



THE SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

Update on FWC's Black Grouper Management Strategy Evaluation

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Presentation Outline

- Explain the MSE Framework
- Describe project components
- MSE Outputs



What Is Management Strategy Evaluation (MSE)?

MSE is a simulation-testing framework.



It asks: "If we used this management approach under different future conditions, how would it perform?"

What the MSE Simulated



Fish population dynamics



Commercial and recreational fisheries



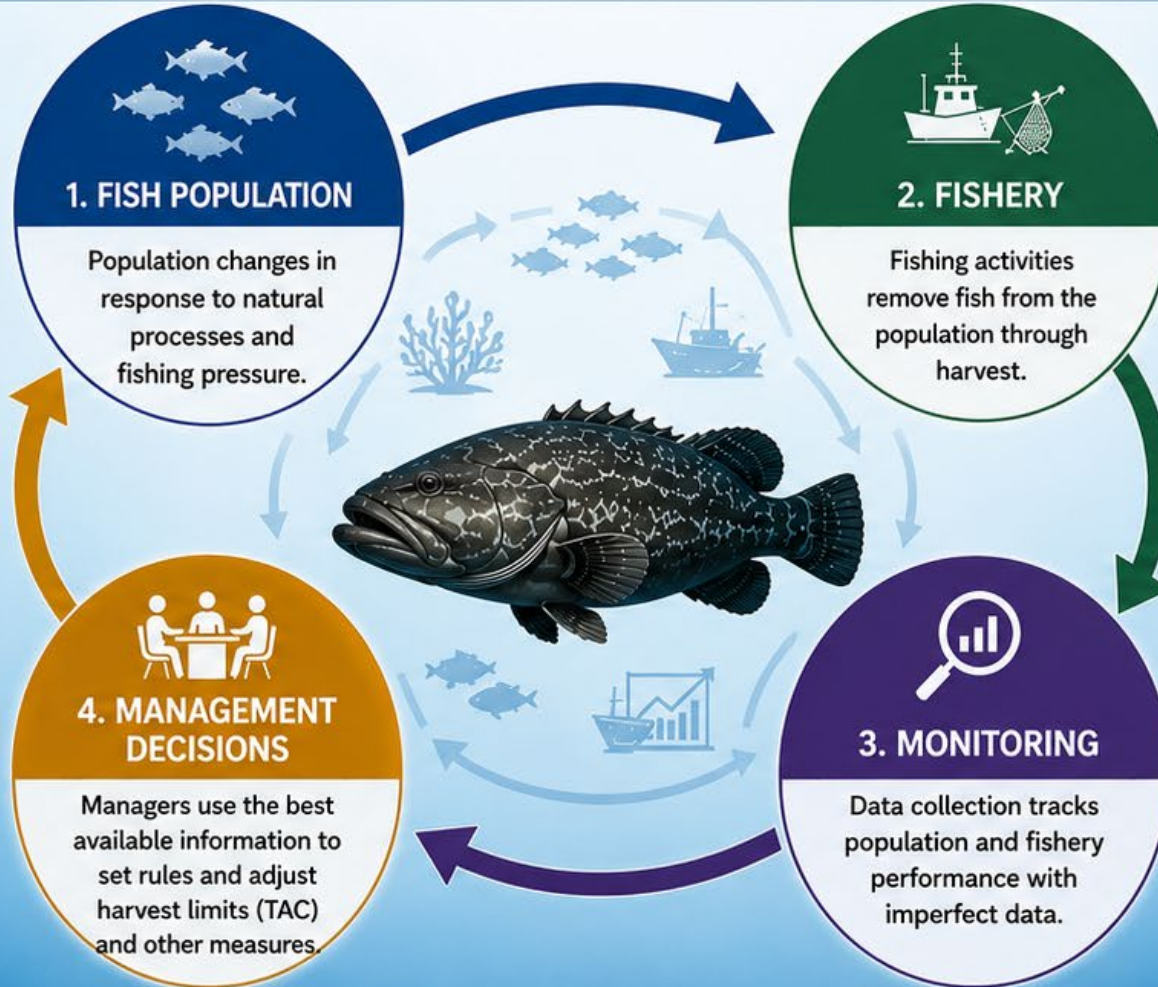
Imperfect monitoring data



Different uncertainty scenarios



Future management responses



How the MSE Works



Simulate many future scenarios



Evaluate how the management strategy performs



Identify trade-offs and risks



Choose strategies that meet objectives and are robust to uncertainty



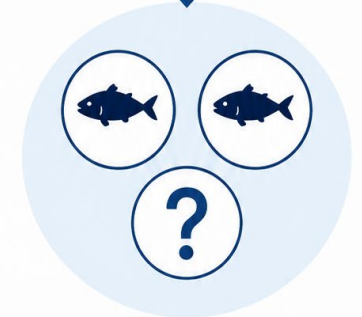
MSE tests management approaches before they are used in the real world—helping ensure healthy fish populations, sustainable fisheries, and better outcomes for the future.

