ALASKA SABLEFISH

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ALASKA FISHERIES SCIENCE CENTER

JUNEAU, AK

BOTTOM LINE

- Maximum permissible ABC way up
- Author's ABC 2020 > ABC 2019 (+25%)
- At least 12 reasons

  why not the max ABC

- Risk-matrix approach
- Ecosystem and Socioeconomic Profile (ESP)

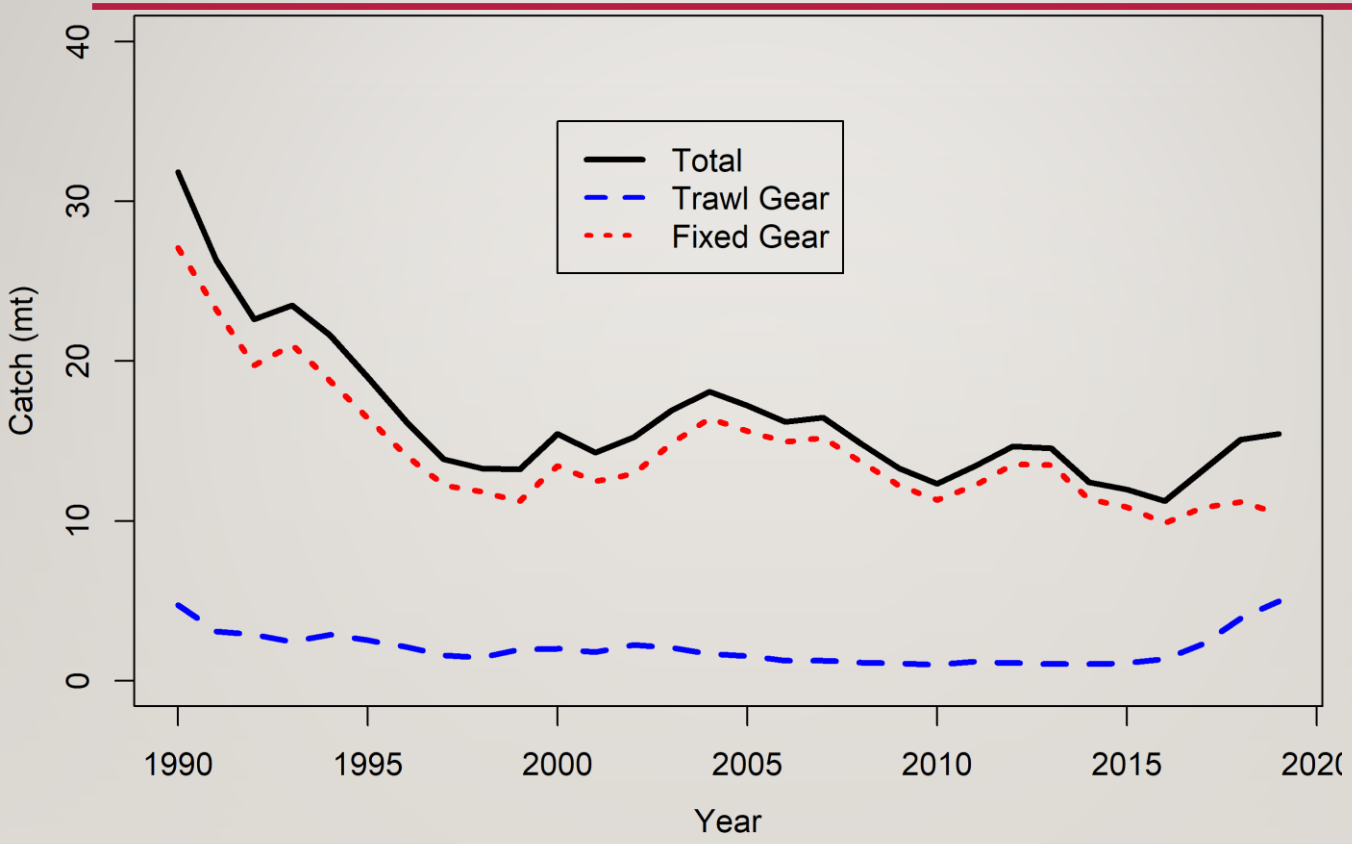
OUTLINE

- Brief Summary of Key Assessment Model Results
- OFL Issue
- Ecosystem and Socioeconomic Profile
- Risk-Matrix ABC Reduction
- Future priorities

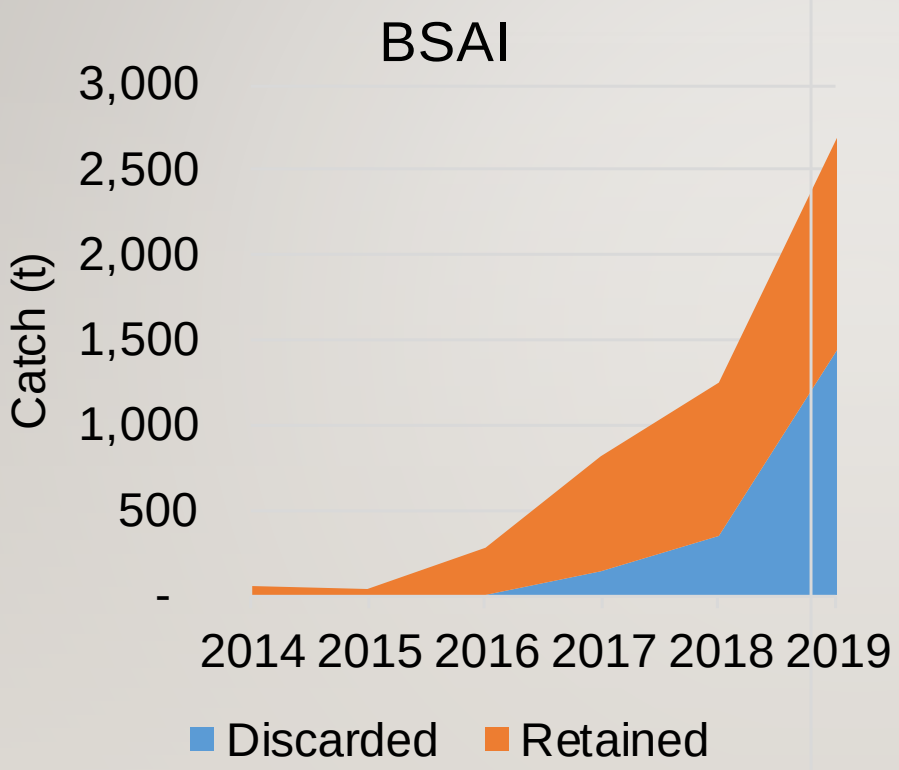
NEW DATA

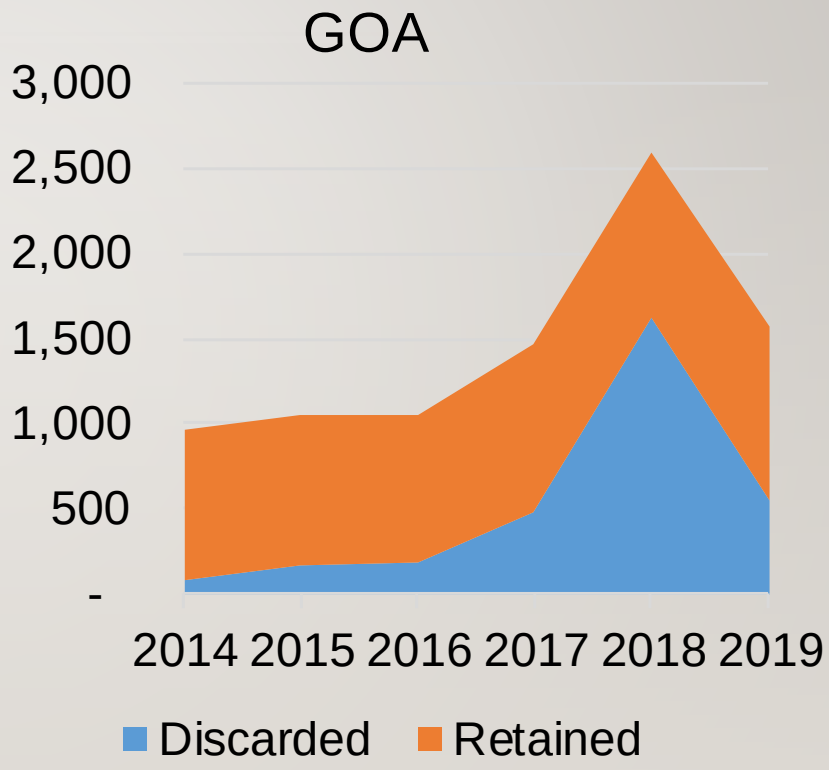
- Catch: updated catch for 2018, new 2019-2021 ests
- Relative abundance: 2019 Longline survey, 2018 longline fishery, 2019 GOA trawl survey
- Ages: 2018 longline survey, 2018 fixed gear fishery
- Lengths: 2019 longline survey, 2019 GOA trawl survey, 2018 fixed gear fishery, and 2018 trawl fishery

RECENT CATCHES



TRAWL CATCH AND RELEASE (ESP)





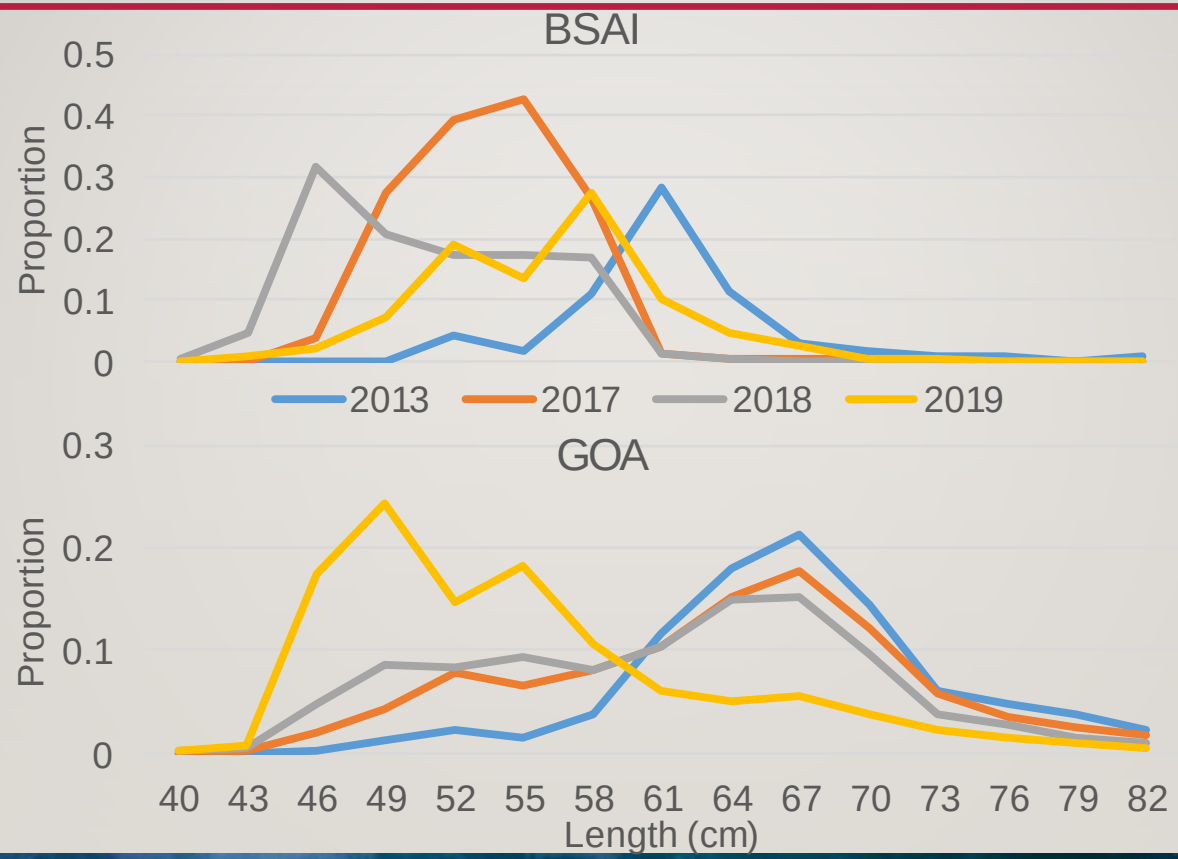
EBS OFL ISSUE

- EBS sablefish catch was very close to OFL in 2019
- We were requested to give history and present options
  - History is very sparse, informal discussions among authors
- We will present the options with discussion, but will not recommend an option
- Under status quo, OFL will be much higher in 2020

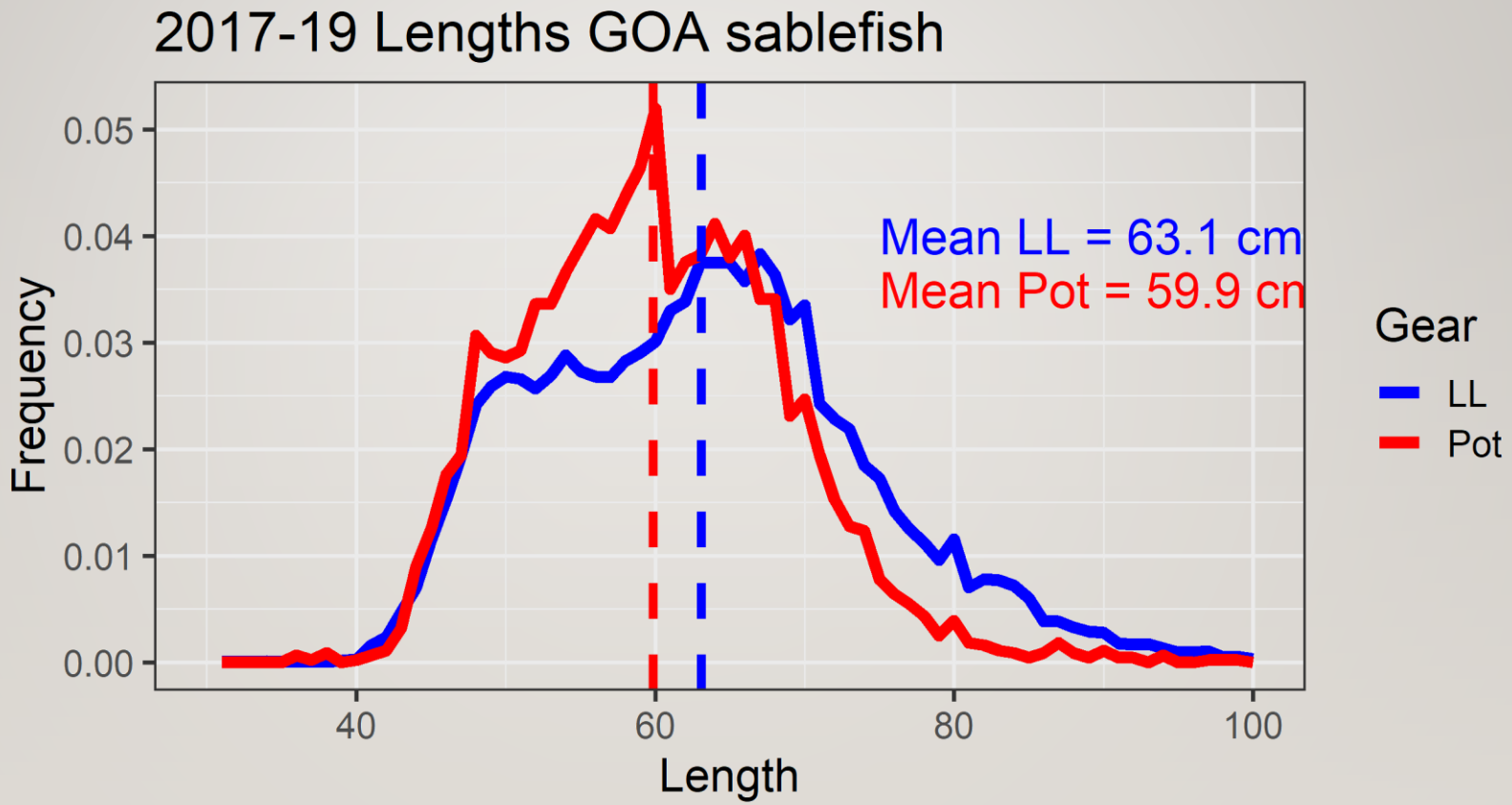
WHAT DOES THIS ACTION MEAN?

- ABC by subareas affords some protections
- What does area-specific OFL do?
  - Potentially close fisheries when reached in an area
  - However, sablefish status determination is Alaska-wide (i.e., if BS OFL is exceeded, the assessment will not report that stock "experiencing overfishing."
- Larger question: Should we have sub-area ABCs **OR** sub-area OFLs? Be more consistent?

