2021 Tautog Stock Assessment Update

Nichole Ares, TC Chair

October 18, 2021

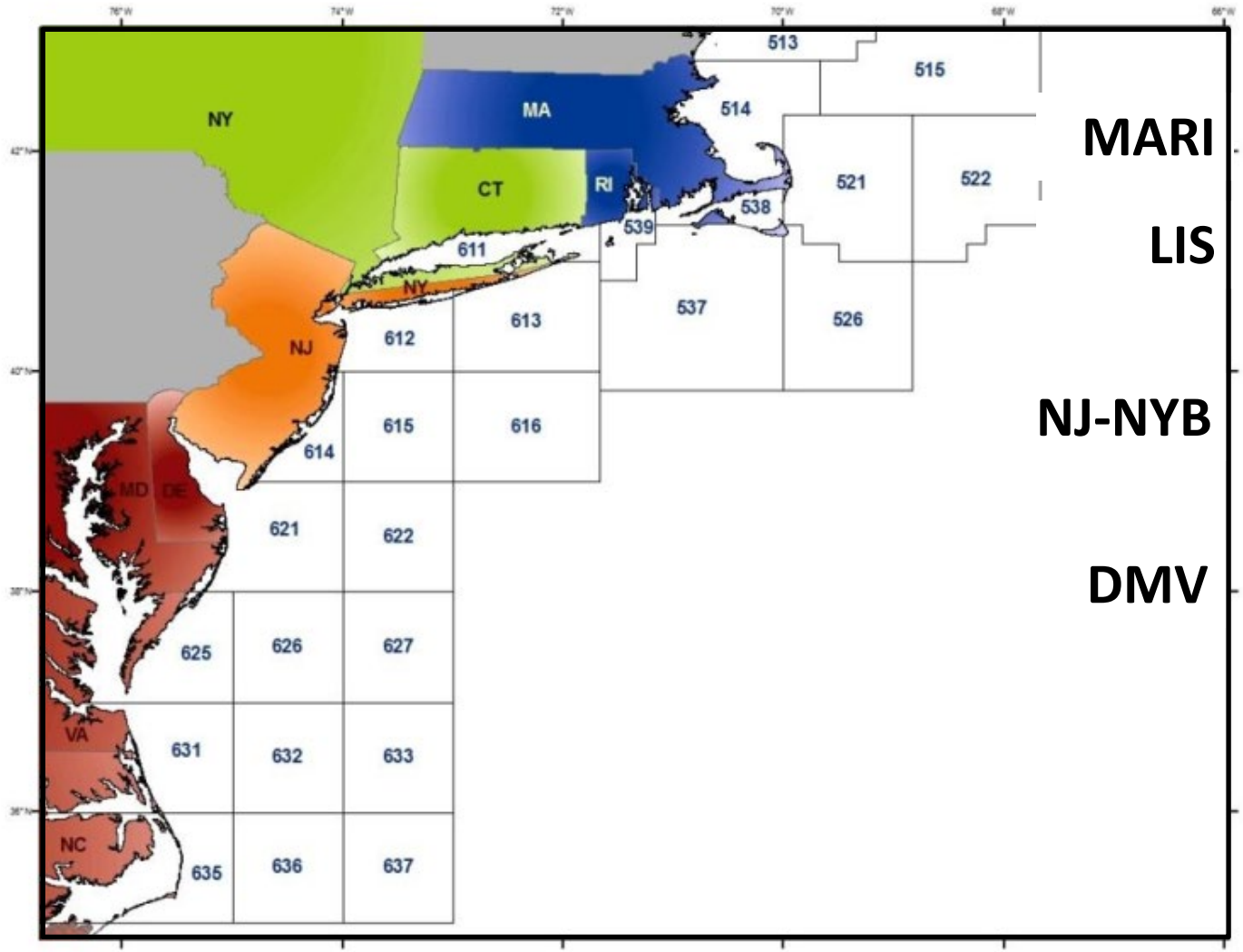
Tautog SAS

- Nichole Ares, RI DFW
- Linda Barry, NJ DFW
- Jacob Kasper, University of Connecticut
- Alexei Sharov, MD DNR
- Sam Truesdell, MA DMF
- Katie Drew, ASMFC
- Kirby Rootes-Murdy, ASMFC

Outline

- Review data, including new MRIP estimates
- Review estimates of F and SSB, including effect of new MRIP numbers
- Review stock status & short-term projections

Tautog Regions



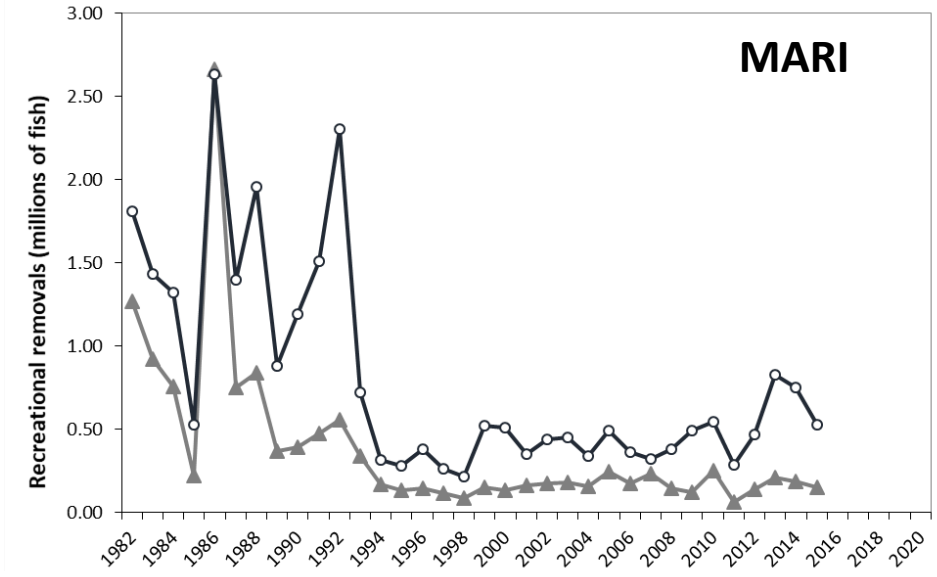
- Tautog is managed as 4 separate regions

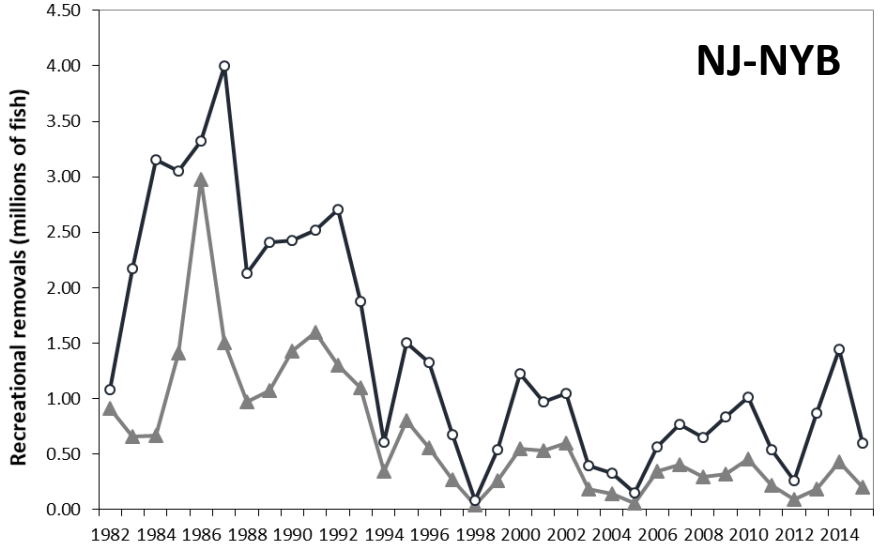
Tautog Assessment Data

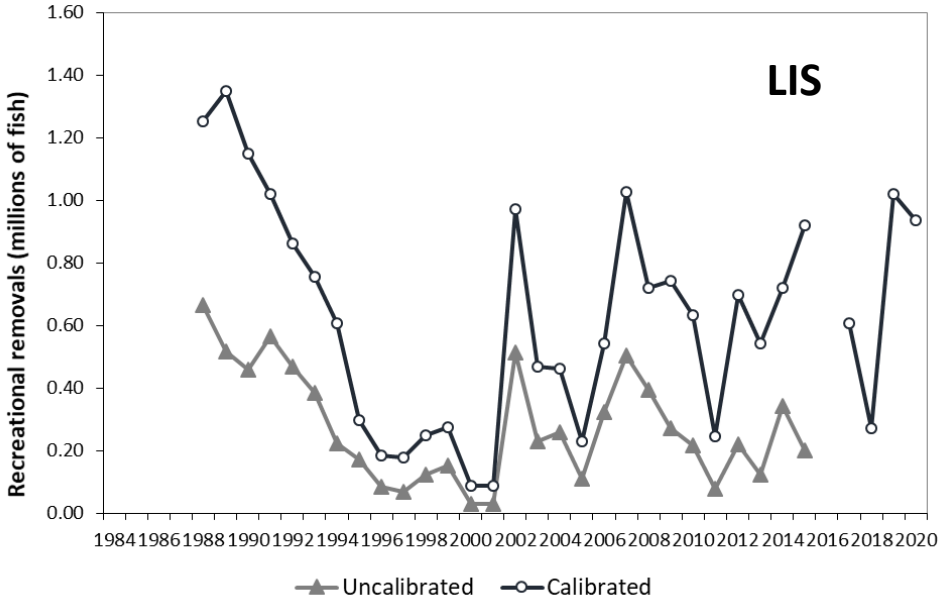
- Previous assessment terminal year: 2015
- This assessment: 2020

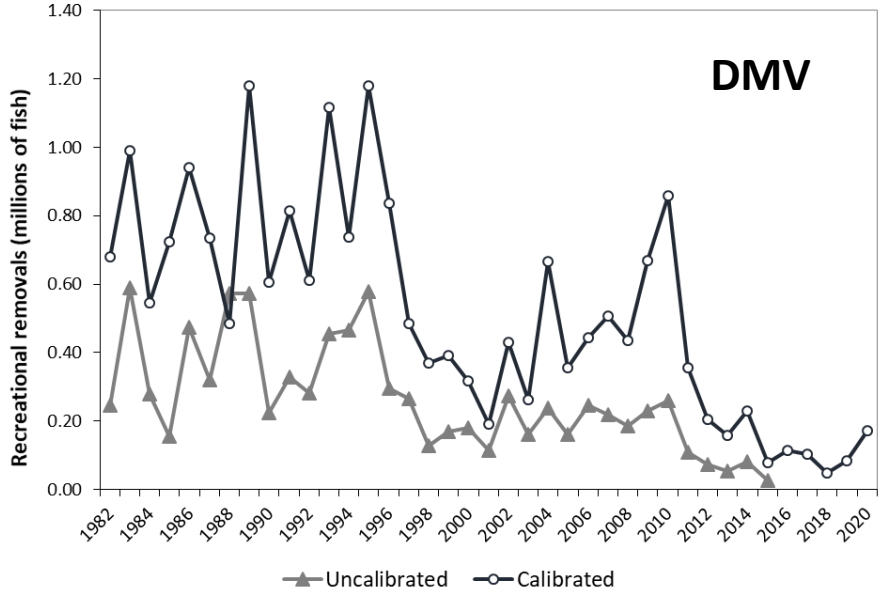
- Data challenges
  - New MRIP numbers for all regions (1981-2020)
  - COVID-19 impacts
    - Not all surveys completed in 2020
    - MRIP dockside sampling limited → 2020 removals estimated with imputed data

