Regional and Coastwide Update Assessment Results

Tautog Management Board

October 2016

Presentation Overview

- Will go through region by region with assessment results, south to north

- Will end with Coastwide info for context

- Each region will present briefly:
  - Data and timeseries
  - Harvest and Indices
  - Results
  - Biological Reference Points and Stock Status

General Comments

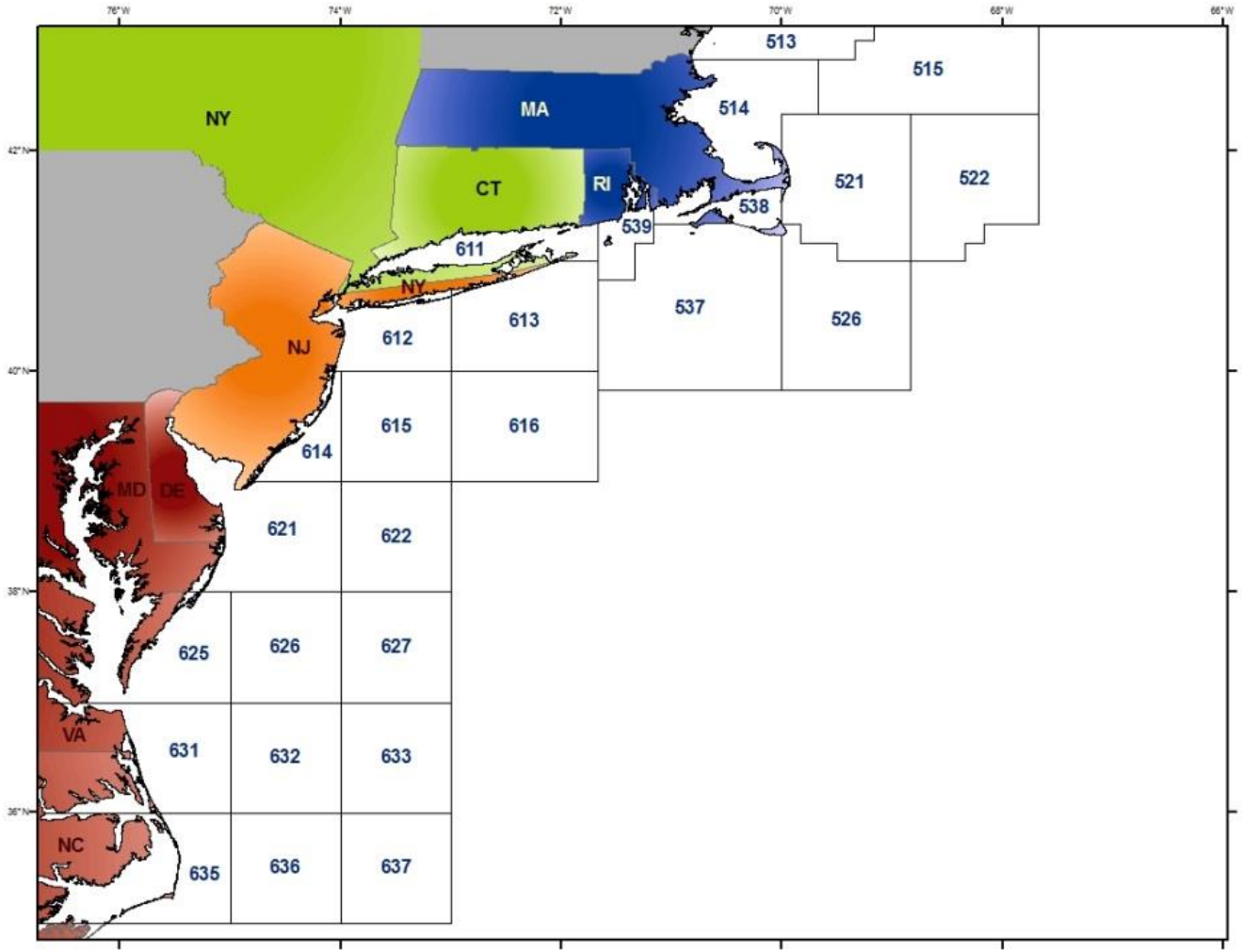
- Once regional structure was determined, basically followed the format and structural elements approved through the benchmark

- These approved elements were applied to the appropriate regions

- Consistent across regions: M, plus group (12), selectivity functional form, discard mort rate

Regional Structure

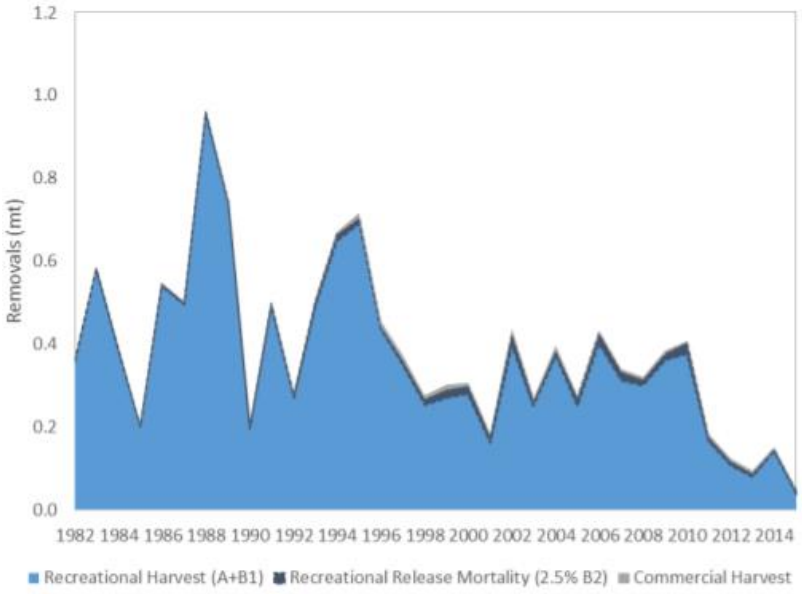
- The tautog stock will now be assessed with a regional approach

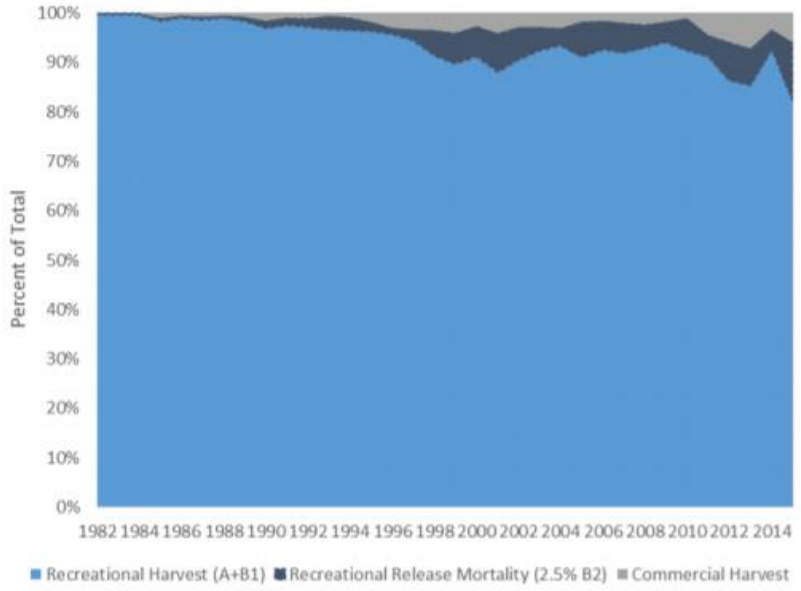


Region: DelMarVa - Data

- Recreational harvest 1990-2015
- Recreational discards 1990-2015
  - 2.5% mortality
- Commercial harvest 1990-2015
- Commercial discards not included
- No fishery independent survey data for this region
- Fishery dependent index data (MRIP CPUE)
- FI and FD biological samples

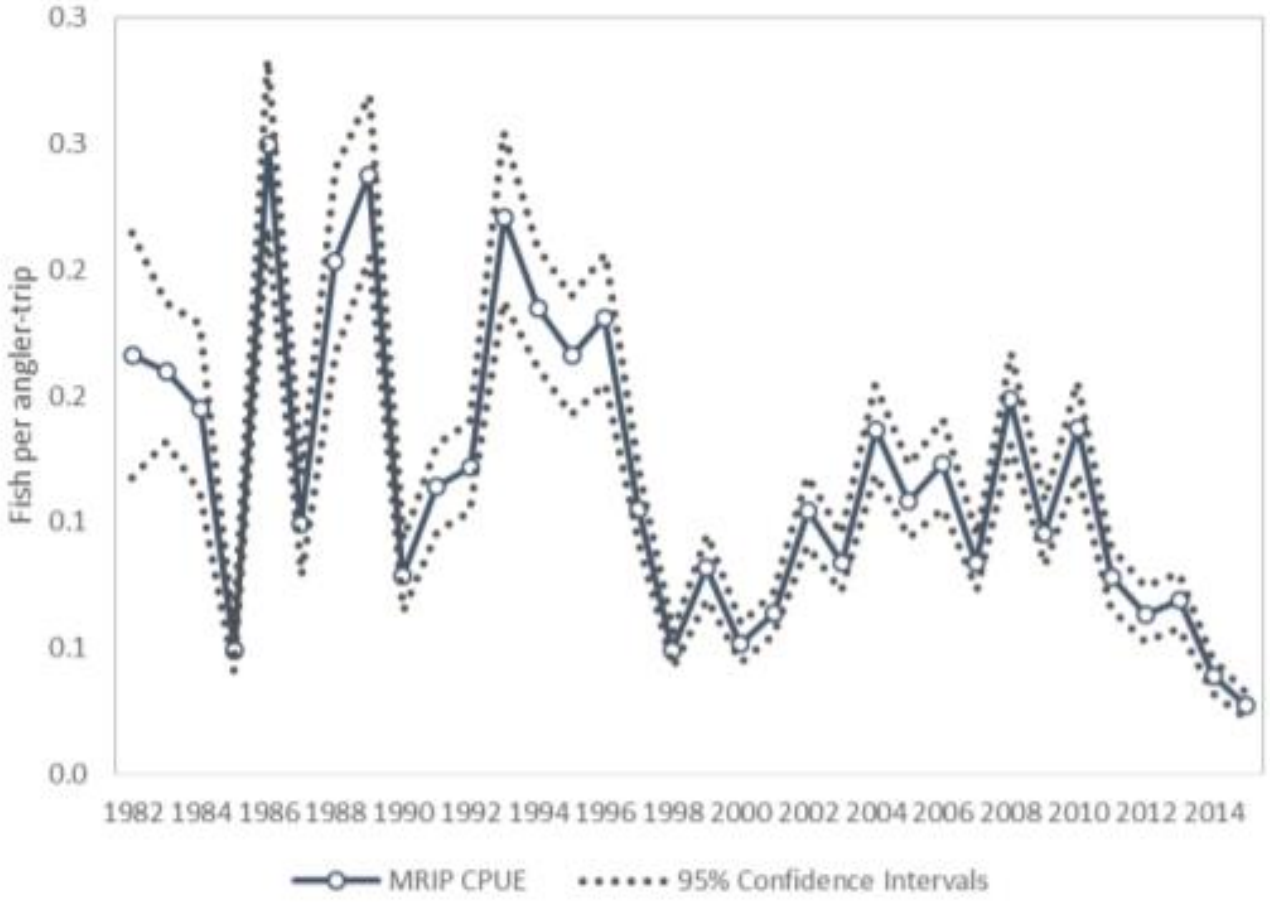
Region: DelMarVa - Harvest



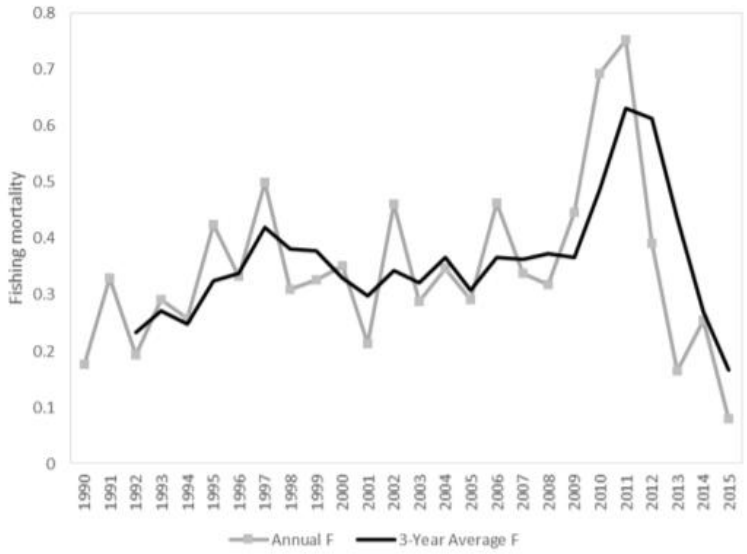


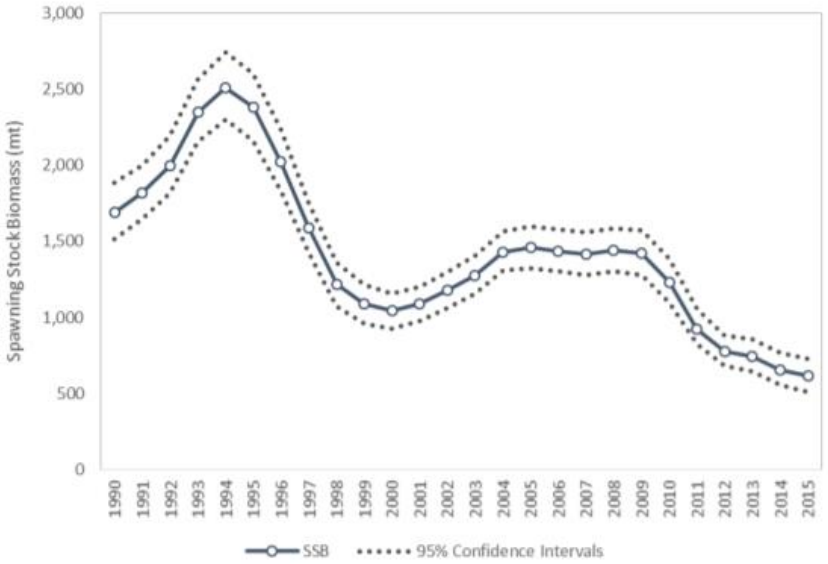
Region: DelMarVa - Indices

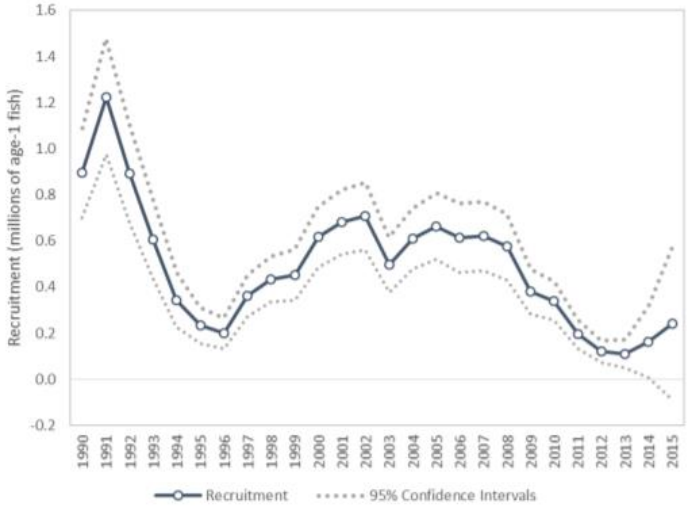
- MRFSS CPUE (adult)



