Harvest Control Rule
Draft Addendum/Framework

Atlantic States Marine Fisheries Commission
Policy Board & MAFMC
Fall Meeting
October 21, 2021




Outline

1. Review draft options
2. Accountability measures under all options
3. SSC sub-group peer review of 2 recreational fishery models
4. FMAT/PDT recommendations for next steps

Discussion: Provide feedback and guidance on options and next steps




Goal of Draft Addendum/Framework

To establish a process for setting recreational bag, size, and season limits for summer flounder, scup, black sea bass, and bluefish such that measures

- Aim to prevent overfishing,
- Are reflective of stock status,
- Appropriately account for uncertainty in the recreational data,
- Take into consideration angler preferences, and
- Provide an appropriate level of stability and predictability in changes from year to year.




Option A: Status Quo

- Aim to prevent RHL overages (and therefore ACL and ABC overages).
- MC/TC has considerable flexibility in how to develop measures.
- Generally, MRIP data from one or more recent years are used to predict impacts of bag/size/season limits on harvest.
  - Other factors can be considered (e.g., availability, stock status, data considerations).




Option B: Percent Change

- Starts with MRIP vs. RHL comparison.
  - RHL within, above, or below 80% joint distribution confidence interval (CI) of MRIP estimate.
  - Can be replaced with a statistical model-based estimate of harvest and associated CI.
- Then compare biomass (B) to target (B_{MSY}).
  - Below target, above target but less than 150% of target, or more than 150% of target?
- Percentage liberalization or reduction, or status quo, depends on magnitude of difference between MRIP and RHL and biomass relative to target .




Option B: Percent Change

Future RHL vs MRIP Estimate		B/B_{MSY}	Change in Measures	
Row A	Future 2-YR avg. RHL greater than upper bound of 2-YR MRIP estimate CI	> 1.5	40% Liberalization	
		1 - 1.5	20% Liberalization	
		< 1	0% (Status quo)	
Row B	Future 2-YR avg. RHL within CI of 2-YR MRIP estimate	> 1.5	10% Liberalization	
		1-1.5	0% (Status quo)	
		< 1	10% Reduction	
Row C	Future 2-YR avg. RHL less than lower bound of 2-YR MRIP estimate CI	> 1.5	0% (Status Quo)	10% Reduction
		1-1.5	20% Reduction	
		< 1	40% Reduction	

Option B: Percent Change

Additional Considerations to Resolve Before Public Hearings

Future RHL vs MRIP Estimate		B/B_{MSY}	Change in Measures	
A	RHL greater than upper bound of MRIP CI	> 1.5	40% Liberalization	
		1 - 1.5	20% Liberalization	
		< 1	Status quo	
B	RHL within MRIP CI	> 1.5	10% Liberalization	
		1-1.5	0% (Status quo)	
		< 1	10% Reduction	
C	RHL less than lower bound of MRIP CI	> 1.5	Status quo	10% Reduction
		1-1.5	20% Reduction	
		< 1	40% Reduction	

Red: Is status quo appropriate in these situations or should a 10% liberalization (row A) or reduction (row B) be used?

Orange: Should the percentage change be capped at the difference between the RHL and MRIP estimate?

Percent Change Option

Alternative considers future RHL, recent MRIP time-series average estimate, and the relationship of Biomass to Bmsy to determine what percent change should occur for management measures. Percent changes provide similar consideration for reductions and liberalizations.

1 → RHL compared to MRIP estimate

Determine if the RHL for the upcoming management period is above, below, or within the confidence interval of the most recent MRIP time-series estimate.

2 → Compare Biomass to Bmsy

Compare the Biomass estimate from the stock assessment to the biological reference point (Bmsy). Biomass categories are as follows:

- 150% above Bmsy
- between 100 and 150% Bmsy
- less than 100% of Bmsy

3 → Find percent change in measures

The RHL and Bmsy comparison determines the appropriate management response. Measures will either be liberalized, restricted, or status quo. There are three different percentages by which measures can be liberalized or reduced .

4 → Set Management Measures

Management measures are based on pre-defined % changes from the status quo.

Option C: Fishery Score

- Combine multiple metrics into one fishery score.
  - Fishing mortality (F) relative to the threshold (F_{MSY}).
  - Biomass (B) relative to the target (B_{MSY}).
  - Recruitment percentile.
  - Comparison of average RHL to MRIP CI (or statistical model-based estimate of harvest and CI).
- Each metric is weighted.

