Red Drum Benchmark Stock Assessment Report

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Stock Assessment Sub-Committee Chair

Associate Marine Scientist
South Carolina Department of Natural Resources
Marine Resources Division

Prepared By…

Underlined = Both SAS & TC
Bold = ASMFC Simulation Assessment (2022)
Italicized = SEDAR 44 (2015) / ASMFC 2017 SAS

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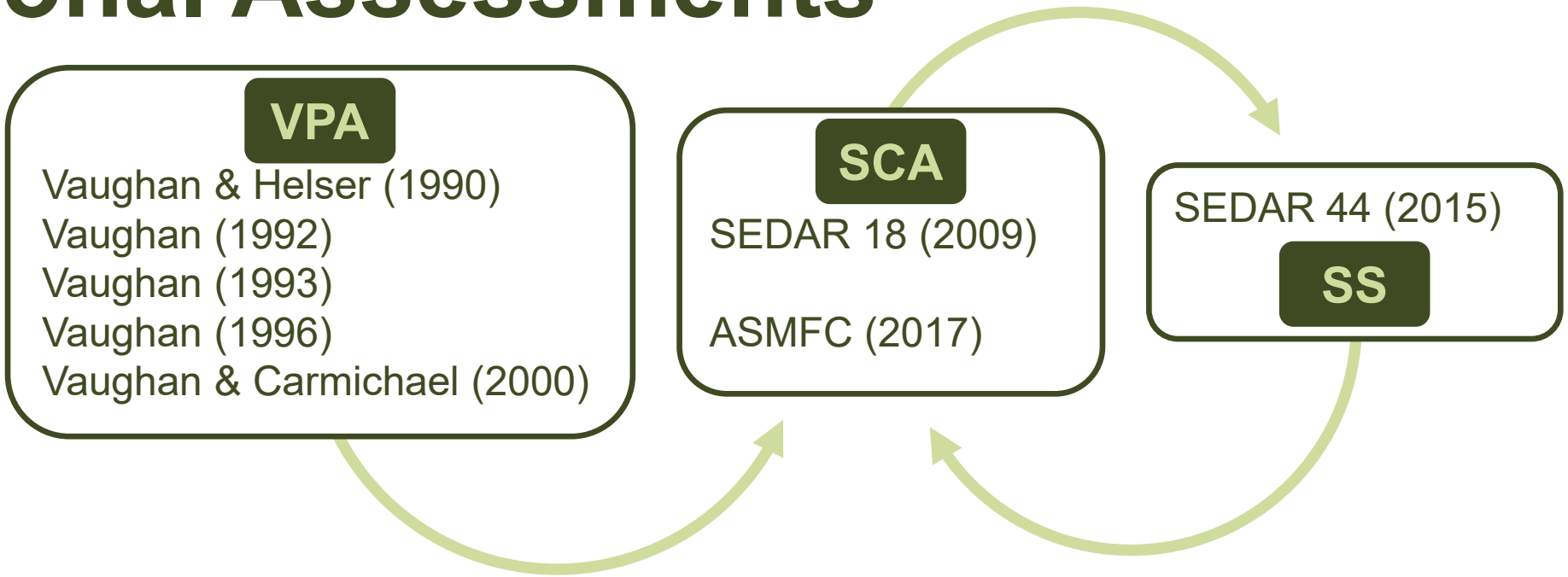
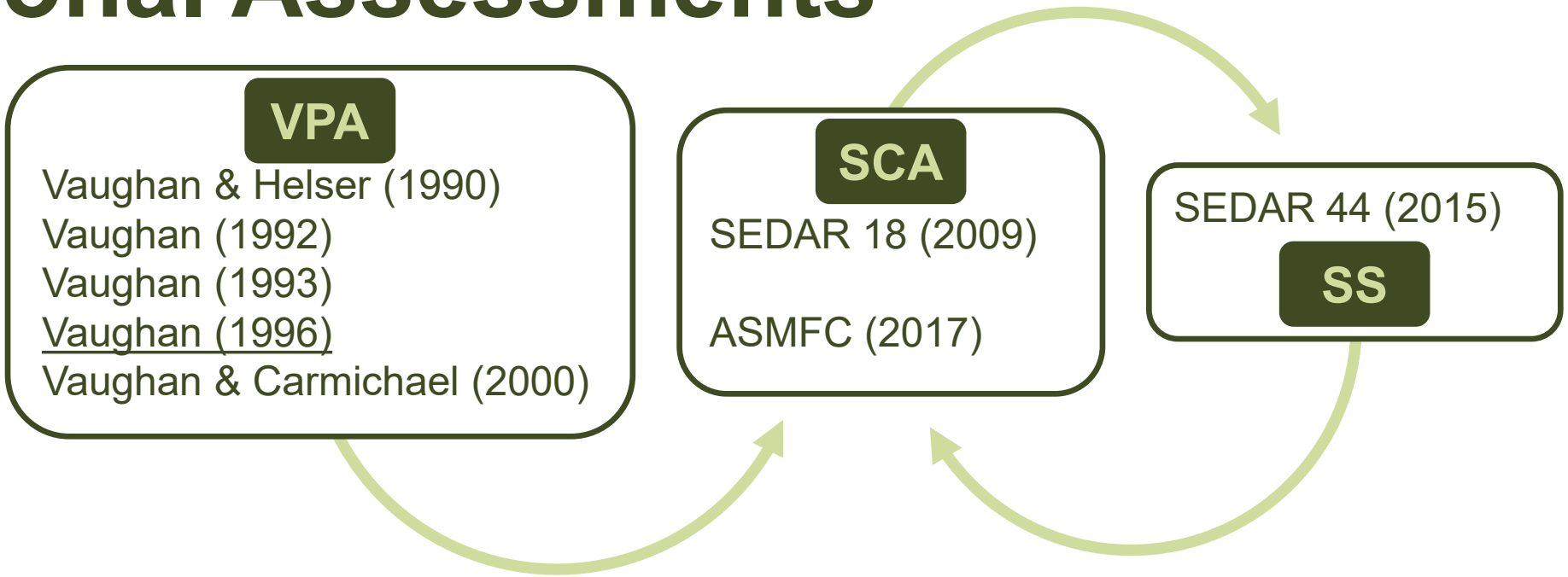
Red Drum Fisheries

- Primarily recreational in nature
  - Exclusively recreational for southern population
  - Limited commercial catch (VA, NC) continues in northern population

Regional Assessments



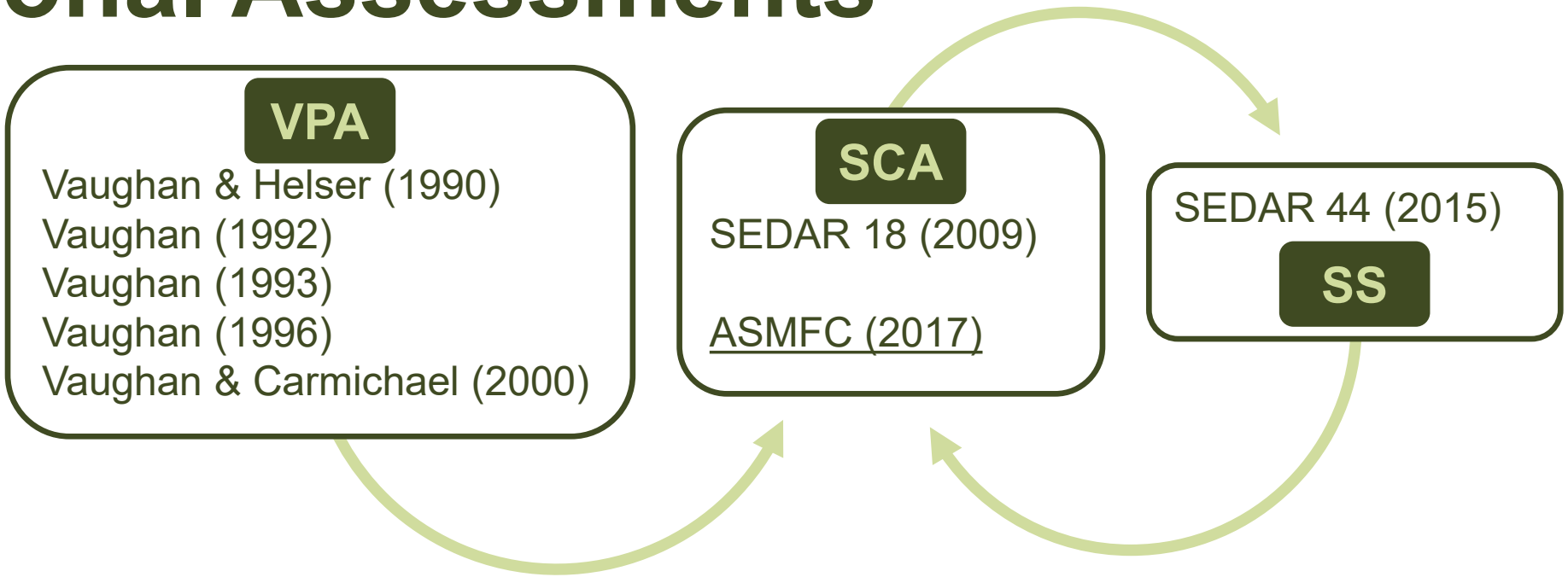
Regional Assessments



Considered one stock in early assessments

Two stocks, with break at the NC/SC border since Vaughan (1996)

Regional Assessments



Considered one stock in early assessments

- Two stocks, with break at the NC/SC border since Vaughan (1996)

ASMFC (2017)

- Neither stock experiencing overfishing in terminal year (2013)
- Model couldn't determine SSB status (Age 7+ group in SCA)

Simulation Assessment

Three modeling frameworks

- Model-free stock indicators (e.g., traffic light analysis)
- Juvenile population dynamics model (e.g., SCA used in ASMFC 2017)
- Integrated stock population dynamics model (e.g., stock synthesis)

Recommendations

Do not continue pursuit of custom SCA model

- Model used in SEDAR 18 (2009) and ASMFC (2017) assessments

Prioritize development of stock synthesis (SS) models

- Output (e.g. F, SPR, SSB) **can be** used for stock status determination
  - Including metrics related to **SSB and SSB status**

Develop the traffic light analysis (TLA) as a **complementary analysis**

Reference Points

Stock Synthesis & TLA

Stock Synthesis Reference Points

Overfishing – Defined in current Interstate FMP

- Threshold = $SPR_{30\%}$ ($F_{30\%}$)
- Target = $SPR_{40\%}$ ($F_{40\%}$)

Stock Synthesis Reference Points

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Overfished – Not currently defined in Interstate FMP

- Threshold = $SSB_{30\%}$
- Target = $SSB_{40\%}$

Stock Synthesis Reference Points

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- Target = $SPR_{40\%}$ ($F_{40\%}$)

Overfished – Not currently defined in Interstate FMP

- Threshold = $SSB_{30\%}$
- Target = $SSB_{40\%}$

Status Determination

- Used three-year running averages…
  - Overfishing = $\overline{SPR_{y-2,y-1,y}}$
  - Overfished = $\overline{SSB_{y-2,y-1,y}}$
- Terminal year status = 2019-2021 avg.

Traffic Light Analysis Reference Points & Management Triggers

Note: Reference points not defined in current Interstate FMP; reference points developed by SAS in the current assessment

Traffic Light Analysis Reference Points & Management Triggers

Overfishing

- Fishery performance red in any of the past 3 years

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Traffic Light Analysis Reference Points & Management Triggers

Overfishing

- Fishery performance red in any of the past 3 years

Overfished

- Adult abundance red in any of the past 3 years

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Traffic Light Analysis Reference Points & Management Triggers

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Overfishing

Fishery performance red in any of the past 3 years

Overfished

Adult abundance red in any of the past 3 years

Additional Management Action Triggers

Fishery performance: yellow any of the past 3 years & recruitment red for 5 consecutive years

- Below average recruitment and ↑ catch and/or ↓ sub-adult abundance

Both fishery performance & adult abundance yellow any of the past 3 years

- ↑ catch and/or ↓ sub-adult abundance leading to declines in adult abundance

Recruitment red for 5 consecutive years & adult abundance yellow in any of the past 3 years

- Below average recruitment representing concern for the future of the adult abundance

Southern Population

Stock Synthesis, TLA, Skate Data Limited Control Rule Method, and Cormack-Jolly-Seber Tag-Recapture Model

Southern Population Fleets

Recreational fleets separated by state, split into a harvest and release time series

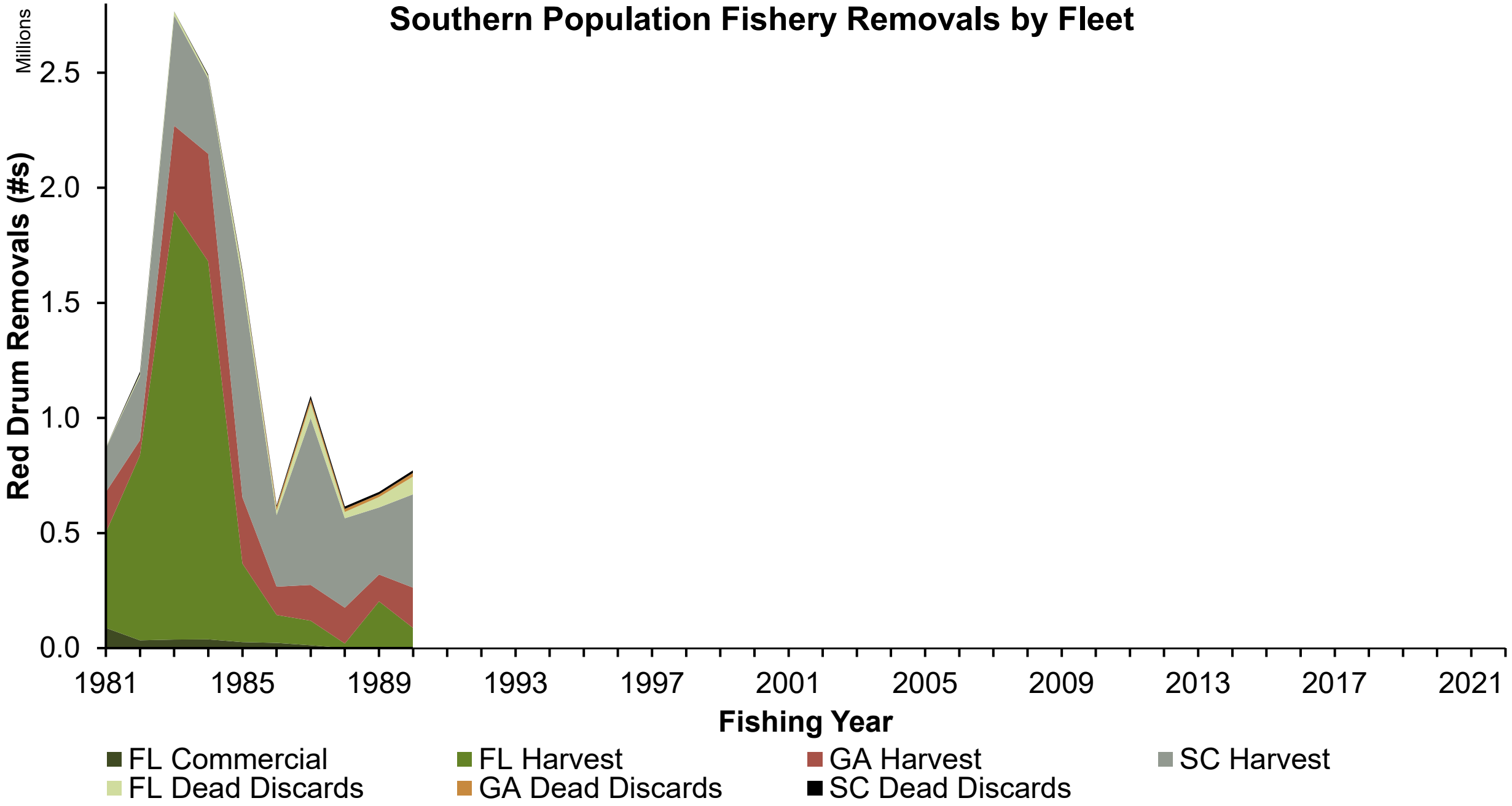
- Different regulations & all contribute to the fishery

Southern Population Fleets

Recreational fleets separated by state, split into a harvest and release time series

- Different regulations & all contribute to the fishery

Assumed an 8% discard mortality rate for released fish

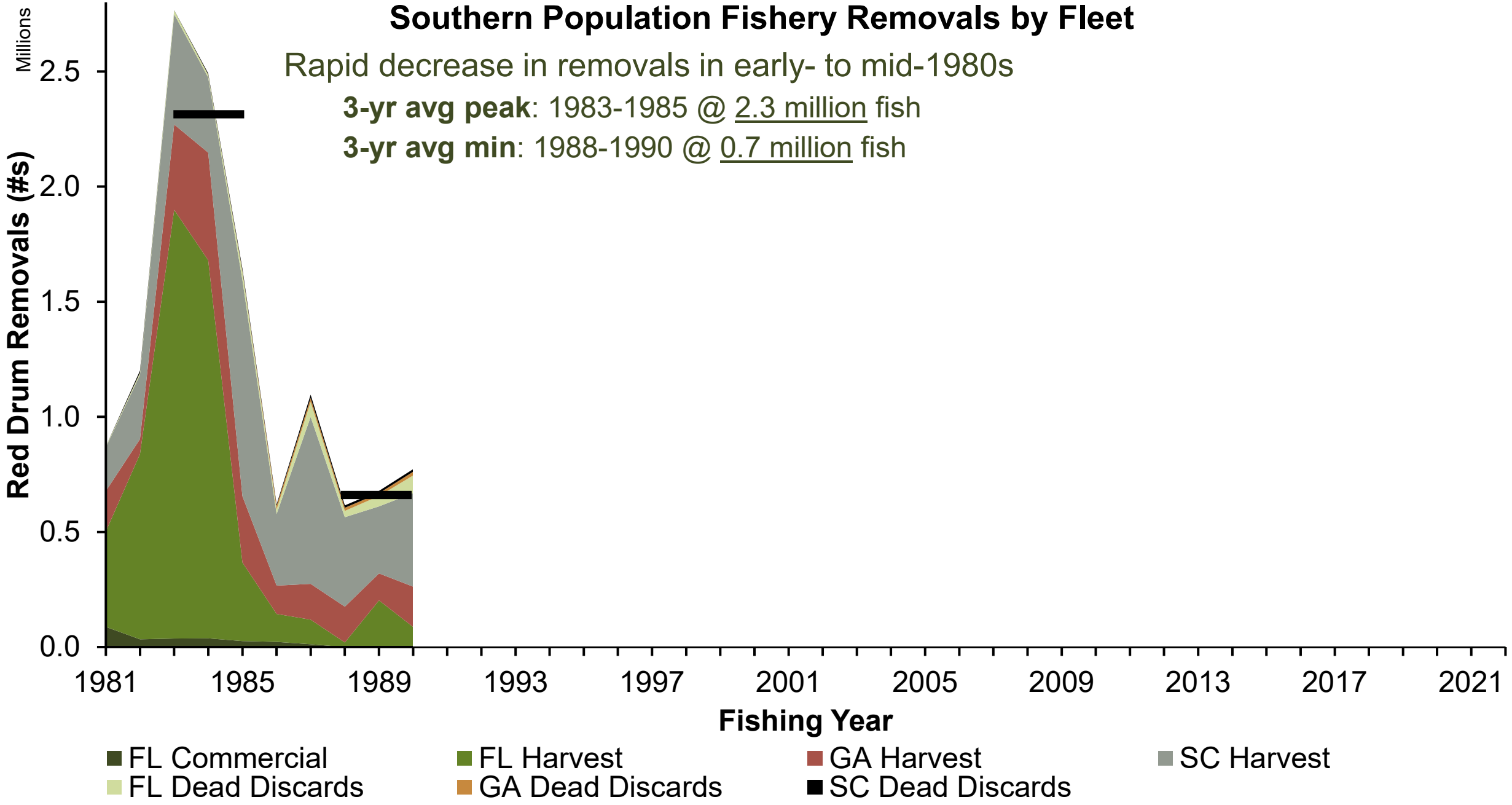

Southern Population Fishery Removals by Fleet
Millions
Red Drum Removals (#s)
2.5
2.0
1.5
1.0
0.5
0.0
1981
1985
1989
1993
1997
2001
2005
2009
2013
2017
2021
Fishing Year
FL Commercial
FL Harvest
GA Harvest
SC Harvest
FL Dead Discards
GA Dead Discards
SC Dead Discards

Southern Population Fishery Removals by Fleet

Rapid decrease in removals in early- to mid-1980s

3-yr avg peak: 1983-1985 @ 2.3 million fish

3-yr avg min: 1988-1990 @ 0.7 million fish



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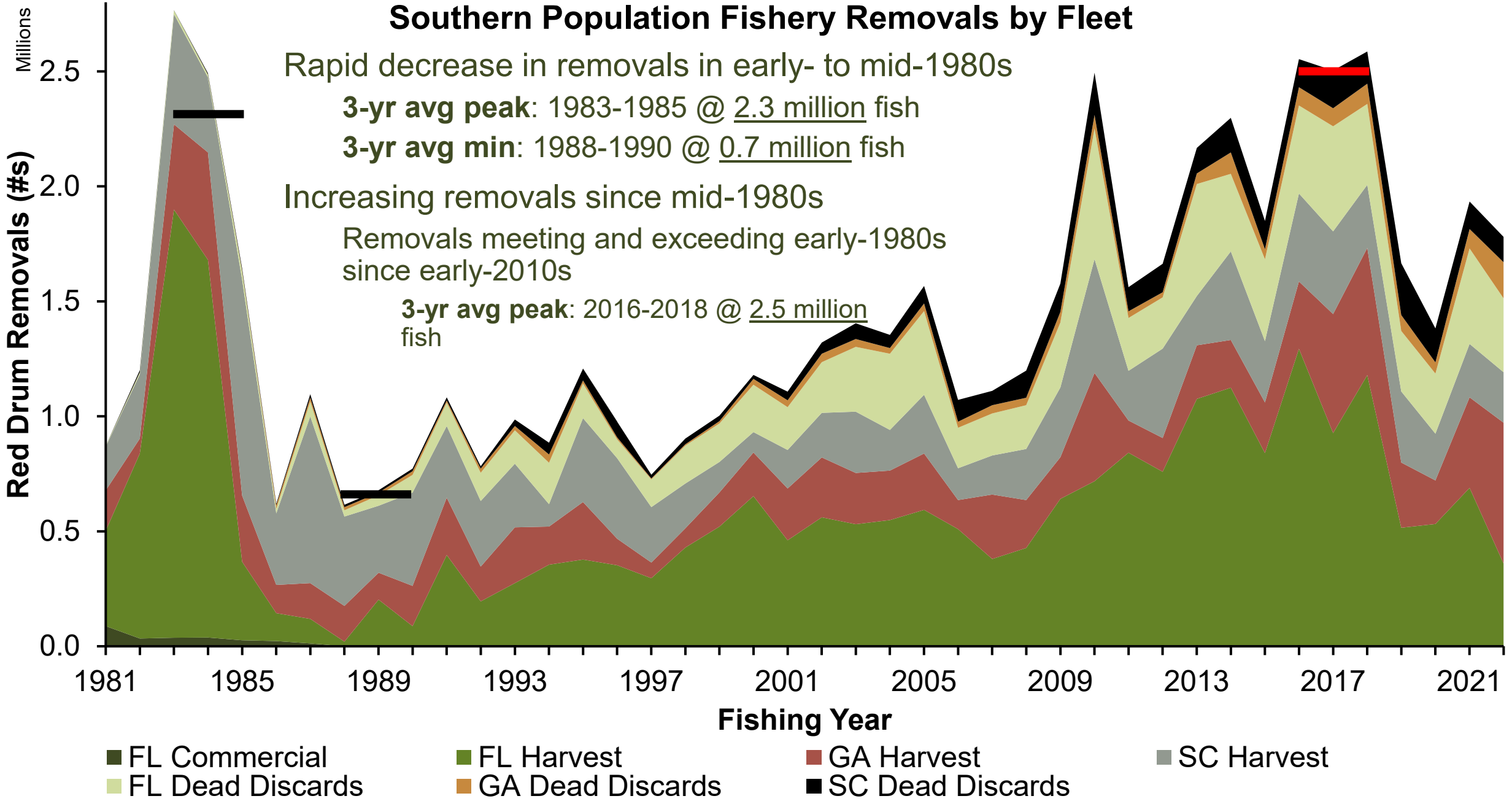

Rapid decrease in removals in early- to mid-1980s

3-yr avg peak: 1983-1985 @ 2.3 million fish

3-yr avg min: 1988-1990 @ 0.7 million fish

Increasing removals since mid-1980s

Removals meeting and exceeding early-1980s since early-2010s

3-yr avg peak: 2016-2018 @ 2.5 million fish

Southern Population Fishery-Independent Indices

Considered 10 (7 in final SS model; 8 used in TLA analysis)

Recruitment Survey
Sub-Adult Survey
Adult Survey

Southern Population Fishery-Independent Indices

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South Carolina

Rotenone, Stop Net, ~~Electrofishing~~, Trammel, ~~Historic Longline~~, & Contemporary Longline

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- South Carolina
  - Rotenone, Stop Net, ~~Electrofishing~~, Trammel, ~~Historic Longline~~, & Contemporary Longline
- Georgia
  - Gill Net & ~~Longline~~

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  - Rotenone, Stop Net, ~~Electrofishing~~, Trammel, ~~Historic Longline~~, & Contemporary Longline
- Georgia
  - Gill Net & ~~Longline~~
- Florida
  - 21.3 m Haul Seine & 183 m Haul Seine

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Sub-Adult Survey
Adult Survey

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- Georgia
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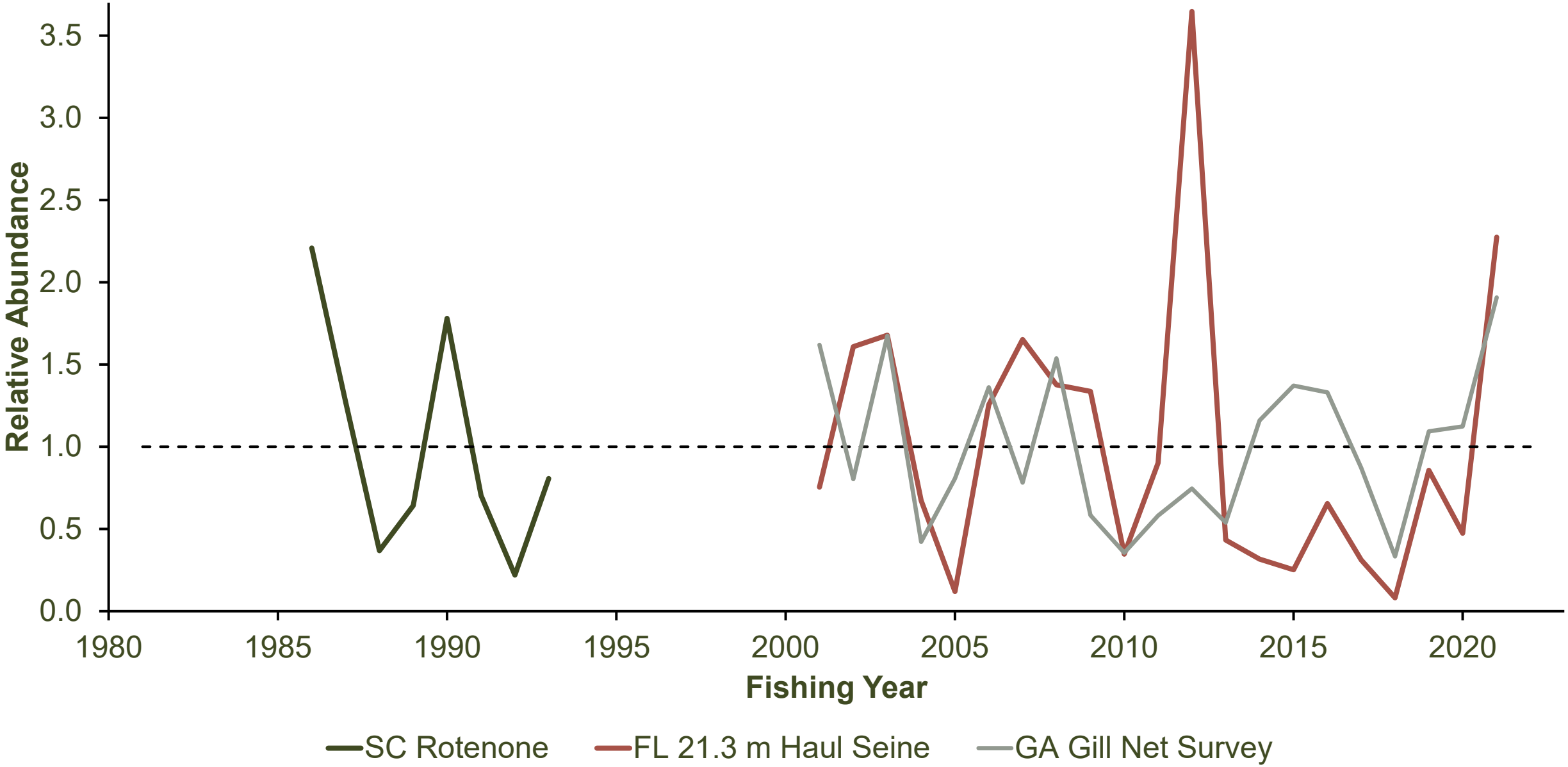
- Florida
  - 21.3 m Haul Seine & 183 m Haul Seine

Standardized indices to account for covariate(s) effect on catchability

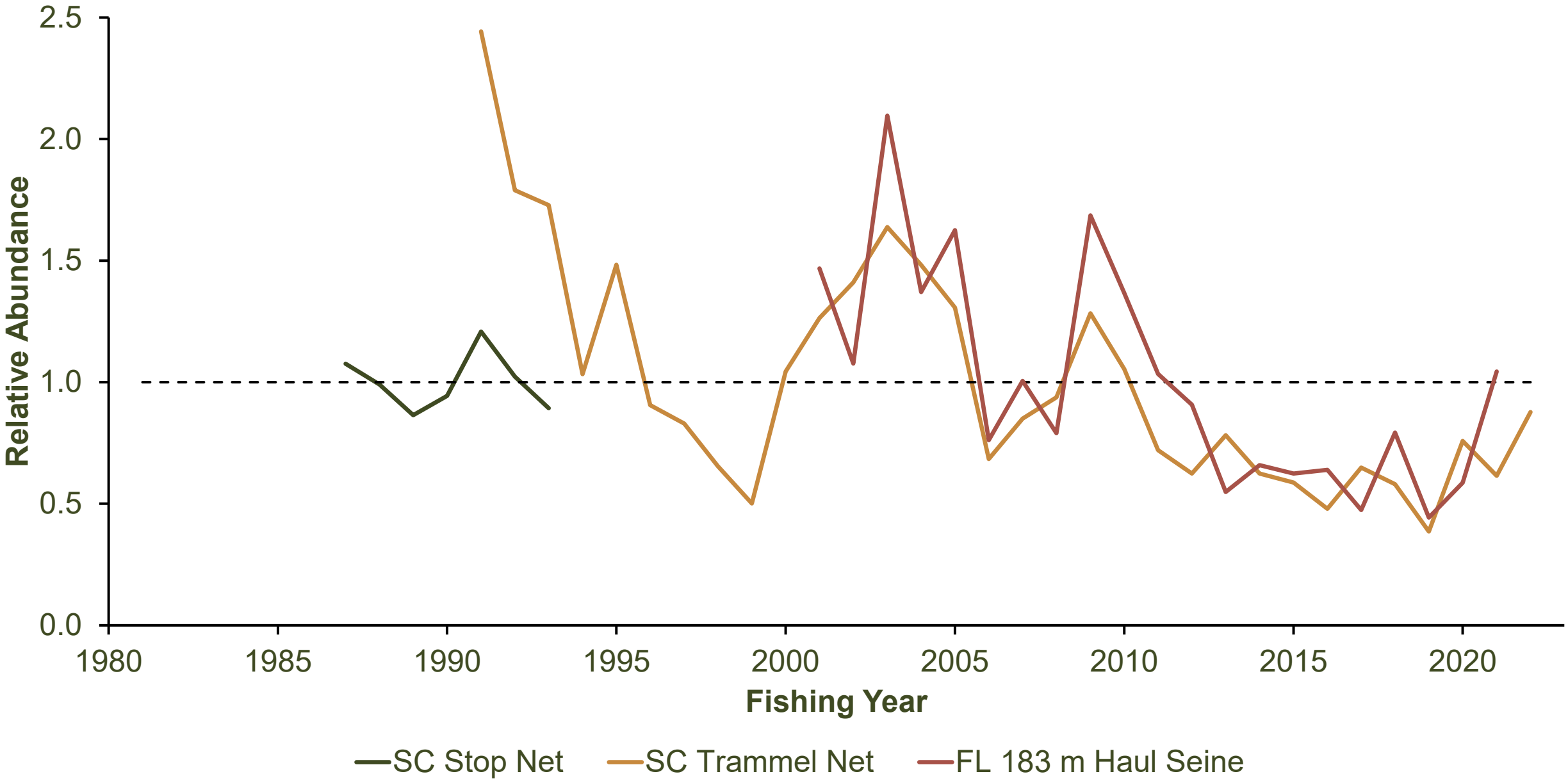
- Previous assessments used nominal indices not accounting for environmental conditions effects on catchability