Region: DelMarVa - Model results







Region: DelMarVa - Biological reference points

- MSY-based reference points unreliable
  - Poor fit to SR relationship
- Default to SPR based reference points
- Target = 40% SPR
- Threshold = 30% SPR

	F	SSB (MT)
30% SPR	0.24	1,447
40% SPR	0.16	1,919

- Consistent with benchmark

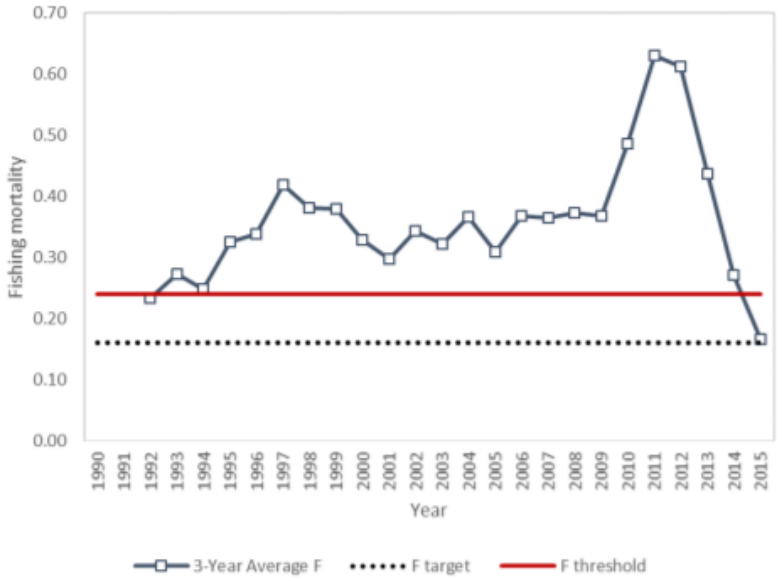
Region: DelMarVa - Stock status

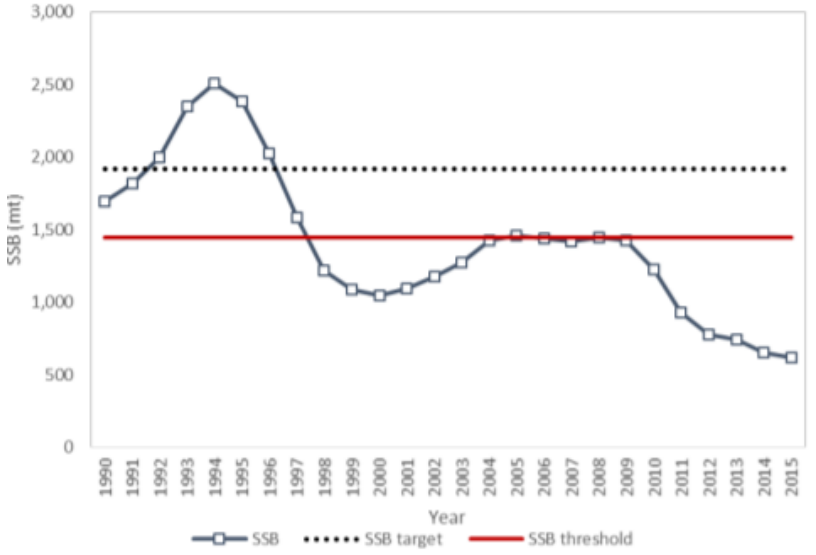
DelMarVa:

- Terminal estimates
  - $F_{3yr\ avg} = 0.16$
  - SSB = 620.9 mt

- overfished, but

- overfishing is not occurring

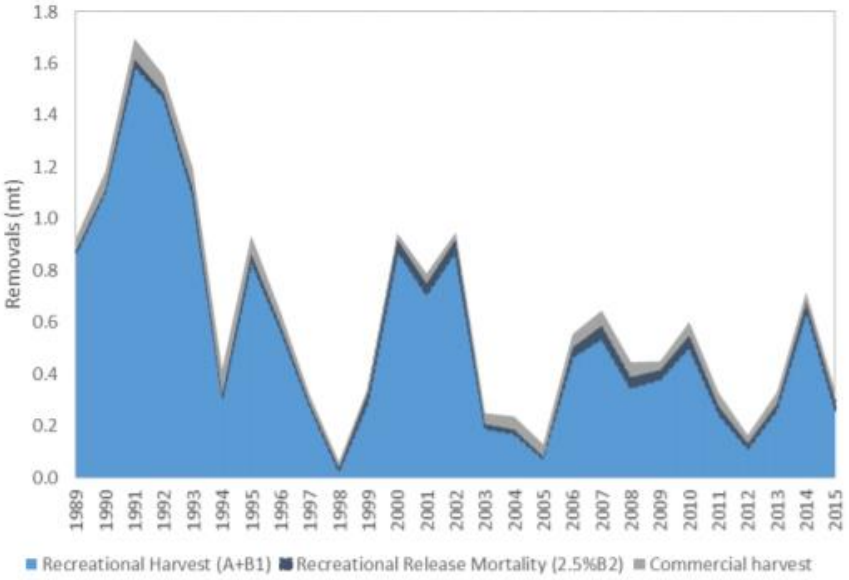


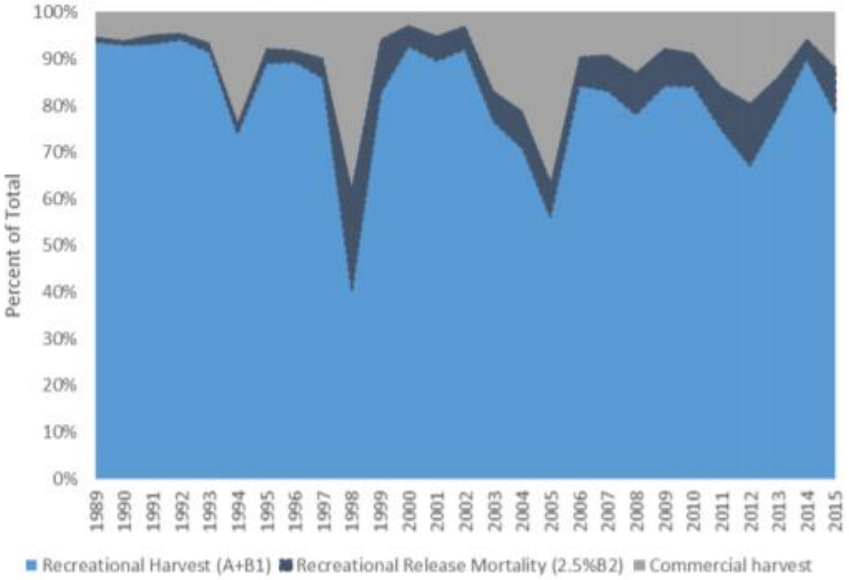


Region: NJ-NYB - Data

- Recreational harvest 1989-2015
- Recreational discards 1989-2015
  - 2.5% mortality
- Commercial harvest 1989-2015
- Commercial discards not included
- Fishery independent survey data (WLI Seine, NJ Ocean Trawl)
- Fishery dependent index data (MRIP CPUE)
- FI and FD biological samples

