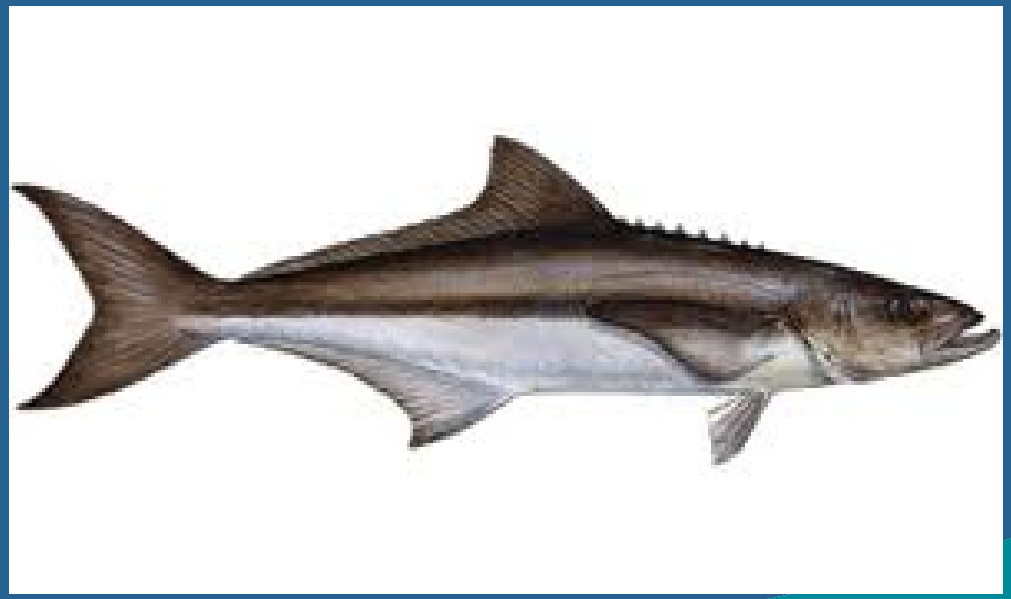
SEDAR 58 – U.S. Atlantic Cobia
(*Rachycentron canadum*)

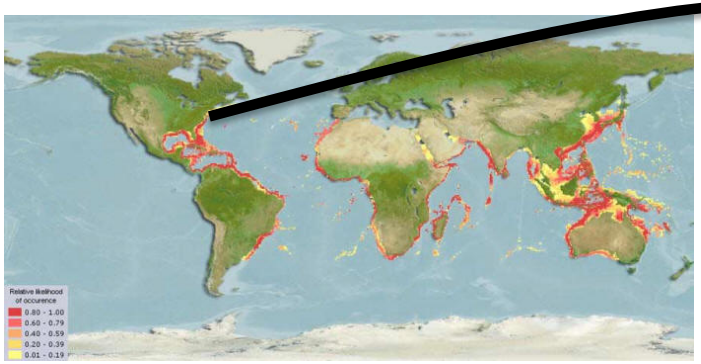
NOAA FISHERIES
Sustainable Fisheries Branch, Beaufort, NC

ASMFC Management Board Meeting



February 5th, 2020

Stock definition



- Globally distributed species
- U.S. distribution extends along Gulf of Mexico and the East coast.
- Stock boundary from New York to Georgia-Florida border, decided at Stock ID workshop

Stock ID workshop

- A Stock Identification Workshop was held in 2018.
- The Stock ID Review Panel agreed that there were two populations of Cobia in U.S. waters with a zone of uncertainty on the east coast of Florida.
- The workshop panelists recommended that the assessment should consider two separate stocks with a boundary at the Florida/Georgia boundary. (Atlantic stock presented here)

Regulations

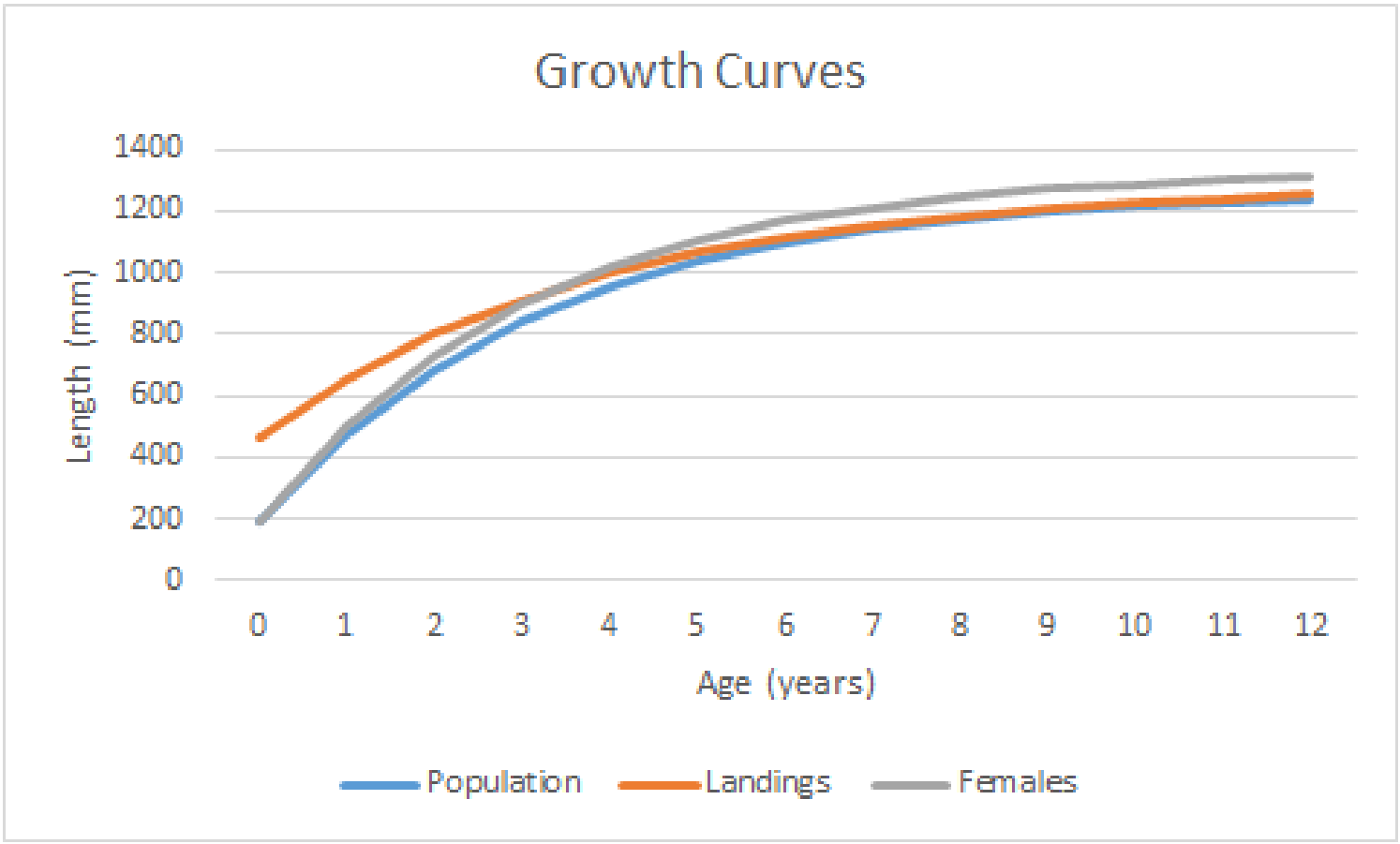
Until 9/5/17

- **Size Limit:** 33 inch fork length
- **Trip Limit:** 2 per person per day

Life history

- Three growth curves were used:
  - Population growth curve – all data, with size limit correction for fishery-dependent samples
  - Fishery growth curve – fishery samples only with no size limit correction
  - Females-only growth curve – used in the calculation of mature female biomass (proxy for SSB)
- Growth curves were estimated external to the model and used as input.

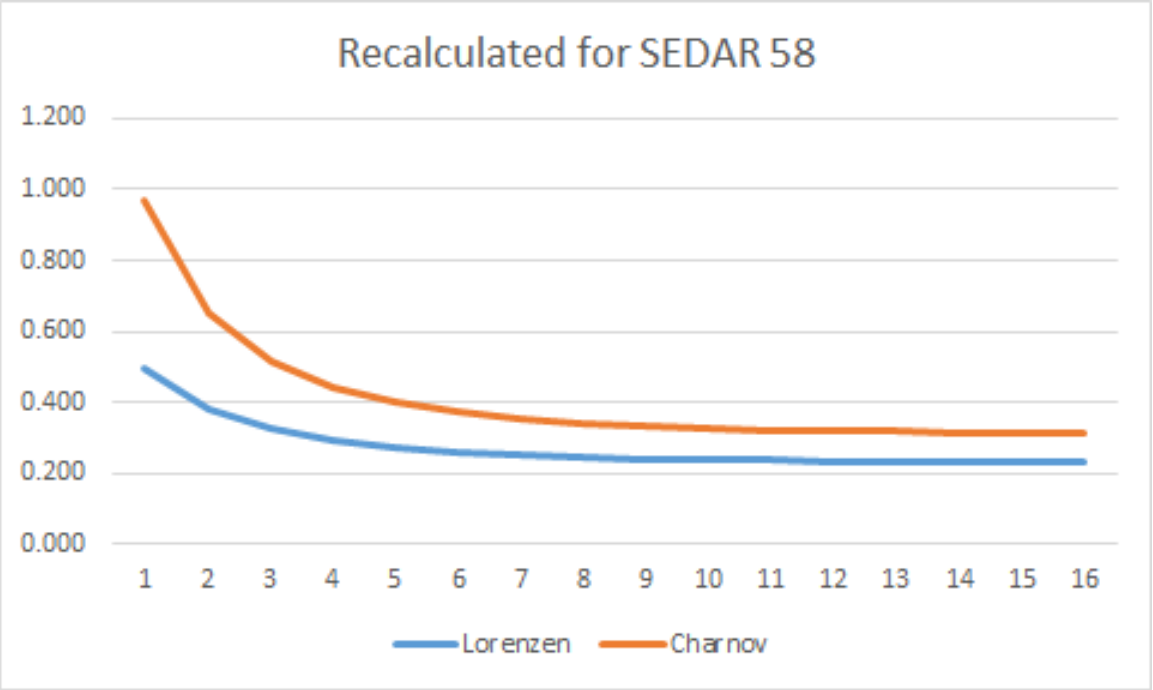
Life History Data - growth curves



Life history – natural and discard mortality

- Age-based method of Charnov et al. (2013) used to calculate age-based natural mortality.

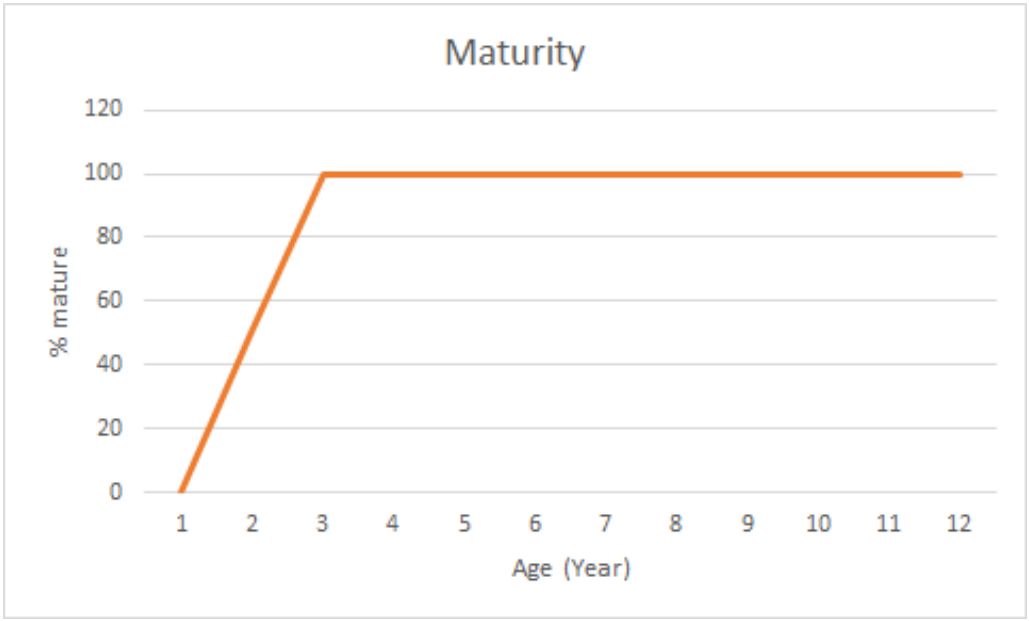
- The discard working group provided a point estimate and a range for lines and gillnets.



	Estimate	Range
Recreational (lines)	0.05	0.02-0.12
Commercial Gillnet	0.55	0.36-0.77

Life history - reproduction

- Sex ratio, F:M = 0.58
- Logistic model for female maturity.
- Spawning occurs mid-June.
- Spawning biomass approximated by mature female biomass.

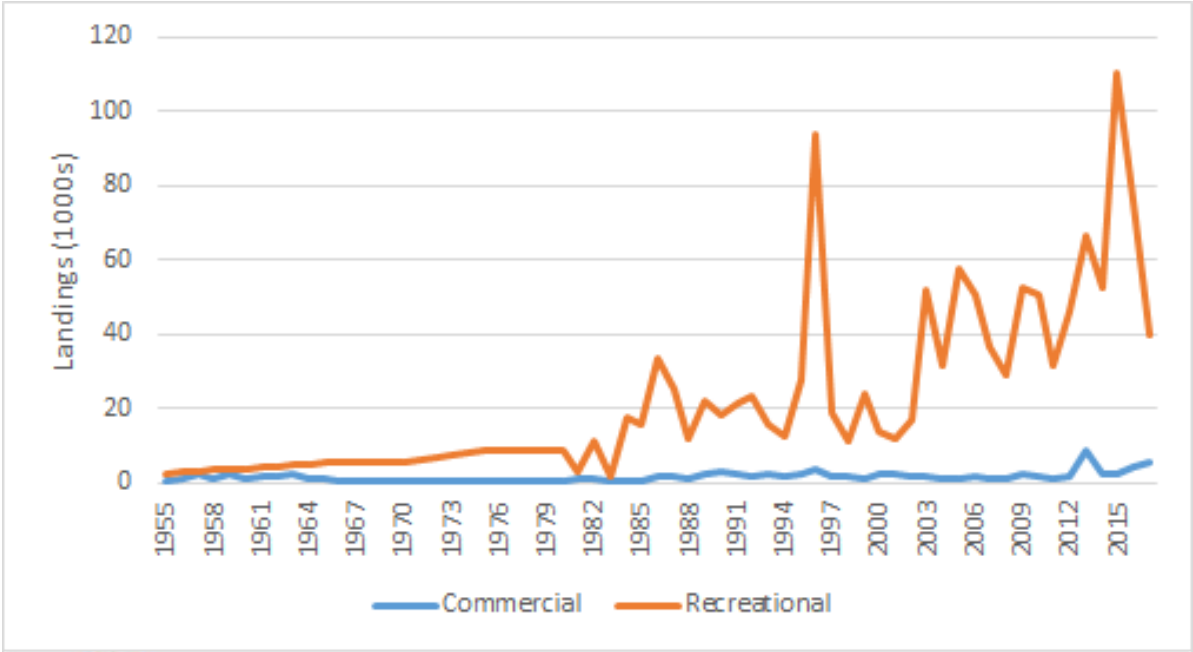


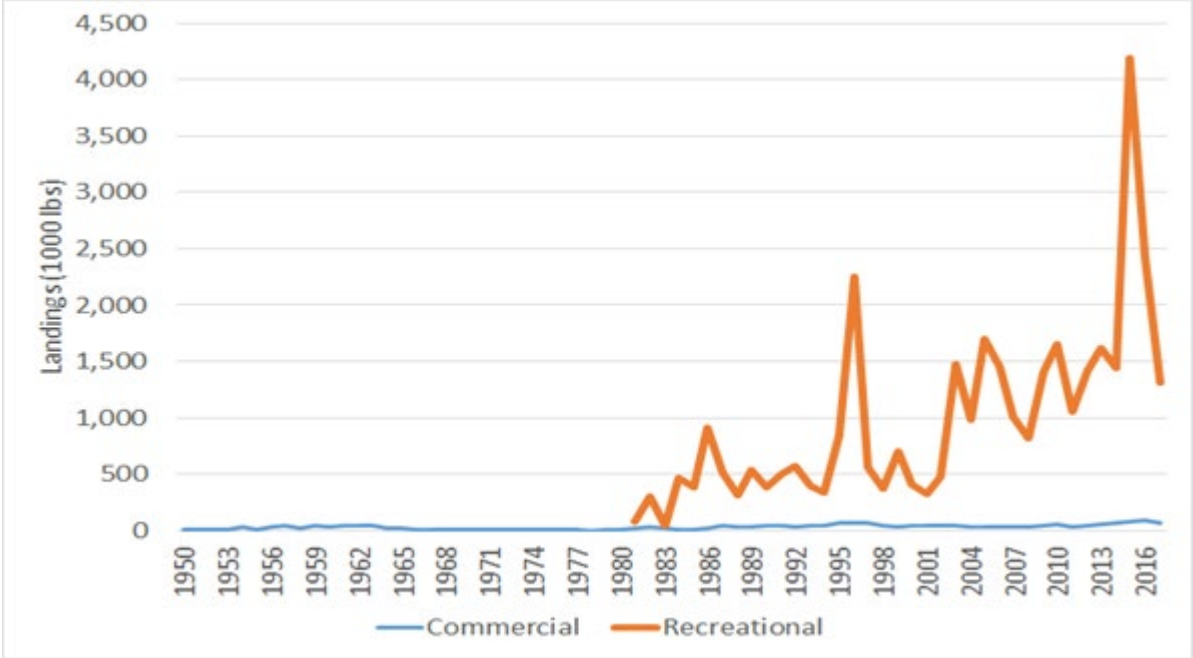
Removals

- Recreational Fleet (combined as general recreational)
  - Charterboat, private recreational, and shore modes from the Marine Recreational Information Program, MRIP.
  - Headboat data from the Southeast Regional Headboat Survey, SRHS.
- Commercial Fleet (all gears combined)
  - Handlines, Gillnets, Pound nets, Seines, trawls, and misc.

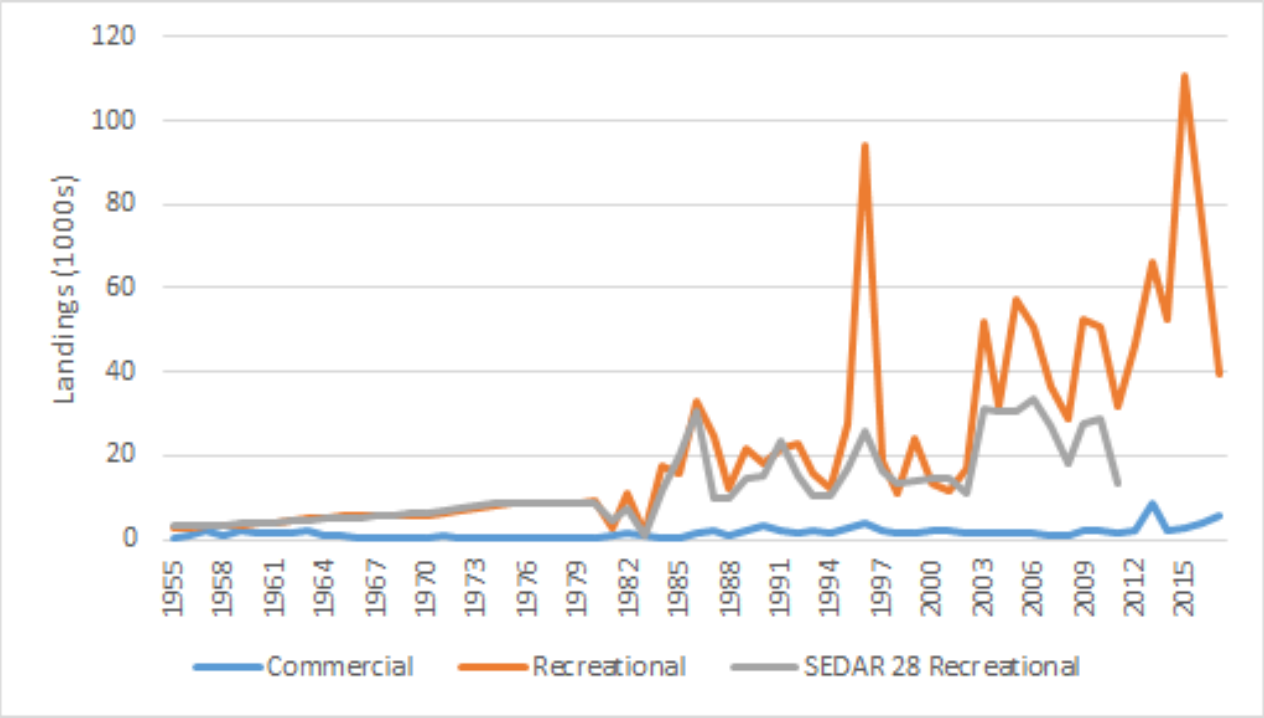
Landings

- Commercial data are a very small proportion of total removals.
- Recreational landings are interpolated prior to 1986 and lack CVs.