Recruitment Survey
Sub-Adult Survey
Adult Survey

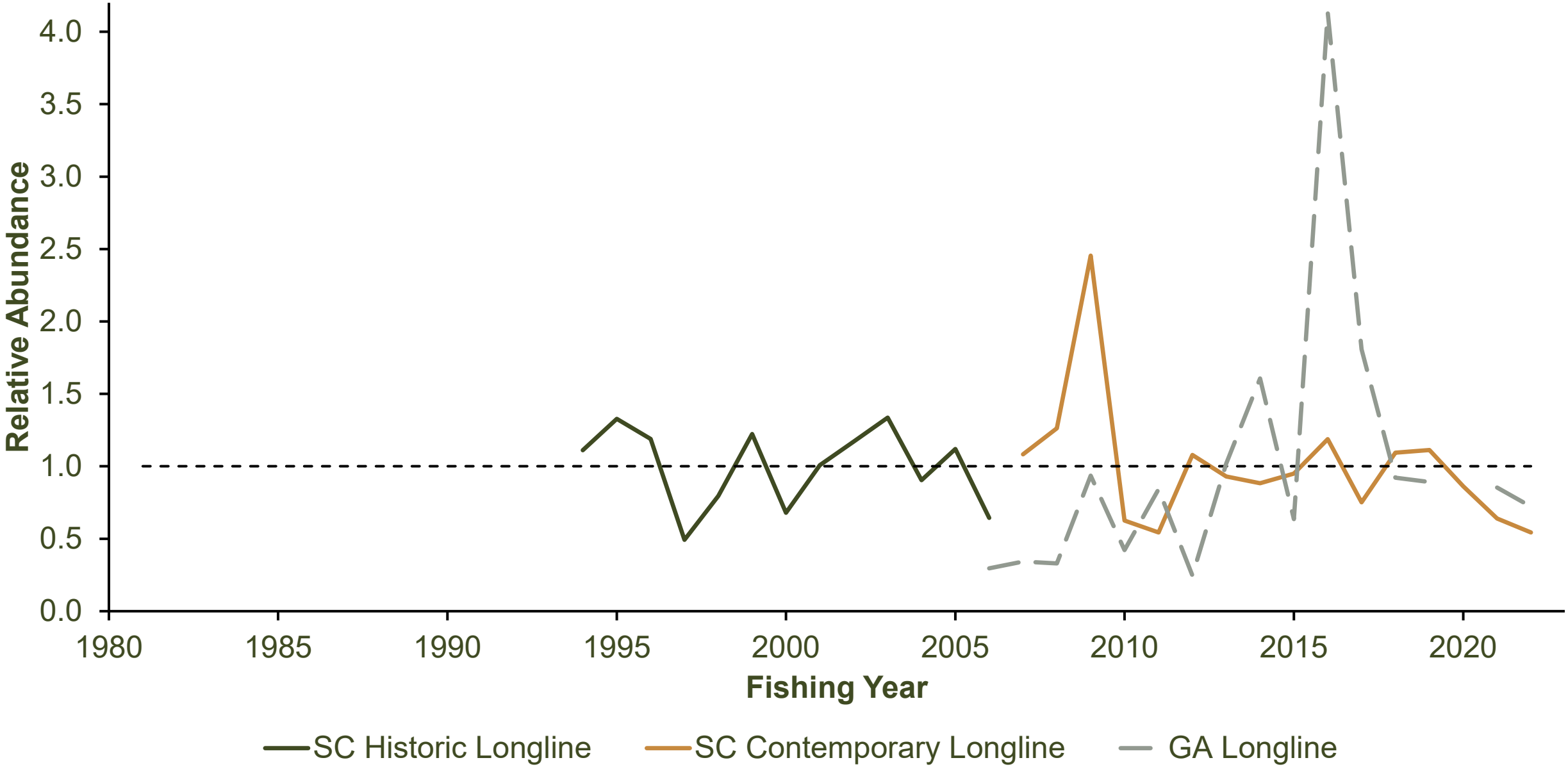
Southern Population Recruitment Indices



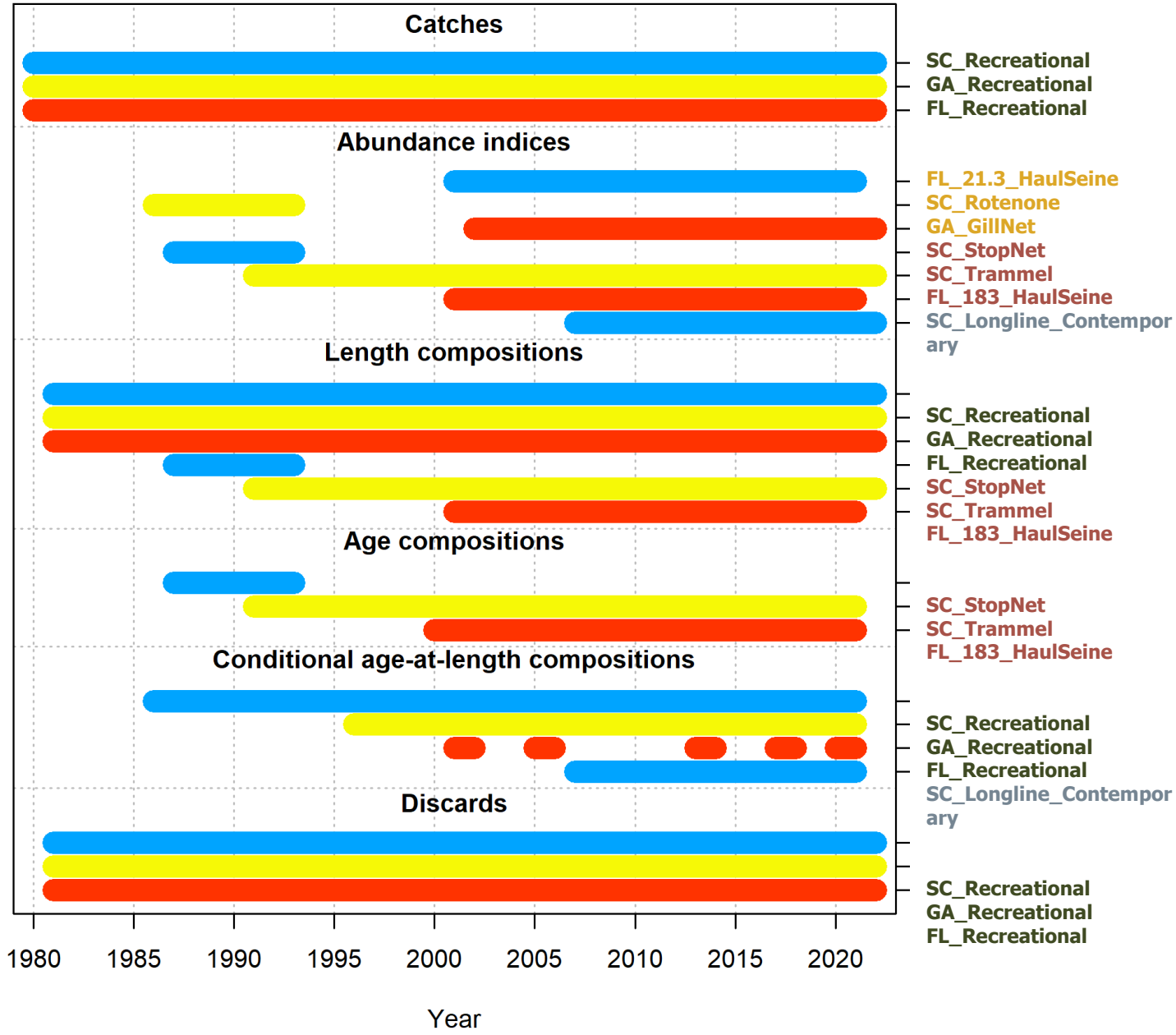
Southern Population Sub-Adult Indices



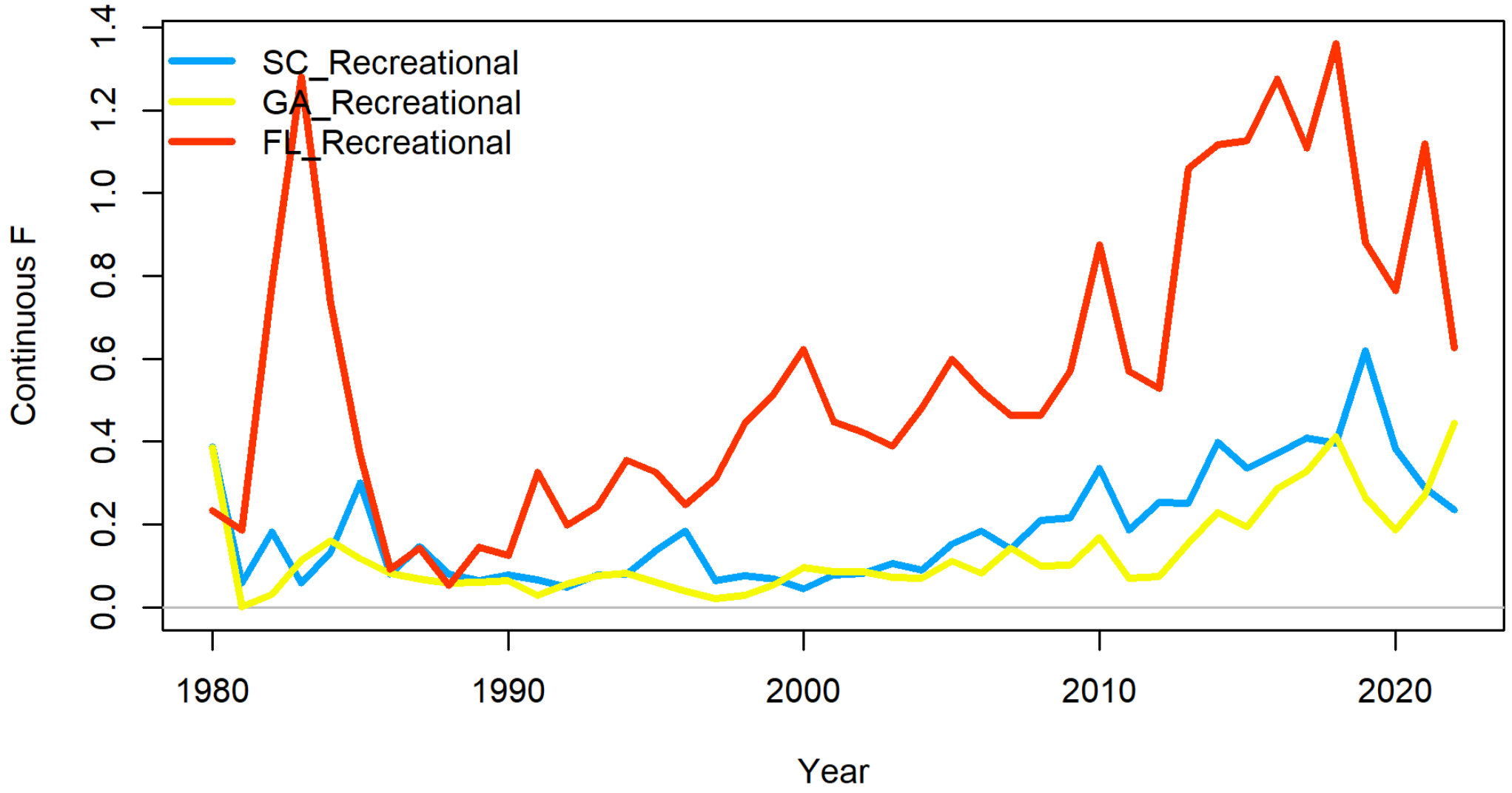
Southern Population Adult Indices



Stock Synthesis Data Inputs



Fishing Mortality



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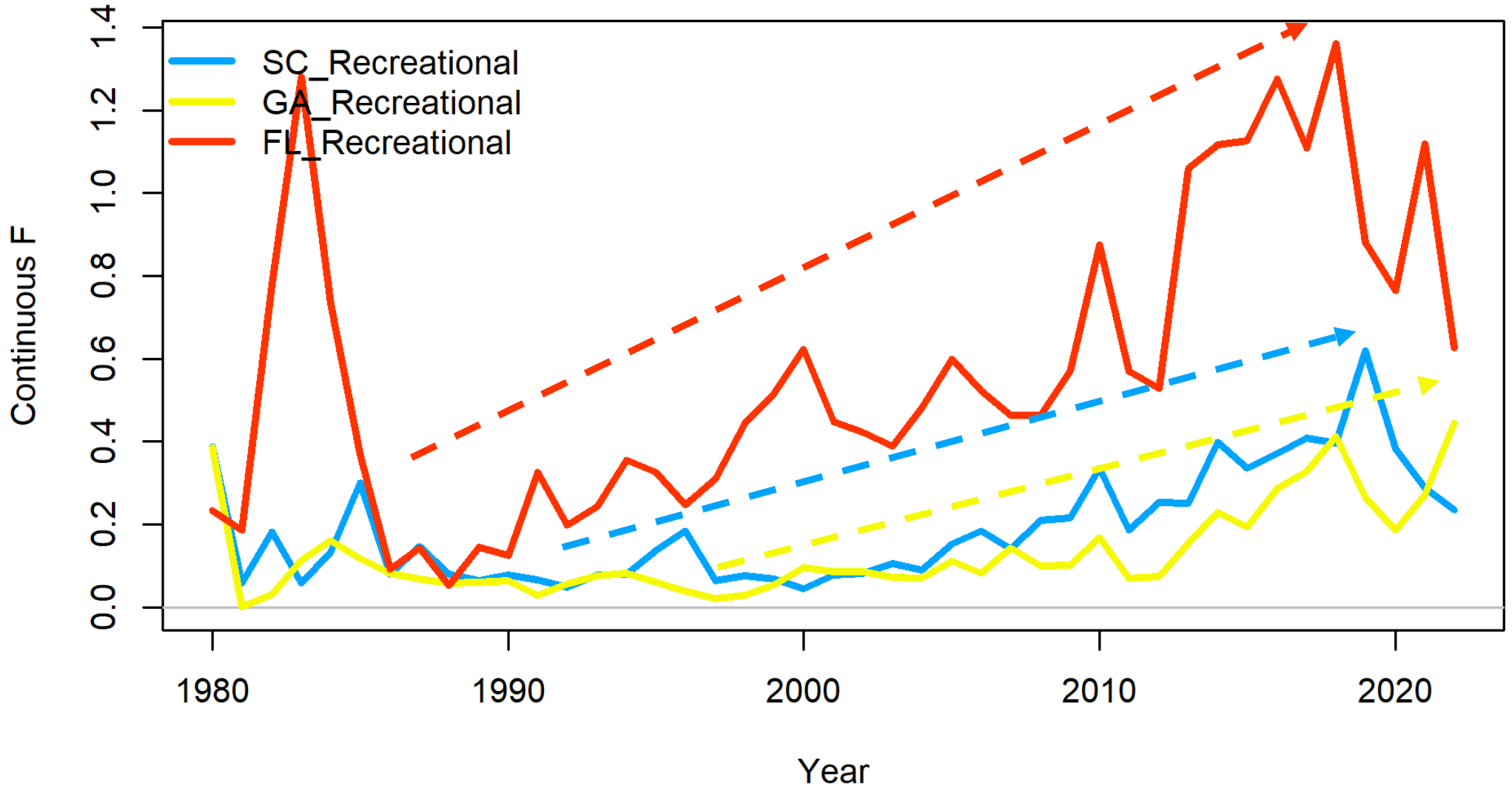

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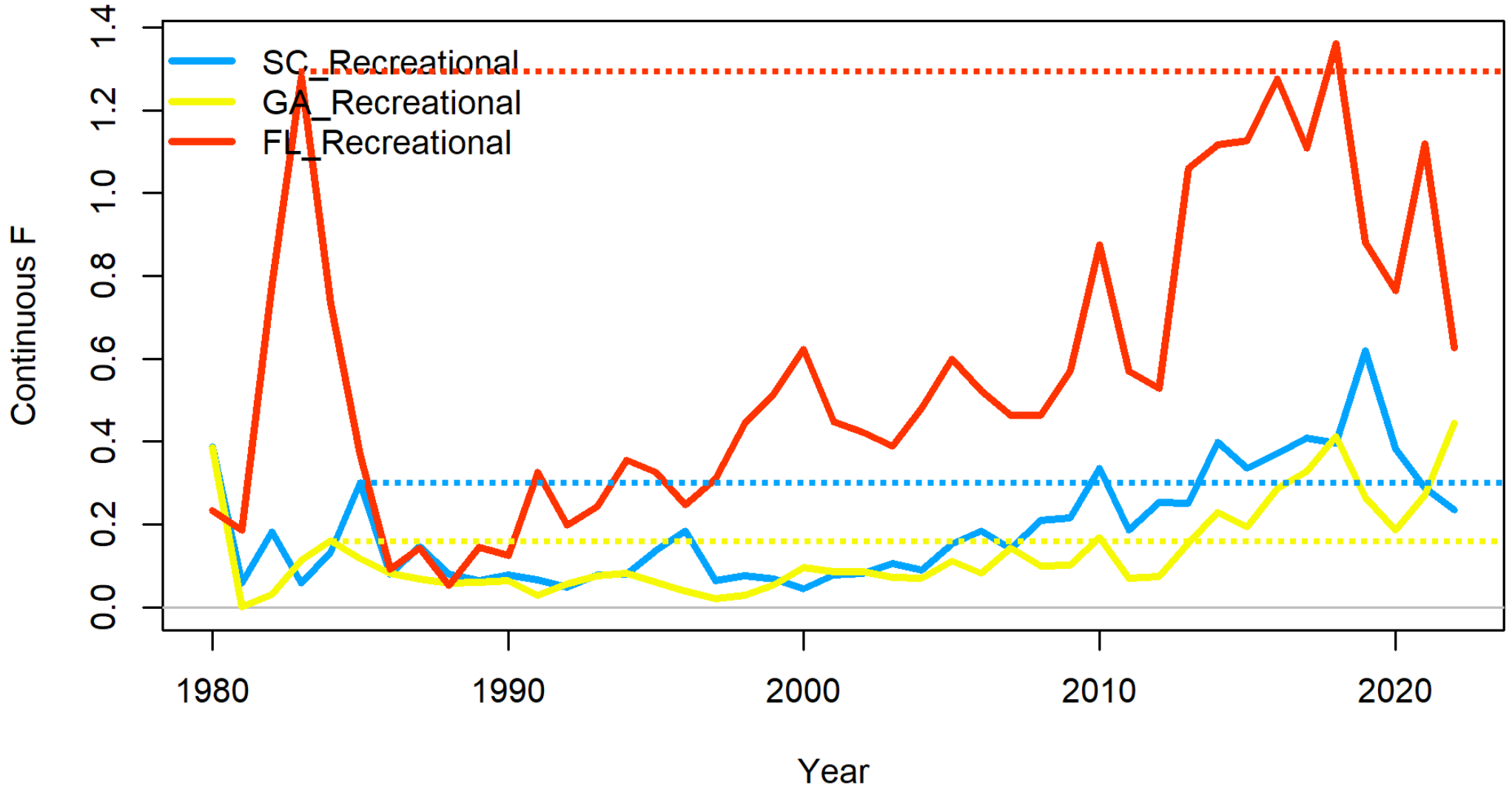
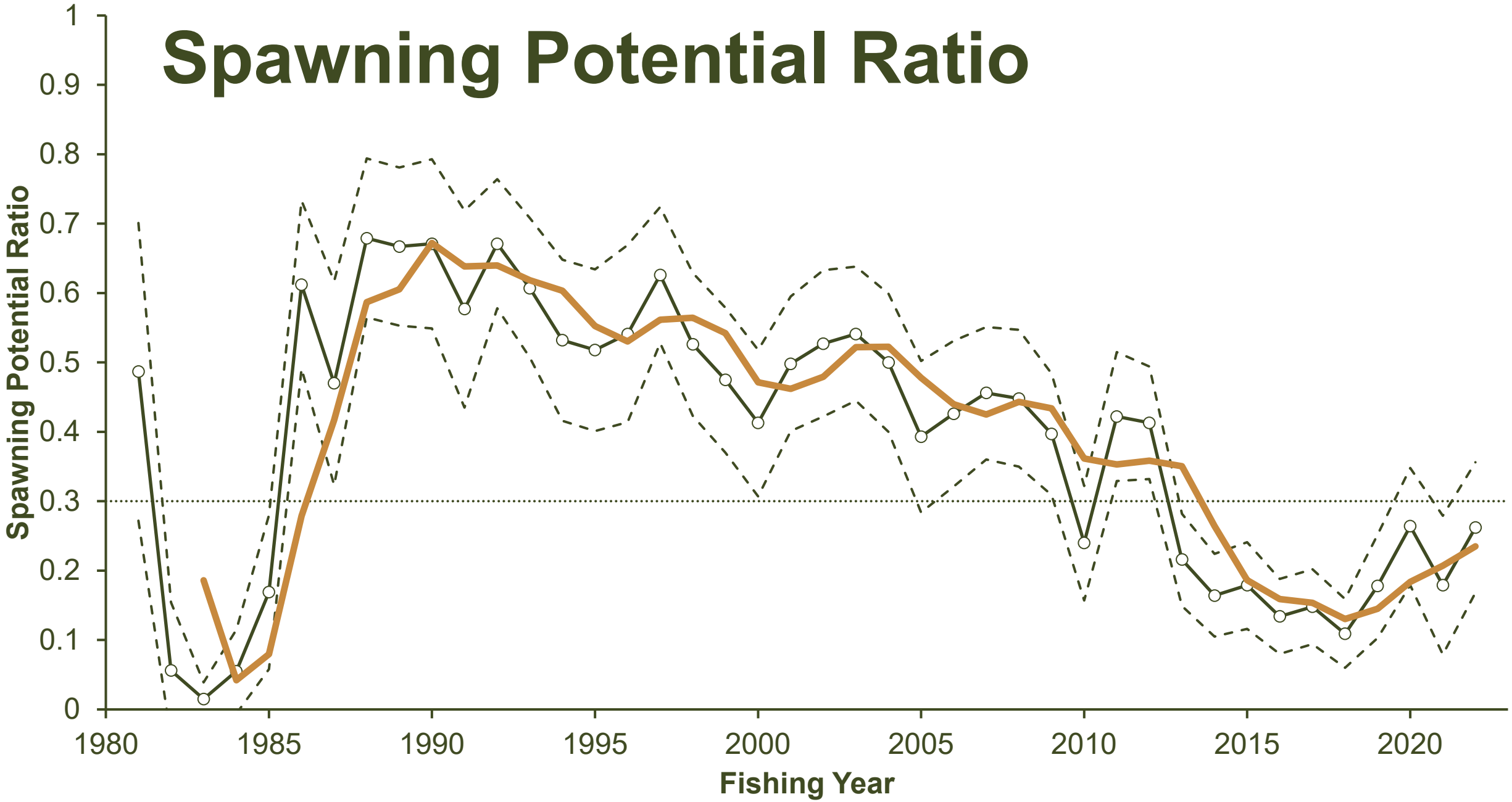


Spawning Potential Ratio



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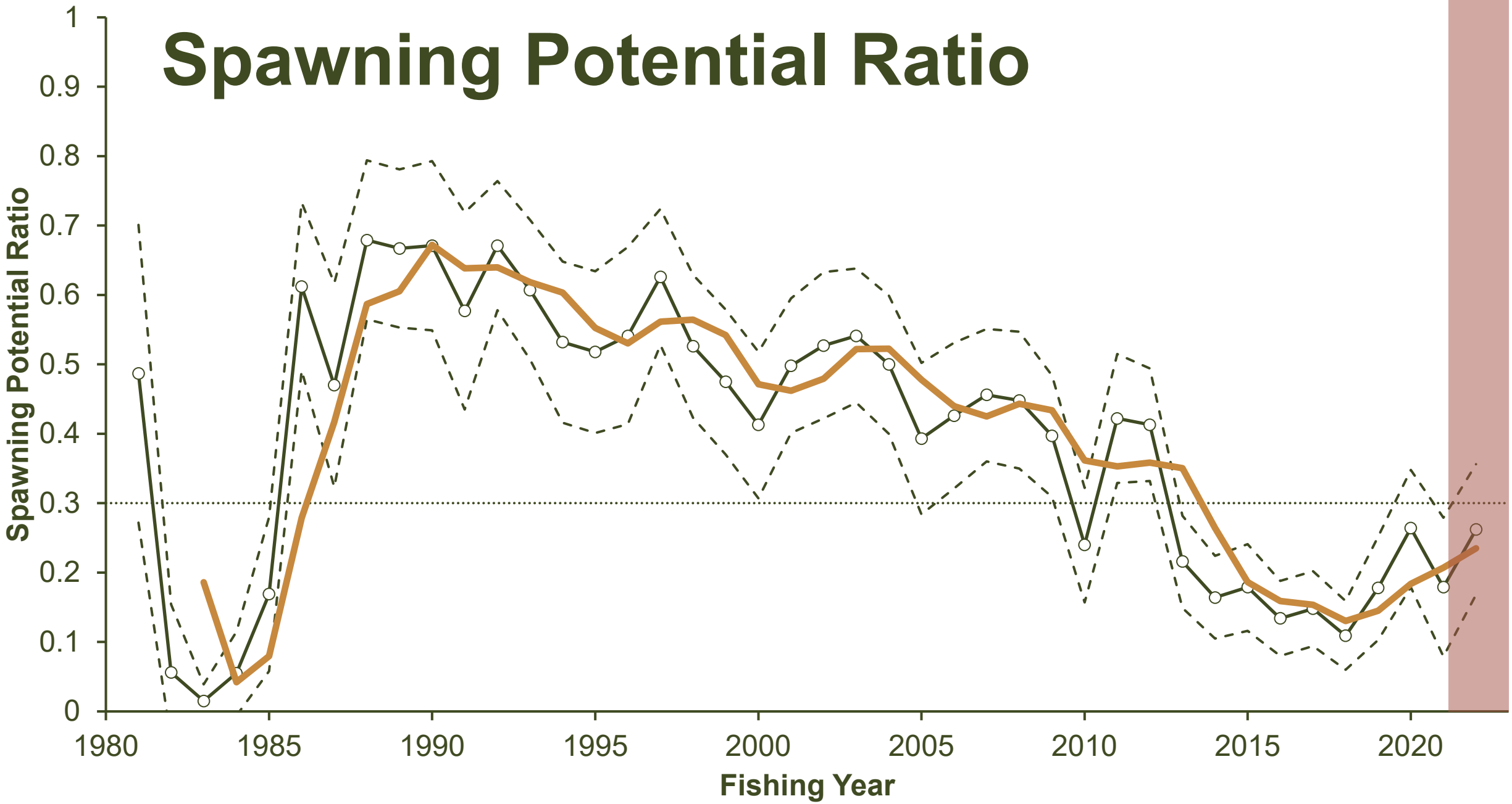

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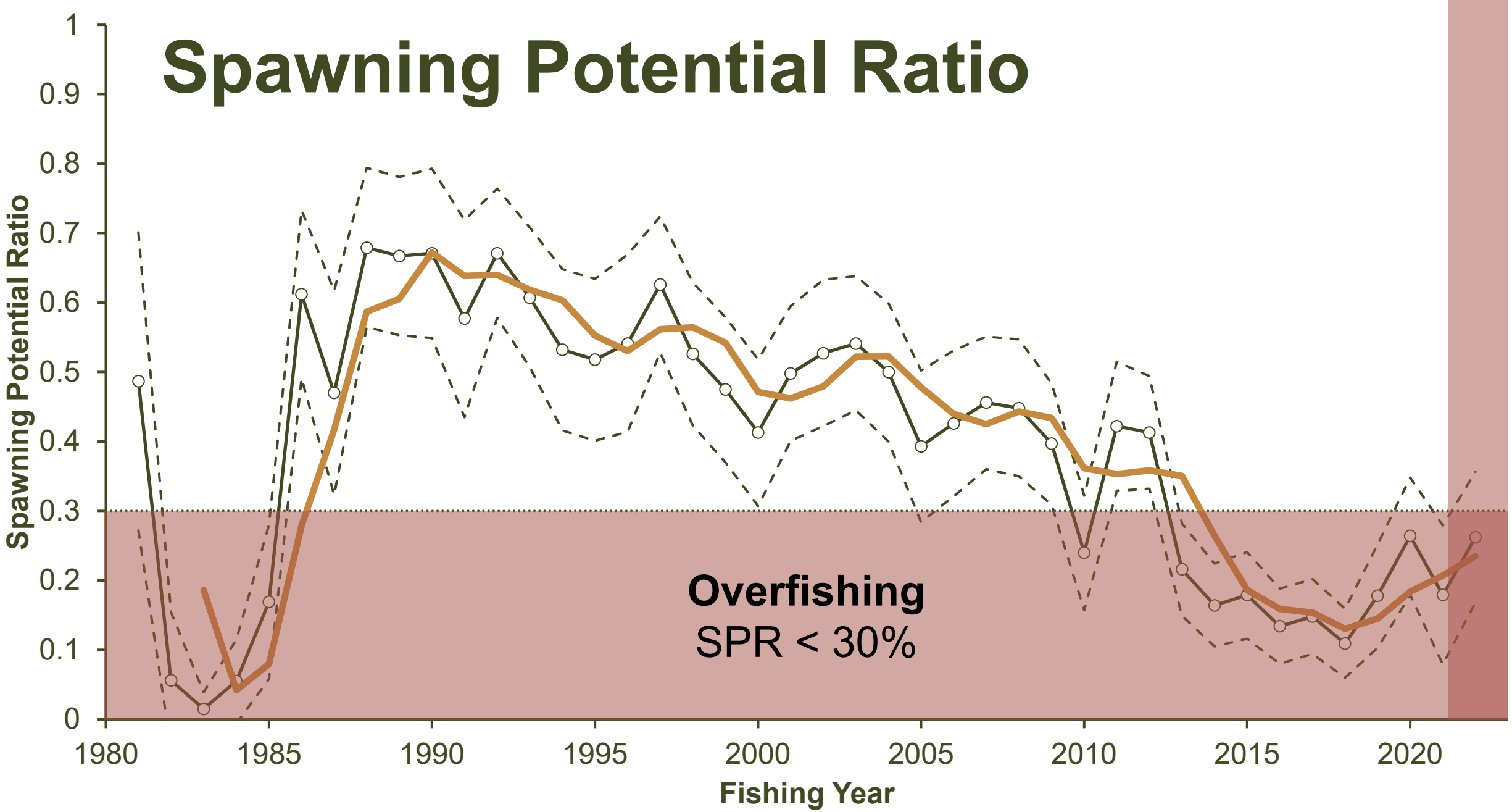
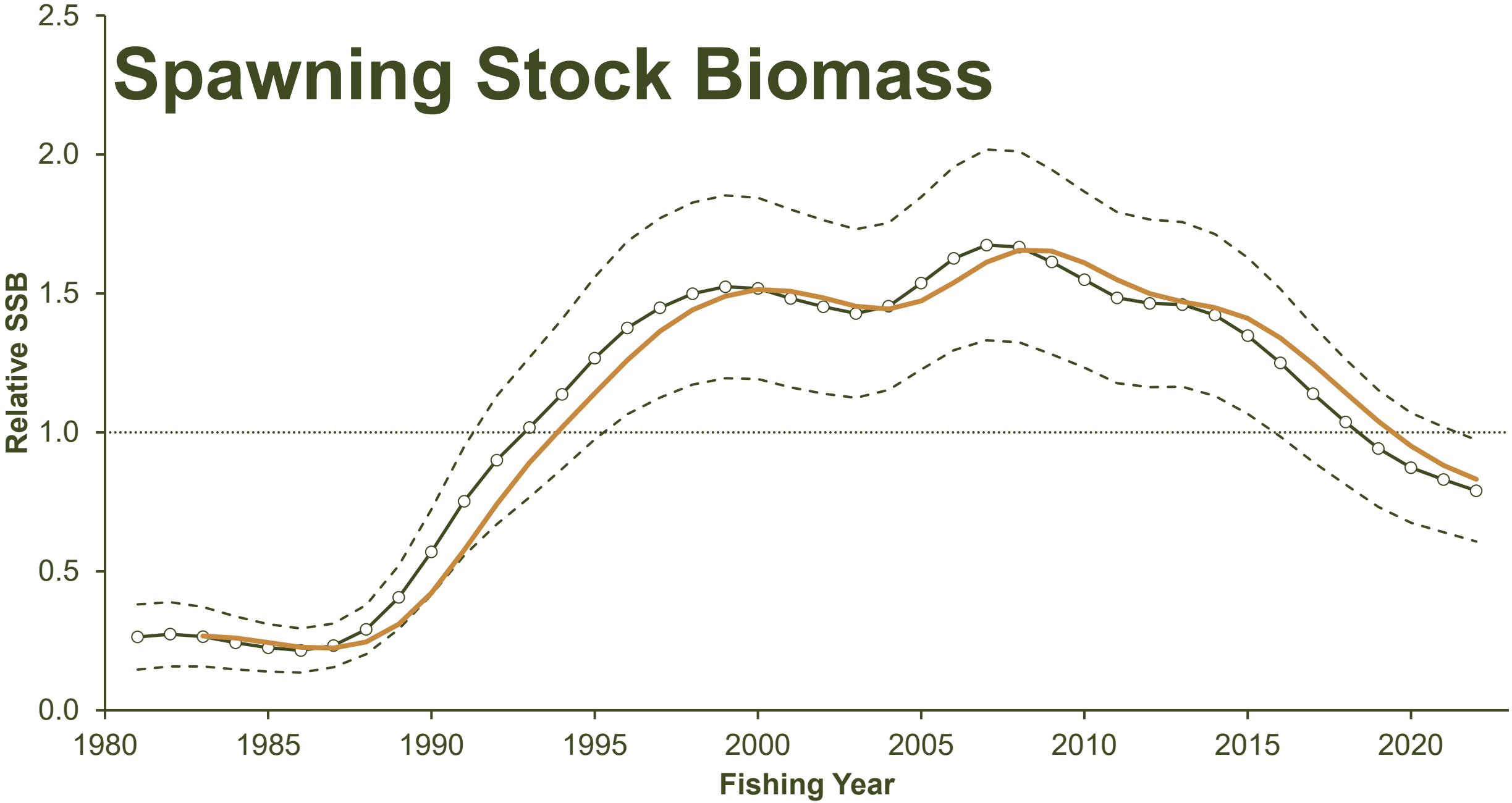


