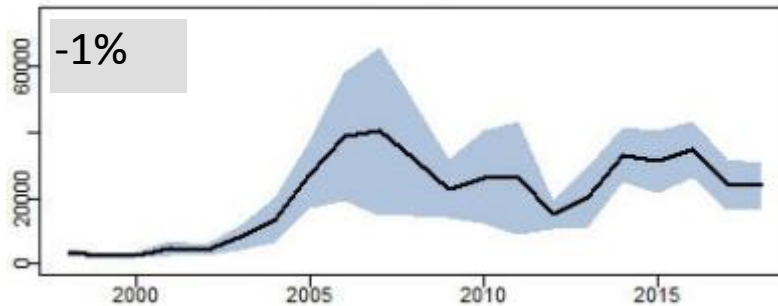
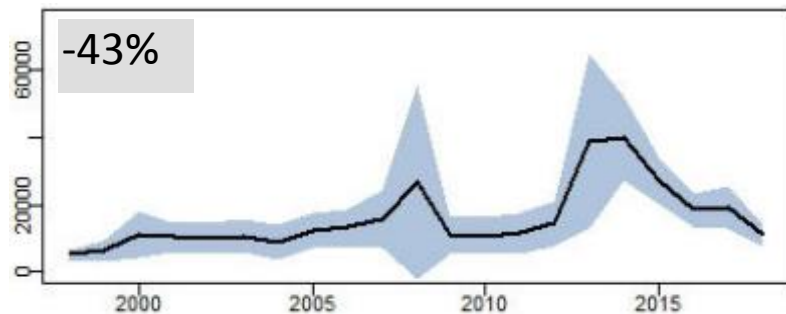




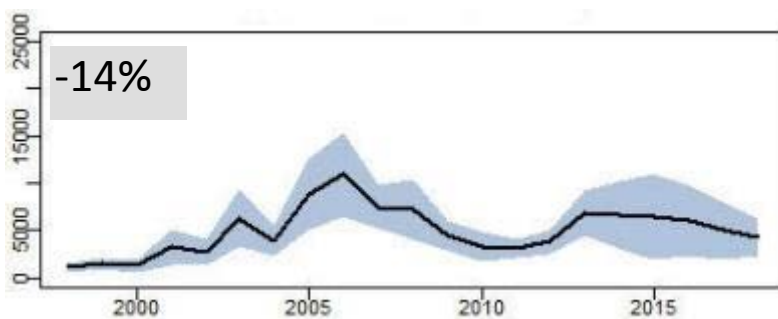
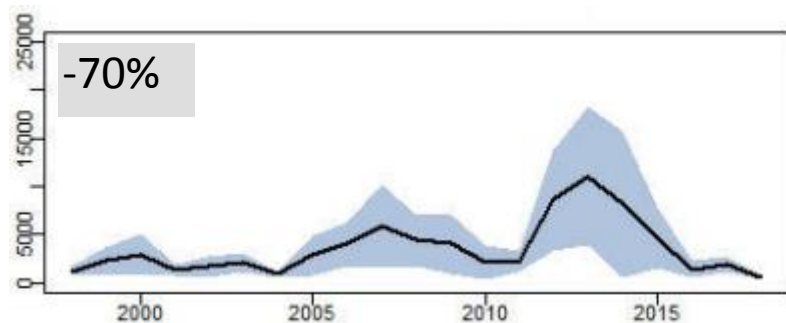
## Tanner crab east of 166°W

## Tanner crab west of 166°W

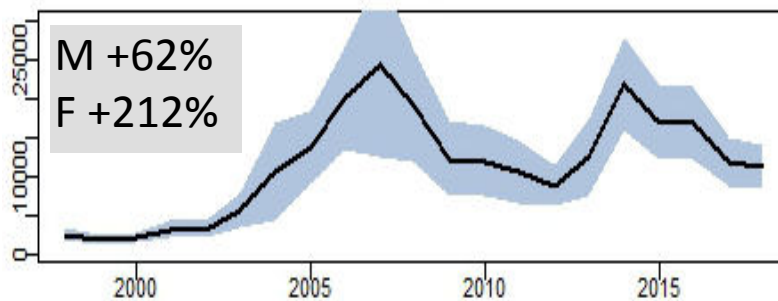
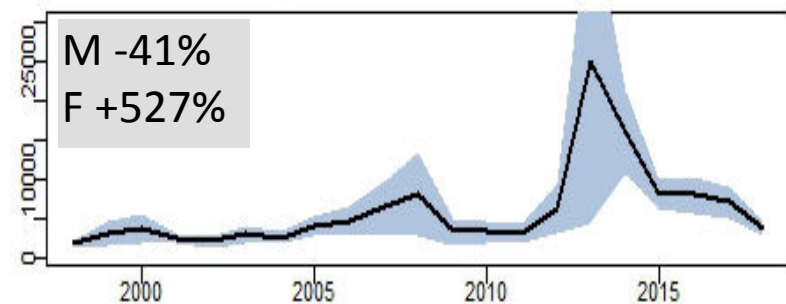
Biomass (t)



Mature male

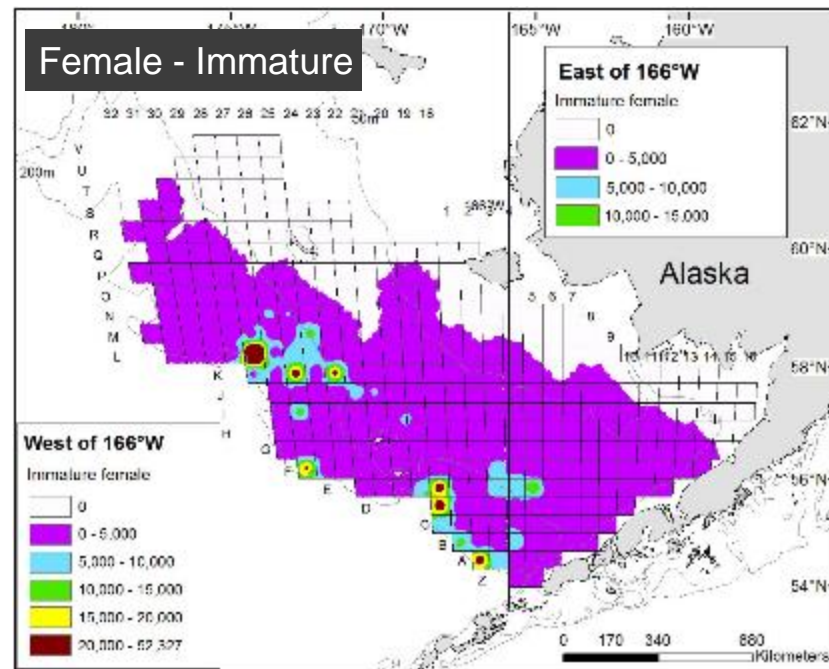
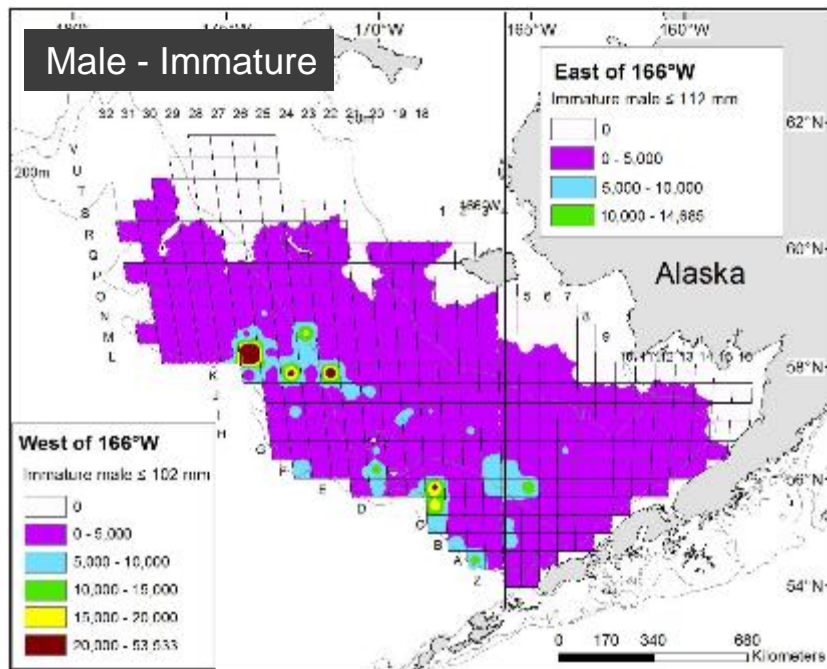
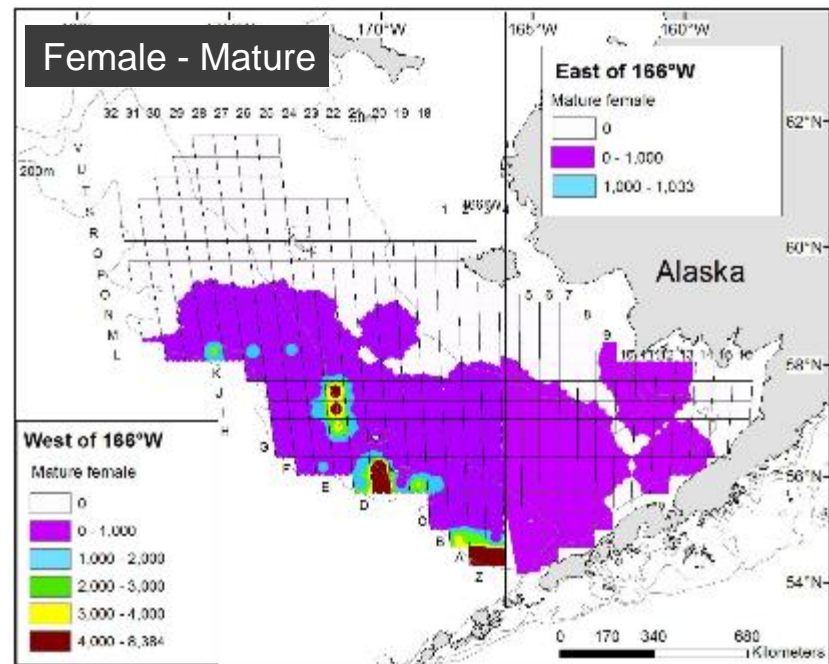
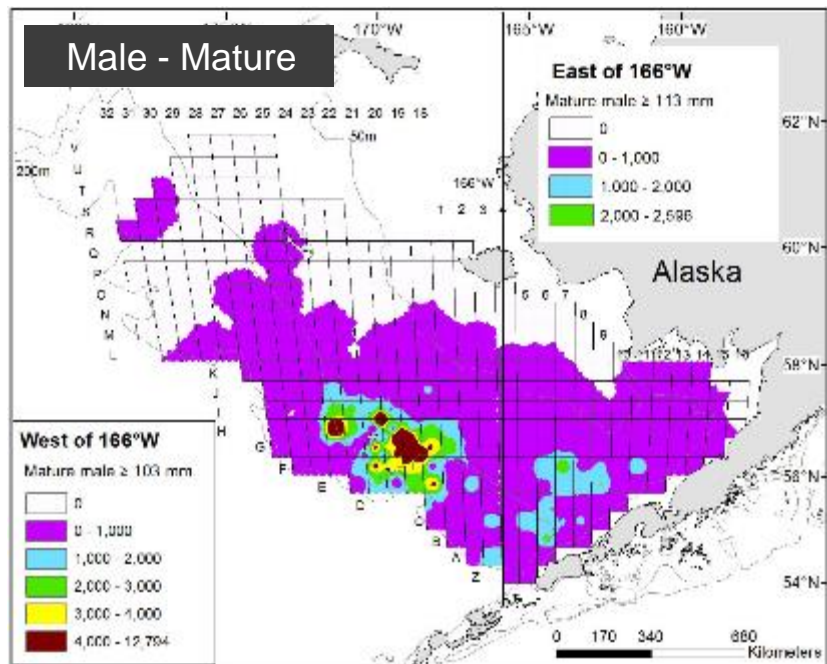


Mature female



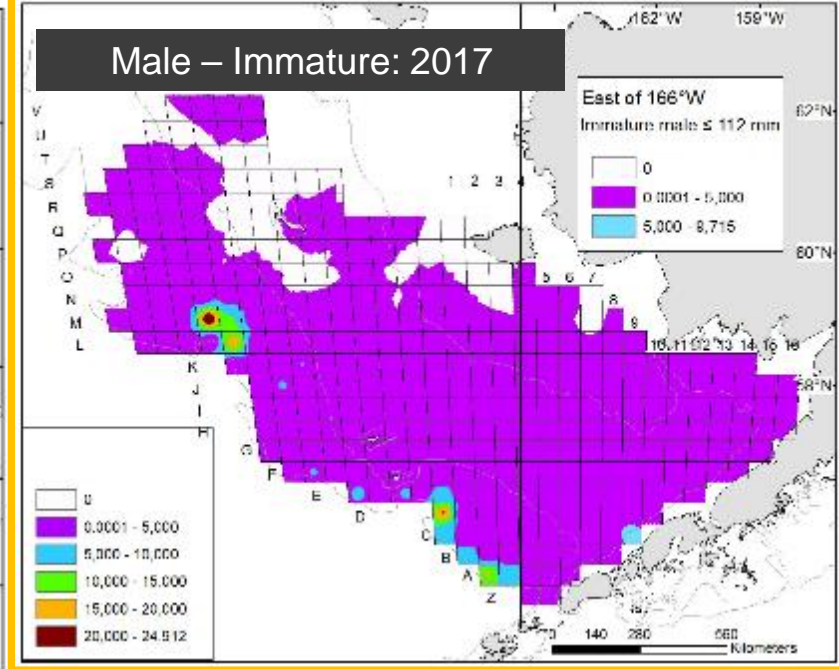
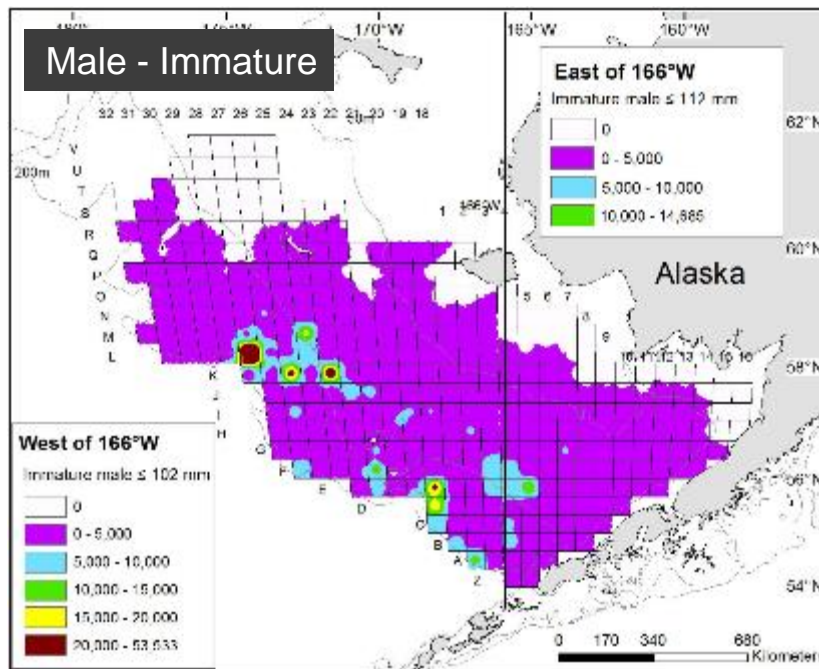
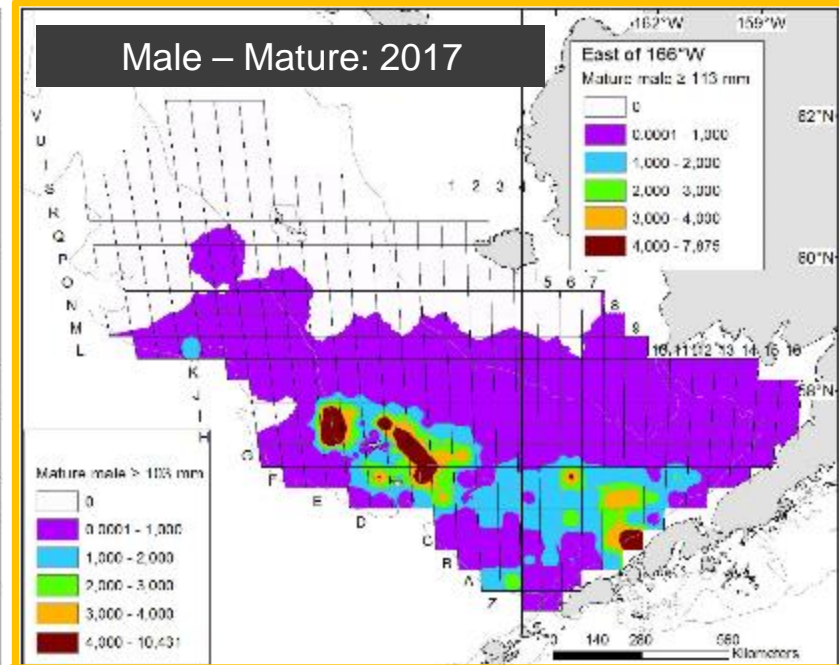
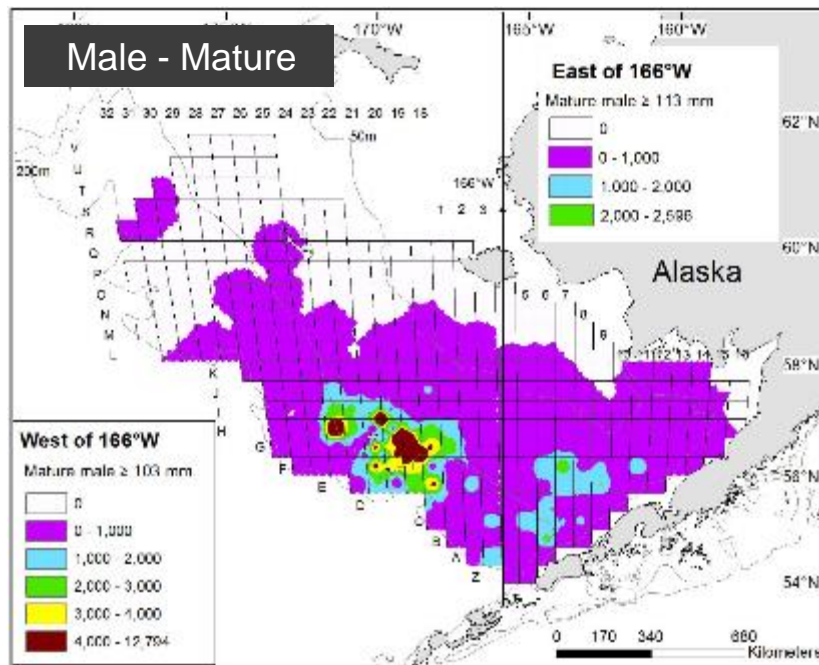
Juveniles