New MRIP Numbers

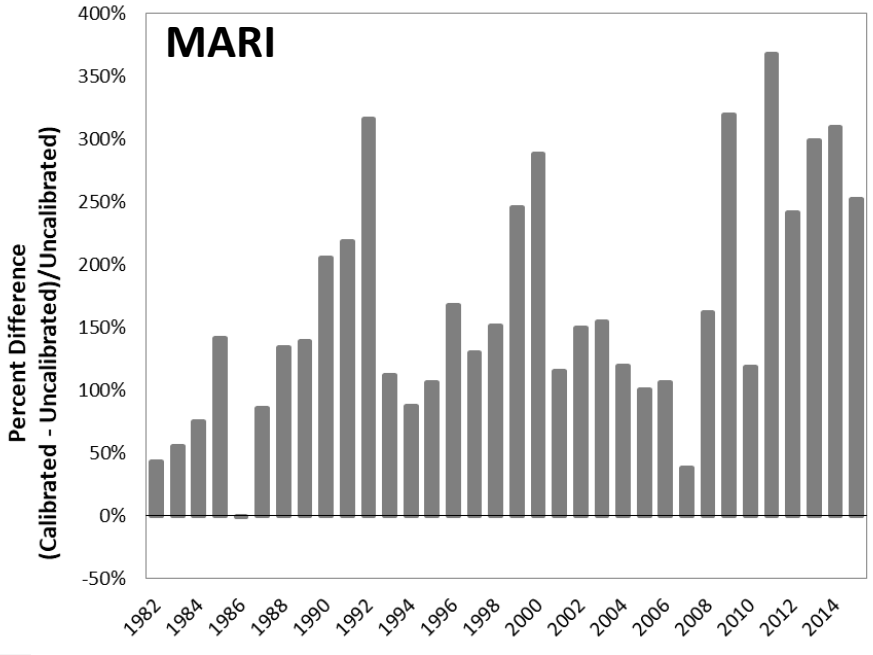


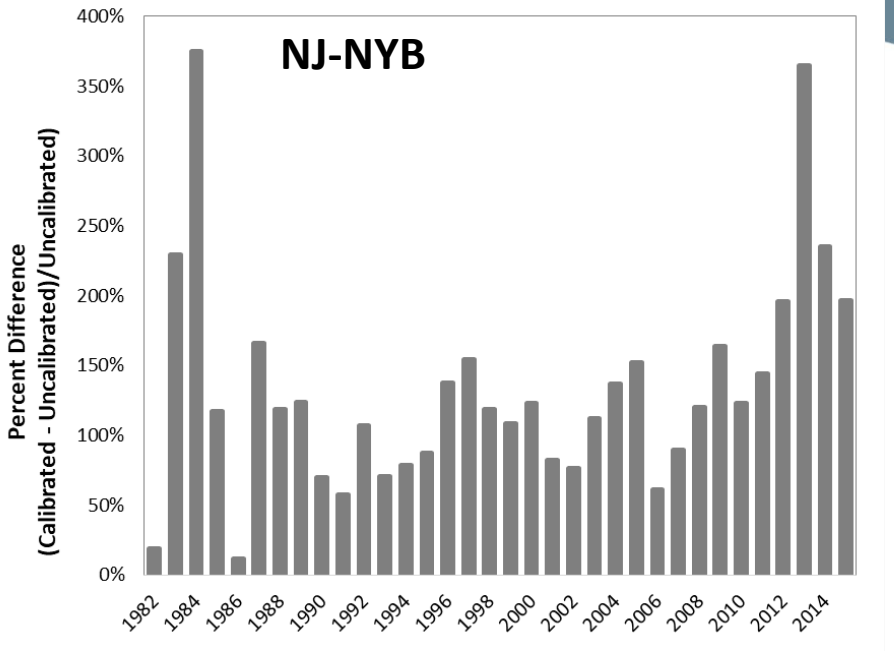


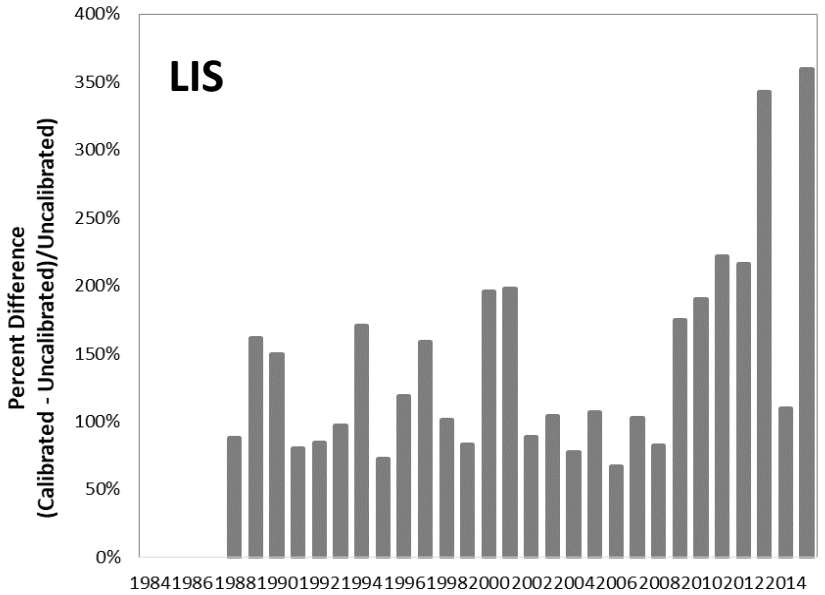


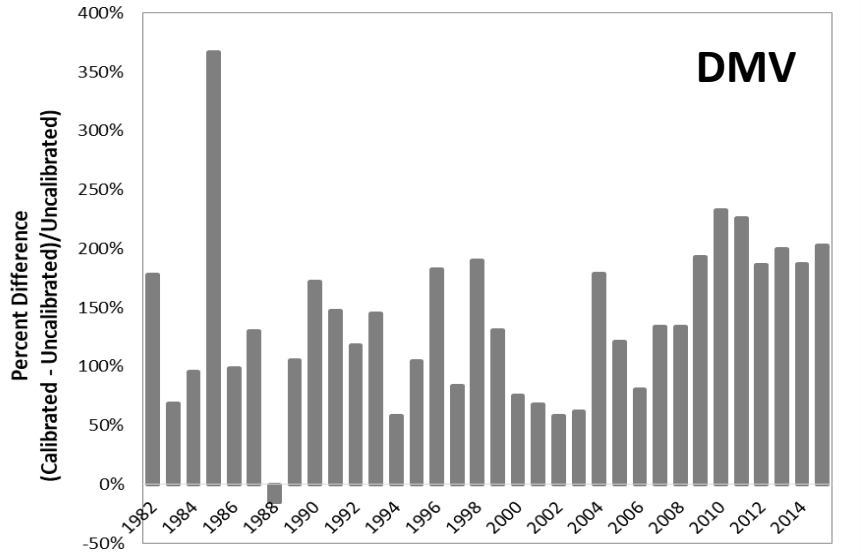


New MRIP Numbers

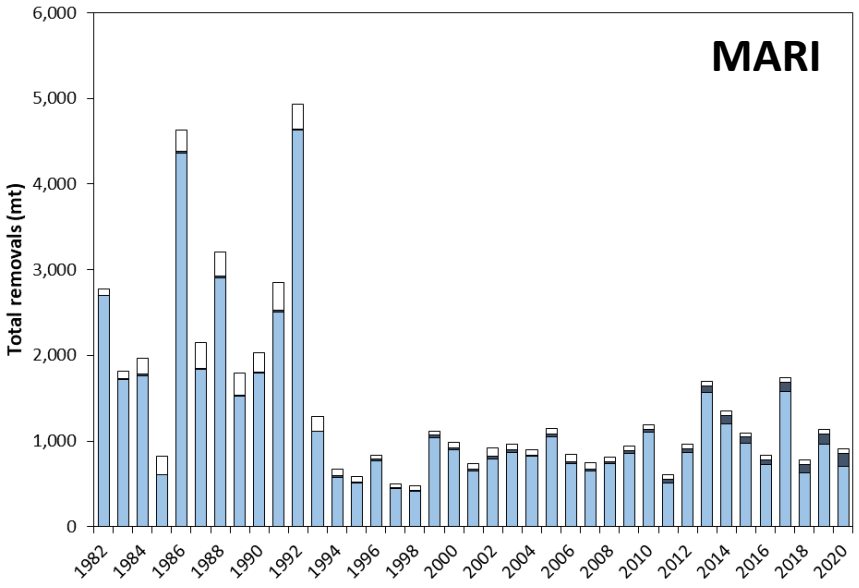


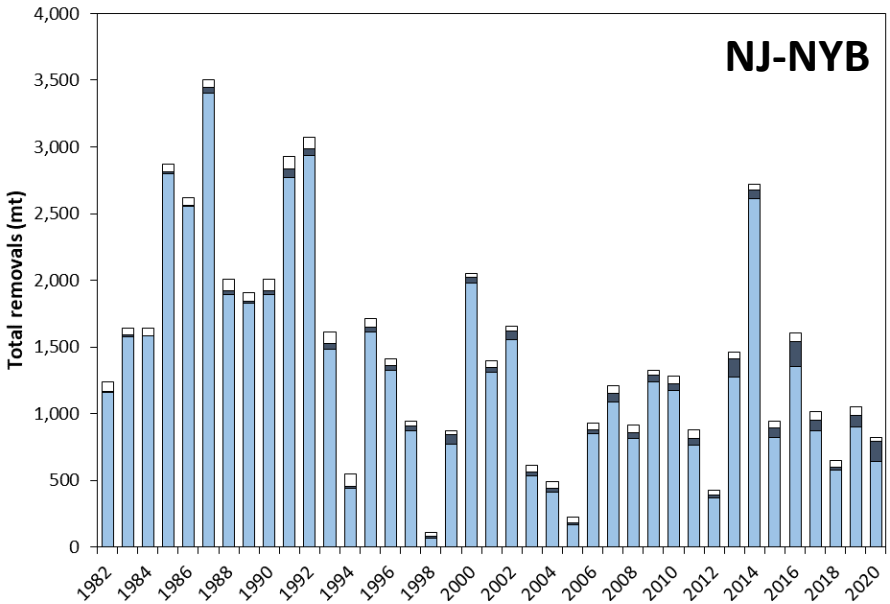


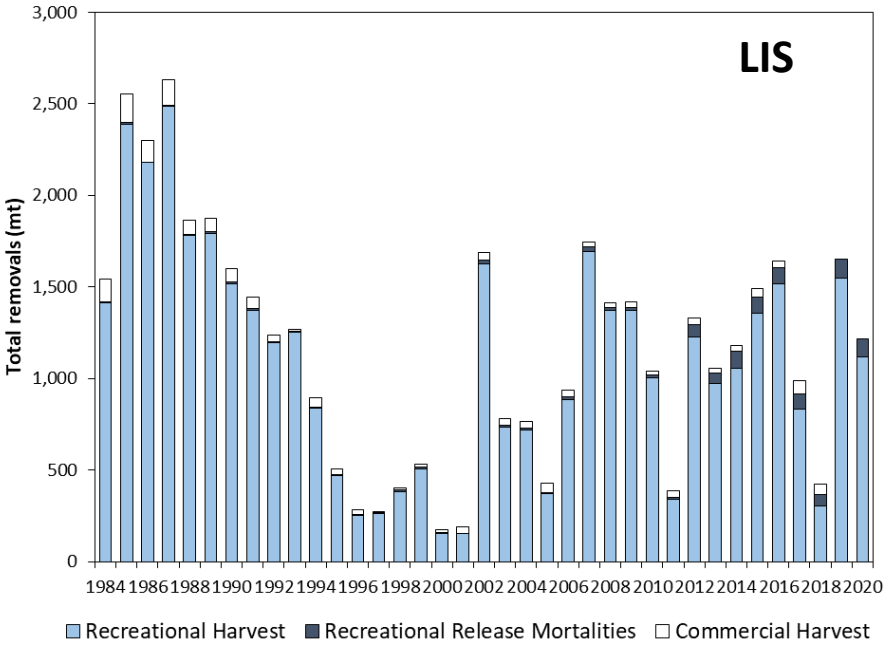


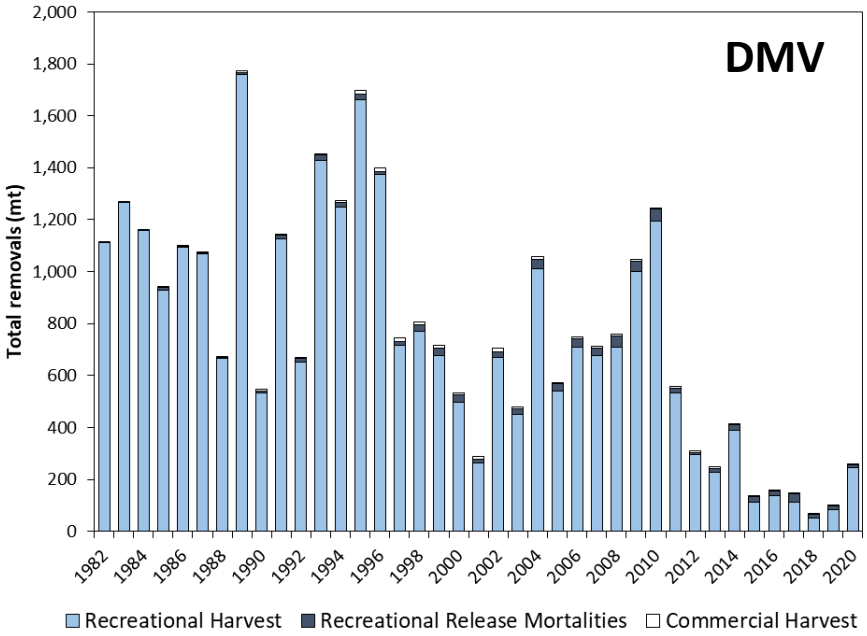


Total Removals

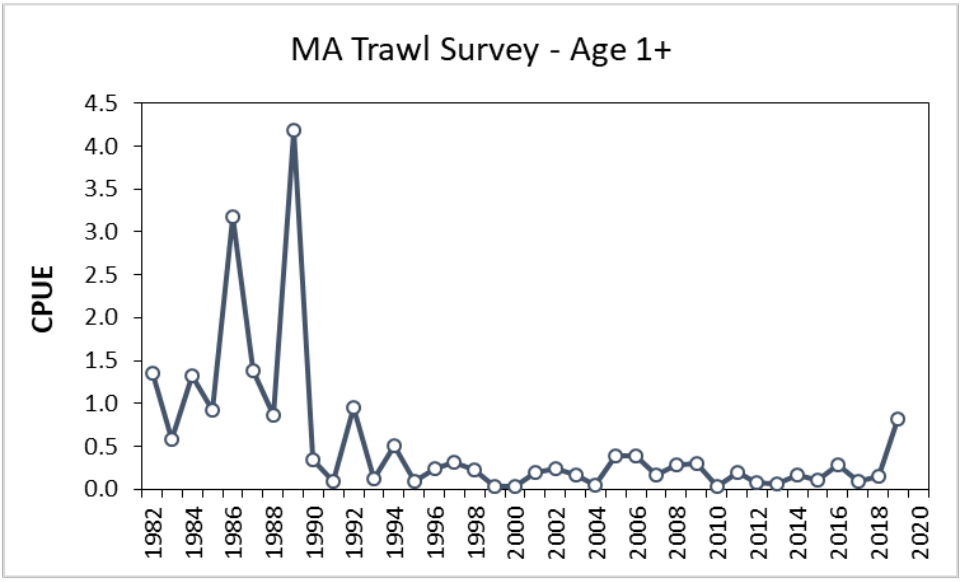


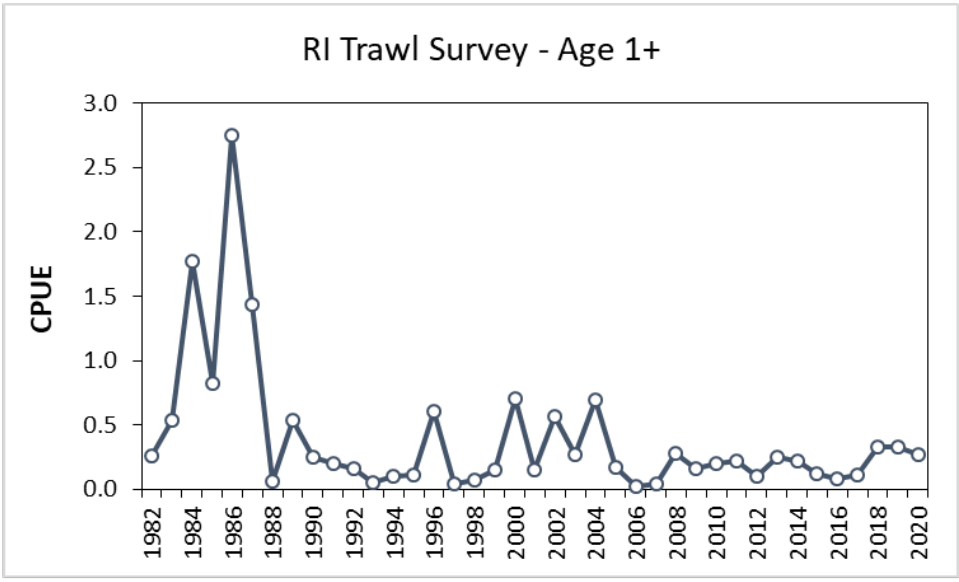