Spawning Stock Biomass



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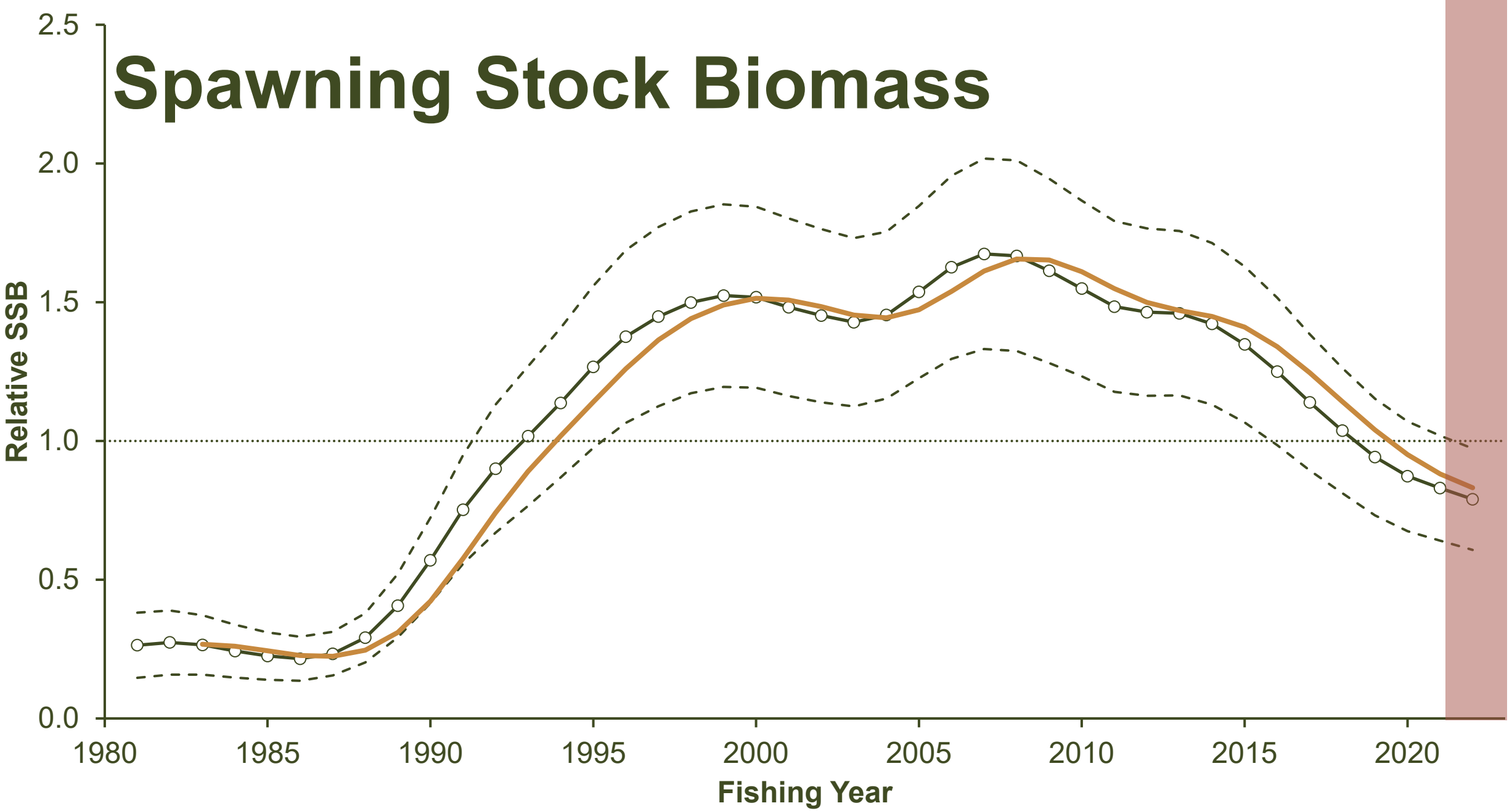

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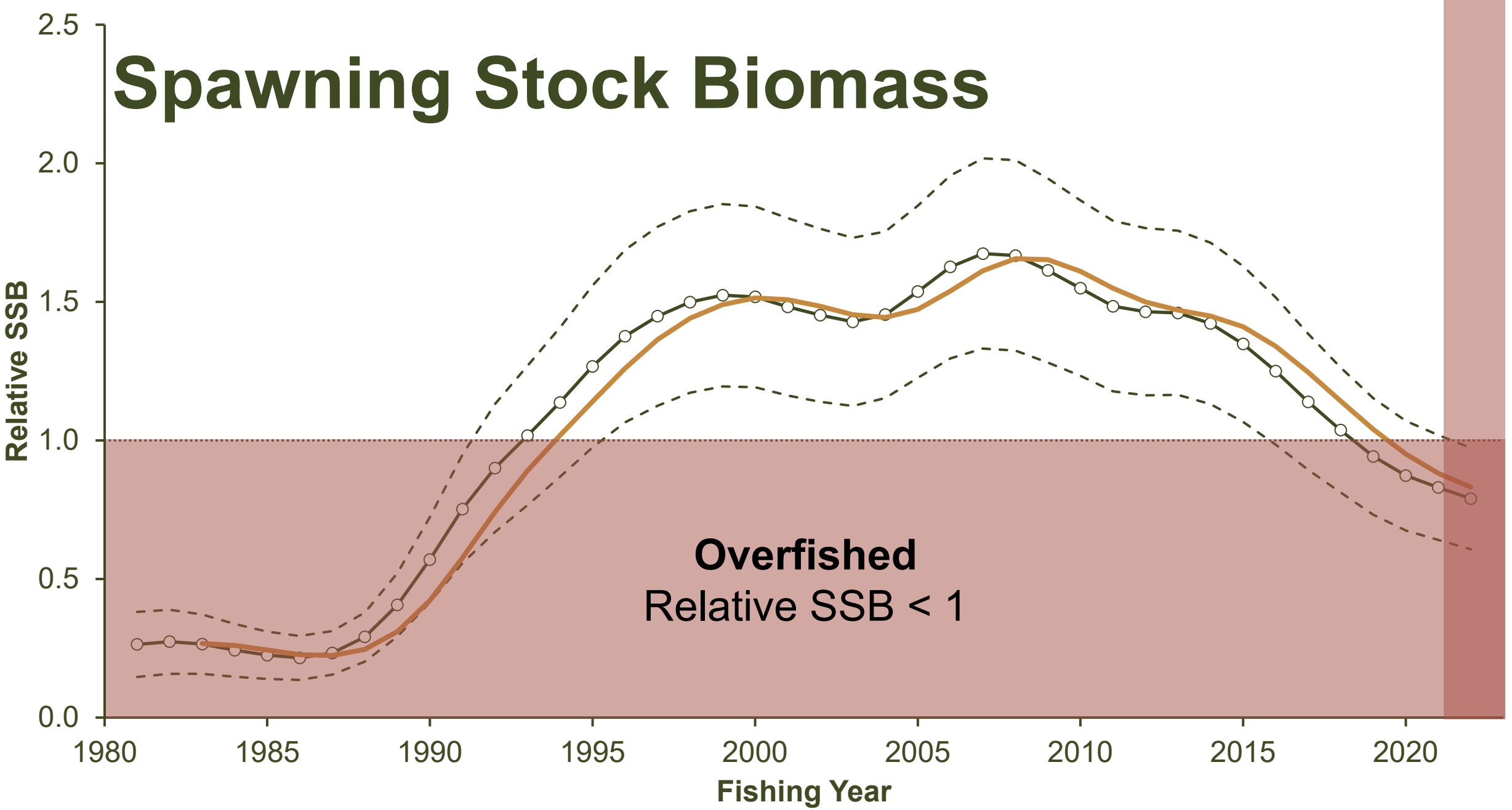
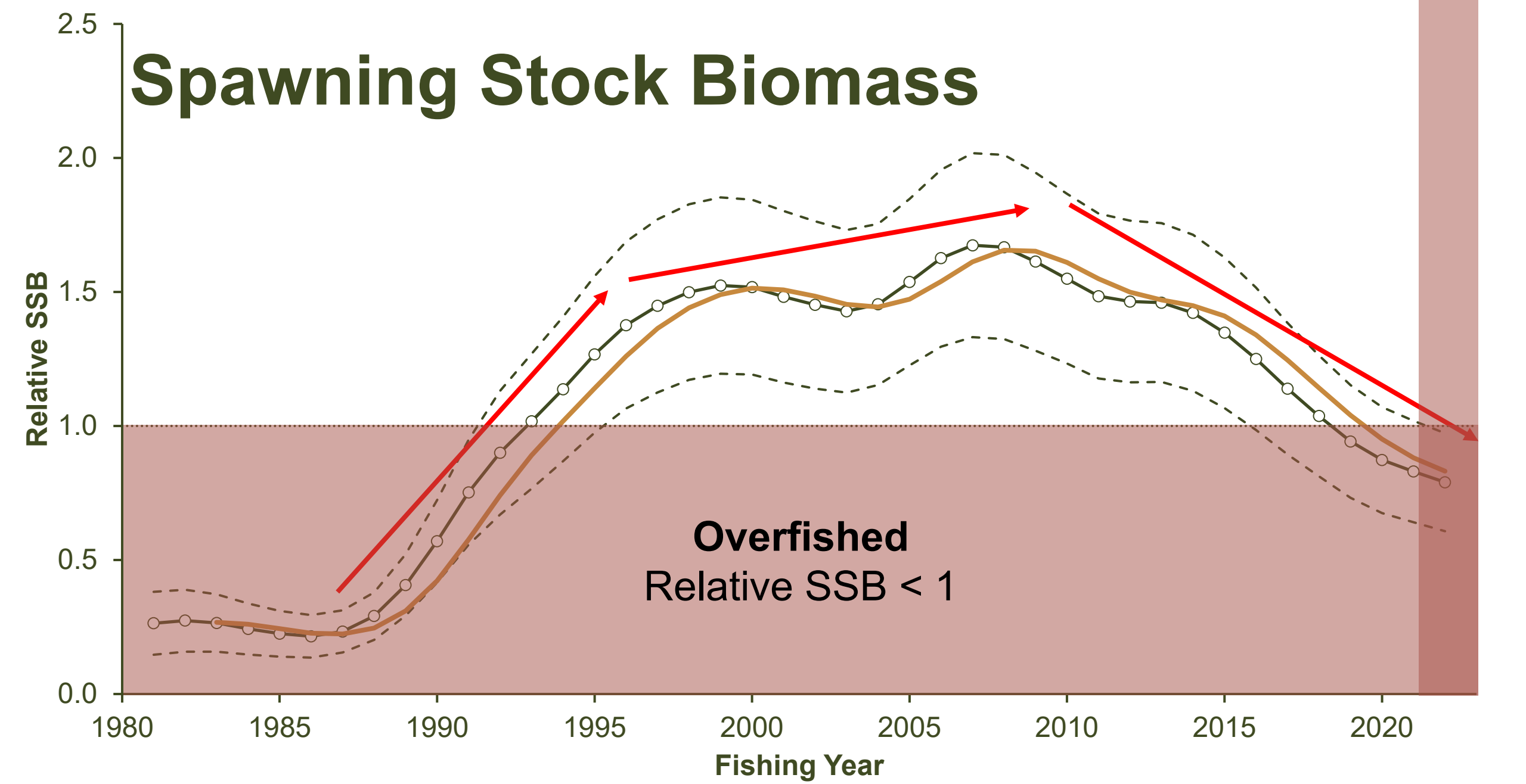



Spawning Stock Biomass
Relative SSB
2.5
2.0
1.5
1.0
0.5
0.0
1980
1985
1990
1995
2000
2005
2010
2015
2020
Fishing Year
Overfished
Relative SSB < 1

Sensitivity Analyses (n = 9)

Model Configuration & Assumptions
- Francis re-weighting of composition data – ***Reweight***
- 1989 start year – ***1989***
- 4% discard mortality of recreational fleet – ***4% Discard***

MRIP Catch Estimates
- Imputed wave 1 catches – ***Wave 1***
- Recreational catches reduced by 30% - ***70% Catch***

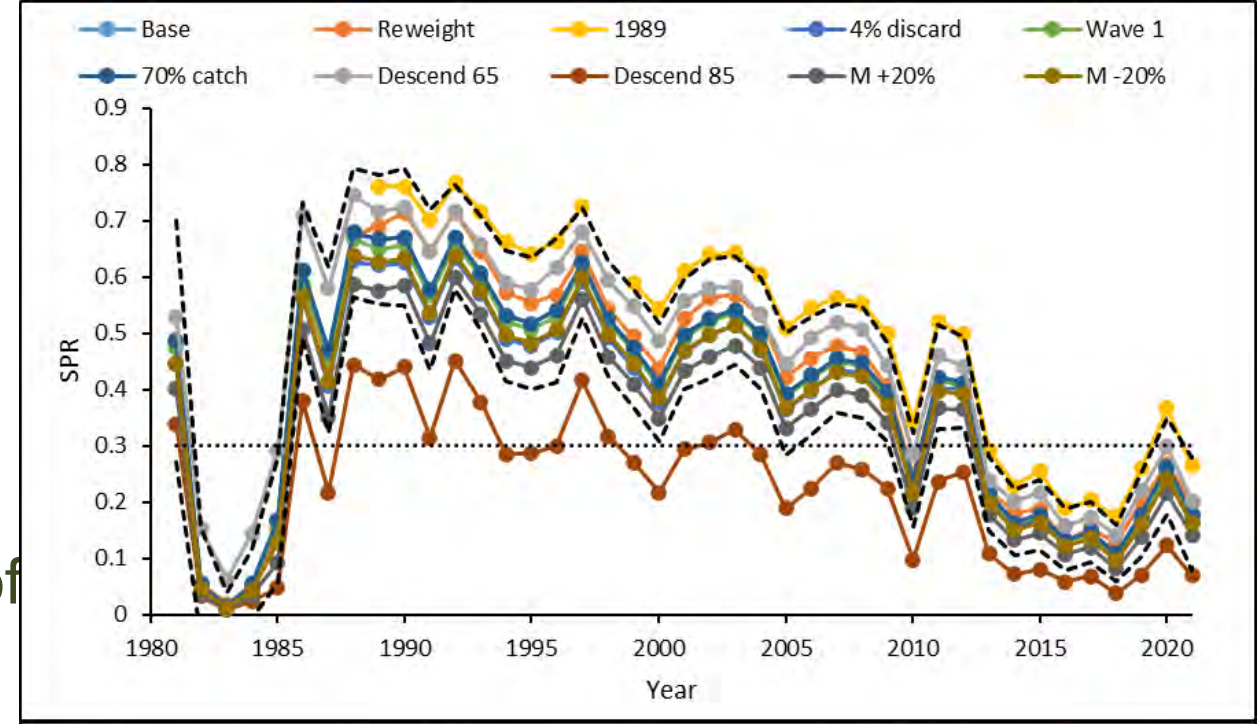
Natural Mortality
- M-@-Age-2 reduced by 20% - ***M – 20%***
- M-@-Age-2 increased by 20% - ***M + 20%***

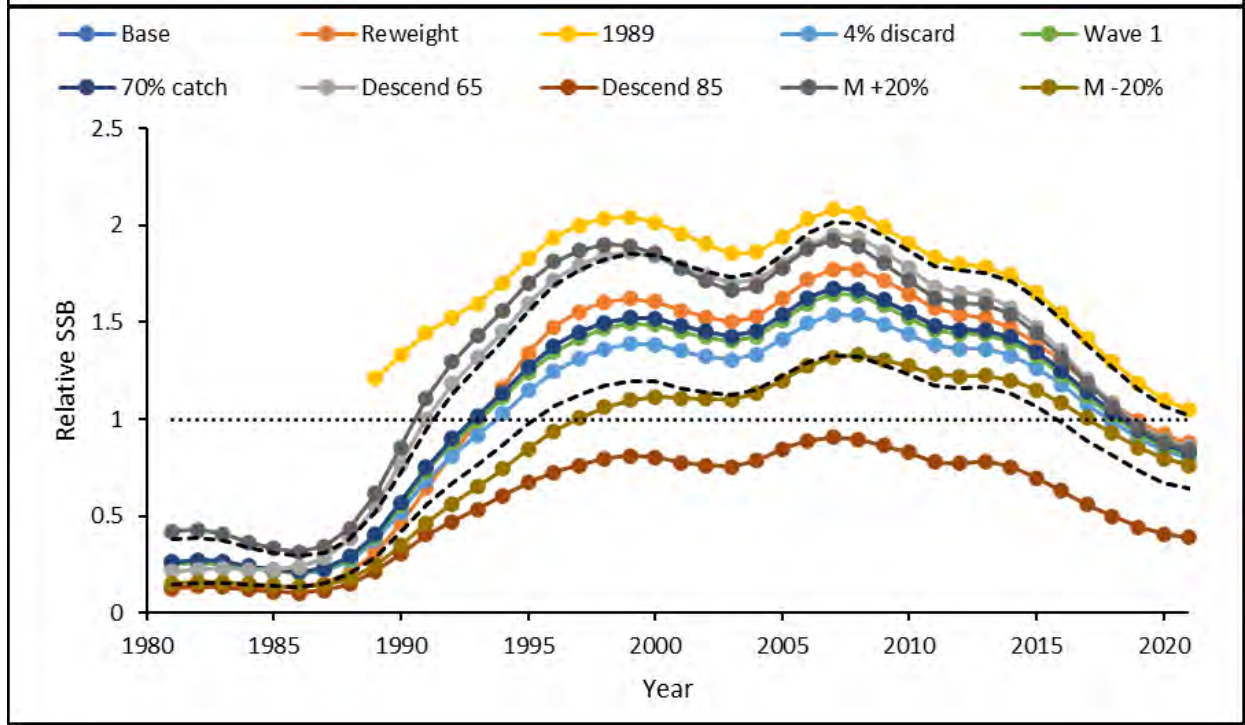
Fixed Selectivity Parameters
- Descending selectivity @ 65 cm TL – ***Descend 65***
- Descending selectivity @ 85 cm TL – ***Descend 85***

Sensitivity Analysis

Similar trends and stock status determinations

- Most sensitive with regards to rebuilding of SSB
  - Varies from 1990 (M+20%) to 1997 (M-20%)
- Terminal year SPR & SSB status insensitive

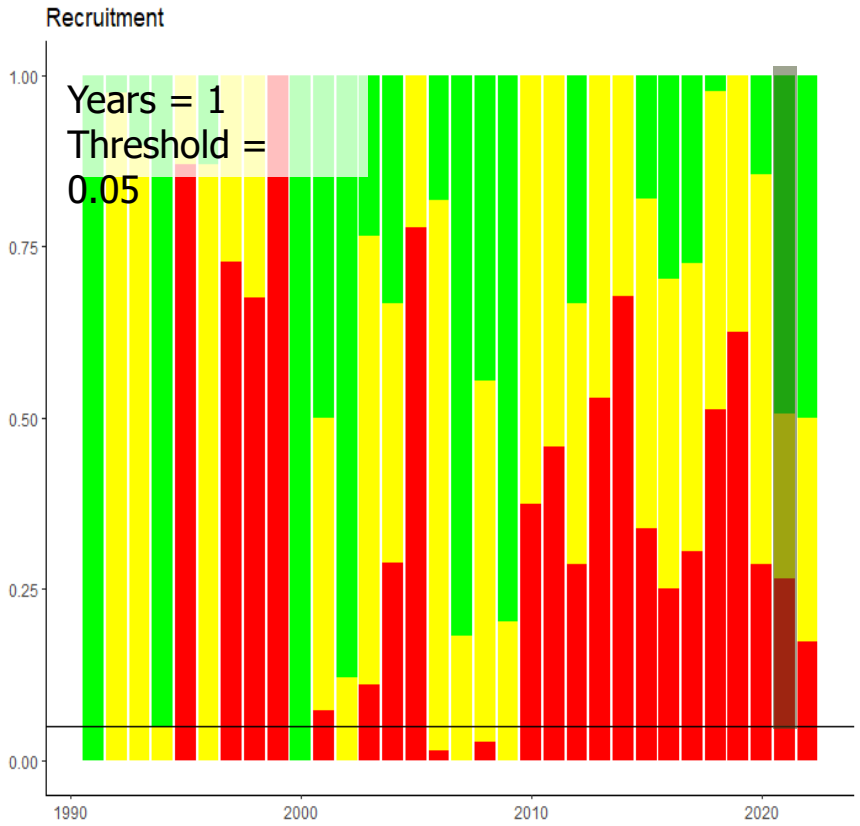


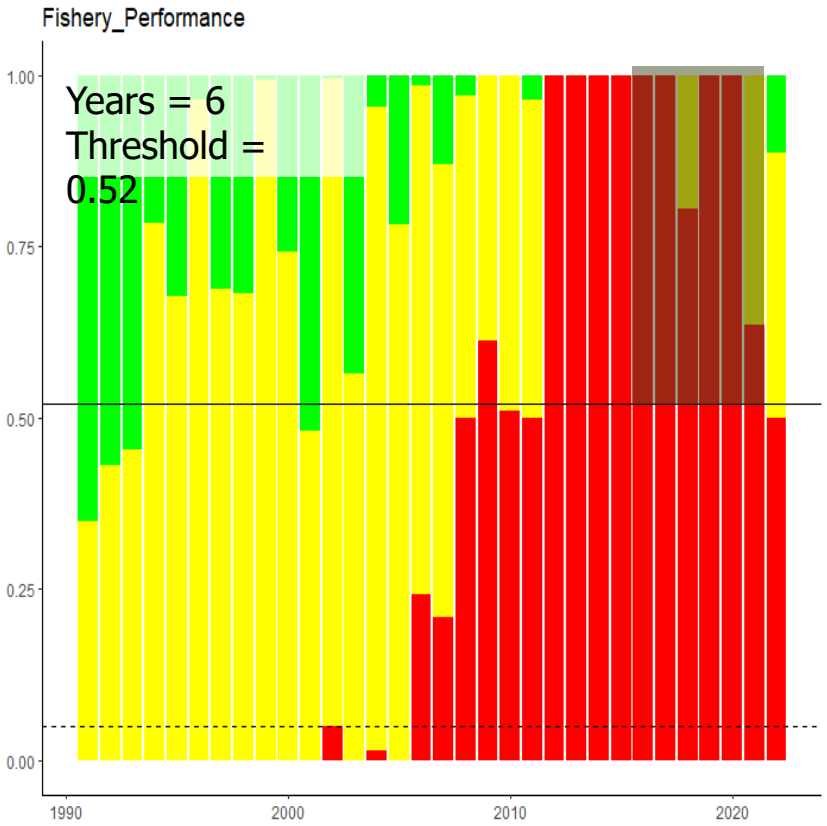


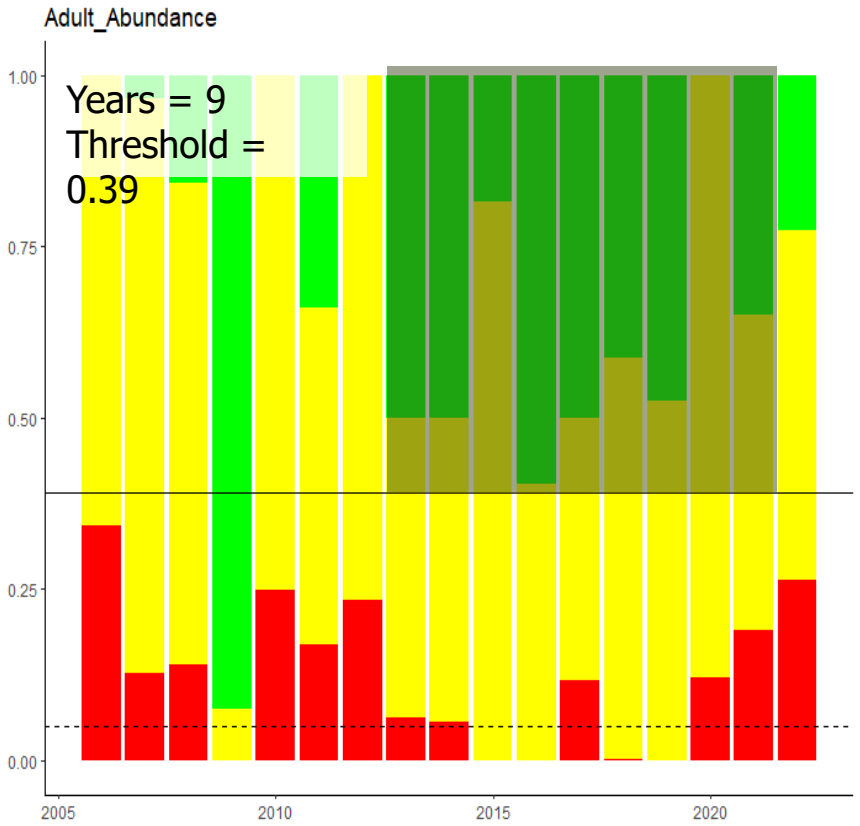
Southern Population – Traffic Light Analysis

Traffic Light Analysis

Management Trigger Time Frame
- Moderate (yellow or red in all years)
- Elevated (red in all years)







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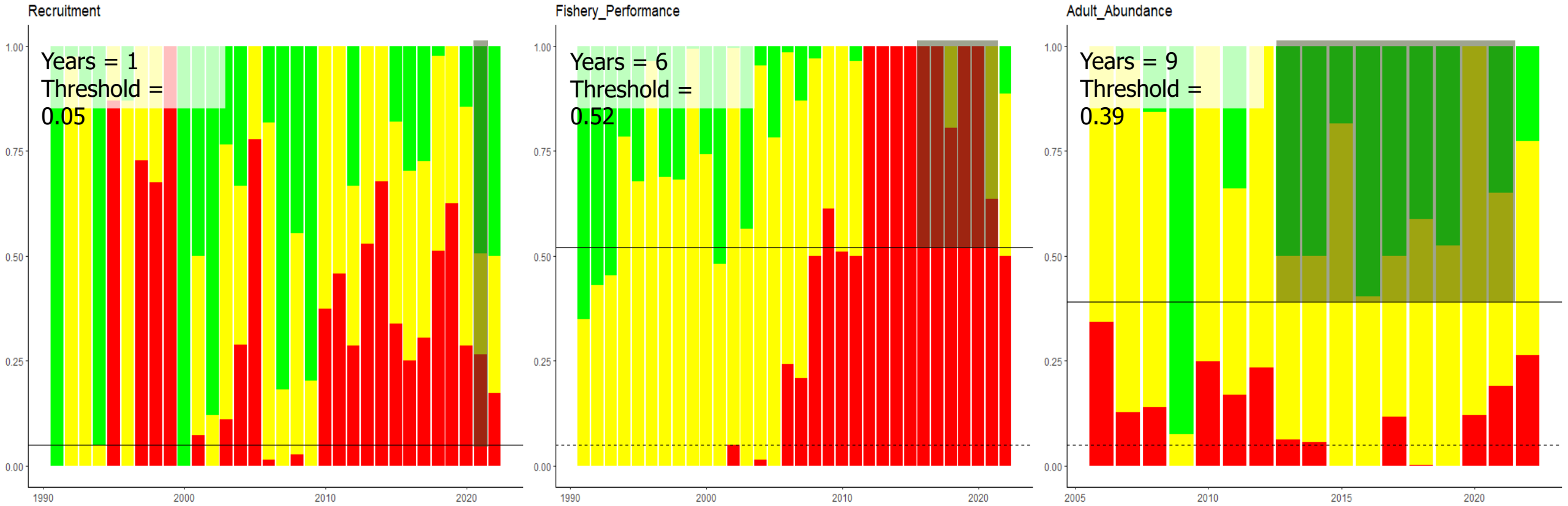

Note: Declining trends for all three southern stock condition characteristics

Recruitment: Red every year from **2010-2022** & **21 of 28 years** since 1995

Fishery Performance: Red every year from **2013-2021**; yellow or red every year since **2002**

Adult Abundance: Decreasing proportion green since mid-2010s

Traffic Light Analysis

Year	Recruitment	Adult Abundance	Fishery Performance
2018	Elevated Action	Moderate Action	Elevated Action
2019	Elevated Action	Moderate Action	Elevated Action
2020	Elevated Action	Moderate Action	Elevated Action
2021	**Elevated Action**	**Moderate Action**	**Elevated Action**

Traffic Light Analysis

Year	Recruitment	Adult Abundance	Fishery Performance
2018	Elevated Action	Moderate Action	Elevated Action
2019	Elevated Action	Moderate Action	Elevated Action
2020	Elevated Action	Moderate Action	Elevated Action
2021	**Elevated Action**	**Moderate Action**	**Elevated Action**

Overfishing

Fishing performance red for at least 1 of the last 3 years

Traffic Light Analysis

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2021	**Elevated Action**	**Moderate Action**	**Elevated Action**

Overfishing

Fishing performance red for at least 1 of the last 3 years

Not Overfished

Adult abundance **not** red for at least 1 of the last 3 years

Traffic Light Analysis

Year	Recruitment	Adult Abundance	Fishery Performance
2018	Elevated Action	Moderate Action	Elevated Action
2019	Elevated Action	Moderate Action	Elevated Action
2020	Elevated Action	Moderate Action	Elevated Action
2021	**Elevated Action**	**Moderate Action**	**Elevated Action**

Overfishing

Fishing performance red for at least 1 of the last 3 years

Not Overfished

Adult abundance **not** red for at least 1 of the last 3 years

2 additional TLA management triggers using adult abundance triggered

Both fishery performance & adult abundance in any of the past 3 years are yellow (or red)

↑ catch and/or ↓ sub-adult abundance

Recruitment red for 5 consecutive years & adult abundance yellow in any of the past 3 years

