



# 2016 Eastern Bering Sea Upper Continental Slope Bottom Trawl Survey

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# Eastern Bering Sea slope survey -overview

Biennial survey beginning in 2002 (2002, 2004, 2008, 2010, 2012, 2016)

Random stratified survey with effort distributed based on estimated survey area

"Full" survey is 200 successful bottom trawls

6 sub-areas and 5 depth strata in each area (200 meter intervals from 200-1200 m)

## Unique Features of EBS slope survey

30 minute tows

2.5 knot trawling speed

PolyNor'Eastern net

Autotrawl

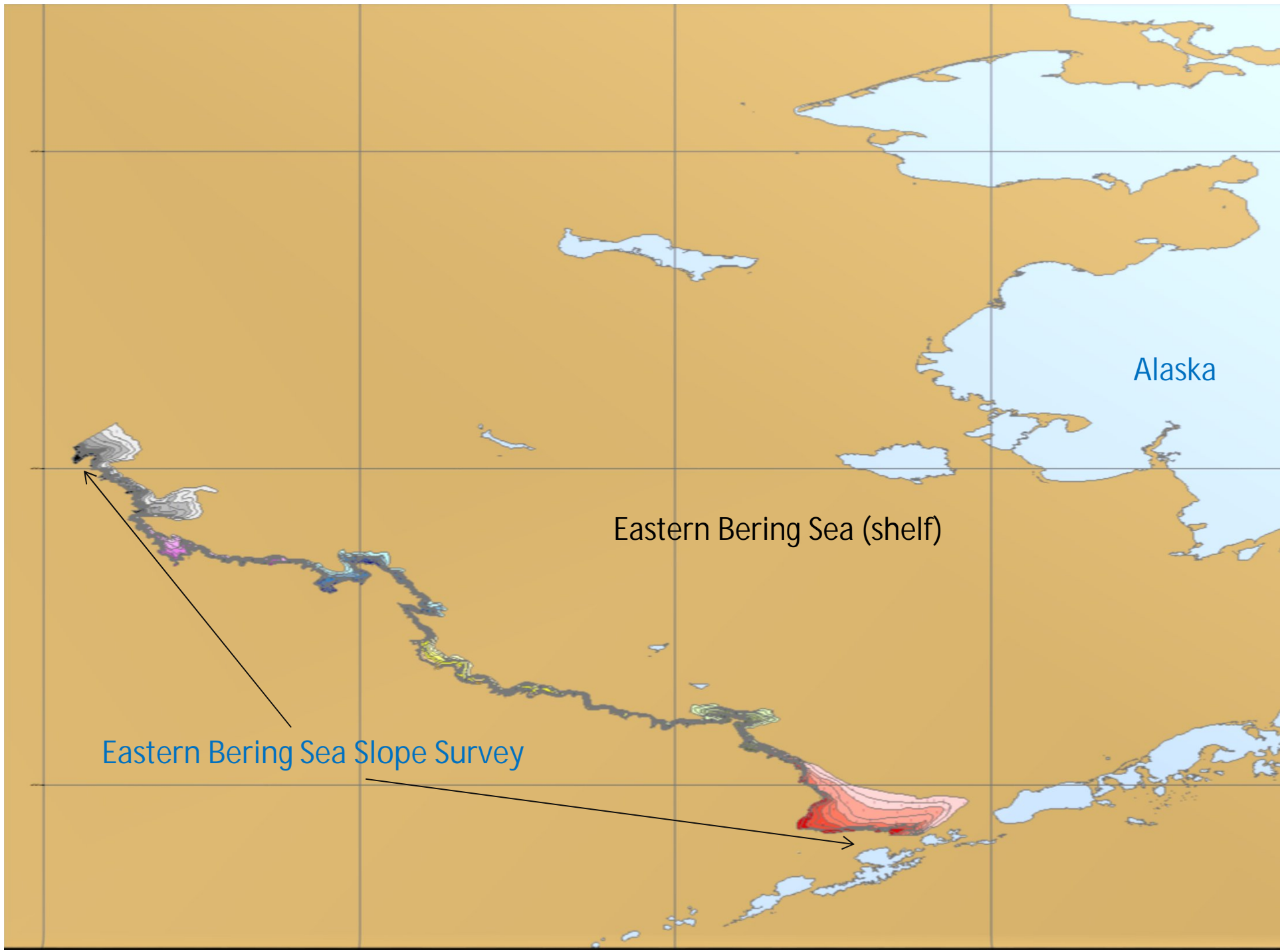
2MT doors

4 point door connection

mud sweep gear footrope

Entire Catch work -up (no subsampling)

One Chief Scientist for 15 years (consistency)



# Eastern Bering Sea slope survey -2016

- 6<sup>th</sup> survey in 15 years of EBS slope groundfish (2002, 2004, 2008, 2010, 2012, 2016)
- 58 meter FV/RV Cape Flattery
- 4 Legs from 10-22 day legs--Survey Dates from May 30-August 10
- Deployed 17 scientist
- ~ 25 additional scientific projects
- New vessel and skipper to survey
- New length and specimen applications for data acquisition-electronic android tablets
- Random otolith collections for most species (except Arrowtooth and Turbot)
- Environmental data: O<sub>2</sub>, pH, temperature, salinity, light, turbidity, depth