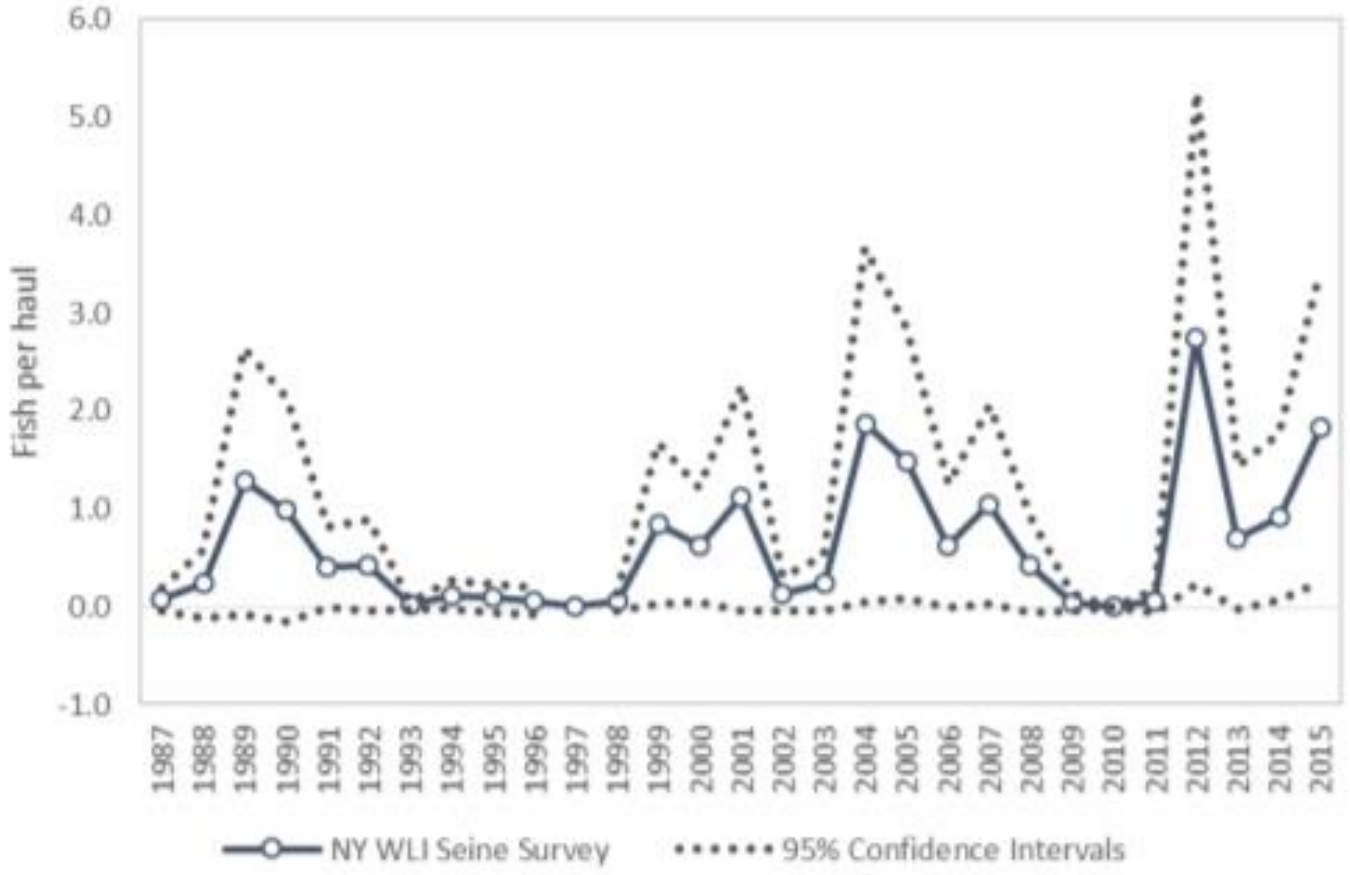
Region: NJ-NYB - Harvest





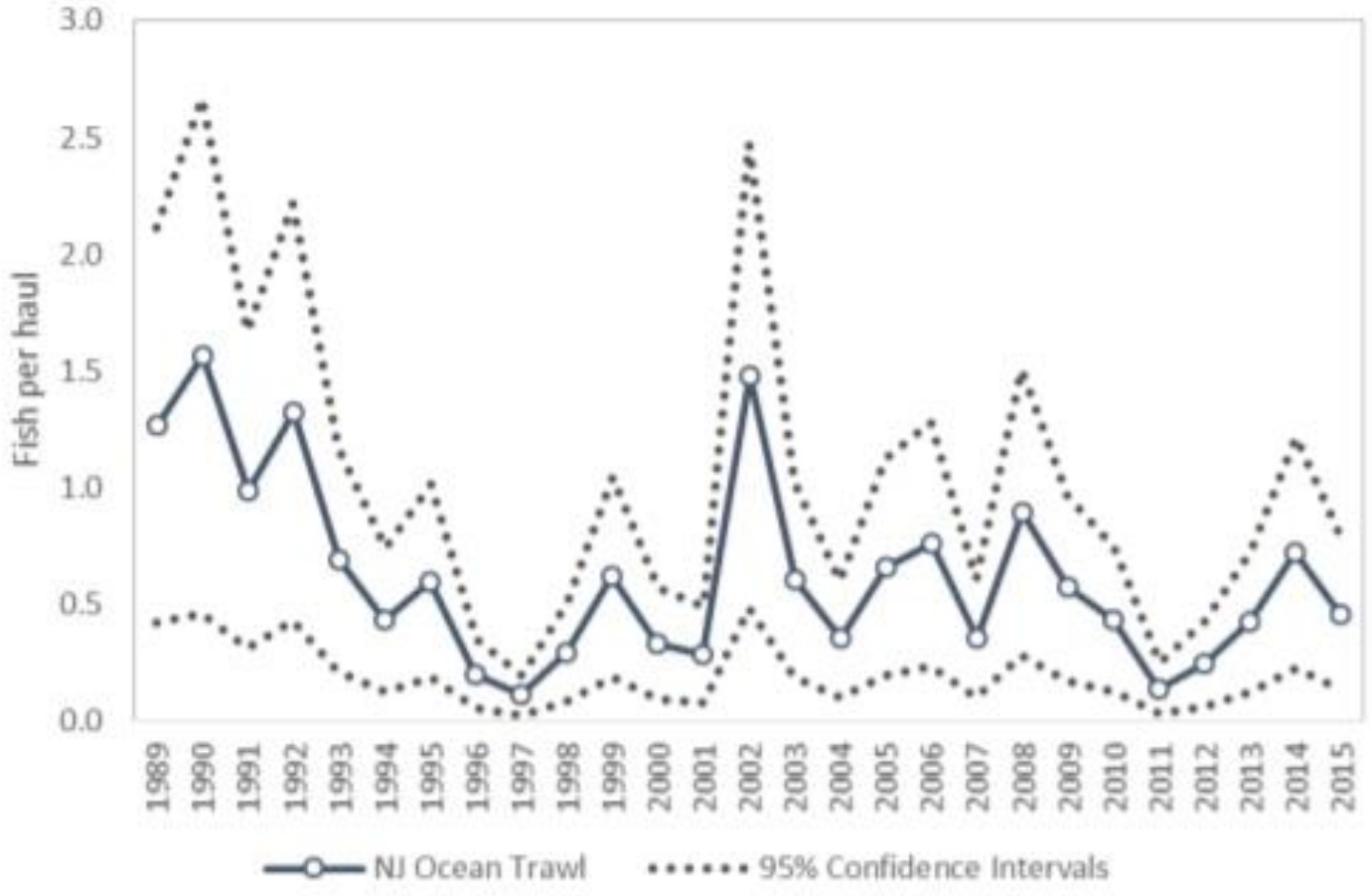
Region: NJ-NYB - Indices

- WLI Seine Survey



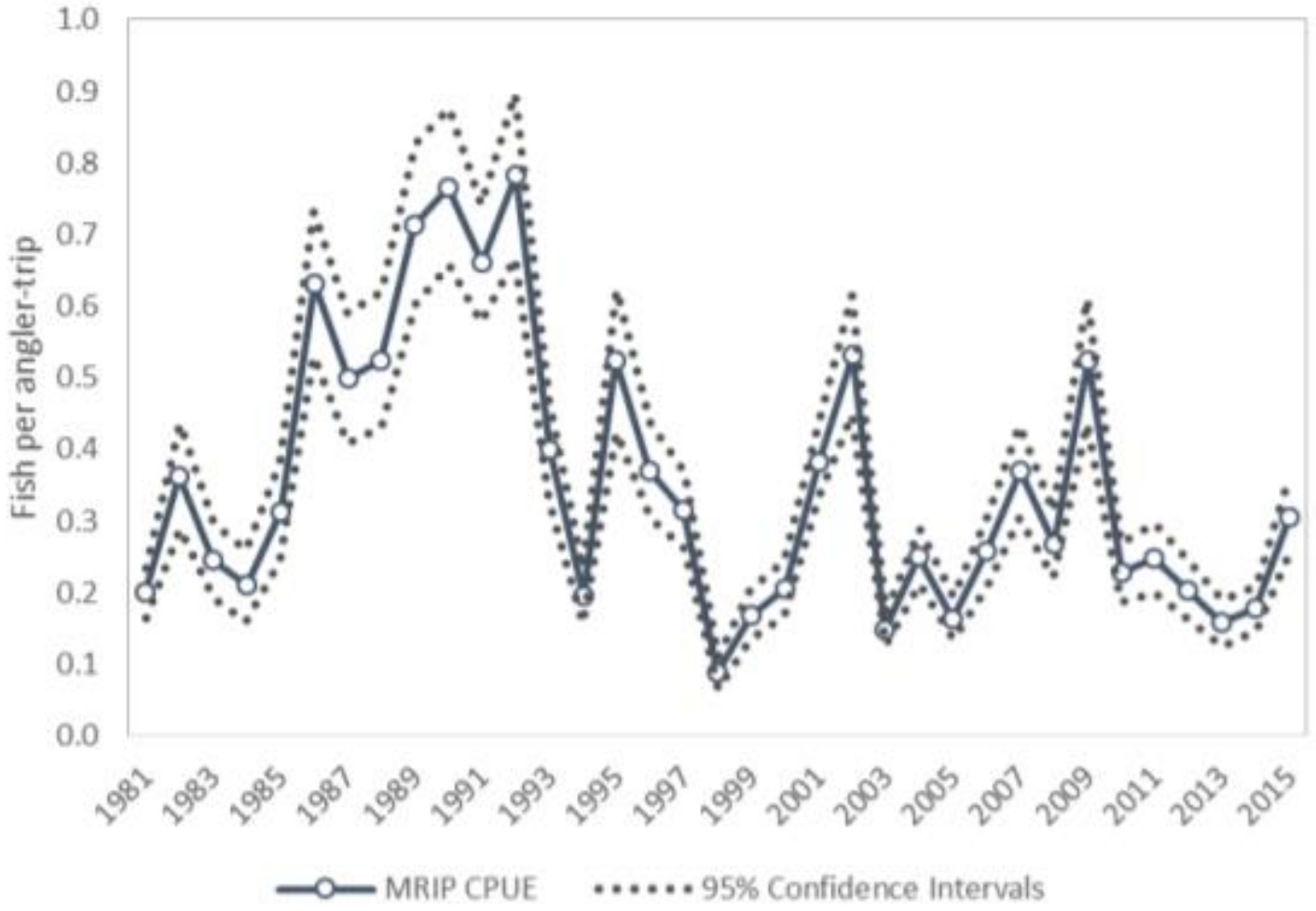
Region: NJ-NYB - Indices

- NJ Ocean Trawl Survey

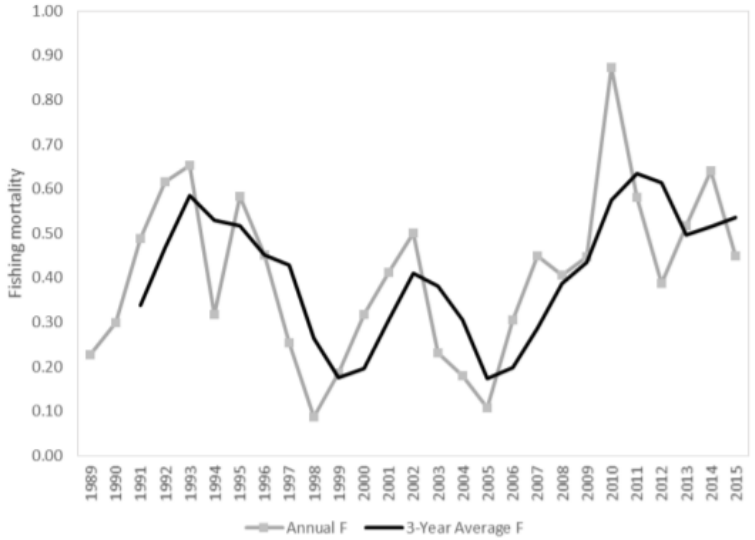


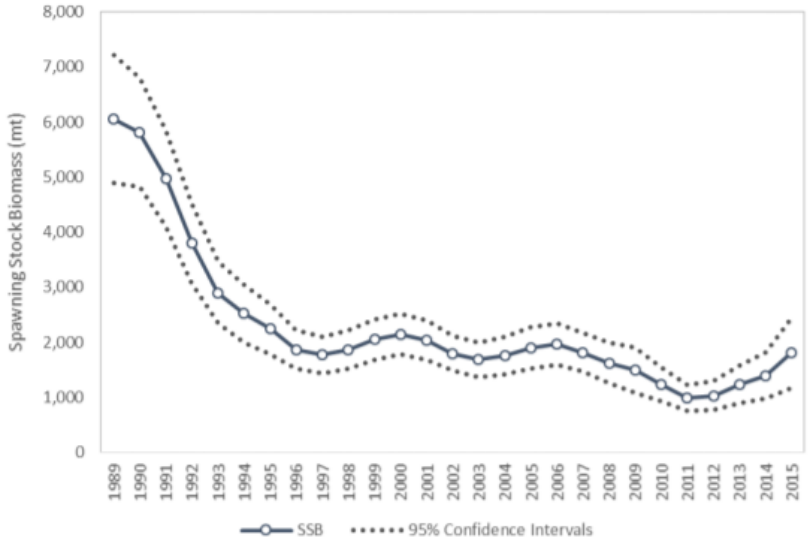
Region: NJ-NYB - Indices

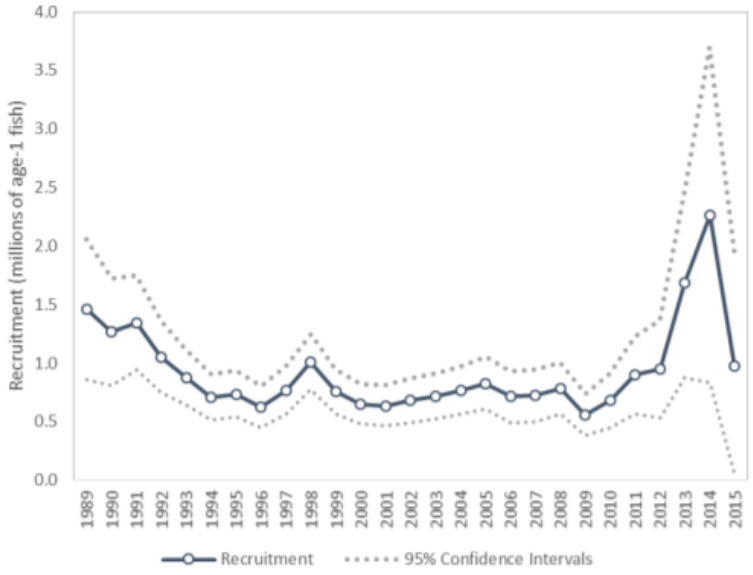
- MRIP CPUE



Region: NJ-NYB - Model results







Region: NJ-NYB - Biological reference points

- MSY-based reference points unreliable
  - Poor fit to SR relationship
- Default to SPR based reference points
- Target = 40% SPR
- Threshold = 30% SPR

	F	SSB (MT)
30% SPR	0.34	2,351
40% SPR	0.20	3,154

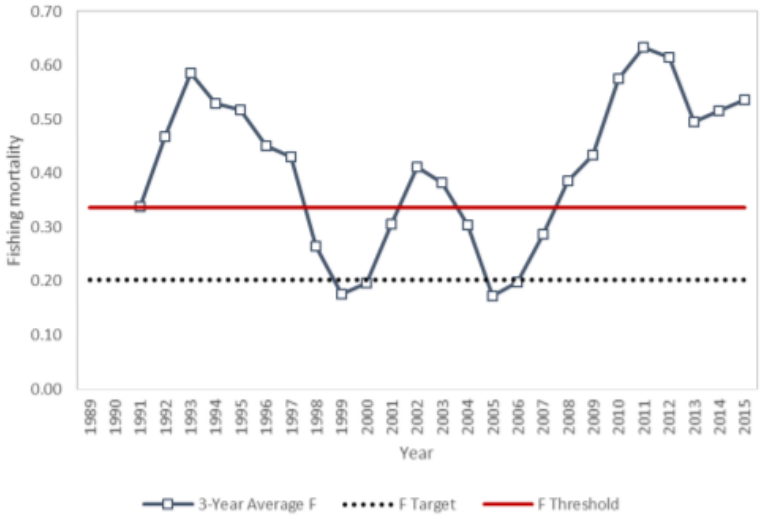
Region: NJ-NYB - Stock status

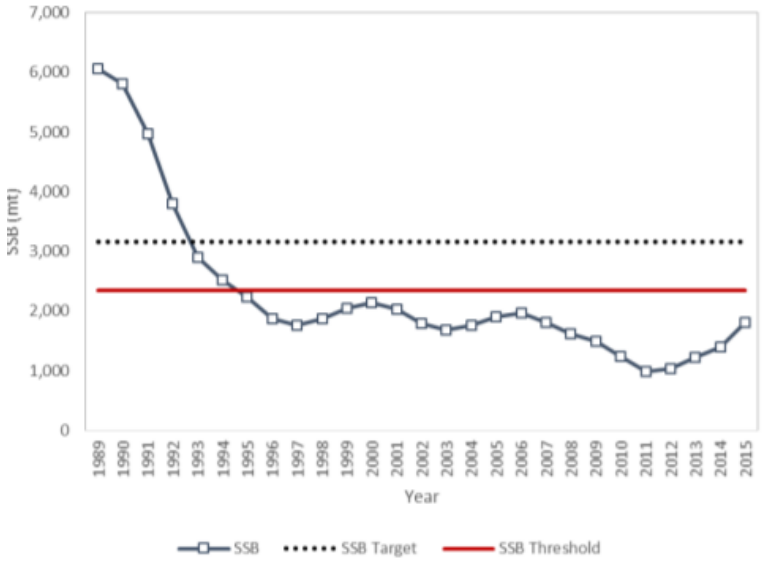
NYNJ:

- Terminal estimates
  - $F_{3yr\ avg} = 0.54$
  - SSB = 1,809 mt

- overfished, and

- overfishing is occurring

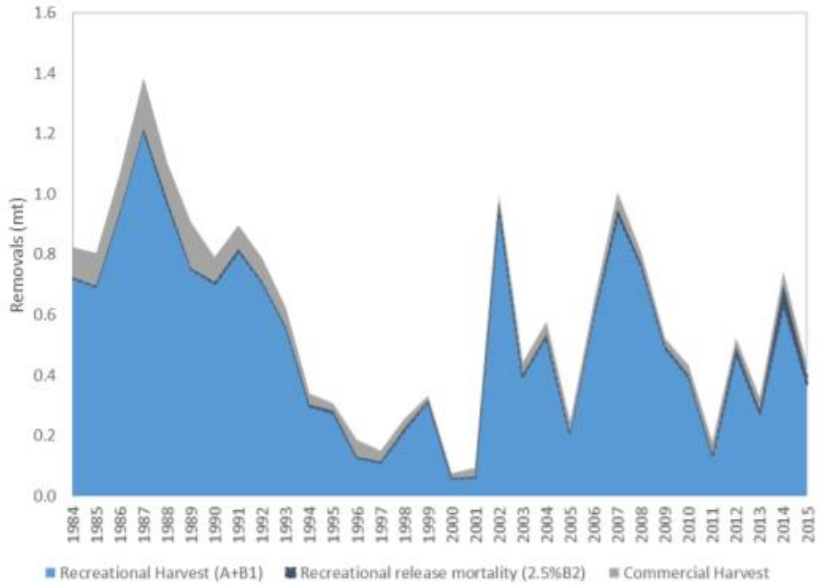


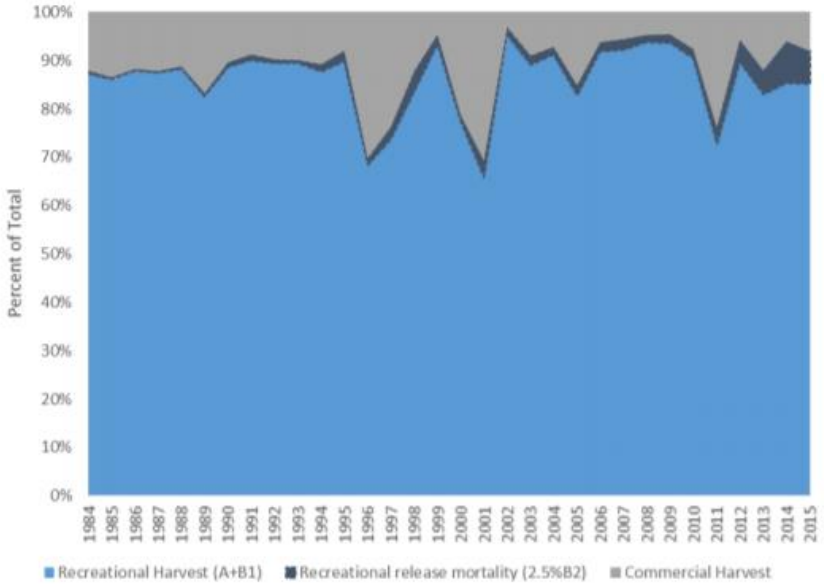


Region: LIS - Data

- Recreational harvest 1984-2015
- Recreational discards 1984-2015
  - 2.5% mortality
- Commercial harvest 1984-2015
- Commercial discards not included
- Fishery independent survey data (WLI Seine, CT LIS Trawl, NY Peconic Bay Trawl)
- Fishery dependent index data (MRIP CPUE)
- FI and FD biological samples