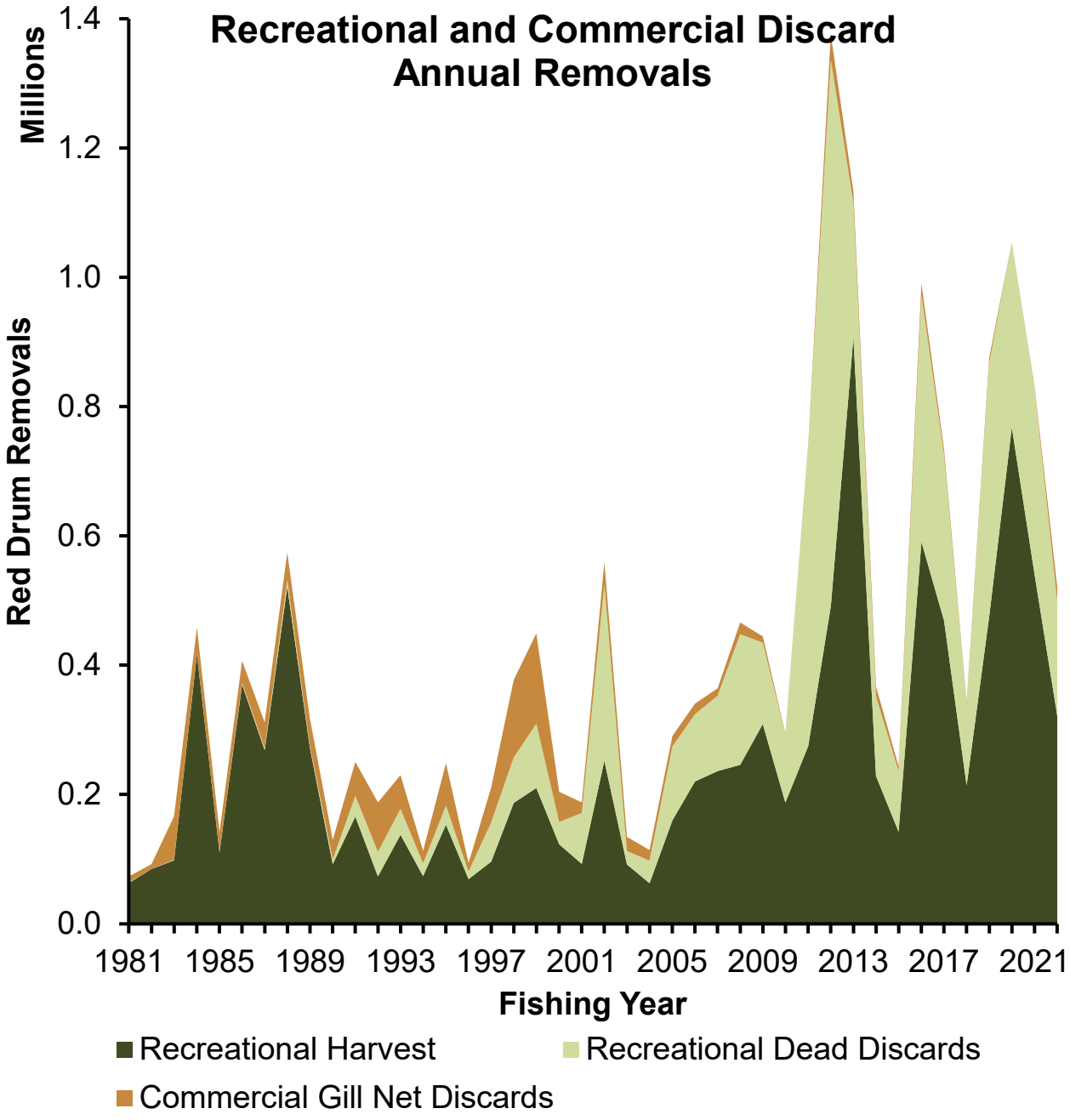
Below average recruitment increasing chance of future declines in adult abundance

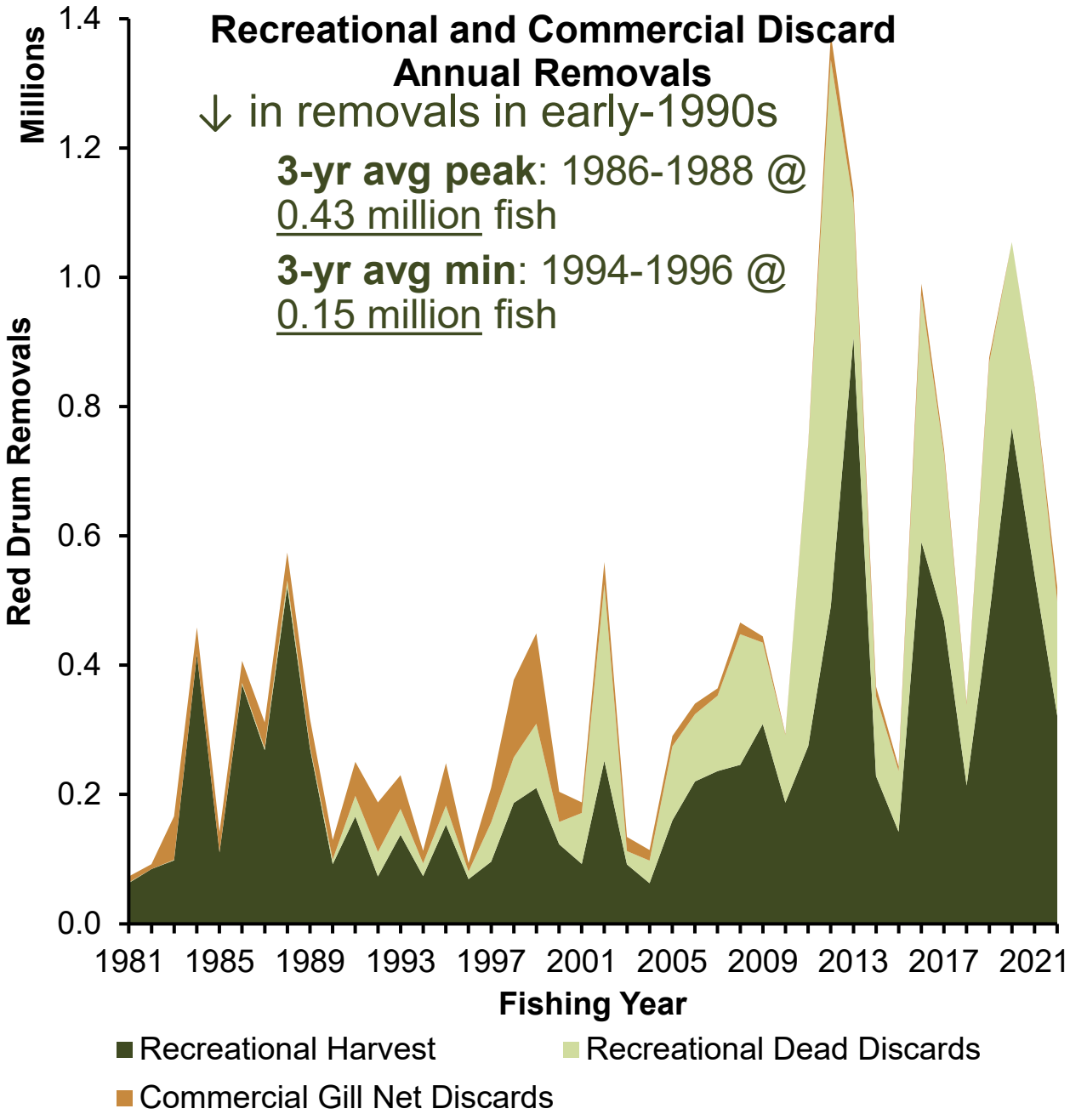
Northern Population

Stock Synthesis, **TLA**, and Skate Data Limited Control Rule Method

Northern Population Fleets

- Commercial Fleets split into harvest (mt) and dead discards (#s of fish) where possible
  - Commercial Gill Net/Beach Seine Fleet (Harvest and Dead Discards)
  - Commercial Other Gears Fleet (Harvest Only)
    - Primarily pound net catches
- Recreational fleet, split into a harvest and release time series
  - Assumed an 8% discard mortality rate for released fish


Recreational and Commercial Discard
Annual Removals
Millions
Red Drum Removals
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1981
1985
1989
1993
1997
2001
2005
2009
2013
2017
2021
Fishing Year
Recreational Harvest
Recreational Dead Discards
Commercial Gill Net Discards


Recreational and Commercial Discard
Annual Removals
↓ in removals in early-1990s
3-yr avg peak: 1986-1988 @
0.43 million fish
3-yr avg min: 1994-1996 @
0.15 million fish
Millions
Red Drum Removals
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1981
1985
1989
1993
1997
2001
2005
2009
2013
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2021
Fishing Year
Recreational Harvest
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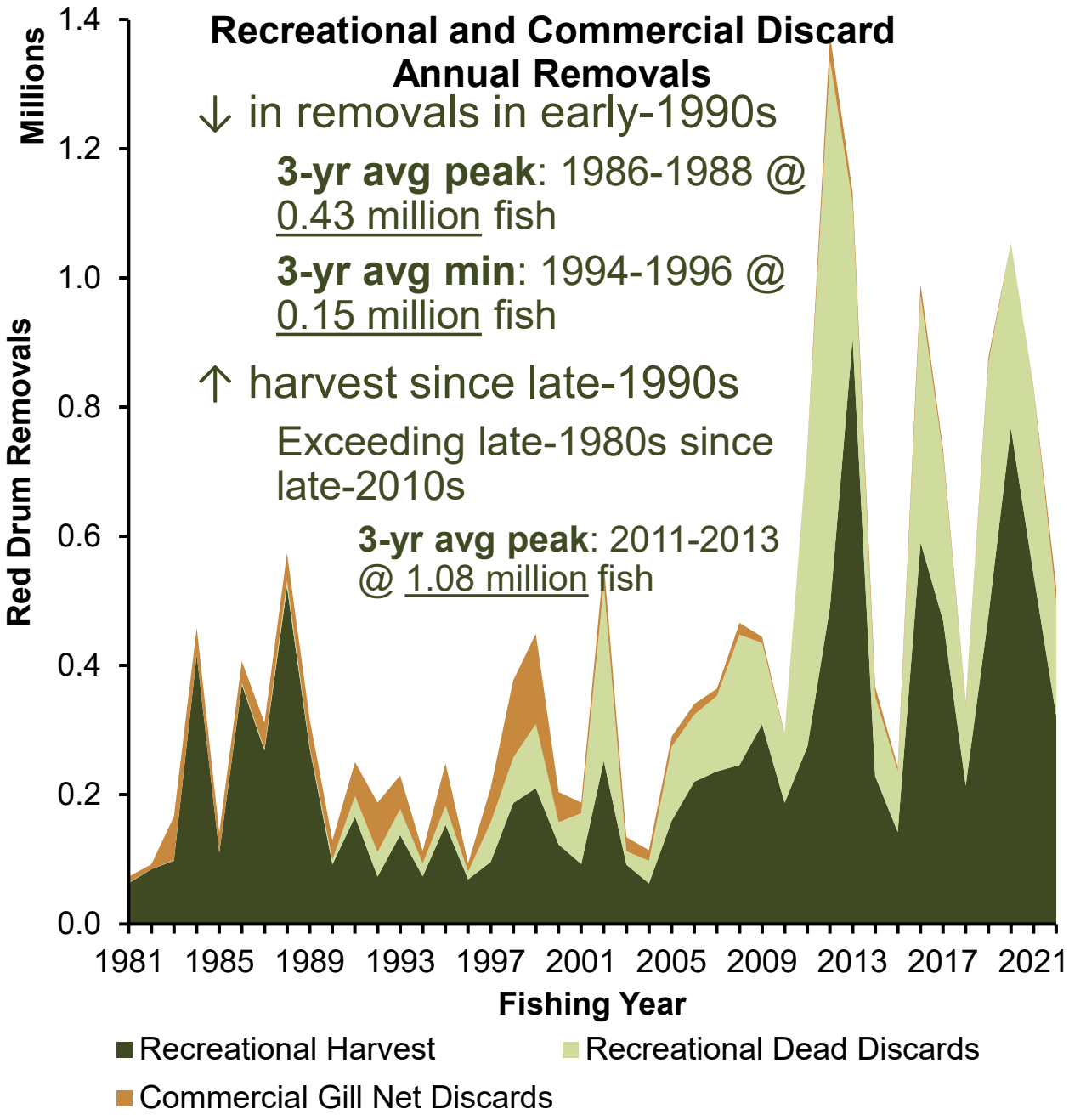
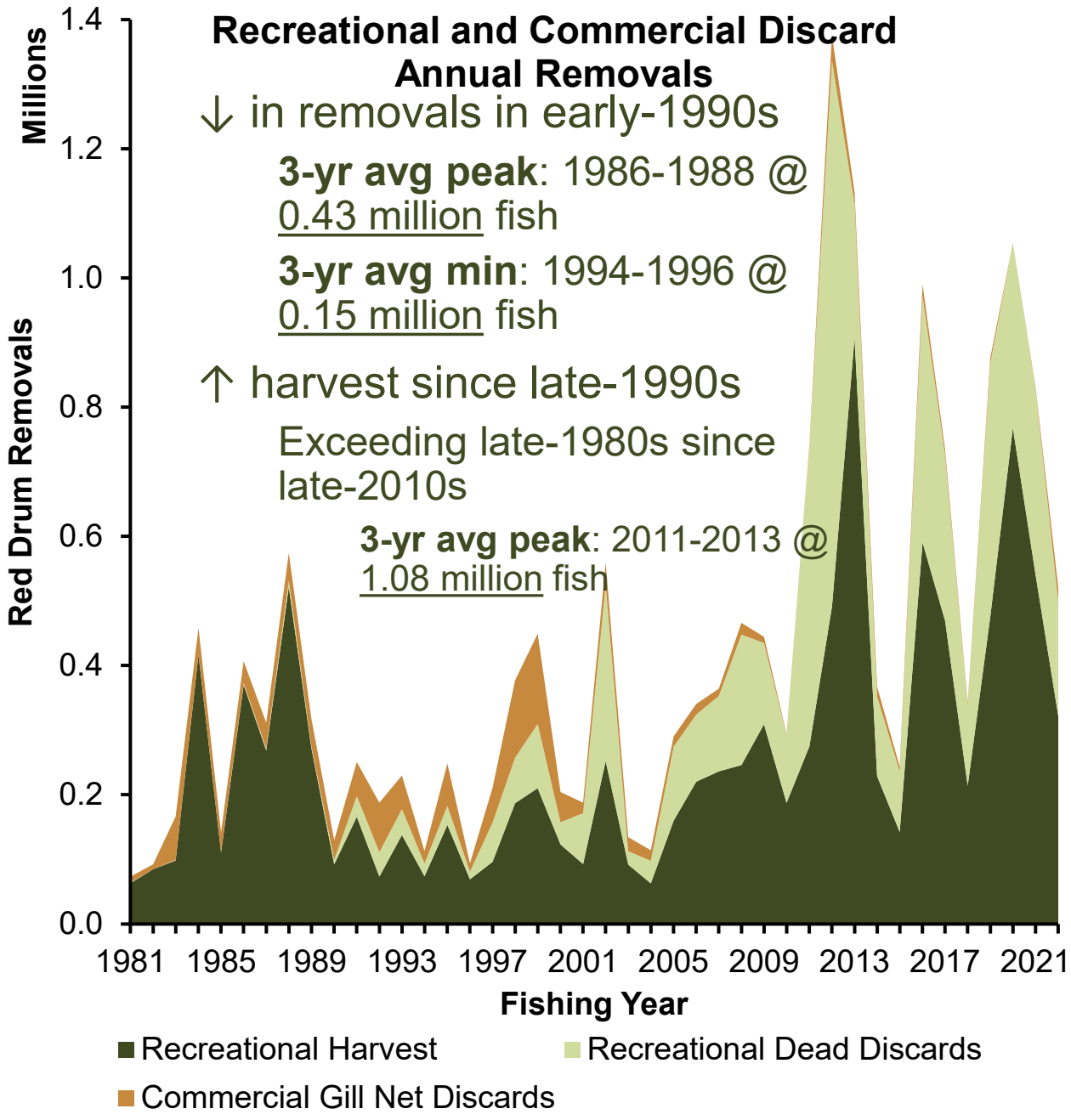

Recreational and Commercial Discard Annual Removals
↓ in removals in early-1990s
3-yr avg peak: 1986-1988 @ 0.43 million fish
3-yr avg min: 1994-1996 @ 0.15 million fish
↑ harvest since late-1990s
Exceeding late-1980s since late-2010s
3-yr avg peak: 2011-2013 @ 1.08 million fish
Millions
Red Drum Removals
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1981 1985 1989 1993 1997 2001 2005 2009 2013 2017 2021
Fishing Year
Recreational Harvest
Recreational Dead Discards
Commercial Gill Net Discards


Recreational and Commercial Discard
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Exceeding late-1980s since late-2010s
3-yr avg peak: 2011-2013 @ 1.08 million fish
Millions
Red Drum Removals
1.4
1.2
1.0
0.8
0.6
0.4
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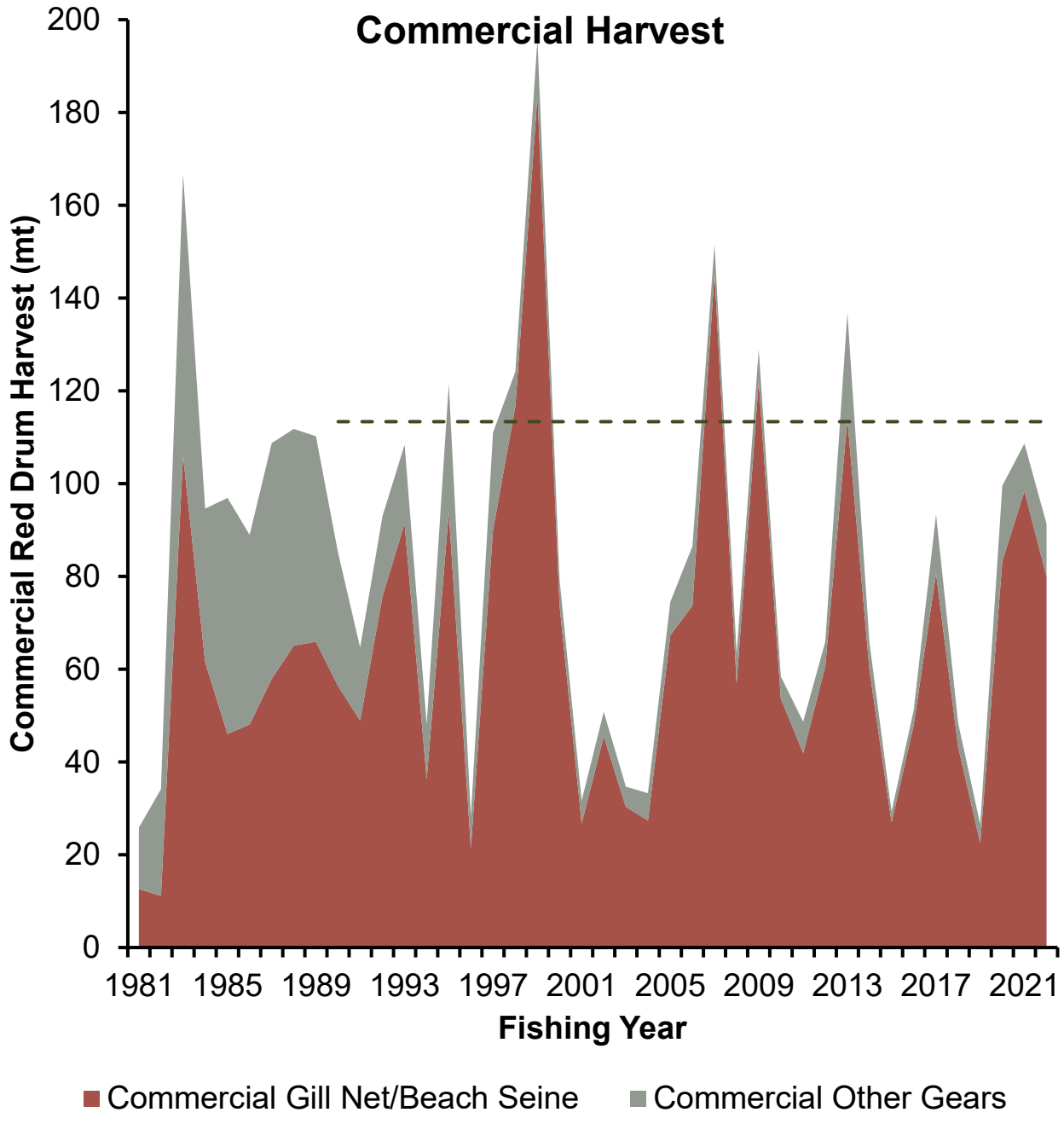
Fishing Year
Recreational Harvest
Recreational Dead Discards
Commercial Gill Net Discards


Commercial Harvest
Commercial Red Drum Harvest (mt)
200
180
160
140
120
100
80
60
40
20
0
1981 1985 1989 1993 1997 2001 2005 2009 2013 2017 2021
Fishing Year
Commercial Gill Net/Beach Seine
Commercial Other Gears

Recreational and Commercial Discard Annual Removals

↓ in removals in early-1990s

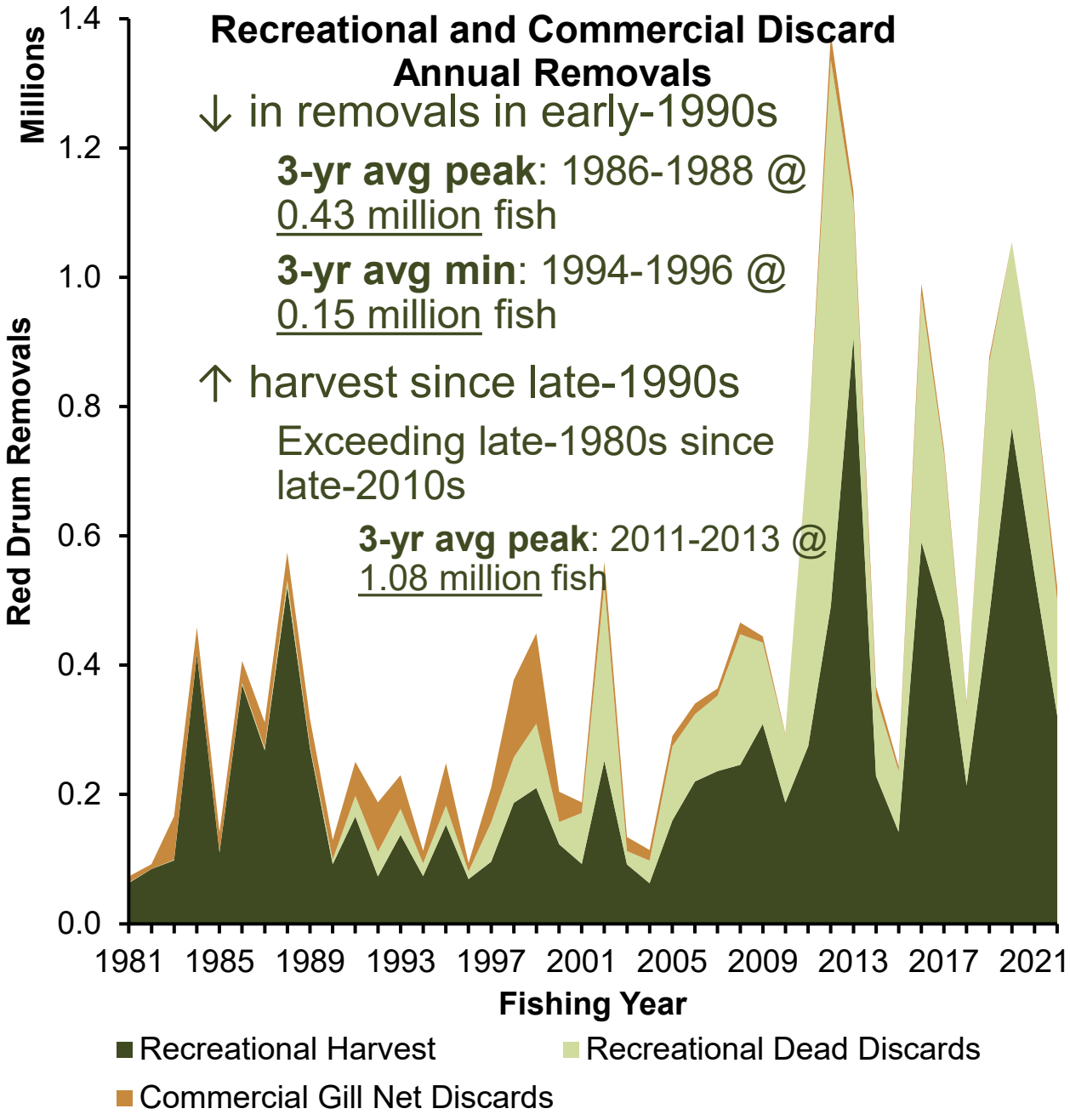
3-yr avg peak: 1986-1988 @ 0.43 million fish

3-yr avg min: 1994-1996 @ 0.15 million fish

↑ harvest since late-1990s

Exceeding late-1980s since late-2010s

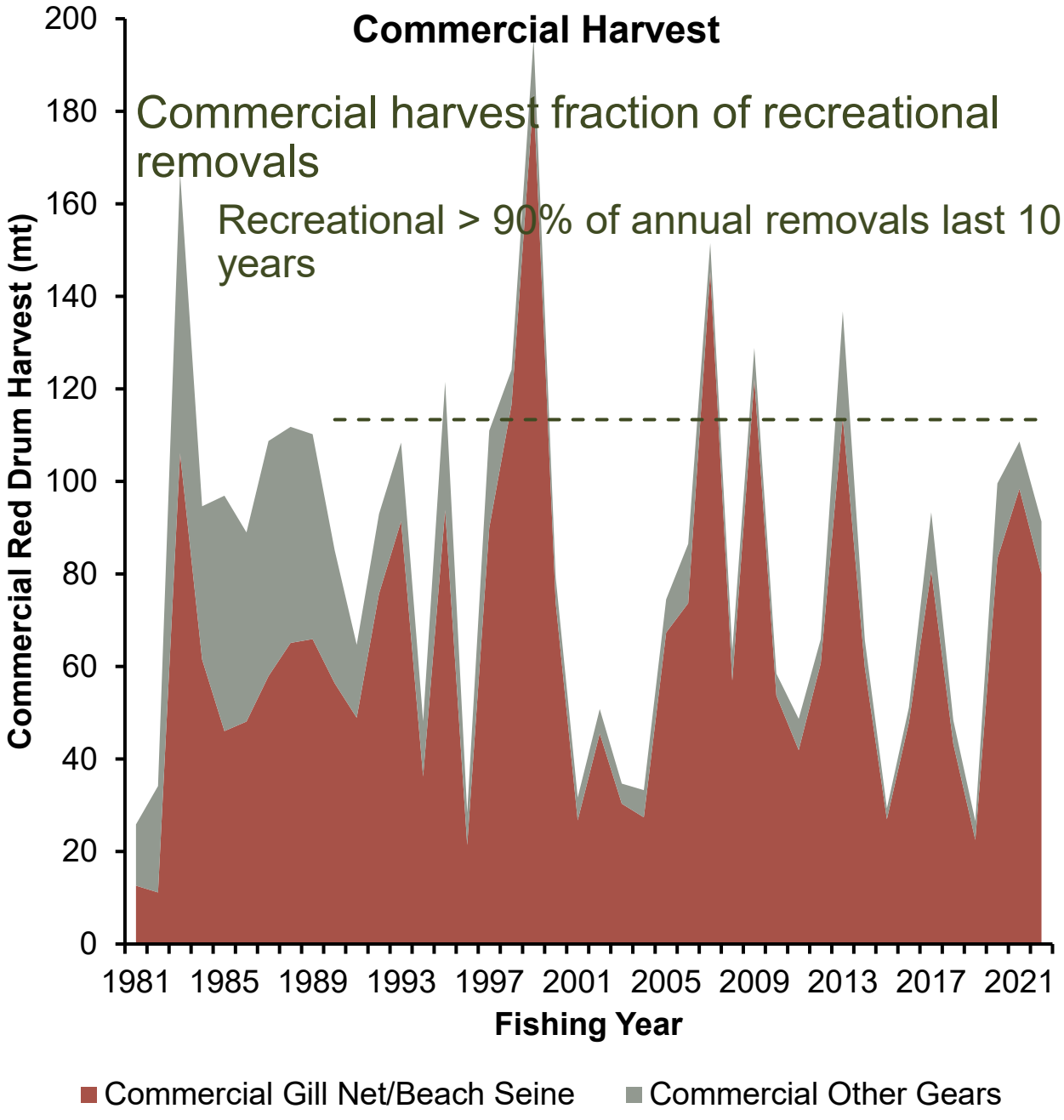
3-yr avg peak: 2011-2013 @ 1.08 million fish



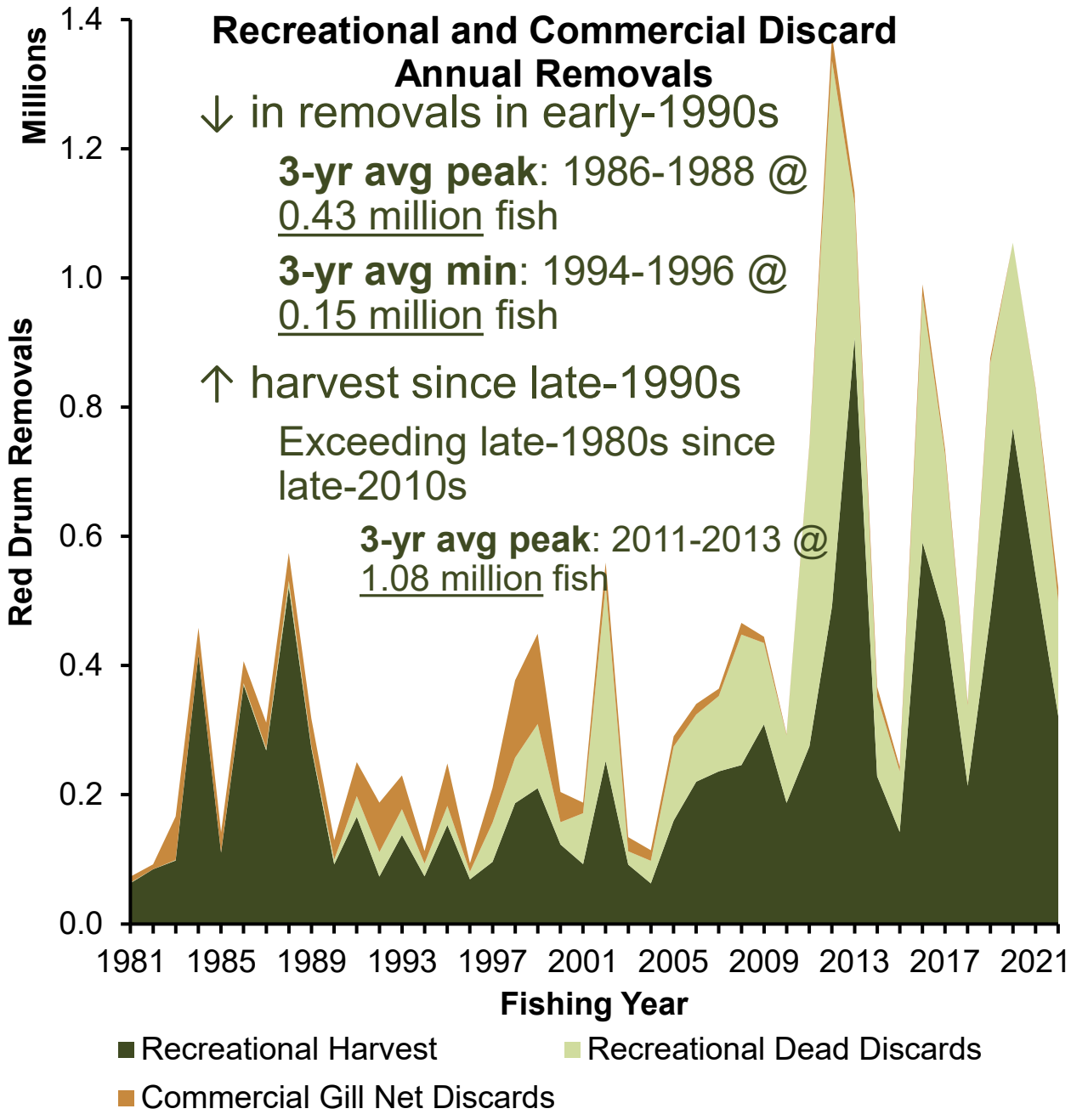
Commercial Harvest

Commercial harvest fraction of recreational removals

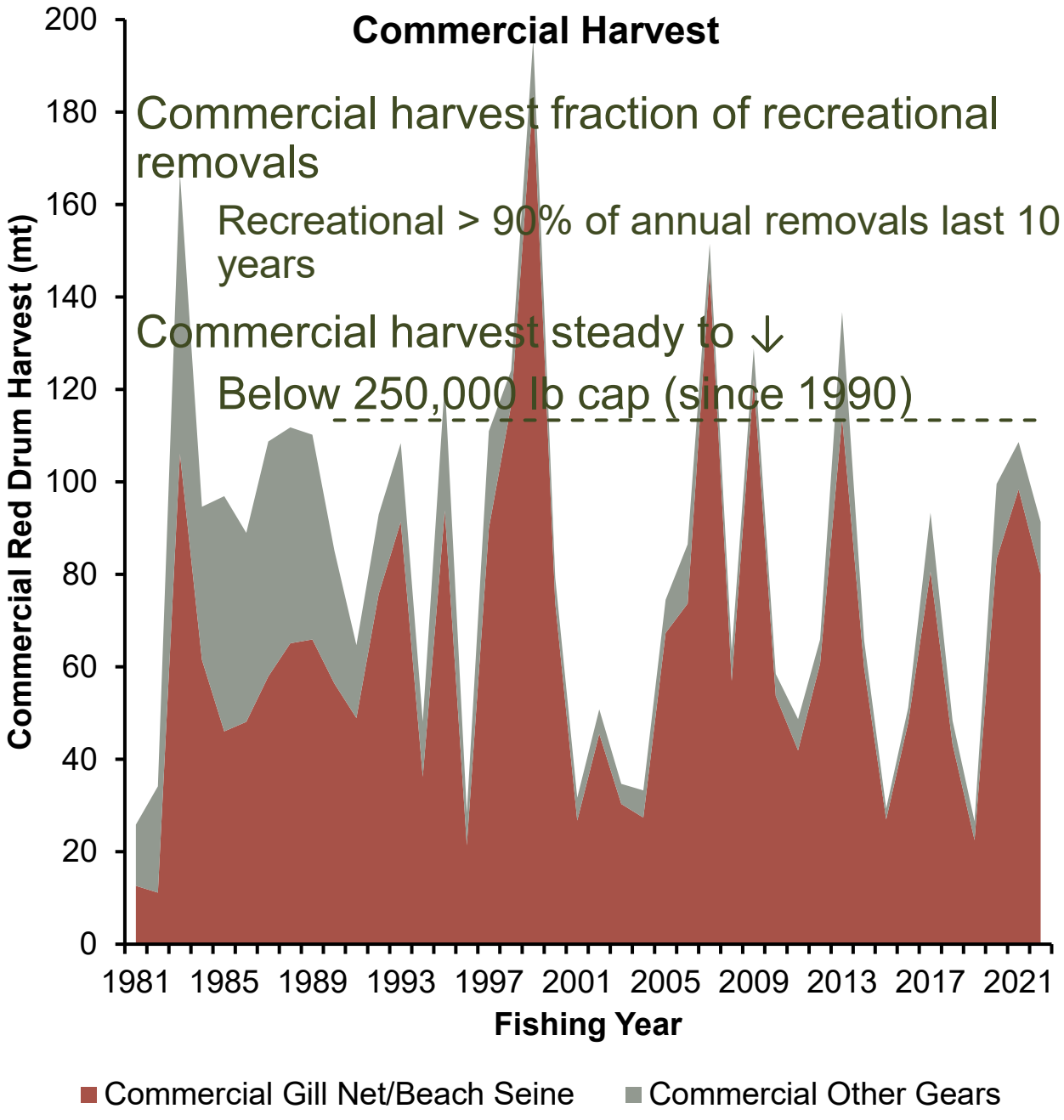
Recreational > 90% of annual removals last 10 years