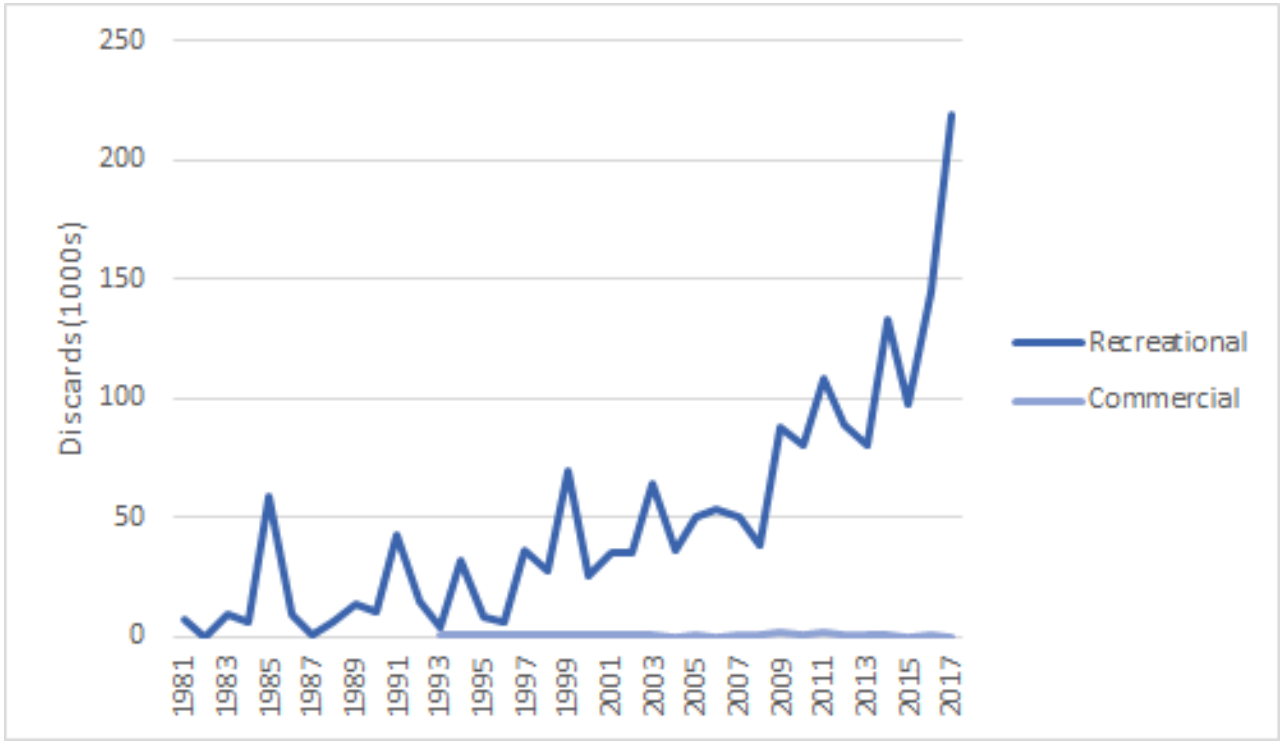




Comparing landings from previous assessment



Discards



- Landings and Discards are combined to create one removals stream for each fleet
  - The discard mortality is applied to the discards before they are combined with landings.
  - Recreational discard estimates prior to 1986 do not have estimates of CVs

Assessment workshop modification

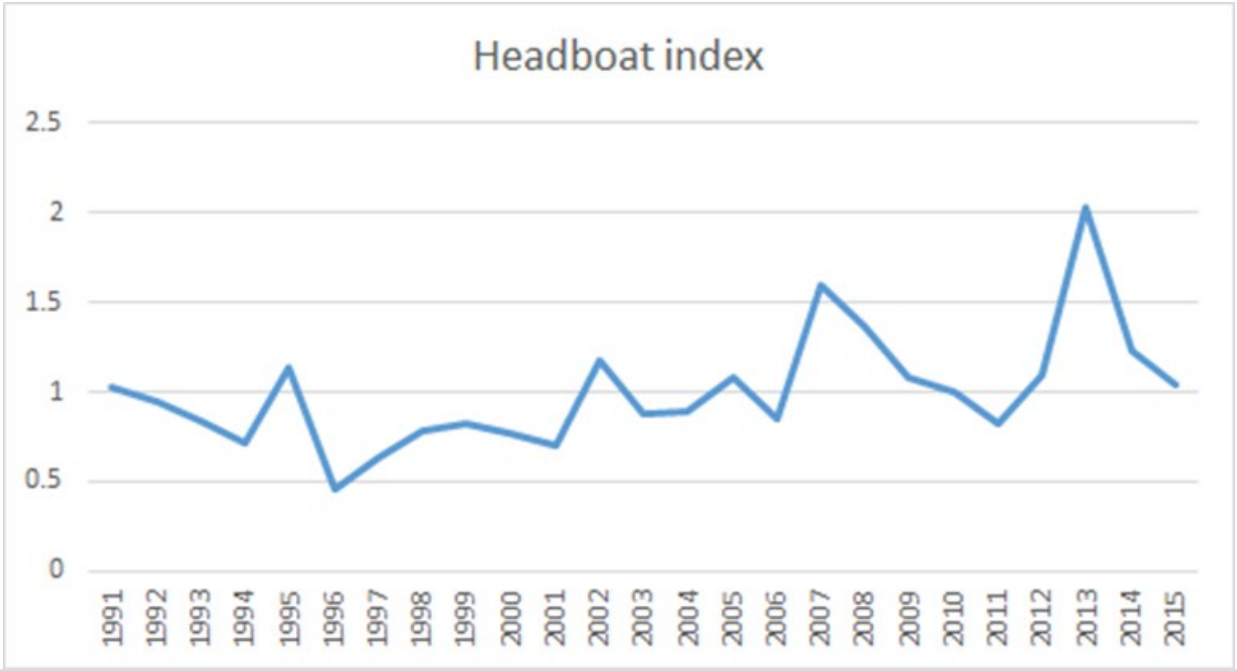
- There were perceived inconsistencies between age and length compositions.
  - Length compositions may only be adding noise to the model.
- We are using an age-structured model, and we have high confidence in the ages determined for this species.
- Assessment Panel chose to use only the age compositions over lengths, where available.

Selectivities

- Assumed a logistic shape for both fleets.
- Stakeholders and data workshop participants noted a change in the fishing behavior in VA and SC around 2007.
  - SC moved to offshore fishing areas, and VA began sight-casting.

Index of Abundance

- One fishery-dependent index of relative abundance
  - Headboat logbooks (1991–2015)
    - Fishery closures in 2016 and 2017 changed the usefulness of the index in those years.



Start year

- There is high uncertainty in the landings and discards data prior to 1986.
- Data availability:

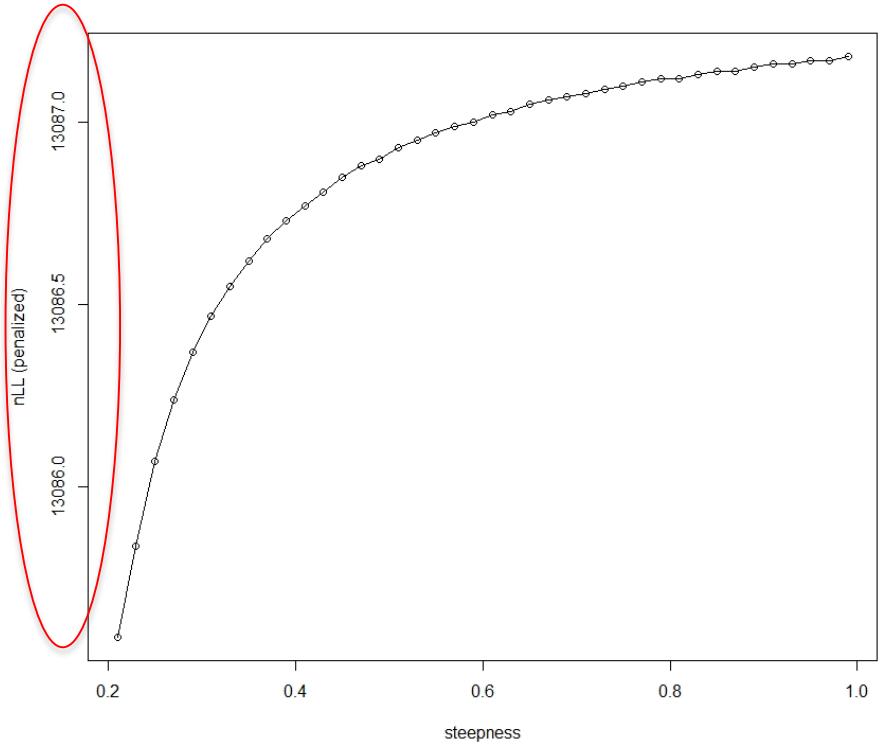
		Year																																		
data source		1950-1955	1955-1980	1981-1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Landings	Commerical																																			
	Recreational																																			
Discards	Commercial																																			
	Recreational																																			
Length Comps	Commercial		Commercial Length comps are a combined comp over all years (1986-2017), states and gear																																		
	Recreational							33	46		33			36	44		44	172	132	70	32		32	40	30	363	390	388	430	359	315	593	683	651	499	306
Age Comps	Recreational				22	18	62	80	13	12				10	31	13		124	111	52	26			57	63	203	225	265	293	246	269	445	487	484	386	273
CPUE	Headboat logbooks																																			

Catch-age model configuration

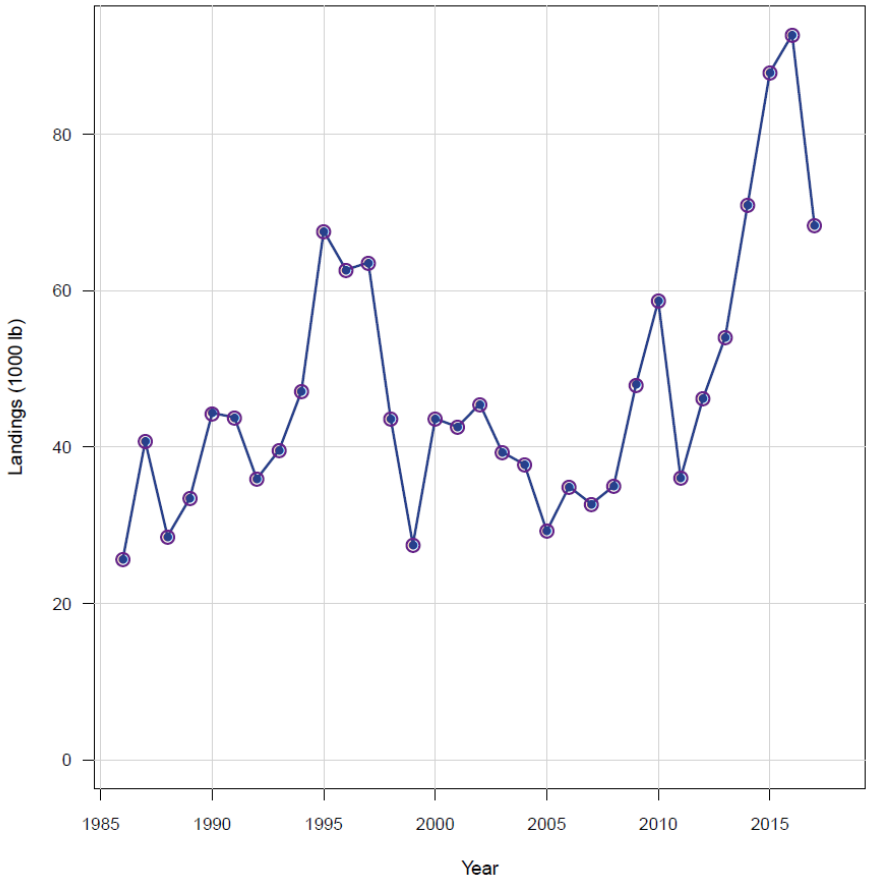
- Start year: 1986.
  - First year with reliable recreational removals and age compositions.
- Estimate an initial fishing mortality.
- Two time blocks for selectivities:
  - Block 1: 1986 to 2006
  - Block 2: 2007 through 2017
- Constant catchability.
- Ages 1-16 modeled, with 12+ as a plus group.

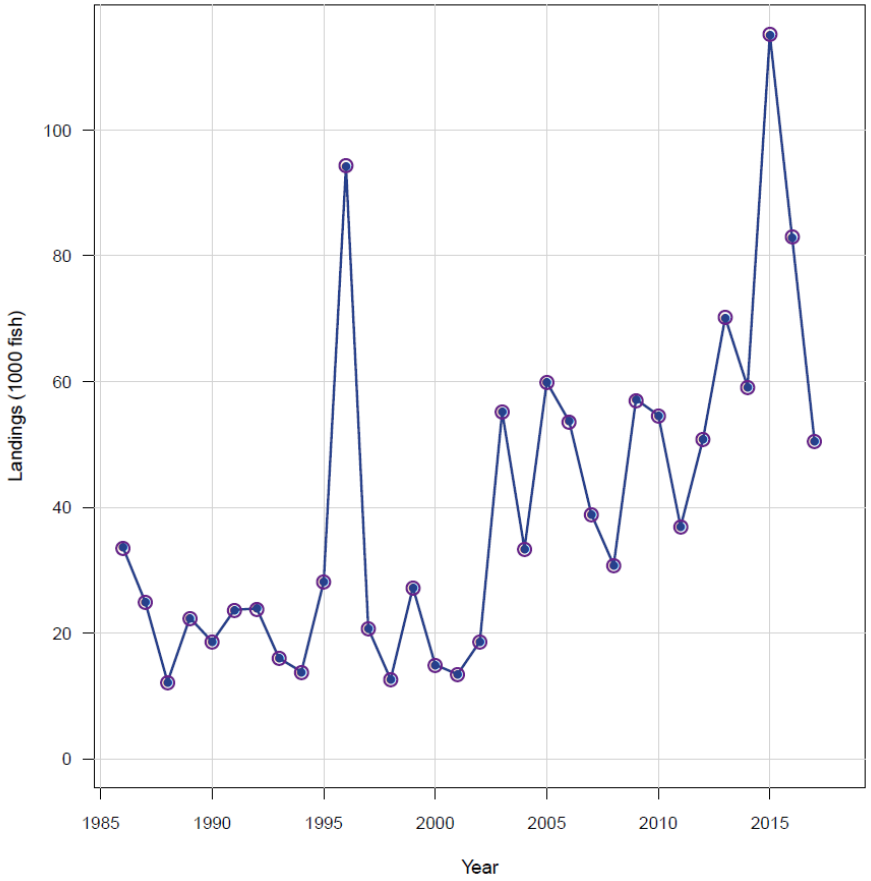
Stock and Recruitment

- Attempted a Beverton-Holt stock recruit function.
- Likelihood profile over steepness was flat.
- Assumed average recruitment and use a proxy ($F_{40\%}$)for MSY.

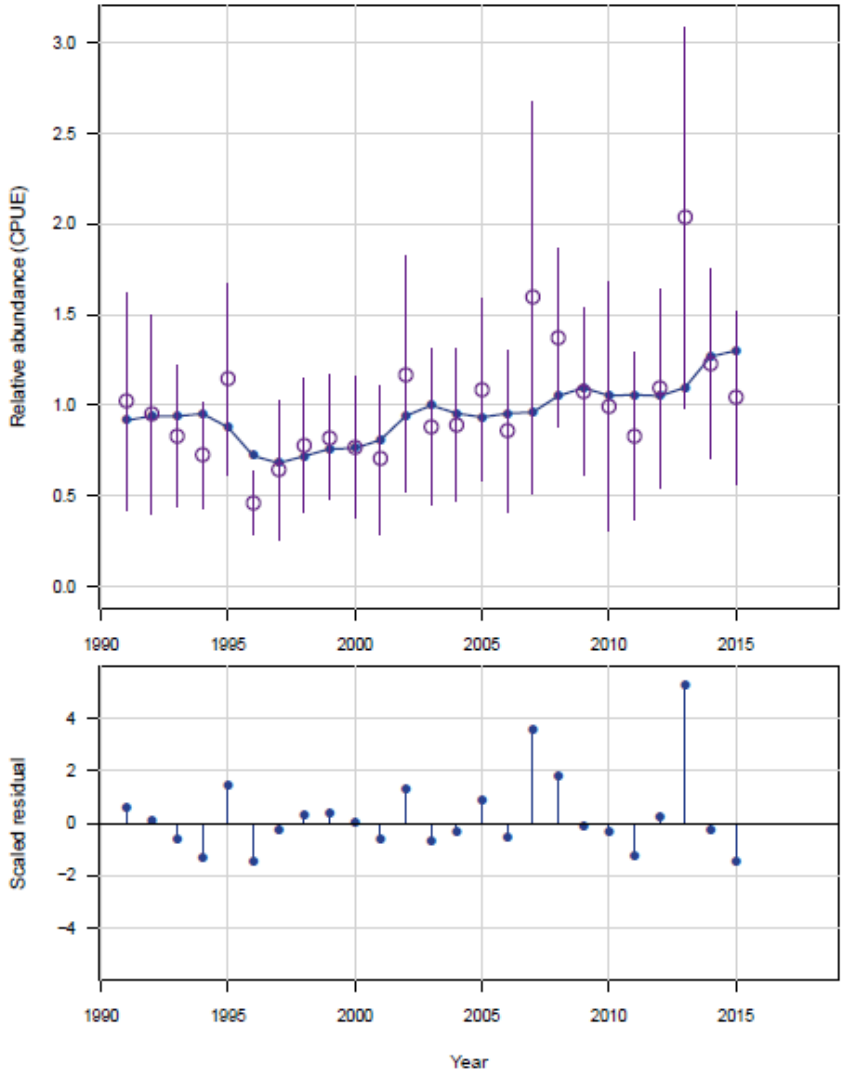


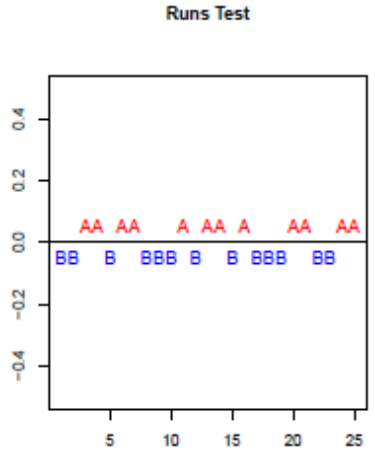
Commercial and Recreational Removals

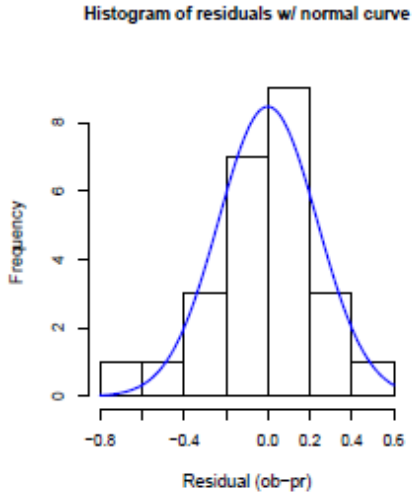




Index fit with diagnostics

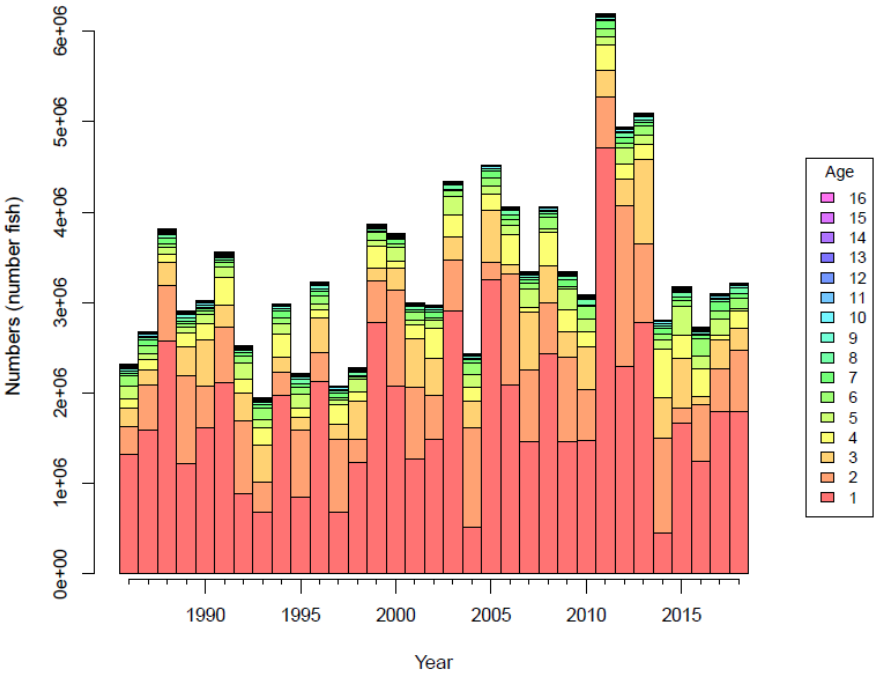


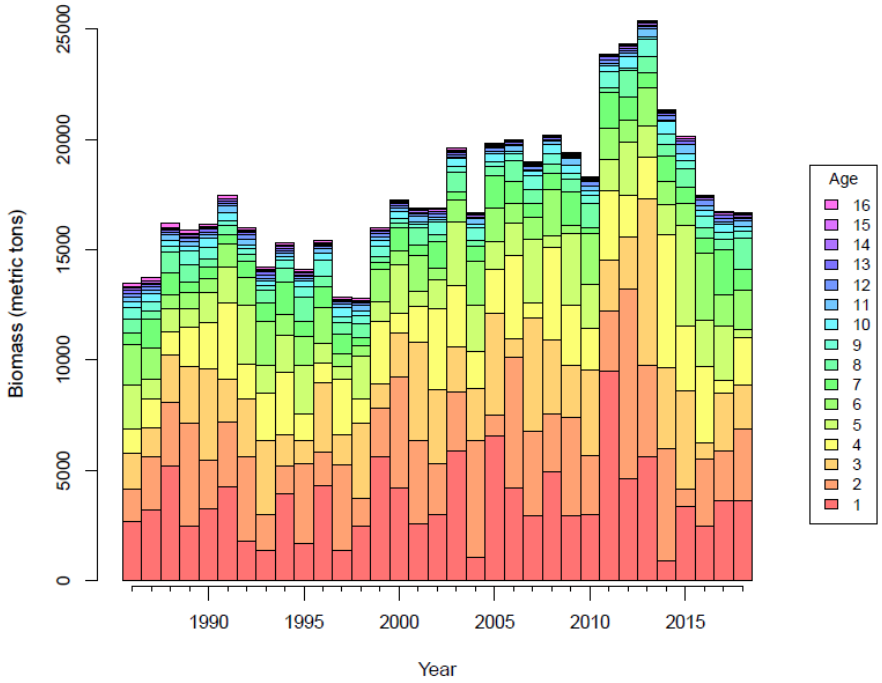




	P−values
Breusch−Pagan test for heteroskedasticity:	0.4288
Harrison−McCabe test for heteroskedasticity:	0.525
usch−Godfrey test for higher−order serial correlation:	0
rbin−Watson test for autocorrelation of disturbances:	0
Lilliefors (Kolmogorov−Smirnov) test for normality:	0.5693
Anderson−Darling test for normality:	0.2799
Pearson chi−square test for normality:	0.369
Shapiro−Wilk test for normality:	0.3788
illips−Perron test for null hypothesis x has a unit root:	0.01
Runs test:	0.8315