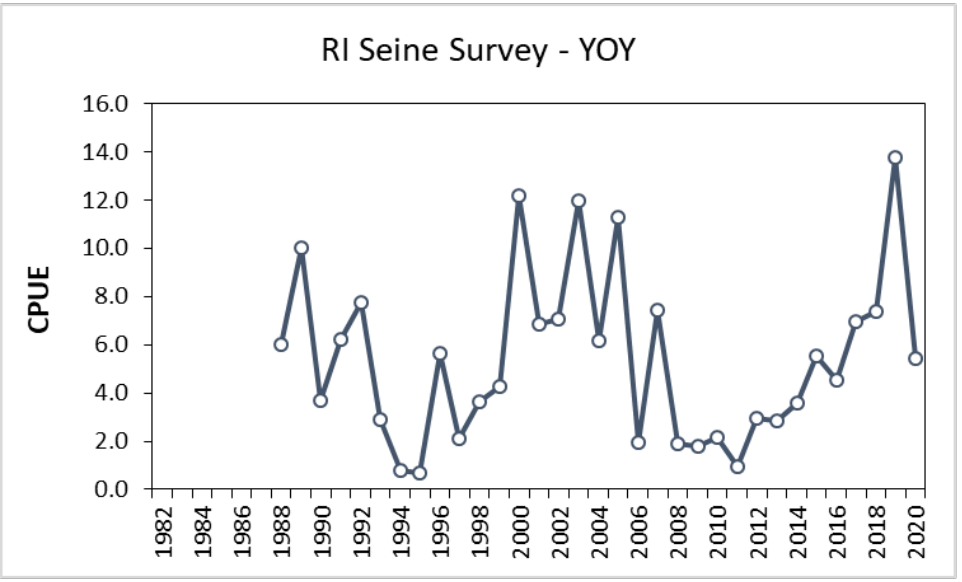


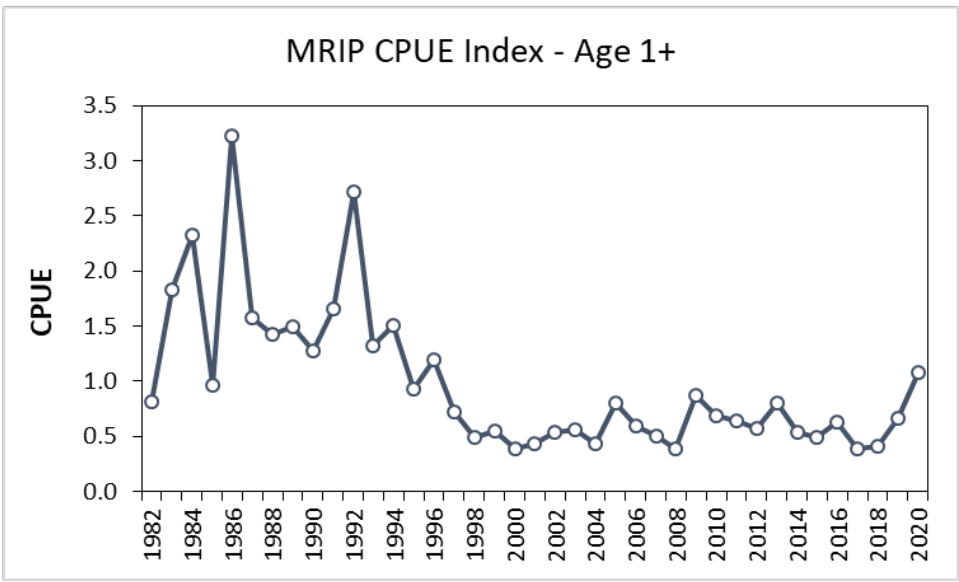


Indices of Abundance: MARI

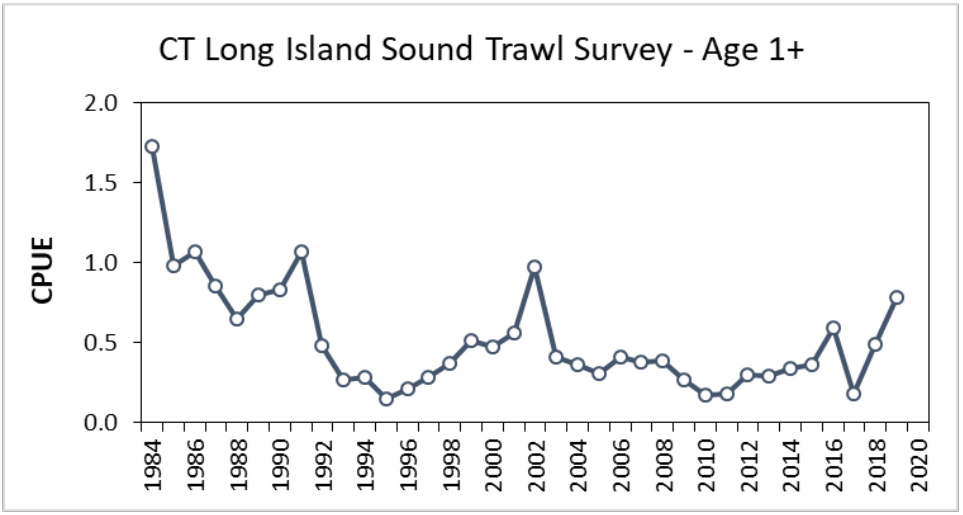


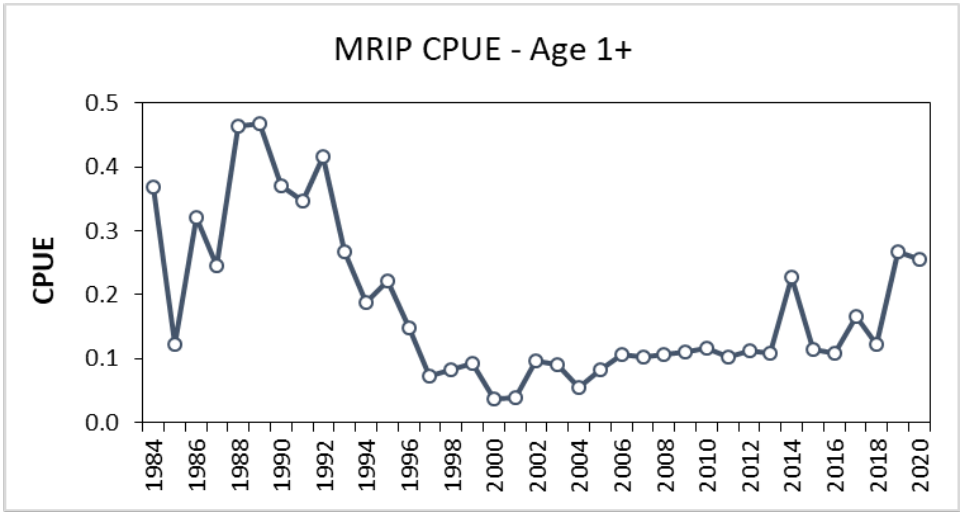


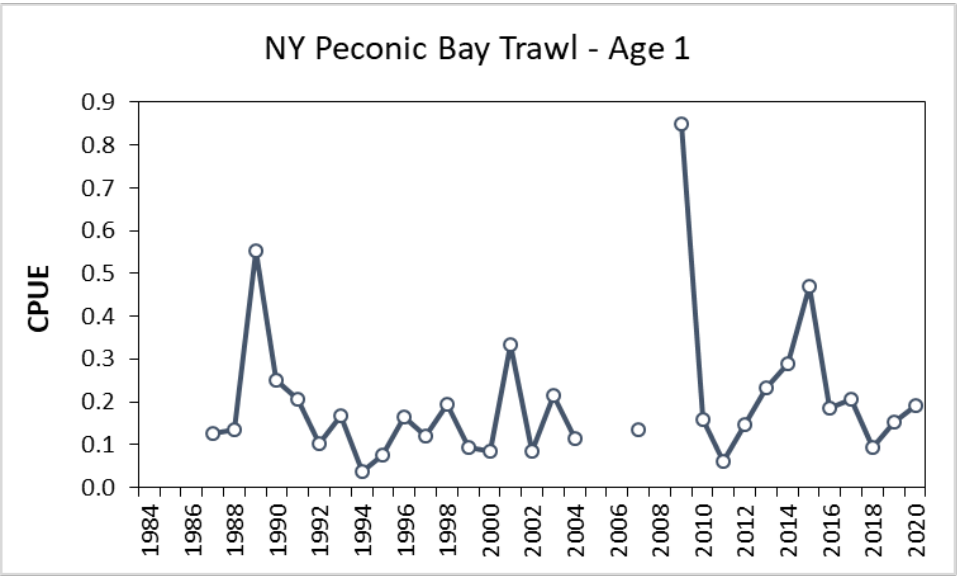


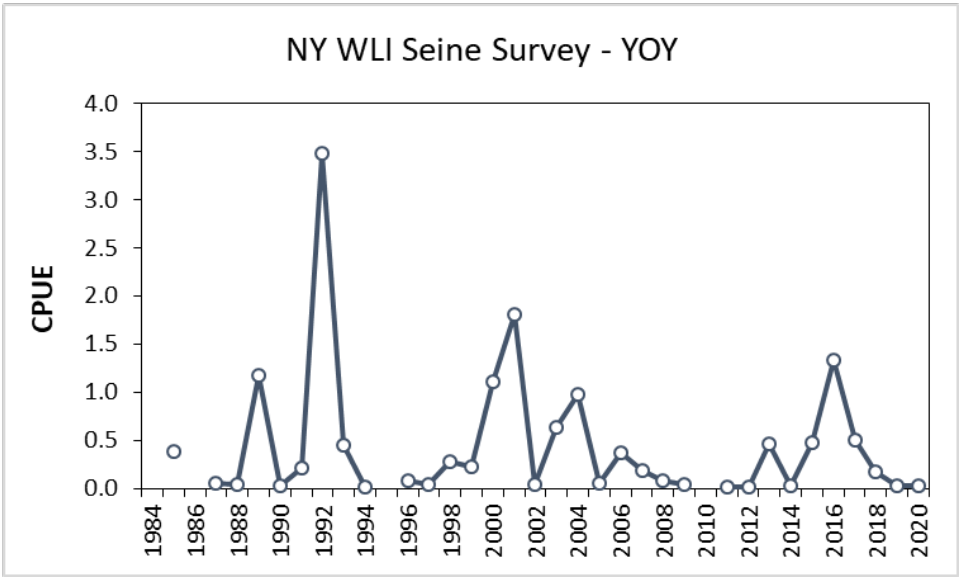


Indices of Abundance: LIS

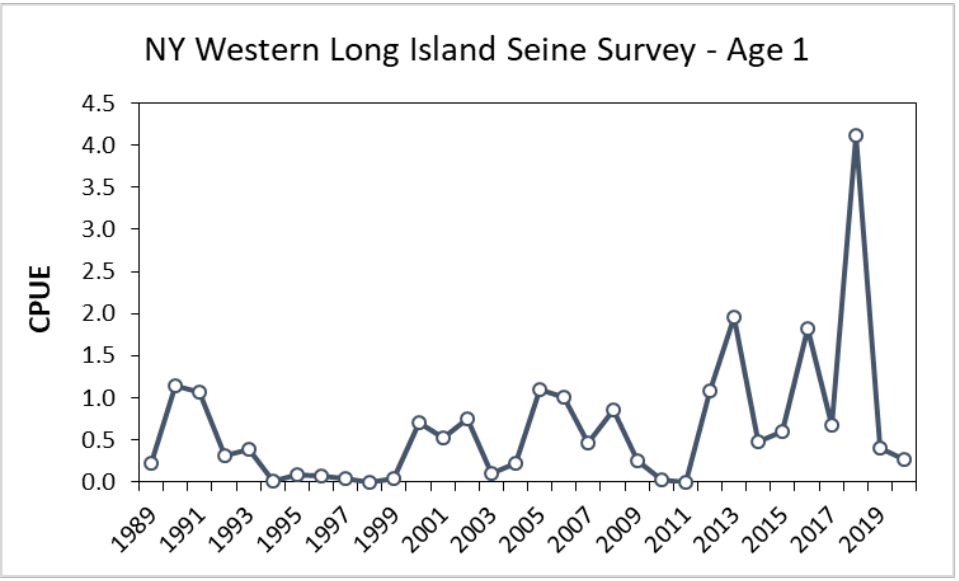


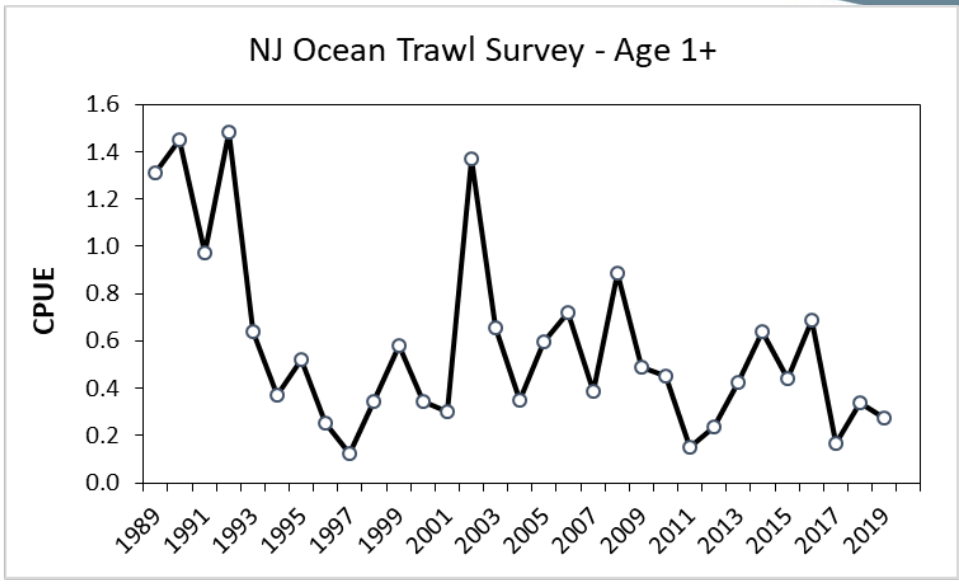


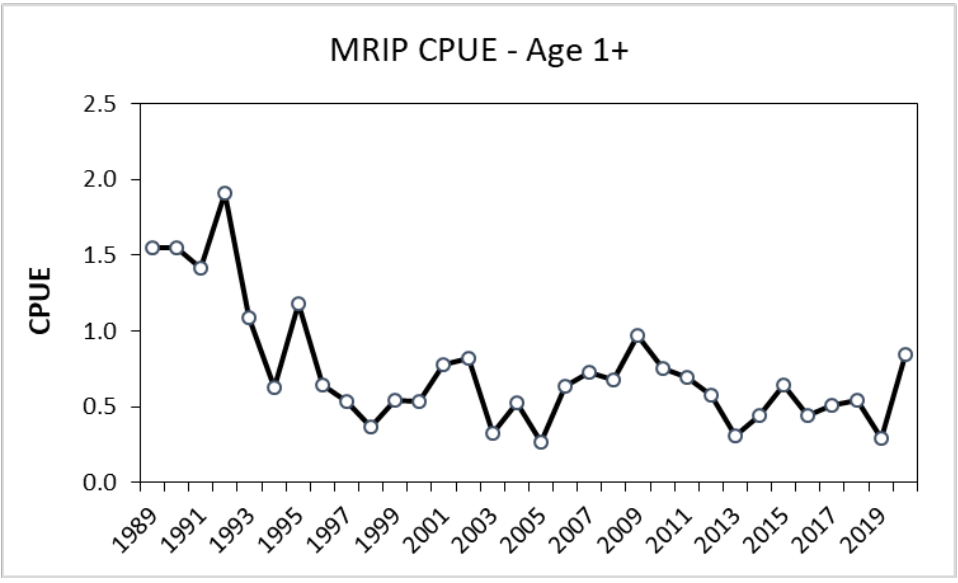




