Update on POP Assessment

- 2018 PT/SSC comments:

  1. "investigation of natural mortality, as the current estimate of 0.066 is higher than the expected value from the prior distribution (0.05) and may be constraining the model"
  2. "re-evaluation of the age-plus group, as changes to the model and input data have occurred since this was previously evaluated"
  3. "continued evaluation of methods for weighting for the compositional data as new models are developed and/or changes are made to input data"
  4. "The SSC supports the PT recommendation to make the use of model-based survey estimates at the individual author's discretion for 2018."

Update on POP Assessment

- Tasks:
  1. "investigation of natural mortality, as the current estimate of 0.066 is higher than the expected value from the prior distribution (0.05) and may be constraining the model"
     - ✓ *M sensitivity analysis (for both prior and prior CV)*
  2. "re-evaluation of the age-plus group, as changes to the model and input data have occurred since this was previously evaluated"
     - ✓ *Plus-age sensitivity loop*
  3. "continued evaluation of methods for weighting for the compositional data as new models are developed and/or changes are made to input data"
     - ✓ *Track scenario with Dirichlet-Multinomial*
  4. "The SSC supports the PT recommendation to make the use of model-based survey estimates at the individual author's discretion for 2018."
     - ✓ *Track scenario with VAST index*
  5. Additional:
     - ✓ *Track scenario with Acoustic index/length comps*
     - ✓ *Track scenario with prior on catchability from Acoustic*
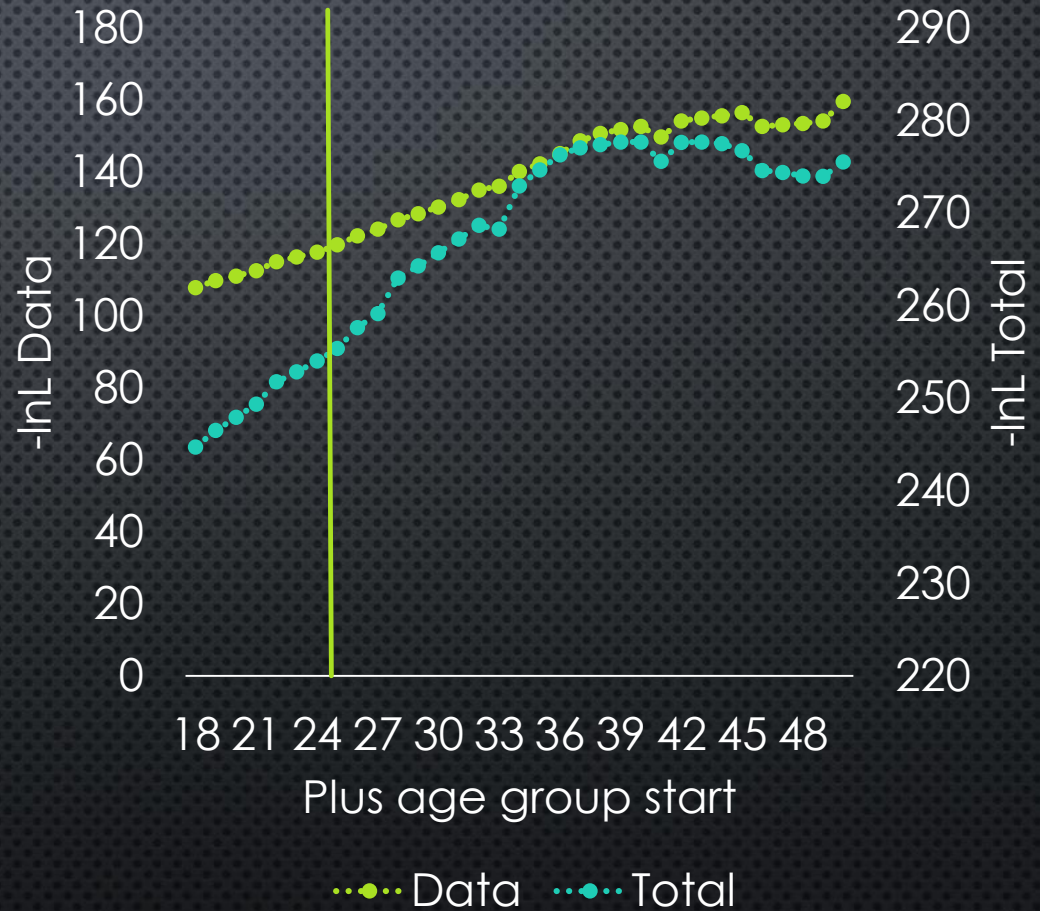   - ✓ *Track scenario with time-dependent mean R*