# Tanner crab

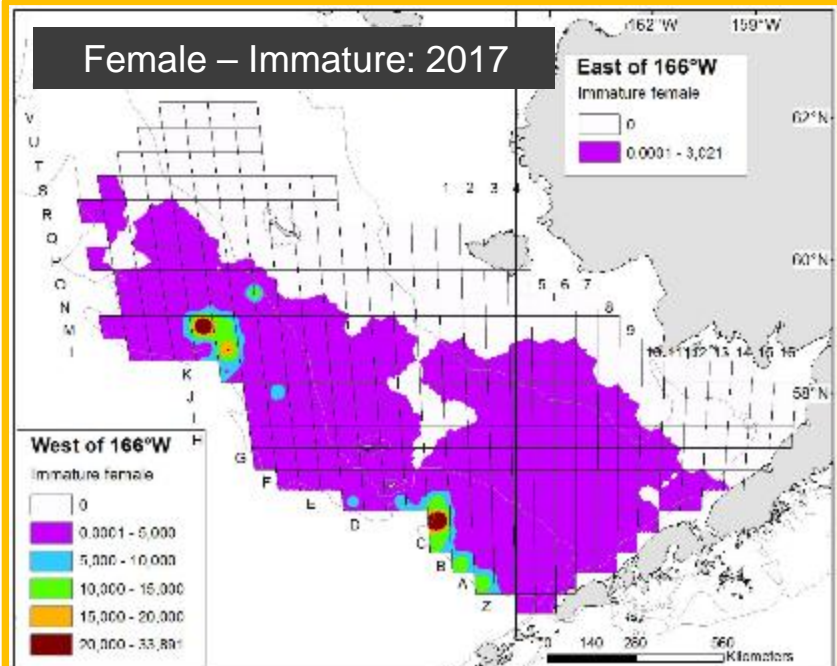
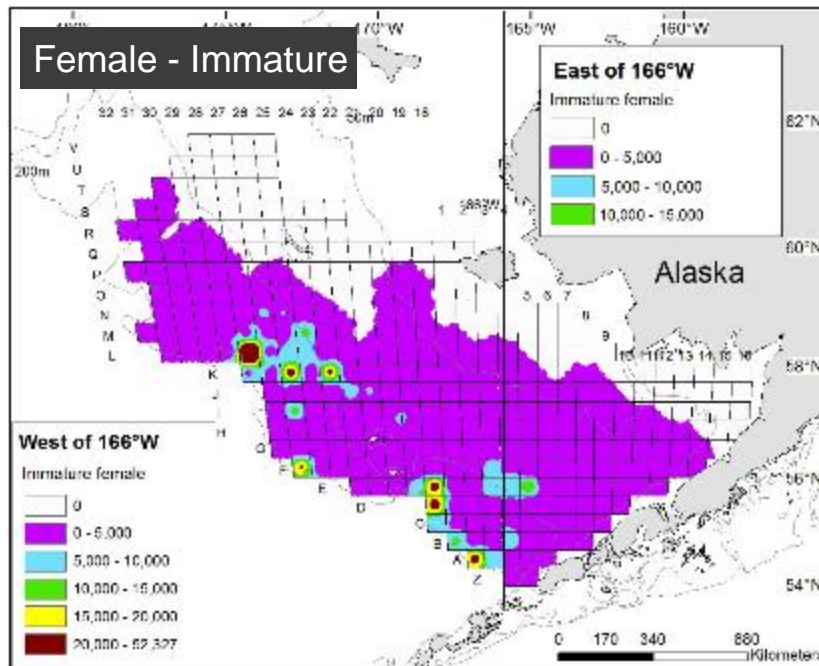
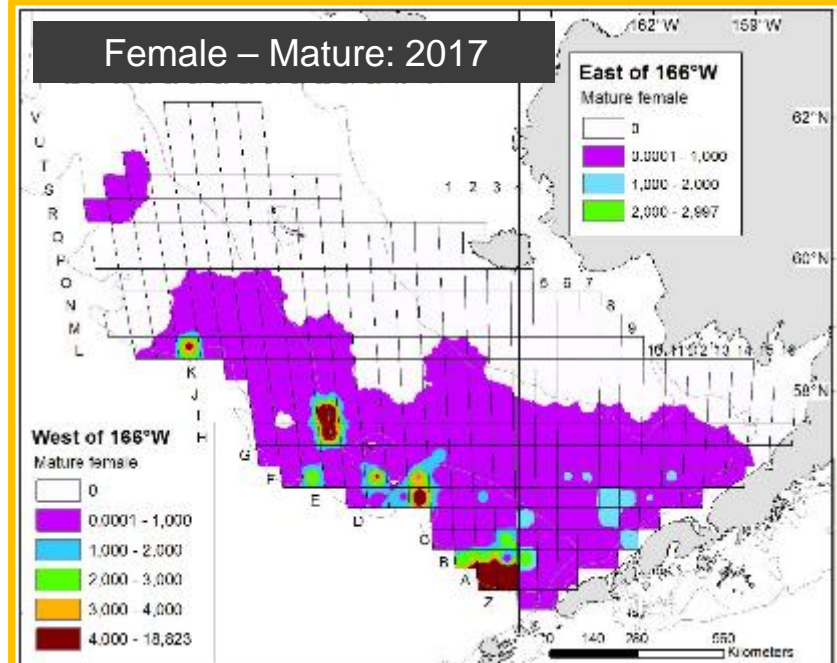
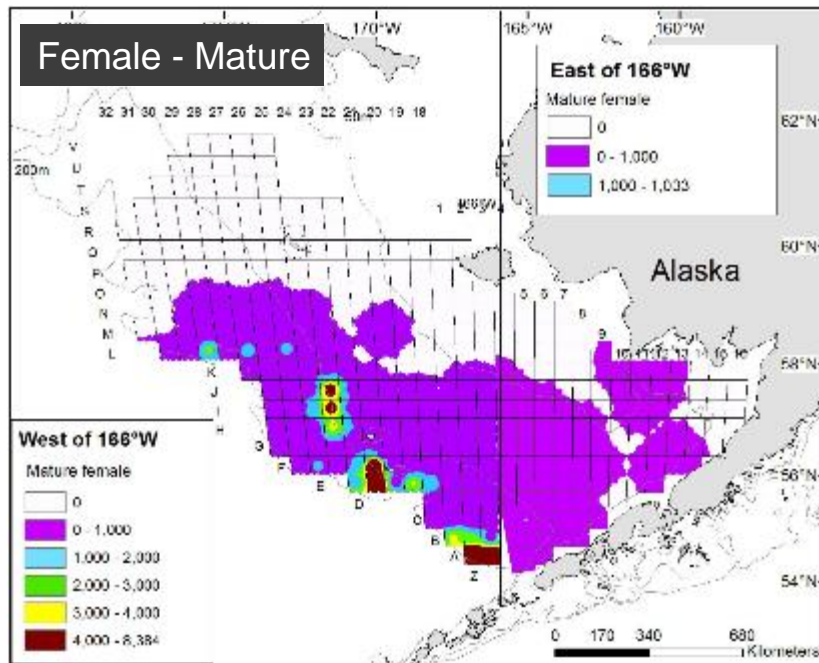




# Tanner crab



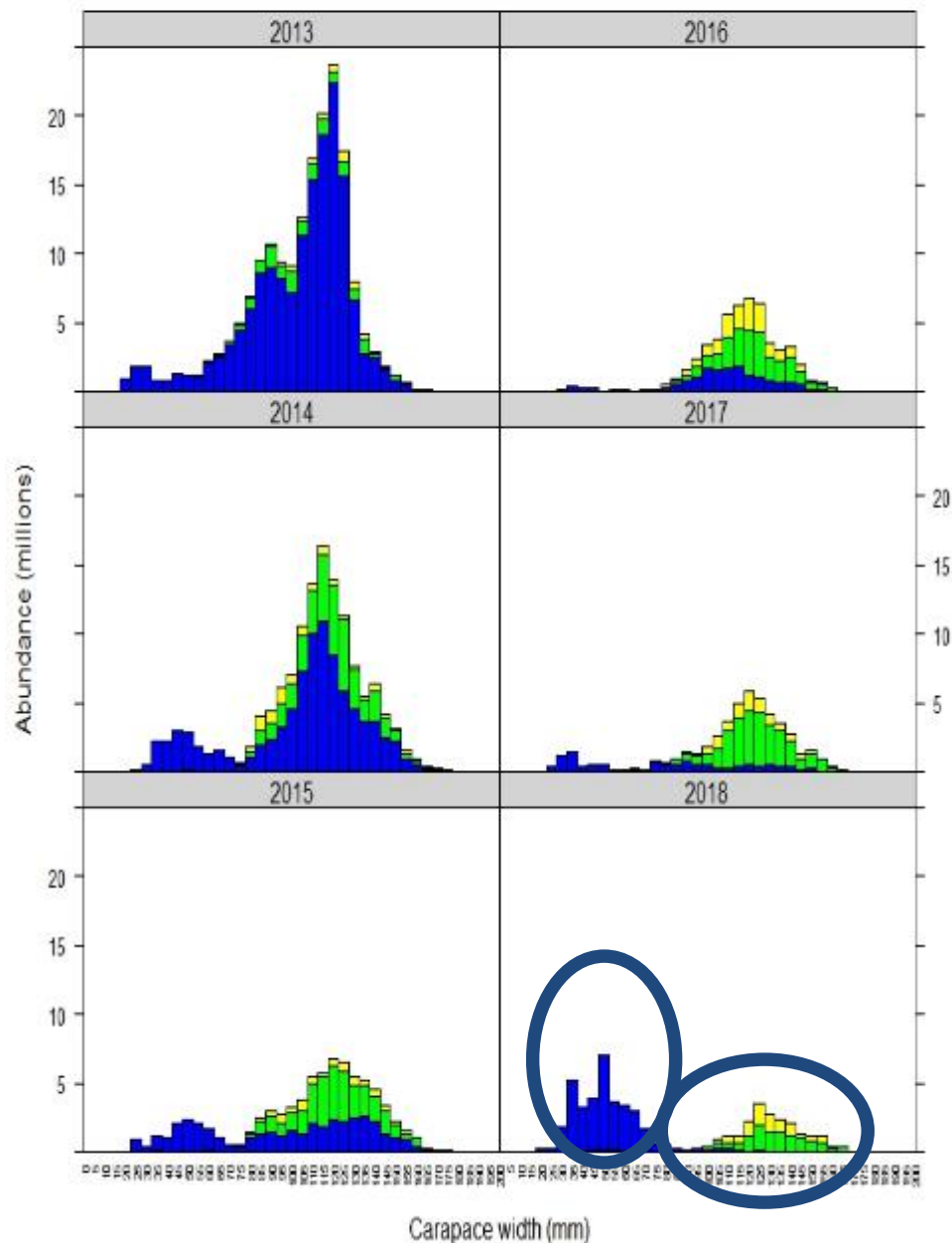
# Tanner crab





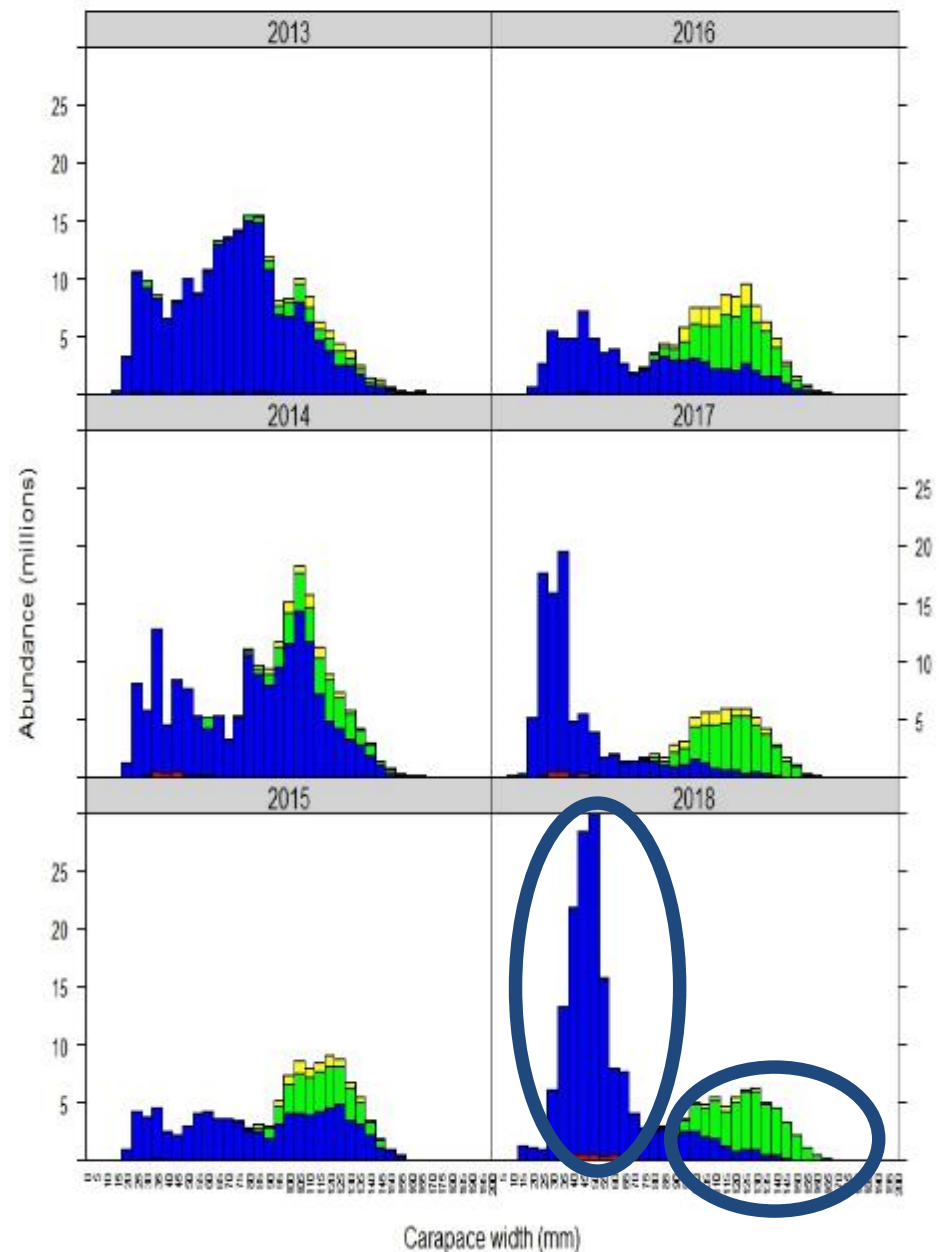
# Tanner Crab east of 166W (male)