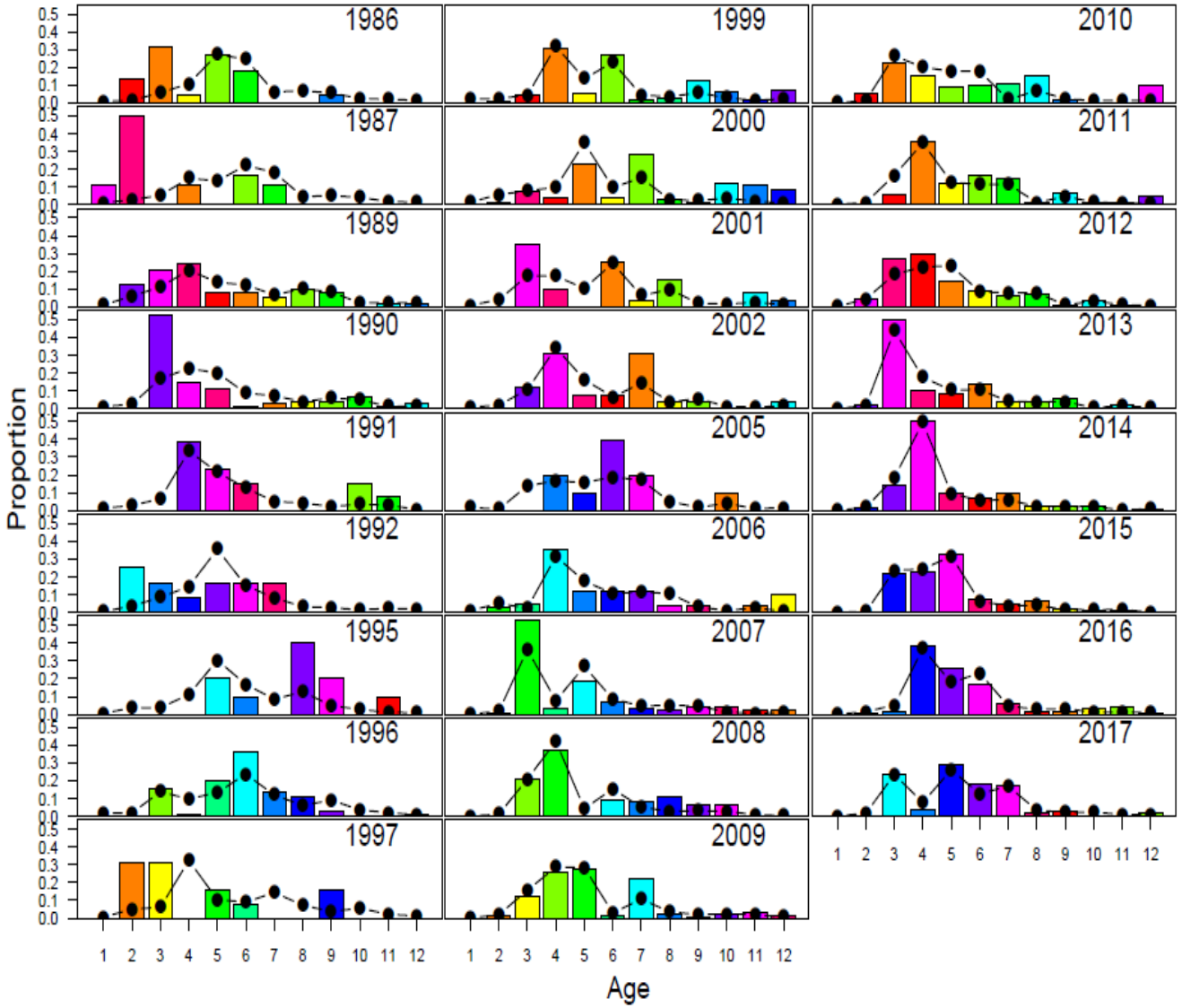
Numbers and Biomass at age

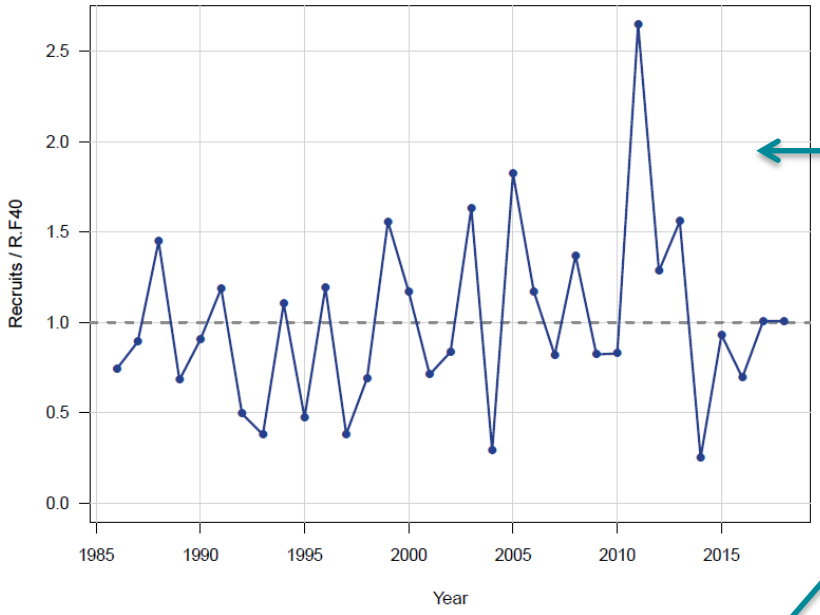




Cohort signals

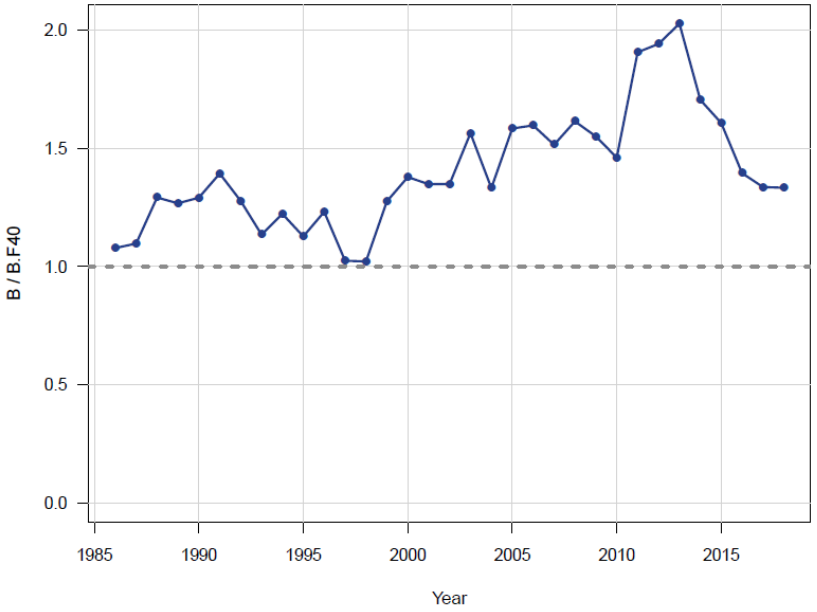
- We can see several strong year classes moving through.

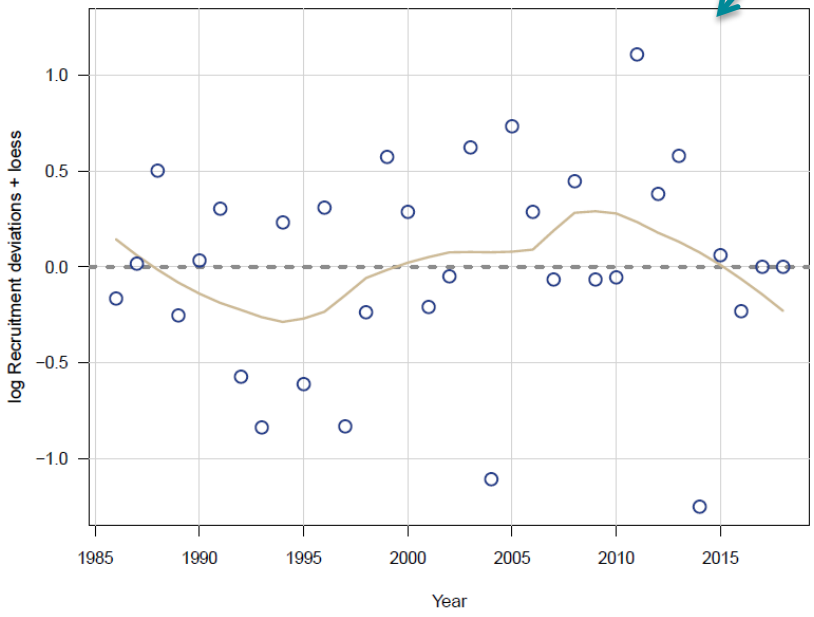




Recruitment

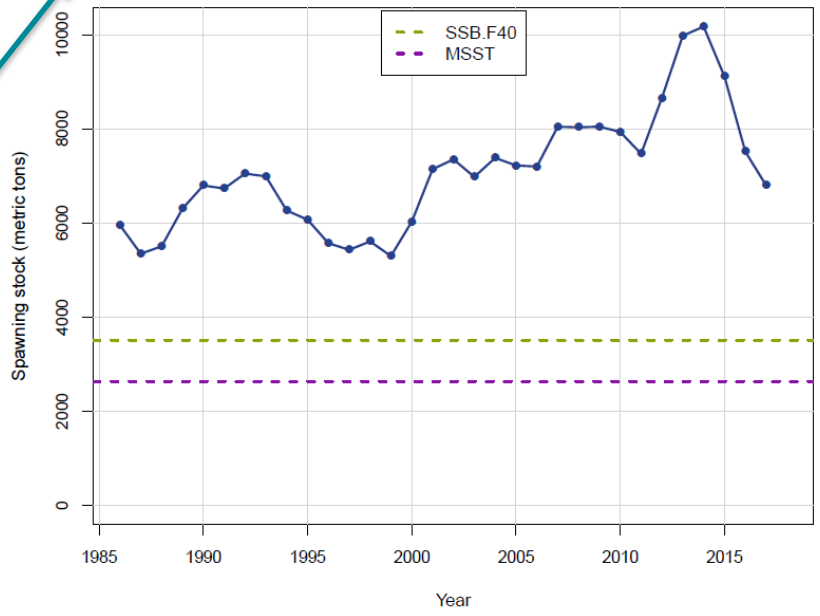
log recruitment residuals



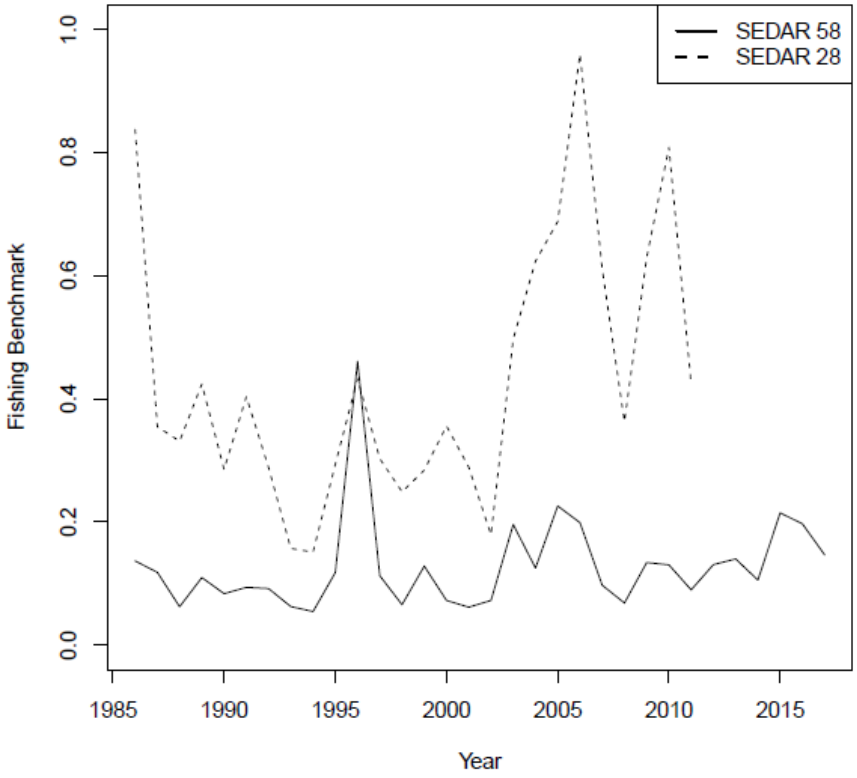


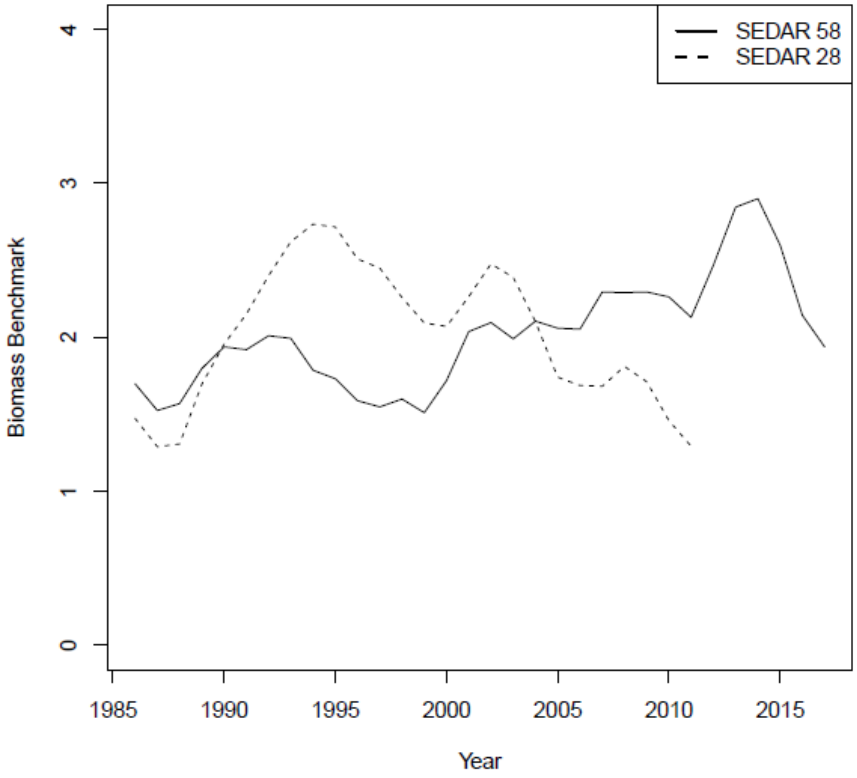
Biomass

SSB status

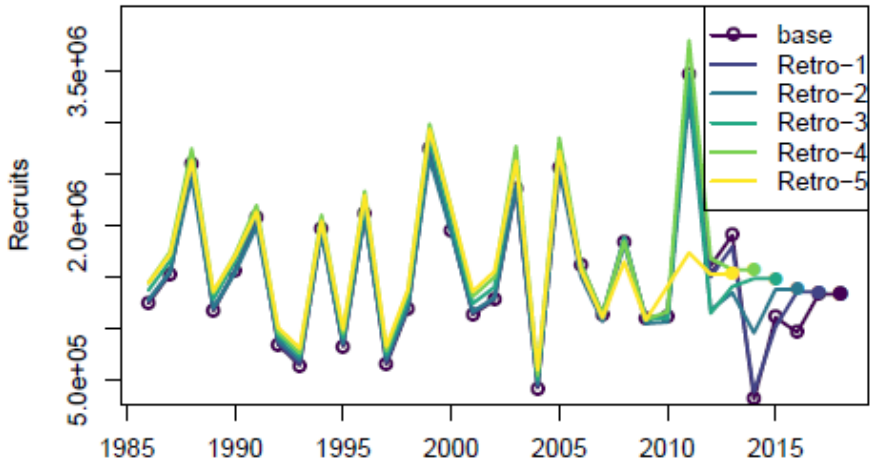


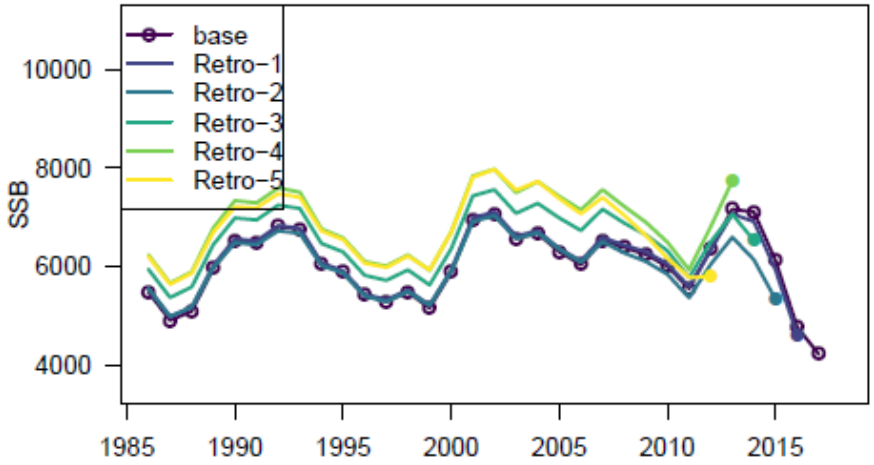
Comparing benchmarks to previous assessment





Retrospectives

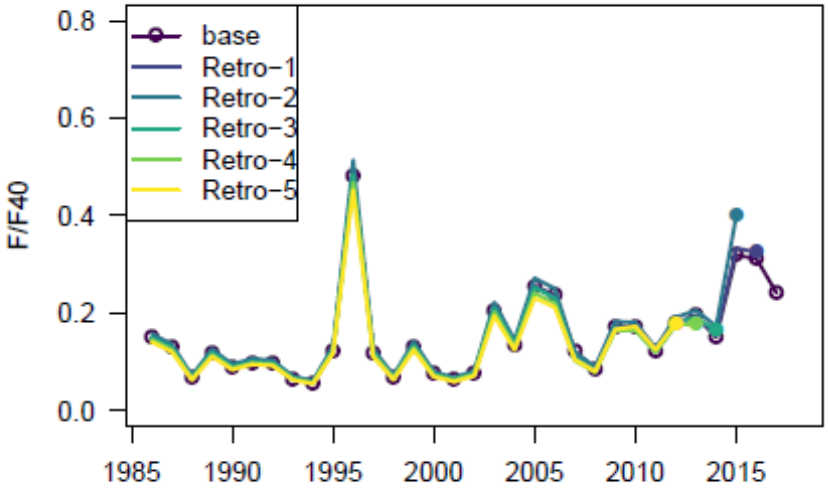


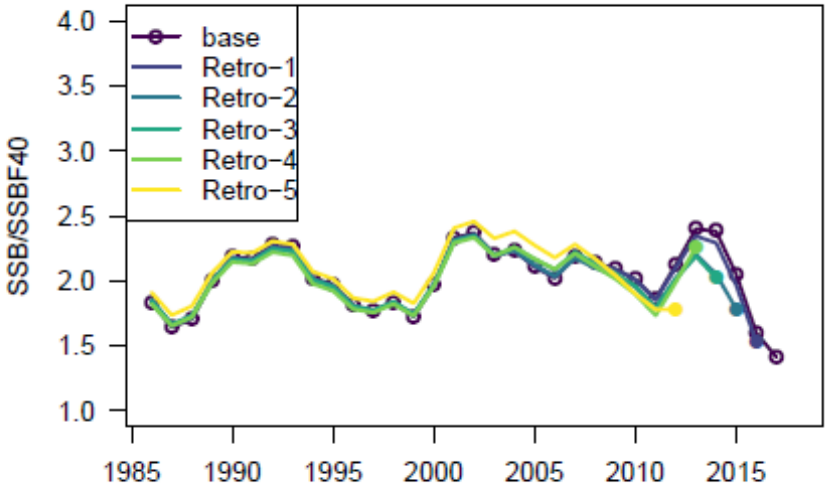


- No strong retrospective pattern in recruits.
- More of a pattern in SSB beyond the 3 year peel.

Retro status

- No pattern of concern in the status plots.





Questions about the base run?

Sensitivities

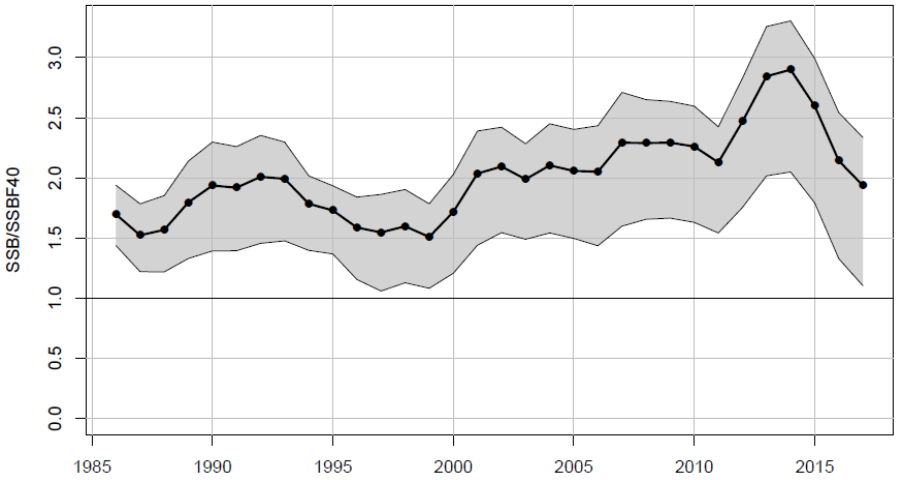
- Start the model in 1950.
- Include length compositions for the general recreational fleet.
- Use the life history values from the last assessment.
- Remove the Headboat index.
- Smooth the peaks in general recreational removals.
- Shift general recreational landings down 3 fold.
- Used the bounds of ensemble parameters that would reach upper and lower bound of status.
- Shift general recreational landings up 3 fold.

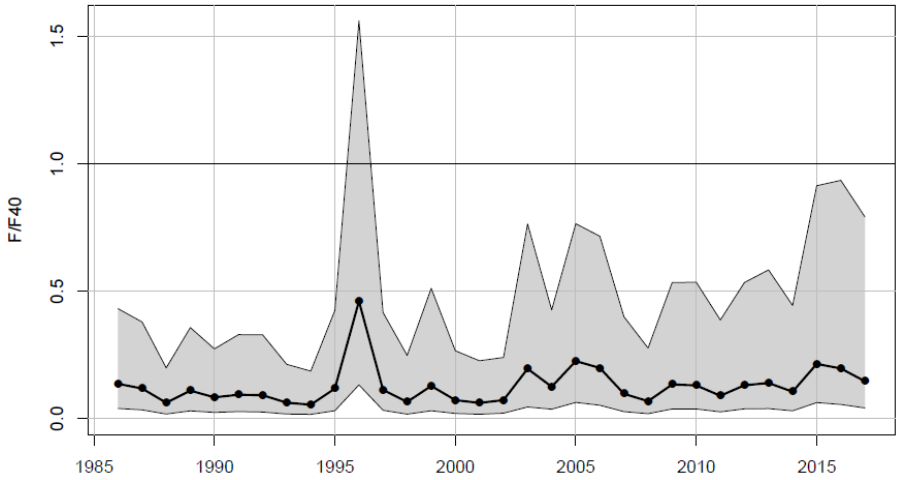
Ensemble modeling to characterize uncertainty

We varied:

- Index
- Landings, Discards, Discard Mortality
- Composition data
- Natural Mortality

Status Uncertainty





Projections

Projection scenarios in the Terms of Reference:

1. $F=F_{current}$ (geometric mean of the last 3 years)
2. $F=F_{40\%}$
3. $F=F_{75\%F40\%}$

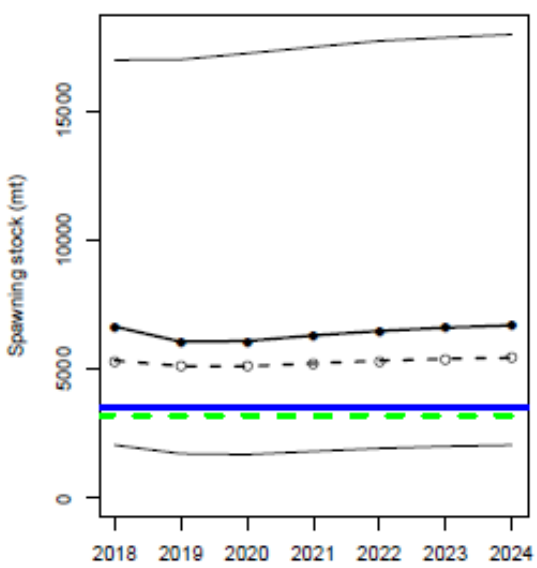
Projection methodology

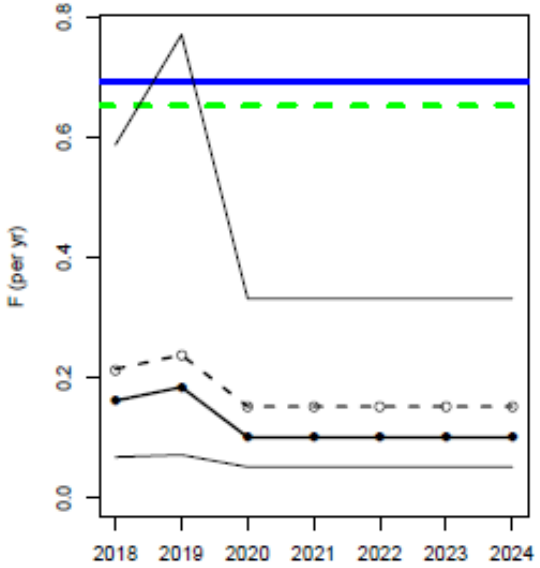
- Projections were run to predict stock status in years after the assessment, 2018–2024.
- The structure of the projection model was the same as that of the assessment model, and parameter estimates were those from the assessment.
- Interim landings (in 2018 and 2019) were an average of the last three years of removals (2015-2017).
- Fishing rates that define the projections were assumed to start in 2020.
- Projections grow less reliable out in time, particularly for a recruitment-driven species.

