Atlantic States Marine Fisheries COMMISSION

2025 Weakfish Assessment Update

August 6, 2025

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TC Conclusions

- Based on the exploration of model performance, the TC is concerned that the current Bayesian model used to assess weakfish is underestimating natural mortality in recent years

- The TC does not recommend using this update for management, and instead recommends completing a benchmark as soon as possible

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Outline

- Review data inputs to 2025 assessment update
  - Total removals
  - Catch-at-age
  - Indices of abundance
- Model Results
- TC Recommendations

Input Data

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Total Removals

- Recreational harvest & release mortality
- Commercial harvest
- Commercial discards

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Commercial Discards

- Estimated from observer data using a species guild approach
  - Discards ratio = Observed weakfish discards/guild landings
  - Total discards = Discards ratio * Total guild landings

- Discard ratio calculated by region, season (early/late), and gear (Otter Trawl, Gillnet) for regulatory periods
  - 1982-1993, 1994, 1995-1996, 1997-2002, 2003-2009, 2010-2014, 2015-2017, 2018-2023

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Commercial Discards

- Single time-period to determine the guilds in benchmark & 2019 update

- Added a new block for this update
  - Benchmark: 1989-2014
  - 2019 Update: 1989-2017
  - 2025 Update: 1989-2014, 2015-2023

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Guild Species

- Species guilds were generally similar between the benchmark and the 2025 update

- Atlantic croaker in the northern region no longer significantly associated with weakfish discards

- Kingfish, menhaden, and black drum becoming significant for some gears/regions.

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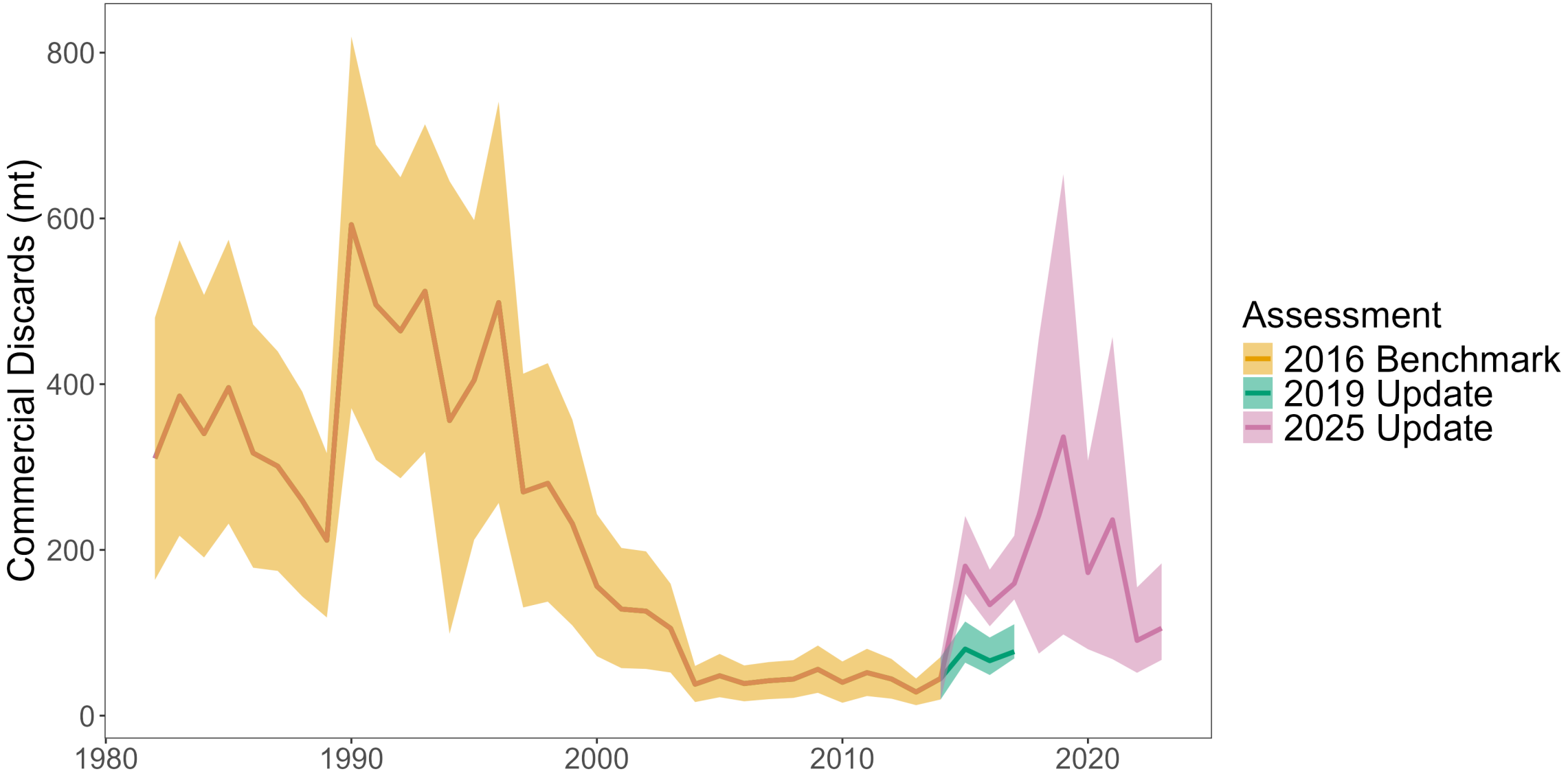
Commercial Discards



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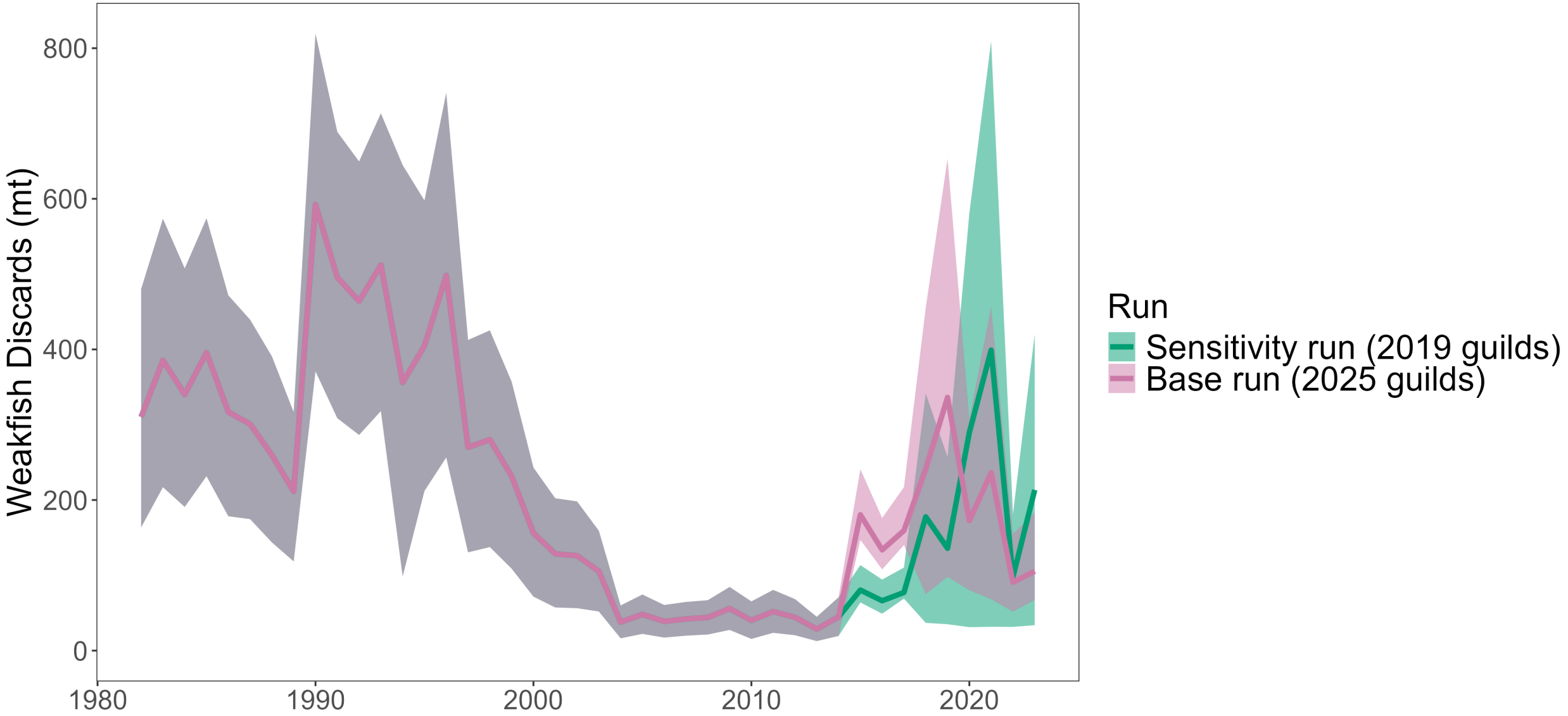
Commercial Discards



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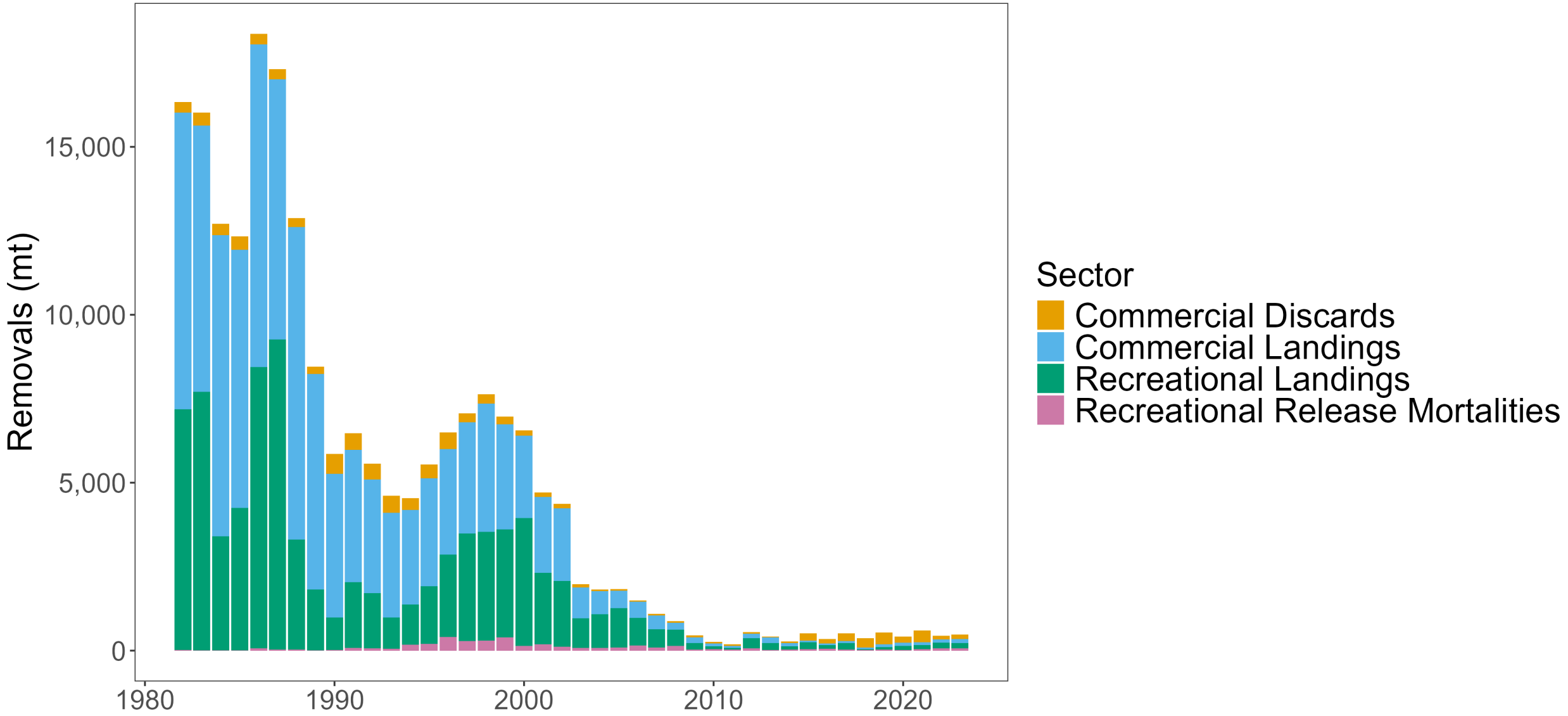
Total Removals



