Recreational Release Mortality Work Group Report

Atlantic Striped Bass Management Board
October 23, 2024

WG Members

- Chris Batsavage (NC, WG Chair)
- Nichola Meserve (MA)
- Marty Gary (NY)
- Adam Nowalsky (NJ)
- David Sikorski (MD)
- Mike Luisi (MD)
- Max Appelman (NOAA)

Background

- Board Work Group established to discuss recreational release mortality (RRM)
  - Task 1. No-targeting closures
  - Task 2. Gear modifications
  - Task 3: Stock assessment work/TC tasks
  - Task 4. Public scoping

WG Timeline

2024	Step
May	WG tasks approved by Board; WG membership established
June-July	WG meetings to discuss initial recommendations
August	WG initial recommendations to Board on stock assessment and public scoping
September	WG meetings to discuss all tasks and WG recommendations; developed WG report
October	**Final Report and WG recommendations to Board**

Task #1: No-Targeting Closures

No-Targeting Closures

Task #1: Review existing no-targeting closures in state and federal waters, including any information on impacts to striped bass catch and effort as well as their enforceability. Identify potential angler responses/behavior change to those closures.

No-Targeting Closures

- WG reviewed existing no-targeting closures for striped bass and a few other species (insight on compliance, enforcement, and angler response)

- WG reviewed information from Law Enforcement Committee on enforceability

No-Targeting Closures

WG Conclusions

- Difficult to isolate the effects of no-targeting closures alone on catch and effort
  - Contributing factors like fish availability, other regulations
  - No-harvest closures would likely decrease effort to some degree; what is added benefit of no-catch-and-release?

No-Targeting Closures

WG Conclusions

- Effect of no-targeting closures on catch and effort will vary based on angler response
  - Shift to species with similar fishing methods and still encounter striped bass
  - Shift effort around the closure with no net reduction in effort, but could reduce mortality if environmental conditions outside closure are better

No-Targeting Closures

WG Conclusions

- Compliance best achieved through early and frequent communication, where strong stakeholder support exists, and as the closure continues into the future (i.e., remains in effect year after year)
- Although compliance appears to be good, no-targeting closures are difficult and resource intensive to enforce
- More enforceable in discrete times and areas, and where there are few other species to target, or when the closure is for fishing in general

No-Targeting Closures

WG Conclusions

- Although difficult to enforce, no-targeting closures may have some merit and should not be rejected as an effective tool to reduce release mortality (or total fishing mortality) solely due to enforcement concerns
  - Policy decision on tradeoff between conservation gains and enforceability
  - Striped bass management toolbox is limited

No-Targeting Closures

WG Conclusions

- No-targeting closures may not be a “one size fits all” approach
  - Variation along the coast in striped bass seasons, spatial area, overlap with other fisheries, environmental conditions, enforcement resources
  - Range of stakeholder values and concerns about inequity of considering only no-harvest closures, which would likely only impact recreational trips harvesting striped bass

No-Targeting Closures

- WG finds no-targeting closures have been successfully applied in some circumstances to achieve management objectives, including reducing recreational releases
- However, mandatory implementation of no-targeting closures would have varying degrees of effectiveness, enforceability, and compliance across states
- **WG supports the consideration of seasonal closures to reduce recreational effort and catch, but recommends that no-targeting closures only be pursued in a flexible manner**

No-Targeting Closures

- Ideas for pursuing no-targeting closures in a flexible manner
  - State/region could select between implementing a no-harvest closure or no-targeting closure; no-targeting closure could be shorter due to additional conservation benefit
  - Some WG members support adding an uncertainty buffer to any proposed no-targeting closure options to address uncertainty
  - Board could adopt no-harvest closures but encourage states to implement them as no-targeting closures if warranted by conditions in their state

Task #2: Gear Modifications

Gear Modifications

Task #2: Review the MA DMF discard mortality study and other relevant reports to evaluate the efficacy of potential gear modifications.

Gear Modifications

- WG reviewed initial results from MADMF study and UMASS-Amherst study
- WG reviewed key findings from past studies
- WG reviewed information from Law Enforcement Committee on enforceability

Gear Modifications

Overall WG Conclusions

- Gear type can impact post-release mortality
- Gear modifications have the potential to reduce post-release mortality of striped bass
- Regulations on recreational gear types and methods of take are moderately enforceable

Gear Modifications

WG Conclusions

- Recent studies suggest lure-hook and bait-hook configurations impact post-release mortality and could be an area for education and/or regulation
  - MADMF study suggests highest mortality rate with baited circle hooks followed by lures, while flies had lowest mortality rate
  - Among lures, single hooks had lowest mortality rate and double treble hooks highest
  - Similar results from UMASS-Amherst study with some differences possibly due to different survey design and sample sizes

Gear Modifications

WG Conclusions

- Many variables to consider regarding gear modifications, and difficult to isolate one particular gear to get the most impact
  - Fight time, handling time, water/air temperatures, angler experience, and fish size also impact the mortality rate; these variables are often interrelated
  - How often is a gear configuration used by anglers? → 2025 MADMF survey to help address this question

Gear Modifications

WG Conclusions

- UMASS-Amherst study suggests striped bass anglers largely support adopting science-based catch and release best practices, and support adequate enforcement of the regulations

- Board should consider the impacts to the industry of any potential gear modification from the perspective of manufacturer, retailer, tackle store, etc.

Gear Modifications

WG Conclusions

- Board should consider enforceability and how gear restrictions would interact with management of other species, but should not rule out gear restrictions based on enforceability alone

- Education and outreach efforts should continue on best management practices

Gear Modifications

WG Conclusions

- States can implement gear restrictions as they see fit (e.g., statewide, area/time-specific) without Board action
  - States should communicate with ASMFC and neighboring states to minimize inconsistency in areas fished by anglers from multiple states (e.g., shared waterbodies)

Gear Modifications

- If the Board considers additional recreational gear modifications, WG recommends modifications that:
  - support post-release survival based on study results
  - are easy for anglers to adopt
  - are consistent among states and regions
- Recognize that any reduction in post-release mortality is currently unquantifiable
- WG recommends the Board also consider:
  - impacts to recreational anglers and fishing tackle industry
  - current efforts by the fishing tackle industry to produce/promote gear that supports post-release survival
  - potential enforcement challenges
  - uncertainty in results from current studies

Task #3: Stock Assessment Work and TC Tasks

Stock Assessment

Task #3. Identify assessment sensitivity runs which may inform Board discussion around release mortality (e.g., how low would you have to reduce the release mortality rate in order to see a viable reduction in removals with the same level of effort?). Consider the tradeoff of reducing the release mortality rate vs. reducing the number of releases overall.

- *Board tasked the TC based on WG recommendation; TC Chair will address this*

Task #4: Public Scoping

Public Scoping

Task #4. Consider public scoping on measures to address release mortality (e.g., online public survey ahead of the October Board meeting).

Public Scoping

- WG discussed a potential survey of stakeholders on measures to reduce RRM

- Committee on Economics and Social Sciences (CESS) members provided guidance on approaches to consider to gather stakeholder input and comments on initial survey draft

Public Scoping

WG Conclusions

- Survey not feasible to gather complex information on stakeholder response to management measures
- Survey would not meet the timeline to gather input prior to Board action following this stock assessment
- Beyond this next management action, stakeholder focus groups could be useful to 1) paint the landscape of potential stakeholder responses to potential measures and 2) discuss outreach on best practices
- An online open survey could also be considered, but recognize inherent biases and survey fatigue

Public Scoping

If Board wants to gather public input on stakeholder buy-in and potential responses to management measures outside of an addendum/amendment public comment processes, the WG recommends focus groups as the best approach to collect that information.

- Need to address logistics and timing
- Focus groups would require significant state staff time
- CESS members could help advise the process
- Consider leveraging participation by graduate students

Release Mortality Calculations and No Targeting Tasks for TC-SAS

Tyler Grabowski, TC Chair

Tasks

- In August 2024, Board tasked the TC with questions to address tradeoff between reducing the release mortality rate vs. reducing the number of releases overall

- Part of this tasking required the TC-SAS to identify a method for estimating reductions associated with no-targeting closures

- TC-SAS met in September-October 2024 to address these tasks

Tasks 1-2

1. If a reduction is needed to achieve rebuilding, determine how low the release mortality rate would need to be to achieve that entire reduction through the release mortality rate alone. If the number of live releases is constant, what would the release mortality rate need to be to achieve the reduction?

2. If a reduction is needed to achieve rebuilding, determine the percent reduction in number of live releases needed to achieve the entire reduction through live releases alone. Using the current 9% release mortality rate, how many fewer live releases would there need to be to achieve the reduction?

Tasks 1-2

- Scenarios assume a reduction would be fully achieved through reducing the release mortality component of fishery removals (i.e., commercial removals and recreational harvest are assumed constant)
- Calculations for 4% reduction (lowest reduction from the assessment) and 15% reduction for reference
- Calculations depend on what proportion of total removals is attributed to recreational release mortality
- In 2023, recreational release mortality was 42% of total removals → used for the calculations
  - TC-SAS considered a range from 39% (2022 proportion) to 50% (2021 proportion); results were not especially sensitive to this assumption

Tasks 1-2

	Current Release Mortality Rate Used in Stock Assessments	Task 1 Hypothetical Release Mortality Rate to achieve entire reduction
4% reduction from total removals	9%	8.1%
15% reduction from total removals	9%	5.8%

Tasks 1-2

	Task 2 Hypothetical Reduction in Live Releases to achieve entire reduction
4% reduction from total removals	-9.5%
15% reduction from total removals	-35.8%

Tasks 3-4

3. If a reduction is needed to achieve rebuilding, determine the percent reduction in number of live releases needed under the current 9% mortality rate, assuming there is an associated reduction in recreational harvest due to no-targeting closures.

4. Identify the tradeoffs of implementing no-targeting closures at different times of the year with different assumed release mortality rates to help inform when/where implementing no-targeting closures would result in the highest reduction. Factors could include water temperature and salinity, with the assumption that the release mortality rate is higher when the water temperature is high and the salinity is low.

Tasks 3-4

- TC-SAS identified a method to estimate the reduction associated with no-targeting closures
- Could apply that methodology coastwide with additional guidance from the Board on what percent reduction management is aiming to achieve (Task #3)
- Task #4 could be addressed when Task #3 is addressed

Methods for Quantifying Reduction from No-Targeting Closures

Quantifying No-Targeting Closure

- MDDNR estimated reductions for no-targeting closures implemented through Addendum VI
  - No-targeting closures in Maryland Chesapeake Bay for April 1-30 and July 16-31
  - Assumed trips only targeting striped bass (e.g. no other species were targeted) would no longer release any striped bass
  - Assumed if striped bass were targeted with a second species, those trips would still release striped bass but at a lower non-targeted rate
  - Assumed all striped bass releases from non-targeted trips (i.e., incidental catch) would still occur

Quantifying No-Targeting Closure

- Anglers report targeting other Bay species more heavily during the closures as compared to prior to the closures when striped bass is the most targeted species

- Impact of a no-targeting closure in the ocean may be different than in the Bay
  - High proportion of anglers in the Bay are only targeting striped bass in the summer, which may result in a larger reduction in the Bay than in the ocean

- TC-SAS agreed the closures seem successful in reducing total removals, but uncertainties around fish availability, angler behavior, and where people are shifting their effort (to other species) are important to consider

Quantifying No-Targeting Closure

- **TC-SAS agreed the MDDNR method for estimating the reduction associated with no-targeting closures is appropriate to apply coastwide if the Board considers no-targeting closures as a future management action**

Questions?

2024 Stock Assessment Update for Atlantic Striped Bass

TOR 1

Update fishery-dependent data (landings, discards, catch-at-age, etc.) that were used in the previous peer-reviewed and accepted benchmark stock assessment.