# Cape Flattery



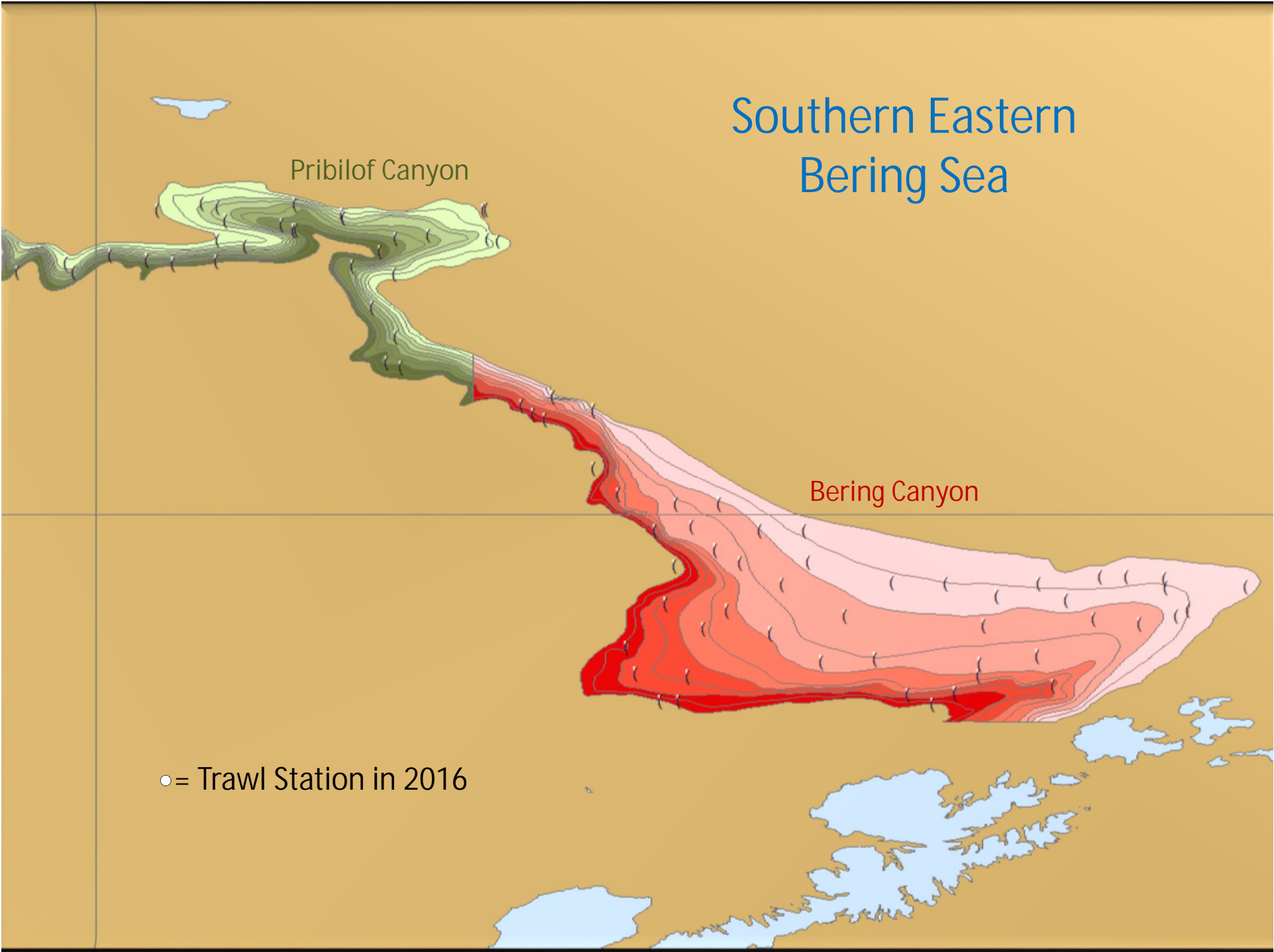


# Southern Eastern Bering Sea

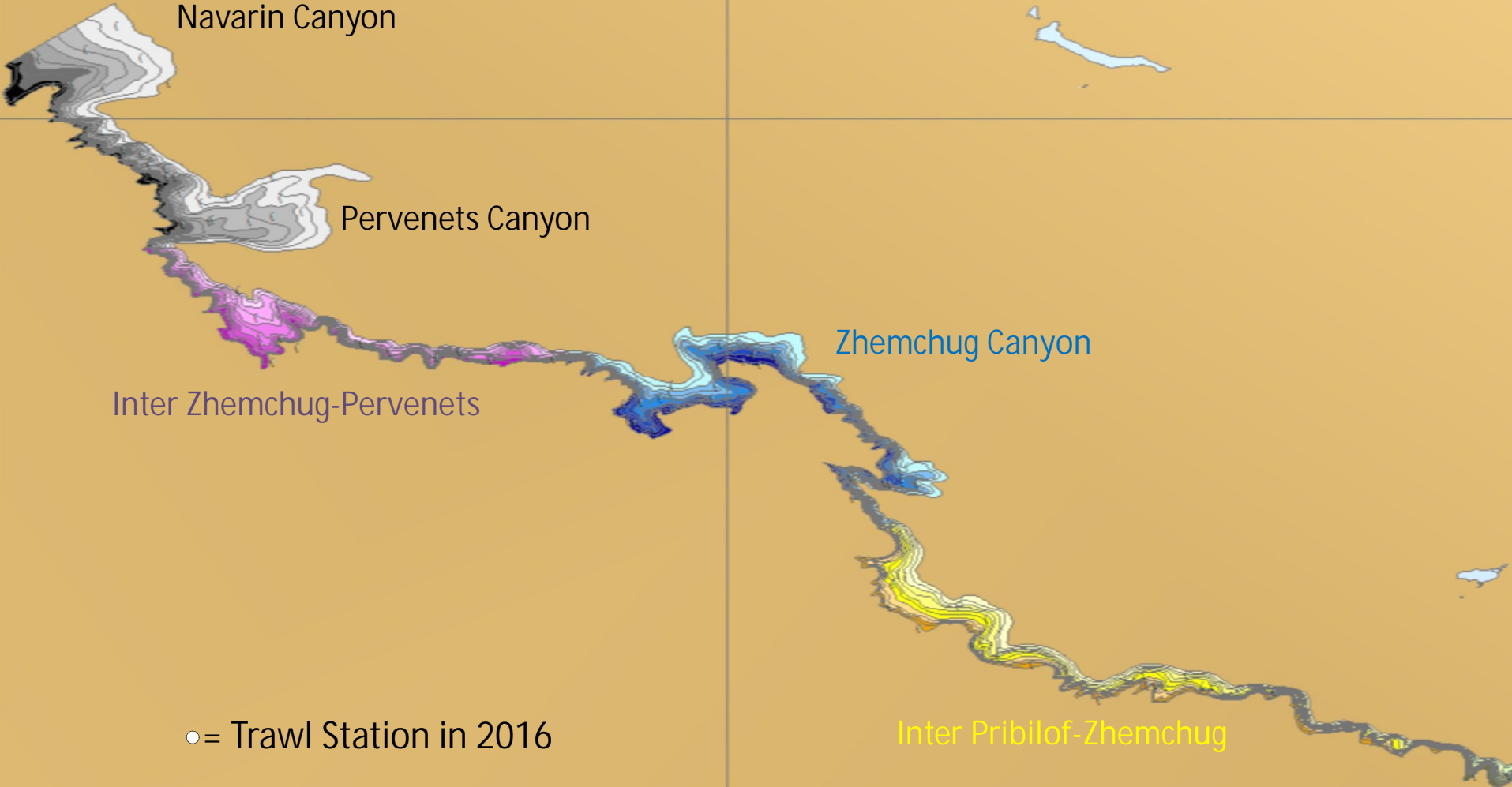
Pribilof Canyon

Bering Canyon

○ = Trawl Station in 2016



# Northern Bering Sea



Navarin Canyon

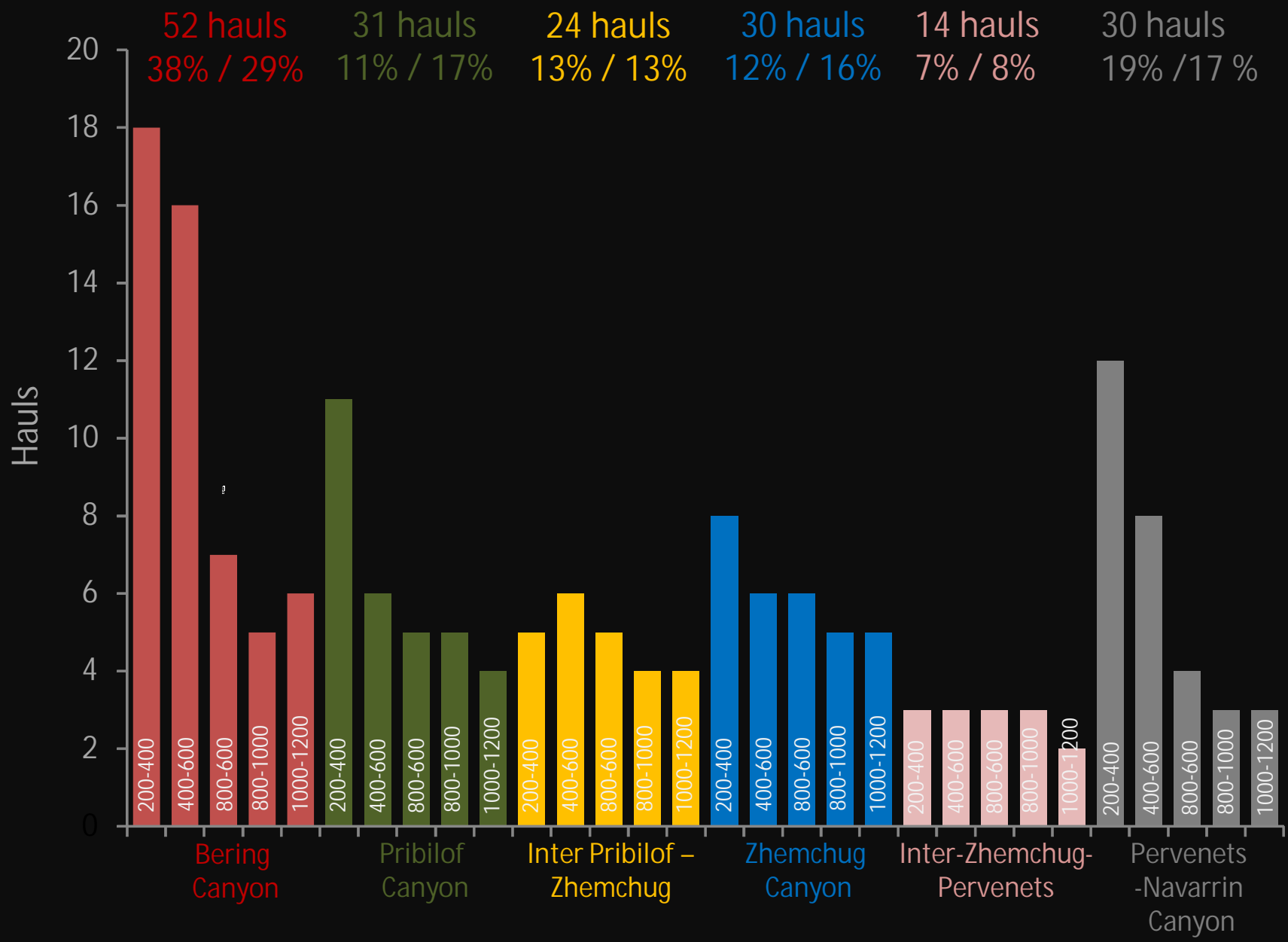
Pervenets Canyon

Zhemchug Canyon

Inter Zhemchug-Pervenets

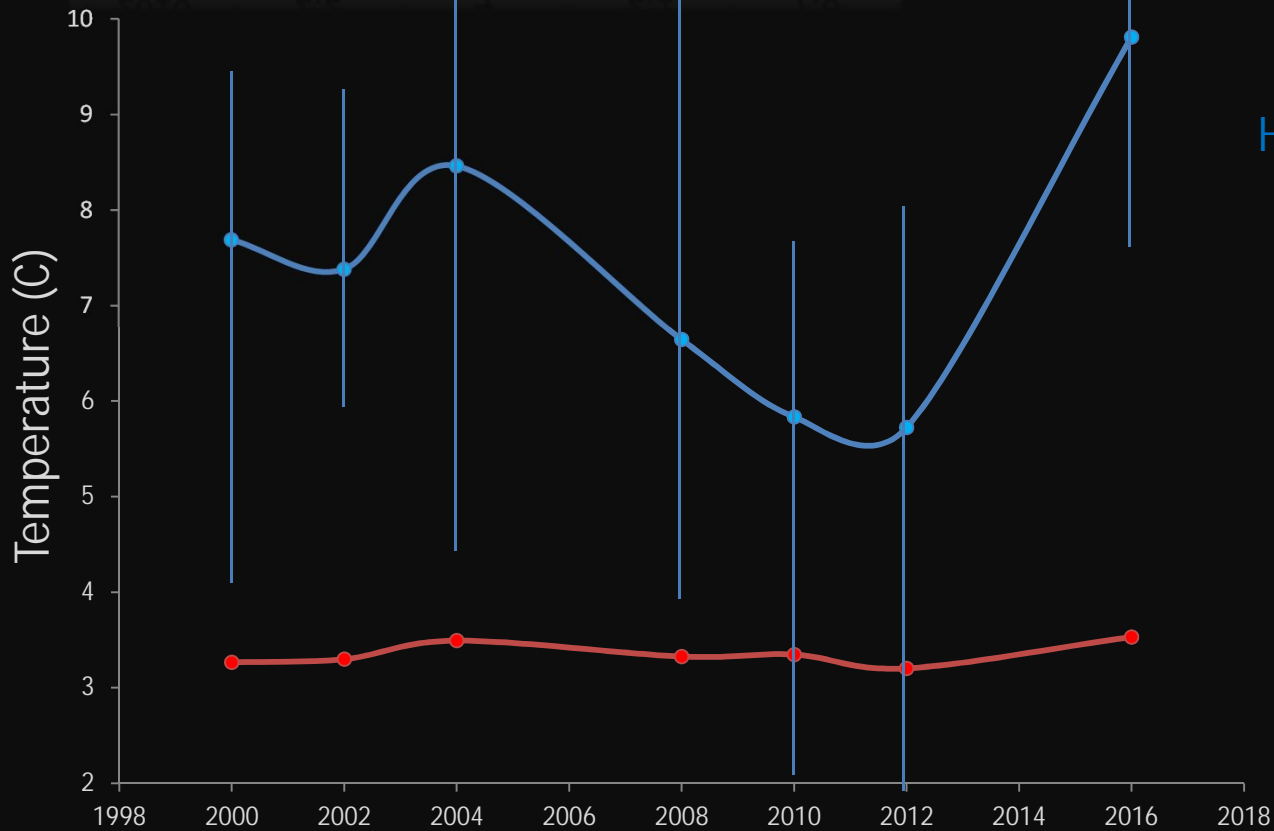
Inter Pribilof-Zhemchug

○ = Trawl Station in 2016





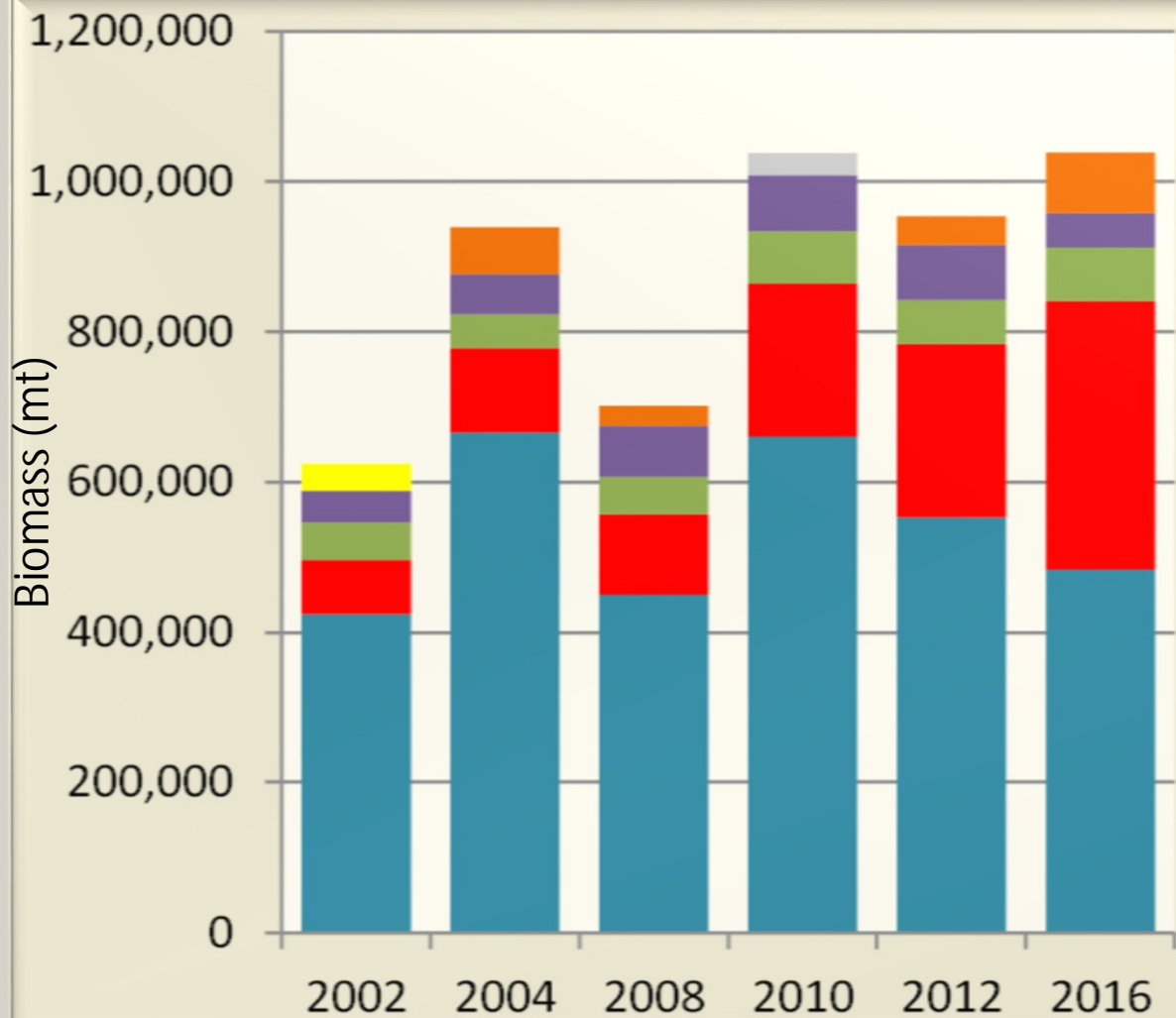
Year	Bottom		Surface	
	minimum	maximum	minimum	maximum
2000	2.4	3.7	4.1	9.6
2002	2.1	4.3	6	9.3
2004	2.3	4.6	4.5	10.9
2008	2.4	4.1	3.9	10.4
2010	2.2	4	2.1	7.8
2012	2	3.8	1.6	8
2016	2.3	4.6	7.7	12.8



