NOAA FISHERIES

Southeast Fisheries Science Center

Gulf Menhaden Assessment Update

Tuesday, October 15, 2024

Dr. Amy M. Schueller

Outline

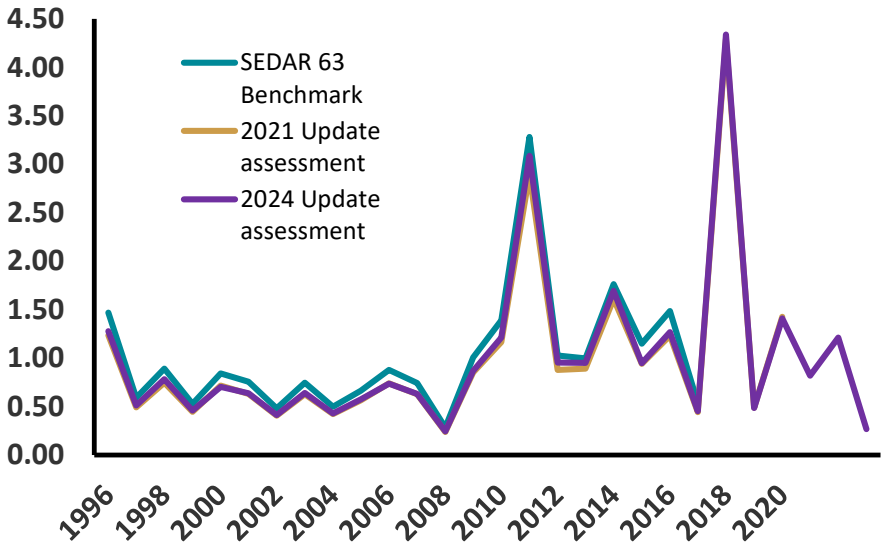
- Data and model structure
- Base model outputs
- Comparison with 2021 update assessment
- Sensitivity analyses
- Monte Carlo bootstrap ensemble
- Stock status determination

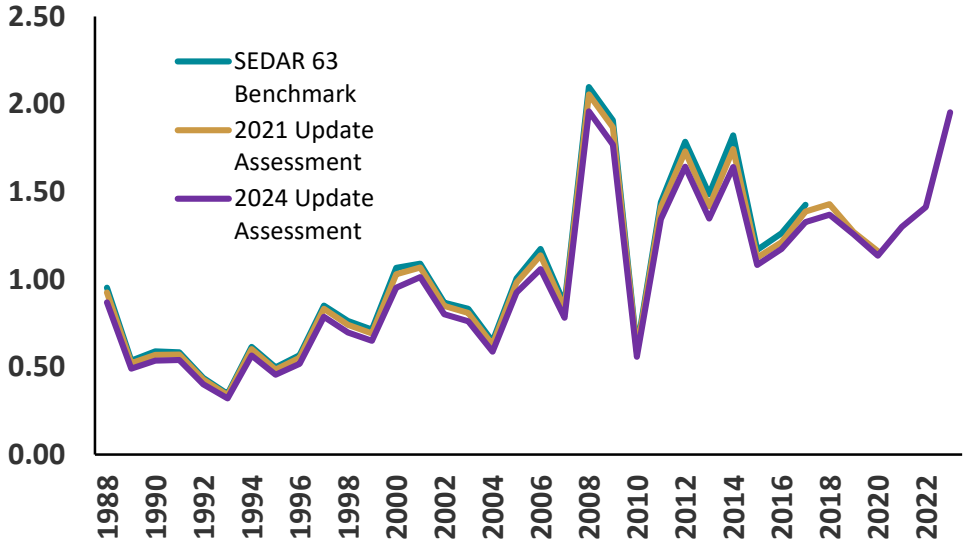
Data and model structure

- 1977-2023 (Jan 1 to Dec 31; annual time step)
- Ages 0 to 4+
- Landings data from 1977-2023
  - Age composition data 1977-2023
  - Bait and MRIP
- Life history information

Data and model structure

- Seine (recruitment) index 1996-2023 – April 1
- LA gill net index 1988-2023 – July 1
  - Length composition data 1996-2023