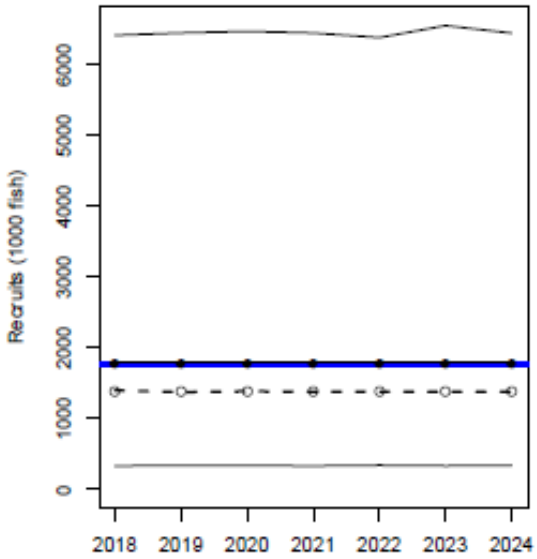
Projection plot layout

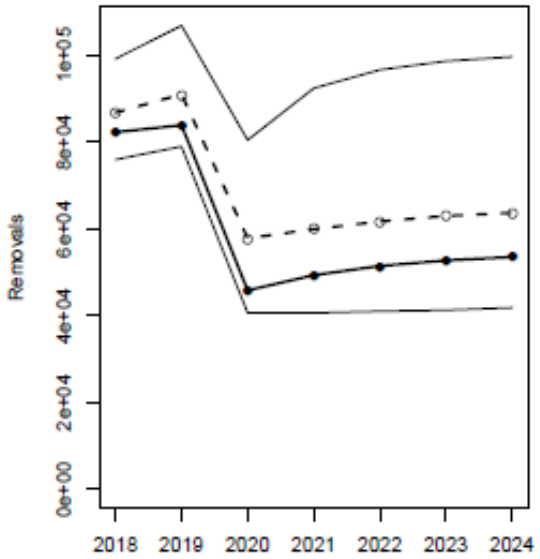
- Expected values (base run) represented by solid lines with solid circles, medians represented by dashed lines with open circles, and uncertainty represented by thin lines corresponding to 5th and 95th percentiles of replicate projections.
- Solid horizontal lines mark $F_{40\%}$-related quantities, while dashed horizontal lines represent corresponding medians.
- Landings were provided in klb and 1000s.

$F=F_{current}$

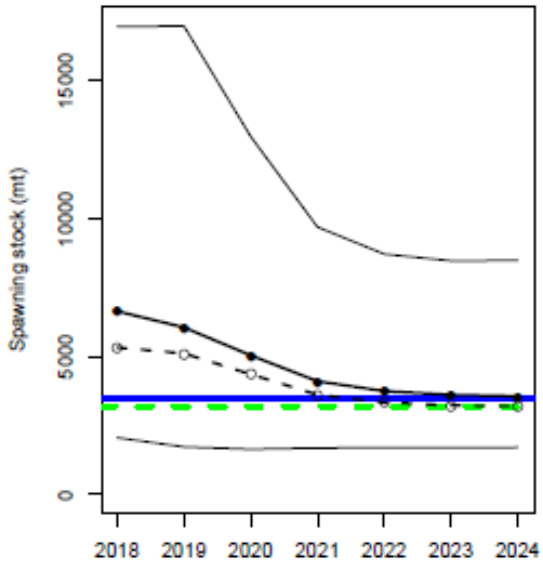

Spawning stock (mt)
0
5000
10000
15000
2018
2019
2020
2021
2022
2023
2024

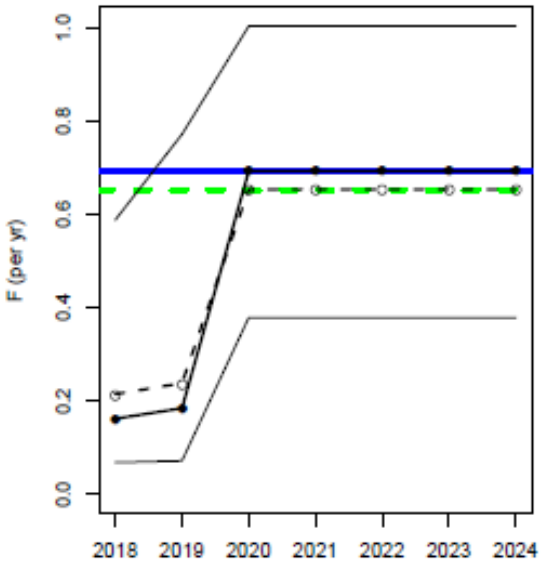

F (per yr)
0.0
0.2
0.4
0.6
0.8
2018
2019
2020
2021
2022
2023
2024

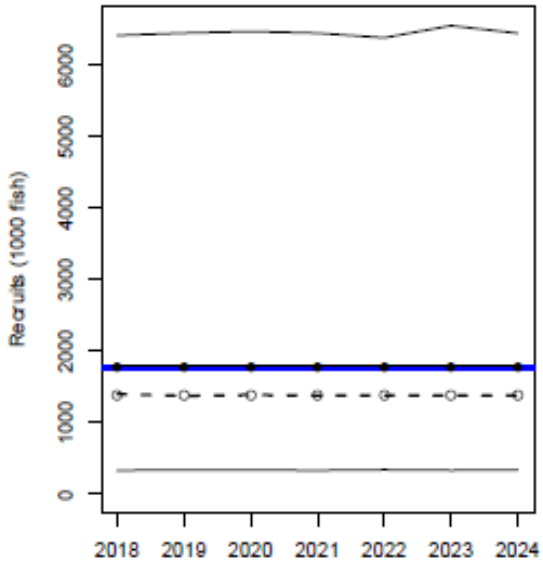

Recruits (1000 fish)
0
1000
2000
3000
4000
5000
6000
2018
2019
2020
2021
2022
2023
2024

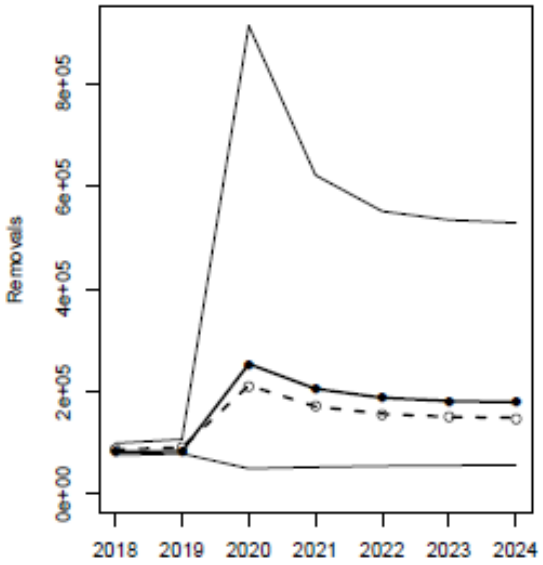

Removals
0e+00
2e+04
4e+04
6e+04
8e+04
1e+05
2018
2019
2020
2021
2022
2023
2024

$F=F_{40\%}$

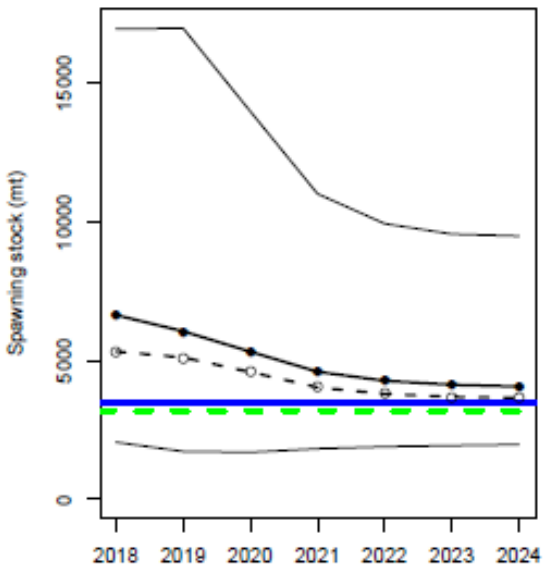

Spawning stock (mt)
0
5000
10000
15000
2018
2019
2020
2021
2022
2023
2024

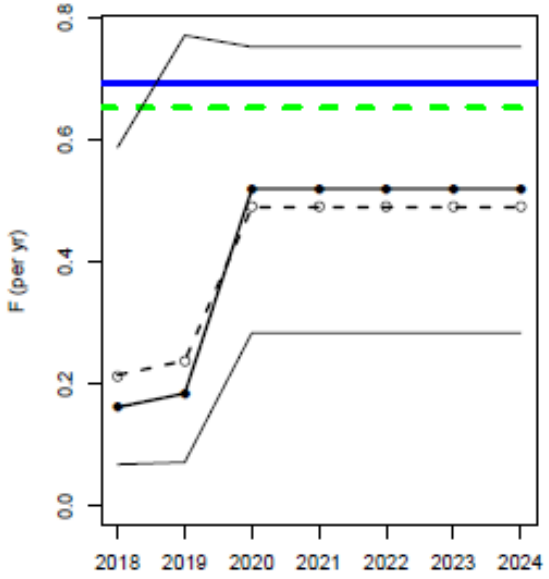

F (per yr)
0.0
0.2
0.4
0.6
0.8
1.0
2018
2019
2020
2021
2022
2023
2024

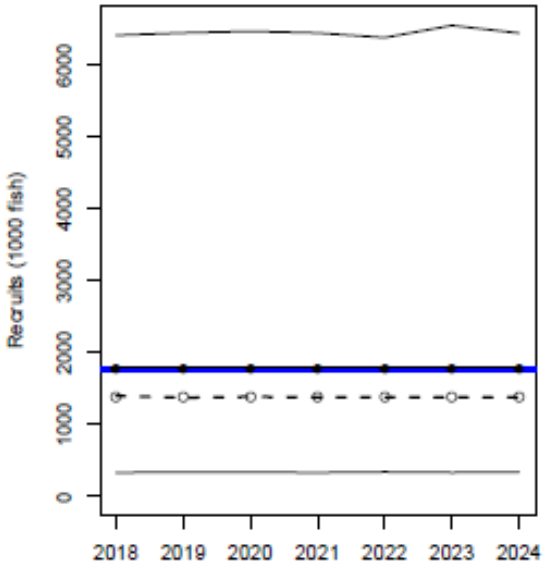

Recruits (1000 fish)
0
1000
2000
3000
4000
5000
6000
2018
2019
2020
2021
2022
2023
2024

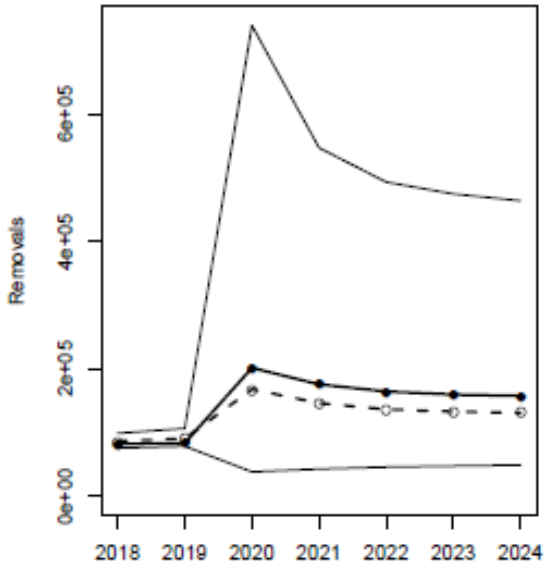

Removals
0e+00
2e+05
4e+05
6e+05
8e+05
2018
2019
2020
2021
2022
2023
2024

$F_{target}=75\%F_{40\%}$









Projection tables available for all scenarios

Table 20. Projection results with fishing mortality rate fixed at $F = 75\%F_{40\%}$ starting in 2020. R = number of age-1 recruits (in 1000s), F = fishing mortality rate (per year), S = spawning stock (mt), L = removals (landings and dead discards) expressed in numbers (n, in 1000s) or whole weight (w, in 1000 lb). The extension b *indicates expected values (deterministic) from the base run; the extension* med *indicates median values from the stochastic projections.*

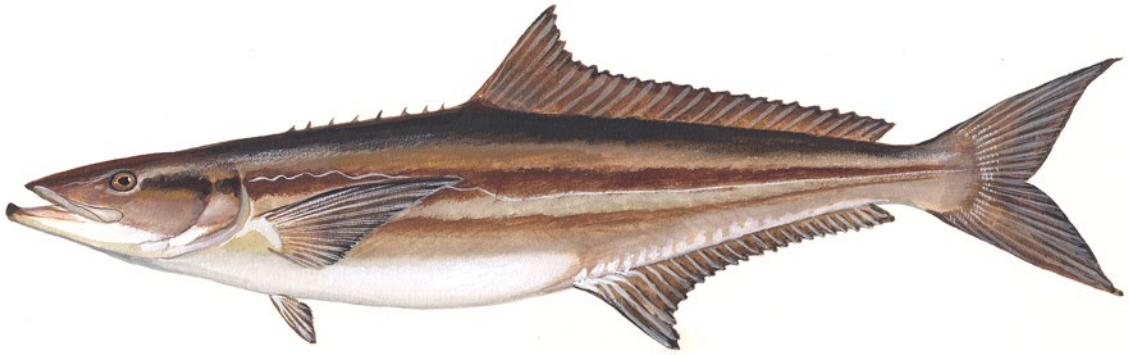
Year	R.b	R.med	F.b	F.med	S.b(mt)	S.med(mt)	L.b(n)	L.med(n)	L.b(w)	L.med(w)
2018	1796	1399	0.16	0.22	6647	5333	82	87	2820	2908
2019	1796	1377	0.19	0.24	6060	5117	84	91	2820	2908
2020	1796	1389	0.52	0.49	5326	4591	202	168	6426	5188
2021	1796	1382	0.52	0.49	4602	4041	176	147	5222	4341
2022	1796	1385	0.52	0.49	4277	3804	165	137	4680	3921
2023	1796	1380	0.52	0.49	4132	3697	160	133	4437	3739
2024	1796	1383	0.52	0.49	4069	3656	158	131	4329	3659

Research Recommendations

- Develop a new fishery-independent index of abundance.
- Increase sample size (such as expanding carcass collection locations and establishing similar programs in other states) of size and age-compositions in harvested and released fish.
- Improve information on age-at-maturity and annual sex ratios.
- Use tagging data or other analytical approaches (e.g., meta-analysis, catch curves, etc.) to ground-truth the estimate of natural mortality.
- Additional research on steepness (*h*) and a full description of landings changes from SEDAR-28 through SEDAR-58 be conducted.

Questions?

SEDAR 58 Atlantic Cobia Benchmark Stock Assessment Review Report



South Atlantic State/Federal Fisheries Management Board

February 2020

SEDAR 58 Peer Review Process

- Data, Assessment, and Peer Review Workshops conducted through SEDAR Process

- SEDAR 58 Atlantic Cobia Peer Review Workshop
  November 19-21, 2019, in Beaufort, NC

- Scientific review focused on data, uncertainty, projections, and research recommendations

Products

- Data, Assessment, and Review Workshop Reports and Post-Review Addendum

Stock Assessment Review Process

Scientific Peer Review Panel

Dr. Jeff Buckel, Chair, NC State University

Dr. John Casey, Center of Independent Experts (CIE)

Dr. Matt Cieri, CIE

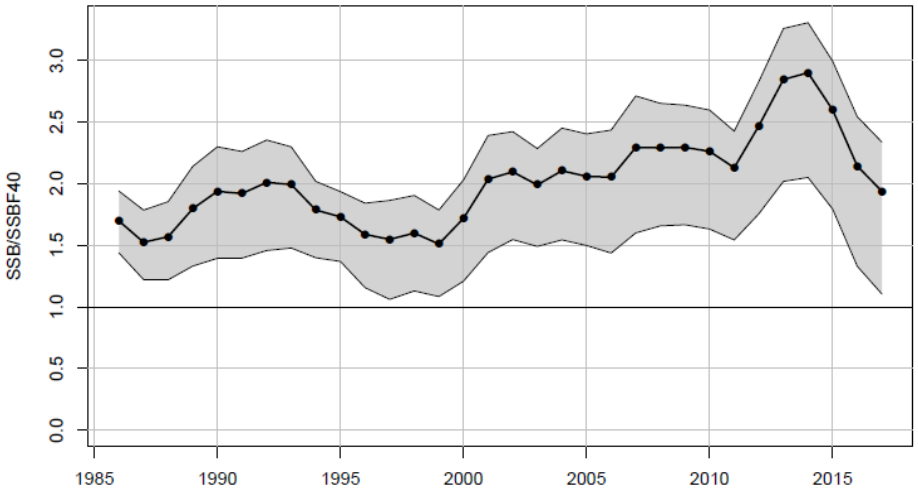
Dr. Alistair Dunn, CIE

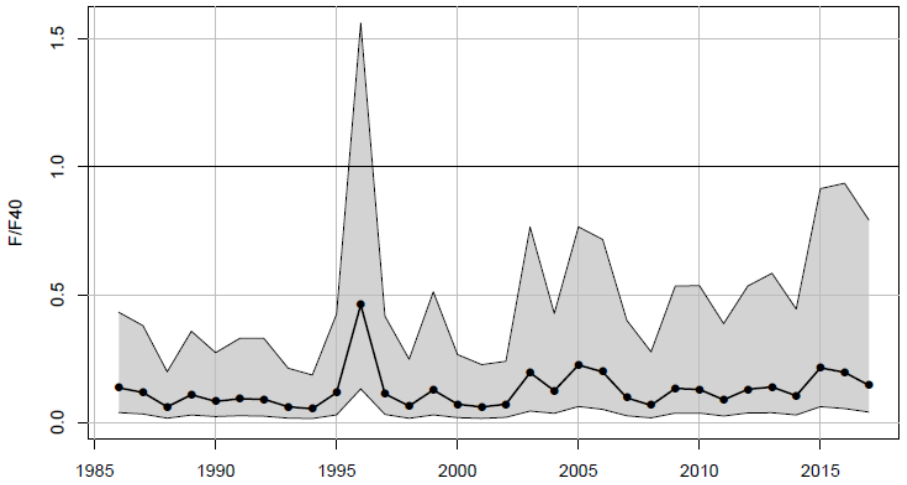
Dr. Gary Nelson, ASMFC, MA DMF

The RP reached consensus on all its recommendations and conclusions and there is no minority report.

Review Panel Overall Findings

- Benchmark assessment represents best available science
- The Beaufort Assessment Model (BAM) should be the basis of stock status and management advice
- Stock status determination (contingent on use of recommended biological reference points) – <u>Not Overfished & Overfishing Not Occurring</u> → $SSB>SSB_{F40\%}$ and $F_{current}<F_{40\%}$





Review Findings

- **ToR 1:** . Evaluate the data used in the assessment (data decisions, uncertainties, application, and reliability)

Panel Conclusions

- The Data Workshop (DW) satisfactorily assembled data, time series, and the necessary life history information needed for the model. However, justification for certain decisions were not provided.

- The RP identified four major sources of data uncertainty: commercial and recreational removals, age compositions for the recreation fishery before 2007, length compositions for the commercial fishery, and the assumed rate of natural mortality.

- Standard error estimates on *M* were too narrow and RP recommended using ±2 standard errors for ensemble modeling.

- Only one index of abundance (head boat) and not available after 2015

Review Findings

- **ToR 2*:*** Evaluate the methods used to assess the stock, taking into account the available data

Panel Conclusions

- Data were used appropriately and the methods were scientifically sound, followed accepted scientific practices, were configured appropriately, and were appropriate for the available data.
- There was no clear stock-recruitment relationship and the use of mean recruitment with deviations was appropriate.

- ***Panel recommendation:*** time-invariant selectivity for the head-boat index; time block selectivity not appropriate for head boat

Review Findings

- **ToR 3*:*** Evaluate the assessment findings with respect to population estimates, status relative to benchmarks, and stock-recruitment.

<u>Panel Conclusions</u>

- The estimates of SSB and *F* for Atlantic Cobia are reliable and show the population has been above $SSB_{F40\%}$ and below $F_{40\%}$ since 1986.
- The RP noted that the model estimates of population size, status, and trend were consistent with the known and assumed population parameters.
- For example, the trends in biomass estimates from the assessment were consistent with the head-boat index and trends in total mortality from assessment were consistent with catch-curve analyses.

Review Findings

- **ToR 4*:*** Are the stock projection methods consistent and appropriate; results informative and robust; key uncertainties acknowledged and reflected in projection results?

Panel Conclusions

- The RP concluded that the projection results are appropriate, informative and robust, and useful to infer future stock conditions; key uncertainties were reflected.

- The mean deterministic and median stochastic estimates of SSB were greater than $SSB_{40\%}$ for 2020-2024. However, given the uncertainty around inputs, there was a small (12%, $F_{current}$) to moderate (50%, $F = F_{40\%}$) percentage of stochastic simulations that resulted in an overfished status ($SSB < SSB_{F40\%}$).

Review Findings

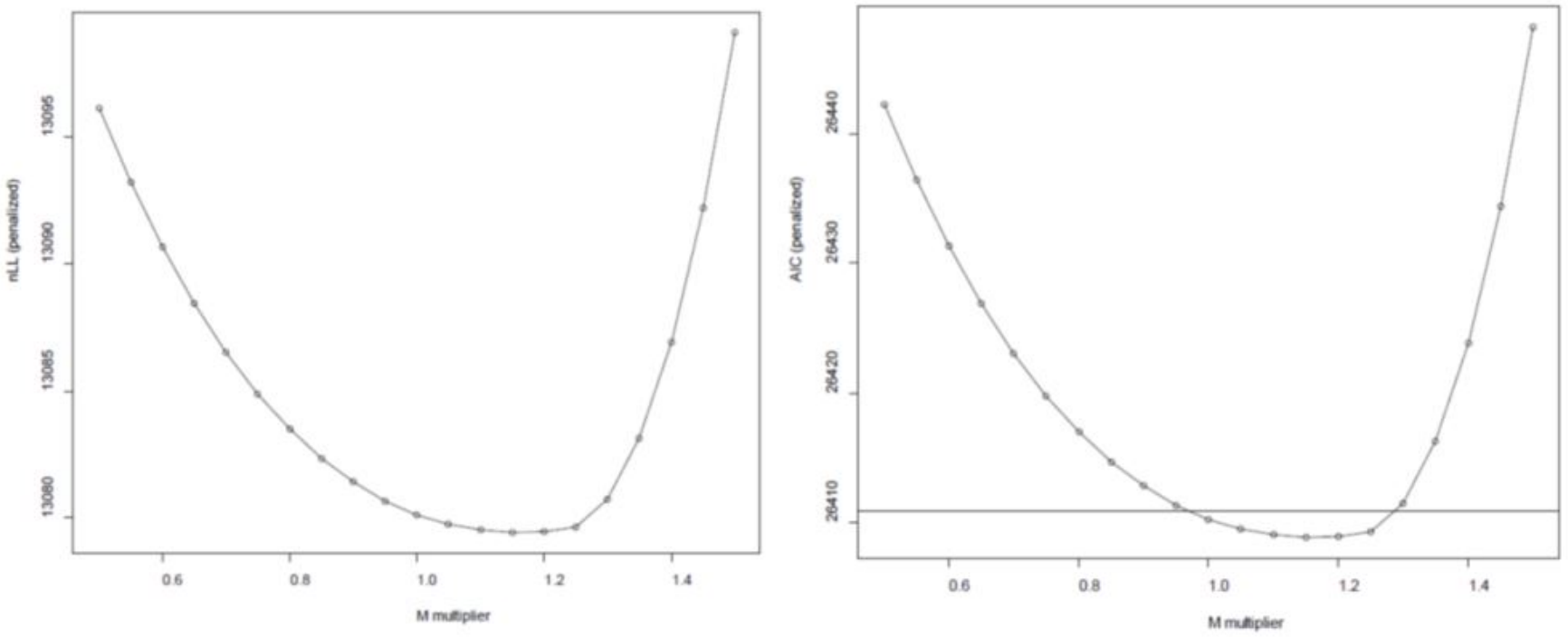
- **ToR 5*:*** Consider how uncertainties in the assessment, and their potential consequences, are addressed.

Panel Conclusions

- Considerable efforts were made by the AW to address uncertainty through sensitivities and ensemble modeling
- The main uncertainty was in estimates of natural mortality (*M*) and less significant uncertainties in the stock-recruit relationship and the estimated maturation ogive.
- Ensemble model bootstraps used estimates of M based on 2x the standard error of the *M* around the Charnov regression line
- The RP noted that that while the estimates of *M* were very uncertain, the outcomes of the assessment showed that the stock was highly unlikely to be below the $SSB_{F40\%}$ reference point.

Review Findings

- ***Likelihood profiling supported the use of a higher M relative to prior assessment***



Negative Log likelihood and AIC at various values of natural mortality, shown as a multiplier on the value of M

Review Findings

ToR 6*:* Consider the research recommendations provided by the Data and Assessment workshops and make any additional recommendations or prioritizations warranted.