Why MSE for Black Grouper

- SEDAR 48 was stopped in 2017
- Landings data quality is uncertain
 - Commercial Landings History
 - Recreational Estimates
- Misreported catch can impact outputs of stock assessments
- MSEs can test impact of different assumptions



MSE SIMULATIONS



TEST DIFFERENT
SCENARIOS



BETTER-INFORMED
DECISIONS

What will the Black Grouper MSE Test



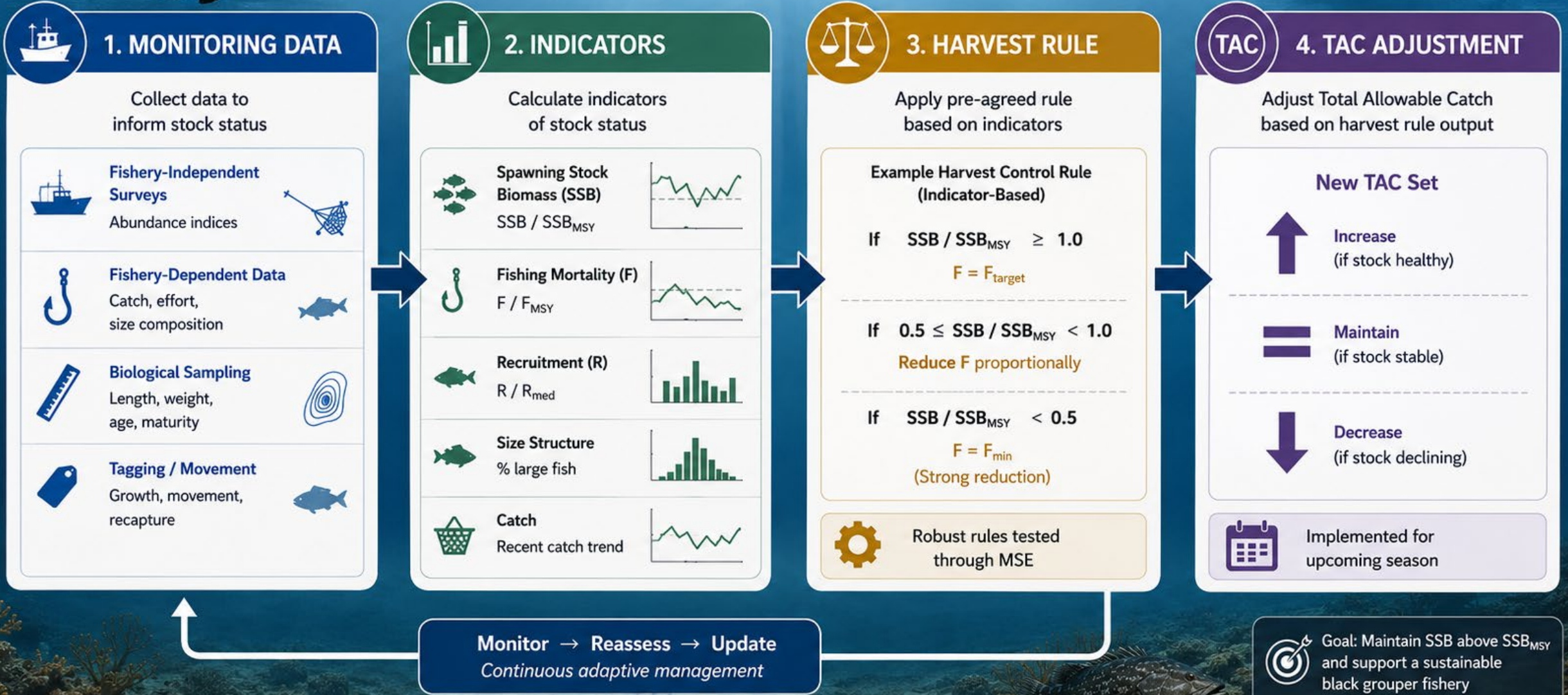
- Test if indicators can be used to stabilize biomass and maintain management target
- Evaluate robustness of conclusion due to uncertainty in model inputs
- Compare tradeoffs among strategies

Objective	Tested?
Biomass stability	Yes
SPR maintenance	Yes
Catch stability	Yes
Robustness to uncertainty	Yes



MSE Workflow for Black Grouper

Adaptive management to ensure a healthy and sustainable fishery



Current MSE Inputs

- Limited access to raw datasets
- Management target 30% SPR as MSY proxy
- Biological information from SEDAR 19 and 48 and available datasets
 - Growth
 - Maturity
 - Catch length composition
- Met with SSC to get feedback on MSE development