Surface temperatures  
Highest for survey since 2000

Bottom temperatures  
Nearly constant

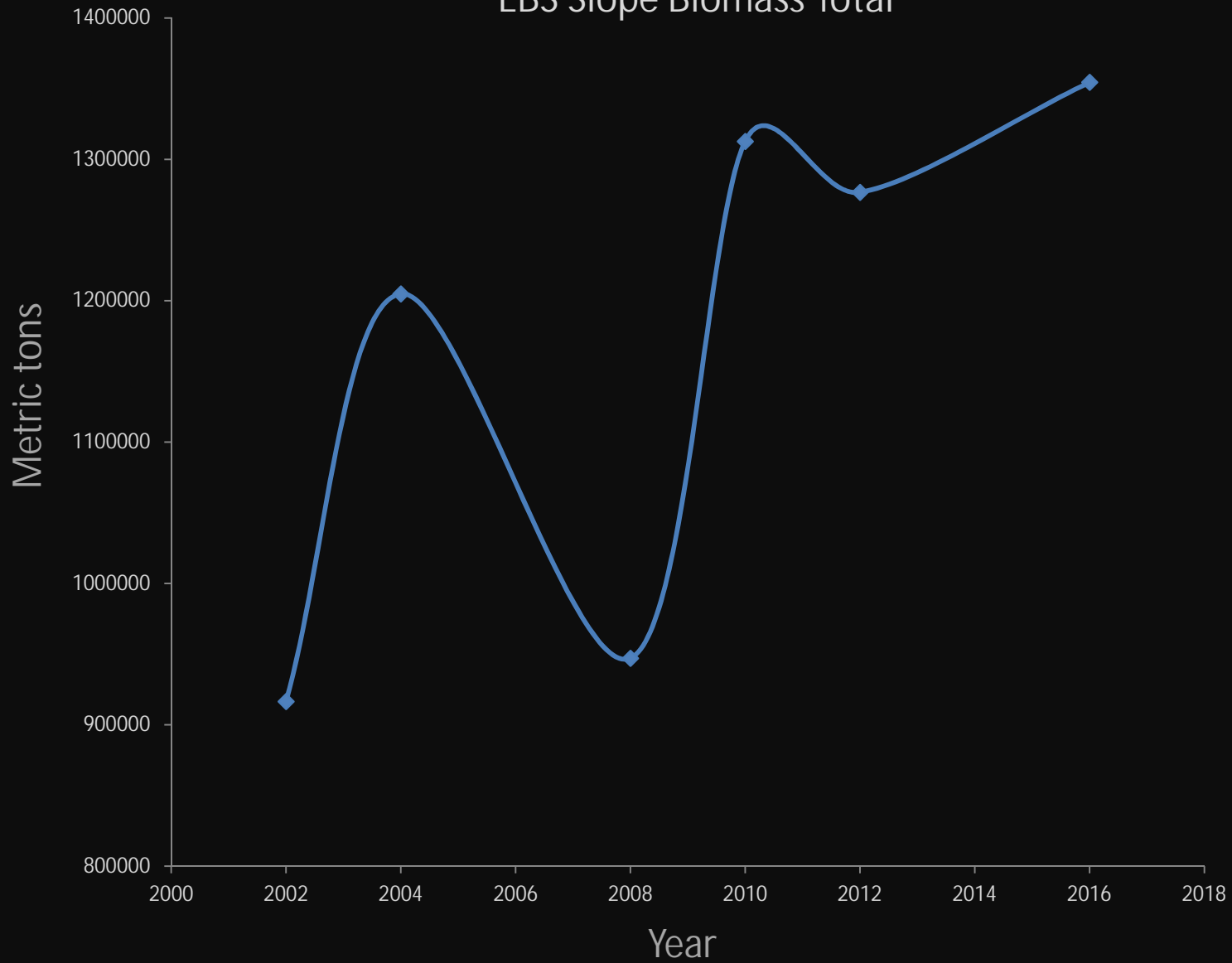
Common name	Scientific name	Age structures	Stomachs	Lengths
Arrowtooth Flounder	<i>Atheresthes stomias</i>	445	332	3483
Kamchatka Flounder	<i>Atheresthes evermanni</i>	744	334	2719
Greenland Turbot	<i>Reinhardtius hippoglossoides</i>	652	131	1763
Sablefish	<i>Anoplopoma fimbria</i>	455		577
Rougheye Rockfish	<i>Sebastes aleutianus</i>	24		25
Blackspotted Rockfish	<i>Sebastes melanostictus</i>	143		137
Pacific Ocean Perch	<i>Sebastes alutus</i>	404	249	3398
Shortraker Rockfish	<i>Sebastes borealis</i>	349	46	346

