



**NOAA  
FISHERIES**

**Alaska Fisheries  
Science Center**

# Results from the 37<sup>th</sup> Annual Eastern Bering Sea Shelf Bottom Trawl Survey

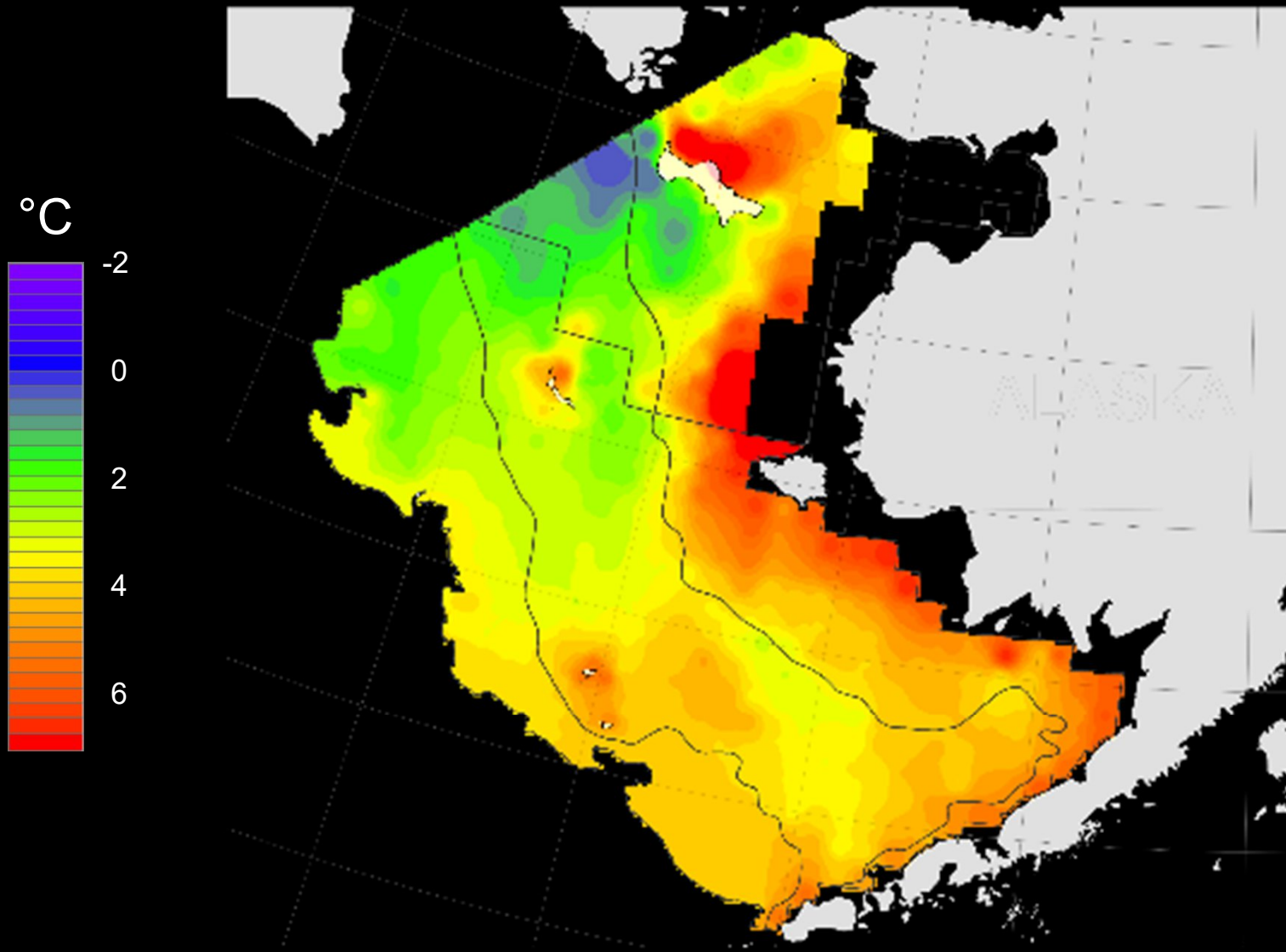
May 31 to August 20, 2018

**Resource Assessment &  
Conservation Engineering Division  
Groundfish Assessment Program**

September 19, 2018

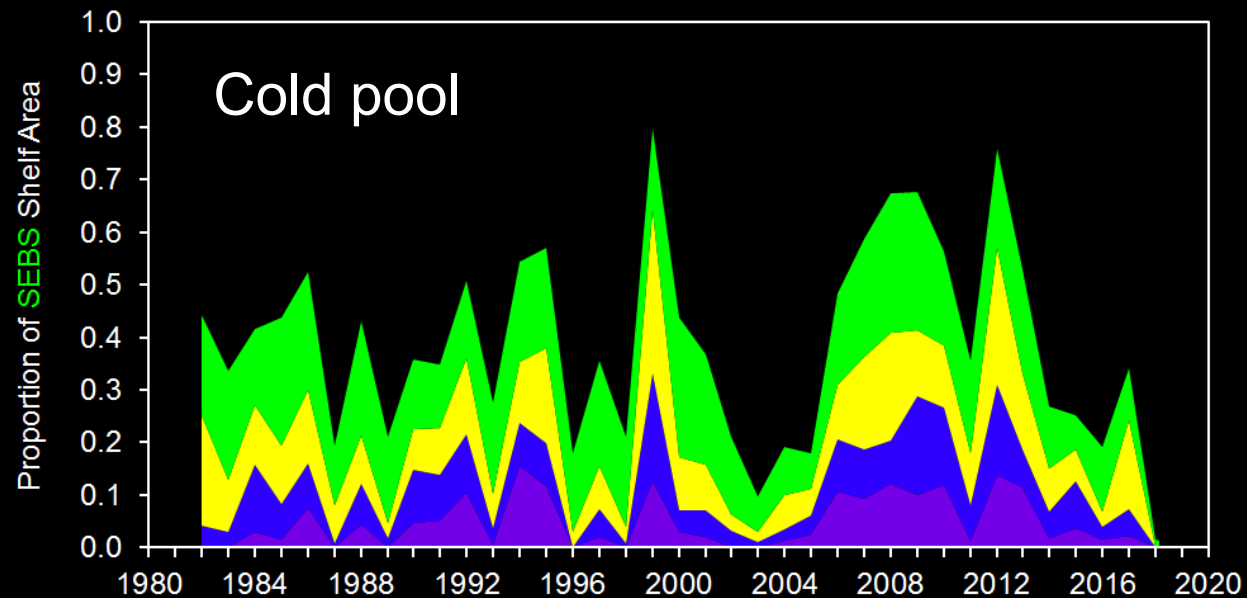
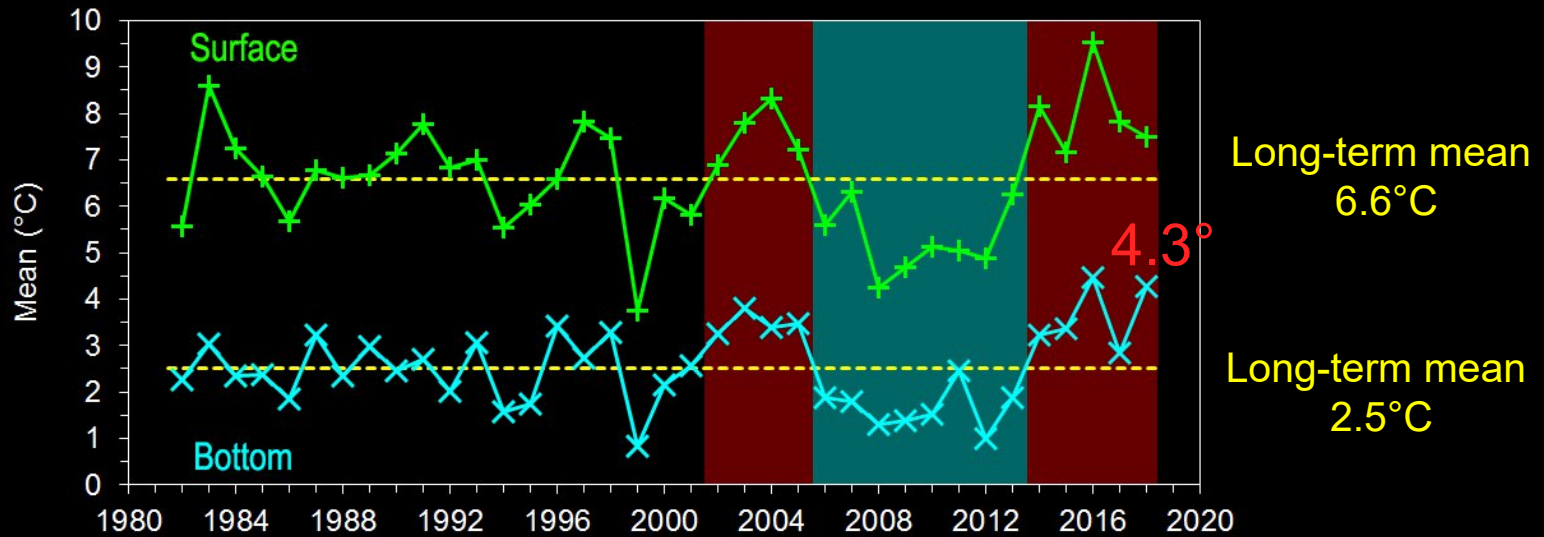