$F/F_{MSY}(W_F) + B/B_{MSY}(W_B) + R\ (W_R) + \text{Fishery performance}\ (W_{FP})$ = Fishery Score




Option C: Fishery Score

$F/F_{MSY}(W_F) + B/B_{MSY}(W_B) + R\ (W_R) + \text{Fishery performance}\ (W_{FP}) = \text{Fishery Score}$

Bin	Fishery Score	Stock Status and Fishery Performance Outlook	Measures
1	4-5	Good	Most Liberal
2	3-3.99	Moderate	Liberal
3	2-2.99	Poor	Restrictive
4	1-1.99	Very Poor	Most Restrictive

Fishery Score Option

This infographic explains how the Fishery Score will function to select the management measure bin for summer flounder, scup, black sea bass, and bluefish

STEP 1

Stock Assessment Results

An updated stock assessment is completed and approved for management use.

STEP 2

Calculate Fishery Score Metrics

Fishing mortality, biomass, recruitment, and fishery performance metrics are drawn from the stock assessment and recent MRIP estimates.

STEP 3

Use Formula to Calculate Fishery Score

Fishery Score metrics are entered in the Fishery Score formula to produce a value ranging from 1 to 5. On this scale, 1 is the lowest possible score and 5 is the highest possible score.

STEP 4

Determine Management Step Based on Fishery Score

Based on the calculated Fishery Score, the stock is placed into one of four bins. Each bin has an associated level of concern, stock status, and a pre-determined set of management measures.

STEP 5

Adapt New Measures if Needed

If the Fishery Score caused the stock to move from one bin to another, then the new pre-determined management measures will be applied. If the stock remains within the same bin, measures will remain the same.

Fishery Score bins and the associated stock status, fishery performance outlook, and measures that are associated with each bin.

Bin	Fishery Score	Stock Status and Fishery Performance Outlook	Measures
1	4-5	Good	Most Liberal
2	3-3.99	Moderate	Liberal
3	2-2.99	Poor	Restrictive
4	1-1.99	Very Poor	Most Restrictive

Option D: Biological Reference Point

- Primary metrics are terminal year B/B_{MSY} and F/F_{MSY} from most recent stock assessment.
- Secondary metrics evaluated when stock conditions are unchanged:
  - Recruitment and trends in biomass.
  - Expected catch or harvest compared to ACL or RHL only considered when overfishing is occurring.



