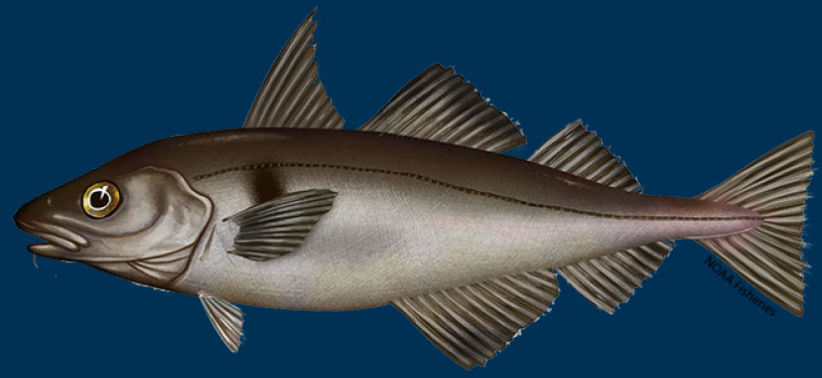
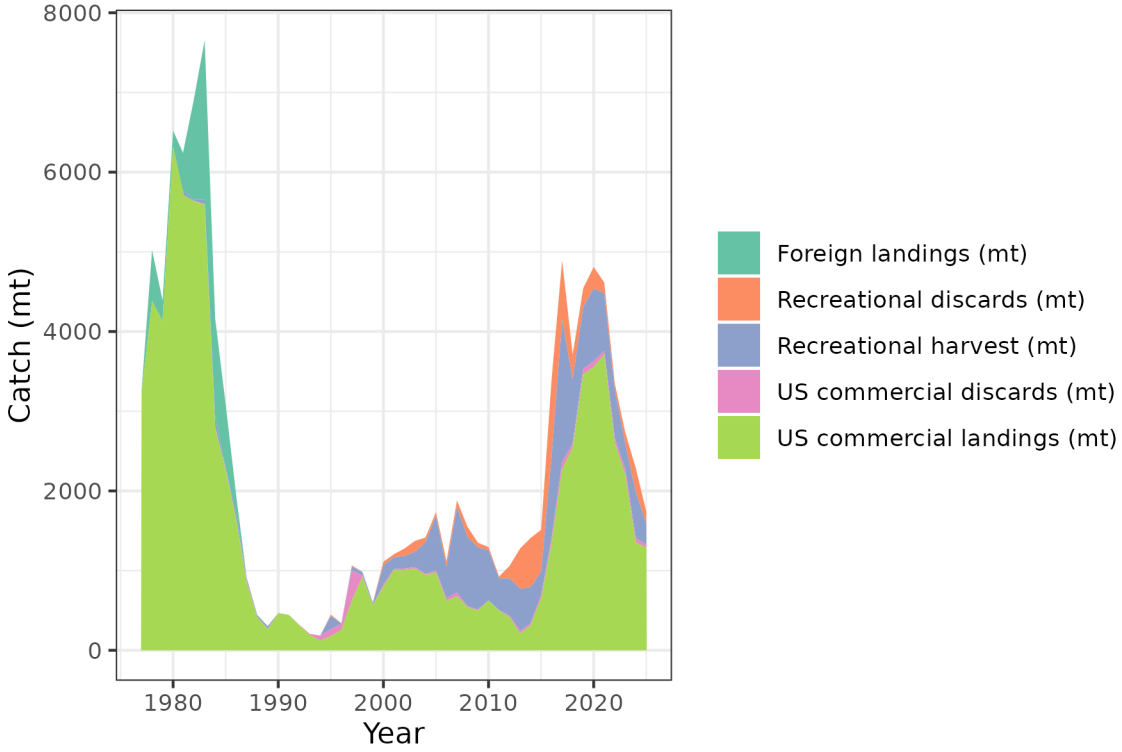
Gulf of Maine haddock

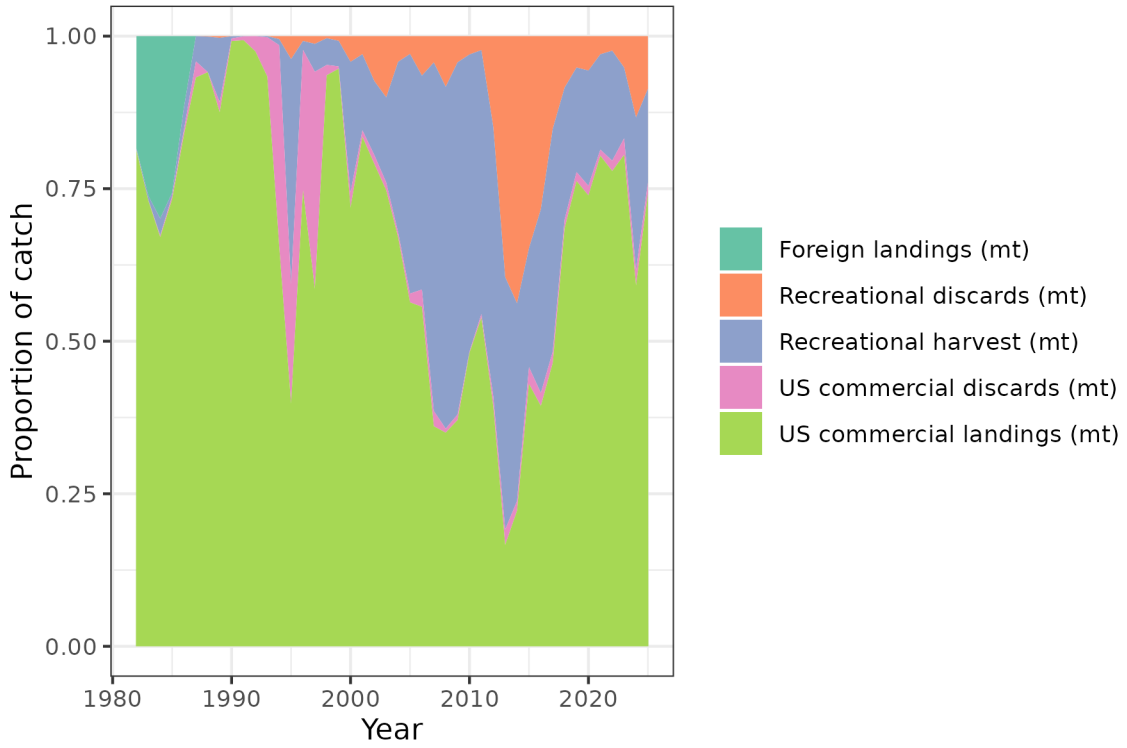
2026 Management Track Assessment Summary



October 27, 2026
NEFMC SSC Meeting

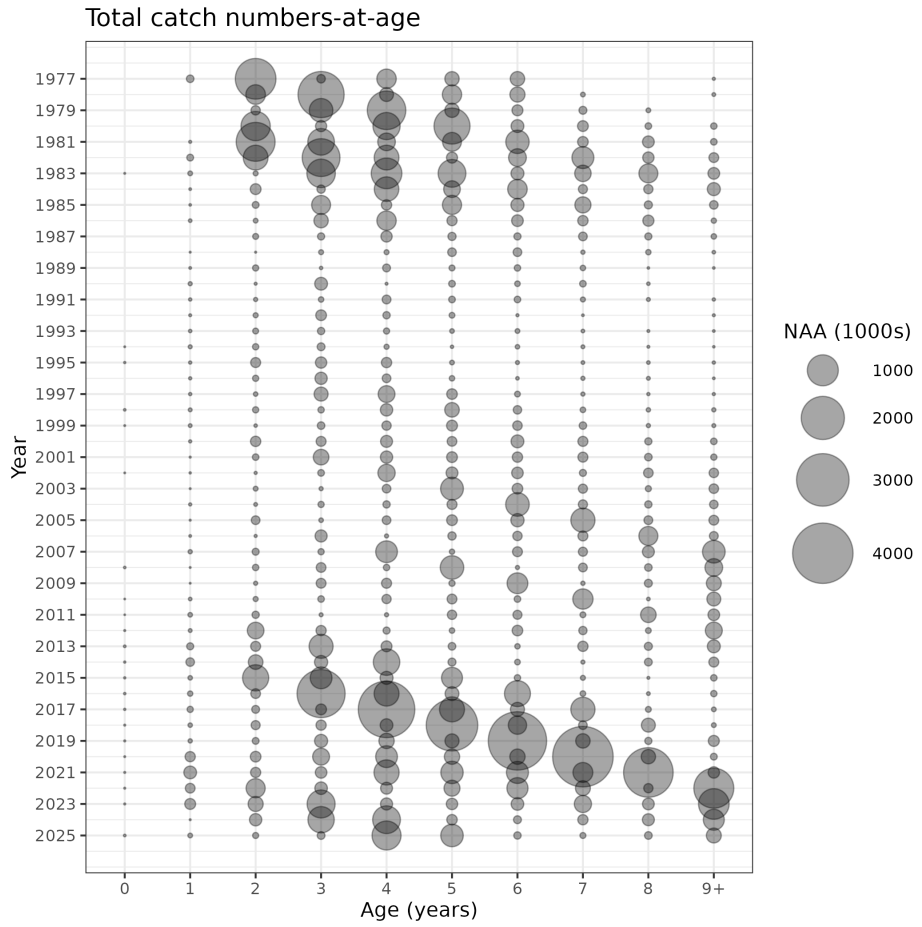
Total catch by source

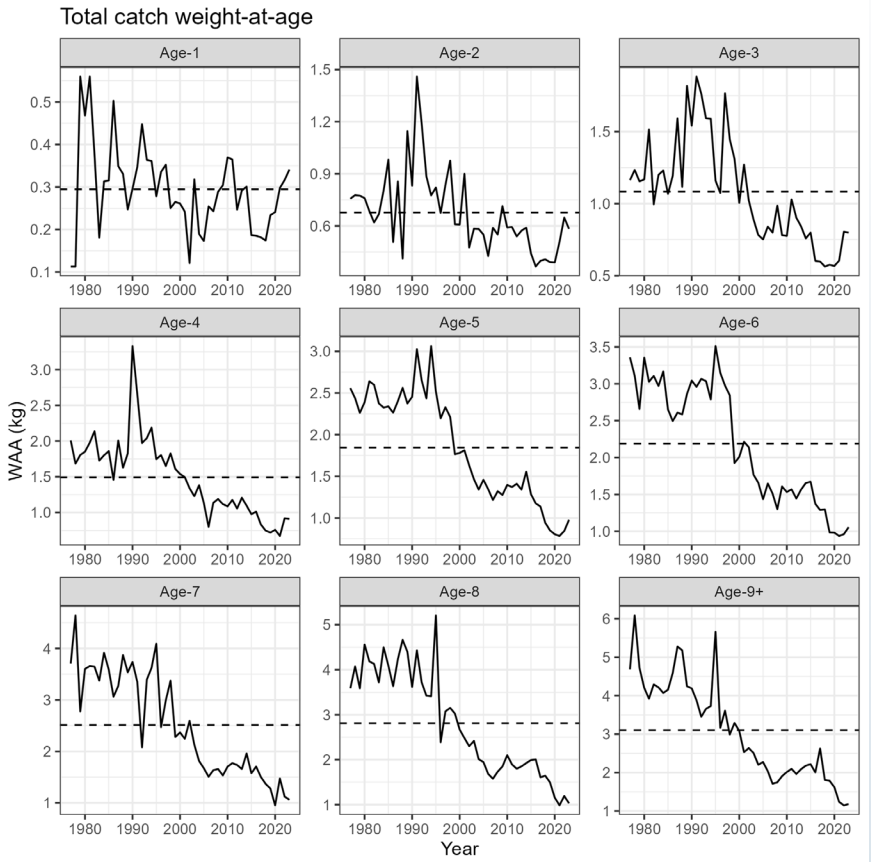




Total catch NAA and WAA

- Good tracking of strong cohorts





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Commercial landings: Recent biological sample amounts

- All market categories were sampled in all quarters in 2024 and 2025

Number of lengths

Year	Category	Q1	Q2	Q3	Q4
2022	Large	100	0	0	51
2022	Scrod	100	200	150	100
2022	Snapper	100	150	150	0
2023	Large	250	50	200	200
2023	Scrod	300	300	450	300
2023	Snapper	150	250	183	50
2024	Large	150	249	344	142
2024	Scrod	350	797	950	600
2024	Snapper	288	656	794	273
2025	Large	172	50	188	100
2025	Scrod	281	100	450	201
2025	Snapper	350	50	250	136