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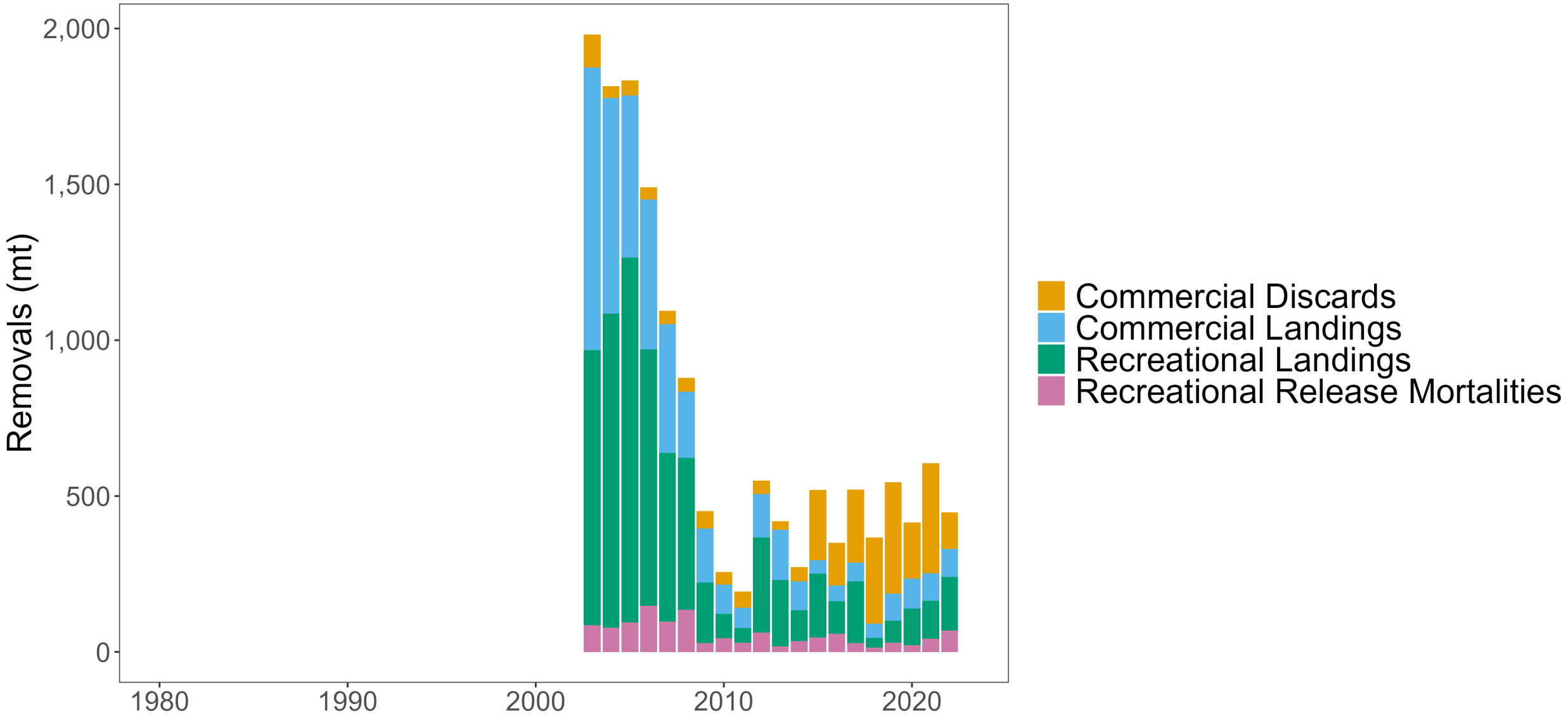
Total Removals



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Total Removals (MT)

Period	Commercial Discards	Commercial Landings	Recreational Landings	Recreational Release Mortalities
2015-2017	199.1	51.3	168.6	44.6
2018-2023	237.8	86.6	111.9	41.2

Catch-at-Age

- Developed age-length keys (ALKs) by:
  - Year
  - Season (Early=Jan-Jun, Late=Jul-Dec)
  - Region (South=FL-NC, North=VA-MA)
- Developed length frequencies by:
  - Year
  - Season
  - Region
  - Fishery (commercial vs. rec)
  - Disposition (landed vs. released/discarded)

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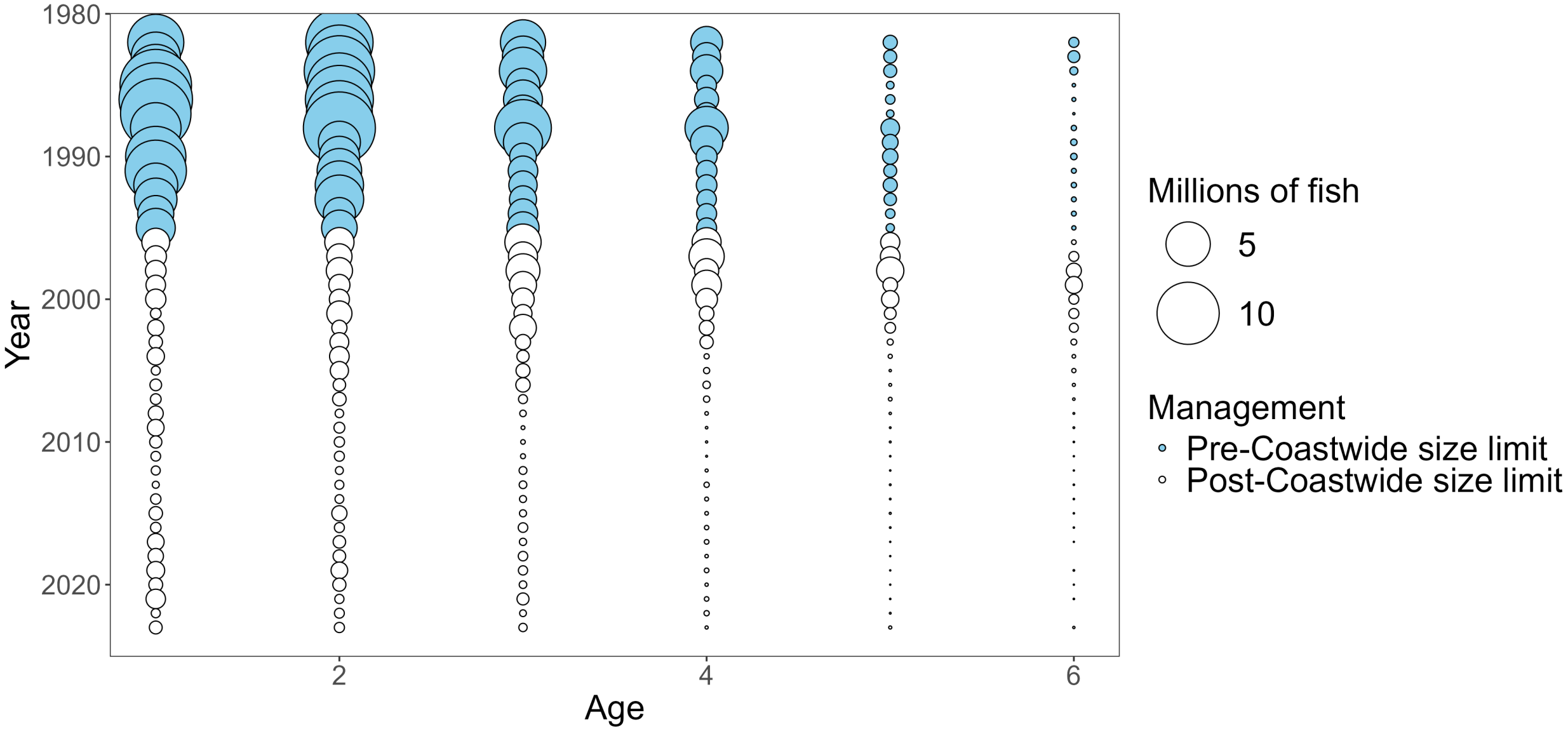
Commerical Catch-at-Age