M sensitivity analysis

M prior: 0.01 → 0.2 & CV for M prior: 10% → 200%
(current M prior 0.05 w/ 10% CV)
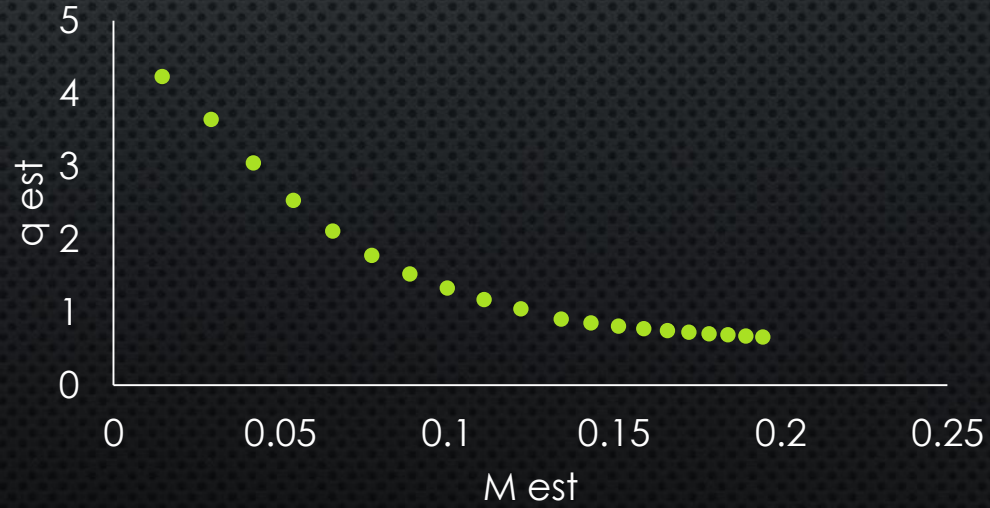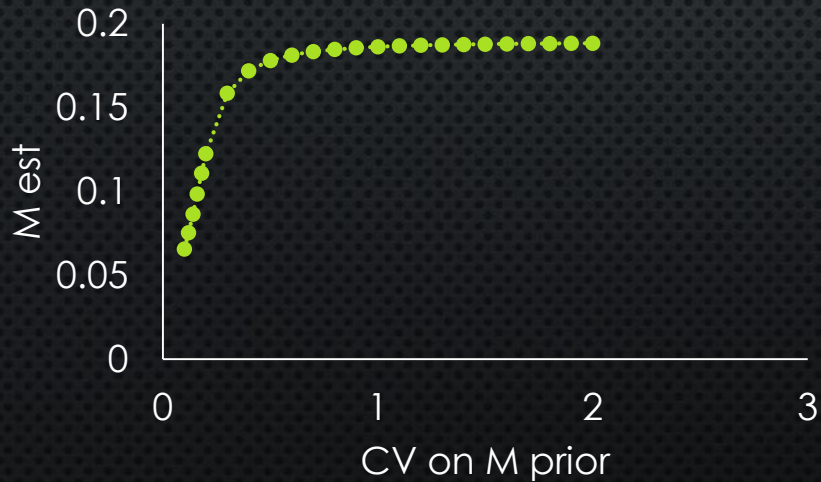