BSAI shortraker

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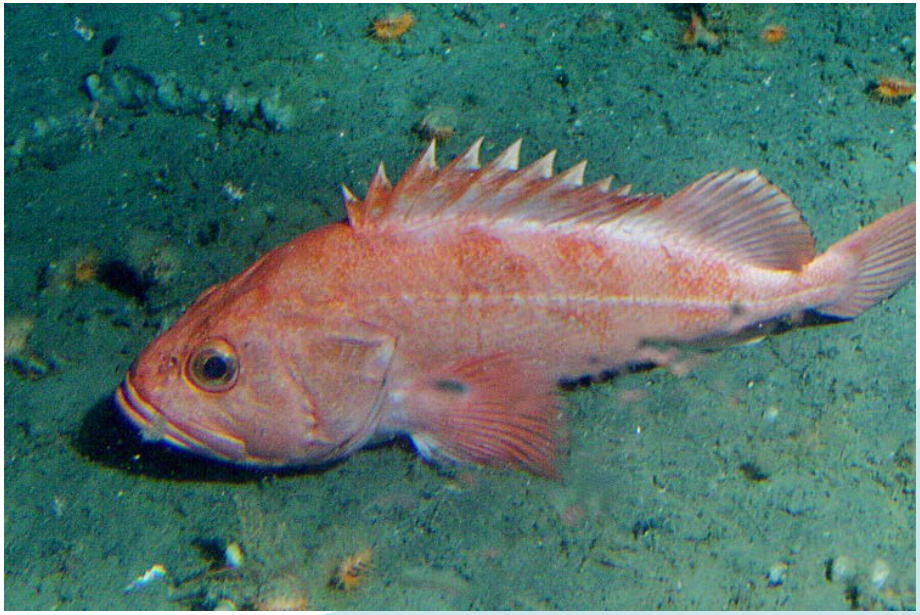
September 2022 Joint Groundfish Plan Team Meeting



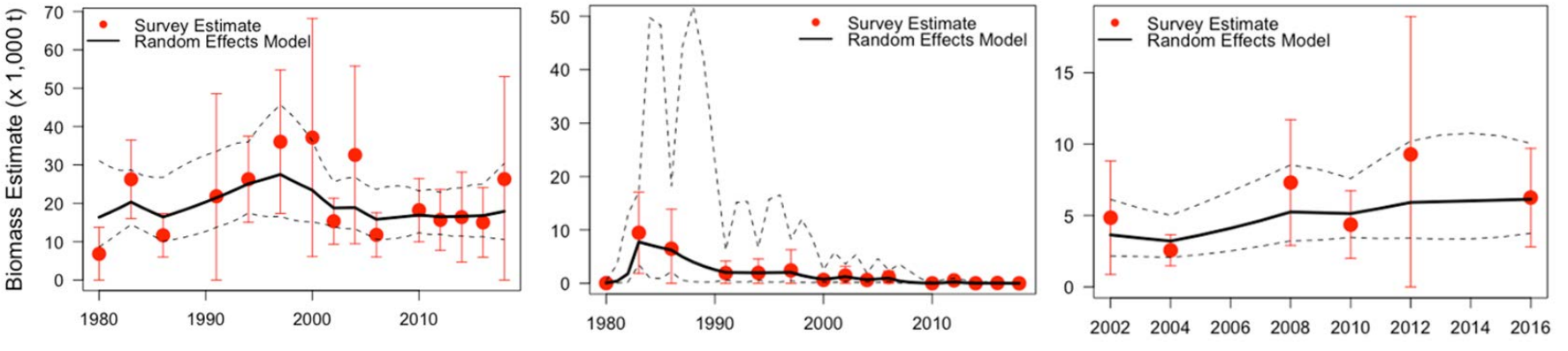
Outline for today's presentation

1. Background and motivation
2. Bridging from ADMB to TMB using rema
3. Adding the EBS slope longline survey (LLS) relative population weights (RPWs) for shortraker rockfish
4. Results: total biomass, ABCs, OFLs, apportionment
5. Considerations for November

Link to Plan Team report (Appendix B)

Current assessment (p. 33)