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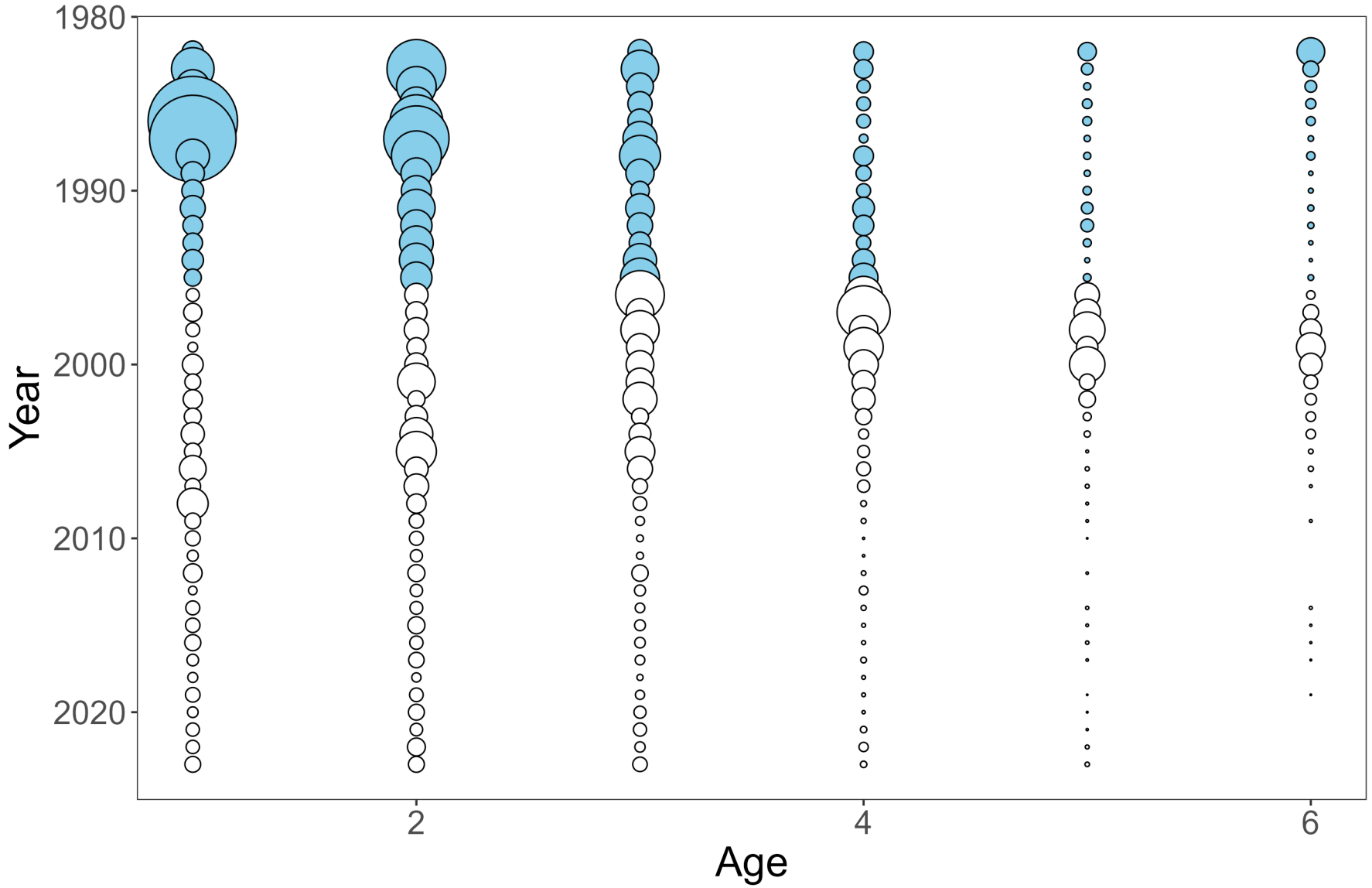
Recreational Catch-at-Age



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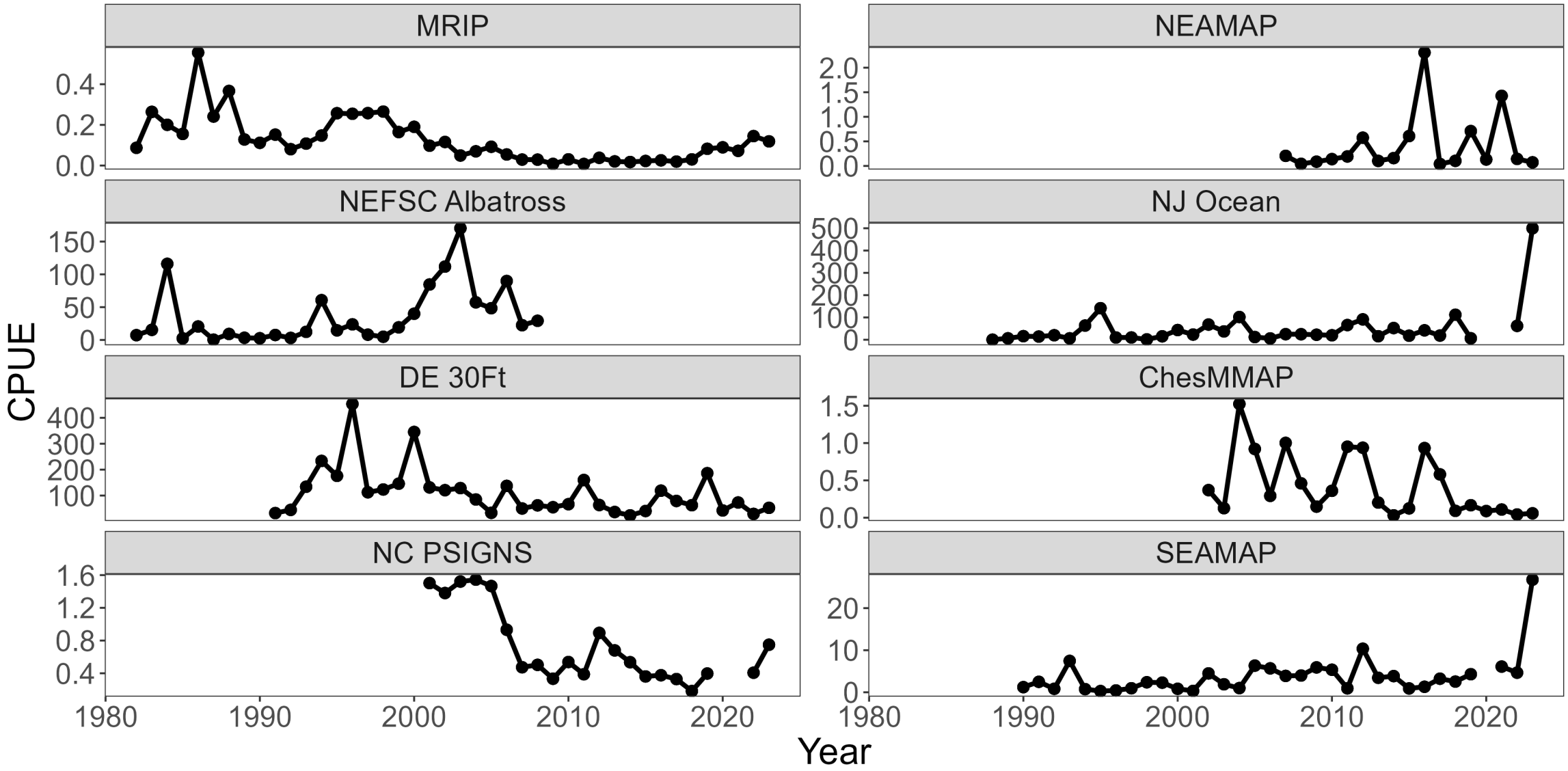
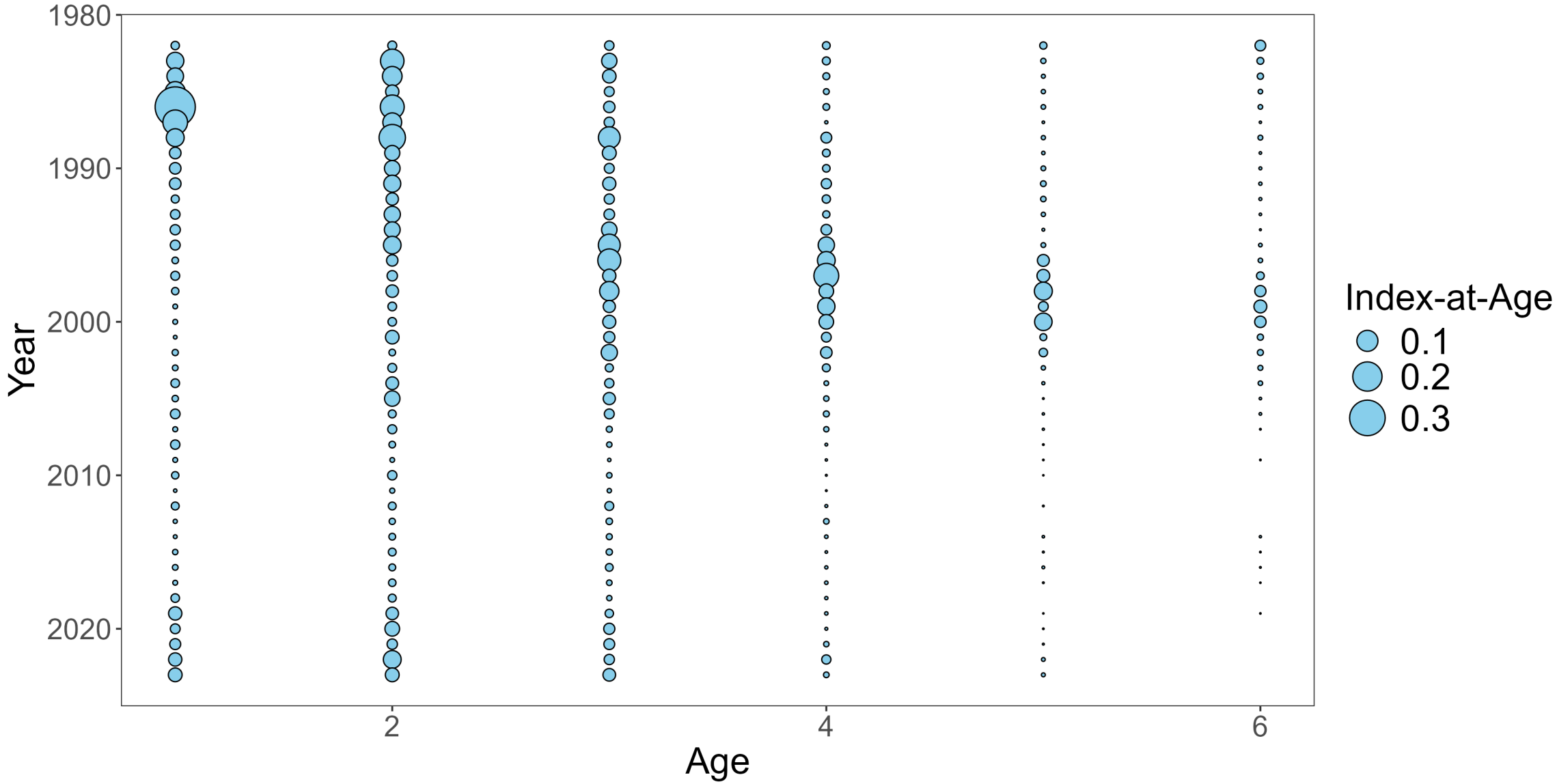
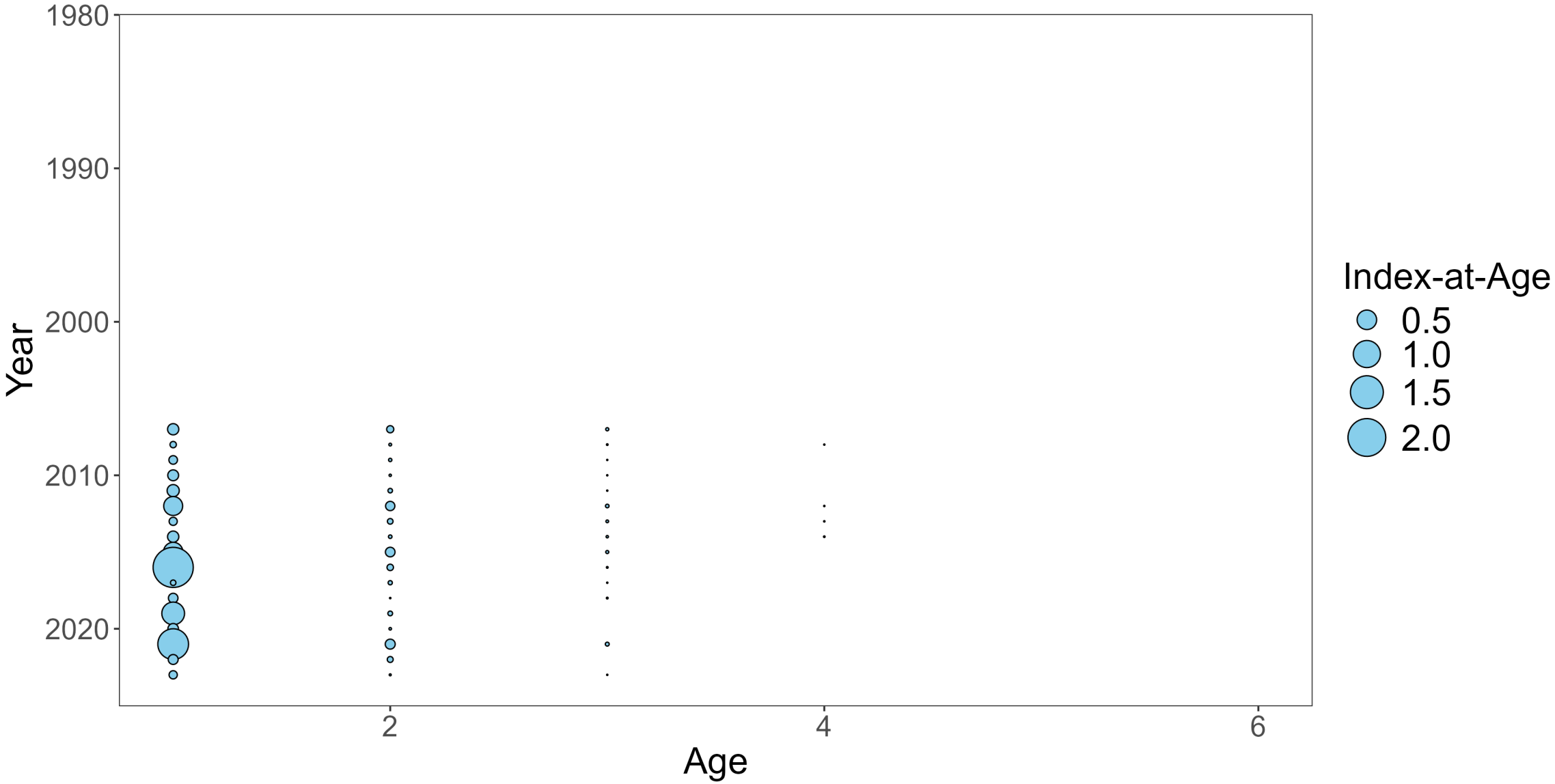
Age-1+ Indices