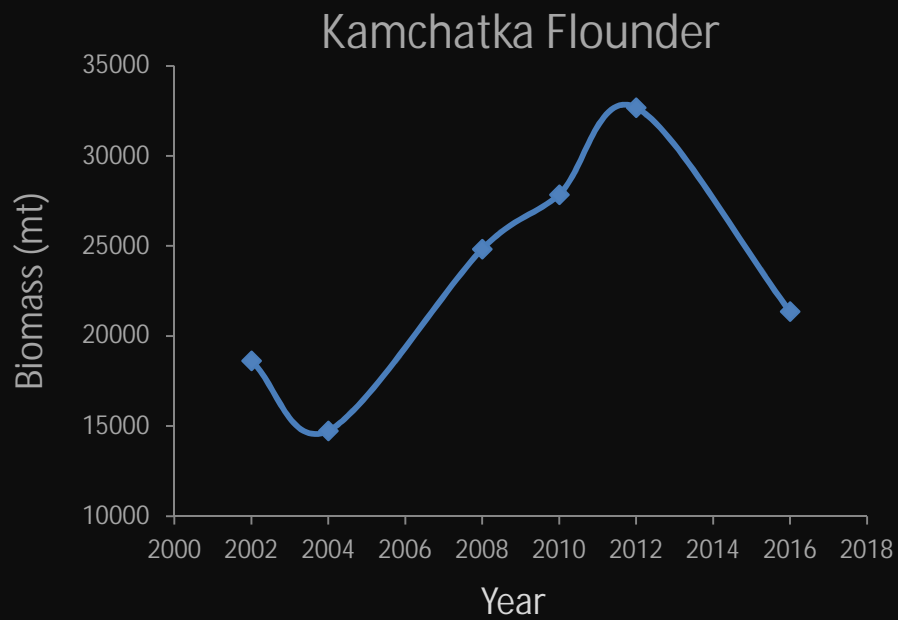
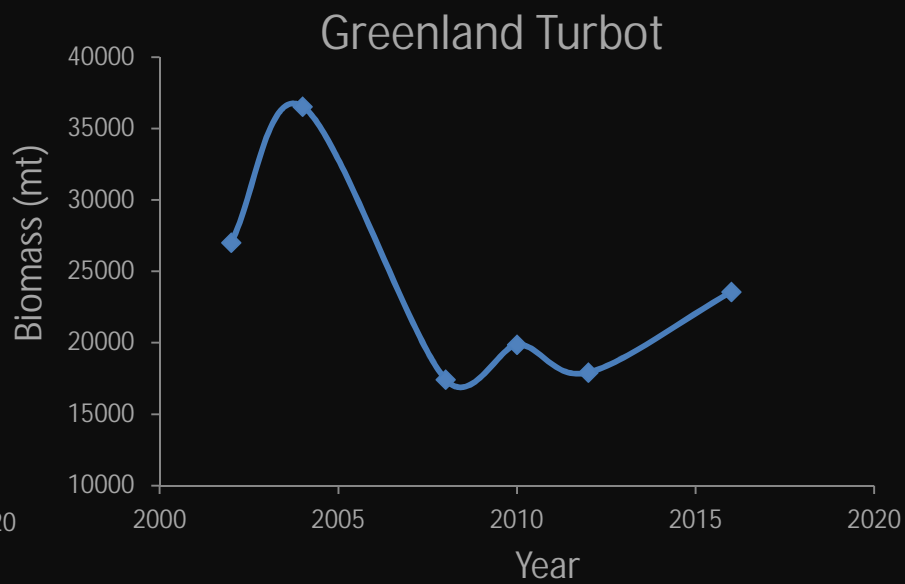
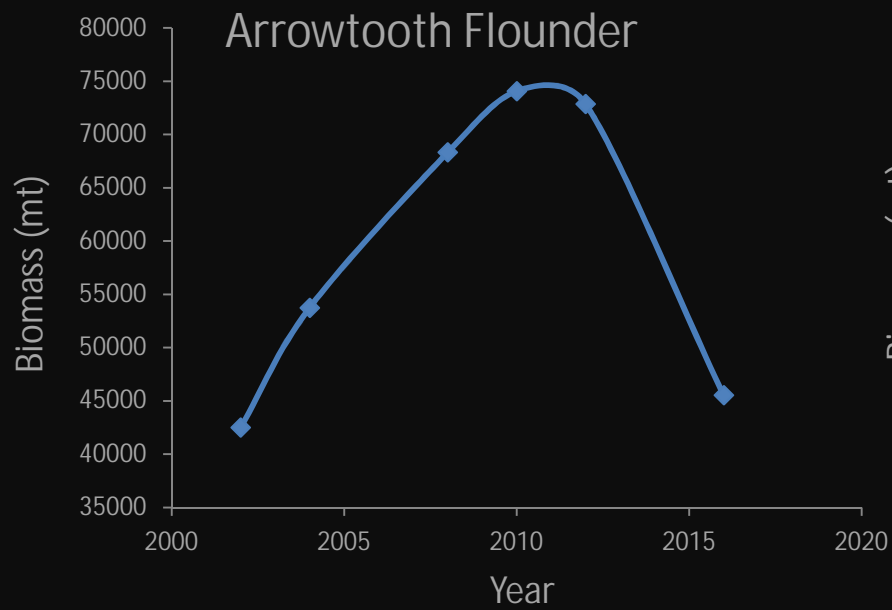


~70% of Total Biomass

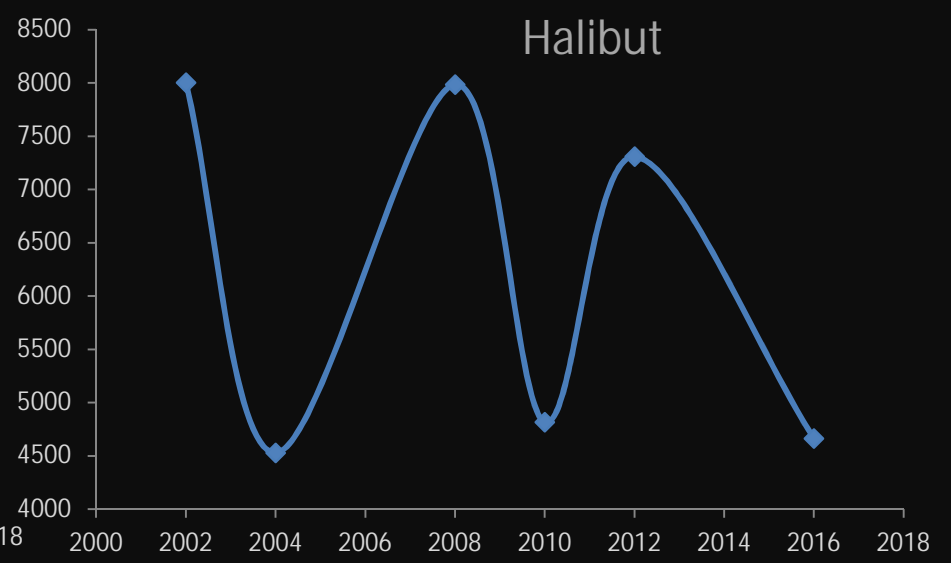
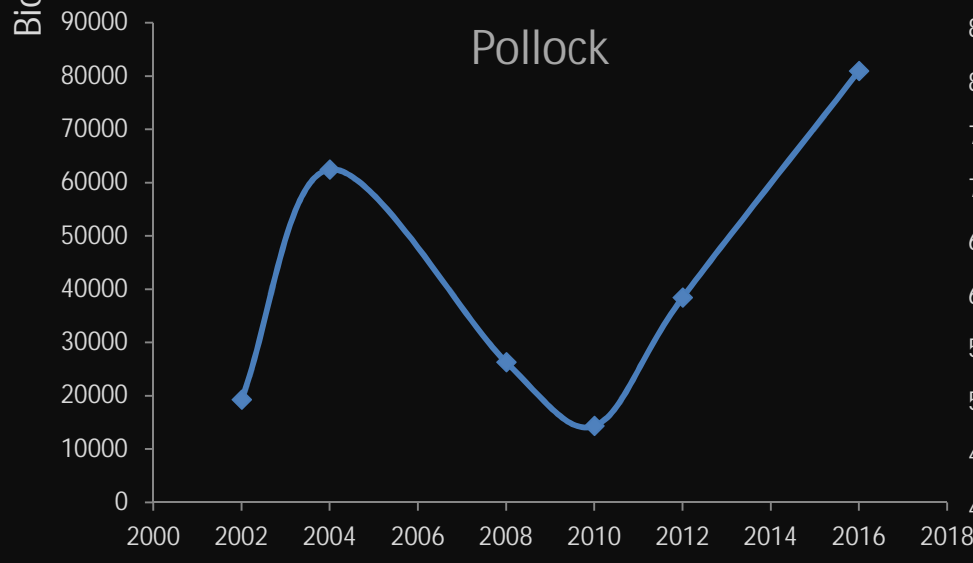
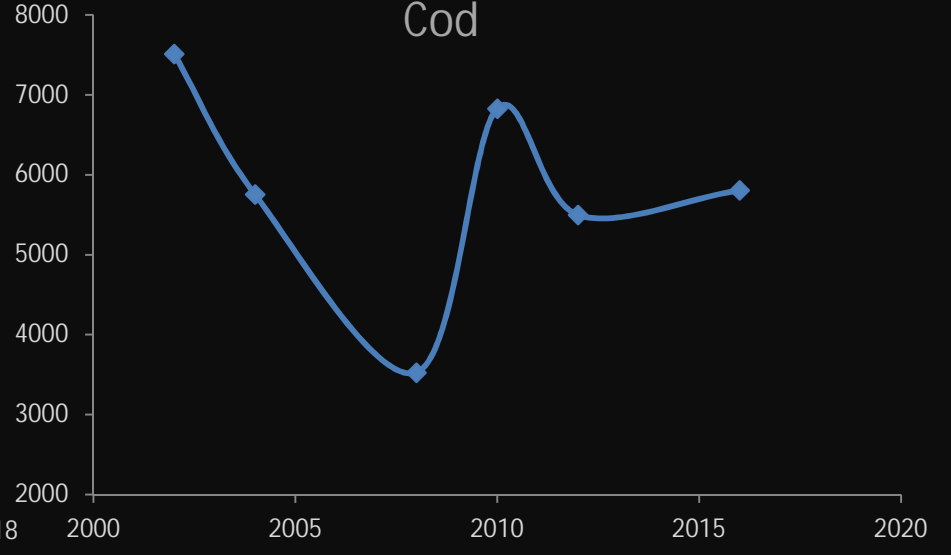
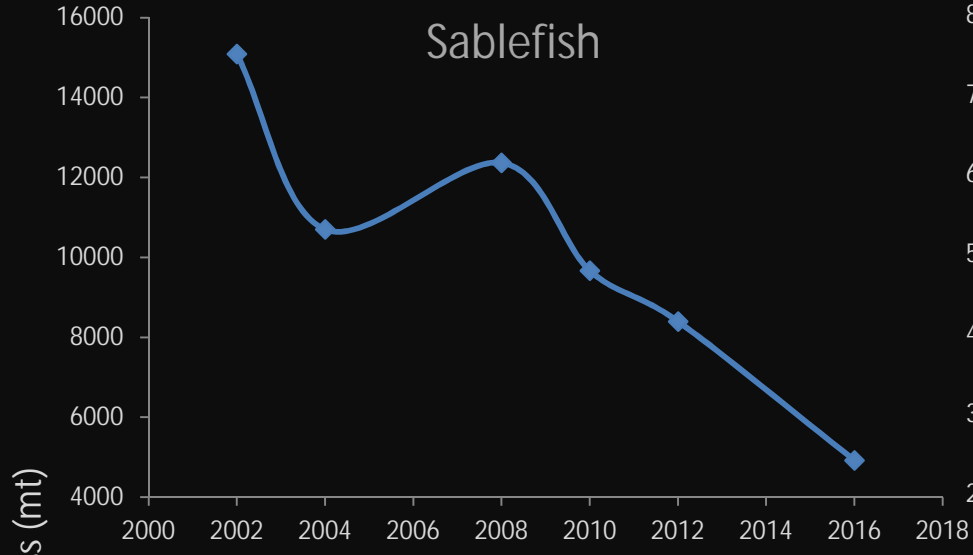
- Shortspine Thornyhead
- Walleye Pollock
- Alaska Skate
- Arrowtooth Flounder
- Popeye Grenadier
- Pacific Ocean Perch
- Giant Grenadier