Recreational and Commercial Discard Annual Removals



Commercial Harvest



Northern Population Fishery-Independent Indices

Only available from North Carolina

- Bag Seine Survey
- Gill Net Survey
- Longline Survey

Recruitment Survey
Sub-Adult Survey
Adult Survey

Northern Population Fishery-Independent Indices

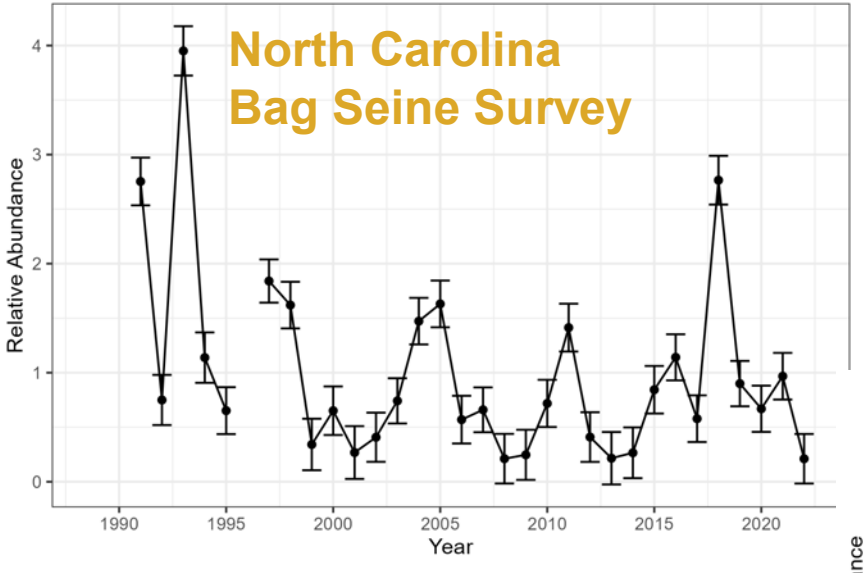
Only available from North Carolina

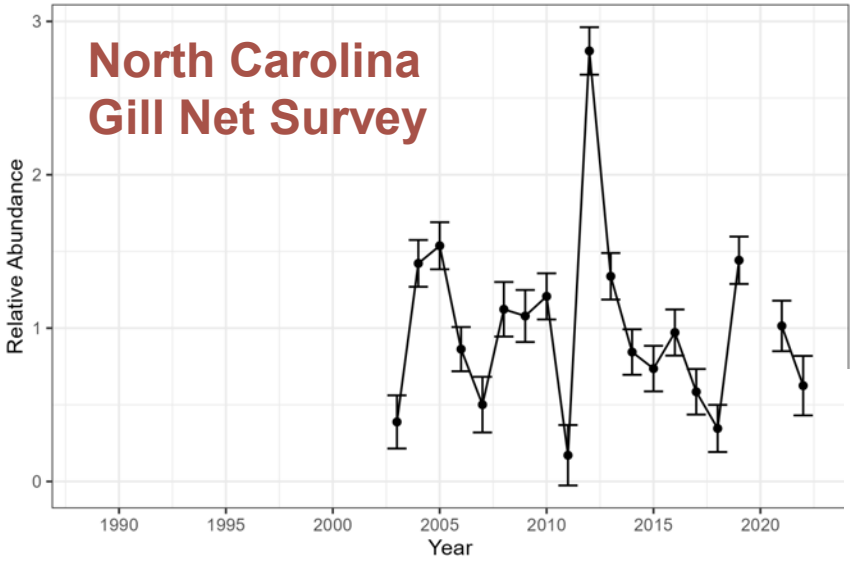
- Bag Seine Survey
- Gill Net Survey
- Longline Survey

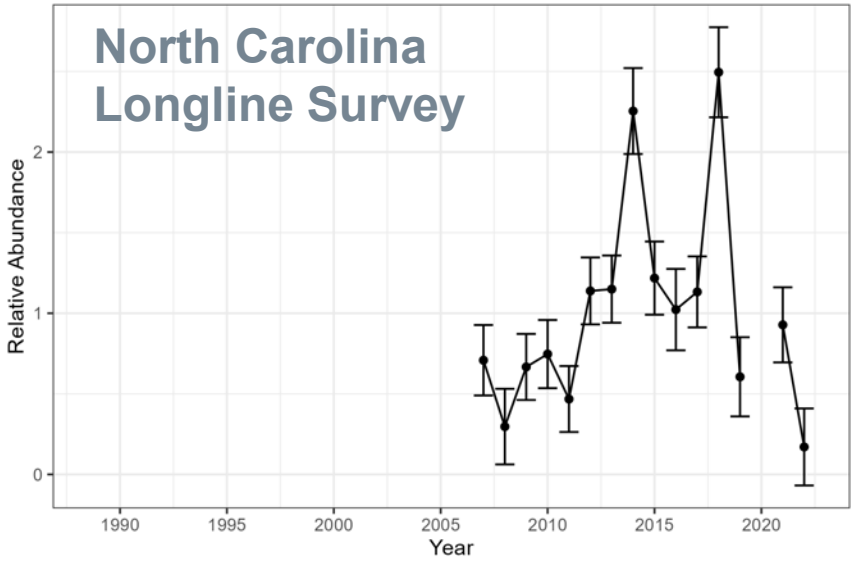
Standardized indices to account for covariate(s) effect on catchability

- Previous assessments used nominal indices not accounting for environmental conditions effects on catchability

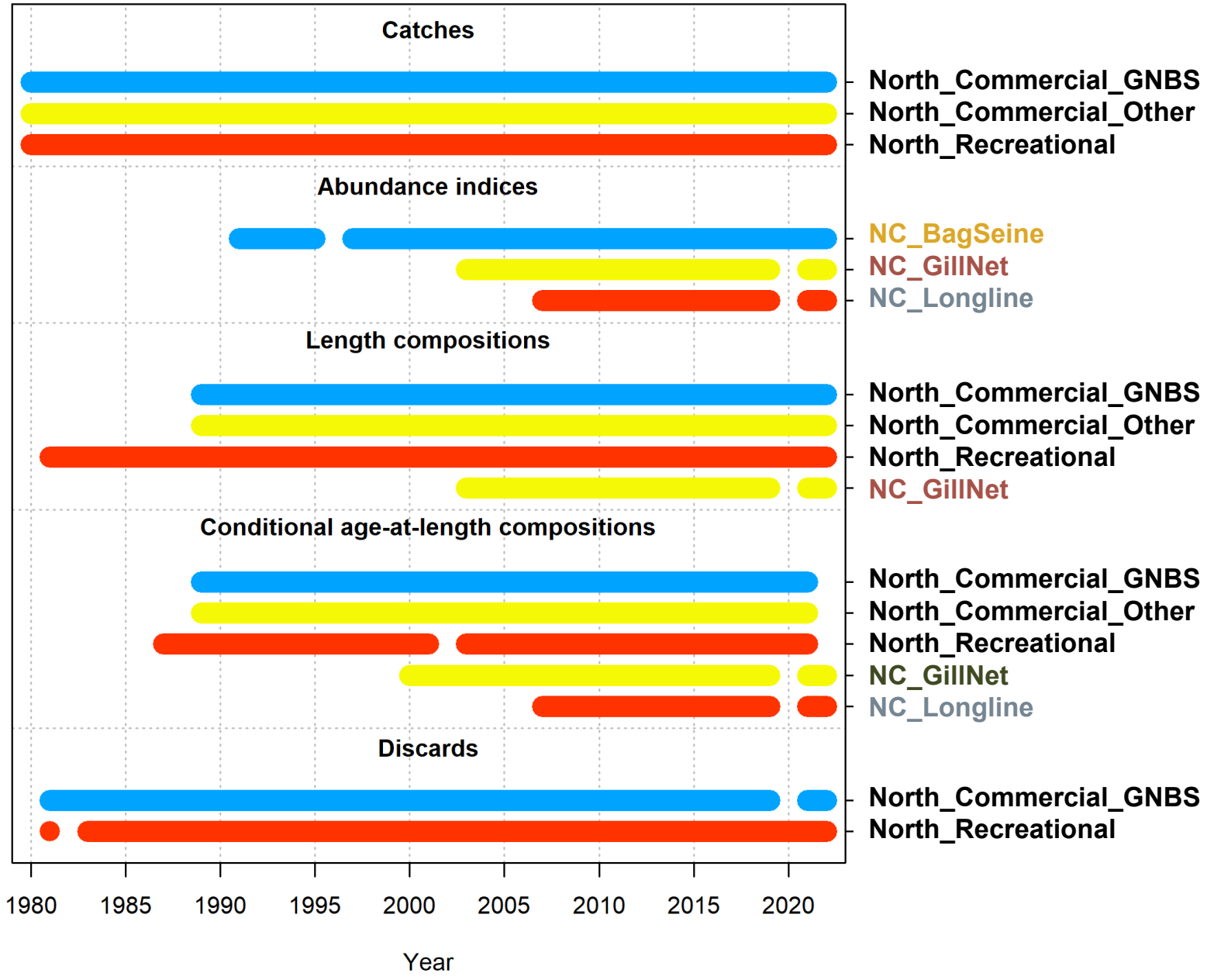
Recruitment Survey
Sub-Adult Survey
Adult Survey


North Carolina
Bag Seine Survey
Relative Abundance
Year
0
1
2
3
4
1990
1995
2000
2005
2010
2015
2020


North Carolina
Gill Net Survey
Relative Abundance
Year
0
1
2
3
1990
1995
2000
2005
2010
2015
2020


North Carolina
Longline Survey
Relative Abundance
Year
0
1
2
1990
1995
2000
2005
2010
2015
2020

SS Data Inputs



No Base Stock Synthesis Model

Due to uncertainty and instability in the northern stock SS model, the model was not deemed satisfactory for stock status determination

No Base Stock Synthesis Model

Due to uncertainty and instability in the northern stock SS model, the model was not deemed satisfactory for stock status determination

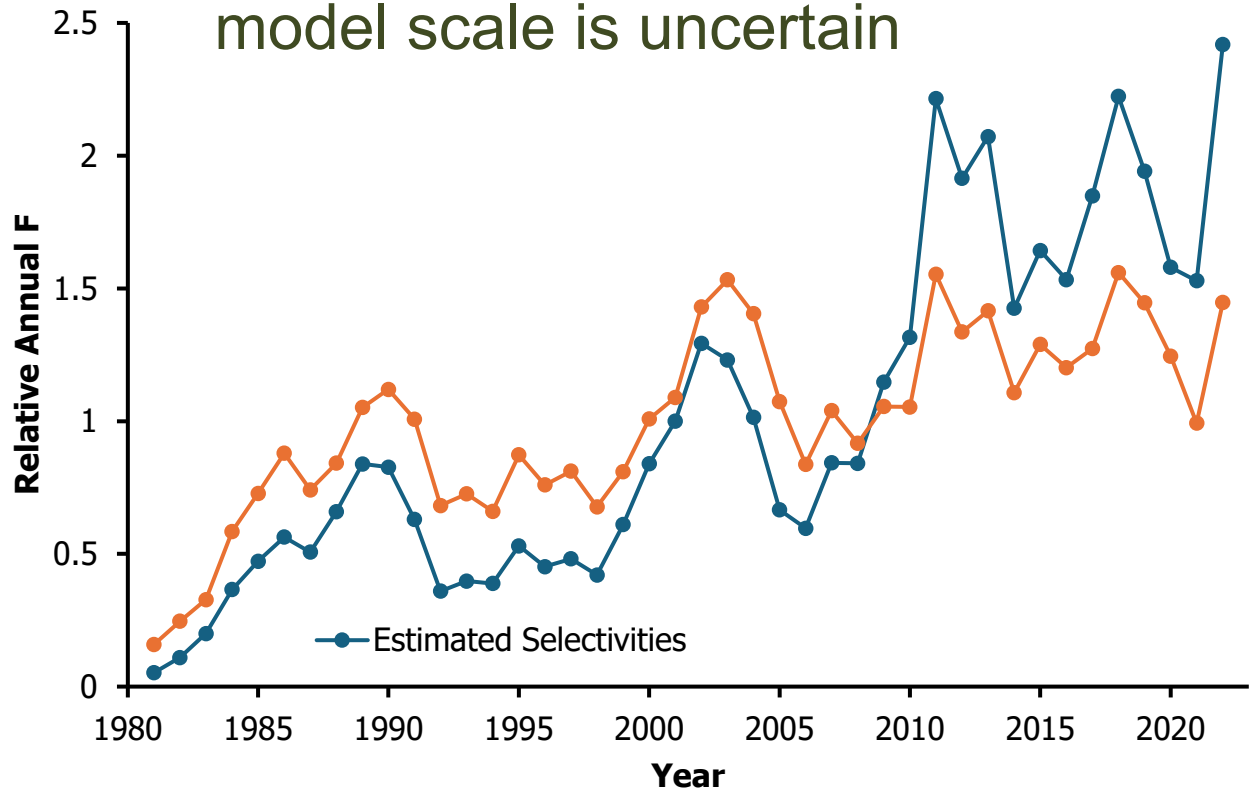
Two Model Alternatives – both had some troubling diagnostics

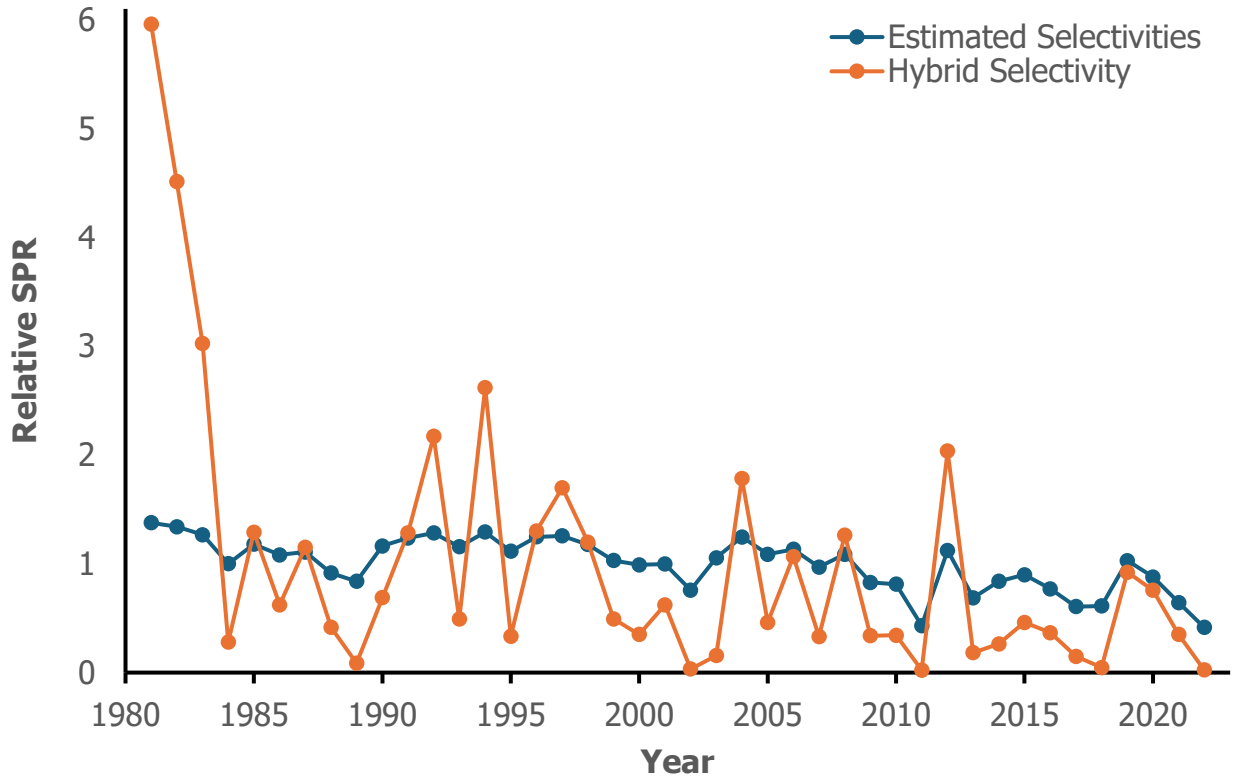
- Estimated Selectivity Model
  - Narrow selectivity for rec fleet and low selectivity for larger sized fish in conflict with published literature and expert opinion
  - Unstable and convergence issues
  - Suggested a more productive northern population (↑ average recruitment)
- Hybrid Selectivity Model
  - Fixed selectivity of commercial gill net/beach seine and recreational fleets
  - Suggested a less productive northern population (↓ average recruitment)

Similar Trends in F and SPR

Despite very different model scales, similar trends in F and SPR

Both models picking up on the same trend of increasing F through time even if model scale is uncertain

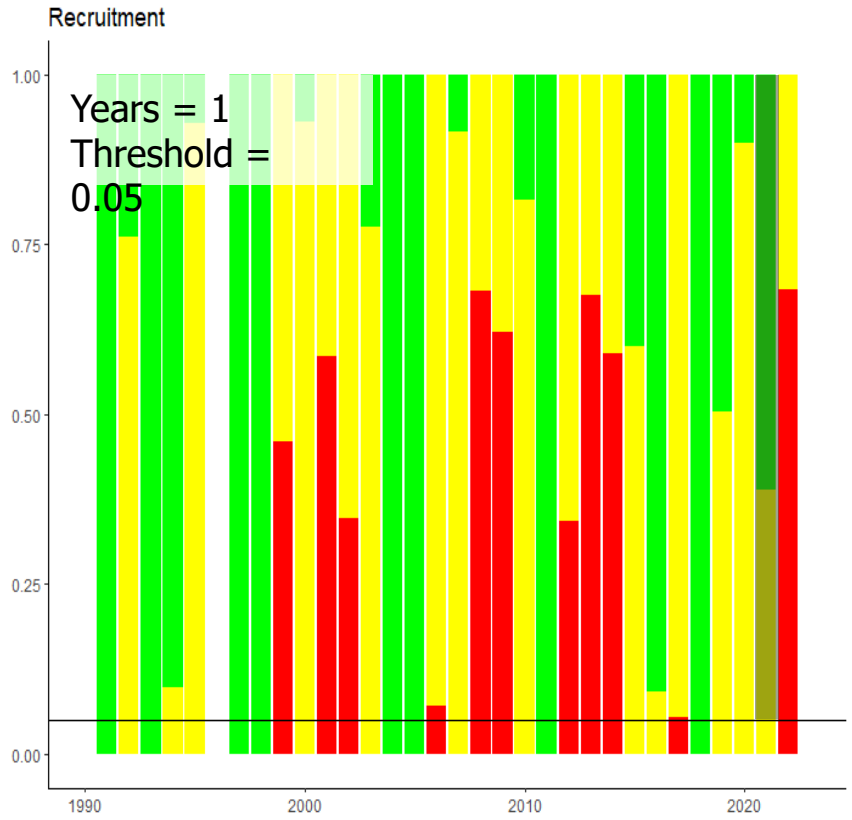


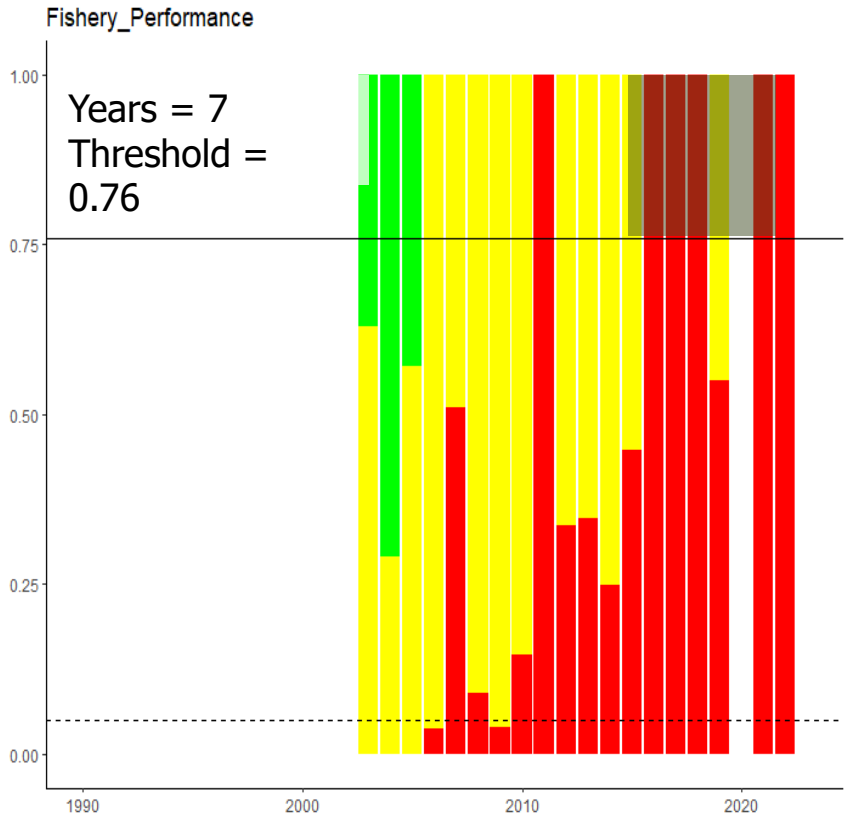


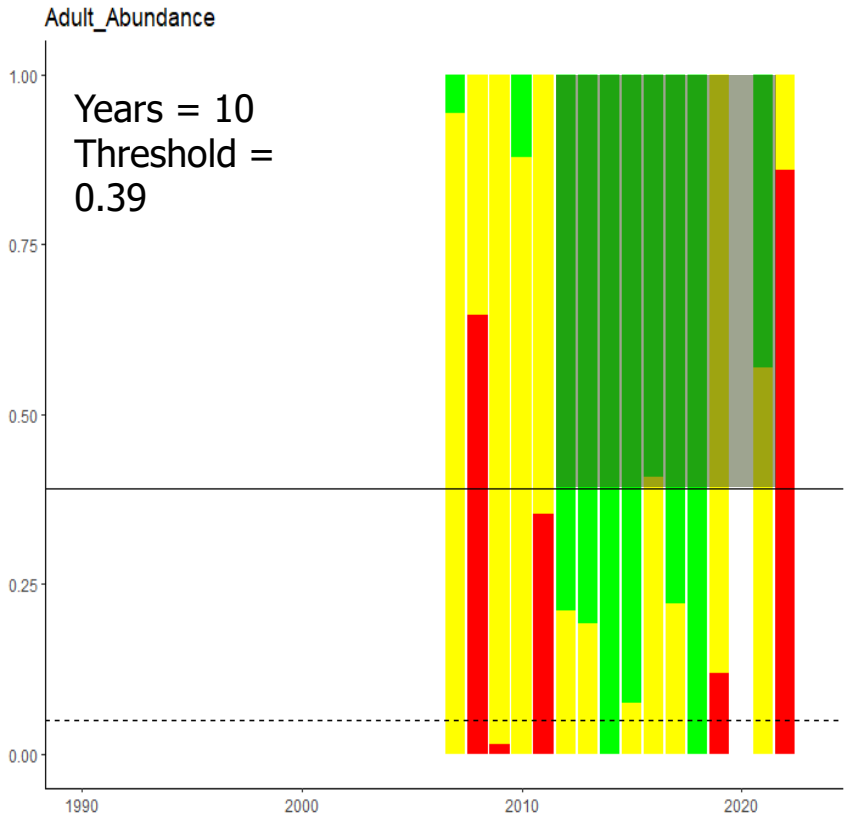
Traffic Light Analysis

Traffic Light Analysis

Management Trigger Time Frame
- Moderate (yellow or red in all years)
- Elevated (red in all years)

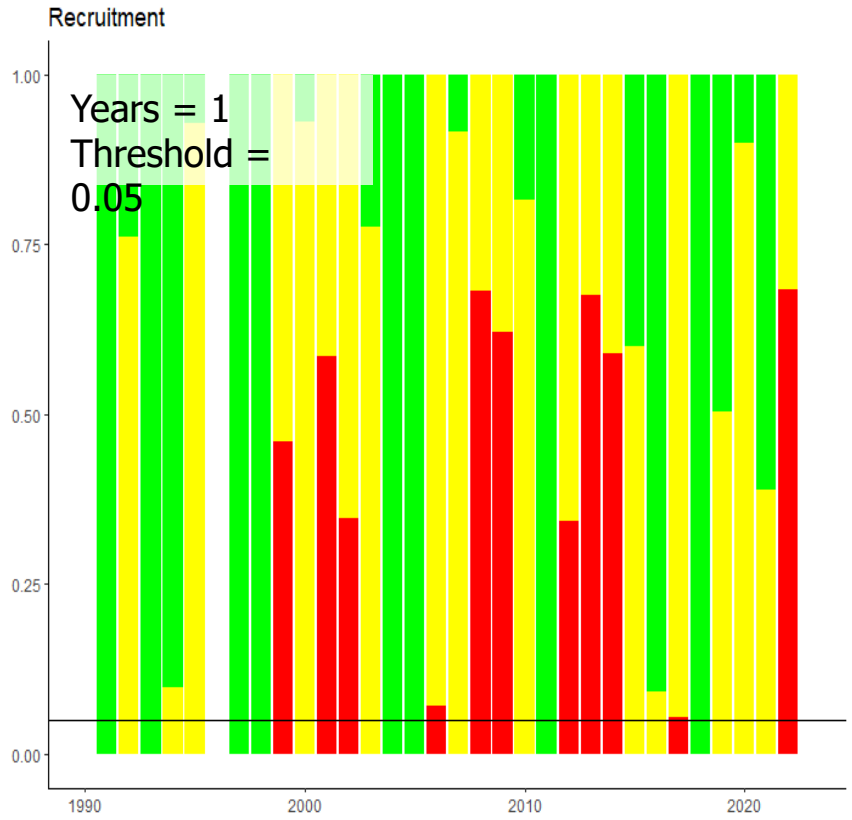


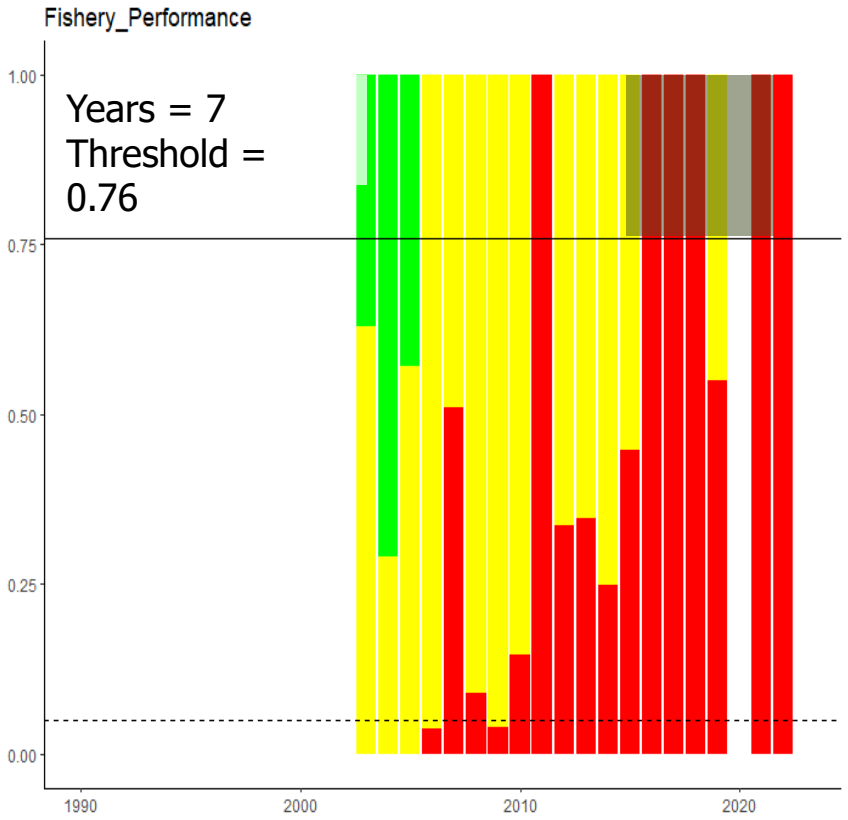


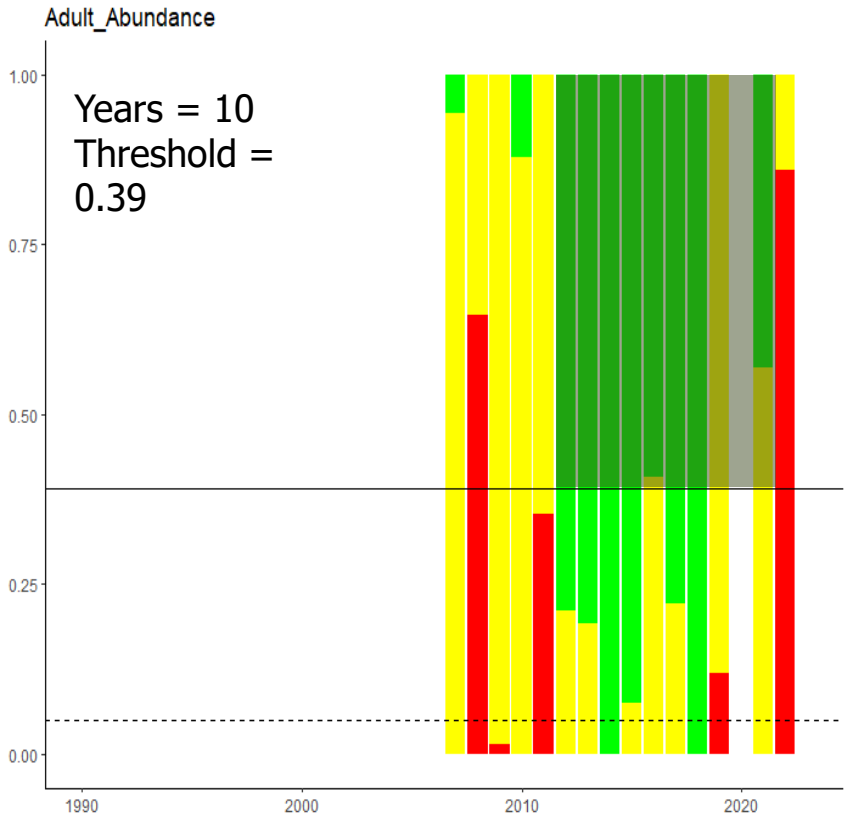


Traffic Light Analysis

Management Trigger Time Frame
- Moderate (yellow or red in all years)
- Elevated (red in all years)