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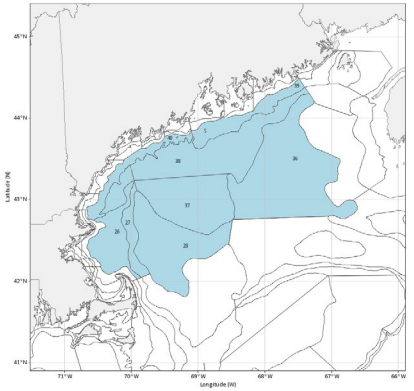
Surveys: Overview

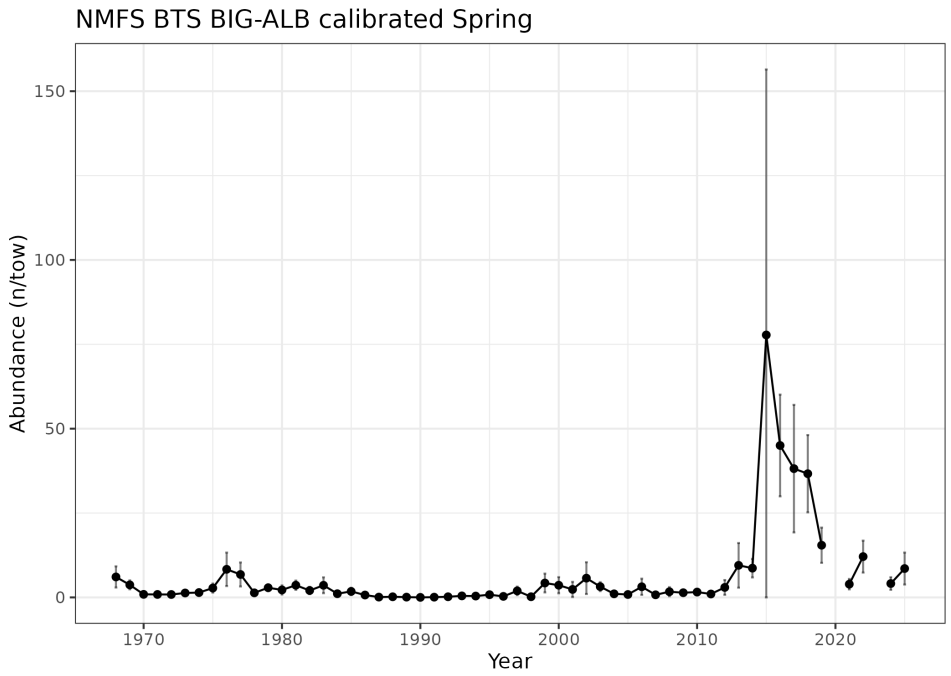
- Four surveys are included in the assessment:
  - NMFS Bottom Trawl Survey (Spring)
  - NMFS Bottom Trawl Survey (Fall)
  - Cooperative Bottom Longline Survey (Spring)
  - Cooperative Bottom Longline Survey (Fall)

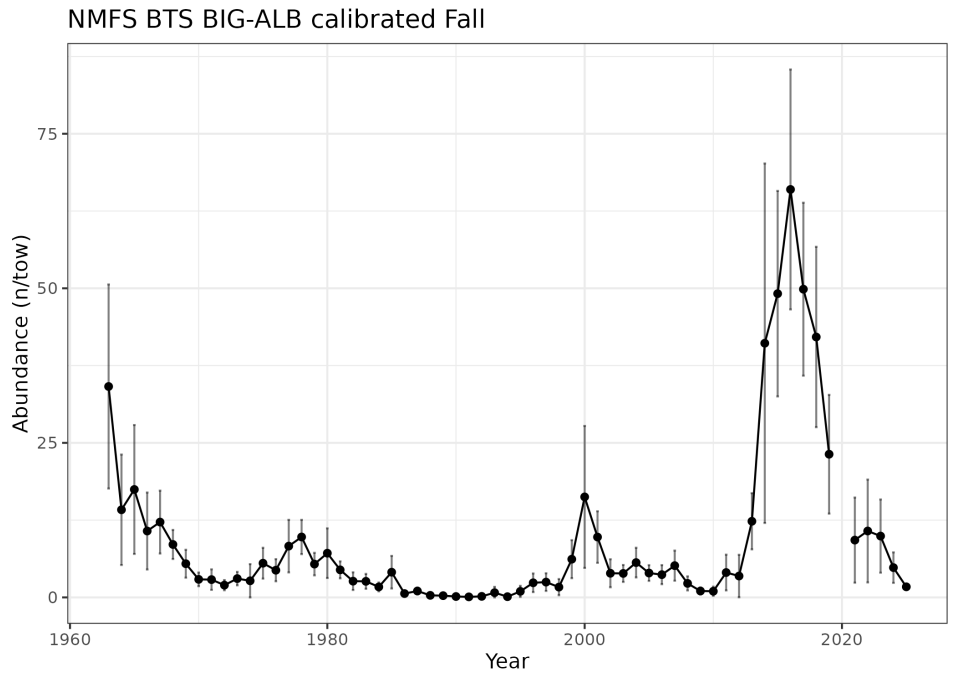
- Time spans:
  - Bottom Trawl Survey: 1977 – 2025
  - Bottom Longline Survey: 2014 – 2025

