Gulf Menhaden Assessment Update

October 20, 2021

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Southeast
Fisheries
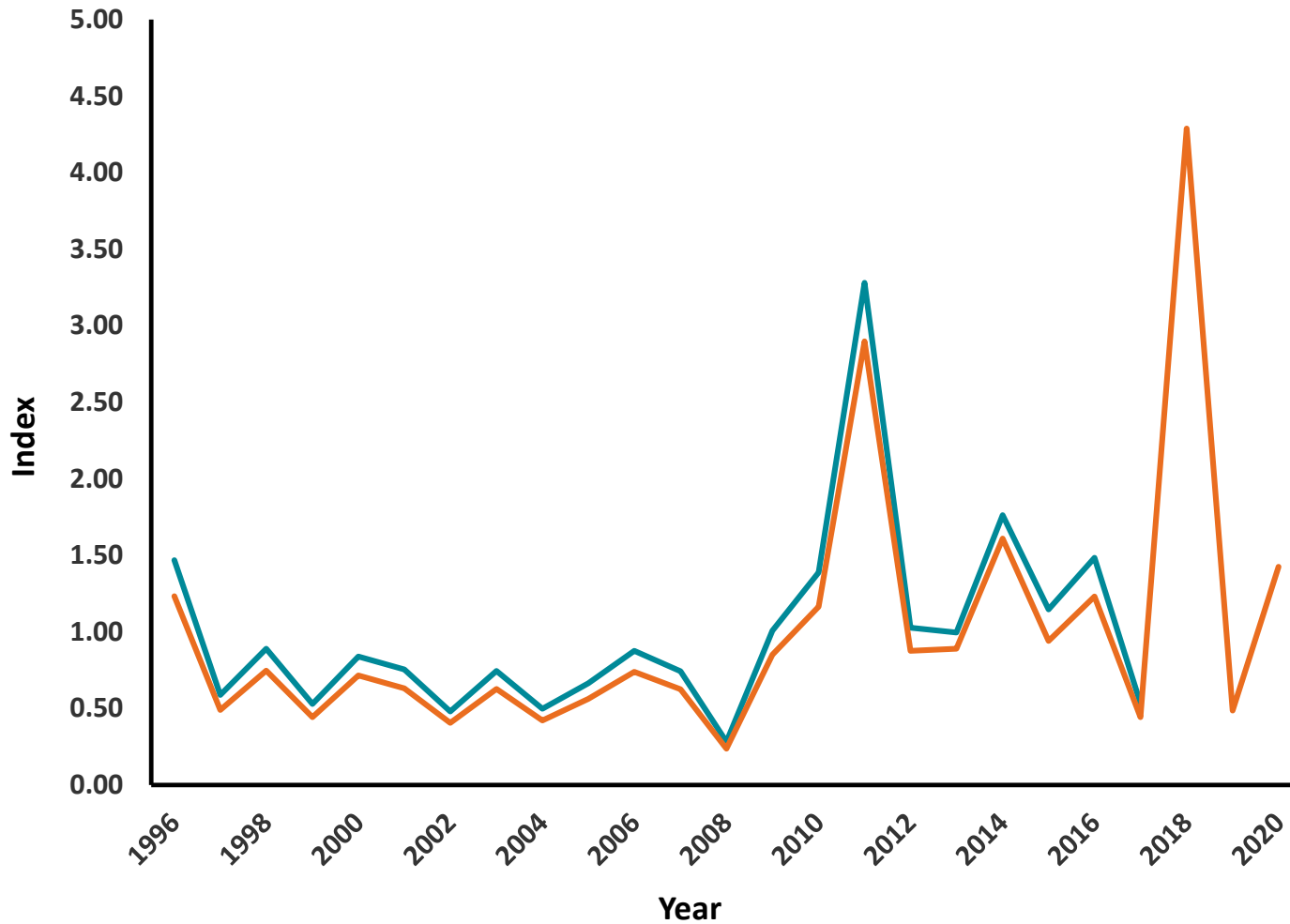Science Center

Outline

- Data used

- Base run results

  - Stock status

  - Phase plot

- Sensitivity analysis
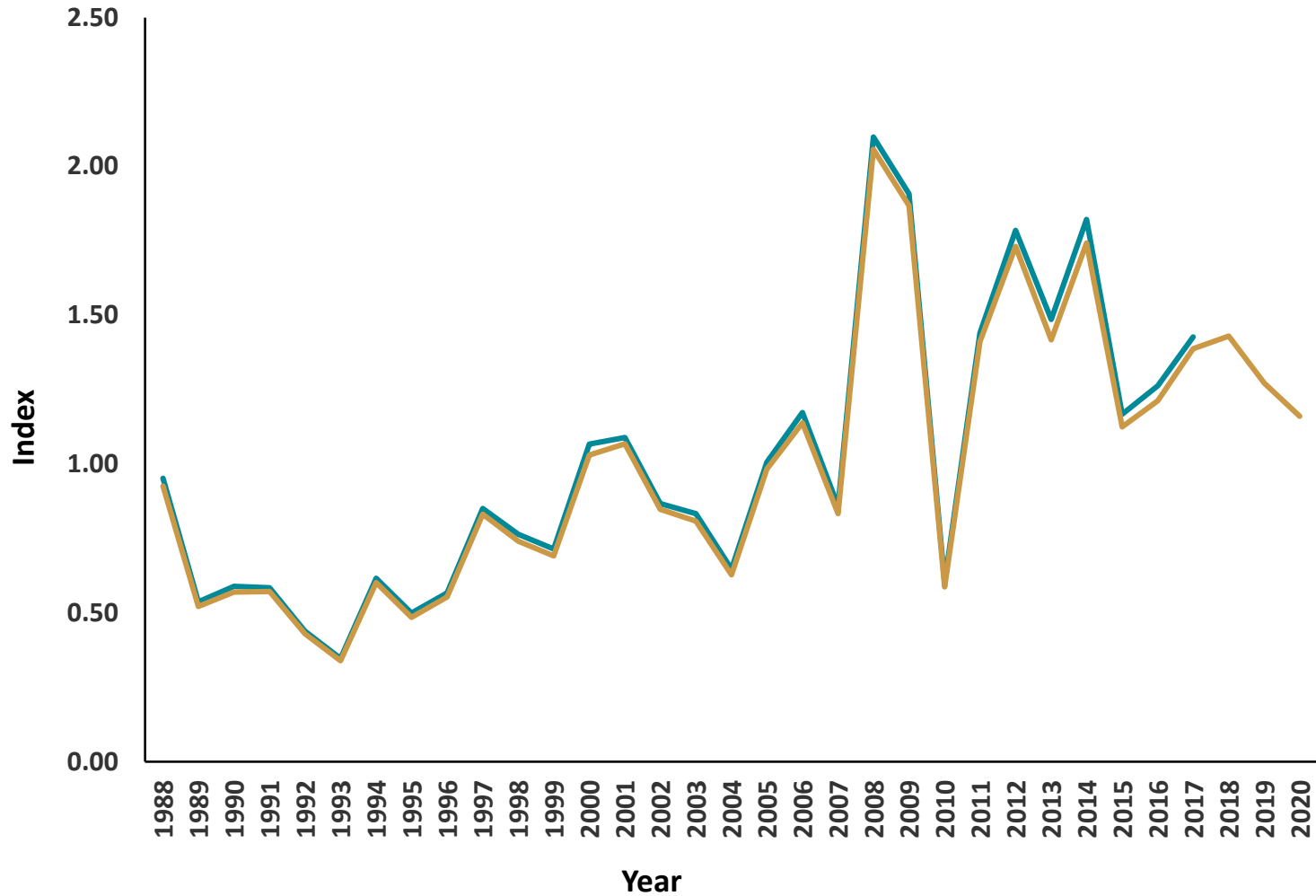
  - EwE based natural mortality

Data included in current model

- Commercial reduction landings [bait and MRIP]
- Commercial reduction age compositions
- 2 indices – LA gill net and seine
- LA gill net length compositions
- Life history information
  - Lorenzen M scaled to tagging data
  - Weights at age for population and fishery
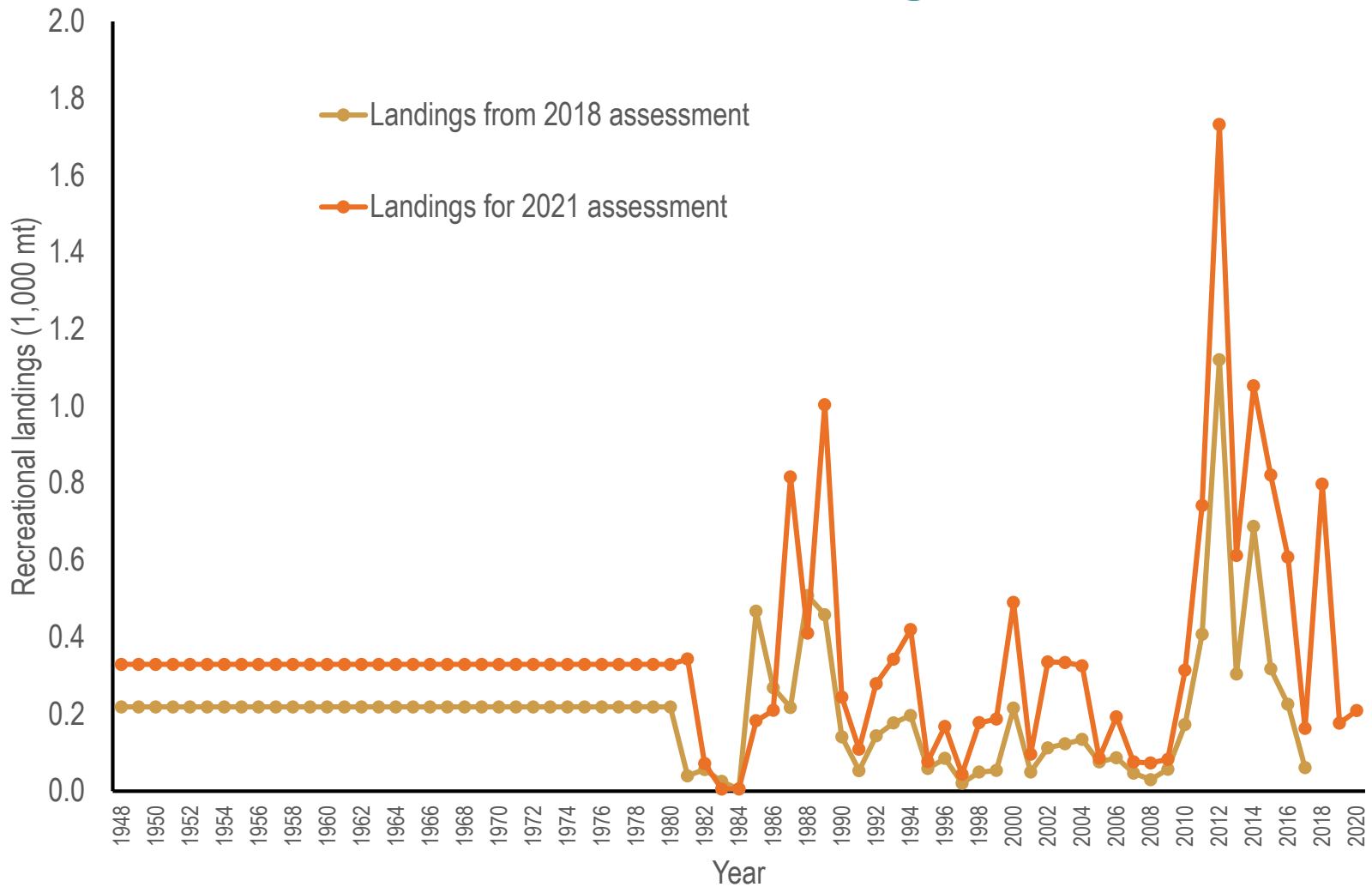 - Fecundity, maturity, sex ratio