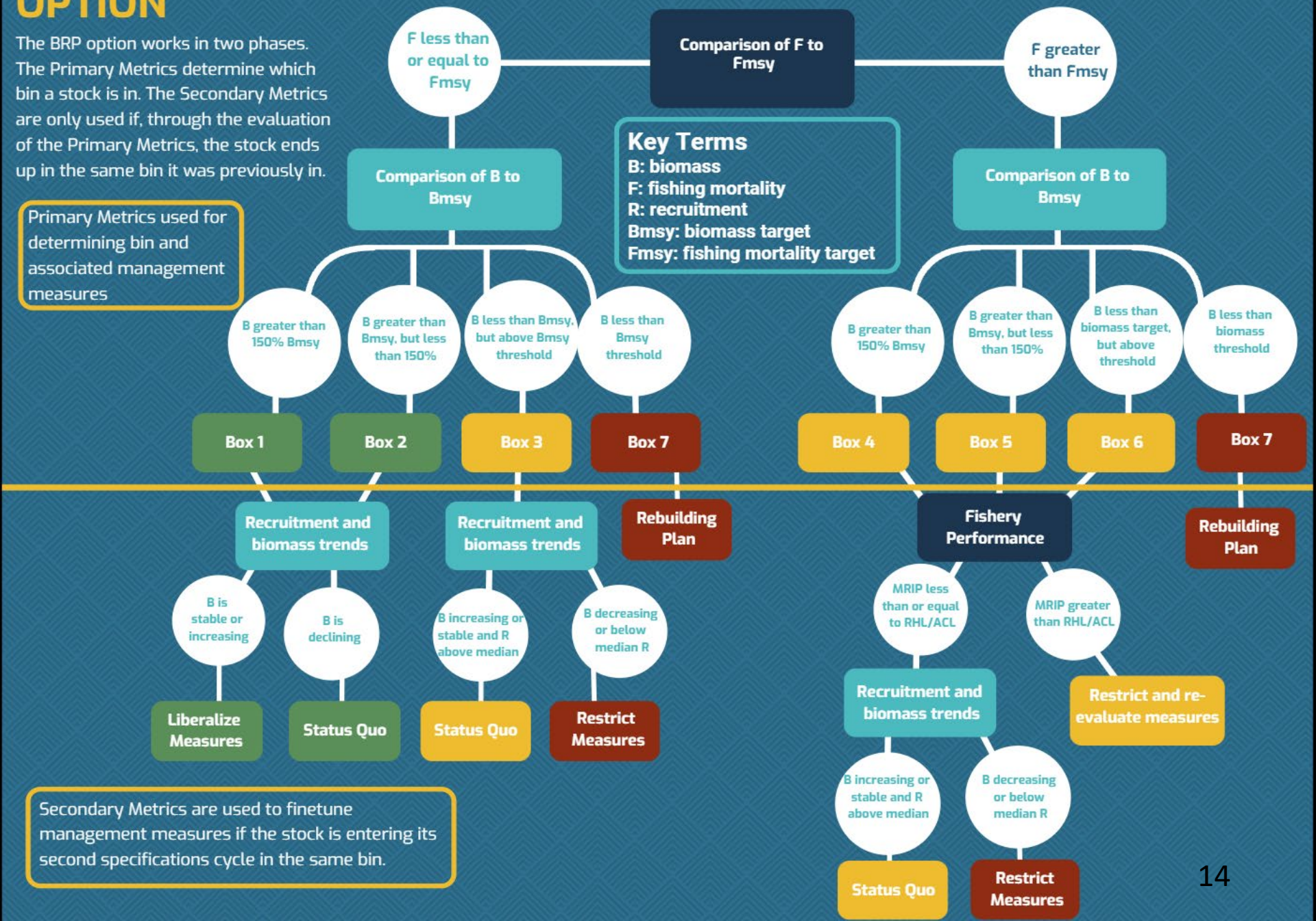

Option D: Biological Reference Point

	F ≤ Fmsy	F > Fmsy
150%Btarget ≤ B	 R↑ / R↓ B↑: liberal / liberal B↓: default / default 1	R↑ / R↓ MRIP ≤ RHL/ACL, B↑: default / restrictive MRIP ≤ RHL/ACL, B↓: restrictive / restrictive MRIP > RHL/ACL: restrictive; re-evaluate measures 4
Btarget ≤ B < 150%Btarget	R↑ / R↓ B↑: liberal / liberal B↓: default / default 2	R↑ / R↓ MRIP ≤ RHL/ACL, B↑: default / restrictive MRIP ≤ RHL/ACL, B↓: restrictive / restrictive MRIP > RHL/ACL: restrictive; re-evaluate measures 5
Bthreshold ≤ B < Btarget	 R↑ / R↓ B↑: default / restrictive B↓: restrictive / restrictive 3	R↑ / R↓ MRIP ≤ RHL/ACL, B↑: default / restrictive MRIP ≤ RHL/ACL, B↓: restrictive / restrictive MRIP > RHL/ACL: restrictive; re-evaluate measures 6
B < Bthreshold	MOST RESTRICTIVE/REBUILDING PLAN  7	

BIOLOGICAL REFERENCE POINT OPTION

The BRP option works in two phases. The Primary Metrics determine which bin a stock is in. The Secondary Metrics are only used if, through the evaluation of the Primary Metrics, the stock ends up in the same bin it was previously in.

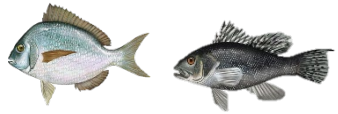
Primary Metrics used for determining bin and associated management measures



Secondary Metrics are used to finetune management measures if the stock is entering its second specifications cycle in the same bin.

Option E: Biomass Based Matrix

- Measures based on two factors:
  - Biomass (B) compared to target (B_{MSY})
  - Most recent trend in biomass.

Stock Status	Biomass Trend		
	Increasing	**Stable**	**Decreasing**
Abundant At least 150% of target	Bin A 		
Healthy Above target, but less than 150% of target	Bin A	Bin B	
Below Target but above threshold	Bin C 	Bin D	
Overfished Below threshold	Bin E	 Bin F	

Biomass Based Matrix Approach

Defines bin conditions based on two factors: stock status (i.e., biomass relative to Bmsy or proxy) and the most recent trend in biomass (increasing, stable, or decreasing). These parameters create a three-by-four matrix to determine which step is appropriate.