# EBS Slope Biomass Total



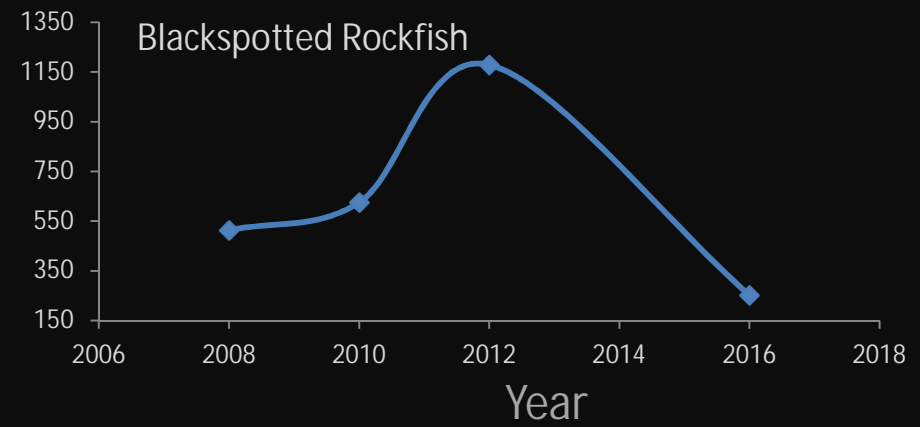
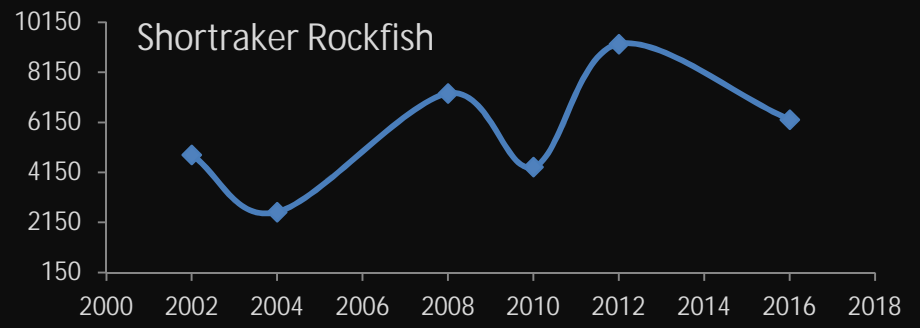
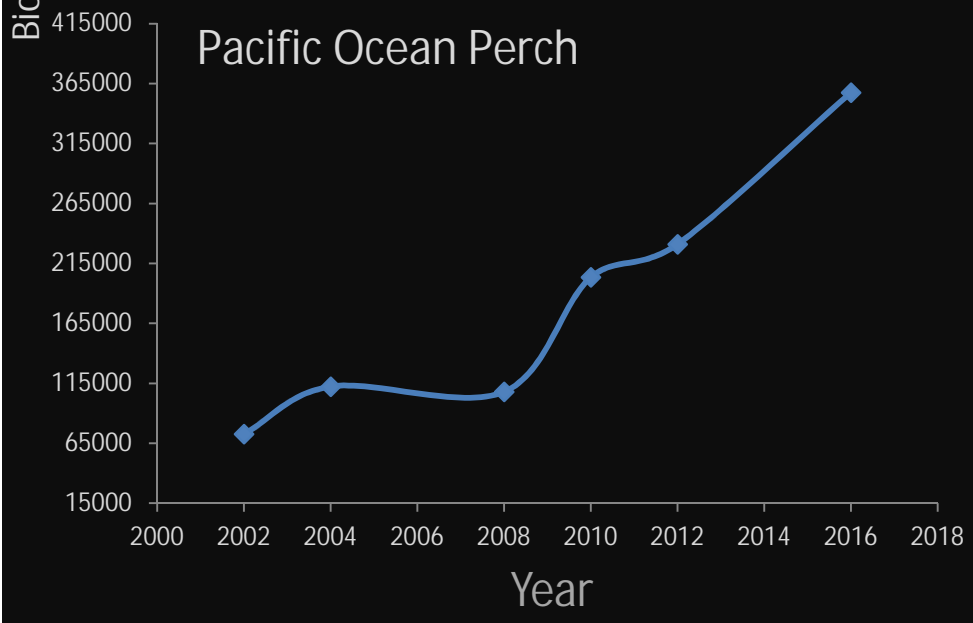
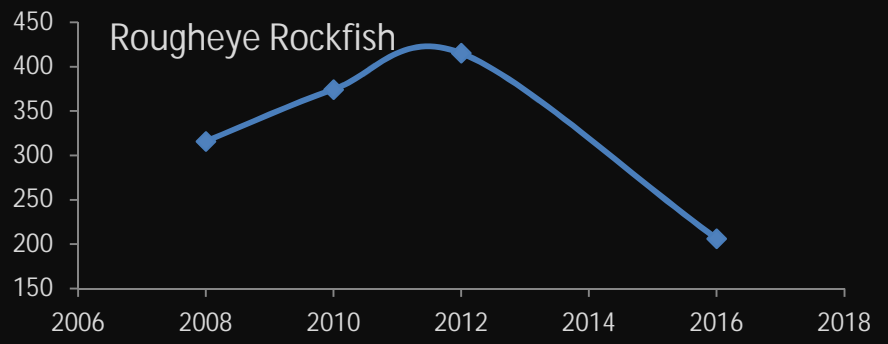
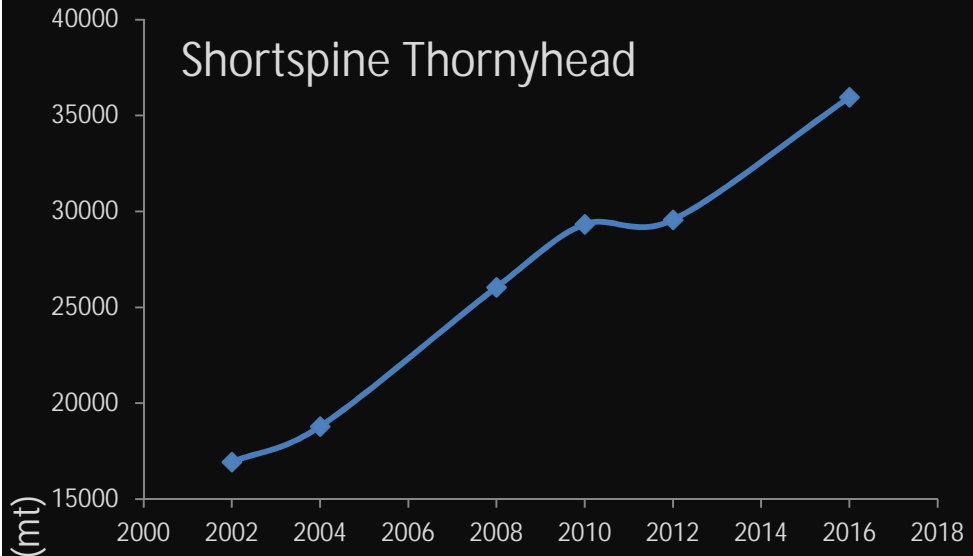