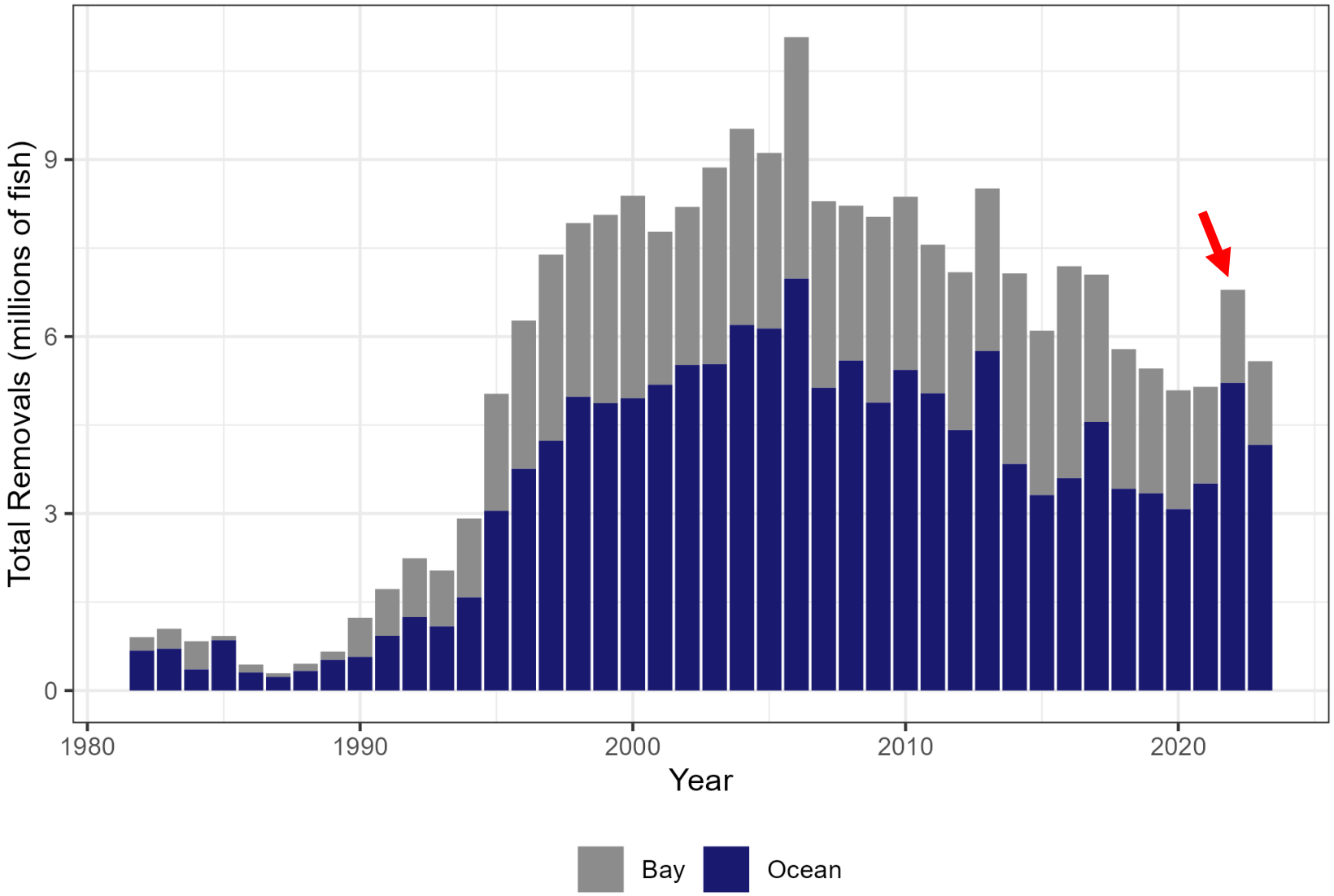
Catch Data

- MRIP estimates of harvest and dead releases for ME, NH, MA, RI, CT, NY, NJ, DE, MD, VA, and NC (ocean only)
- Reported commercial harvest for MA, RI, NY, DE, MD, PRFC, VA and NC (ocean only)
- Commercial dead discards estimated from tag and MRIP data

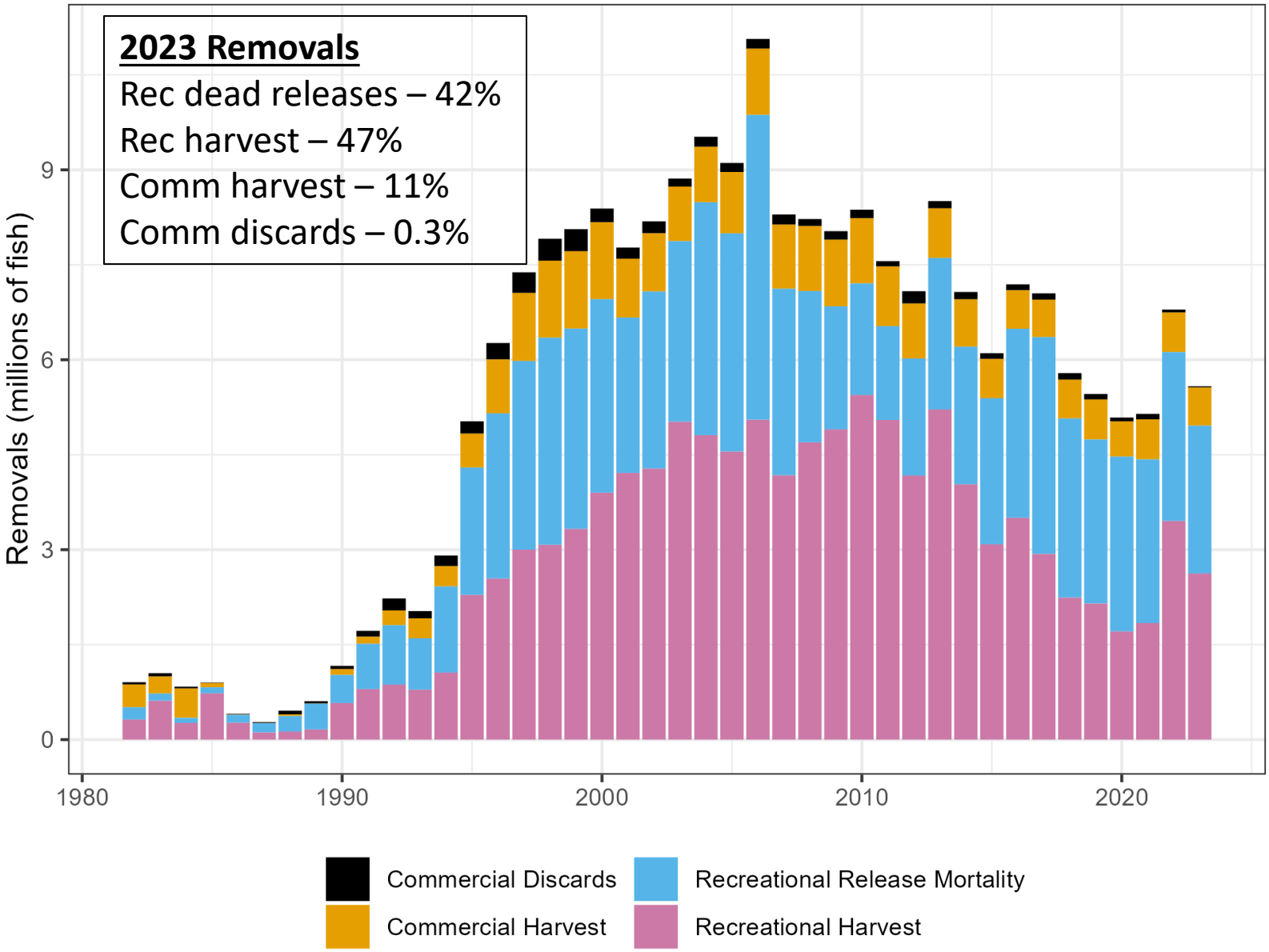
<u>Missing Catch Data</u>

- Catch from major rivers (e.g., Hudson River, Delaware River, etc.)
- Unreported catch (e.g., poaching, underreporting)

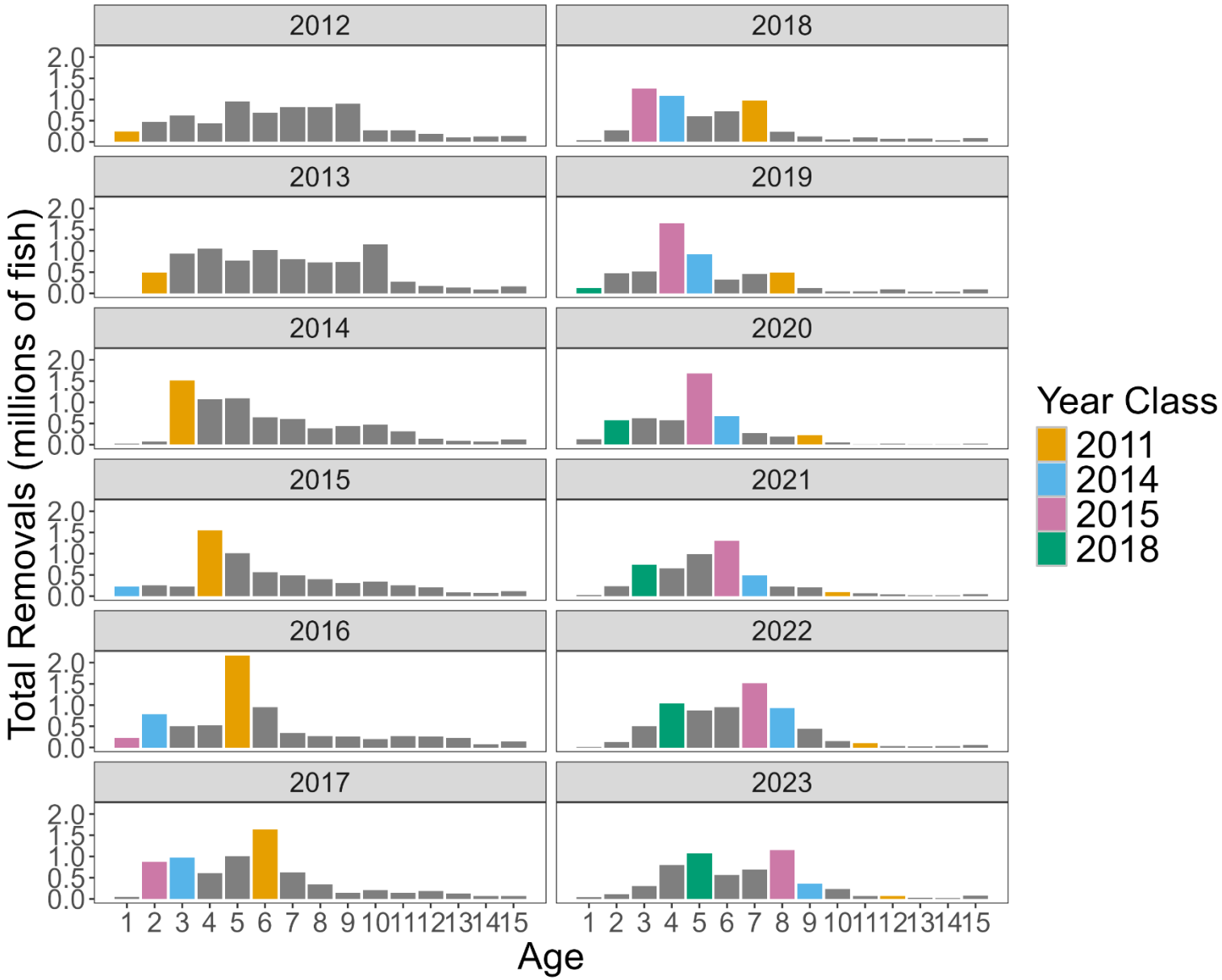
Total Removals By “Fleet”