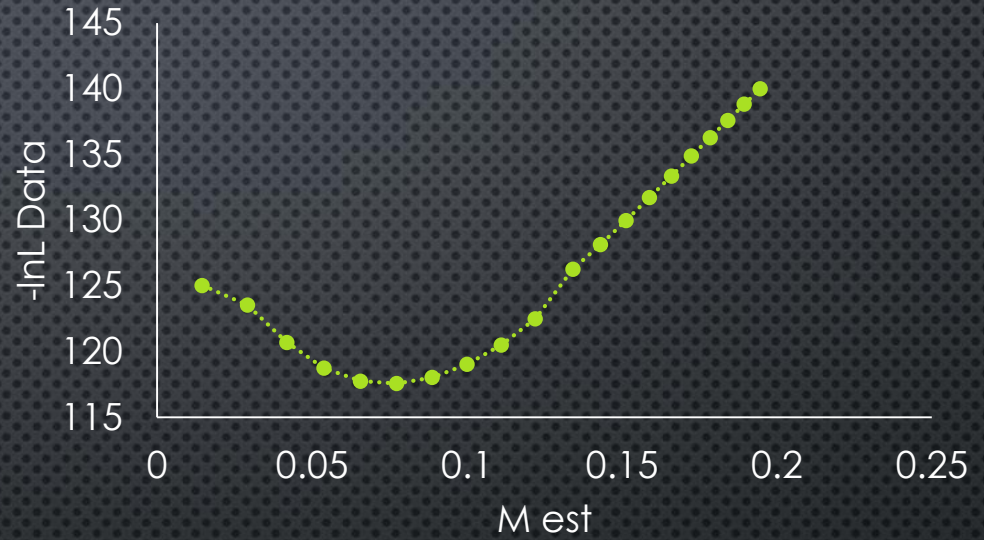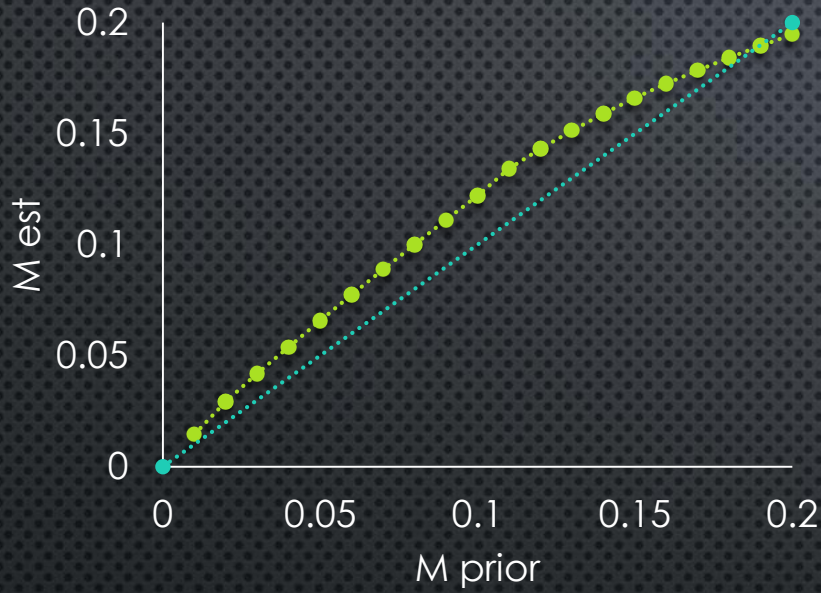
Plus age analysis
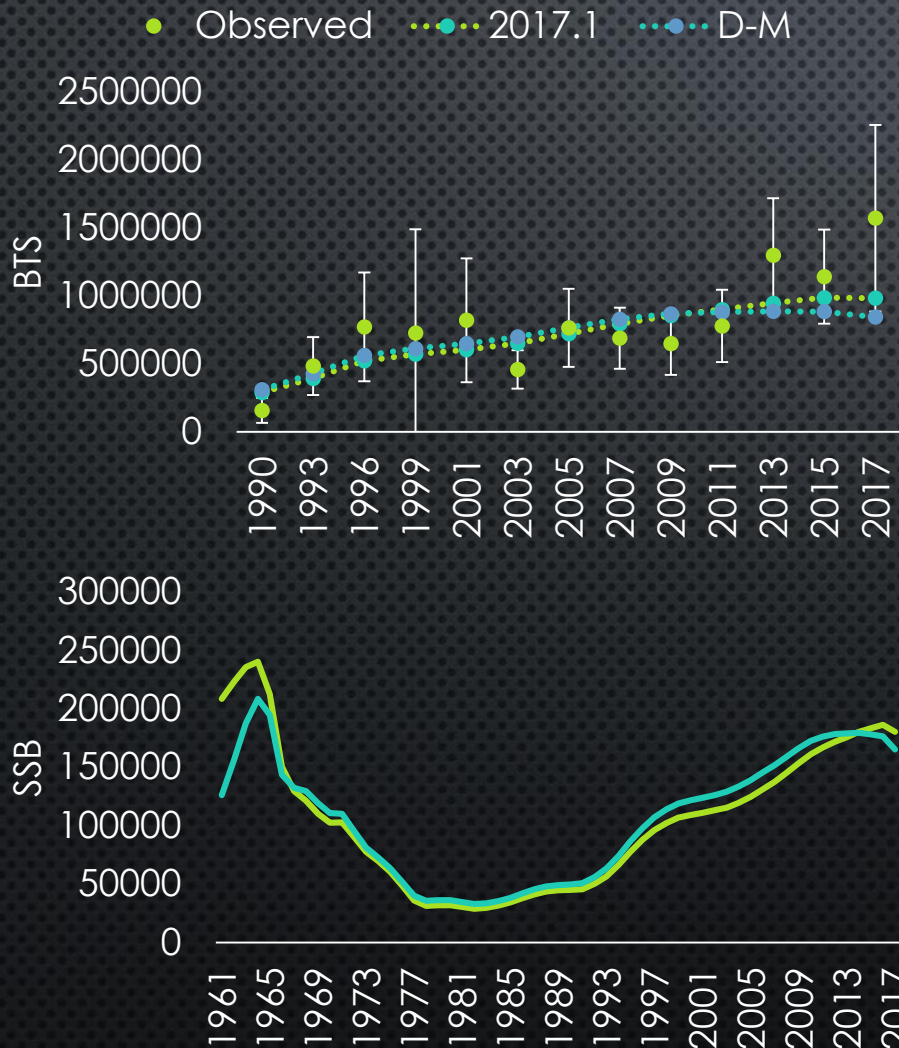
Investigated plus age from 18 to 50 (current 25)