1980
1990
2000
2010
2020
Year
2
4
6
Age
Index-at-Age
0.1
0.2
0.3


1980
1990
2000
2010
2020
Year
2
4
6
Age
Index-at-Age
0.5
1.0
1.5
2.0

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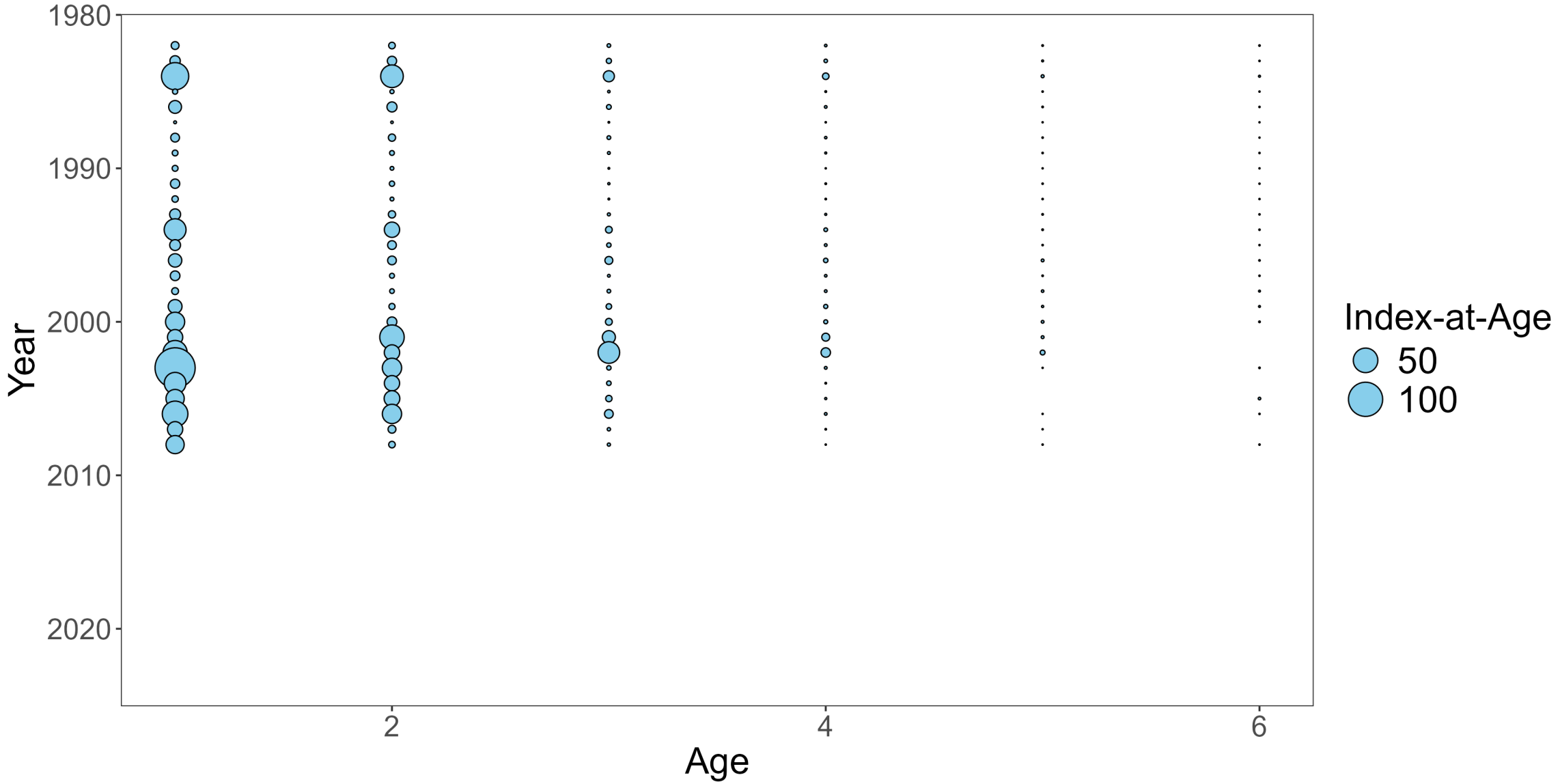
NEFSC Albatross



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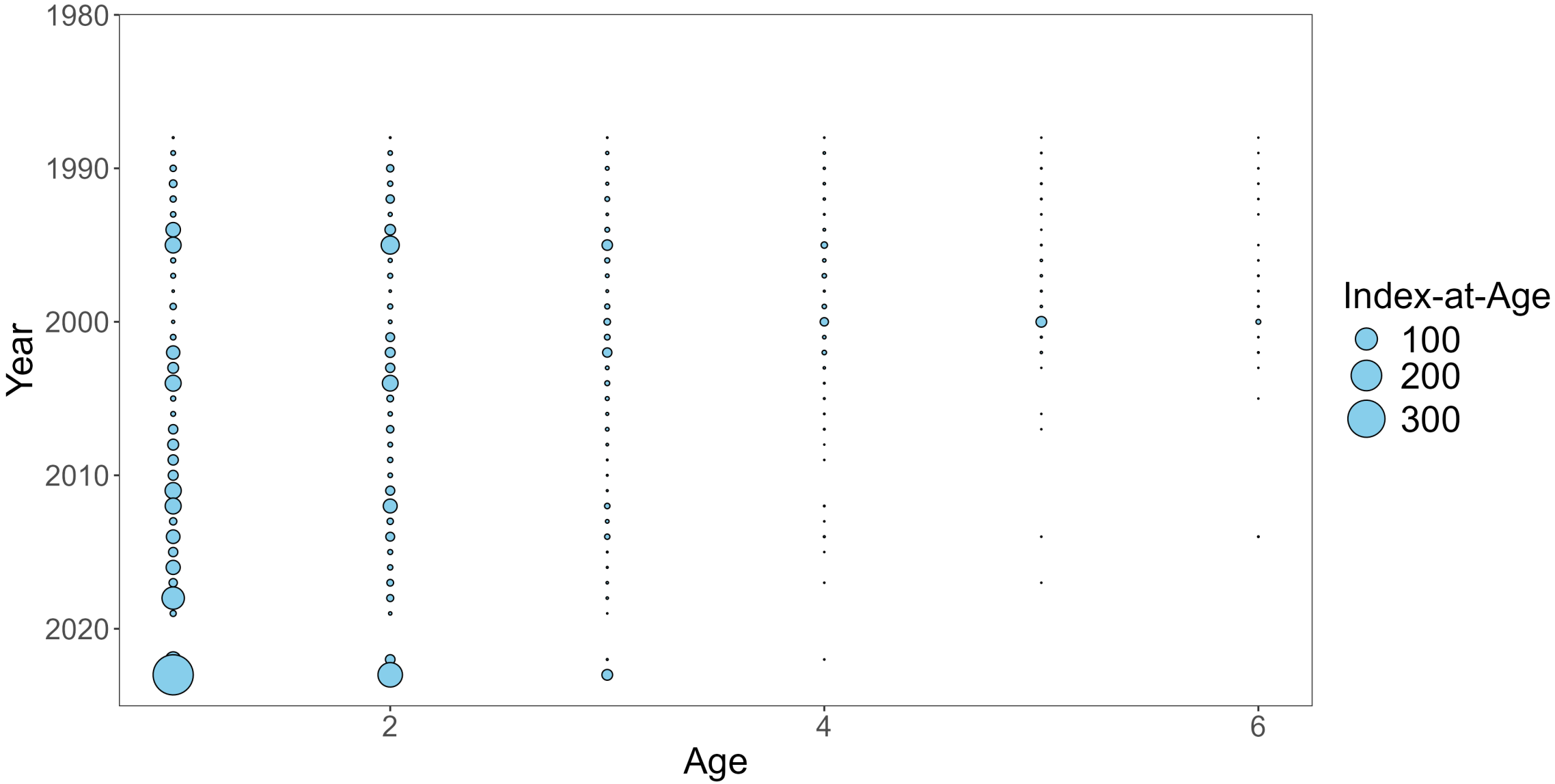
NJ Ocean