Total Removals By Disposition



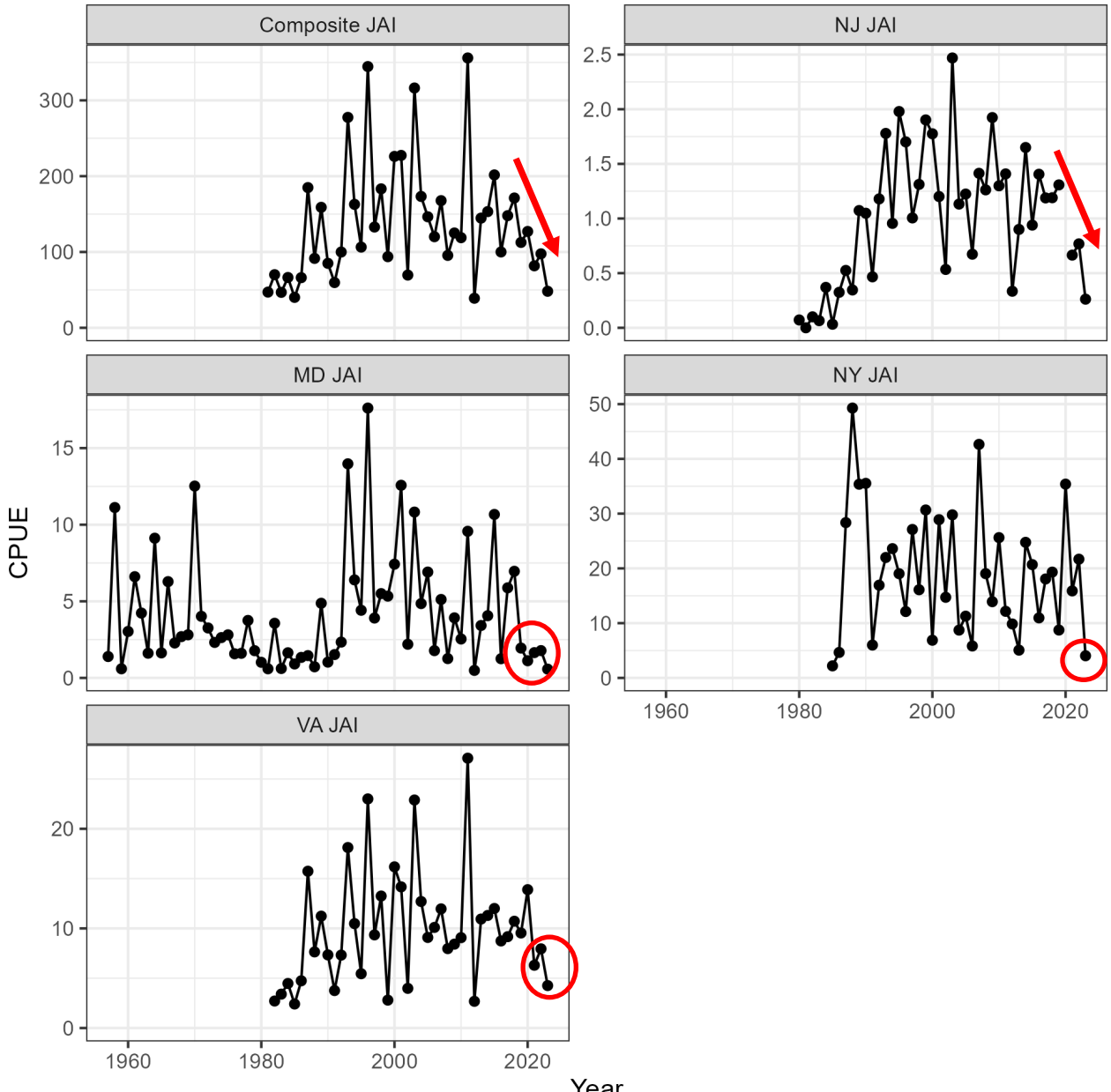
Total Catch Composition



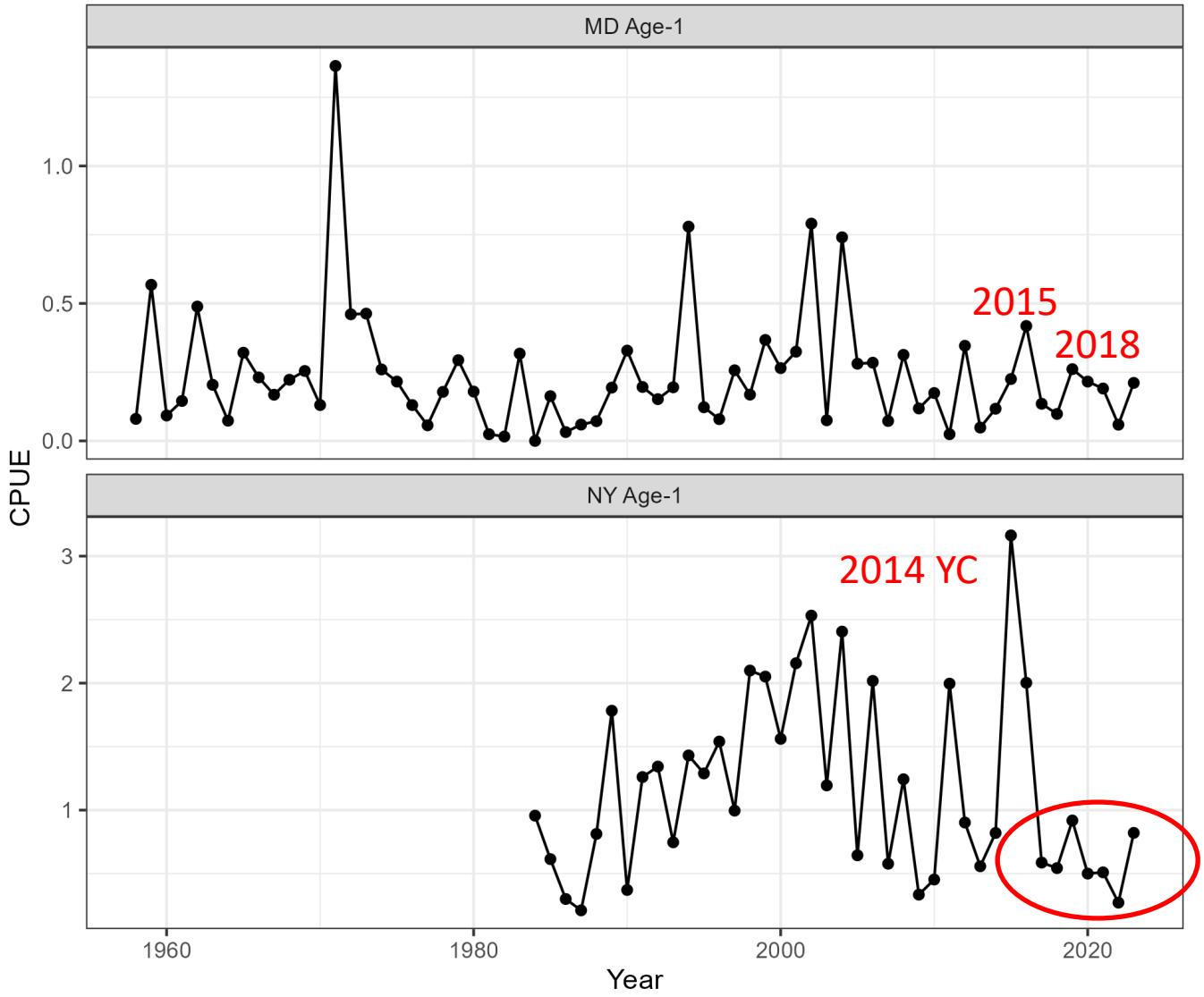
TOR 2

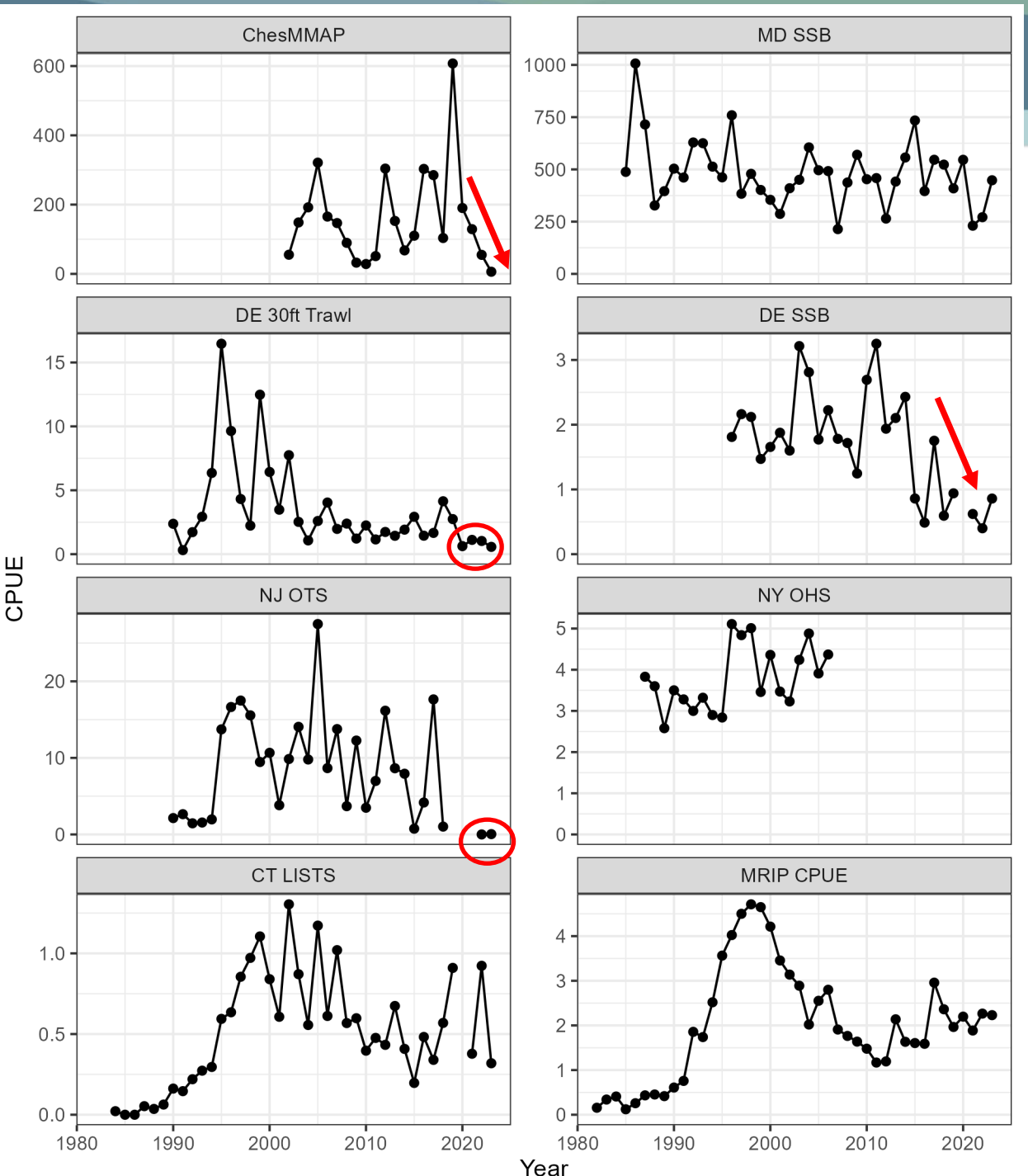
Update fishery-independent data (abundance indices, age-length data, etc.) that were used in the previous peer-reviewed and accepted benchmark stock assessment.

YOY Indices


Composite JAI
NJ JAI
MD JAI
NY JAI
VA JAI
CPUE
Year
0
100
200
300
0.0
0.5
1.0
1.5
2.0
2.5
5
10
15
20
30
40
50
1960
1980
2000
2020

Age-1 Indices





Age Composition Indices

TOR 3

1) Tabulate or list the life history information used in the assessment and/or model parameterization (M, age plus group, start year, maturity, sex ratio, etc.) and note any differences (e.g., new selectivity block, revised M value) from benchmark.

2018 Benchmark Assessment

- Forward projecting statistical catch-at-age model
  - Age-1 abundance (recruitment) in each year
  - Fully-recruited F in each year
  - Catch selectivity in 4 regulatory periods
  - Catchability coefficients for all indices (14)
  - Selectivity for each survey (8) with age composition data
- Data are split into two "Fleets" – Ocean and Bay regions
  - Improved selectivity fits
  - Provided partial F for each fleet
- Age-specific M were used (1.13: age 1 to 0.15: age 7+)

Update

- Same life history parameters (M, maturity-at-age, etc.)
- Updated weights-at-age for use in SSB calculation
- Adjusted CVs of surveys to get close to RMSE=1.0
- Adjusted effective sample size of survey age compositions using the Francis method

Update

Selectivity Time Blocks

- Base Run: Single time block (2020-2023) for both regions (used for determining status)

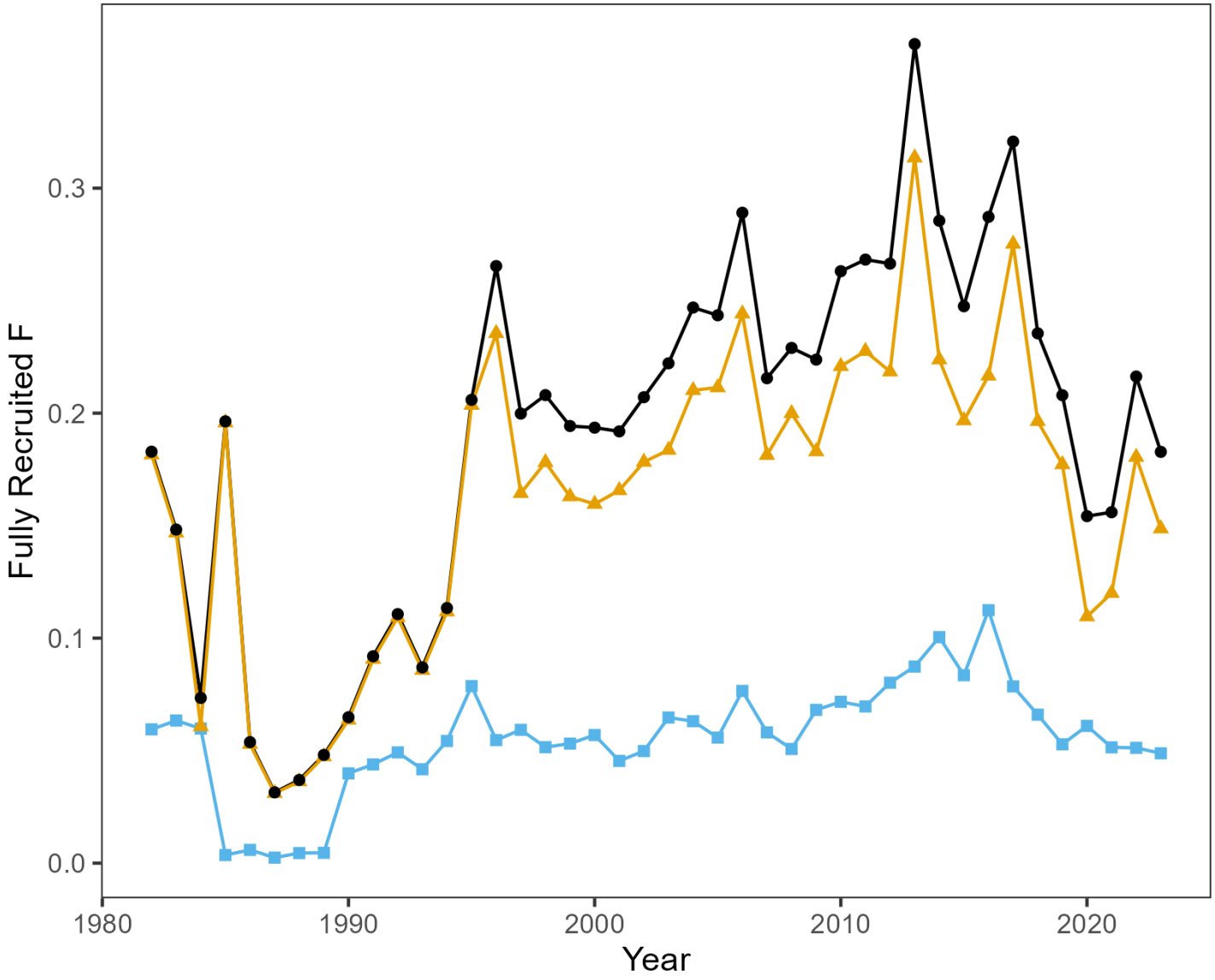
- Alternate Run: Two time blocks (2020-2022, 2023)

- TC was uncomfortable with only a single year of data used for the estimation. Also, the estimated Ocean curve showed a descending limb that was steeper than would be expected by a change from max. 35” to 31” and the curve shifted to older ages.