- Develop a new index of abundance
- Increase sample size (such as expanding carcass collection locations and establishing similar programs in other states) of size- and age-compositions in harvested and released fish
- Improve information on age-at-maturity and annual sex ratios
- Use tagging data or other analytical approaches (e.g., meta-analysis) to ground-truth the estimate of natural mortality.
- Determine plausible values on *h* (steepness) to evaluate as sensitivities
- Recommend that chair of DW be present at RW; DW report summaries

Review Findings

ToR 7*:* Provide suggestions on improvements in data or modeling approaches which should be considered when scheduling the next assessment.

- Evaluate other reference points based on management goals and objectives/risk tolerance prior to next assessment

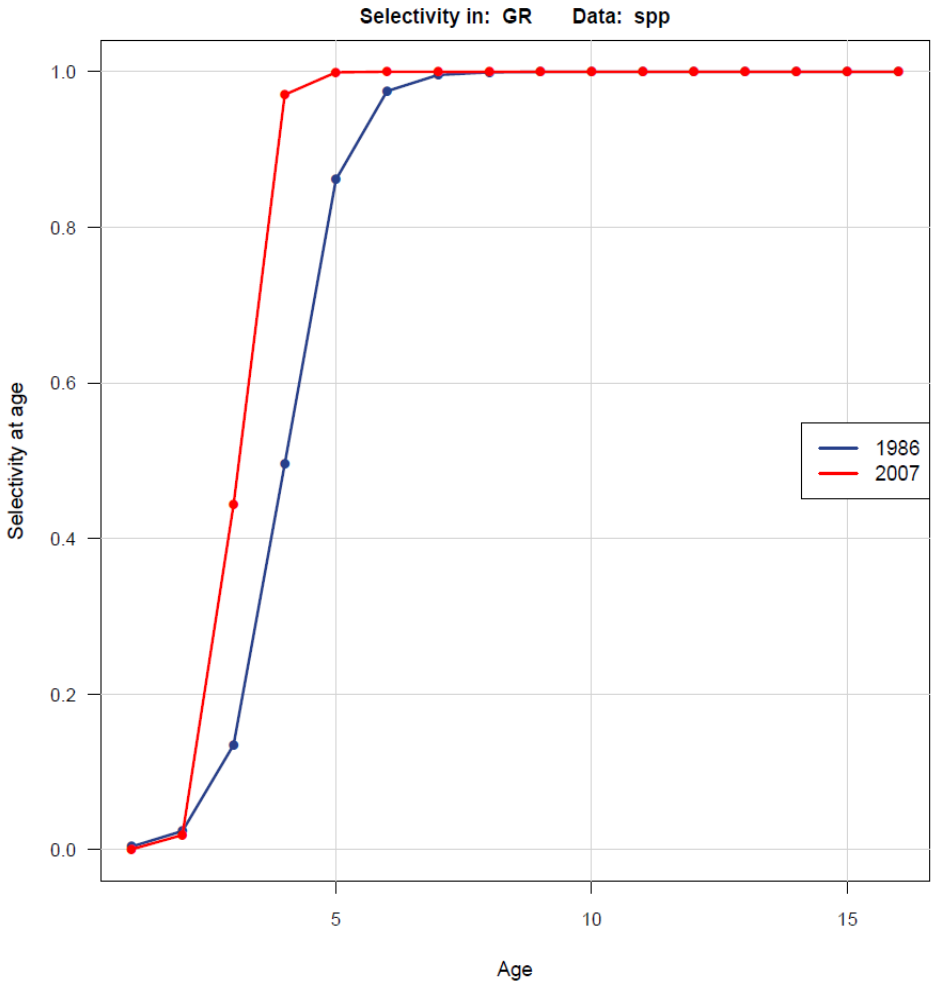
- The RP recommended that additional research on steepness (*h*) and a full description of landings changes from SEDAR-28 through SEDAR-58 be conducted.

- There was small evidence of lack of fit to age-composition data and the RP recommended that the AT consider alternative selectivity shapes in future assessments.

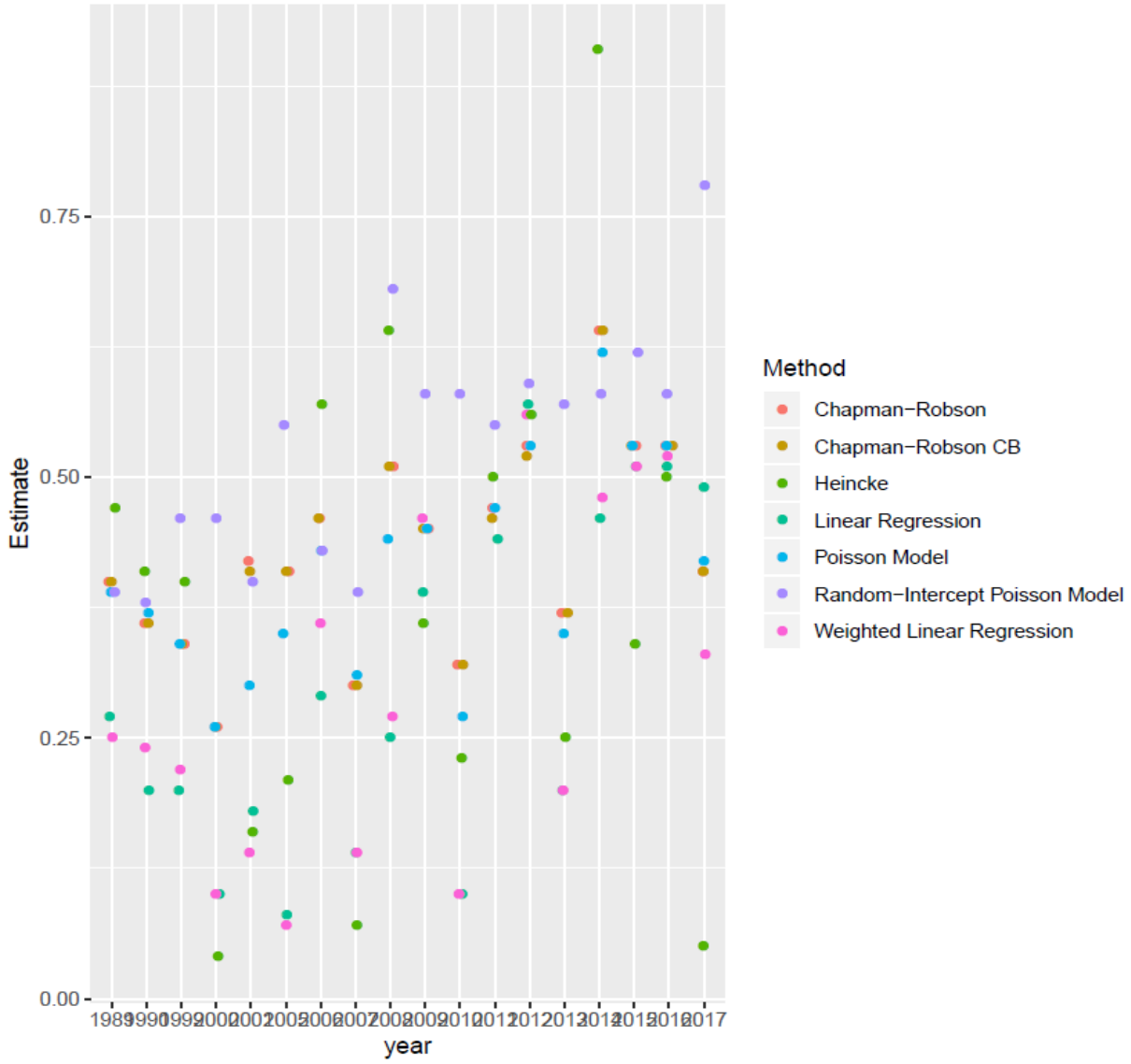
- If no other index is identified, next assessment should be 2024 or later to ensure at least three additional years of head boat index after break

Questions?

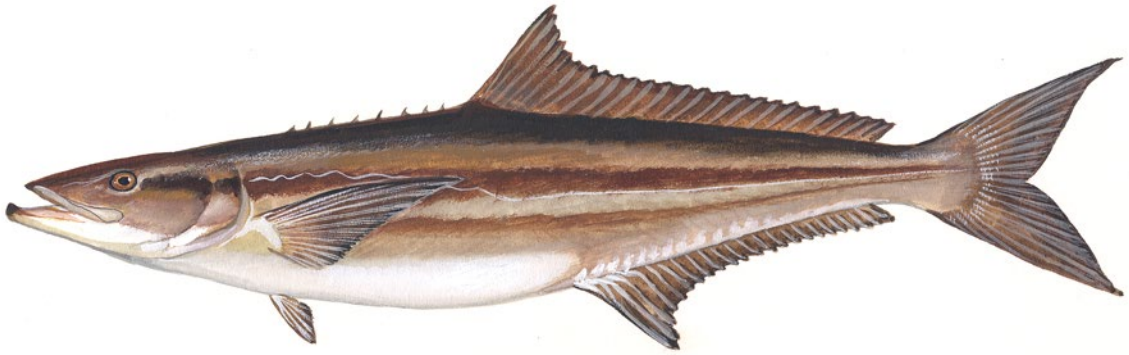
Recreational selectivity



Catch-curve analyses



Atlantic Cobia Harvest Specification Process

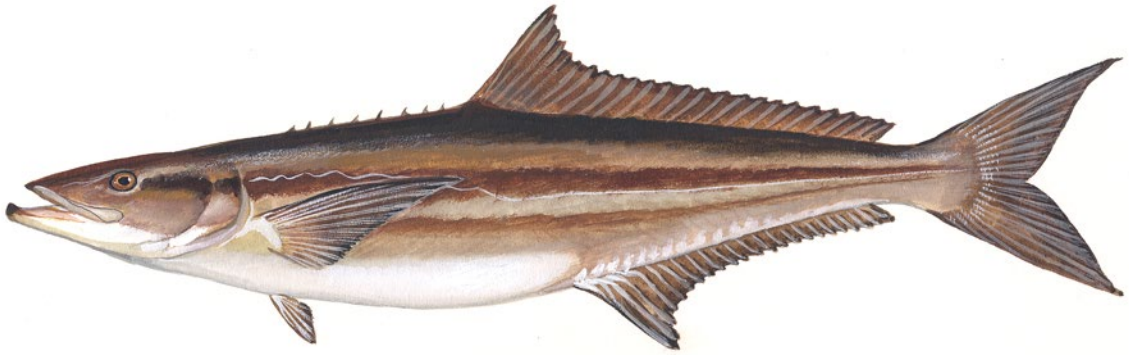


February 2020

Specification Process

- Today – Board can specify harvest
  - Measures (total quota, coastwide limits, etc.)
  - Timeframe (up to 3 years, start in 2020?)
- Potential schedule if Board specifies a total quota for implementation in 2020:
  - March 1 – Implementation plans due (could also include Amd 1)
    - Recreational non-*de minimis* state season/vessel limits to achieve targets
    - Recreational *de minimis* states 1 fish/vessel no season or match closest non-*de minimis*
  - ~March 9 – TC Review of implementation plans
    - TC will calculate commercial trigger percentage
  - ~March 23 – Board consideration of plans and commercial trigger via webinar

Recommended Harvest Quota Options from the Cobia Technical Committee



February 2020

Projection Methodologies

- Projections in Assessment
  - Used 2015-2017 average landings as estimates of 2018 and 2019 landings
  - 3 projection scenarios: $F_{current}$, $F_{40\%}$, 75% $F_{40\%}$
- Modifications Requested by TC
  - Requested use of actual 2018 harvest and 2016-2018 average harvest for 2019
  - Landings used in projections are actually harvest and dead discards—need to estimate dead discards
    - Calculated the annual ratio of dead discards to landings by sector
    - Used 2015-2017 weighted average of dead discard ratios (13.3%) to estimate dead discards from total landings

Projections Requested

- F based Projections—harvest varies year to year
  - $F_{40\%}$ (0.65)
  - 75% $F_{40\%}$ (0.49)
  - 50% $F_{40\%}$ (0.33)
  - 25% $F_{40\%}$ (0.16)
  - $F_{current}$ (0.15)
- Constant Harvest Projections
  - 2 million pounds
  - 2.4 million pounds (avg 2016-2018 harvest)
  - 2.8 million pounds
  - 3.7 million pounds (max harvest since 2014)
- Used 2020-2024 average landings in numbers from projections for proposed quotas

Projection Results

Median Spawning Stock Biomass (mt)

Year	F40%	Harvest= 3,711,695	75% F40%	Harvest= 2,821,695	Harvest= 2,410,848	50% F40%	Harvest= 2,000,000	25% F40%	F Current
2018	5235	5235	5235	5235	5235	5235	5235	5235	5235
2019	4969	4969	4969	4969	4969	4969	4969	4969	4969
2020	4293	4676	4518	4833	4903	4759	4972	5015	5032
2021	3590	4261	4007	4655	4835	4513	5014	5131	5164
2022	3328	3968	3784	4551	4815	4401	5082	5239	5293
2023	3228	3726	3687	4457	4792	4341	5126	5307	5370
2024	3199	3586	3652	4421	4807	4320	5195	5368	5427

Projection Results

Probability of Overfished (prop of runs <$L_{40\%}$ benchmark)

Year	F40%	Harvest= 3,711,695	75% F40%	Harvest= 2,821,695	Harvest= 2,410,848	50% F40%	Harvest= 2,000,000	25% F40%	F Current
2018	0.21	0.08	0.21	0.08	0.08	0.21	0.08	0.21	0.08
2019	0.26	0.14	0.26	0.14	0.14	0.26	0.14	0.26	0.14
2020	0.32	0.23	0.29	0.19	0.18	0.27	0.16	0.24	0.14
2021	0.41	0.32	0.33	0.24	0.21	0.26	0.17	0.2	0.12
2022	0.46	0.39	0.36	0.28	0.23	0.25	0.18	0.16	0.1
2023	0.49	0.43	0.37	0.3	0.24	0.24	0.18	0.13	0.09
2024	0.5	0.46	0.37	0.32	0.25	0.23	0.18	0.1	0.08

TC Harvest Recommendations

- TC recommends 2.4 million pound harvest as max quota with preferred options being ≤ 2 million pounds
- Reasons for precautionary approach
  - Declining trends in SSB through assessment's terminal year
  - Uncertainty in assessment, particularly from natural mortality sensitivity run
  - Possibility of an incoming year class

TC Harvest Recommendations

- TC recommends harvest quota calculated in numbers
  - Quota in numbers partitioned to rec and comm sectors (92%-8% split)
  - Convert comm quota to pounds (avg 2015-2017 comm wt=22.82 lbs)

Projection	Total Harvest Quota (fish)	Recreational Quota (fish)	Commercial Quota (pounds)
$F_{current}$	53,467*	49,190	97,595
25% $F_{40\%}$	57,526*	52,924	105,003
Harvest = 2 mil lb	65,819*	60,554	120,142
Harvest = 2.4 mil lb	80,112	73,703	146,232

*Preferred by TC

Harvest Quotas in Numbers

- Example: 2 million pound harvest quota
  - Using numbers, allocation would be:
    - 2 million lbs = 65,819 fish
    - 65,819 fish x 0.92 = 60,554 fish rec quota
    - 65,819 fish – 60,554 fish = 5,265 fish comm quota

      5,265 fish x 22.82 lbs = 120,142 lbs comm quota
  - Commercial avg weights are smaller than recreational, likely due to differences in fishing practices, gears, and min size regulations

Questions?

EXTRA SLIDES

Recent Cobia Harvests	
Year	**Total Pounds**
2014	1,334,373
2015	3,711,695
2016	2,587,126
2017	1,413,915
2018	3,231,501

Prelim 2019: 2,052,757 lb

Comparison to Status Quo

- Current Rec Quota: 22,124 fish
- Calculated 2015-2017 average MRIP calibration factor (2.38)
  - Calculated as $\frac{FCAL\ harvest\ (numbers)}{BASE\ harvest\ (numbers)}$ for each year across the management unit
- Status Quo Rec Quota = 22,124 x 2.38 = 52,655 fish
- Range of TC recommended rec quotas: 49,190-73,703 fish

Projection Results

Median Landings (harvest + dead discards, 1000 lbs)

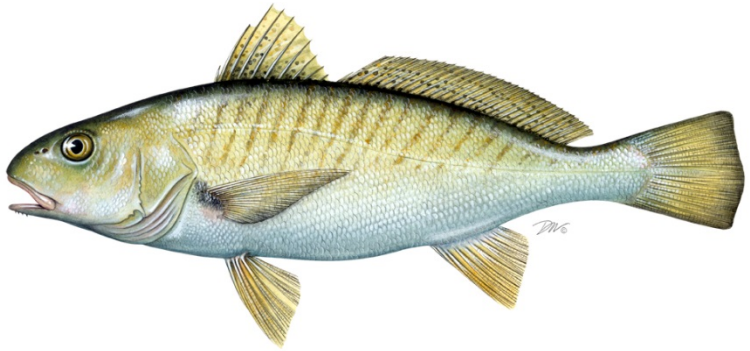
Year	F40%	Harvest= 3,711,695	75% F40%	Harvest= 2,821,695	Harvest= 2,410,848	50% F40%	Harvest= 2,000,000	25% F40%	F Current
2018	3664	3664	3664	3664	3664	3664	3664	3664	3664
2019	2742	2742	2742	2742	2742	2742	2742	2742	2742
2020	6362	4207	5064	3198	2732	3592	2267	1913	1777
2021	4915	4207	4294	3198	2732	3352	2267	1980	1832
2022	4290	4207	3893	3198	2732	3208	2267	2025	1887
2023	4070	4207	3724	3198	2732	3137	2267	2058	1931
2024	3978	4207	3655	3198	2732	3112	2267	2086	1960

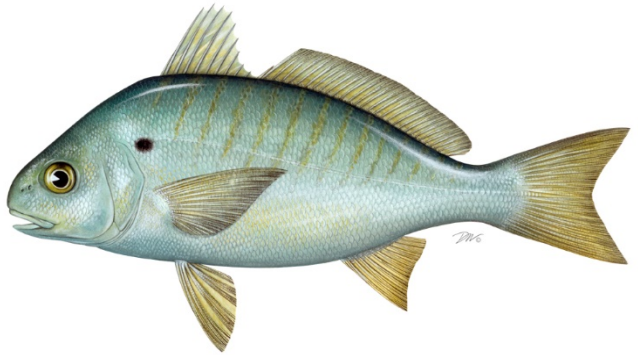
Projection Results

Median Landings (harvest + dead discards, 1000 fish)

Year	F40%	Harvest= 3,711,695	75% F40%	Harvest= 2,821,695	Harvest= 2,410,848	50% F40%	Harvest= 2,000,000	25% F40%	F Current
2018	109	109	109	109	109	109	109	109	109
2019	86	86	86	86	86	86	86	86	86
2020	208	137	165	104	89	117	74	62	57
2021	169	142	145	106	90	111	74	64	59
2022	156	146	136	108	91	108	75	66	61
2023	150	150	133	109	92	107	75	67	63
2024	149	152	131	110	92	107	75	67	63

Draft Addenda to the Atlantic Croaker and Spot FMPs





February 2020

Presentation Outline

- Intro/Background
- Public Comment
- AP Report
- TC/PRT Report
- Atlantic Croaker Add III
- Spot Add III

Addenda Process and Timeline

Commission's Process and Timeline

May 2019	South Atlantic Board Tasks PDT to Develop Draft Addendum III
May 2019 – October 2019	PDT Develops Draft Addendum III for Public Comment
October 2019	South Atlantic Board Reviews Draft Addendum III and Considers Its Approval for Public Comment
November 2019 – January 10, 2020	Board Solicits Public Comment and States Conduct Public Hearings
February 2020	**Board Reviews Public Comment, Selects Management Options and Considers Final Approval of Addendum III**
TBD	Provisions of Addendum III are Implemented

Background/Statements of the Problem

- Traffic Light Approach (TLA) used to manage croaker & spot since 2014 (Add II for each plan)
  - Uses red, yellow, and green to show current fishery-independent abundance and harvest relative to a long-term average within a ref. period
- Conflicting signals between harvest/abundance indicators, showed declining harvest but high "adult" abundance
- TC recommended updates to TLA analysis, impact management
- Add II triggered management responses difficult to estimate/predict, more prescriptive options considered in Add III
- **Draft Add III incorporates TC/PRT-recommended updates and considers revisions to management triggers and responses**

Background – Recommended TLA Updates

1. Abundance Metric Surveys: NEFSC, SEAMAP, **ChesMMAP, SC Trammel Net (Croaker)/NC Pamlico Sound (Spot)**
2. Revise above surveys by **using age-length keys and length composition to estimate the number of adult (Croaker: Age 2+; Spot Age 1+) individuals** caught by each survey
3. **Regional metrics N and S of the VA-NC state border**
   - North (Mid-Atl): NEFSC and ChesMMAP
   - South: SEAMAP and SC Trammel Net (Croaker)/NC Pamlico Sound (Spot)
4. Reference time period (all metrics/surveys): **2002-2012**
5. Trigger **coastwide management** action if both abundance and harvest thresholds **within a region** exceeded in any **3 of the 4 terminal years (Croaker)/2 of the 3 terminal years (Spot)**

Add III Issues Overview

1. Management Trigger
2. Recreational Response to Trigger
3. Commercial Response to Trigger
4. Evaluation of Fishery's Response to Triggered Measures

Public Comment Summary

- Public comment open through January 10, 2020
- 5 public hearings: DE-MD (hosted jointly by states), MD, VA, NC, Webinar
  - 44 public attendees
- Written/emailed comments submitted by 18 individuals and 3 organizations

Public Comment Summary

	Comments in Favor of Options for Croaker Draft Addendum III											
Issue	**Issue 1 (Trigger Timing)**		**Issue 2 (Rec Trigger Response)**				**Issue 3 (Com Trigger Response**				**Issue 4 (Fishery Eval)**	
Option	A	B	A	B	C	D	A	B-B1	B-B2	B-B3	A	B
Individual								1				
Organization						1						
Hearings												
DE-MD		2				2						2
MD	1	6	6	1		1		8				5
VA		2	4			2					5	
NC		3		2				4				4
Webinar												
TOTAL	**1**	**13**	**10**	**3**		**6**		**13**			**5**	**11**