Shell condition  
Soft & molting ■ New - hard ■ Old ■ Very old ■

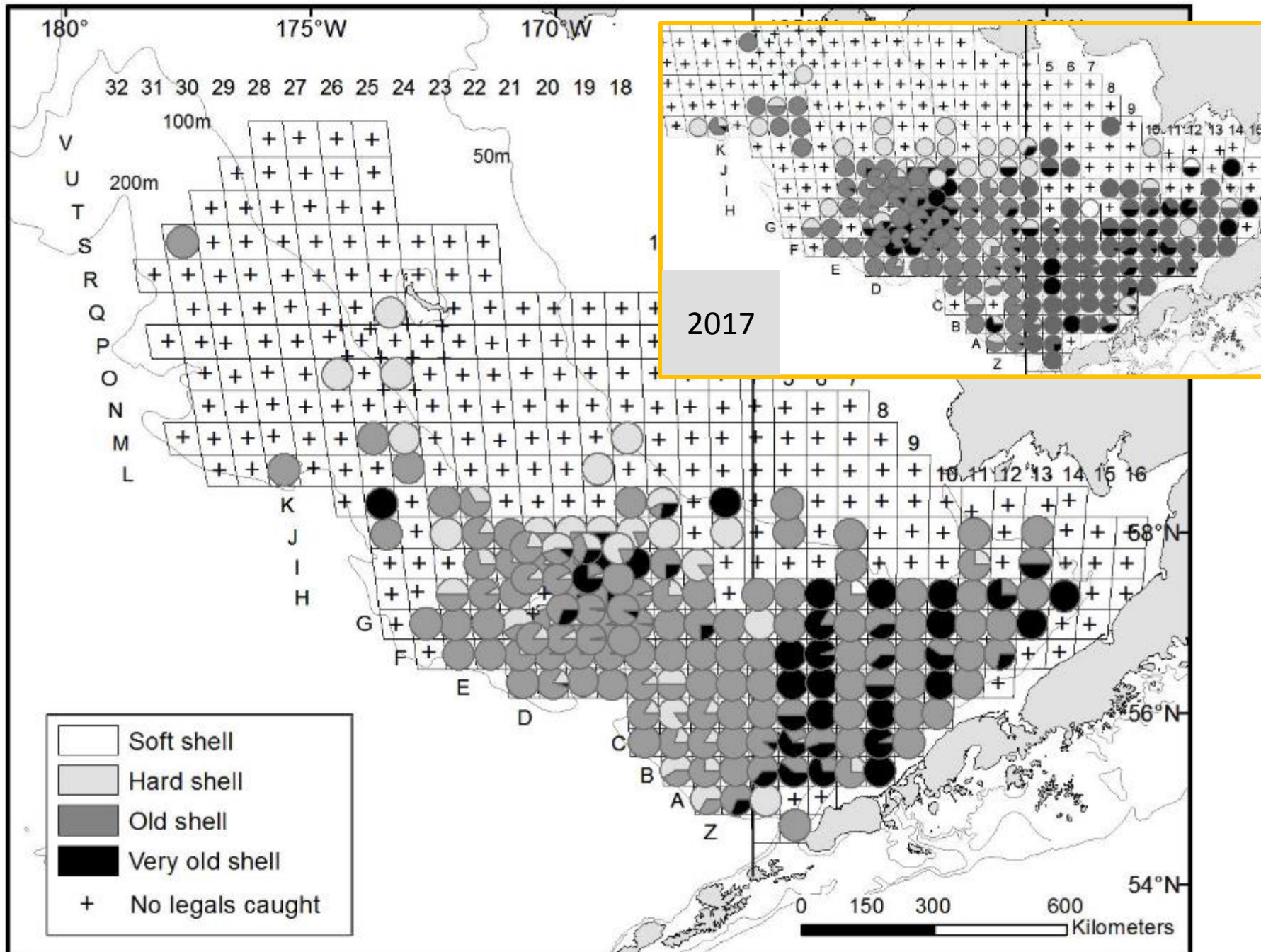


# Tanner Crab west of 166W (male)

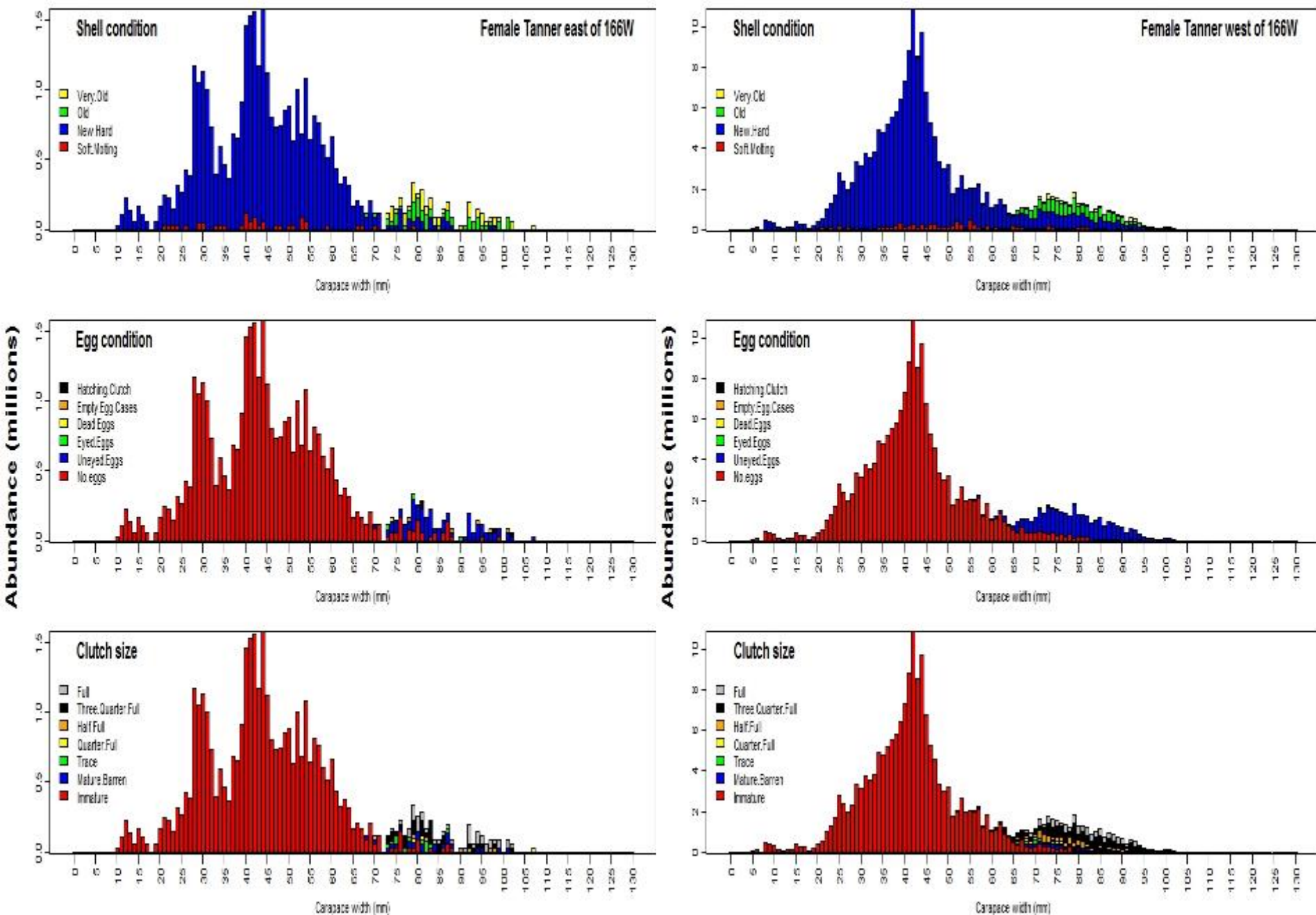
Shell condition  
Soft & molting ■ New - hard ■ Old ■ Very old ■

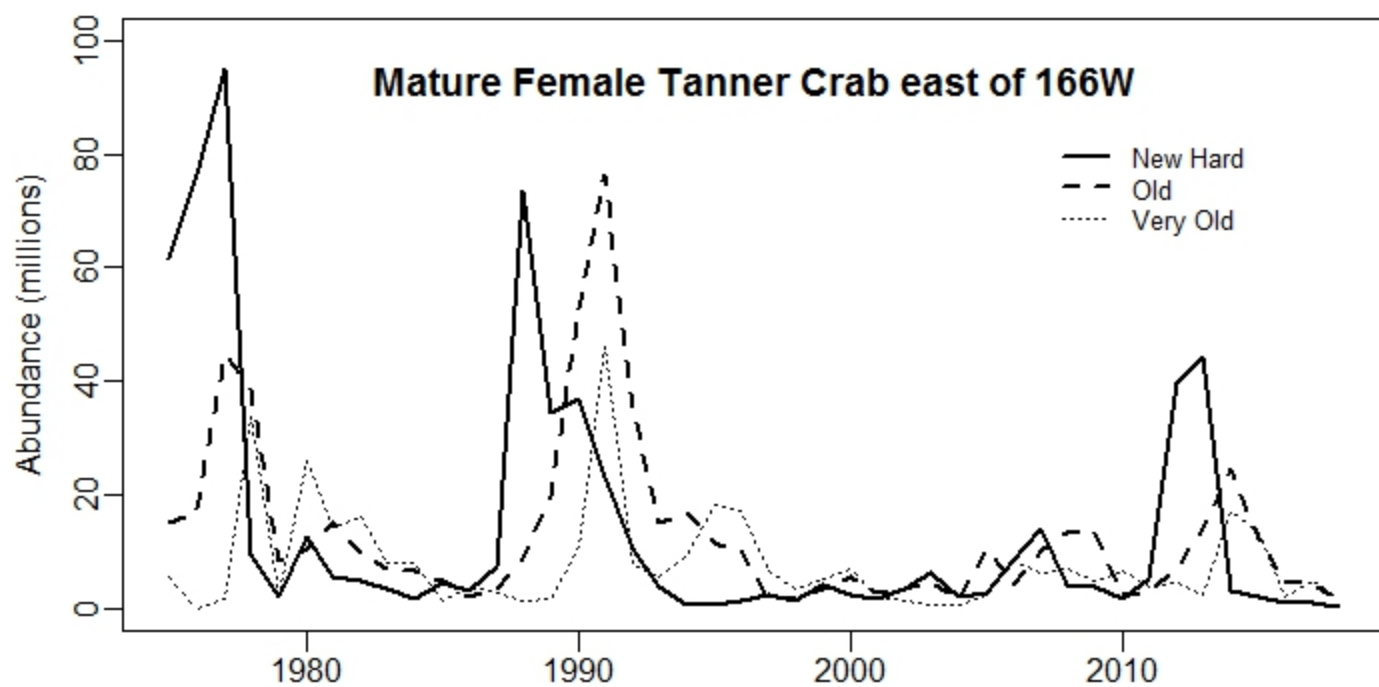
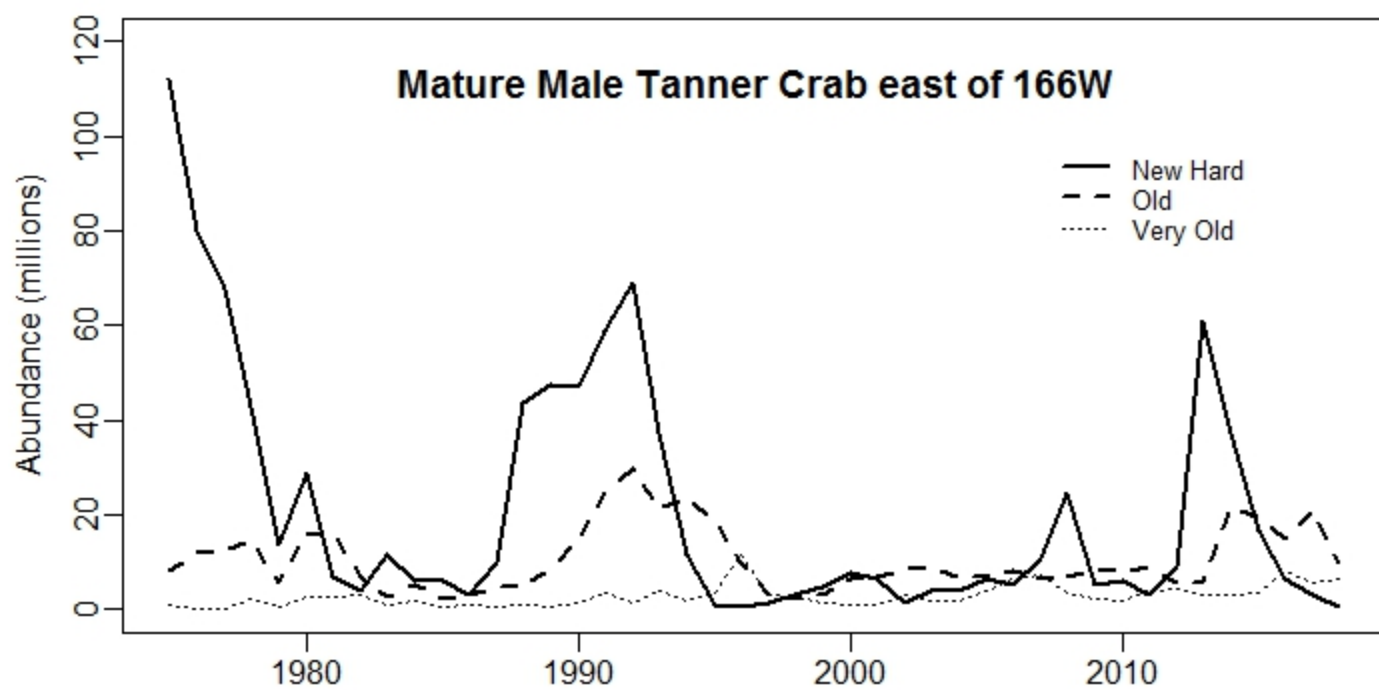


# Tanner crab: east and west of 166°W

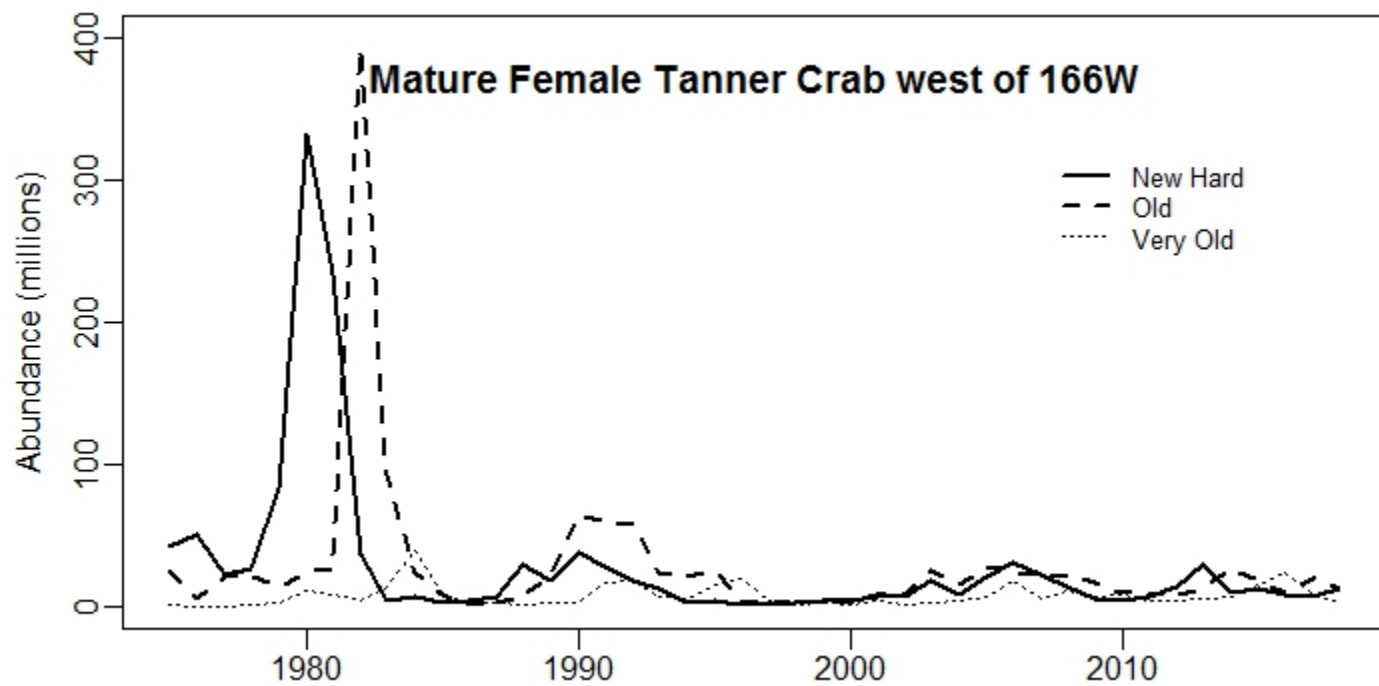
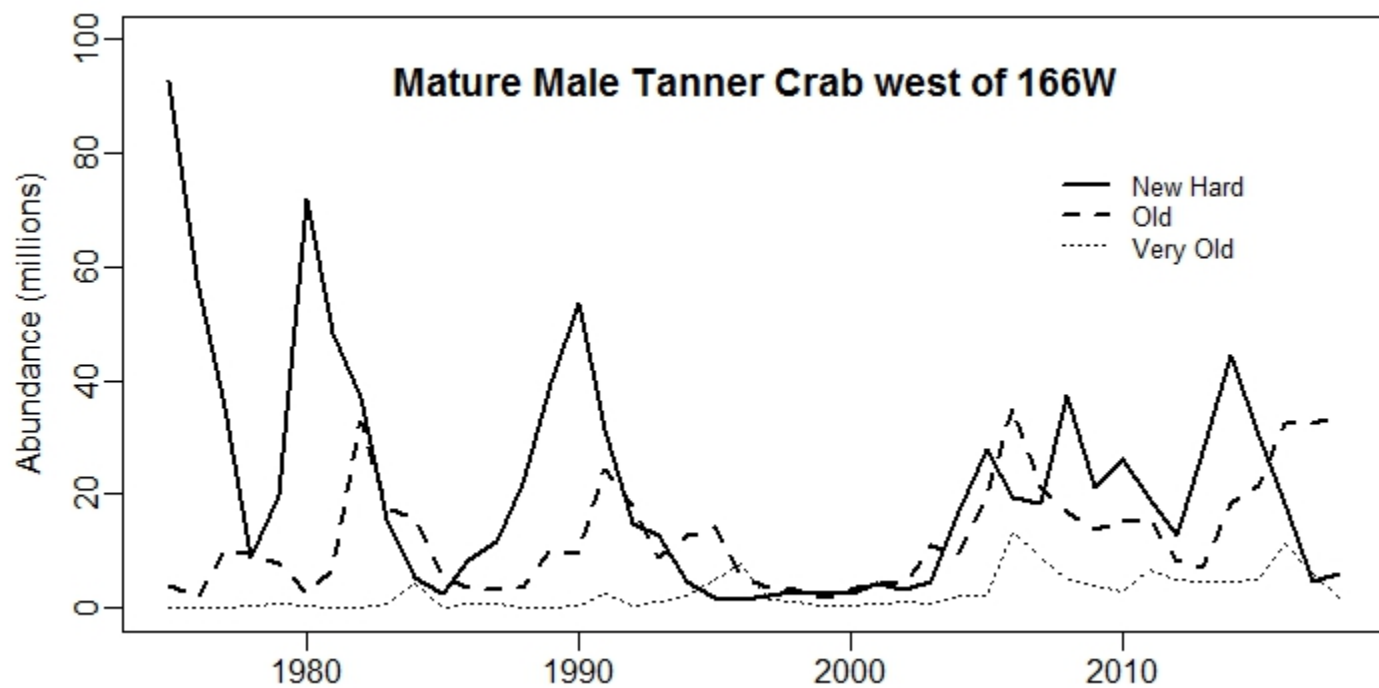