TOR 4

1) UPDATE ACCEPTED MODEL AND ESTIMATE UNCERTAINTY
2) RETROSPECTIVE ANALYSIS
3) INCLUDE SENSITIVITY RUNS
4) COMPARE WITH THE BENCHMARK ASSESSMENT RESULTS

Fully-Recruited F By "Fleet"



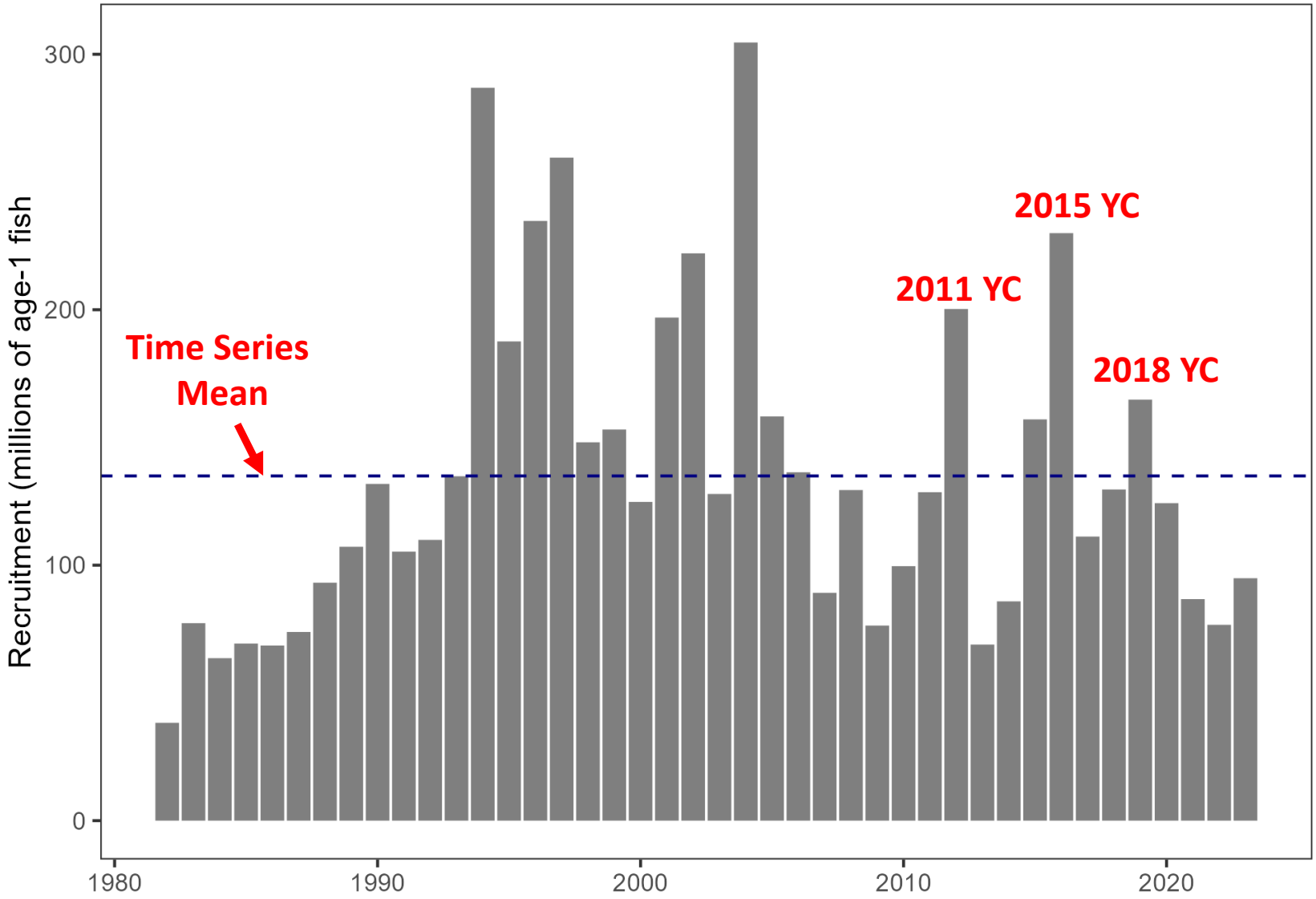
2023

Bay: 0.05

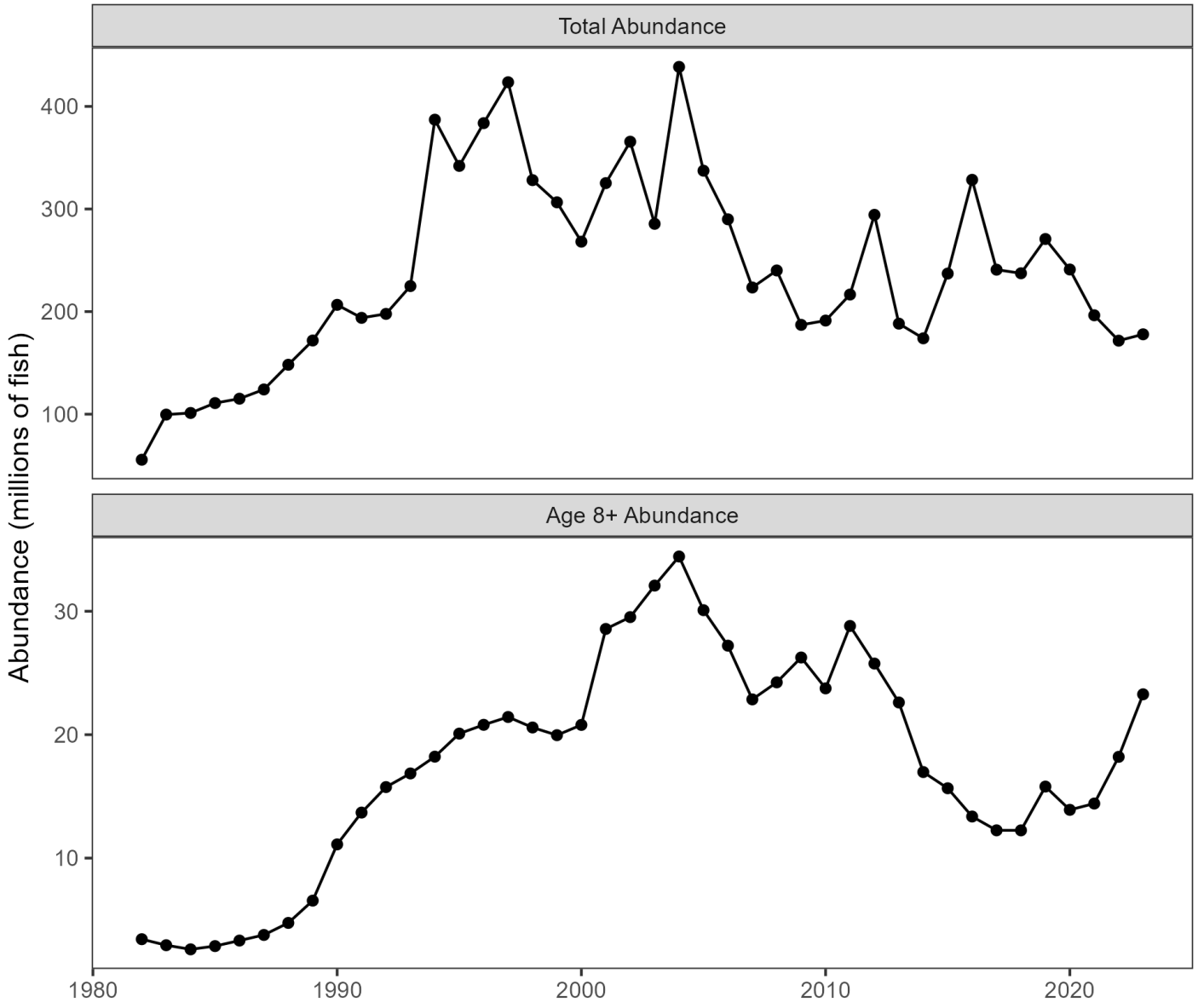
Ocean: 0.15

Total: 0.18

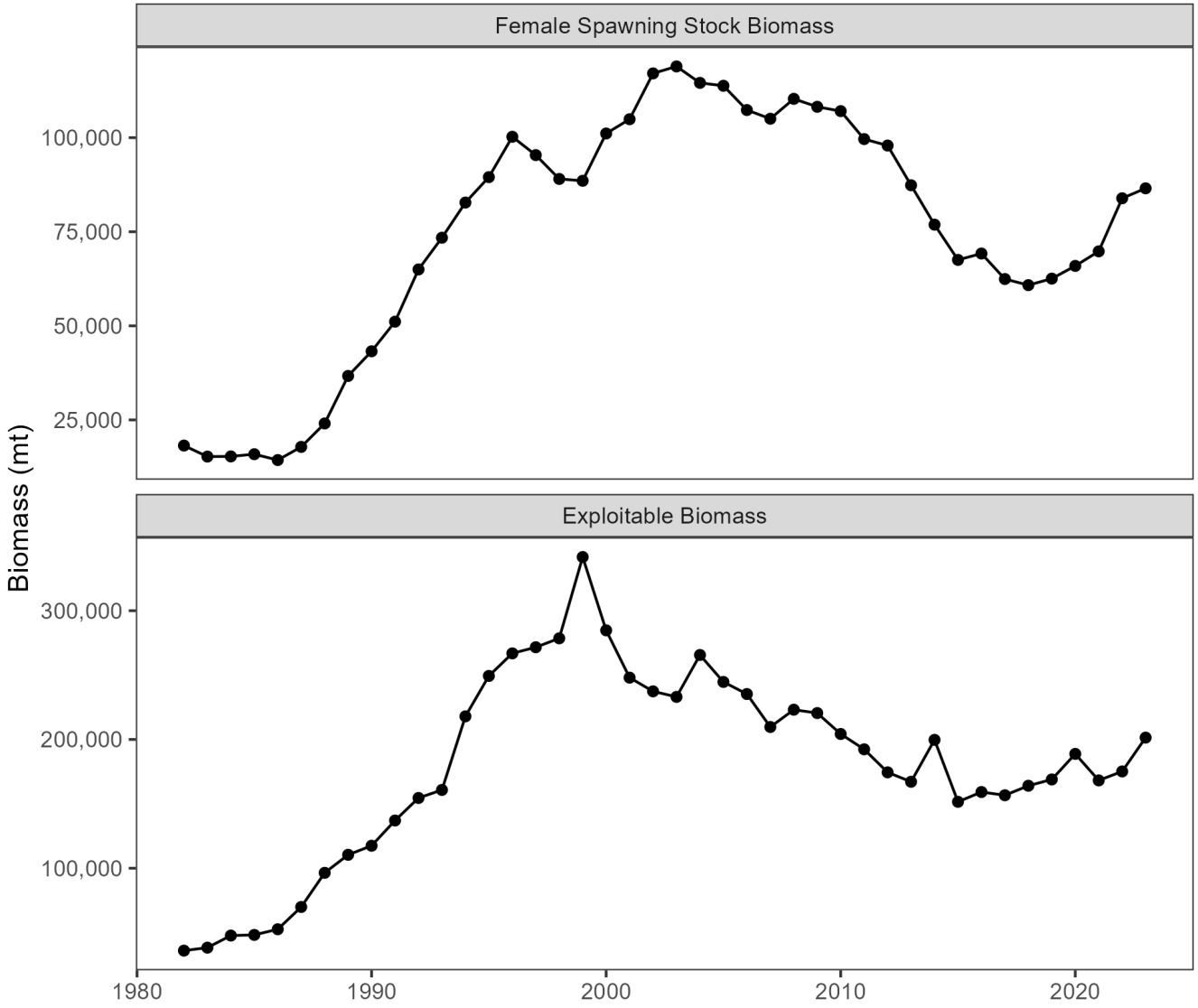
Recruits (Age-1)