Recreational management measure matrix under the Biomass Based Matrix Approach

		Biomass Trend		
		Increasing	Stable	Decreasing
Stock Status	Abundant	Bin A		
	Healthy	Bin A	Bin B	
	Below Target	Bin C	Bin D	
	Overfished	Bin E	Bin F	

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Comparison Table

Option	Metrics used to set measures					Measures are pre-determined	Expected number of sets pre-determined measures	Measures specified for 1 or 2 years
	Expected harvest*	Biomass compared to target level (B/B_{MSY})	Fishing mortality compared to threshold level (F/F_{MSY})	Recent recruitment	Biomass trend			
No action	Primary					No	N/A	1
Percent change	Primary	Primary				No	N/A	2
Fishery score	Primary**	Primary**	Primary**	Primary**		Yes	4	2
Biological reference point	Only when $F>F_{MSY}$	Primary	Primary	Secondary	Secondary	Yes	13	2
Biomass based matrix		Primary			Primary	Yes	6	2

*Expected harvest refers to expected harvest under status quo measures compared to the upcoming year(s)' RHL and could be based on past MRIP estimates, including consideration of confidence intervals for those estimates, or a model-based estimate of harvest, including considerations related to uncertainty in that estimate.

**As described in the Draft Addendum, the fishery score metrics may not be weighted evenly. The Monitoring/Technical Committees will recommend the appropriate weight for each metric. These weights can be modified through the specifications process.




Stocks Under a Rebuilding Plan

- Rebuilding plans dictate measures, not HCR.
- Options in this action will not replace rebuilding plan measures.
- In some instances, measures implemented through HCR may be temporary until a rebuilding plan is implemented (can take up to 2 years after stock declared overfished).
- Once stock is no longer in a rebuilding plan, measures can be set based on HCR.

Setting Measures for Each Bin

- Measures for each bin will aim to achieve a range of harvest that is appropriate for stock conditions associated with each bin.
  - PDT/FMAT is still discussing details, including the role of the ACL or RHL.
  - Can include considerations related to CIs and other statistical metrics and models.
- Measures will be informed by quantitative analysis and stakeholder input.
- Measures will be regularly re-evaluated to ensure they remain appropriate.
- Can be modified through the specifications process.

Magnuson-Stevens Fishery Conservation and Management Act (MSA) Requirements

- "Conservation and management measures shall prevent overfishing…"
- FMPs shall include "annual catch limits… including measures to ensure accountability."
- The Council's framework action must be approved and implemented by NOAA Fisheries.
  - NOAA Fisheries will not approve measures that are inconsistent with the MSA.
  - NOAA Fisheries will provide guidance throughout development of this action.

ACCOUNTABILITY MEASURES (AMs)




Accountability Measures

- **Proactive AMs:** measures to prevent ACLs from being exceeded.
- **Reactive AMs:** measures to correct or mitigate ACL overages if they occur.
- AMs should address and minimize both the frequency and magnitude of overages and correct the problems that caused the overage in as short a time as possible.




Proactive Accountability Measures

- Bag/size/season limits are intended to constrain harvest to appropriate levels.
- Considerations vary by option.
  - Expected harvest vs. RHL
  - Biomass vs target
  - Biomass trend
  - F vs threshold
  - Recruitment




Reactive Accountability Measures

- **Step 1: Determine if a reactive AM was triggered.**
  - SFSBSB: 3 year average ACL compared to 3 year average recreational dead catch.
  - BF: single year comparison.
- **Step 2: If so, determine the appropriate response.**
  - Recommendations specific to each option.
  - Based as closely as possible on the current AMs with modifications as necessary to fit with the intent of each alternative.




Reactive AM Under Option A (Status Quo)

Current regulations:

1. **If the stock is overfished, under a rebuilding plan, or stock status is unknown:** Exact overage amount must be paid back as soon as possible.
2. **If biomass is above the threshold, but below the target, and the stock is not under a rebuilding plan:**
   - **If only the ACL exceeded:** Adjust bag/size/season, taking into account performance of the measures and conditions that precipitated the overage.
   - **If the ABC is also exceeded:** Single year deduction will be made as a payback, scaled based on biomass, where payback = *(overage amount) * (Bmsy−B)/½ Bmsy.*
3. **If biomass is above the target:** Adjustments to bag/size/season are considered, taking into account the performance of the measures and conditions that precipitated the overage.