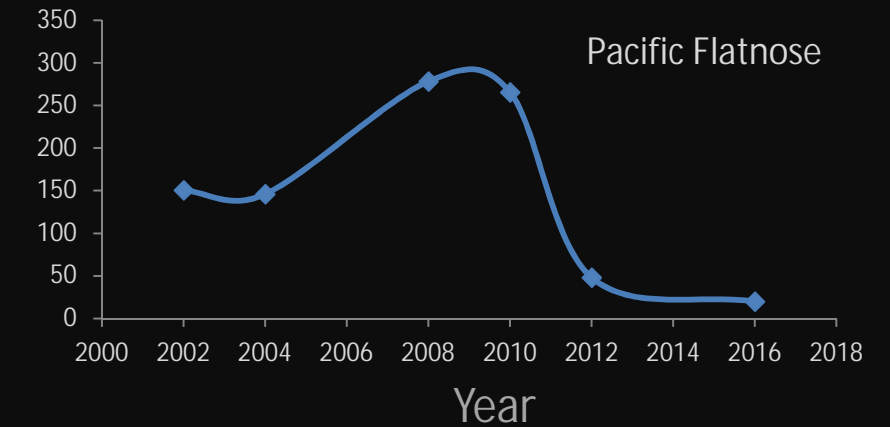
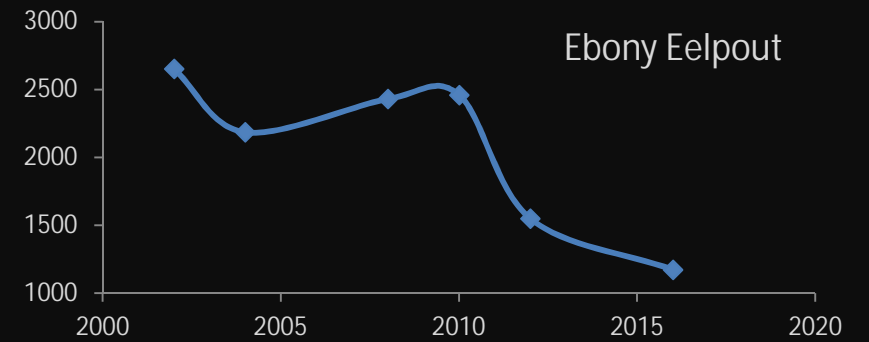
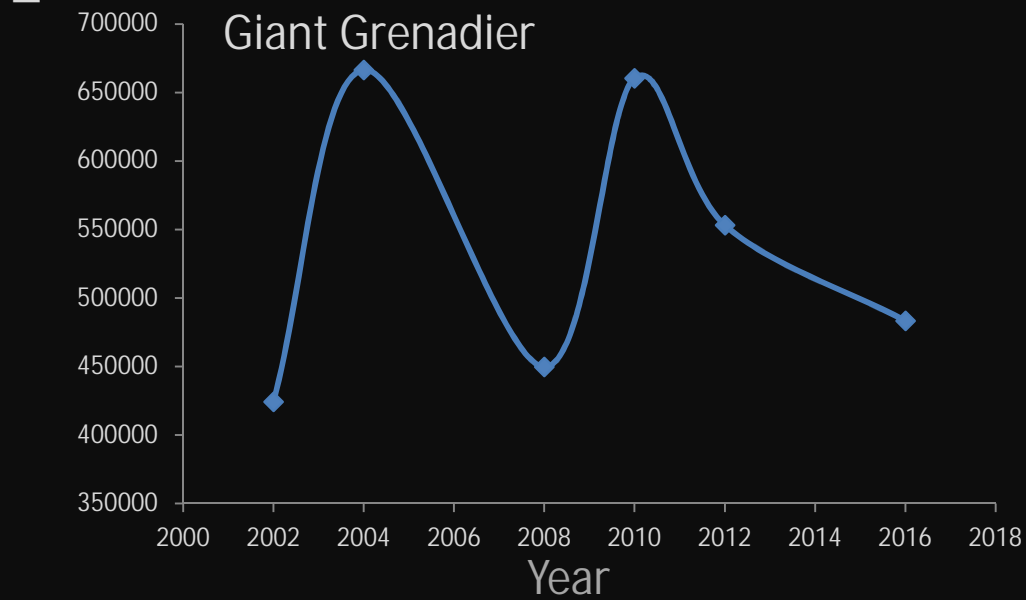
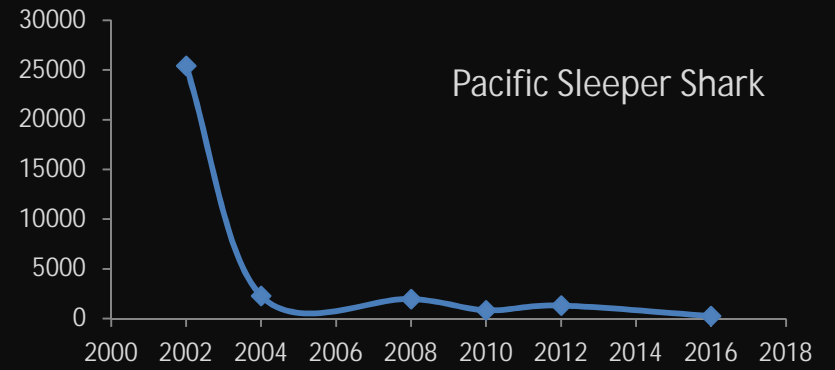
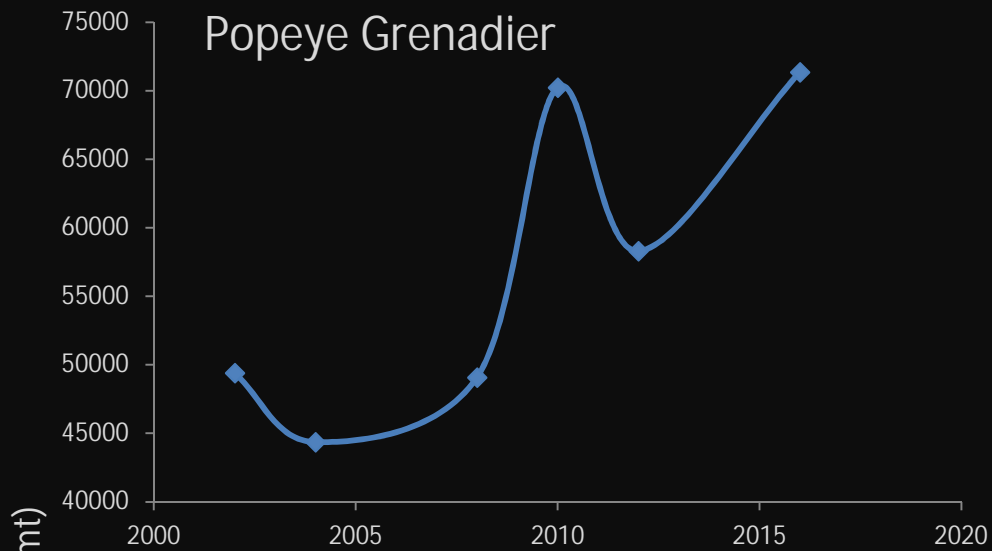