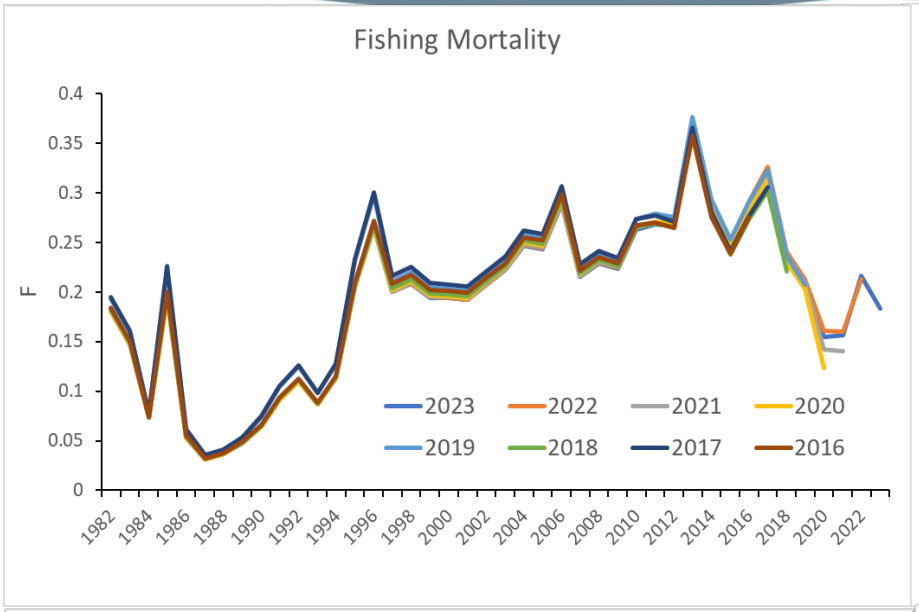
Abundance

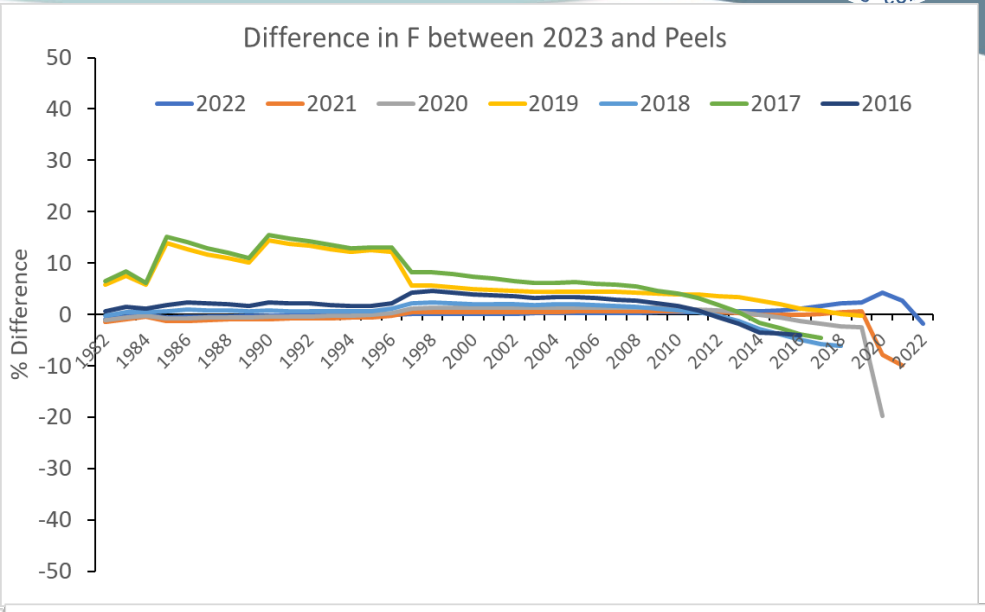

Total Abundance
Age 8+ Abundance
Abundance (millions of fish)
400
300
200
100
30
20
10
1980
1990
2000
2010
2020