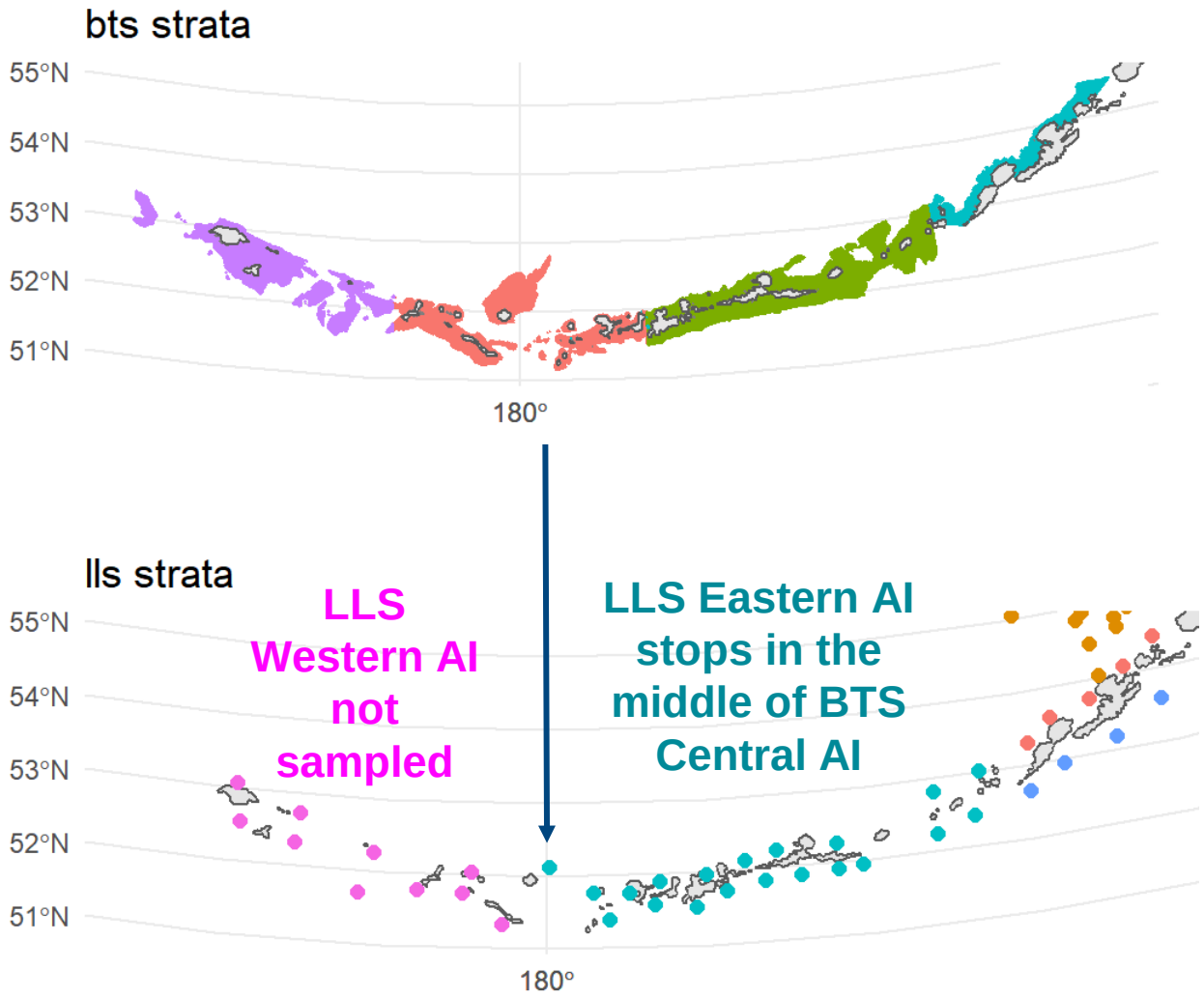
1. Current assessment uses univariate version of the random effects (RE) model (Tier 5)
2. Two surveys, three strata
   a. AI BTS stratified into two regions (SBS and AI)
   b. EBS slope BTS treated as a single stratum
3. Process error estimated independently for the three strata, AI, SBS, and EBS slope.