# Tanner crab: east and west of 166°W

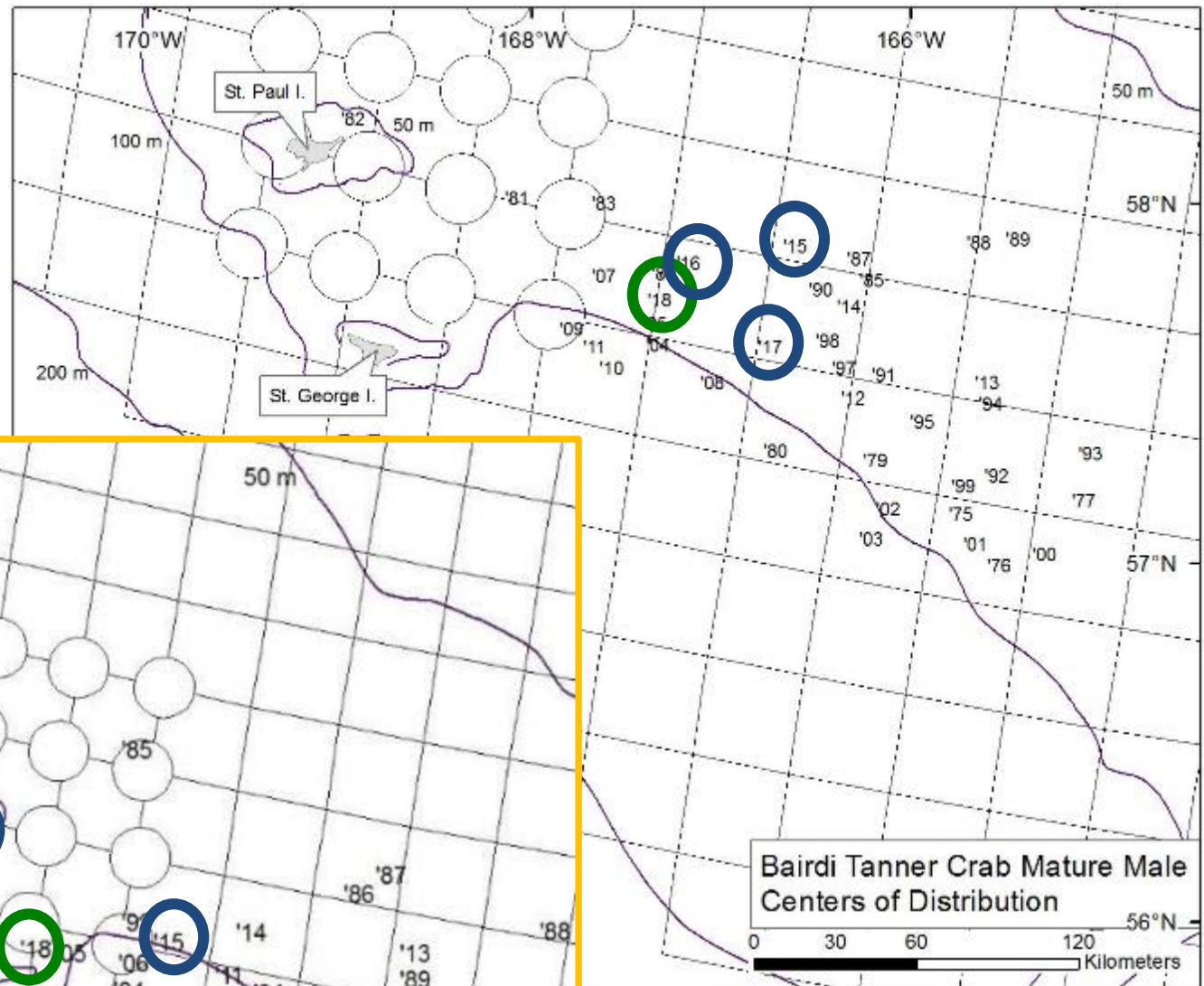






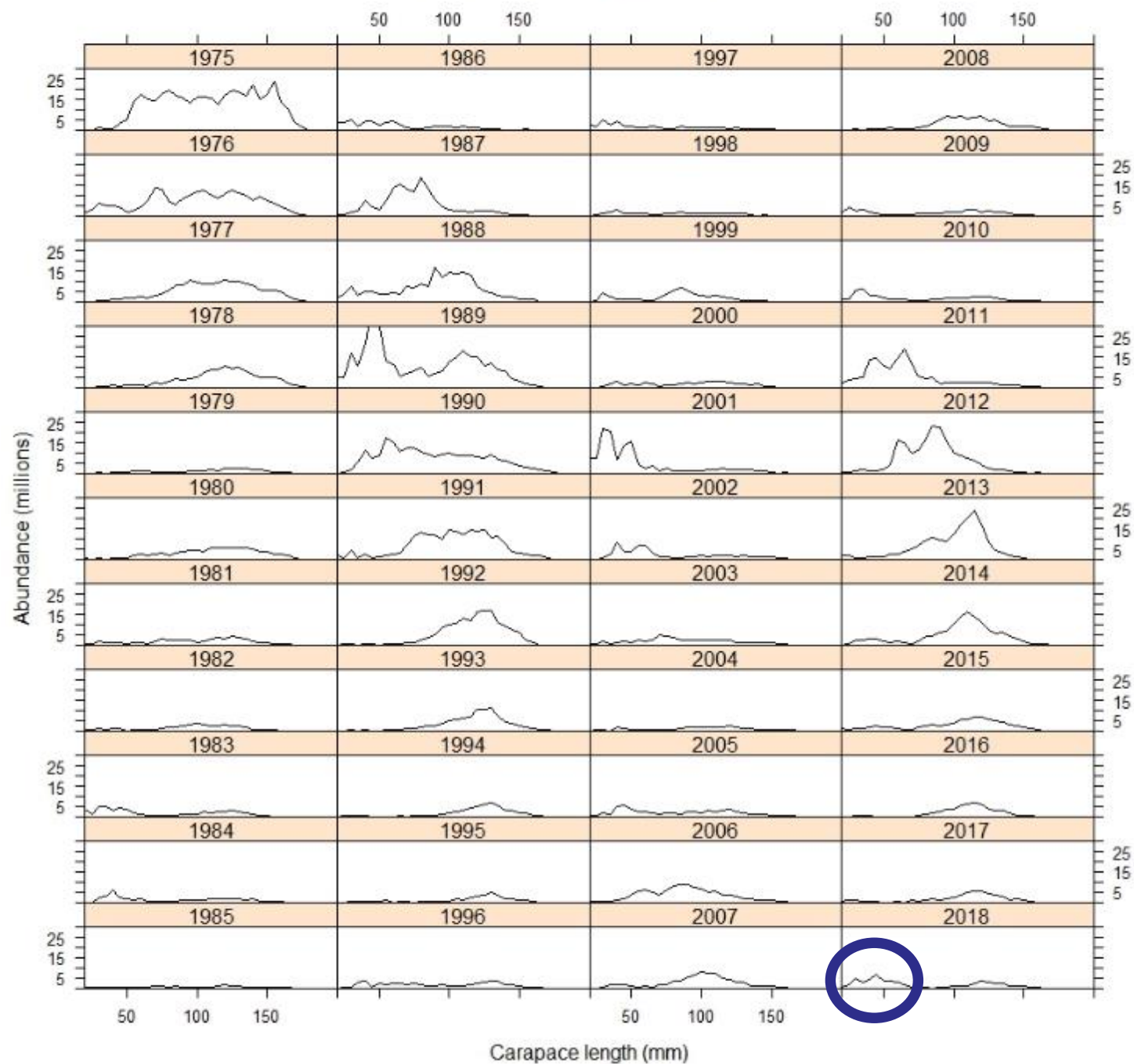


## Tanner crab: east and west of 166°W

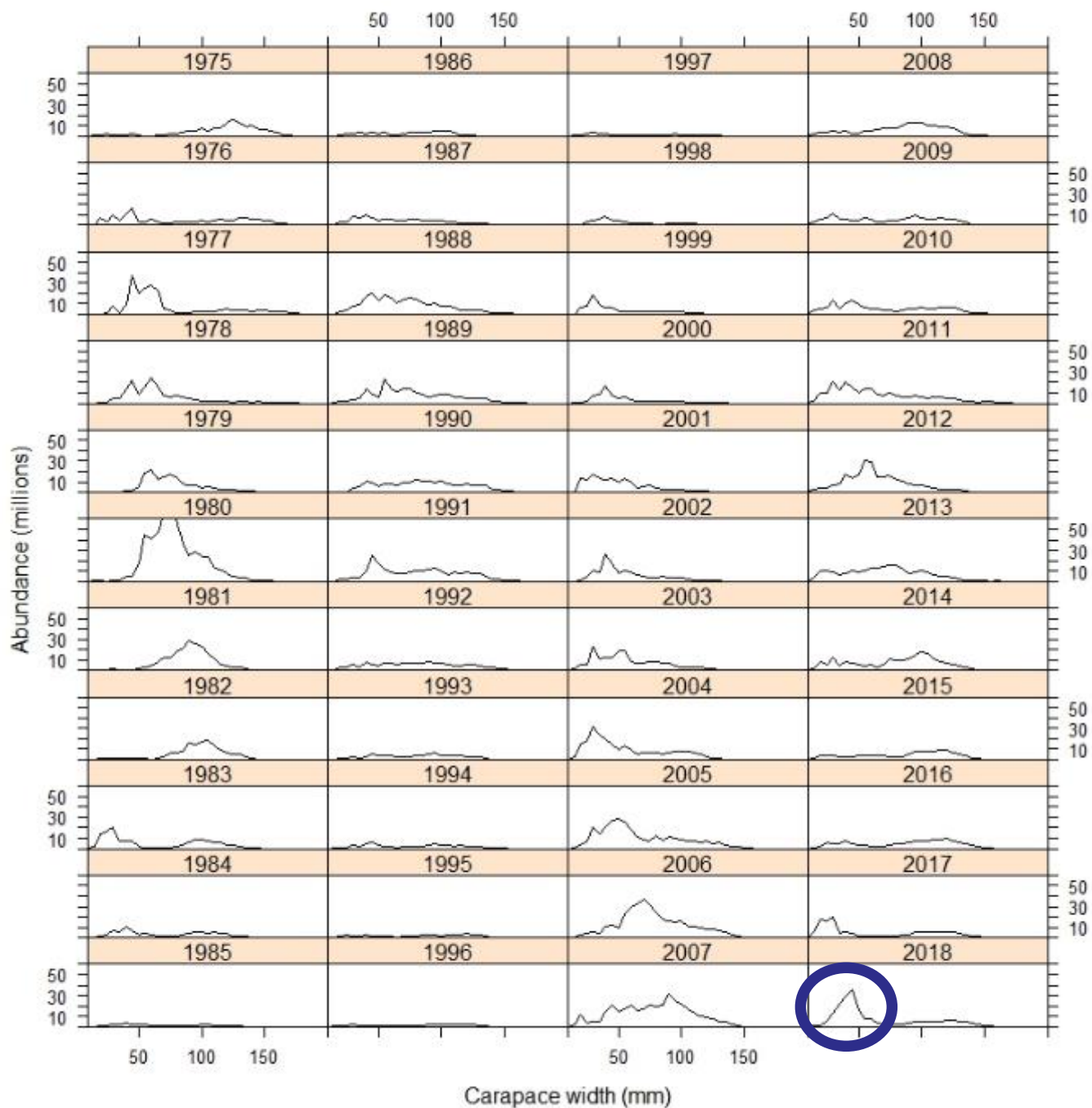


Mature Female Centers of Distribution

# Tanner Crab east of 166W (male)

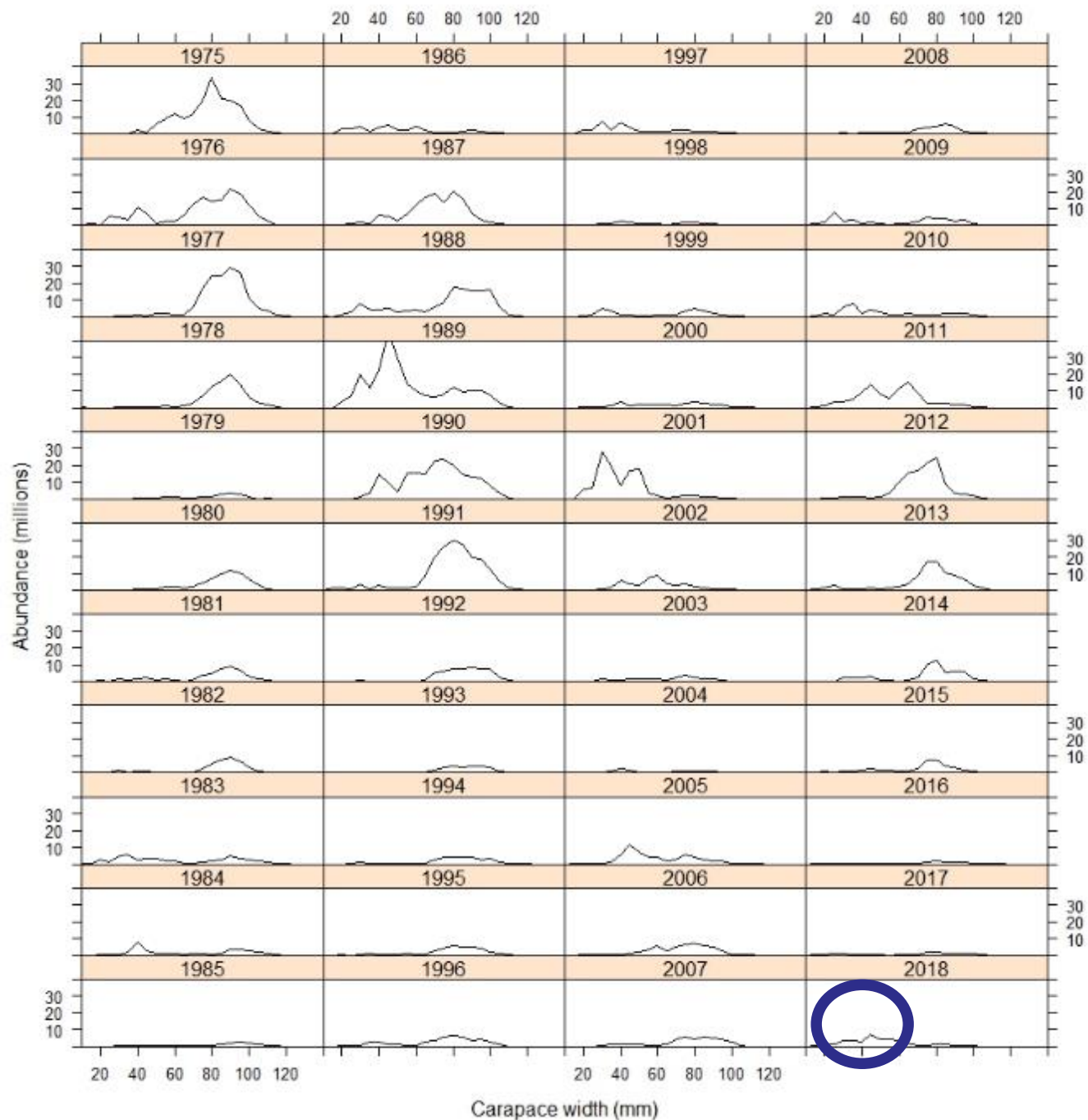


# Tanner Crab west of 166W (male)

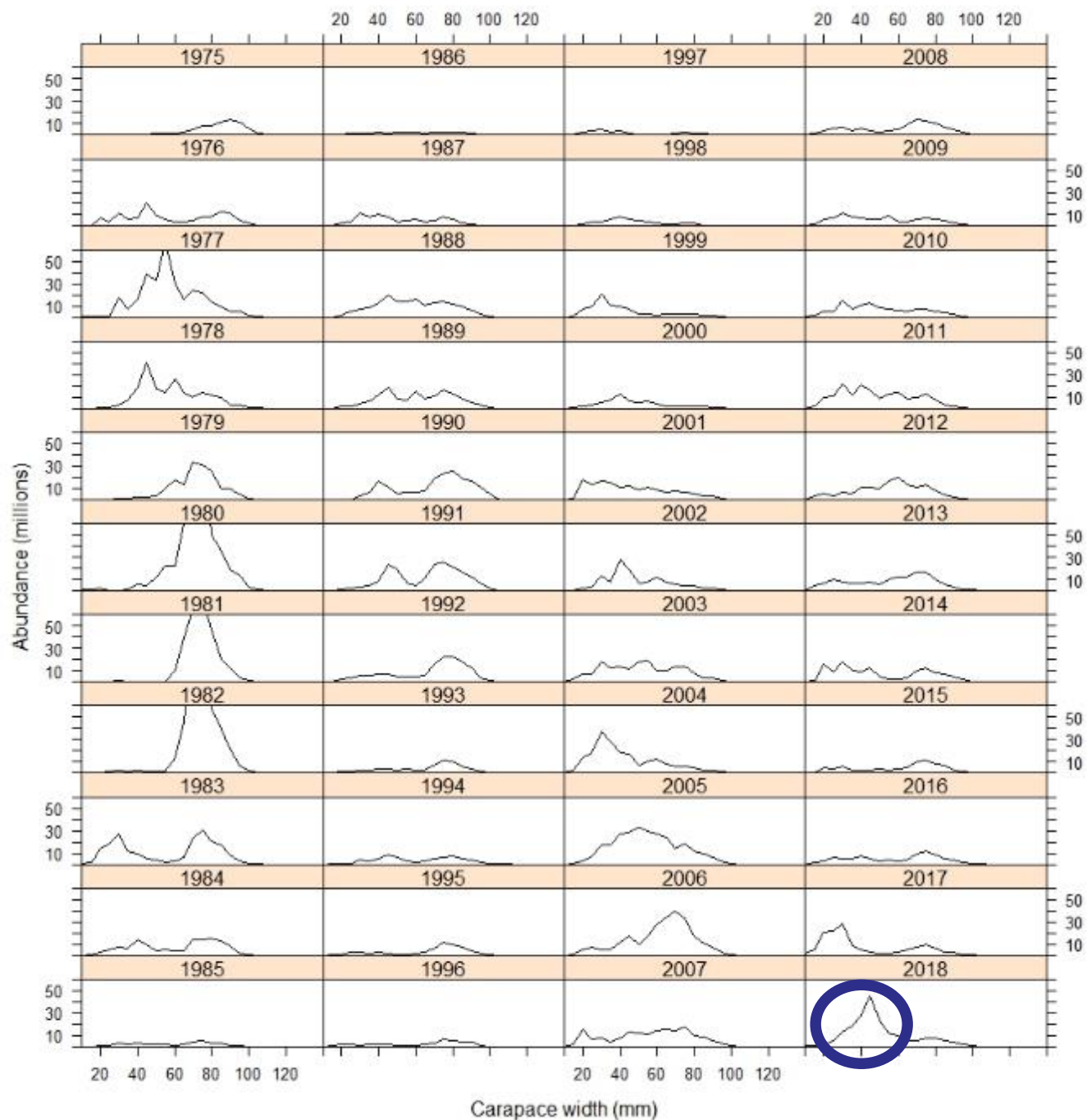




# Tanner Crab east of 166W (female)

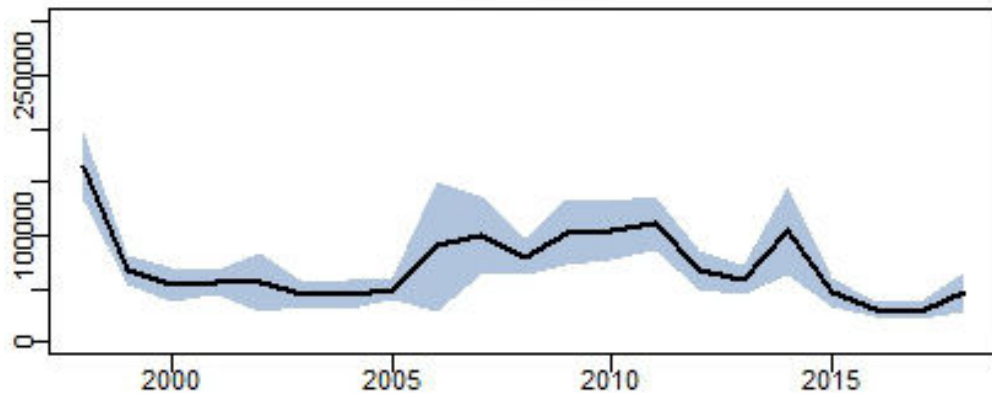