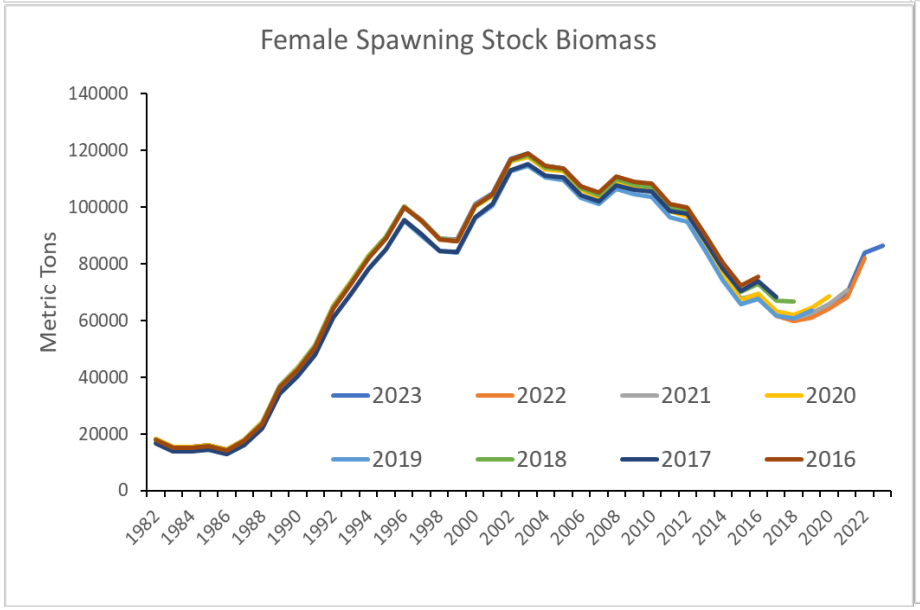
Female Spawning Stock Biomass

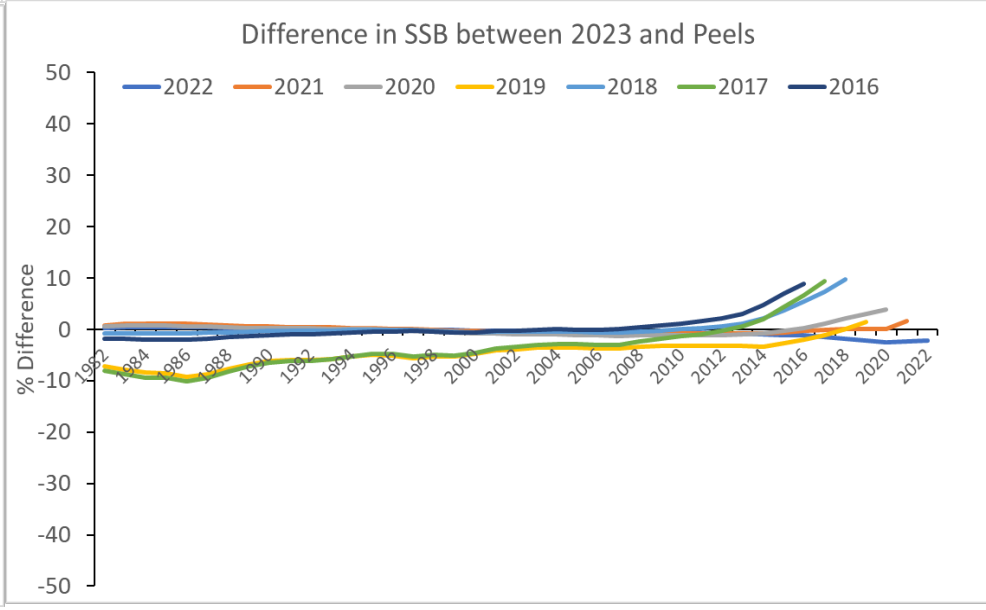


Retrospective Analysis

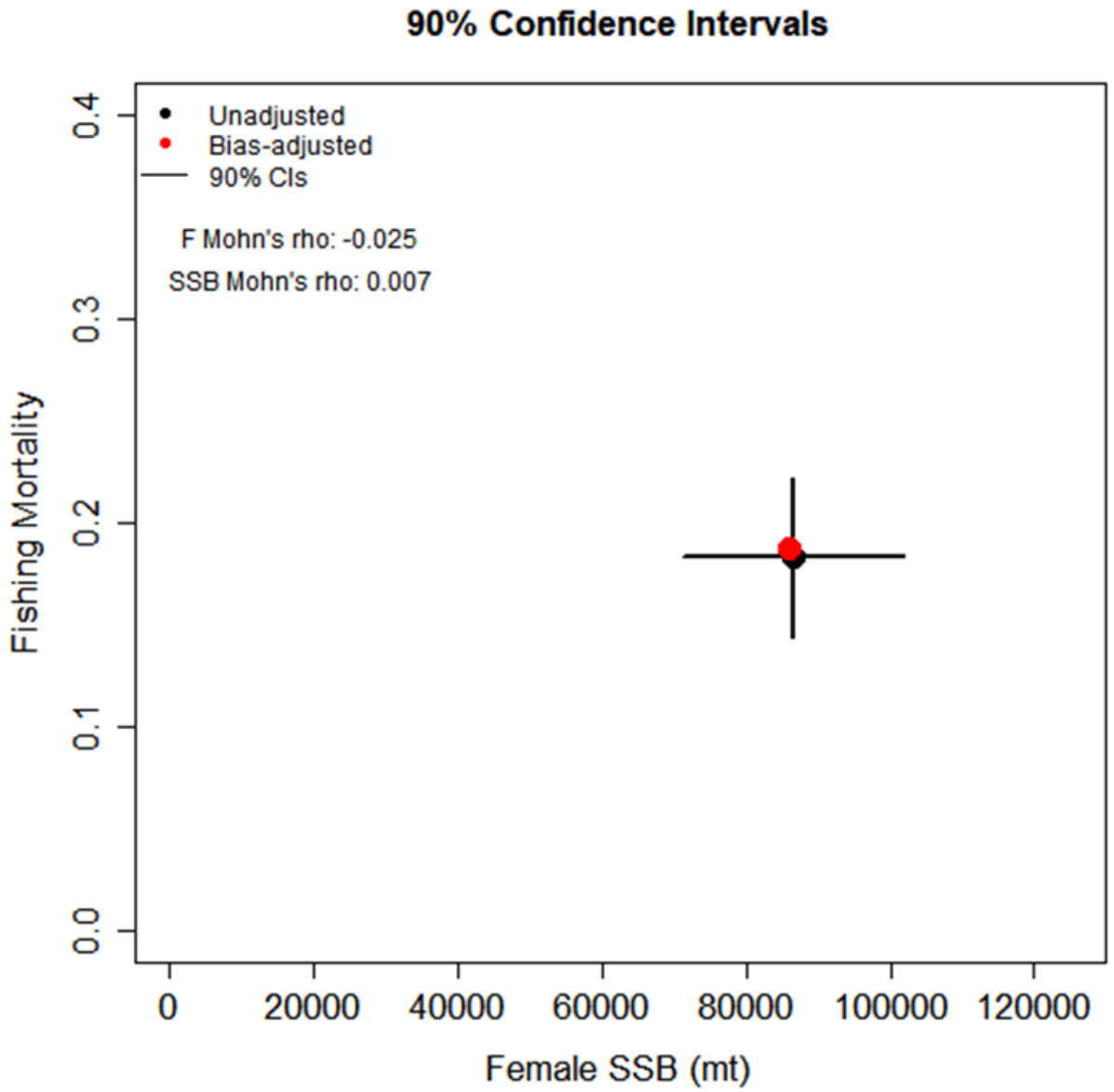






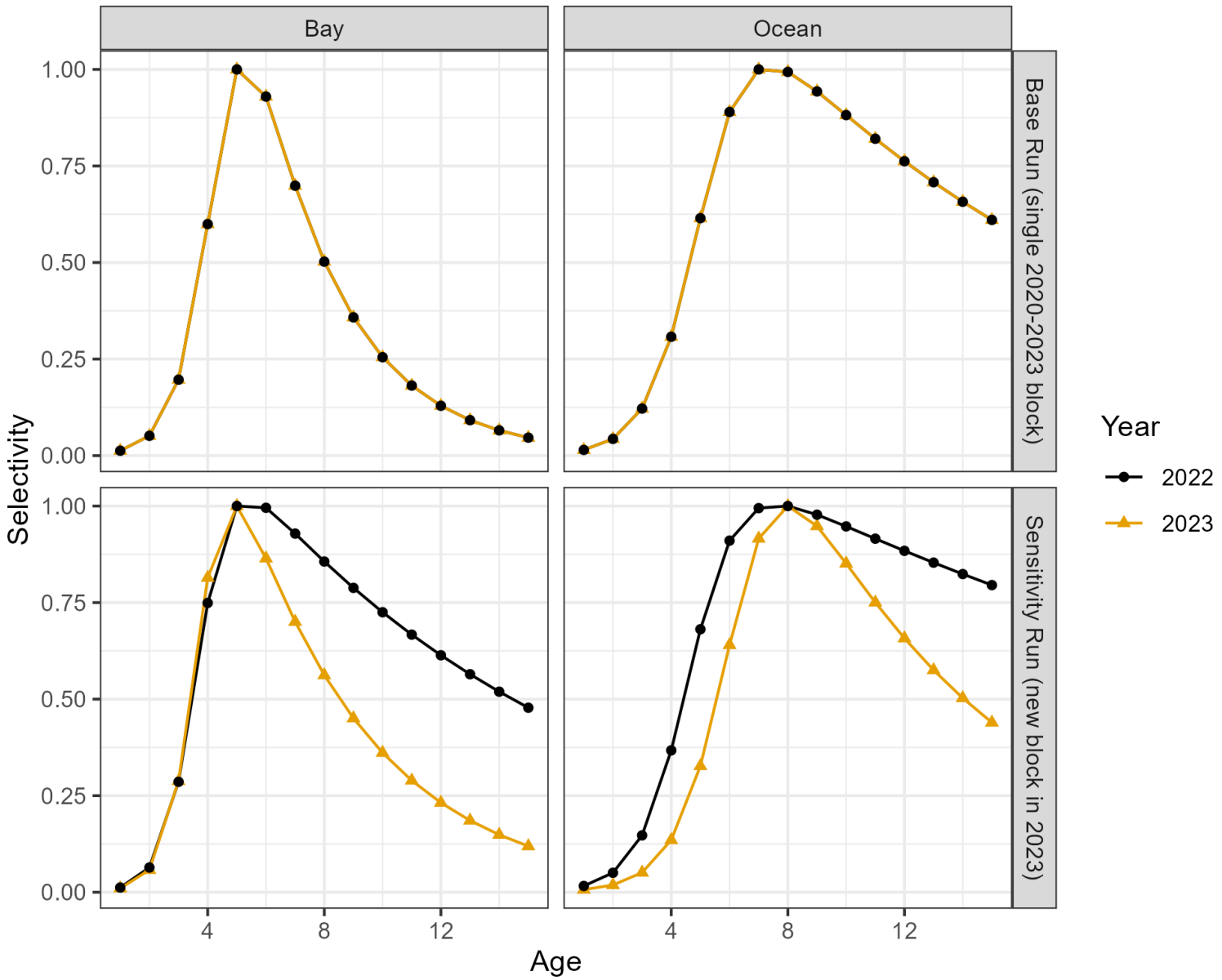


Bias-Correction Not Needed

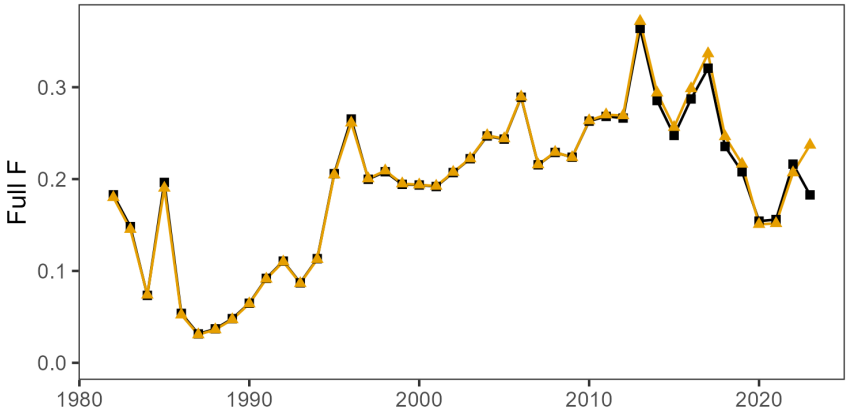


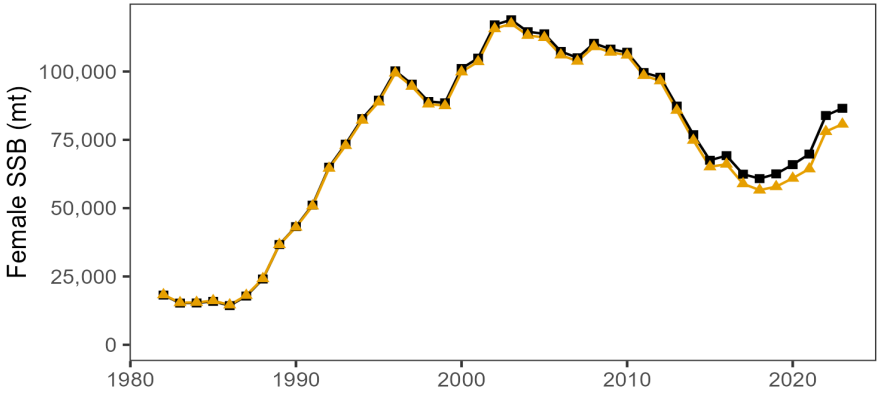
SENSITIVITY RUNS

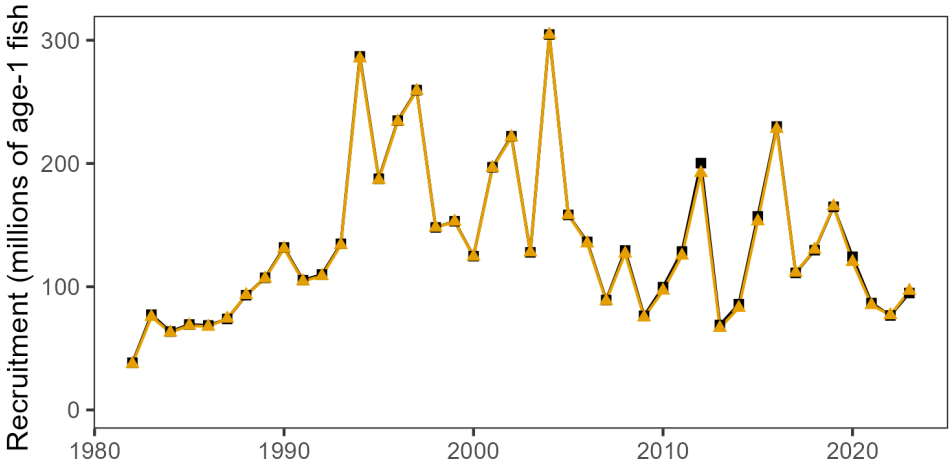
Different Selectivity Blocks



Comparisons of Base and Alternate Outputs

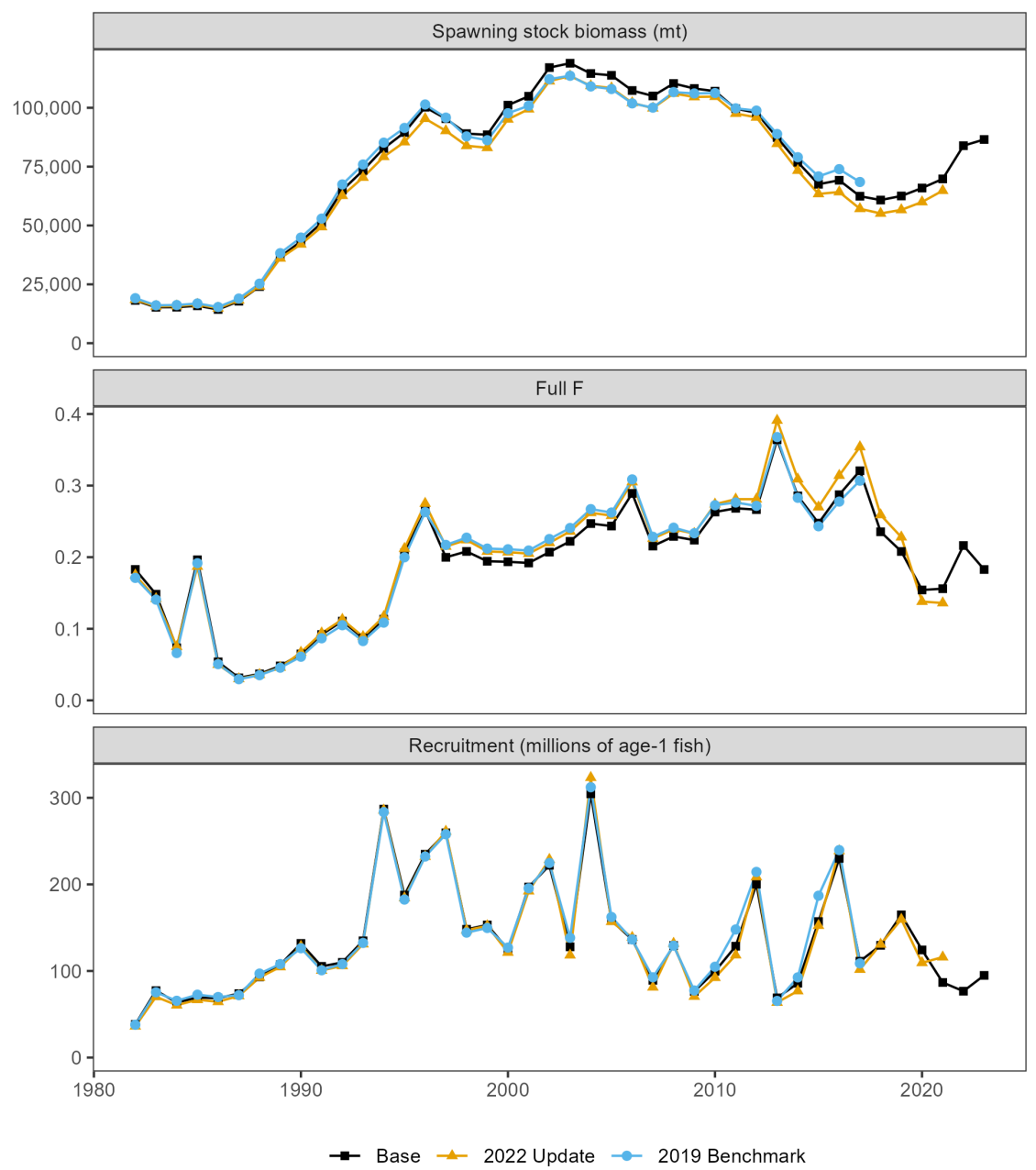






Base Alternate (new block in 2023)

Comparisons: Benchmark and Updates



TOR 5

1) UPDATE THE BIOLOGICAL REFERENCE POINTS FOR THE STOCK

2) DETERMINE STOCK STATUS

Reference Points

Female Spawning Stock Biomass Reference Points

$SSB_{threshold}$ = 1995 SSB Value = **89,513** metric tons
SSB_{target} = 125% of Threshold = **111,892** metric tons

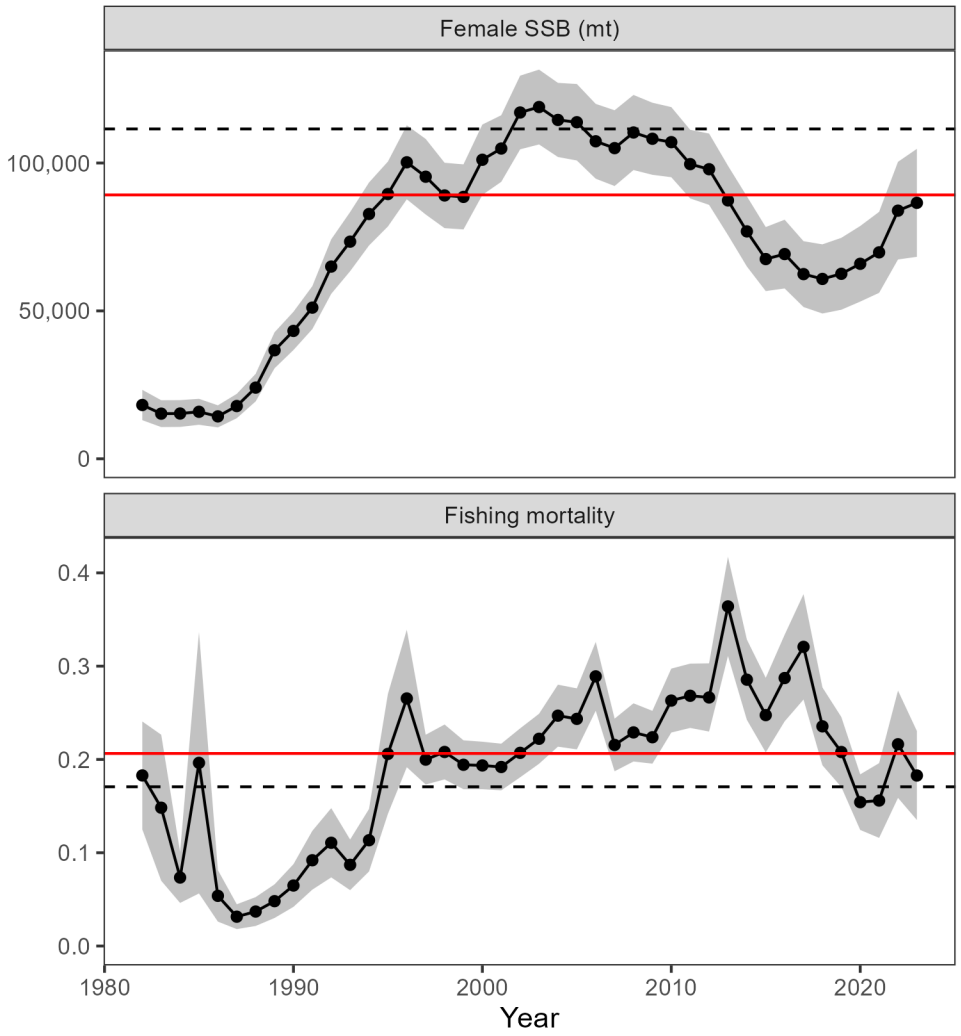
Fishing Mortality Reference Points (*F* associated with $SSB_{threshold}$ and SSB_{target})

Determined via stochastic projection

- Estimates of N-at-age and associated error for 2023
- After 2023, average selectivity 2020-2023
- Empirical estimates of recruitment from "low" (2008-2023) recruitment regime
- Projected 100 years 10,000 times
- Adjust fully-recruited *F* until median SSB = $SSB_{threshold}$ or SSB_{target}

$F_{threshold}$ = **0.21**
F_{target} = **0.17**

Stock Status (2023)



Stock is overfished

Overfishing is <u>not</u> occurring

QUESTIONS?