Updated seine index
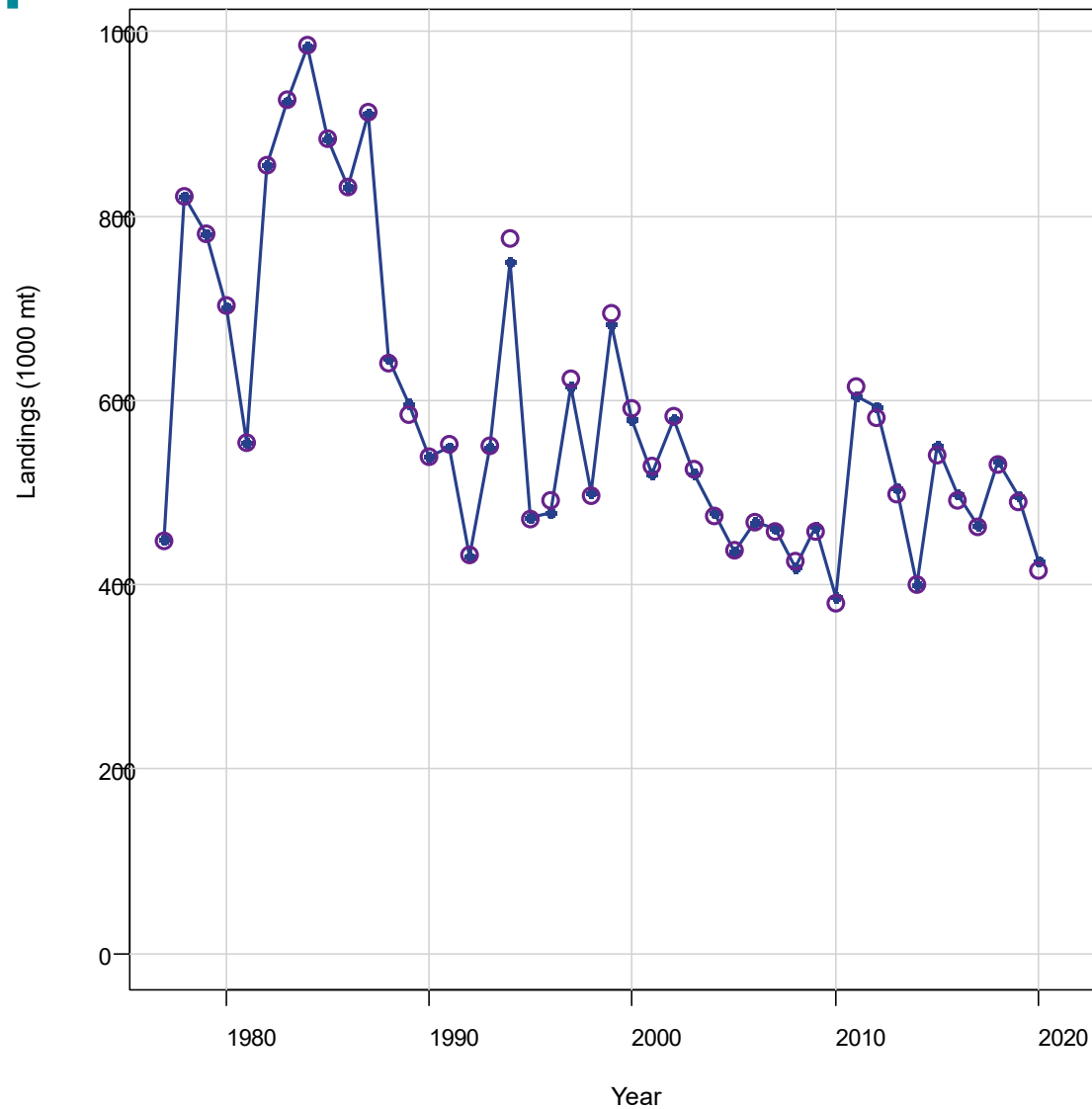
Updated gill net index
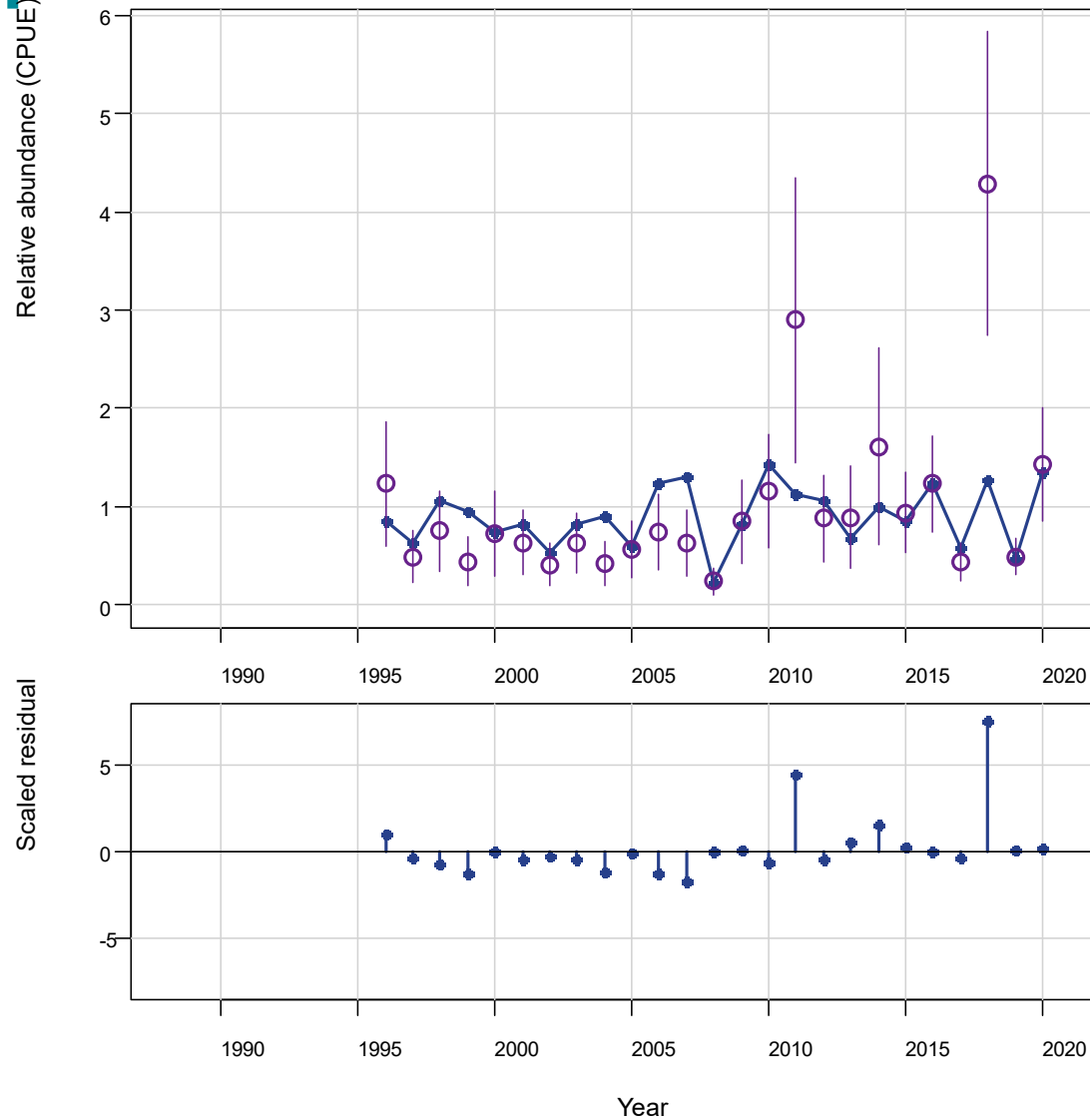
Updated recreational landings

Model structure

- BAM [Beaufort Assessment Model] – SCAA model

- 1977-2020   (Jan 1 to Dec 31; annual time step)

- Ages 0 to 4+

- Landings data from 1977-2020

  - Age composition data 1977-2020

- LA gill net index 1988-2020 – July 1

  - Length composition data 1996-2020

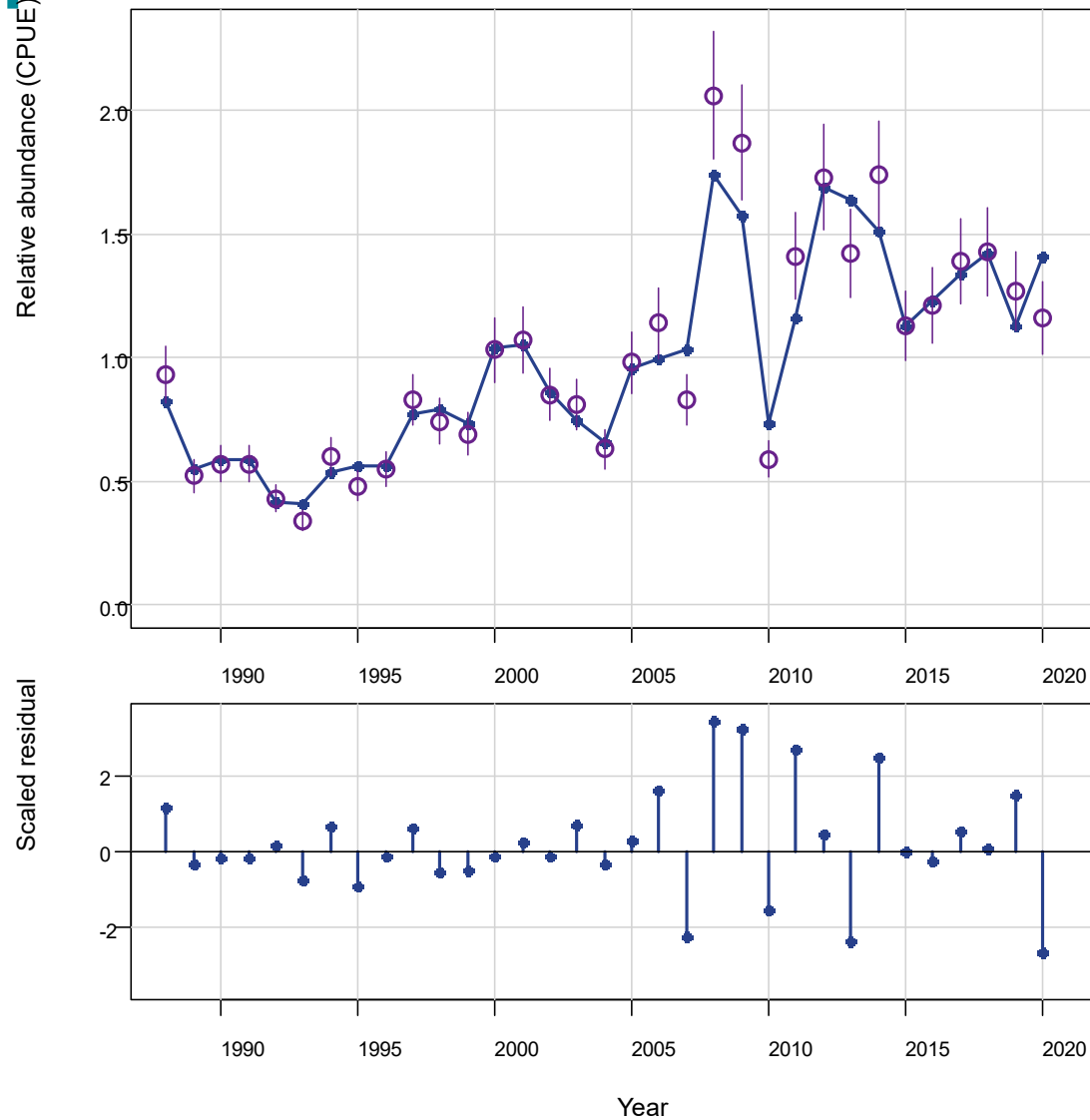- Seine (recruitment) index 1996-2020 – April 1
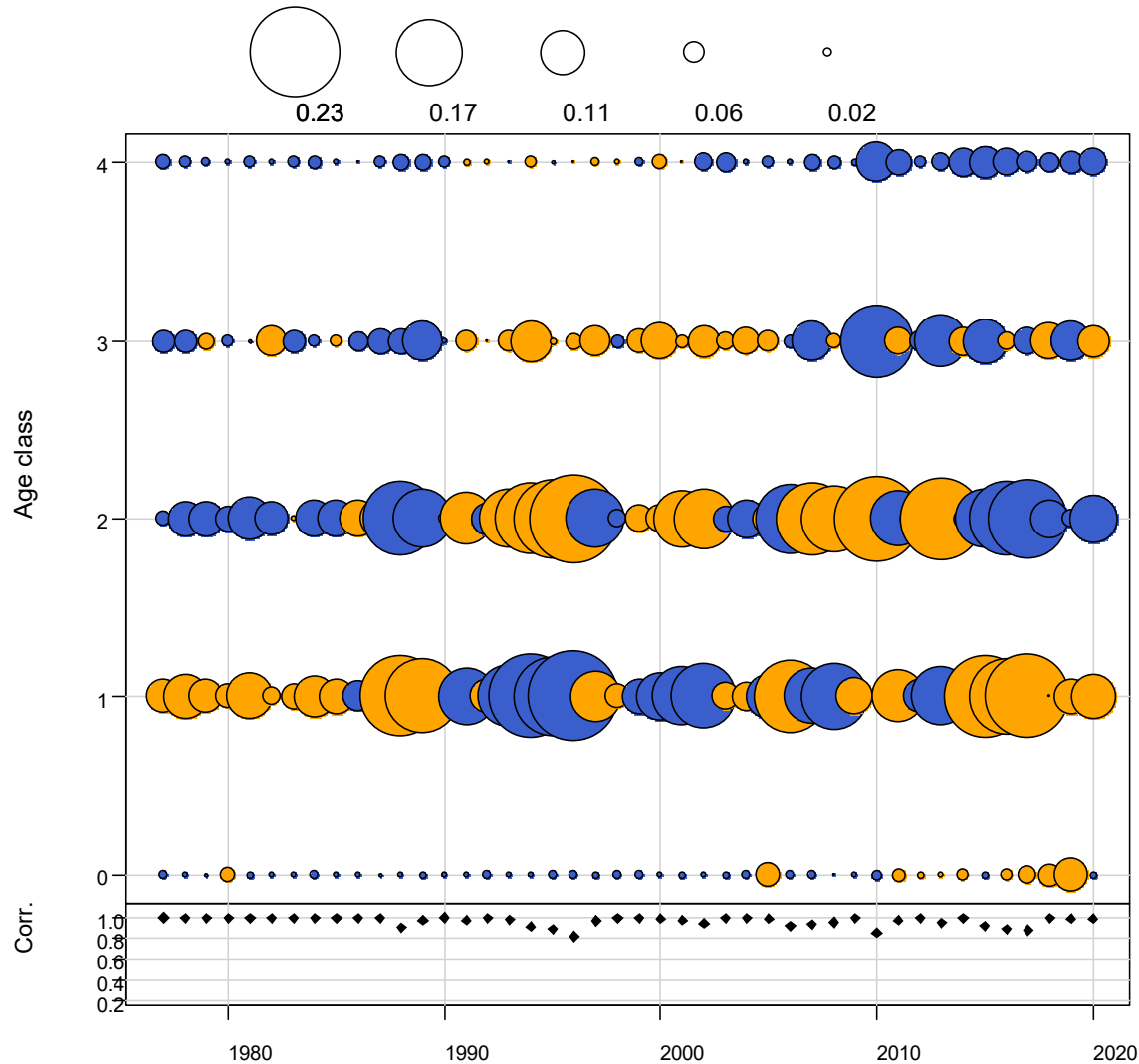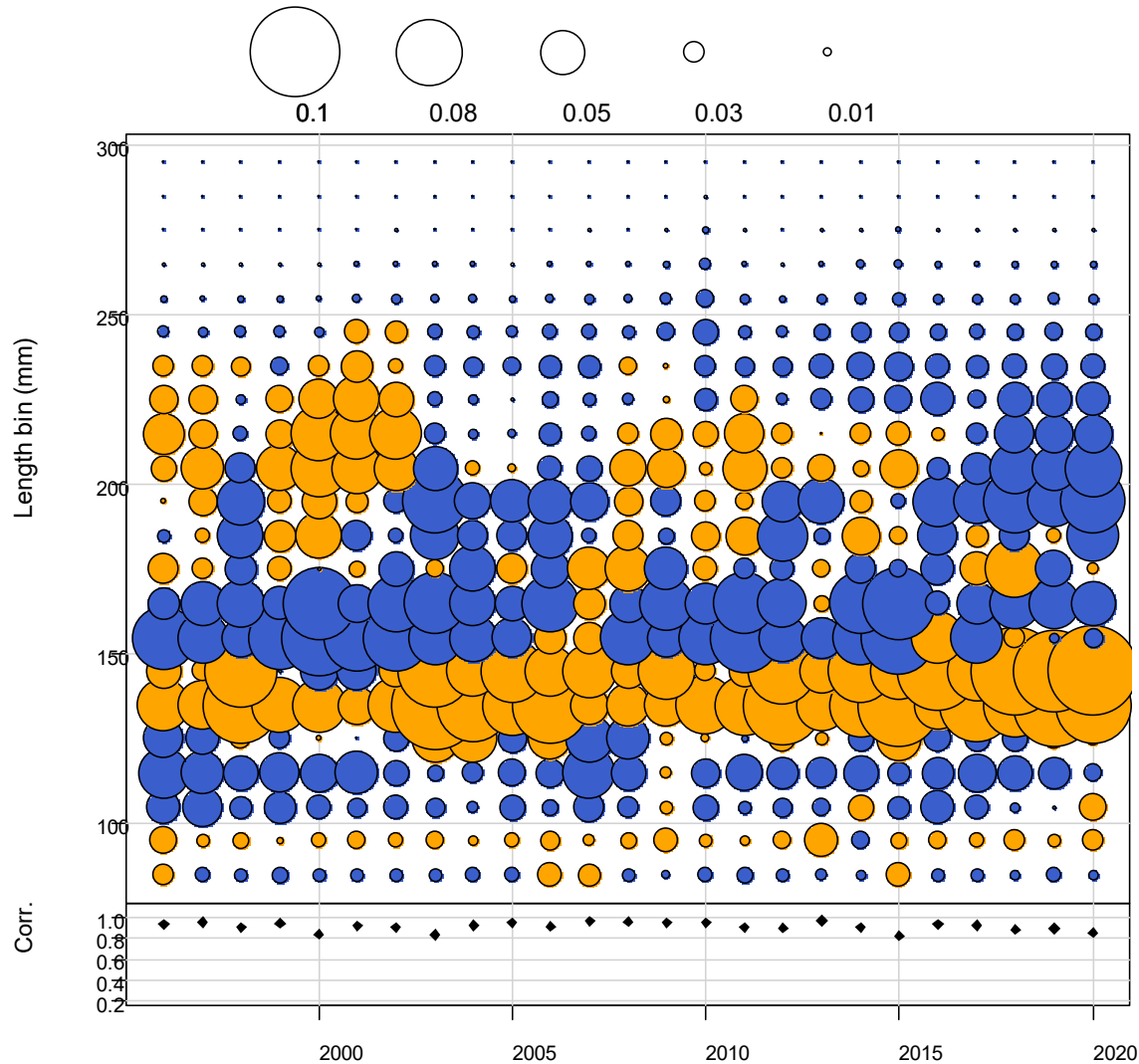
2021 Update assessment