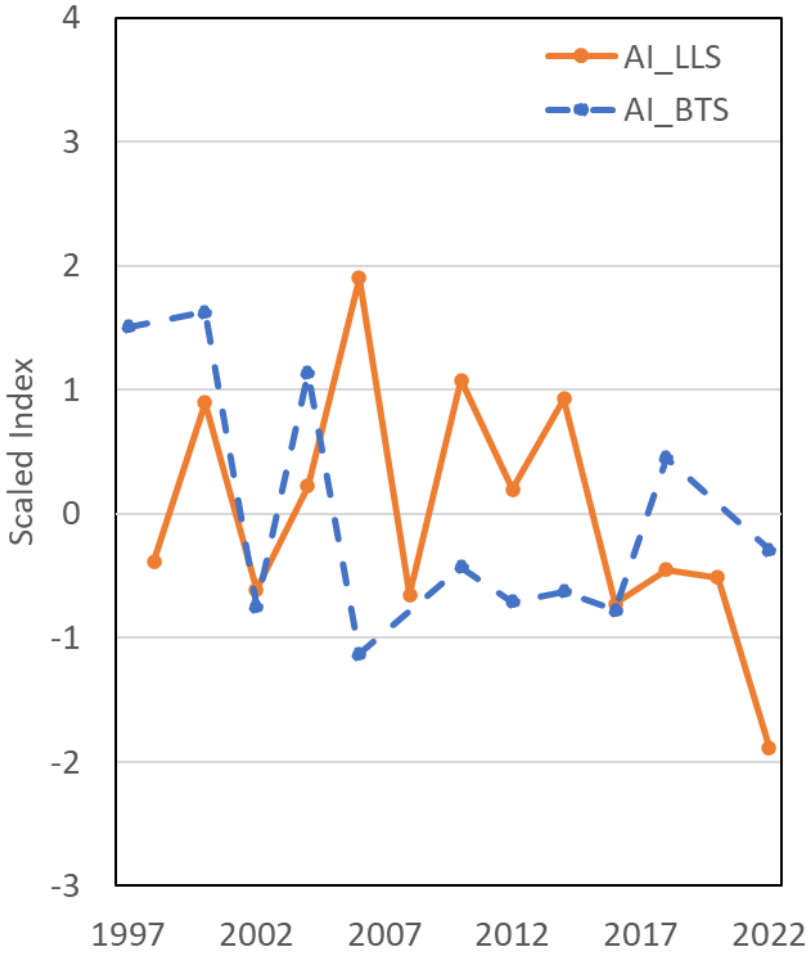
Why include the longline survey (LLS)?

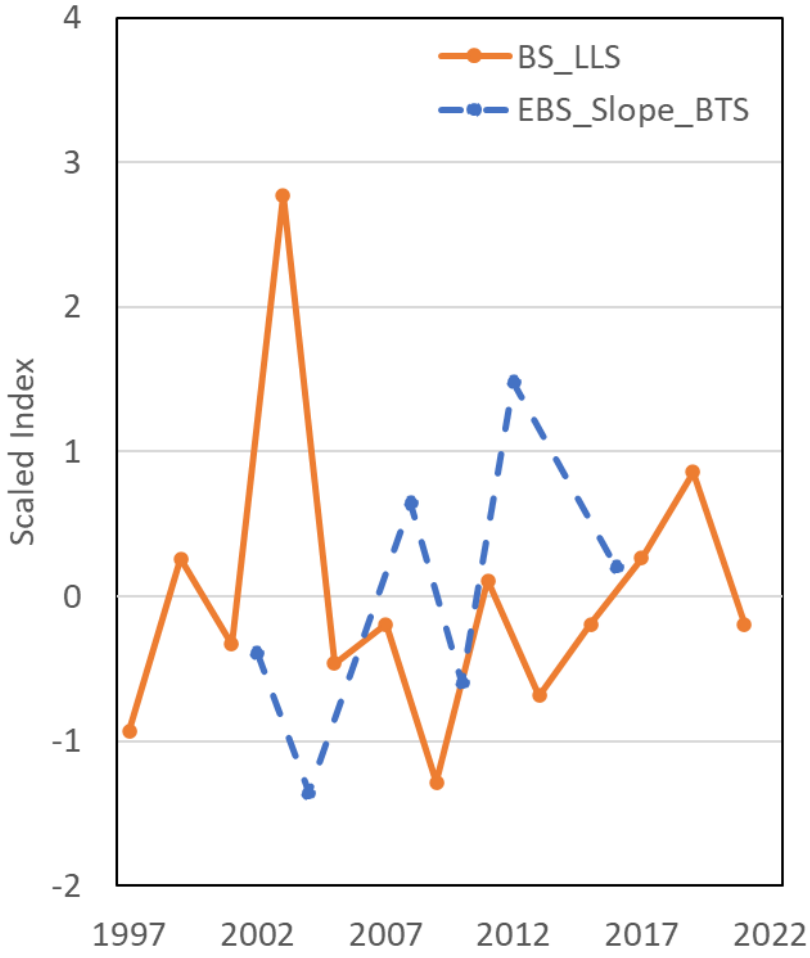
- SSC recommends developing methods to be robust to future survey reductions and consider model-based survey time series for Tier 4,5
  - As an interim to the VAST methods we plan to follow the GOA shortraker methods for using the bottom trawl and longline survey together in the random effects model
  - SSC thanked the authors for the survey descriptions and data in the 2020 assessment and looks forward to this exploration in the next full assessment
- Due to concerns over future sampling consistency, not recommending use of IPHC longline survey at this time