# Tanner Crab west of 166W (female)



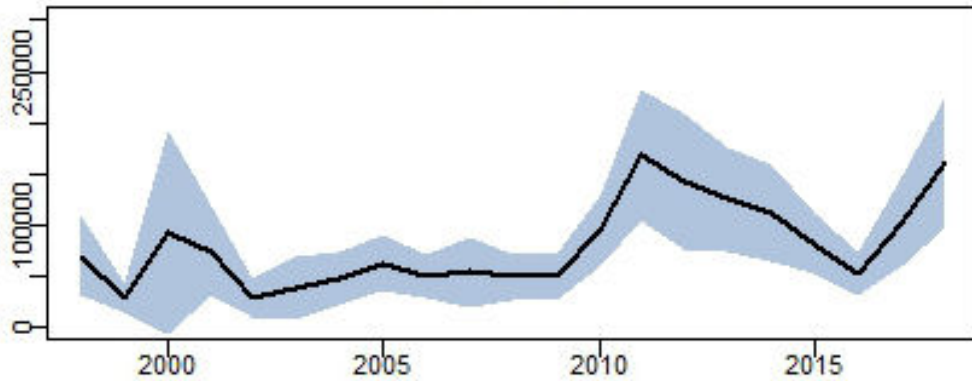
# Snow crab

Biomass (t)



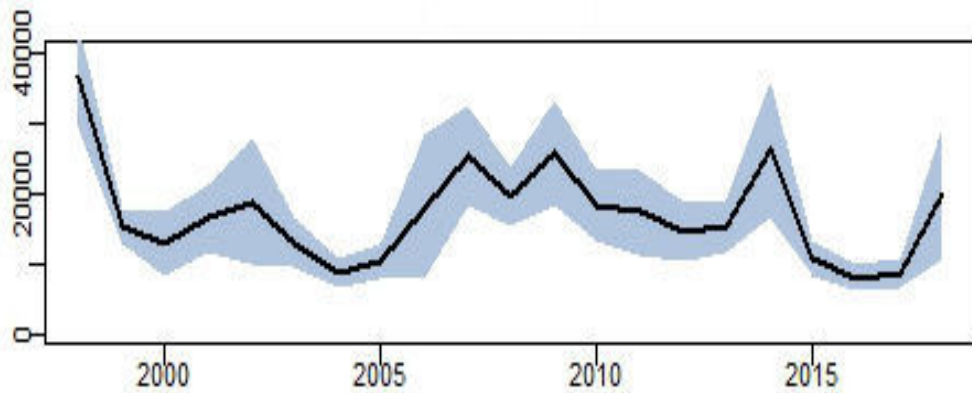
Mature male

+60%



Mature female

+56%

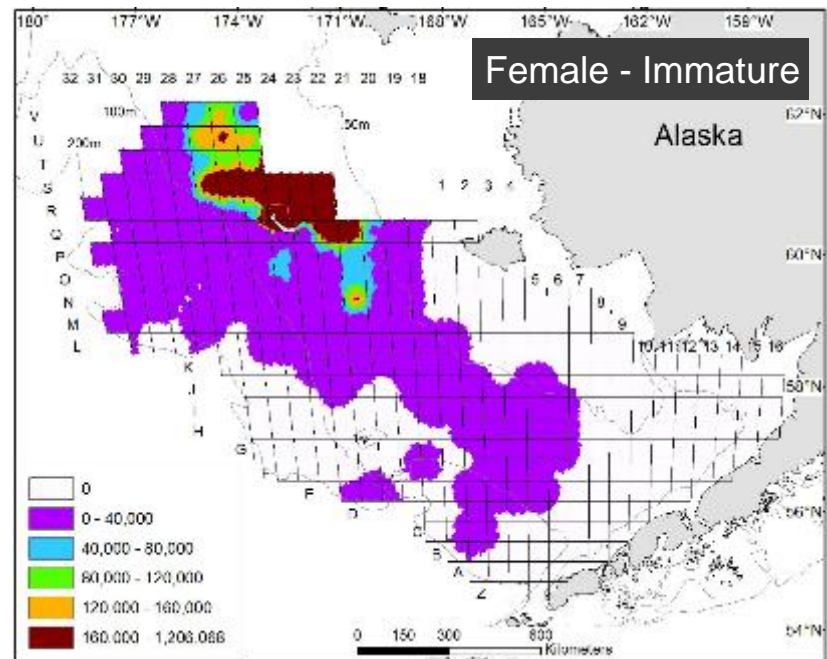
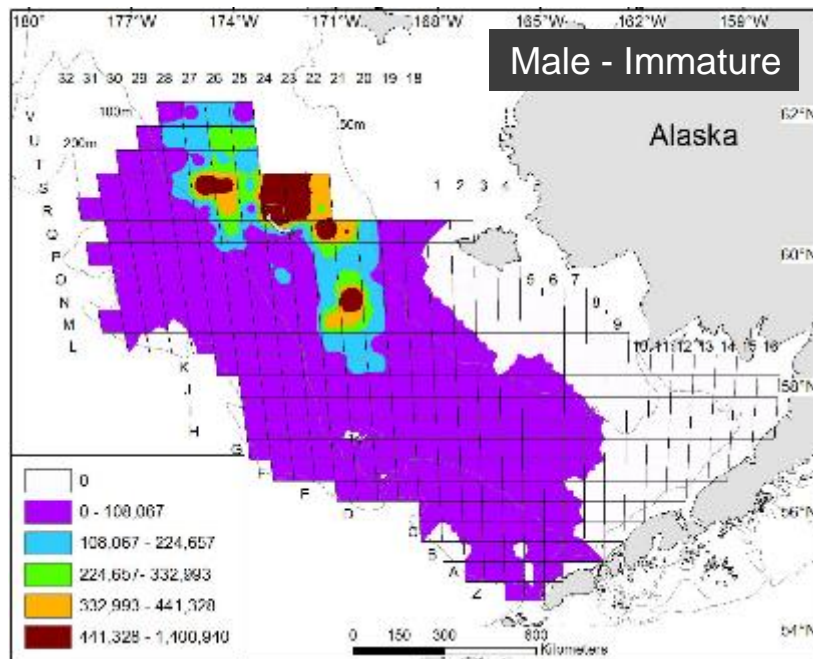
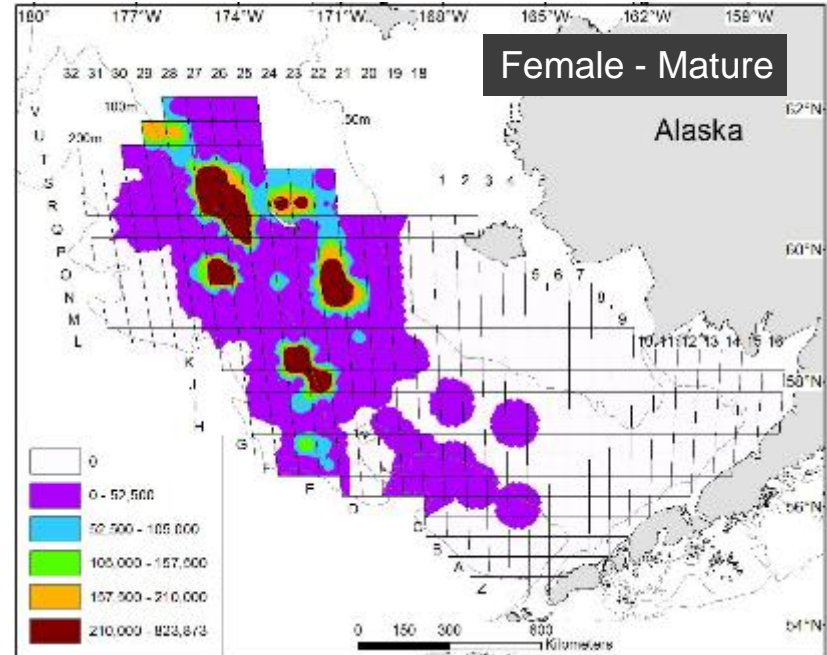
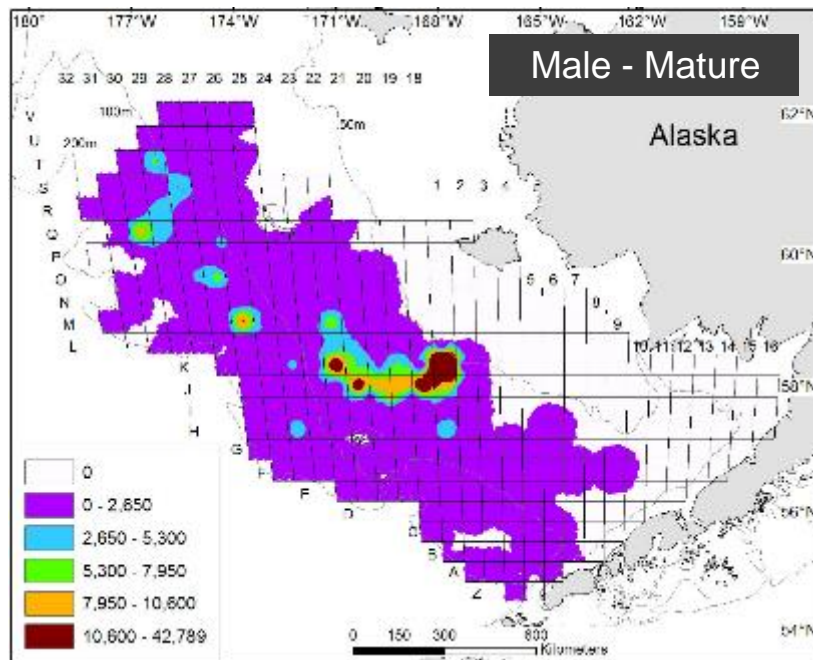


Juveniles

Male +143%

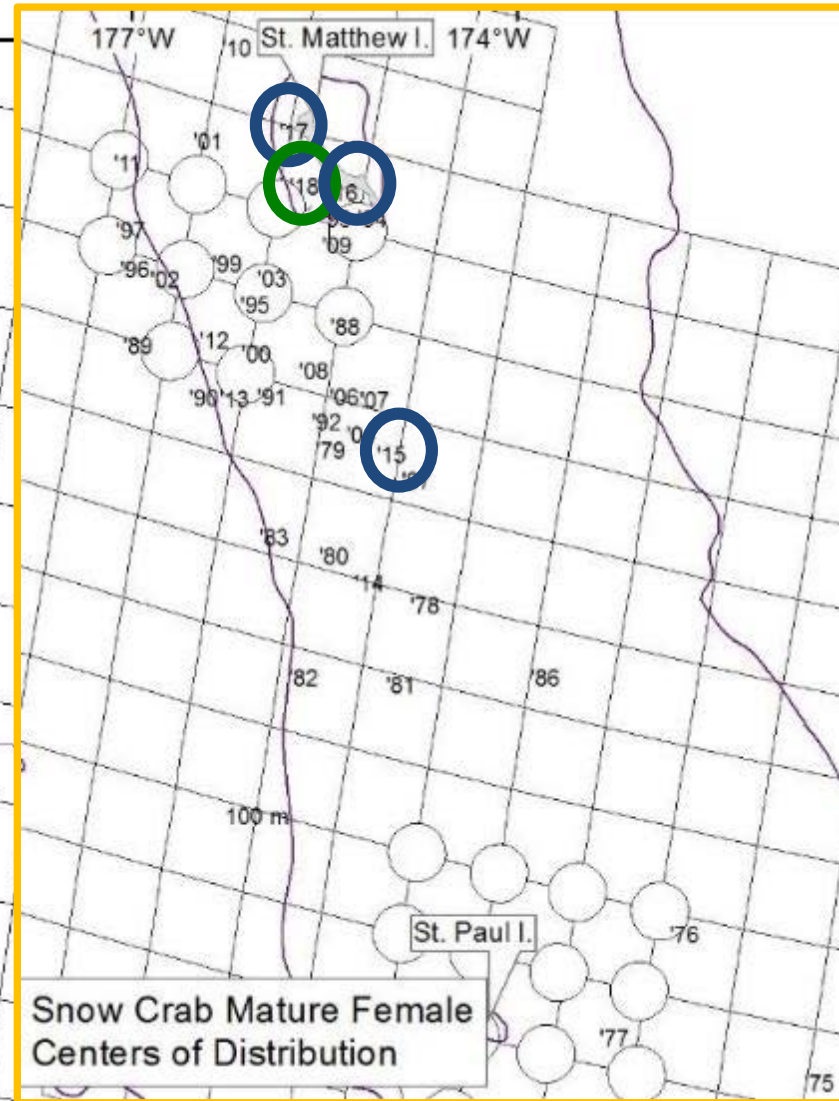
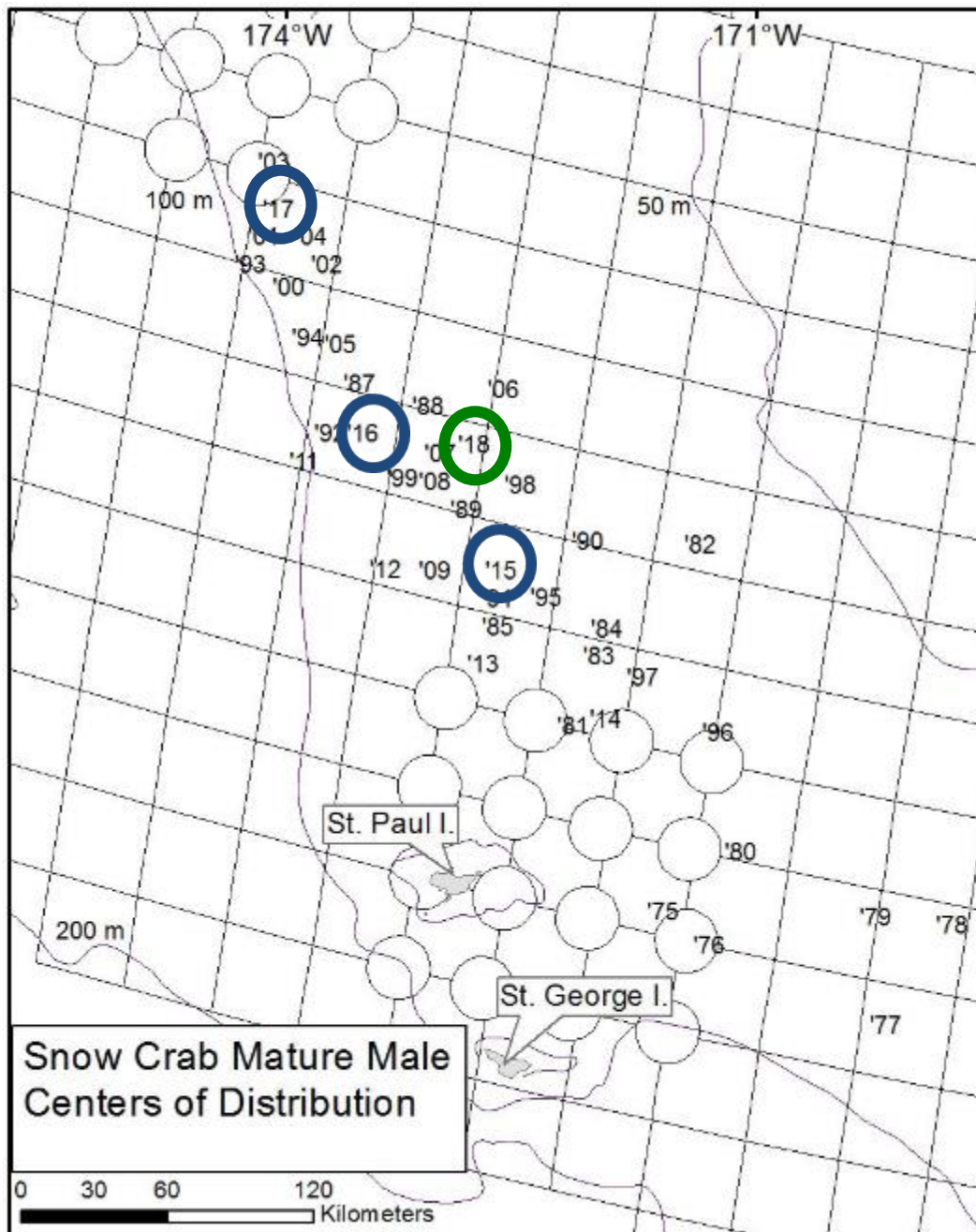
Female +26%