Note: recent increase (higher proportion red) in fishery-performance

Traffic Light Analysis

Year	Recruitment	Adult Abundance	Fishery Performance
2018	No Action	No Action	Moderate Action
2019	Moderate Action	No Action	Moderate Action
2020	Moderate Action	No Action	Moderate Action
2021	**Moderate Action**	**No Action**	**Moderate Action**

Traffic Light Analysis

Year	Recruitment	Adult Abundance	Fishery Performance
2018	No Action	No Action	Moderate Action
2019	Moderate Action	No Action	Moderate Action
2020	Moderate Action	No Action	Moderate Action
2021	**Moderate Action**	**No Action**	**Moderate Action**

Not Overfishing

Not Overfished

Traffic Light Analysis

Year	Recruitment	Adult Abundance	Fishery Performance
2018	No Action	No Action	Moderate Action
2019	Moderate Action	No Action	Moderate Action
2020	Moderate Action	No Action	Moderate Action
2021	**Moderate Action**	**No Action**	**Moderate Action**

Not Overfishing

Not Overfished

Multiple years of yellow fishery performance and increasing frequency of yellow for recruitment are areas to watch

Future Research

Next assessment

- Benchmark in 2029 (data through 2027 fishing year)
- Update TLAs every two years between assessments

Research Recommendations

- Data on recreational discard size structure
- Expand tag-recapture analyses to states outside SC
- Develop surveys tracking sub-adults in VA and adults in FL & VA
- Studies to estimate movements rates to support spatial model

Questions

SAS Response to Review Report

SAS Response to Review Report

Conflicting advice on stock-recruit steepness, but shown not to impact stock status

Index data shown to correspond spatially and between age classes

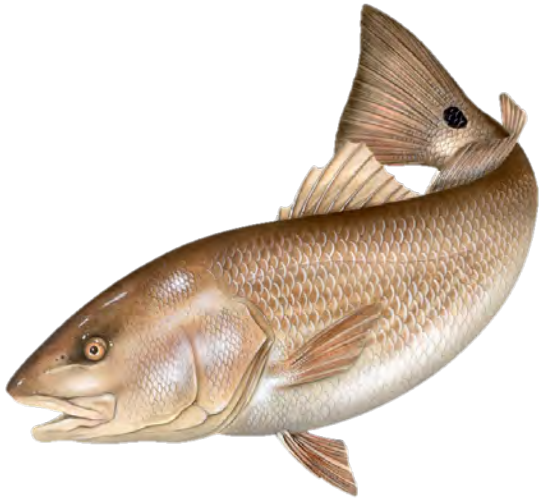
Several requested sensitivity runs showed no impact to overfishing status, two runs showed SSB at threshold with declining trend as in base model

- One run with SSB at threshold included alternative index with inadequate time and consideration to develop

TLA reference period based on BSIA without alternative recommended, tested with sensitivity analysis and shown to be largely insensitive

SAS does not believe 2025 assessment update will change conclusions of current assessment

Red Drum Stock Assessment Peer Review Report



Sciaenids Fishery Management Board

October 22, 2024

Stock Assessment Peer Review Process

- Red Drum Technical Committee and Stock Assessment Subcommittee developed new stock assessment

- Peer Review Workshop: August 13-16, Charleston, SC

- Scientific review of data inputs, analytical methods, results, and overall quality of stock assessment

Products

- SEDAR Stock Assessment and Review Report
- https://sedarweb.org/assessments/sedar-93-atlantic-red-drum/

Review Process

Scientific Review Panel

Chair + 3 additional Technical Reviewers, with expertise in

- Marine fish ecology and population dynamics models
- Recreational fisheries and tagging data
- Stock Synthesis catch-at-age models

Dr. Gavin Fay (Chair), University of Massachusetts-Dartmouth

Dr. Geoff Tingley, Sustainable Fisheries Partnership, New Zealand

Dr. Kotaro Ono, Norwegian Institute for Marine Research

Dr. Katyana Vert-Pre, Arizona State University

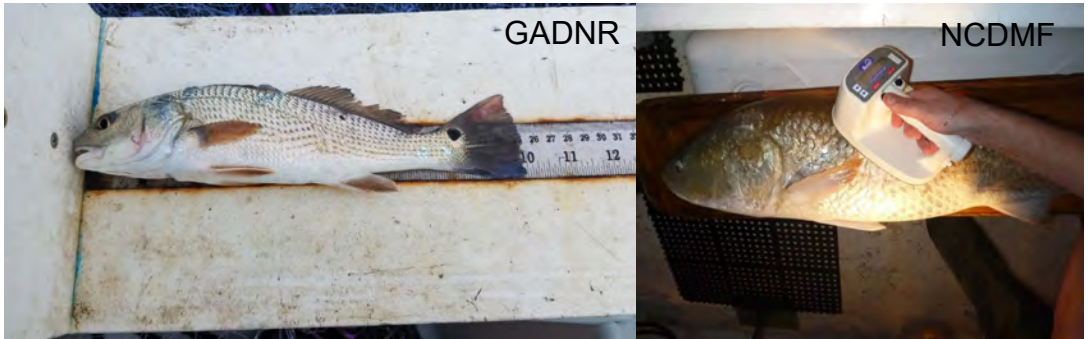
✓ **ToR 1:** Evaluate responses to Simulation Assessment recommendations

Conclusions

- Southern Stock Synthesis model performance encouraging, producing unbiased estimates
- Traffic Light Analysis reference points optimized using revised grid search

Recommendations (for future assessment work)

- Test SS model performance over multiple scenarios using data without observation error



✓ **ToR 2:** Evaluate the data used in the stock assessment

Conclusions

- Thorough work in gathering and vetting all available red drum fisheries-dependent and -independent data
- Valid justification for excluding select data sources
- Commended SAS on holistic thinking to include data for different life stages (recruits, sub-adults, adults)
- Rec discard length data addressed notable information gap

Recommendations (for future assessment work)

- Reconsider scale-based age data
- Index standardization: 1) incorporate survey spatiotemporal changes, 2) explore temperature, salinity influence on abundance

✓ **ToR 3:** Evaluate the assessment methods and models

Conclusions

- Stock Synthesis model specification values well justified
- Southern: SS model most appropriate for characterizing population; good choice for integrating variety of data sources
- Northern stock: TLA most appropriate, also integrating data

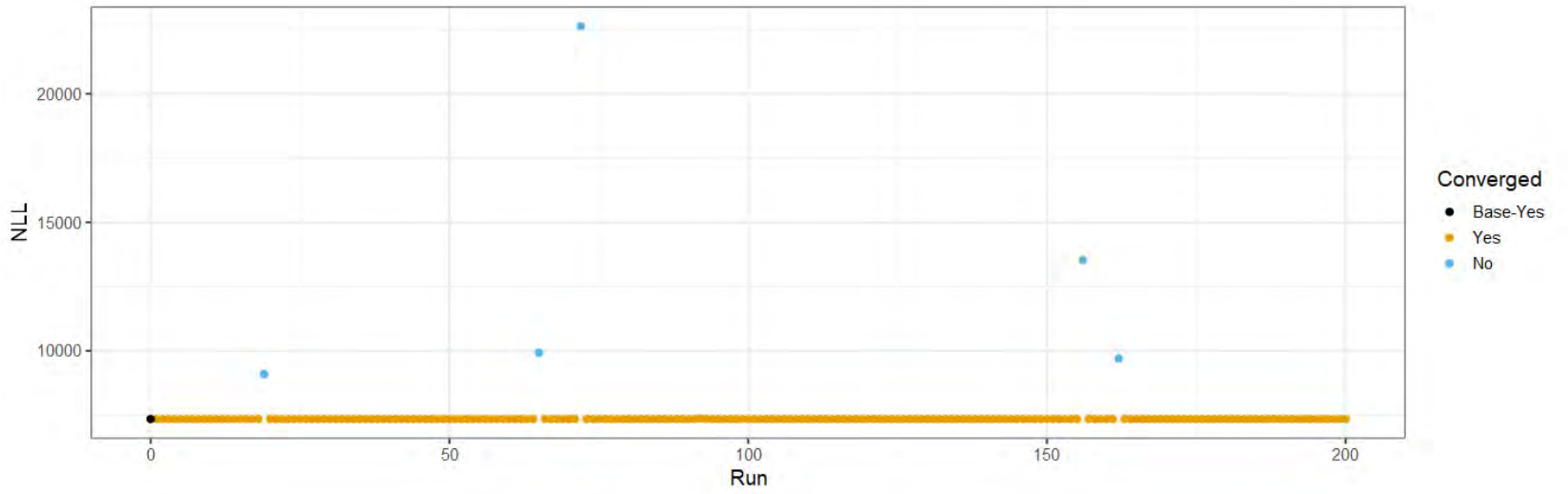
Recommendations (for future assessment work)

- Reconsider steepness value in stock-recruitment function
- Explore different reference periods for TLA
- Improve justification for TLA adult abundance threshold

✓ **ToR 4:** Evaluate model diagnostic analyses, including sensitivity and retrospective analyses

Conclusions

- SS diagnostic analyses comprehensive, model converged
- TLA sensitivity analyses sufficient
- Standardized indices residual patterns showed poor diagnostics
- No concerns regarding minor retrospective pattern (SSB, *F*, SPR)



✓ **ToR 5:** Evaluate the methods used to characterize uncertainty

Conclusions

- Best practices used in SS model characterization, uncertainty metrics provided → confident in results
- Southern: TLA comparison confirmed stock status
- SAS completed additional model runs requested by Panel → outputs within confidence intervals of base run

Recommendations

- Consider Management Strategy Evaluation to inform selection of TLA Ref Pts

✓ **ToR 7:** Recommend best estimates of stock biomass, abundance, and exploitation

Conclusions

- Southern: Stock Synthesis produced best SSB, *F*, SPR estimates
- Northern: no SSB or F estimates; use TLA as qualitative indicator

Recommendations

- Index standardization: 1) incorporate survey spatiotemporal changes, 2) explore temperature, salinity influence on abundance, 3) consider dropping longline survey
- Northern: continue SS model development

✓ **ToR 8:** Evaluate the choice of reference points and estimation methods; recommend stock status determination

<u>Conclusions</u>

- Southern: agree with SSB30%, F30% and SPR30% thresholds, and SSB40%, F40% and SPR40% targets
- Northern: agree with reference period-based reference points used to provide qualitative stock status determinations
- Review Panel agrees with status determinations from assessment for reach region

✓ **ToR 9:** Review and prioritize future red drum research

<u>Top priorities for future assessments</u>

- Index Standardization: explore adding temperature, salinity, and other 'habitat' variables affecting drum abundance
- Simulation Framework: a powerful tool to build on
  - Testing reference points selection
  - Value of information analysis to prioritize future data collection
- Continue tagging studies – evaluate mortality by gear types
- Evaluate seasonal population dynamics in SS models

✓ **ToR 10:** Recommend timing of future stock assessments

- Next benchmark assessment in 5 years
- Southern: consider assessment update in 2025, if index standardization explored further
- Consider re-running Southern SS model after MRIP calibration study, if catches significantly different (e.g., 30% reduction)
- Northern: TLA update every 2 years

Review Panel Conclusions

- New assessment represents substantial progress in accurately characterizing red drum stocks, notably SS models provision of SSB and *F*
- Southern: Stock Synthesis suitable for management advice; Panel agrees with Overfished status and Overfishing
- Northern: Traffic Light Analysis suitable for management advice; Panel agrees with Not Overfished and Not Overfishing
- Stock Assessment Subcommittee commended for thorough examination of all data, extensive model development, and utilization of simulation framework


Questions?

Risk and Uncertainty Tool Inputs

K. Drew, ASMFC

Oct. 22, 2024

Risk and Uncertainty Tool

- ASMFC is pilot testing a Risk and Uncertainty Tool with the red drum assessment

- Goals of the tool:
  - Provide a more structured framework around risk and uncertainty for Board discussions
  - Provide more transparency on the factors that go into the final management decisions

R&U Tool Inputs

- Technical Inputs: scores from the TC and CESS on key factors

TC scores these factors

  - Stock status
  - Assessment model uncertainty
  - Management uncertainty
  - Environmental uncertainty
  - Ecosystem importance

CESS scores these factors

  - Commercial & recreational importance
  - Short- and long-term socioeconomic impacts of proposed management

R&U Tool Inputs

- Weightings: scores from the Board on how important each factor is when making management decisions

→ How do you balance stock status, uncertainty, and potential socioeconomic impacts when you decide on a quota or a regulation change?

R&U Tool Output

- The technical inputs are combined with the Board weights to provide a recommended risk tolerance level that management action should strive to achieve

R&U Tool Output

→For red drum in the south, overfishing is occurring, so F needs to be reduced to the F target

- How much of a reduction in removals is necessary to achieve F target next year?

R&U Tool Output

- If you take no reduction, there's a low probability that you will achieve F target: very risky!

- If you close the fishery completely, there's a high probability that will achieve the F target: very precautionary, but significant short-term socioeconomic impacts

→ Want to take a reduction with a probability of achieving F target somewhere in between those extremes

R&U Tool Output

- But what's "in between"?
  - 50%?
  - 60%?
  - 45%?

- This tool will provide a recommended probability, based on stock status, uncertainty, and socioeconomic considerations and weighted by what the Board considers more important

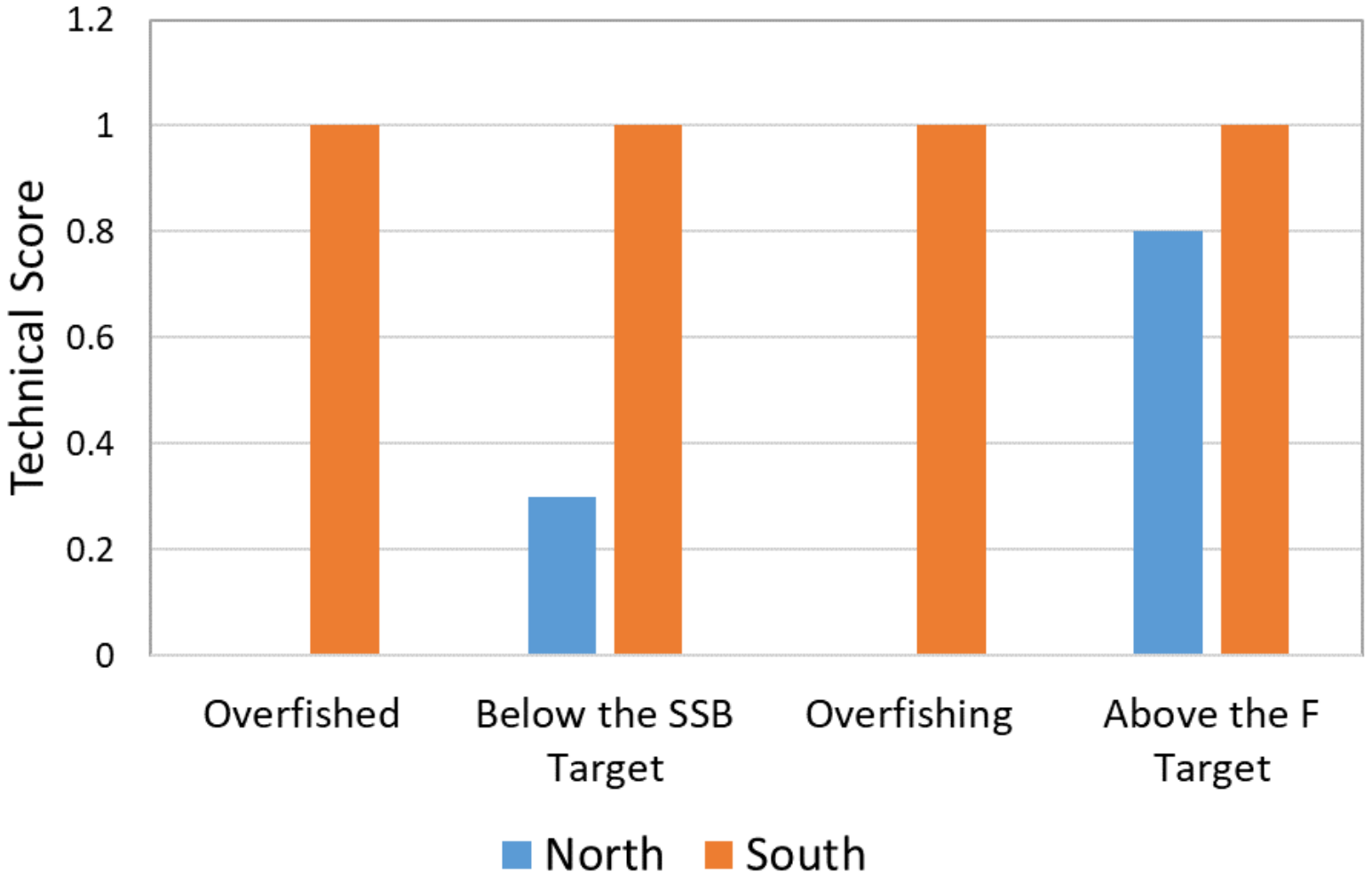
R&U Tool Application

- This tool is only useful for data-rich assessments with the capacity to do projections
- We can use this tool for the southern stock but not the northern stock
- Scores and weights have been compiled for both regions for comparison, but the output can’t be used in the traffic light framework for the north

TECHNICAL INPUT SCORES

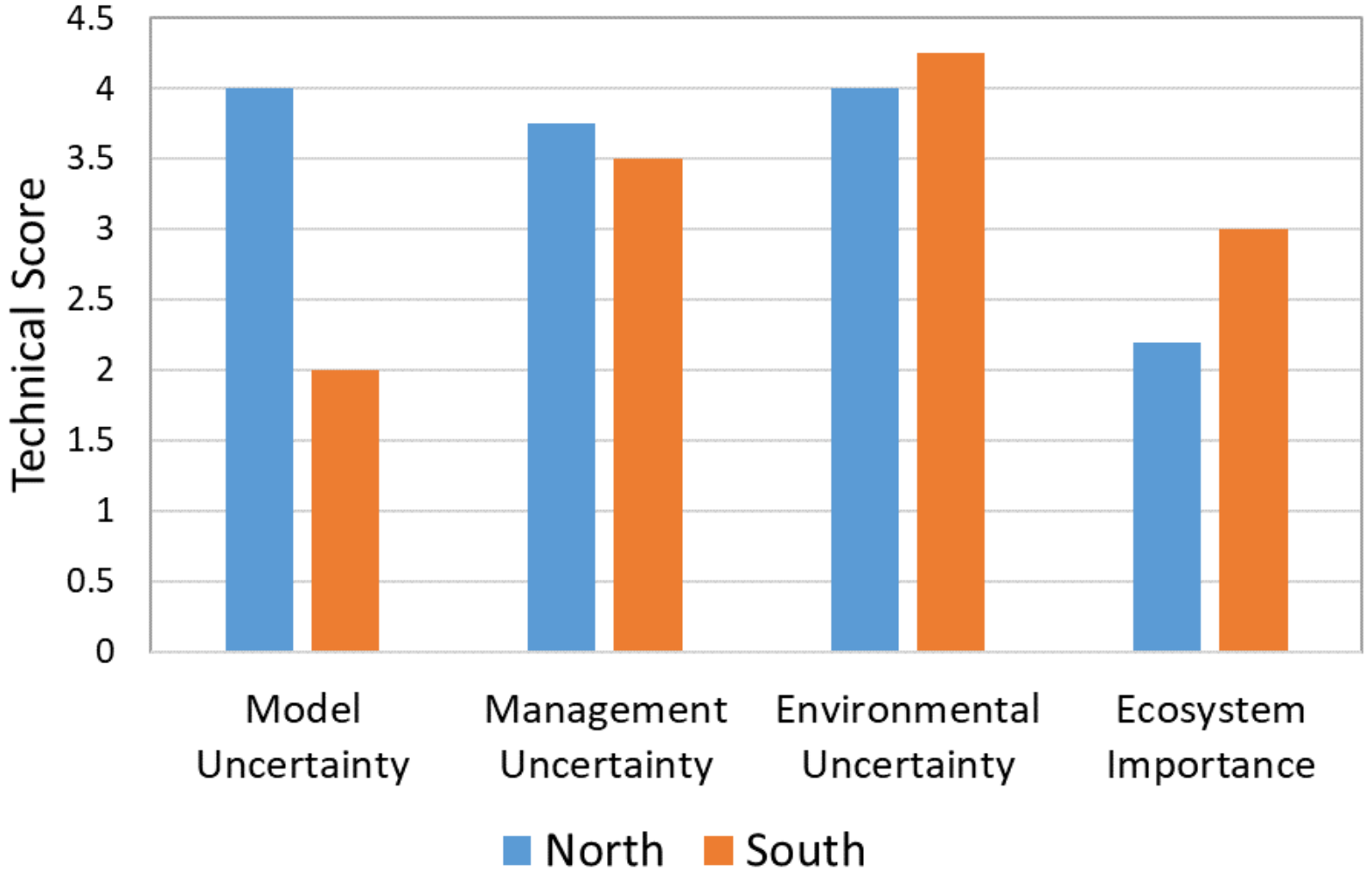
R&U Technical Input

- Stock Status: from benchmark assessment



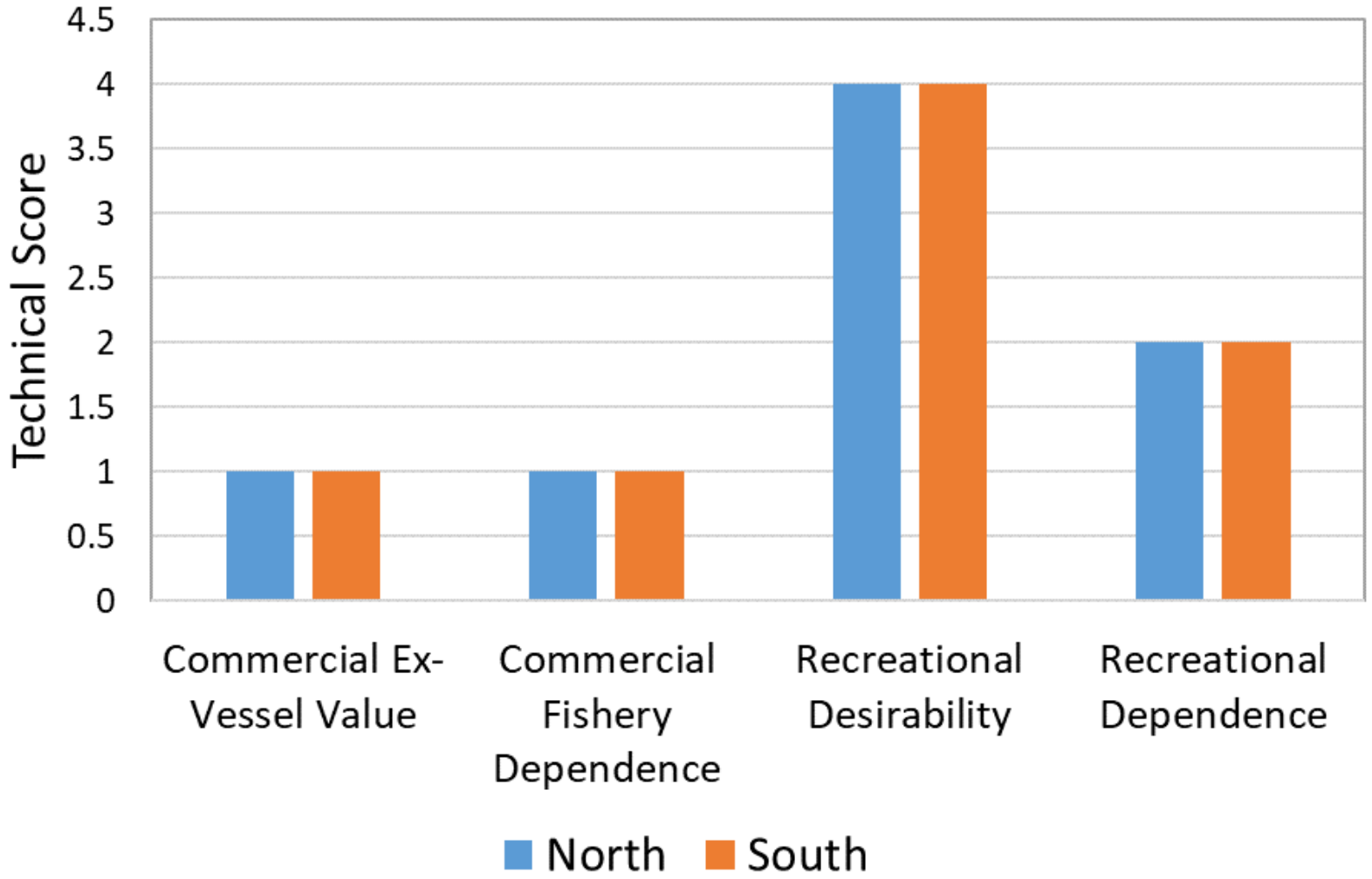
R&U Technical Input

- Other uncertainty and risk factors



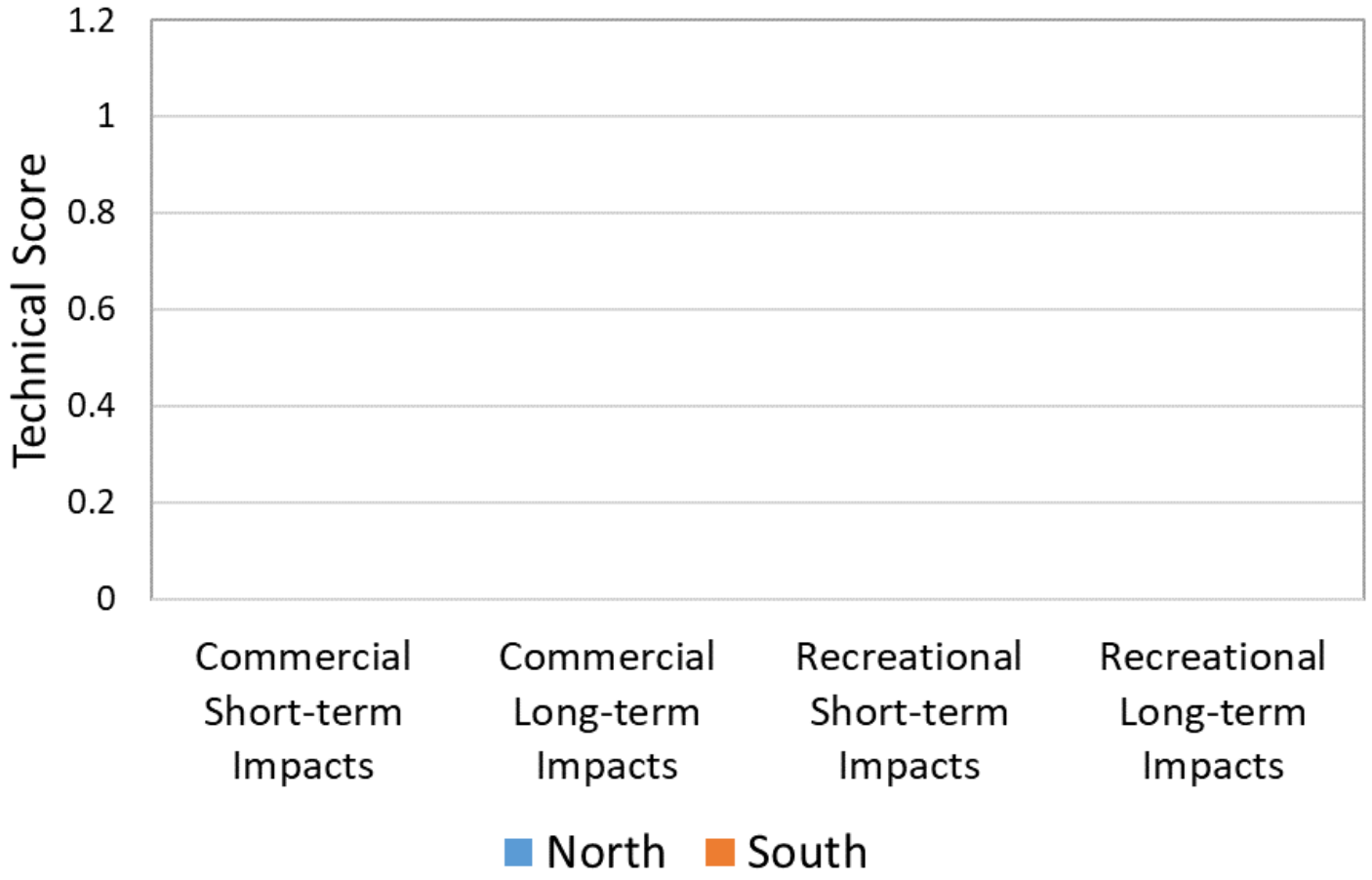
R&U Technical Input

- Socioeconomic factors



R&U Technical Input

- Not available yet: socioeconomic impacts of proposed reductions



INITIAL BOARD WEIGHTINGS

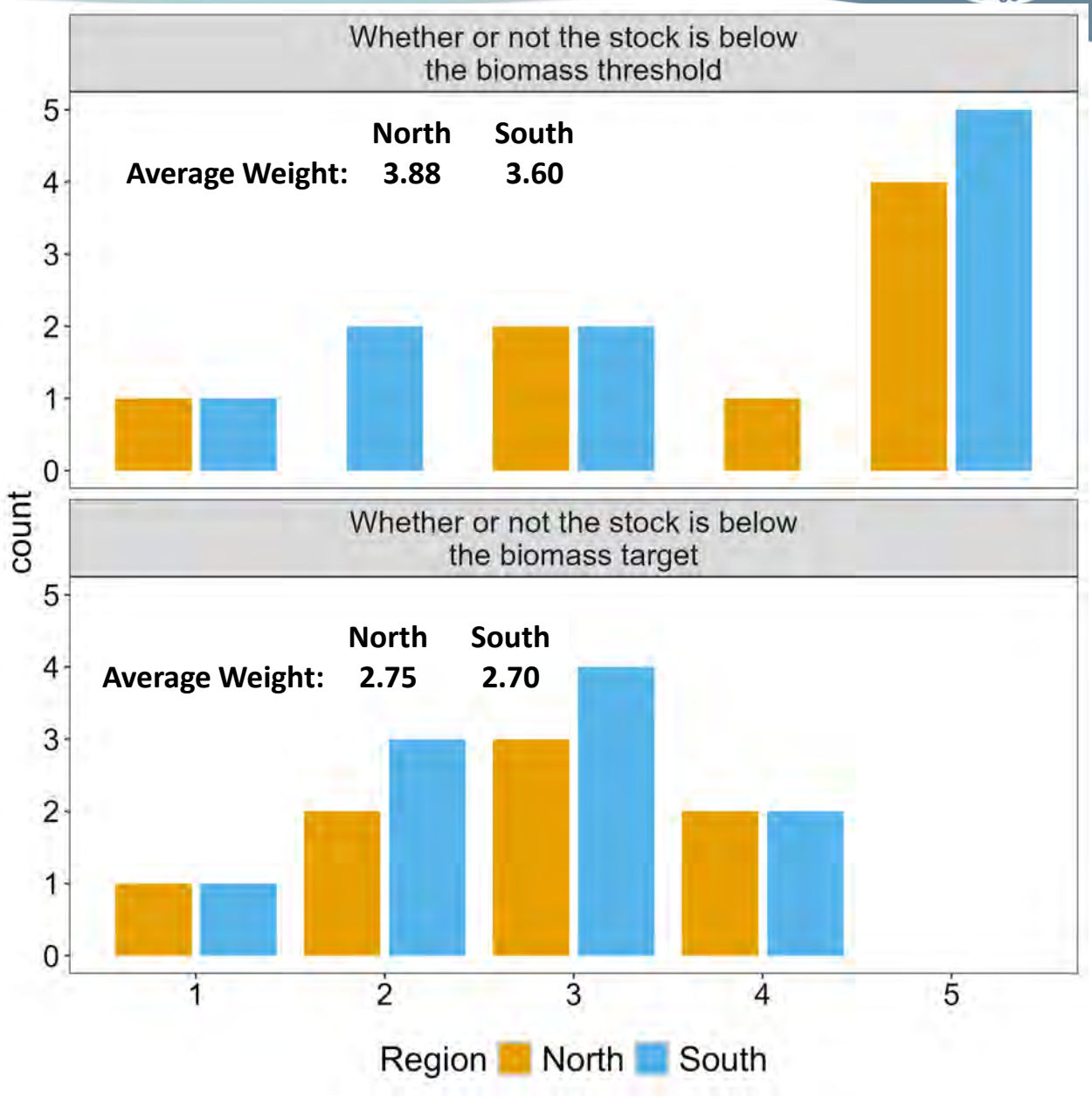
R&U Weightings

- Initial weights collected via survey of Board members

- 11 Commissioners responded
  - 4 from the southern region (SC-FL)
  - 7 from the northern region (NY-NC)