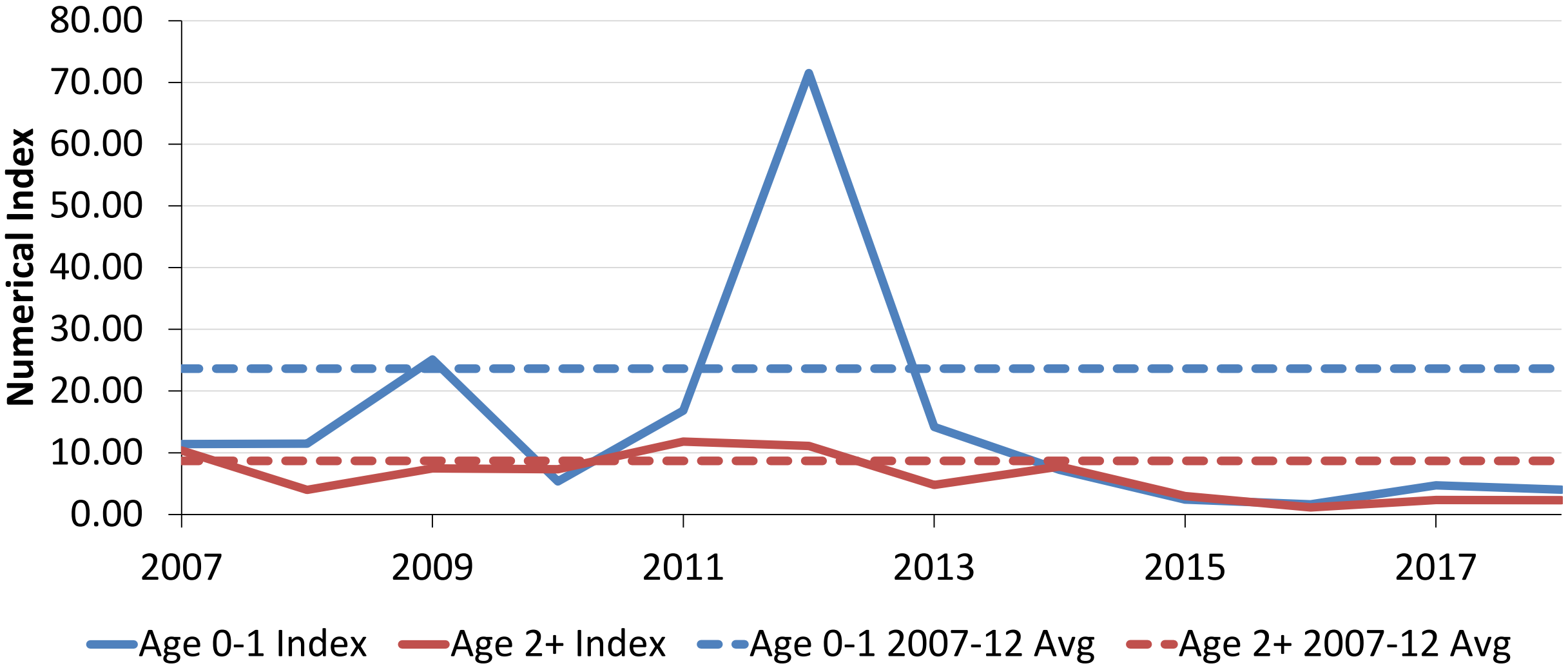
Public Comment Summary

	Comments in Favor of Options for Spot Draft Addendum III											
Issue	**Issue 1 (Trigger Timing)**		**Issue 2 (Rec Trigger Response)**				**Issue 3 (Com Trigger Response**				**Issue 4 (Fishery Eval)**	
Option	A	B	A	B	C	D	A	B-B1	B-B2	B-B3	A	B
Individual												
Organization						1						
Hearings												
DE-MD		2				2						2
MD	2	5		8			1	5	1			4
VA		4	2			2	2				2	
NC		2		2				4				4
Webinar												
TOTAL	**2**	**13**	**2**	**10**		**5**	**3**	**9**	**1**		**2**	**10**

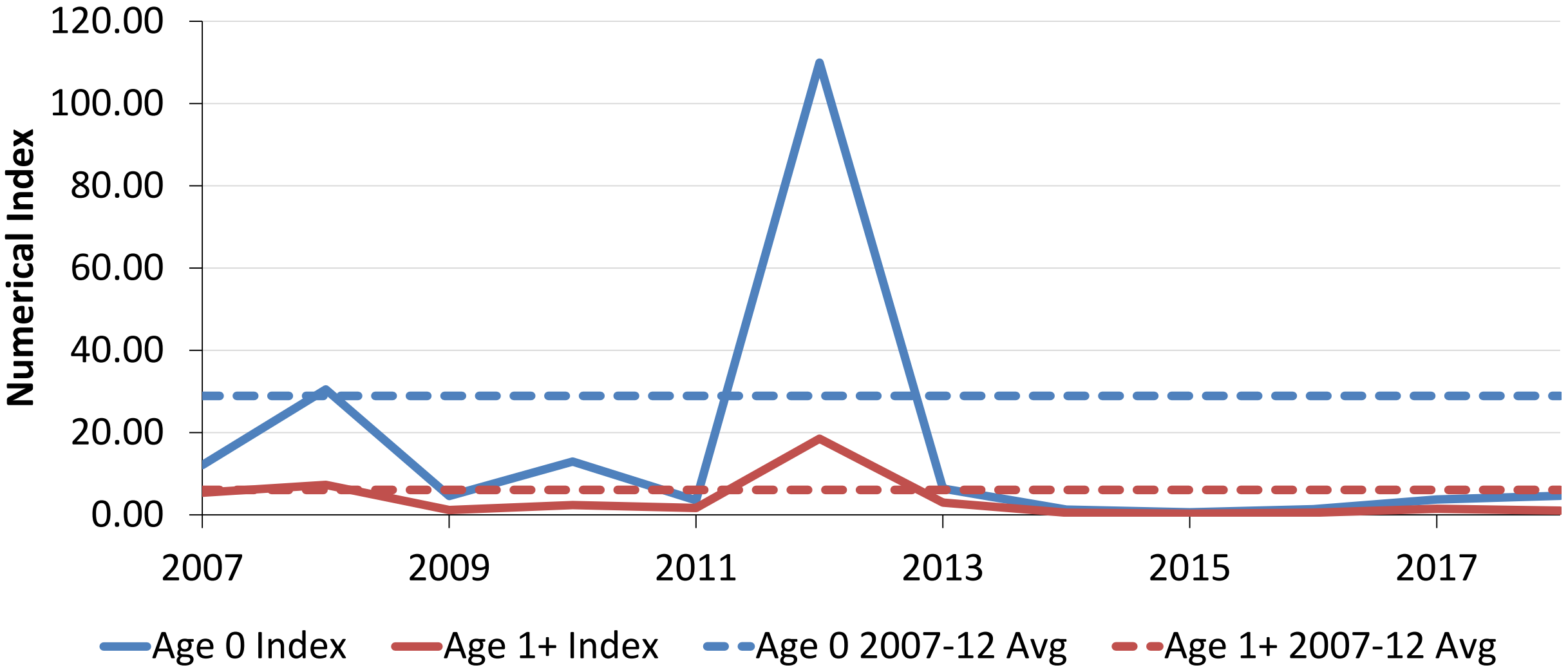
Additional Comments

- Significant concern with discard mortality from the South Atlantic shrimp trawl fishery, with specific mention of NC inshore trawling
  - Interest in management action to reduce this mortality
  - Concern that actions through Add III would not have significant conservation benefit
- Hearing attendees suggested consideration of higher bag limits, particularly for spot
  - Recreational charter captains and pier owners commented that the proposed bag limits could have drastically detrimental economic effects (esp. for spot)
- Comments on the TLA analysis recommended use of NEAMAP instead of NEFSC and incorporation of effort in harvest metric

NEAMAP Indices for Atl. Croaker



NEAMAP Indices for Spot



Editing Public Comments

- Note bag limits as per person per day
- Add language to allow holding of and access to live Atlantic croaker and spot held in bait pens without being subject to personal bag limits

Questions on Public Comment

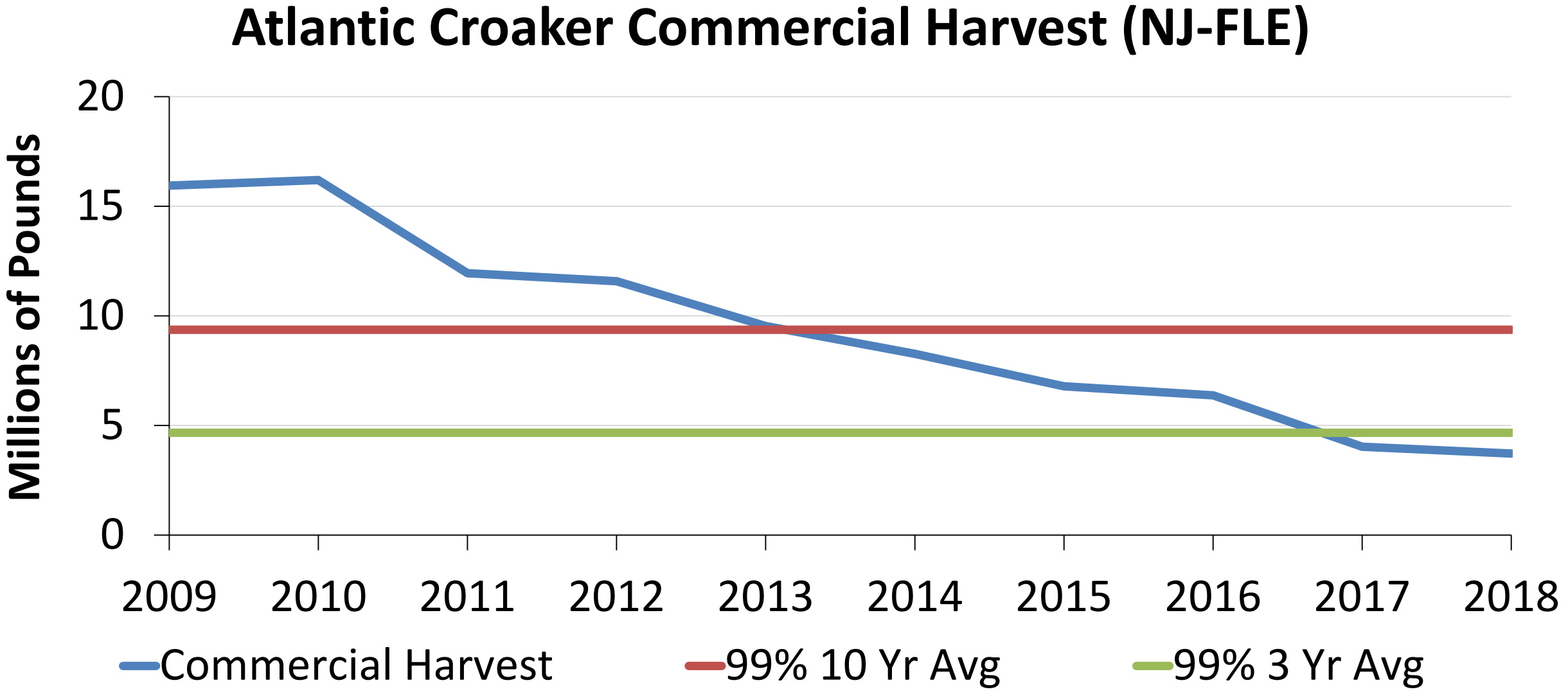
AP Report – Atl Croaker

- AP met via webinar; 4 members attended & 1 emailed comments
  - Recommendations are those stated on call; emailed comment recommends least restrictive measures
- Issue 1: Option B
- Issue 2: Option C (40 fish/30 fish bag limit) or Option D (30 fish/20 fish bag limit)
  - No limit on live bait up to 6 inches; any fish larger than 6 inches or dead count towards bag limits
  - Include captain's and mate's bag limits in vessel possession limits for harvest
  - Same bait provisions for entire recreational fishery (for-hire and private)

AP Report – Atl Croaker

- Issue 3: Option B with alterations to the reduction percentages and timeframes considered for deriving measures.
  - 30% Red Trigger: **5%** commercial harvest reduction from the previous **3**-year average
  - 60% Red Trigger: **10%** commercial harvest reduction from the previous **3**-year average.
  - Reductions relative to the previous 10-year average would allow harvest greater than most recent years

AP Report – Atl Croaker



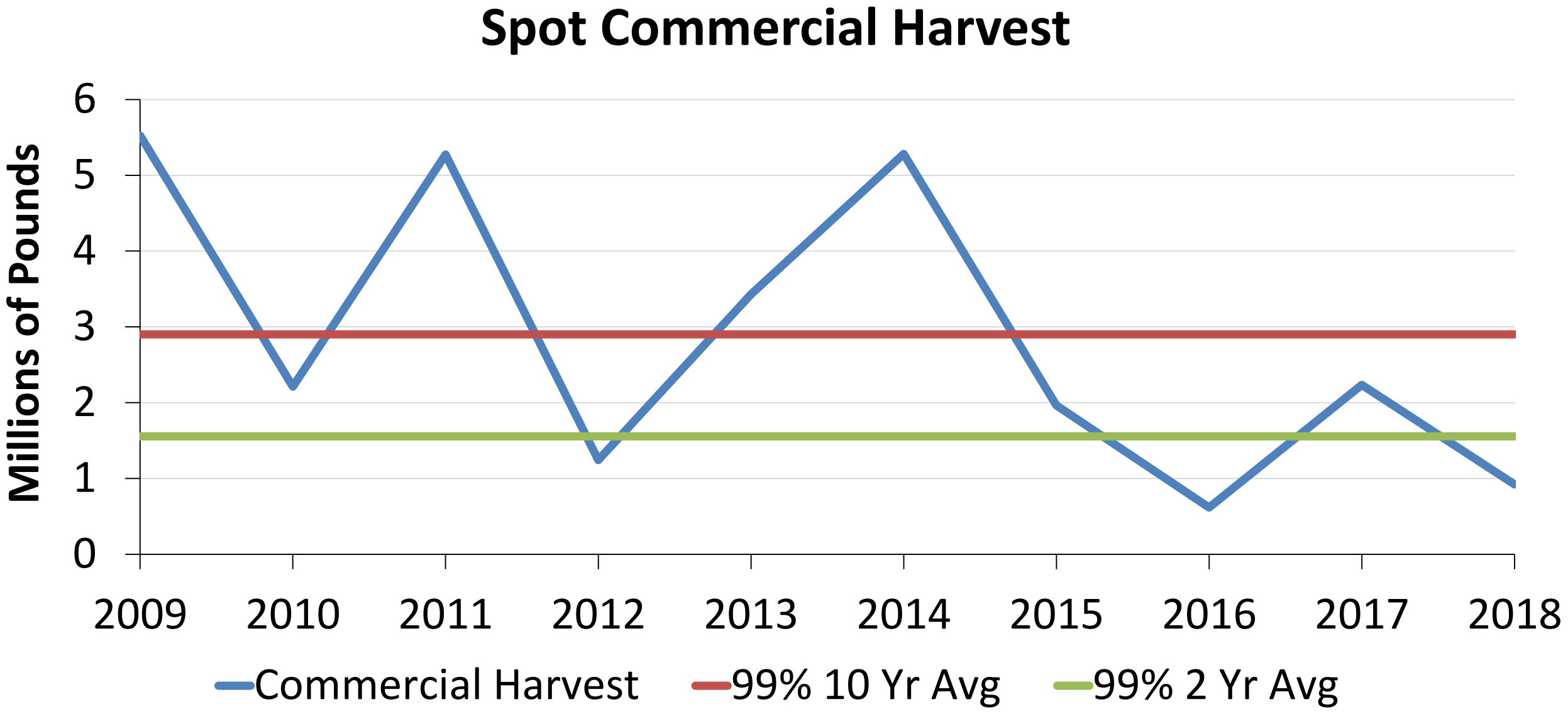
AP Report – Atl Croaker

- Issue 4: Option B, with edits to the requirements for management triggers to be removed
  - TLA still considers harvest while management triggers are in place, and the removal of measures should be based increased levels (i.e. lowered percentages of red) of both harvest and abundance
  - Measures only removed after a 4-year time period in which red percentages for both harvest and abundance in both regions are less than 30% in all 4 years and 2 of those 4 years have red percentages of less than 15% for each regional metric

AP Report – Spot

- Issue 1: Option B
- Issue 2: Option B (50 fish/40 fish bag limit)
  - No limit on live bait up to 5 inches; any fish larger than 5 inches or dead count towards bag limits
  - Include captain's and mate's bag limits in vessel possession limits for harvest
  - Same bait provisions for entire recreational fishery (for-hire and private)

AP Report – Spot



AP Report – Spot

- Issue 3: Option B with alterations to the reduction percentages and timeframes considered for deriving measures.
  - 30% Red Trigger: **5%** commercial harvest reduction from the previous **2**-year average
  - 60% Red Trigger: **10%** commercial harvest reduction from the previous **2**-year average.
  - Reductions relative to the previous 10-year average would allow harvest greater than most recent years

AP Report – Spot

- Issue 4: Option B, with edits to the requirements for management triggers to be removed
  - TLA still considers harvest while management triggers are in place, and the removal of measures should be based increased levels (i.e. lowered percentages of red) of both harvest and abundance
  - Measures only removed after a 3-year time period in which red percentages for both harvest and abundance in both regions are less than 30% in all 3 years and 2 of those 3 years have red percentages of less than 15% for each regional metric

Questions on AP Report

TC Report – Atl Croaker

- Issue 1: Option B
- Issue 2: Options B-D (bag limit options)
  - In choosing options for Issues 2 and 3, TC recommends the Board consider equity of estimated reductions between the recreational and commercial fisheries
  - Add language noting ability for more restrictive state-level bait regulations
  - Add language allowing live fish possession from fish pots and bait pens while not on a vessel

TC Report – Atl Croaker

- Issue 3: Option B, any Sub-Options
  - In choosing options for Issues 2 and 3, TC recommends the Board consider equity of estimated reductions between the recreational and commercial fisheries
- Issue 4: Option B

PRT Report – Spot

- Issue 1: Option B
- Issue 2: Options B-D (bag limit options)
  - In choosing options for Issues 2 and 3, PRT recommends the Board consider equity of estimated reductions between the recreational and commercial fisheries
  - Add language noting ability for more restrictive state-level bait regulations
  - Add language allowing live fish possession from fish pots and bait pens while not on a vessel

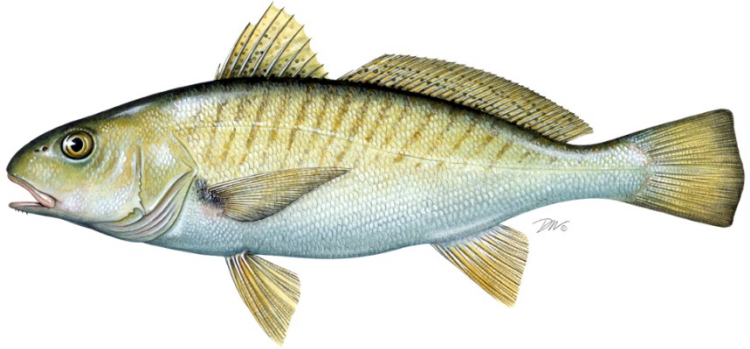
PRT Report – Spot

- Issue 3: Option B, any Sub-Options
  - In choosing options for Issues 2 and 3, TC recommends the Board consider equity of estimated reductions between the recreational and commercial fisheries
- Issue 4: Option B

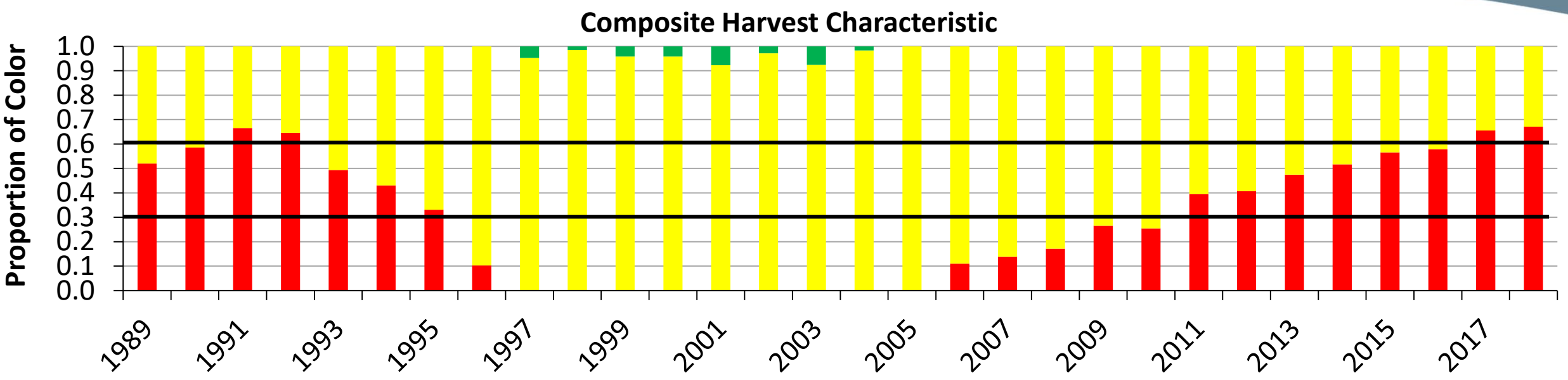
Questions on TC/PRT Report

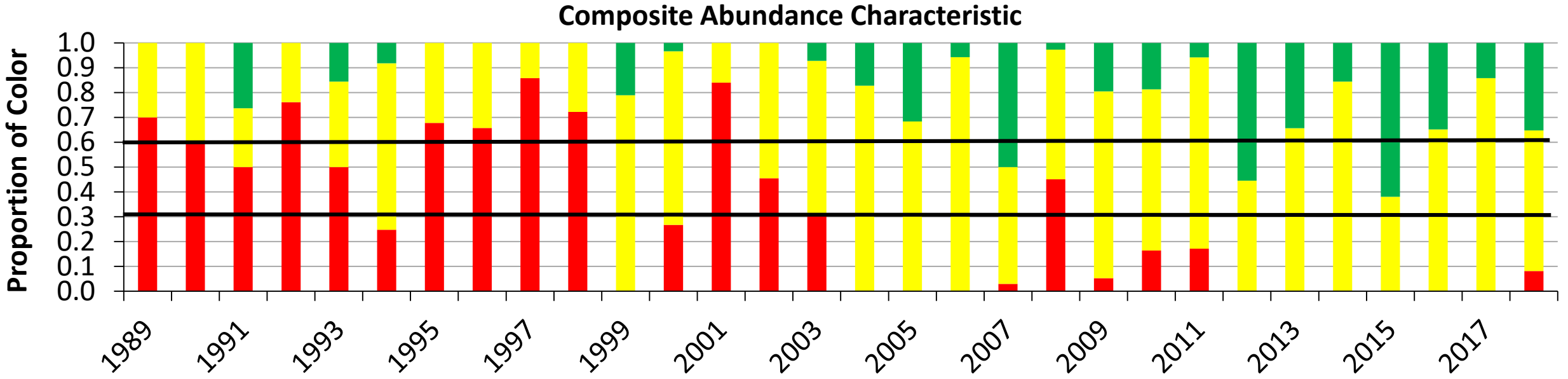
Draft Addendum III to Amendment 1 to the Interstate FMP for Atlantic Croaker

Revisions to Management using the Traffic Light Approach

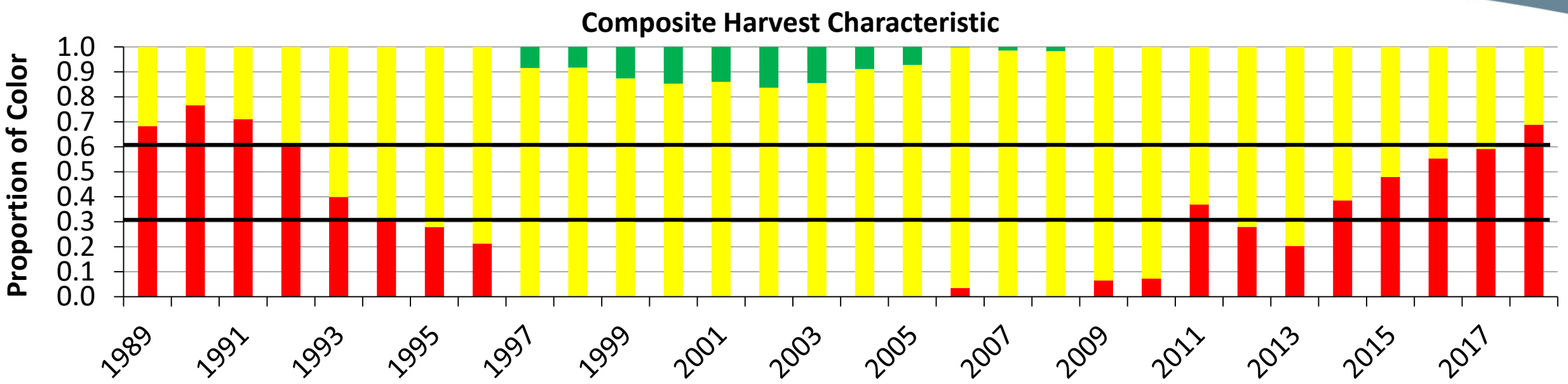


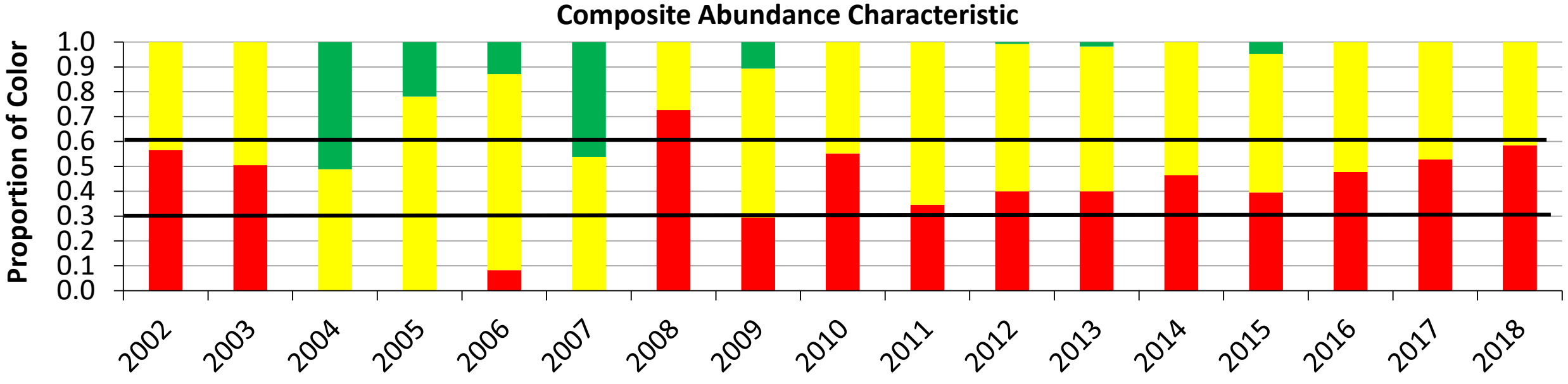
Add II (Current) TLA (Fig. 1 & 4)