Surveys: NMFS Trawl time series

- Abundance has declined as the 2013 year class has aged out

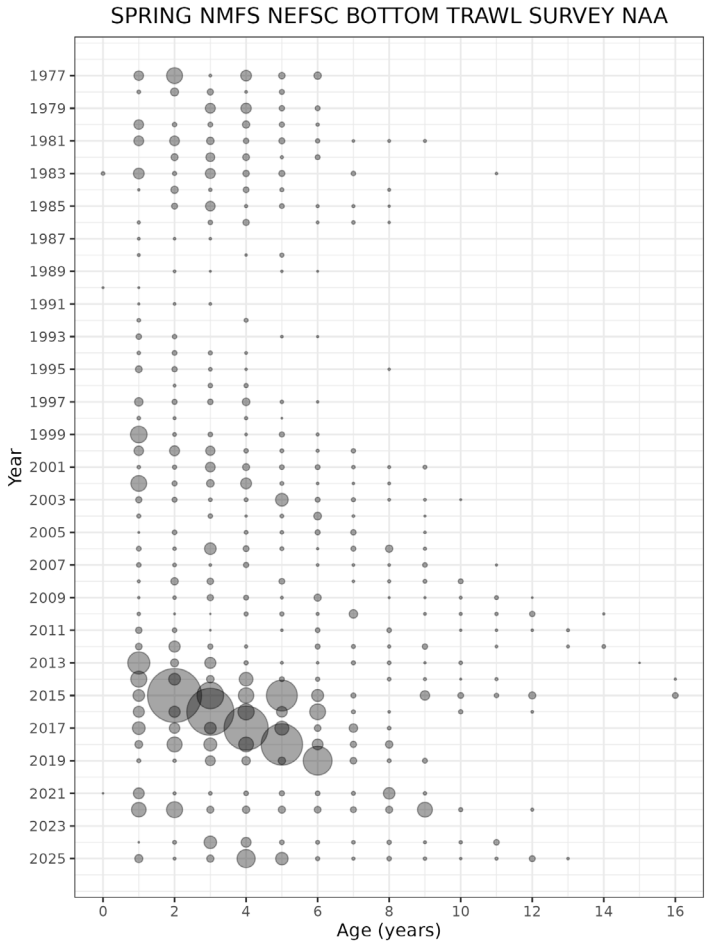


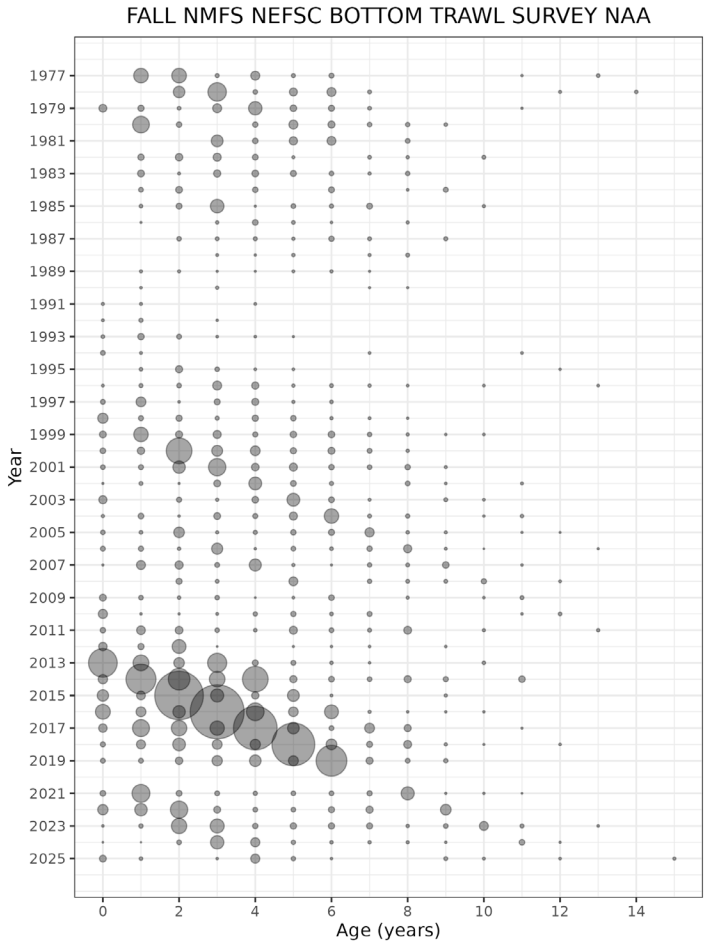




Surveys: NMFS Trawl NAA

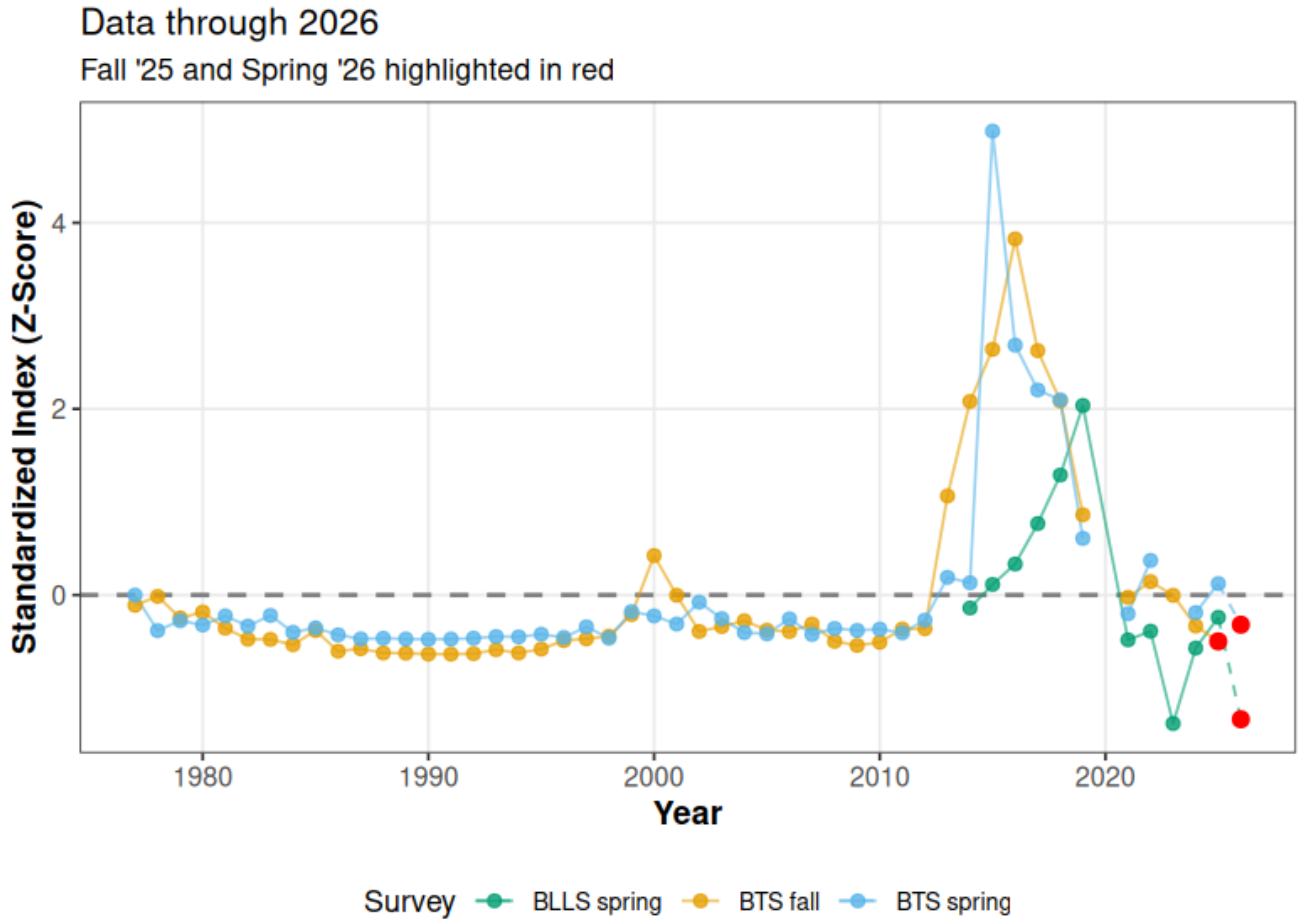
- Above-average 2020 and 2021 cohorts





Surveys: spring 2026 and fall 2025

- Low spring 2026 values support the low fall 2025 value



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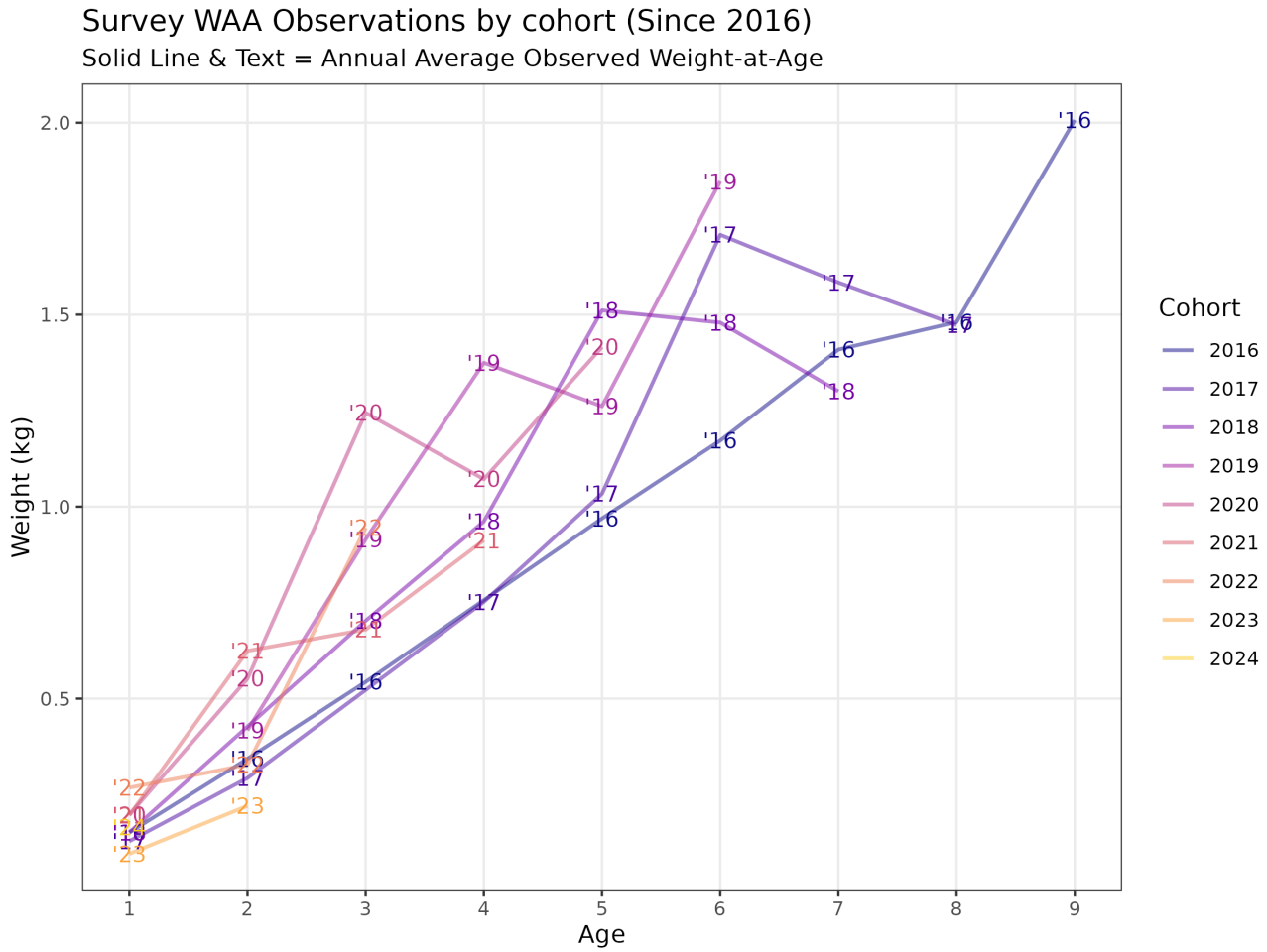
Surveys: NMFS Trawl Weight-at-age

- 2020 and 2021 cohort growth has slowed



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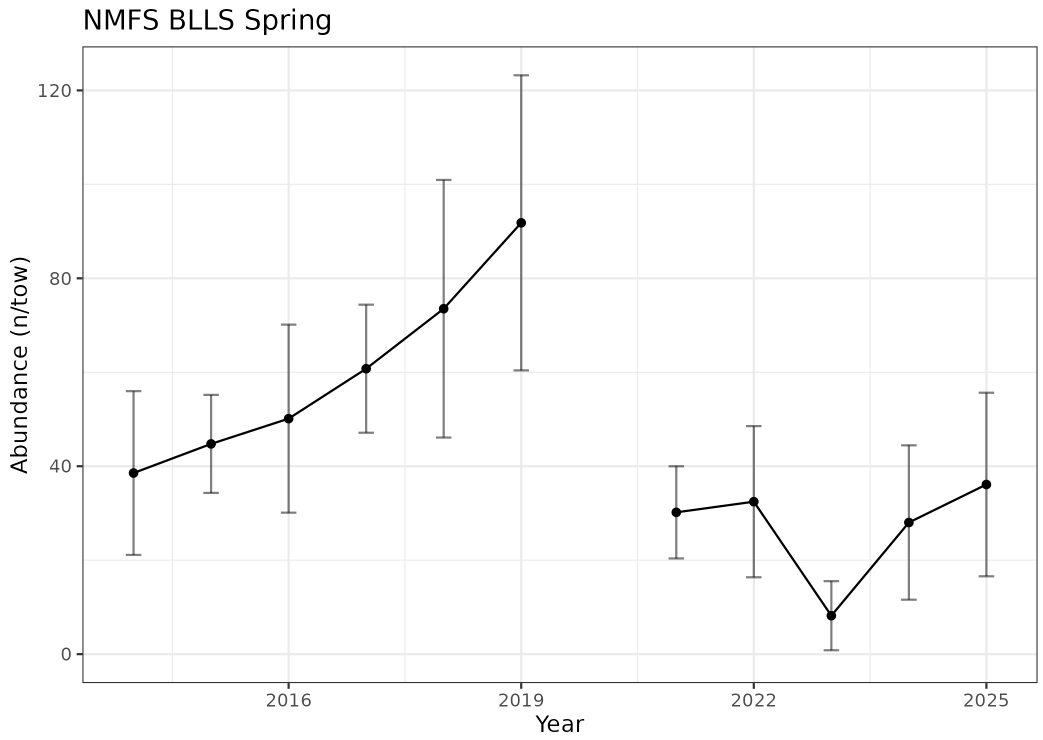
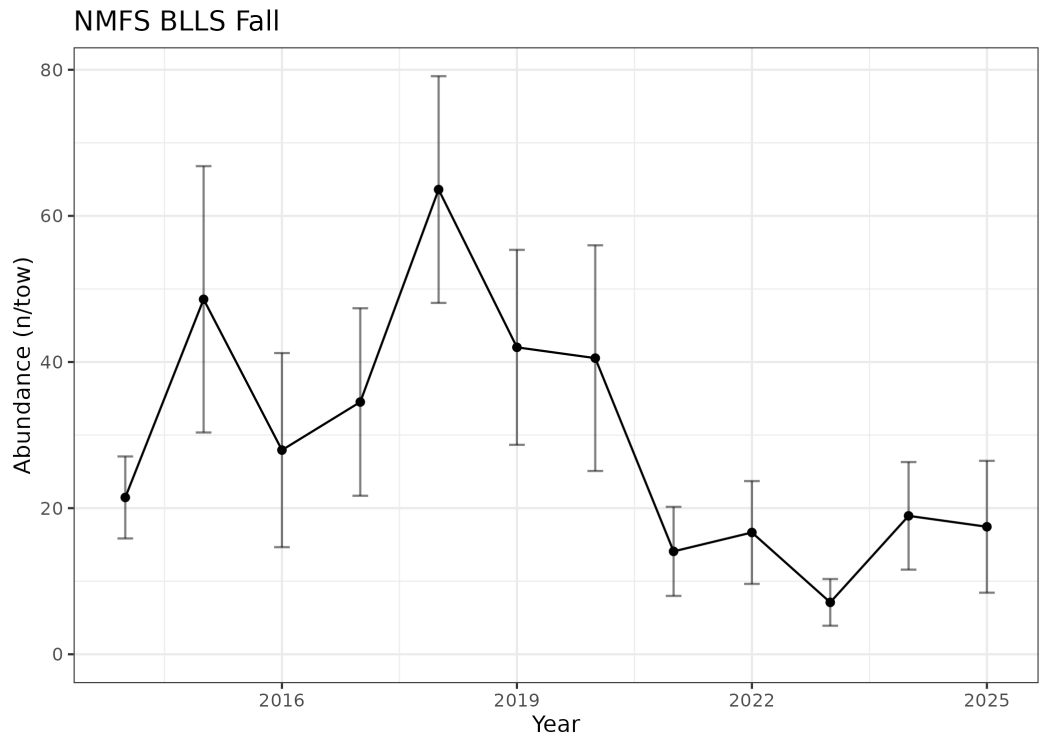
Surveys: Bottom Longline (BLLS) index