15 Management Procedures for indicator development

- Fishery Dependent Data
 - State Reef Fishery Survey (SRFS)
 - Abundance and length data
 - Commercial longline
 - Length data
- Fishery Independent Data
 - Reef Visual Census (RVC)
 - Abundance and length data

How Indicators Inform ACL Decisions: A Hypothetical Example for Black Grouper

Using monitoring data and indicators to adjust the Annual Catch Limit (ACL)

1. FROM DATA TO INDICATORS TO MANAGEMENT INFORMATION

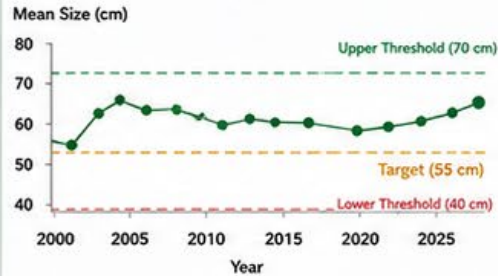
Managers track key indicators of black grouper stock status. These indicators summarize complex data and provide signals about the population's health.



Hypothetical Example: Key Indicator and Harvest Rule

KEY INDICATOR

Mean Size (cm) of Black Grouper (Length-Converted)



Mean size is an important indicator of stock status because larger fish are more productive and better able to reproduce.

HARVEST CONTROL RULE (Hypothetical)

Indicator: Mean Size (cm)	ACL Decision
≥ 70 cm (Above Upper Threshold)	Increase ACL (Up to +20%)
40 – 70 cm (Within Thresholds)	Maintain ACL (No change)
< 40 cm (Below Lower Threshold)	Decrease ACL (Reduce proportionally)

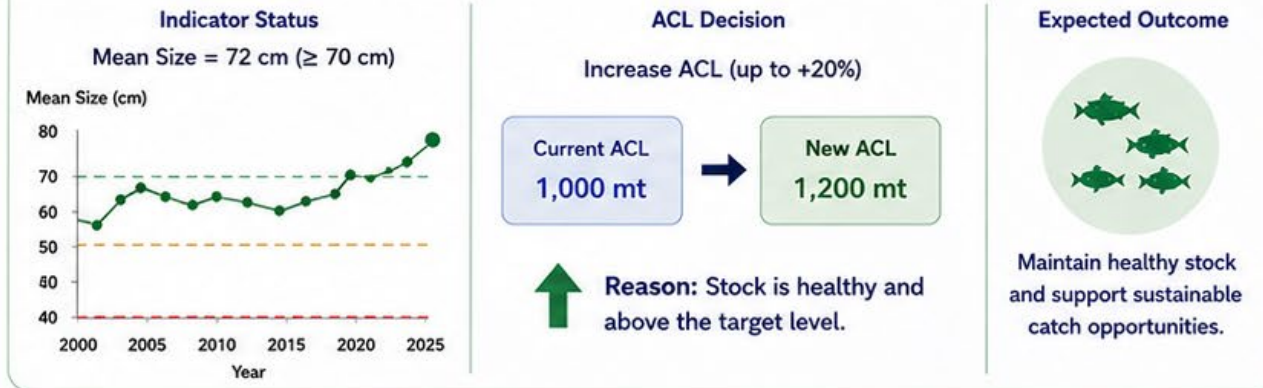


This rule helps ensure the stock stays healthy over the long term while allowing for sustainable fishing opportunities.

2. USING THE INDICATOR TO ADJUST THE ACL

Each year, the indicator is updated. The harvest rule is applied to set the new ACL.

SCENARIO A: INDICATOR HIGH – INCREASE ACL



SCENARIO B: INDICATOR LOW – DECREASE ACL



Using indicators and harvest rules to adjust the ACL helps achieve the goal: Healthy black grouper populations and sustainable fisheries for the future.





What the Current Black Grouper MSE

Can do:

- Identify candidate management procedures and indicators
- Develop a method to compare tradeoffs
- Design process to evaluate robustness of the management strategy
- Support future interim approaches

Cannot do:

- Determine current stock status
- Replace a full stock assessment
- Estimate exact biomass
- Provide immediate management recommendations
- Guarantee future outcomes

Next Steps

- Update input data
- Expand from desktop MSE to full MSE
 - Work with stakeholders and managers to develop management measures to consider in future amendment

FROM DESKTOP MSE (SINGLE PERSON OR TEAM)

DESKTOP MSE Single Person or Team



- Analysis done in isolation
- Limited perspectives
- Output used for decision making with limited context



TO FULL MSE (MANAGERS & STAKEHOLDERS INVOLVED)

FULL MSE Managers & Stakeholders Involved



Diverse expertise and viewpoints



Collaborative discussions



Better identification of risks and opportunities



Stronger alignment and buy-in

Questions



NOAA Fisheries