# Survey bottom temperatures 2018



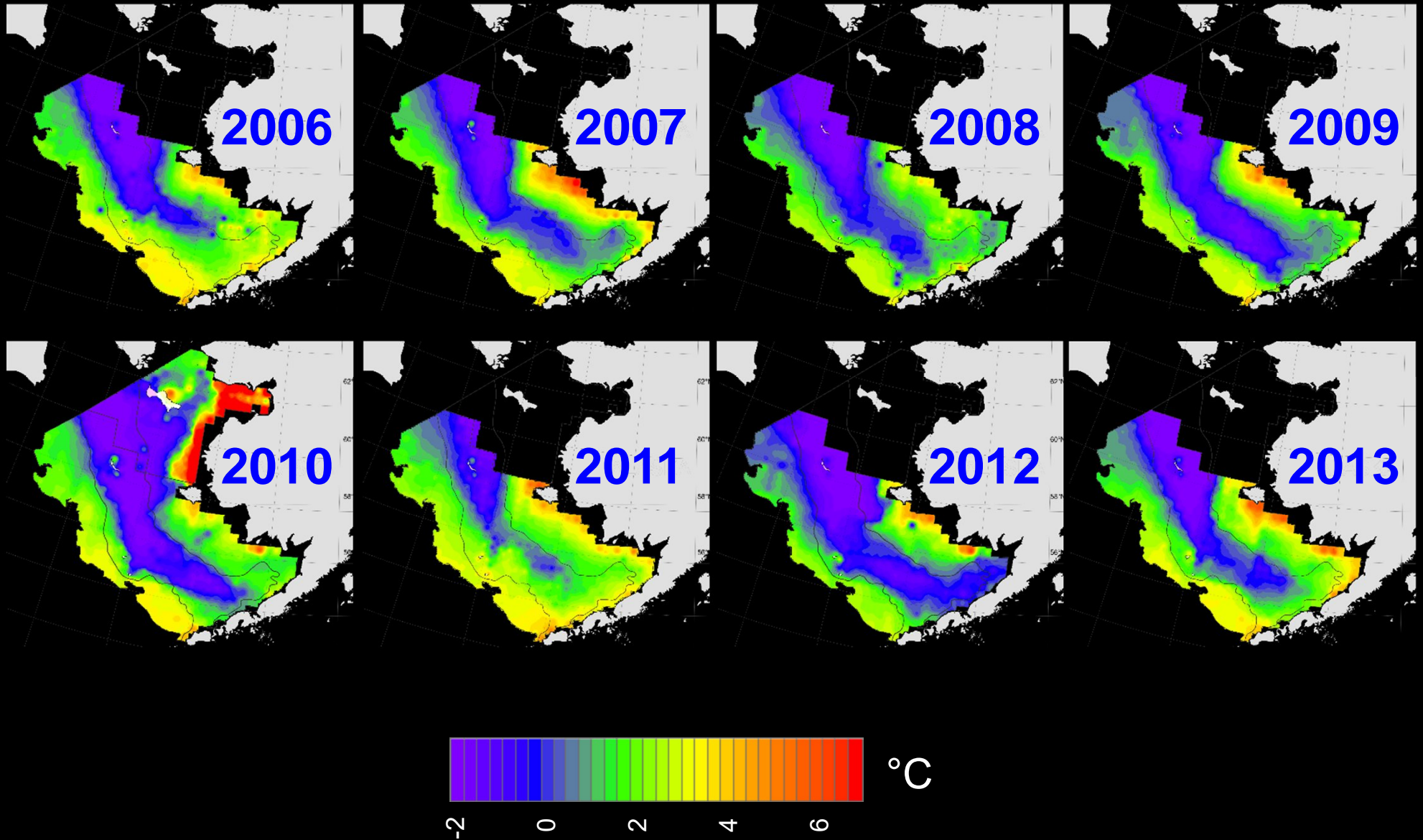
# CPA & Mean Bottom Temperature

## Standard SEBS survey area



# Bottom temperatures 2006 to 2013

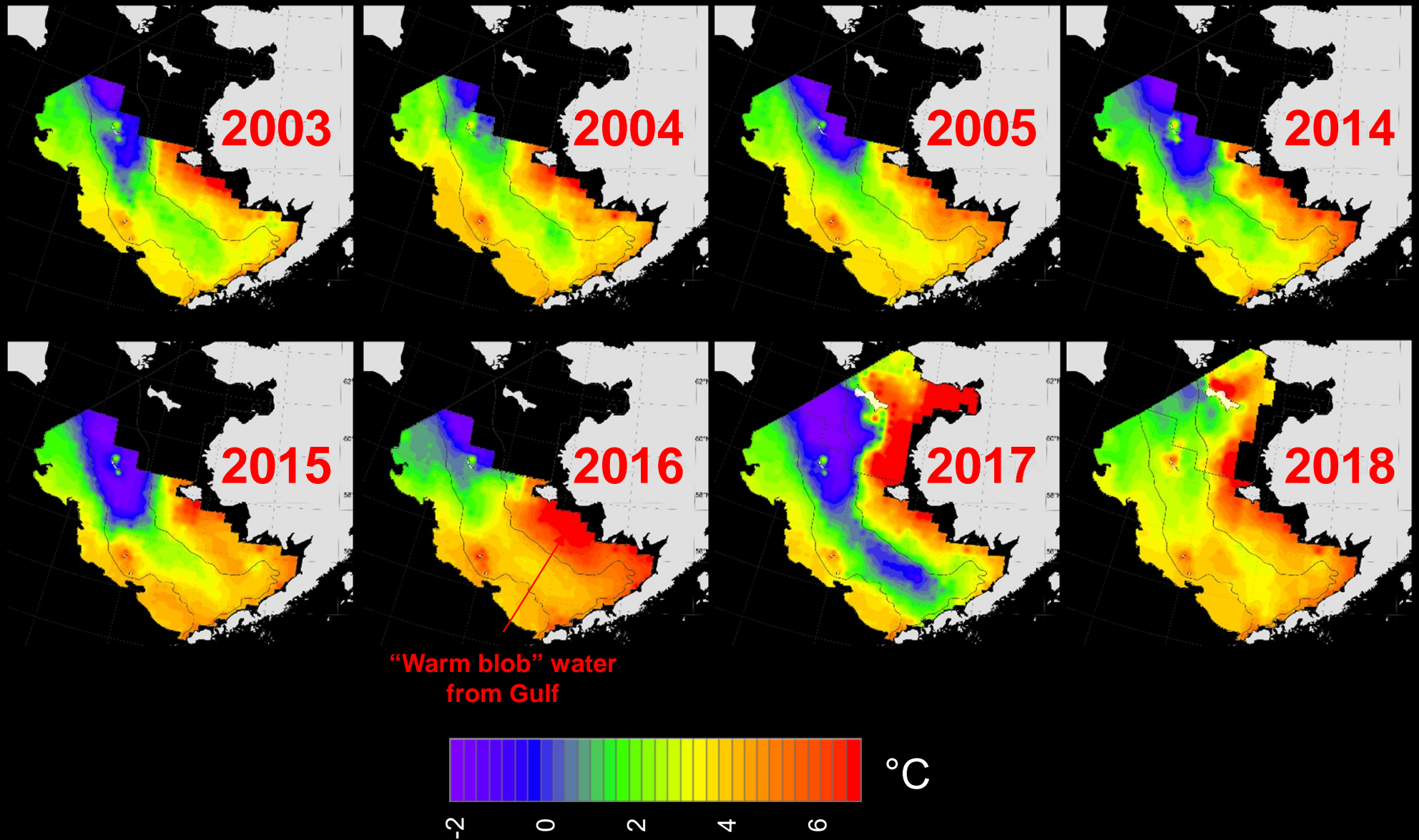
Below average “cold” years



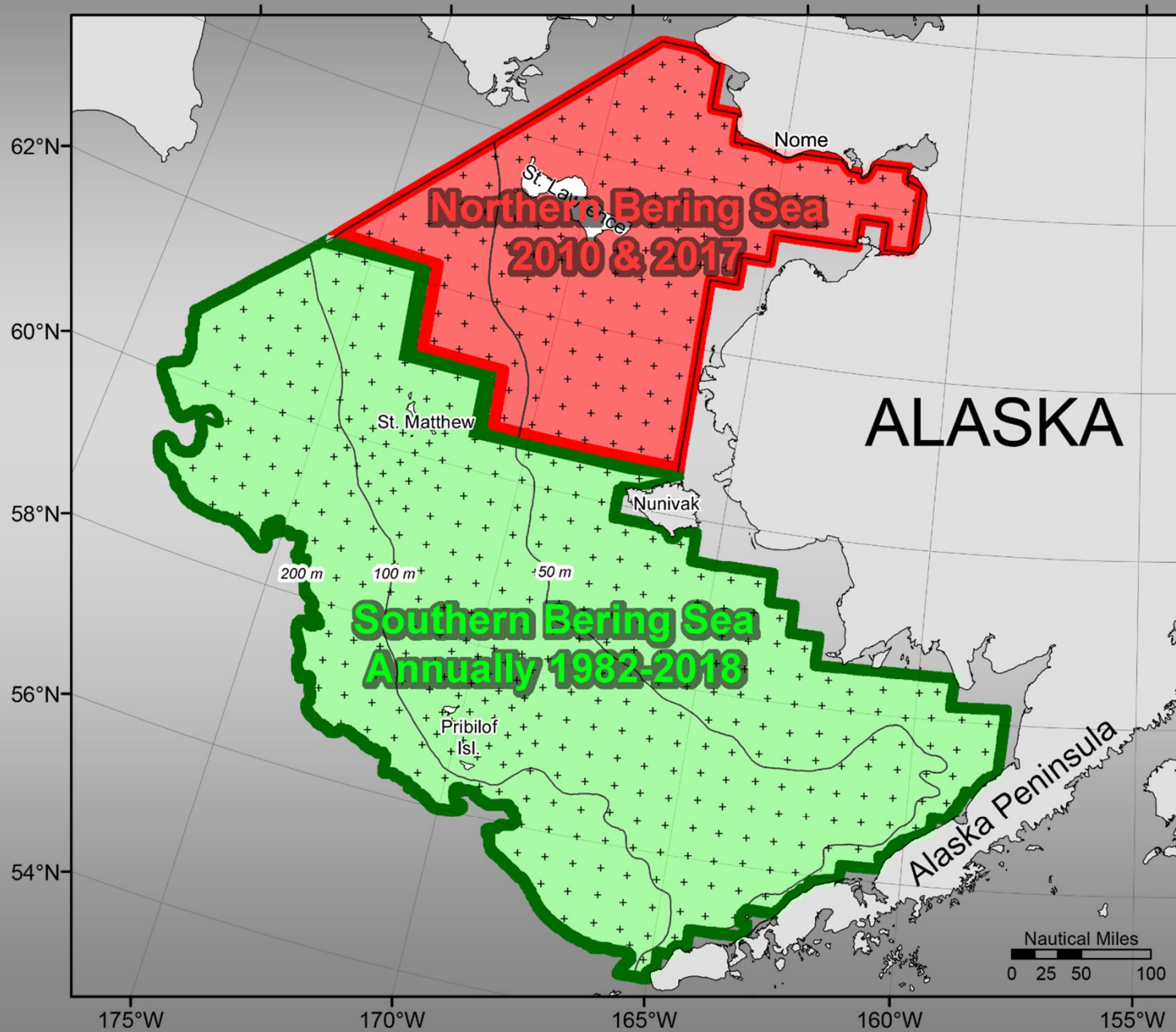


# Bottom temperatures 2003-05 & 2014-18

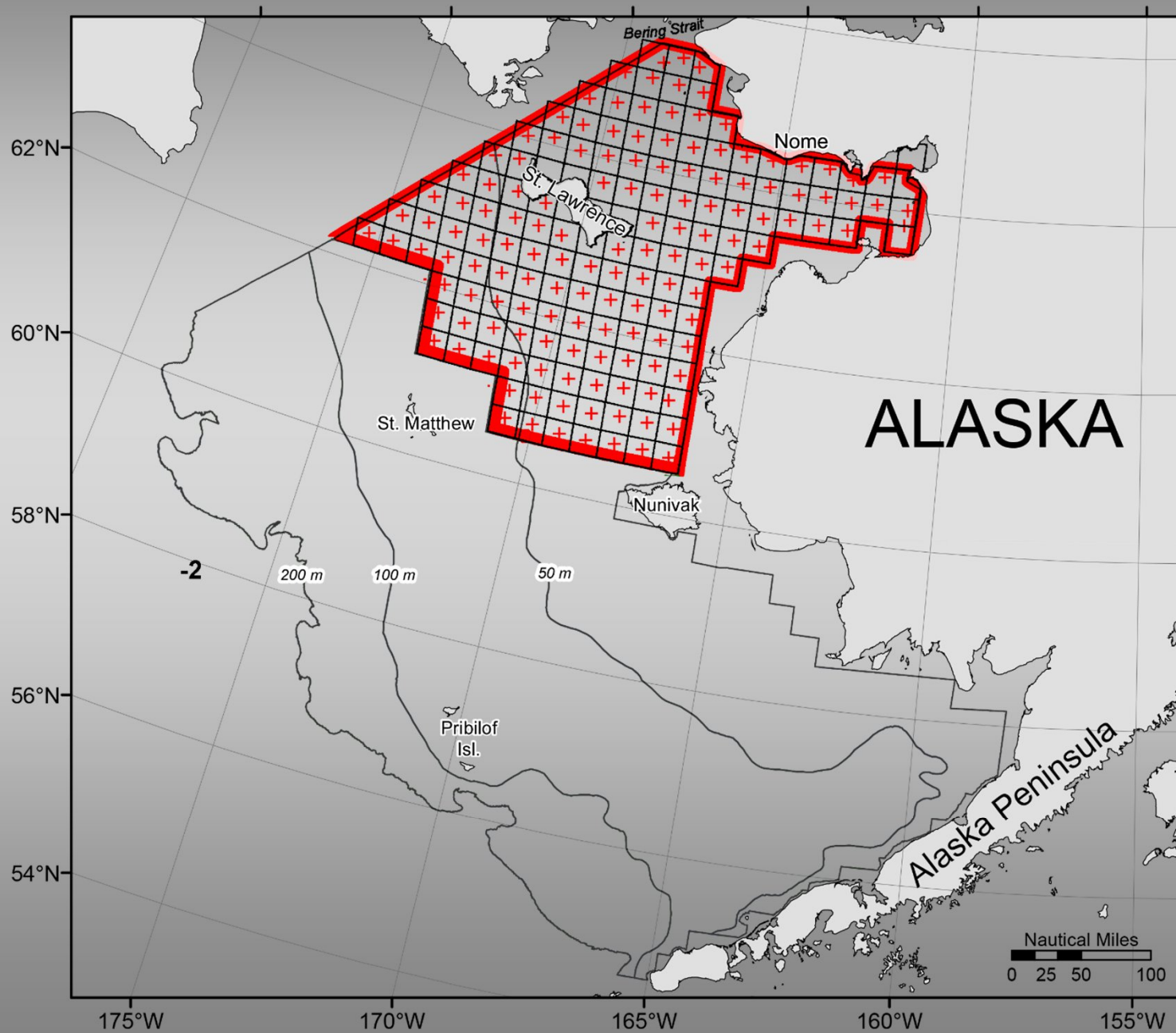
Above average “warm” years



# Standard surveys

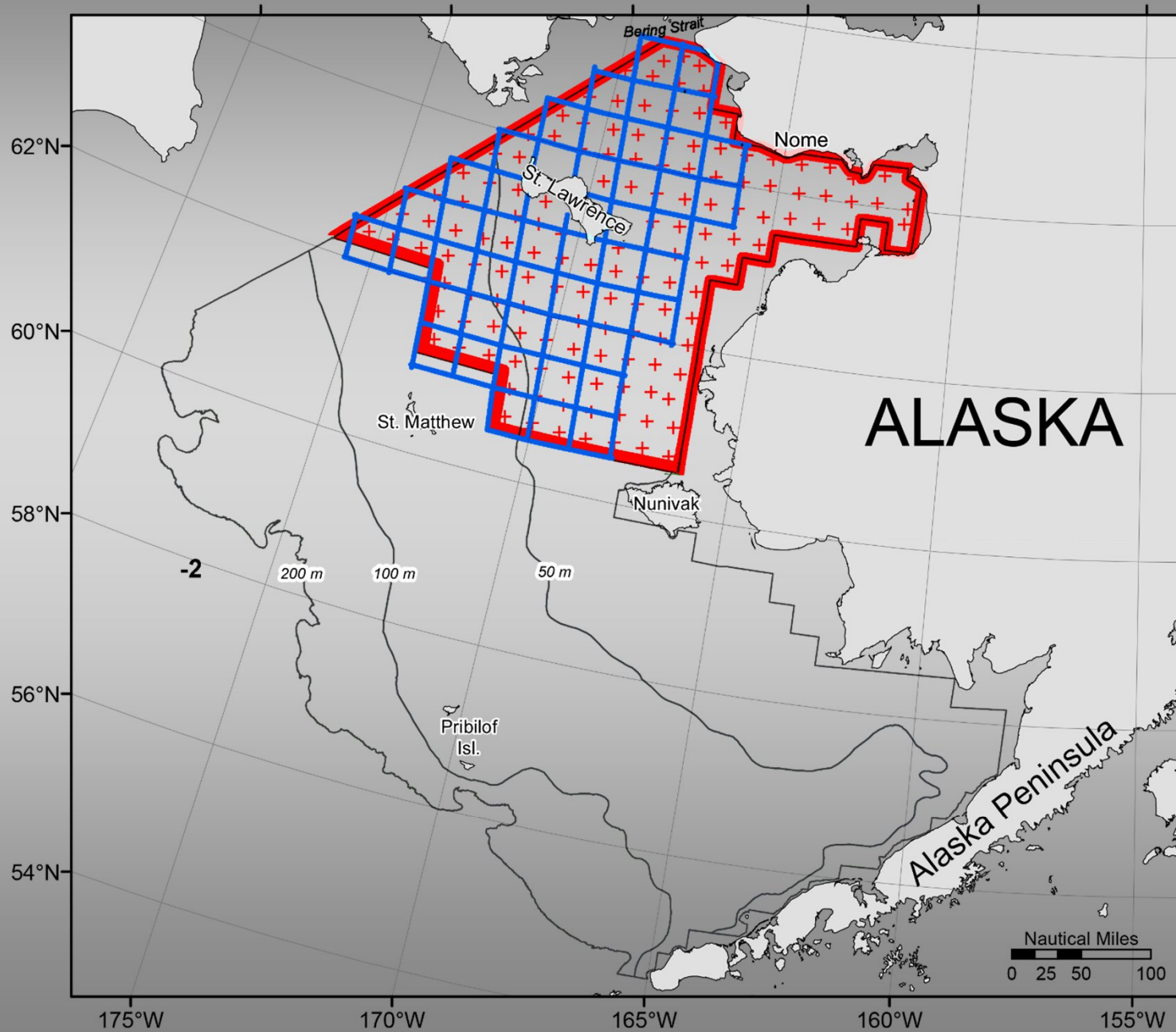


# Standard $20 \text{ nm}^2$ grid pattern



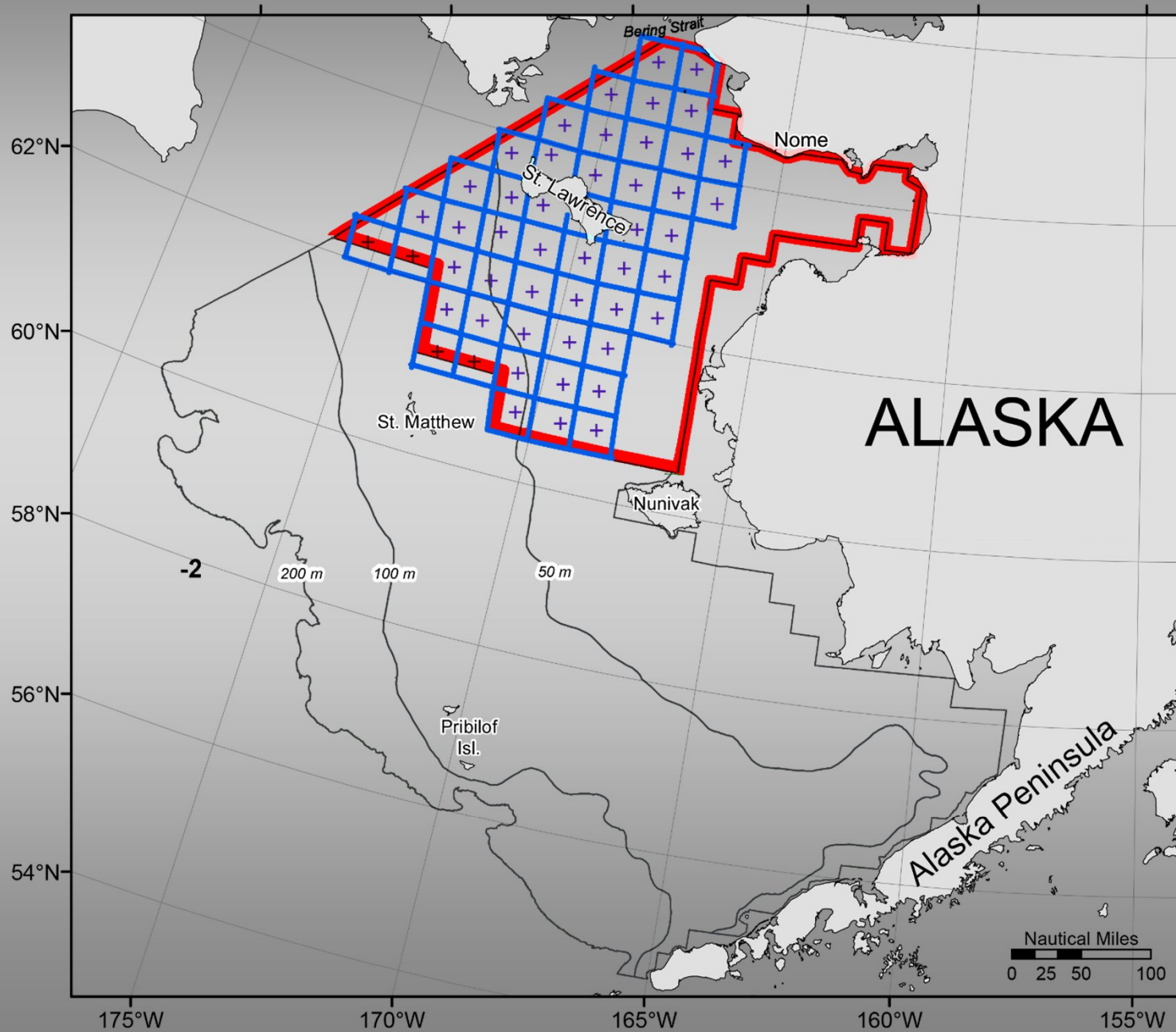


# “Special” 30 nm<sup>2</sup> grid pattern

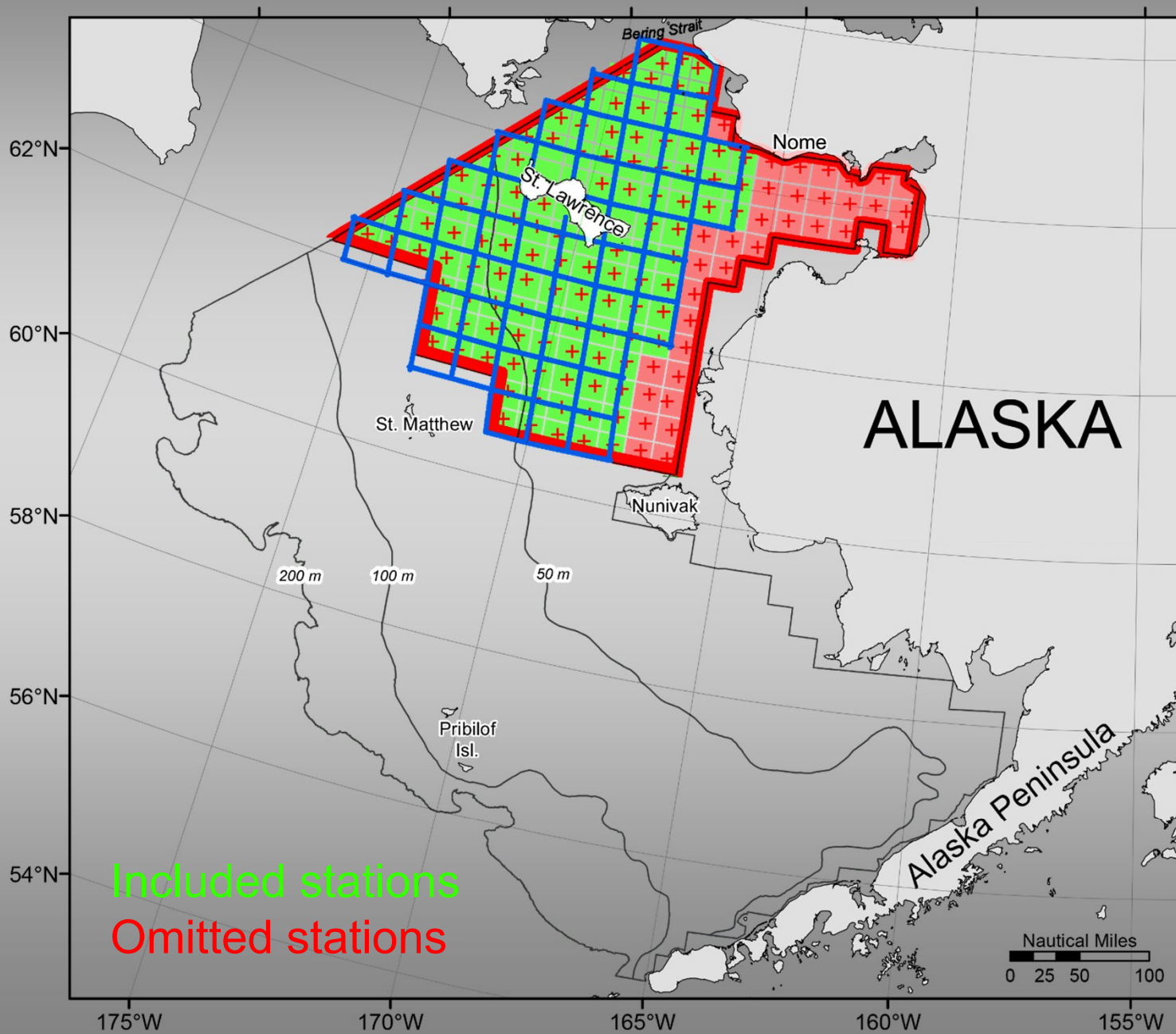




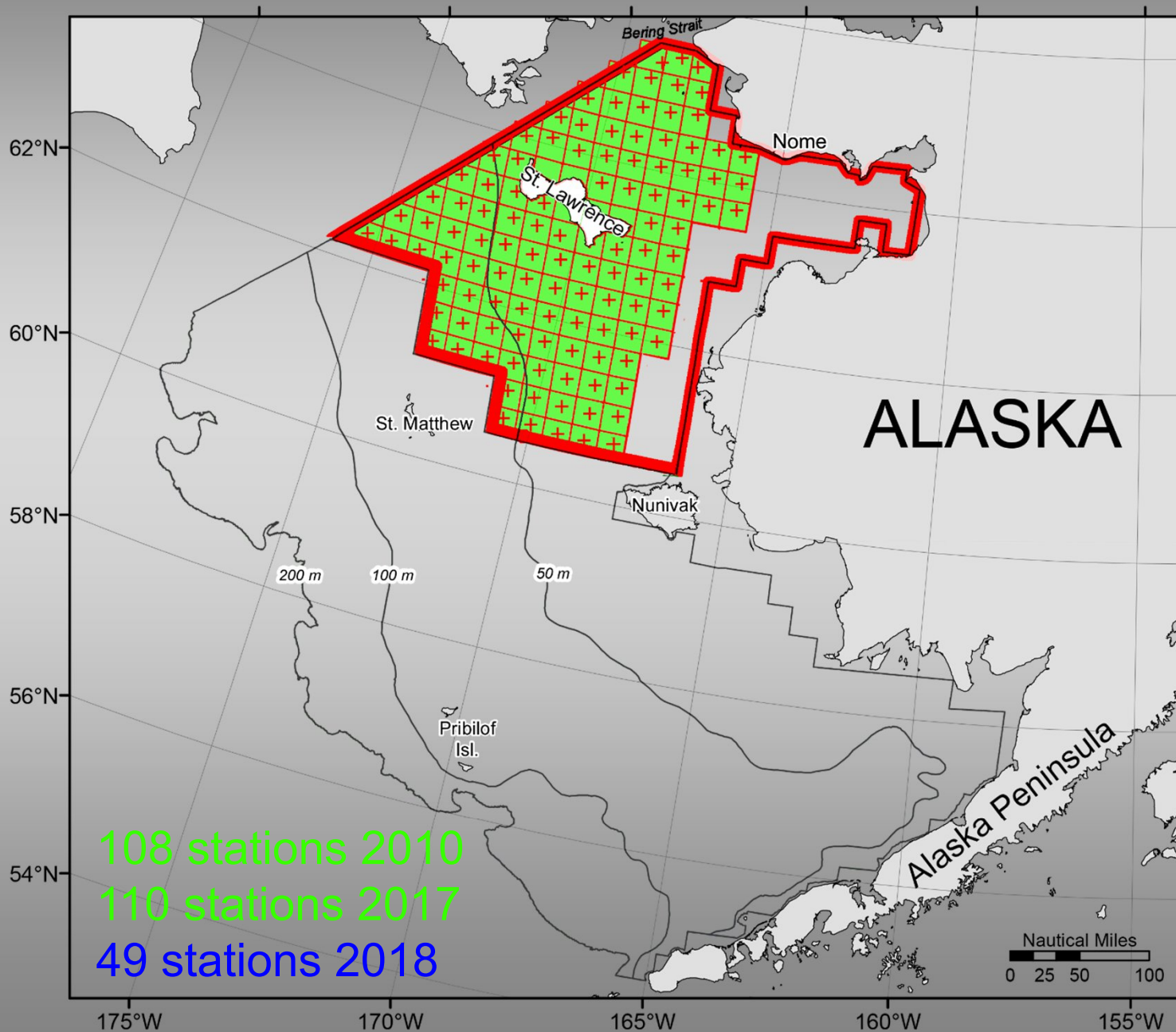
# “Special” 30 nm<sup>2</sup> grid pattern