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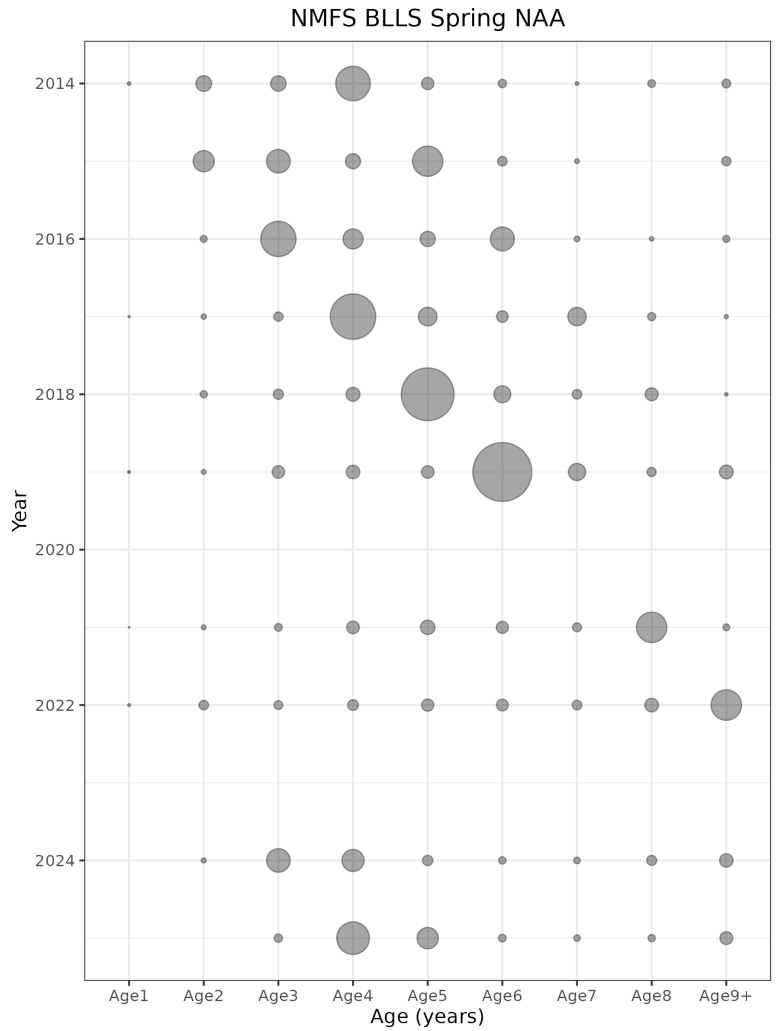
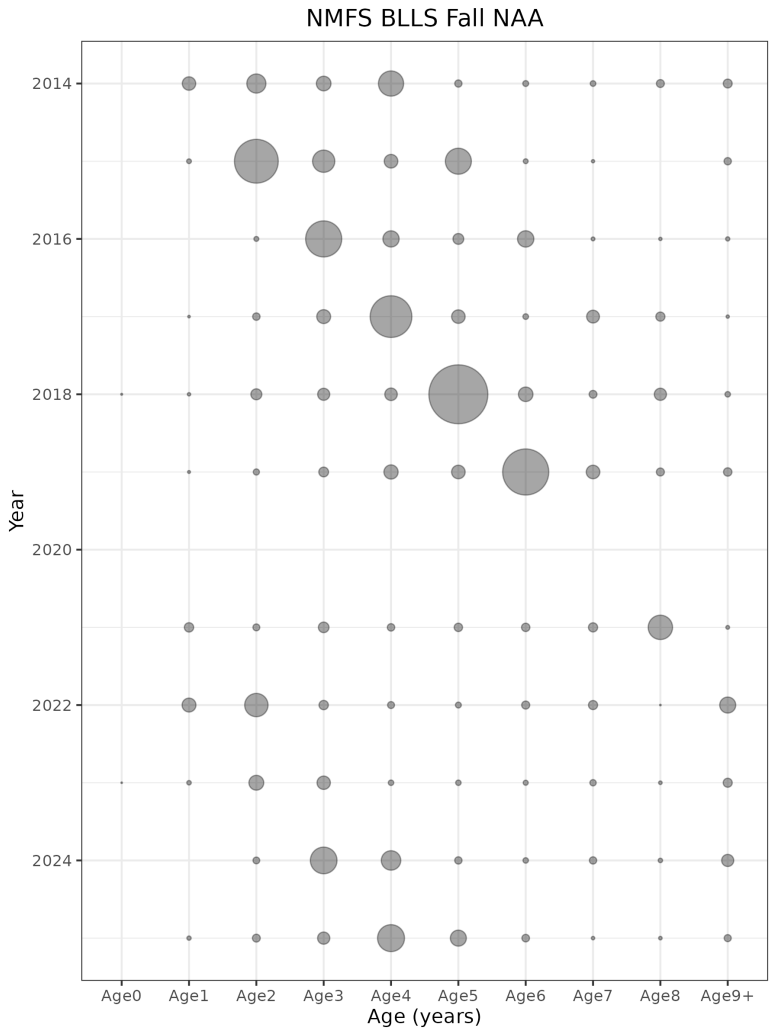
Surveys: Longline numbers-at-age





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Model configuration (WHAM)

Surveys

- NMFS Trawl Survey spring & fall (1977+)
- Bottom Longline Survey spring & fall (2014+)
- Selectivity freely estimated at age
- Dirichlet age-composition likelihood

Fishery

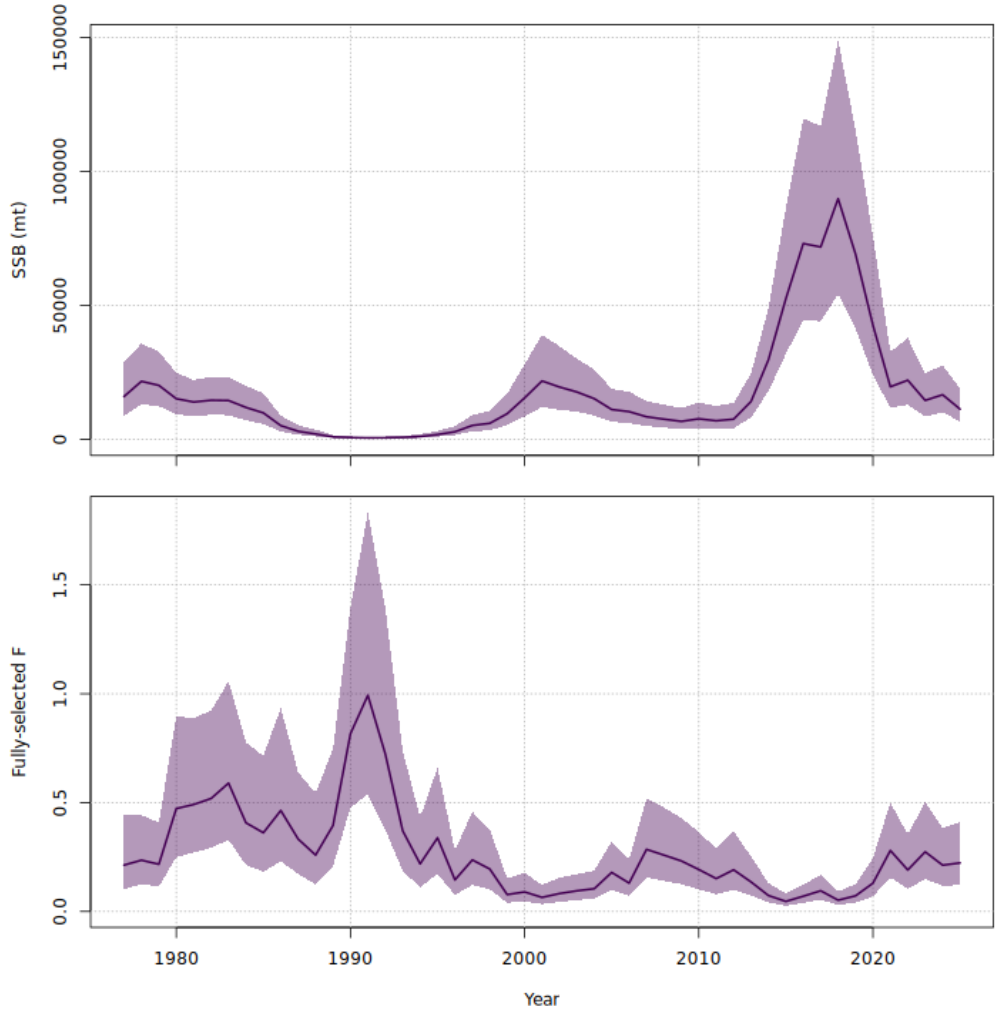
- Combined recreational and commercial fleet (1977+)
- Three selectivity blocks (1977, 1989, 2005)
- Selectivity freely estimated at age
- Dirichlet age-composition likelihood

Biology

- Time series average maturity-at-age
- Natural Mortality = 0.2
- Recruitment modelled as deviations from the mean
- 2dar1 NAA process error for all ages with recruitment process error decoupled from ages-2+

Model results: SSB and fishing mortality

- SSB has declined and F has increased



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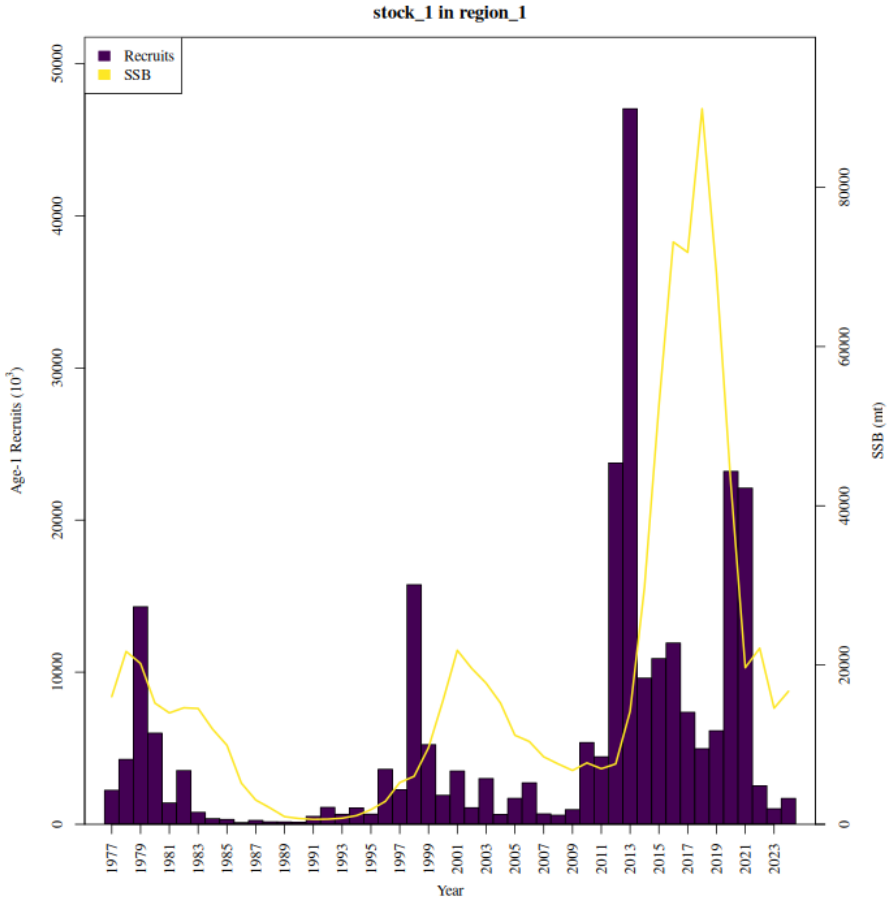
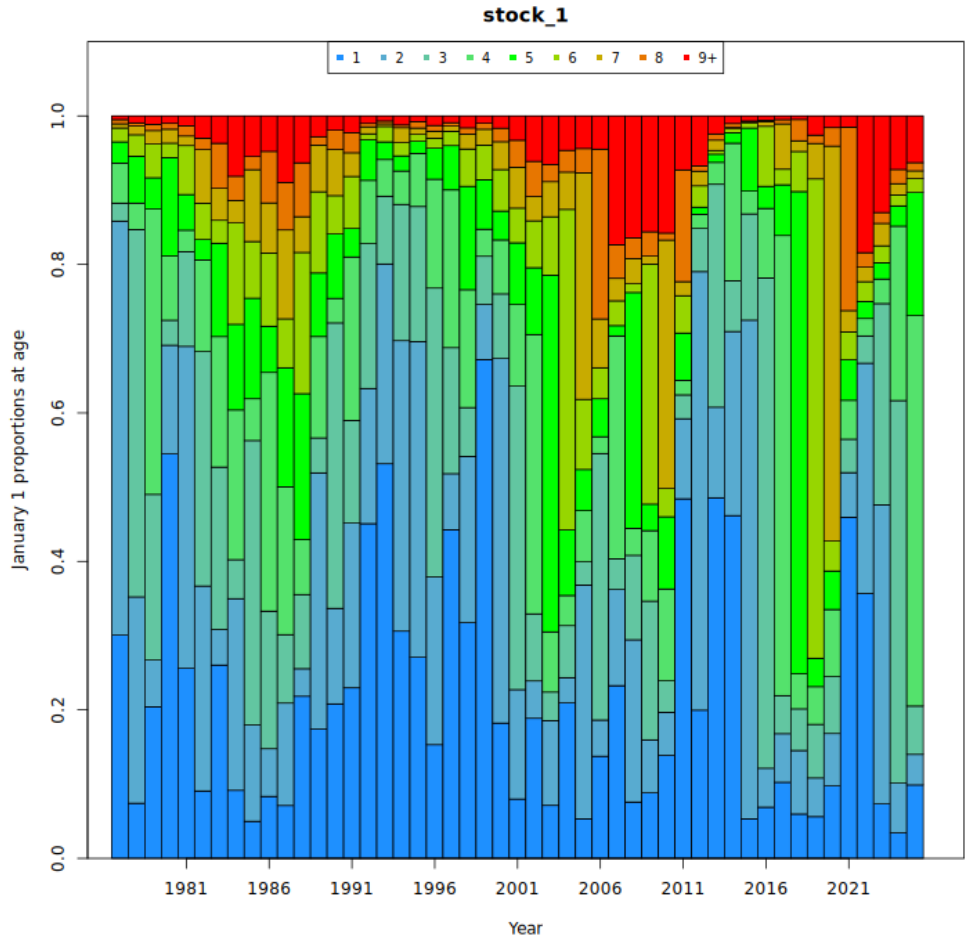
Model results: SSB and recruits