Reactive AM Under Option B (Percent Change)

1. **If the stock is overfished, under a rebuilding plan, or stock status is unknown:** No change from current regulations except that the payback may be spread equally across 2 years.
2. **If biomass is above the threshold, but below the target, and the stock is not under a rebuilding plan:**
   - **If only the ACL exceeded:** No change from current regulations.
   - **If the ABC or F_{MSY} is also exceeded (depending on other options):** No change from current regulations except that the payback may be spread equally across 2 years.
3. **If biomass is above the target:** No change from current regulations.

Reactive AM Under Option C (Fishery Score) and Option E (Biomass Based Matrix)

1. **If the stock is overfished, under a rebuilding plan, or stock status is unknown:** Most restrictive measures implemented. If most restrictive measures were previously implemented, or those measures are otherwise expected to continue to result in overages, then they must be further restricted such that they are aim to prevent future overages.
2. **If biomass is above the threshold, but below the target, and the stock is not under a rebuilding plan:**
   - **If only the ACL exceeded:** Stock remains in current bin, but measures associated with all bins are re-evaluated with the intent of preventing future ACL overages.
   - **If the ABC or F_{MSY} is also exceeded (depending on other options):** Stock drops down a bin and measures associated with all bins are re-evaluated with the intent of preventing future ACL overages.
3. **If biomass is above the target:** Consider adjustments to the measures for all bins, taking into account the performance of the measures and the conditions that precipitated the overage.

Reactive AM Under Option D (Biological Reference Point)

1. **If the stock is overfished, under a rebuilding plan, or stock status is unknown:** Same as described on previous slide for fishery score and biomass based matrix.
2. **If biomass is above the threshold, but below the target, and the stock is not under a rebuilding plan:**
   - **If only the ACL exceeded:** Same as described on previous slide for fishery score and biomass based matrix.
   - **If the ABC or F_{MSY} is also exceeded (depending on other options):** Measures step down to the next most restrictive set of measures. Measures in all bins must be re-evaluated with the intent of preventing future ACL overages.
3. **If biomass is above the target:** Adjustments may be considered for the most restrictive measures of the current bin (bin 1 or 2).

Reactive AMs, cont.

When a reactive AM is triggered and biomass is above the threshold but below the target and the stock is not under a rebuilding plan, consideration is also given to:

- Reactive AM option A: **If the ABC was also exceeded.**
  - The current process.
- Reactive AM option B: **If the fishing mortality threshold was also exceeded.**
  - Considers if total removals negatively impacted the stock.
  - Uses more recent data than data used to set ACL and ABC.
  - If regularly updated F estimates are not available, would default to ABC comparison.
- In both cases, the response is more strict if the ABC or F threshold is exceeded than if just the ACL is exceeded.

SSC REPORT AND PDT/FMAT RECOMMENDATIONS

SSC Report and Proposed Models

- Sub-group of the Council's SSC reviewed two models which could be used to inform measure setting.
- RFDM: statistical model that estimates harvest and discards from MRIP data with a variety of explanatory variables
  - Additional work needed on model specification and correlations between harvest and discards
- REDM: bioeconomic model in development for the summer flounder MSE
  - Properly specified, with recommendations for improvement from SSC




SSC Report and Proposed Models

- Concluded both models should be considered for use to set measures, even used in tandem, after recommended improvements are made

"Both models have value for management, upon revision and if their limitations are accounted for in management decisions…they will have real value when they are used together. This would be a major improvement over the ad hoc approaches that are used now. The models would predict the impact of multiple regulations on harvest and discards, and angler welfare."

- The PDT/FMAT will continue communications with model developers to further develop and refine models based on feedback and recommendations from the report




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FMAT/PDT Recommendations: Revised Timeline

- Approval draft addendum for public comment in December 2021 or Winter 2022
  - Allows for more time to develop and refine the statistical models and more time to iron out specifics of HCR options




Proposed Updated Timeline

- Policy Board/Council review and approve final range of options and draft addendum for public comment (Dec)
- Public hearings (Jan-Feb 2022)
- Continued development of models to inform measure setting (winter 2022)
- FMAT/PDT and APs meet to consider recommendations for final action (March 2022)
- Policy Board/Council take final action on FW/addendum (April 2022)
- Development of NEPA document for framework and federal rulemaking (April 2022 – late 2022)
- Completion of NEFSC socioeconomic survey (spring 2022)
- NEFSC socioeconomic survey data used to update models used to inform measure setting (summer/fall 2022)
- MC and AP meetings to provide input on 2023 measures (fall 2022)
- Board, Council set 2023 recreational management measures based on HCR option selected (Dec 2022)




FMAT/PDT Recommendations: Example Measures

- Do not include example measures in the draft addendum
  - The preferred HCR option should be selected based on the merits of the approach not the resulting measures.
  - Example measures may be misleading.
  - MC/TC may need to further refine methodology for developing measures during the specifications process.