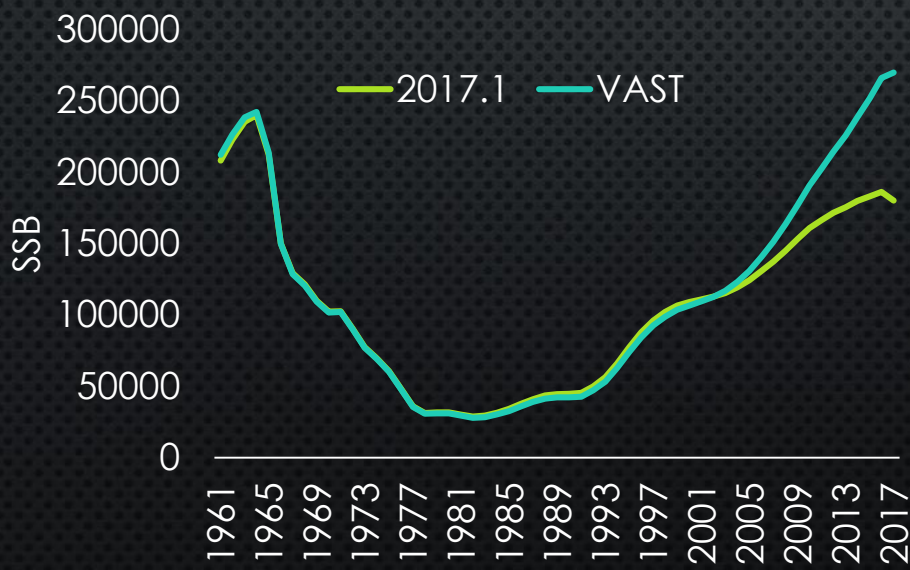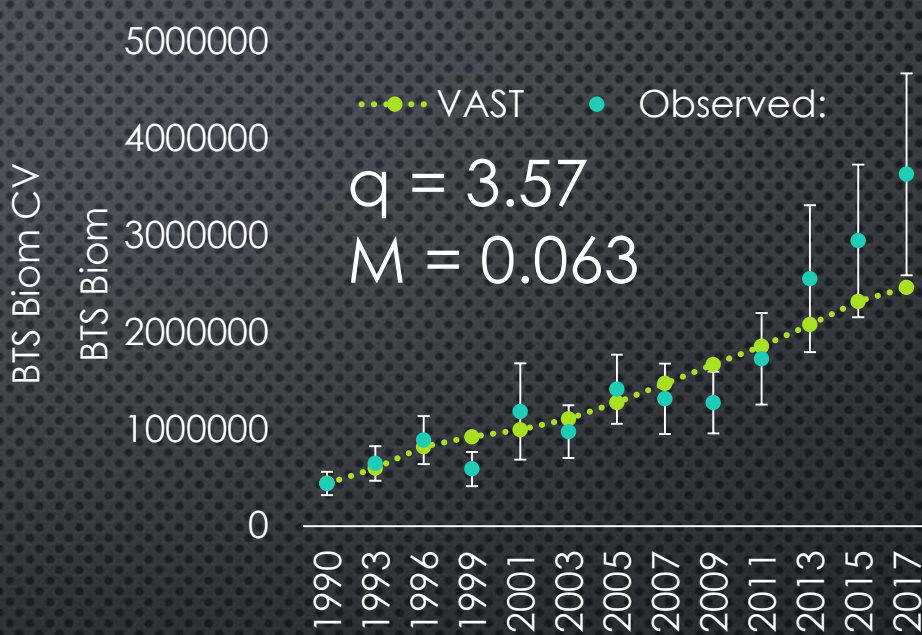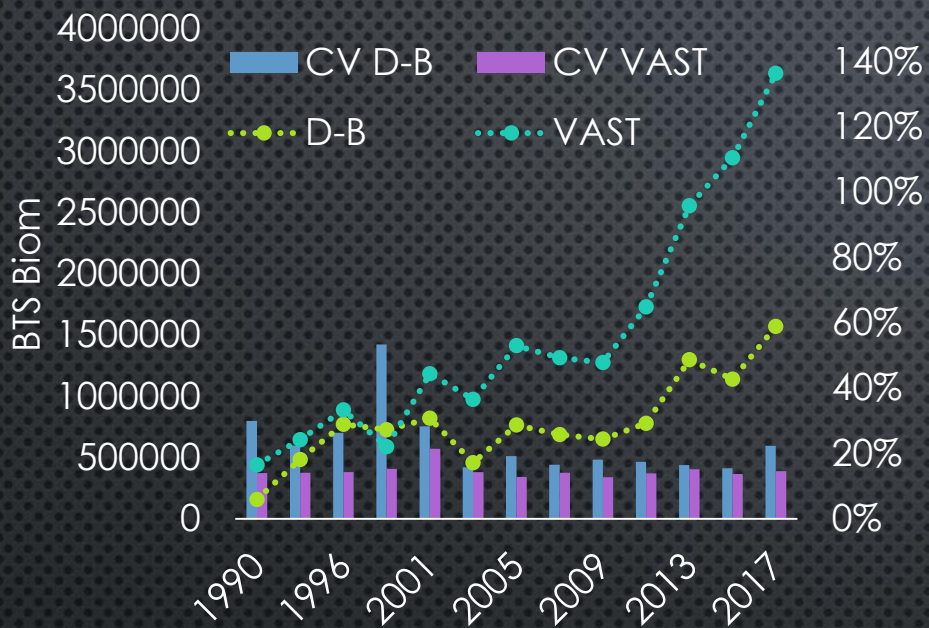
Dirichlet-Multinomial
Start including case to track results with D-M (est ESS)