- Low recruitment since 2022



Model results: Proportion-at-age

- The 2020 and 2021 cohorts now make more than half of the population



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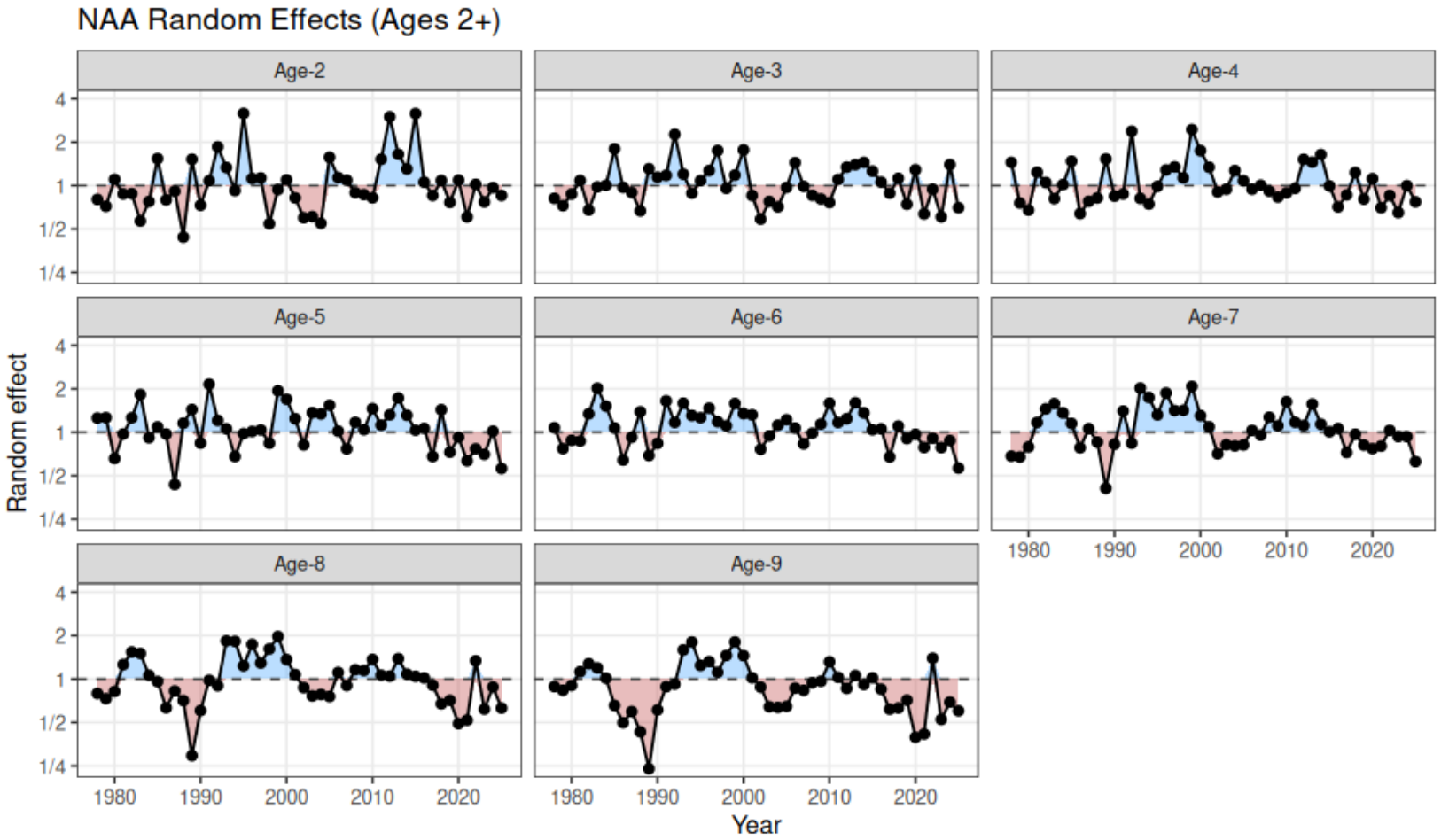
Model results



Values are exponentiated random effect estimates (exp(η)), which are multiplicative factors on the deterministic model (1 = no deviation).
The y-axis uses a log-2 scale so that proportional decreases (e.g., 1/2) and increases (e.g., 2) are visually symmetrical relative to the baseline.

NAA RE parameter estimates

Parameter	Estimate
Std. Dev. (Age 1)	1.001
Std. Dev. (Ages 2+)	0.347
Corr. (Age 1, Inter-annual)	0.608
Corr. (Ages 2+, Inter-annual)	0.177
Corr. (Ages 2+, Inter-age)	0.731

Retrospective error adjustment

- Rho-adjusted values fall within their 90% confidence intervals, therefore a retrospective adjustment is not needed:

$SSB_{2025\text{rho-adjusted}}$: 8143 mt
$SSB_{90\%CI}$: 7371 mt – 17443 mt

$F_{2025\text{rho-adjusted}}$: 0.30
$F_{90\%CI}$: 0.13 – 0.37

Reference points: Methods

- Fmsy method: $F_{40\%}$ YPR approach calculated internally in WHAM
- SSBmsy method: SPR approach calculated internally in WHAM
- SSBmsy recruitment: Mean estimated recruitment over the full time series
- Natural mortality: Model value of 0.2
- Weight-at-age: Average of the last five years
- Maturity-at-age: Time-invariant ogive
- Fishery selectivity: Terminal selectivity block

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Reference points

- SSB_{MSY}: 7,809 mt
- SSB_{2025}: 11,339 mt

- F_{MSY}: 0.35
- F_{2025}: 0.22

- Not overfished, overfishing not occurring

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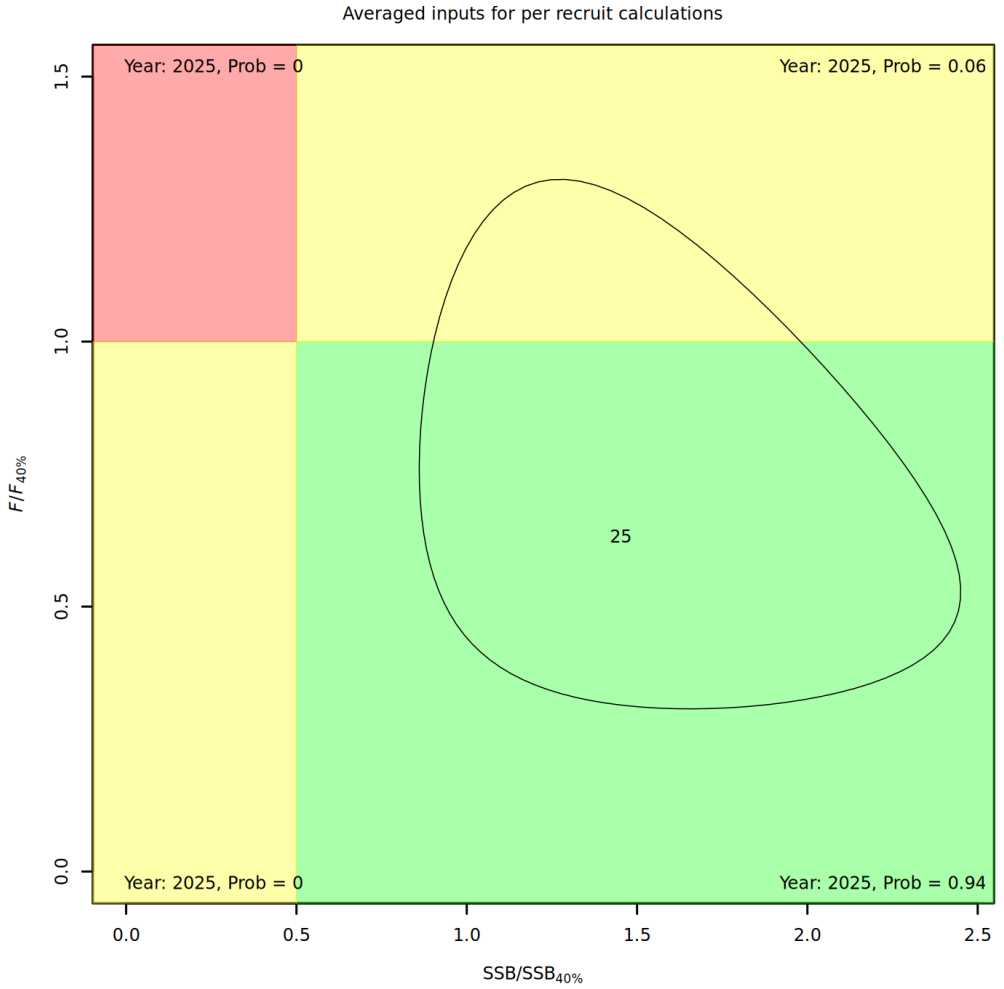
Reference points

- 6% probability of overfishing in 2025
- 0% probability that the stock is overfished



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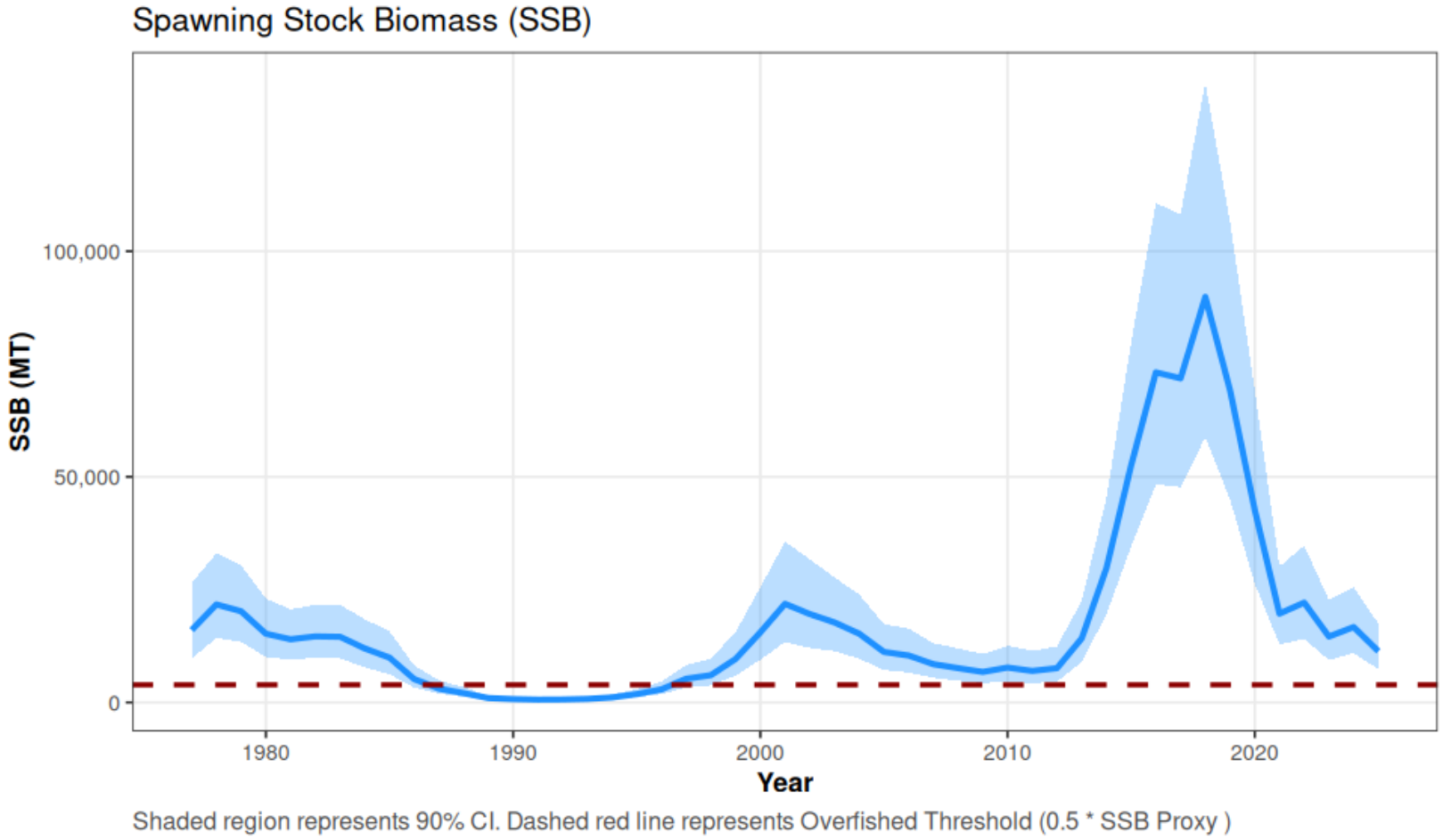
Reference points