12 TRAWL CATCH AND RELEASE (ESP)

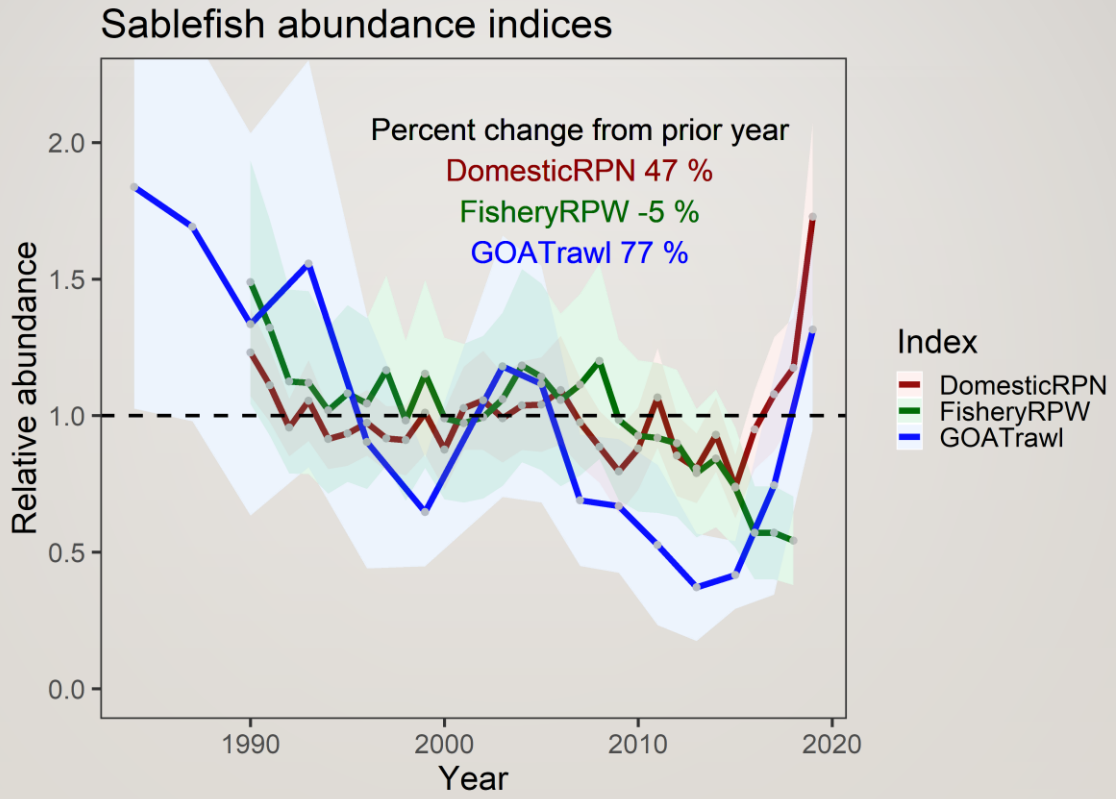


POTS CATCH SMALLER FISH

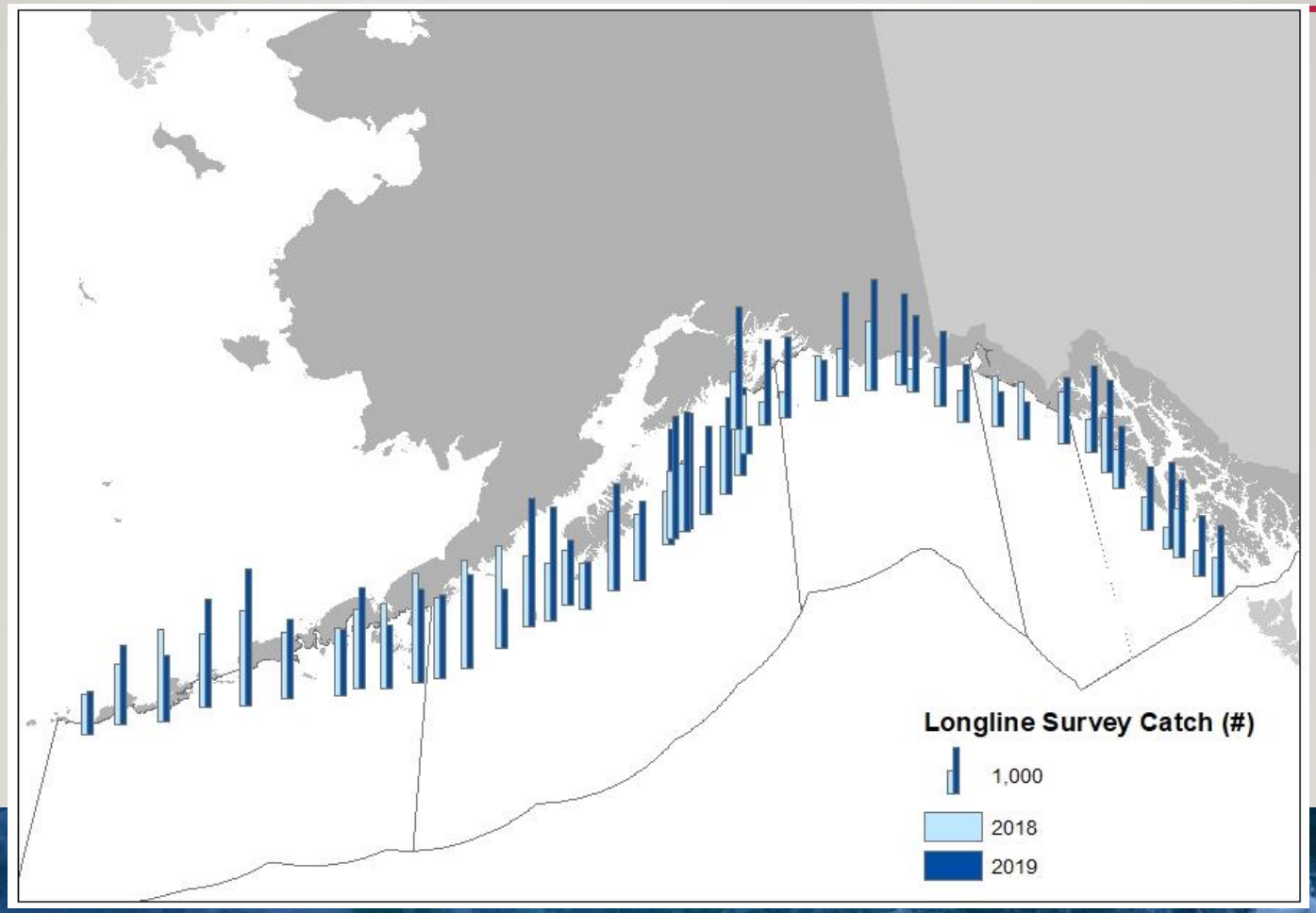


~ 13% of GOA catch is pots, ~1,400 t in 2018/2019, up from 9% in 2017

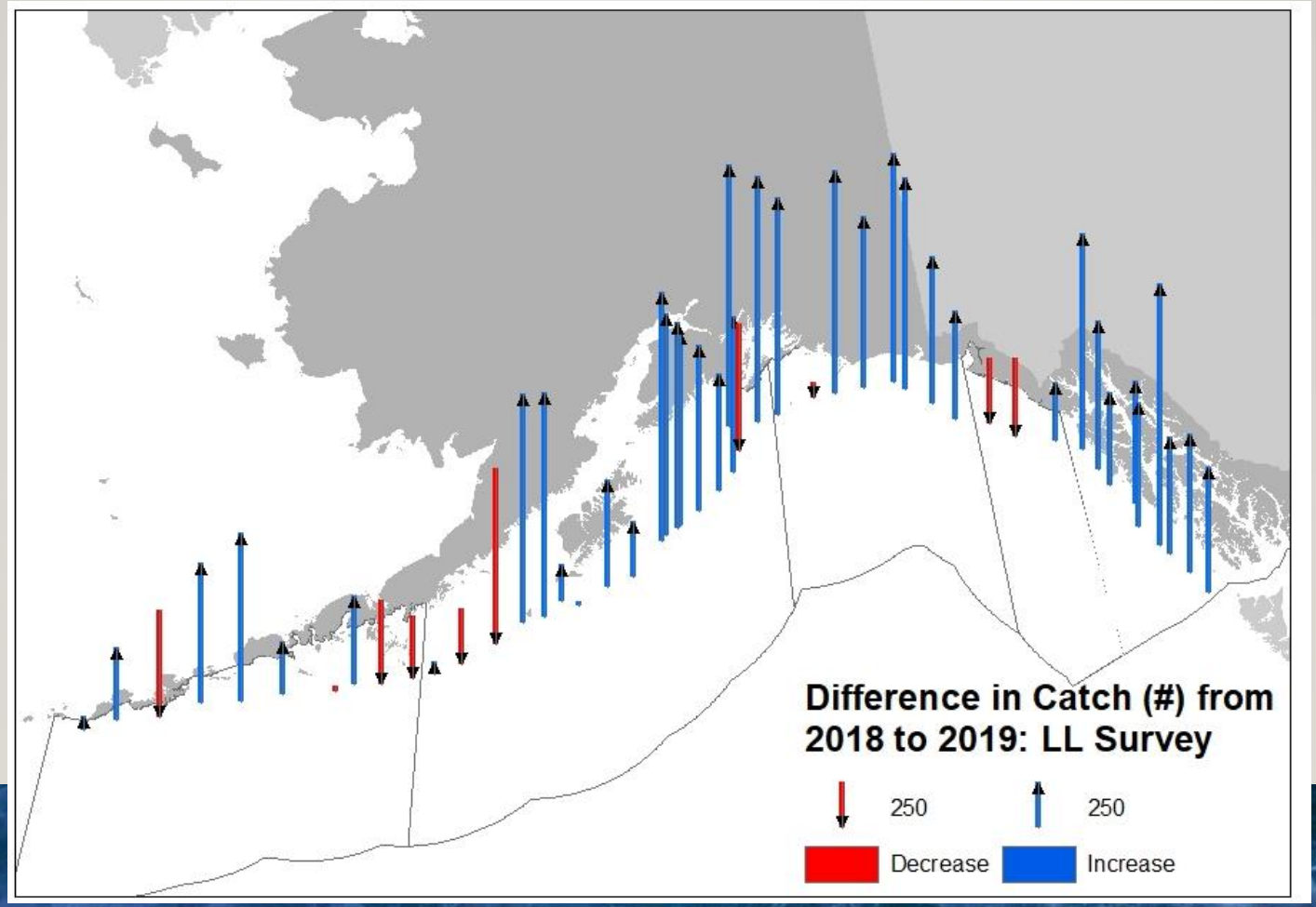
INDICES IN THE MODEL



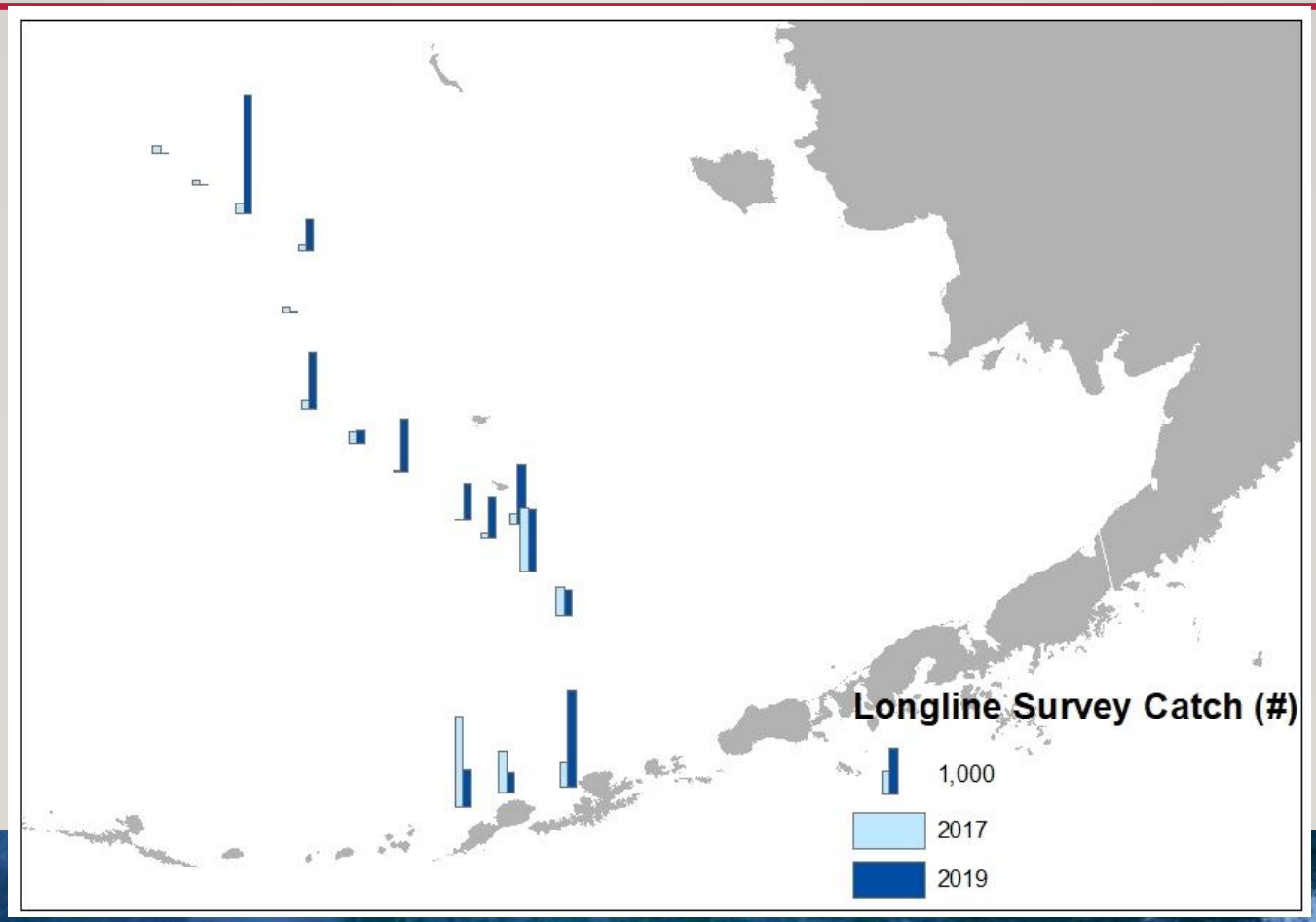
GOA LL SURVEY CATCHES



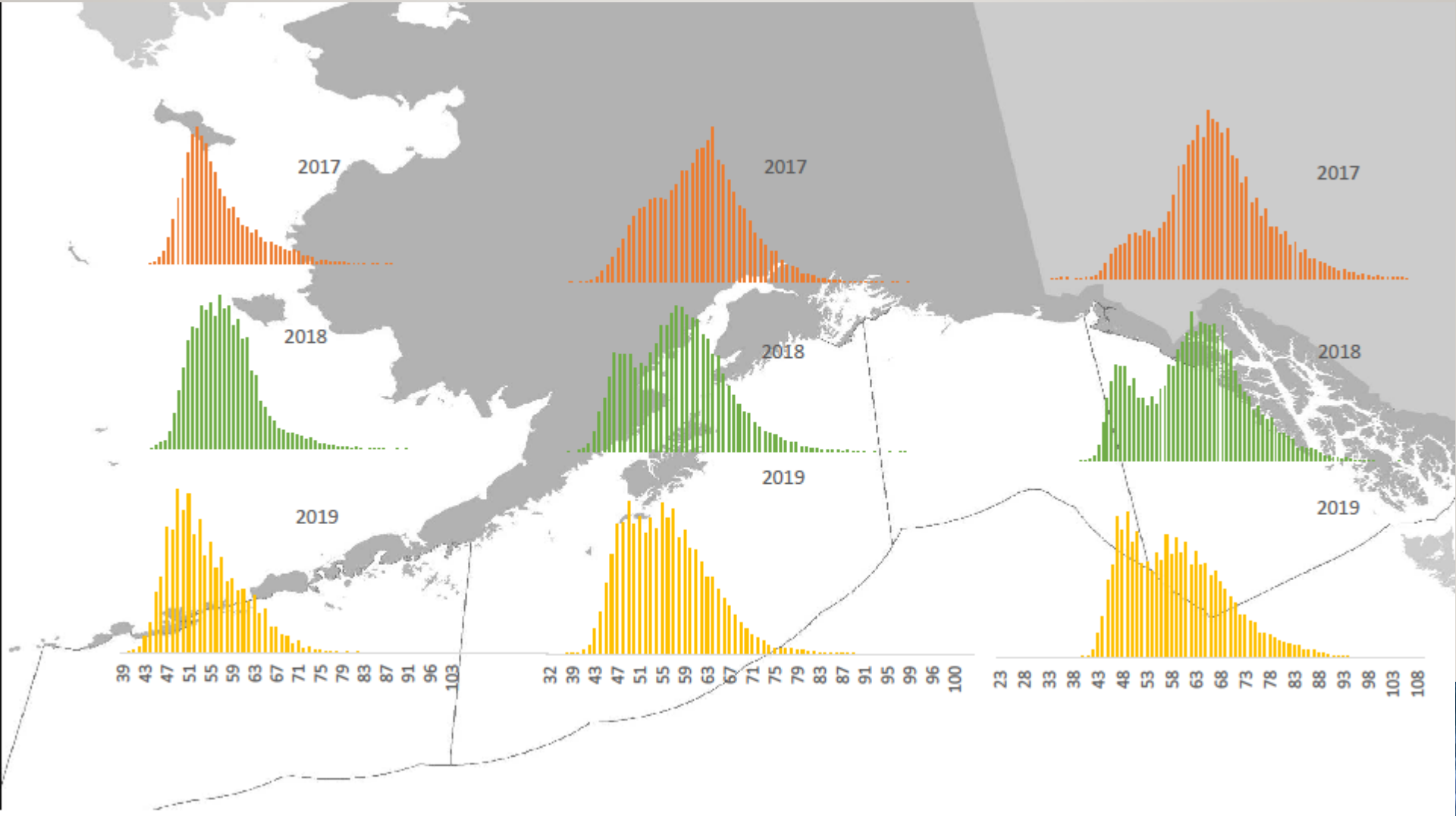