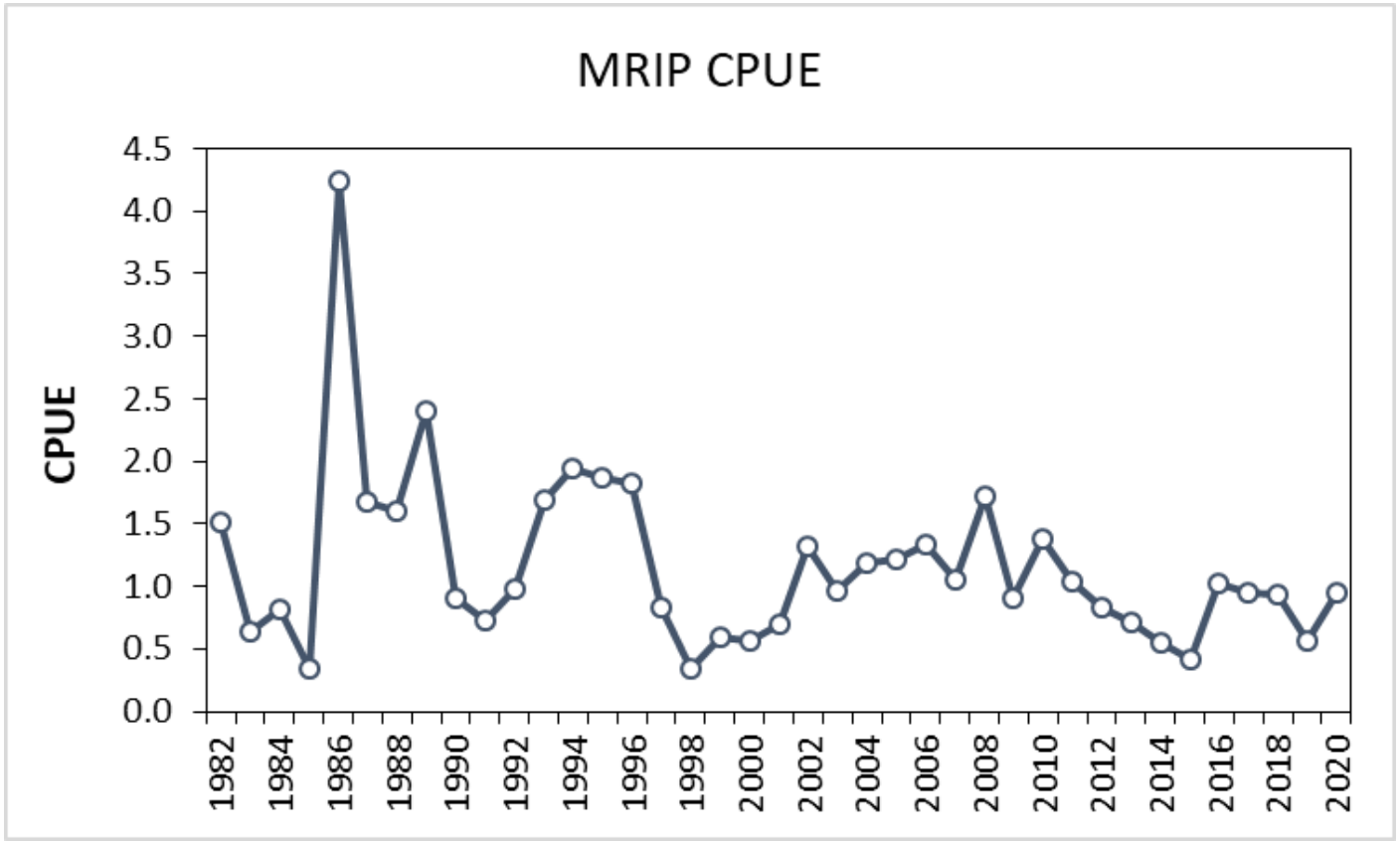
Indices of Abundance: NJ-NYB







Indices of Abundance: DMV

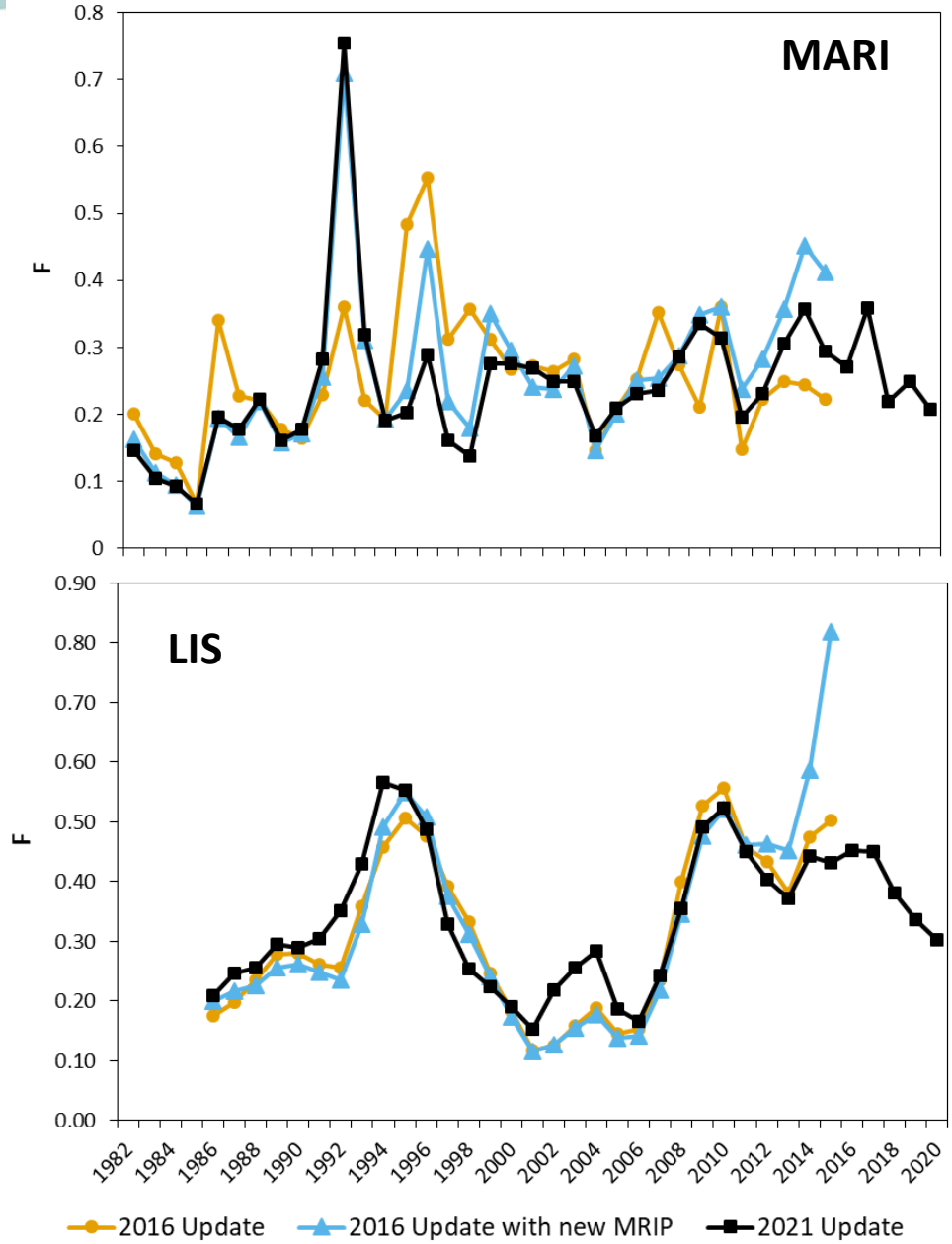


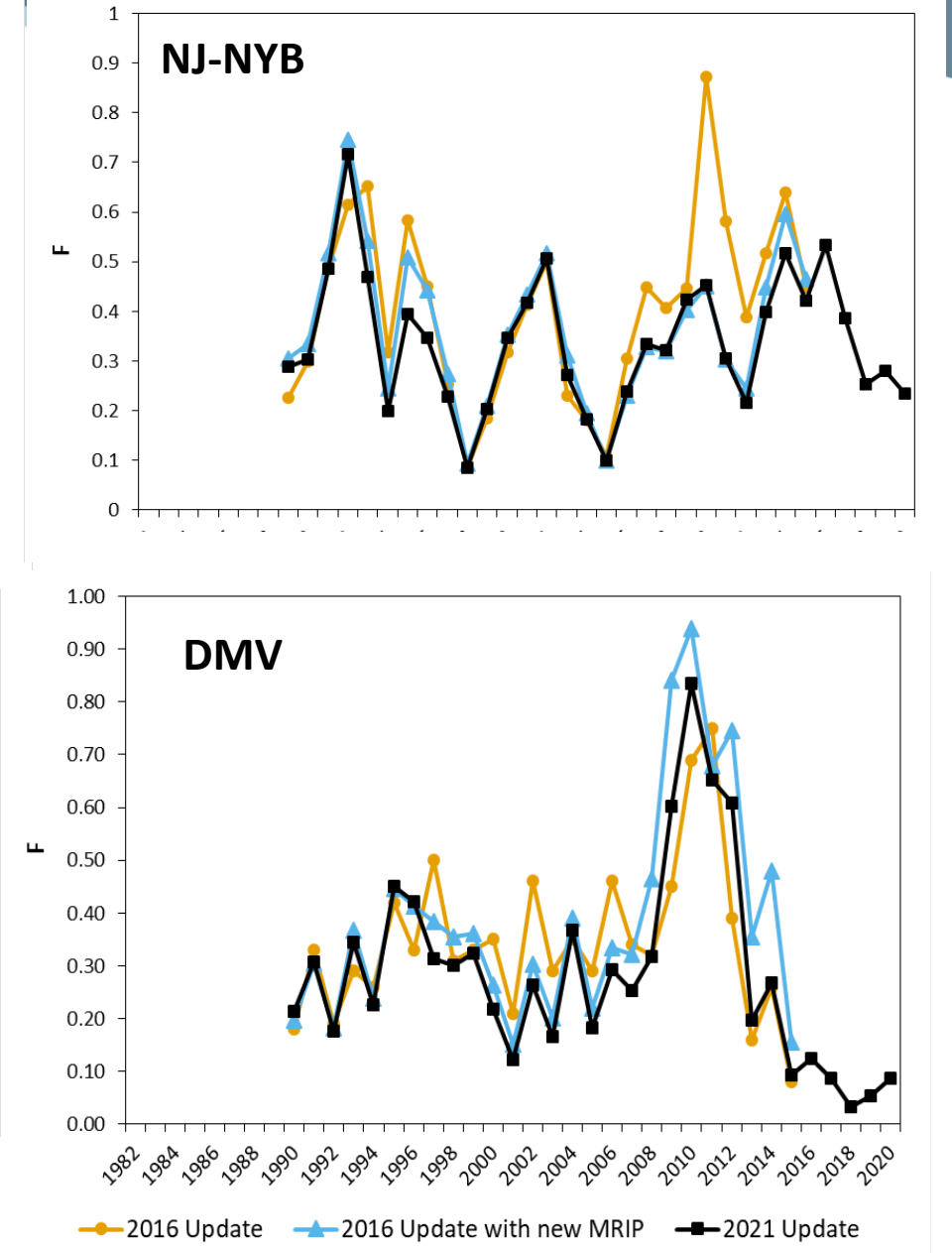
Bridge Models

- To separate the effects of the new MRIP numbers from the effects of adding more year of data, the SAS ran a bridge model for each region

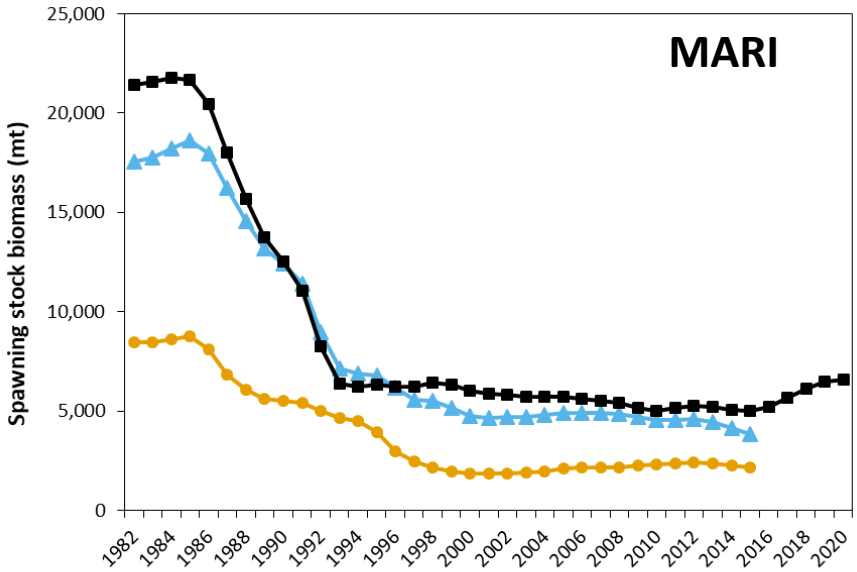
2016 Update → 2016 Update with new MRIP numbers (bridge) → 2021 Update with new MRIP numbers