# Snow crab

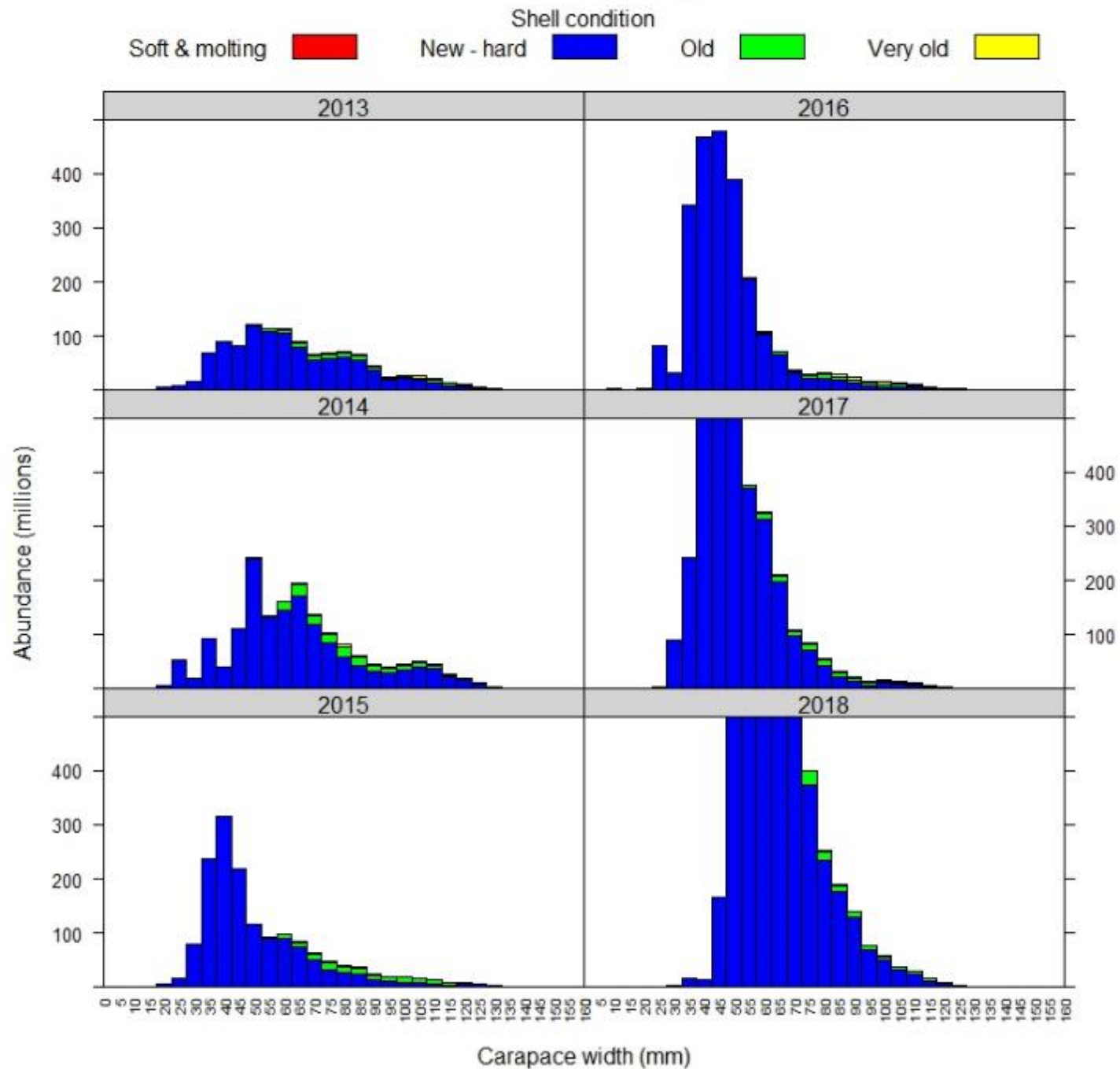




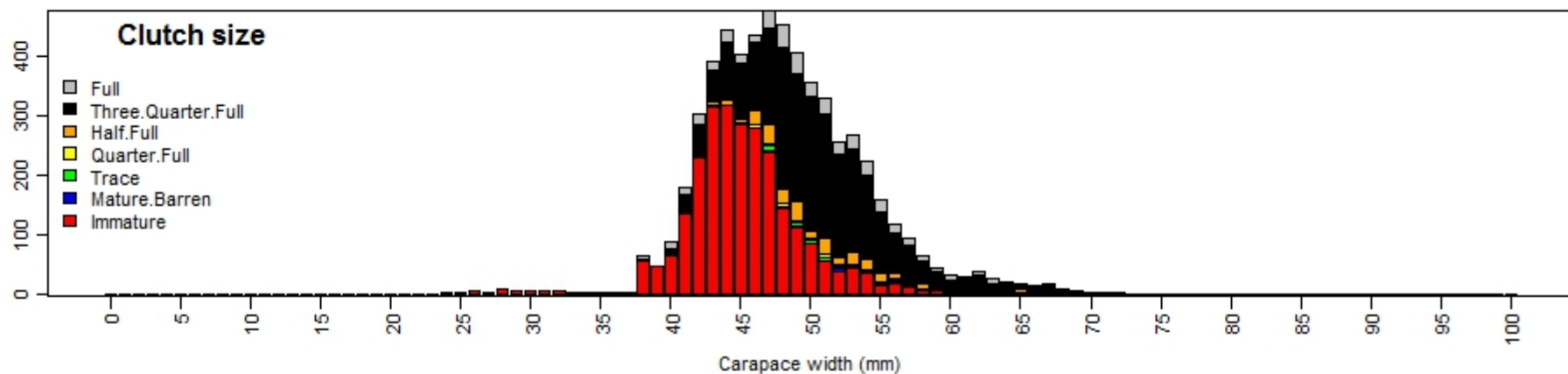
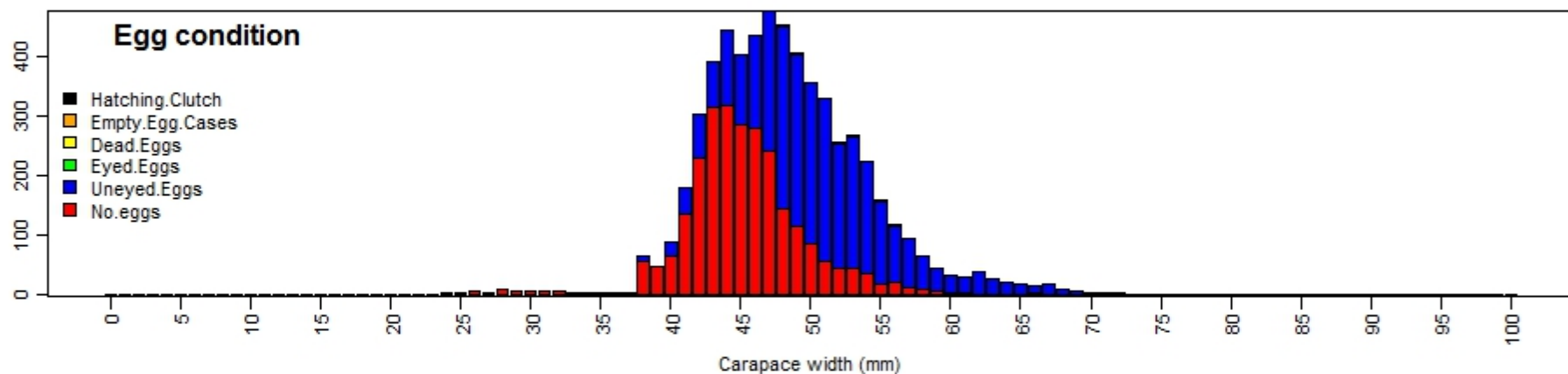
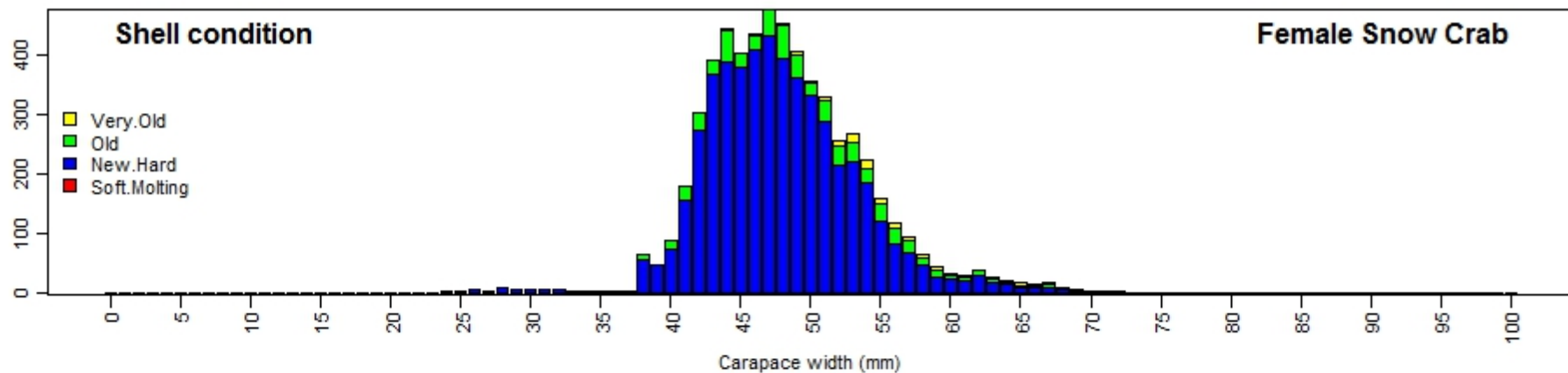
# Snow crab



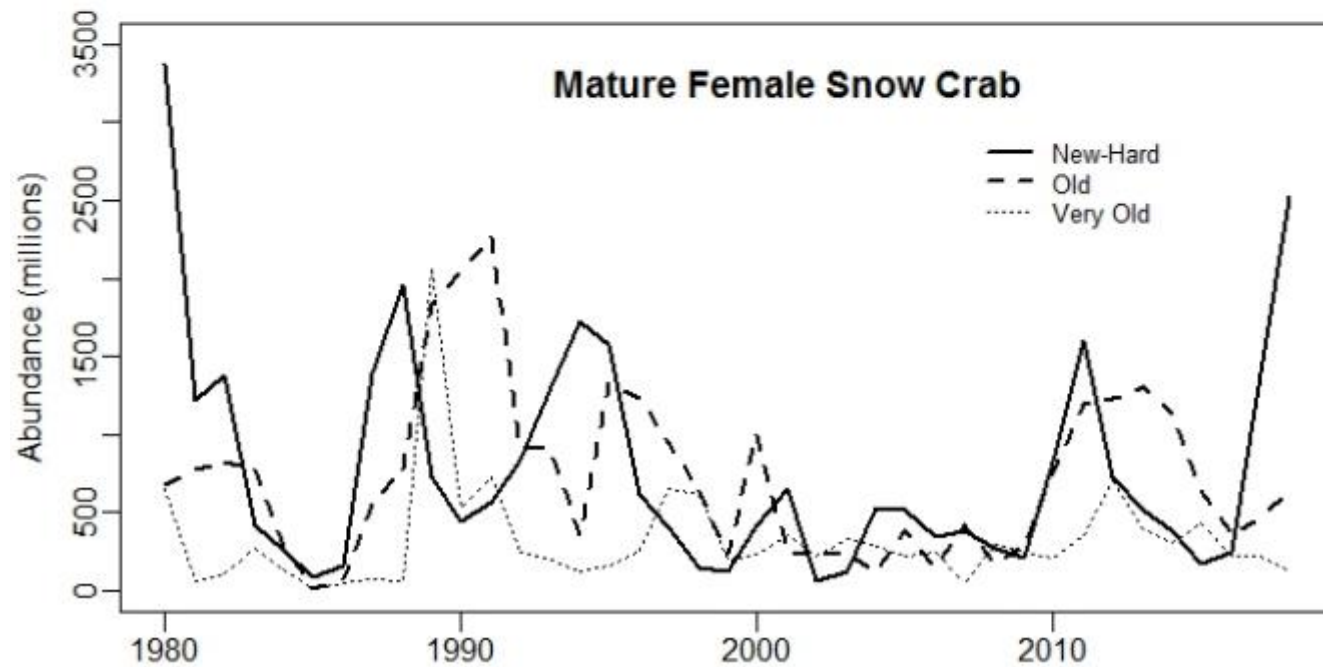
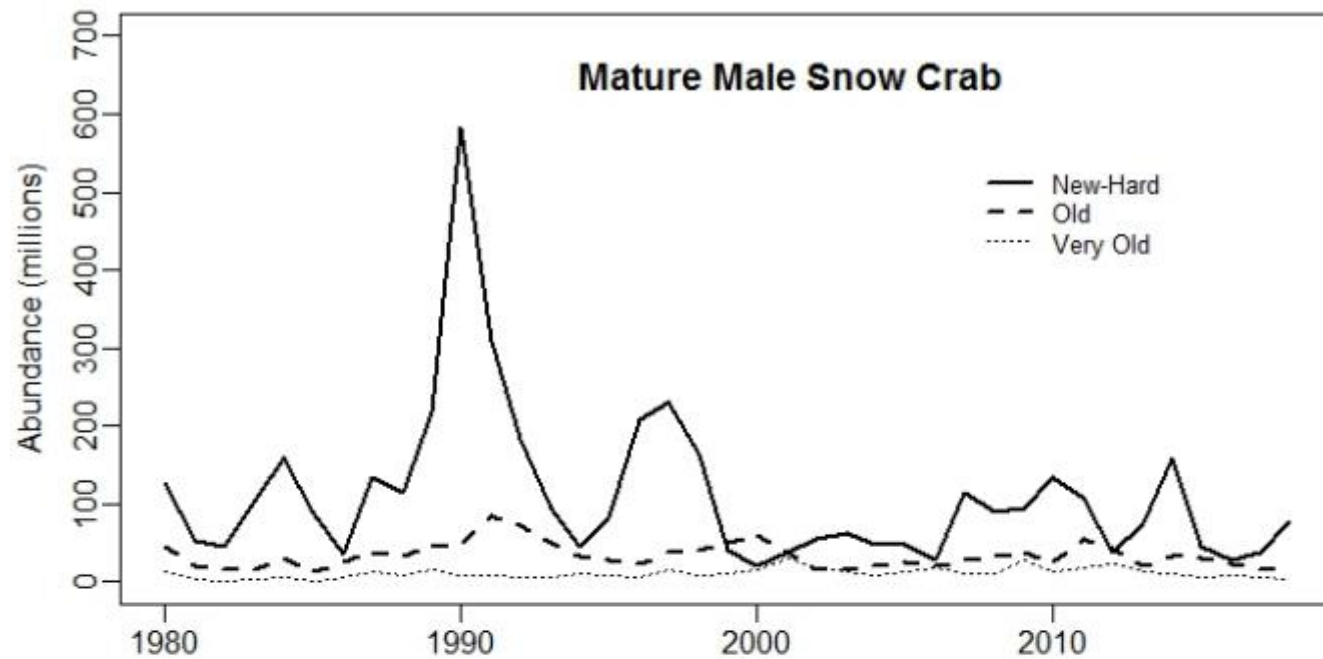
# Snow Crab (male)