GOA LL SURVEY CATCHES



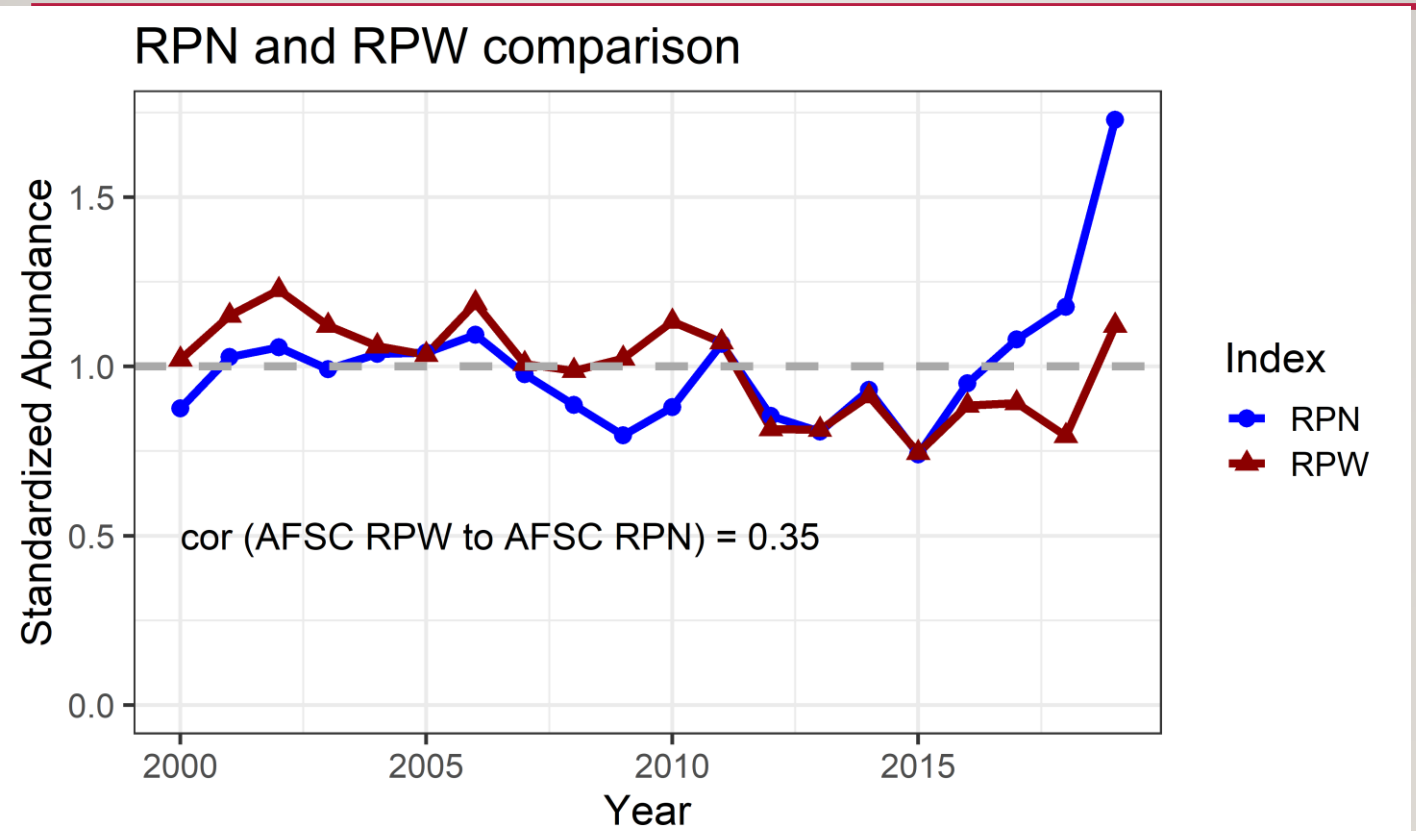
EBS LL SURVEY CATCHES



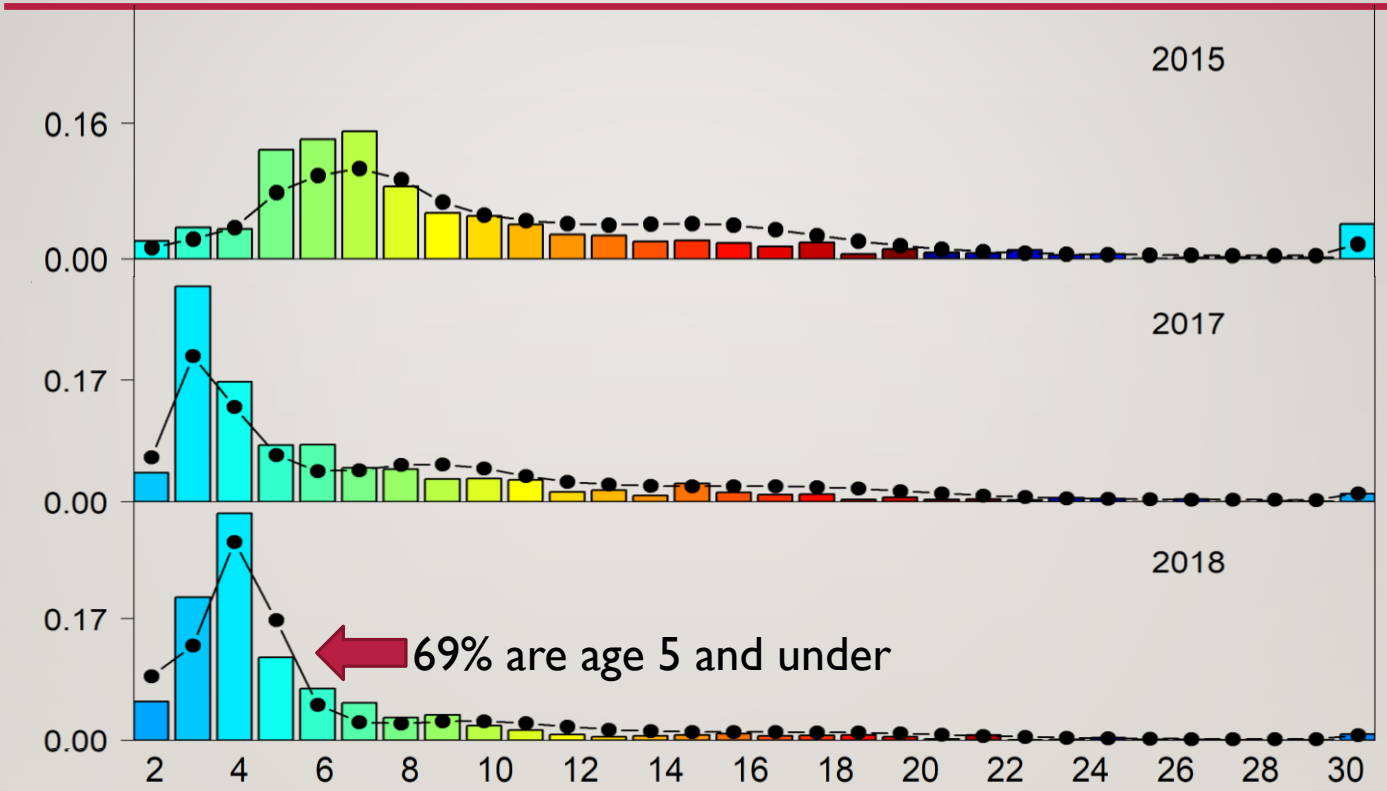
SABLEFISH LENGTHS BY AREA



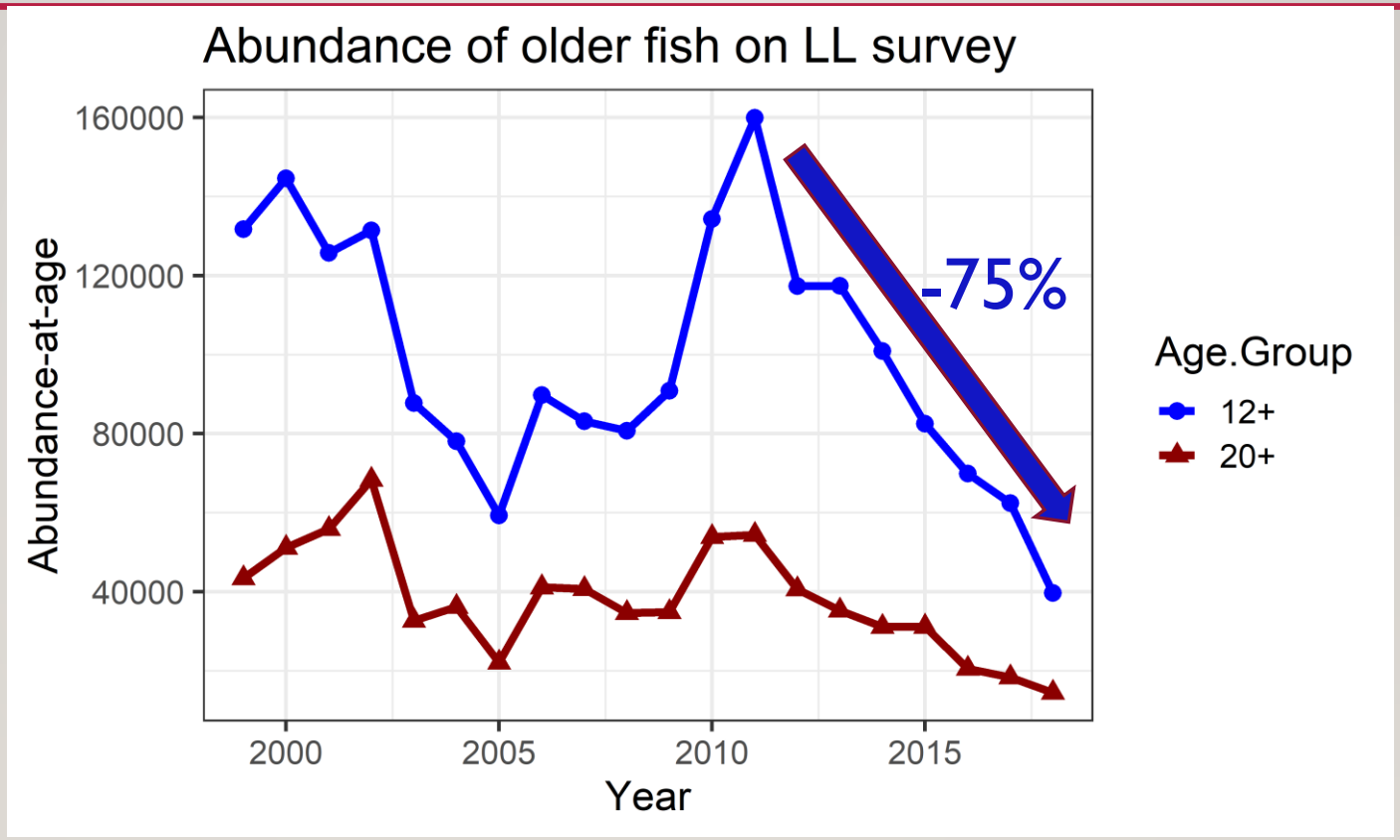
5 A TALE OF TWO INDICES



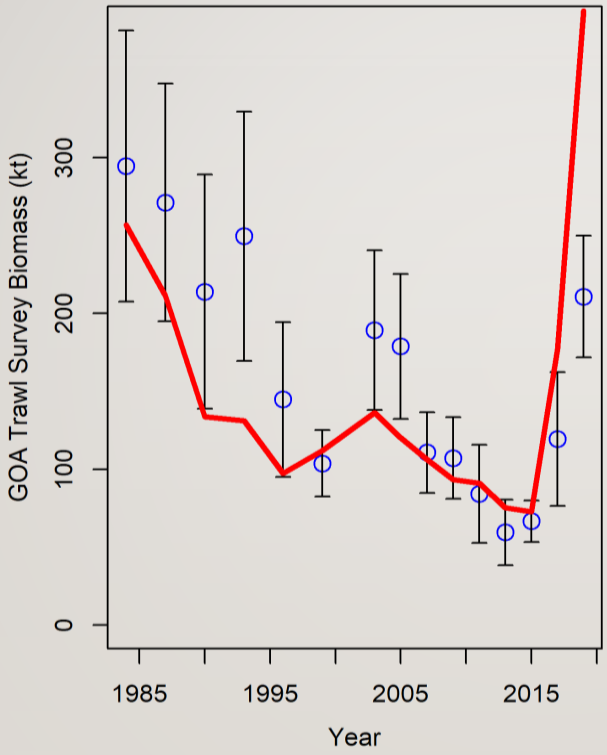
LONGLINE SURVEY AGES

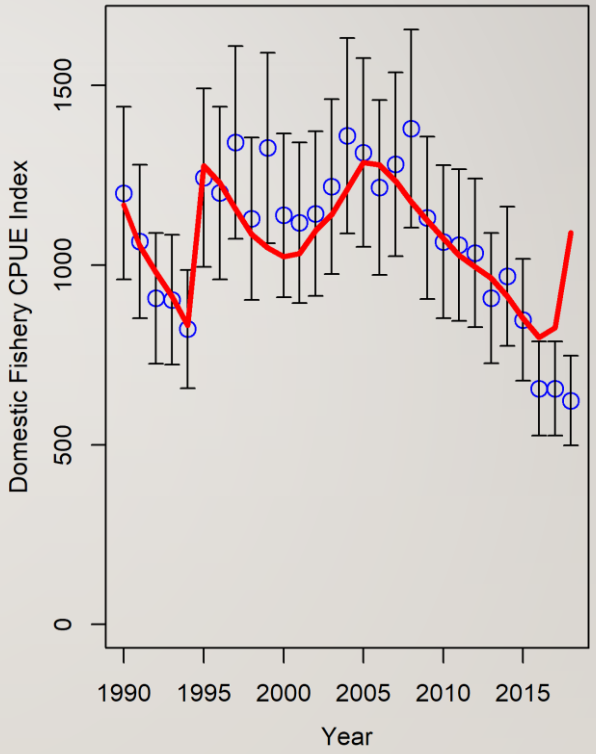


3 OFF TO WARMER CLIMATES

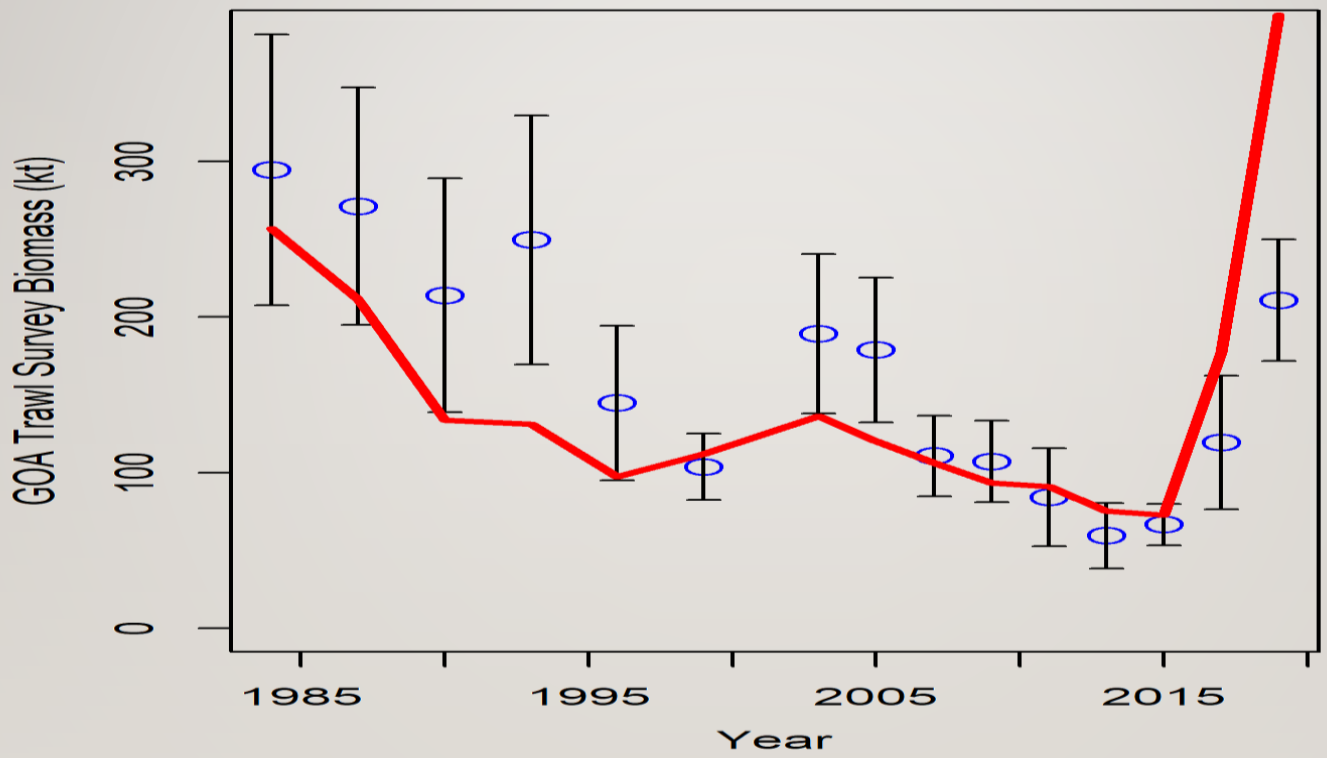