- Range in ESS:
  - Survey age: 94 - 393
  - Fishery age: 115 - 375
  - Fishery size: 38 – 920 (in '66)
- q
  - 2017.1 = 2.11
  - D-M = 1.99
- M
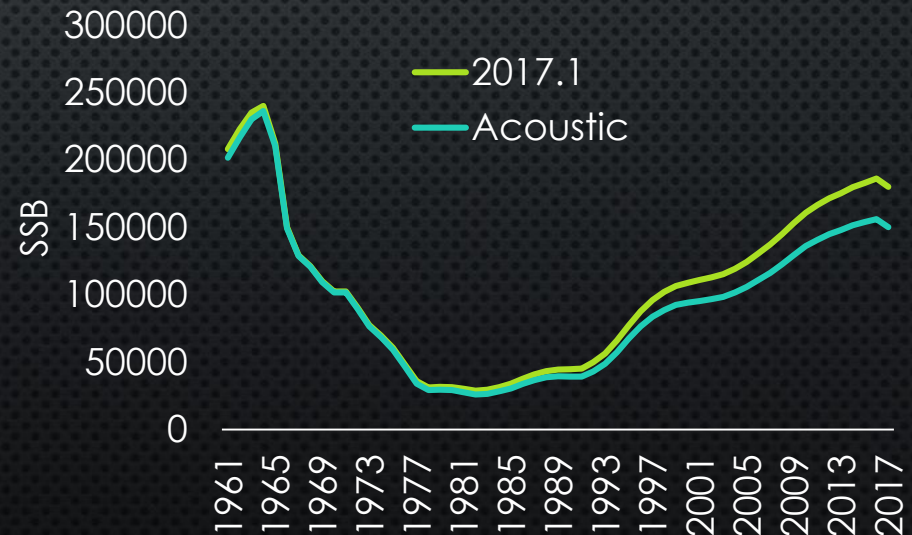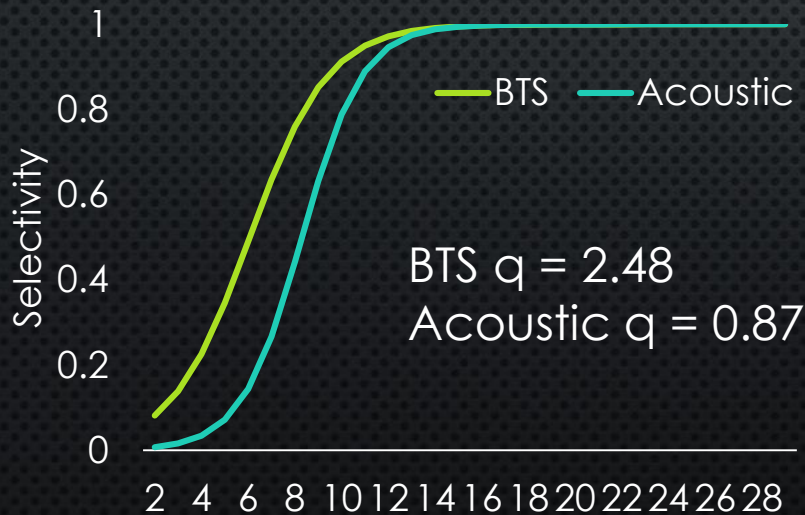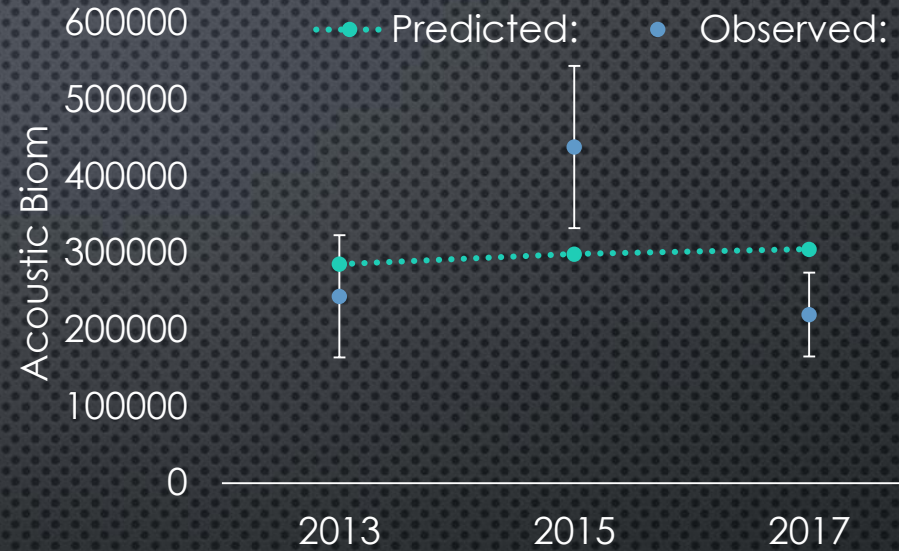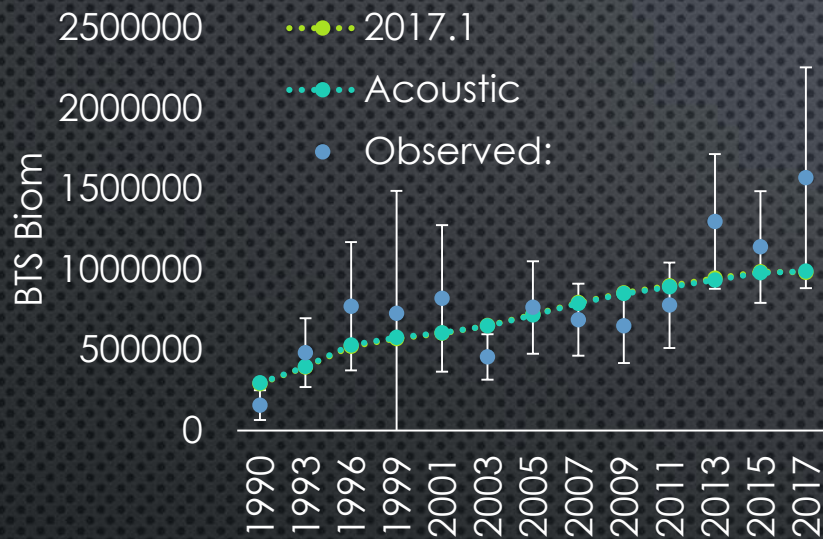 - 2017.1 = 0.066
  - D-M = 0.076