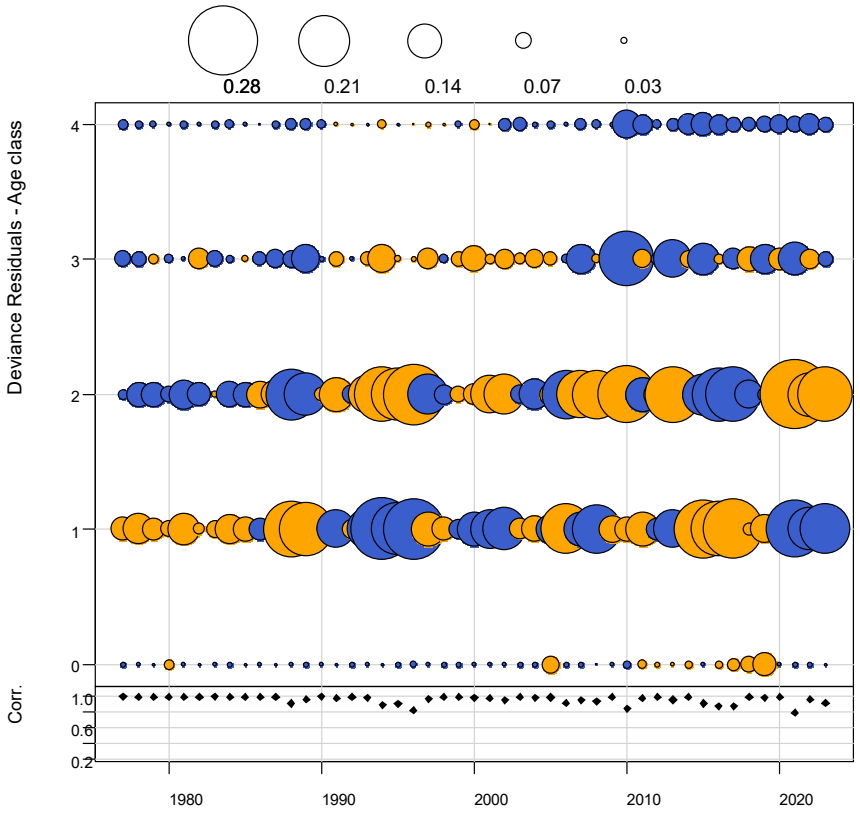


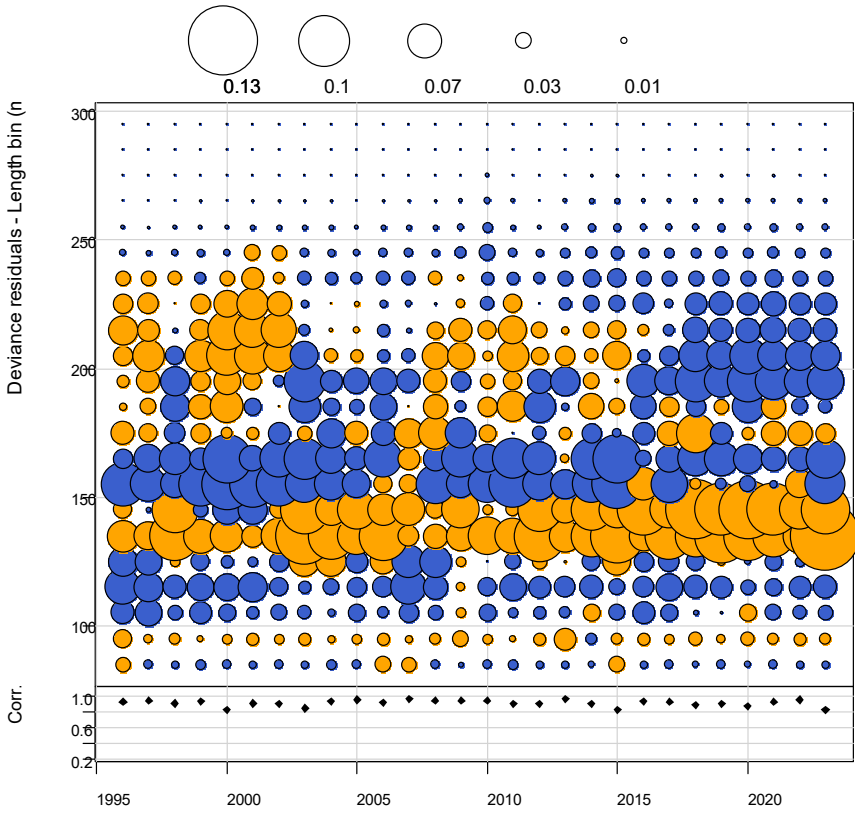


Data and model structure

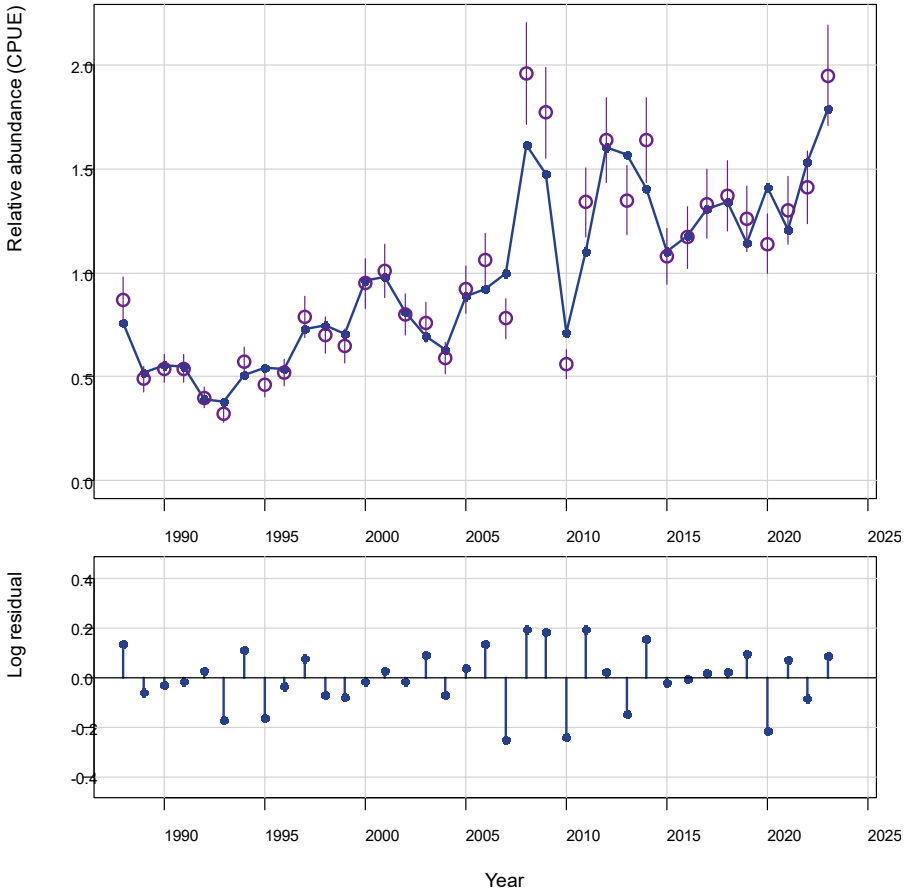
- Benchmarks
  - F=M; F=0.75M
    - Geo mean of ages-0, -1 and -2
      - F = 1.32 (threshold/limit) and F = 0.75*1.32 = 0.99 (target)
  - SSB based metrics (threshold and target)
    - 25% and 50% of the equilibrium value of SSB when F=0