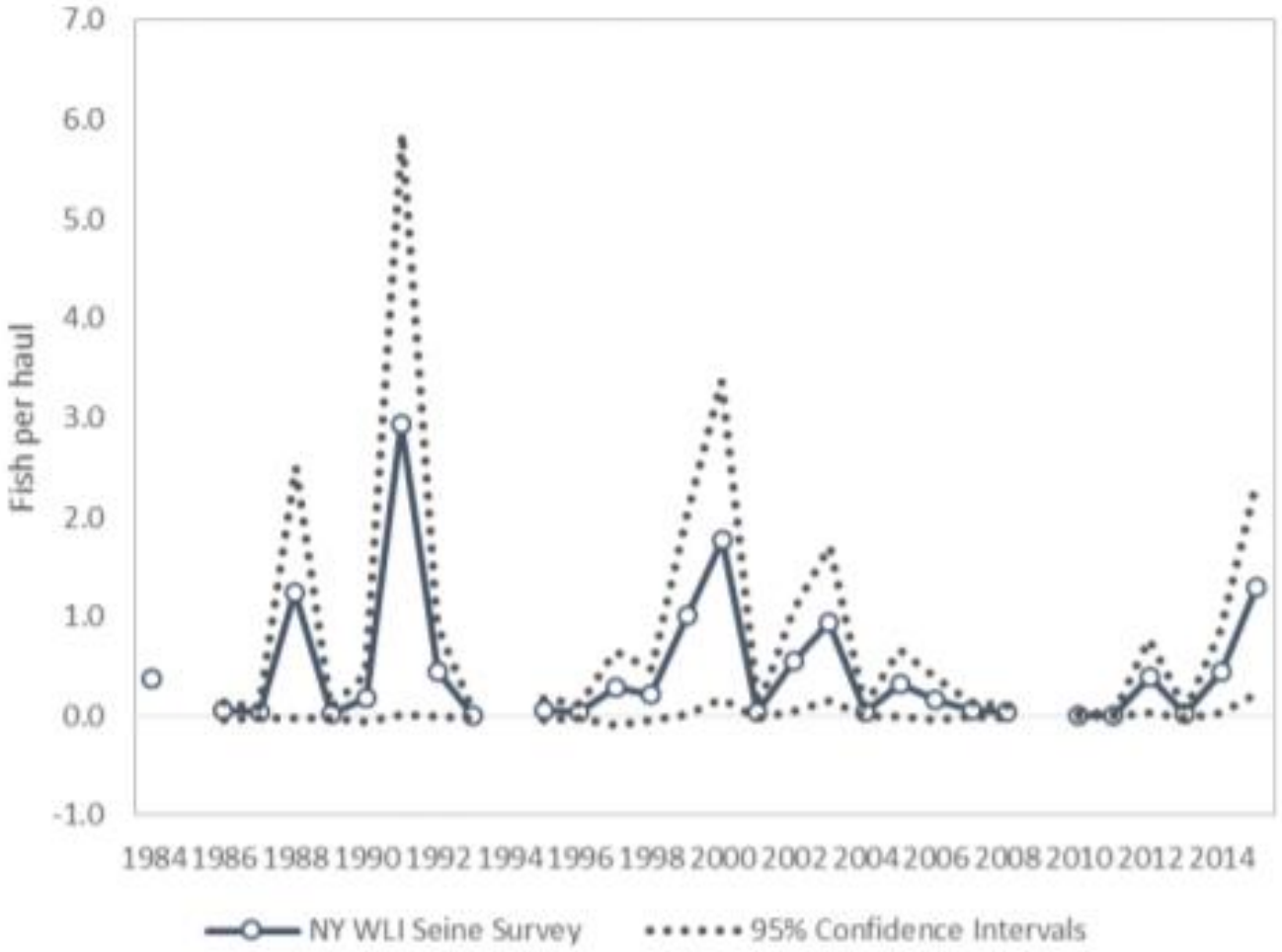
Region: LIS - Harvest





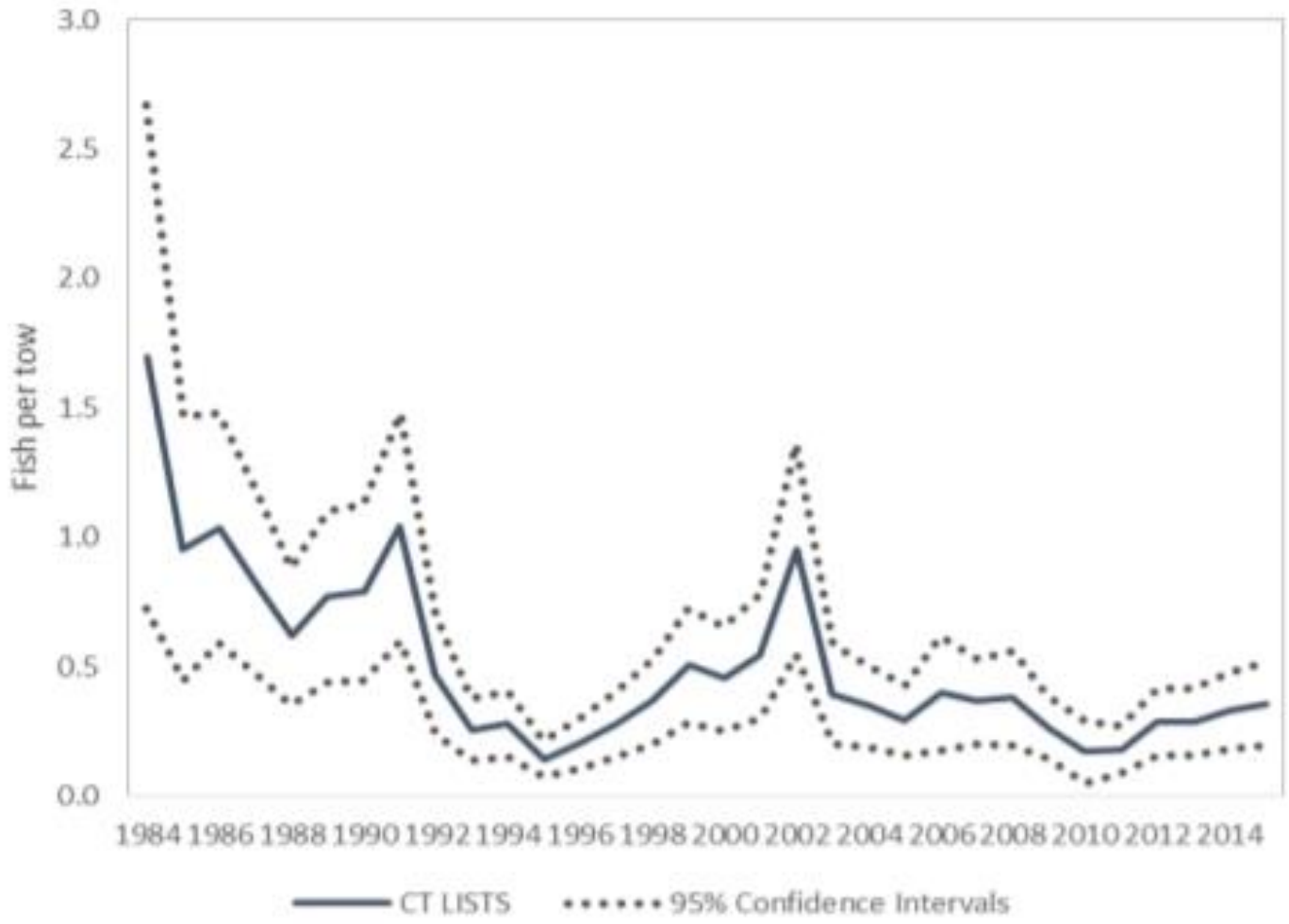
Region: LIS - Indices

- WLI Seine Survey



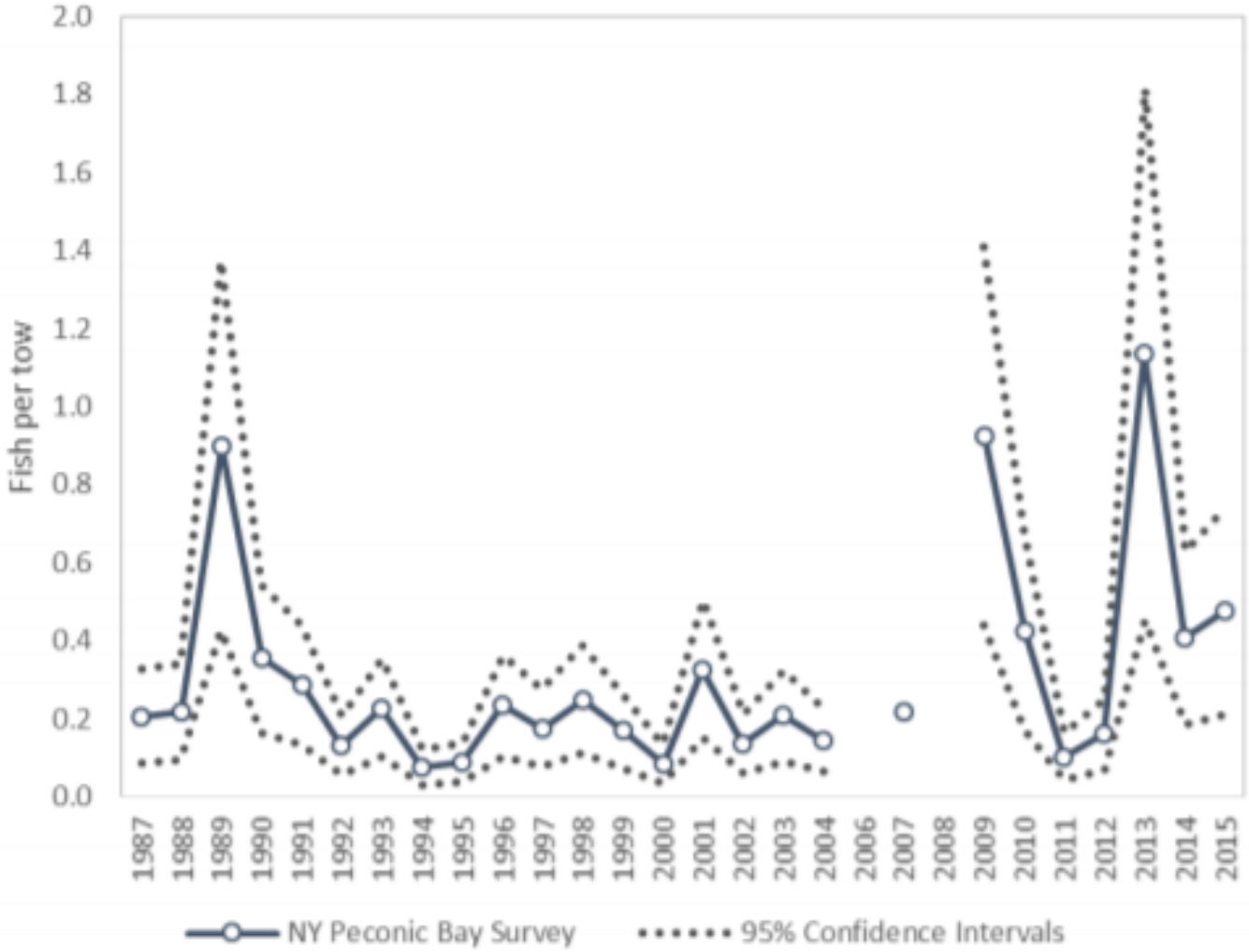
Region: LIS - Indices

- CT LIS Trawl Survey



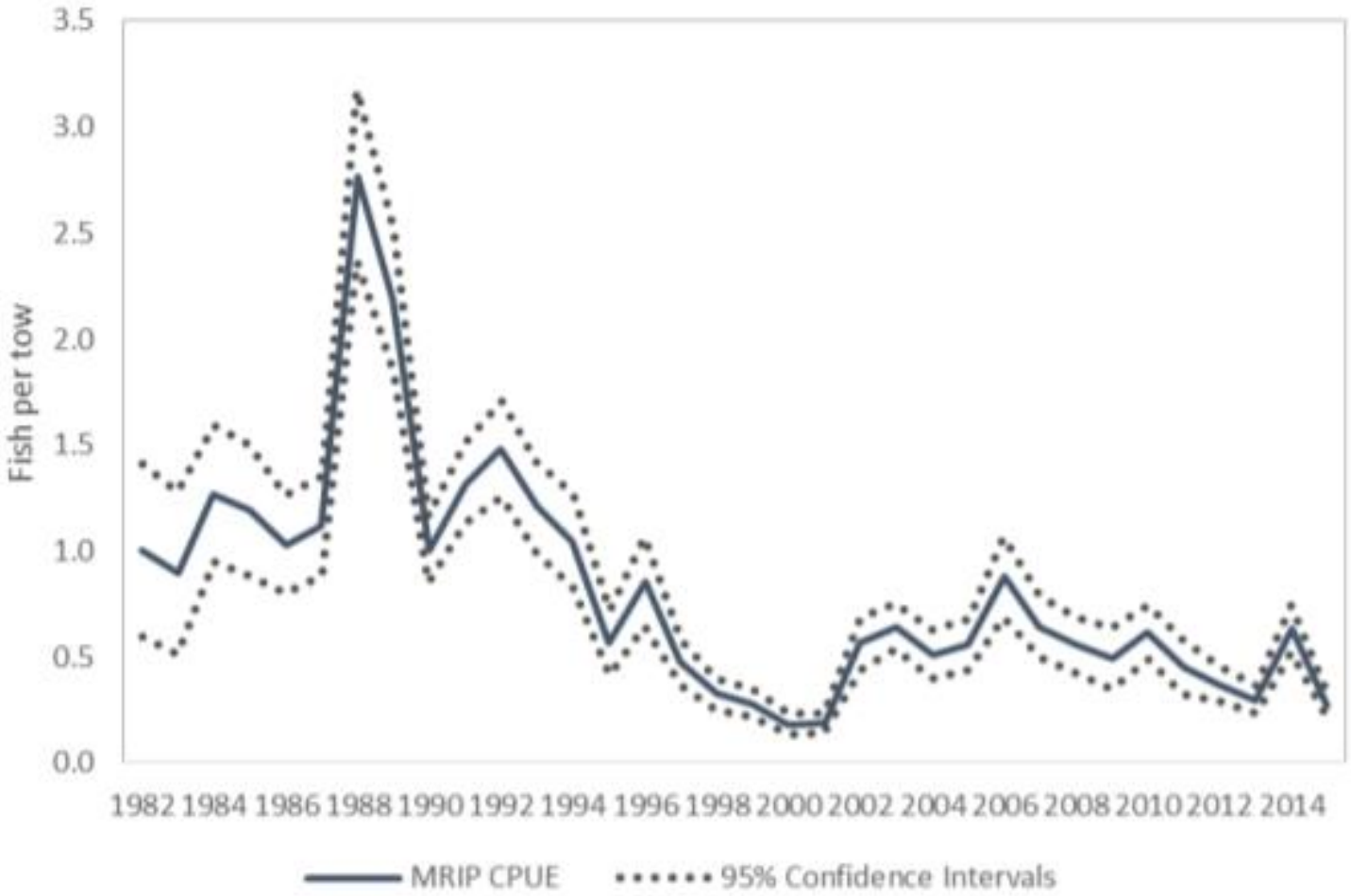
Region: LIS - Indices

- NY Peconic Bay Trawl Survey (Age 1 only)

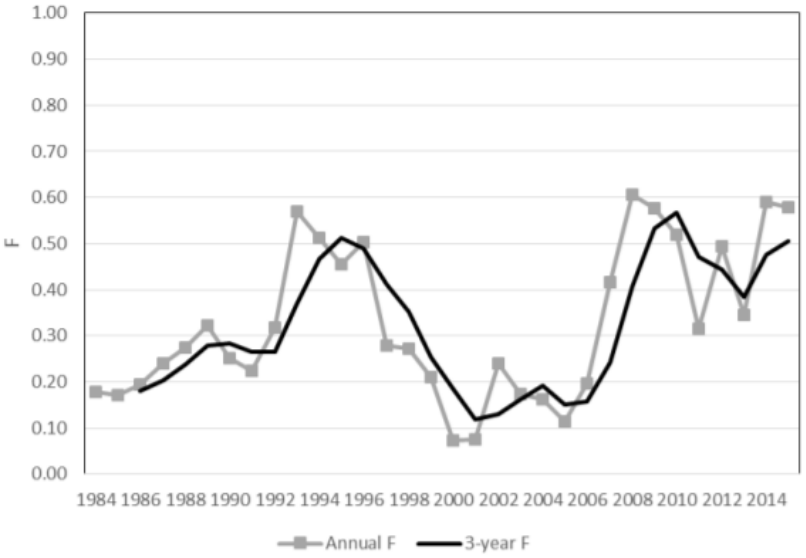


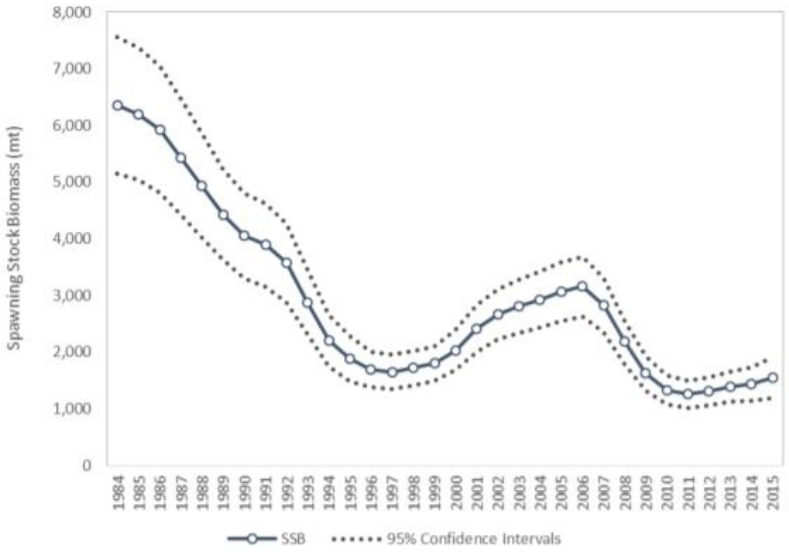
Region: LIS - Indices

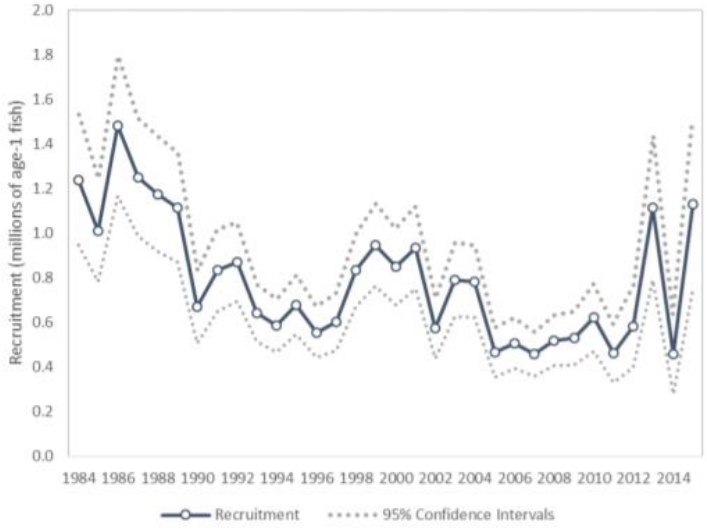
- MRIP CPUE



Region: LIS - Model results







Region: LIS - Biological reference points

- MSY-based reference points preferred by TC
- Also presenting SPR based reference points for context

	F	SSB (MT)
MSY Threshold	0.49	2,148
MSY Target	0.28	2,865
30% SPR	0.46	2,238
40% SPR	0.27	2,980

Region: LIS - Stock status

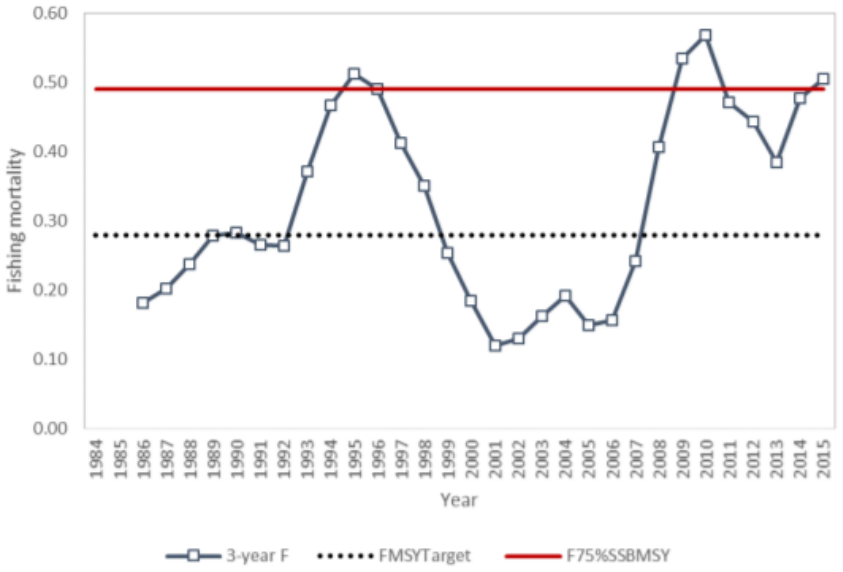
LIS:

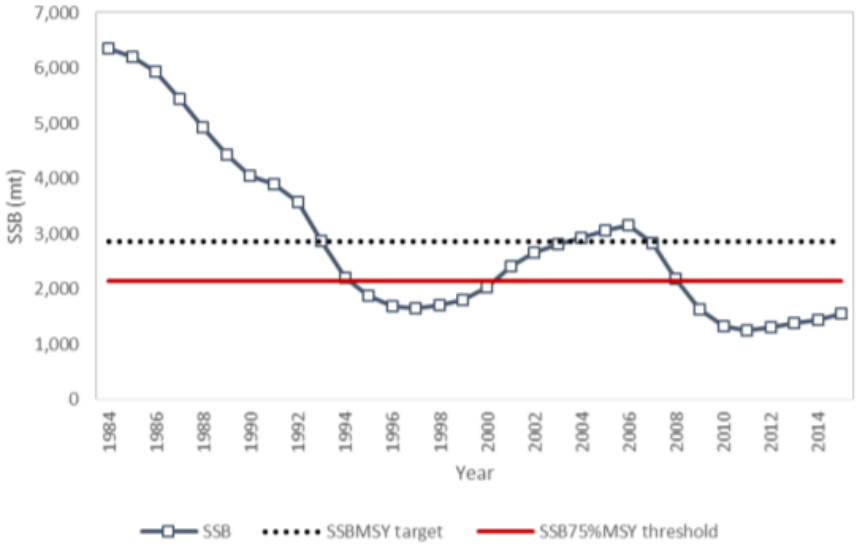
- Terminal estimates
  - $F_{3yr\ avg} = 0.51$
  - SSB = 1,603 mt

- overfished, and

- overfishing is occurring

- Same status for any BRPs selected

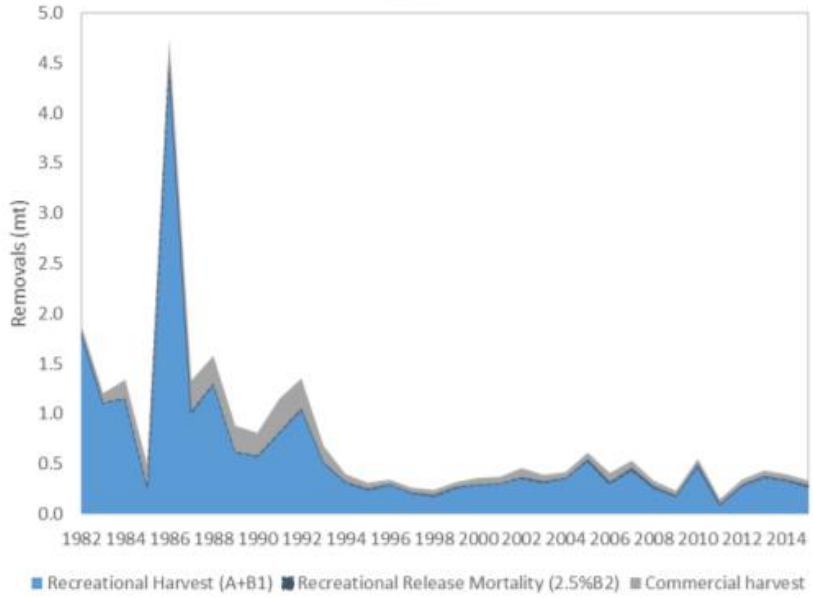


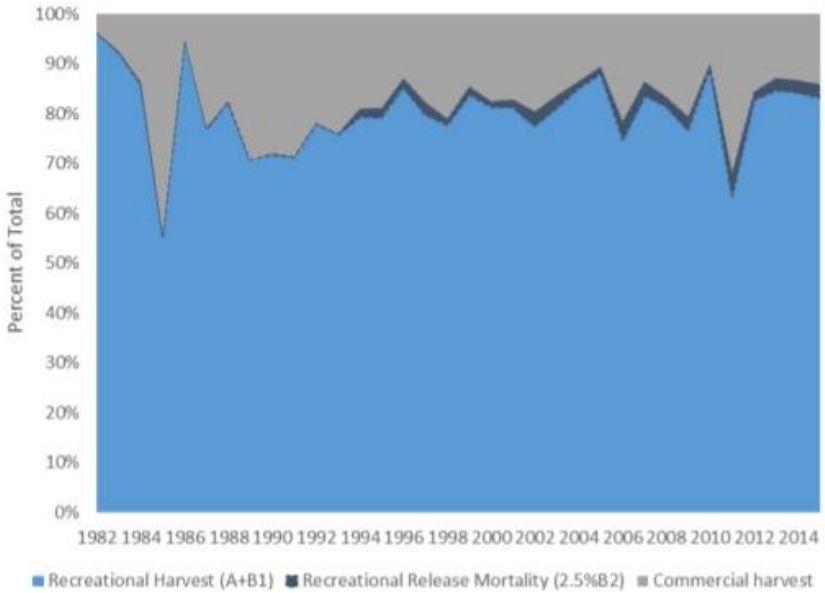


Region: MARI - Data

- Recreational harvest 1982-2015
- Recreational discards 1982-2015
  - 2.5% mortality
- Commercial harvest 1982-2015
- Commercial discards not included
- Fishery independent survey data (Narr Bay Seine, RI Trawl, MA Trawl)
- Fishery dependent index data (MRIP CPUE)
- FI and FD biological samples