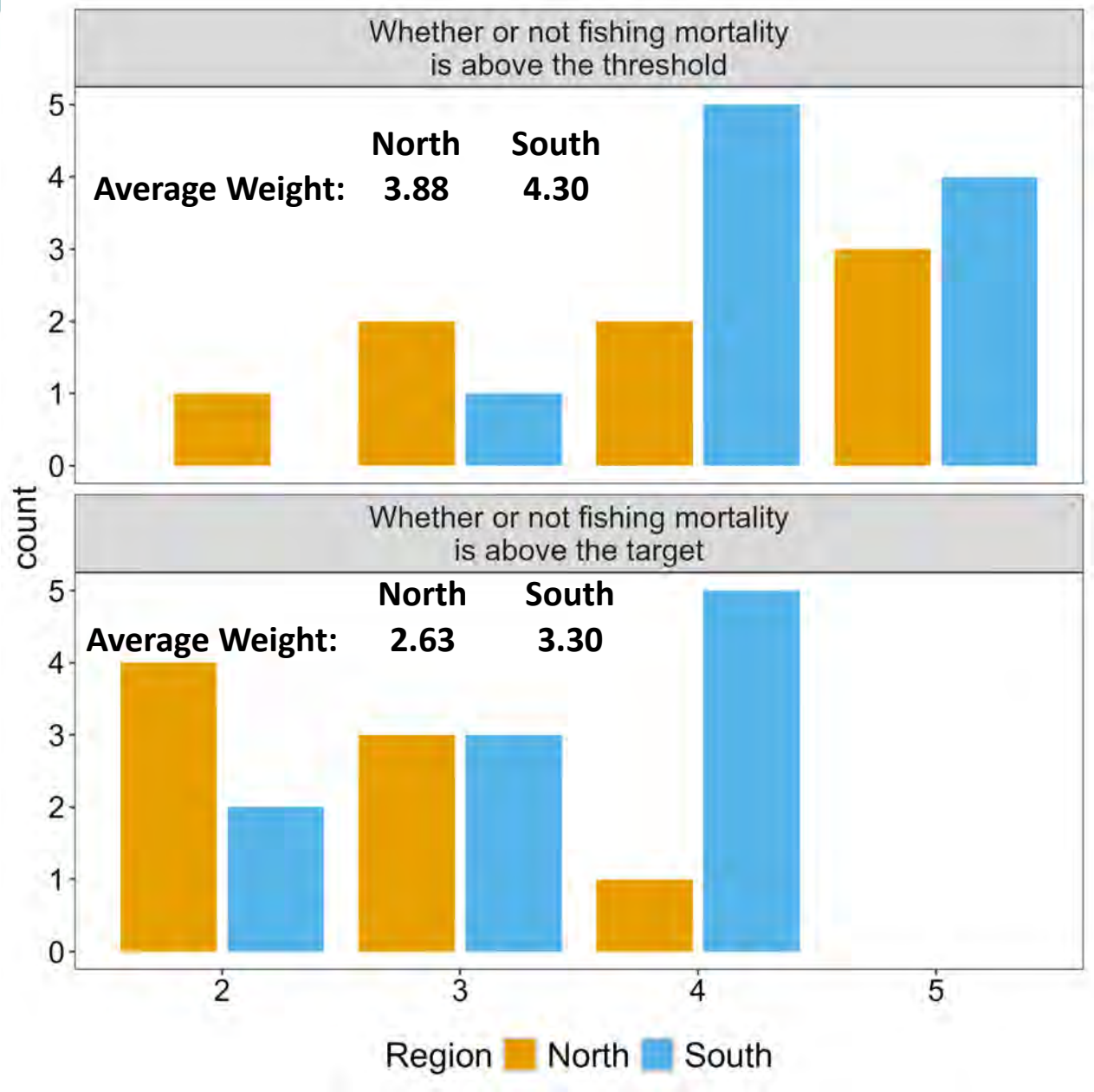
R&U Weightings: SSB Status

- Higher weight:
  - Important to avoid overfished state, red drum life history/management could make it difficult to rebuild
- Lower weight:
  - High uncertainty in SSB estimates/status



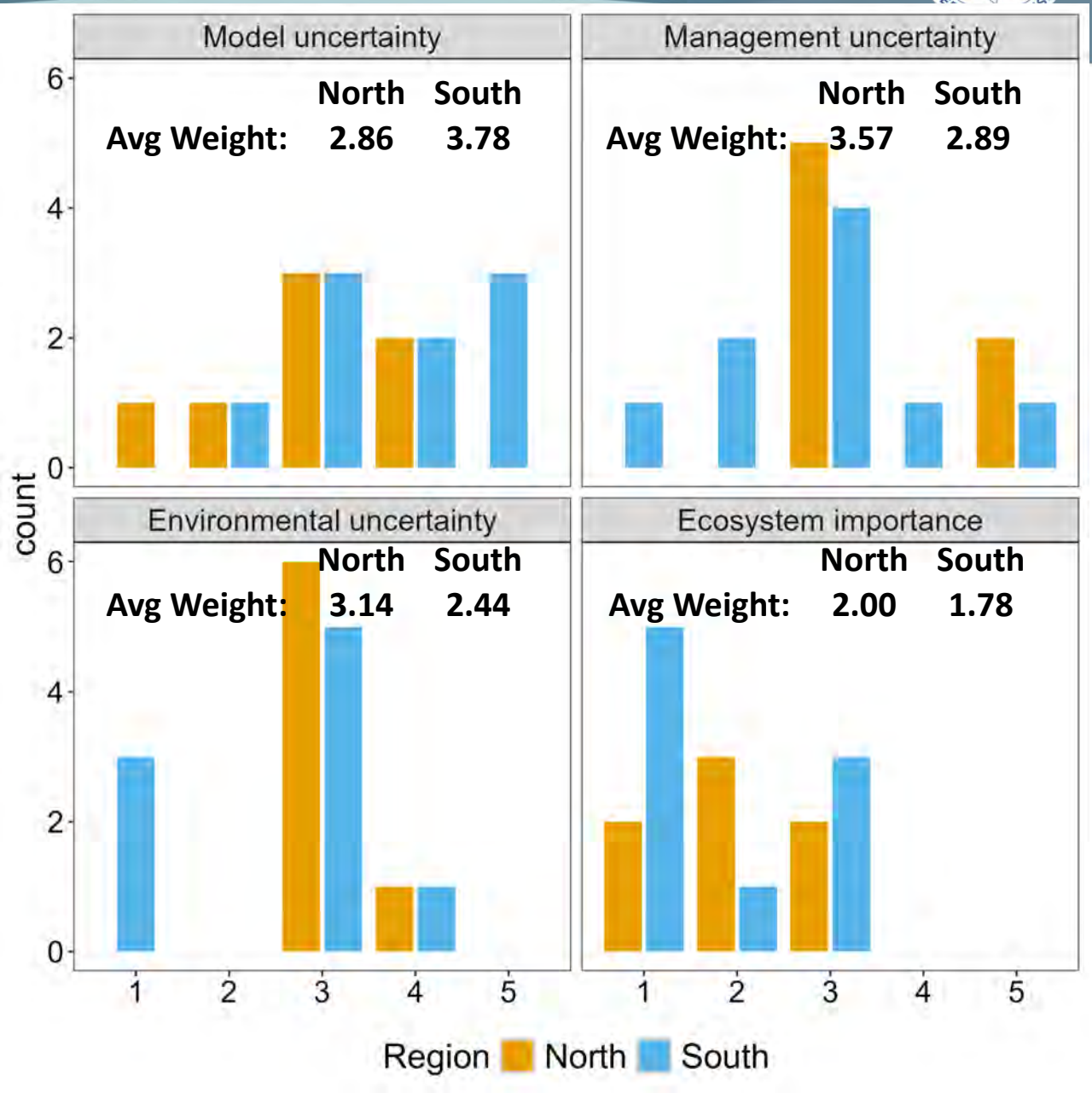
R&U Weightings: F Status

- Comments
  - Important to avoid overfishing state
  - F estimates more reliable than SSB estimates



R&U Weightings: Other Factors

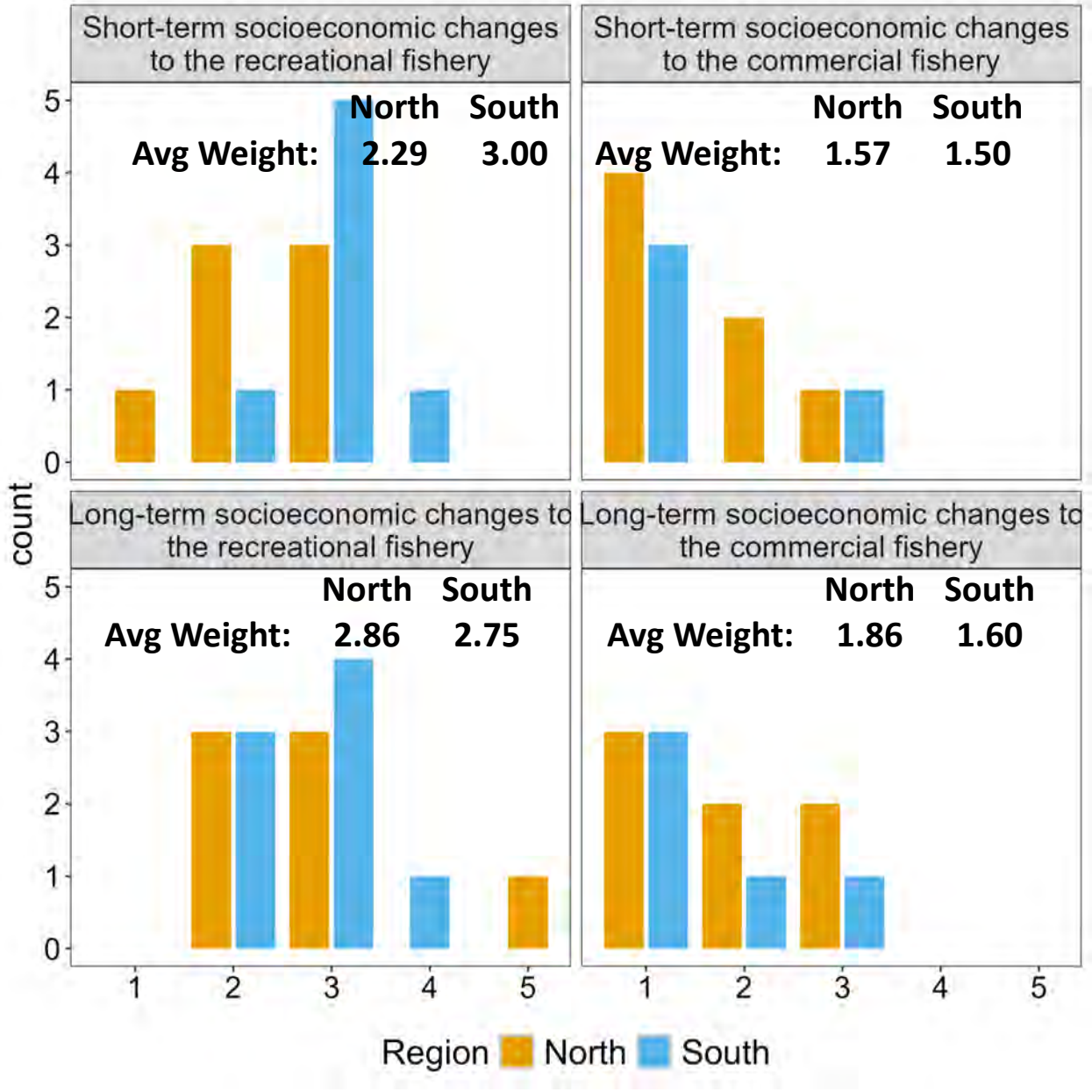
- Model: Data availability, MRIP uncertainty, cryptic SSB
- Management: sporadic availability in north, better MRIP data in south but high catch & release
- Environmental: unclear what the impact will be on the stock in either region
- Ecosystem importance: Not a keystone predator



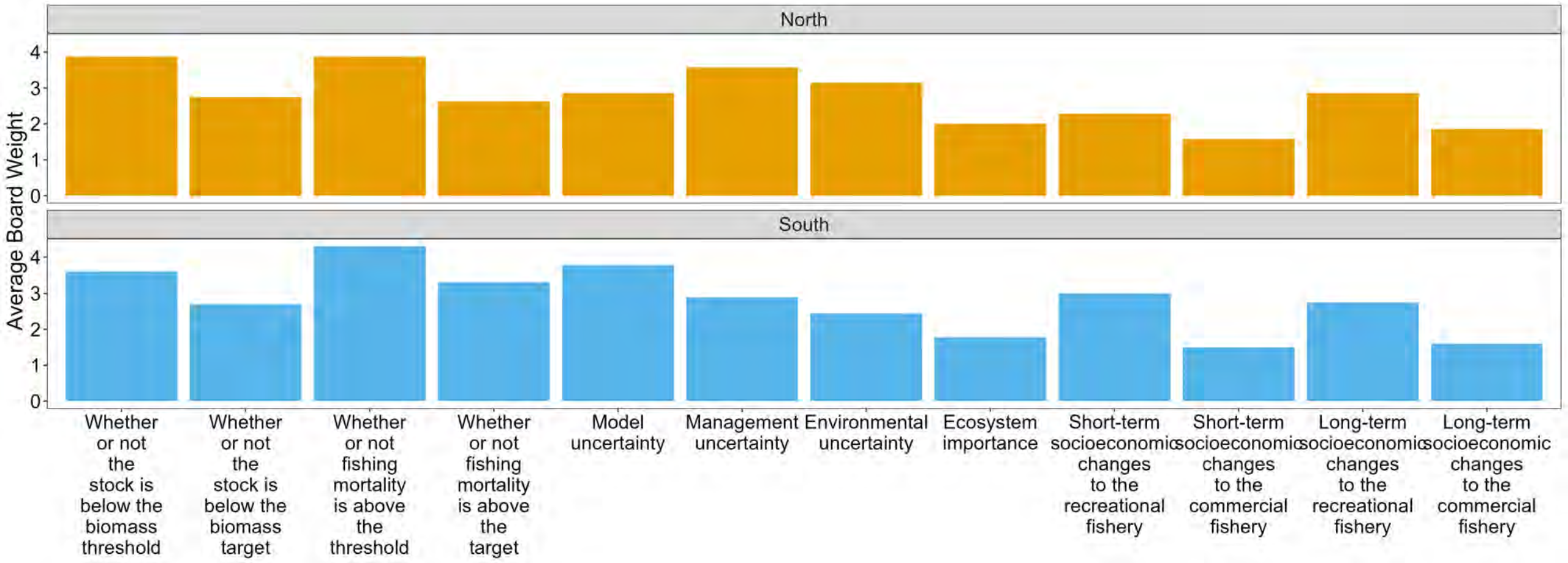
R&U Weightings: Socioeconomics

- Commercial fisheries small in both regions

- Large catch-&-release component to recreational fishery, so likely less impact on demand/trips with management changes



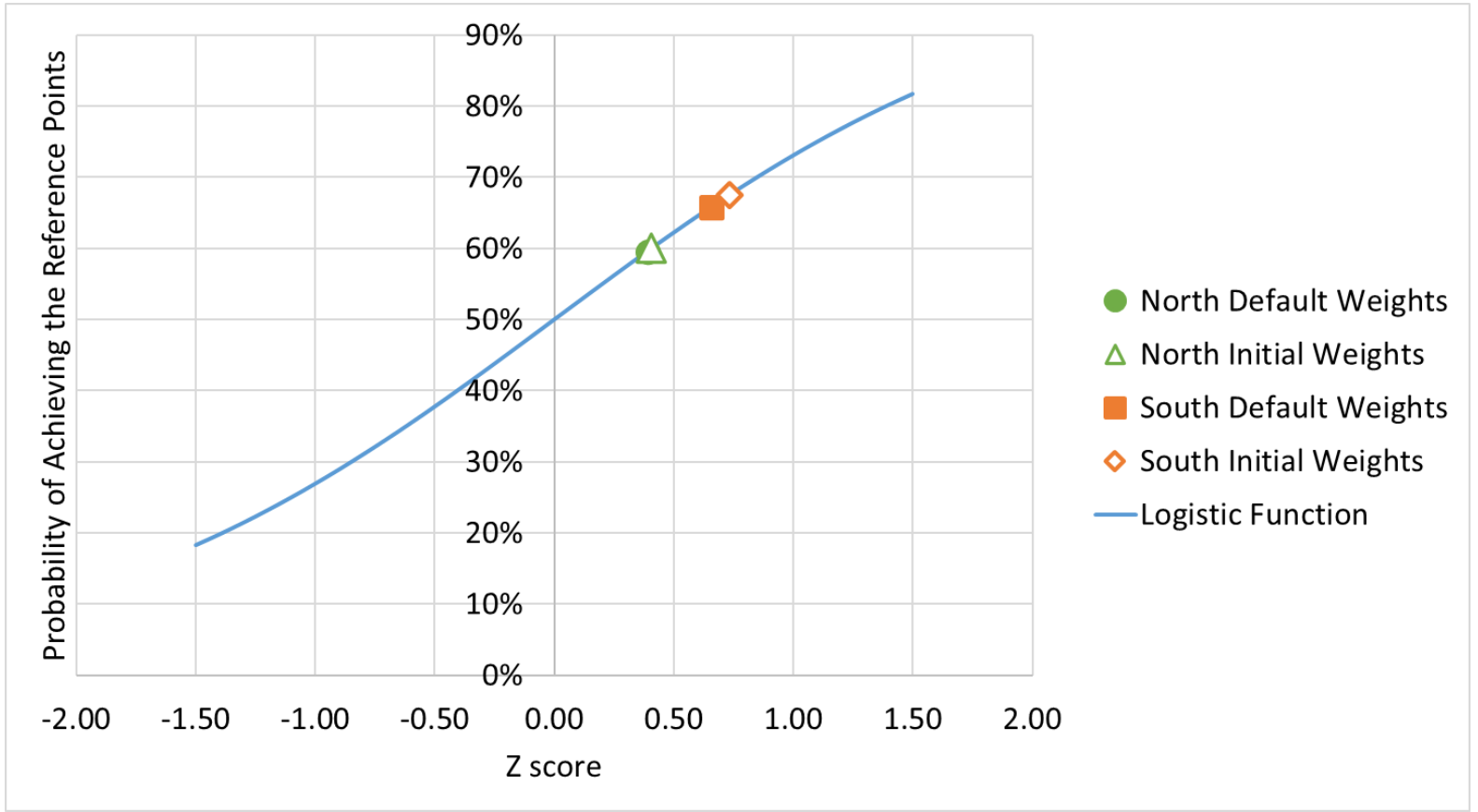
Average Weights by Region



R&U Tool Initial Output

- Due to the negative stock status and higher uncertainty, the tool recommends a reduction should have a 66-68% probability of achieving F target

- Does not include the SE criteria which will push back on that buffer



R&U Tool Next Steps

- Board discussion on weights
  - Can happen at this meeting, or can wait until the tool is updated with the final SE scores
- TC does projections with the recommended probability for the south (68%) to estimate the reduction needed
- CESS updates the SE scores with that information
- TC does another set of projections with the adjusted probability

R&U Tools Next Steps

- Board can use the recommended probability from the tool as is

- Can adjust the weights to get a probability that is more consistent with management objectives

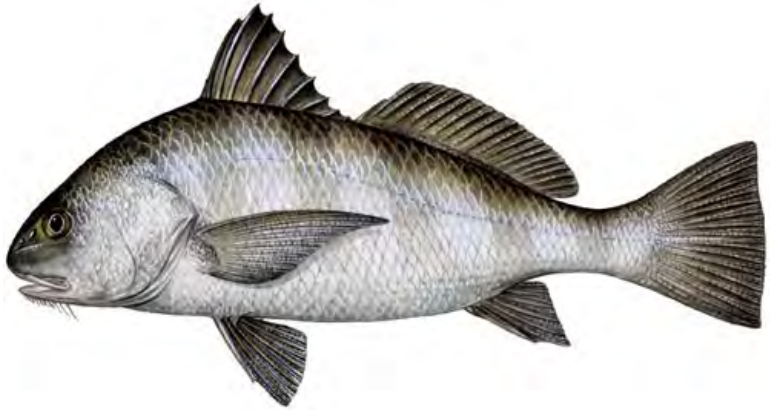
- Can choose another probability without the tool

→ We would like feedback on the tool at the end of the process to help the Policy Board decide how to proceed with the tool

QUESTIONS

2024 Black Drum Indicator Update

October 22, 2024



Data Update Process

- Black drum stock determined to not be overfished nor experiencing overfishing in 2020
  - Empirical indicators overall did not appear negative
- Lack of contrast in black drum data sets coupled with high uncertainty in model-based estimates
- TC recommended monitoring of empirical stock indicators annually between stock assessments
- Next assessment in 2027, but TC may recommend expediting based on data update

Data Update Process

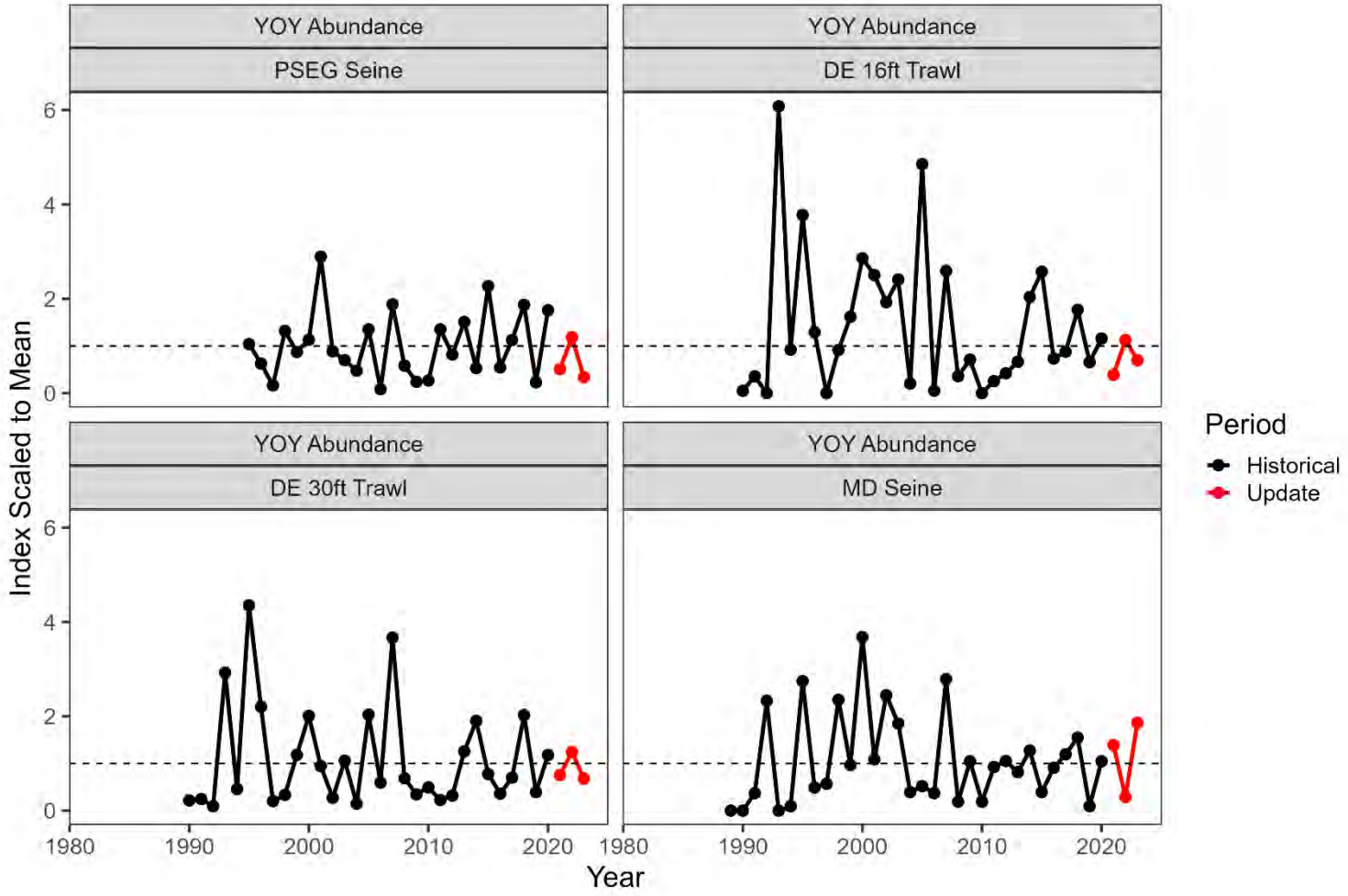
- Recommended indicators:
  - Abundance
    - YOY, age 0-1, subadult, exploitable abundance
  - Range expansion
  - Fishery catch
    - Recreational live releases
    - Recreational harvest
    - Commercial landings
    - Structured by region

- First Data Update last year with data through 2022
  - Indicators showed mixed signs of stability and declines since the assessment
  - TC not concerned with updates, recommended no change to assessment schedule
  - Sciaenids Board requested TC consider frequency of updates in future

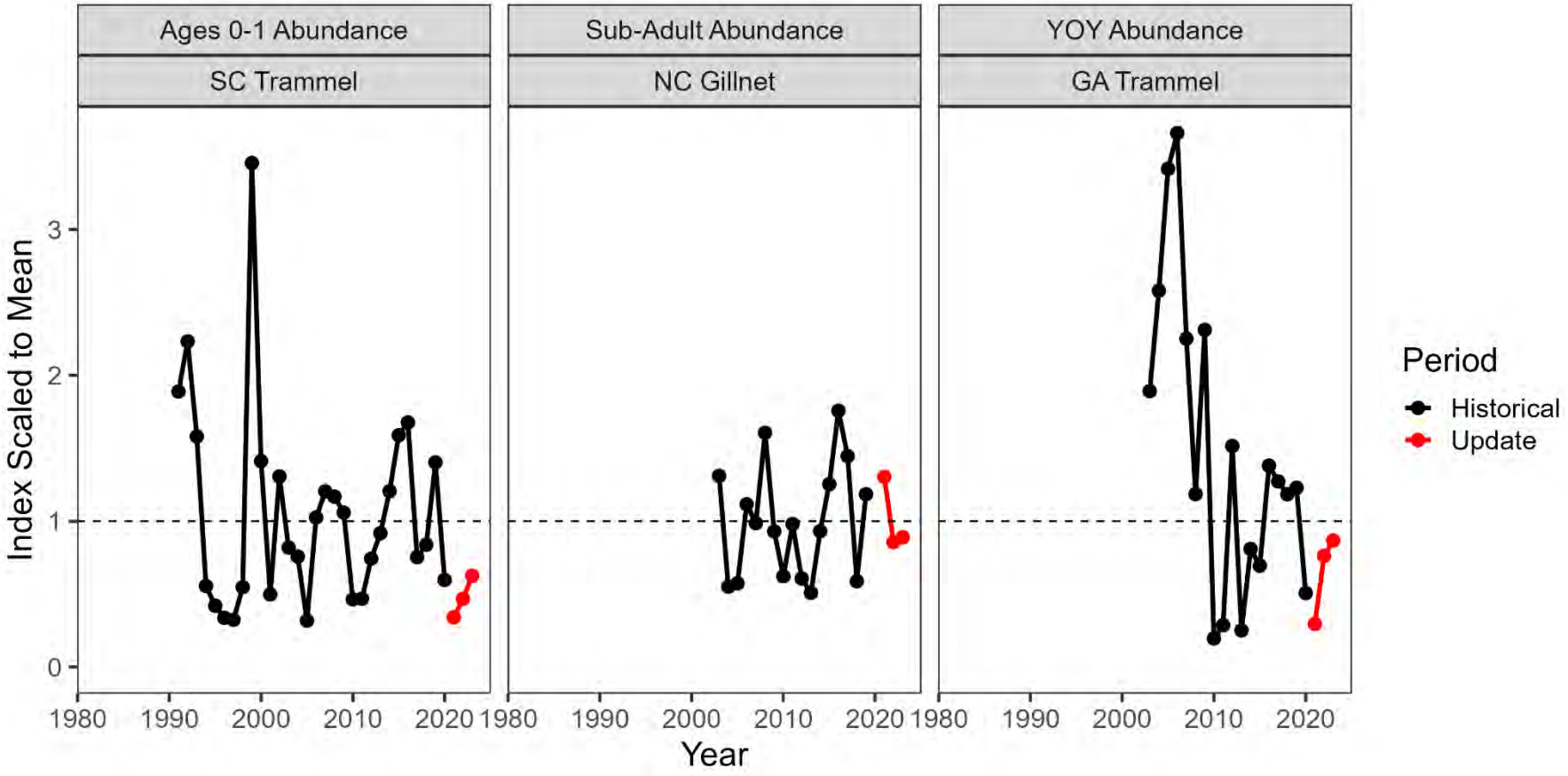
- Current 2024 Data Update includes addition of 2023 data

- Time series mean included for reference

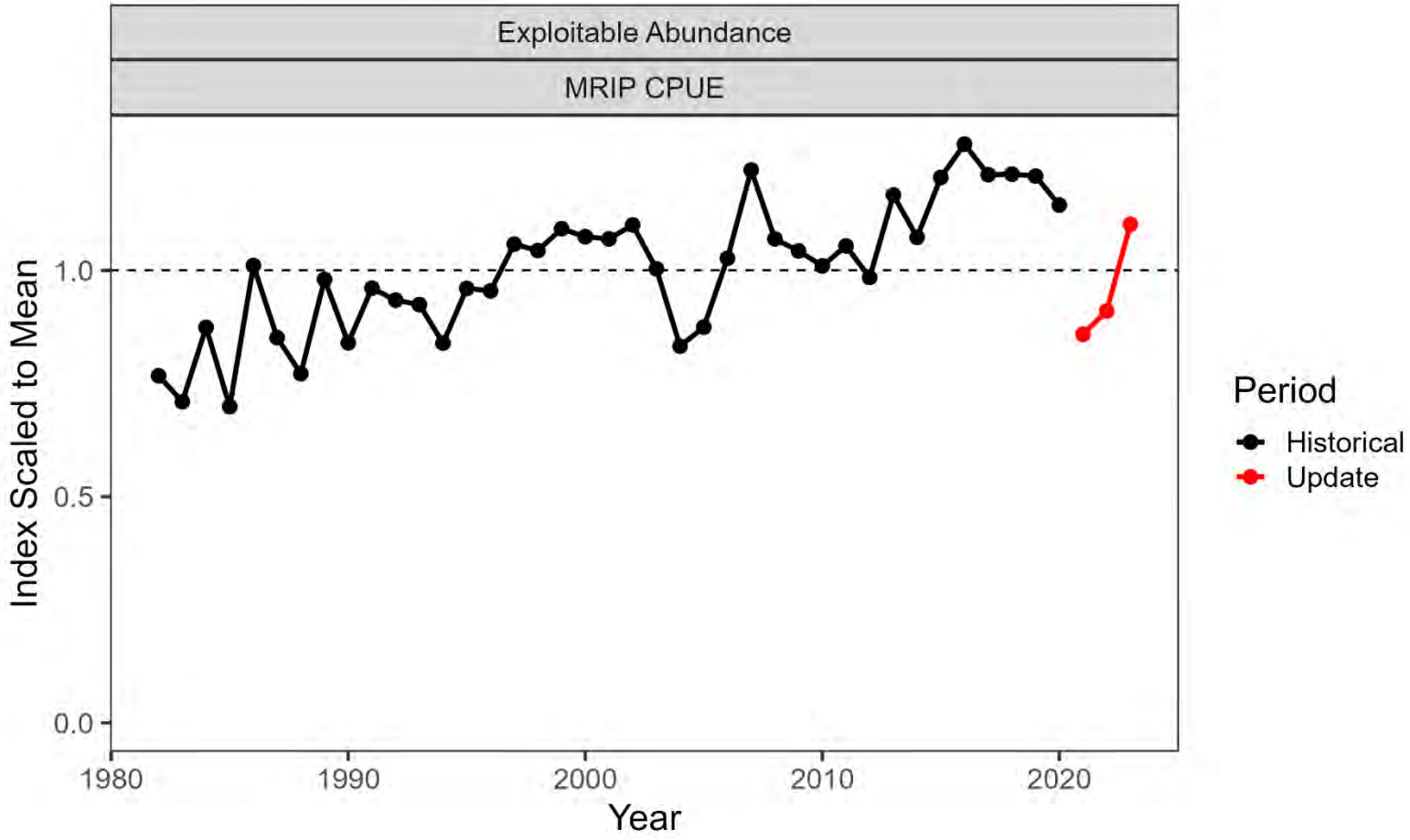
2024 Data Update – Mid-Atlantic Abundance