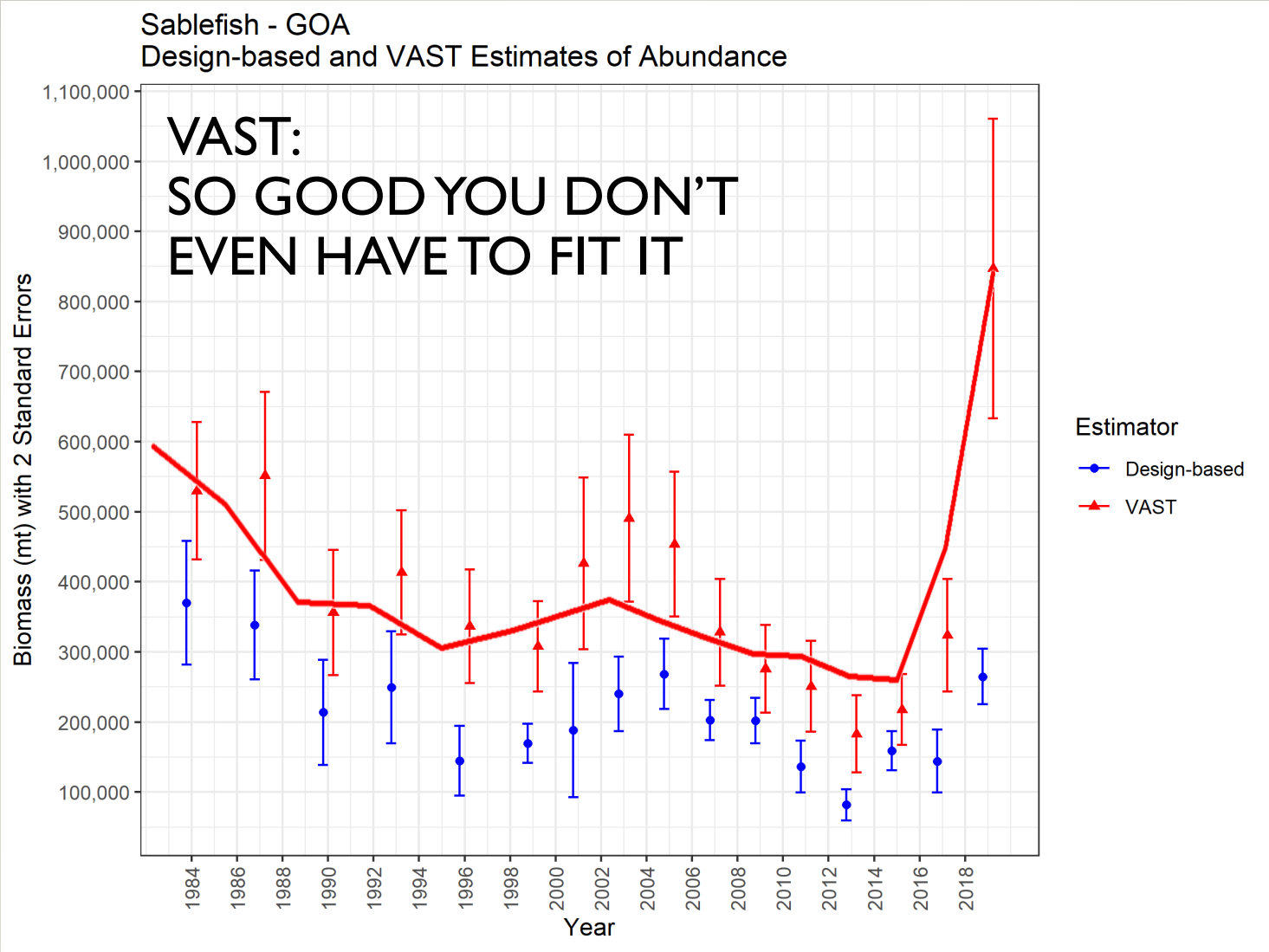
4 FIT TO OTHER INDICES IS POOR



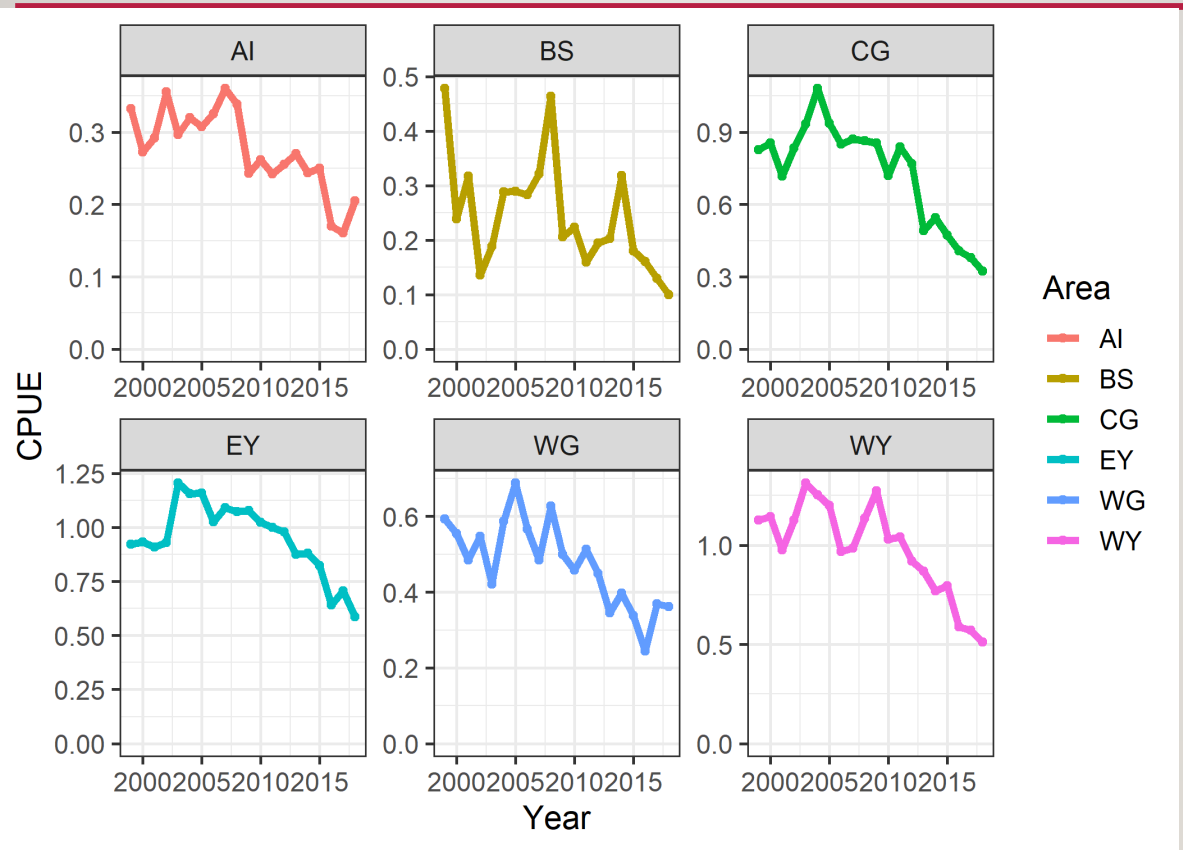


POOR TRAWL FIT

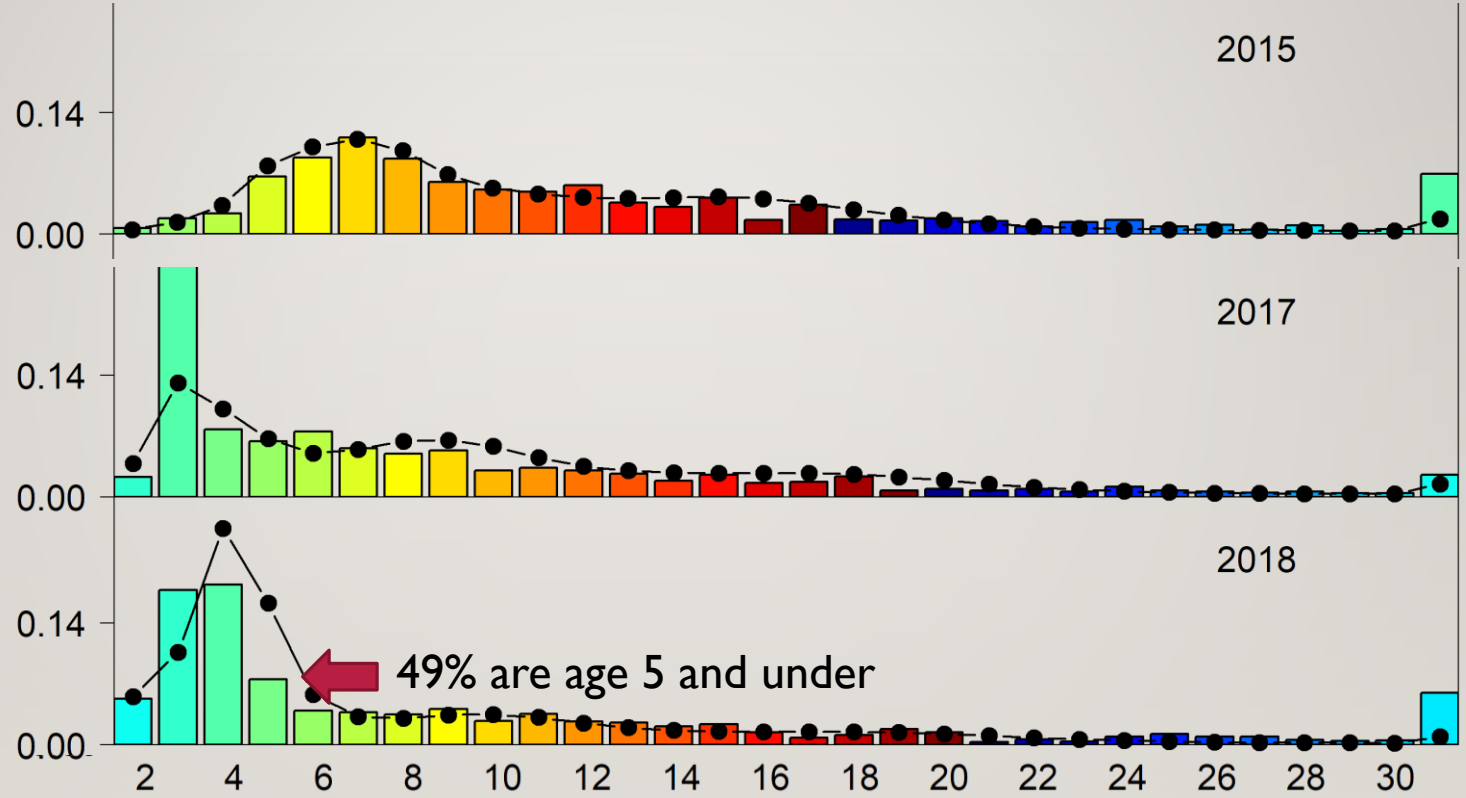



Sablefish - GOA
Design-based and VAST Estimates of Abundance
VAST:
SO GOOD YOU DON'T
EVEN HAVE TO FIT IT
Biomass (mt) with 2 Standard Errors
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
Year
Estimator
Design-based
VAST