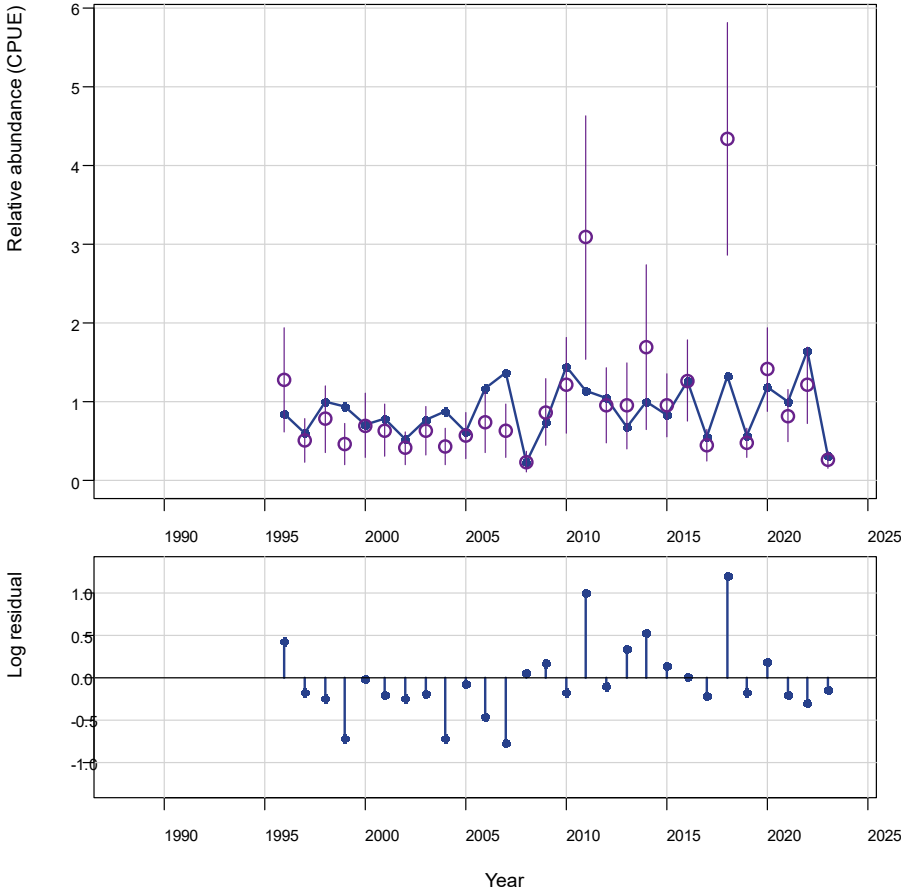
Base model outputs



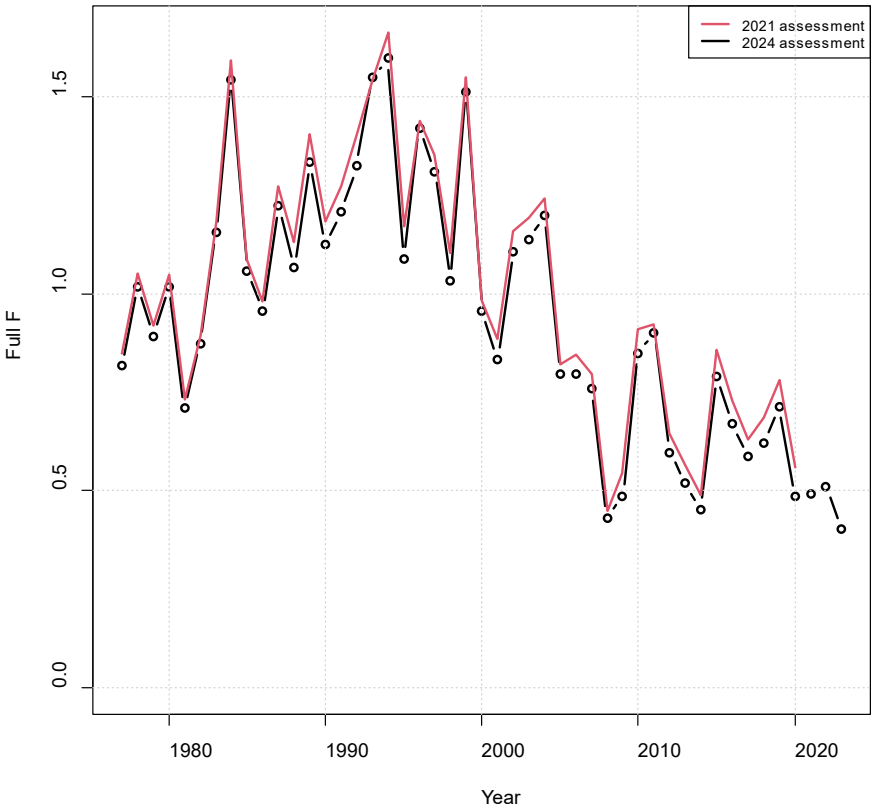


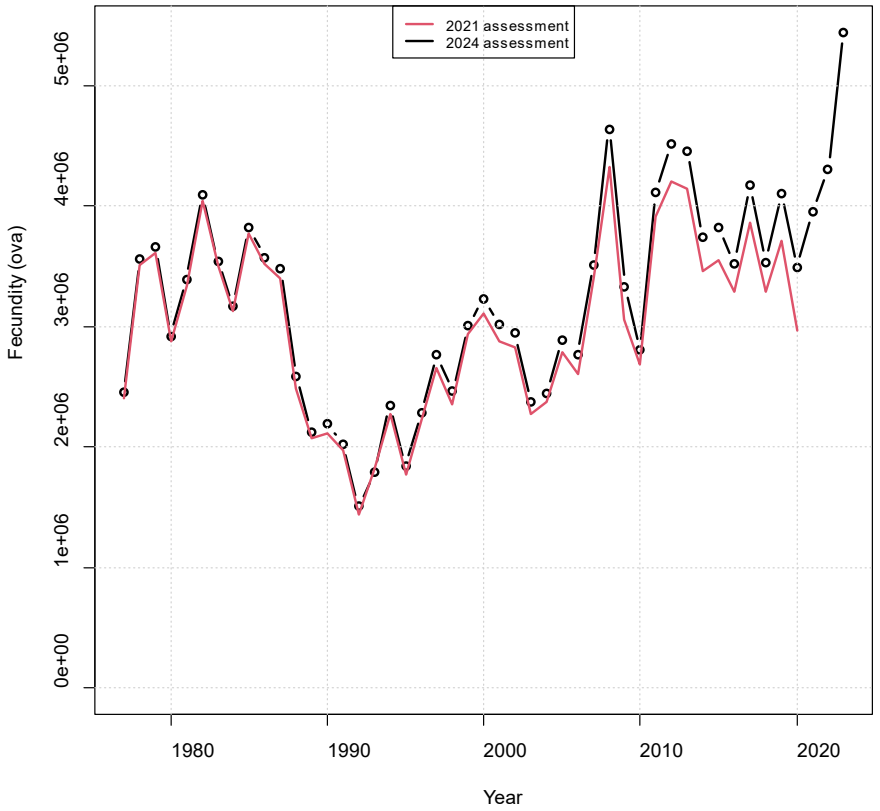
Base model outputs



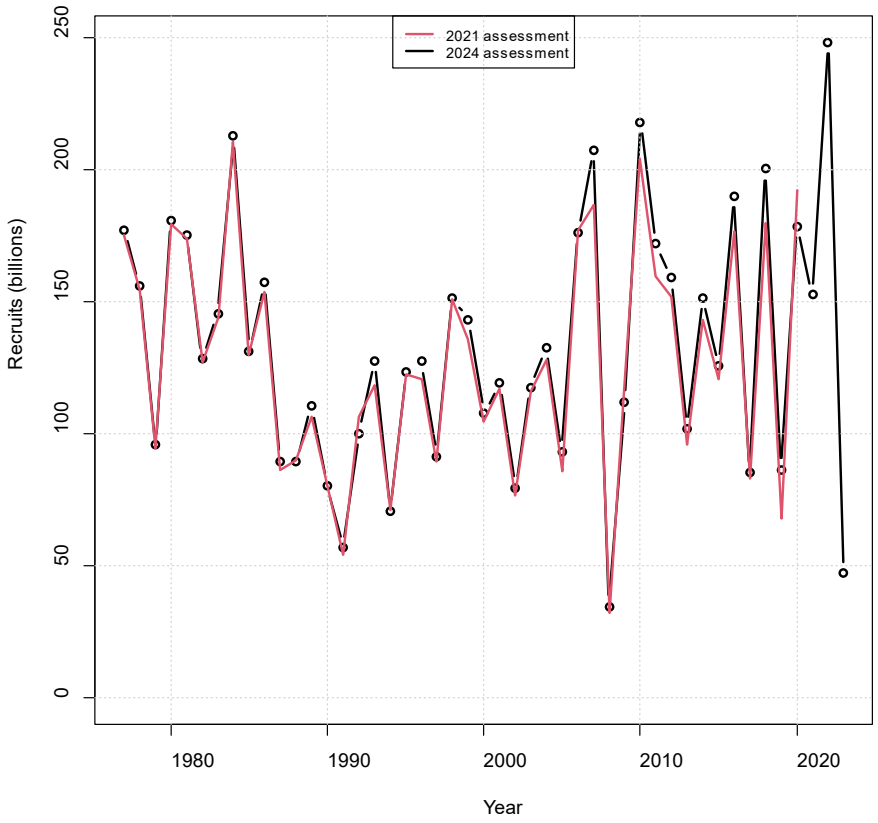


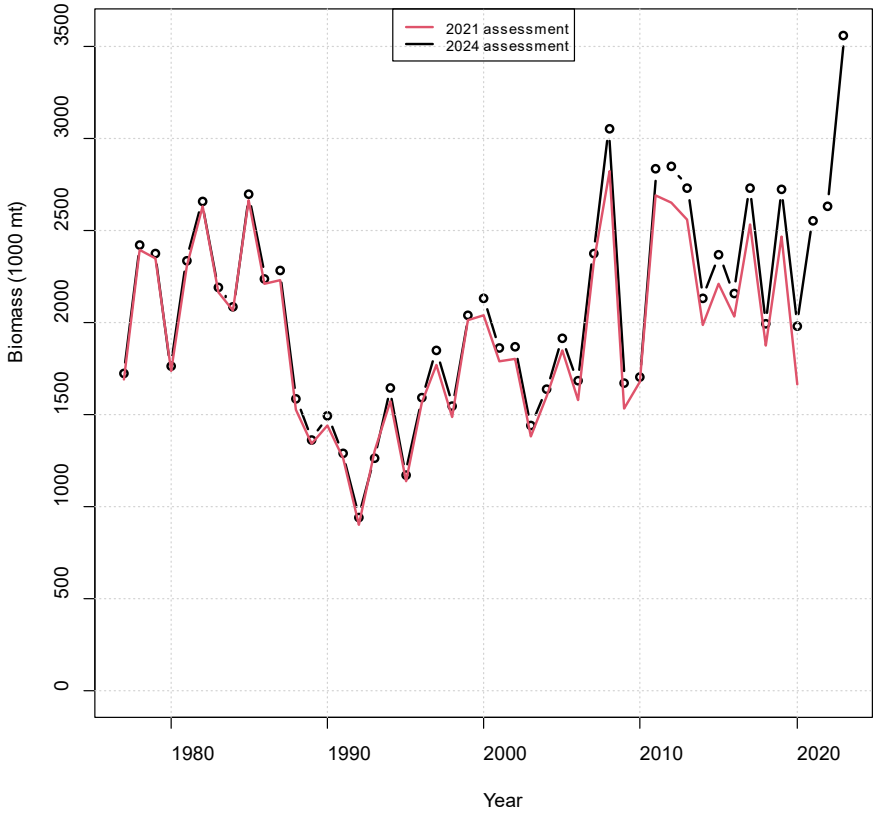
Comparison with 2021 update