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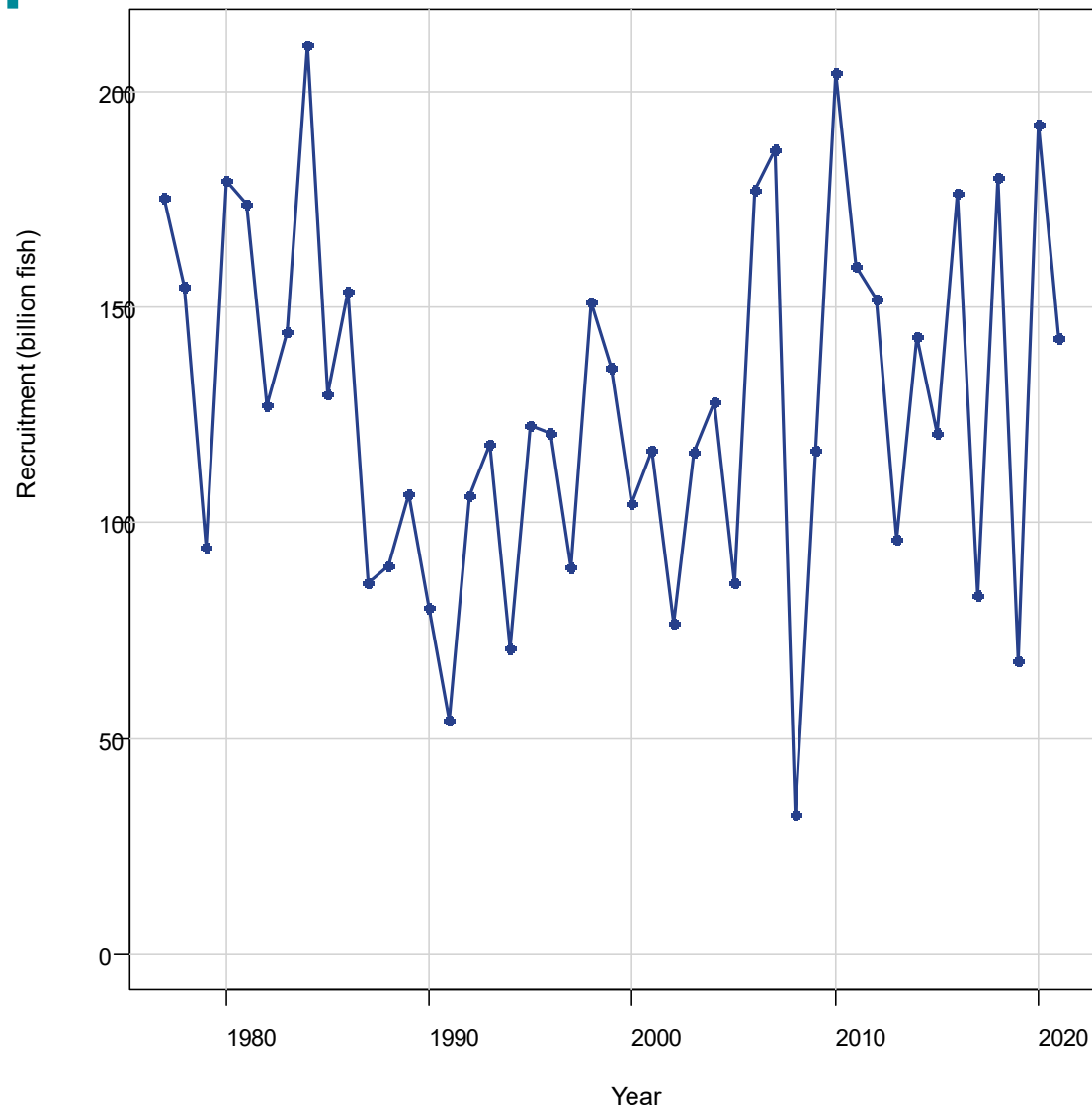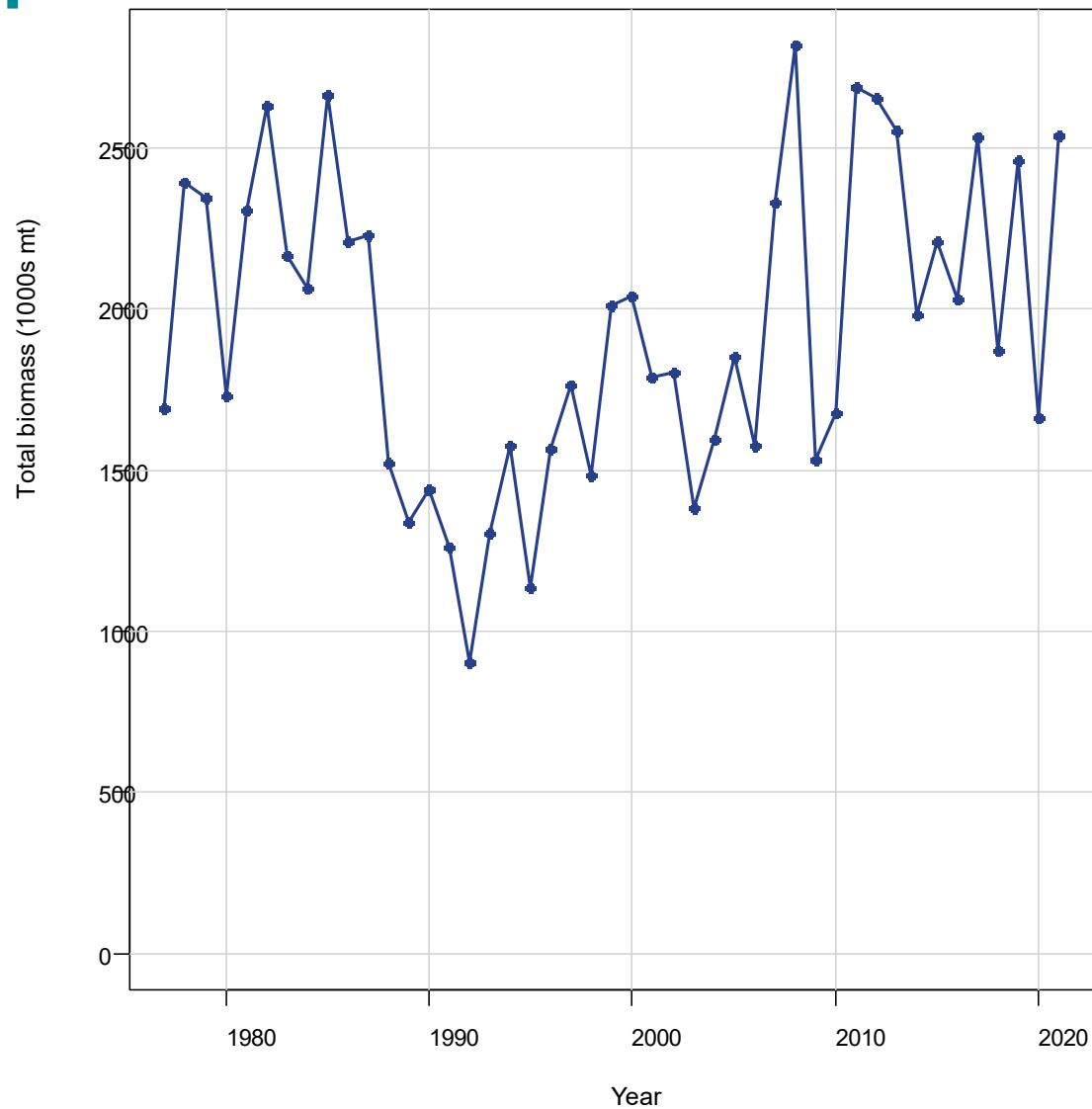
2021 Update assessment
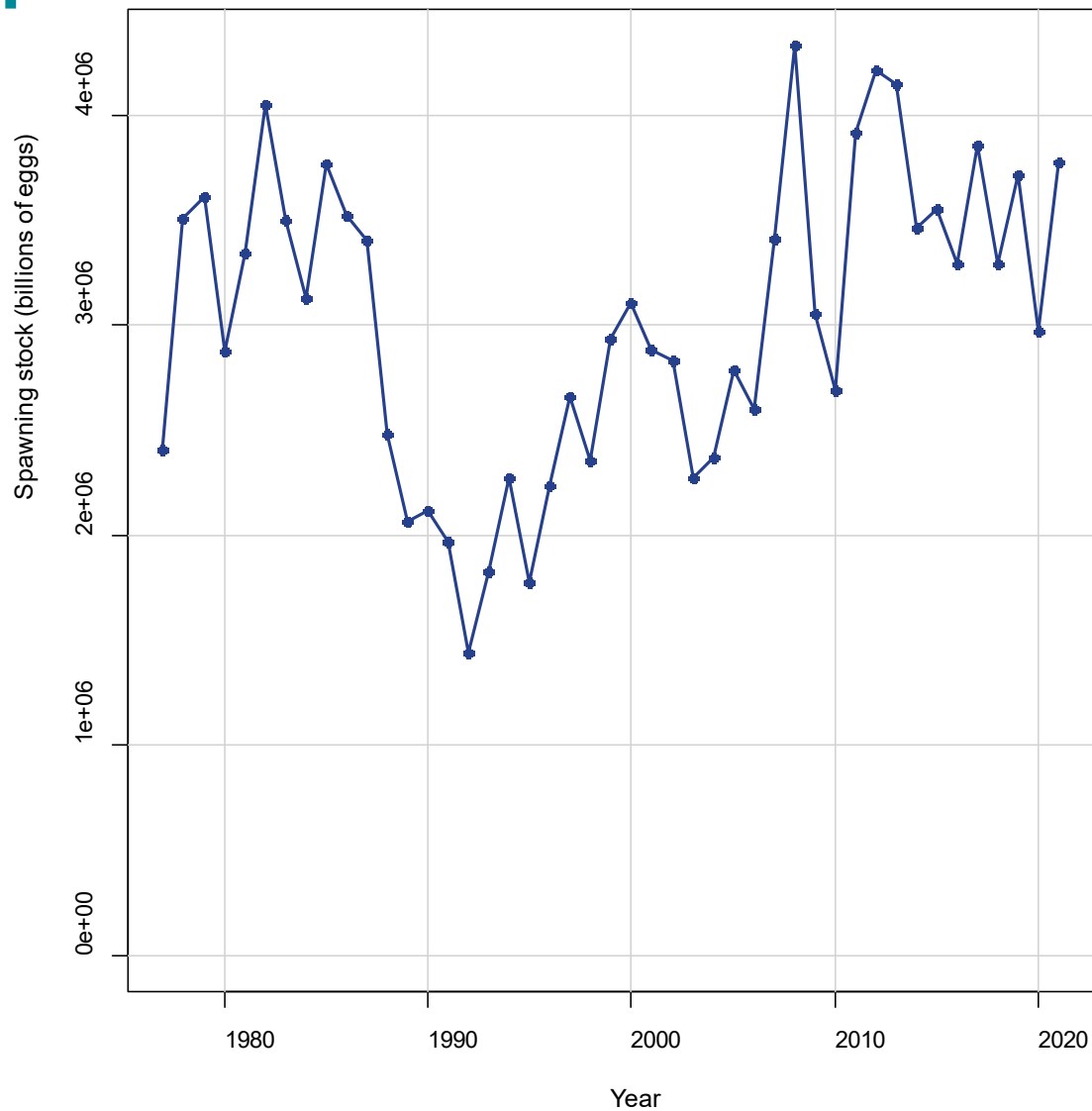
2021 Update assessment