FMAT/PDT Recommendations: Workshops

- Initial timeline included fall/winter stakeholder workshops to gather angler preference data.
- With recommended revised timeline, it would be more valuable to use results from the upcoming NEFSC North Atlantic Recreational Fishing Survey.
  - More comprehensive, wider reaching
  - Bluefish has not been included in this or prior surveys. Other ways to gather this info (e.g., workshops) could be pursued once bluefish is no longer under a rebuilding plan.

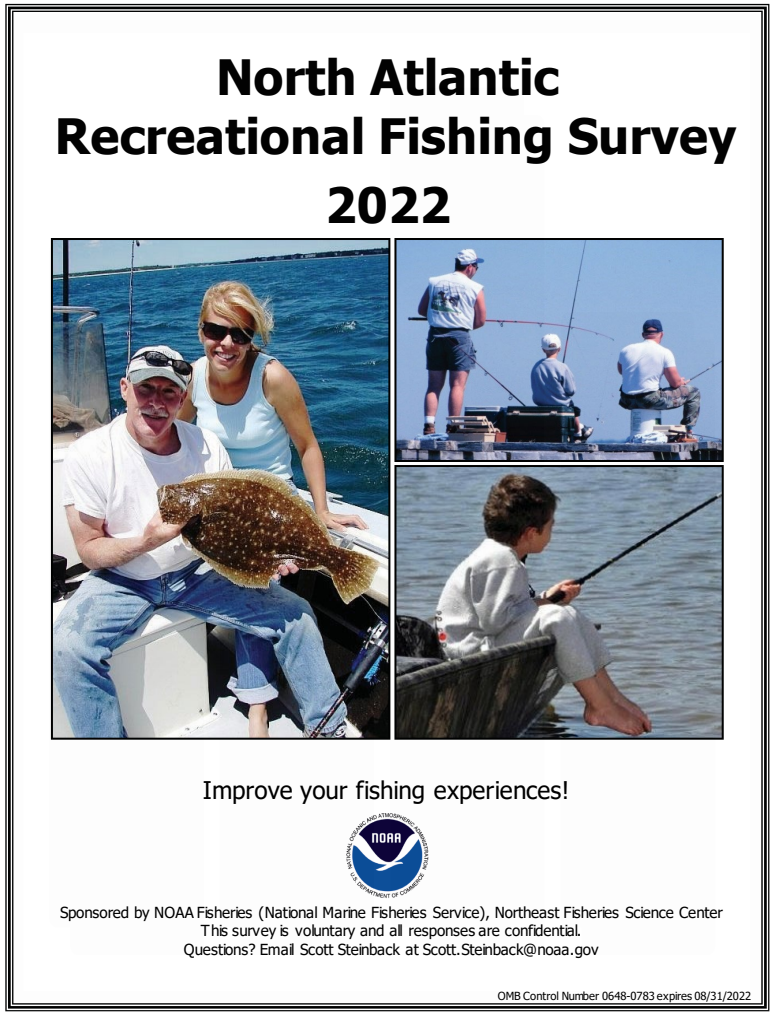



North Atlantic Recreational Fishing Survey: Overview

When: early 2022

Target population: saltwater anglers that fish for summer flounder, black sea bass, and scup in the North Atlantic (MA through VA)

How: approximately 4,000 surveys will be sent to a sample of anglers, randomly drawn from 2021 state-level saltwater recreational fishing license frames



North Atlantic Recreational Fishing Survey: Purpose

- Provide information necessary to:
  1) quantitatively estimate angler preferences for summer flounder, scup, and black sea bass
     - value of keeping or releasing an additional summer flounder, black sea bass, or scup
     - how the size of a fish affects value (e.g., value of keeping an 18” black sea bass vs a 15” black sea bass)
     - value of angler tradeoffs between species (e.g., value of keeping summer flounder relative to keeping black sea bass or scup)
  2) predict changes in angler behavior under different regulations
     - how angler effort changes under different regulatory scenarios