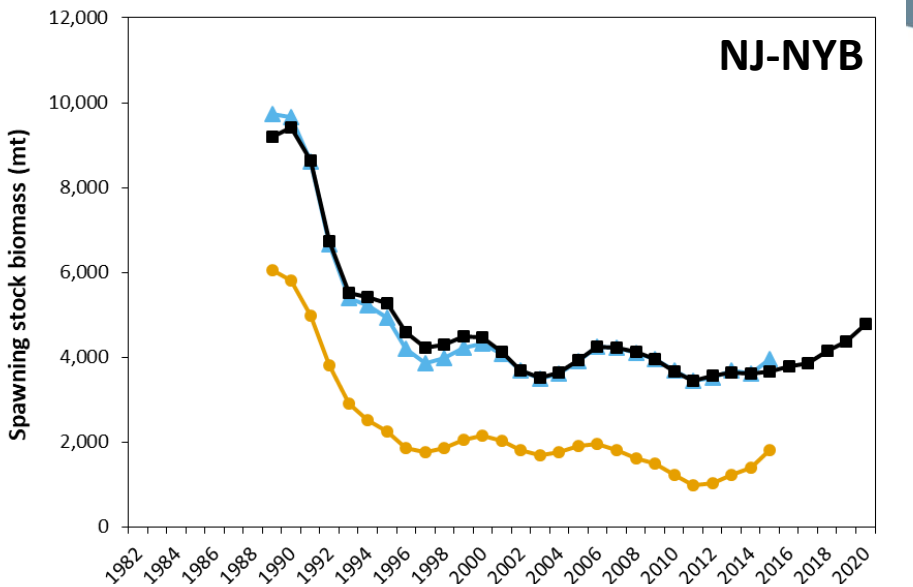
Bridge Models: F

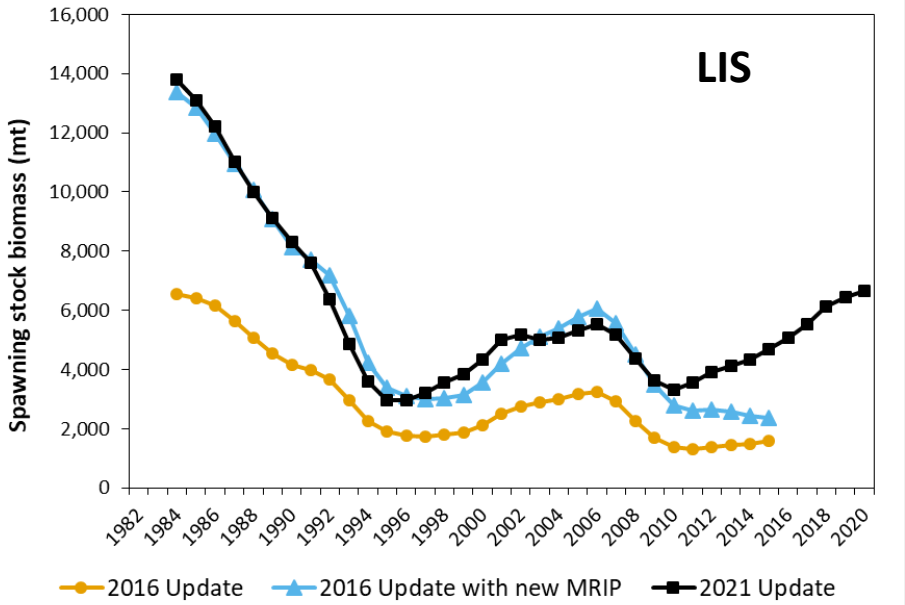


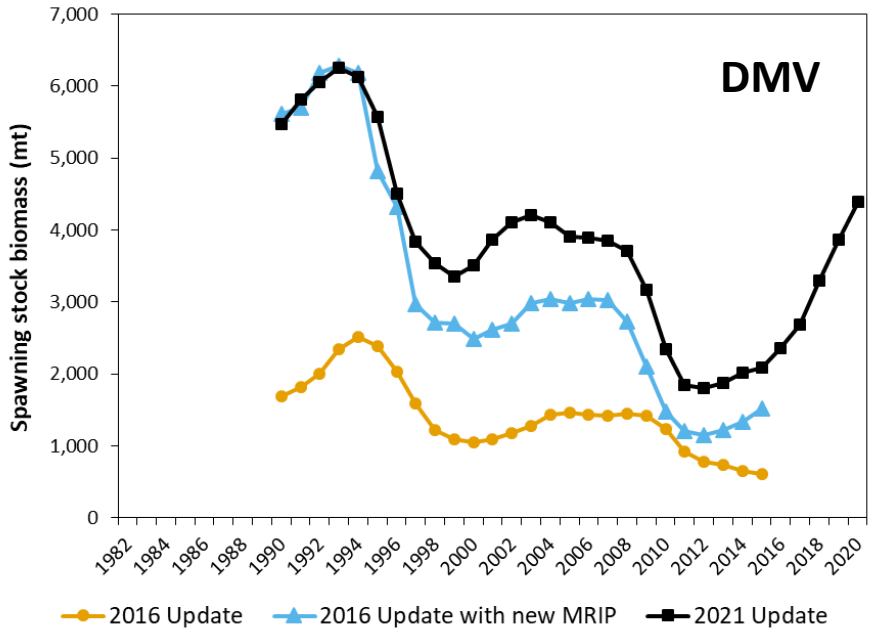


Bridge Models: SSB

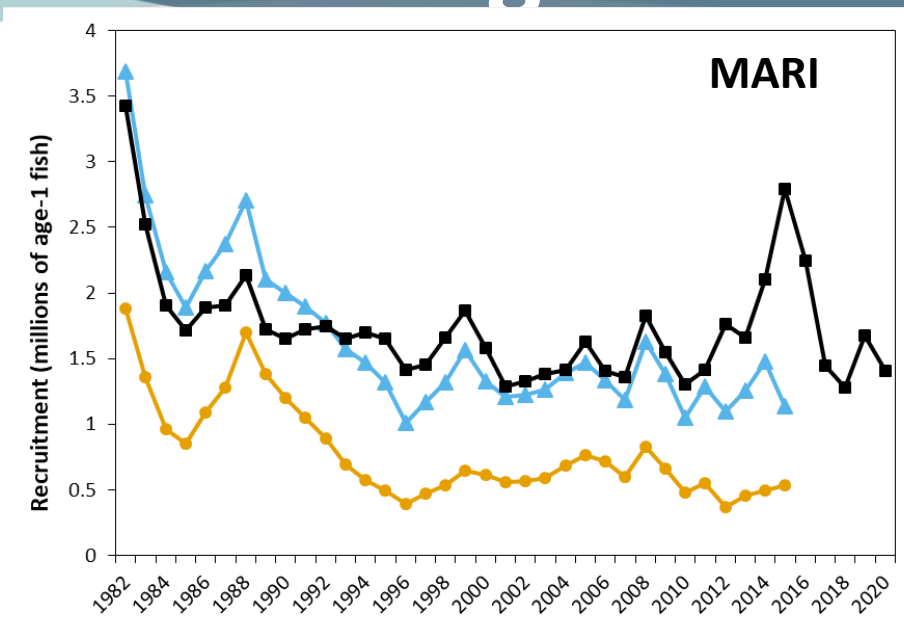


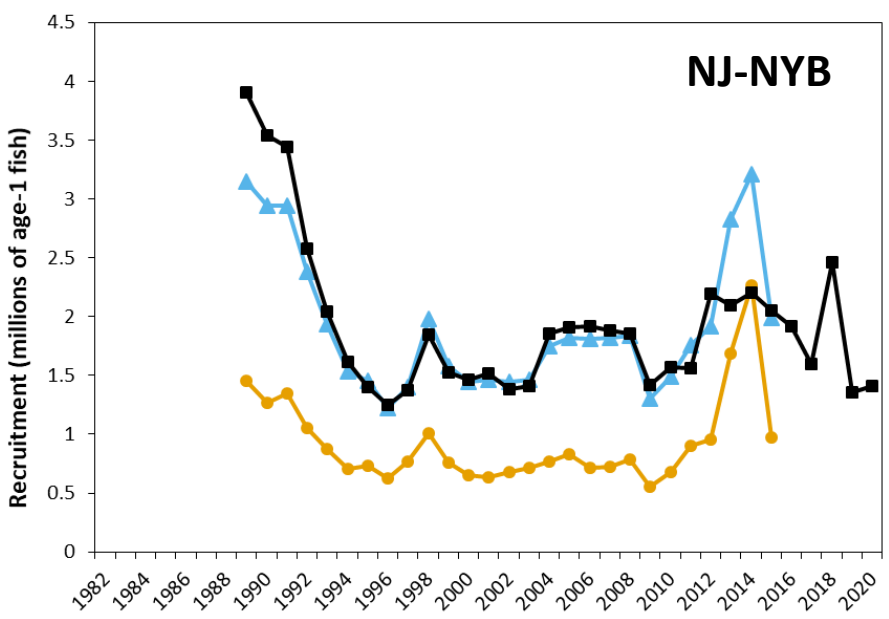


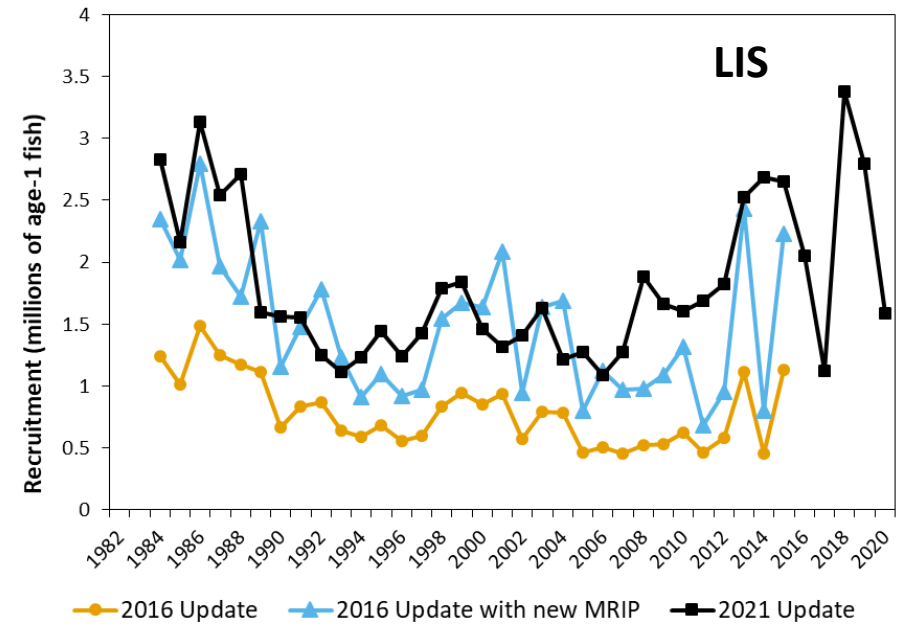


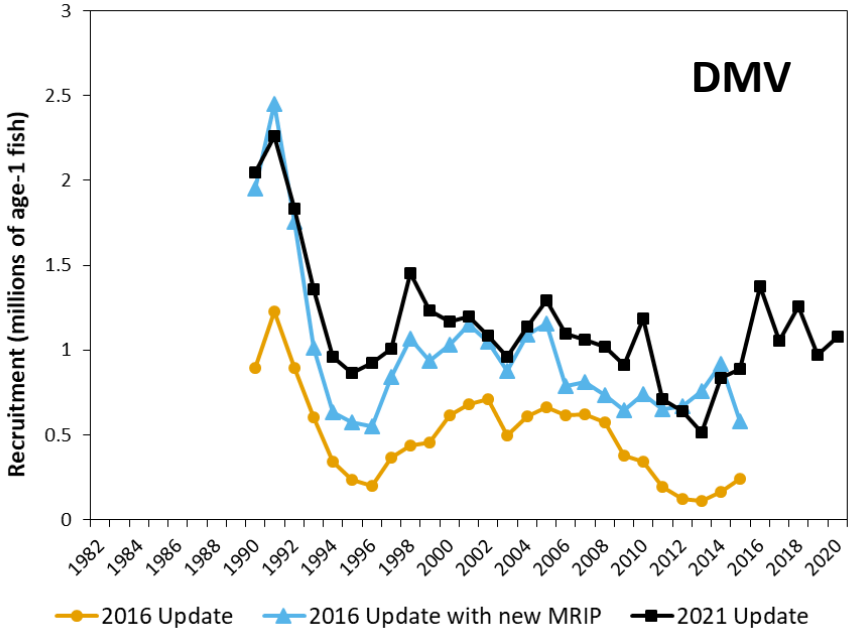


Bridge Model: Recruitment









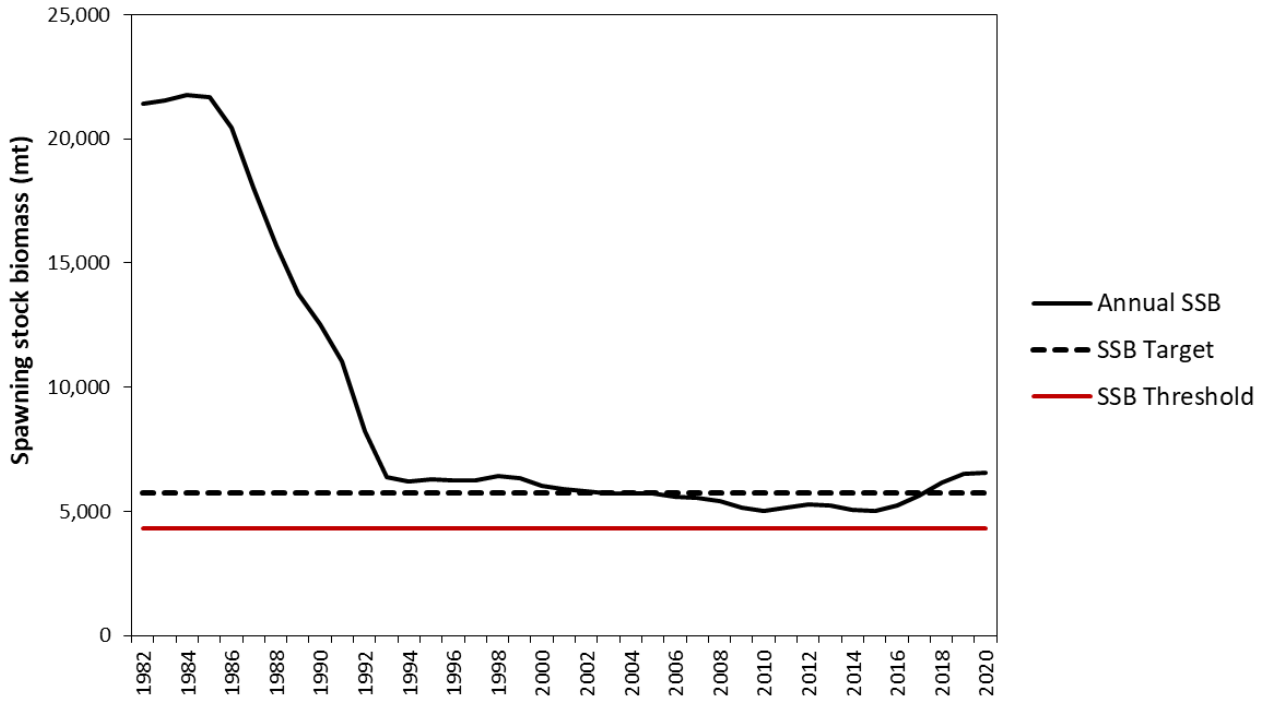
Stock Status

MARI

Not overfished

SSB_{2020} = 6,568 mt

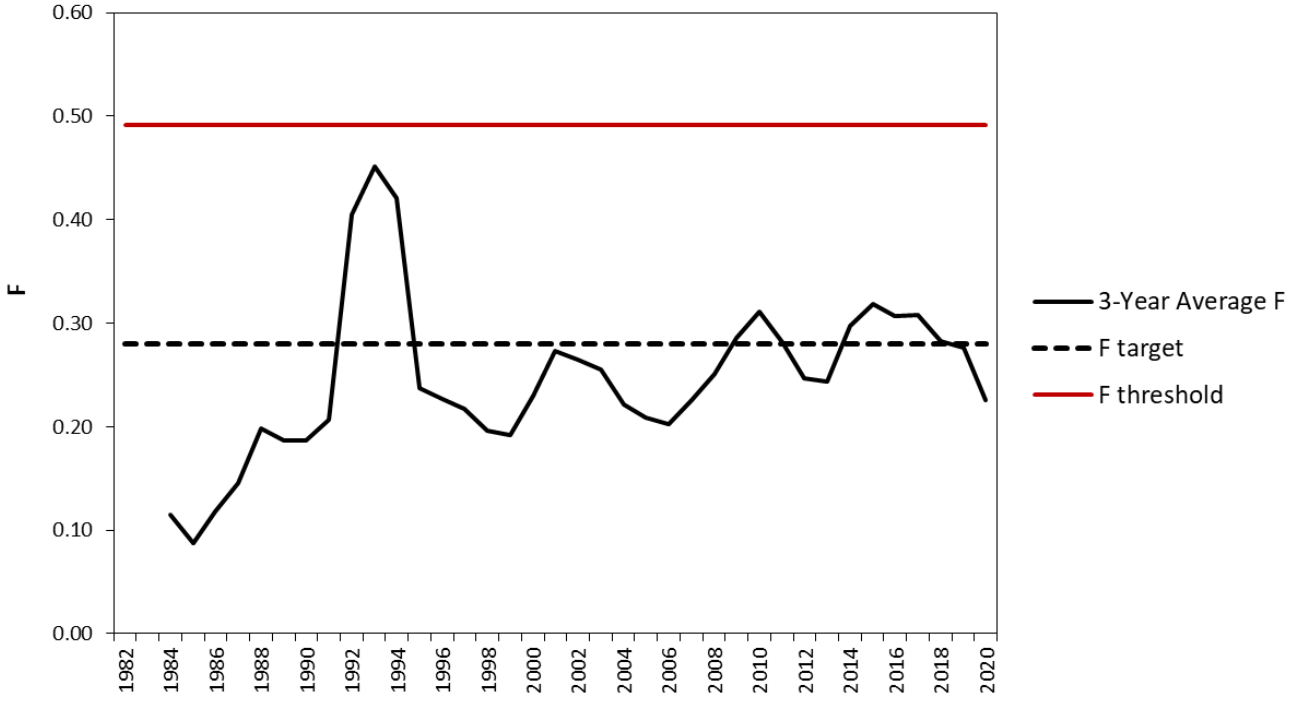
$SSB_{threshold}$ = 4,335 mt



Overfishing not occurring

3-year avg. F_{2020} = 0.23

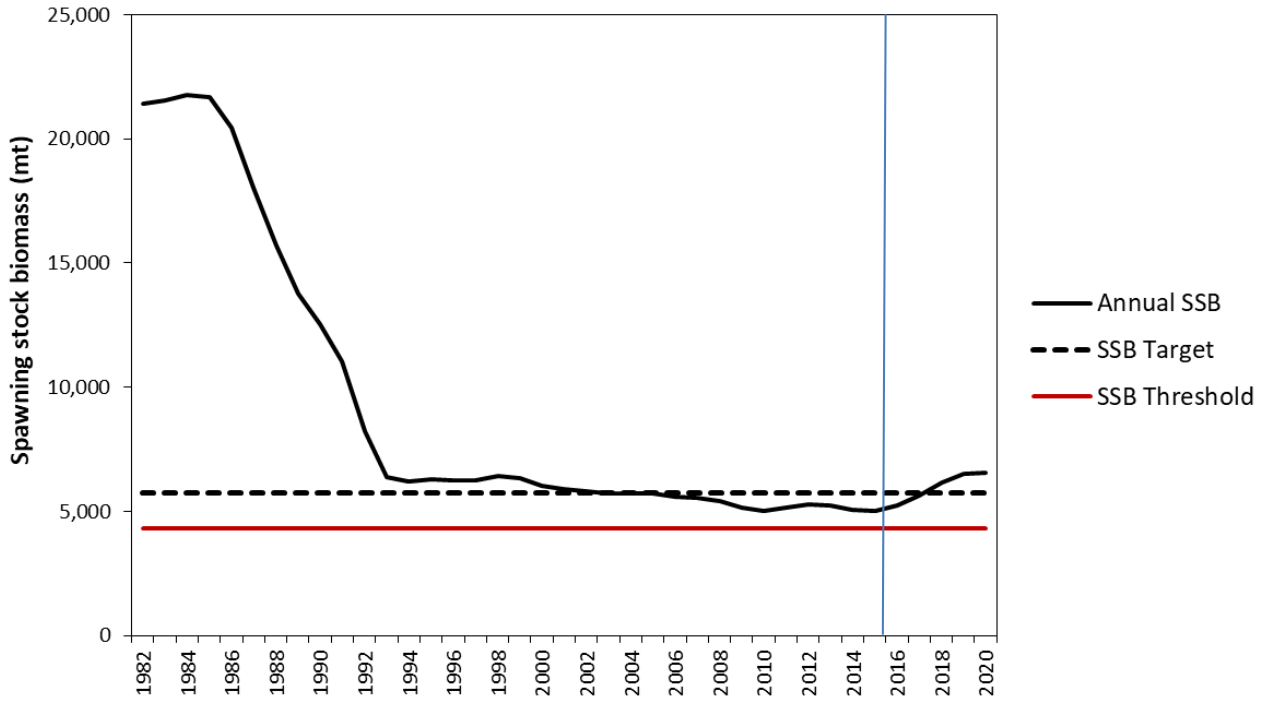
$F_{threshold}$ = 0.49



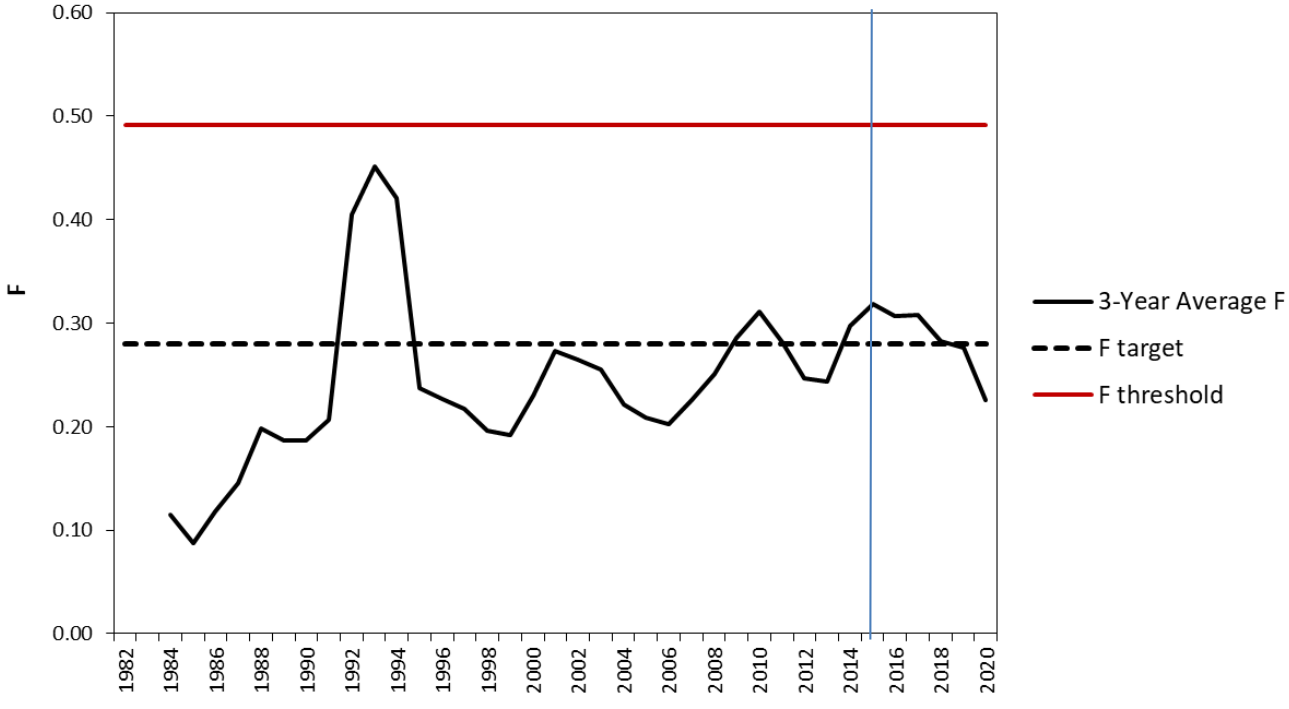
Stock Status

MARI

2015 status: Not overfished
2020 status: Not overfished
(No change)



2015 status: Overfishing not occurring
2020 status: : Overfishing not occurring
(No change)