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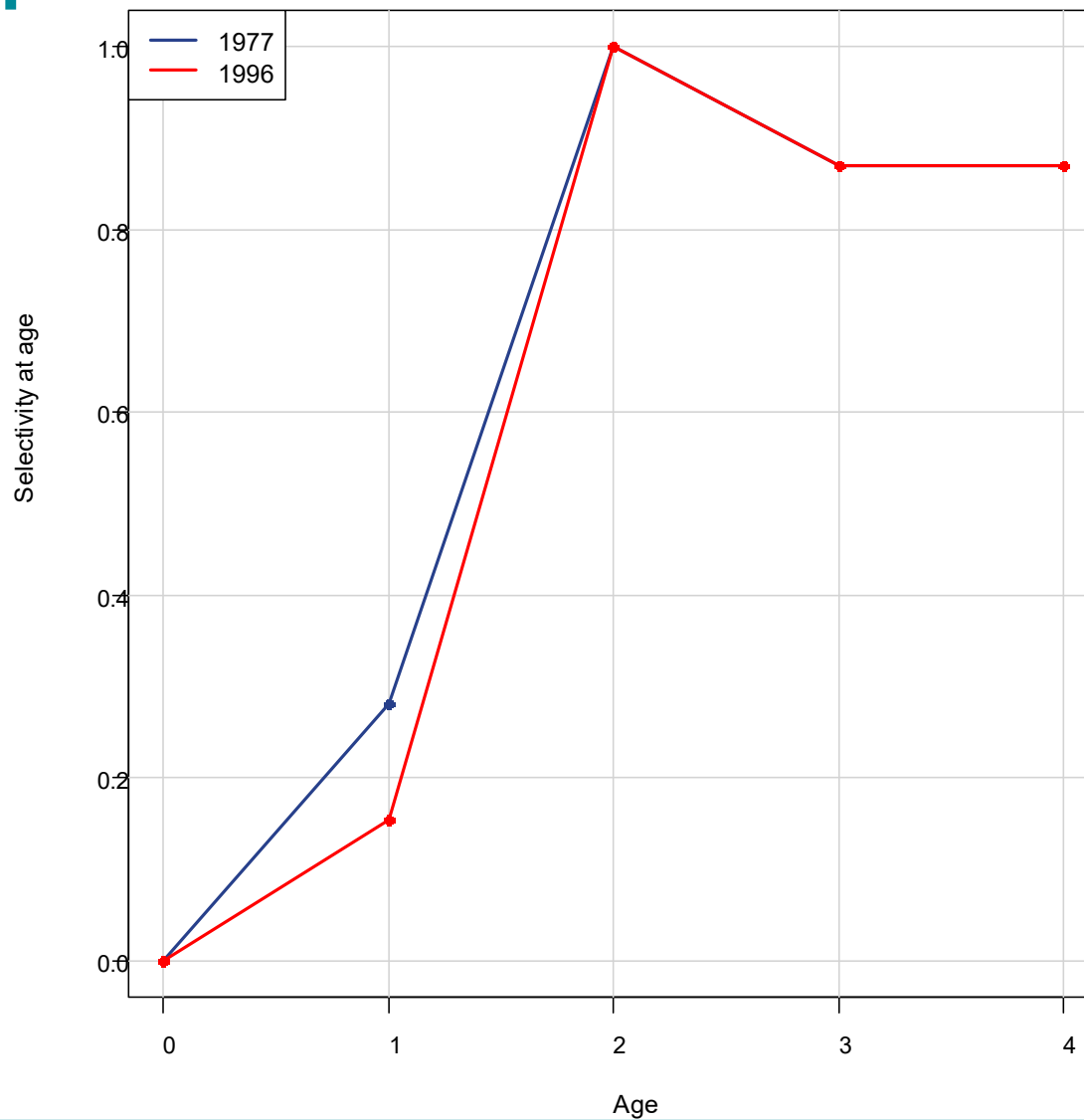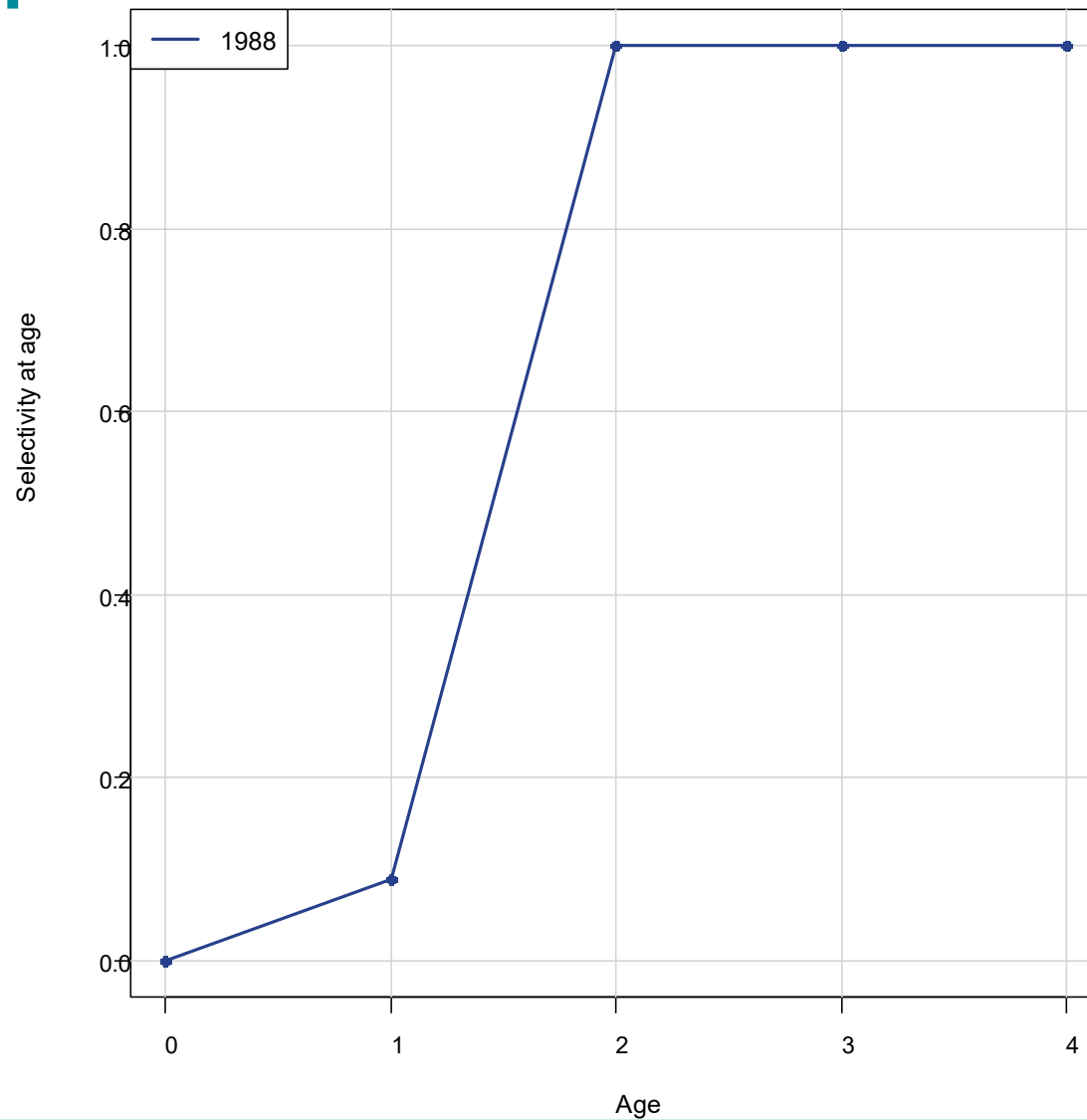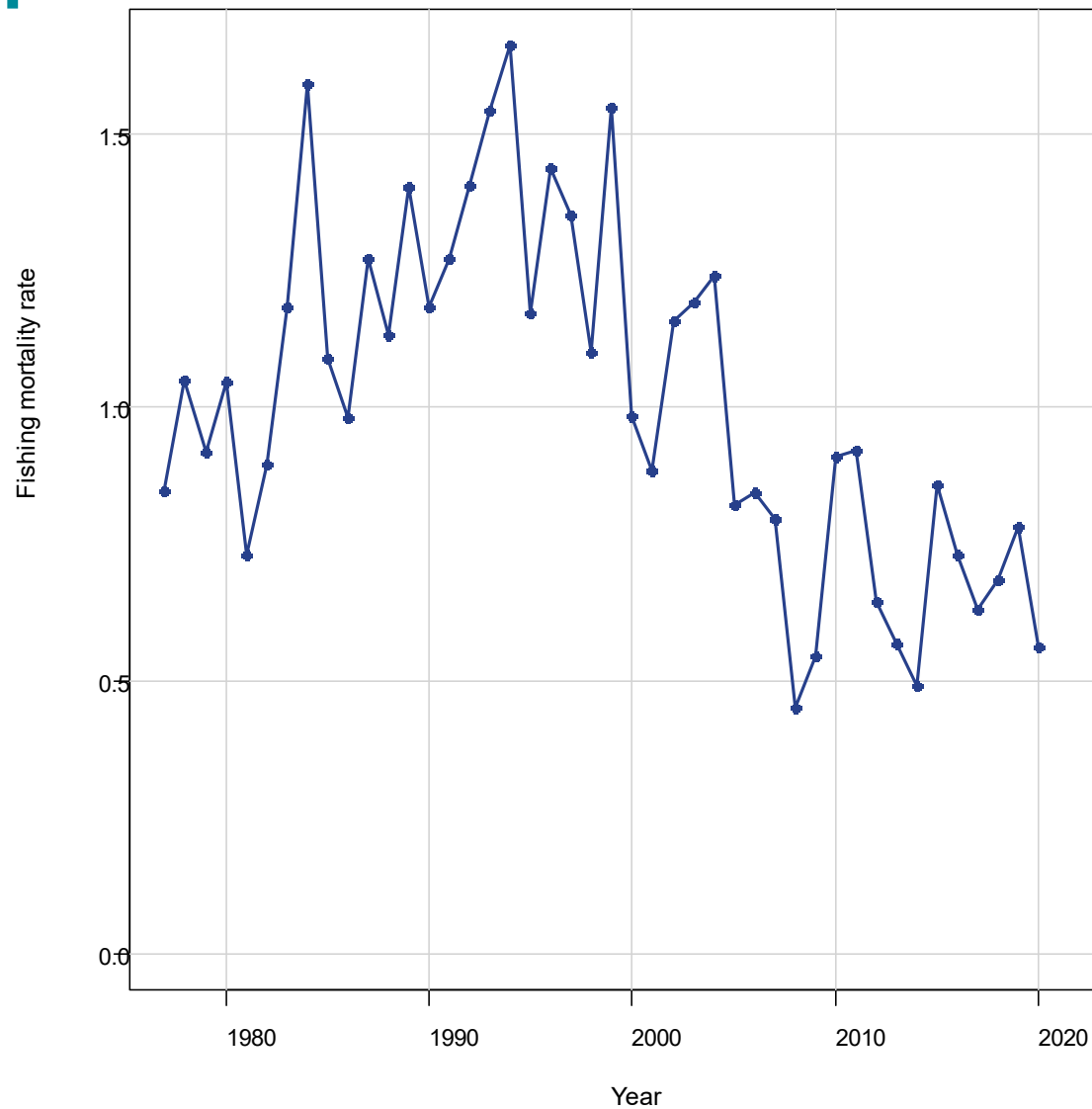# 2021 Update assessment