VAST

Start included case to track results with VAST index

q = 3.57
M = 0.063

	2017.1	VAST
Fishery Age	19.3	19.4
BTS Age	19.6	20.8
Fishery Size	65.5	66.4

Acoustic index/lengths

Start including case that tracks results with MACE Acoustic survey data (biomass & length comps)
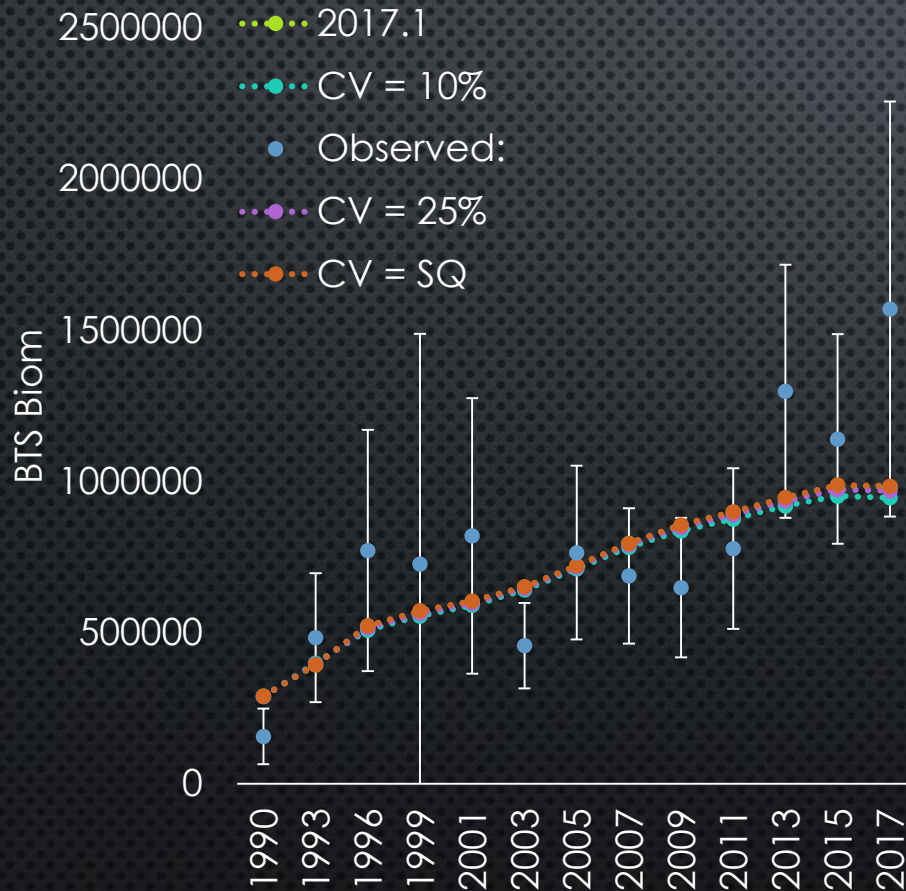
Acoustic index/lengths