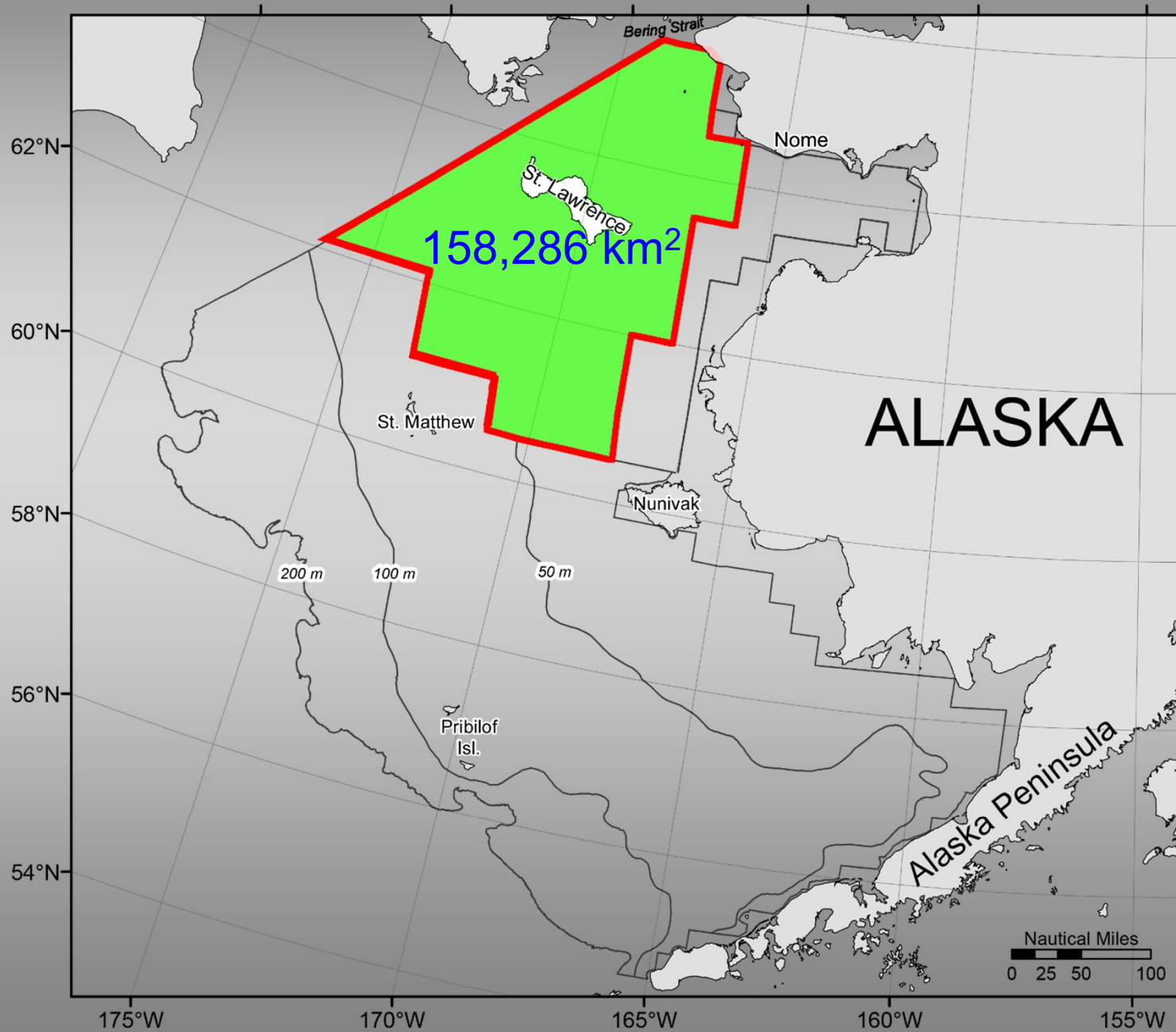
# “Truncated” 2010 & 2017



# “Truncated” 2010 & 2017



# Analysis of 2010, 2017 & 2018





# 2018 Survey Charter Vessels

**EBS & NBS**

May 31 – August 20



*FV Alaska Knight*  
2010 -present  
9<sup>h</sup> year

**EBS only**

May 31 – August 7



*FV Vesteraalen*  
2014 -present  
5<sup>th</sup> year

Both vessels on contract to do full EBS & NBS next year.  
Thank you AFSC leadership and NOAA Fisheries HQ!

# Length measurements SEBS & NBS

walleye pollock	48,535	8,126
yellowfin sole	27,237	4,299
flathead sole	26,708	11
northern rock sole	25,765	2,540
arrowtooth flounder	18,689	12
Alaska plaice	12,024	1,992
Pacific cod	8,804	2,511
Alaska skate	4,587	376
Kamchatka flounder	2,736	7
rex sole	2,425	-
plain sculpin	1,899	290
Pacific halibut	1,828	63
Bering flounder	1,450	1,250
yellow Irish lord	1,354	1
starry flounder	1,024	54
great sculpin	782	24
longhead dab	498	72
bigmouth sculpin	346	-
Greenland turbot	249	10
other taxa (22)	2,817	1,431
<b>TOTAL</b>	<b>213,302</b>	

# Age structures SEBS & NBS

## Random

Walleye pollock	1502 & 250	Aging completed
Pacific cod	1352 & 196	
Flathead sole	805	
Arrowtooth flounder	804	

## Per cm/sex/area

Yellowfin sole	724
Northern rock sole	571
Alaska plaice	472
Kamchatka flounder	485
Greenland turbot	203
Pacific halibut	381
Yellow Irish lord	258

# Other survey projects & samples

## Genetic samples

Pacific cod 250

## Crab pathology

Snow crab 783

Tanner crab 446

## Pacific halibut

Wire tags 768

Tissue samples 181

Fin clips 518

## Stomachs

Pollock Lots

Pacific cod &

Halibut Lots

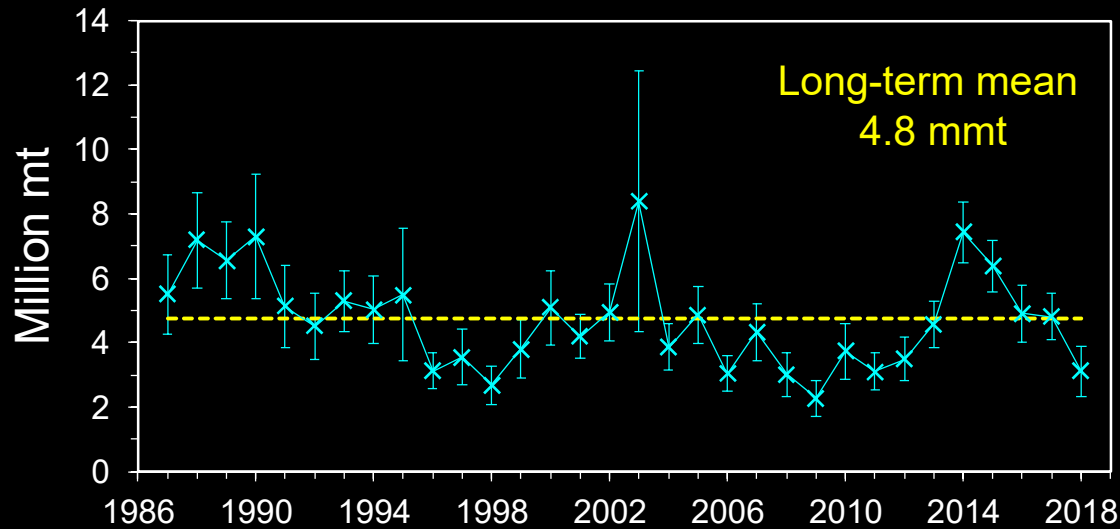
ATF

## Other major projects

- Temporal-spatial variation of juvenile flatfish condition
- MACE “AVO” pollock index
- Estimation of catchability of the combined BT & AT survey for pollock
- CTD and light intensity data collections
- Population genomics of RKC and Tanner crabs
- Genetics and mating dynamics of snow crab
- Cooperative BSFRF Tanner crab catchability study