- Update the coefficients contained in the NEFSC recreational economics demand model (REDM) to reflect current angler preferences
  – the REDM is currently based on survey data collected in 2010

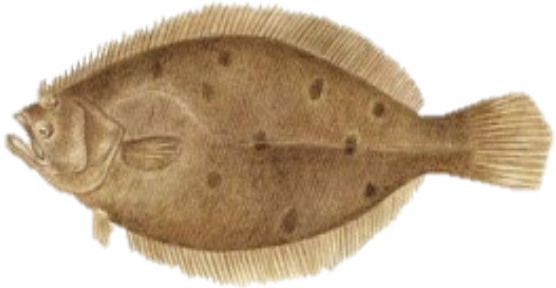


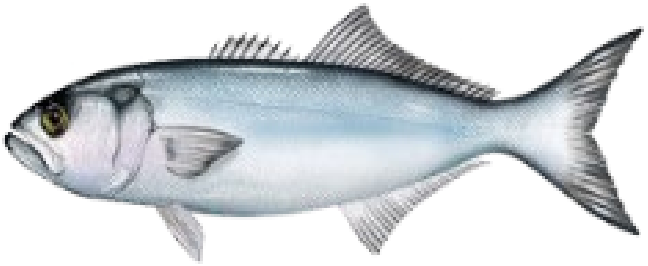

Discussion Points

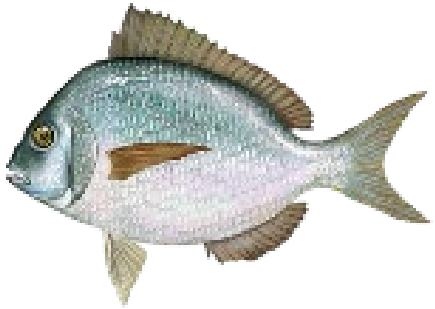
- Revised timeline
- Guidance on further development of options presented today




Questions?







Conservation Equivalency Tasks for the Management and Science Committee

ISFMP Policy Board

October 2021

CE as defined in the ISFMP Charter

- Actions taken by a state which differ from the specific requirements of the FMP, but achieve the same level of conservation.
- One example can be, various combinations of size limits, gear restrictions, and season length can be demonstrated to achieve the same targeted level of F.
- The appropriate Management Board/Section will determine conservation equivalency.
- The application of conservation equivalency is described in the Conservation Equivalency Policy and Technical Guidance Document

General Policy Guidance

- Current CE Policy Guidance has some recommendations and requirements.
- General recommendations
- Specific recommendations for info to included in proposals: rational, data needs, how the FMP goals are met, and plans for monitoring and evaluation
- Specific guidelines for proposal submission and review process

After Approval

- Annually states should describe and evaluate CE programs in compliance reports
- PRT evaluates all CE programs during FMP reviews
- Programs can be suspended if a state is not completing monitoring to evaluate programs
- PRT will provide reports to the Board

MSC Task

- Develop a way to better characterize and address uncertainty of conservation equivalency (CE) proposals, for example: Develop a buffer to account for uncertainty
  - Should stock status be accounted for when establishing buffers (stock status steps/tiers, control rule)
  - Don't want a buffer that is overly burdensome on "fringe states" the buffer apply differently to the fringe states?
- Develop a retrospective analysis to see how well CE performed including the CW measure for comparison
  - This could help inform the above buffer
  - Consider harvest vs total removals consistent with FMP
- For species and measures that are harder to evaluate equivalency should CE be allowed (some measures are non-quantifiable)? Should there be bounds on CE or is anything allowed unless specifically excluded by the FMP/Board?