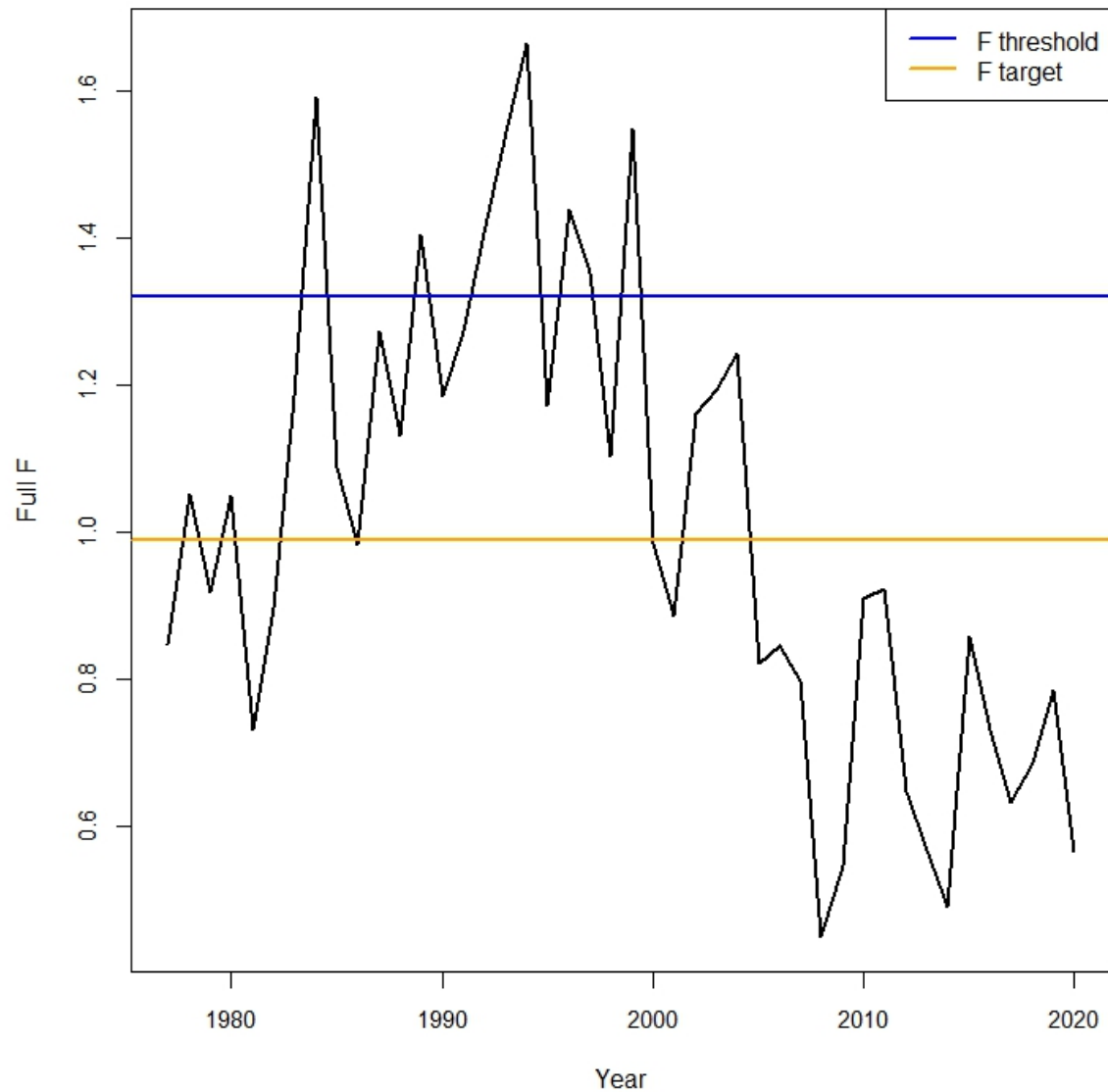# 2021 Update assessment

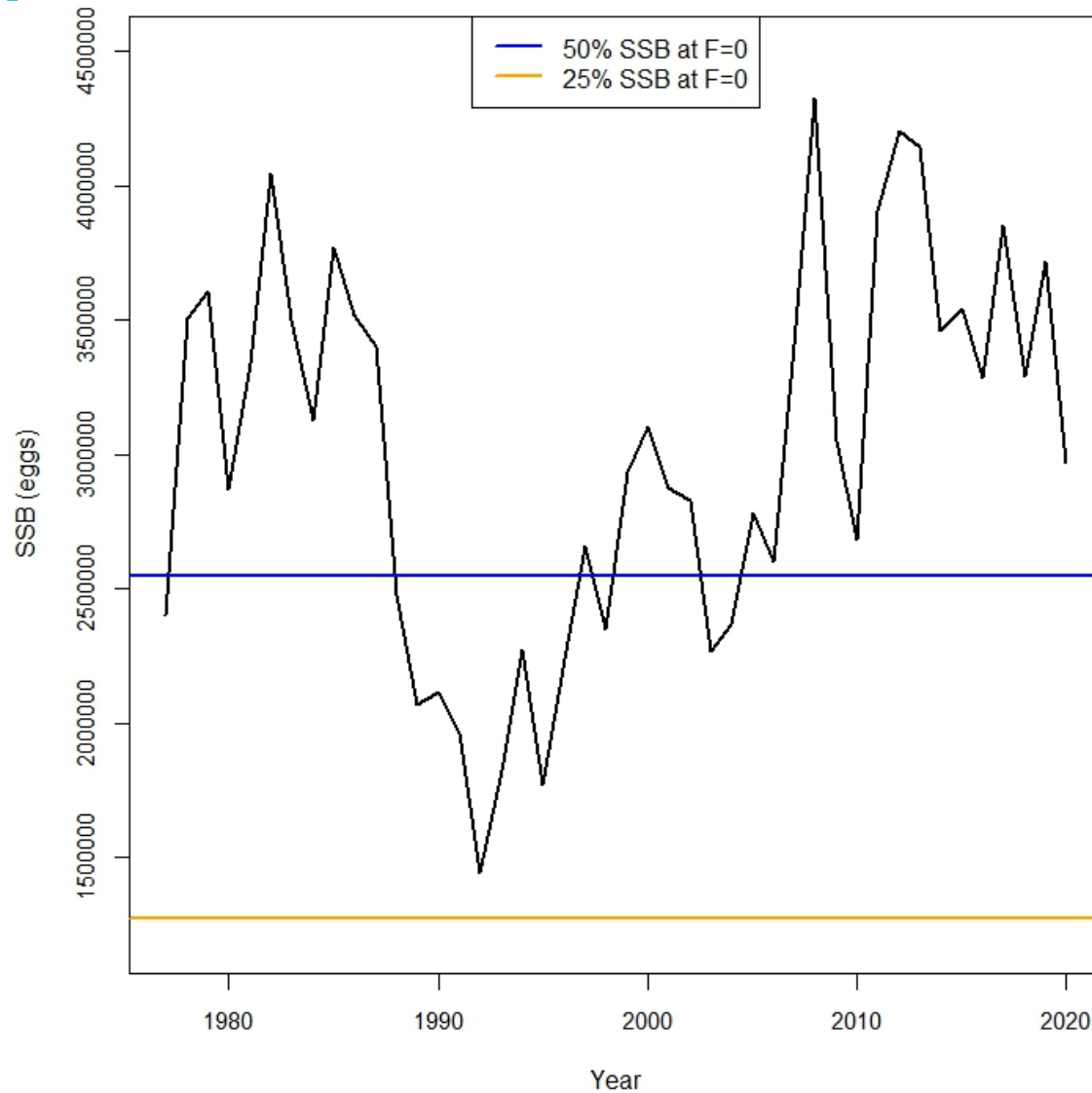# 2021 Update assessment

2021 Update assessment

Benchmark or Reference Point definitions

- F based metrics
  - F=M (threshold); F=0.75M (target)
    - Geo mean of ages-0, -1 and -2
    - F = 1.32 (threshold) and F = 0.75*1.32 = 0.99 (target)
- SSB based metrics
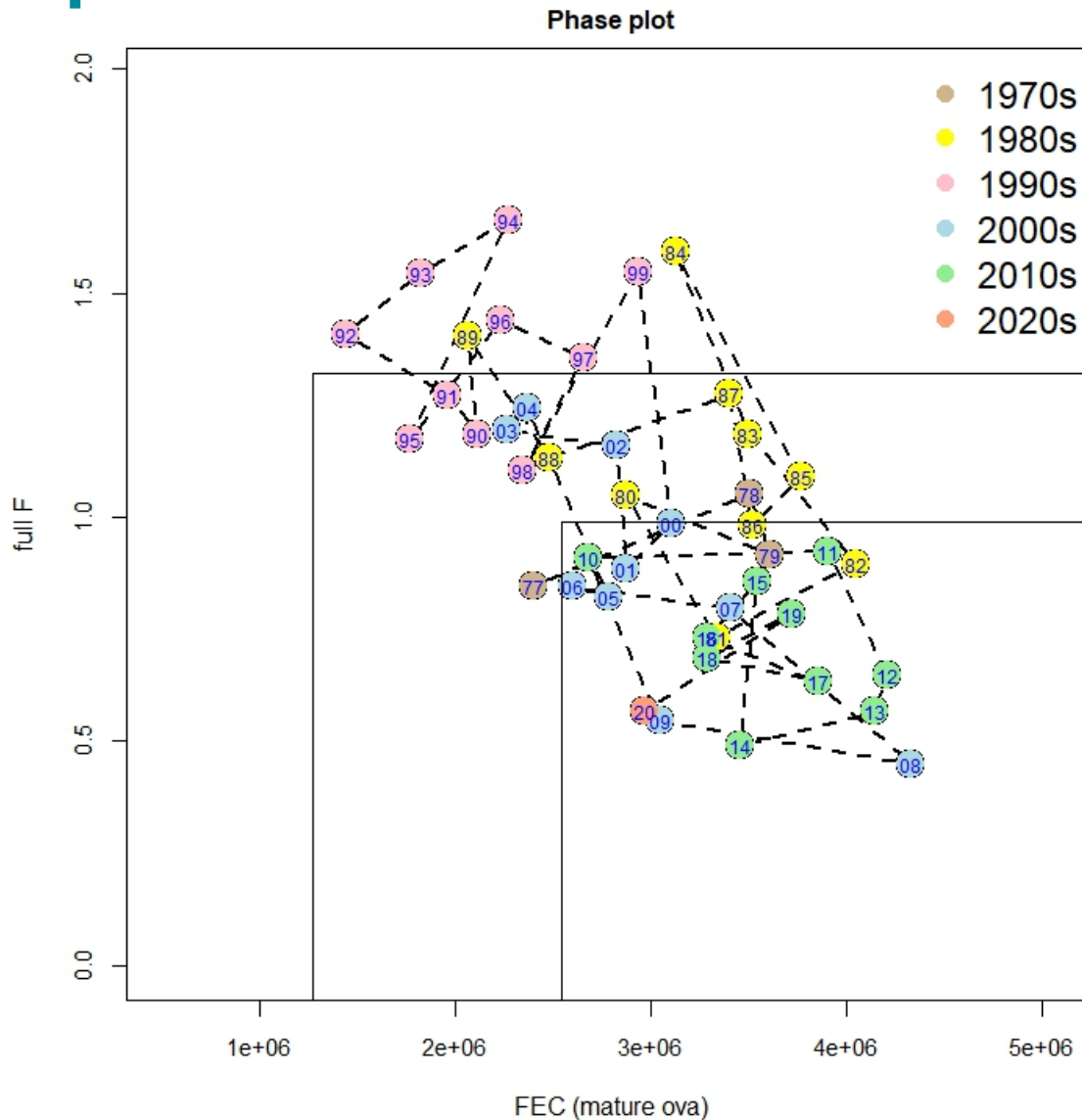 - 25% (threshold) and 50% (target) of the equilibrium value of SSB when F=0
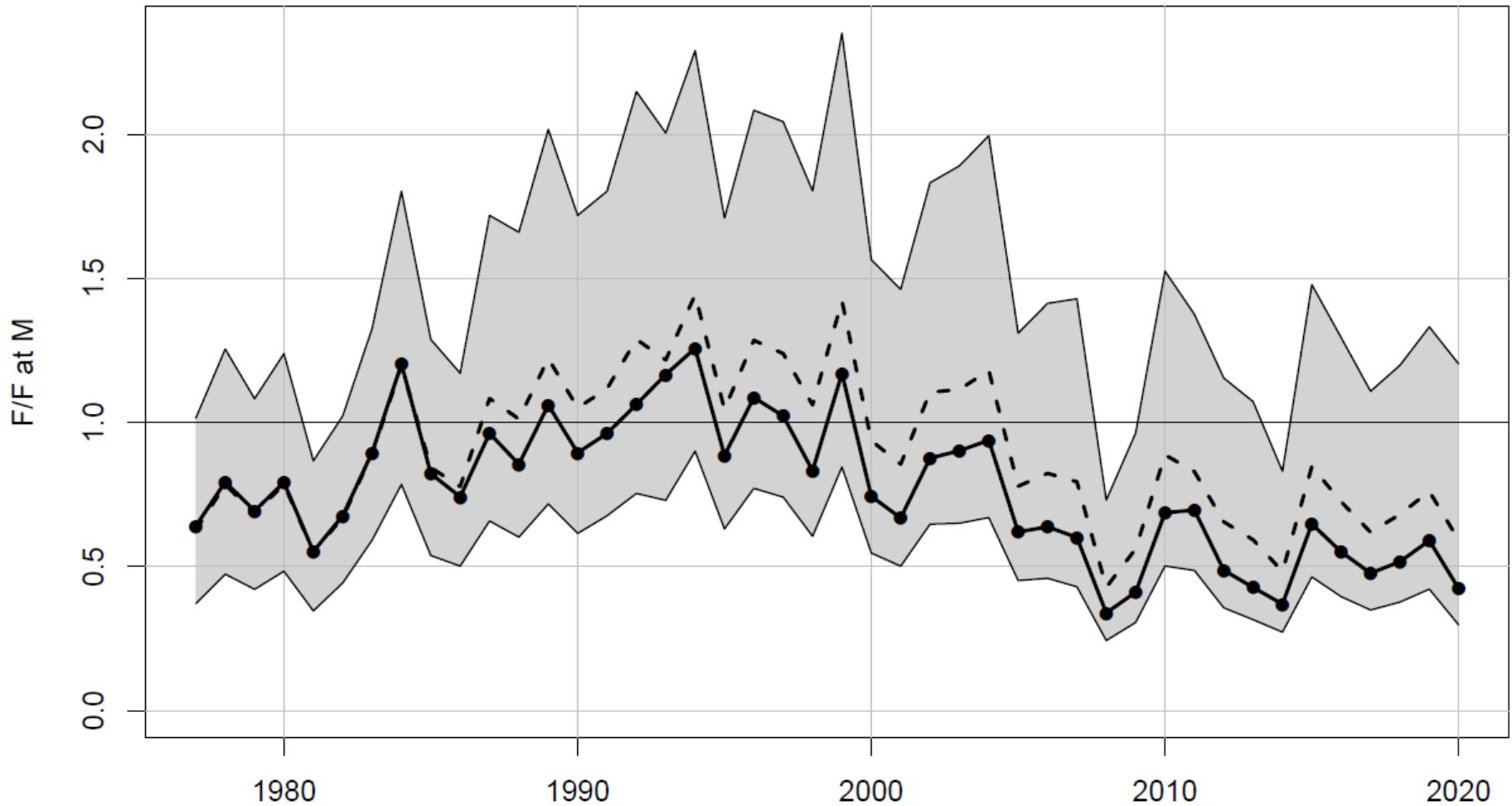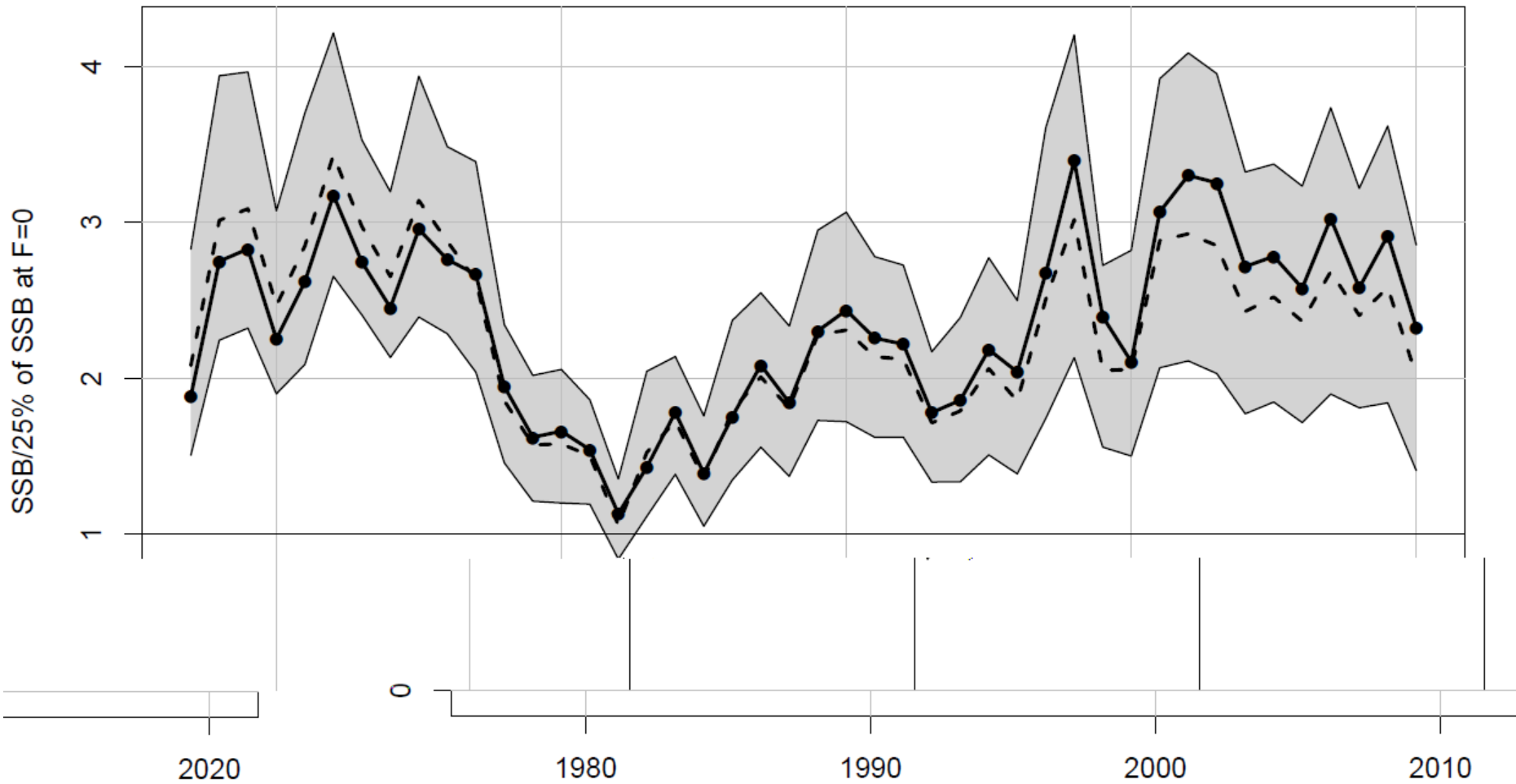
2021 Update assessment