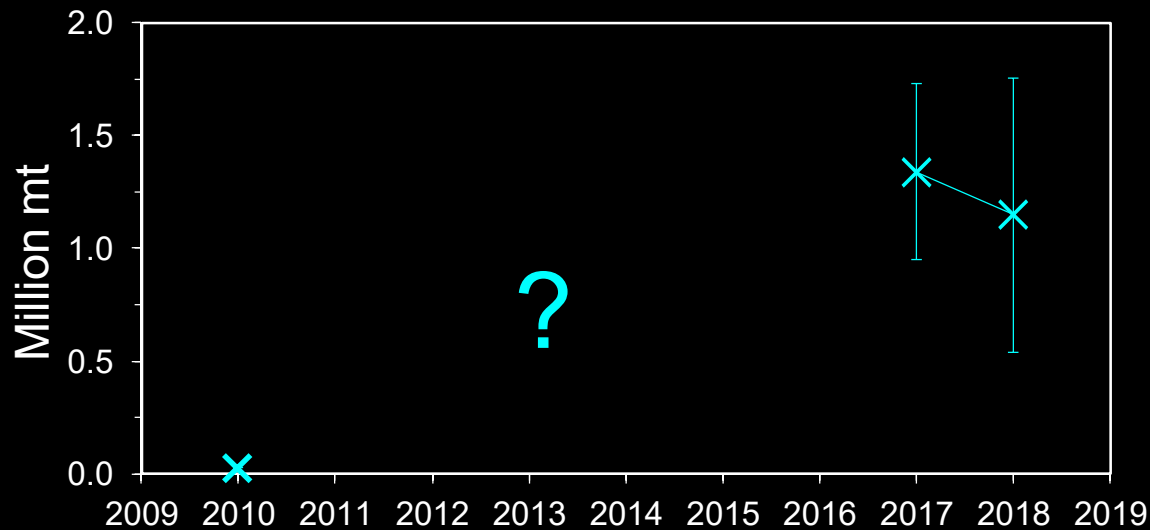
# SEBS & NBS Walleye pollock



## SEBS Biomass

3.1 mmt

**-35%** from 2017 (4.8 mmt)



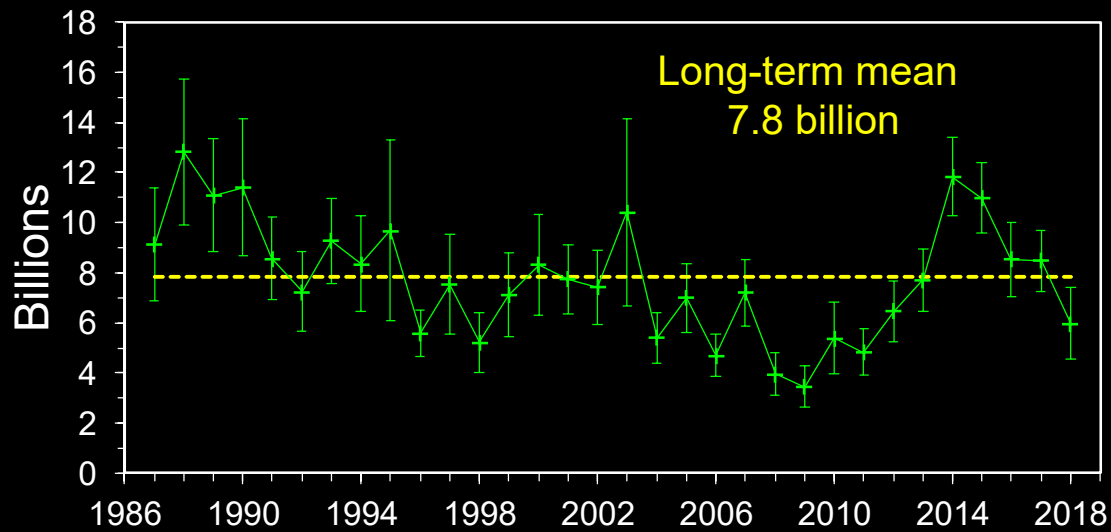
## NBS Biomass

1.15 mmt

**-14%** from 2017 (1.34 mmt)



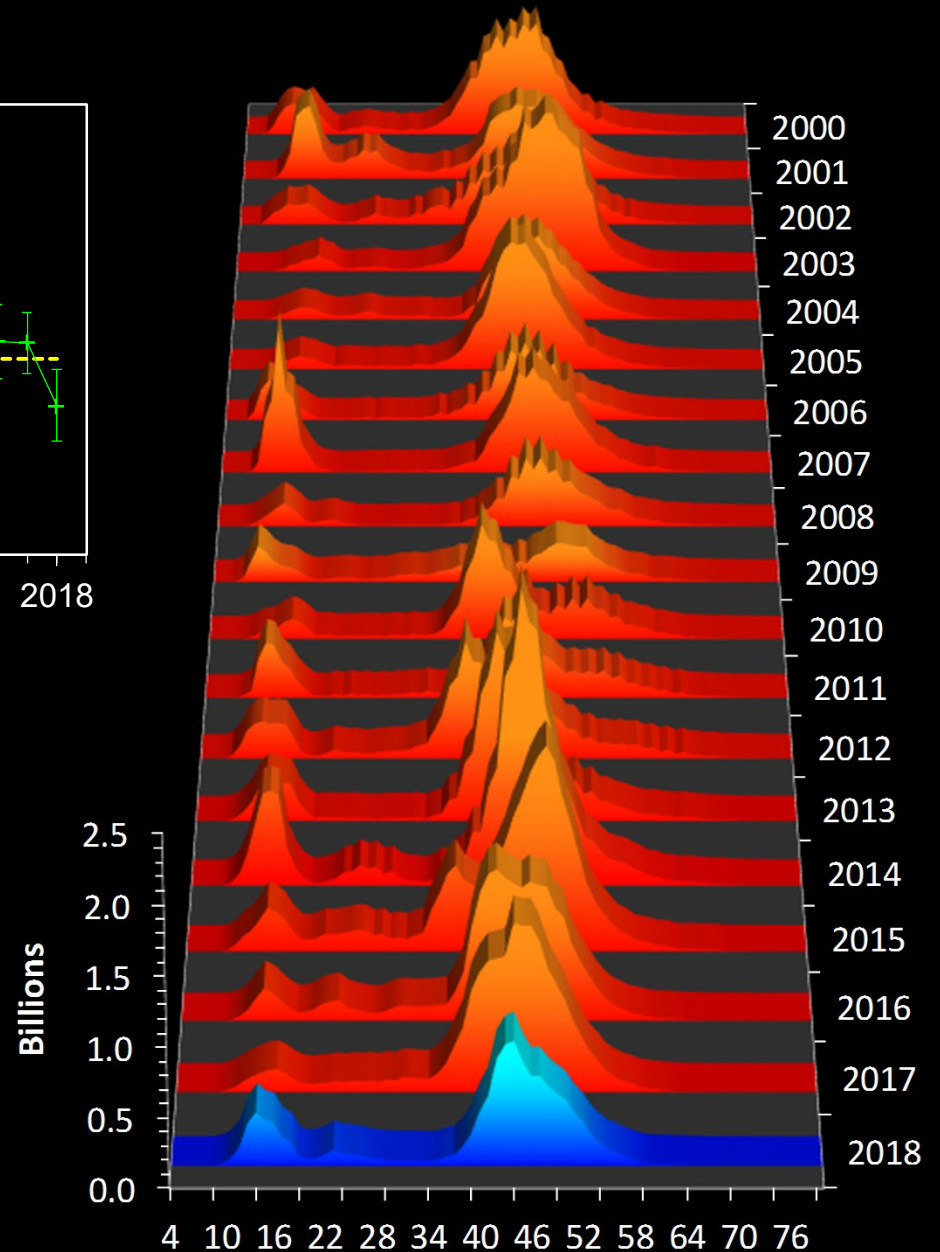
# SEBS Walleye pollock



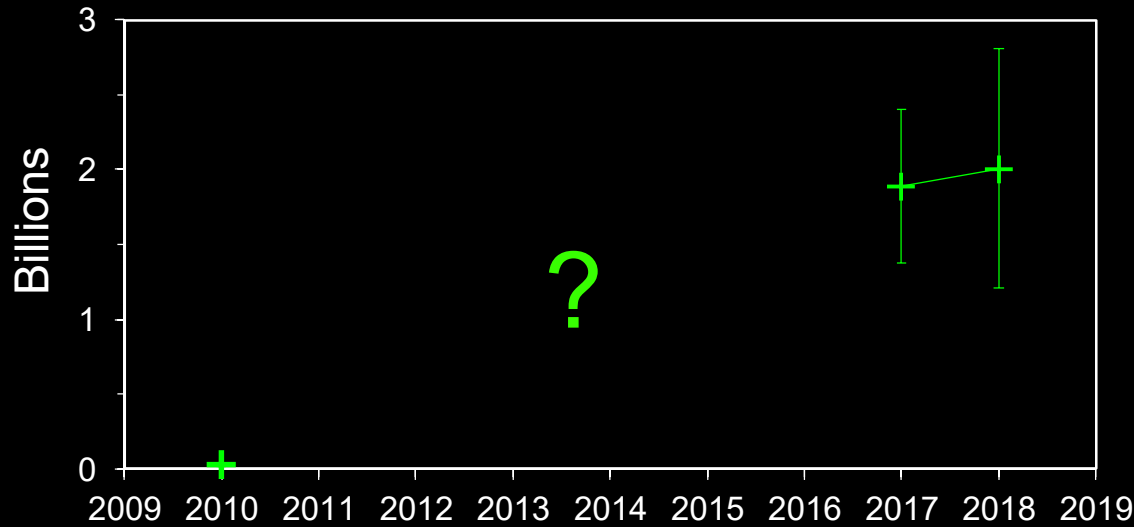
## SEBS Abundance

6.0 billion

**-30%** from 2017 (8.5 billion)



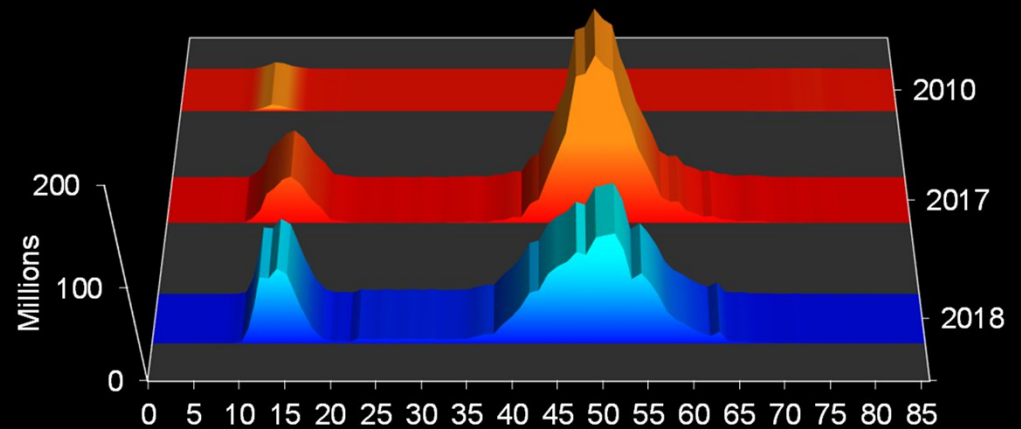
# NBS Walleye pollock



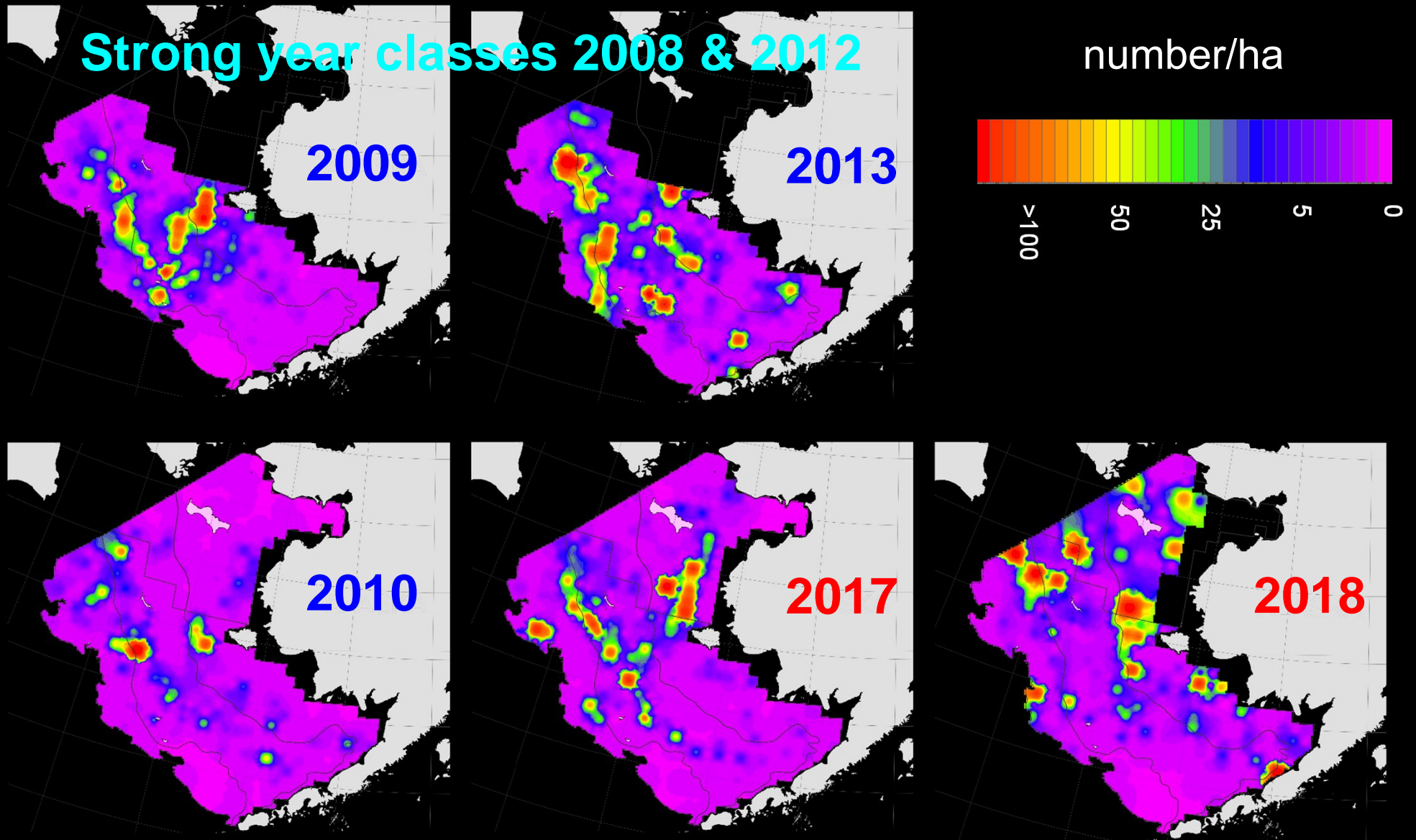
## NBS Abundance

2.0 billion

+6% from 2017 (1.9 billion)