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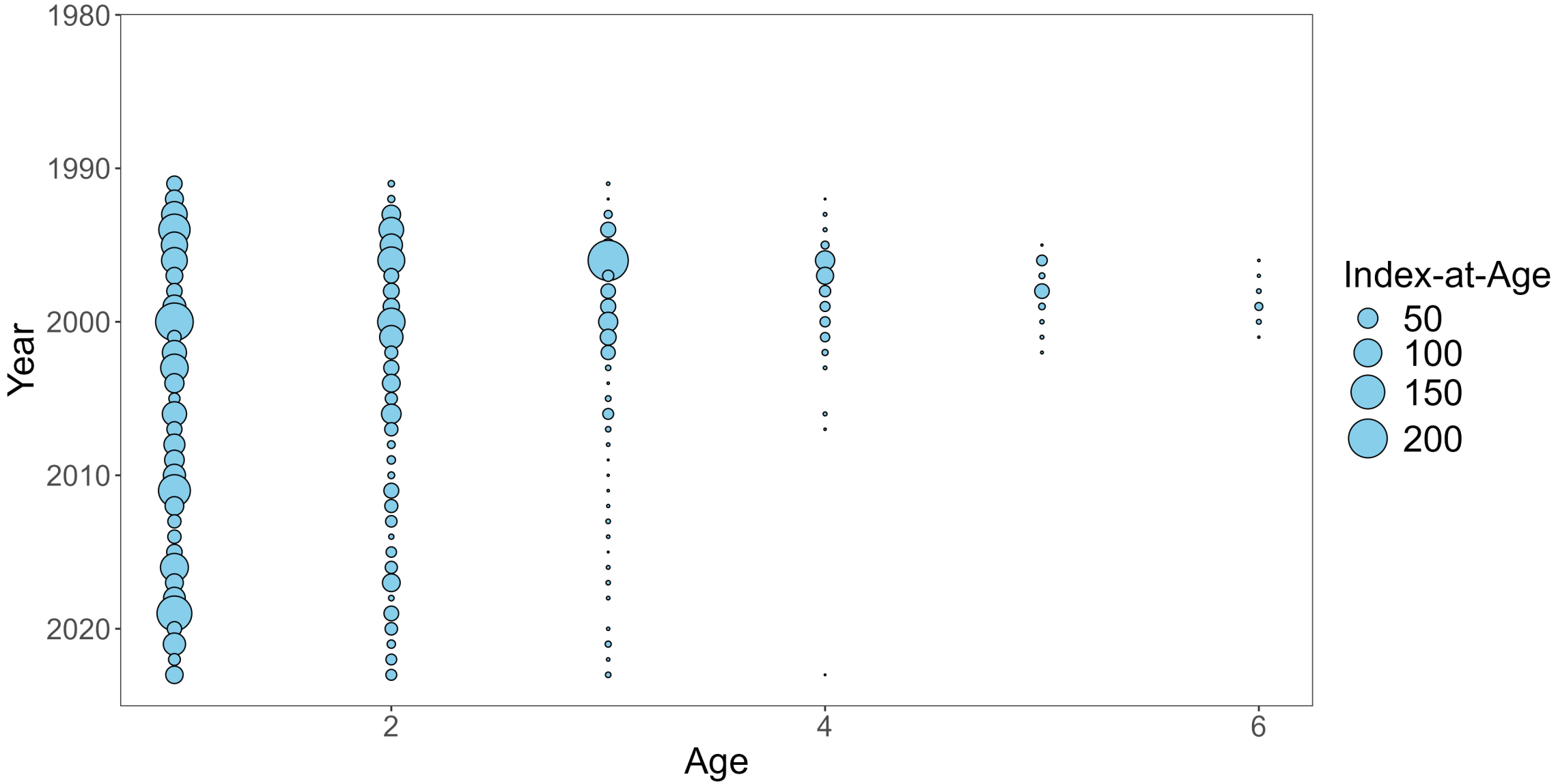
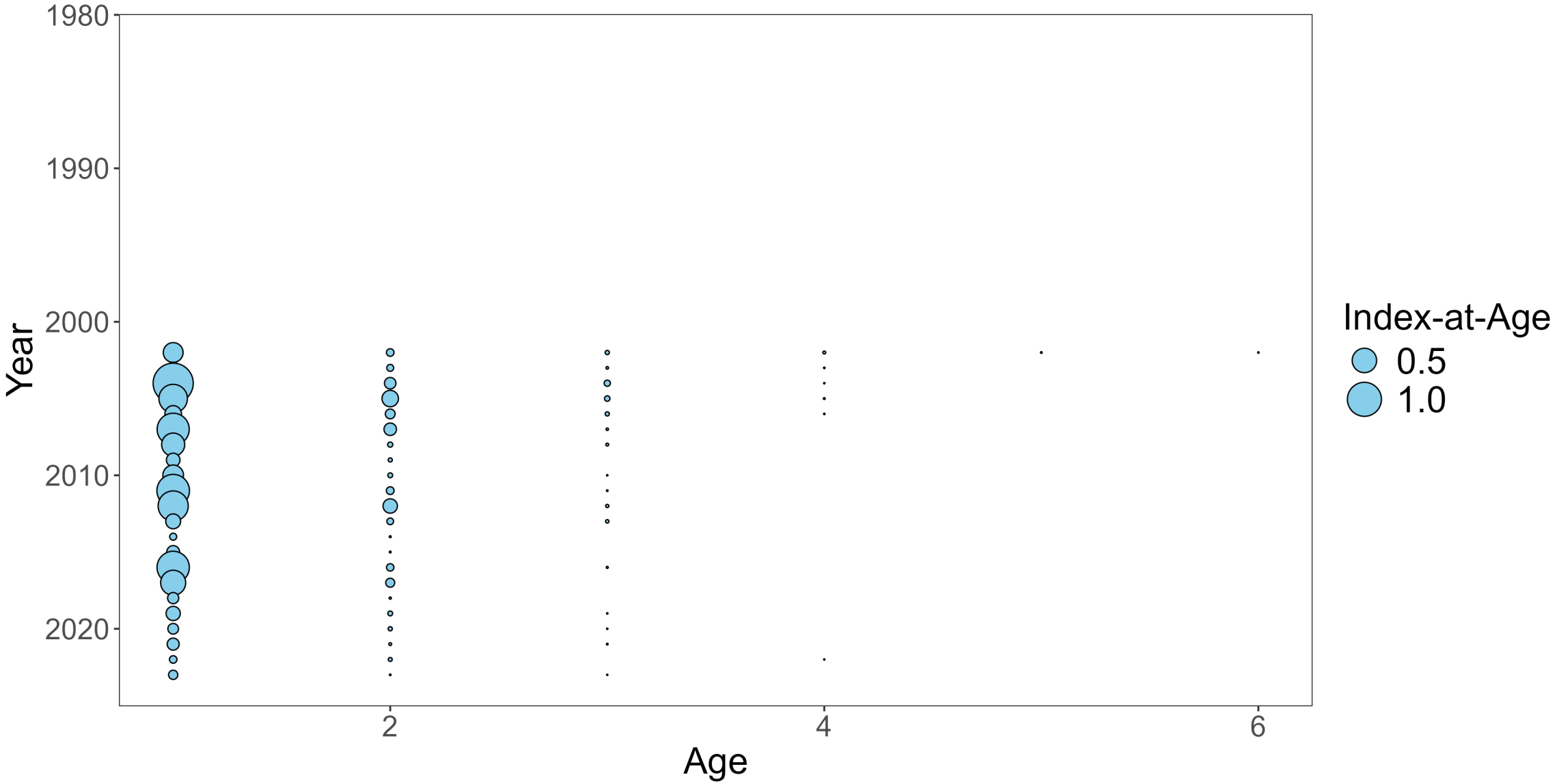
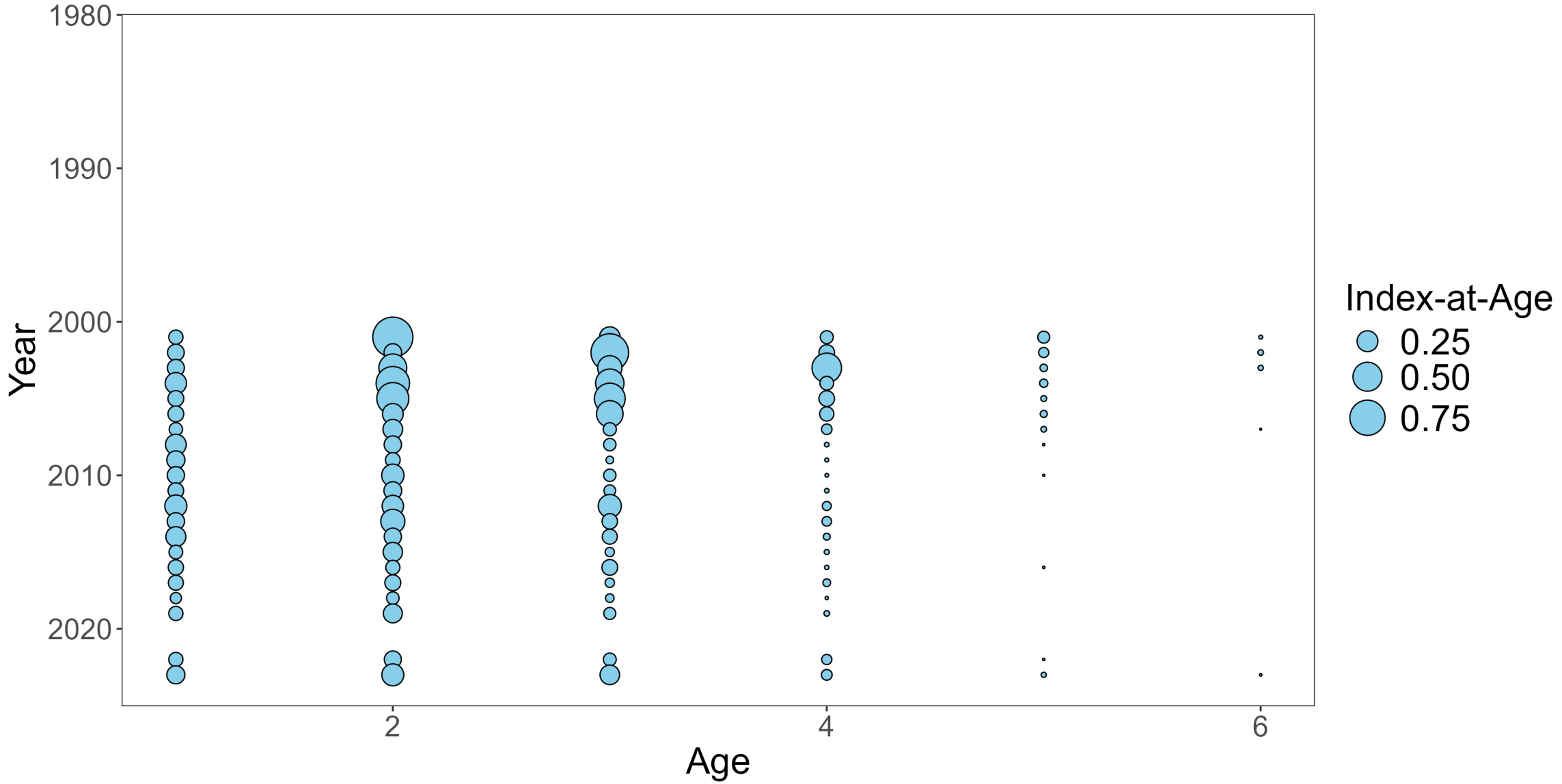
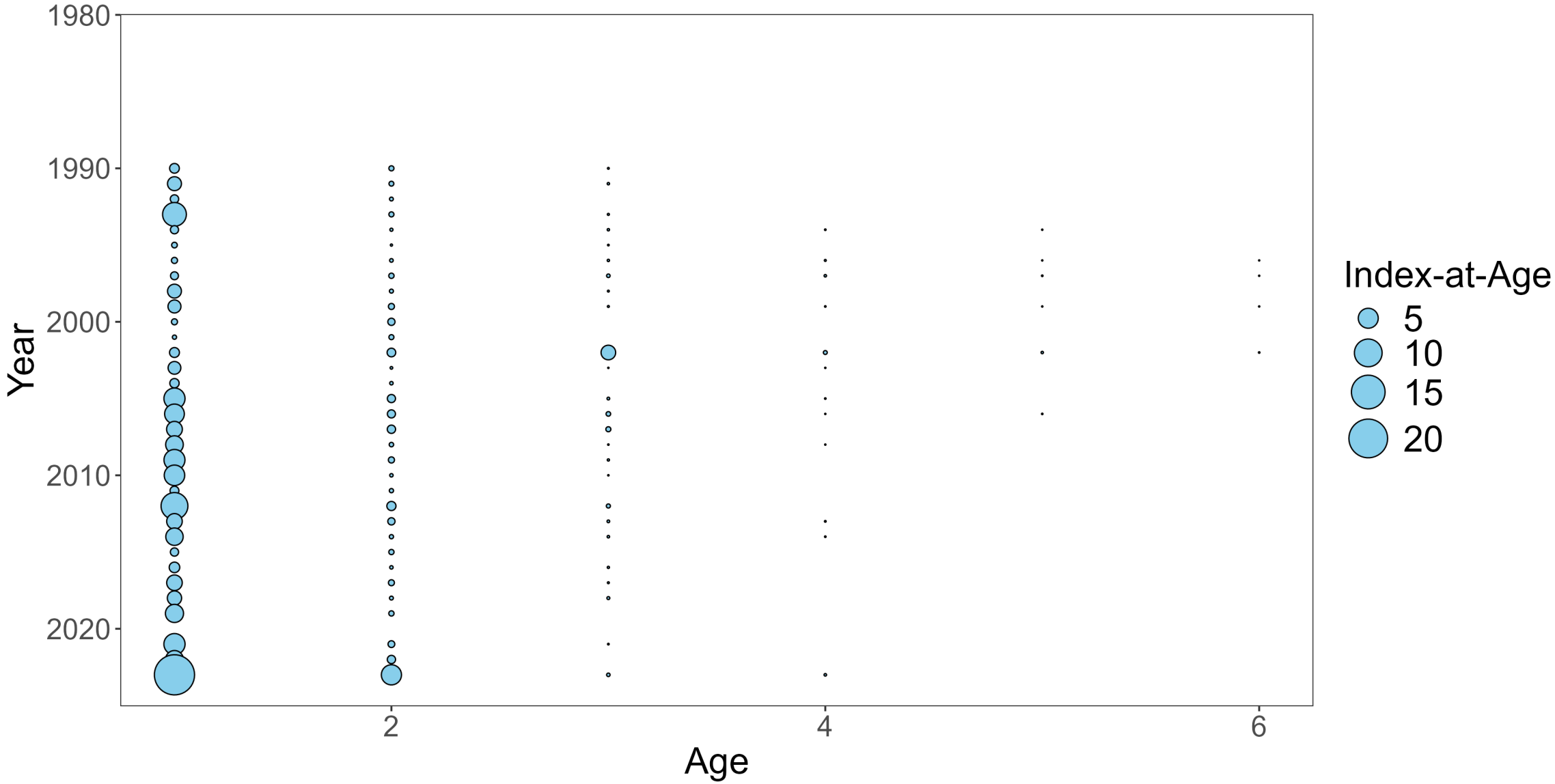
DE 30Ft