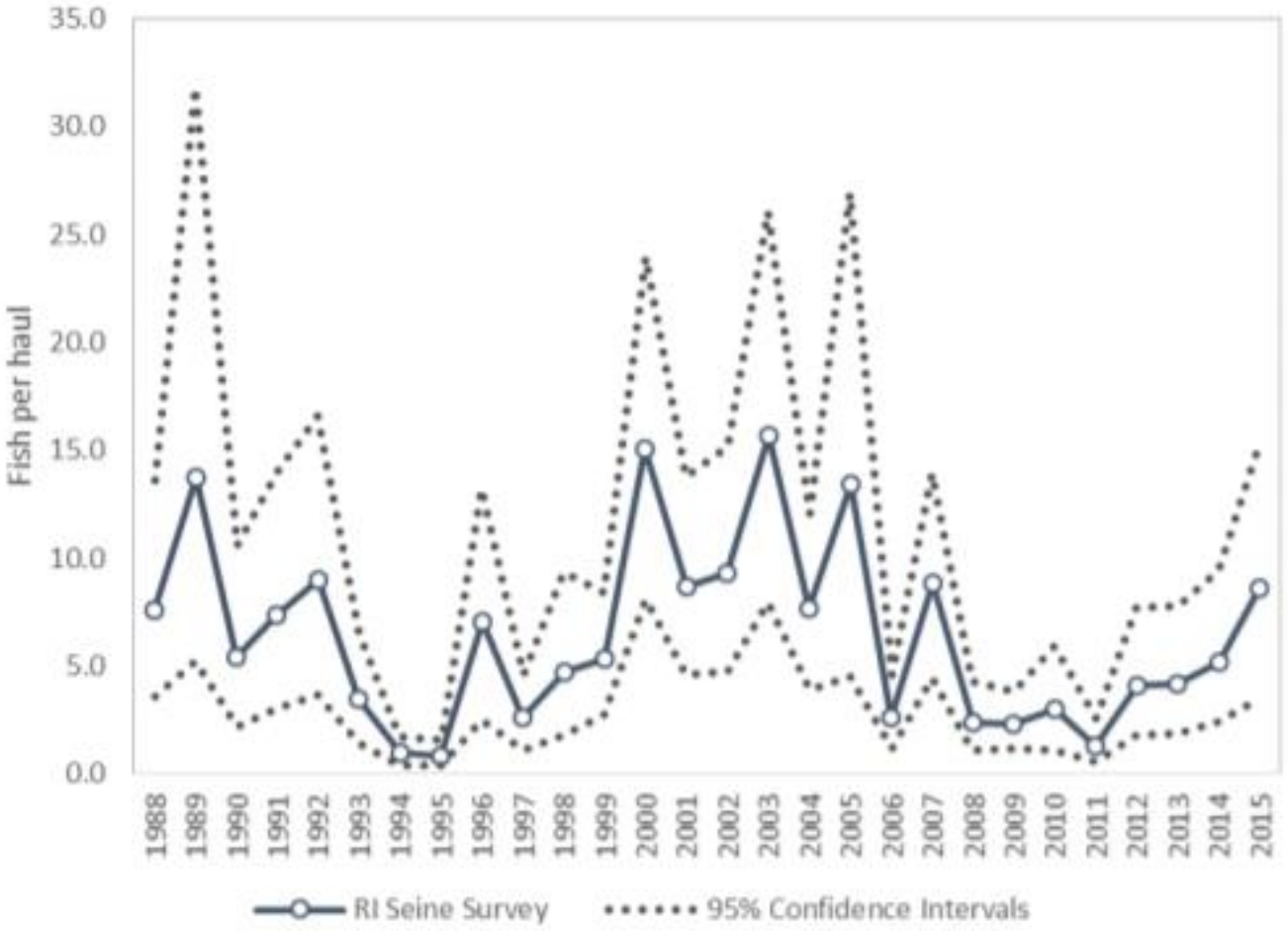
Region: MARI - Harvest





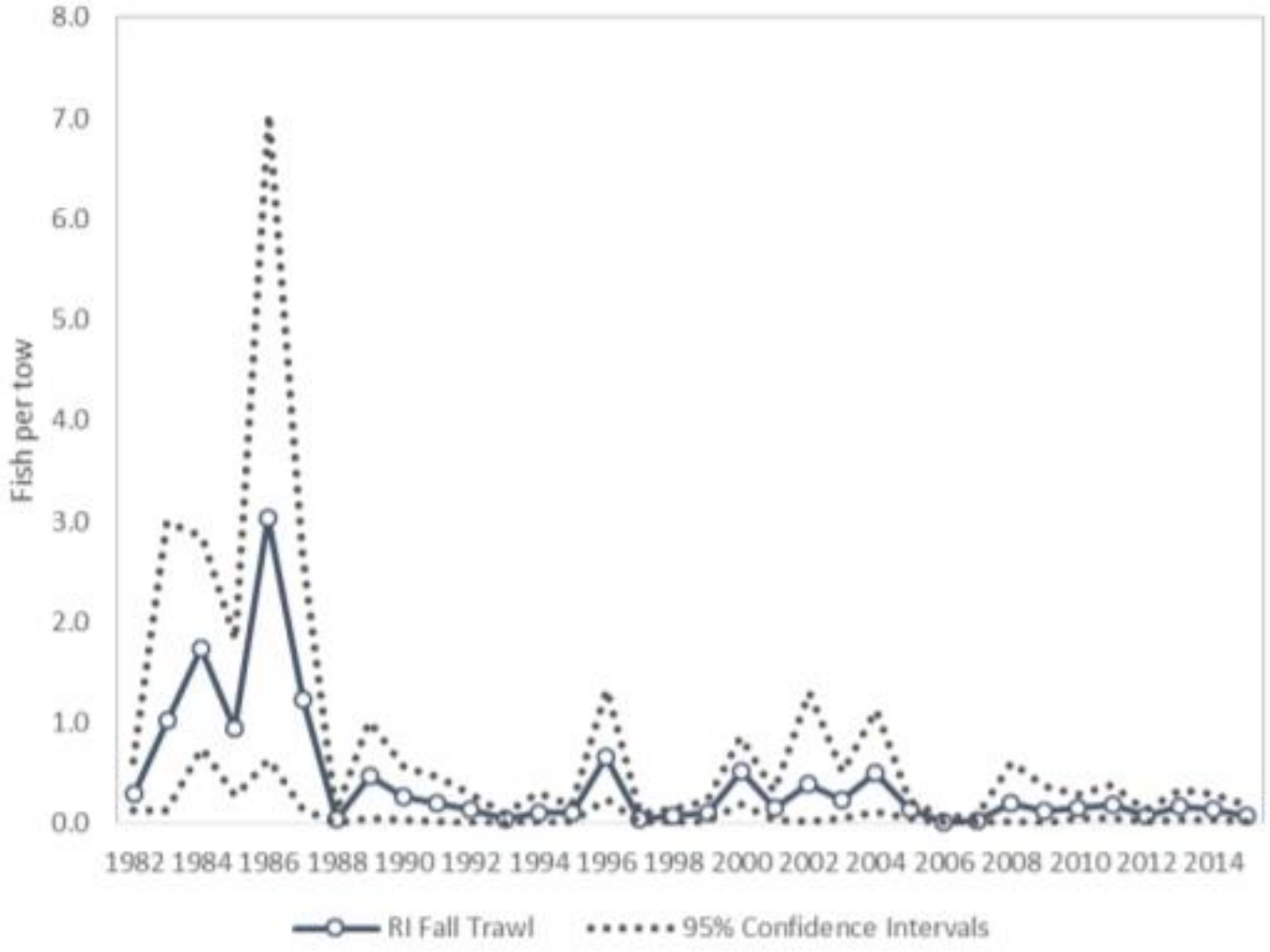
Region: MARI - Indices

- Narr Bay Seine Survey



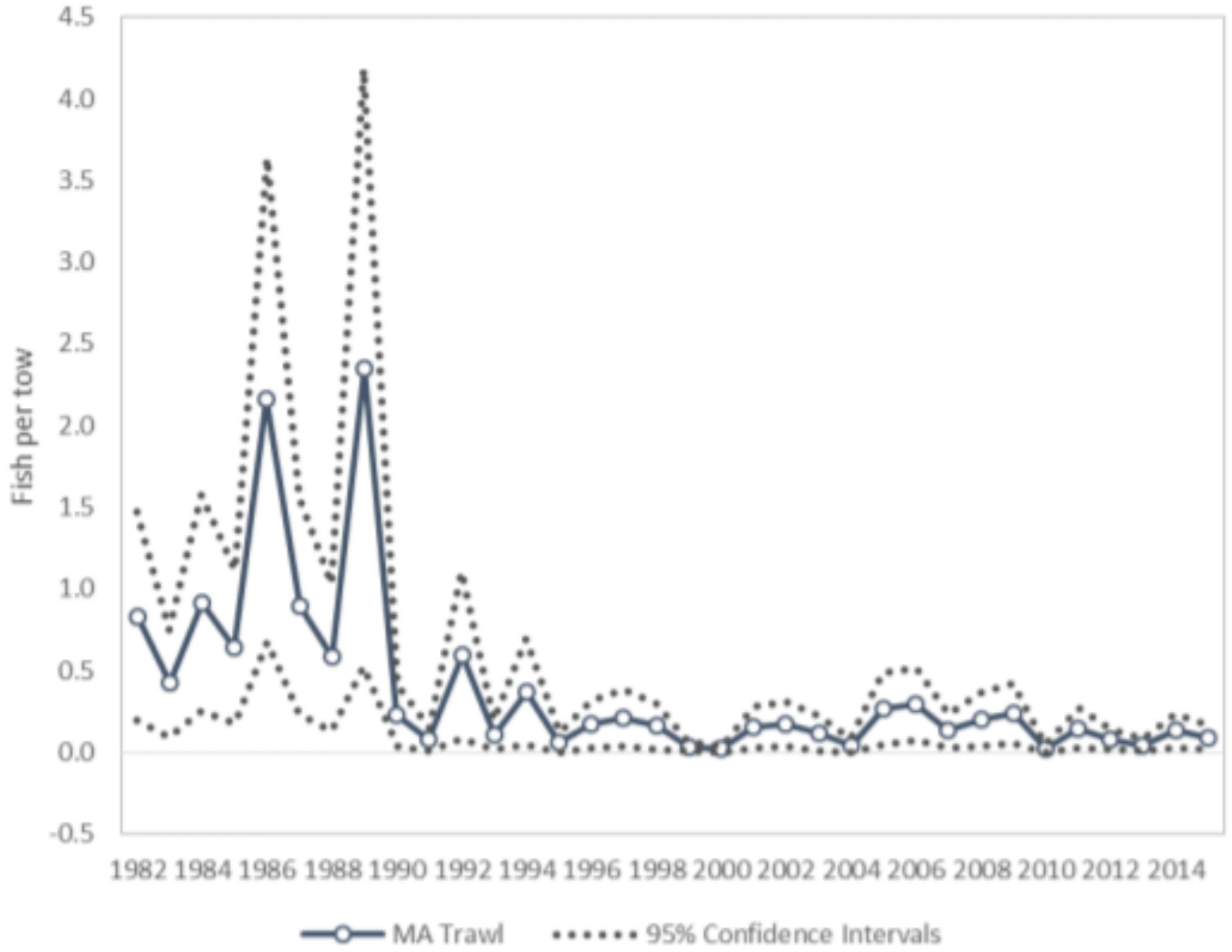
Region: MARI - Indices

- RI Trawl Survey



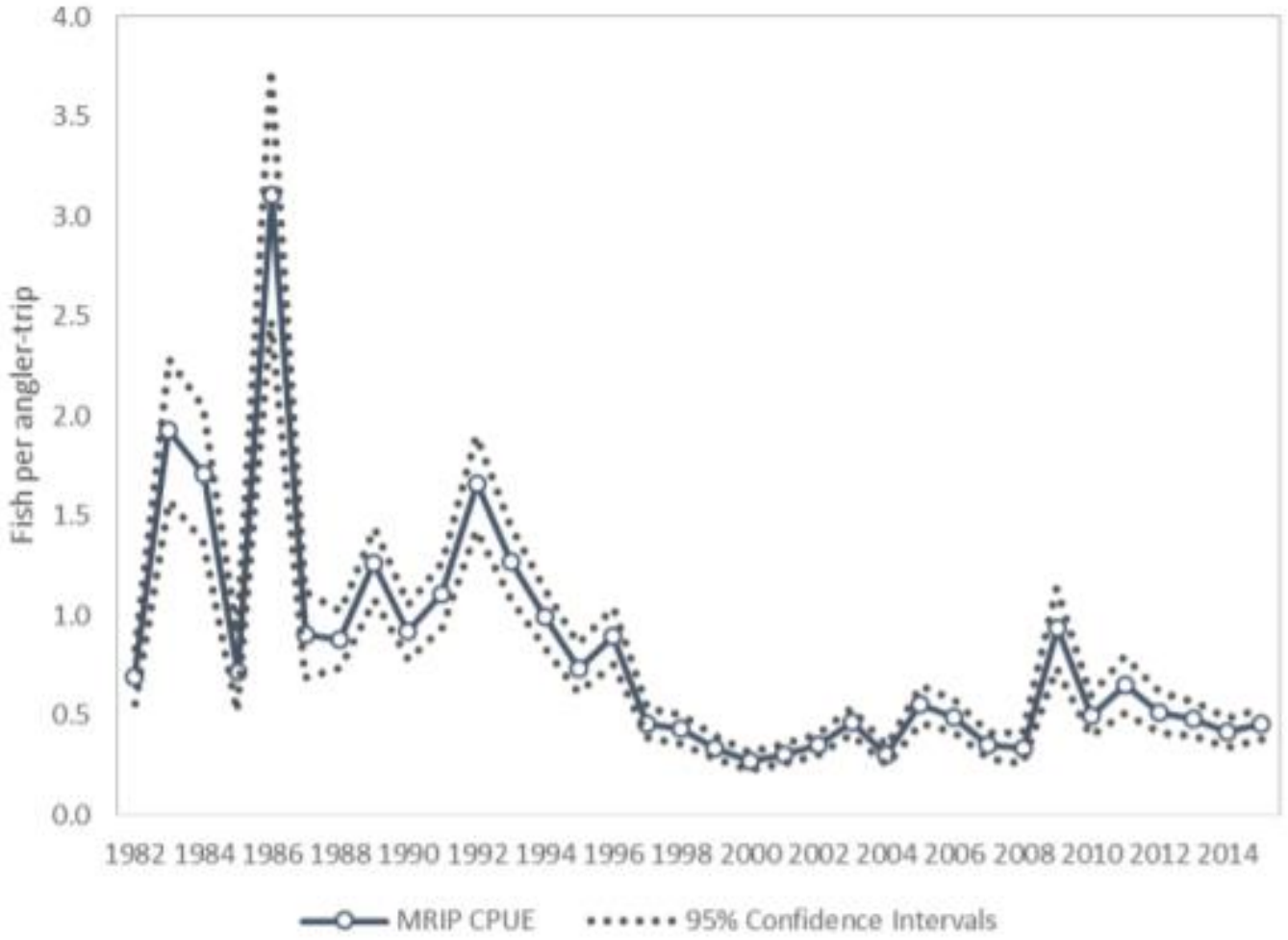
Region: MARI - Indices

- MA Trawl Survey

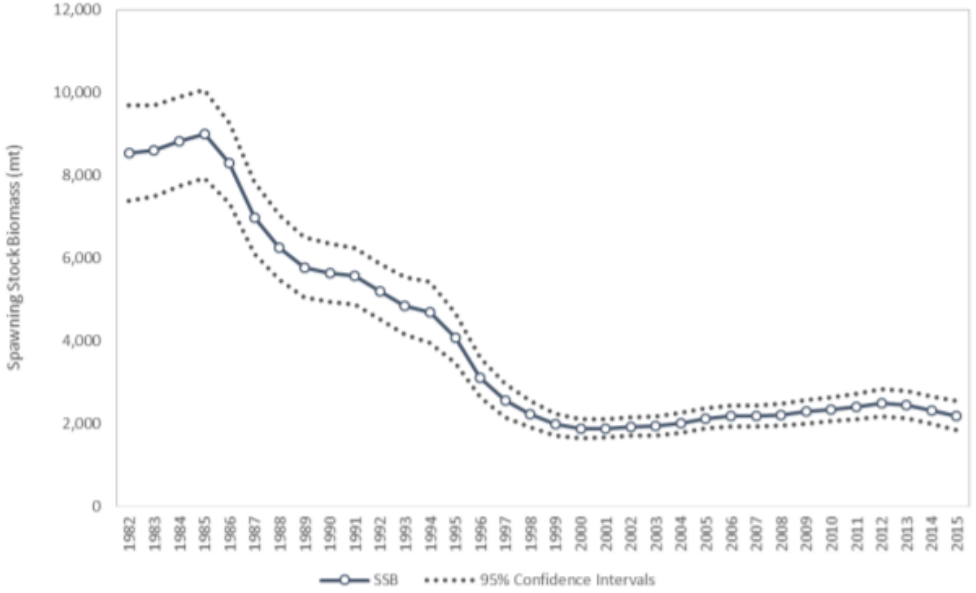


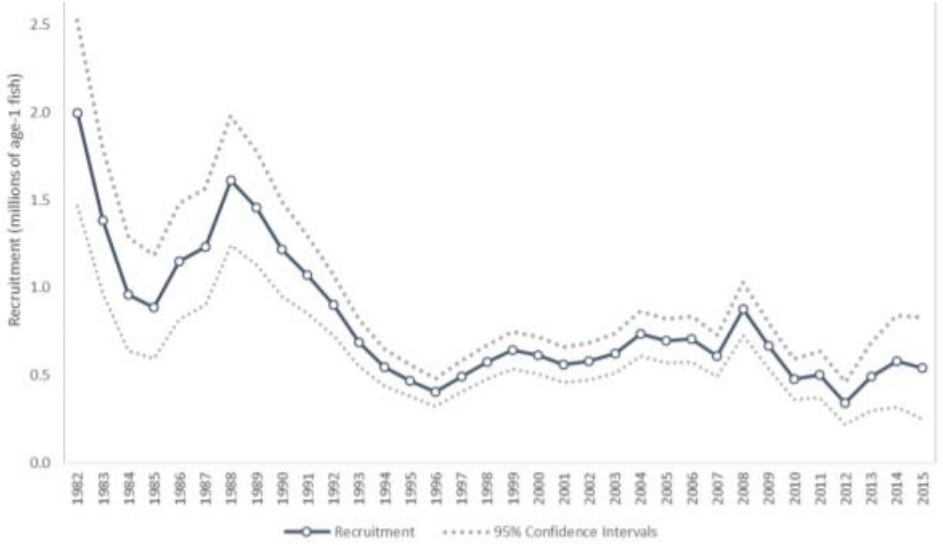
Region: MARI - Indices

- MRIP CPUE



Region: MARI - Model results





Region: MARI - Biological reference points

- MSY-based reference points preferred by TC
- Also presenting SPR based reference points for context

	F	SSB (MT)
MSY Threshold	0.28	2,723
MSY Target	0.14	3,631
30% SPR	0.49	2,004
40% SPR	0.28	2,684