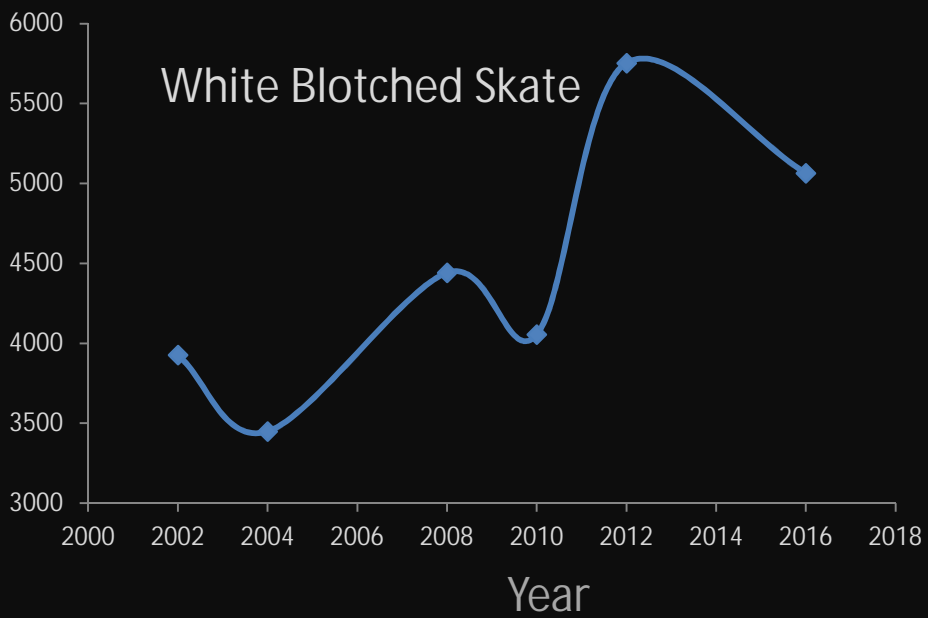
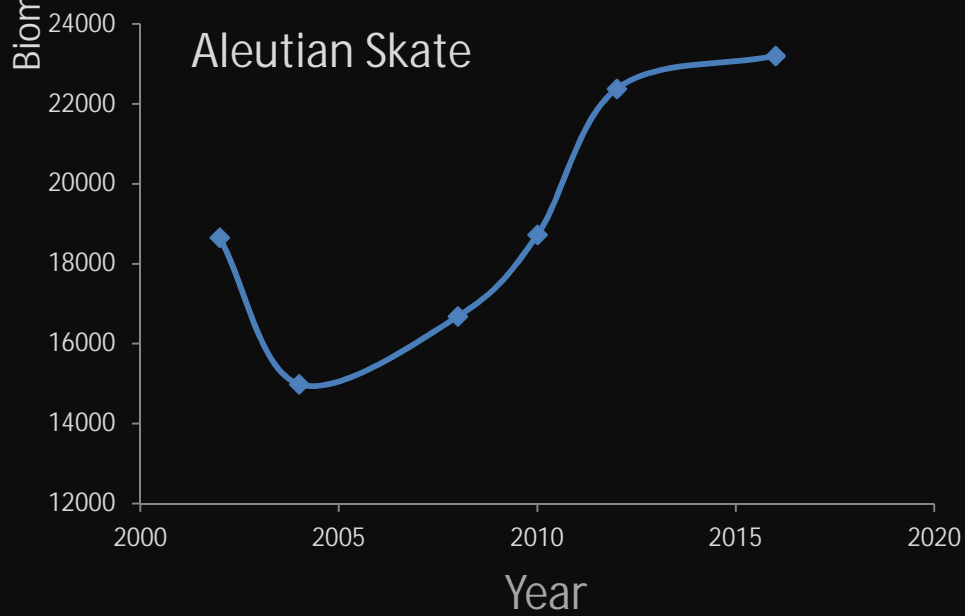
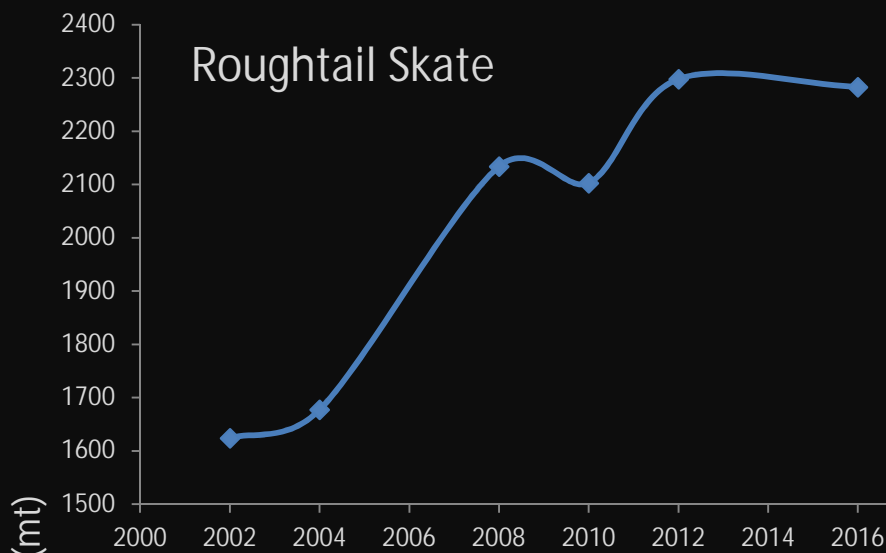


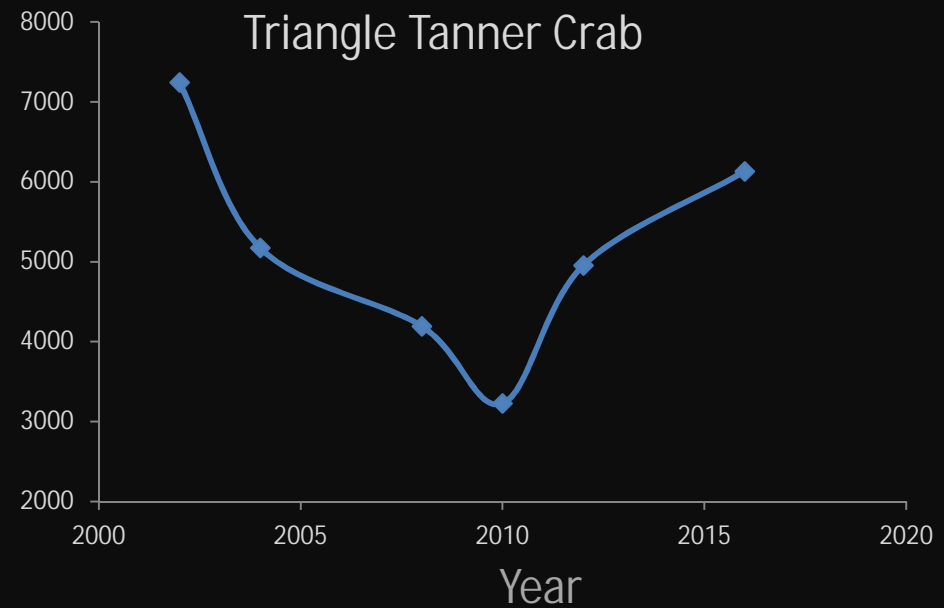
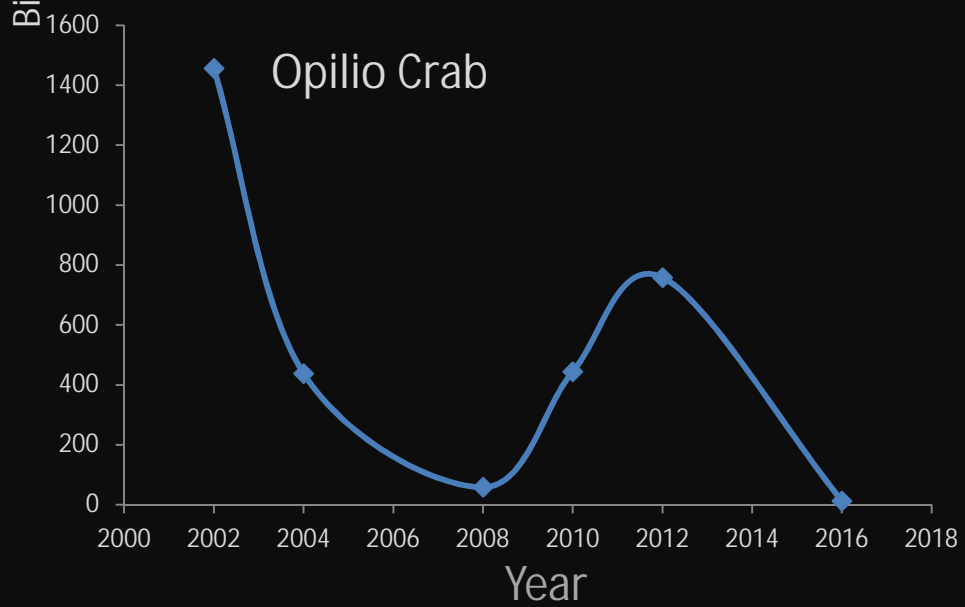
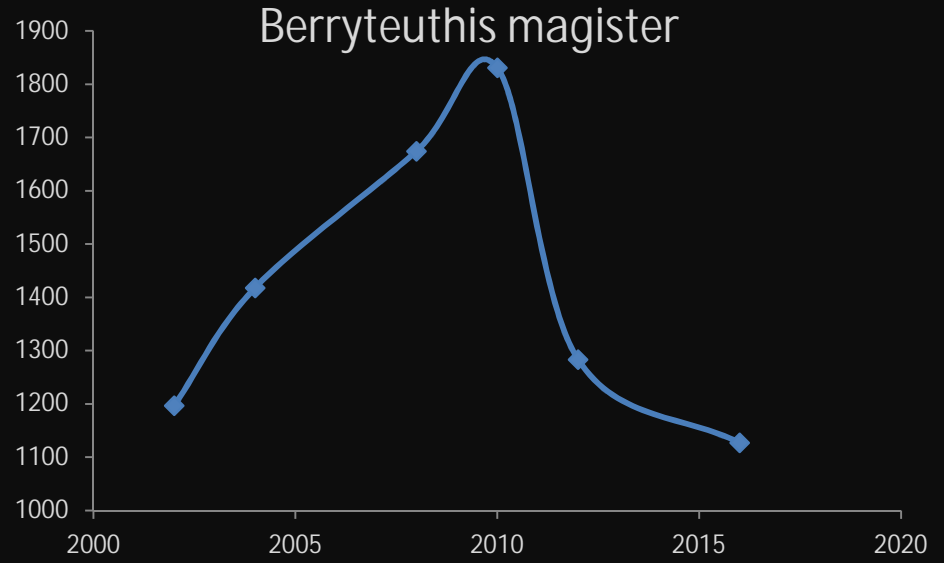
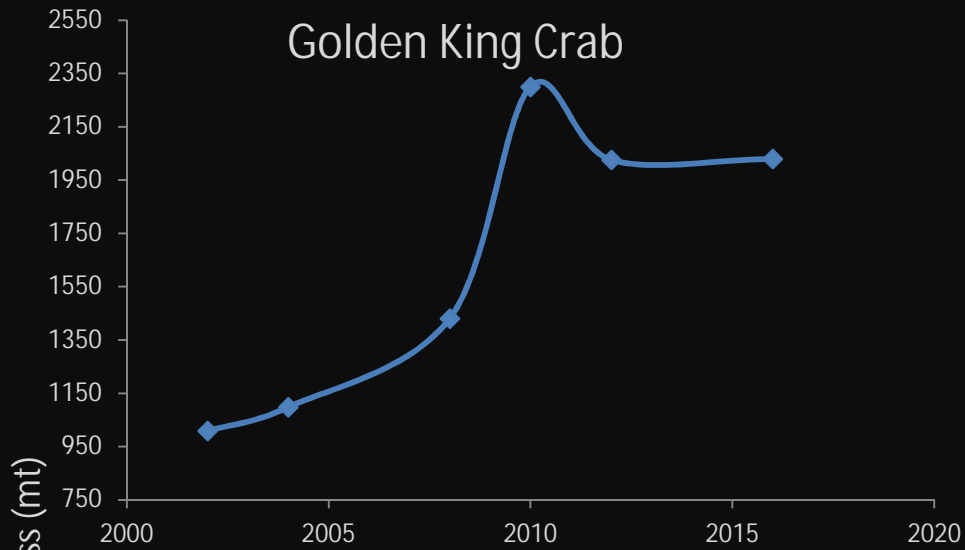
Year