TOR 6

CONDUCT SHORT TERM PROJECTIONS WHEN APPROPRIATE

Selectivity Curve For Projection

- Need to know selectivity under emergency regulations (Bay: 19-24”; Ocean: 28-31”)
- TC decided resulting curve for a single year time block (alternate run) was unreliable
- Developed a selectivity curve using ALKs and catch numbers that reflects the regulation changes
- Assumed the resulting pattern will occur in future years

Starting Abundance and Fishing Mortality

- Projections start in 2024
- Calculated the 2024 abundance-at-age from 2023 January-1 abundance estimates from the alternate model and catch-at-age
- Need an estimate of starting fishing mortality in 2024
- Developed two catch estimates for 2024 to estimate fully-recruited F in 2024 using the hybrid selectivity

Catch in 2024

- “High”: 5.86 million fish (a 13.7% reduction from 2022, our expected reduction from Add. II based on 2022 data)

- “Low”: 3.9 million fish (based on expanding the preliminary 2024 Wave 2-3 landings to the full year)

- Estimated fully-recruited Fs = 0.195 for “High” and 0.126 for “Low”

2024 Catch Projection F time series

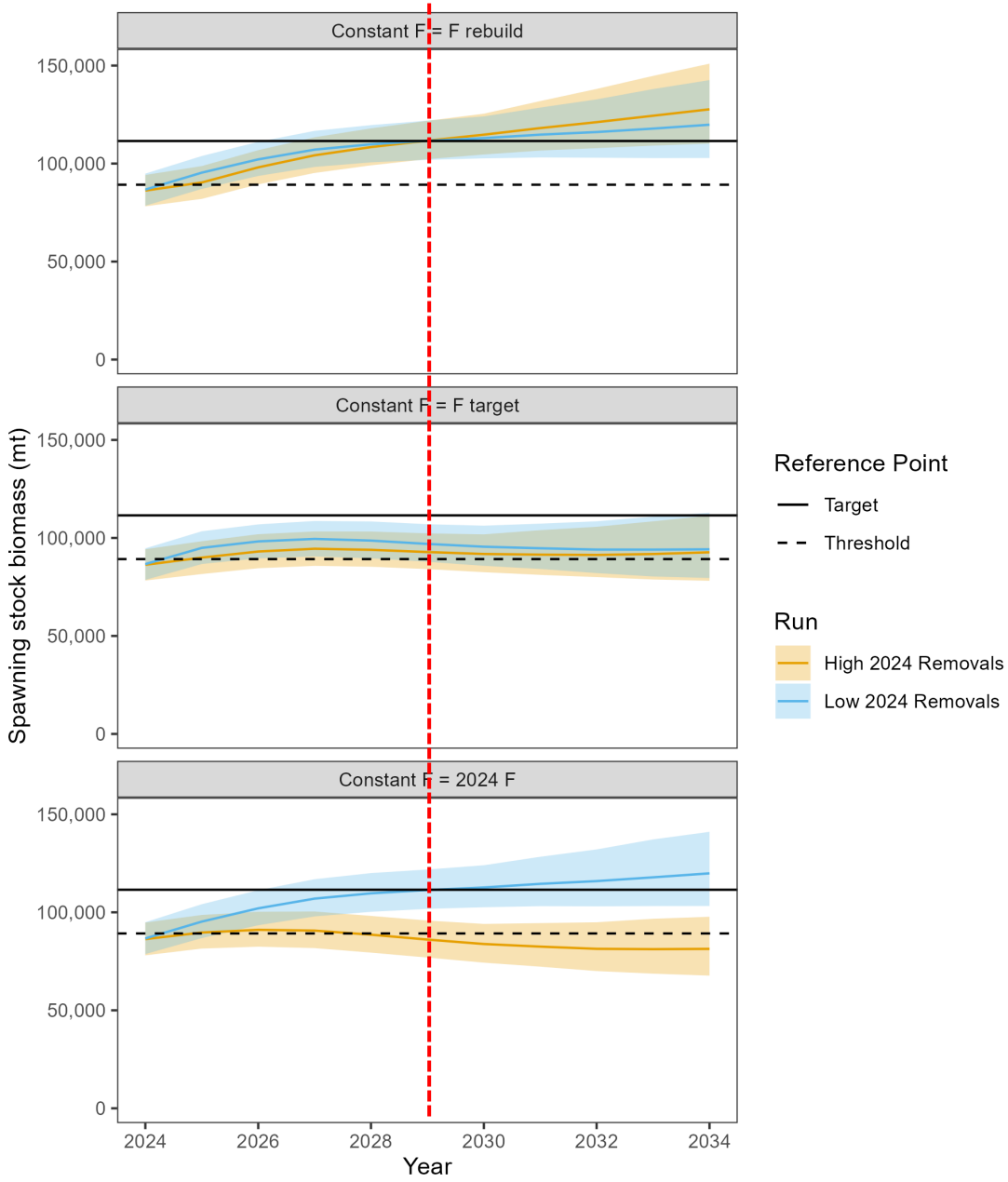
High 2024 Catch Scenario

- F_{2024}= 0.195, F_{2024} in 2025 and later
- F_{2024}=0.195, F_{target} in 2025 and later
- F_{2024}=0.195, $F_{rebuild}$ (solved for) in 2025 and later

Low 2024 Catch Scenario

- F_{2024}= 0.126, F_{2024} in 2025 and later
- F_{2024}=0.126, F_{target} in 2025 and later
- F_{2024}=0.126, $F_{rebuild}$ (solved for) in 2025 and later

Projections



High 2024 Catch Scenario

F	Value	Prob. $SSB \geq SSB_{target}$
$F_{rebuild}$	0.111	51.3%
F_{target}	0.171	1.5%
F_{2024}	0.195	0.1%

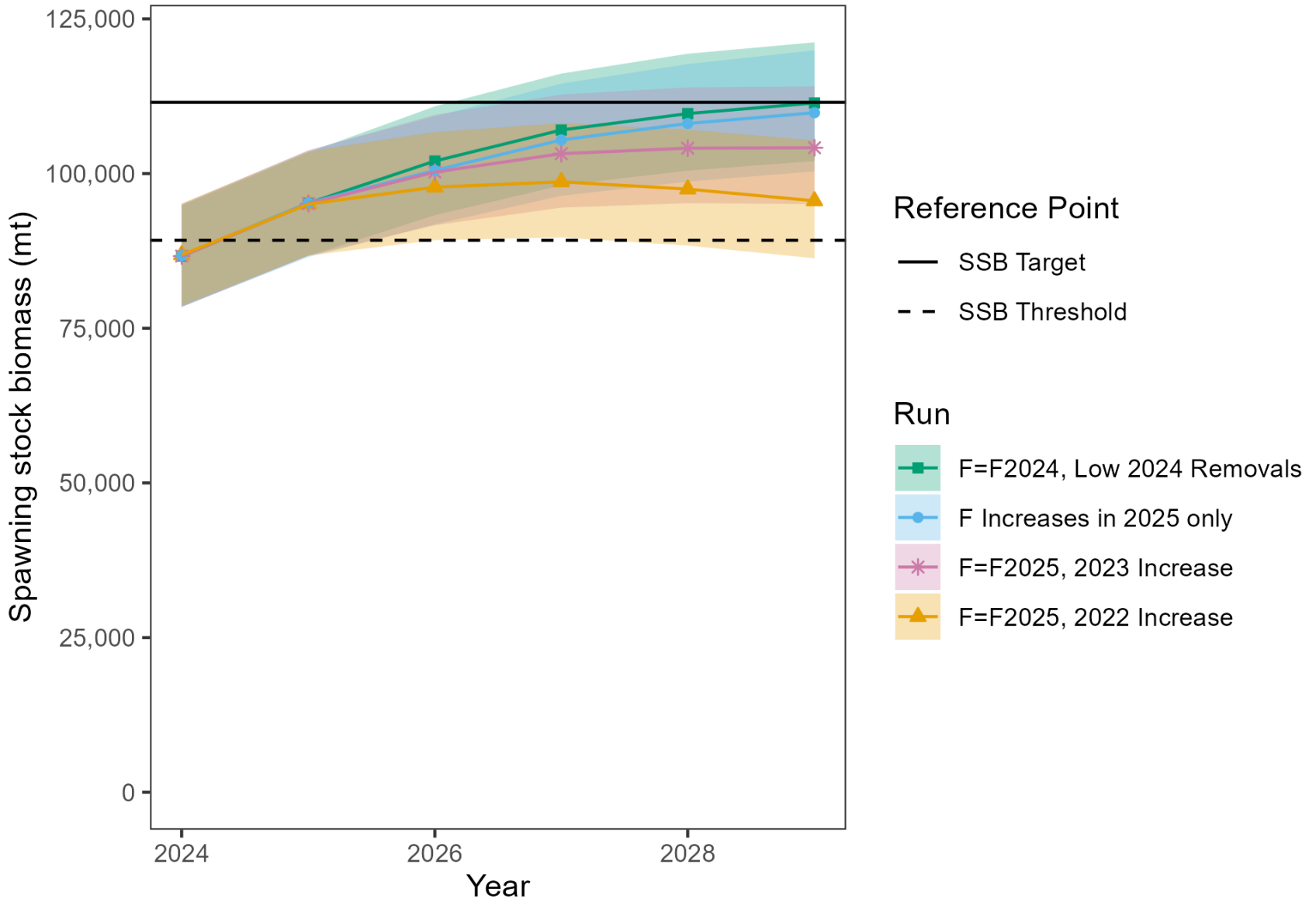
Low 2024 Catch Scenario

F	Value	Prob. $SSB \geq SSB_{target}$
$F_{rebuild}$	0.126	50.6%
F_{target}	0.171	4.3%
F_{2024}	0.126	50.0%

2025-2029 F Scenarios

- TC looked at additional scenarios based on the low 2024 catch assumption where F increases in 2025 due to the 2018 year-class entering the ocean slot limit

2025-2029 F Scenarios



Conclusions

- Stock is **overfished**
- Overfishing is not occurring, relative to the low-recruitment F reference points
- Sources of uncertainty in rebuilding projections:
  - Selectivity for 2023-2024 (only 1 year of data)
  - Catch in 2024
  - F in 2025 and beyond

TC-SAS Discussion on Assessment Projections and Management Considerations

Tyler Grabowski, TC Chair

TC-SAS Discussion

- TC-SAS discussed likelihood of different projection scenarios and considerations for management (Supplemental Memo)