FISHERY CPUE BY AREA

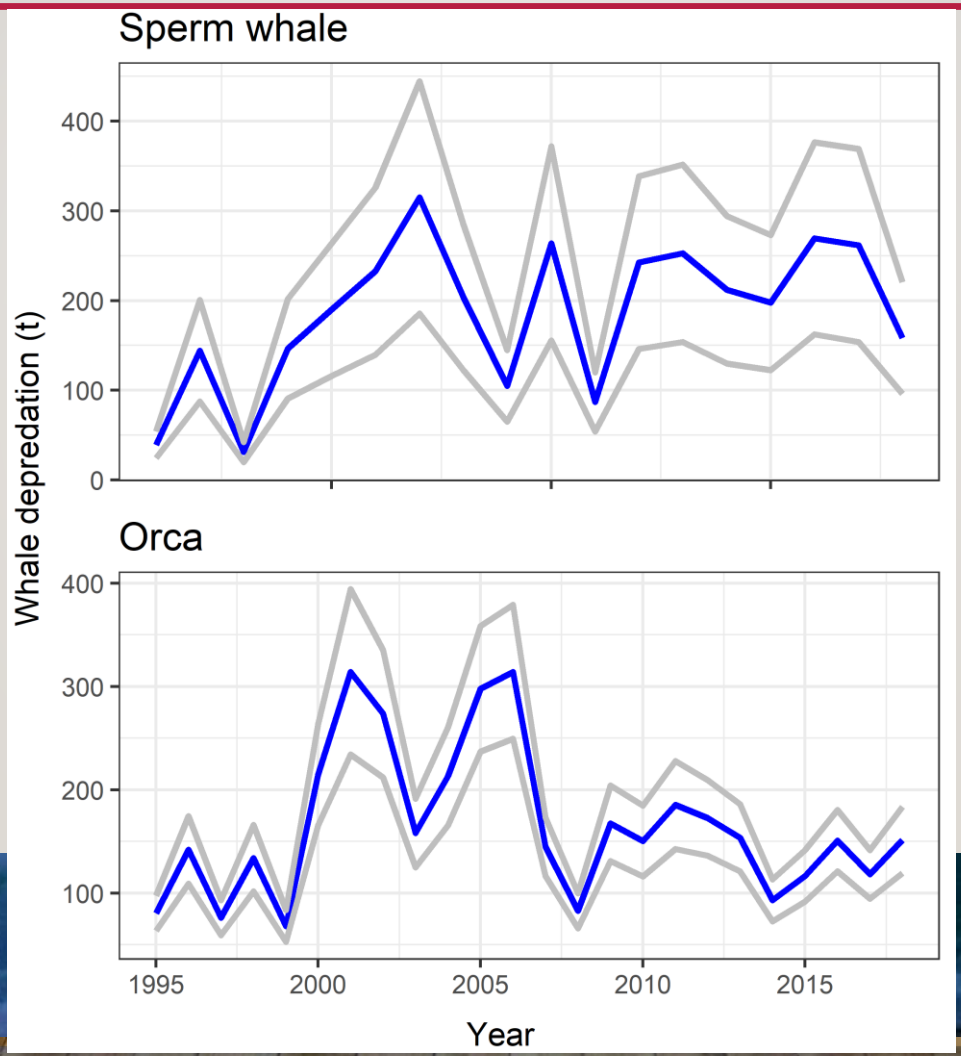


FIXED GEAR FISHERY AGES



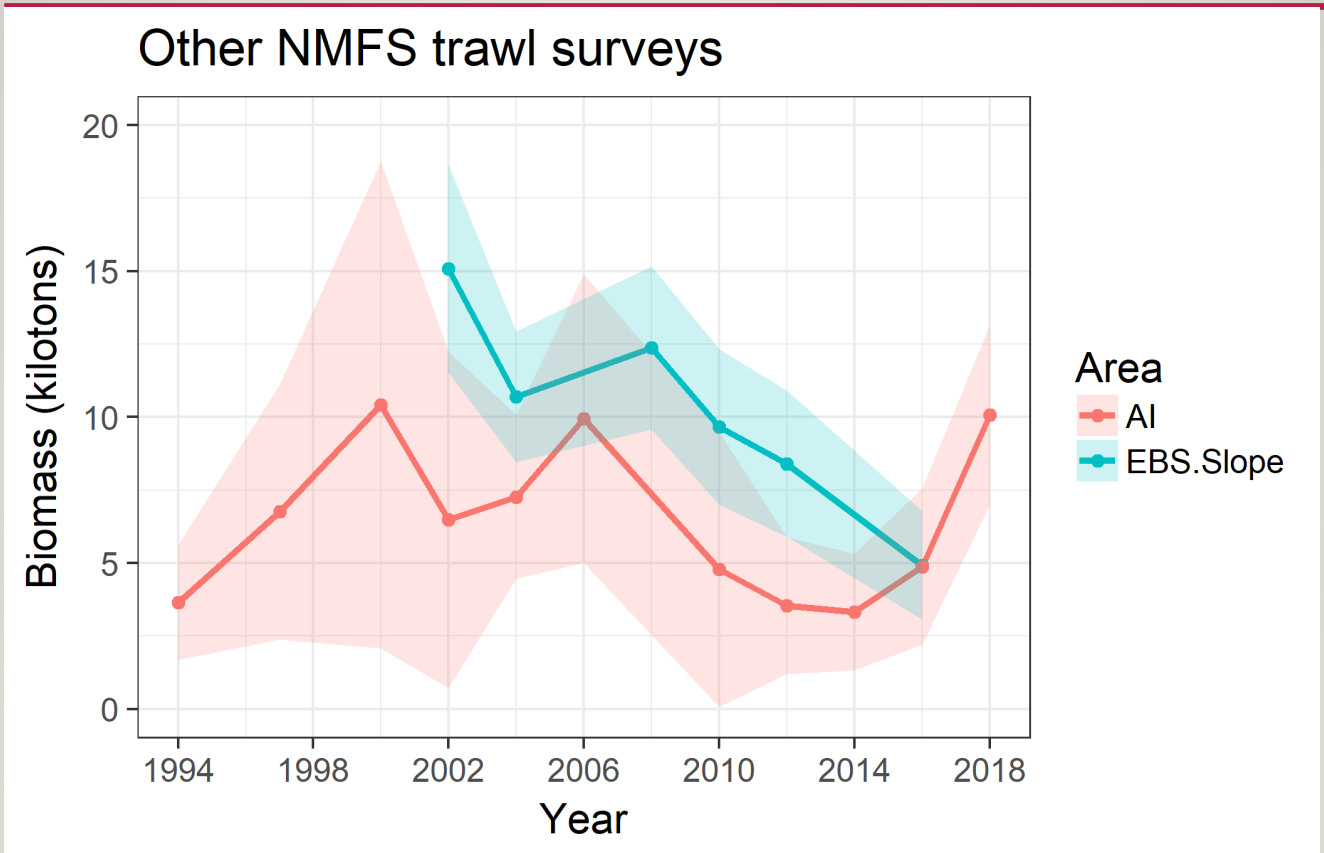
WHALES IN FISHERY

We are now getting whale observations in logbooks!

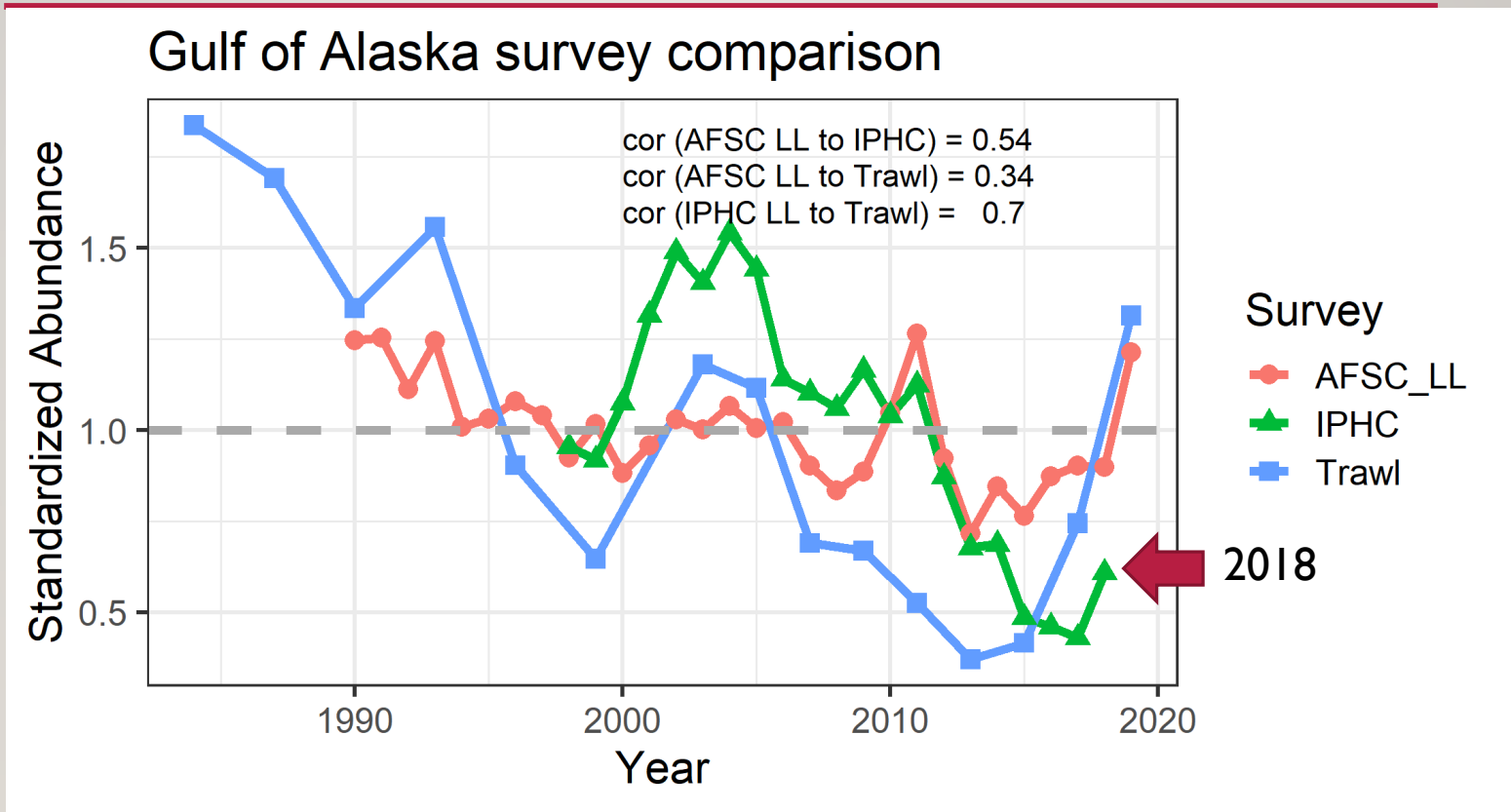


We are thinking about whale observations in EM!

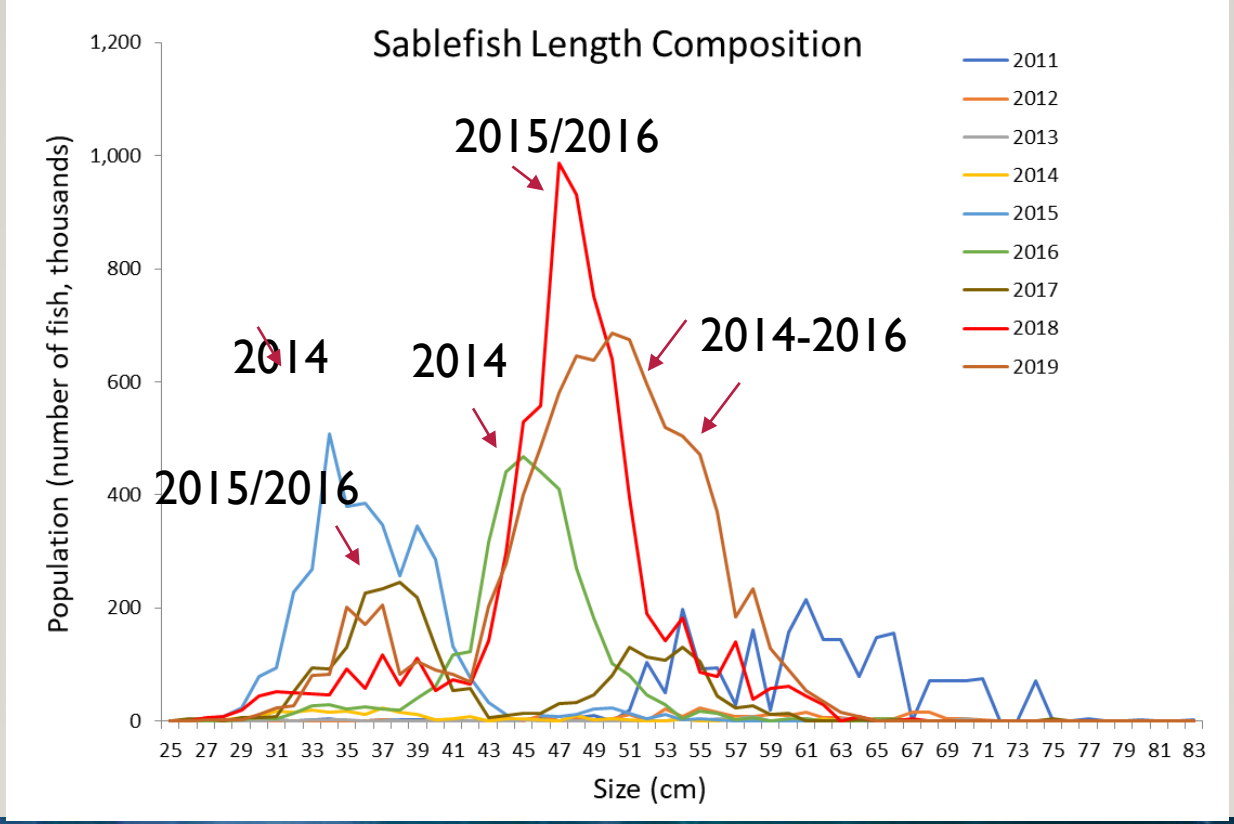
OTHER TRAWL SURVEYS



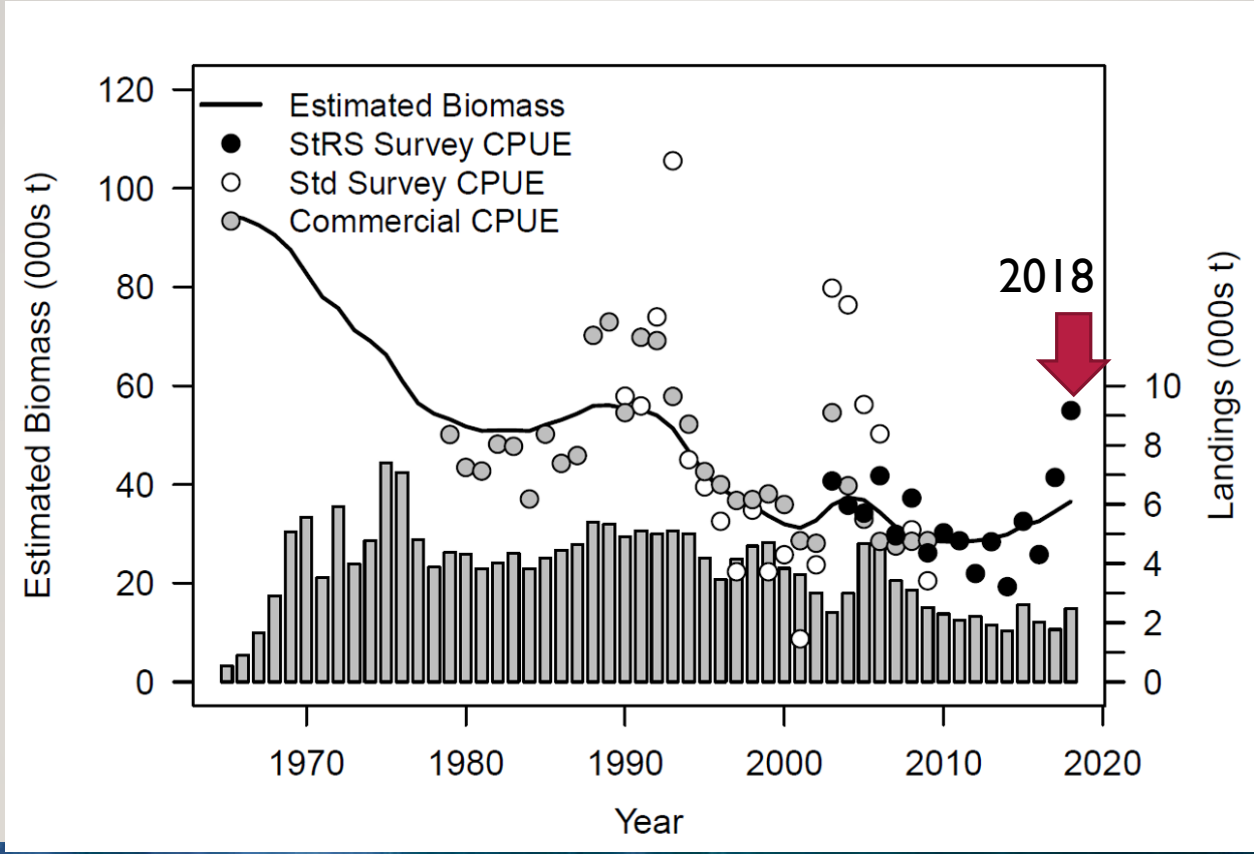
SURVEY NOT IN THE MODEL (IPHC)



ADF&G LARGE MESH TRAWL (ESP)

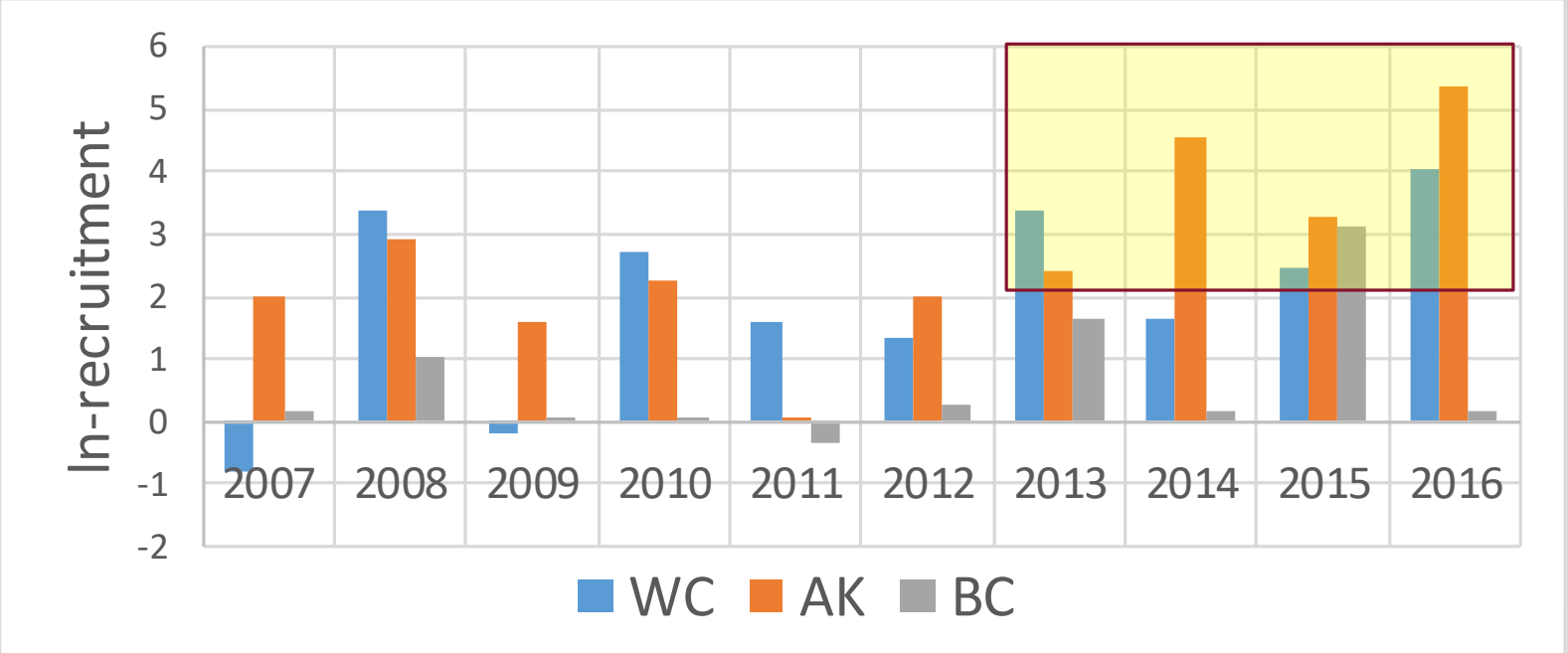


SURVEY NOT IN THE MODEL (BC)