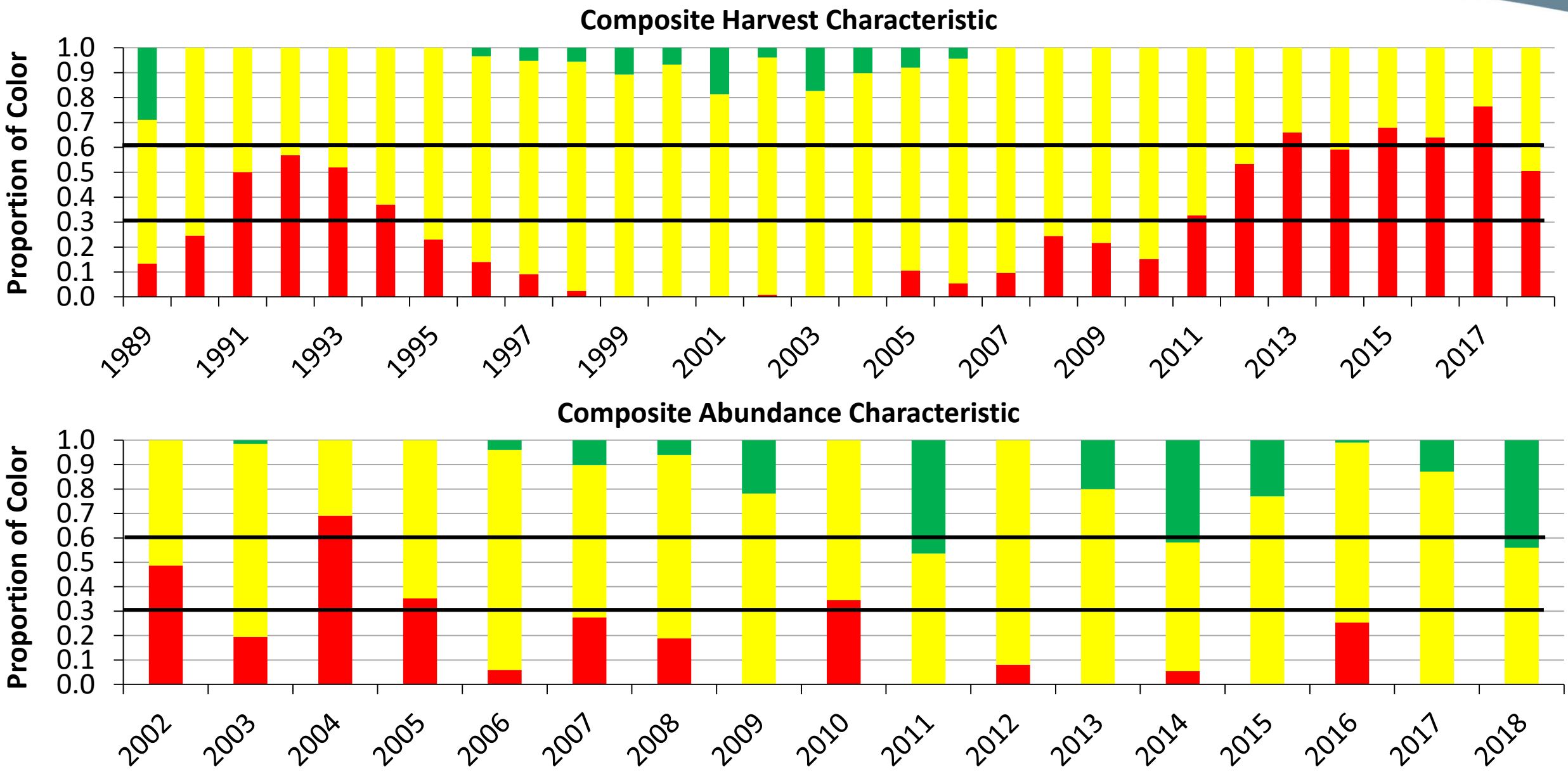


Updated TLA – Mid-Atl (Fig. 2 & 5)





Updated TLA – S Atl (Fig. 3 & 6)



3.1 Management Triggers

Issue 1: Management Trigger Based on Proportion Red Options

Option A. If red proportions for both population characteristics (adult abundance and harvest) in a regional, with both characteristics being for the same region, or a coastwide TLA meet or exceed the proportion of a threshold for the **three terminal (most recent) years**, then management action will be taken. **(1 Public)**

Option B. If red proportions for both population characteristics (adult abundance and harvest) in a regional, with both characteristics being for the same region, or a coastwide TLA meet or exceed the proportion of a threshold for **any three of the four terminal years**, then management action will be taken. **(AP, TC, 13 Public)**

- If Add III approved with Option B, action would be triggered in August 2020, with implementation of triggered measures potentially beginning in 2021

Thresholds for both options remain at 30% and 60% red.

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

Option A. (Status Quo) TC recommends state percent reductions and measures to achieve an overall harvest percentage reduction proportional to the magnitude of exceeding the trigger. **(10 Public)**

Option	**30% Threshold Response**	**60% Threshold Response**
B **(TC, 3 Public)**	Bag Limit: up to 50 fish Non-*de minimis* states (all)	Bag Limit: up to 40 fish All states
C **(AP, TC)**	Bag Limit: up to 40 fish Non-*de minimis* states	Bag Limit: up to 30 fish All states
D **(AP, TC, 6 Public)**	Bag Limit: up to 30 fish Non-*de minimis* states	Bag Limit: up to 20 fish All states

Estimated percent reductions for each state and bag limit shown in Table 2 (next slide)

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

	Table 2. Estimated Percent Reductions in Harvest (Pounds) from 2009-18 Averages								
Bag Limit	NJ	DE	MD	VA	NC	SC	GA	FL*	Total
50 fish	0.00%	2.76%	0.00%	2.38%	0.20%	0.00%	0.00%	0.15%	1.49%
40 fish	0.00%	3.42%	0.00%	3.35%	0.35%	0.00%	0.00%	0.49%	2.12%
30 fish	1.07%	4.13%	0.03%	4.79%	0.56%	0.00%	0.00%	1.58%	3.16%
20 fish	4.29%	7.67%	0.65%	8.47%	1.44%	0.30%	1.65%	4.55%	6.03%
2009-18 Average Harvest	374,559	190,683	1,320,978	4,976,468	451,391	169,920	94,944	851,963	8,430,905

*East coast of FL

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

All options:

- For-hire vessels may possess live croaker for use as bait, up to the sum of the bag limits for the number of paying customers allowed onboard
- During a trip, bag limits apply according to the number of paying customers aboard
- E.g. 50 fish bag limit, vessel licensed for 6 customers = 300 croaker allowed onboard
  - If 4 customers onboard, up to 200 of 300 croaker allowed onboard may be harvested (i.e. dead & not in a live well)

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

Committee Live Bait Recommendations

- LEC: Bag limit only applied to harvested fish; no restriction on number of live fish (size restriction if useful)
- AP: Include captain and mate bag limits in any possession limits; no limit on <=6 inch fish, bag/vessel limits only apply to live fish >6 inches or dead fish
- AP, TC: Add language allowing unlimited bait possession in pens and while not fishing or on a vessel

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

Option A. (Status Quo) TC recommends state percent reductions and measures to achieve an overall harvest percentage reduction proportional to the magnitude of exceeding the trigger. **(10 Public)**

Option	**30% Threshold Response**	**60% Threshold Response**
B **(TC, 3 Public)**	Bag Limit: up to 50 fish Non-*de minimis* states (all)	Bag Limit: up to 40 fish All states
C **(AP, TC)**	Bag Limit: up to 40 fish Non-*de minimis* states	Bag Limit: up to 30 fish All states
D **(AP, TC, 6 Public)**	Bag Limit: up to 30 fish Non-*de minimis* states	Bag Limit: up to 20 fish All states

3.2 Management Response to Triggers

Issue 3: Commercial Management Trigger Response Options

Option A. (Status Quo) TC recommends state percent reductions and measures to achieve an overall harvest percentage reduction proportional to the magnitude of exceeding the trigger.

3.2 Management Response to Triggers

Issue 3: Commercial Management Trigger Response Options

Option B. 30% Red Threshold Response: quantifiable measures (e.g. season, trip limit, or size limit) to achieve 1% com harvest reduction from previous 10-year average for commercial non-*de minimis* states (*de min*: DE, SC, GA, FL) without a minimum size or possession limit. **(TC; AP with changes)**

Sub-Option	**60% Red Threshold Response: Commercial quantifiable measures for each state to achieve a**
B1 **(13 Public)**	5% reduction from previous 10-year average
B2	10% reduction from previous 10-year average
B3	20% reduction from previous 10-year average

Measures must be TC-reviewed and Board-approved

3.3 Evaluation of Fishery Response

Issue 4: Evaluation of Fishery Response to Triggered Measures Options

Option A. (Status Quo) Management measures set in response to any trigger will remain in place for three years… Once management action has been taken, the thresholds will not be applied to the harvest characteristics in assessing the fishery for three years… **(5 Public)**

3.3 Evaluation of Fishery Response

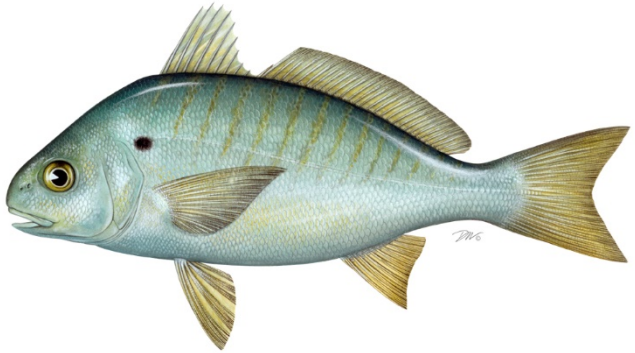
Issue 4: Evaluation of Fishery Response to Triggered Measures Options

Option B. **(TC, 11 Public; AP with changes)**

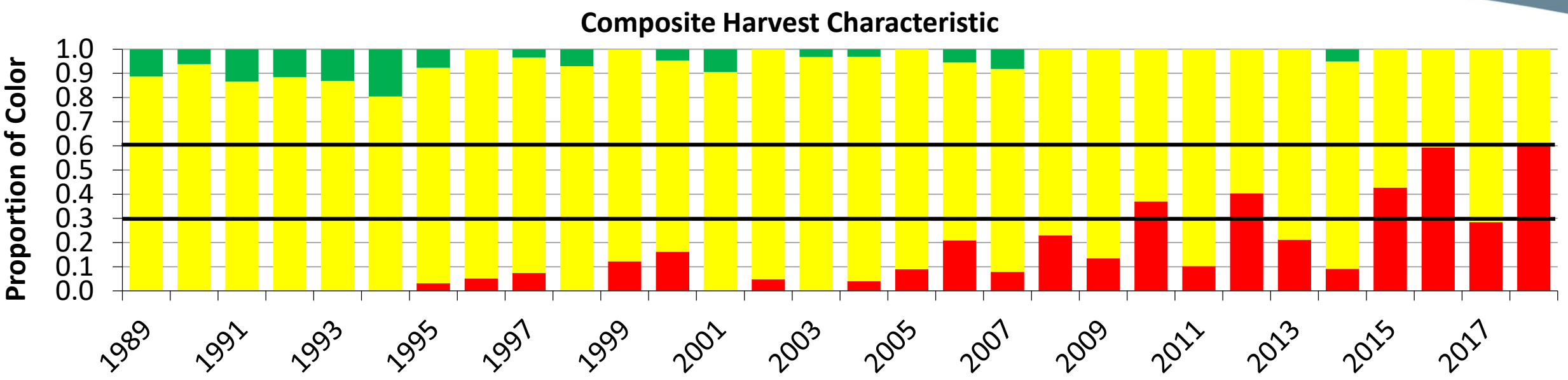
- Triggered measures in place for **at least** 3 years
- During triggered measures, harvest characteristics not used for management, but abundance characteristics can trigger action at a higher level
- After at least 3 years, if no more triggers (i.e., % red for abundance characteristics in both regions are <30% for at least 2 of the 4 most recent years), no more triggered measures and harvest characteristics used in TLA again
- If triggered measures in place for a minimum of 4 years, the TC will evaluate abundance trends and recommend if more restrictive measures are necessary

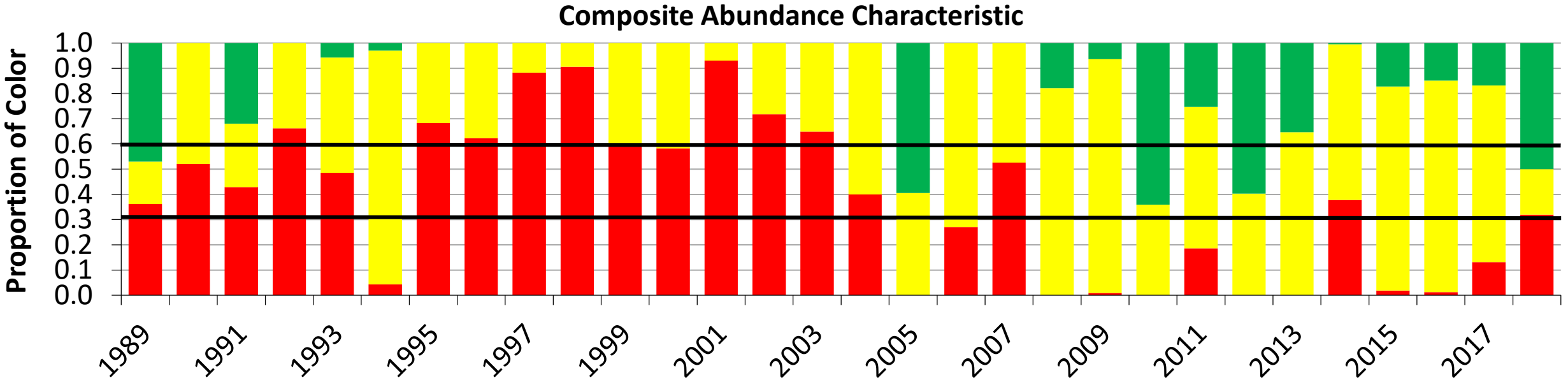
Draft Addendum III to the Omnibus Amendment to the Interstate FMPs for Spot, Spotted Seatrout, and Spanish Mackerel

Revisions to Spot Management using the Traffic Light Approach

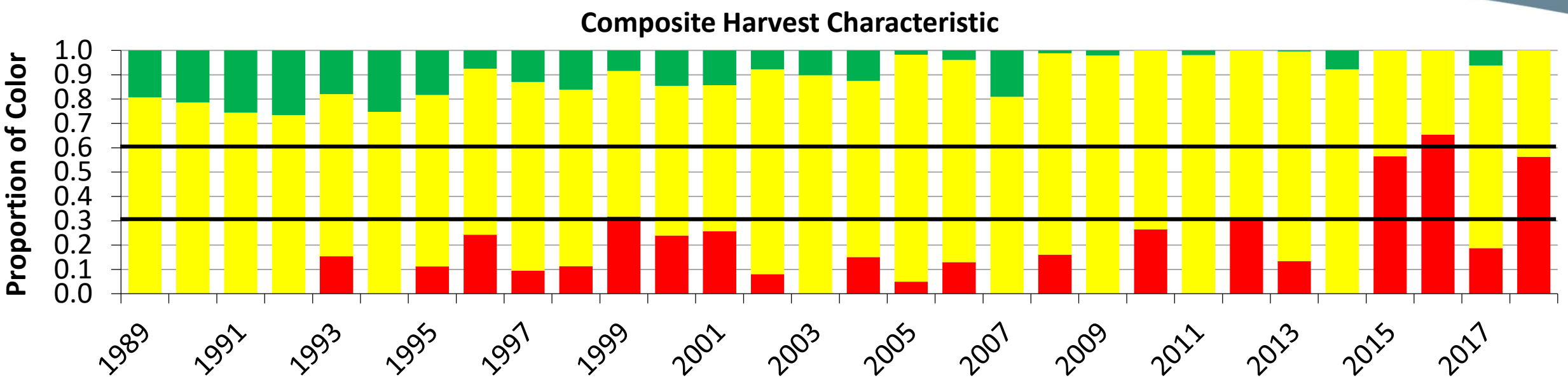


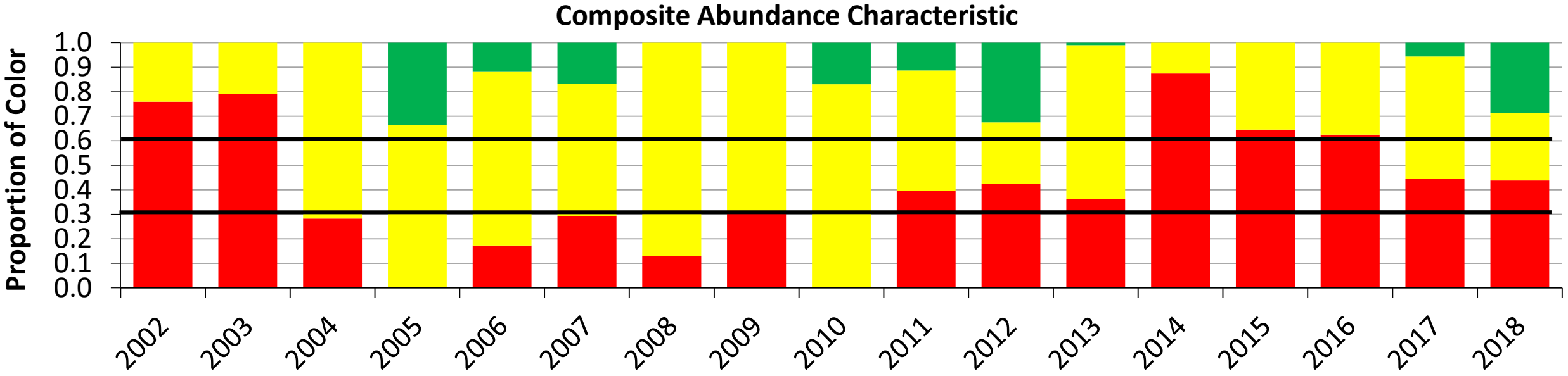
Add II TLA (Fig. 1 & 4)





Updated TLA – Mid-Atl (Fig. 2 & 5)





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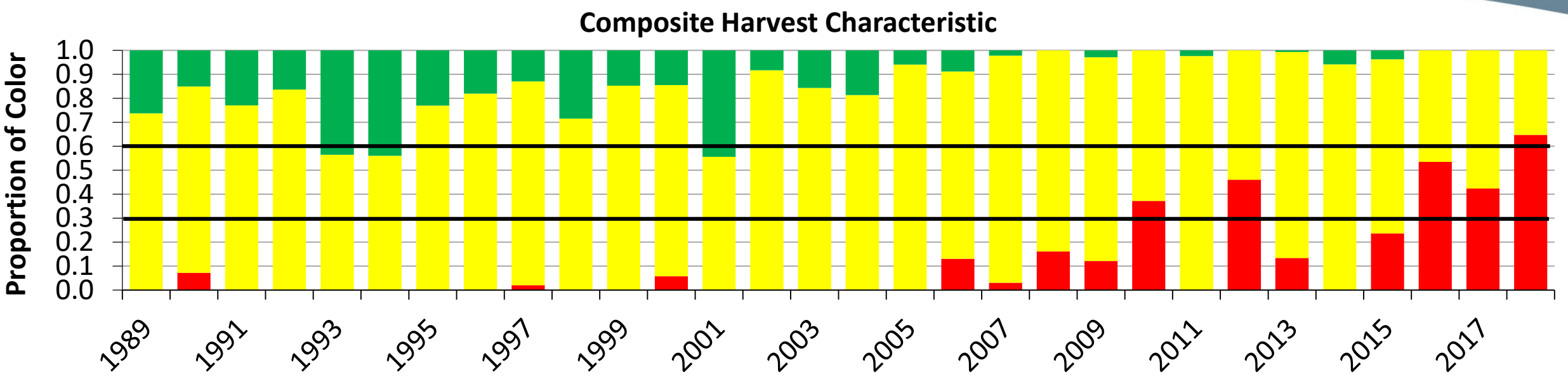
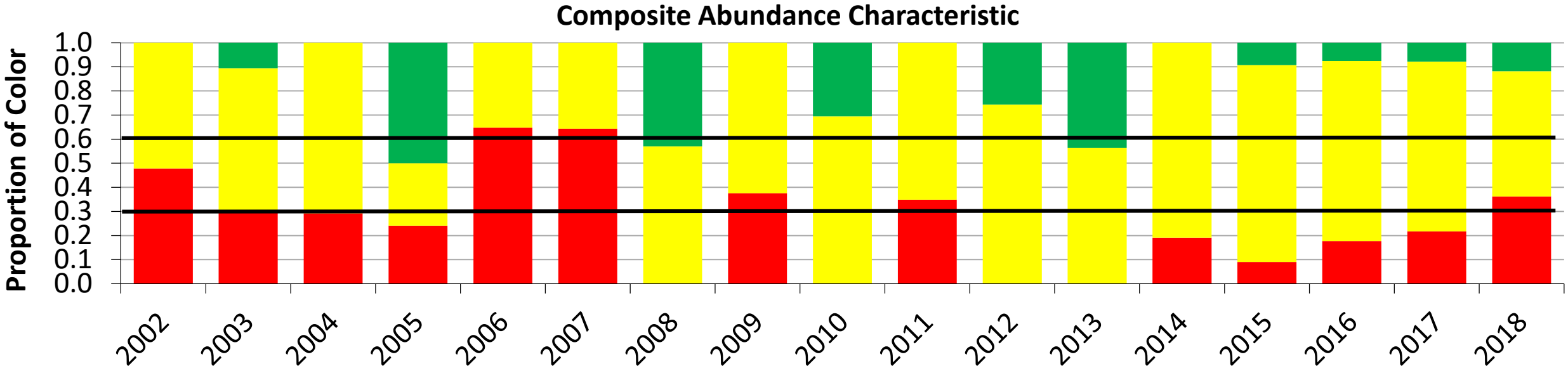




3.1 Management Triggers

Issue 1: Management Trigger Based on Proportion Red Options

Option A. If red proportions for both population characteristics (adult abundance and harvest) in a specific regional or a coastwide TLA meet or exceed the proportion of a threshold for the **two terminal (most recent) years**, then management action shall be required. **(2 Public)**

Option B. If red proportions for both population characteristics (adult abundance and harvest) in a specific regional or a coastwide TLA meet or exceed the proportion of a threshold for **any two of the three terminal years**, then management action shall be required. **(AP, PRT, 13 Public)**

- If Add III approved with Option B, action may be triggered in August 2020, with implementation of triggered measures beginning in 2021

Thresholds for both options remain at 30% and 60% red.