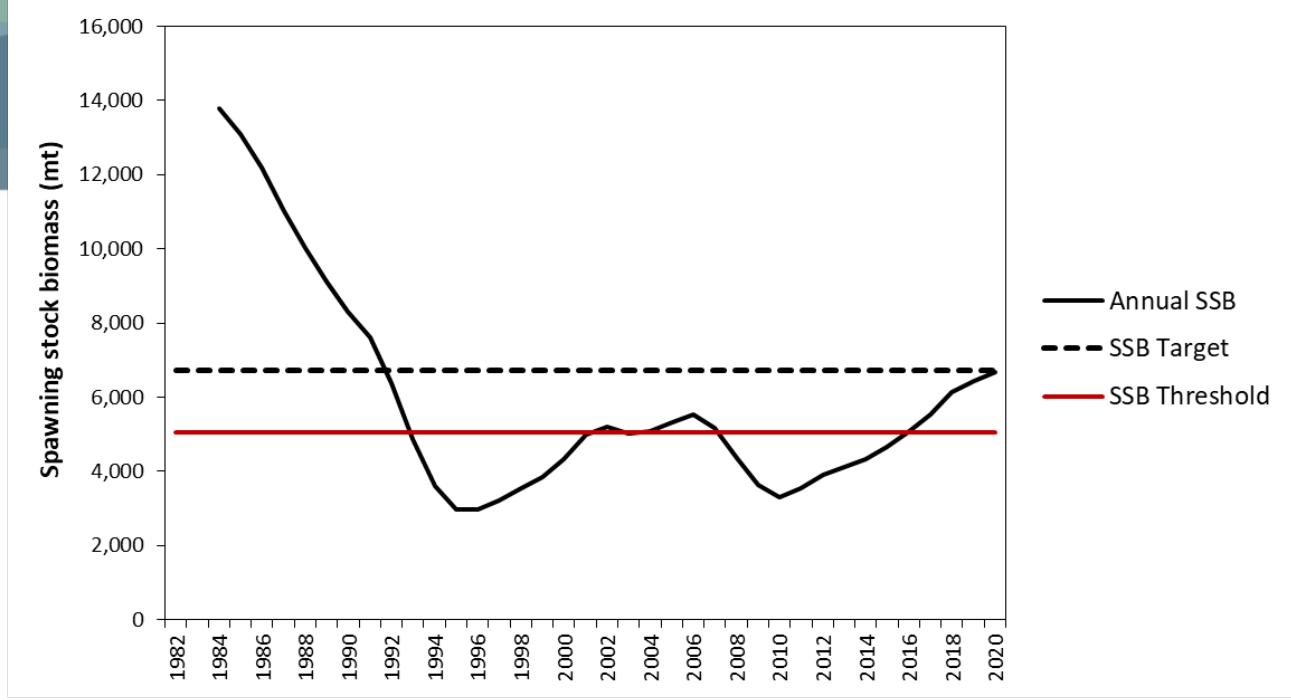
Stock Status

LIS

Not overfished

SSB_{2020} = 6,413 mt

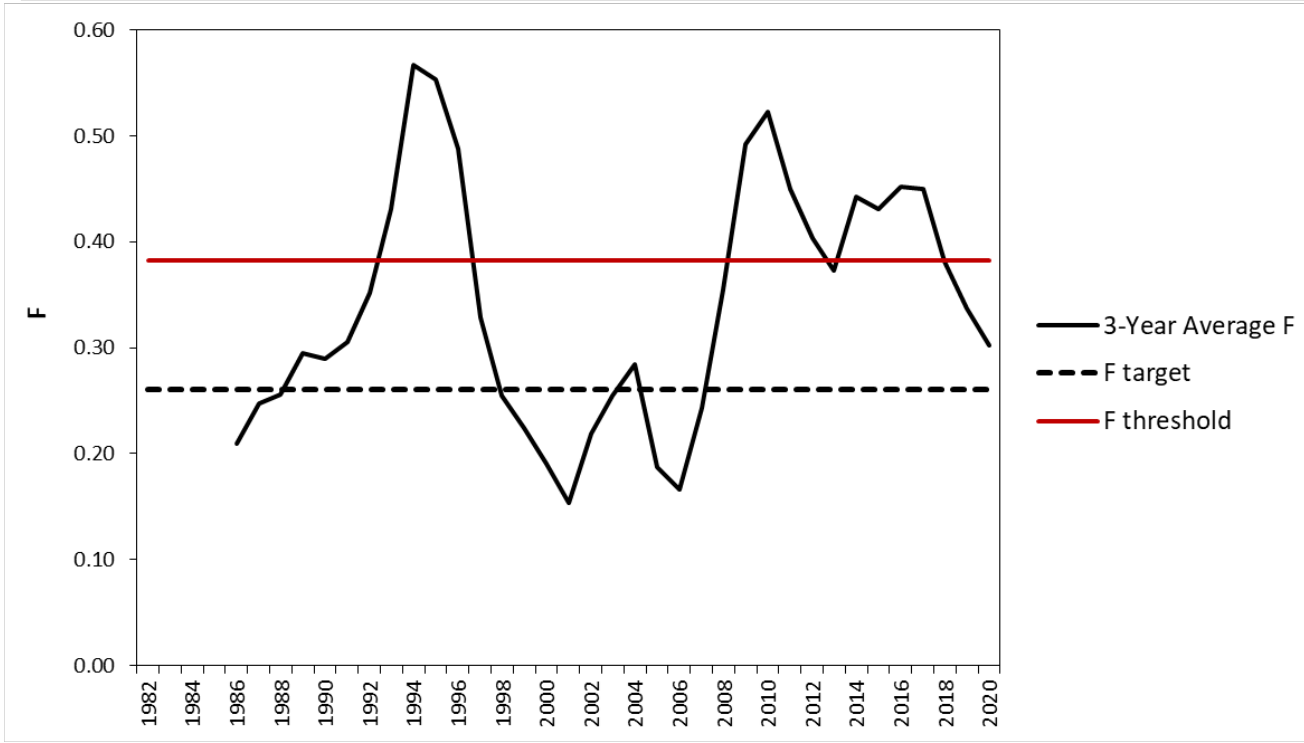
$SSB_{threshold}$ = 5,044 mt



Overfishing not occurring

3-year avg. F_{2020} = 0.30

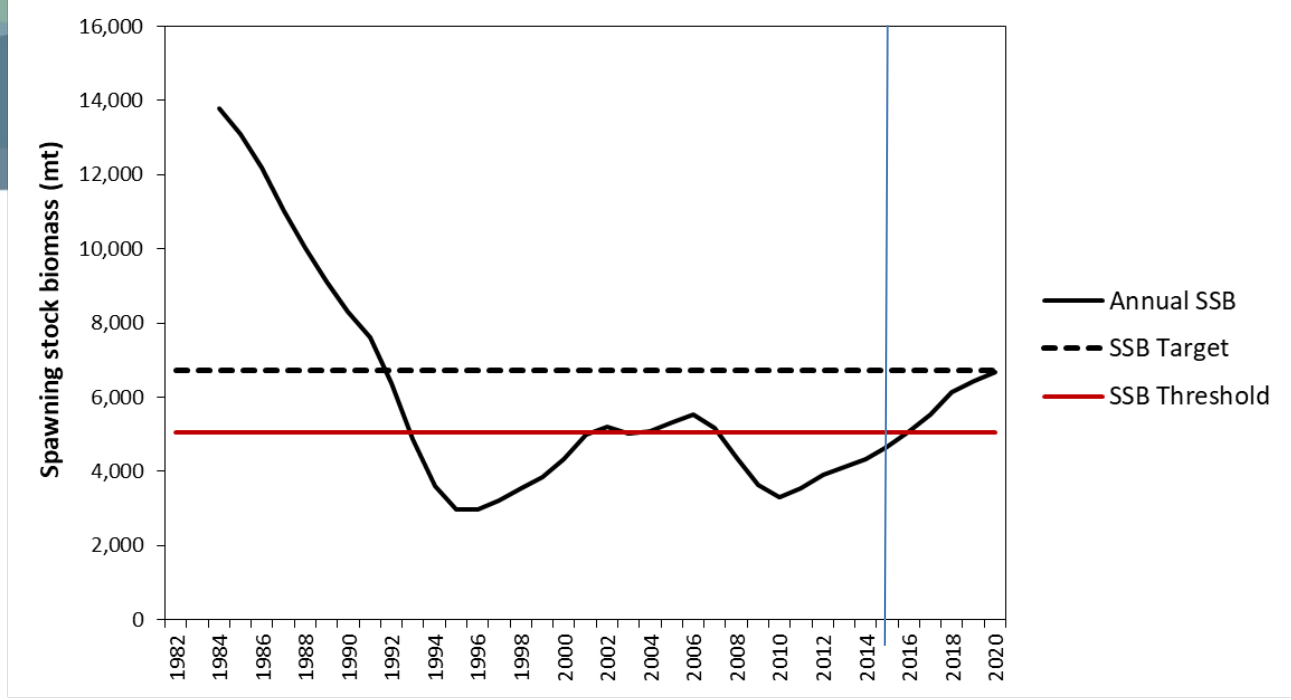
$F_{threshold}$ = 0.38



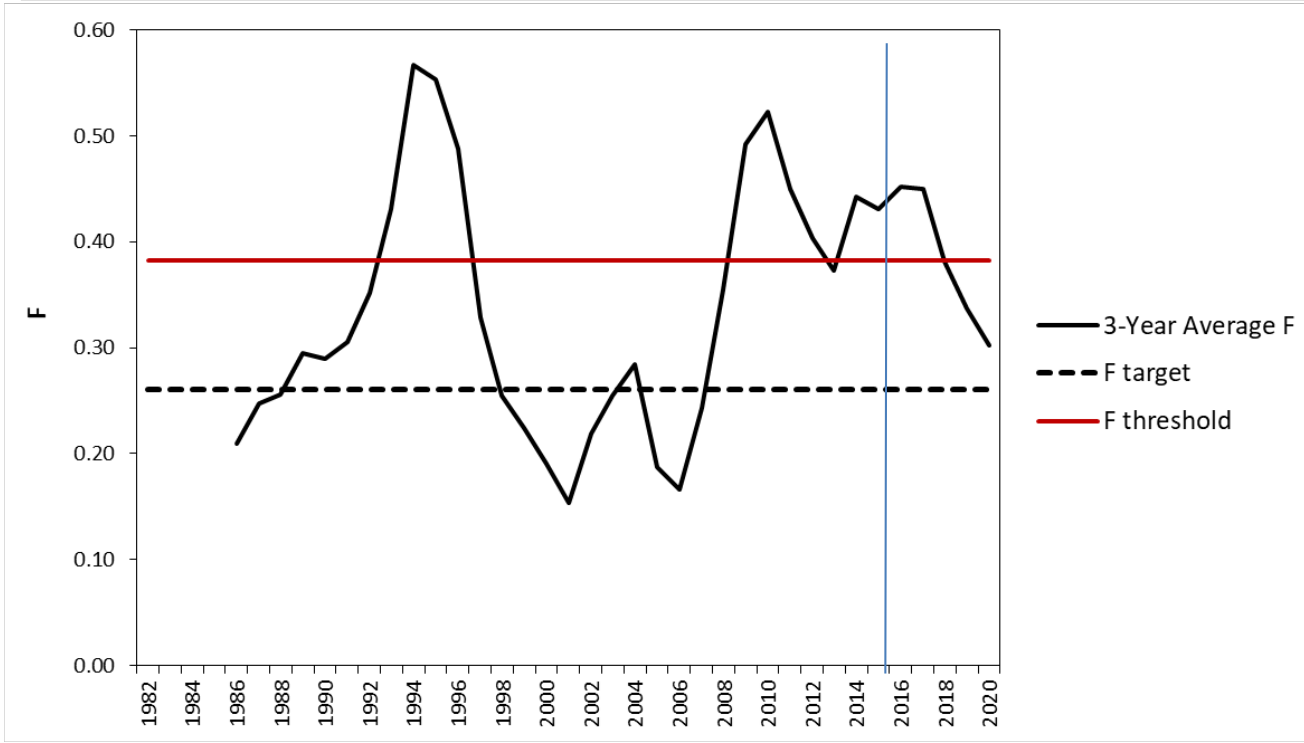
Stock Status

LIS

2015 status: Overfished
2020 status: Not overfished
(Improved)



2015 status: Overfishing
2020 status: : Overfishing not occurring
(Improved)



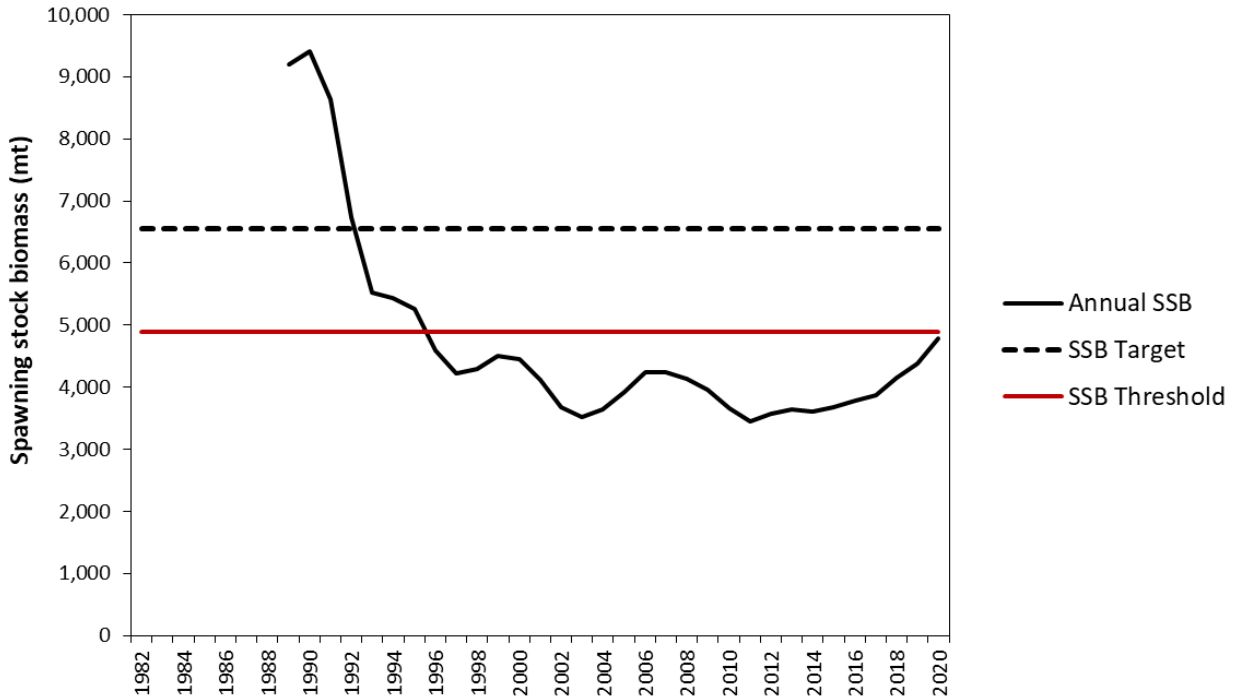
Stock Status

NJ-NYB

Overfished

SSB_{2020} = 4,782 mt

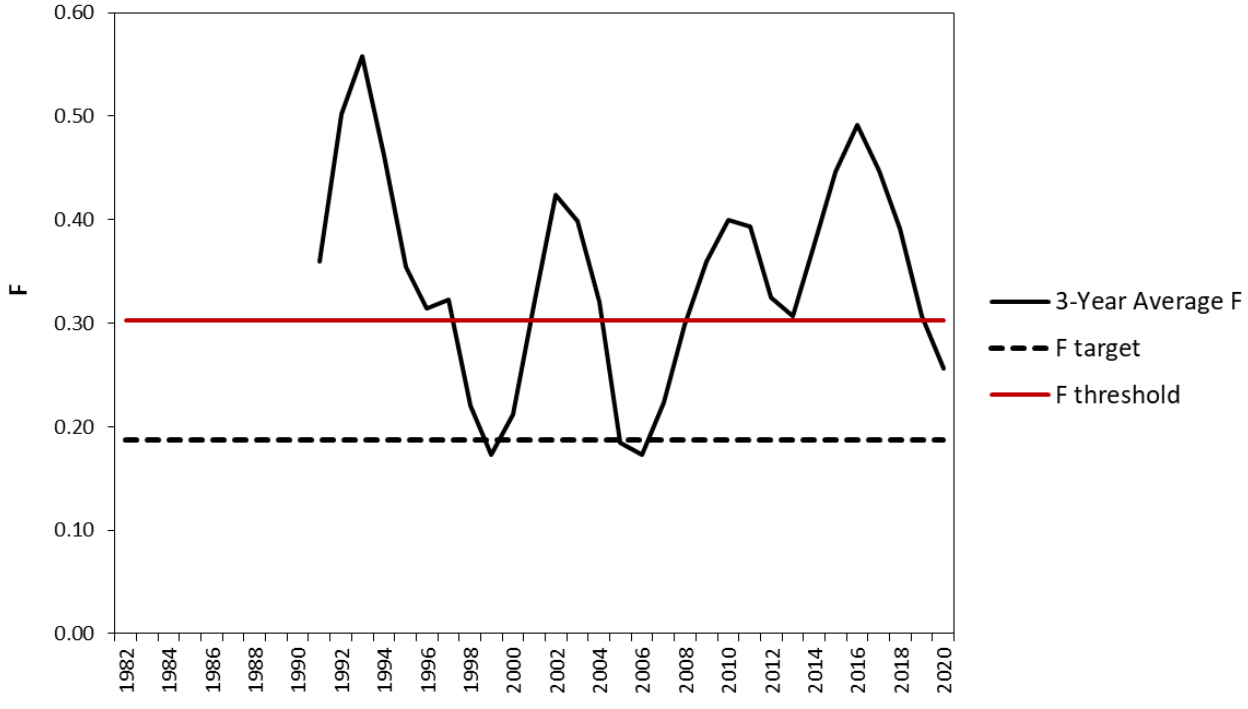
$SSB_{threshold}$ = 4,890 mt



Overfishing not occurring

3-year avg. F_{2020} = 0.26

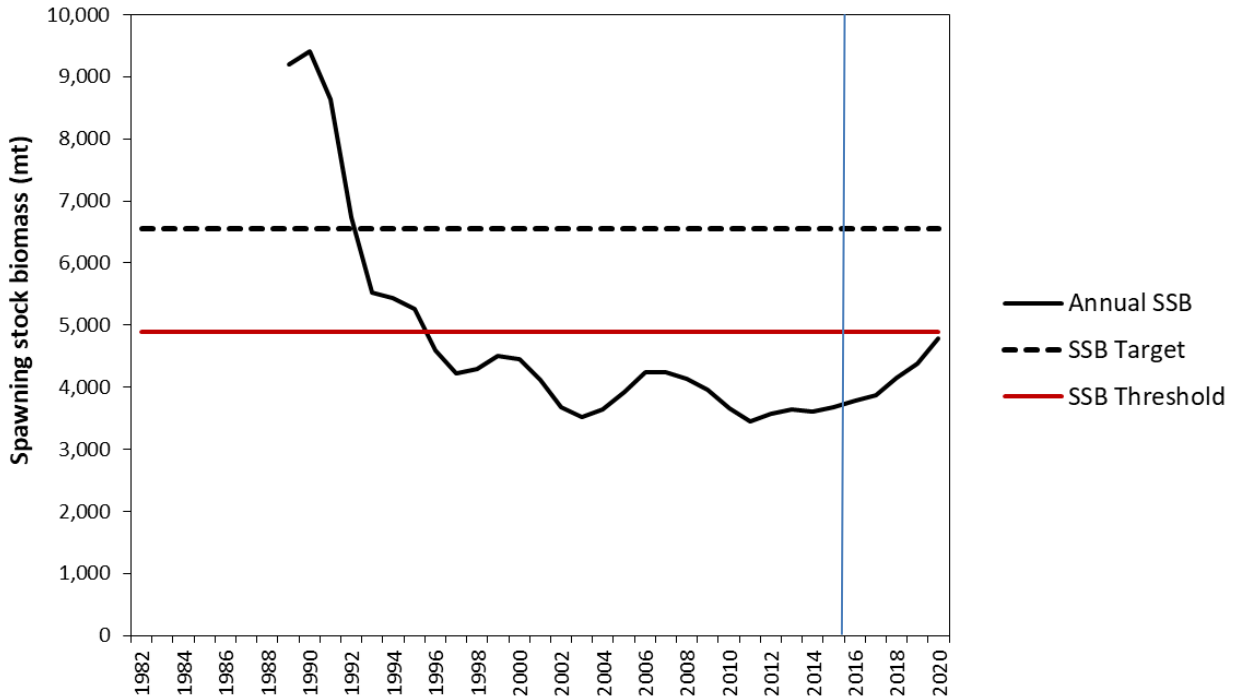
$F_{threshold}$ = 0.30



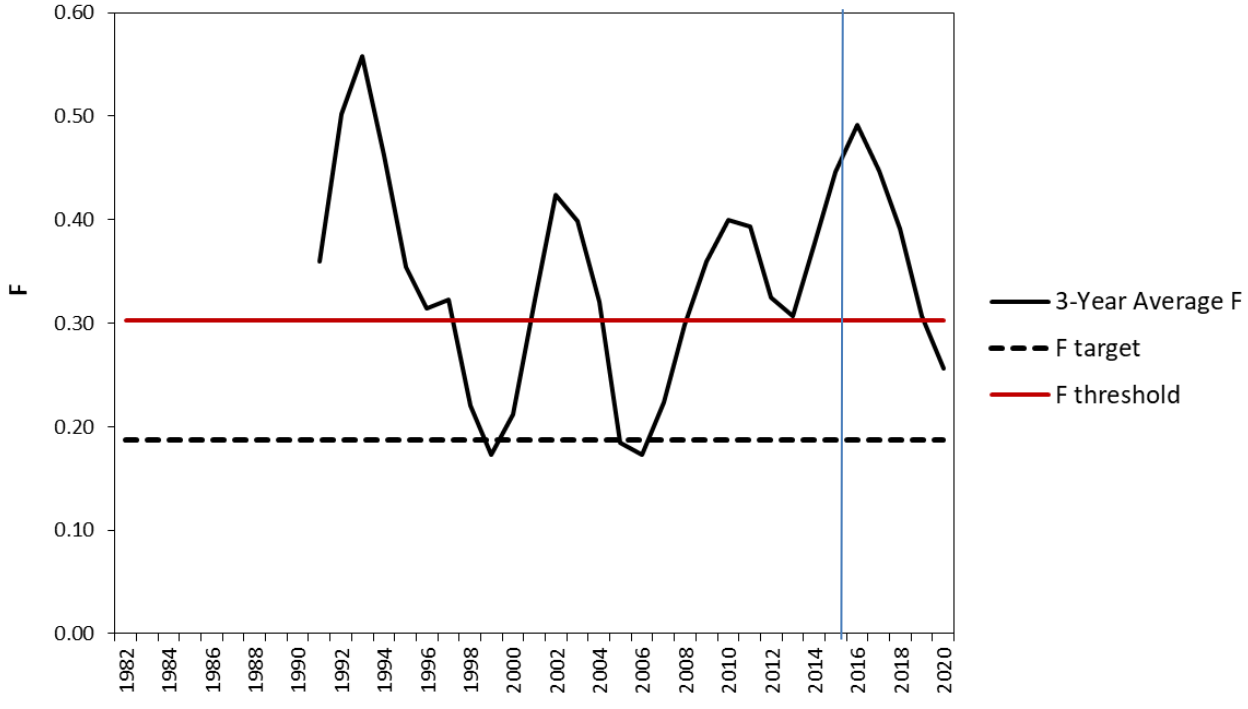
Stock Status

NJ-NYB

2015 status: Overfished
2020 status: Overfished
(No change)