Start including case that tracks results with MACE Acoustic survey data (biomass & length comps)

Acoustic q prior

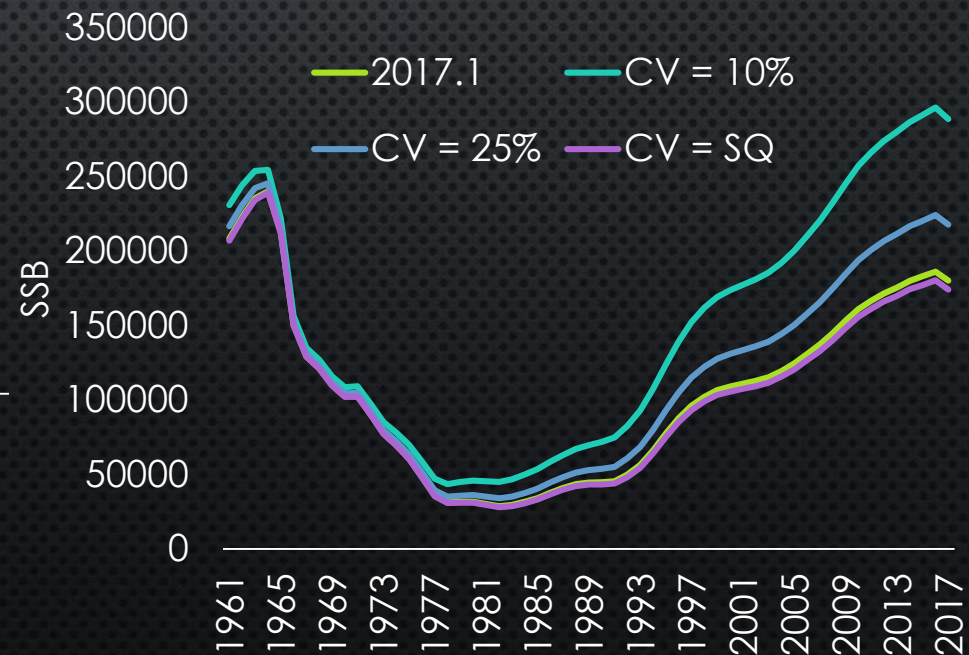Start including case that tracks results with prior on q from Jones et al (q = 1.15)
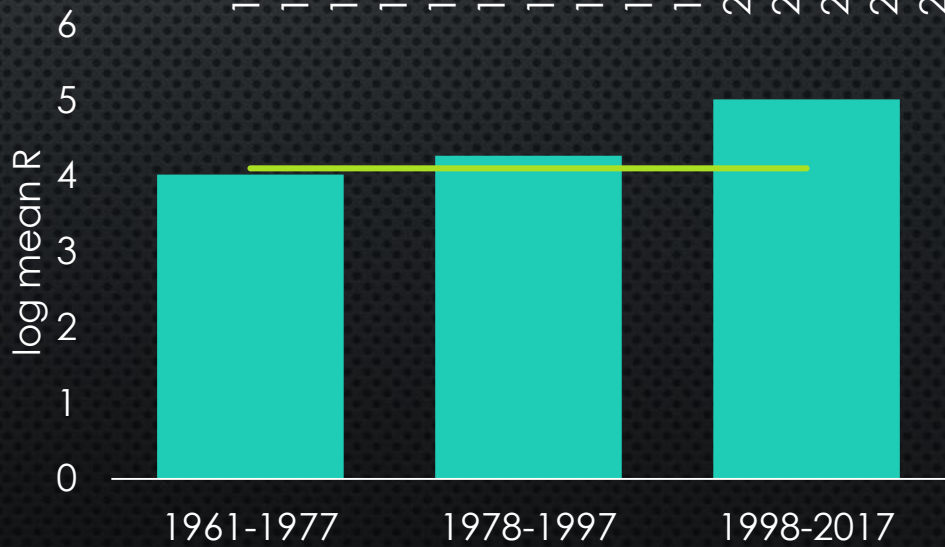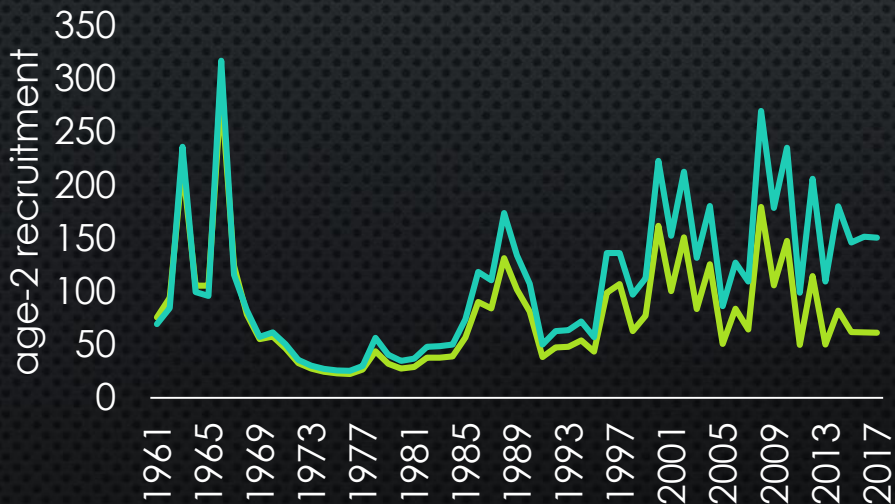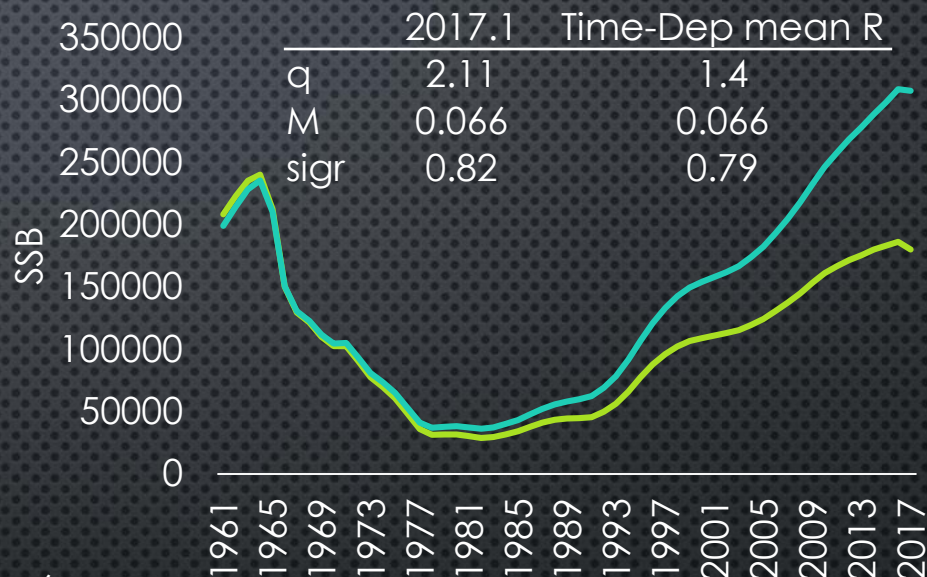Sensitivity cases: CV = 10%, 25%, Status Quo (~44%)