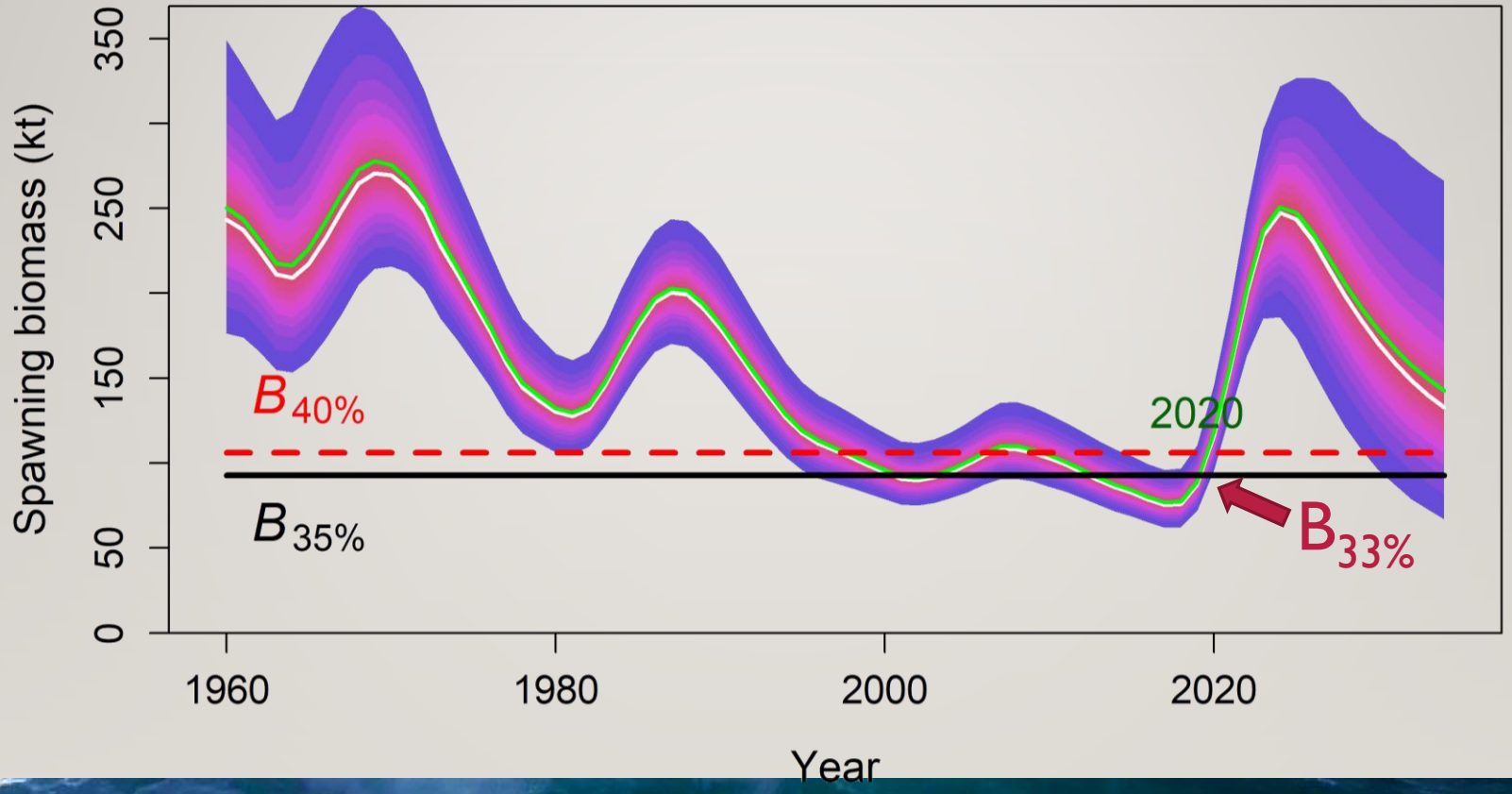


POLICE SYNCHRONICITY

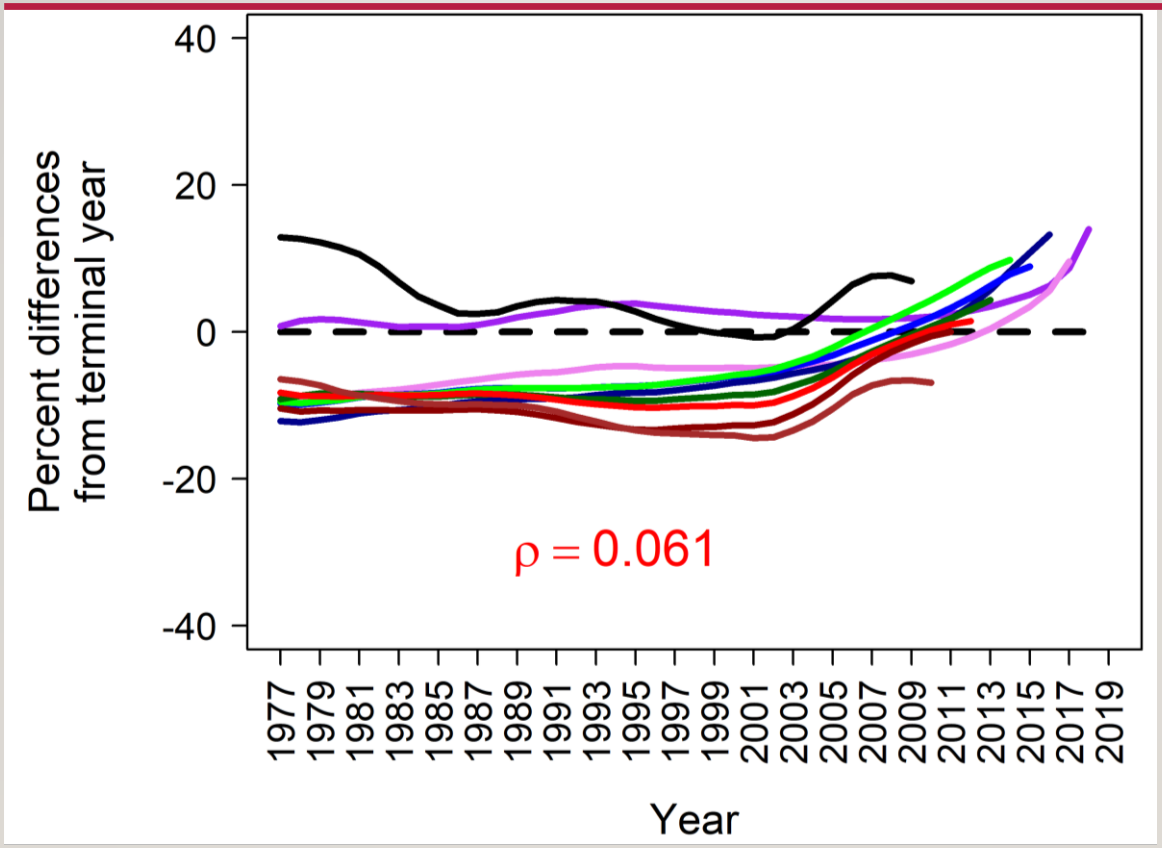
Recruitment increasing in all areas, but different years?