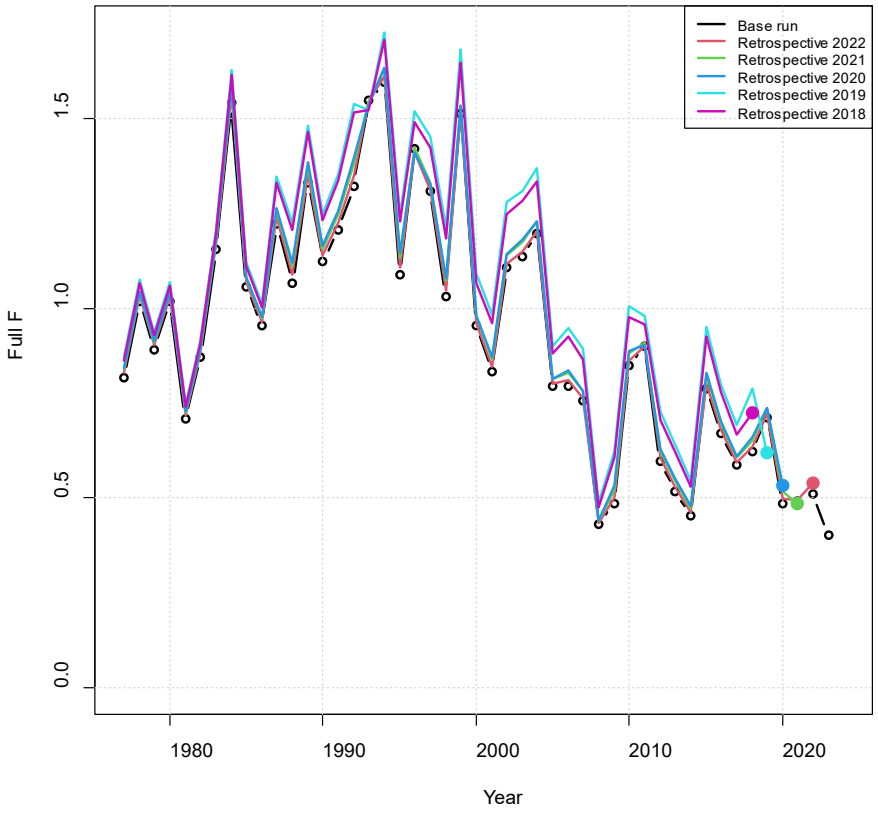


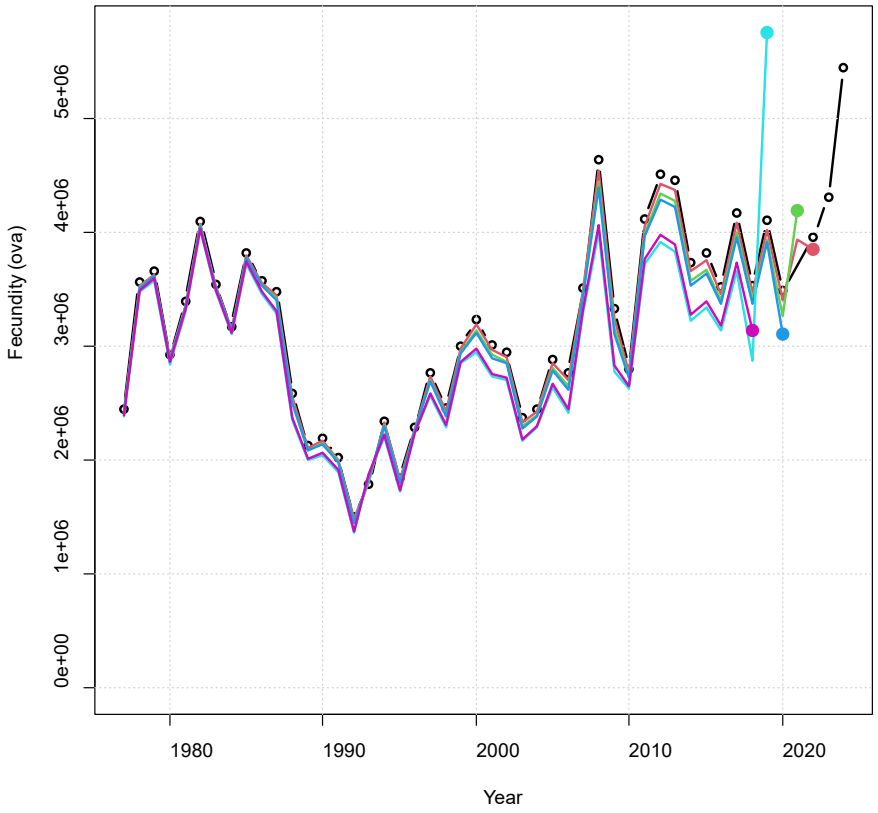
Comparison with 2021 update



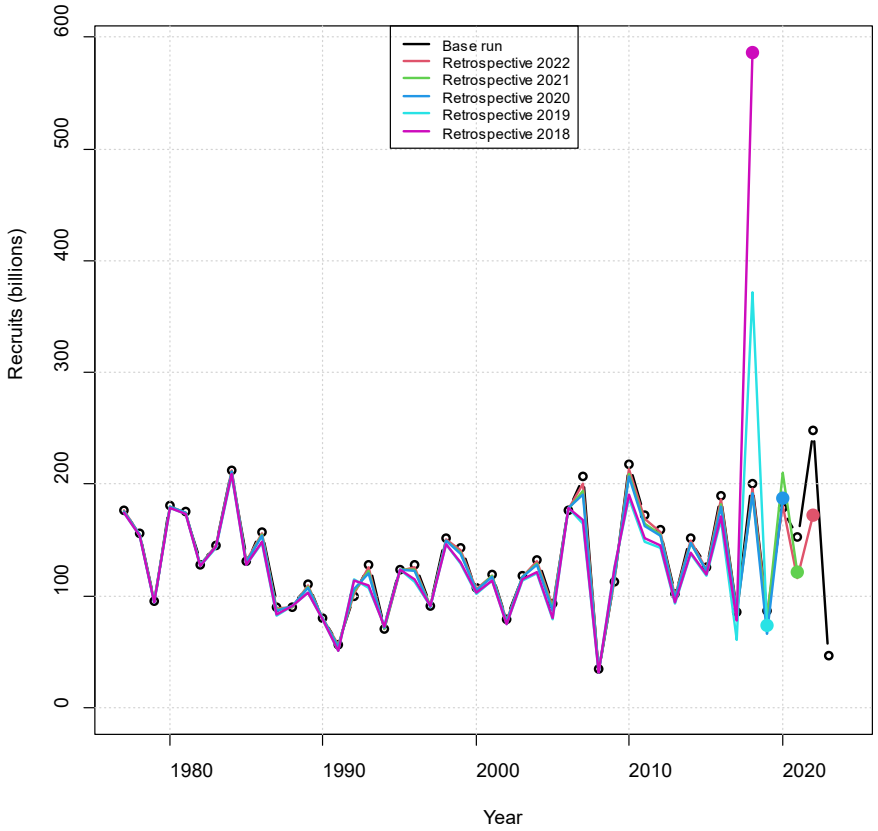


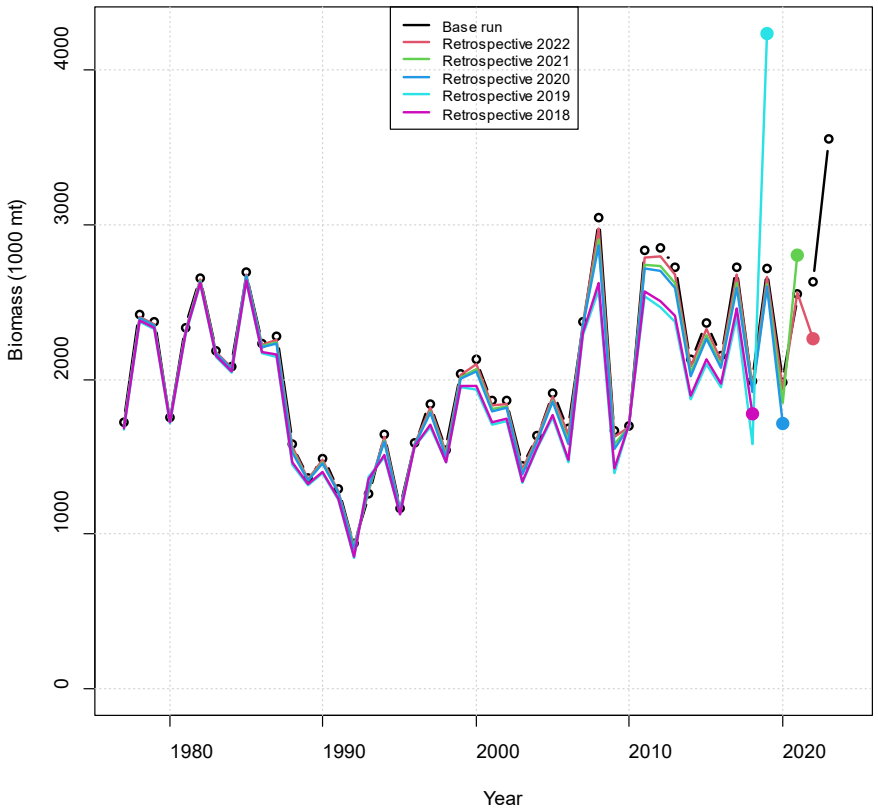
Sensitivity Analyses - Retrospective





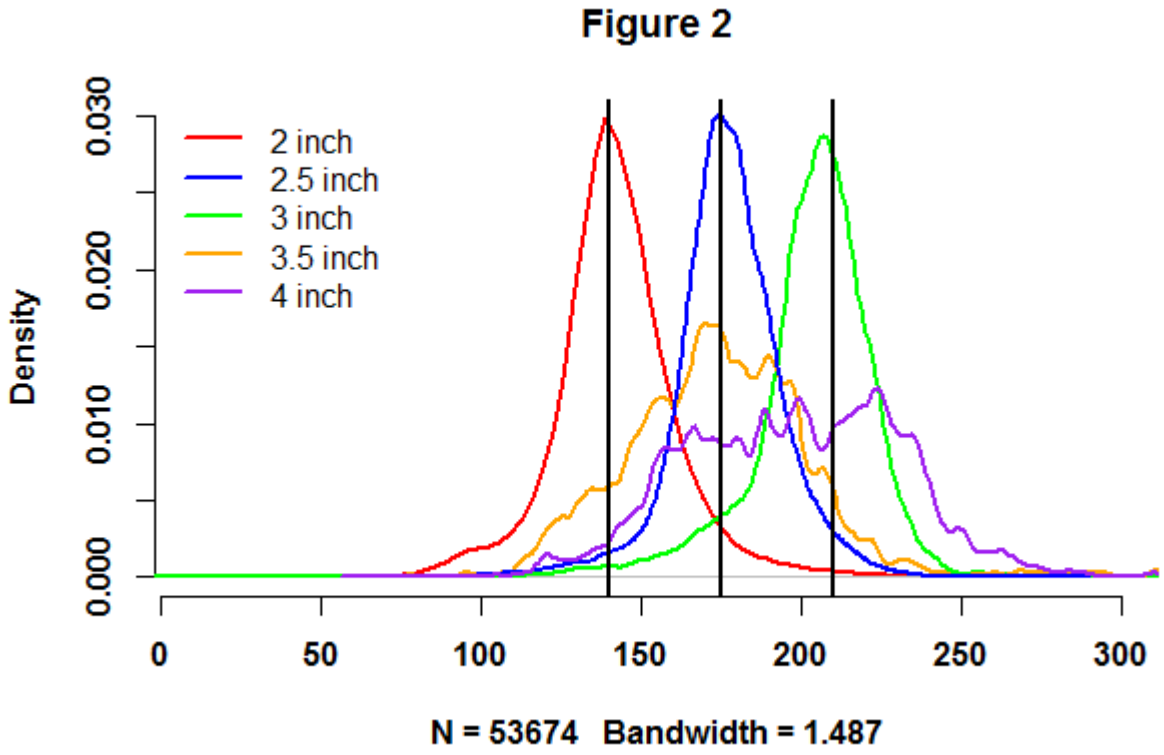