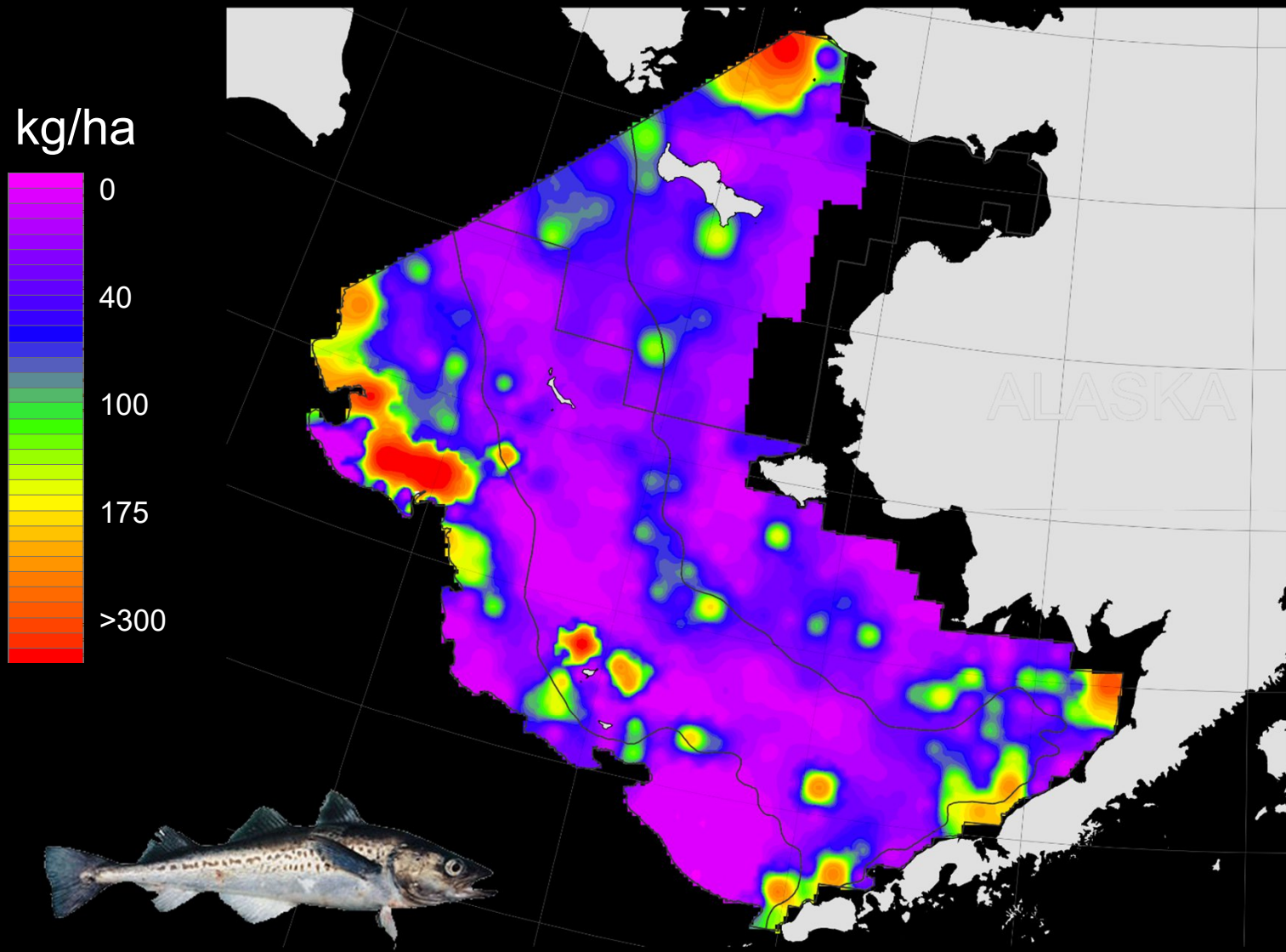


# Juv. walleye pollock distribution <20 cm

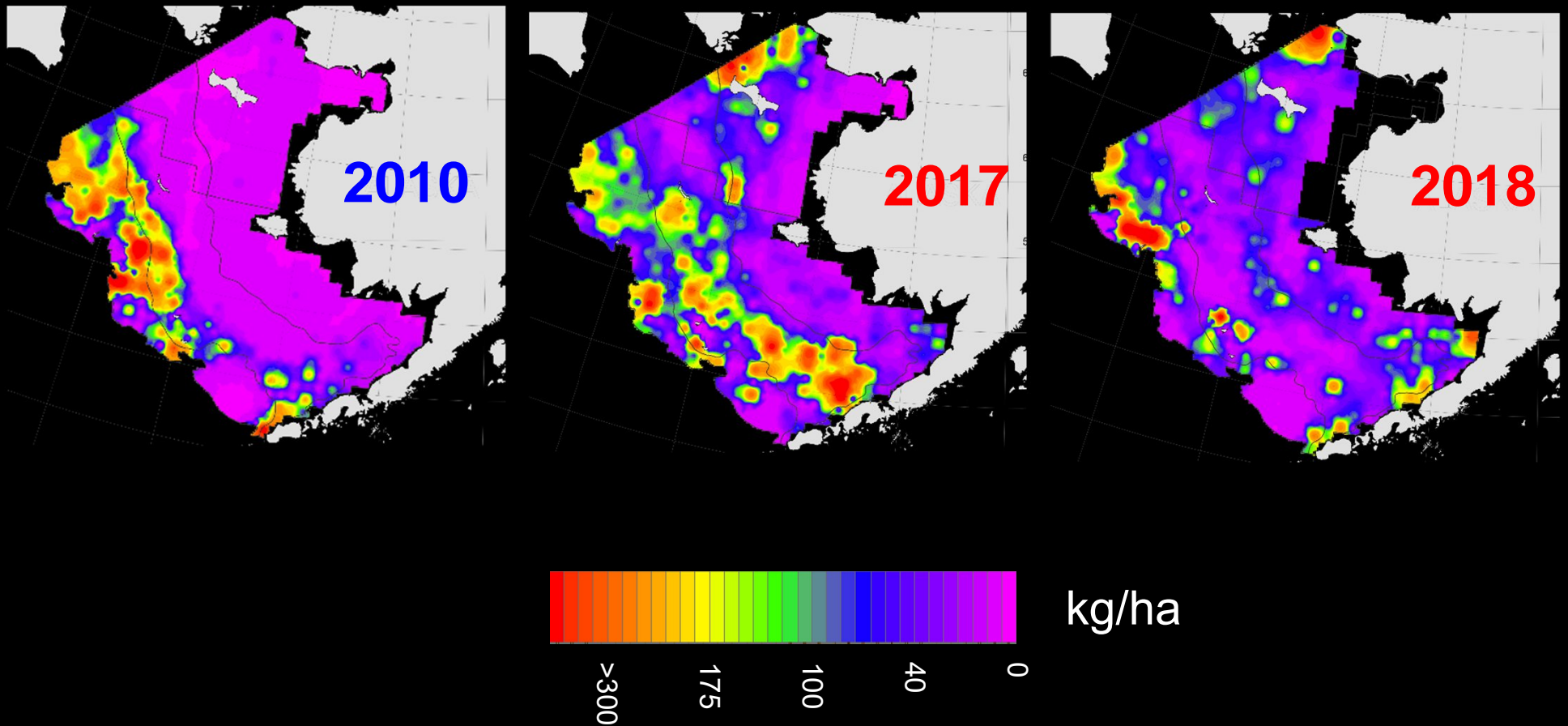




# Walleye pollock distribution

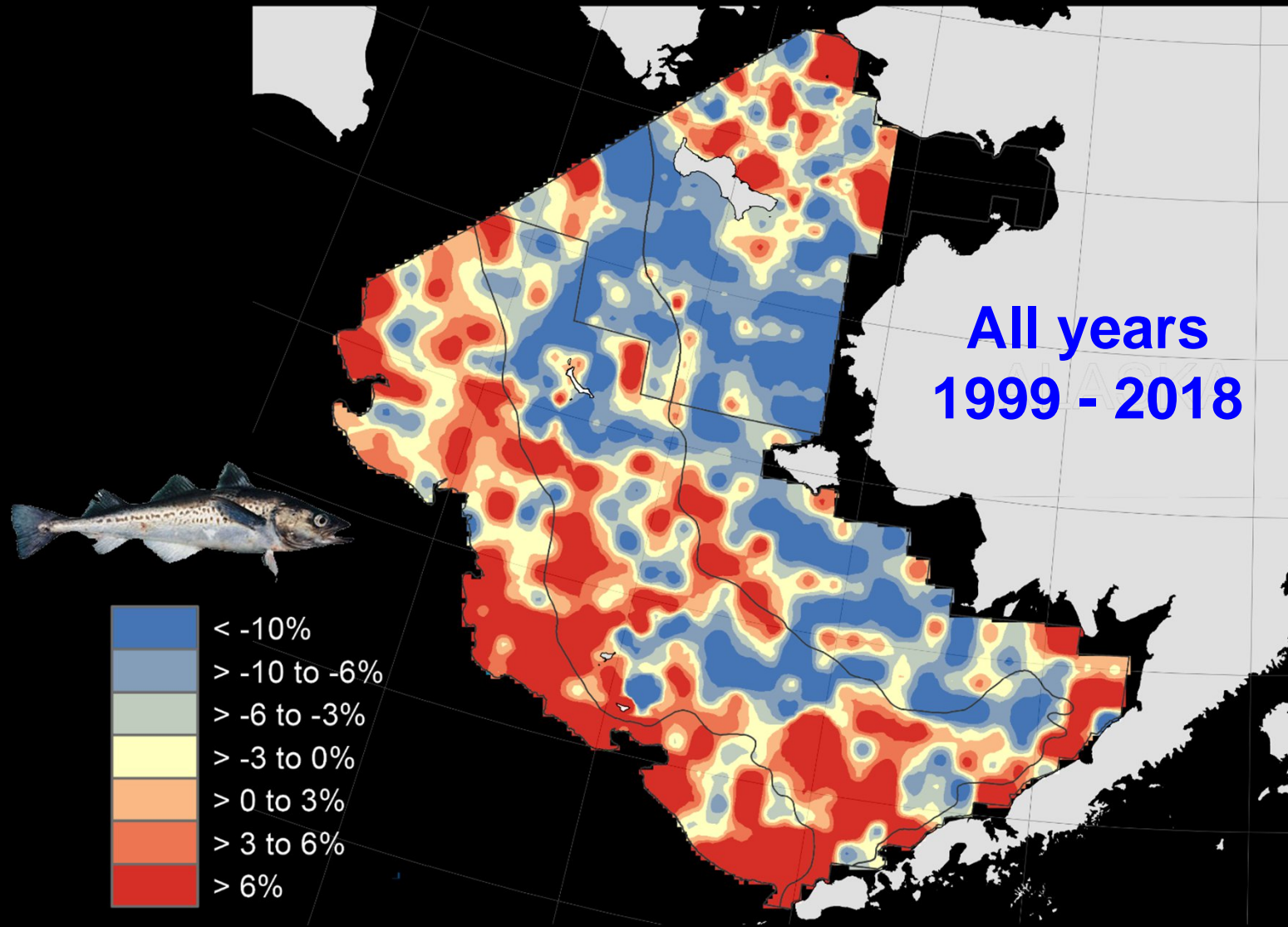


# Walleye pollock distribution

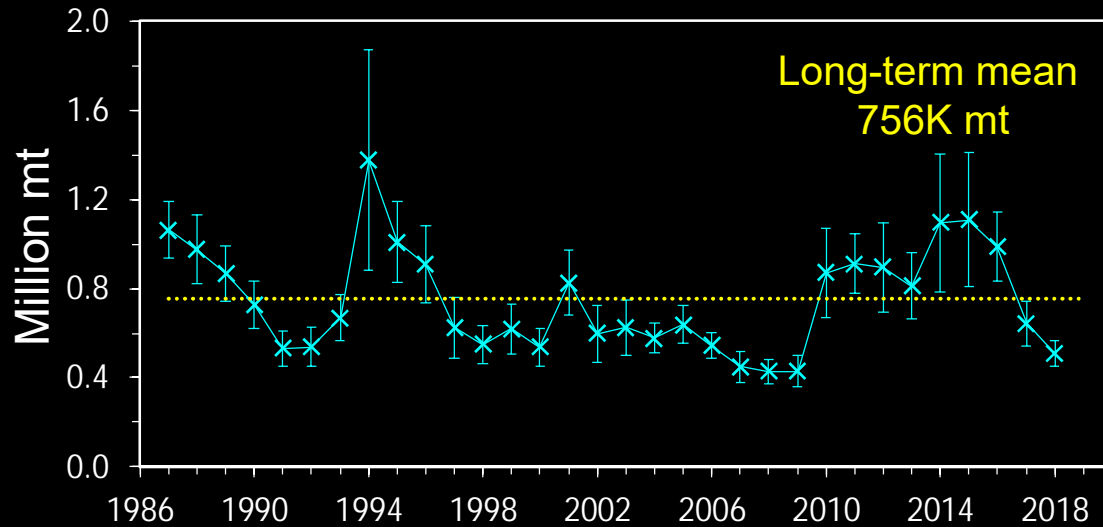


# Walleye pollock condition 40-65 cm

## Residuals of predicted weight



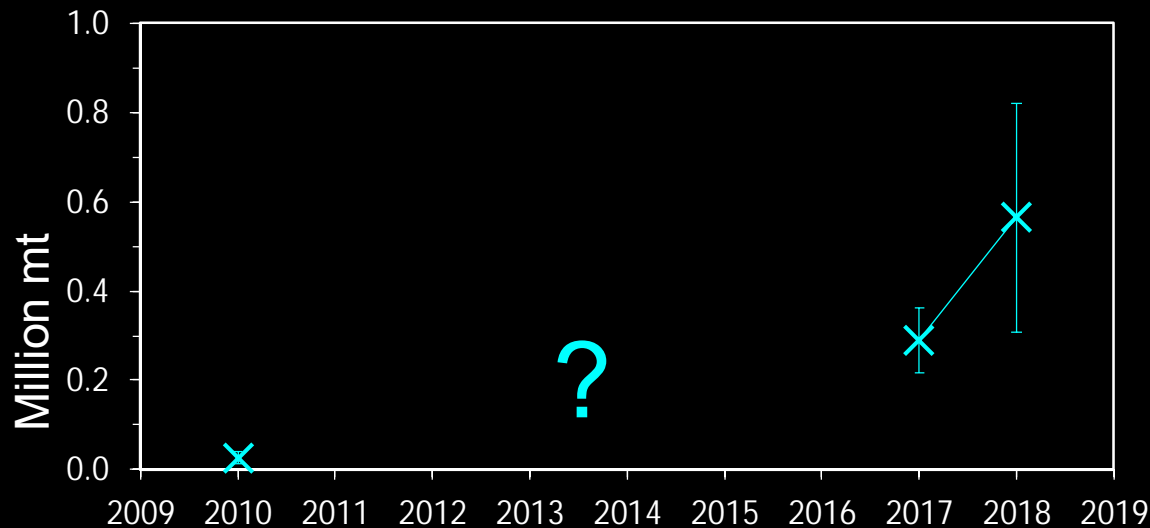
# SEBS & NBS Pacific cod



## SEBS Biomass

547K mt

**-21%** from 2017 (644K mt)



## NBS Biomass

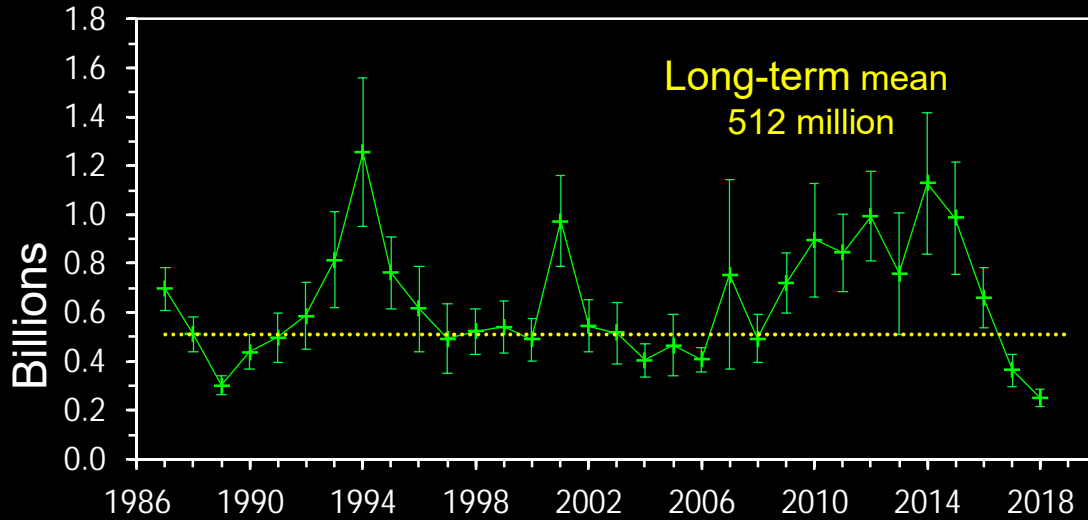
565K mt

**+95%** from 2017 (289K mt)





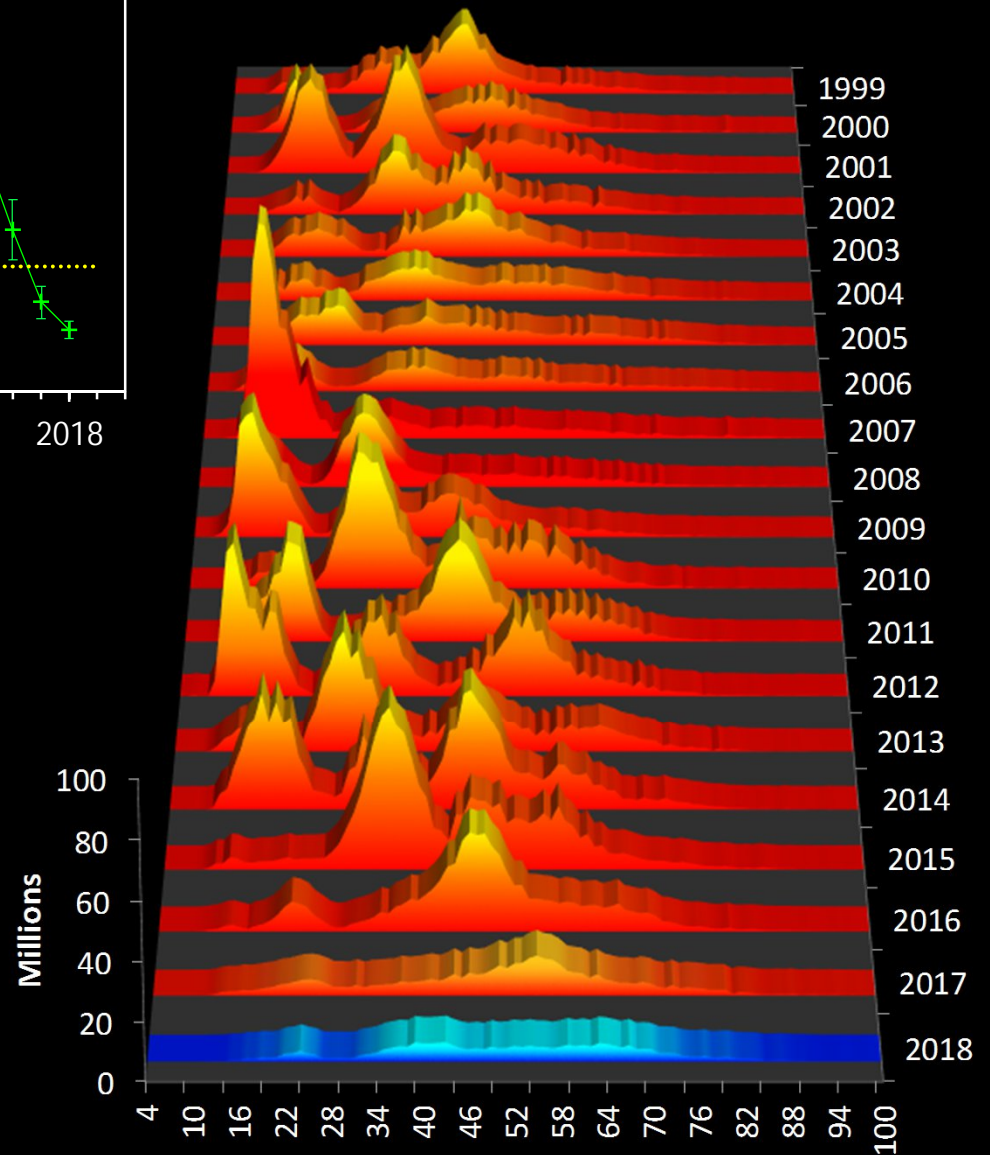
# SEBS Pacific cod



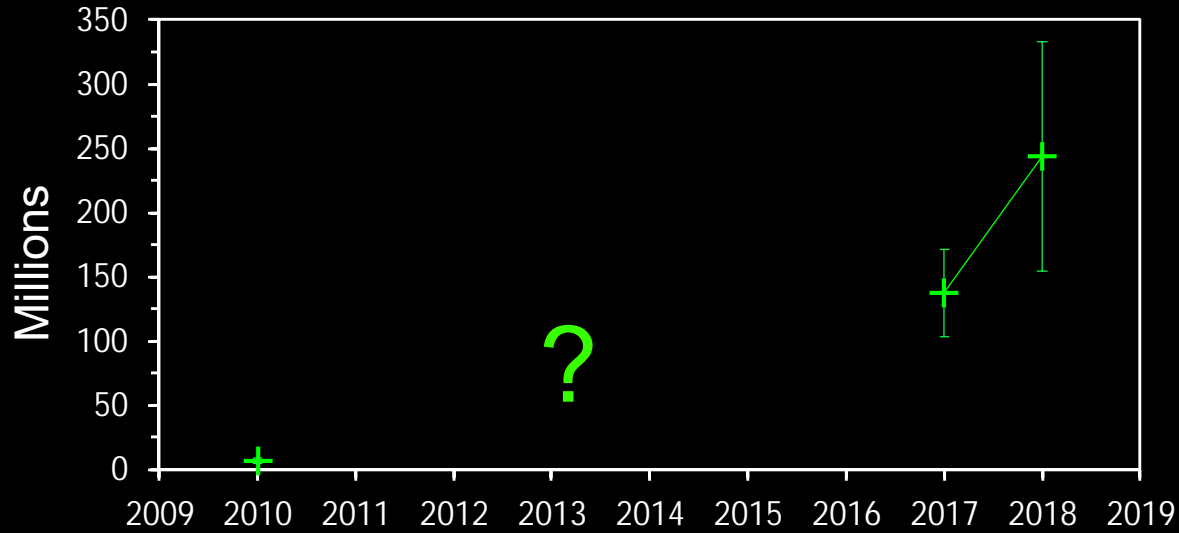
## SEBS Abundance

248 million

-32% from 2017 (364 million)



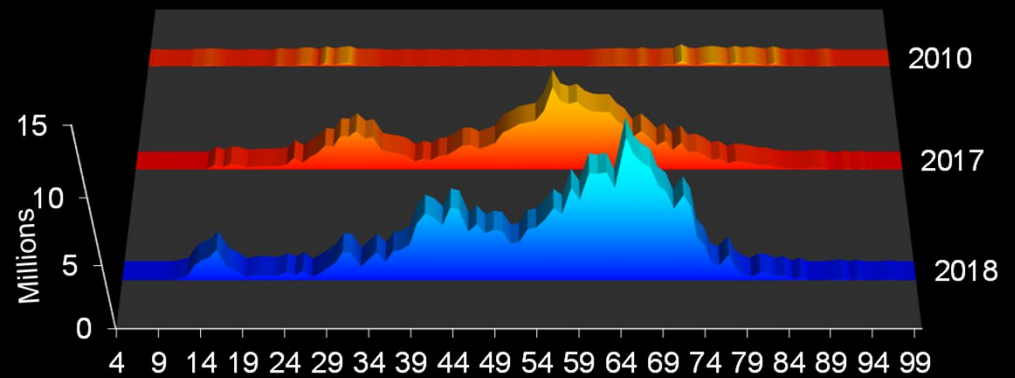
# NBS Pacific cod



## NBS Abundance

244 million

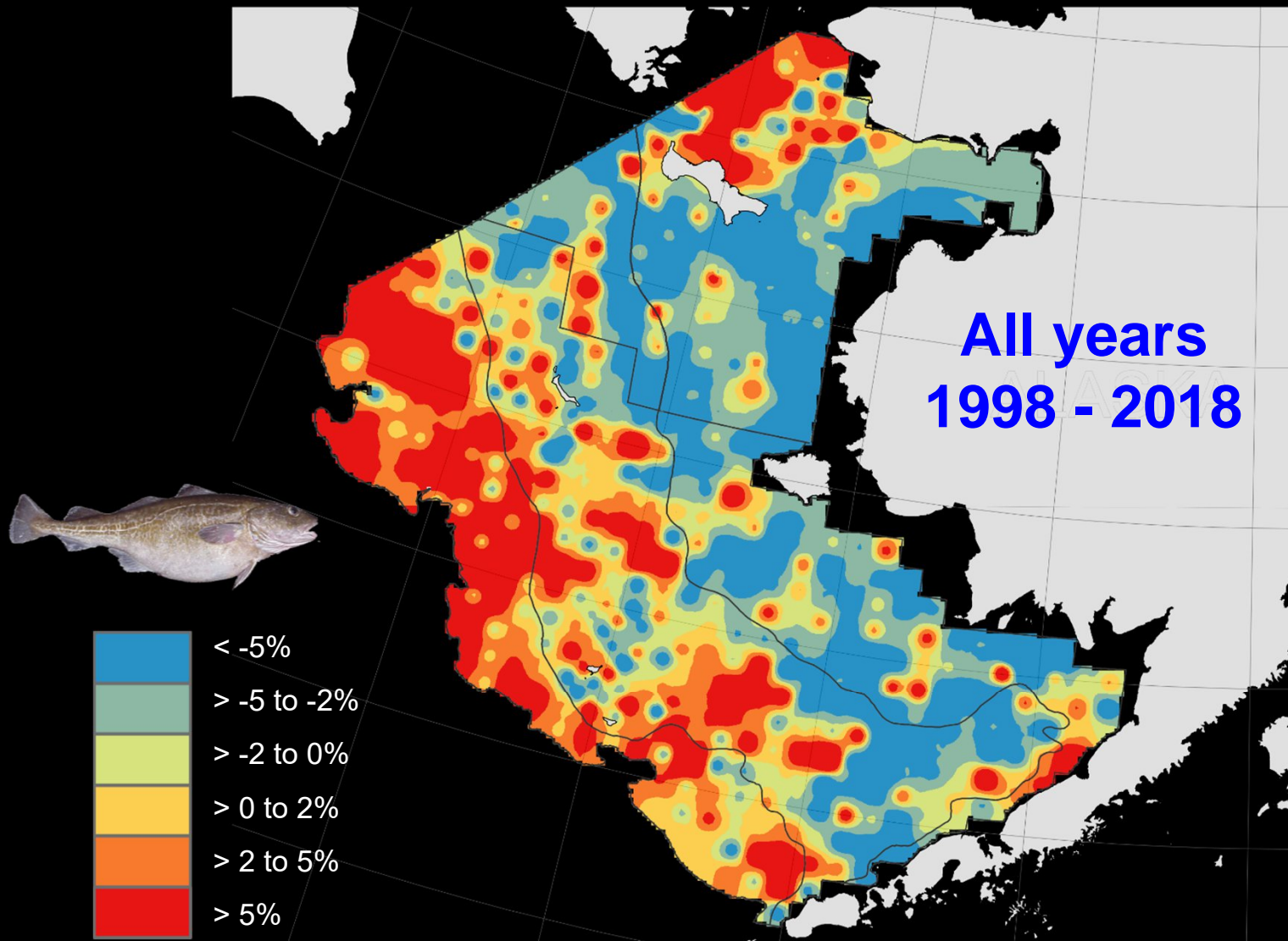
+78% from 2017 (137 million)