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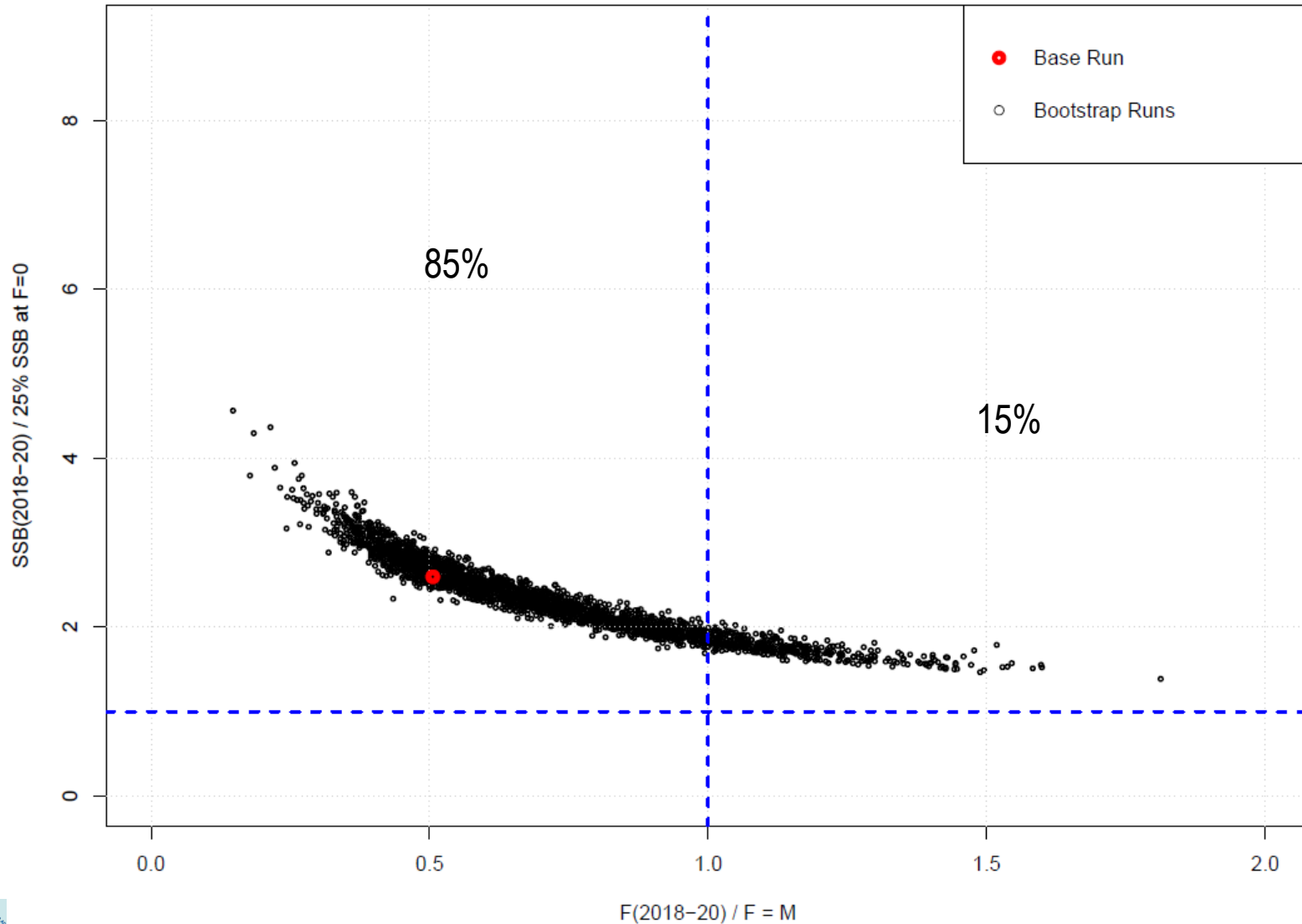

Phase plot

Monte Carlo Bootstrap Ensemble

Monte Carlo Bootstrap Ensemble

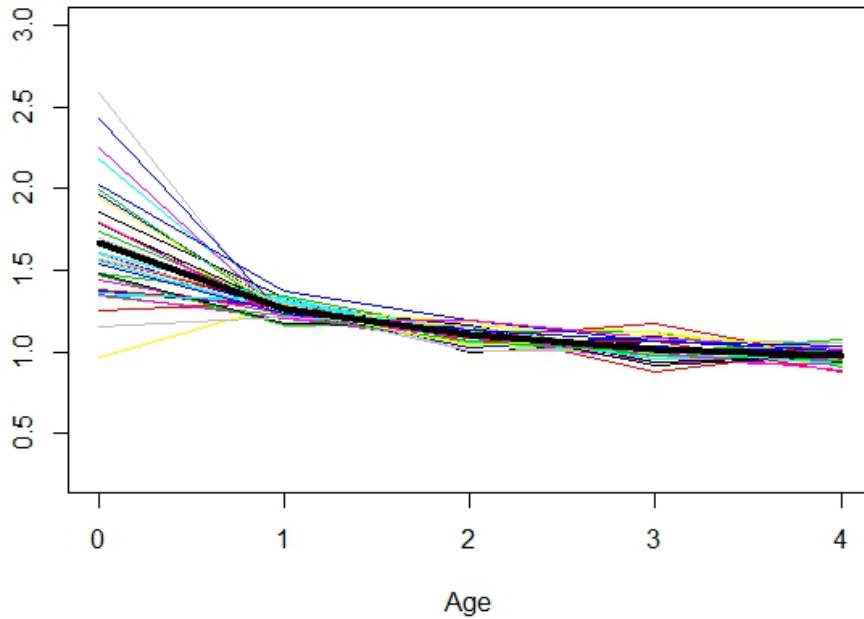# Monte Carlo Bootstrap Ensemble

Stock status determination

- Benchmarks
  - F = 1.32 (threshold); F = 0.75*1.32 = 0.99 (target)
  - SSB(FEC) based metrics – Threshold = 1,274,663 and Target = 2,549,325
  - Stock status determination
    - G. mean (2018-20) of F – 0.67 – **overfishing is not occurring**
    - G. mean (2018-20) of SSB – 3310900 – **not overfished**
    - Sensitivity analyses agree with determination
    - MCBE runs generally agree, but some uncertainty in F Threshold
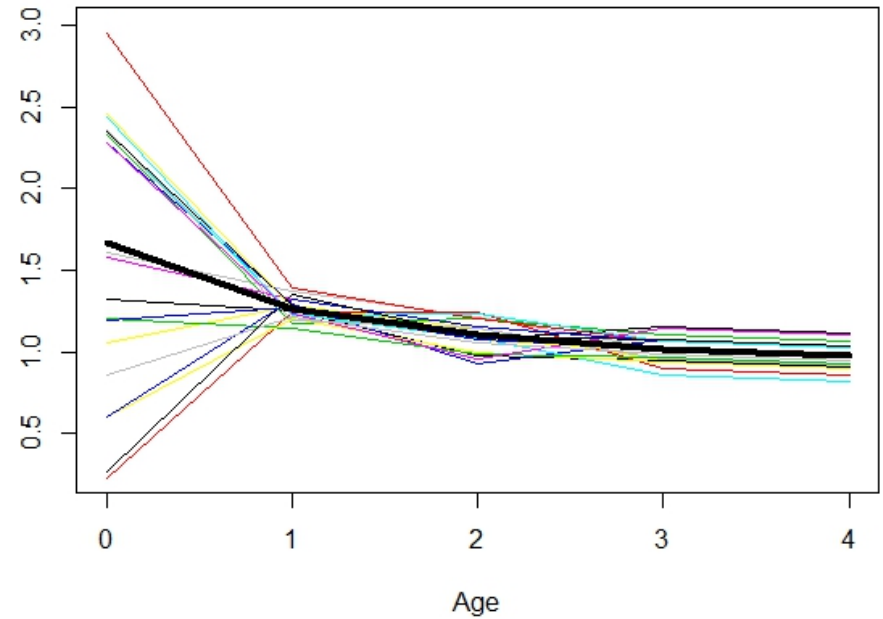
Sensitivity analyses