Sensitivity Analyses - Retrospective



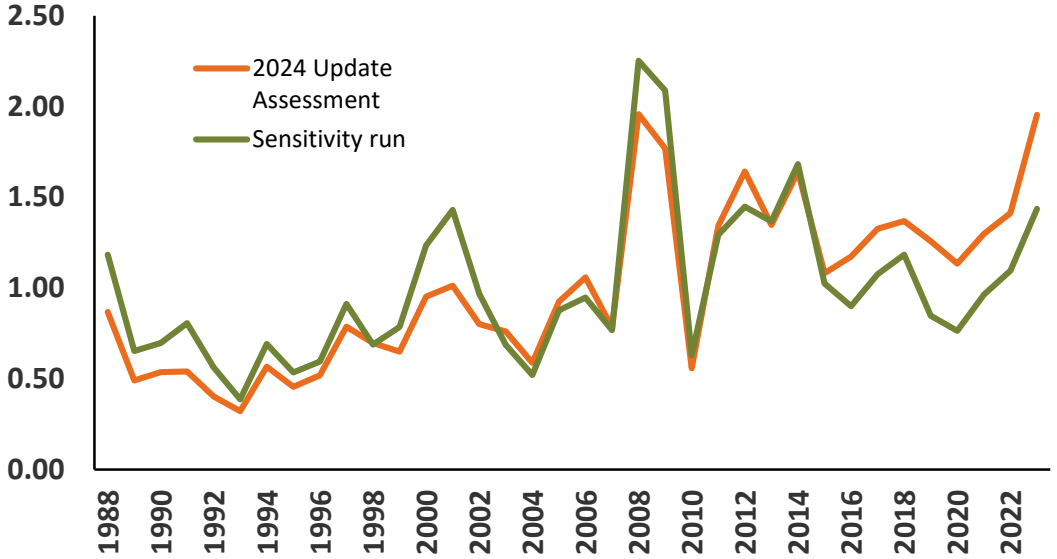


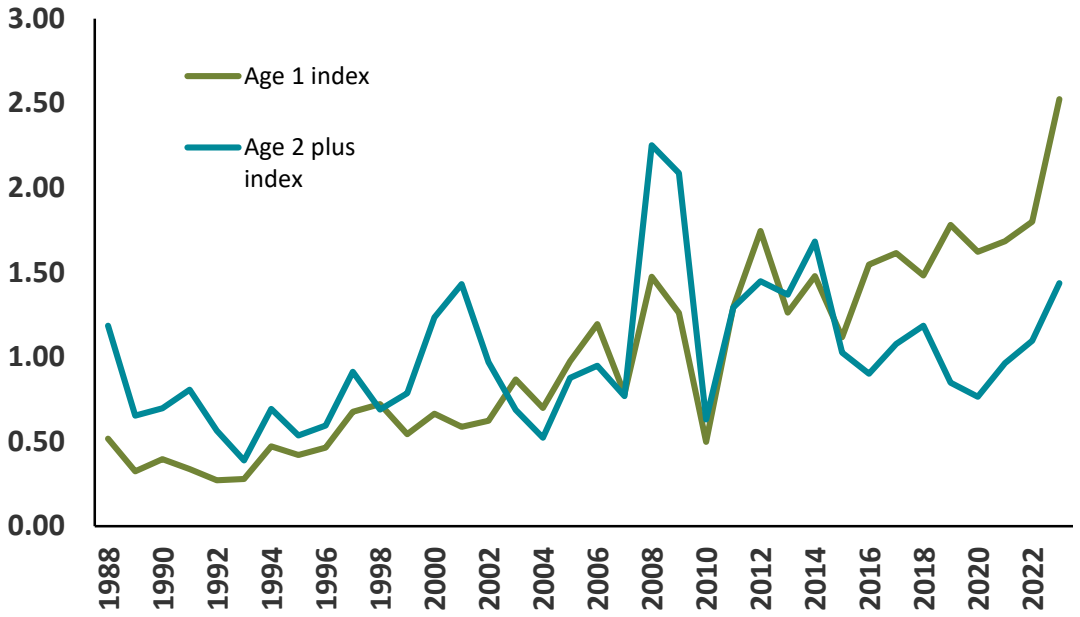
Sensitivity analyses

- Use smallest mesh size of gillnet index to create an age-1 index; use other meshes to create age-2+ index; incorporate in the stock assessment