Year



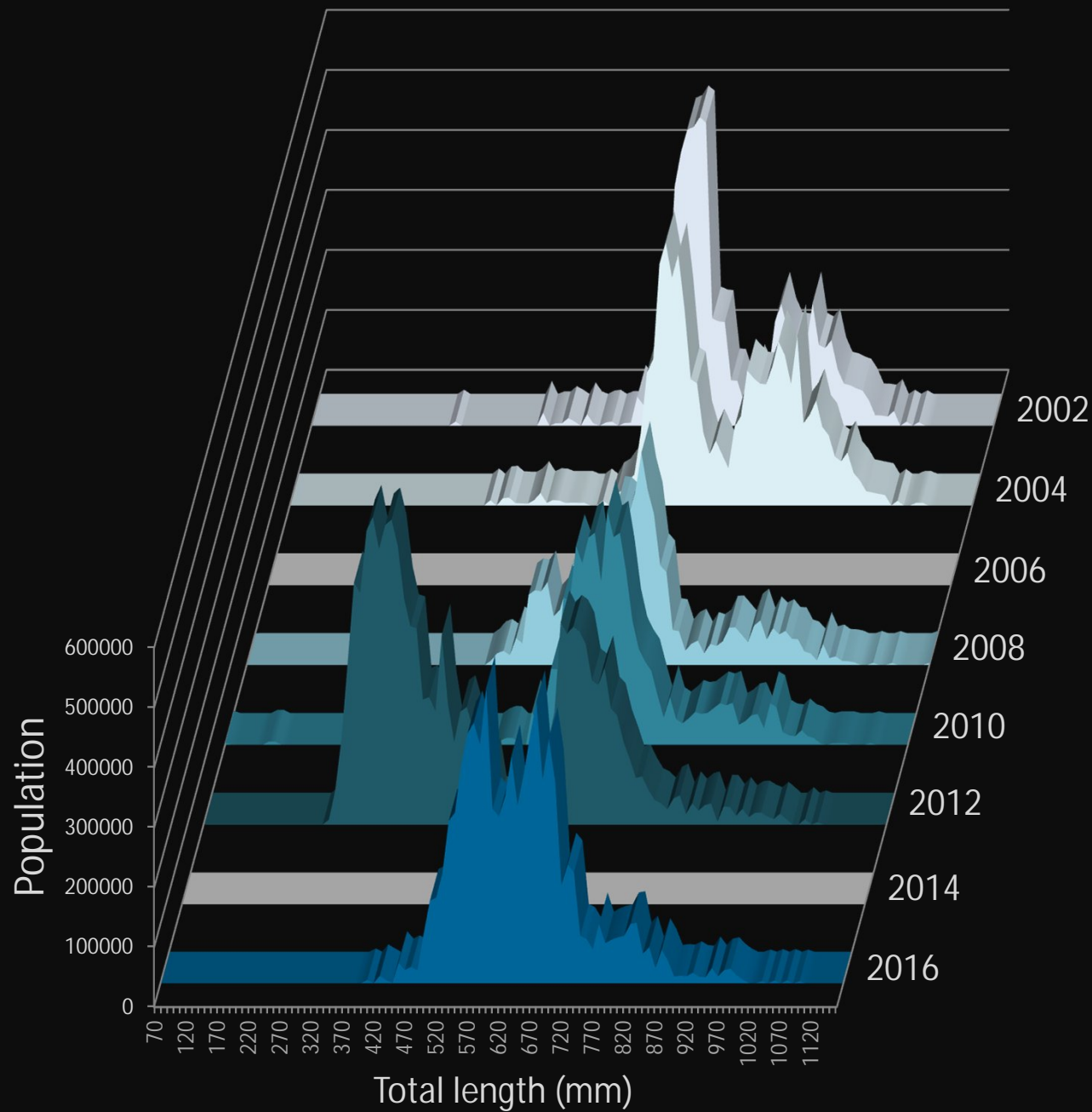




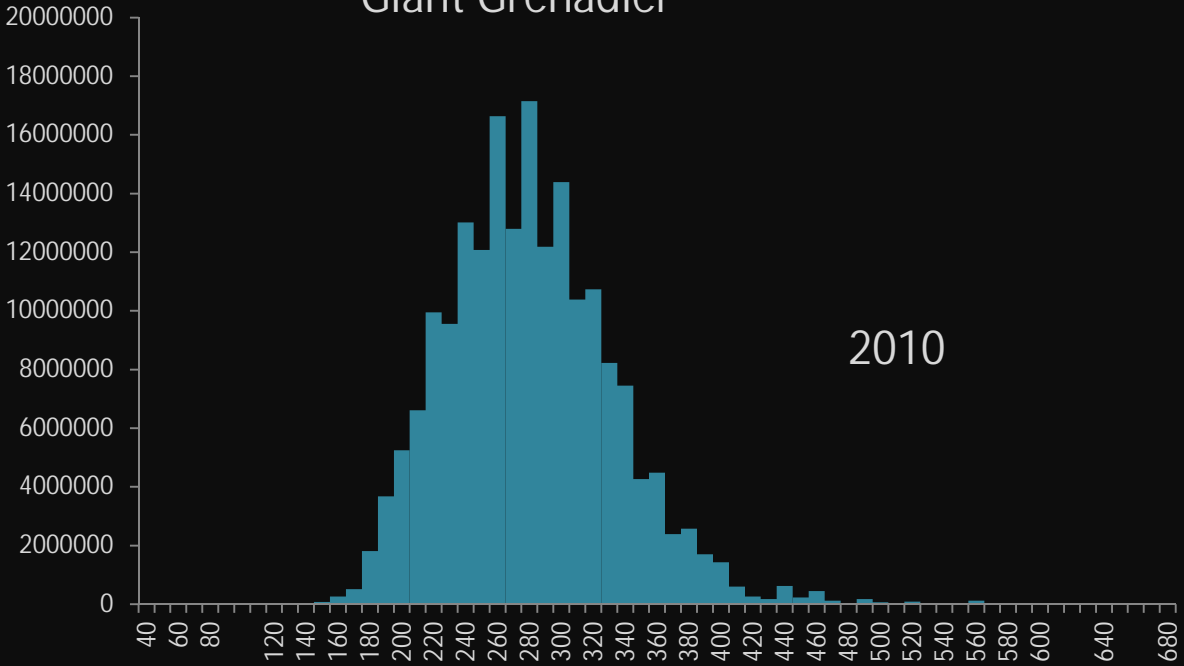




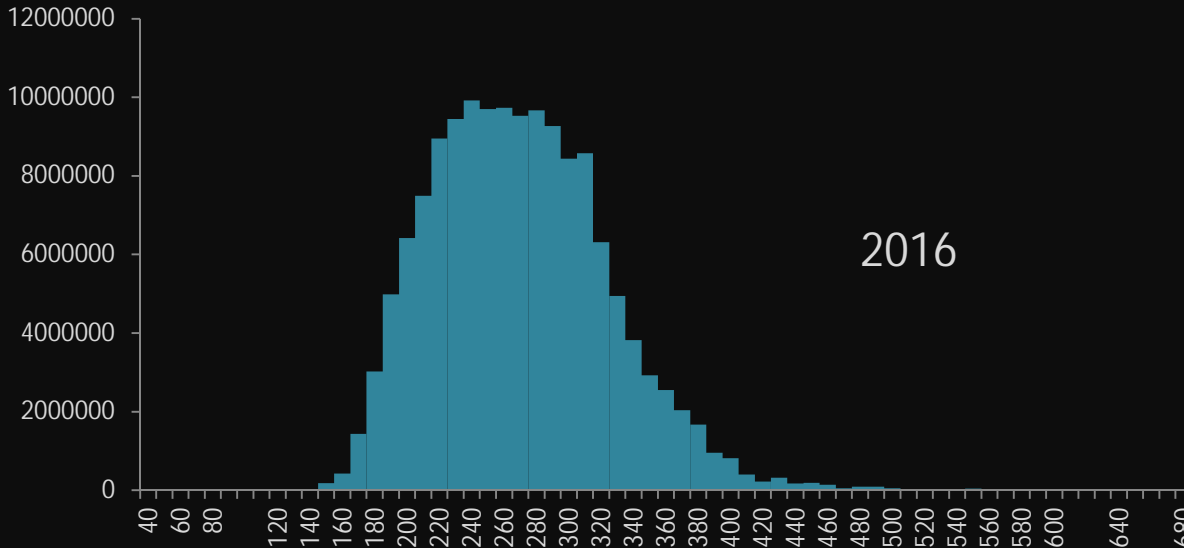
# Greenland Turbot



# Giant Grenadier



2010



2016

PAFL length (mm)