q estimates:
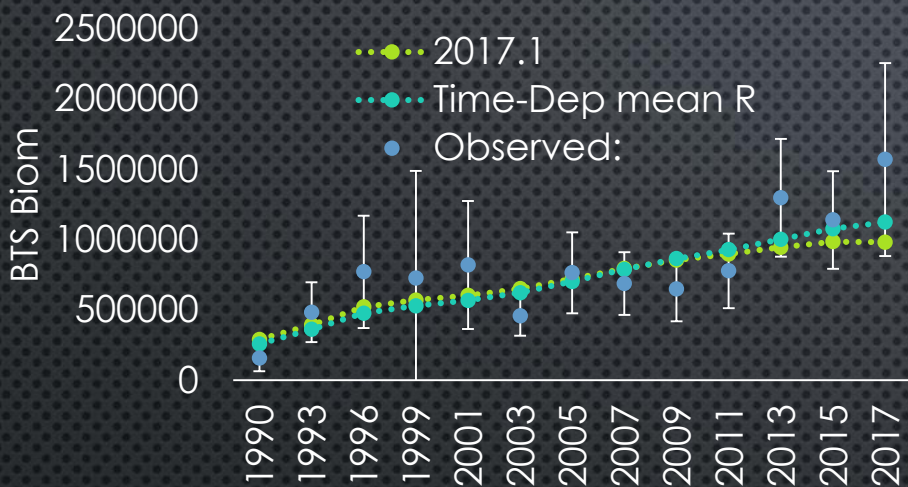- 2017.1 = 2.11
- 10% CV = 1.28
- 25% CV = 1.73
- Status quo CV = 2.19

Time-varying mean R

Estimate mean R for blocks determined by PDO (w/ STARS)
3 time periods: 1961 → 1977, 1978 → 1997, 1998 → 2017

	2017.1	Time-Dep mean R
q	2.11	1.4
M	0.066	0.066
sigr	0.82	0.79

<u>Take aways</u>

- Model is crazy sensitive to prior assumptions about M

- If we're digging deep, could extend plus age to 35+

- D-M increases relative weight of comp data, need to take closer look at old fishery length comps

- One of the cases where VAST really different then D-B

- Continue to track acoustic data, improve model-specification

- Let MS get published on q prior

- Time-varying mean R promising

Are we done yet???