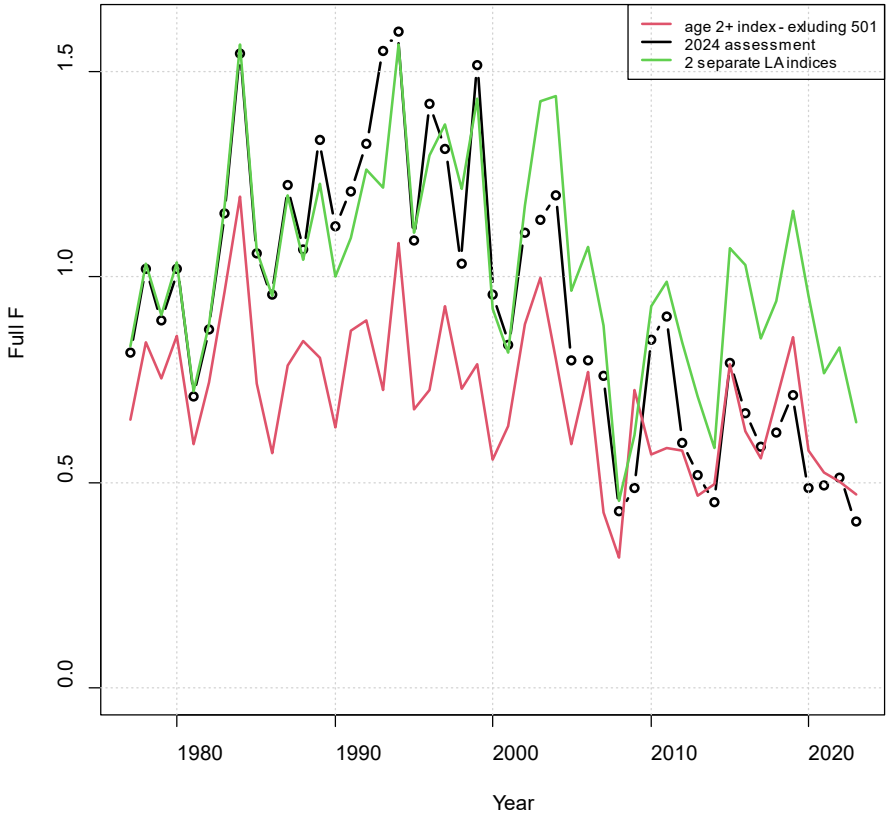


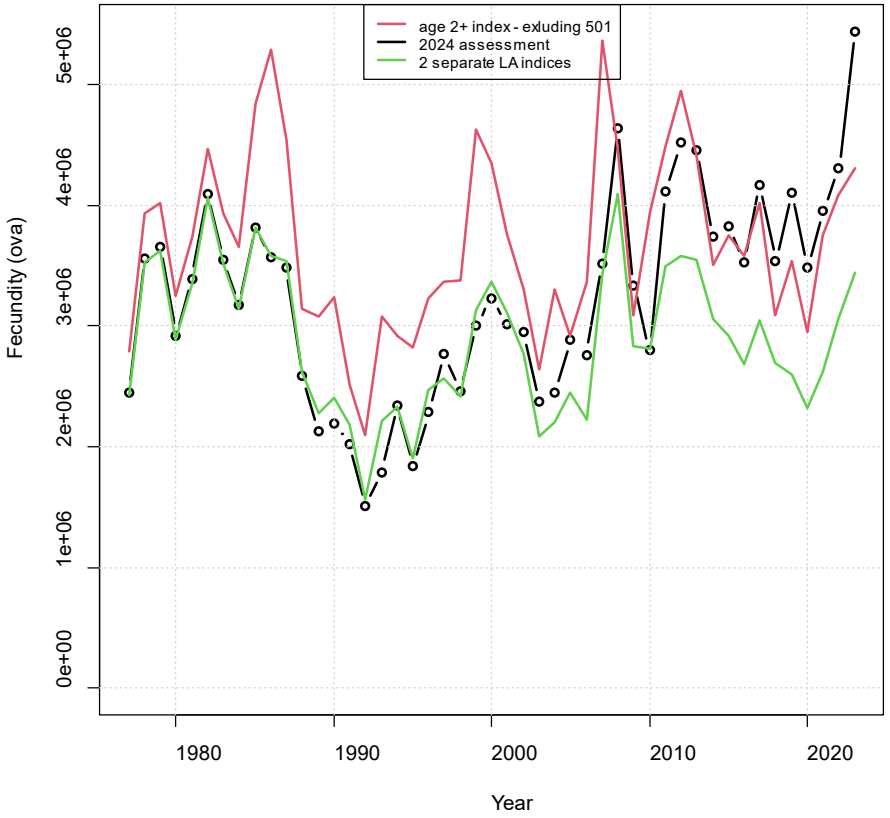
Sensitivity analyses



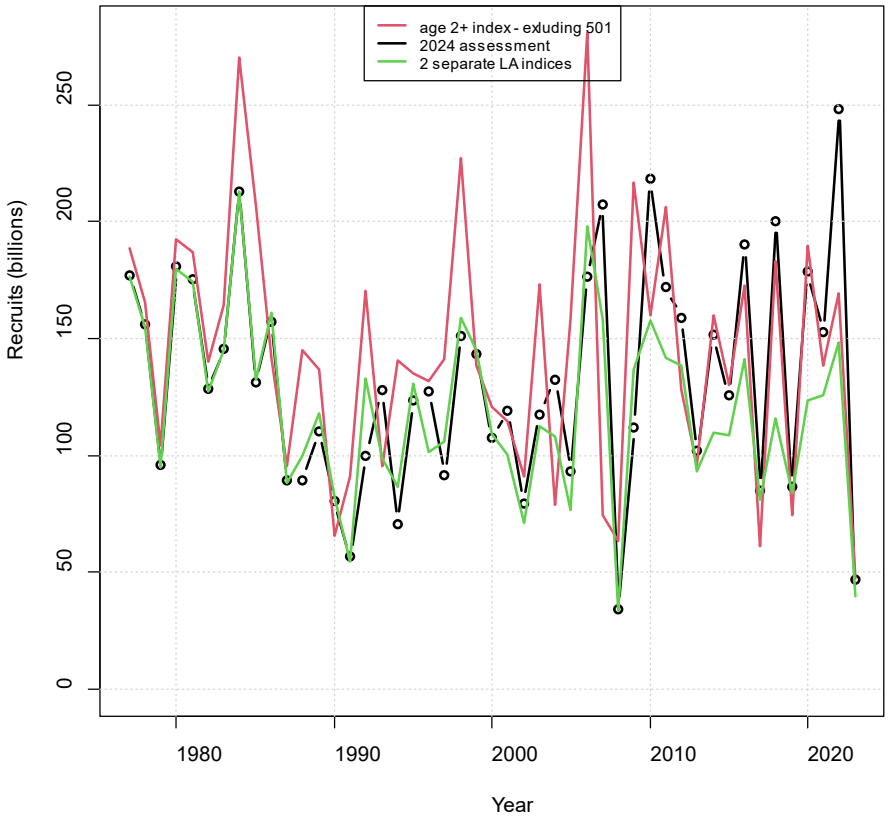


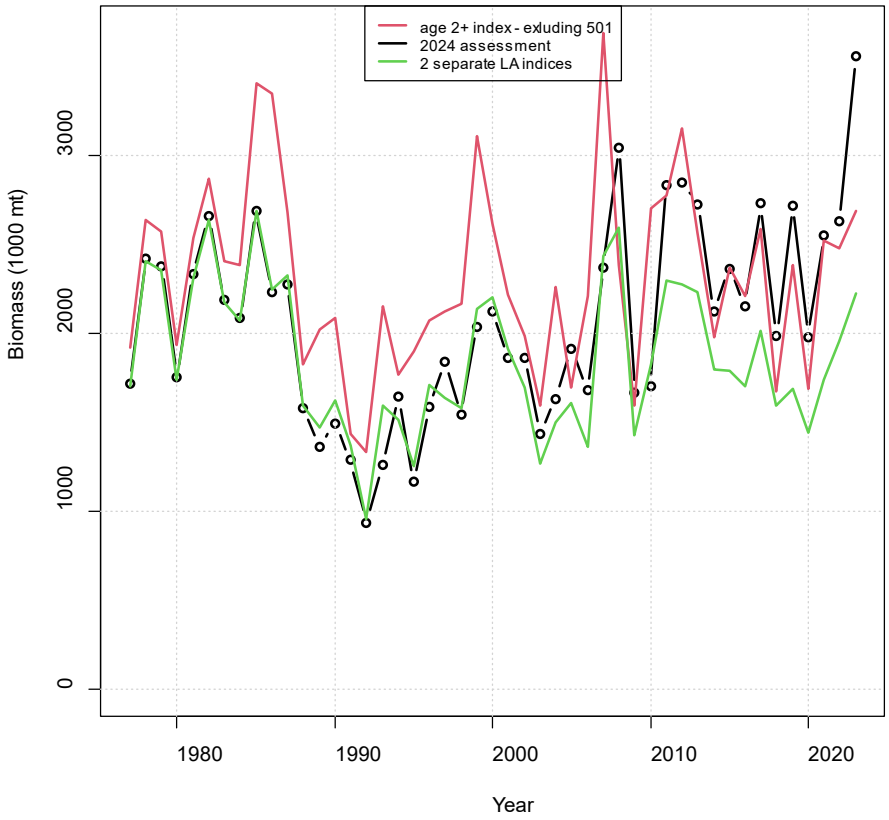
Sensitivity analyses





Sensitivity analysis



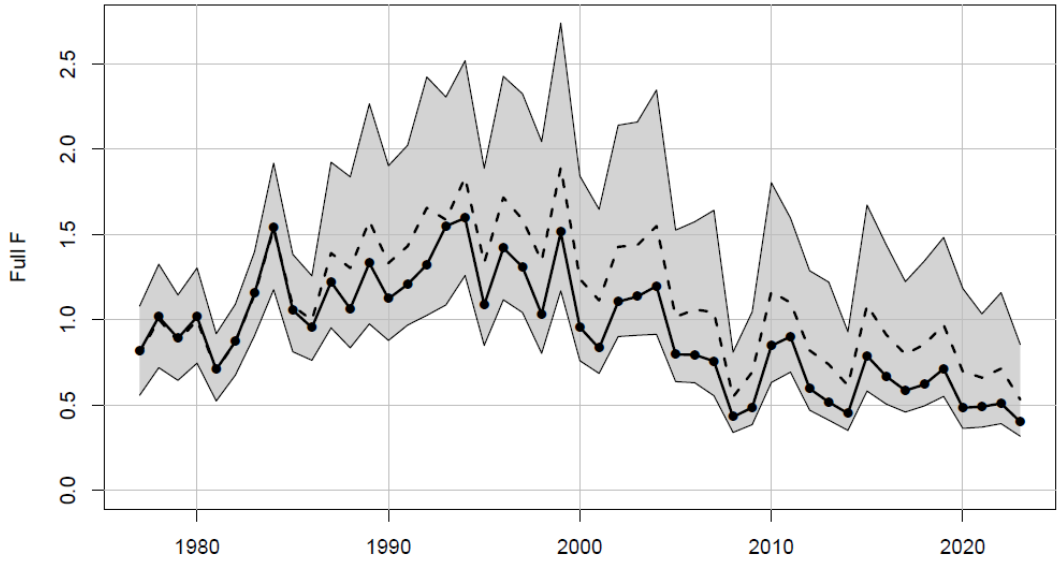