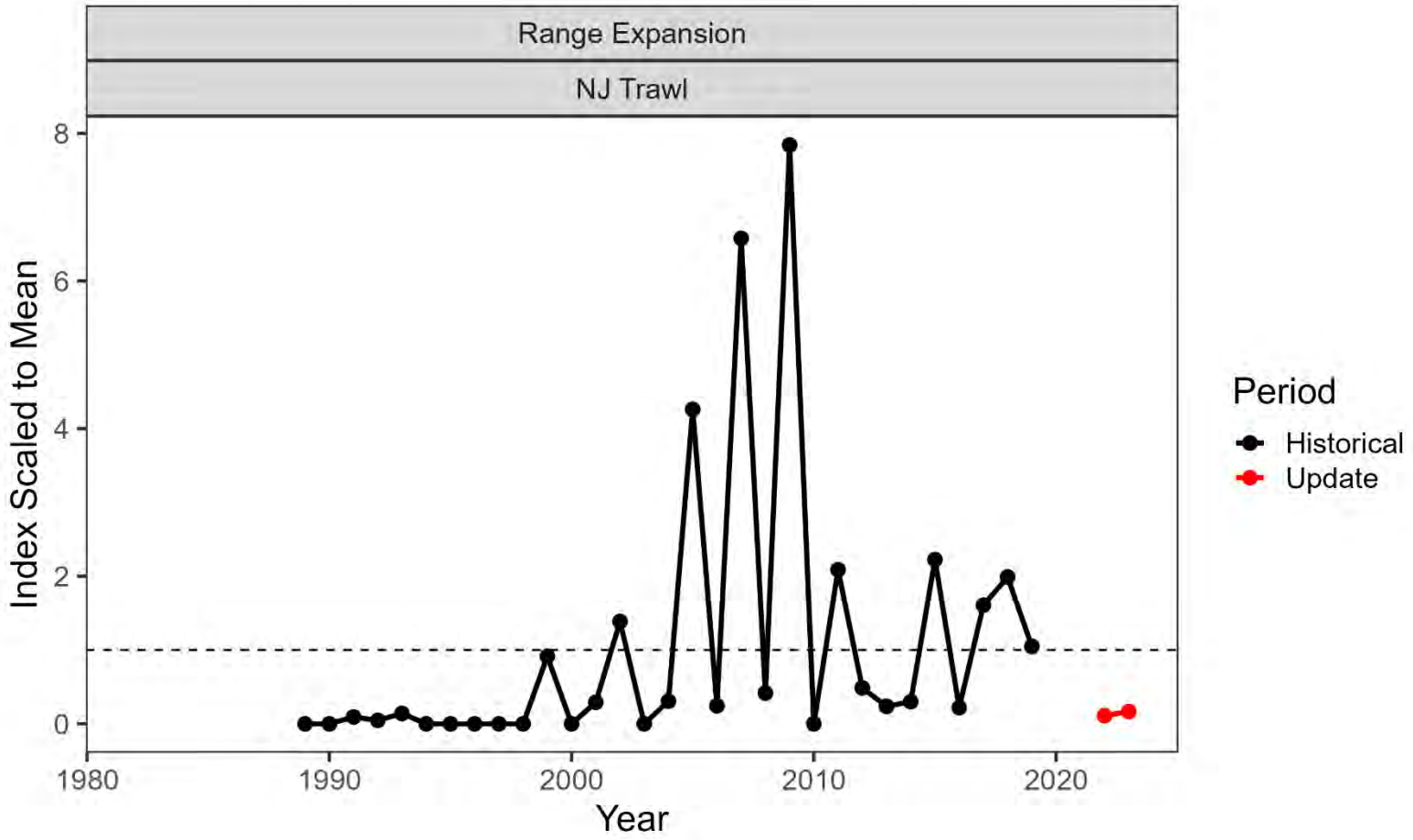
2024 Data Update – South Atlantic Abundance



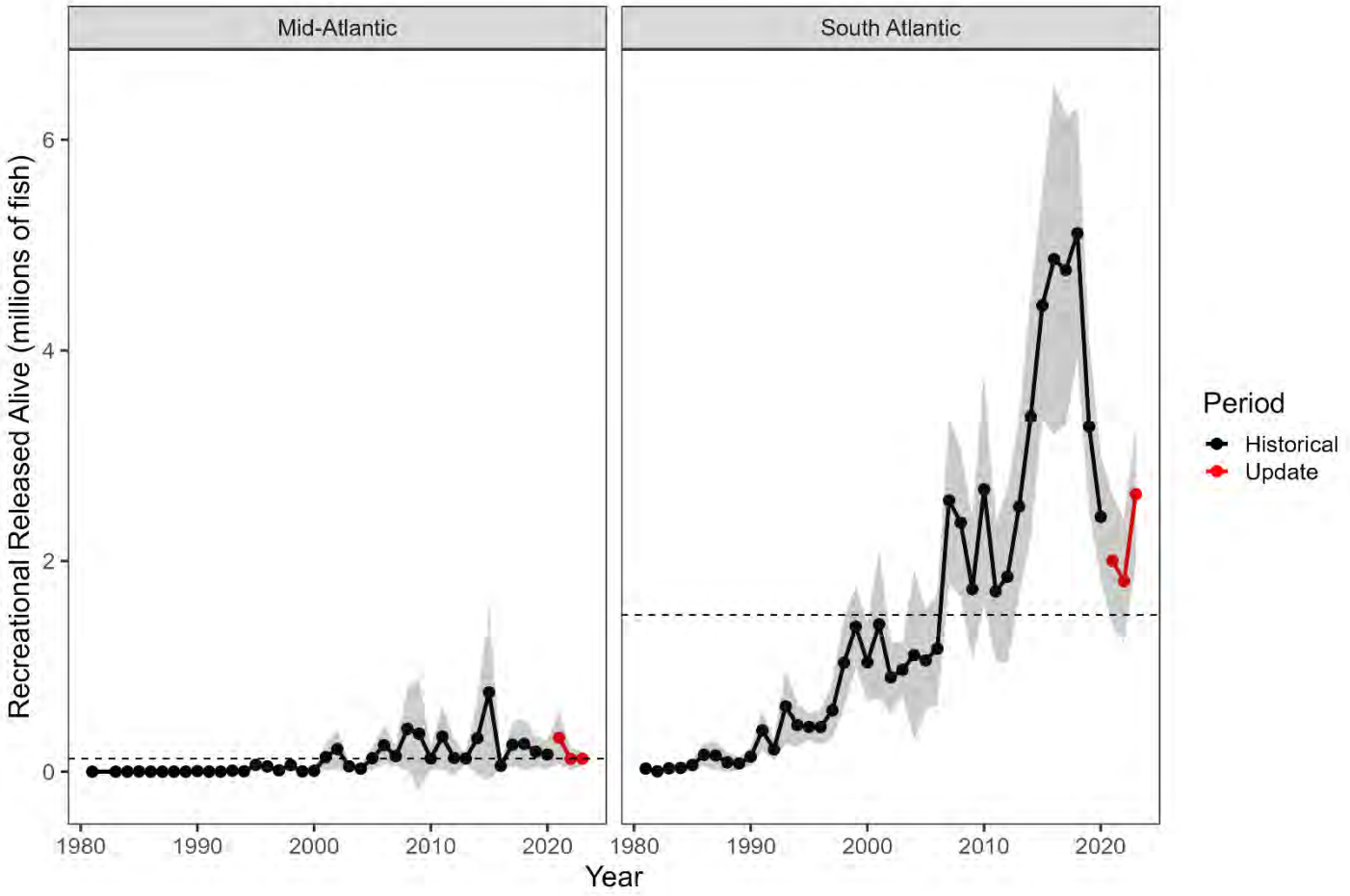
2024 Data Update – Exploitable Abundance



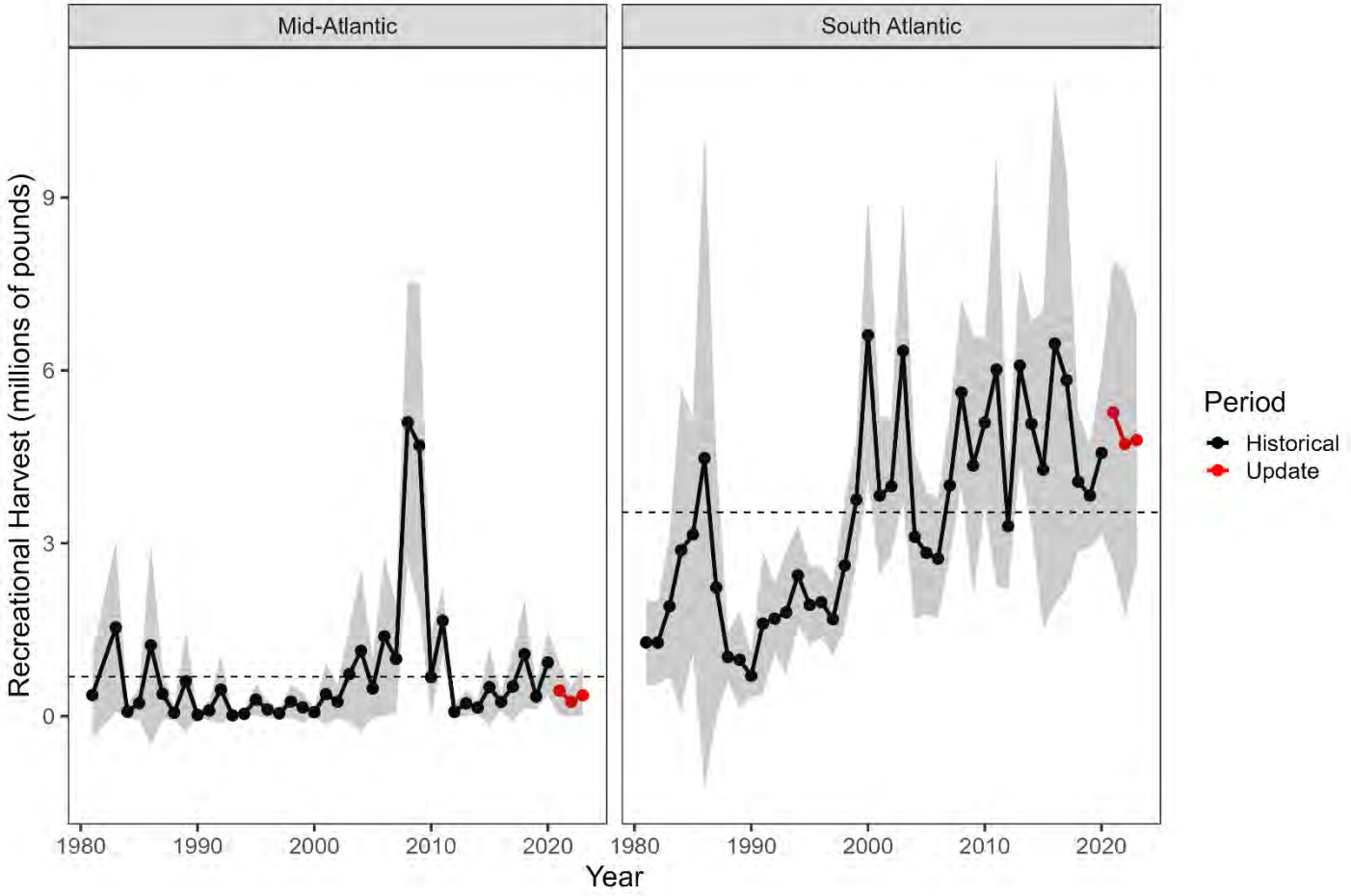
2024 Data Update – Range Expansion



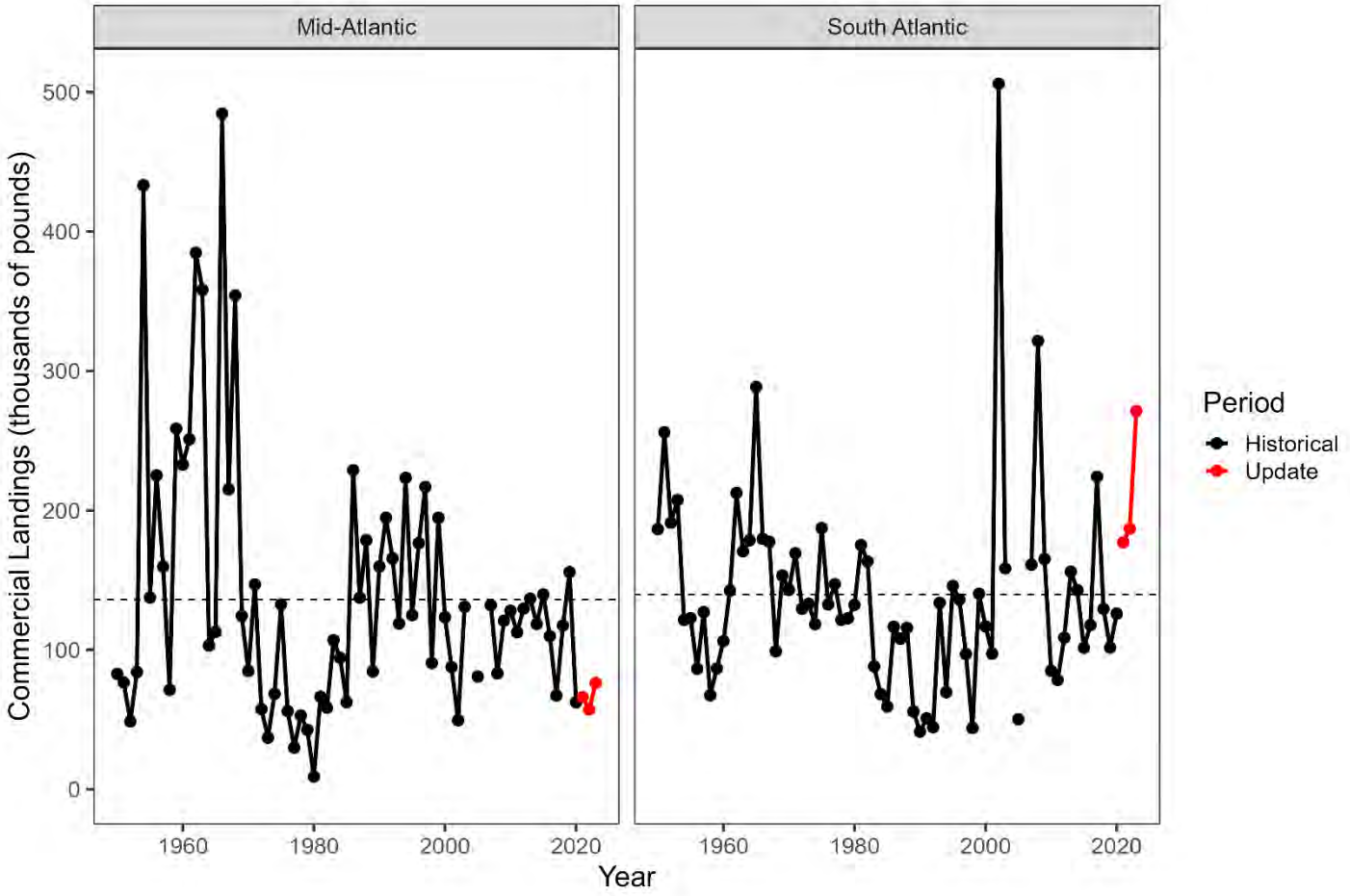
2024 Data Update – Recreational Live Releases



2024 Data Update – Recreational Harvest



2024 Data Update – Commercial Landings



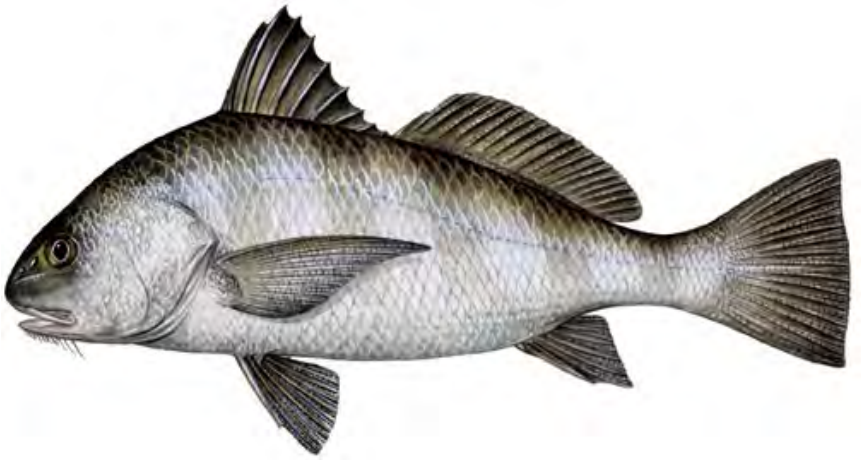
2024 Data Update

- Overall, indicators showed similar conditions to the terminal year of the assessment, with signs of increases in the South Atlantic in 2023
- Increased catch in the South Atlantic is likely driven by increased effort in response to tighter regulations on other recreational species
- Decreased commercial landings in Mid Atlantic due to reduced market demand
  - Reduced commercial harvest has led to a loss of age samples in Delaware

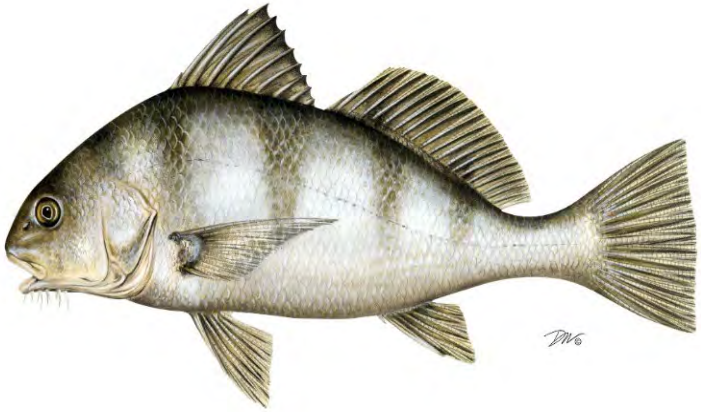
TC Recommendations

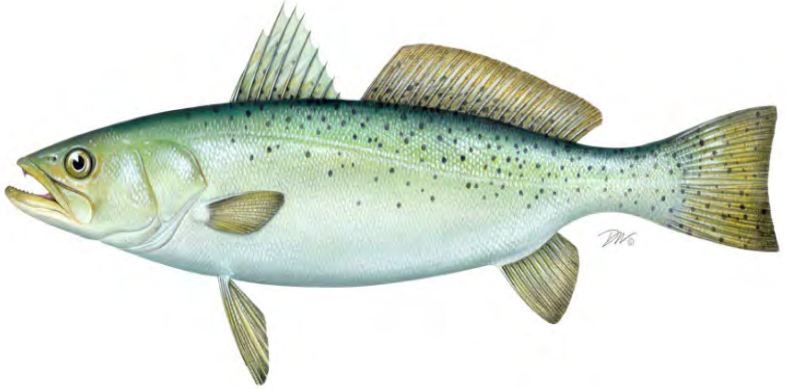
- An advanced assessment timeline is not currently needed
- The next data update should occur in 2026, with additional data from 2024 and 2025
  - Frequency of updates will be reevaluated following the next assessment
- The next stock assessment should be pushed back one year to 2028

Questions?



Black Drum and Spotted Seatrout Fishery Management Plan Reviews

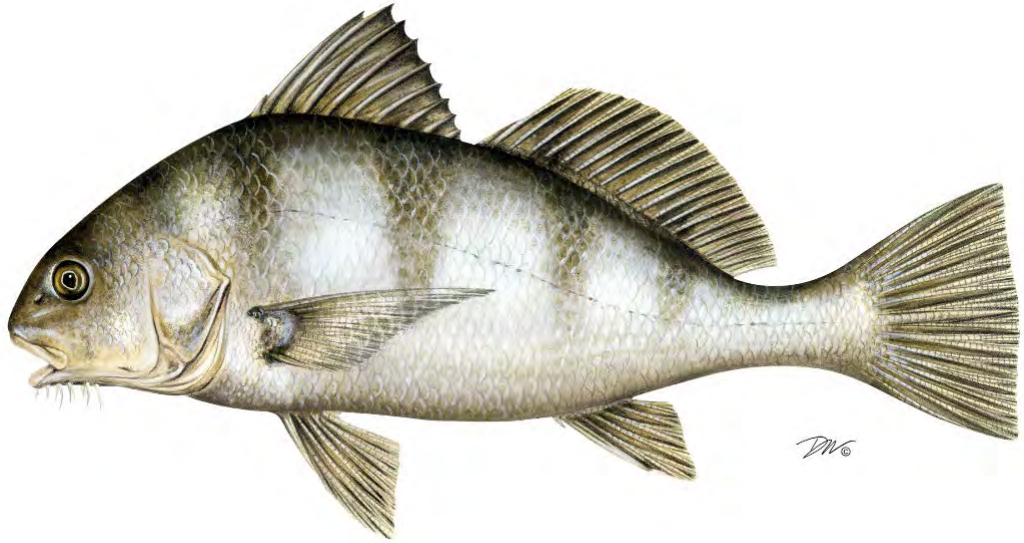




Sciaenids Management Board

October 22, 2024

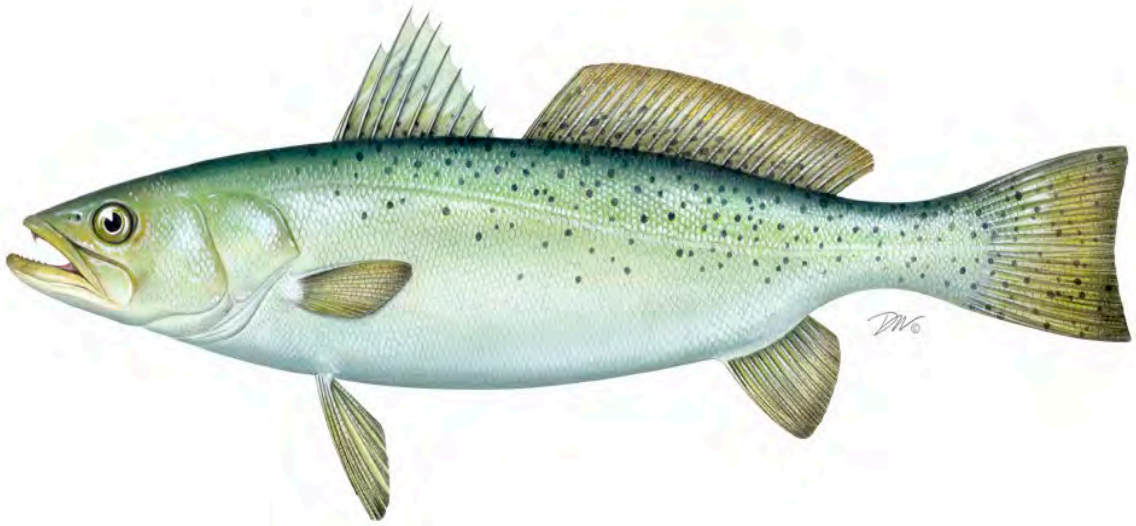
Black Drum
Fishery Management Plan Review



PRT Recommendations

- Found no inconsistences from the FMP
- No *de minimis* requests
- PRT recommends the approval of state compliance reports
- Additional research/monitoring recommendations found in FMP Review document and Black Drum Assessment and Peer Review Report

Spotted Seatrout
Fishery Management Plan Review



Status of the FMP

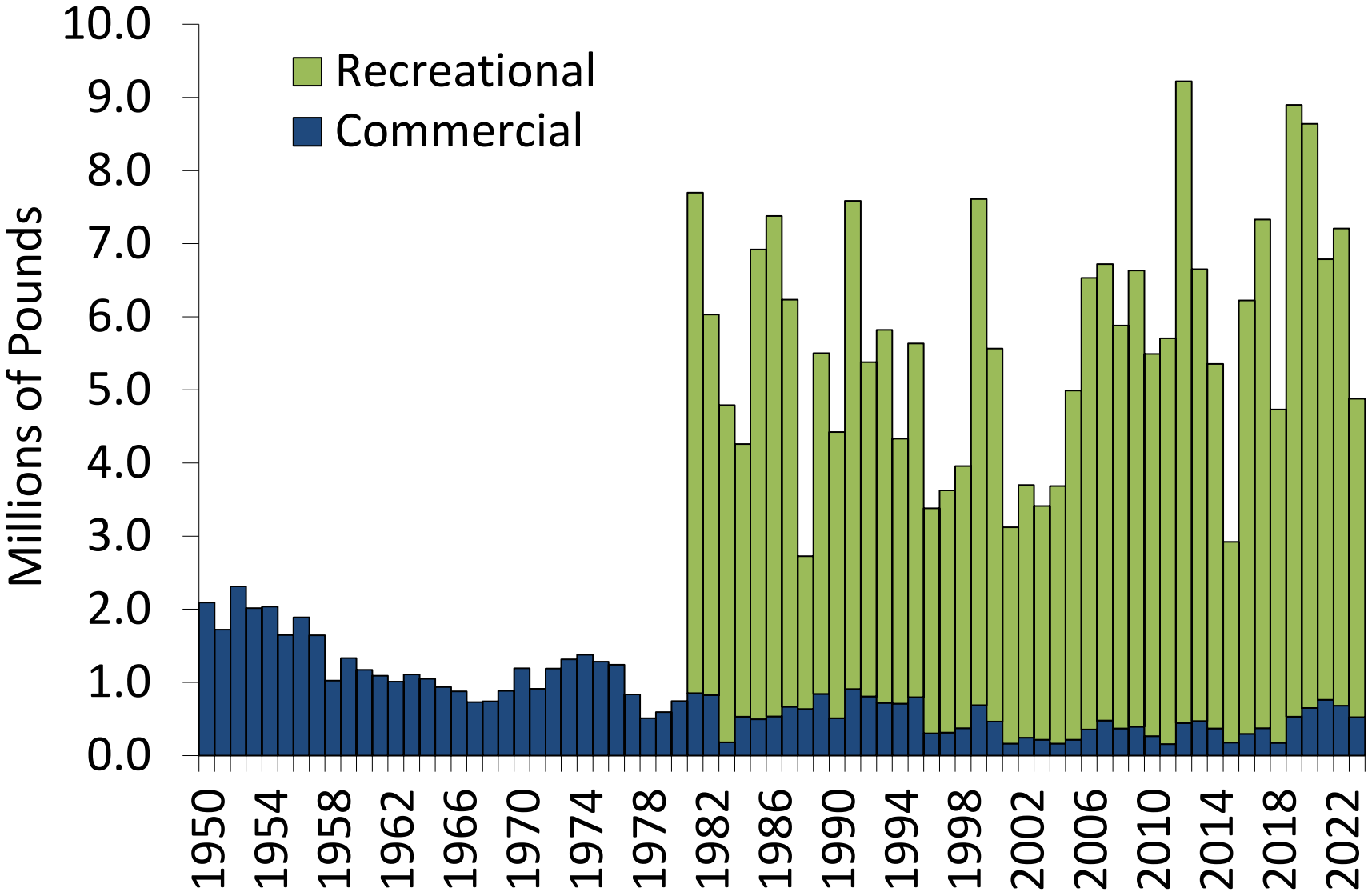
- Omnibus Amendment to the Spanish Mackerel, Spot, and Spotted Seatrout FMPs (2011)

Status of the Stock

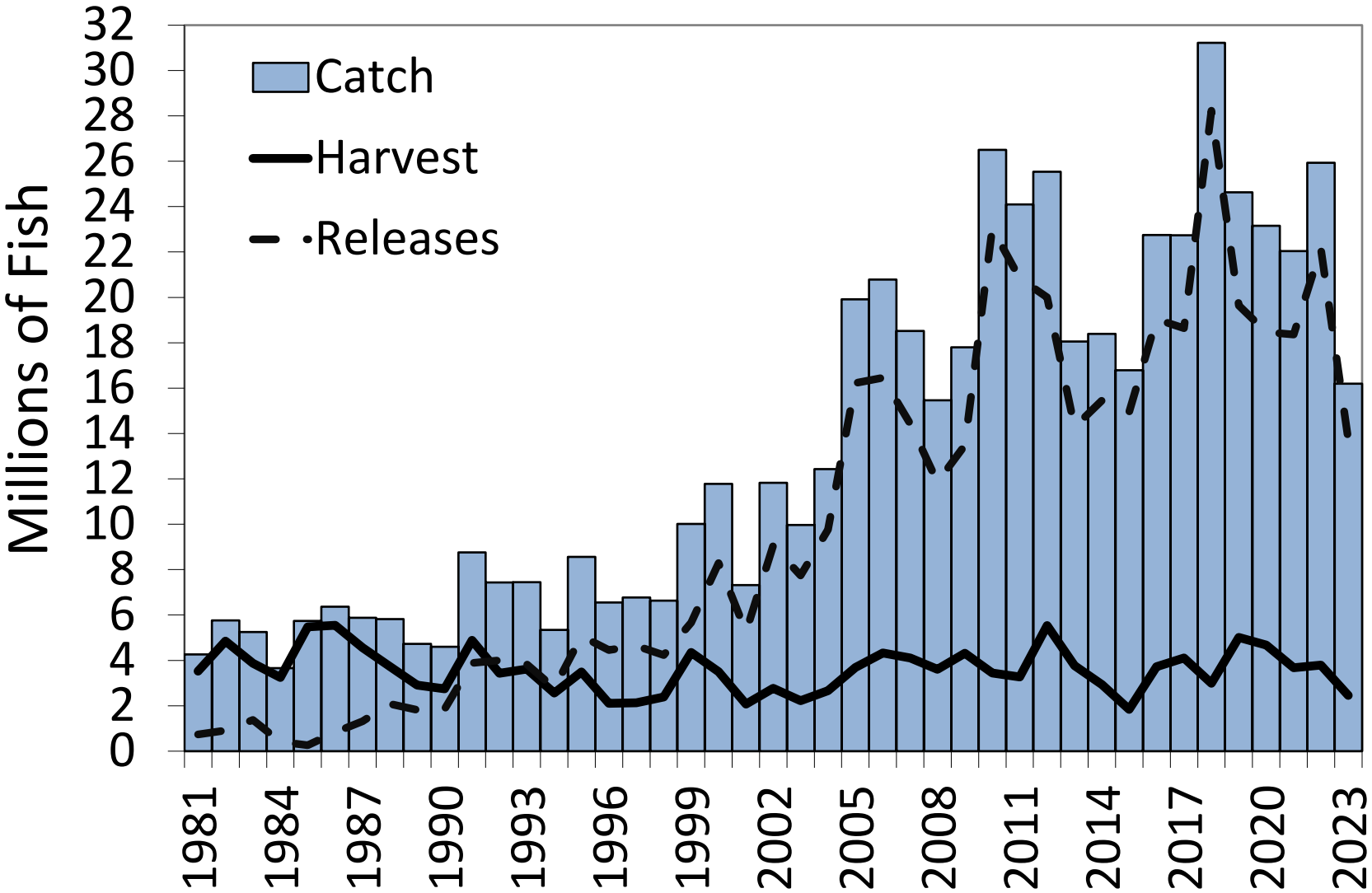
- 2019 Florida Spotted Seatrout Stock Assessment Update
  - Terminal year 2017
- 2022 North Carolina Spotted Seatrout Stock Assessment: the stock is not overfished but overfishing is occurring
  - Terminal year 2019

Photo credit: SCDNR

Status of the Fishery: Commercial and Recreational Harvest



Status of the Fishery: Recreational Catch



PRT Recommendations

- No inconsistencies found among states with regard to FMP requirements
- PRT recommends approval of state compliance reports and *de minimis* status for New Jersey and Delaware.
- Additional research/monitoring recommendations found in FMP Review document

Board Actions and Next Steps

- Motion on approval/disapproval of FMP reviews, state compliance reports, and *de minimis* requests for black drum and spotted seatrout.

Questions?