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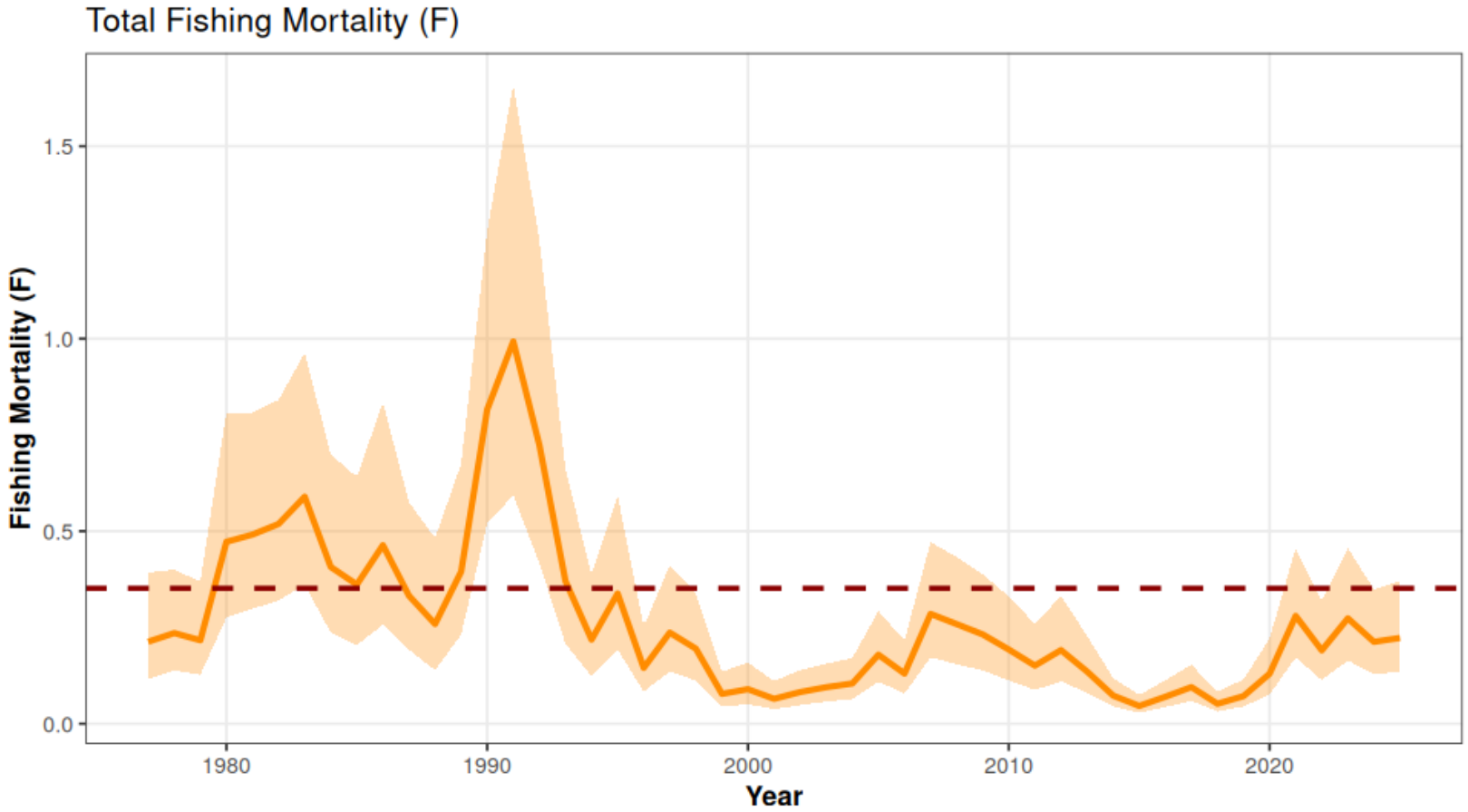
Reference point results



Shaded region represents 90% CI. Dashed red line represents the overfishing threshold F Proxy

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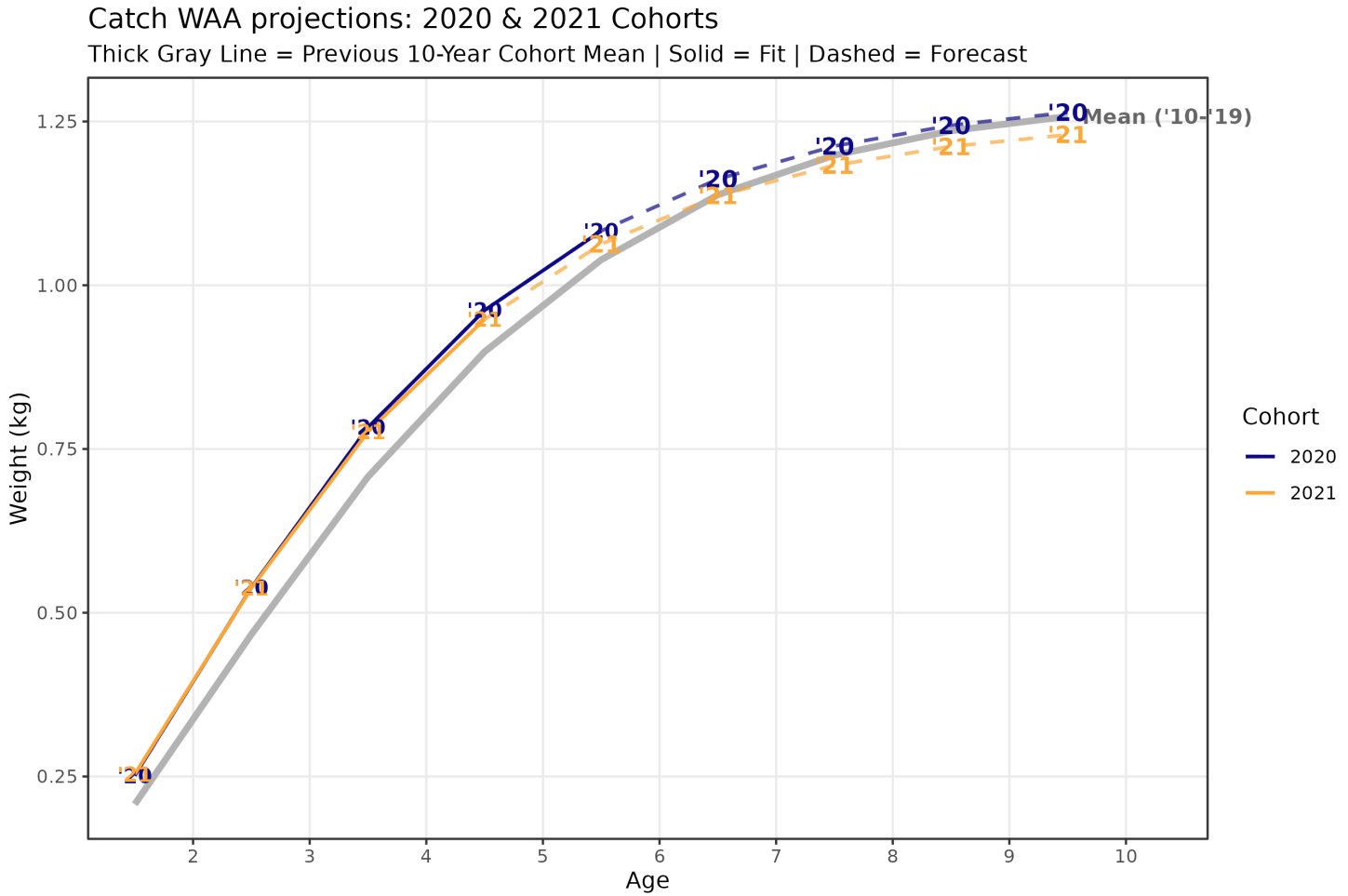
Projection methods

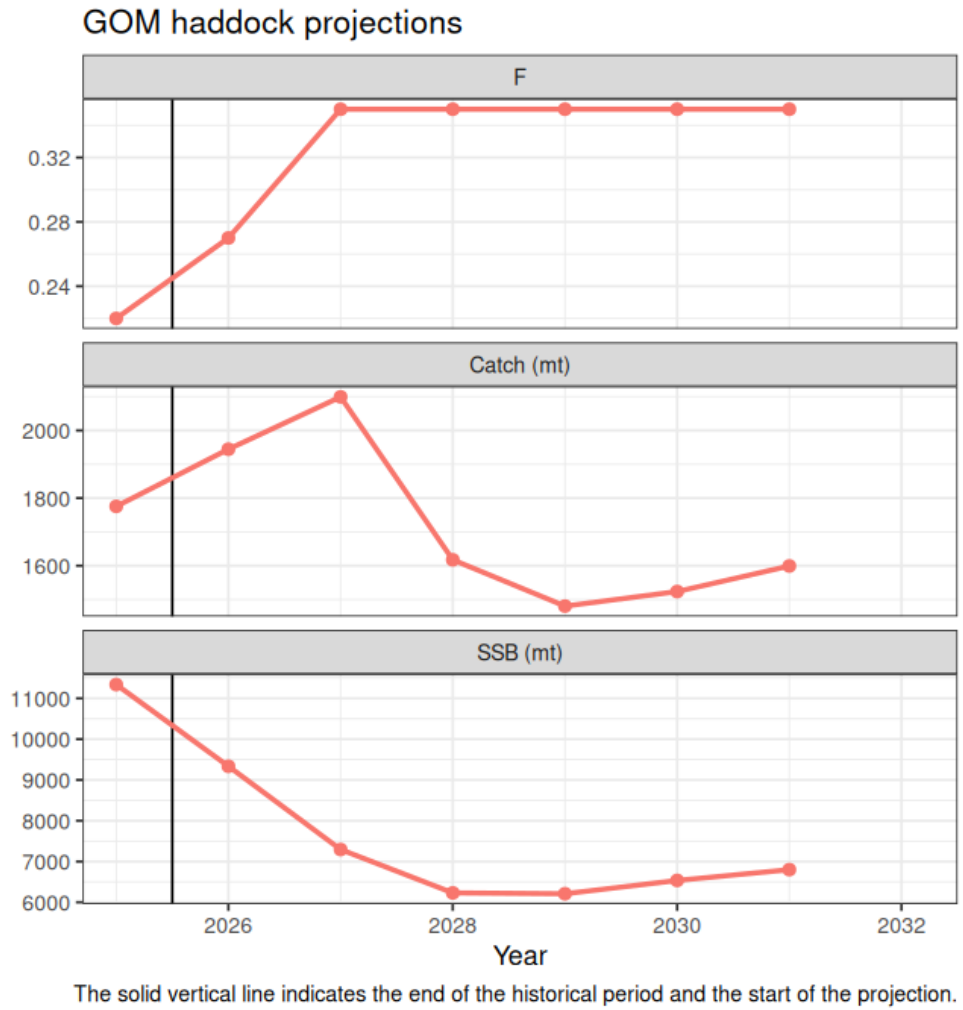
- Recruitment: Mean estimated recruitment with correlated RE
- Ages 2+: correlated RE over time and ages
- Maturity-at-age: Time invariant ogive
- Fishery selectivity: Terminal selectivity block
- 2026 catch of 1944.5 mt (Groundfish PDT estimate)
- 2027-2031 F at F_{MSY} ($F_{40\%}$)
- Projected weight-at-age: Cohort growth model