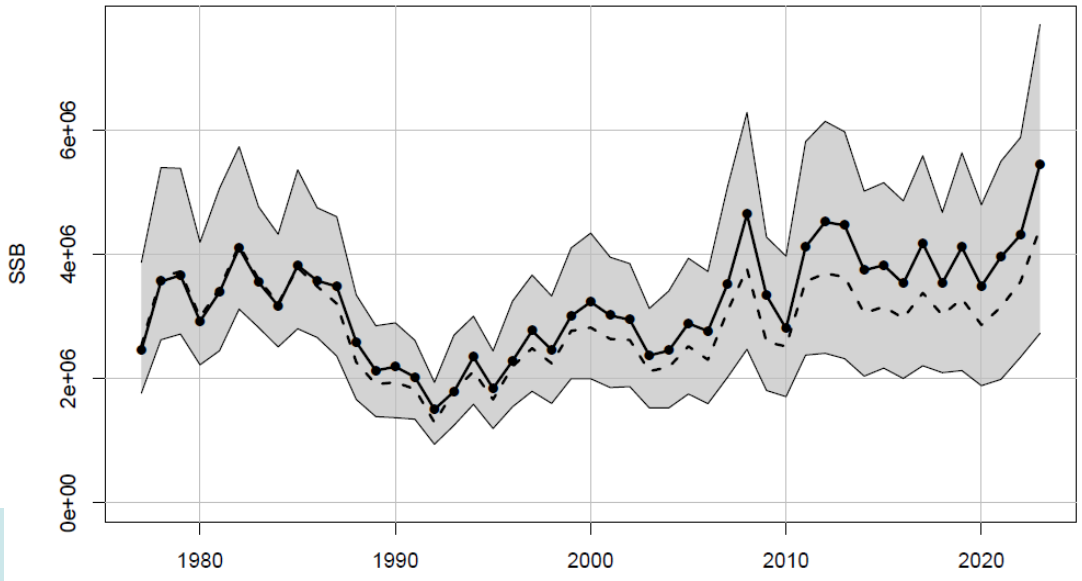
Monte Carlo bootstrap configuration

- Include uncertainty in (same as benchmark):
  - Landings
  - Indices
  - Composition data
  - Age-3 and 4 cR sel – uniform [0.68, 0.95]
  - M – scale based on est from paper