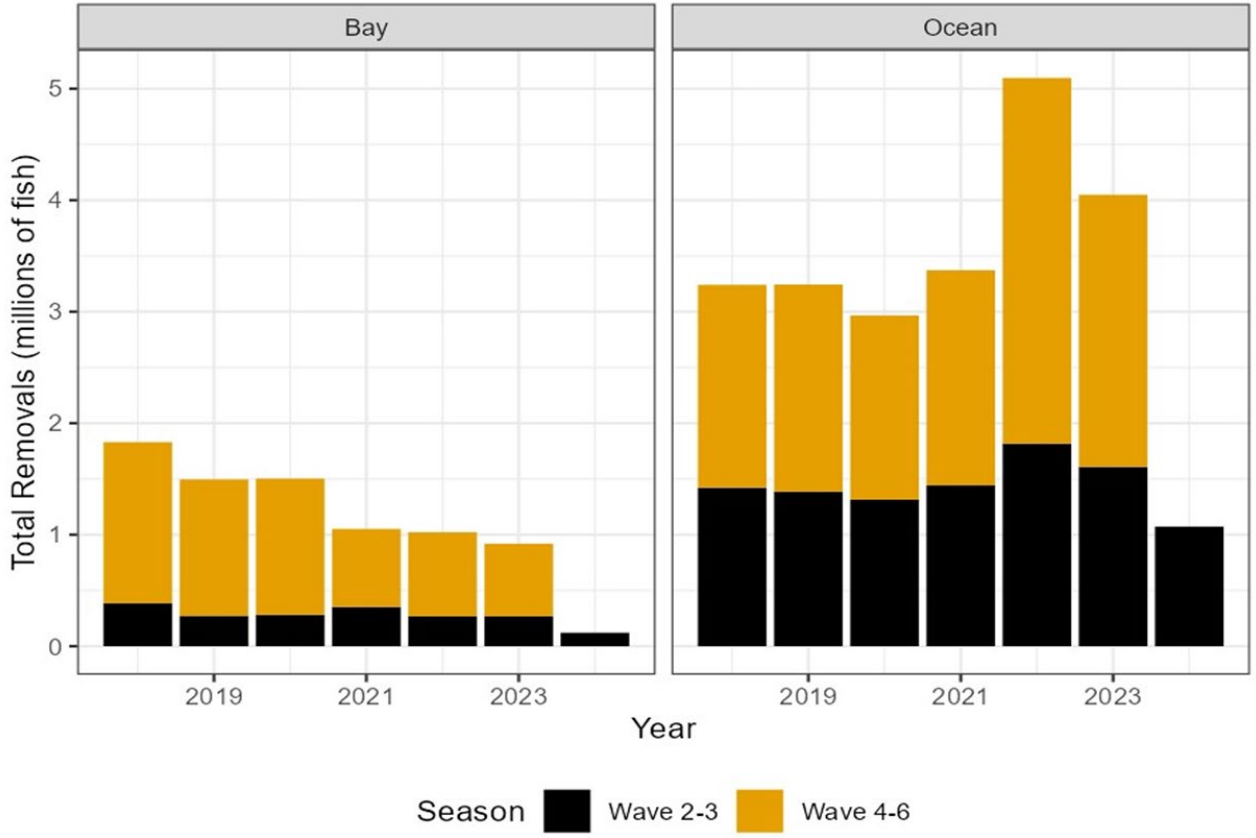
- Sources of uncertainty for the stock rebuilding trajectory include 2024 removals and *F* for 2025-2029

2024 Removals

- Two scenarios for 2024 removals
  - High: 5.86 million fish based on initial estimate of impacts from Addendum II measures as 13.7% reduction relative to 2022
  - **Low: 3.89 million fish based on expanding preliminary 2024 MRIP catch for Waves 2 and 3 to the full year**
  - **TC-SAS considers the low removals scenario to be more likely**

2024 Removals

- Low removals scenario based on realized data through mid-2024, while high removals scenario based on pre-2024 calculations



F for 2025-2029

- The above-average 2018 year-class will be age-7 in 2025, similar to the 2015 year-class in 2022

- Saw a large increase in harvest and *F* in 2022 relative to low 2021 *F* as the 2015 year-class entered the ocean fishery, followed by a decrease in 2023 and likely 2024

F for 2025-2029

- Three scenarios for *F* in 2025-2029 to explore the effect of the 2018 year-class entering the ocean fishery in 2025
  - High increase in F in 2025, constant from 2025-2029
  - Moderate increase in F in 2025, constant from 2025-2029
  - **Moderate increase in F in 2025, return to F_{2024} for 2026-2029**

→ **TC-SAS considers the moderate increase followed by a decrease to be the most likely**

Scenarios

- ***F* Increases in 2025 Only and Returns to 2024 Levels for 2026-2029**
  - As 2018s enter the ocean slot, assumes moderate increase in *F* in 2025 (+17%)
    - Same magnitude as increase from 2021 to 2023 with 2015s in the narrow slot; this may be an overestimate since 2018s are not as strong as 2015s
  - As 2018s grow out of the ocean slot and lack of subsequent strong year classes, *F* decreases and stabilizes in 2026-2029

Scenarios

- Unlikely that *F* would remain constant from 2024 to 2025 as 2018s enter the ocean fishery

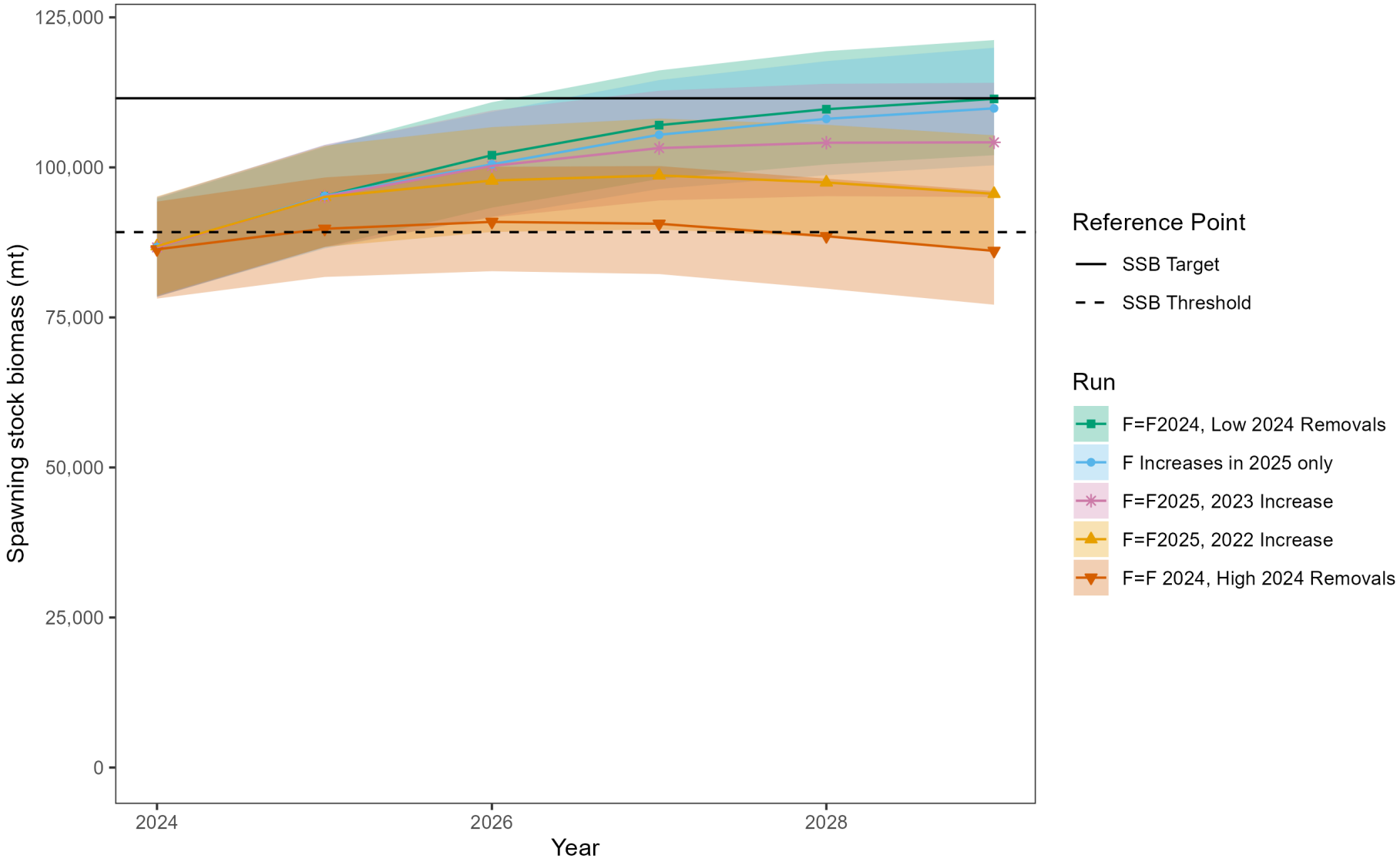
- Unlikely that *F* would remain at the increased rate for 2026-2029, given the 2018s are expected to grow out of the slot
  - However, *F* could remain elevated due to decreasing abundance (lower removals from a smaller population)

- Unlikely that *F* would increase as much as was seen in 2022 with the stronger 2015 year-class and the wider slot limit

Scenarios

Scenario	Rebuilding Probability
Constant *F* at *F*2024 Low (requires 4% reduction in 2025)	50%
***F*2024 Low, *F* Increases in 2025 Only and Returns to Low Levels for 2026-2029**	**43%**
*F*2024 Low, Moderate Increase to Constant *F* for 2025-2029	19%
*F*2024 Low, Large Increase to Constant *F* for 2025-2029	3%
Constant *F* at *F*2024 High	0%

Scenarios


125,000
100,000
75,000
50,000
25,000
0
Spawning stock biomass (mt)
2024
2026
2028
Year
Reference Point
SSB Target
SSB Threshold
Run
F=F2024, Low 2024 Removals
F Increases in 2025 only
F=F2025, 2023 Increase
F=F2025, 2022 Increase
F=F 2024, High 2024 Removals

Considering Uncertainty

Considering Uncertainty

- Angler behavior and fish availability are still sources of uncertainty

- TC-SAS considers the scenario of F increasing in 2025 then subsequently decreasing to be most likely, BUT the magnitude of those changes (i.e., the exact *F* values) are highly uncertain

Considering Uncertainty

- To have a 50% or greater probability of rebuilding, *F* will have to decline to levels that would be lowest since 1994
  - Could result from the very narrow slot limit and lack of strong year classes available

- Fewer fish will be available to harvest as weaker year-classes enter the fishery following the 2018s
  - This could result in lower effort and lower *F*
  - Or, *F* may not decrease as much as expected if removals remain constant on those weaker year-classes

Considering Uncertainty

- Uncertainty around how well the 2024 selectivity curve represents actual selectivity

- Additional years of data under the same management regulations would inform a better estimate of selectivity for upcoming assessments

Potential Management Options

Potential Management Options

- TC-SAS calculated estimated reductions for a range of recreational size limit changes for 2025 and various recreational harvest closure options for reference

- After further guidance from the Board on next steps for management, additional options could be analyzed

Potential Management Options

- For size limit analysis, MRIP data from past years used to represent 2025 fish availability
  - 2018 for the ocean to represent a strong year-class at age-7 (2011 year-class as proxy)
  - 2011 for the Chesapeake Bay to represent a year when there was no prominent year class available

- For harvest closure analysis, 2021-2022 MRIP data were used to capture recent years under the slot limit and closures in the Chesapeake Bay

Potential Management Options

Tradeoffs of allowing harvest of larger fish vs. maintaining the current slot limit targeting smaller fish in the ocean

- If ocean harvest remains in the current 28-31” slot, the remaining larger 2015s will be protected but the incoming 2018 year-class will be subject to harvest

- If harvest is shifted to larger fish, the incoming 2018s would be protected but the larger 2015s would then be subject to harvest

Potential Management Options

What about an ocean size limit below 28”?

- 28” has been the ocean minimum size since the stock was rebuilt

- Unclear whether the biological benefit of reducing harvest of the remaining 2015s and 2018s would outweigh the biological risk of targeting immature fish under 28”

- Would need alternative data sources to calculate options (e.g., state logbooks)

Potential Management Options

- Most size limits evaluated, particularly in the ocean, are estimated to achieve less than a 6% reduction
- TC-SAS does not believe that a regulation change designed to achieve such a small reduction would result in a meaningful change in removals, given the typical sources of uncertainty in these analyses
- Size limit change could be combined with a seasonal closure for a higher estimated cumulative reduction, but the benefit of changing to a size limit with such a small estimated reduction may be limited

Potential Management Options

- When considering possible management response, the Board should consider its risk tolerance
- **The level of risk the Board is willing to accept is a management decision**
- In the coming months, the TC could provide updated projections incorporating realized 2024 removals once 2024 MRIP data are available
- Note: benchmark stock assessment work will begin in 2025 with scheduled peer review in Spring 2027

Questions?

Extra Slides

Reductions if *F*2025 Increases

	***F*2025 increases by 2021-2023 amount**	***F*2025 increases by 2021-2022 amount**
2024 Low Removals	3.89 million	3.89 million
2025 Removals under increased *F*	4.37 million	5.10 million
2025 Removals for *F*rebuild	3.74 million	3.74 million
Percent Reduction from 2025 Increased *F* Removals to 2025 Rebuild Removals	-14.5%	-26.8%

Potential TC Tasking

1. Update the “low 2024 removals with F increase in 2025 only” projection with realized 2024 Wave 4 MRIP data, and determine the reduction in removals needed in 2025 to achieve a 50% probability of being above the SSB target in 2029. For comparison only (not option development), identify the reduction in removals needed in 2025 to achieve a 60% probability of being above the SSB target in 2029.

2. Develop a range of Ocean and Chesapeake Bay recreational no-harvest seasonal closure options at the regional level to achieve the reduction. Include the equivalent no-targeting closure length for each option.

3. Develop an ocean slot limit option below the current 28” minimum.

4. For comparison only (not option development), conduct an alternative “low 2024 removals with F increase in 2025 only” projection where age-1 recruitment is sampled from 2020-2024 only, and determine the reduction in removals needed in 2025 to achieve a 50% probability of being above the SSB target in 2029.