2/3 SPAWNING BIOMASS IS STILL LOW

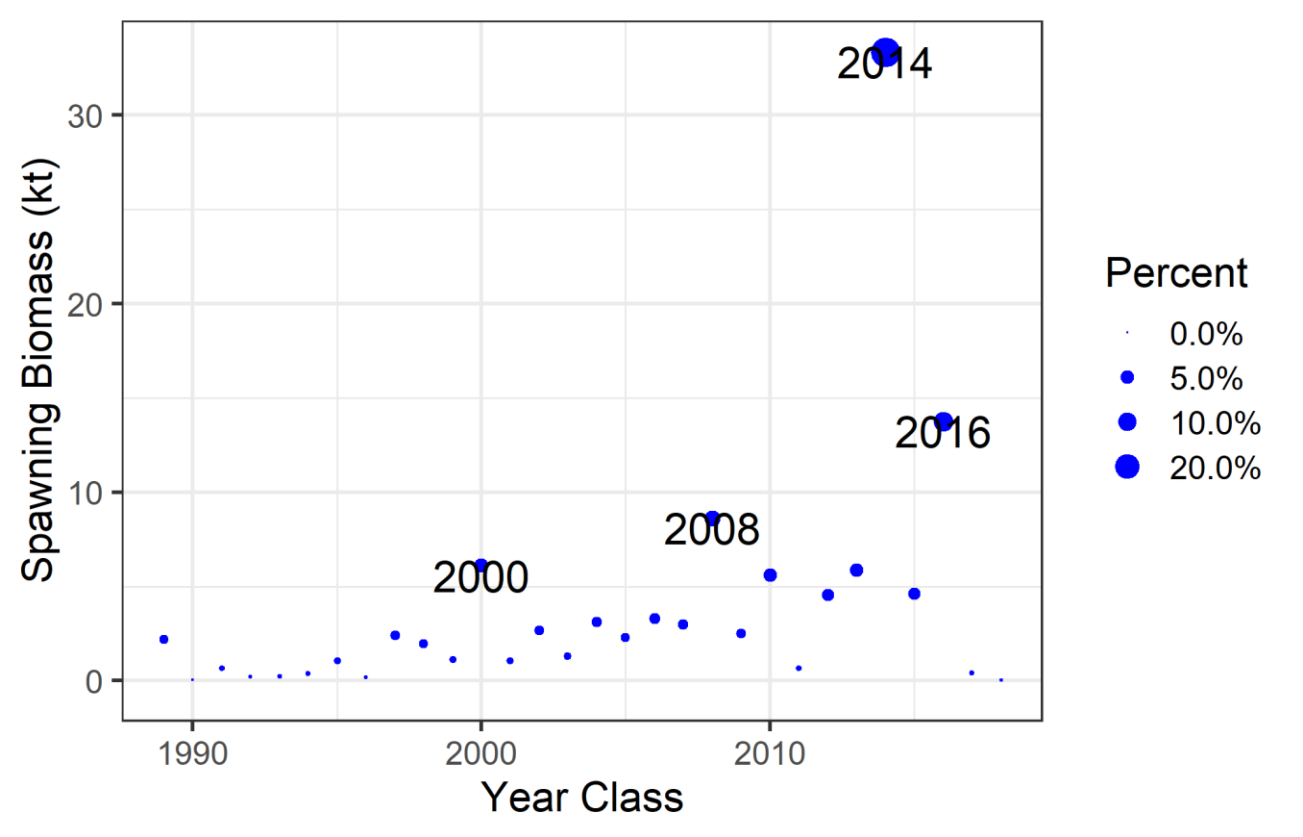


6 RETROSPECTIVE BIAS

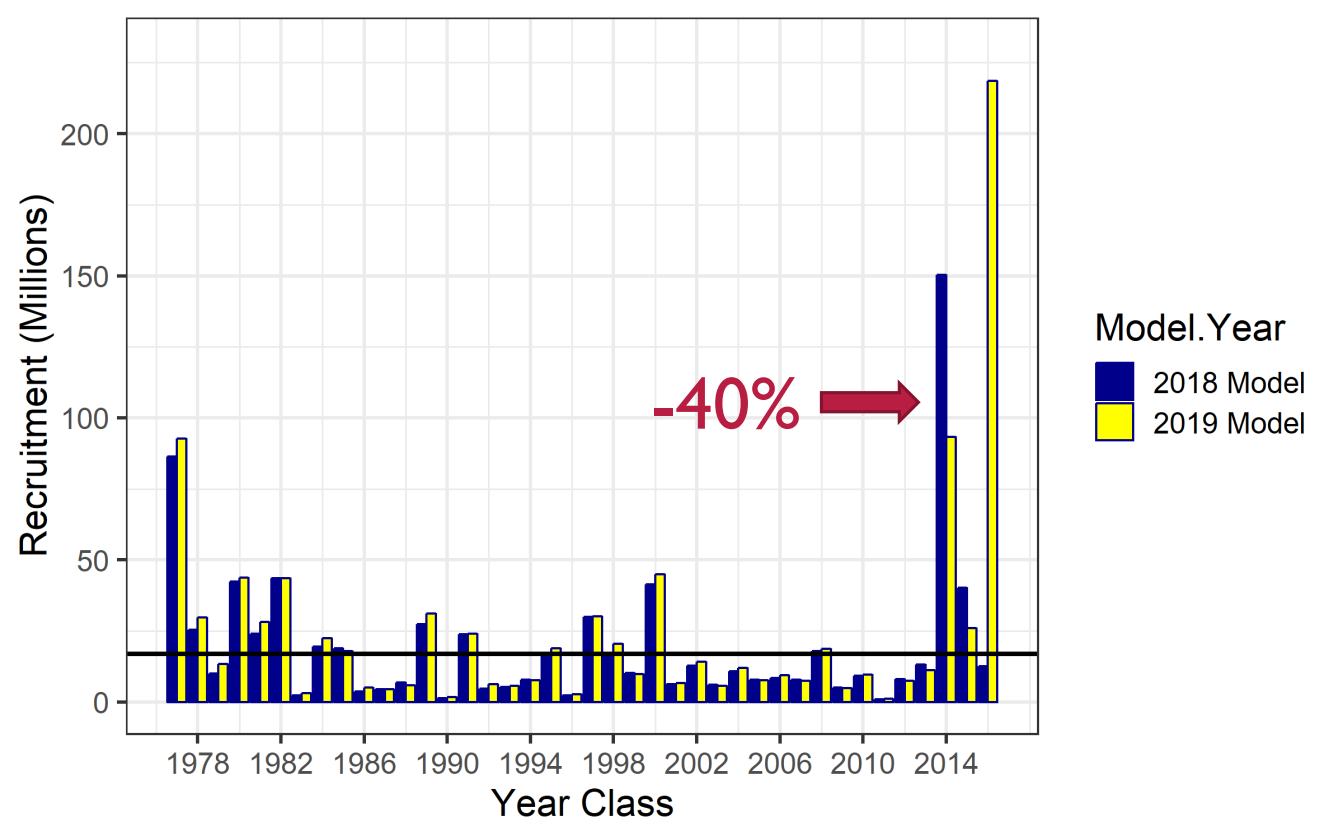


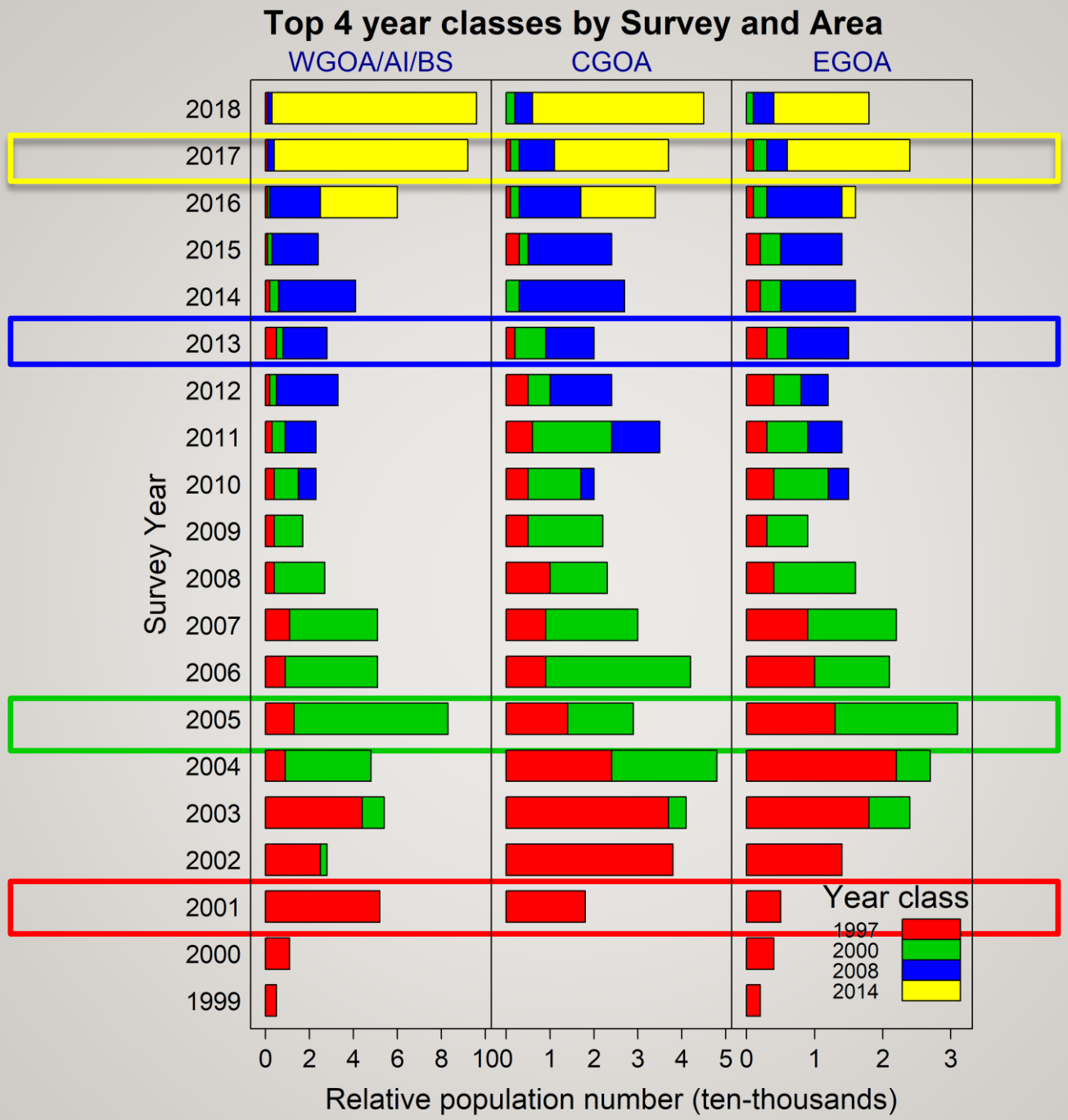
2014, WE'RE COUNTING ON YOU:

… 2016 WE ALSO NEED YOU…



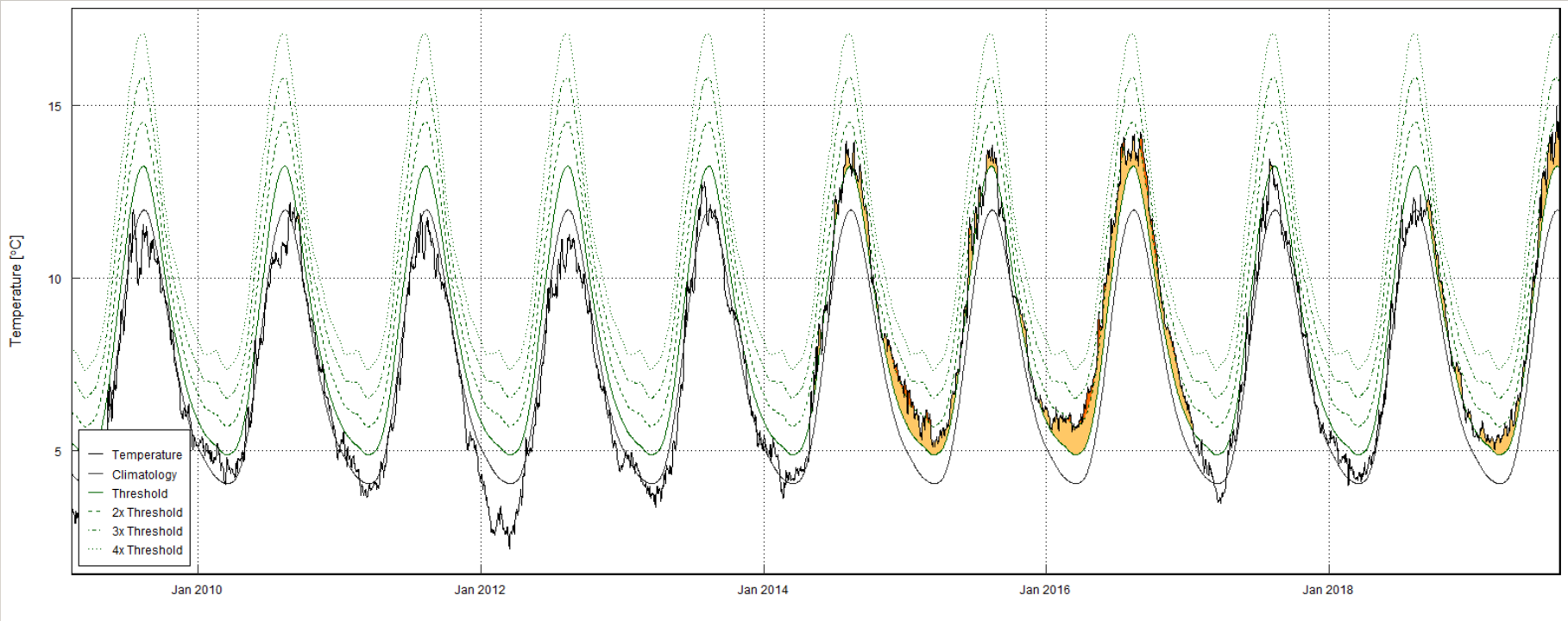
THE 2014 YEAR CLASS DECREASED (AGAIN)



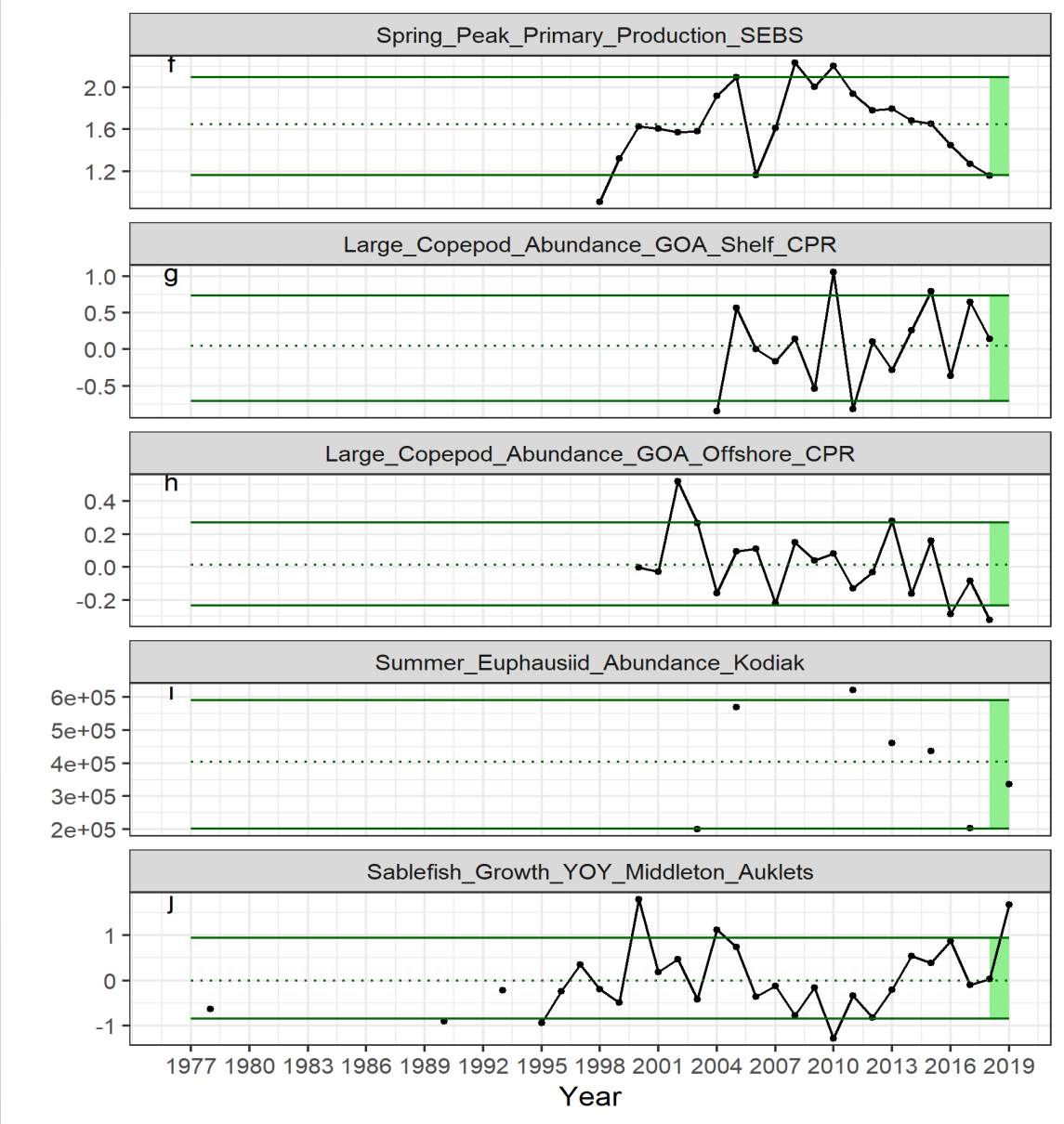

Top 4 year classes by Survey and Area
WGOA/AI/BS
CGOA
EGOA
Survey Year
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006
2005
2004
2003
2002
2001
2000
1999
0 2 4 6 8
100 1 2 3 4 5
0 1 2 3
Relative population number (ten-thousands)
Year class
1997
2000
2008
2014

RECRUITMENT VARIABILITY

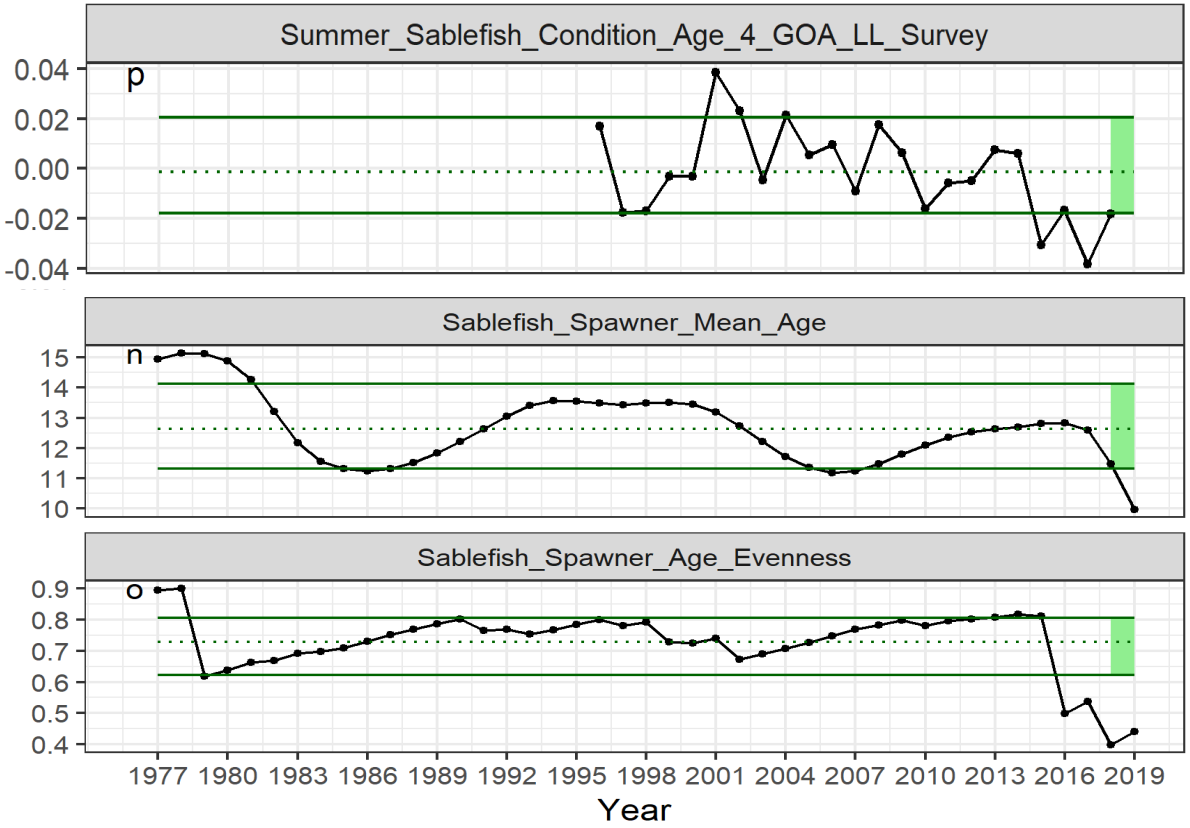
HEAT EXHAUSTION (ESR/ESP)



ESP INDICATORS



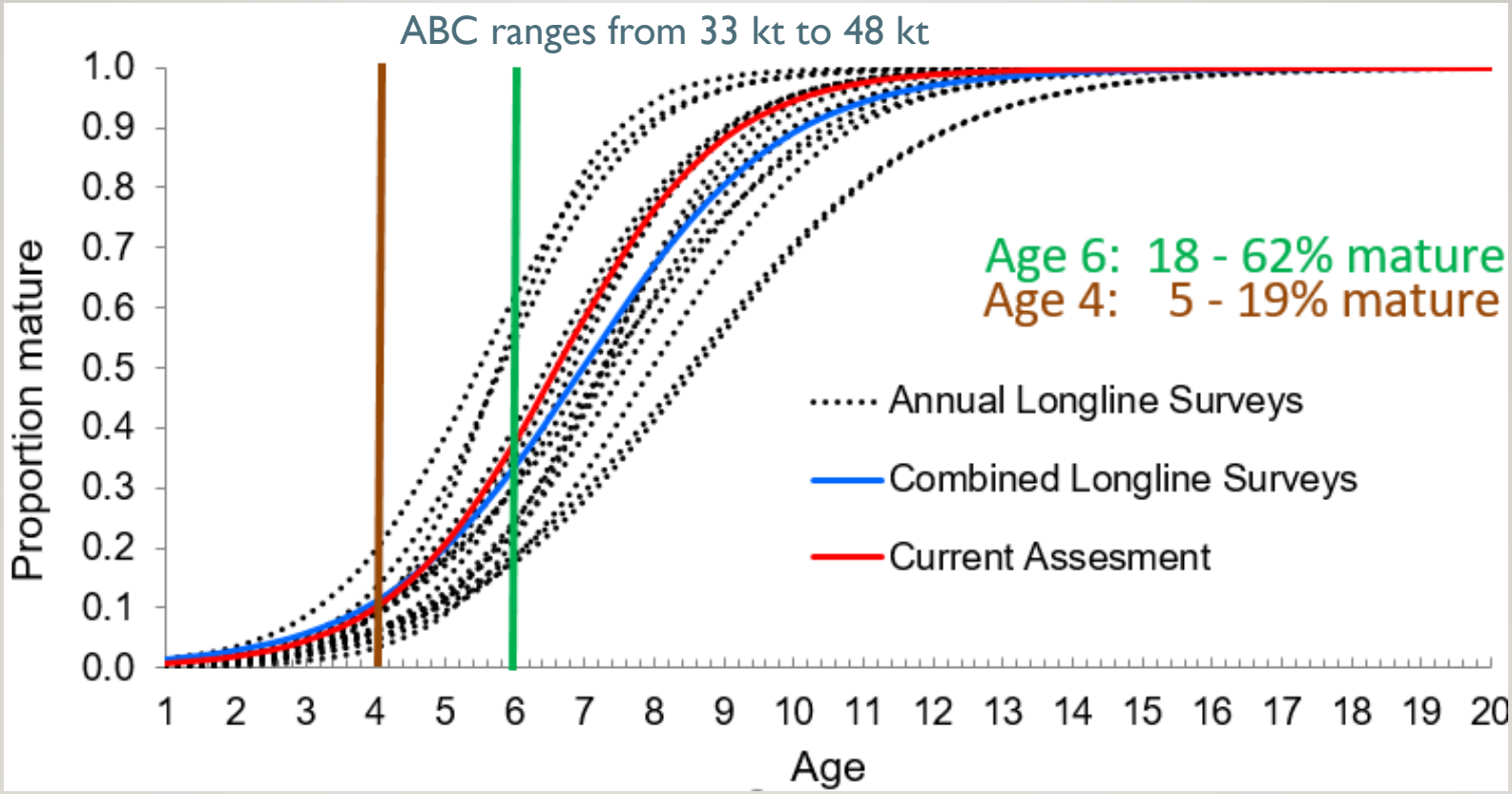
RELIANCE ON FEW COHORTS (ESP)