Region: MARI - Stock status

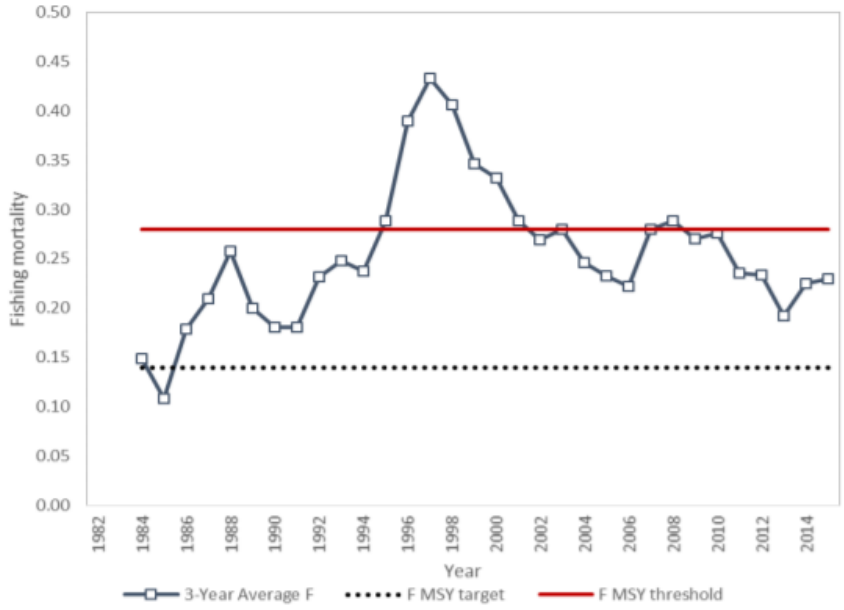
MARI:

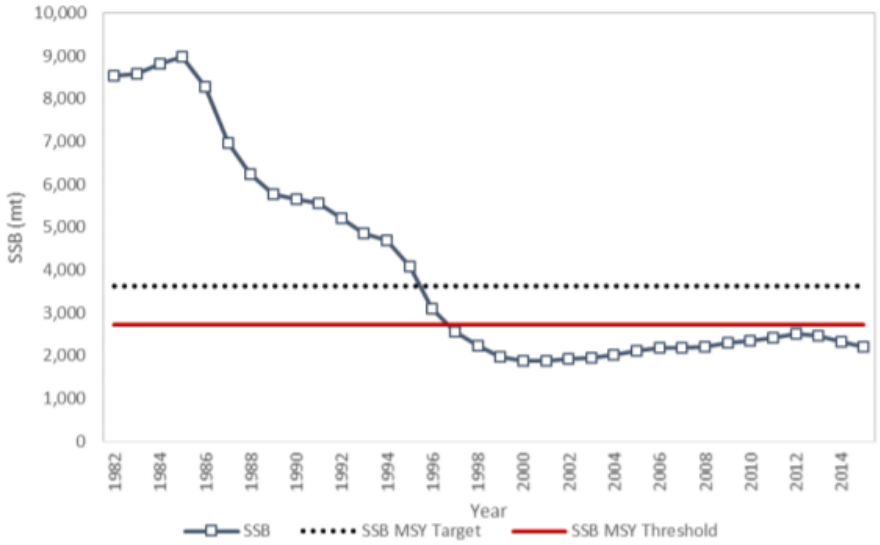
- Terminal estimates
  - $F_{3yr\ avg} = 0.23$
  - SSB = 2,196 mt

- overfished, but

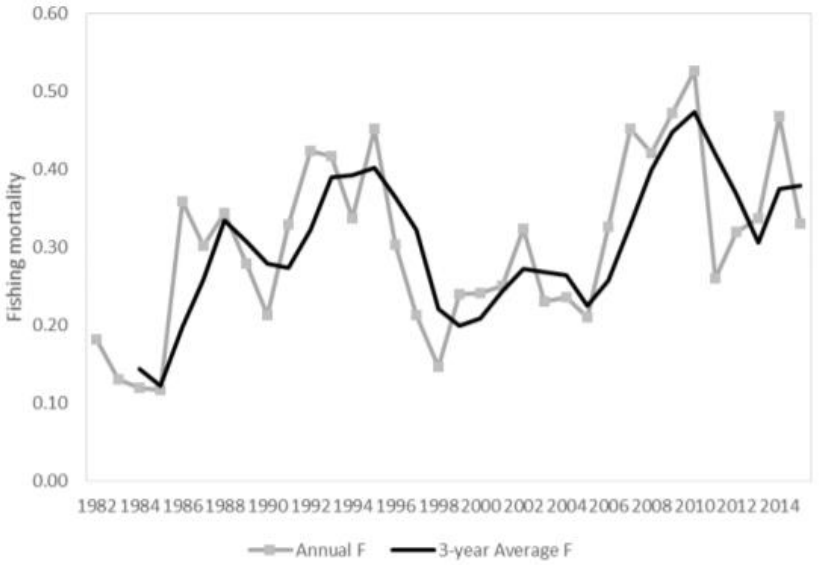
- overfishing is not occurring

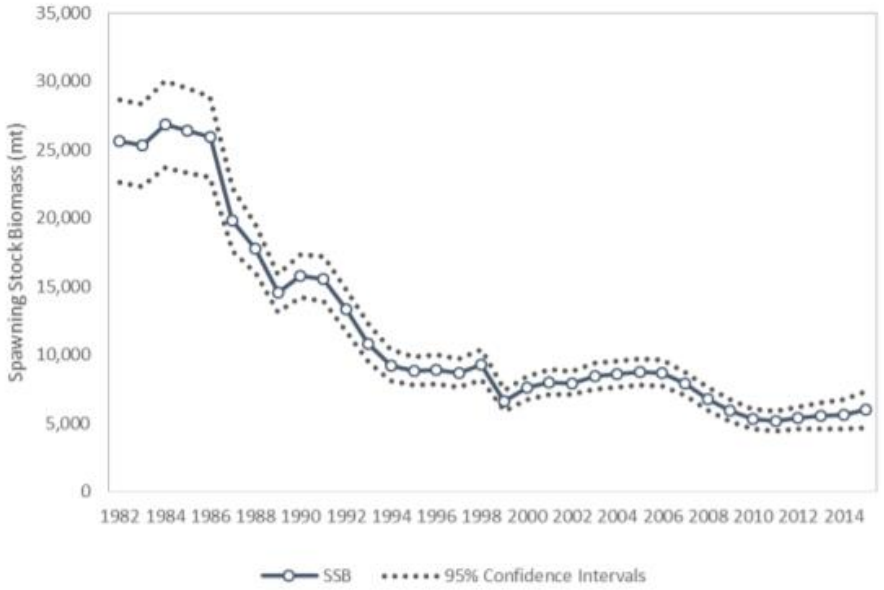
- Overfished status changes with SPR BRPs

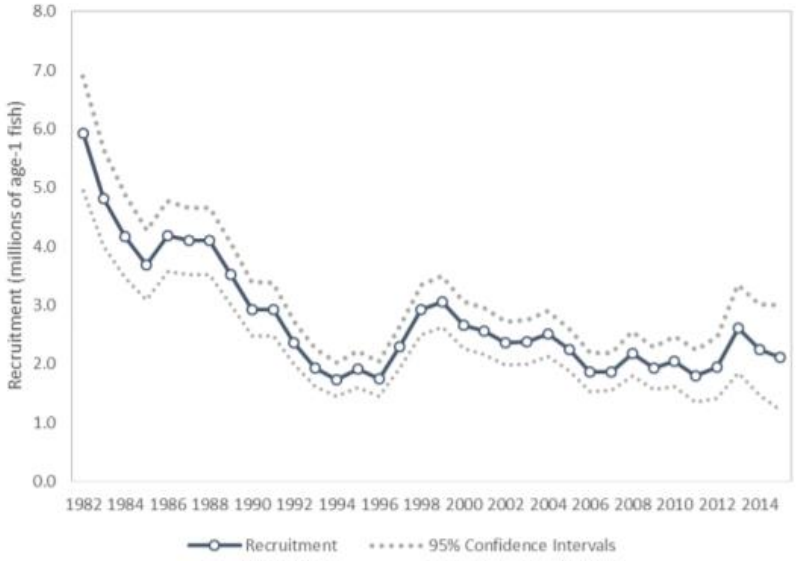




Coastwide - Model results







Coastwide - Biological reference points

- MSY-based reference points preferred by TC
- Also presenting SPR based reference points for context

	F	SSB (MT)
MSY Threshold	0.24	11,208
MSY Target	0.17	14,944
30% SPR	0.43	7,019
40% SPR	0.25	9,448

Coastwide - Stock status

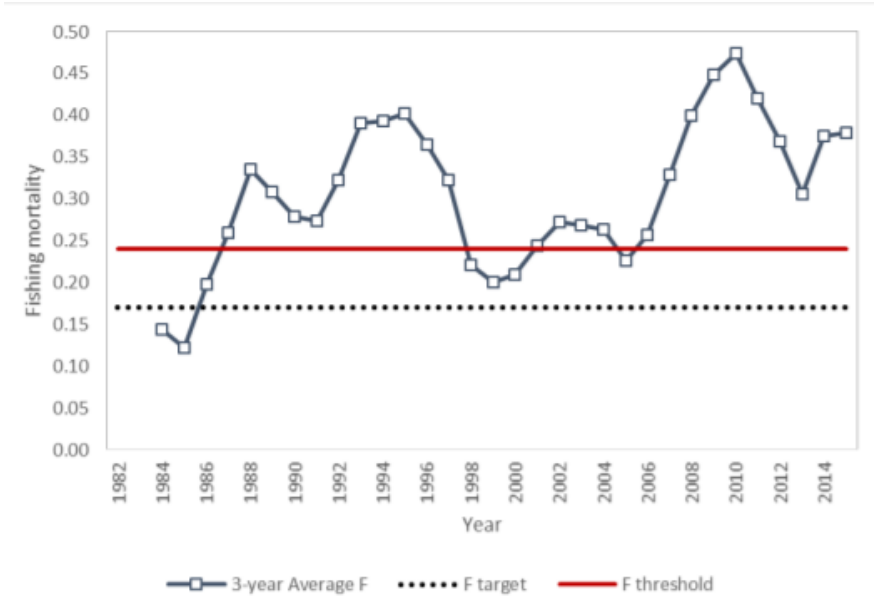
MARI:

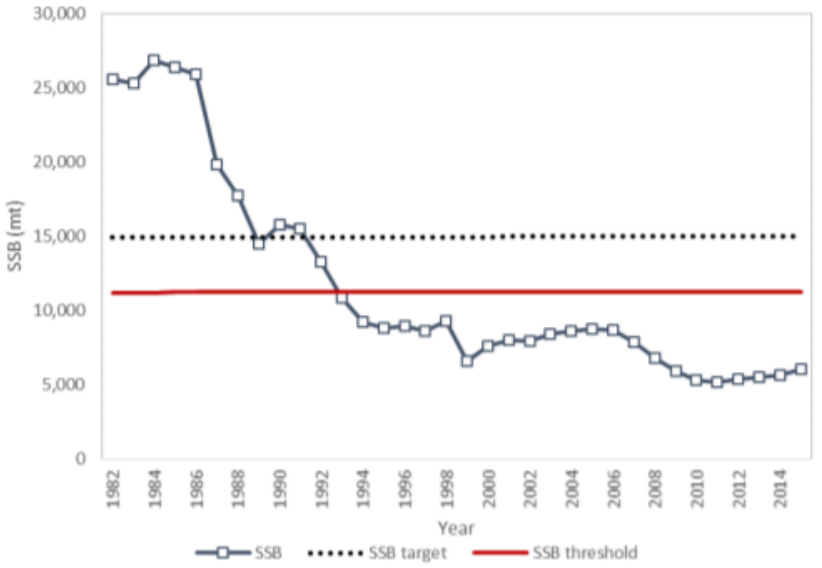
- Terminal estimates
  - $F_{3yr\ avg} = 0.38$
  - SSB = 6,014 mt

- overfished, and

- overfishing is occurring

- Overfishing status changes with SPR BRPs





Overall Conclusions

- Smaller regional scale continued to hold up in updates

- Models robust to input data and model configuration

	DelMarVa	NJ-NYB	LIS	MARI
SSB target	1,919	3,154	2,865	3,631
SSB Thresh	1,447	2,351	2,148	2,723
SSB curr	620.9	1,809	1,603	2,196
SSB status	Overfished	Overfished	Overfished	Overfished
F target	0.16	0.20	0.28	0.14
F Thresh	0.24	0.34	0.49	0.28
F curr	0.16	0.54	0.51	0.23
F status	Not Overfishing	Overfishing	Overfishing	Not Overfishing

Projections

- **Assessment team performed short term projections (2016 – 2020) to provide Board with additional information for their deliberations**

- **Ran 3 scenarios: status quo, 50%, 70% probability of achieving F target in 2020**

- **Biological parameters (maturity, M, weights at age) were the same used in model**
  - exception was catch weights at age set equal to average of latest selectivity block

Projections

- **Assumed:**
  - empirical recruitment drawn from model estimated observed recruitment (SPR), and
  - Beverton and Holt recruitment w/ lognormal error using parameter estimated by model (MSY)

- **Fishery selectivity was input as that estimated by model in most recent selectivity period**

- **Harvest for 2016 and 2017 assumed equal to most recent three year average harvest**

- **Iterative process was used to determine a constant harvest rate in 2018-2020 that resulted in 50% and 70% probabilities of achieving F target**

Projections - Results

- DelMarVa

Table 7.4.1. Short-term projection results for the DMV region.

SPR Reference Points		
Landings (mt) for 2018 -2020	Probability of being at or below F Target in 3 years	Probability of being at or above SSB threshold in 3 years
Status quo (77 mt)	100%	18%
139 mt	50%	10%
125 mt	70%	12%

Projections - Results

- NJ-NYB

Table 7.3.1. Short-term projection results for the NJ-NYB region.

SPR Reference Points		
2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
Status quo (461 mt)	45%	85%
450 mt	50%	86%
410 mt	70%	88%

Projections - Results

- LIS

Table 7.2.1. Short-term projection results for the LIS region.

MSY Reference Points		
2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
Status quo (500 mt)	1.70%	0.60%
264 mt	50%	34%
237 mt	70%	40%

SPR Reference Points		
2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
Status quo (500 mt)	0%	0.60%
255 mt	50%	28%
229 mt	70%	33%

Projections - Results

- MARI

Table 7.1.1. Short-term projection results for the MARI region.

MSY Reference Points		
2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
Status quo (390 mt)	0%	0.00%
151 mt	50%	2.20%
148 mt	70%	2.30%

SPR Reference Points		
2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
Status quo (390 mt)	0%	4.10%
257 mt	50%	23.2%
253 mt	70%	24.3%

Questions on Regional Stock Assessment Updates

Draft Amendment 1
Key Issues

Presented to the ASMFC Tautog Board
October 25, 2016

Presentation Overview

The Board is asked to comment on each issue before moving to the next.

1. Reference points
2. Projections to reduce F
3. Rebuilding plan
4. Commercial / recreational split
5. Commercial harvest tagging program
6. Commercial harvest quota
7. Management within a region

1. Reference Points

Stock Region	MSY or SPR	SSB Target (mt)	SSB Threshold (mt)	SSB 2015 (mt)	F Target	F Threshold	F 3-year Avg (2013-15)	Stock Status
MARI	MSY	3,631	2,723	2,196	0.14	0.28	0.23	Overfished, Overfishing not occurring
	SPR	2,684	2,004	2,196	0.28	0.49	0.23	Stock not overfished, Overfishing not occurring
LIS	MSY	2,865	2,148	1,603	0.28	0.49	0.51	Overfished, Overfishing
	SPR	2,980	2,238	1,603	0.27	0.46	0.51	Overfished, Overfishing
NJ-NYB	SPR	3,154	2,351	1,809	0.20	0.34	0.54	Overfished, Overfishing
DMV	SPR	1,919	1,447	621	0.16	0.24	0.16	Overfished, Overfishing not occurring
Coast	MSY	14,944	11,208	6,014	0.17	0.24	0.38	Overfished, Overfishing
	SPR	9,448	7,091	6,014	0.25	0.43	0.38	Overfished, Overfishing not occurring

1. Reference Points

Does the Board approve the reference points as recommended by the TC?

1. MSY-based reference points are recommended by the TC for the MARI and LIS regions and coastwide.
   - Targets: SSB_{MSY} and F_{MSY}
   - Thresholds: 75% SSB_{MSY} and $F_{75\%MSY}$

2. SPR-based reference points are recommended by the TC for the NJ-NYB and DelMarVa regions.
   - Targets: $F_{40\%SPR}$ and $SSB_{40\%}$
   - Thresholds: $F_{30\%SPR}$ and $SSB_{30\%}$

2a. Projections to Reduce F

Does the Board want the projections to incorporate a 50% or a 70% probability of achieving F target by 2020?

TC Recommended Reference Points

3-year average / 2015 Landings Compared to the Proposed Maximum Removals by Region

			Probability of achieving F target	
	3 yr avg: 2013-2015	2015 Landings	50% (mt)	70% (mt)
MARI	390	337	151	148
LIS	500	431	264	237
NJ-NYB	461	334	450	410
DMV	77	41	139	125
Coast	1270	905	737	682

2b. Projections to Reduce F

Does the Board want the projections to incorporate a 50% or a 70% probability of achieving F target by 2020?

SPR Reference Points

3-year average / 2015 Landings Compared to the Proposed Maximum Removals by Region

			Probability of achieving F target	
	Status quo (mt) 3 yr avg: 2013-2015	**2015 Landings (mt)**	**50% (mt)**	**70% (mt)**
MARI	390	337	257	253
LIS	500	431	255	229
NJ-NYB	461	334	450	410
DMV	77	41	139	125
Coast	1270	905	968	895

3. Rebuilding Plan

Does the Board want to establish a SSB rebuilding plan?

Stock Region	MSY or SPR	SSB Target (mt)	SSB Threshold (mt)	SSB 2015 (mt)	Stock Status
MARI	MSY	3,631	2,723	**2,196**	Overfished, Overfishing not occurring
	SPR	2,684	2,004	**2,196**	Stock not overfished, Overfishing not occurring
LIS	MSY	2,865	2,148	**1,603**	Overfished, Overfishing
	SPR	2,980	2,238	**1,603**	Overfished, Overfishing
NJ-NYB	SPR	3,154	2,351	**1,809**	Overfished, Overfishing
DMV	SPR	1,919	1,447	**621**	Overfished, Overfishing not occurring

3. Rebuilding Plan

Does the Board want to establish a SSB rebuilding plan?

To establish stock rebuilding projections the Board would need to task the TC to begin this work, as well as provide the following information:

- Rebuild to SSB_{target} or $SSB_{threshold}$
- Specify a rebuilding timeframe (e.g. 10 years)
- Specify the probability of achieving SSB threshold (e.g. 80%, 100%)

4. Commercial / Recreational

Should one sector take a greater reduction than the other?

% of overall harvest by sector

	Recreational	Commercial
MARI	85%	15%
LIS	90%	10%
NJ-NYB	92%	8%
DelMarVa	98%	2%

5. Commercial Harvest Tagging Program

- The tautog tagging trial is underway; a project report will be presented at the February meeting.
- In Draft Amendment 1, the Board can request the PDT:
  - Include text under adaptive management that allows a commercial harvest tagging program to be developed as an addendum
  - Develop management options for a comprehensive commercial harvest tagging program
  - Opt to not include text on a commercial harvest tagging program

6. Commercial Harvest Quota

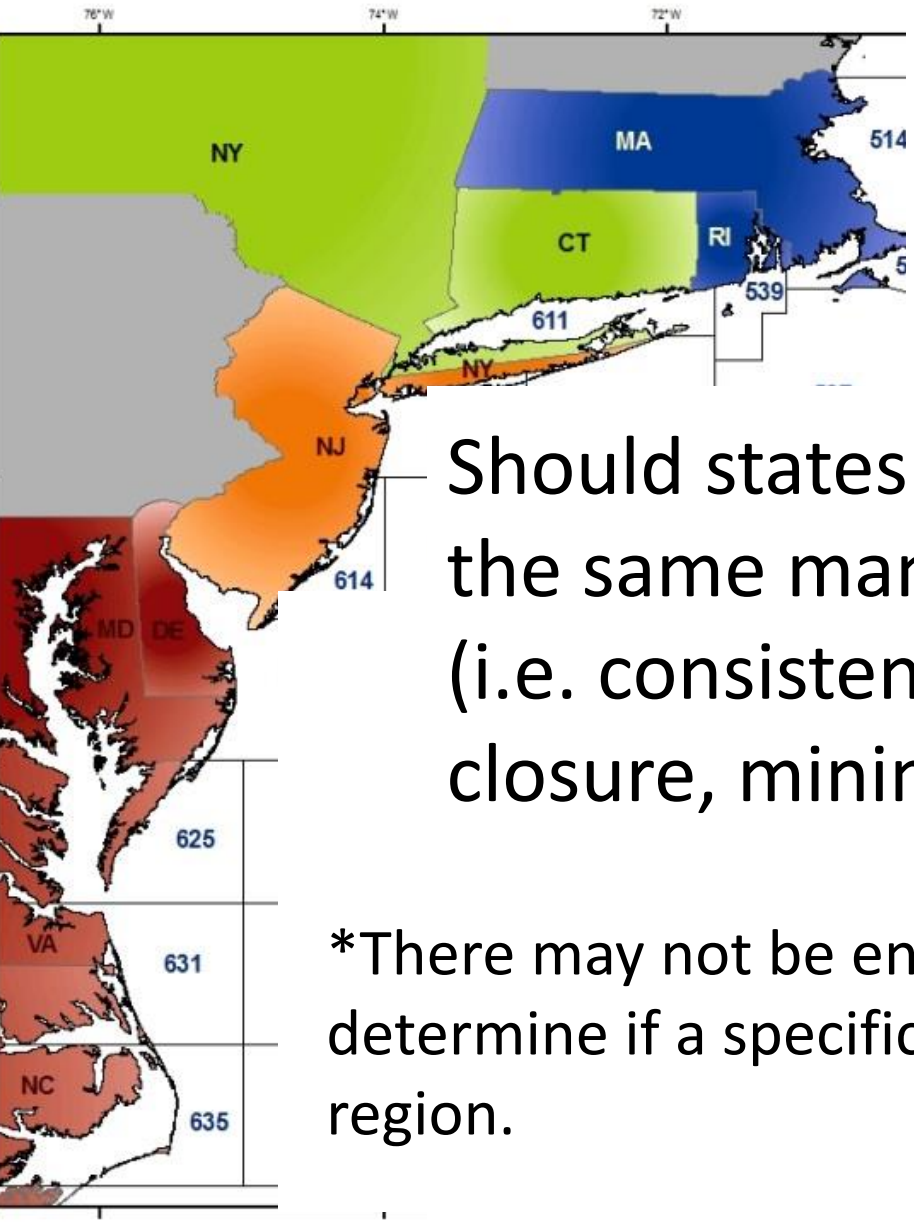
Should each region and/or state have a commercial quota?

* A commercial quota may be useful if a tagging program is implemented

Regional implementation options:

- Regional quota (common pool)
- Divide the quota equally between states in a region
- Allocate the regional quota (state shares)

7. Management within Regions



Should states within a region implement the same management measures (i.e. consistent bag size, seasonal closure, minimum size limit)?

*There may not be enough data at the state level to determine if a specific measure is equivalent within a region.

Draft Amendment 1 Timeline

- **Aug 2016:** Board reviews peer-reviewed LIS and NJ-NYB assessments; Board chooses one management region alternative
- **Oct 2016:** Board reviews the stock assessment update
- **Nov-Jan:** PDT further develops management options
- **Feb 2017:** Draft Amendment 1 is presented for public comment approval
  - Tag Trial project report is presented
- **Spring 2017:** Public comment/hearings
- **May 2017:** Board reviews public comments and considers final approval of Draft Amendment 1

Questions

Tautog Tank Trial
Update

Presented to the ASMFC Tautog Board
October 25, 2016

Tag + Applicator

Tagging

Tagged

Tanks