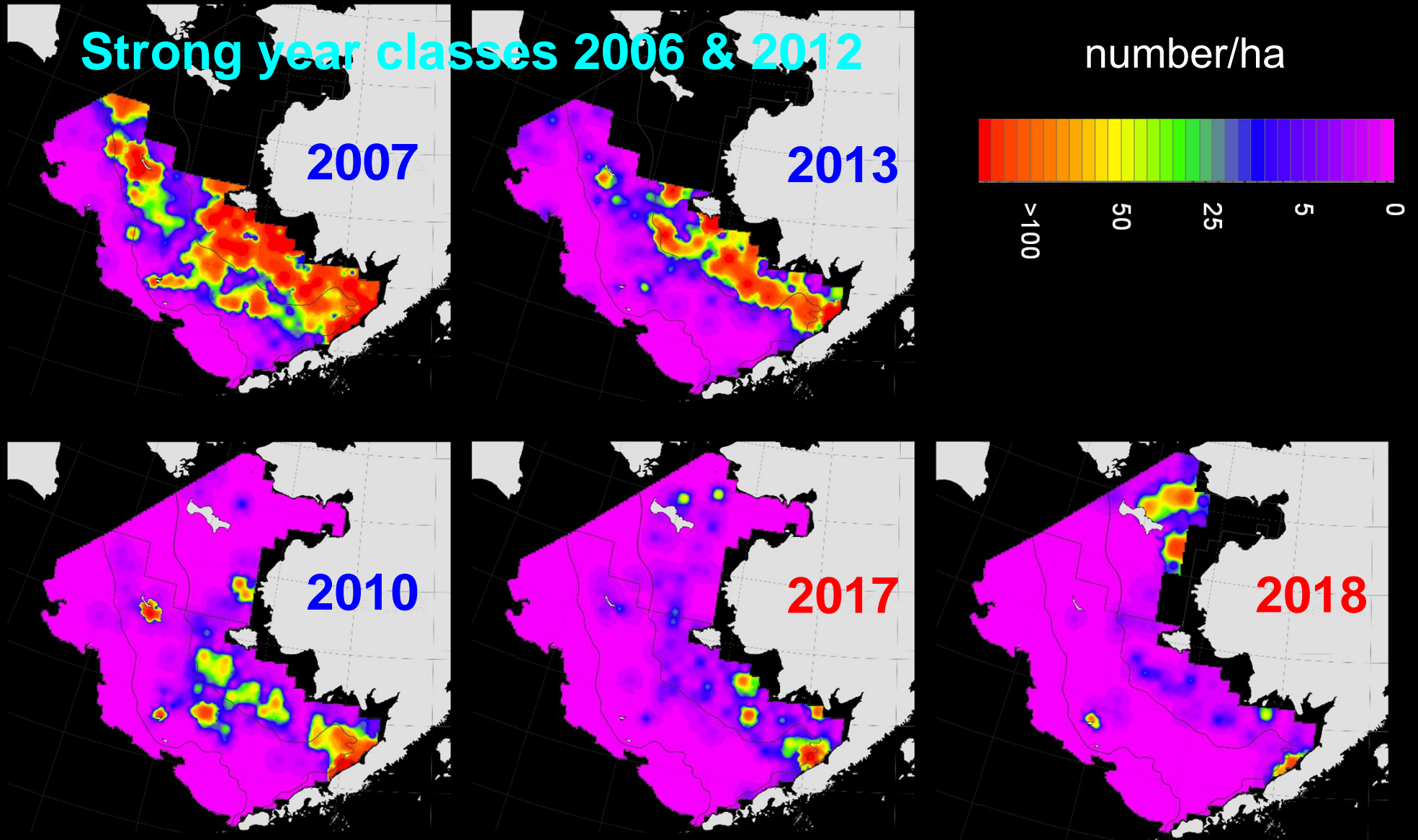


# Pacific cod condition 40-85 cm

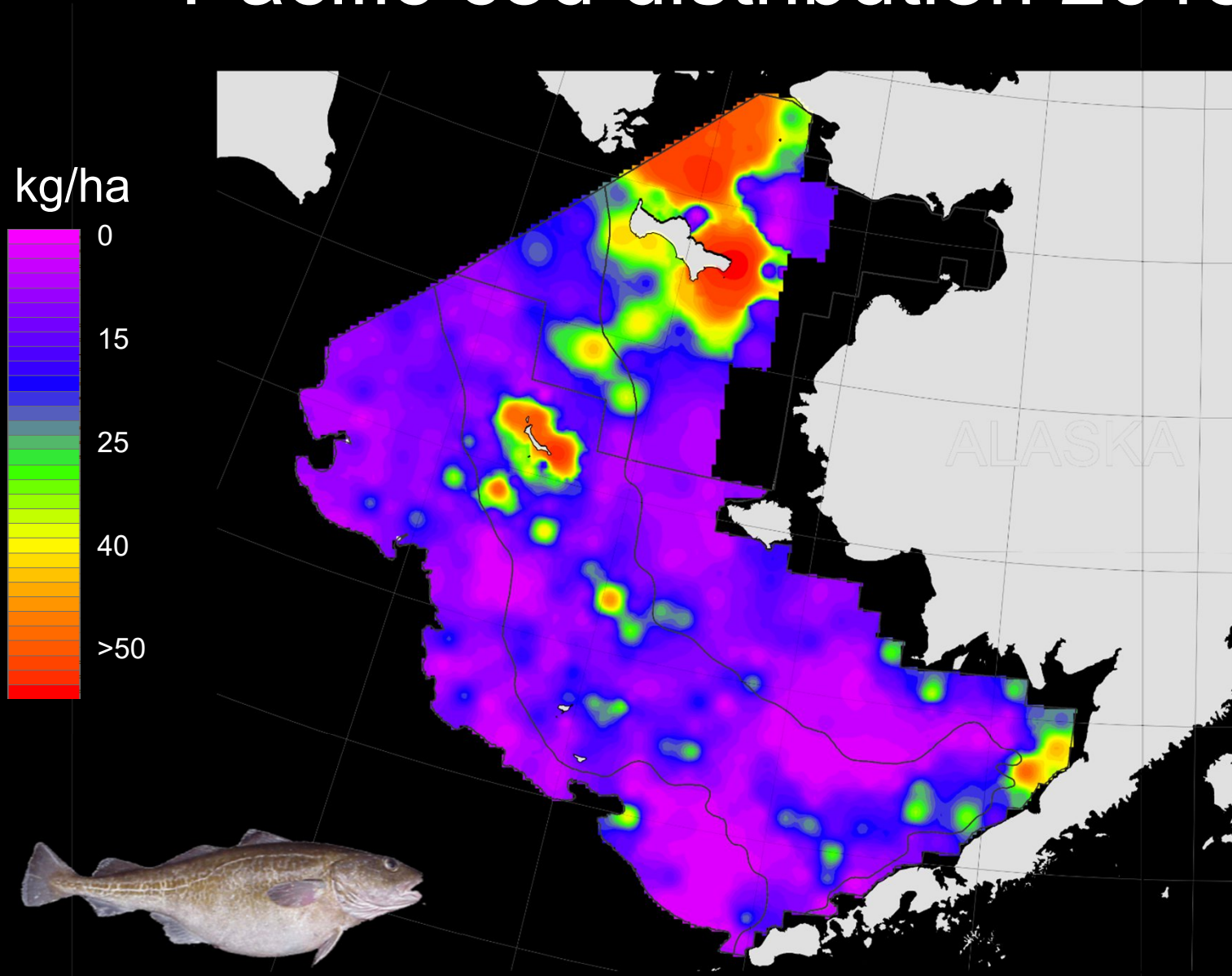
## Residuals of predicted weight



# Juv. Pacific cod distribution <20 cm

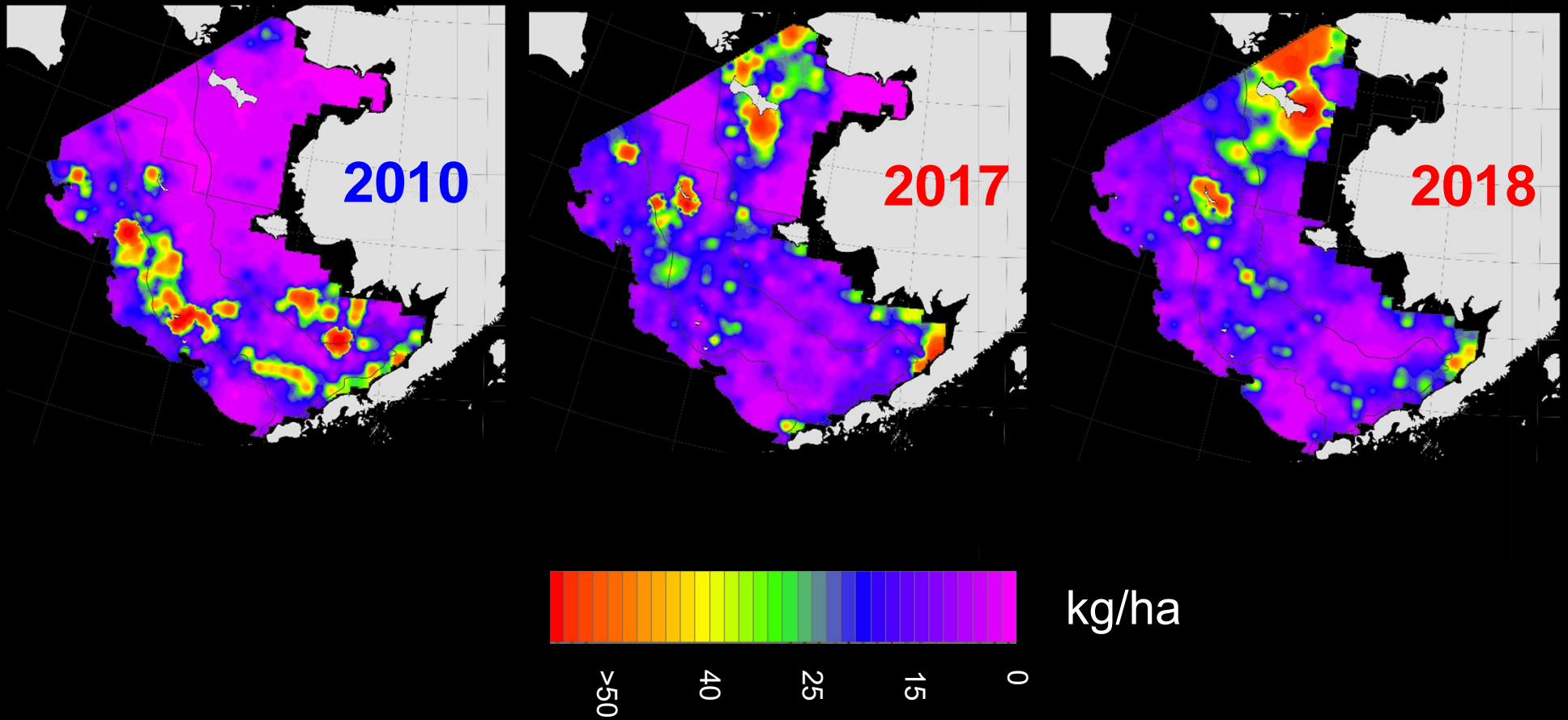


# Pacific cod distribution 2018

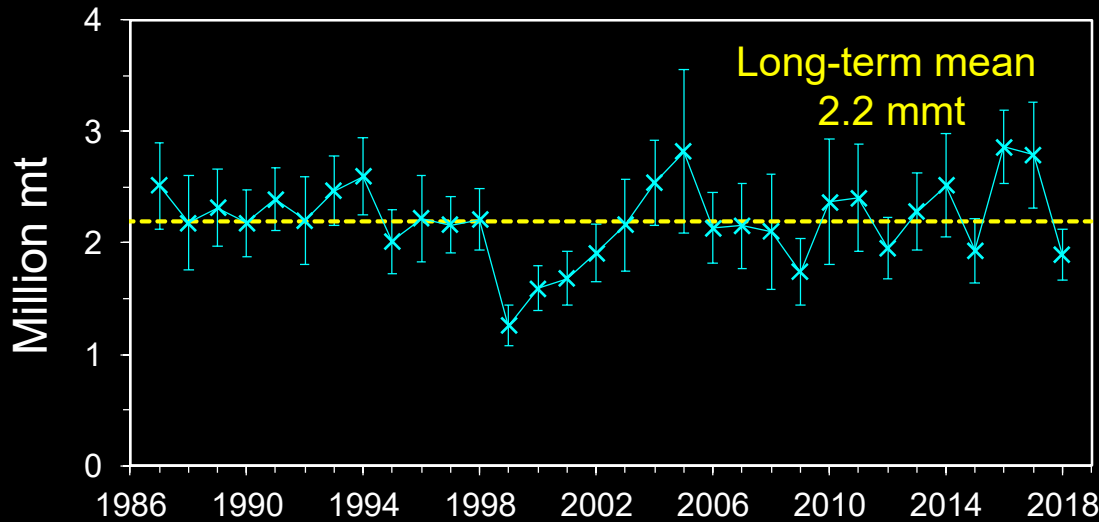




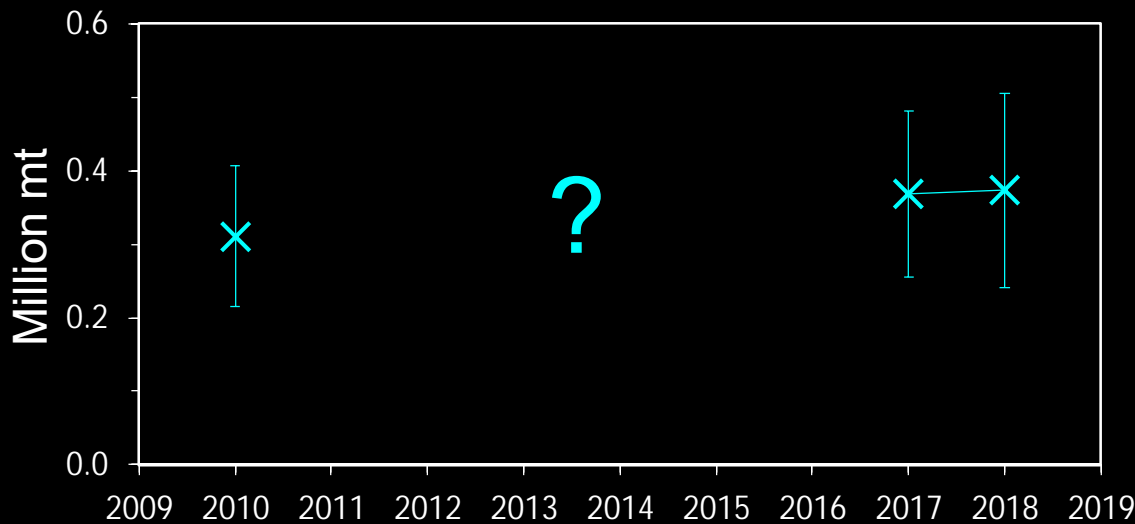
# Pacific cod distribution



# SEBS & NBS Yellowfin sole



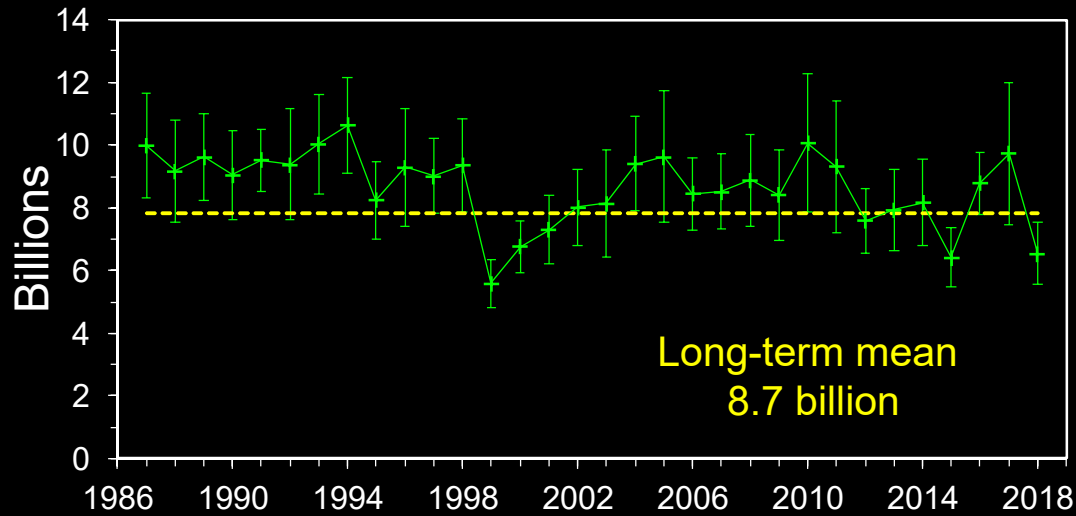
**SEBS Biomass**  
1.9 mmt  
**-32%** from 2017 (2.8 mmt)



**NBS Biomass**  
373K mt  
**+1%** from 2017 (368K mt)



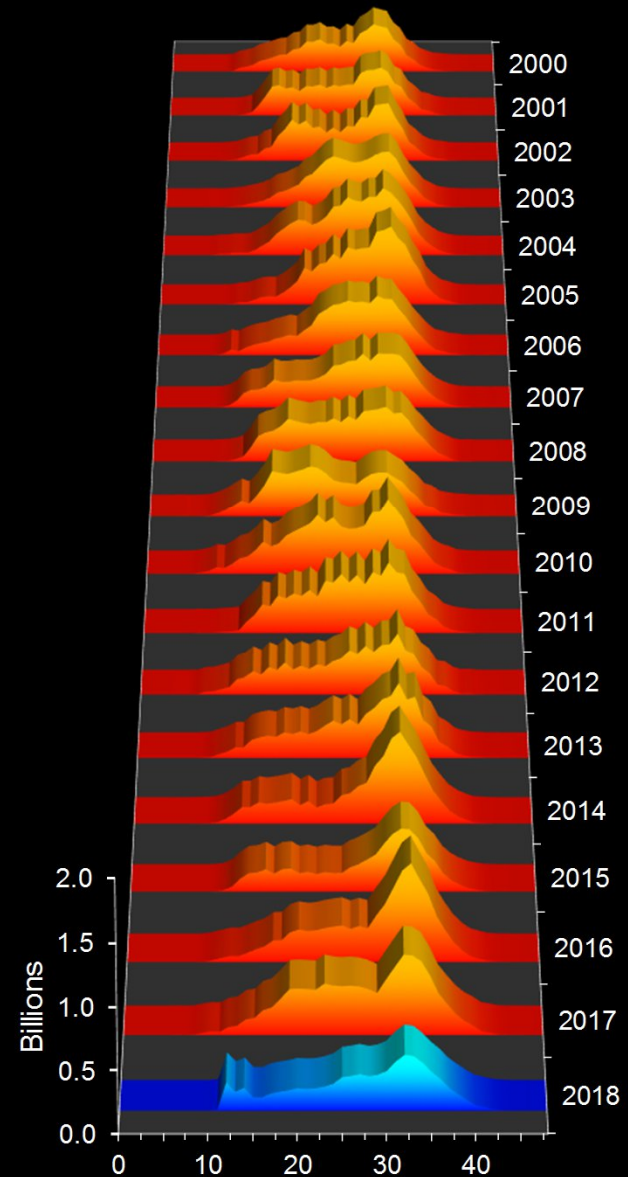
# SEBS Yellowfin sole



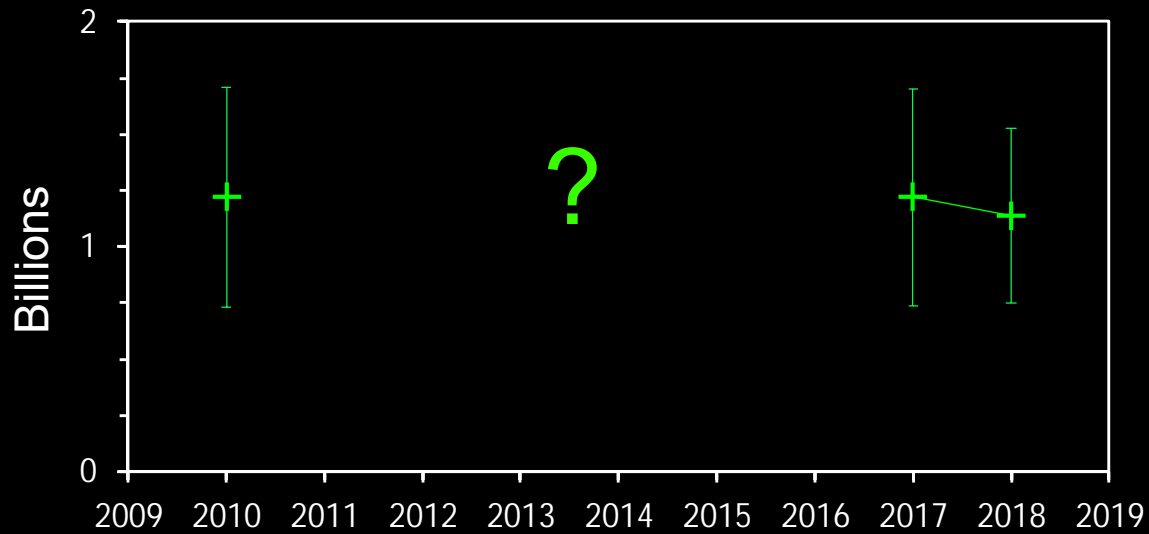
## SEBS Abundance

6.5 billion

-32% from 2017 (9.7 billion)