2015 status: Overfishing
2020 status: : Overfishing not occurring
(Improved)



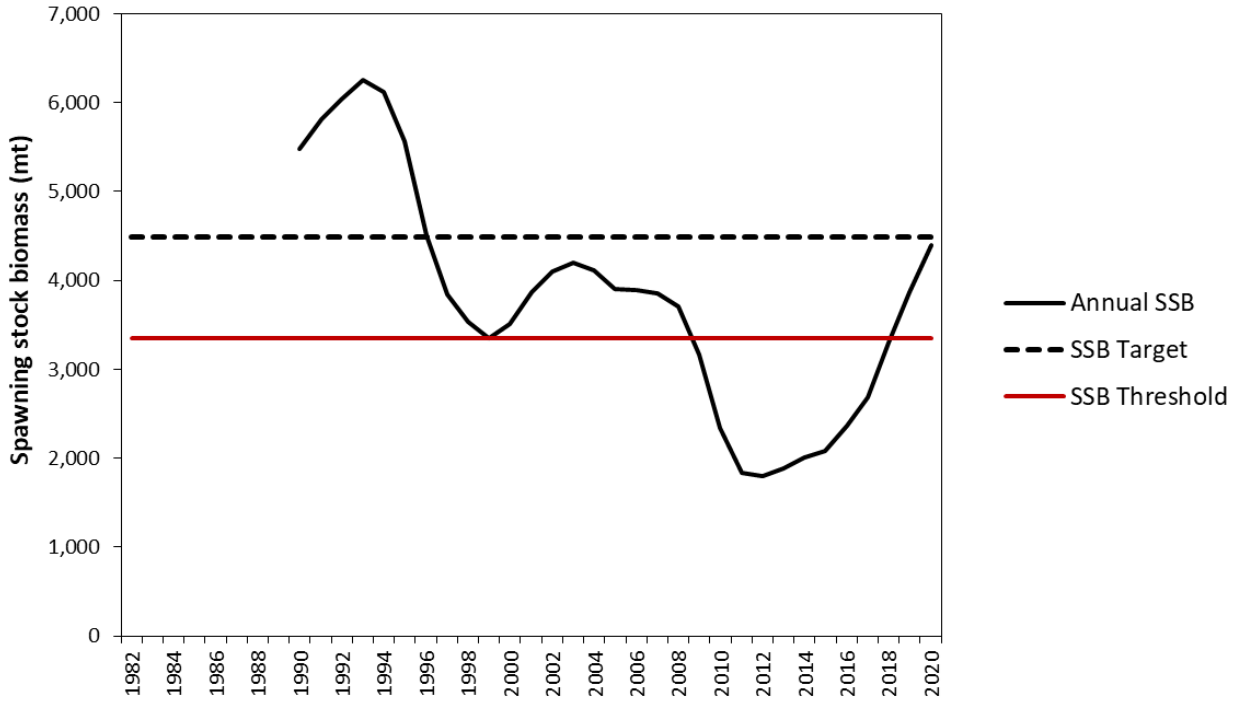
Stock Status

DMV

Not overfished

SSB_{2020} = 4,396 mt

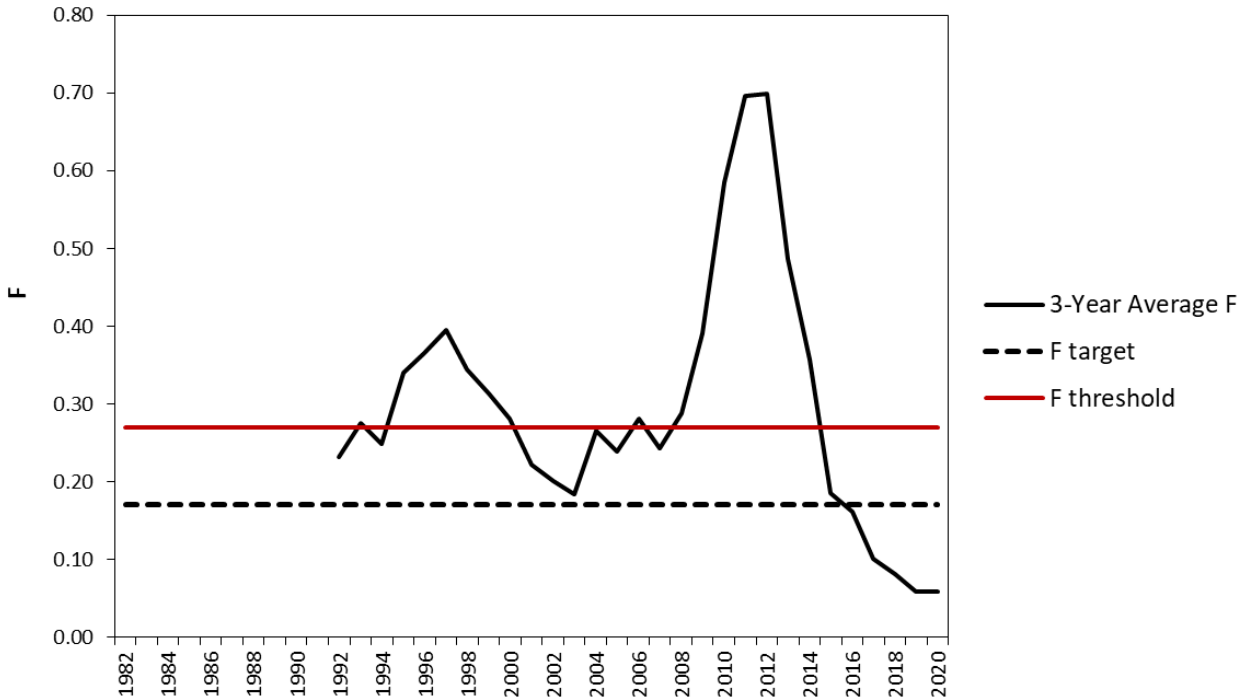
$SSB_{threshold}$ = 3,355 mt



Overfishing not occurring

3-year avg. F_{2020} = 0.06

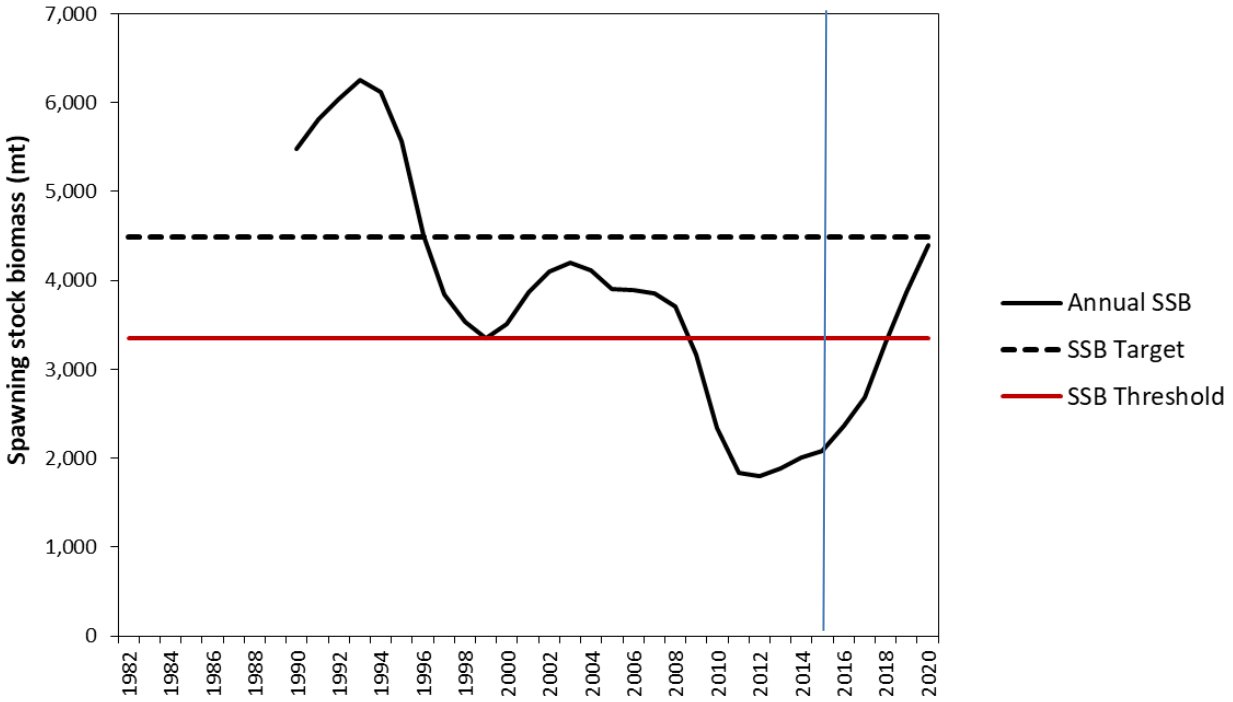
$F_{threshold}$ = 0.27



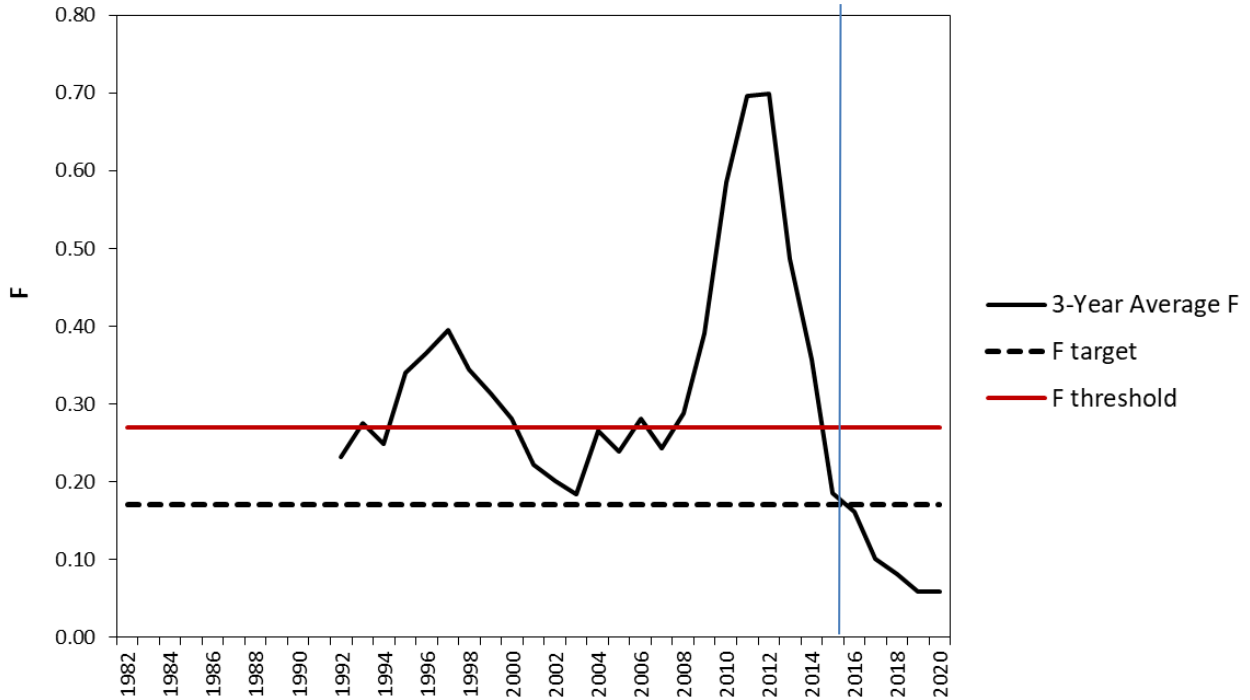
Stock Status

DMV

2015 status: Overfished
2020 status: Not overfished
(Improved)



2015 status: Overfishing not occurring
2020 status: : Overfishing not occurring
(No change)



Stock Status Summary

Region	SSB status	Change from 2015
MARI	Not overfished	No change
LIS	Not overfished	Improved
NJ-NYB	Overfished	No change
DMV	Not overfished	Improved

Region	F status	Change from 2015
MARI	No overfishing	No change
LIS	No overfishing	Improved
NJ-NYB	No overfishing	Improved
DMV	No overfishing	Improved

Projections

- The SAS conducted short-term projections for each region using the average of the most recent 3 years of removals (2018-2020)

- Projections showed the probablility that the stock would be overfished (SSB < SSB threshold) and the probability that F would be above the F target in 2025

Projections

Region	Probability of being at or below F Target in 3 years	Probability of being at or above SSB threshold in 3 years
MARI	100%	100%
LIS	3%	97%
NJ-NYB	15%	53%
DMV	100%	100%

QUESTIONS

Consider Management Response to 2021 Stock Assessment Update

Tautog Management Board

October 18, 2021

Management Background

- Amendment 1 (2017)
  - Fishing Mortality (F) Target (2.7.1)
    - Managing to Regional Target **F**
    - Probability of Achieving **F** Target
  - Process for Developing Regional Measures (4.2.1)

Managing to Regional Target F

- If **F** exceeds target, but below threshold, Board should consider steps to reduce **F** to the regional target level.
- If current **F** is below the target, no action necessary to reduce **F**.
  - LIS & NJ-NYB: Above the regional target but below the threshold (trending down; improvement from 2015 status)
  - MARI & DMV: below the regional target F

Probability of Achieving **F** Target: Management measures will be developed based on at least a 50% probability of achieving **F** Target

  - Board will consider guidance on probabilities for stock projections in the Risk and Uncertainty Decision Tool

Procedure to Develop Regional Measures

- Work through Regional Working Group to consider consistent or different measures for each state in a region.
- For different measures for one state within a region, the general procedure for *Conservation Equivalency* (Section 4.11) will be followed.
- All modifications to measures are to be reviewed by the TC and approved by the Board. Once approved by the Board, modifications to measures can be implemented.

Questions?

Risk & Uncertainty Policy: Tautog

Presented to the Tautog Management Board

October 18, 2021

Overview

- Background
- Tautog Risk and Uncertainty Process
- Tautog Risk and Uncertainty Report Review
  - Weightings
  - Technical Inputs
- Questions for Board Feedback
  - Weightings
  - Technical Inputs
  - Risk and Uncertainty Process

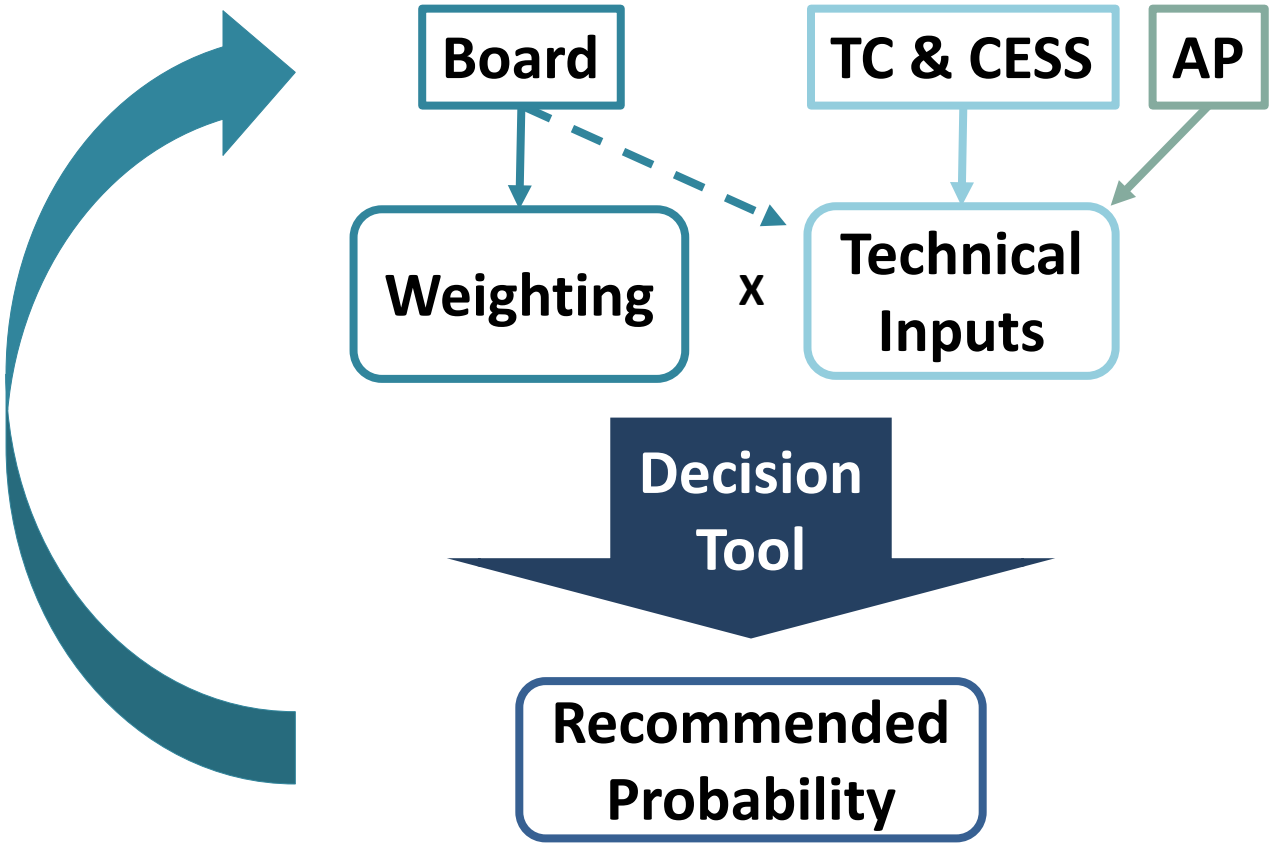
Background

- The Risk & Uncertainty Decision Tool is a method for arriving at a recommended risk level for a stock, given Commission priorities and characteristics of the stock and fishery
  - This risk level (the recommended probability of the achieving reference points) can then be used to identify management options that reach that probability of achieving the reference points in projections