Spatial mismatch in the AI

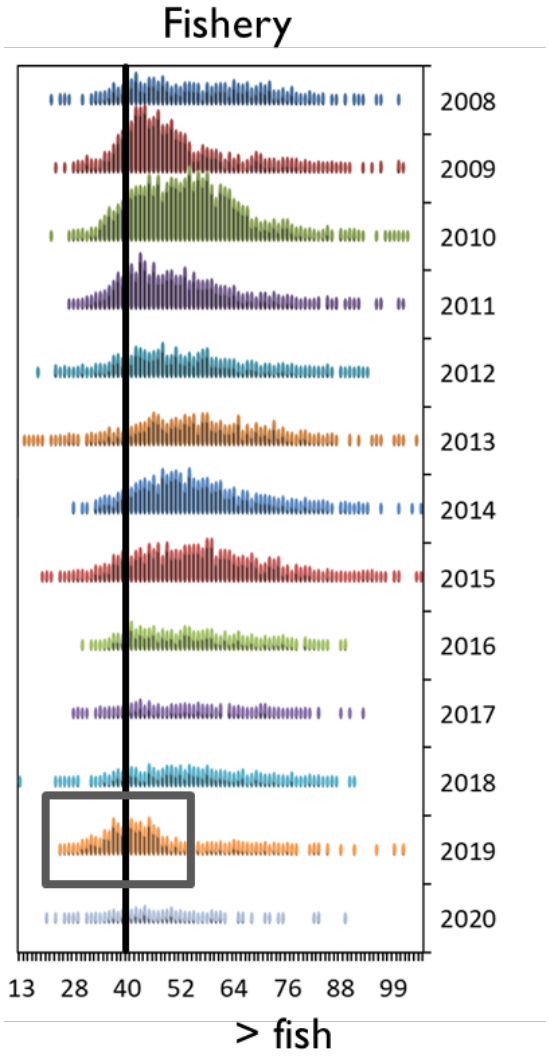


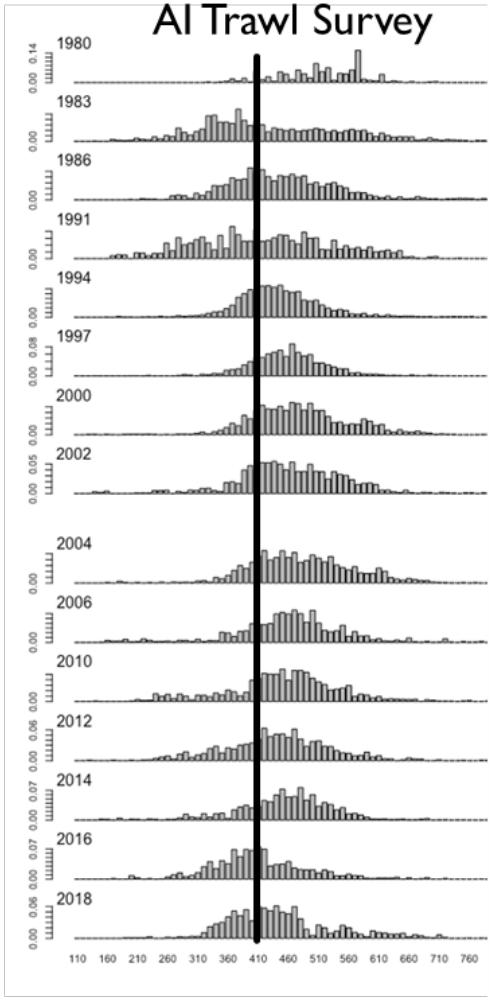
Shortraker in the bottom trawl (BTS) and longline surveys (LL)