- M matrix from each EwE model
  - Gulf-wide: age (0-4) and year (1980-2016)
    - Used averages to fill missing years of data
    - Scaled to M vector from base [used deviations]
  - NGOMEX: age (0-3) and year (2000-2017)
    - Used averages to fill missing ages and years of data
    - Scaled to M vector from base [used deviations]
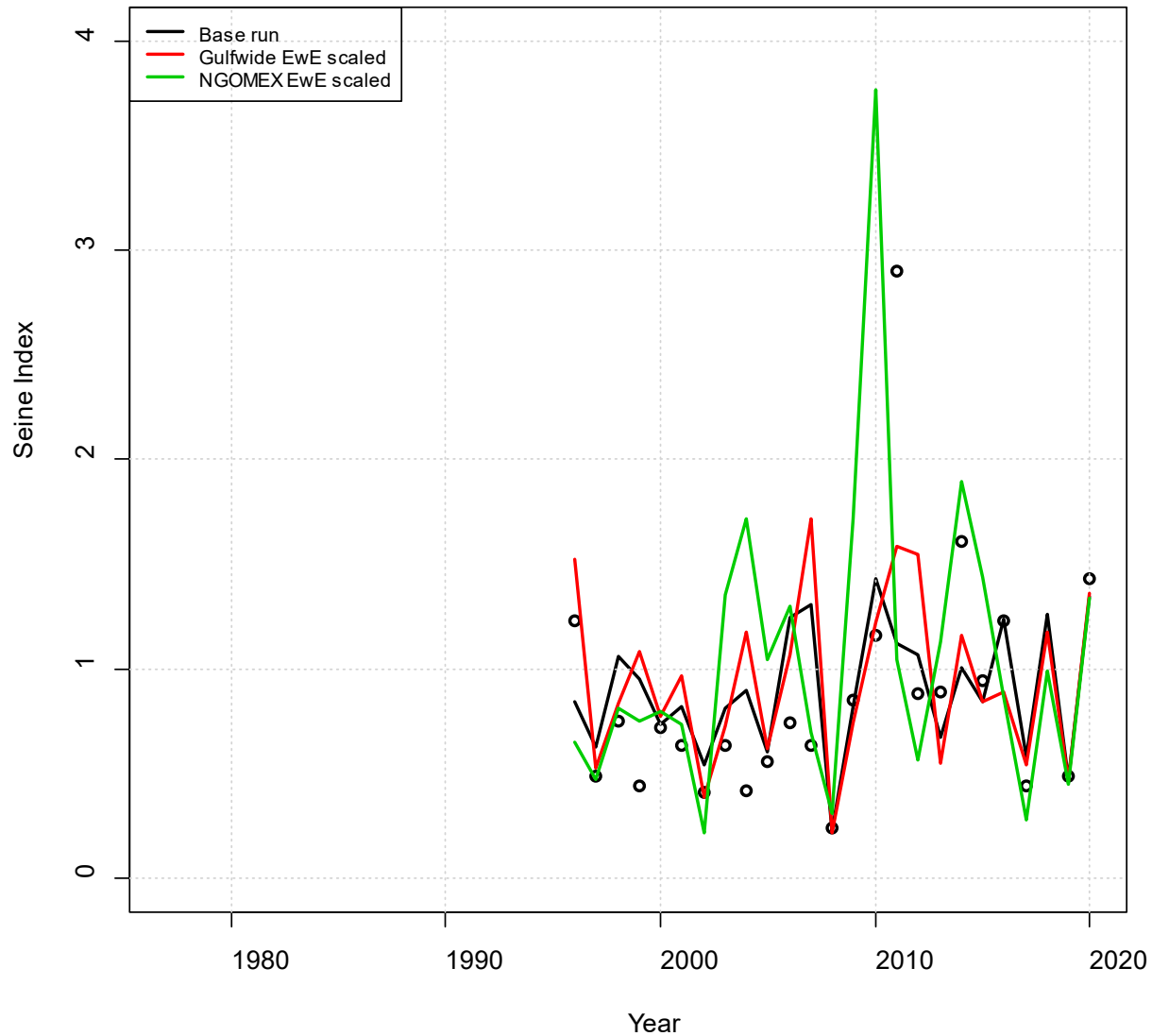
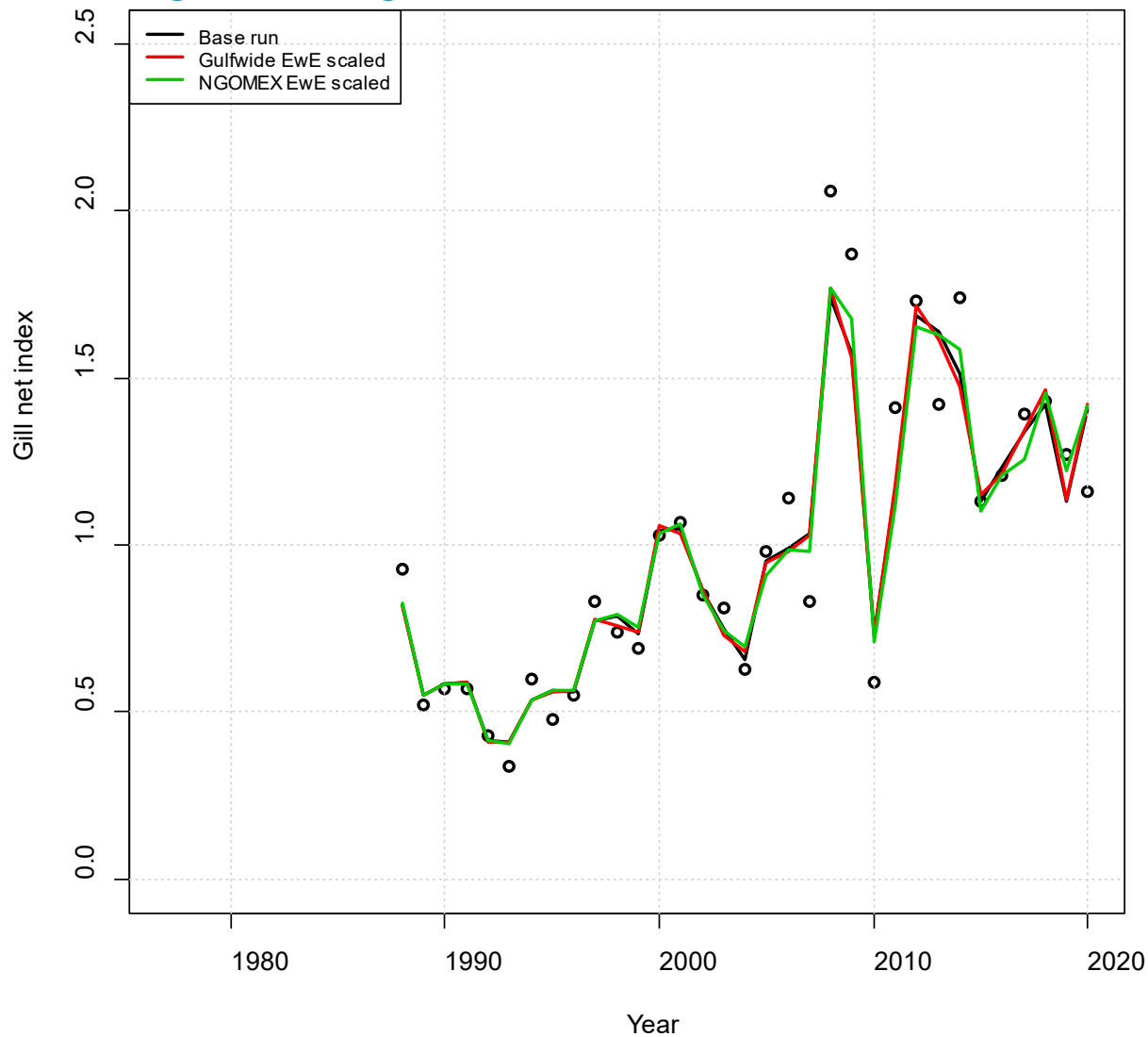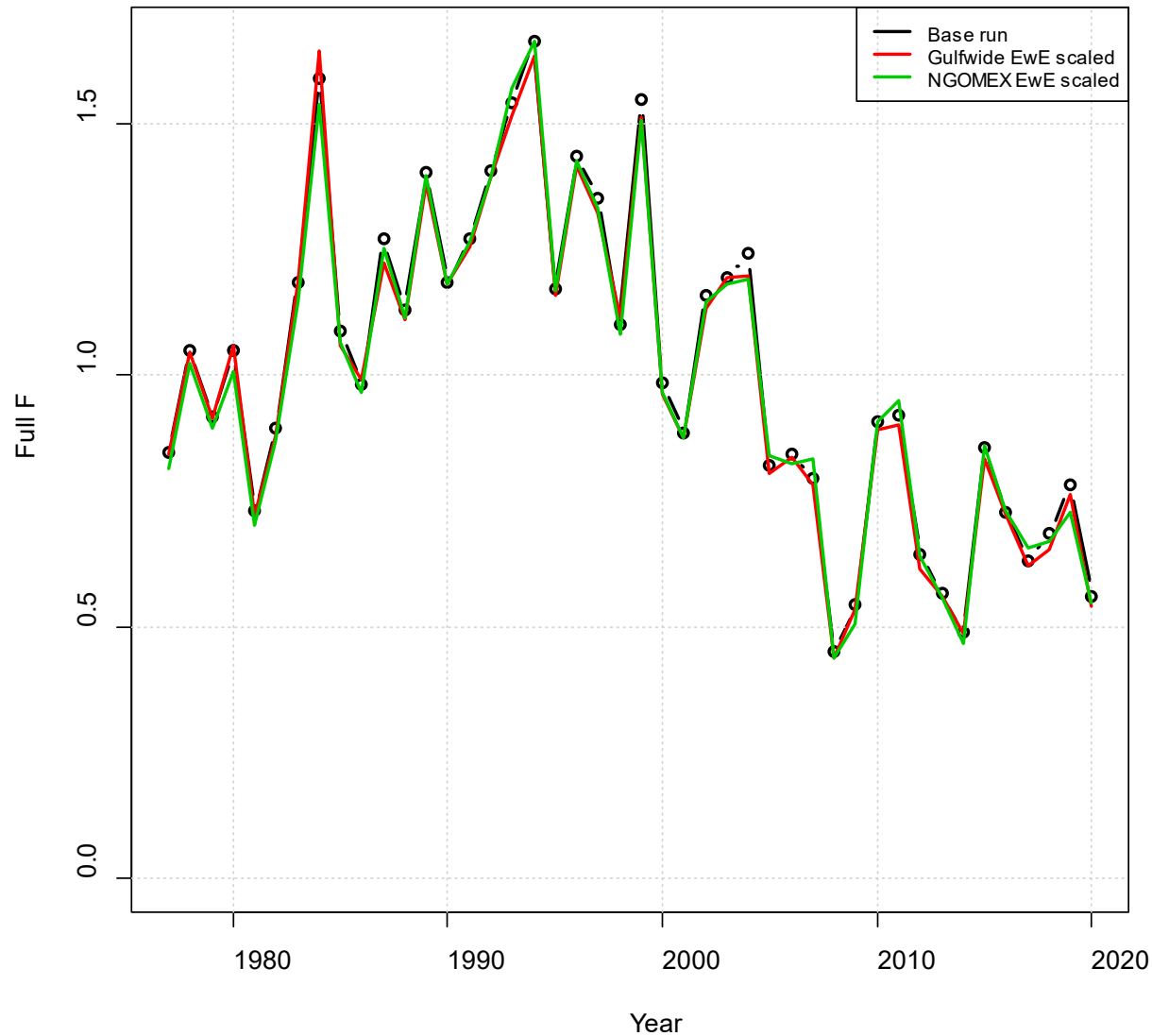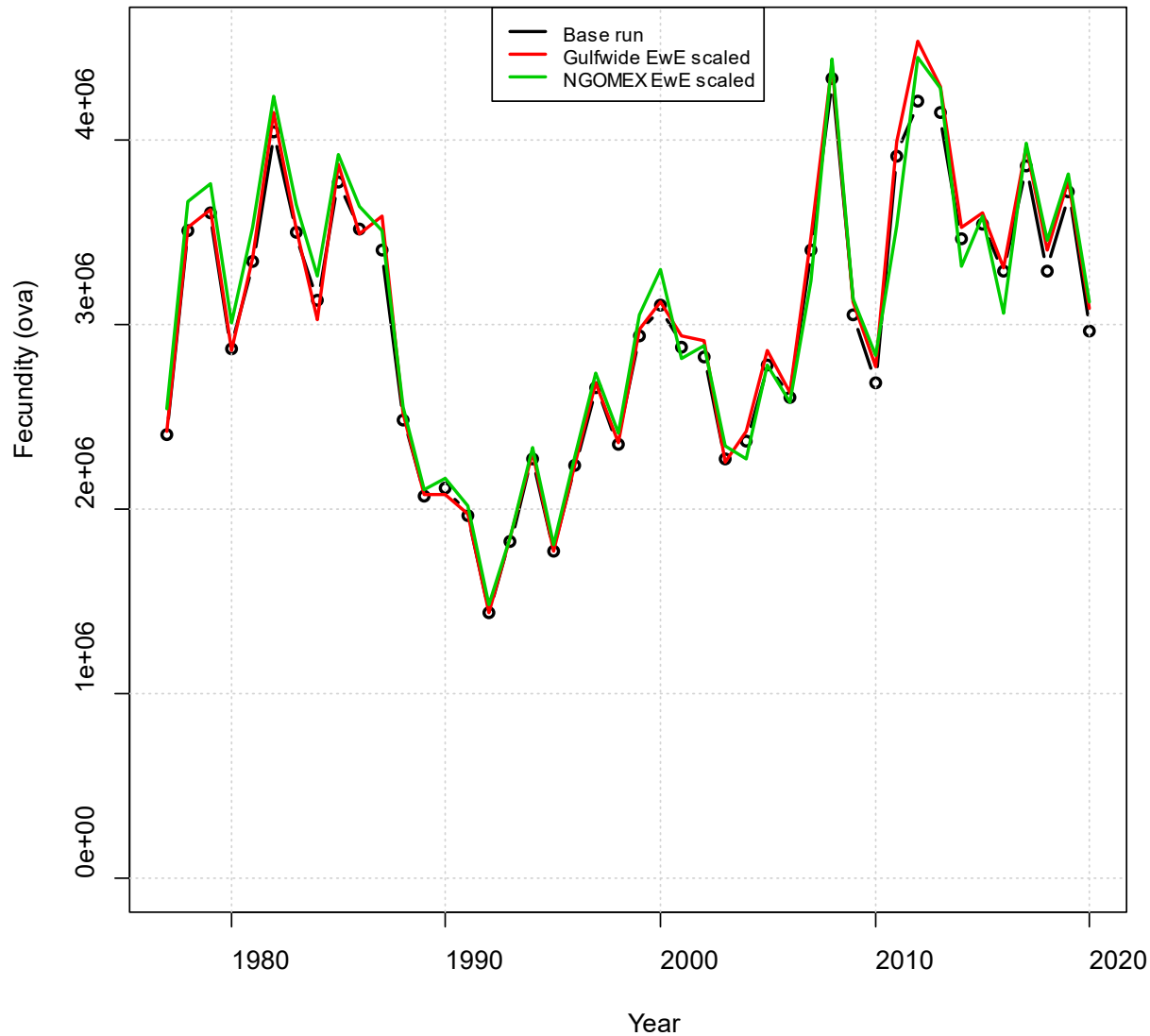# Sensitivity analyses – M comparison figures