Projection results: Weight-at-age growth model

- Projected WAA of the 2020 and 2021 cohorts is not exceptional

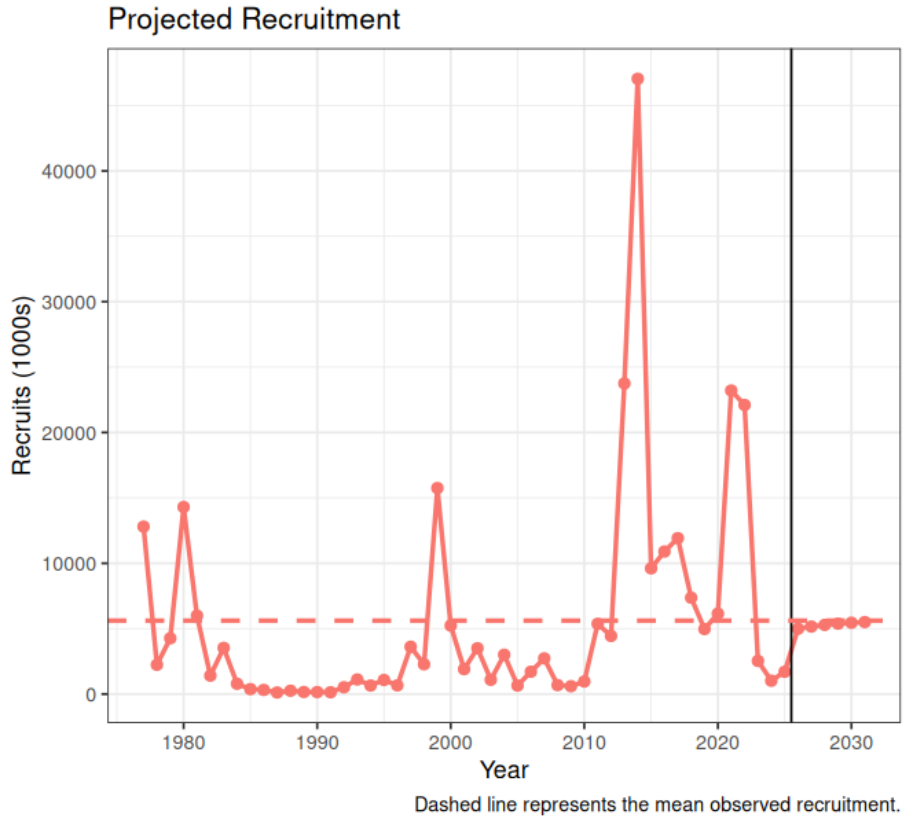


Projection results at Fmsy

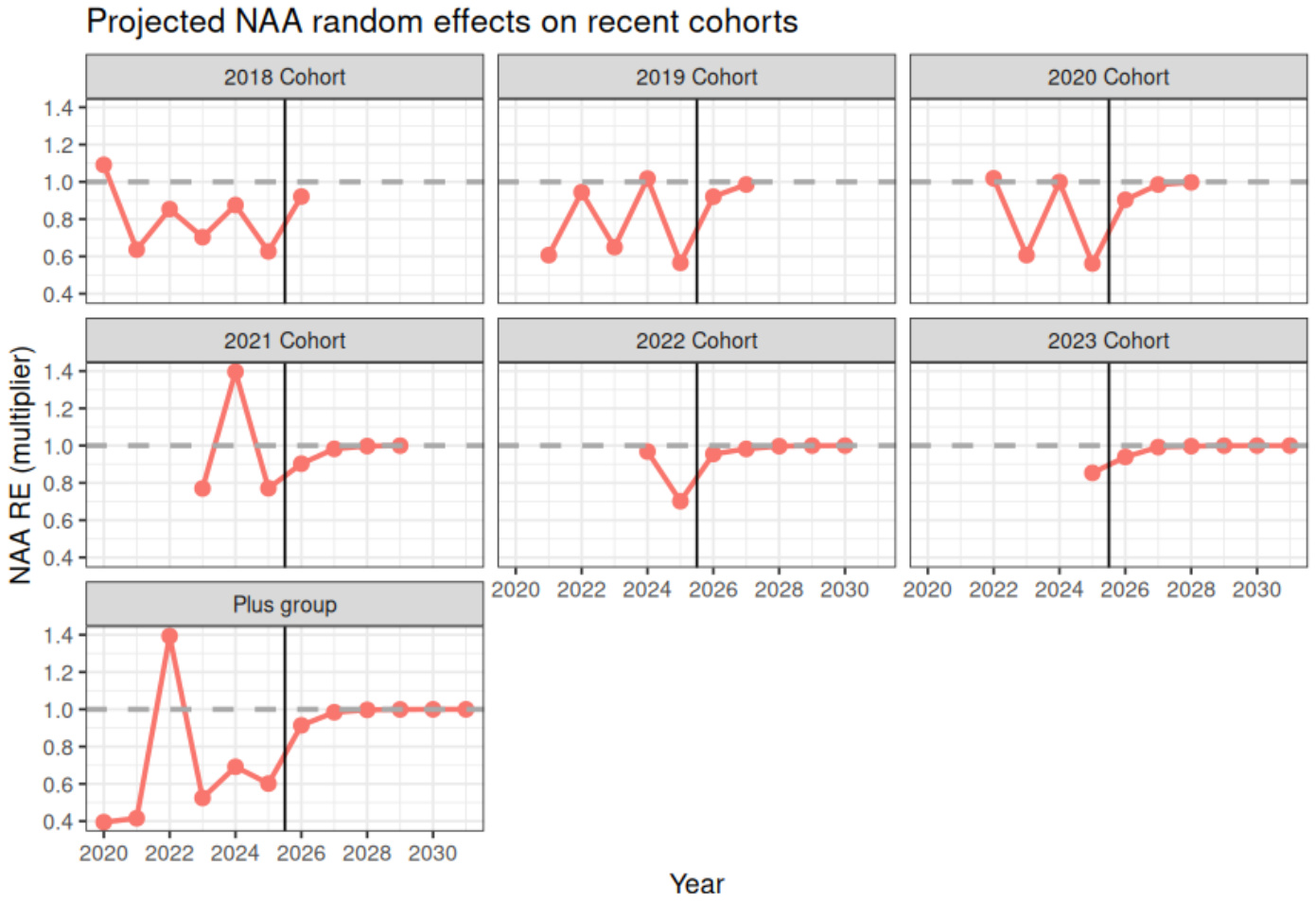


The solid vertical line indicates the end of the historical period and the start of the projection.

Projection results: Recruitment



Projection results: Random effects



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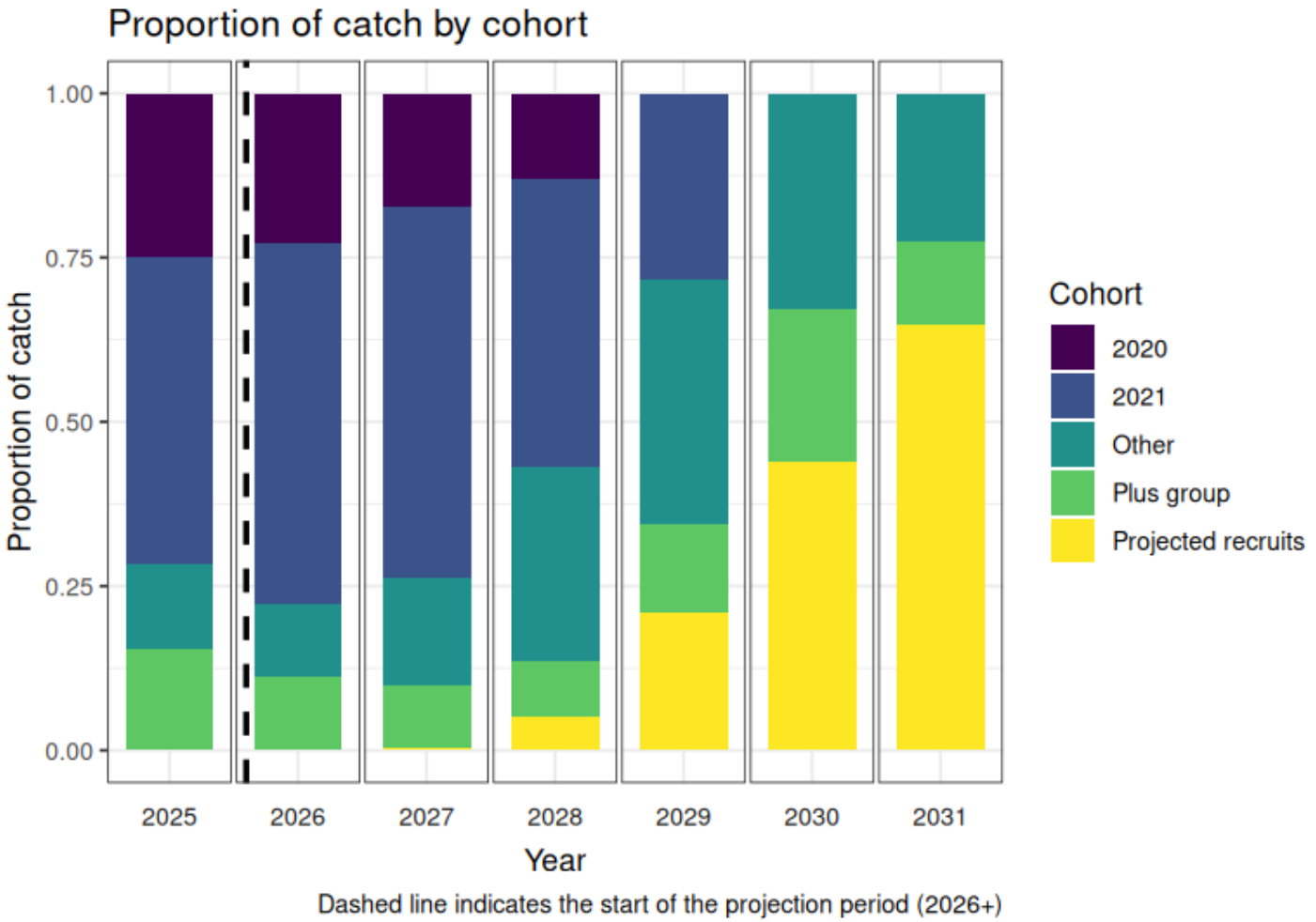
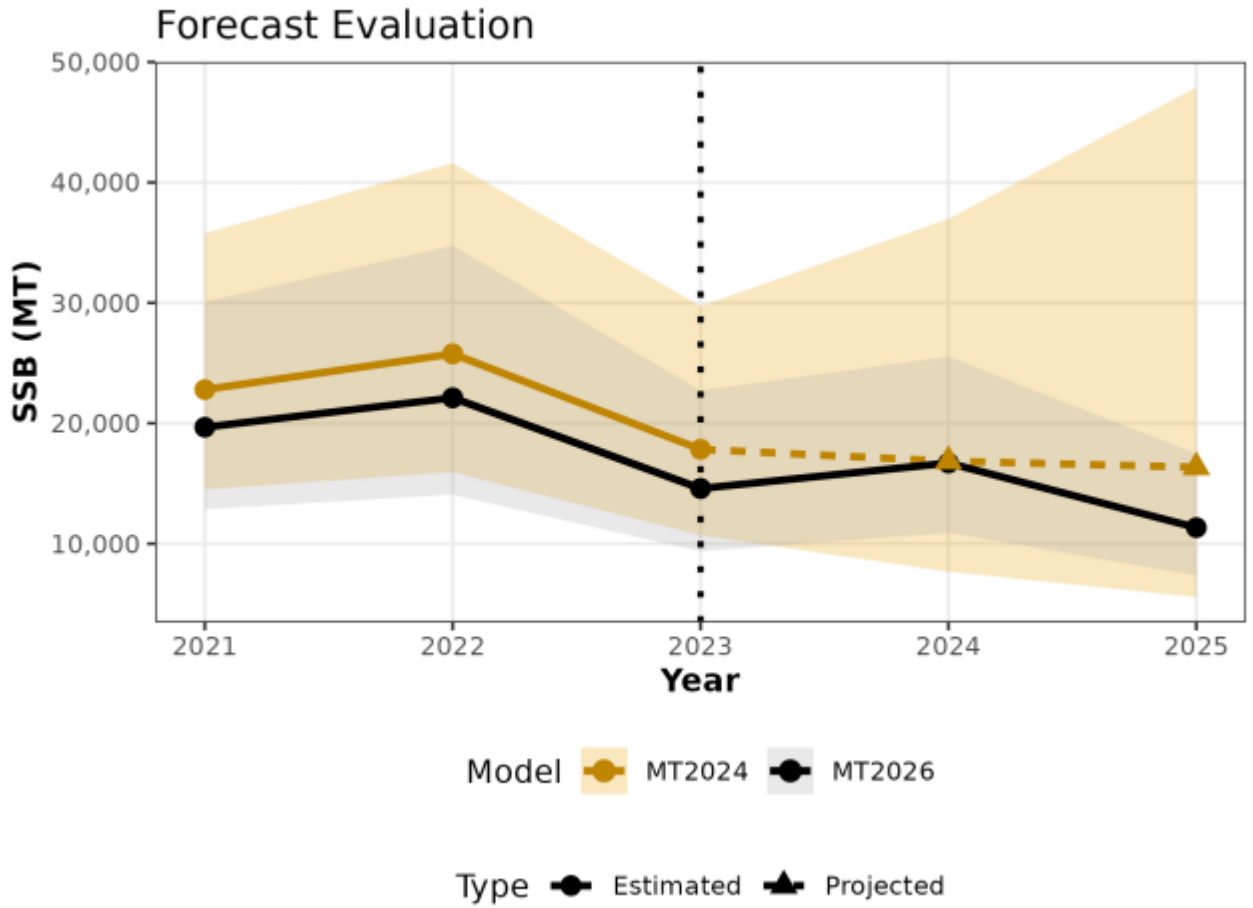
Projection results