ECOSYSTEM AND SOCIO-ECONOMIC PROFILE (ESP)

- Eco-Positives: High YOY growth and high presence of 2016 YC in ADF&G large-mesh
- Eco-Negatives: Spawners and age evenness low, arrowtooth predation on juveniles
- Socio-Positives: TACs no longer declining
- Socio-Negatives: Value of small fish extremely low, increased incidental catch

9 MATURITY MATTERS



RISK-MATRIX FRAMEWORK: 3

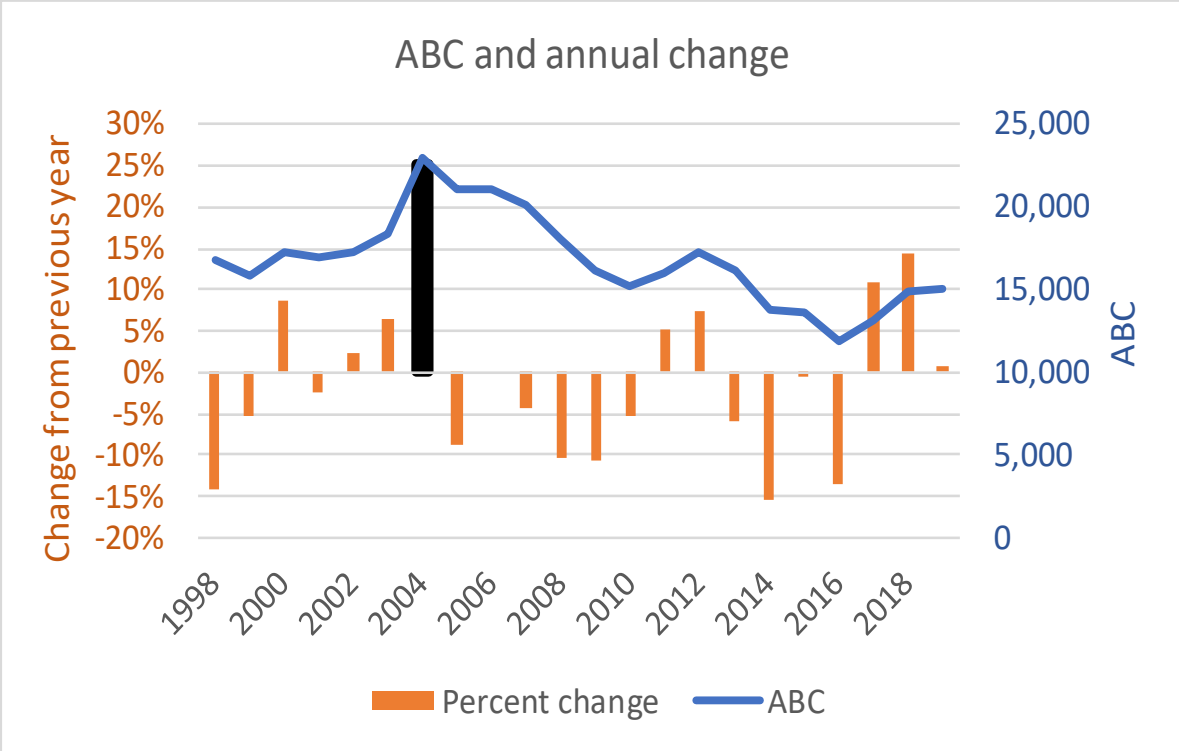
- Assessment model: **2** (increased concern)
- Population dynamics: **3** (major concern)
- Ecosystem: **2** (increased concern)
- Fishery performance: **3** (major concern)

ABC SUMMARY

- LL survey RPN up substantially from low in 2015
- Fishery CPUE index at time series low in 2018
- 43% unfished spawning biomass (now Tier 3a)
- ABC_w 2019: 15,068 t
- ABC 2020 (Max): 44,065 t (vs. 38,916 t projected)
  - 292 % **increase** from 2019
- Author recommended ABC_w 18,763 (+25%)

BOTTOM LINE

- Author's ABC 2020 is much lower than max
- Rebuilding spawning biomass and improving age structure is primary goal
- ABC 2021 continues with 25% increase from 2020 for now



APPORTIONMENT

- CIE not concerned with static apportionment
- We believe it is best to stay put (and we have no new alternatives prepared)
- MSEs and spatial work continue
- Recent spatial operating model with sablefish-like model shows maximum yield can be achieved with a wide range of apportionments
- SSC agreed at October meeting (while noting the old apportionment has diverged quite a bit)

RECOMMENDING…

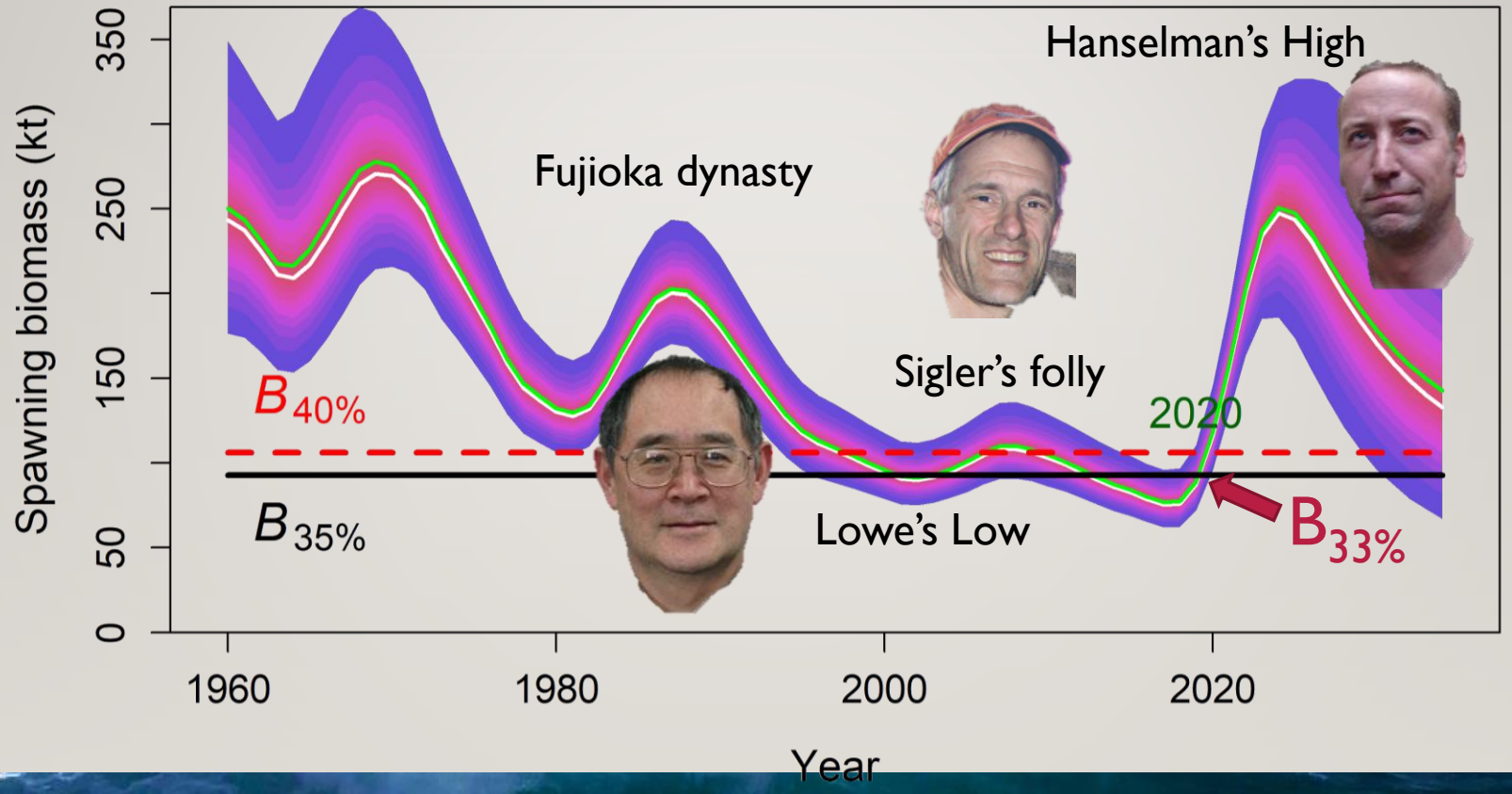
- Continuing with the fixed apportionment from 2019 fishery for 2020

Area	2019 ABC	Standard apportionment for 2020 ABC	**Recommended fixed apportionment for 2020 ABC***	**Difference from 2019**
Total	15,380	19,225	19,225	25%
Bering Sea	1,501	4,050	1,876	25%
Aleutians	2,030	3,102	2,537	25%
Gulf of Alaska (subtotal)	11,849	12,073	14,812	25%
Western	1,659	2,247	2,074	25%
Central	5,246	4,510	6,558	25%
W. Yakutat**	1,765	1,803	2,206	25%
E. Yak. / Southeast**	3,179	3,513	3,974	25%

WHALE ADJUSTMENTS

Area	AI	BS	WG	CG	WY*	EY*	Total
2019 ABC	2,030	1,501	1,659	5,246	1,765	3,179	15,380
2020 ABC	2,537	1,876	2,074	6,558	2,206	3,974	19,225
2016-2018 avg. depredation (tons)	16	19	105	91	45	94	370
Ratio 2020:2019 ABC	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Deduct 3 year average depredation (tons)	-20	-23	-132	-113	-56	-118	-462
2020 ABC_w	**2,517**	**1,853**	**1,942**	**6,445**	**2,150**	**3,856**	**18,763**
Change from 2019 ABC_w	25%	24%	23%	24%	29%	23%	25%

THE TORCH MUST BE PASSED

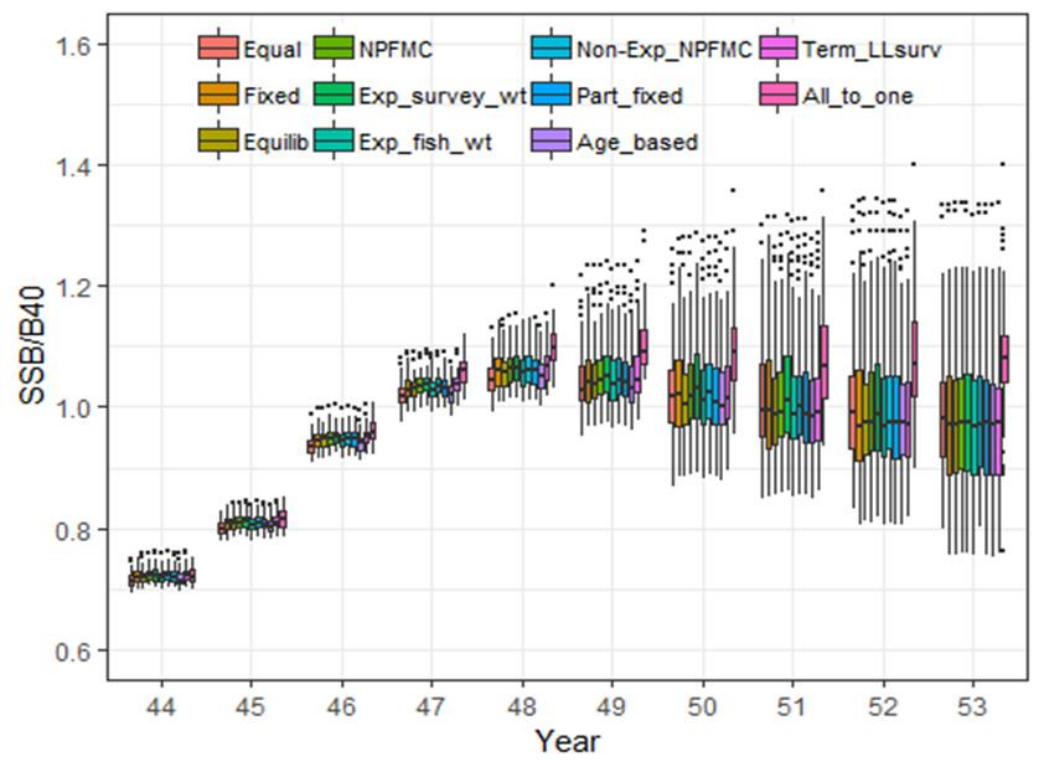


FUTURE

- **5 other author's problem!**
- Re-visiting selectivities
- Modeled fishery CPUE index
- Continue spatial modeling
- Refine Ecosystem and Socioeconomic Profile (ESP) at upcoming workshops

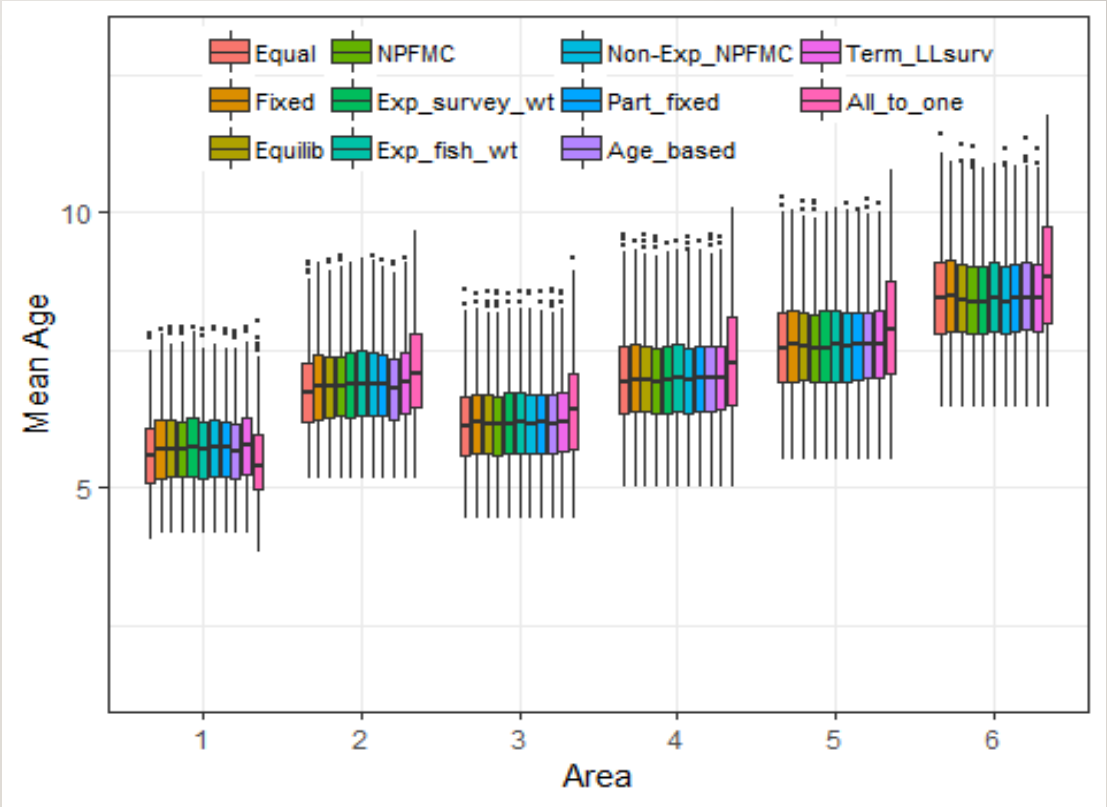
SIMULATION RESULTS

- Little different in SSB/B40 for all apportionment methods
- Means range 0.96-1.01 over all years
- NPFMC harvest control rule dominates



SIMULATION RESULTS

- Mean age varies by management area but not by apportionment method
- Typical result was to see more variation in results between areas than apportionment method used.



SIMULATION NEXT STEPS

- Still soliciting feedback
- Stakeholder meeting this spring