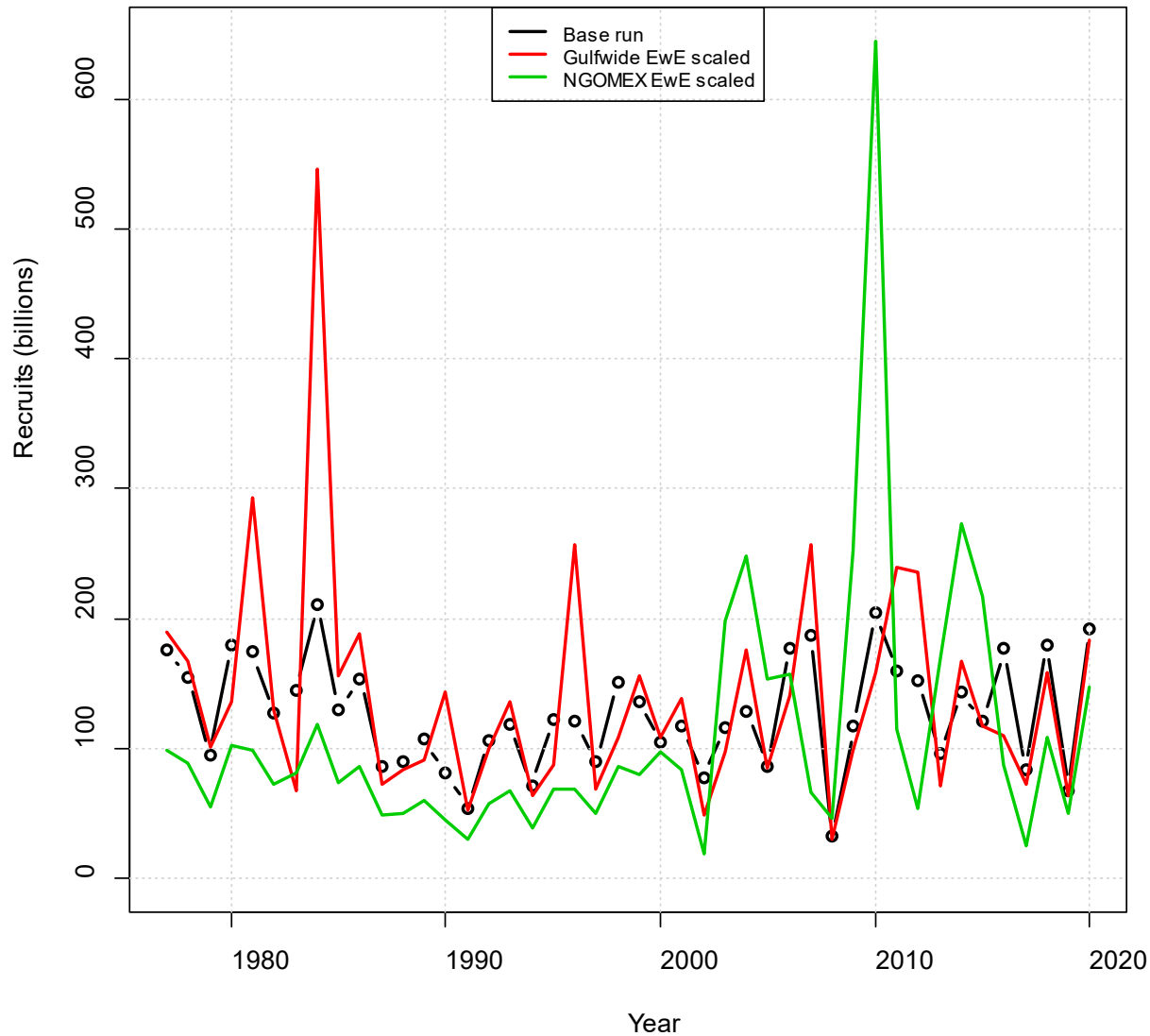Gulfwide

NGOMEX

Sensitivity analyses
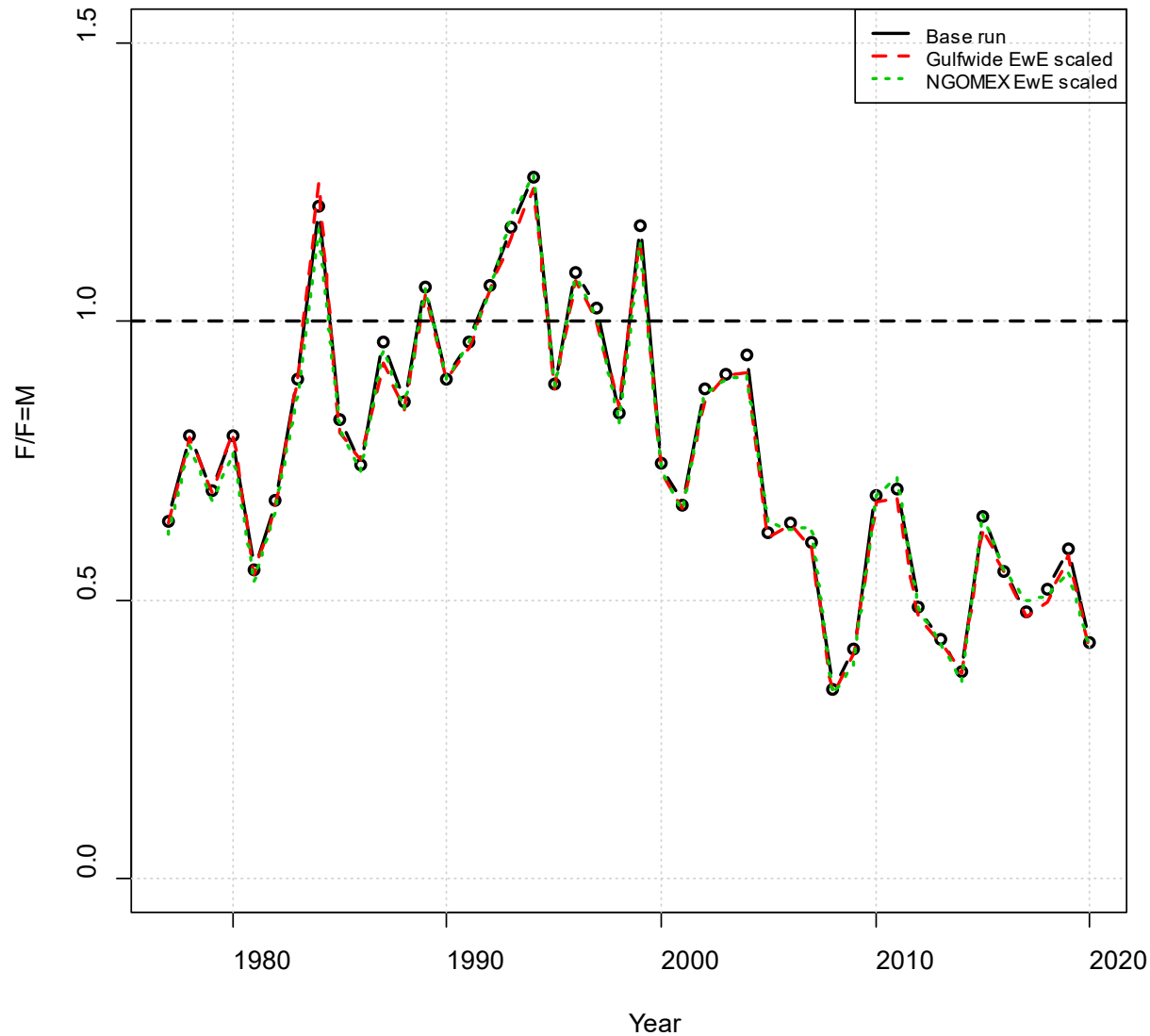
Sensitivity analyses

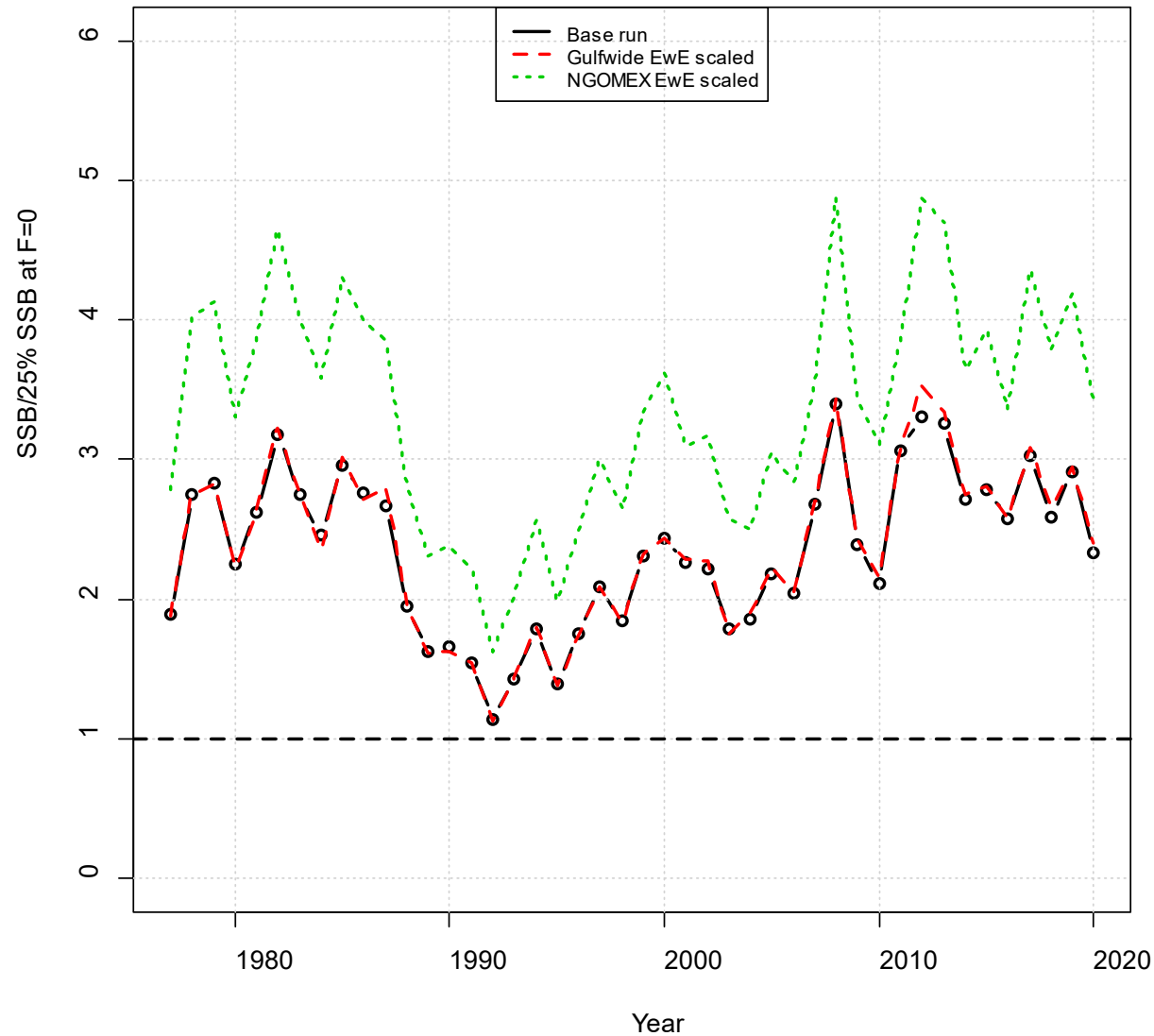# Sensitivity analyses

Sensitivity analyses

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Questions?

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