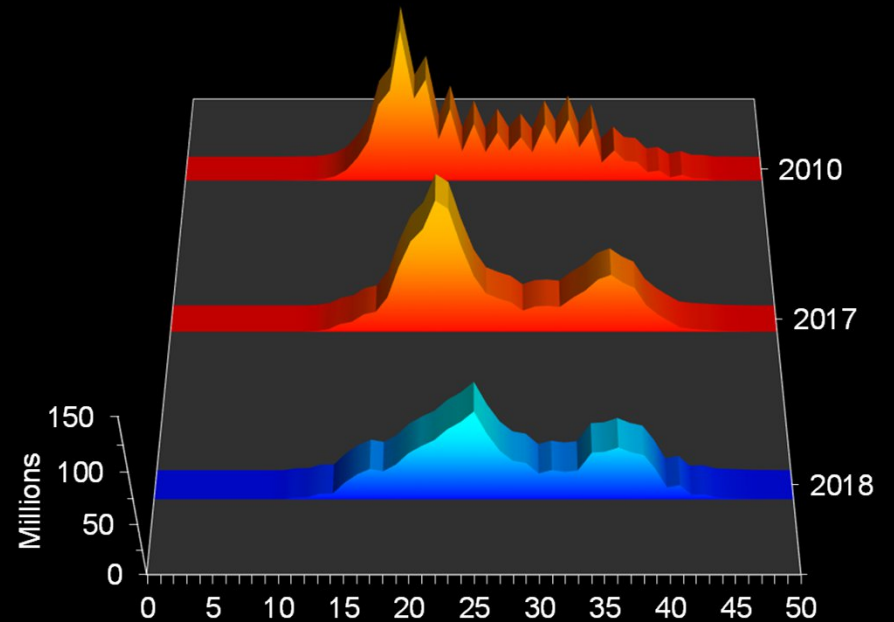
# NBS Yellowfin sole



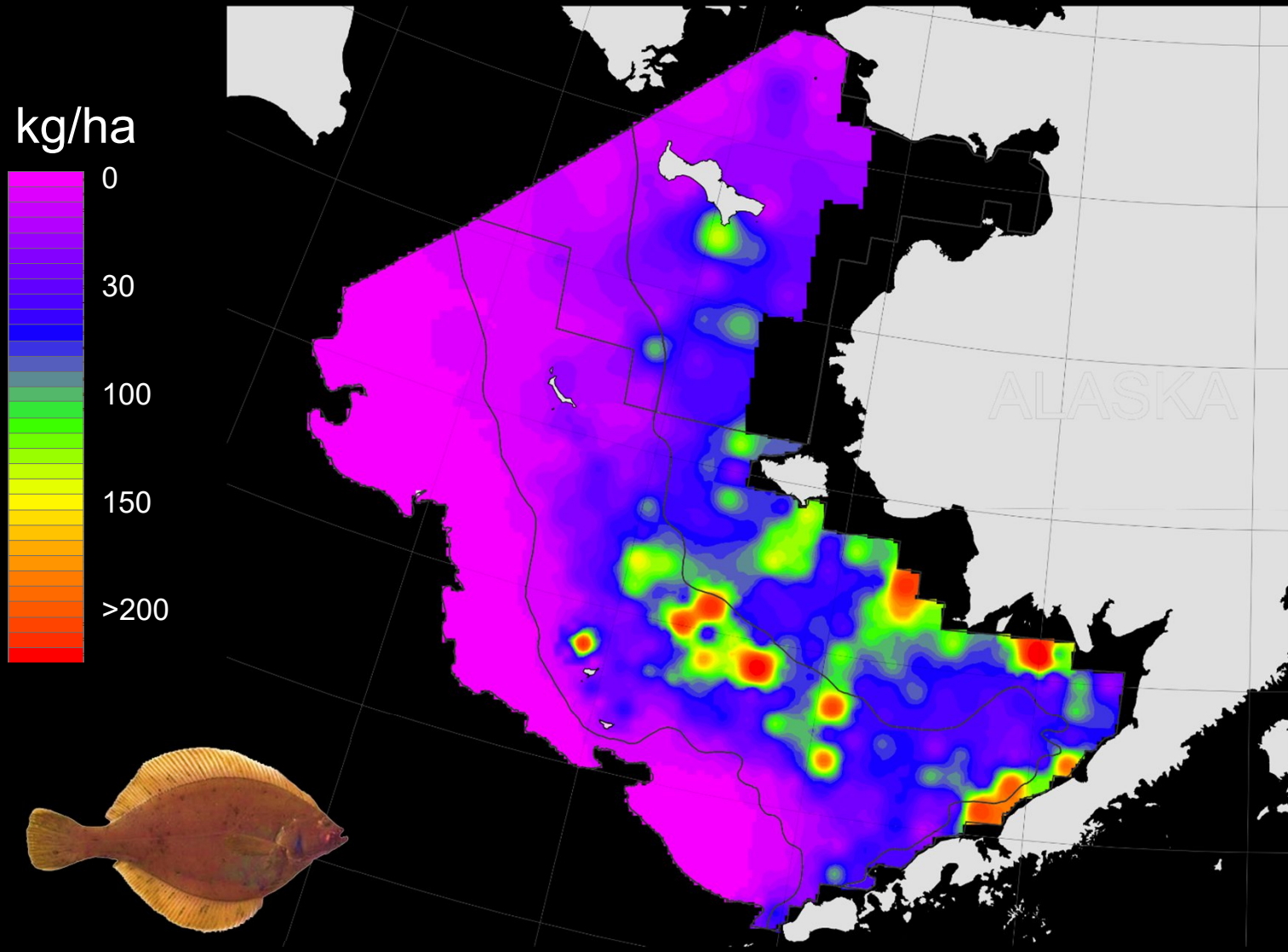
## NBS Abundance

1.1 billion

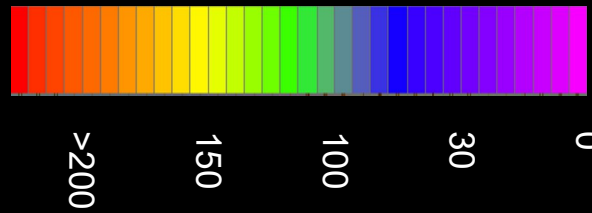
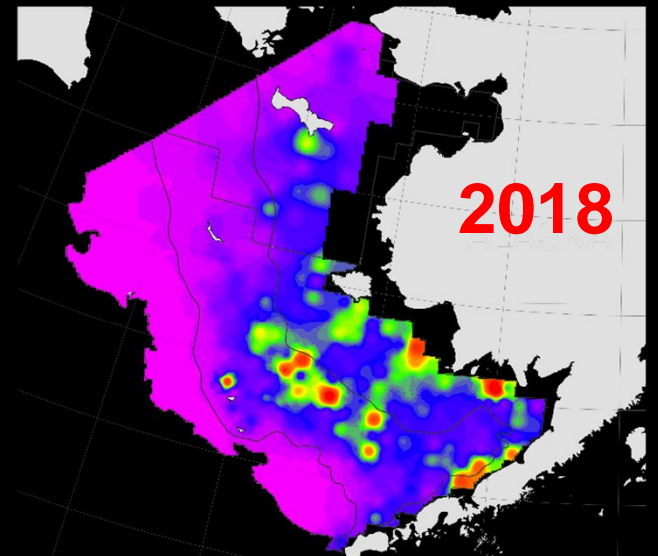
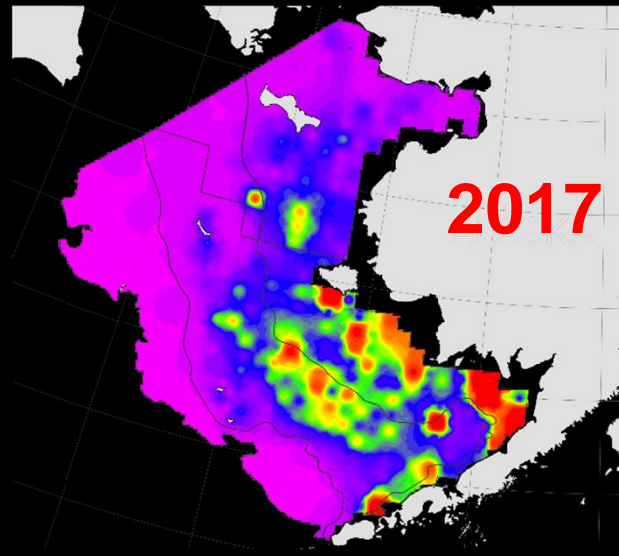
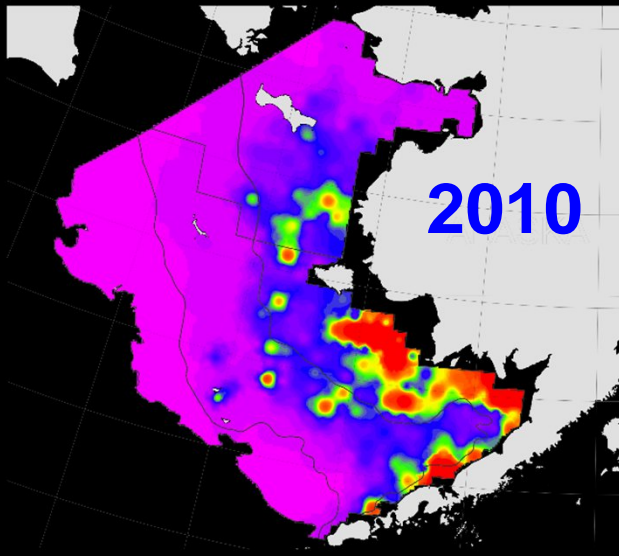
-7% from 2017 (1.2 billion)



# Yellowfin distribution 2018

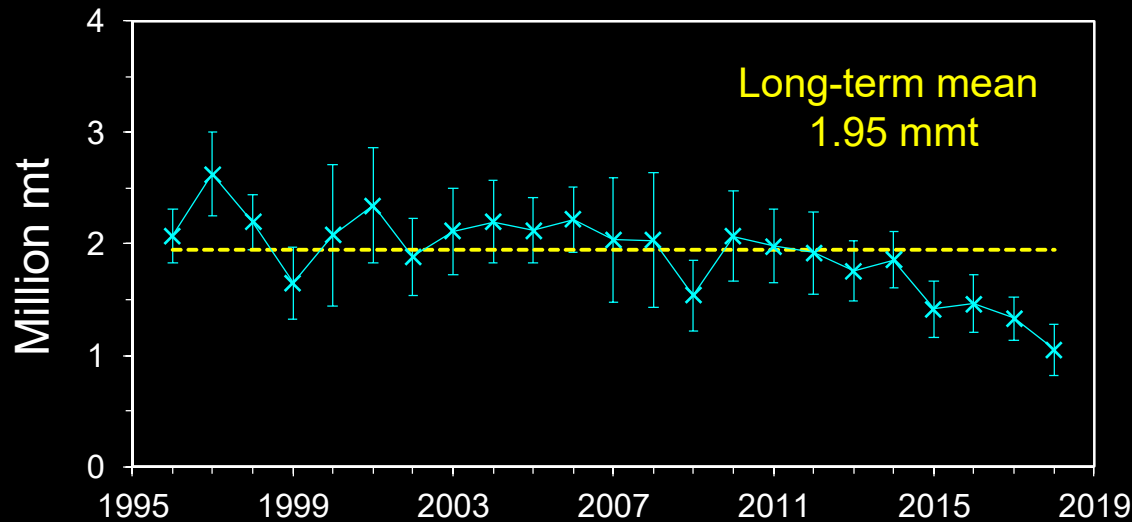


# Yellowfin distribution

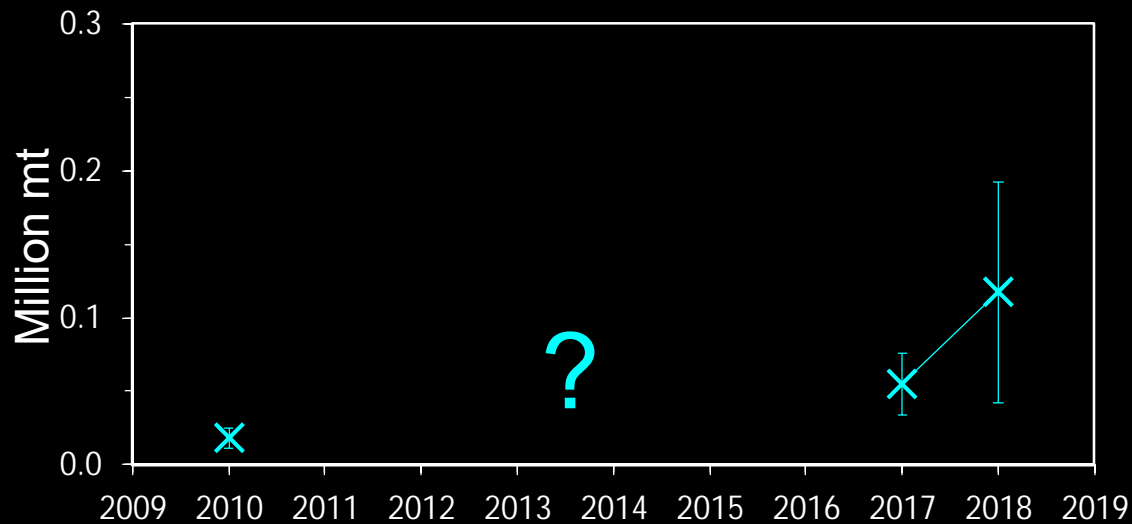


kg/ha

# SEBS & NBS Northern rock sole



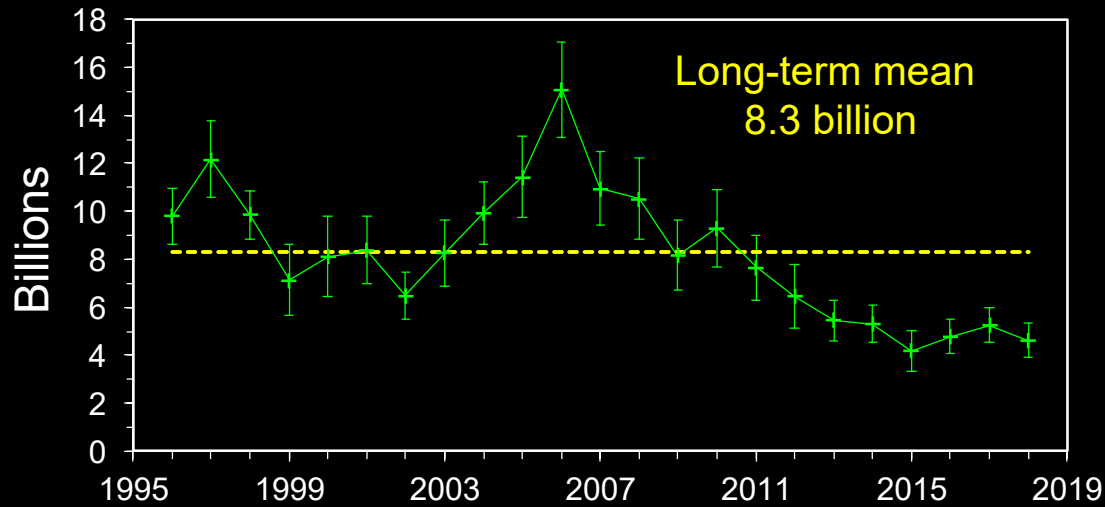
**SEBS Biomass**  
1.05 mmt  
**-21%** from 2017 (1.33 mmt)