Background

- The decision tool is a structured method for arriving at the Commission's **risk tolerance** for a species, and incorporating that into management
  - The tool answers the question: **How much risk is appropriate for the stock when making management decisions?**
- The tool ***does not*** assess the level of risk associated with specific management actions
  - This would require a different type of analysis, such as an MSE

Background


Board
TC & CESS
AP
Weighting
x
Technical Inputs
Decision Tool
Recommended Probability

R&U Process for Tautog

Developing the Decision Tool		
Technical Inputs: Stock Status, Model Uncertainty, Mgmt. Uncertainty, Envir. Uncertainty, Ecosystem Importance	TC	**Completed**
Technical Input: Socioeconomic Importance	CESS	**Completed**
Weightings	Tautog Board	**Completed**
Review Decision Tool	Tautog Board	**Fall Meeting**
Using the Decision Tool		
Produce preliminary probability (without socioeconomic component)	TC	
Technical Input: Management Effect	CESS	
Produce recommended probability	TC/ CESS	
Review & approve probability	Tautog Board	

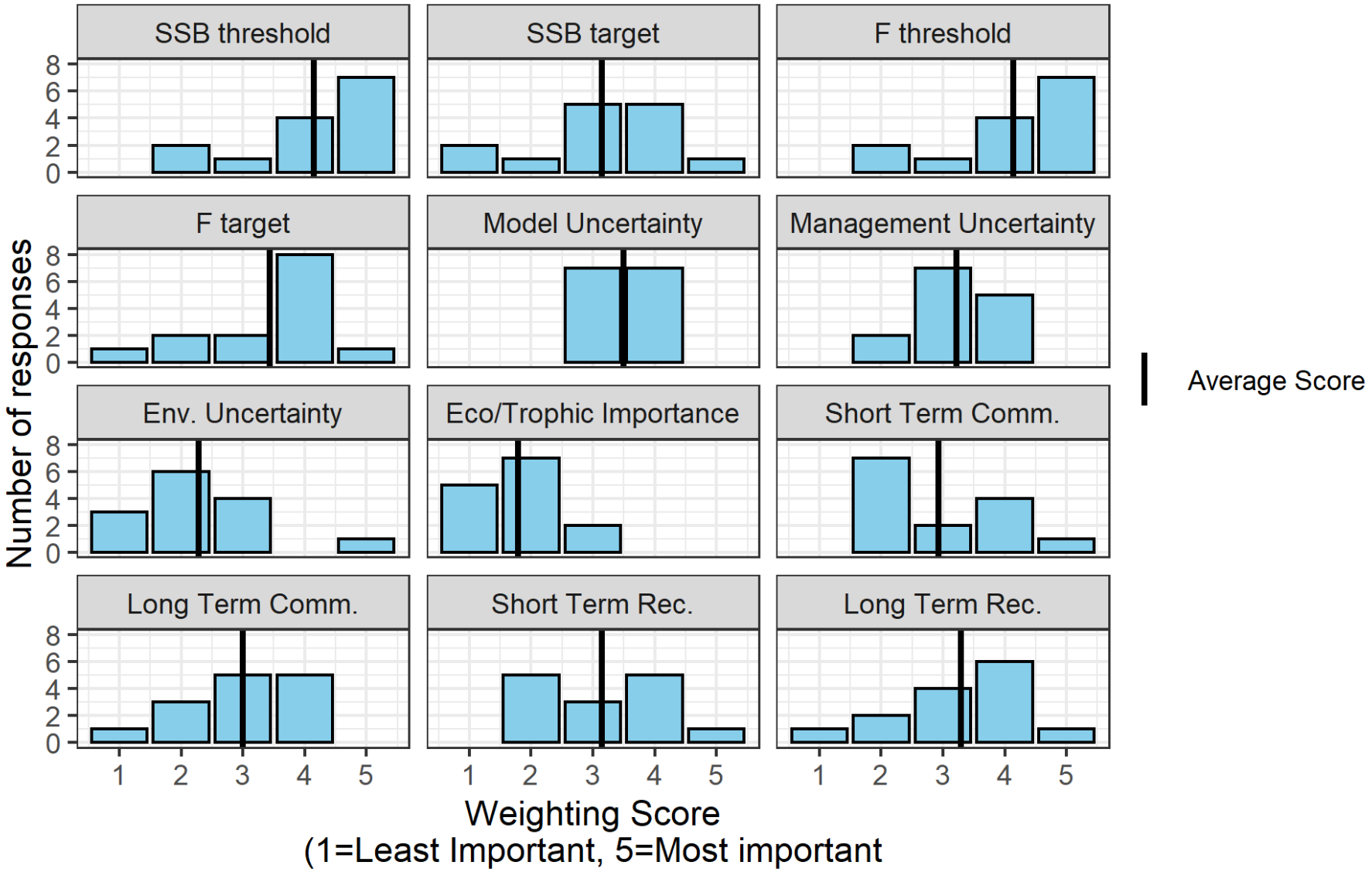
Tautog Risk & Uncertainty Report

Weightings

- Preliminary decision tool weightings are based on Tautog Board input, provided via a webinar poll and survey

Component	Survey Score	Weight
SSB Threshold	4.14	0.13
SSB Target	3.14	0.10
***F* Threshold**	4.14	0.13
***F* Target**	3.43	0.11
Model Uncertainty	3.50	0.11
Management Uncertainty	3.21	0.10
Environmental Uncertainty	2.29	0.07
Ecosystem Importance	1.79	0.06
Commercial Short-term	2.93	0.09
Commercial Long-term	3.00	0.09
Recreational Short-term	3.14	0.10
Recreational Long-term	3.29	0.10

Weightings


SSB threshold
SSB target
F threshold
F target
Model Uncertainty
Management Uncertainty
Env. Uncertainty
Eco/Trophic Importance
Short Term Comm.
Long Term Comm.
Short Term Rec.
Long Term Rec.
Number of responses
0
2
4
6
8
1
2
3
4
5
Weighting Score
(1=Least Important, 5=Most important
Average Score

Technical Inputs: MARI

- Stock Status (0 – 1):

P(SSB < SSB Threshold)	P(SSB < SSB Target)	P(*F* > *F* Threshold)	P(*F* > *F* Target)
0.000	0.069	0.000	0.000

- Model Uncertainty (0 – 5): 3.13
  - High MRIP PSEs; trawl survey not ideal for tautog; 2020 interruptions; sensitivity runs didn't affect status; retrospective large but conservative; some residual patterning; age-structure uncertainty
- Management Uncertainty (0 – 5): 2.83
  - 95% recreational; IUU fishing; stock status indicates success
- Environmental Uncertainty (0 – 5): 1.80
  - No significant concerns; potential climate vulnerability
- Ecosystem/Trophic Importance (0 – 5): 0.80
  - No known key ecosystem/trophic roles

Technical Inputs: LIS

- Stock Status (0 – 1):

P(SSB < SSB Threshold)	P(SSB < SSB Target)	P(*F* > *F* Threshold)	P(*F* > *F* Target)
0.003	0.528	0.259	0.754

- Model Uncertainty (0 – 5): 3.17
  - High MRIP PSEs + NY split; trawl survey not ideal for tautog; 2020 interruptions; sensitivity runs didn't change status; retrospective large but conservative; some residual patterning; age & length data uncertainty
- Management Uncertainty (0 – 5): 3.60
  - 96% recreational; sig. IUU concerns
- Environmental Uncertainty (0 – 5): 1.50
  - No significant concerns; potential climate vulnerability
- Ecosystem/Trophic Importance (0 – 5): 1.00
  - No known key ecosystem/trophic roles

Technical Inputs: NJ - NYB

- Stock Status (0 – 1):

P(SSB < SSB Threshold)	P(SSB < SSB Target)	P(*F* > *F* Threshold)	P(*F* > *F* Target)
0.491	0.947	0.239	0.722

- Model Uncertainty (0 – 5): 3.17
  - High MRIP PSEs + NY split; trawl survey not ideal for tautog; 2020 interruptions; sensitivity runs could affect SSB status; retrospective large but conservative; some residual patterning; catch/catch-at-age uncertainty
- Management Uncertainty (0 – 5): 3.67
  - 95% recreational; sig. IUU concerns
- Environmental Uncertainty (0 – 5): 1.80
  - No significant concerns; potential climate vulnerability
- Ecosystem/Trophic Importance (0 – 5): 1.00
  - No known key ecosystem/trophic roles

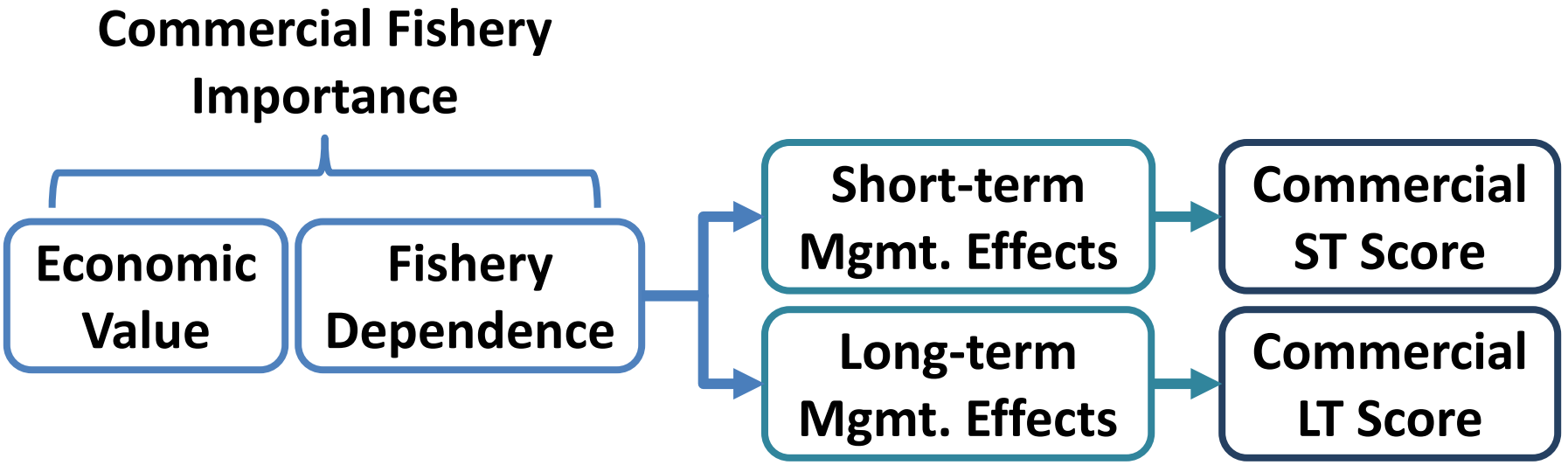
Technical Inputs: DelMarVa

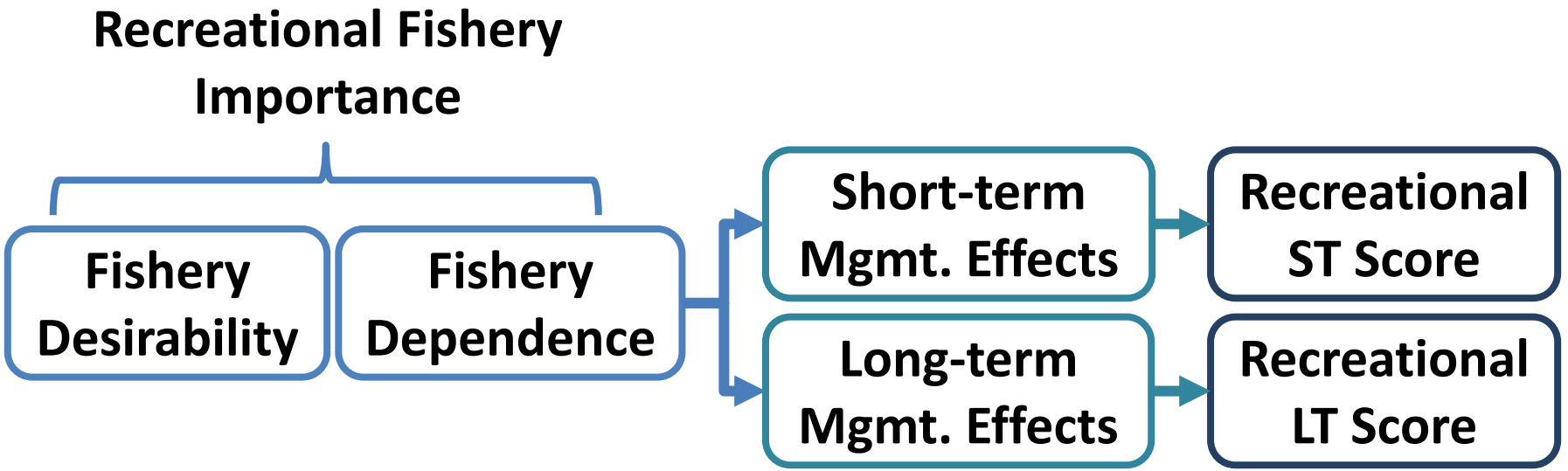
- Stock Status (0 – 1):

P(SSB < SSB Threshold)	P(SSB < SSB Target)	P(*F* > *F* Threshold)	P(*F* > *F* Target)
0.085	0.378	0.000	0.012

- Model Uncertainty (0 – 5): 4.00
  - High MRIP PSEs; no FI index; retrospective patterning in risky direction; residual patterning; limited sensitivity runs due to lack of indices; catch estimate uncertainty
- Management Uncertainty (0 – 5): 3.20
  - 99% recreational; IUU fishing
- Environmental Uncertainty (0 – 5): 1.40
  - No significant concerns; potential climate vulnerability
- Ecosystem/Trophic Importance (0 – 5): 1.40
  - No known key ecosystem/trophic roles

Socioeconomic Criteria





Technical Inputs: Socioeconomic

Socioeconomic scores were calculated based on coastwide socioeconomic indicators & applied to all regions.

- Commercial Economic Value (0 – 5): 2
  - The average (2018-20) annual ex-vessel value of tautog from VA to MA was $1,383,049 (2020 dollars)
- Commercial Community Dependence (0 – 5): 4
  - The average (2018-20) commercial community dependence for the top ten communities was 35.1%
- Recreational Desirability (0 – 5): 3
  - The average (2018-20) annual proportion of tautog targeted trips to total trips was 2.4%
- Recreational Community Dependence (0 – 5): 2
  - The average (2018-20) recreational community dependence for the top ten communities was 7.2%

Questions for the Board

Report

- Are there any questions or feedback on:
  - Weightings?
  - Technical Inputs?

Next Steps

- Would the Board like to task the TC/CESS with any additional analyses?
  - If there will be a management action → producing the recommended probability
  - If there will not be a management action → producing hypothetical scenarios to illustrate decision tool use

Process

- Is there any feedback on the R&U Process (webinar, survey, etc.)?

Develop Guidance for LEC Review of Commercial Tagging Program

Tautog Management Board

August 18, 2021

Background

- August 2021: Board was presented initial reports (TC, Industry, LEC) on implementation of tagging program
  - Focus was general
  - Assessing compliance & reducing illegal harvest has not been done in-depth

- Chair Bill Hyatt has put together questions for the LEC to answer to aid the Board in assessment of compliance and impact in reducing illegal harvest

For Board Consideration

- Review Questions and be ready to provide feedback

- If the Board agrees on the questions today, the LEC may be able to provide responses back to the Board by the 2022 Winter Meeting
  - 4 questions were included in memo (supplemental materials)

Questions

1. **Are there any areas of concern (ex. specific fisheries or markets) where compliance with tautog tagging requirements remains a significant issue? Please be as specific as possible.**

Questions

2. **Is there a practical way for Agencies to collect information on non-compliance with tagging requirements in the fishery or markets that could inform and improve the efficiently and effectiveness of law enforcement efforts?**

Examples might include specific types of advance information gathered by agency biologists or by partner organizations. Please be as specific as possible.

Questions

3. **Any additional thoughts or recommendations for improving the efficiency and effectiveness of enforcement of the tagging program?**

Questions

4. **Now that the tagging program has been underway for a couple of years, what is your expectation on if the program will ultimately be successful at reducing illegal fishing and markets?**

Board Considerations

- Feedback on the draft questions
- Agree on questions to pose to LEC on compliance with the tagging program and impact on illegal harvest