# Snow crab

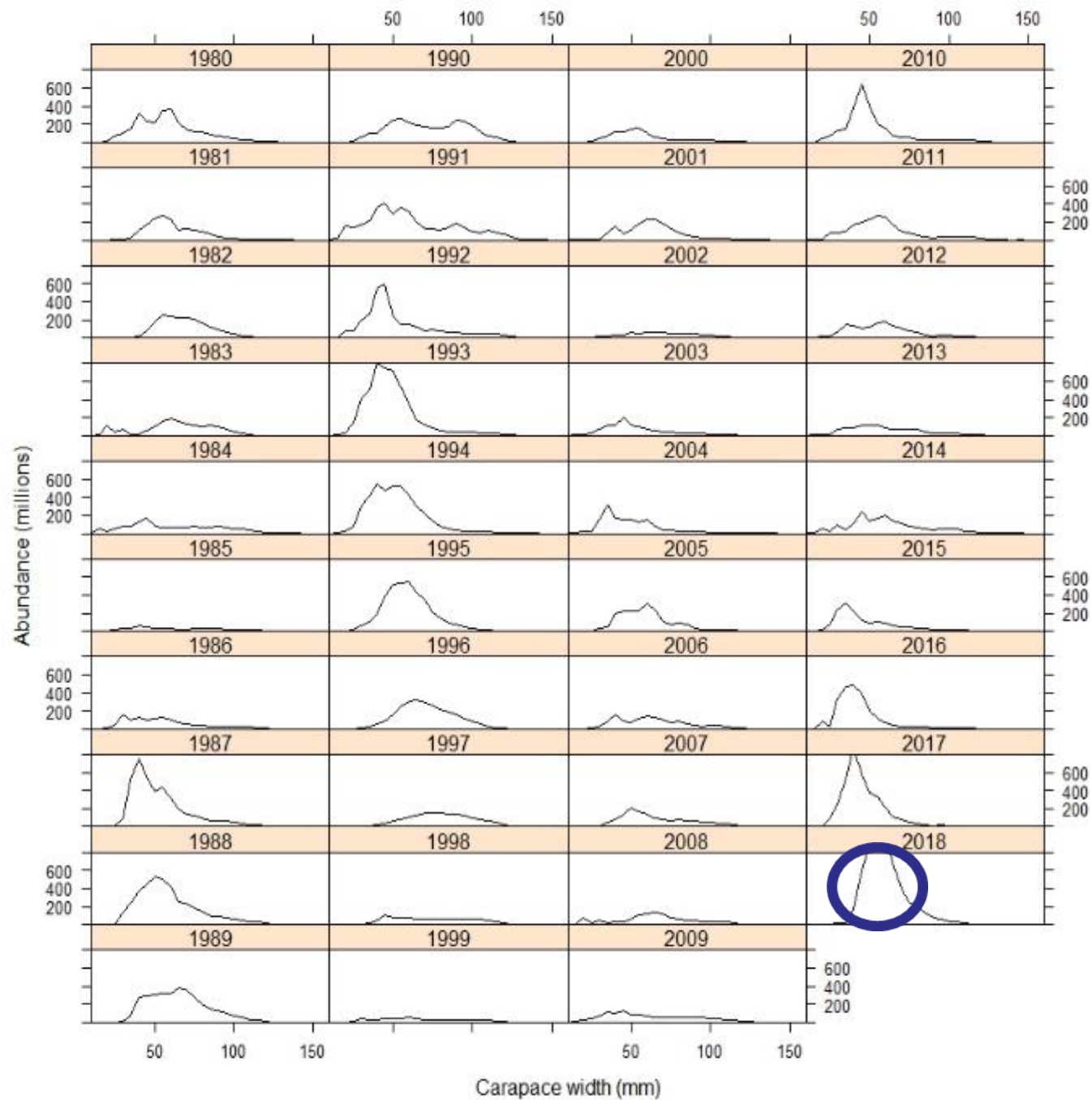


# Snow crab

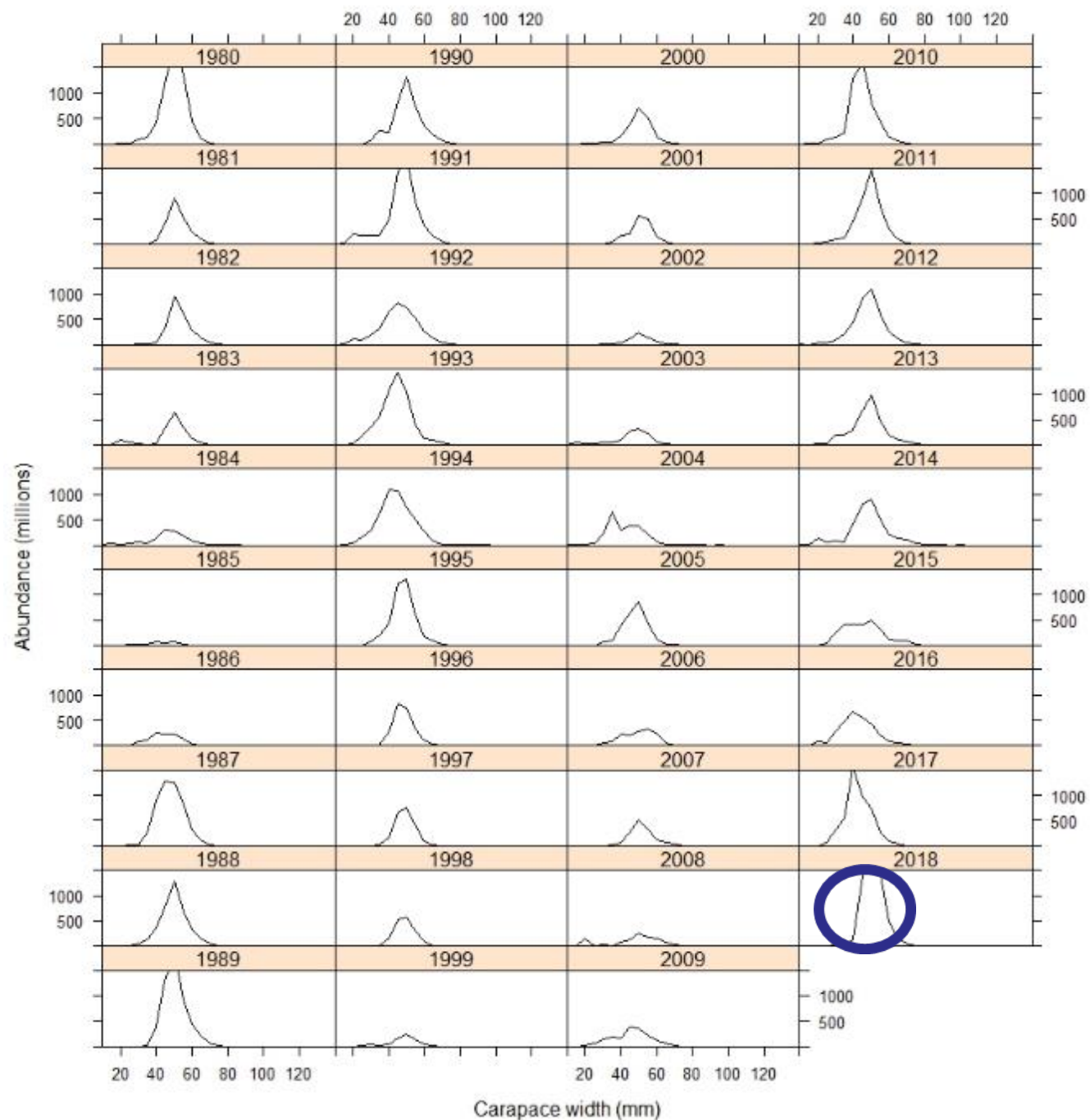




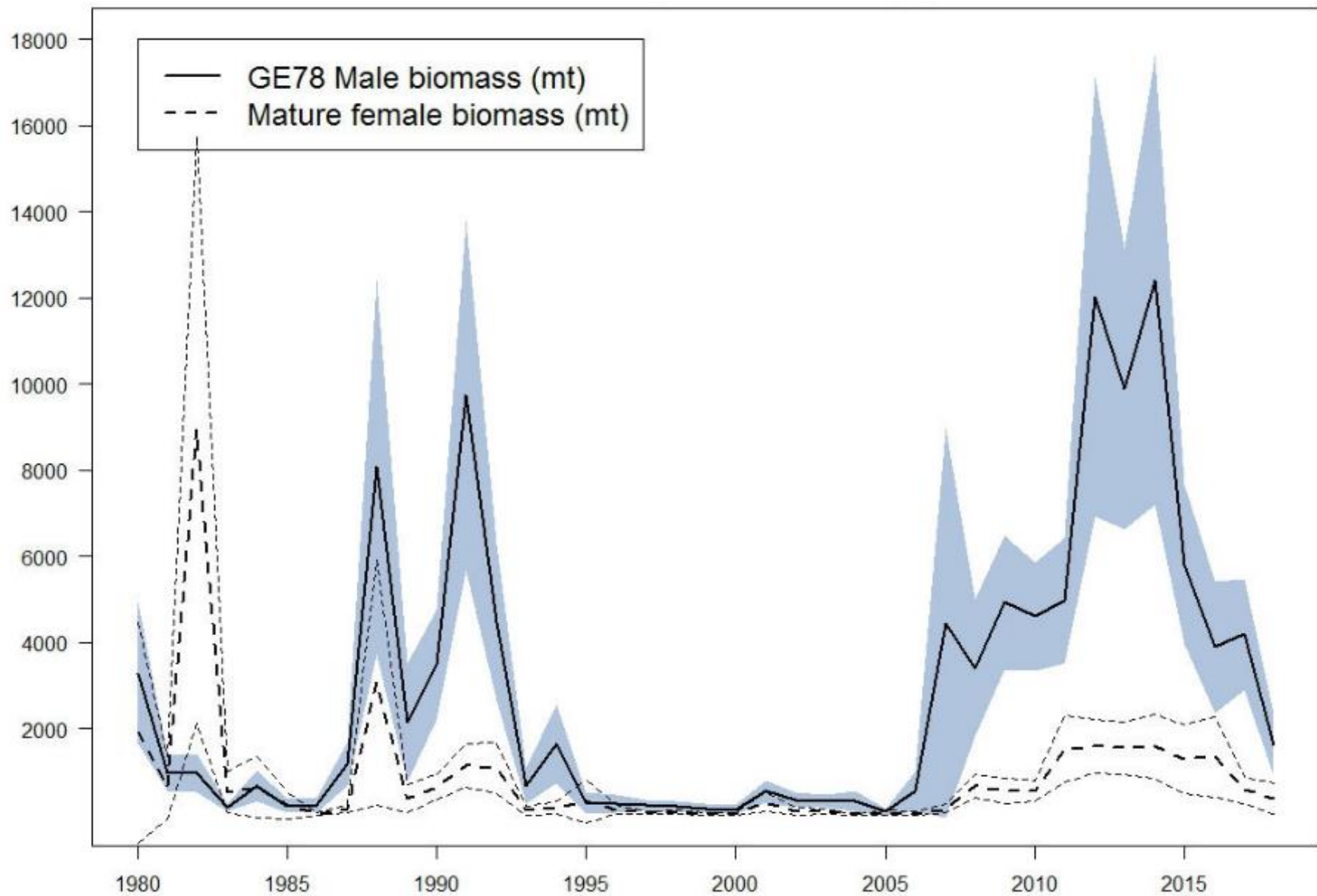
# Snow Crab (male)



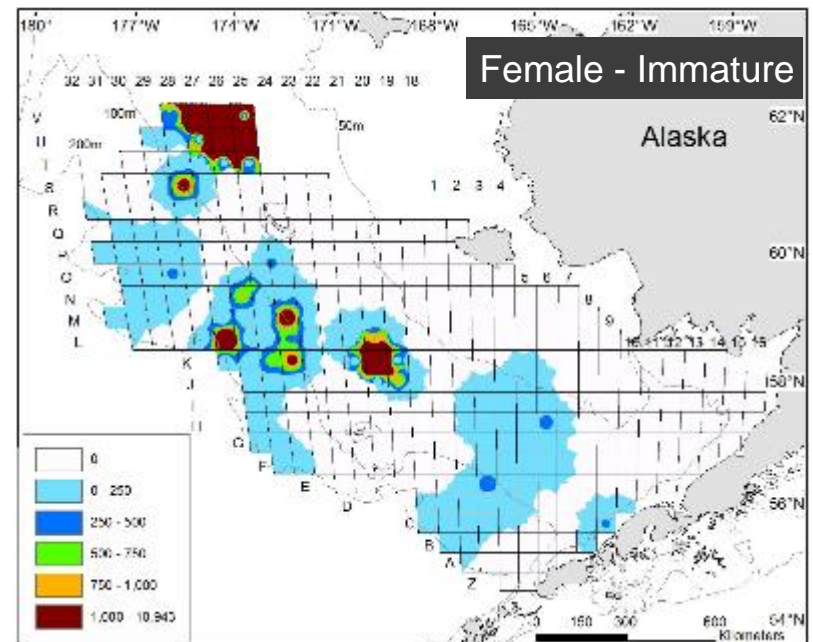
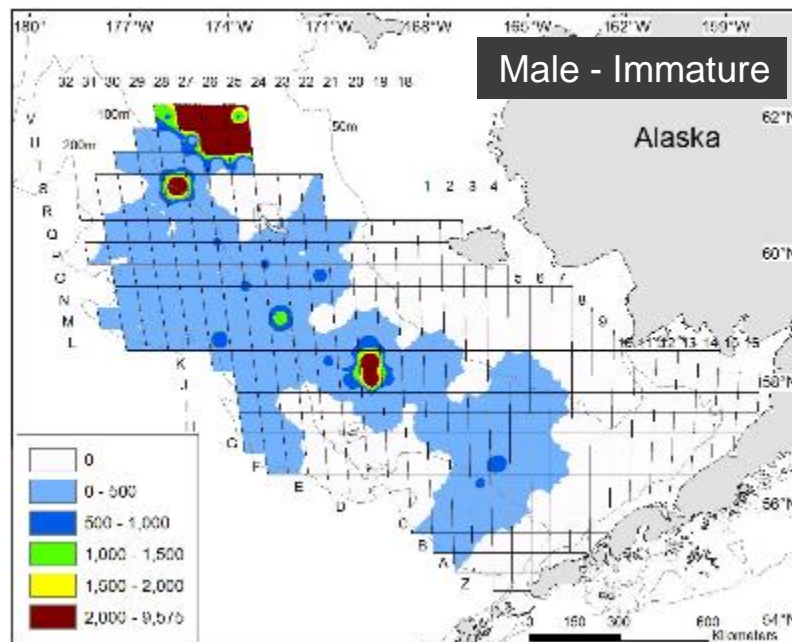
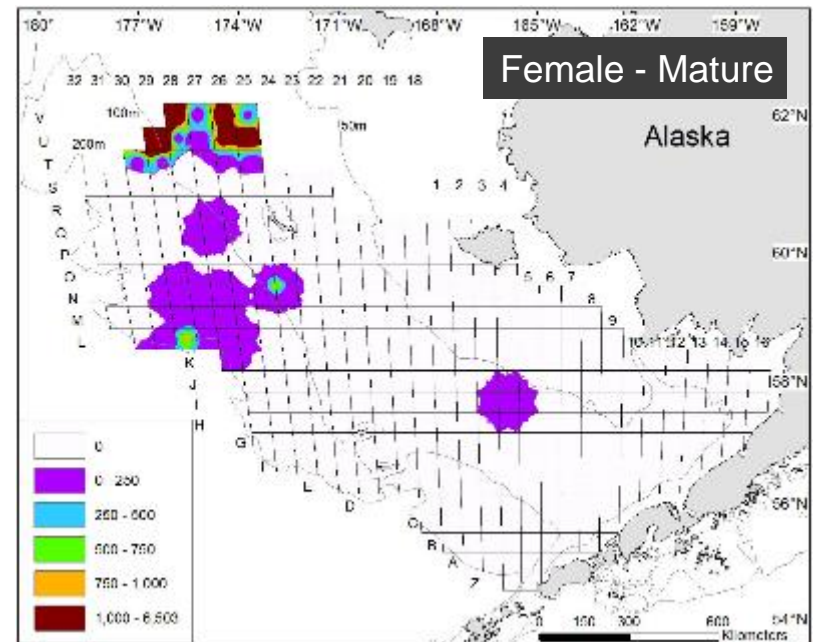
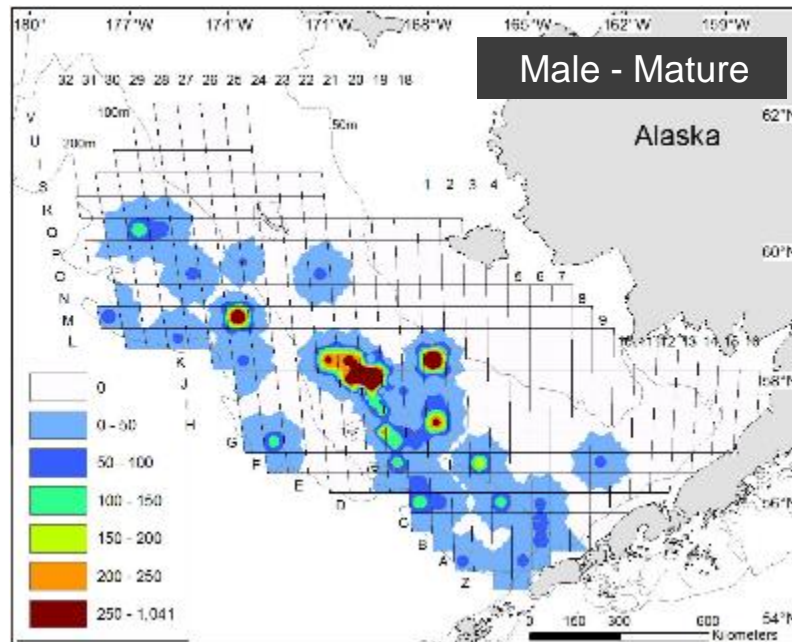
# Snow Crab (female)