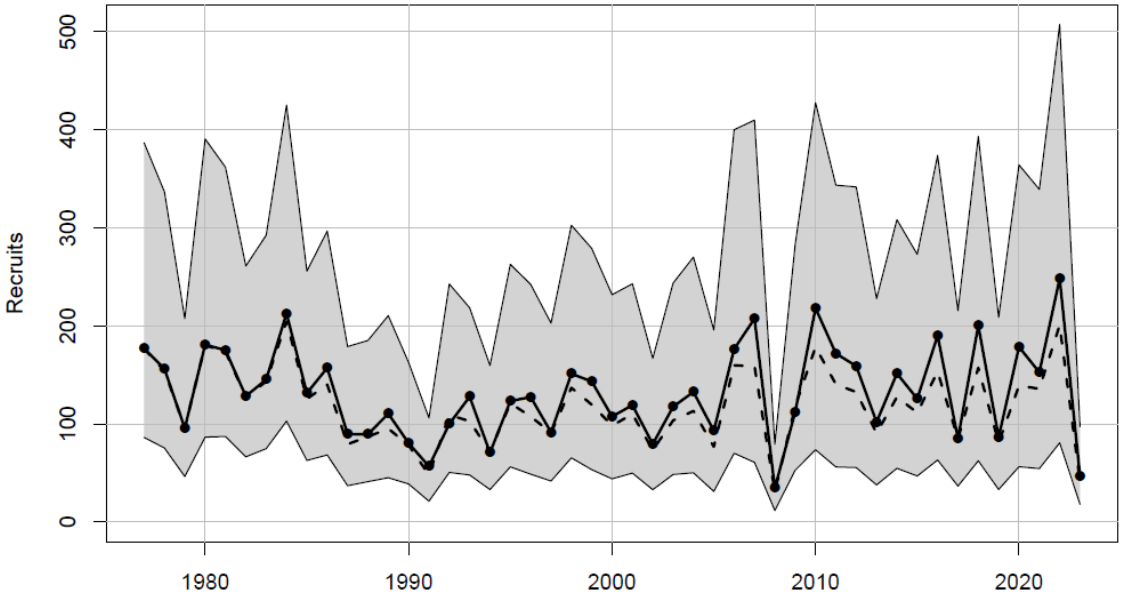
- Trimmed runs – total of 2,413 runs

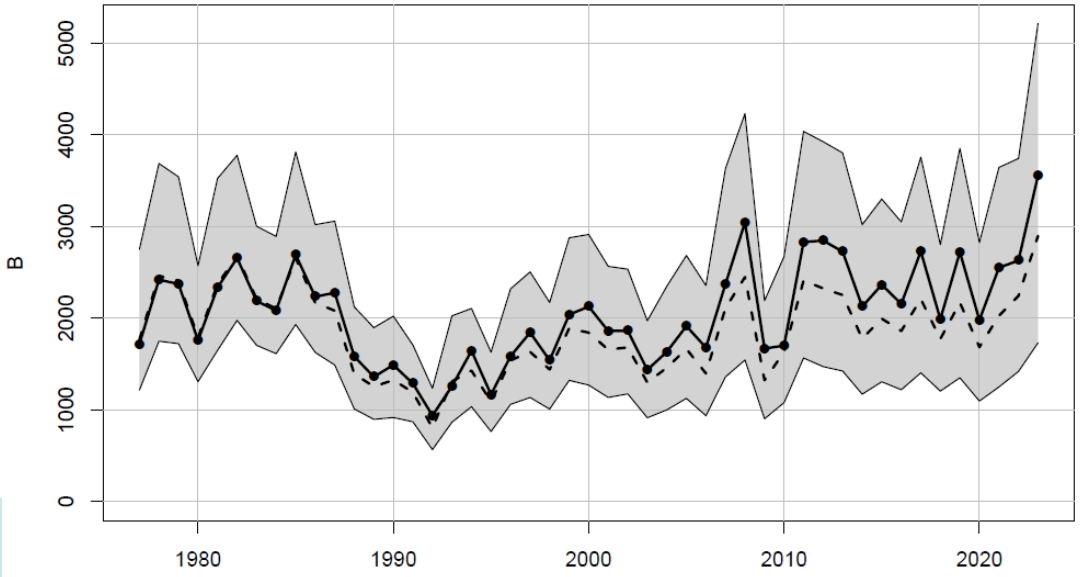
Monte Carlo Bootstrap Ensemble





Monte Carlo Bootstrap Ensemble

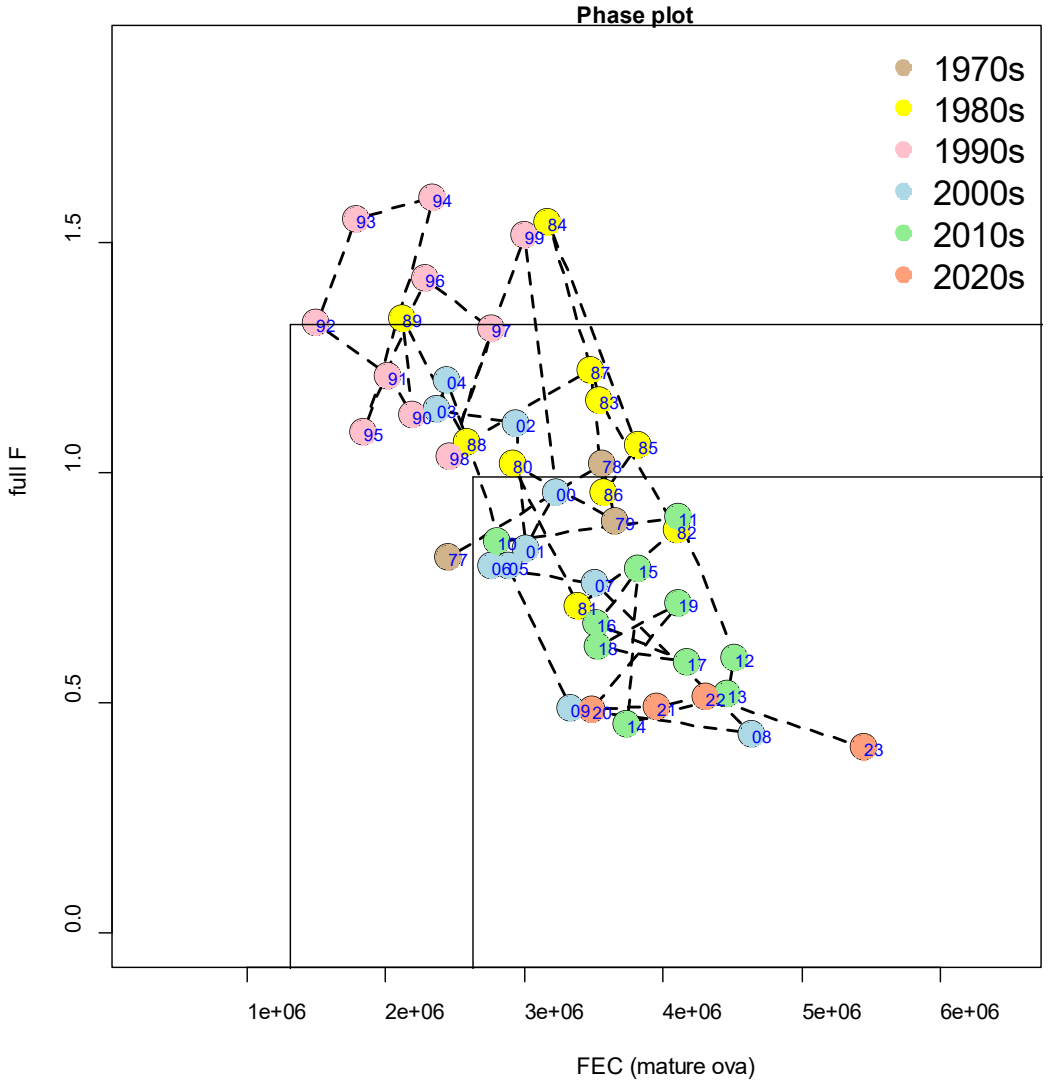




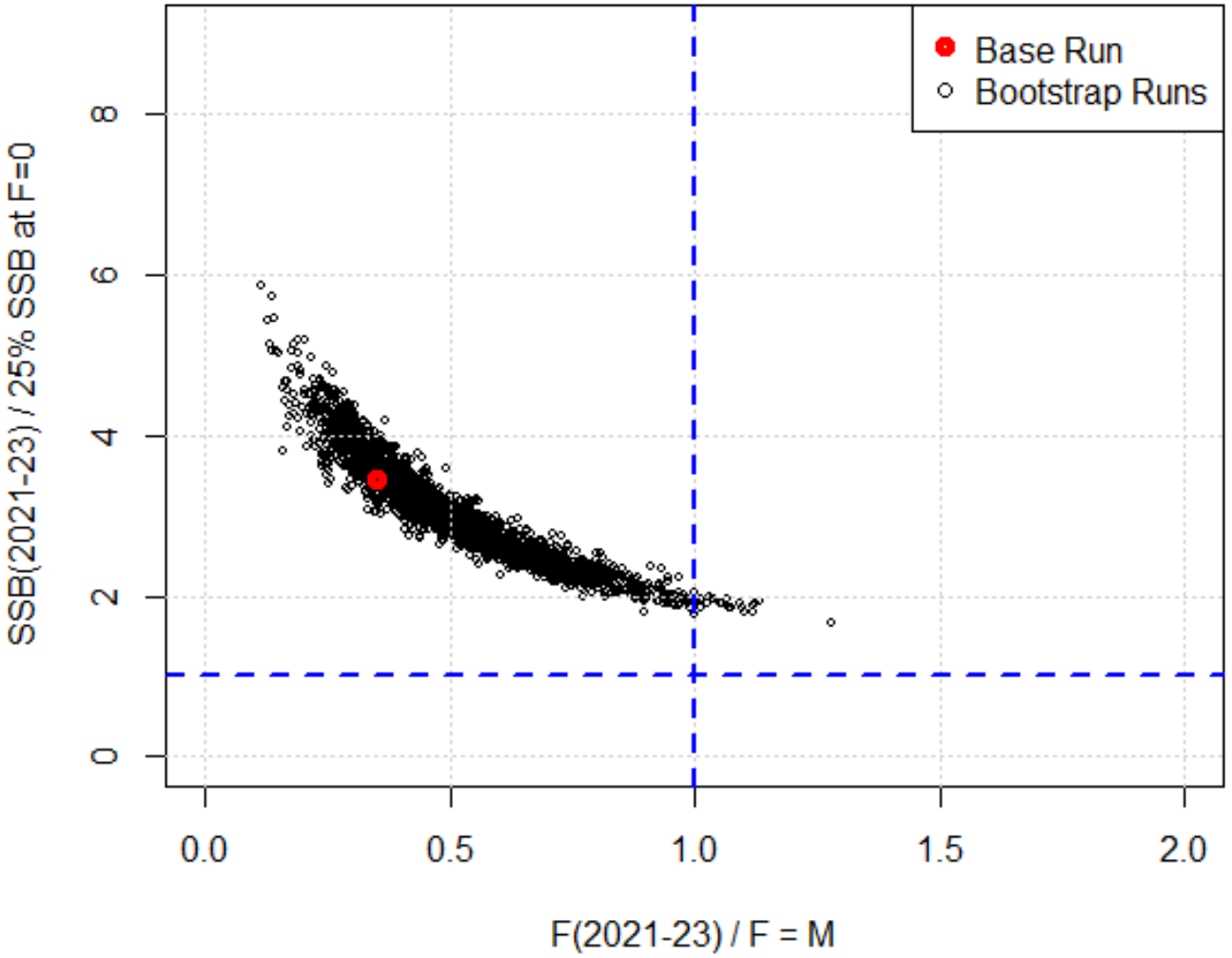
Stock status determination

- Benchmarks
  - F=M; F=0.75M (Geo mean of ages-0, -1 and -2)
    - F = 1.32 (threshold/limit) and F = 0.75*1.32 = 0.99 (target)
    - SSB based metrics (threshold and target) [thresh = 1315586 and target = 2631172]
  - Stock status determination
    - Geo mean (2021-23) of F – 0.47 – not overfishing
    - Geo mean (2021-23) of SSB – 4525923 – not overfished
    - Sensitivity runs, retrospective, and MCBE consistent with stock status determination for base run

Stock status determination



Monte Carlo Bootstrap Ensemble



Questions?