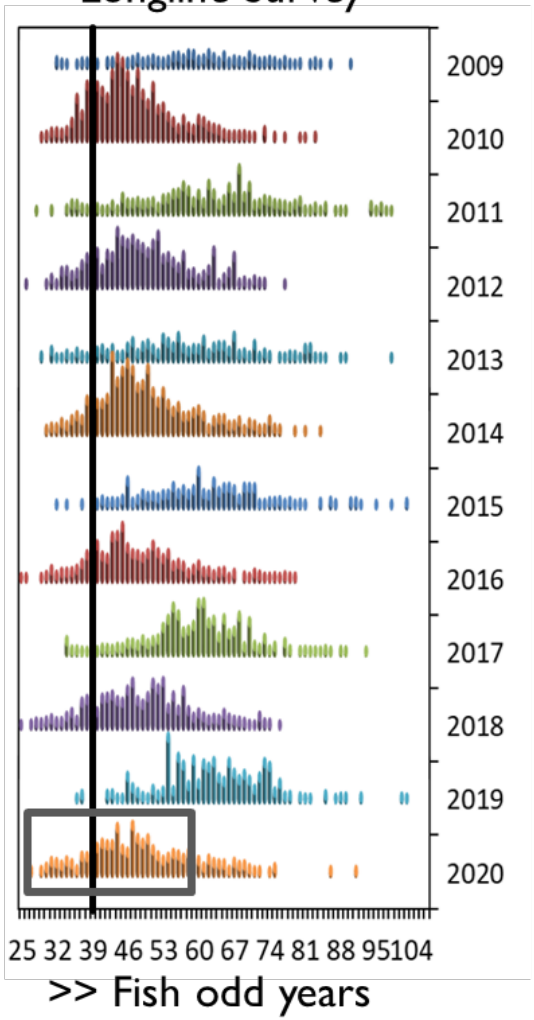




Shortraker Lengths



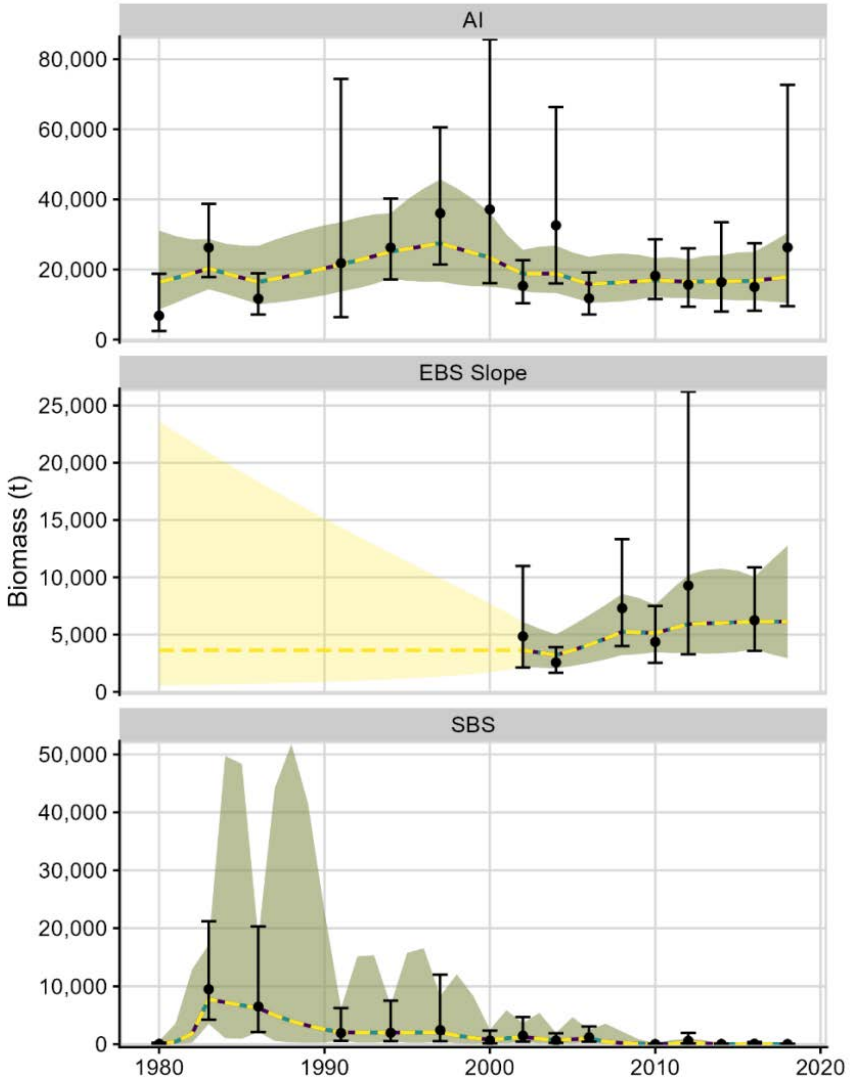




Alternative models (p. 32)

1. **Model 18**: accepted model in the last full assessment
2. **Model 18a**: Transition RE model from ADMB (Model 18) to TMB using *rema* R library
3. **Model 18.b**: Model 18.a fit in TMB but using the multivariate version of the random effects (REM) model
4. **Model 22**: Multi-survey version of Model 18.b that adds LLS RPWs for Shortraker on the EBS slope

Bridge Shortraker from ADMB to TMB to REM



Model 18
Model 18.a
Model 18.b

Fig. B-1
(p. 38)