# *Chionoecetes bairdi/opilio* hybrid crab



# *Chionoecetes bairdi/opilio* hybrid crab

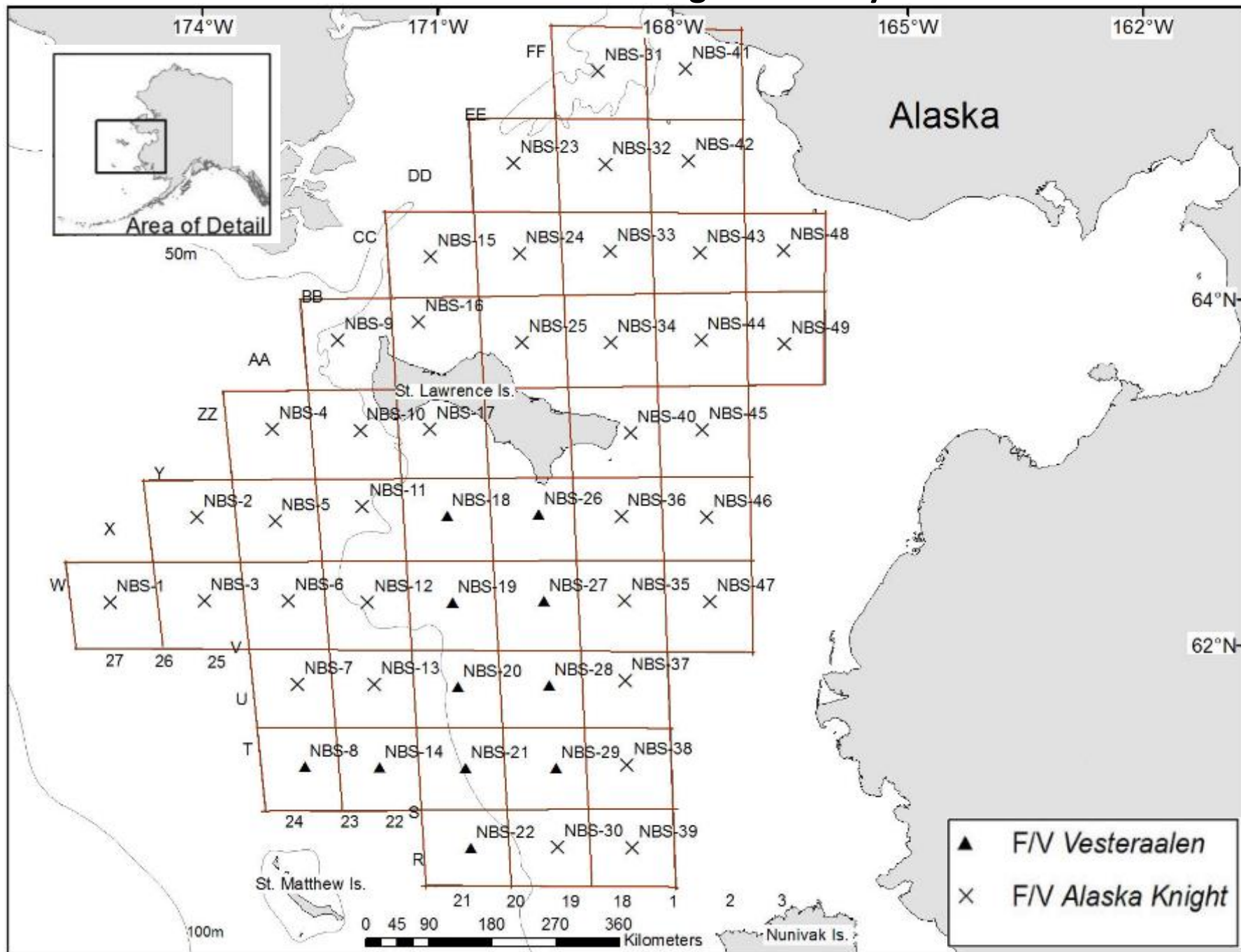




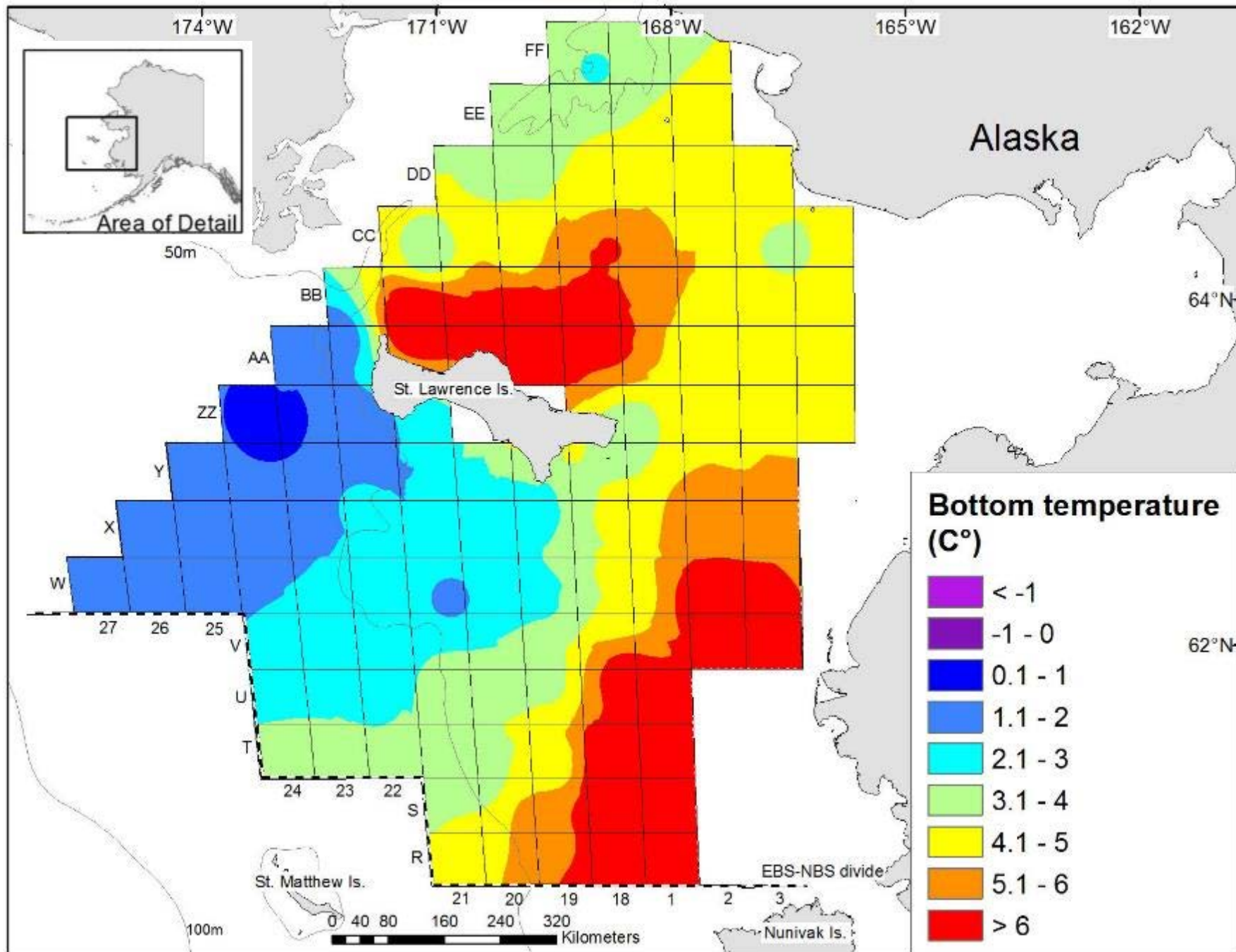
## 2018 Mature Males (2017 value in parentheses)

	# tows	#tows with crab	# caught	% measured	Biomass (t)
BB RKC	136	56 (64)	155 (266)	100%	13,226 (23,102)
PI RKC	77	8 (8)	14 (57)	100%	929 (3,658)
PI BKC	86	3 (4)	3 (4)	100%	152 (253)
SM BKC	56	12 (13)	47 (39)	100%	1,612 (1,721)
TC east	120	73 (80)	574 (1,053)	100%	11,058 (19,313)
TC west	255	106 (107)	1,898 (1,955)	100% (99%)	23,948 (24,268)
SC	375	157 (167)	3,398 (2,198)	85% (96%)	47,054 (29,240)

# 2018 Northern Bering Sea Survey

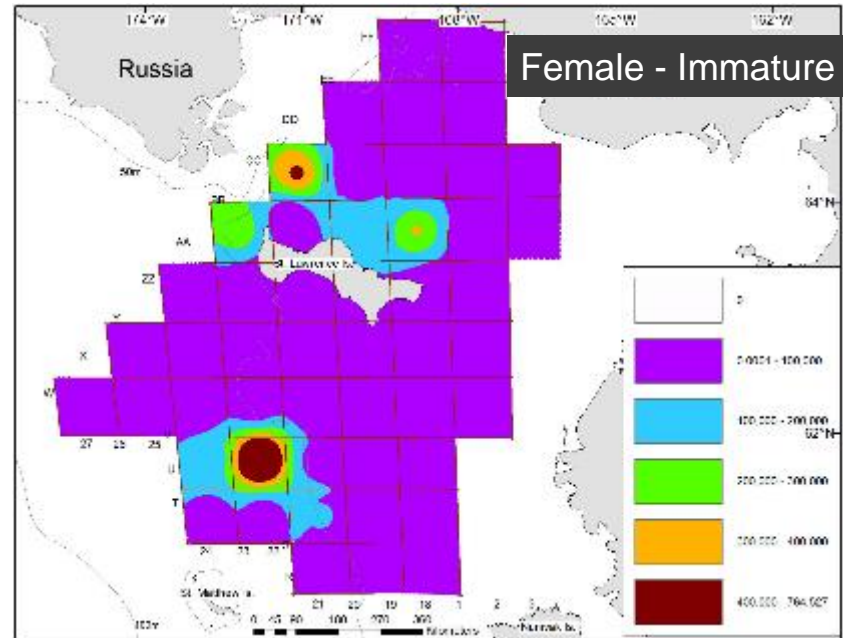
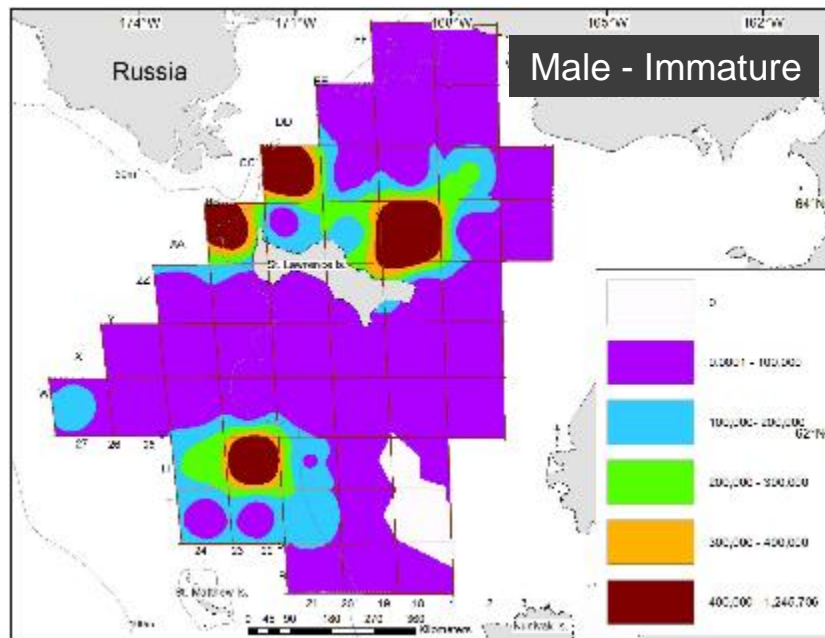
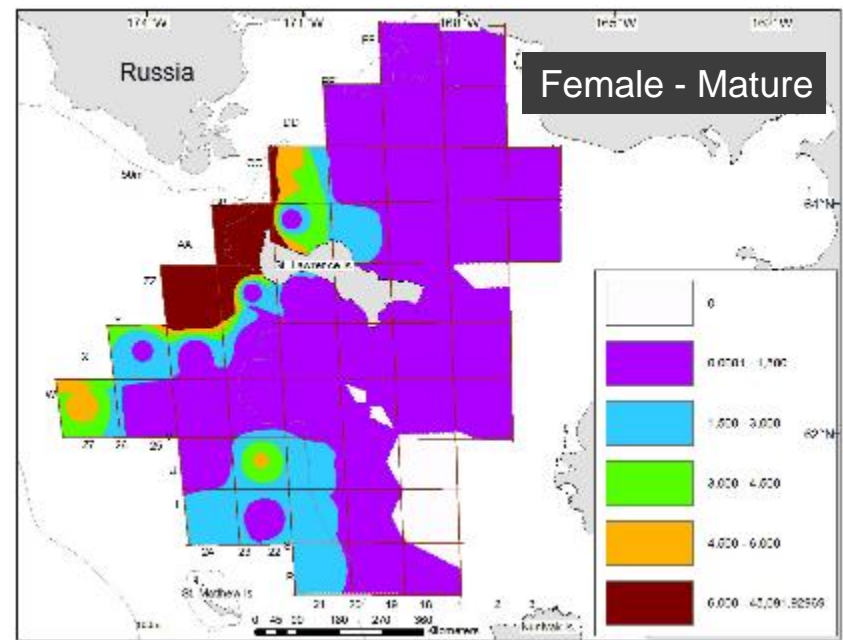
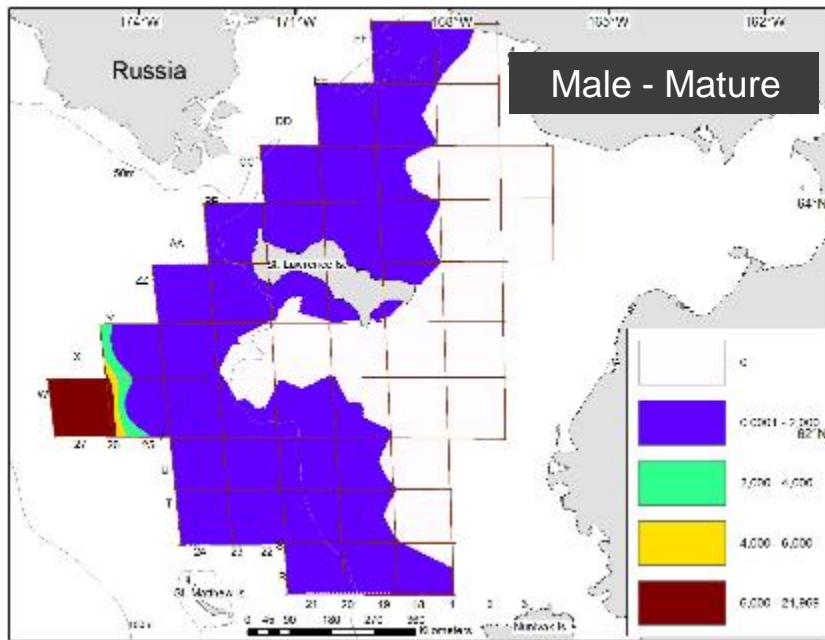


# 2018 Northern Bering Sea Survey



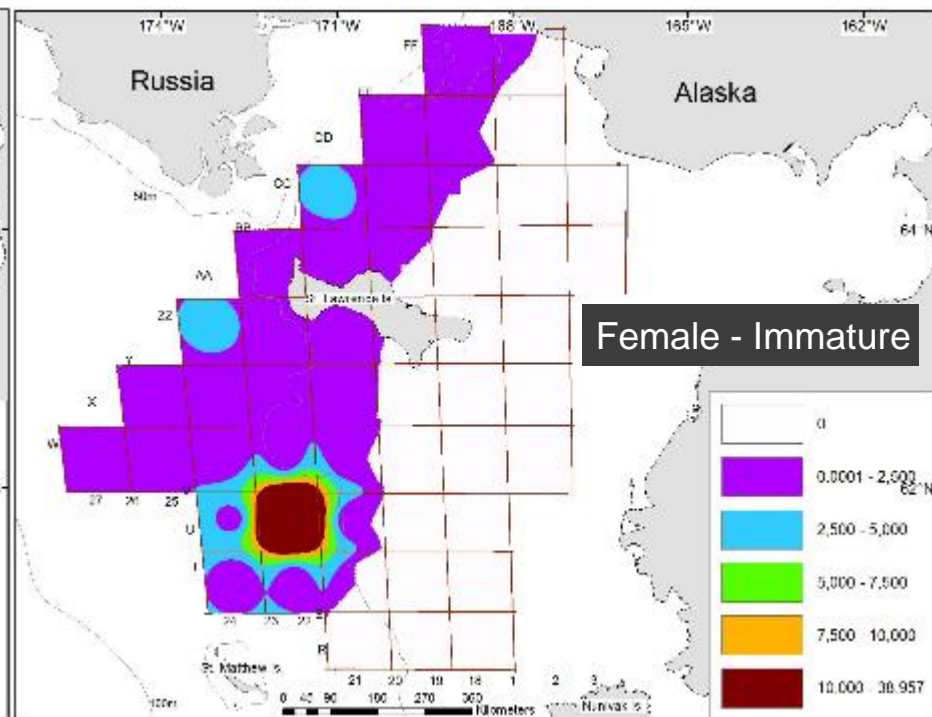
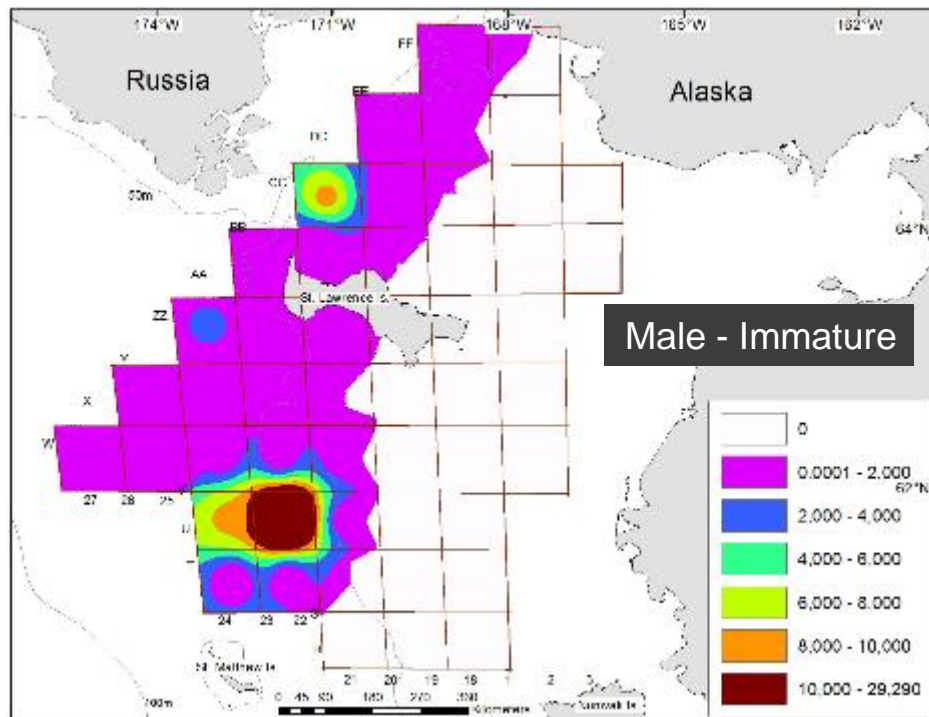


# Northern Bering Sea snow crab





# Northern Bering Sea *Chionoecetes bairdi/opilio* hybrid crab



## Snow crab: eastern Bering Sea vs. northern Bering Sea

	Station count		Biomass (t)	
	<u>South</u>	<u>North</u>	<u>South</u>	<u>North</u>
<b>Immature male</b> (2017)	<b>204</b> (205)	<b>35</b> (103)	<b>458,902</b> (188,849)	<b>115,491</b> (135,802)
<b>Mature male</b> (2017)	<b>157</b> (167)	<b>12</b> (2)	<b>47,054</b> (29,240)	<b>3,799</b> (349)
<b>Immature female</b> (2017)	<b>135</b> (109)	<b>41</b> (103)	<b>83,164</b> (66,240)	<b>56,667</b> (80,918)
<b>Mature female</b> (2017)	<b>121</b> (135)	<b>41</b> (53)	<b>161,573</b> (103,422)	<b>3,265</b> (6,147)