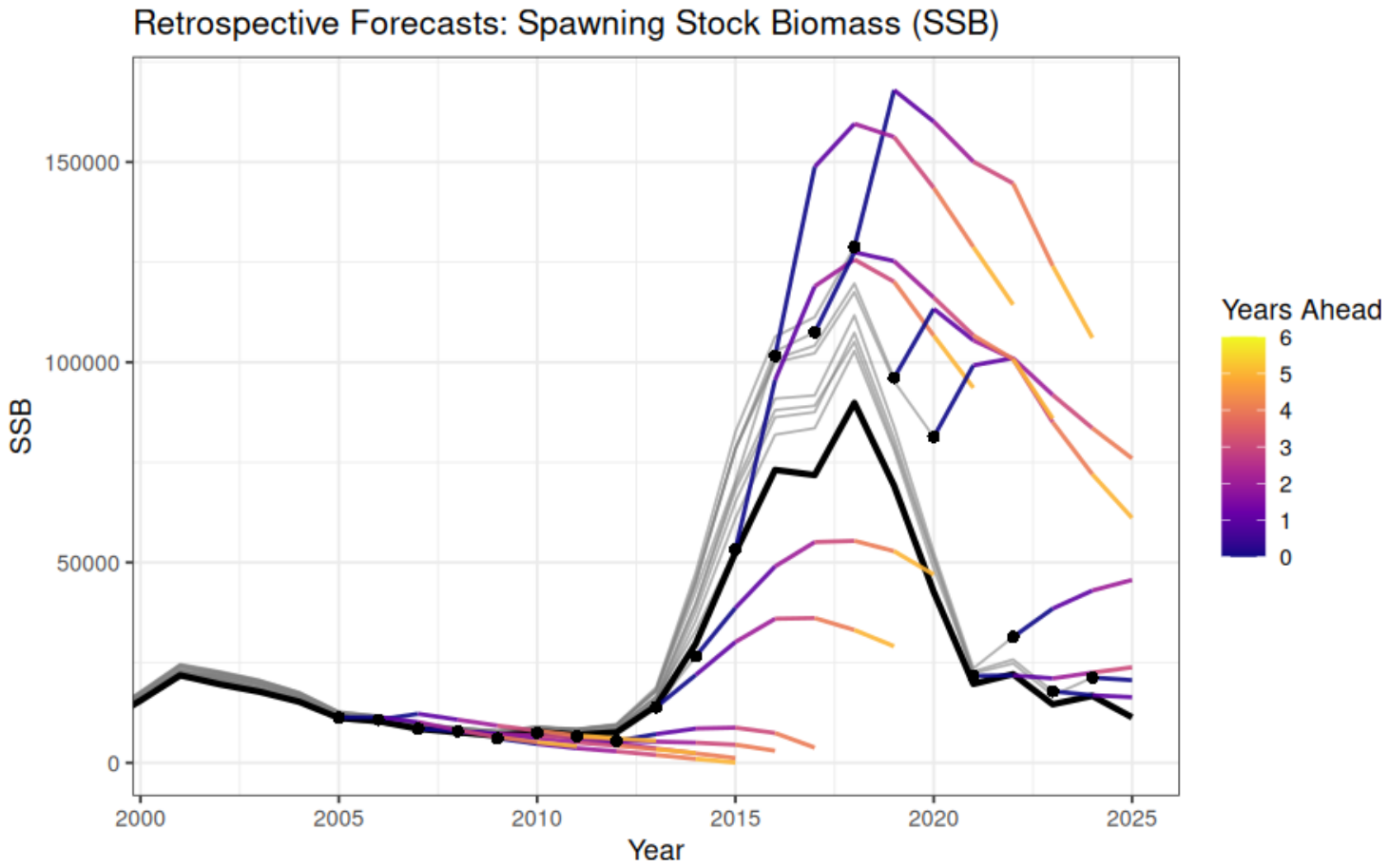
Projection performance



Projection performance: Retrospective forecasting

- Forecast performance was evaluated using retrospective forecasting
- 20 years of data was sequentially removed
- For each year of data that was removed, fixed effects were held constant and only random effects were re-estimated and forecasted
- SSB forecasts were compared to the final SSB estimates
- Percent error quantified using Median Symmetric Accuracy (Morley et al., 2018).

Projection performance: Retrospective forecasting



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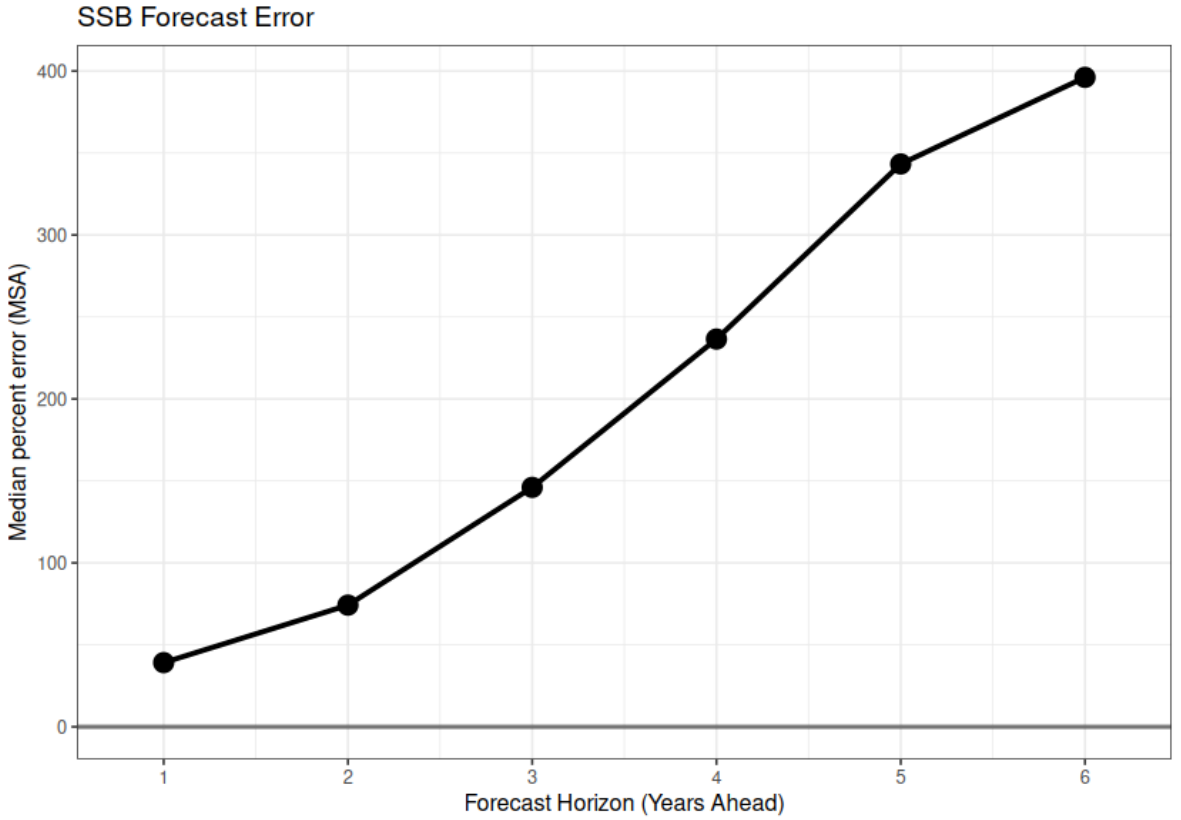
Projection performance: Retrospective forecasting



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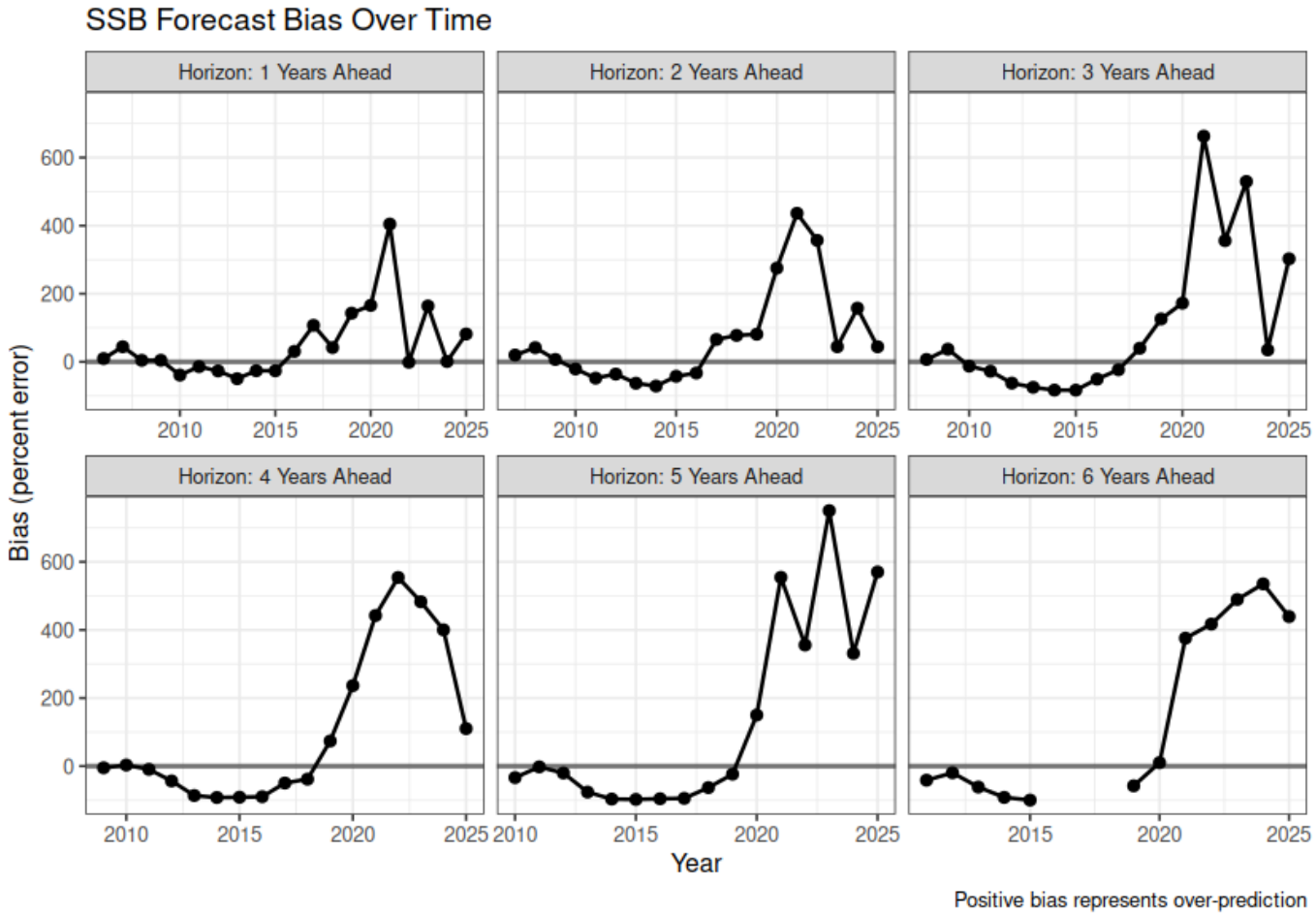
Projection performance: Retrospective forecasting



Projection performance: Retrospective forecasting

- Projections have oscillated between being overly optimistic and overly pessimistic
- Projection bias was relatively low in the last two years
- Longer-term forecasts have higher error than short-term forecasts

Projection recommendations

1. Avoid using projections for years 5 & 6 (2030 & 2031) due to high historical error and a high reliance on projected recruits.
2. Recommend re-assessing the stock in 2029 or earlier rather than relying on 2030 and 2031 forecasts

End