Add LLS RPWs to Shortraker on the EBS slope

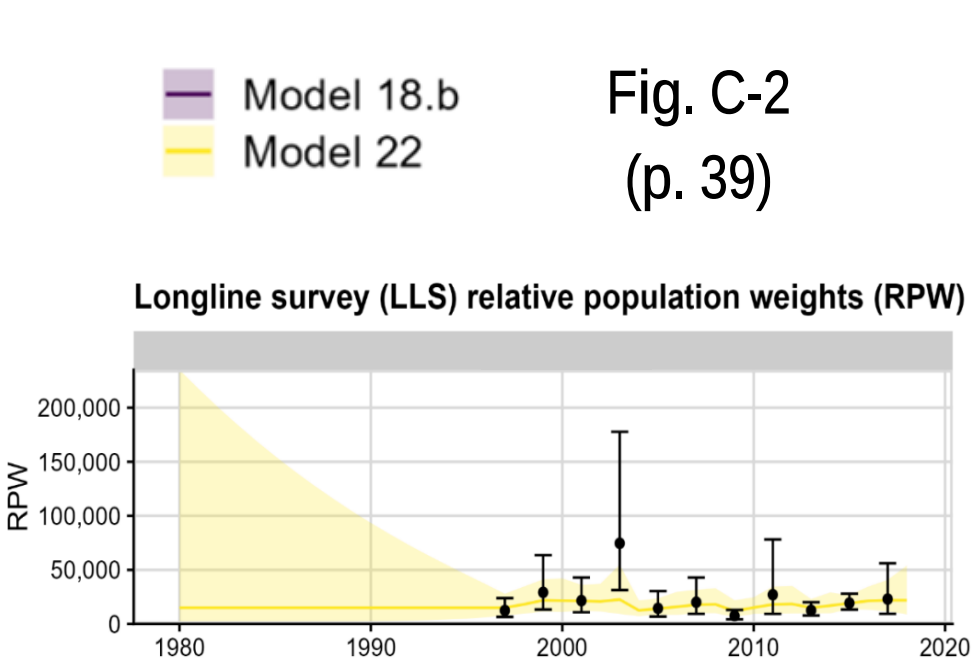
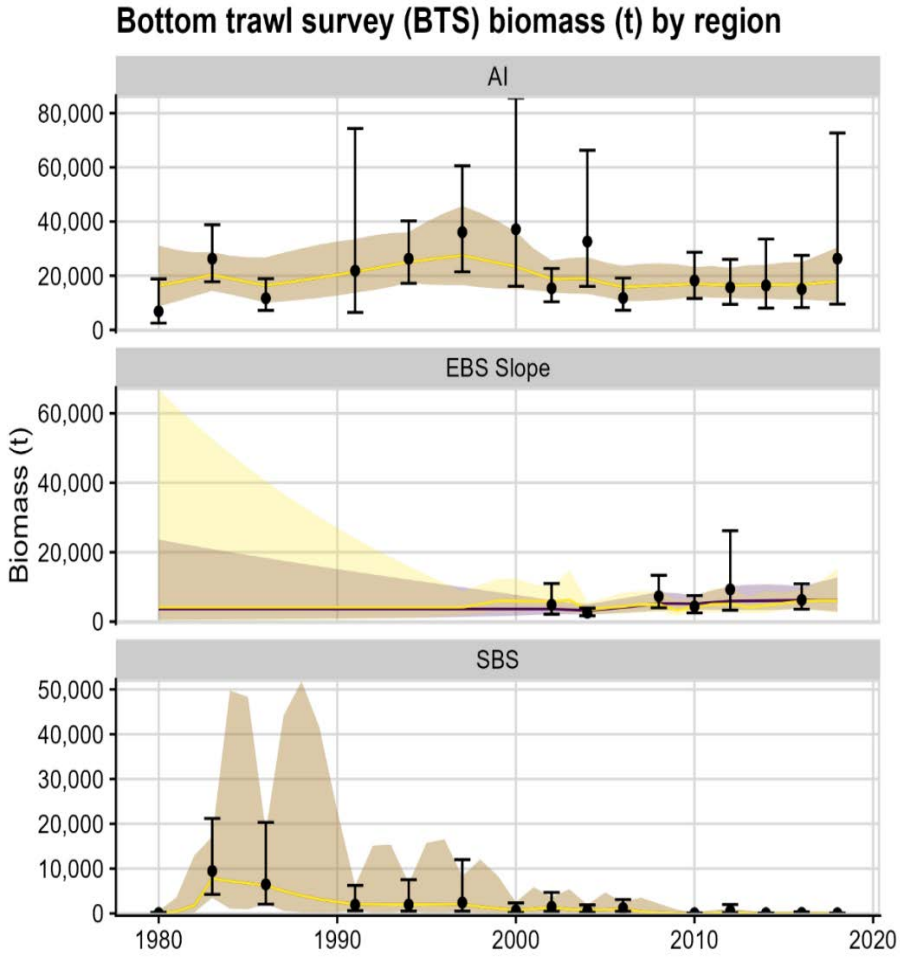


Fig. C-2
(p. 39)



Increase in process error

Model	Parameter	Estimate	SE
Model 18.a	AI process error	0.148	0.104
Model 18.a	EBS Slope process error	0.195	0.137
Model 18.a	SBS process error	1.135	0.297
Model 18.b	AI process error	0.148	0.104
Model 18.b	EBS Slope process error	0.195	0.137
Model 18.b	SBS process error	1.135	0.297
Model 22	AI process error	0.148	0.104
Model 22	EBS Slope process error	0.331	0.240
Model 22	SBS process error	1.135	0.297
Model 22	Scaling parameter (q)	3.624	0.732

Table. B-2 (p. 37)

Total biomass, ABC, and OFL

Model	Year	Biomass (t)	OFL (t)	max ABC (t)	Percent change from Model 18
Model 18	2018	24,055	722	541	--
Model 18.a	2018	24,055	722	541	0%
Model 18.b	2018	24,055	722	541	0%
Model 22	**2018**	**23,968**	**719**	**539**	**-0.4%**

Author-preferred model in bold. p. 33

Recommendation:

Bring new Model 22 (with LLS RPWs for Shortraker on the EBS slope) forward in November 2022

Question for the Team:

Based on previous discussions this week regarding the AI survey. Should we remove older data from this model for Nov?