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

Option A. (Status Quo) TC recommends state percent reductions and measures to achieve an overall harvest percentage reduction proportional to the magnitude of exceeding the trigger. **(2 Public)**

Option	**30% Threshold Response**	**60% Threshold Response**
B **(AP, TC, 10 Public)**	Bag Limit: up to 50 fish Non-*de minimis* states (*de min*: NJ & GA)	Bag Limit: up to 40 fish All states
C **(TC)**	Bag Limit: up to 40 fish Non-*de minimis* states	Bag Limit: up to 30 fish All states
D **(TC, 5 Public)**	Bag Limit: up to 30 fish Non-*de minimis* states	Bag Limit: up to 20 fish All states

Estimated percent reductions for each state and bag limit shown in Table 2 (next slide)

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

	Table 2. Estimated Percent Reductions in Harvest (Pounds) from 2009-18 Averages								
Bag Limit	NJ	DE	MD	VA	NC	SC	GA	FL*	Total
50 fish	0.00%	6.81%	0.83%	9.26%	5.40%	1.39%	0.00%	0.21%	5.35%
40 fish	0.96%	10.89%	1.31%	12.69%	7.91%	6.07%	0.00%	0.41%	8.19%
30 fish	8.26%	20.71%	1.91%	19.15%	12.11%	17.17%	0.00%	0.60%	13.93%
20 fish	13.19%	30.67%	3.42%	29.73%	20.88%	29.14%	0.00%	1.22%	22.52%
2009-18 Average Harvest	181,274	124,704	865,618	2,760,249	1,462,935	1,093,306	8,988	344,906	6,841,980

*East coast of FL

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

All options:

- For-hire vessels may possess live spot for use as bait, up to the sum of the bag limits for the number of paying customers allowed onboard
- During a trip, bag limits apply according to the number of paying customers aboard
- E.g. 50 fish bag limit, vessel licensed for 6 customers = 300 spot allowed onboard
  - If 4 customers onboard, up to 200 of 300 spot allowed onboard may be harvested (i.e. dead & not in a live well)

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

Committee Live Bait Recommendations

- LEC: Bag limit only applied to harvested fish; no restriction on number of live fish (size restriction if useful)
- AP: Include captain and mate bag limits in any possession limits; no limit on <=5 inch fish, bag/vessel limits only apply to live fish >5 inches or dead fish
- AP, TC: Add language allowing unlimited bait possession in pens and while not fishing or on a vessel

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

Option A. (Status Quo) TC recommends state percent reductions and measures to achieve an overall harvest percentage reduction proportional to the magnitude of exceeding the trigger. **(2 Public)**

Option	**30% Threshold Response**	**60% Threshold Response**
B **(AP, TC, 10 Public)**	Bag Limit: up to 50 fish Non-*de minimis* states (*de min*: NJ & GA)	Bag Limit: up to 40 fish All states
C **(TC)**	Bag Limit: up to 40 fish Non-*de minimis* states	Bag Limit: up to 30 fish All states
D **(TC, 5 Public)**	Bag Limit: up to 30 fish Non-*de minimis* states	Bag Limit: up to 20 fish All states

3.2 Management Response to Triggers

Issue 3: Commercial Management Trigger Response Options

Option A. (Status Quo) PRT recommends state percent reductions and measures to achieve an overall harvest percentage reduction proportional to the magnitude of exceeding the trigger. **(3 Public)**

3.2 Management Response to Triggers

Issue 3: Commercial Management Trigger Response Options

Option B. 30% Threshold Response: quantifiable measures (e.g. season, trip limit, or size limit) to achieve 1% com harvest reduction from previous 10-year average for non-*de minimis* states (*de min*: NJ & GA) without a minimum size or possession limit. **(TC; AP with changes)**

Sub-Option	**60% Threshold Response: Commercial quantifiable measures for each state to achieve a**
B1 **(9 Public)**	5% reduction from previous 10-year average
B2 **(1 Public)**	10% reduction from previous 10-year average
B3	20% reduction from previous 10-year average

Spot TC would be formed & measures must be TC-reviewed and Board-approved

3.3 Evaluation of Fishery Response

Issue 4: Evaluation of Fishery Response to Triggered Measures Options

Option A. (Status Quo) Management measures set in response to any trigger will remain in place for two years… Once management action has been taken, the thresholds will not be applied to the harvest characteristics in assessing the fishery for two years… **(2 Public)**

3.3 Evaluation of Fishery Response

Issue 4: Evaluation of Fishery Response to Triggered Measures Options

Option B. **(TC, 10 Public; AP with changes)**

- Triggered measures in place for **at least** 2 years
- During triggered measures, harvest characteristics not used for management, but abundance characteristics can trigger action at a higher level
- After at least 2 years, if no more triggers (i.e., % red for abundance characteristics in both regions are <30% for at least 2 of the 3 most recent years), no more triggered measures and harvest characteristics used in TLA again
- If triggered measures in place for a minimum of 3 years, the TC will evaluate abundance trends and recommend if more restrictive measures are necessary

3.2 Management Response to Triggers

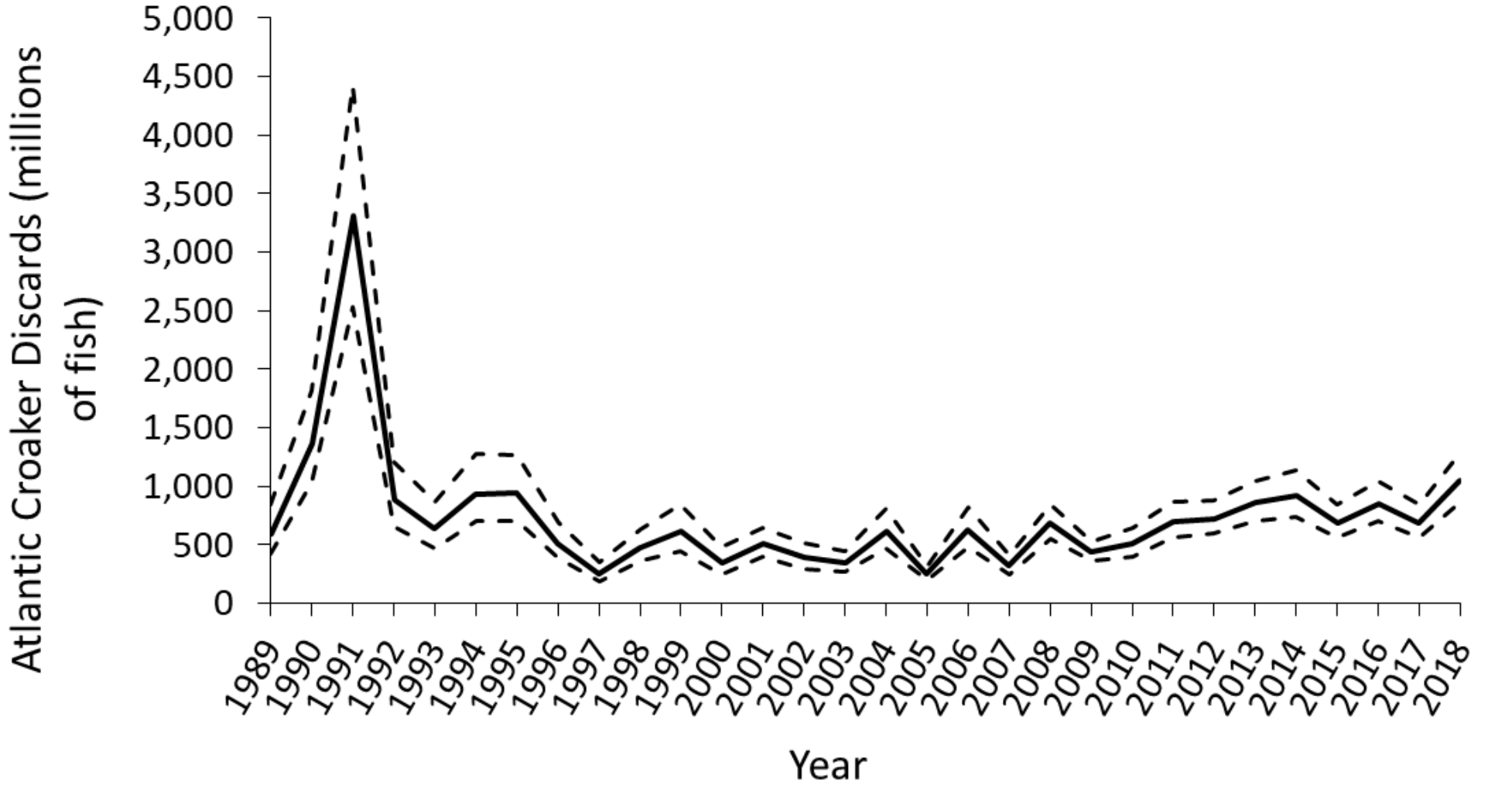
Issue 2: Recreational Management Trigger Response Options

	Table 2. Estimated Percent Reductions in Croaker Rec Harvest (Pounds) from 2009-18 Averages								
Bag Limit	**NJ**	**DE**	**MD**	**VA**	**NC**	**SC**	**GA**	**FL***	**Total**
80 fish	0.00%	0.77%	0.00%	1.26%	0.00%	0.00%	0.00%	0.00%	0.76%
70 fish	0.00%	1.43%	0.00%	1.51%	0.03%	0.00%	0.00%	0.00%	0.93%
60 fish	0.00%	2.09%	0.00%	1.89%	0.08%	0.00%	0.00%	0.00%	1.17%
50 fish	0.00%	2.76%	0.00%	2.38%	0.20%	0.00%	0.00%	0.15%	1.49%
40 fish	0.00%	3.42%	0.00%	3.35%	0.35%	0.00%	0.00%	0.49%	2.12%
30 fish	1.07%	4.13%	0.03%	4.79%	0.56%	0.00%	0.00%	1.58%	3.16%
20 fish	4.29%	7.67%	0.65%	8.47%	1.44%	0.30%	1.65%	4.55%	6.03%
2009-18 Average Harvest	374,559	190,683	1,320,978	4,976,468	451,391	169,920	94,944	851,963	8,430,905

3.2 Management Response to Triggers

Issue 2: Recreational Management Trigger Response Options

	Table 2. Estimated Percent Reductions in Spot Rec Harvest (Pounds) from 2009-18 Averages								
Bag Limit	**NJ**	**DE**	**MD**	**VA**	**NC**	**SC**	**GA**	**FL***	**Total**
80 fish	0.00%	1.80%	0.18%	4.30%	2.34%	0.09%	0.00%	0.00%	2.30%
70 fish	0.00%	3.17%	0.38%	5.61%	2.99%	0.28%	0.00%	0.00%	3.05%
60 fish	0.00%	4.77%	0.61%	7.18%	3.99%	0.55%	0.00%	0.02%	4.00%
50 fish	0.00%	6.81%	0.83%	9.26%	5.40%	1.39%	0.00%	0.21%	5.35%
40 fish	0.96%	10.89%	1.31%	12.69%	7.91%	6.07%	0.00%	0.41%	8.19%
30 fish	8.26%	20.71%	1.91%	19.15%	12.11%	17.17%	0.00%	0.60%	13.93%
20 fish	13.19%	30.67%	3.42%	29.73%	20.88%	29.14%	0.00%	1.22%	22.52%
2009-18 Average Harvest	181,274	124,704	865,618	2,760,249	1,462,935	1,093,306	8,988	344,906	6,841,980


Atlantic Croaker Discards (millions of fish)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
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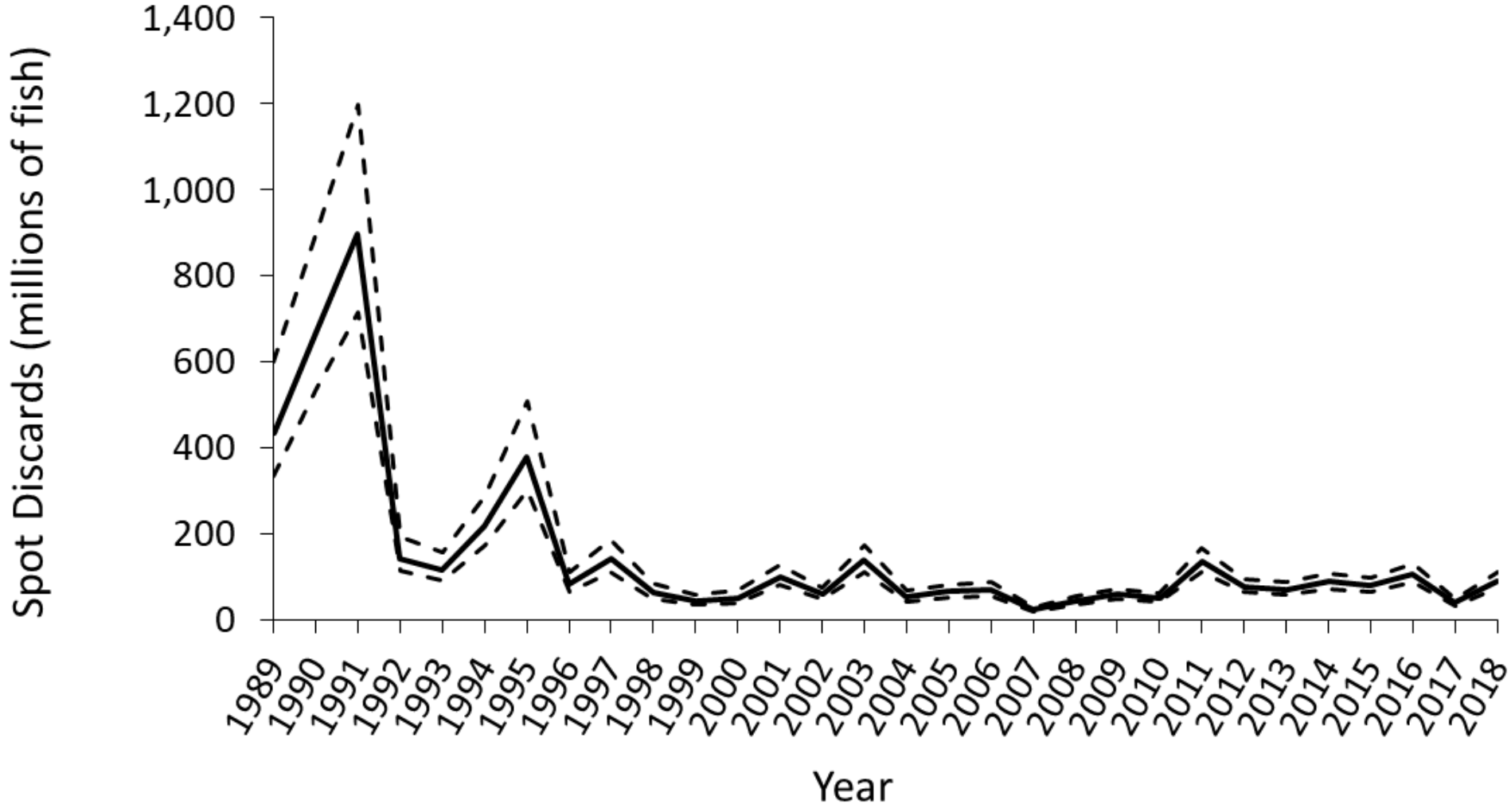
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Year


Spot Discards (millions of fish)
1,400
1,200
1,000
800
600
400
200
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Year

Spanish Mackerel Management

South Atlantic State/Federal Fisheries

Management Board

February 2020

Management Differences

- Recreational Season
  - Omnibus: Calendar
  - CMP FMP: March – February
- Gears
  - Omnibus: No drift gillnets south of Cape Lookout, NC (both); no purse seines (com)
  - CMP FMP: Only automatic reel, bandit gear, handline, rod and reel, cast net, run-around gillnet, and stab net allowed (both)
- Commercial Zones
  - Omnibus: NY-GA (North), FL (South)
  - CMP FMP: NY-NC (North), SC-FL (South)

Management Differences

- Recreational Accountability
  - Omnibus: Rec quota decreased via reduced bag limits if Total ACL exceeded and stock overfished
  - CMP FMP: Rec bag limit reduced if rec landings exceed rec ACL and stock ACL is exceeded
    - Rec ACT reduced by the amount of any overage if stock ACL is exceeded and stock overfished

Management Differences

- Commercial Trip Limits
  - Omnibus: North – 3,500 lb; South – 3,500 lb stepped down based on day of the week, date, and % of adjusted quota harvested, lowest step: 500 lb per day through end of season
  - CMP FMP: North – 3,500 lb; South – 3,500 lb stepped down based on % of adjusted quota harvested, lowest step: 500 lb per day until 100% of commercial quota is harvested
    - If 100% of regional com quota harvested, fishery closed for remainder of season (March – February)
  - CMP FMP Framework Amd 9 considers N Zone trip limit reductions to extend season (in Public Comment)

Summary

- Recreational Season
- Gears
- Commercial Management Zones
- Recreational Accountability Measures
- Commercial Trip Limits

Red Drum Assessment Road Map

South Atlantic State/Federal Fisheries Management Board

February 5, 2020

Statement of Problem

- Several monitoring programs encountering juvenile red drum, but more limited monitoring of mature adults
- Past assessments have applied population dynamics models to estimate fishing mortality relative to spawning potential ratio-based reference points
- Population dynamics models have been subject to high uncertainty driven by “cryptic” spawning stock biomass that can’t be verified with available data
- Appropriateness of reference points has been questioned and is difficult to confirm for red drum populations given model uncertainty
- South Atlantic Board sought a “road map” to obtain improved management advice from future stock assessments

Assessment Road Map

- ASMFC Assessment Science Committee and Red Drum Stock Assessment Subcommittee
- Met via webinars to review red drum life history, assessment, and management
- Recommended potential assessment frameworks and methods for evaluating reliability of frameworks

Assessment Frameworks

- Model-free stock indicators, similar to traffic light analyses used for Atlantic croaker and spot
  + advice on all life stages
  - no quantitative stock status estimates

- Population dynamics model tracking the juvenile components of the stocks
  + estimates of stock status relative to potential productivity from integrated juvenile data
  - stock status estimates that are not influenced by changes in the mature, adult components of the stocks

- Population dynamics model tracking all life stages of the stocks
  + stock status relative to potential productivity from integrated data across life stages
  - likely to have relatively high levels of uncertainty given current data limitations on adult components of the stocks

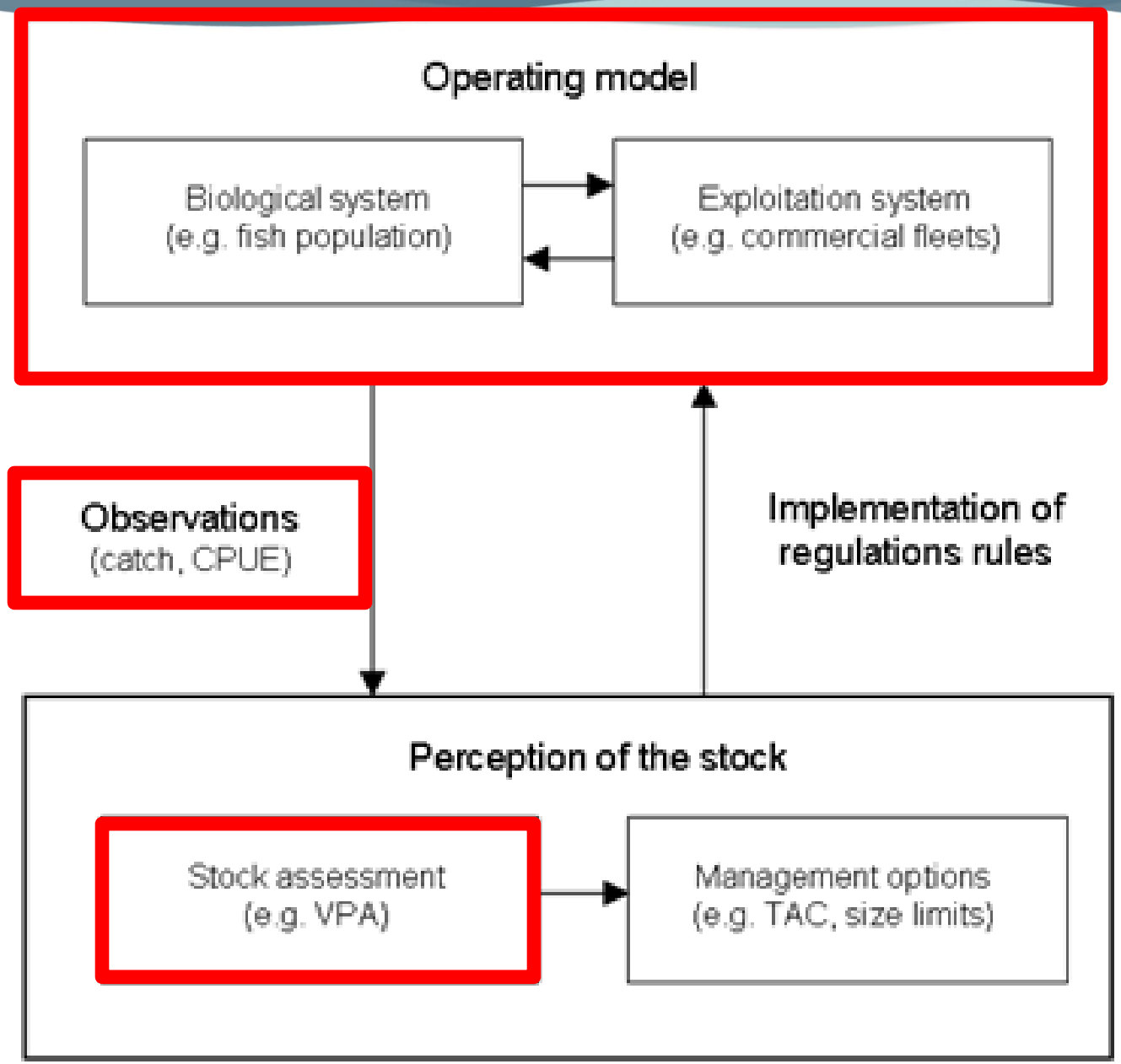
Methods to Evaluate Frameworks

- Simulation modeling to evaluate frameworks relative to each other in terms of characterizing stock status from a “known” population

- Identify preferred method(s) for assessing red drum stock status

- Identify data deficiencies limiting assessment advice to focus future data collection efforts

Simulation Modeling



ICES-ICCAT
2013

Traditional Benchmark Assessment

CATCH

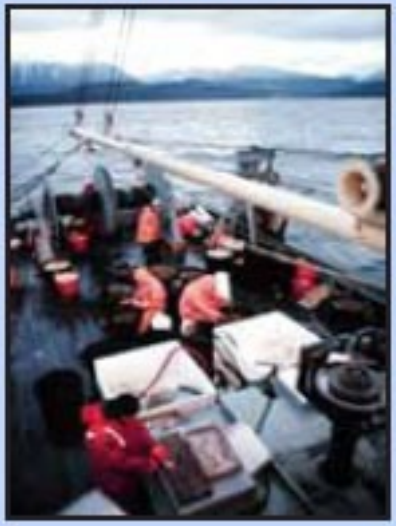
Removals from a fish population *by fishing*

BIOLOGY

Life history information (growth, mortality, reproduction)

ABUNDANCE

Trends in fish stock population size



Models

Calculates time series of historical, current and forecast fish abundance and fishing mortality rate

NOAA Fisheries

Assessment Timeline

- Two-stage assessment process
  - Simulation modeling peer reviewed in 2022 (ASMFC External Review)
  - Traditional benchmark assessment peer reviewed in 2024 (SEDAR Review)

Questions?