**NBS Biomass**  
118K mt  
**+113%** from 2017 (55K mt)



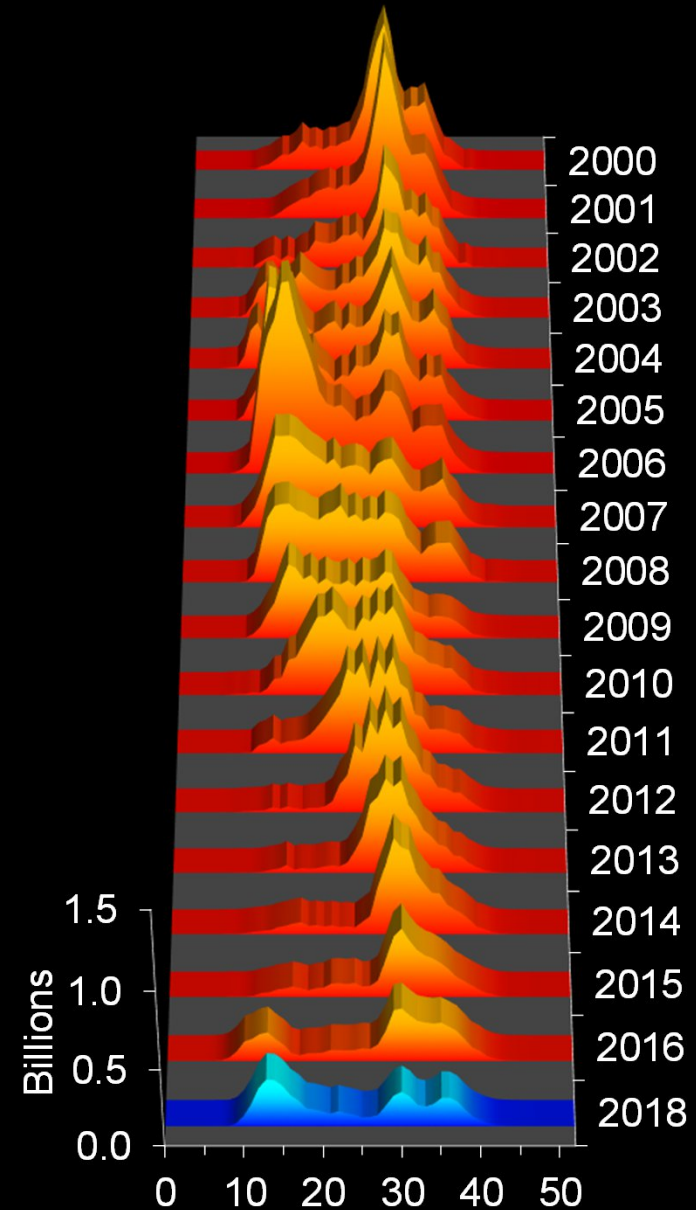
# SEBS Northern rock sole



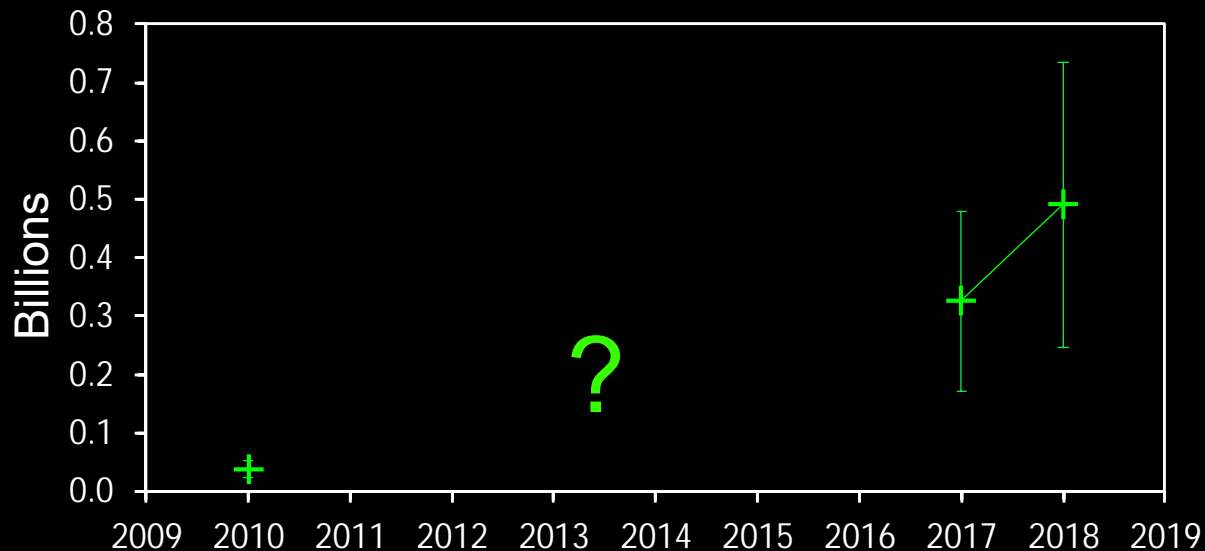
## SEBS Abundance

4.63 billion

-12% from 2017 (5.26 billion)



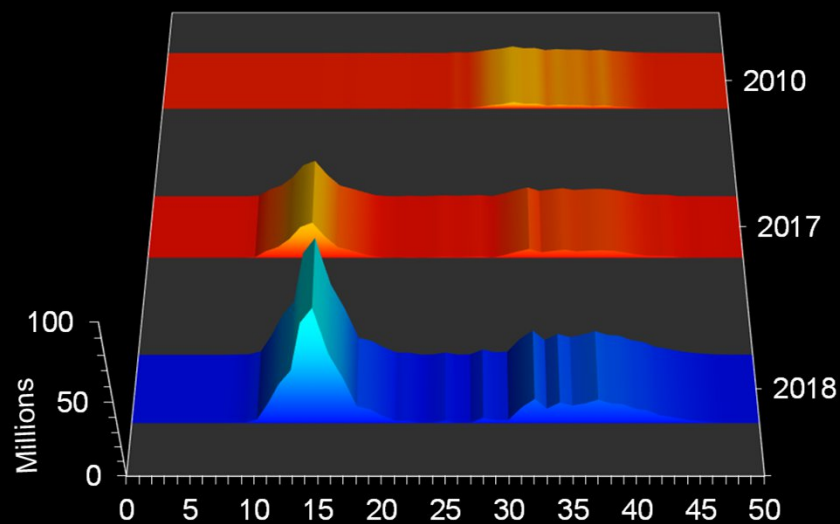
# NBS Northern rock sole



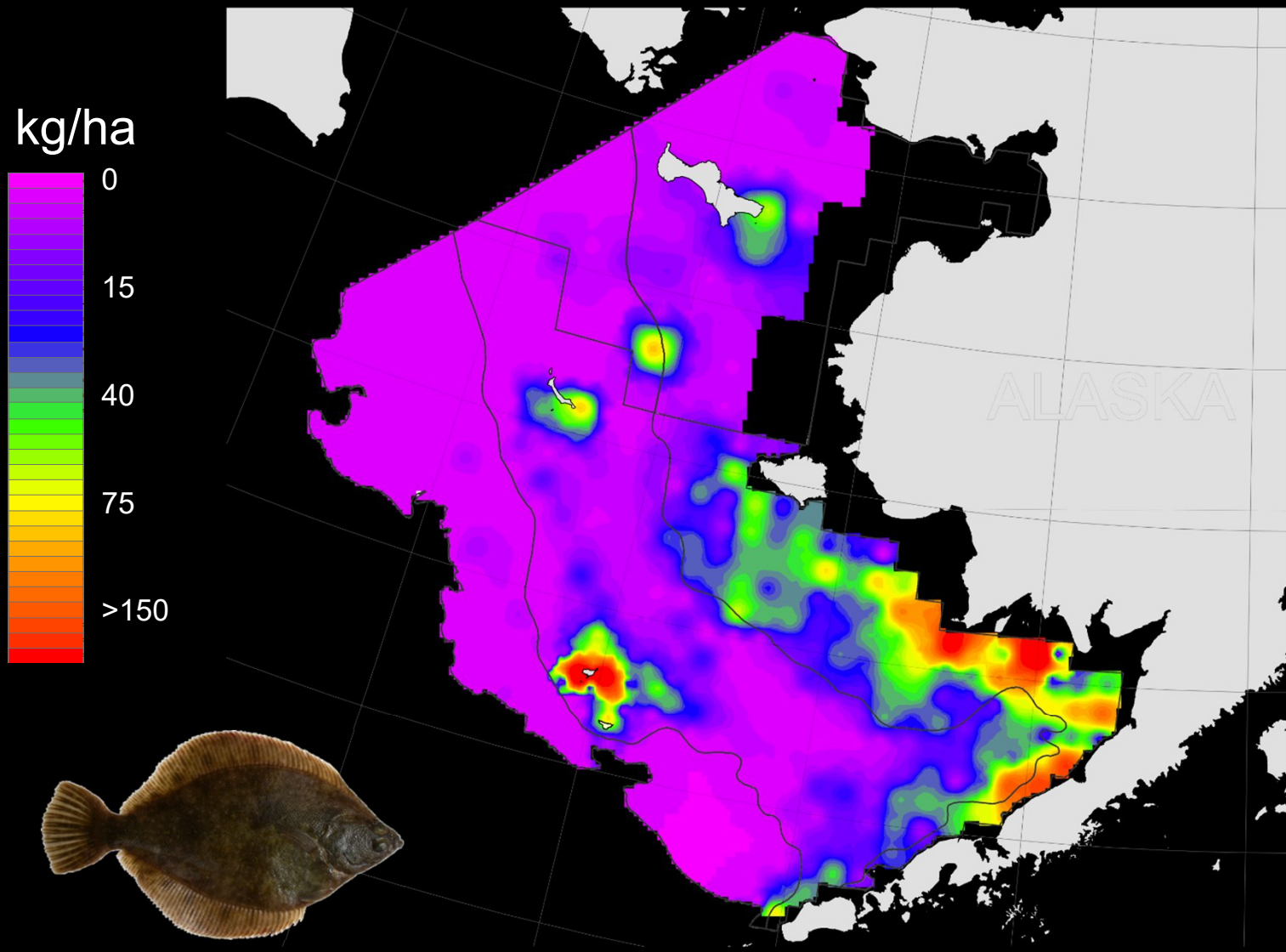
## NBS Abundance

491 million

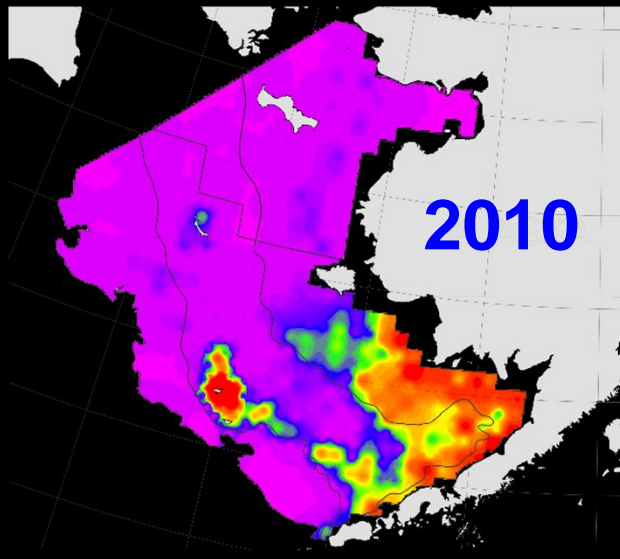
+51% from 2017 (326 million)



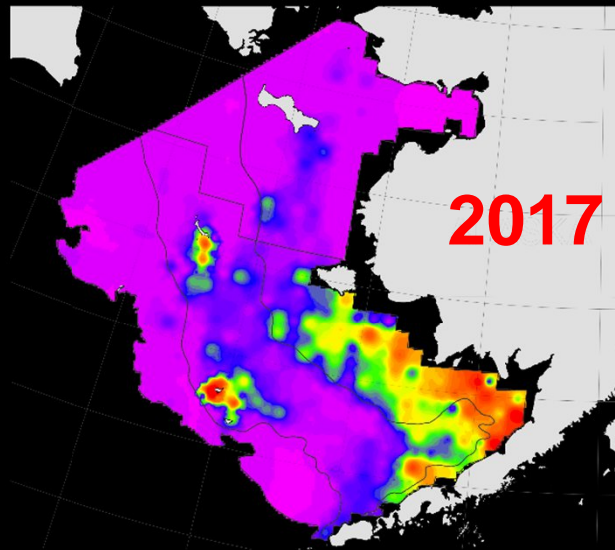
# Northern rock sole distribution



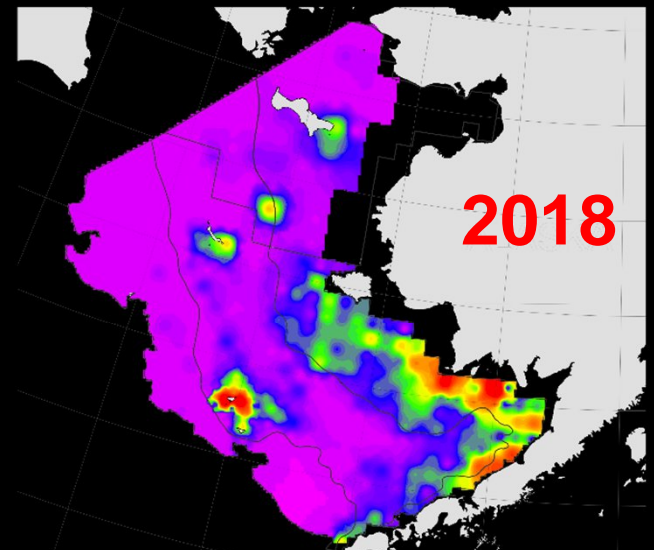
# Northern rock sole distribution



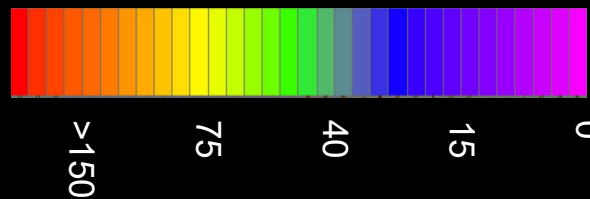
2010



2017



2018



kg/ha



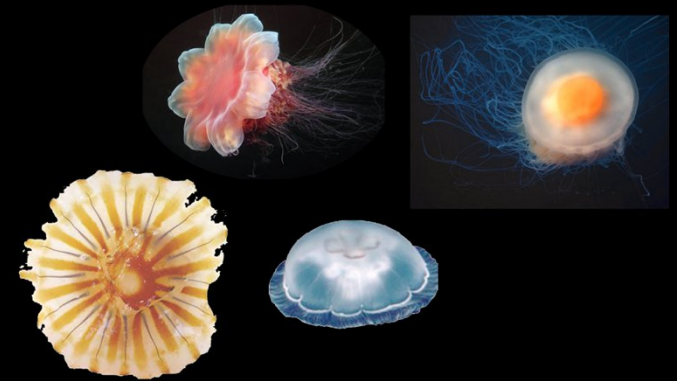
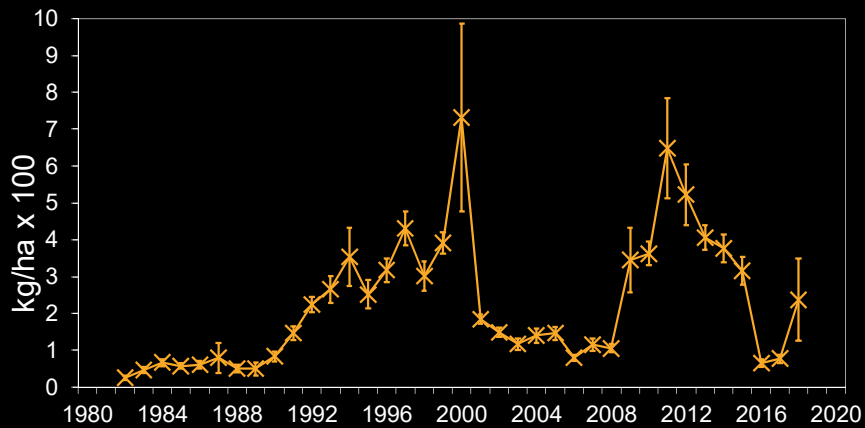
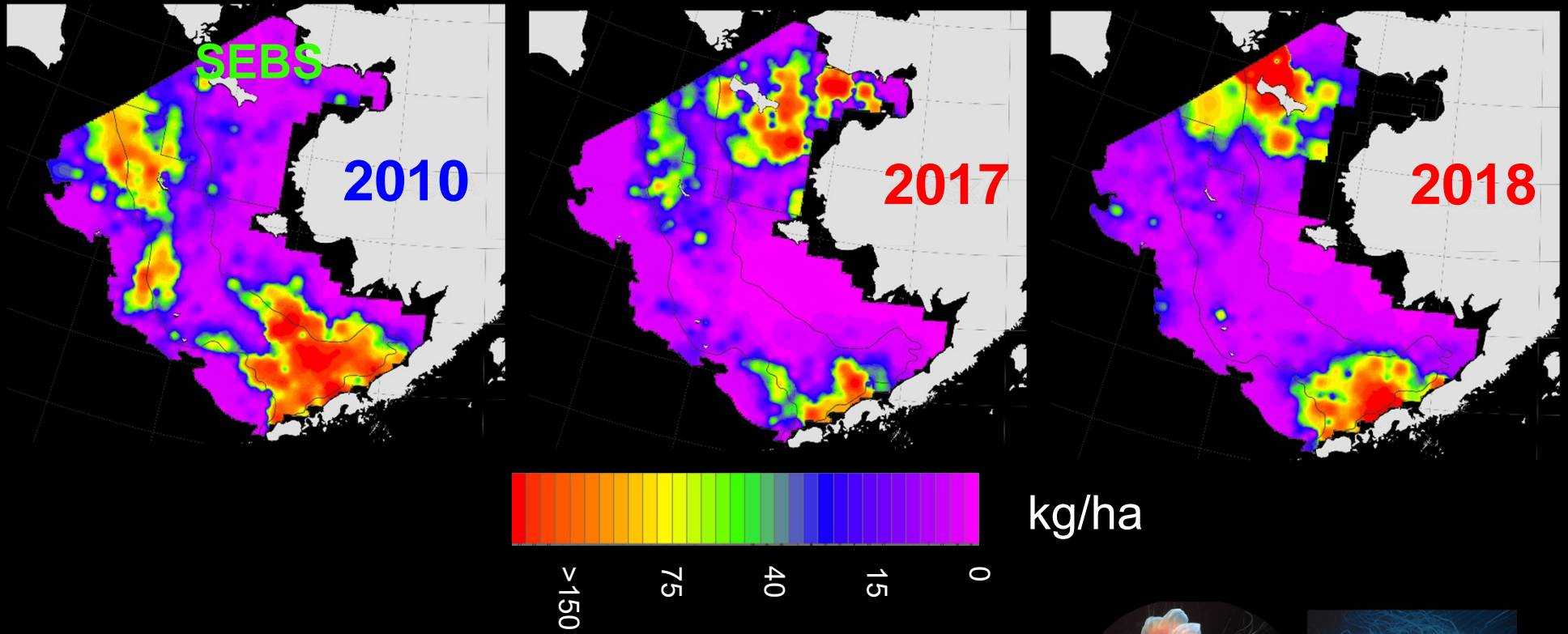
# Other 2018 survey results

## SEBS

## NBS

Taxon	Year	SEBS		NBS		NBS	
		Biomass mt	Abund. X1000	Biomass mt	Abund. X1000		
Arrowtooth fl.	2017	424,194	742,123	-	-		
	2018	511,192	1,086,953	852	1,056	21%	46%
Kamchatka fl.	2017	48,084	111,180	99	93		
	2018	44,000	93,721	758	548	663%	487%
Greenland turbot	2017	21,519	10,518	62	94		
	2018	18,017	7,361	1,116	685	1703%	627%
Pacific halibut	2017	126,684	52,718	15,022	4,220		
	2018	125,702	50,416	18,397	4,607	22%	9%
Flathead sole	2017	538,018	2,099,347	83	180		
	2018	492,623	2,329,667	510	1,028	516%	470%
Bering fl.	2017	27,404	122,044	20,712	239,346		
	2018	12,995	61,152	30,025	275,082	45%	15%
Alaska plaice	2017	491,050	666,201	336,841	438,662		
	2018	419,509	569,754	274,543	310,564	-18%	-29%
Alaska skate	2017	544,657	118,976	82,399	18,497		
	2018	545,994	126,778	116,835	27,670	42%	50%

# Jellyfish



# Long-term monitoring in the NBS