MSC Tasks

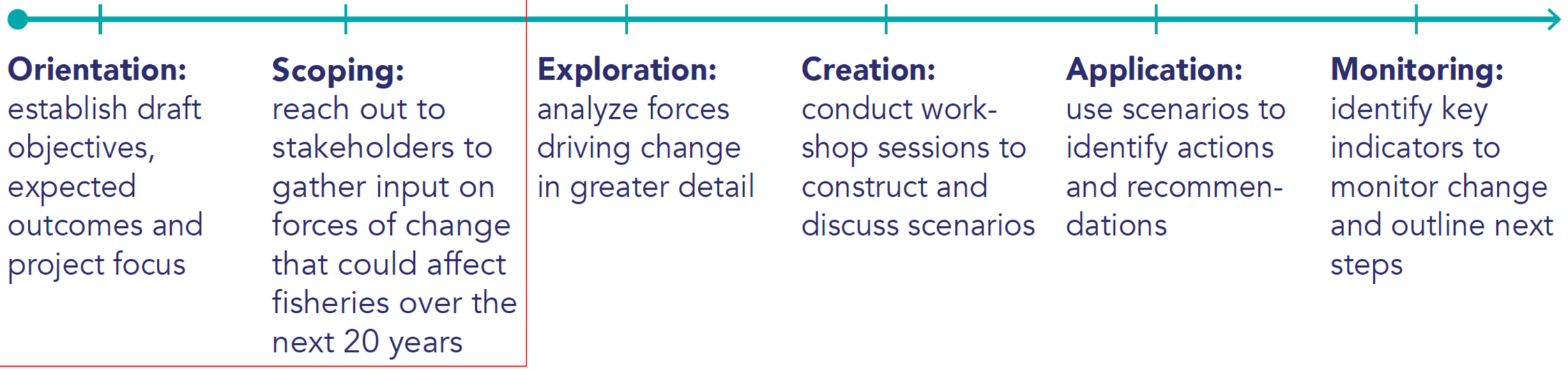
- Data Standards:
  - Are there minimum data standards for CE or a required level of review of the data sets used if not within the bounds of the minimum data standards?
  - Should things that cannot be quantified be permitted under CE?
- Should there be a time limit on CE programs (set # of years, assessment cycle, etc)?
- Should stock status impact CE? If so how? Example, if a stock is declared OF/OFO then CE be re-evaluated?

EAST COAST CLIMATE CHANGE SCENARIO PLANNING

Update to ASMFC: October 2021

1. Our Work So Far

Steps in this Multi-Year Initiative



Summer / Fall 2021

1. Our Work So Far: Highlights

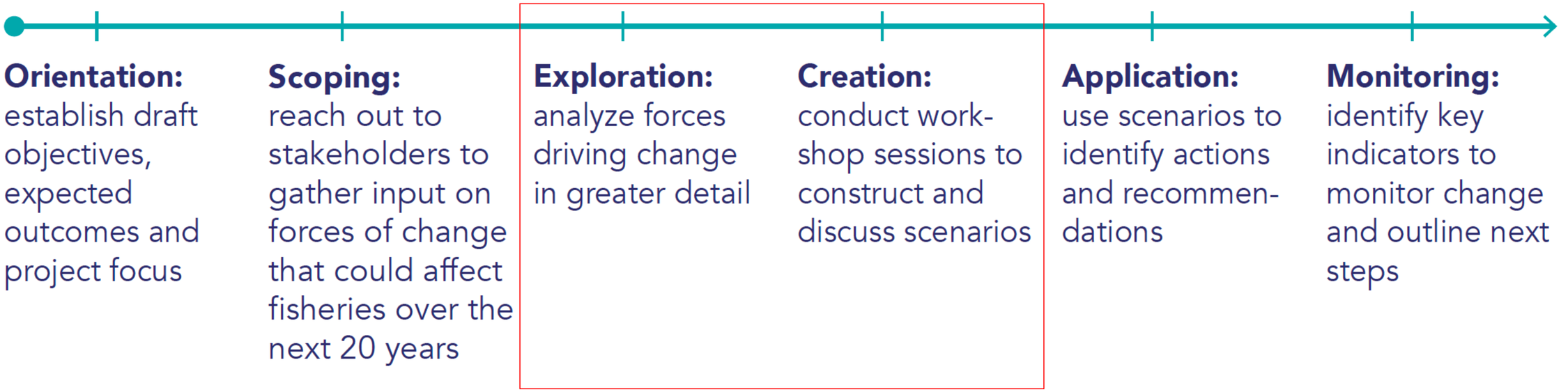
1. Created a set of **introductory materials** (brochures, videos) and redesigned the website to ensure the process is transparent and accessible.

2. Held 3 **webinars this summer**, attended by over 250 participants. The webinar introduced the initiative, explained scenario planning, and provided participants with a chance to review the project objectives and provide their own perspective on climate change.

3. Designed and conducted an online **questionnaire** to gather input on the initiative, and the forces of change that could affect fisheries over the next 20 years (and will hence feature in our scenarios). We received 383 responses to the survey, containing a wealth of information and perspectives from a wide range of stakeholders.

3. Next Phases: Proposed Tasks and Timings

Steps in this Multi-Year Initiative



Late 2021 – Winter/Spring 2022