1980
1990
2000
2010
2020
Year
2
4
6
Age
Index-at-Age
0.5
1.0


1980
1990
2000
2010
2020
Year
2
4
6
Age
Index-at-Age
0.25
0.50
0.75


1980
1990
2000
2010
2020
Year
2
4
6
Age
Index-at-Age
5
10
15
20

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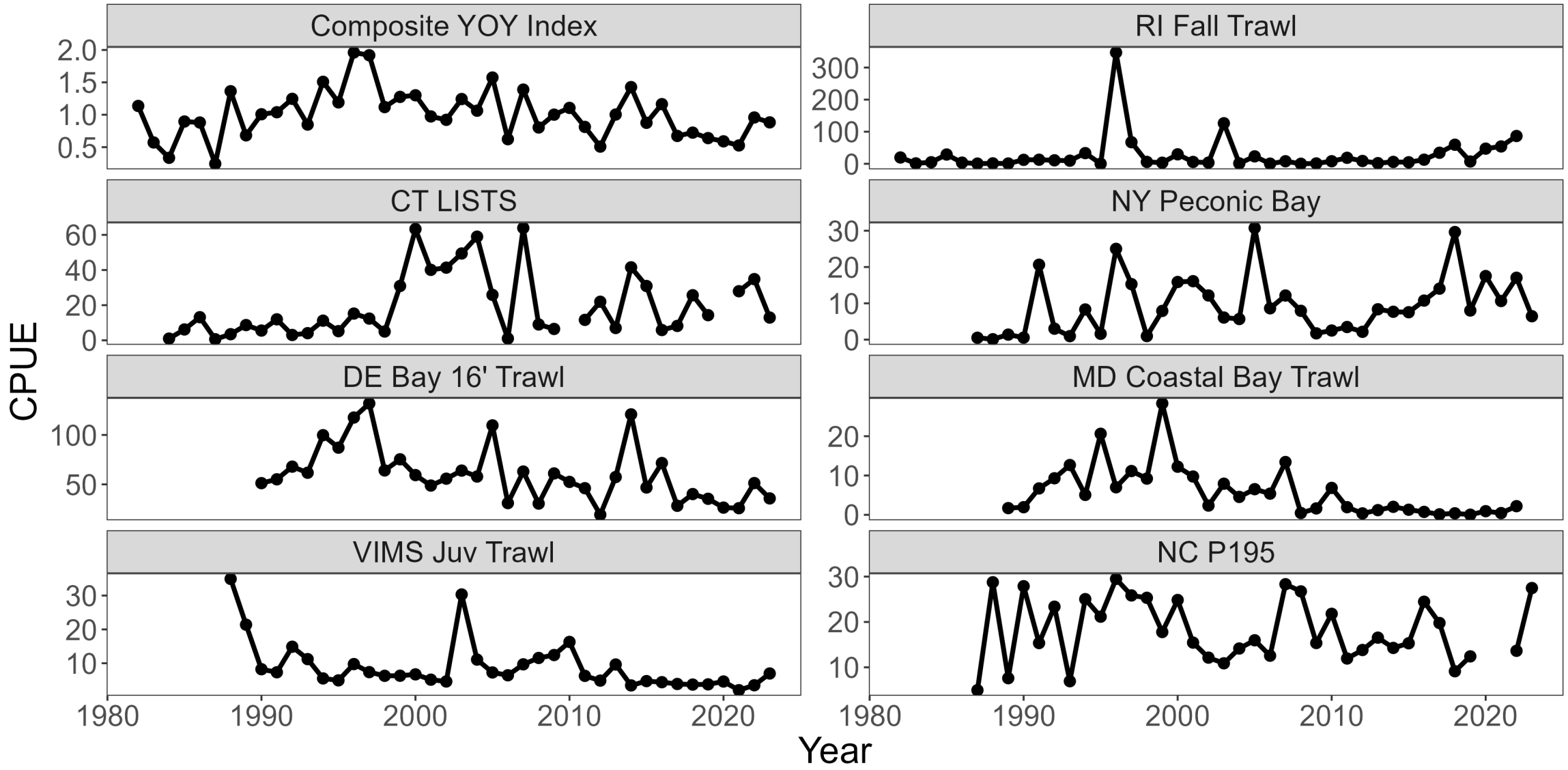
YOY Indices



Model Results

Assessment Model

- Bayesian statistical catch-at-age model
  - Estimates time-varying natural mortality (M)
  - Allows spatial heterogeneity in the indices (i.e., does not assume that the same proportion of the population is available to each index every year)

- 2016 benchmark and 2019 update used an upper bound of 1.0 on M
  - Max age of weakfish is 17 years

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Tagging M for Weakfish

- Krause et al. (2020) used an integrated tagging model to estimate M for weakfish for 2013-2017
- Estimated M=2.33 for age 2-3 weakfish
- Similar total mortality as the benchmark assessment for this time-period

→ Is the upper bound on M in the model too low?

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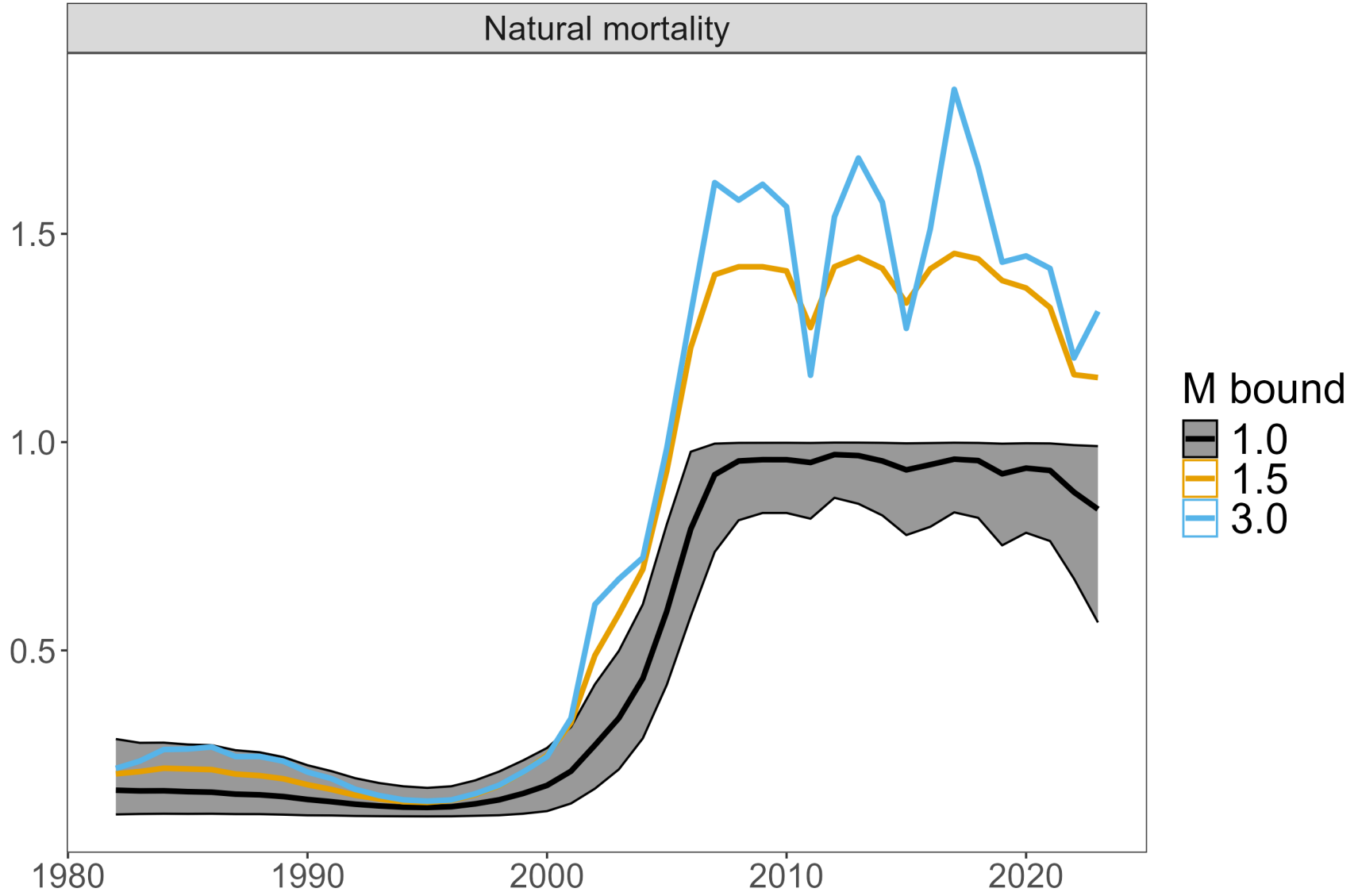
2025 Update

- Ran the model with 3 different bounds on M
  - 1.0 (same as previous assessments)
  - 1.5
  - 3.0

- Sensitivity runs around data
  - Terminal year of 2017 and M bound = 1.0
  - Using 2019 guilds for discards

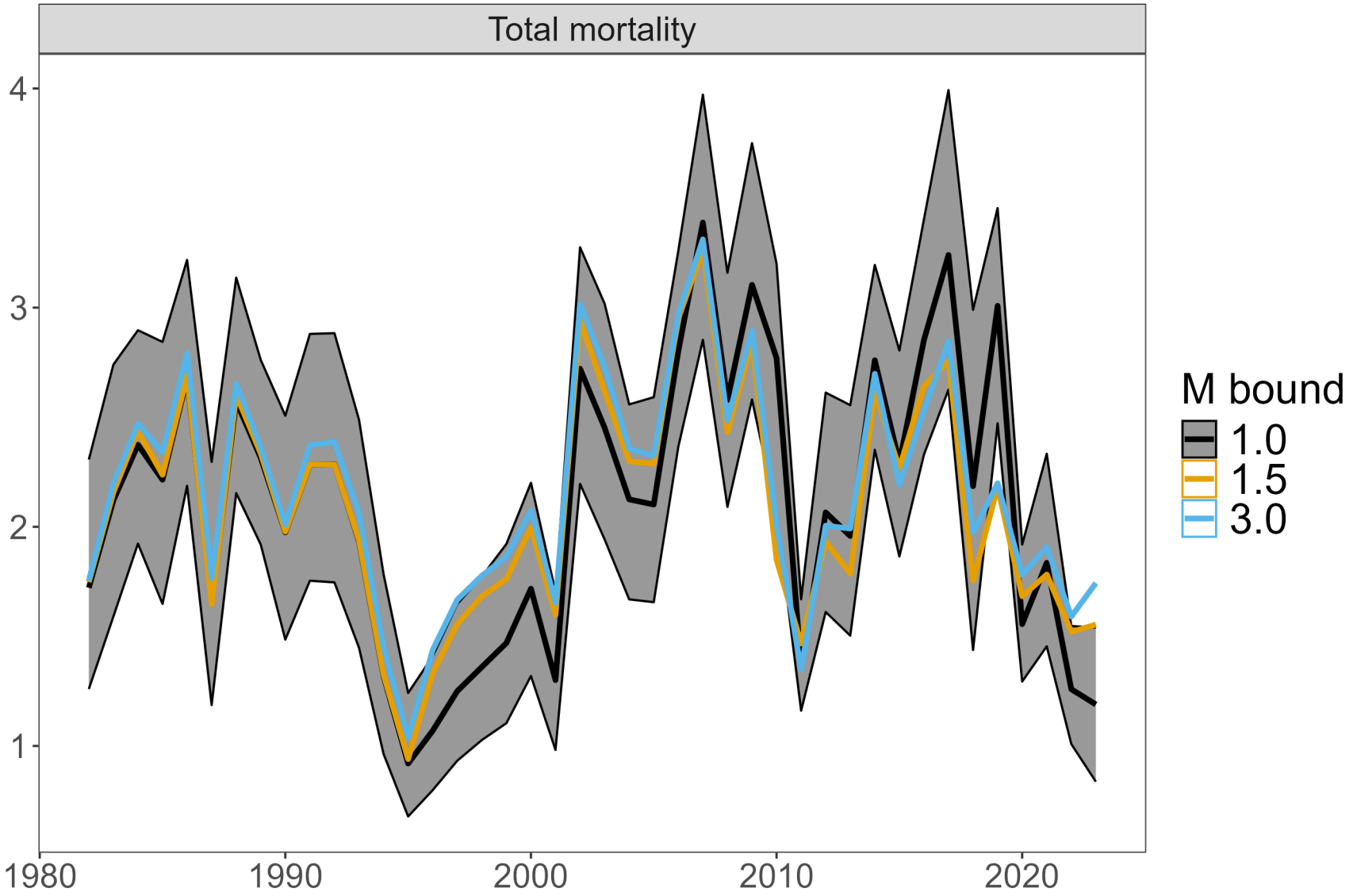
Results

- Higher bound on M → higher estimate of M
- M did not approach upper bound of 3



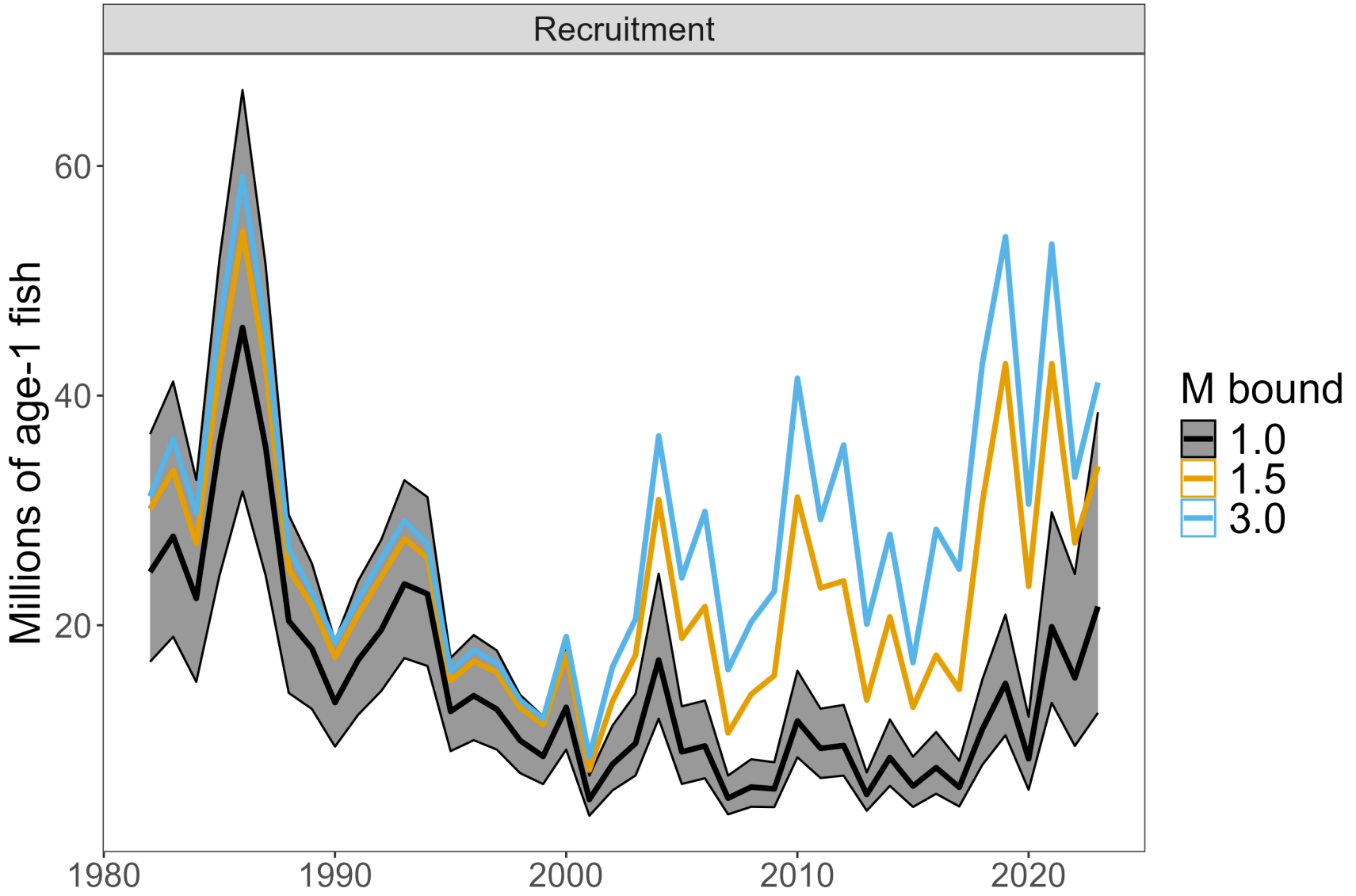
Results

- Estimates of total mortality similar across all runs



Results

- Higher estimates of M translate into higher recruitment and SSB, and lower F



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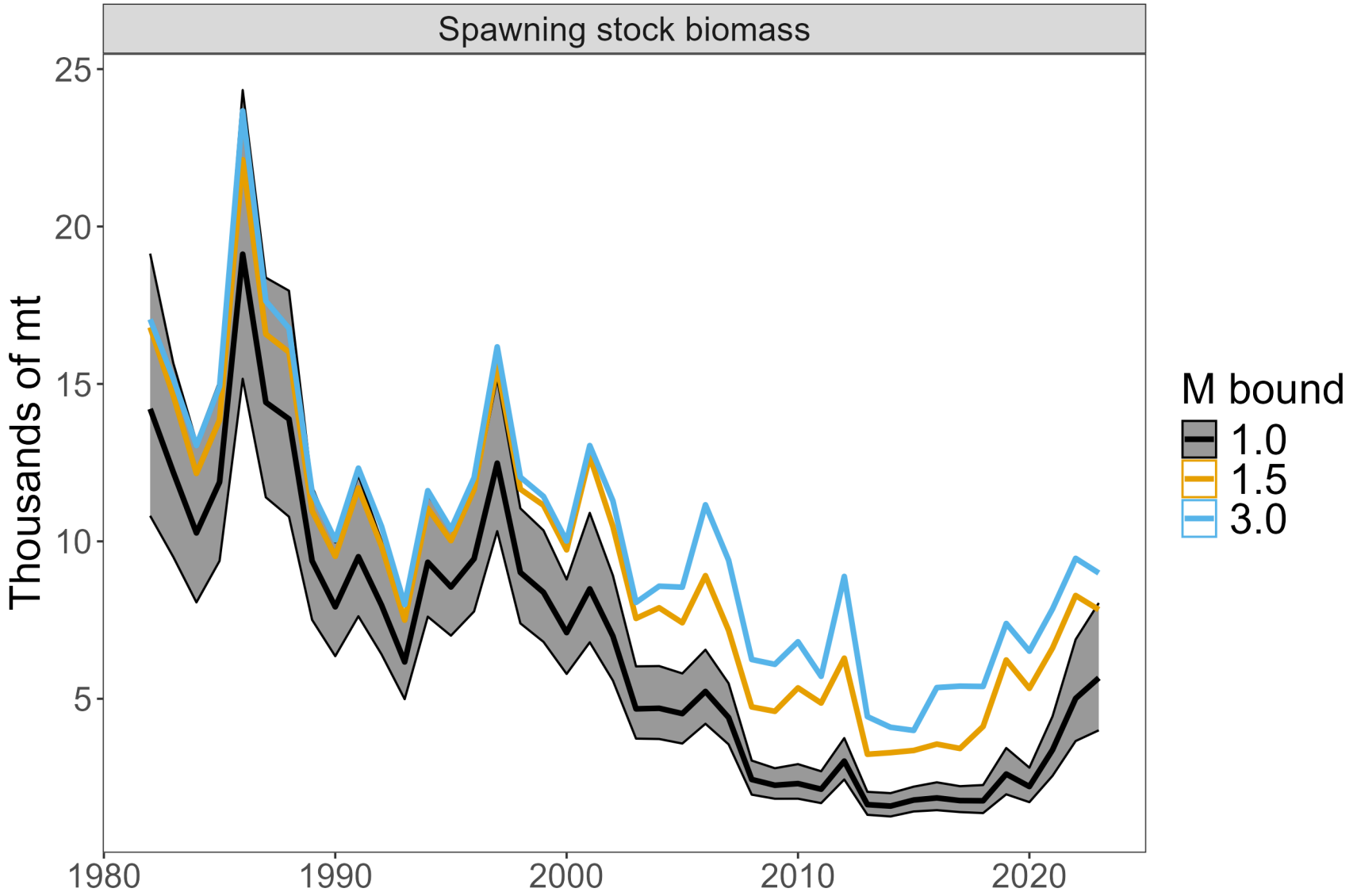

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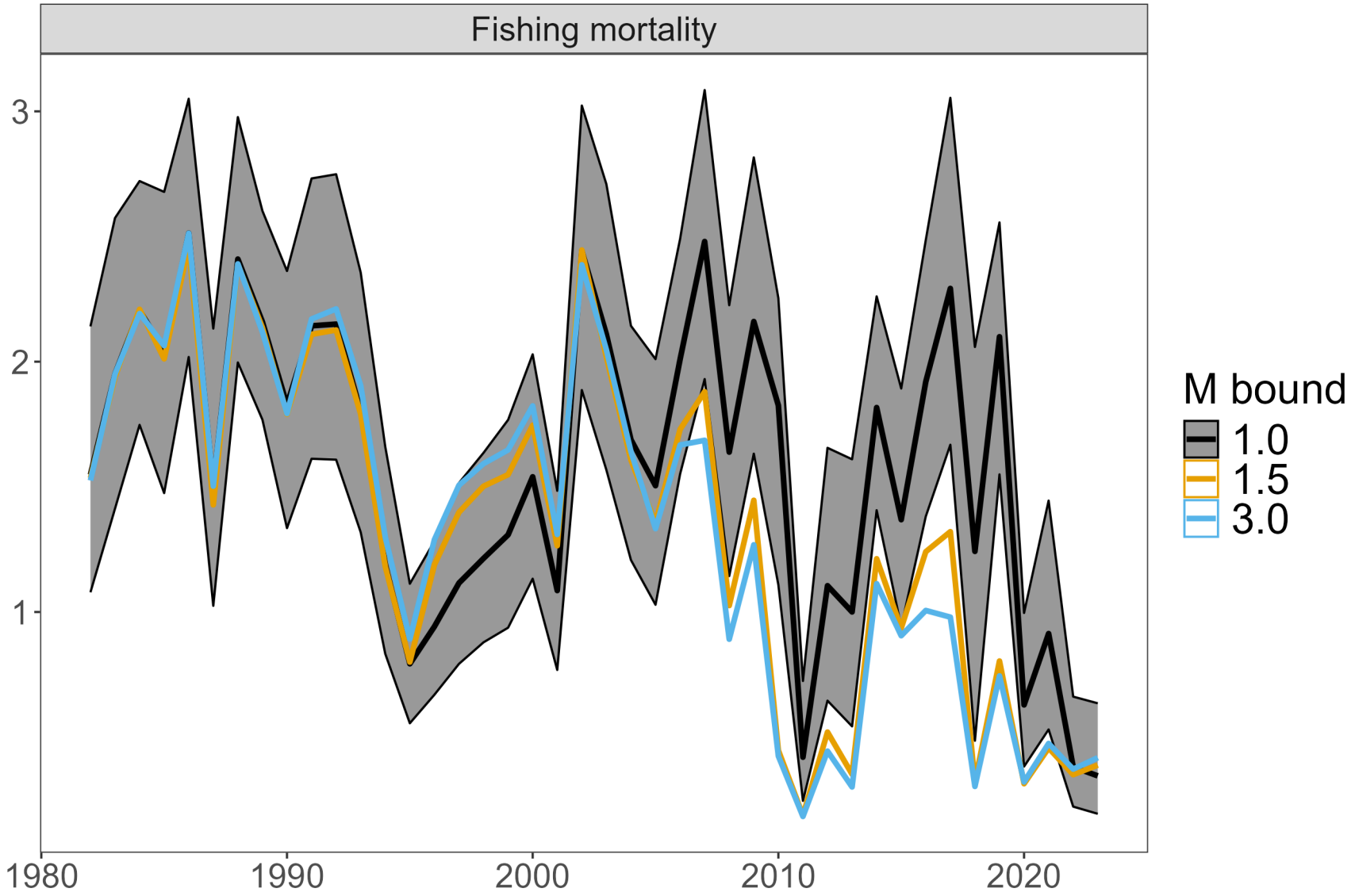
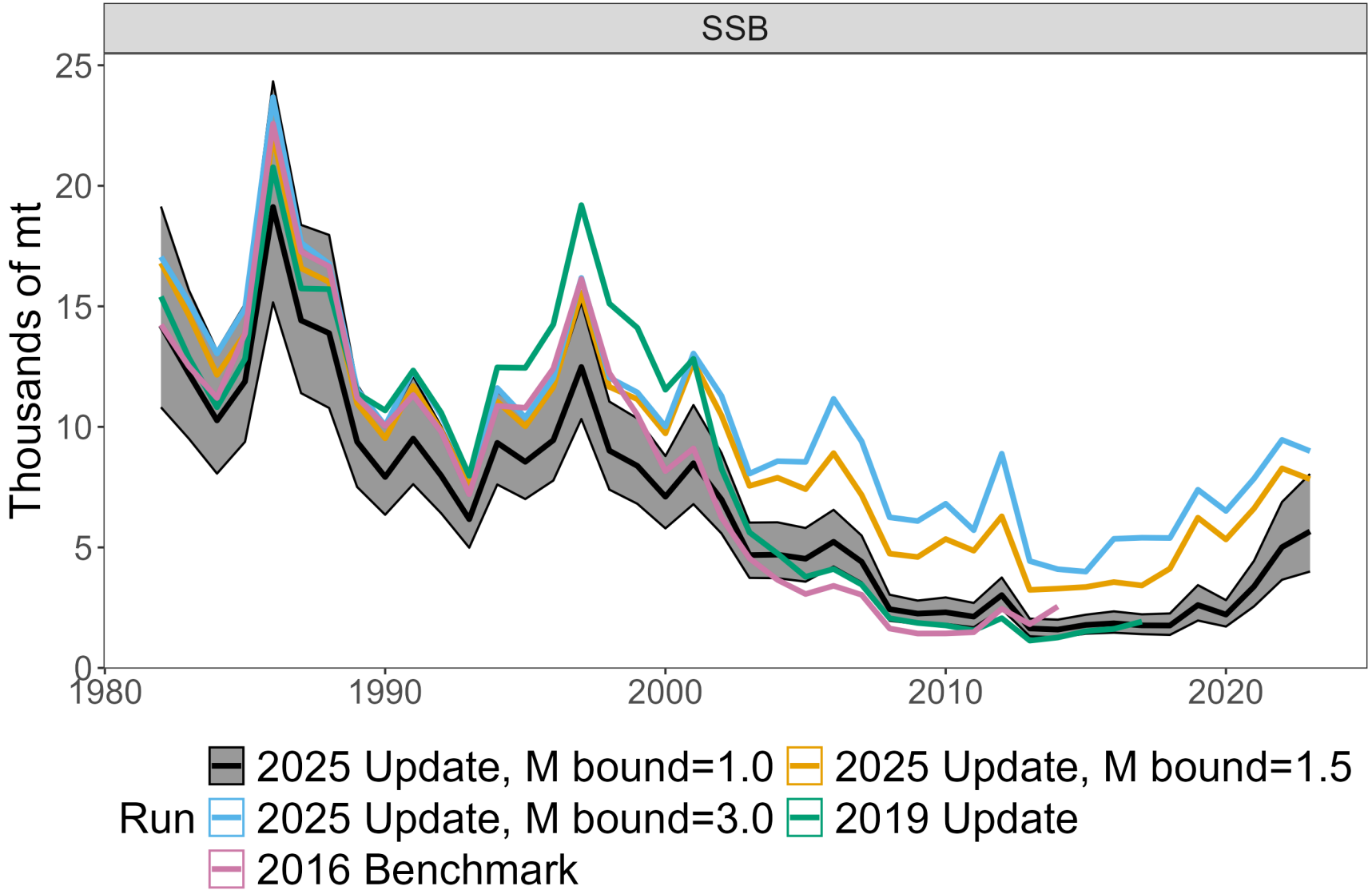


Results

- Scale of 2025 update with M bound = 1.0 generally similar to 2016 and 2019 updates



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TC Conclusions

- The assumption about the upper bound of M in the model had a significant impact on the estimate of M and the overall scale of the population

- Benchmark bound of 1.0 too low; model is likely underestimating M
  - Consistent with findings of tag-based M from Krause et al. (2020)

TC Recommendations

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TC Recommendations

- This update should not be used for management

- Changing the upper bound on M would be a significant change to the model and more work is needed to evaluate model performance, reference point definitions, etc.

→ Not something that can be done for an update, needs a benchmark assessment

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TC Recommendations

- Initiate a benchmark in 2026 to be completed in 2028

- Focus on:
  - Evaluating the ability of the model to estimate M in the current low removals scenario
  - Exploring potential other parameterizations or models including an age-varying as well as time-varying M

- Can also incorporate:
  - New MRIP numbers
  - Re-evaluation of shrimp trawl bycatch

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TC Recommendations

- Some positive signs in the data (increasing commercial and rec catch, small increases in some indices in recent years)
- BUT no signs of expanding age structure, many indices flat/variable with no trend in recent years
- Unlikely stock status has changed significantly since the last assessment

→ Management changes not warranted at this time

Questions