Dolphin Management Strategy Evaluation:

Plans and Progress

Dolphin/Wahoo AP Meeting November 2023

Acknowledgements

Stakeholder Workshops:

SEFSC: Mandy Karnauskas, Matt McPherson, Suzana Blake, Cassidy Peterson
SAFMC: Julia Byrd, John Hadley

MSE Modeling Technical Team:

SEFSC: Matt Damiano, Kyle Shertzer, John Walter, Cassidy Peterson
NCSU: Jie Cao
OSU: Bryan Minihan
Beyond Our Shores Foundation: Wess Merten
SERO: Nikhil Mehta

Stakeholder participants

Background

2020 Dolphin / Wahoo Stakeholder Participatory Workshops

- Built stakeholder-driven conceptual models detailing local abundance of dolphin
- Clear regional differences in use, reliance, and value of fisheries
- Perceived increased utilization on the resource; accompanied by increased user conflicts

Can we design a new management approach that reduces conflicts, maximizes achievement of stakeholder-defined management objectives, and is appropriate for the life history strategy of dolphin?

https://safmc.net/citizen-science/dolphin-wahoo-participatory-workshops/ | https://safmc.net/documents/2022/05/dolphin-wahoo-participatory-workshops-final-report.pdf/

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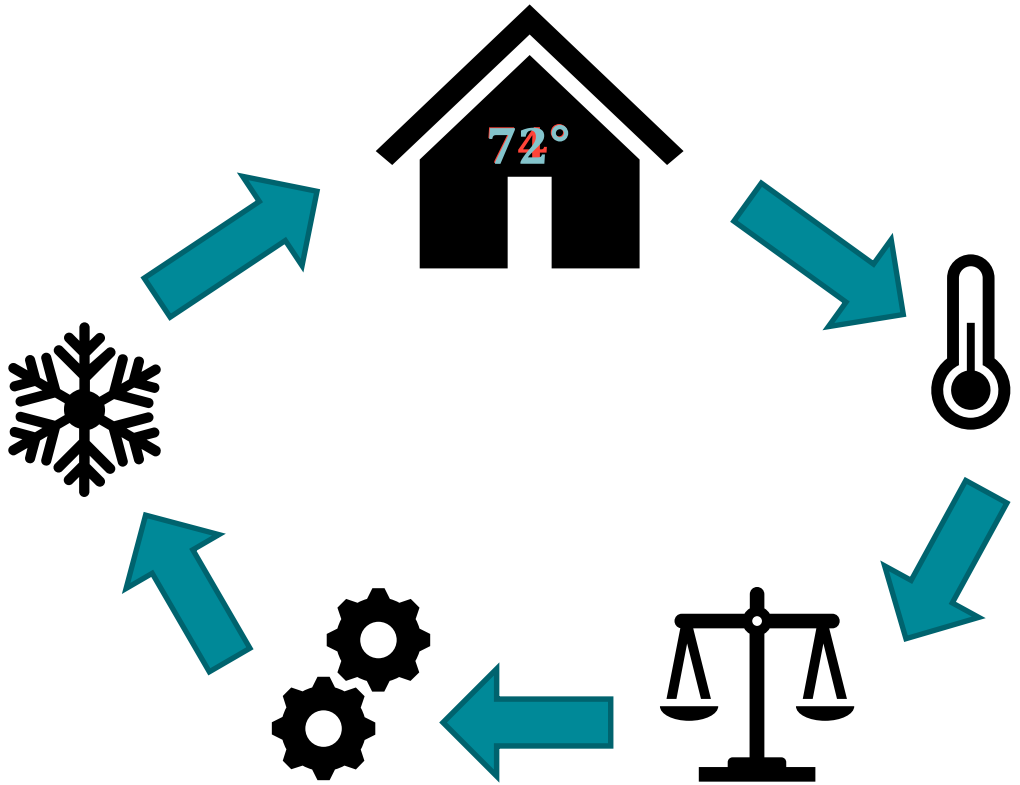
Motivation

- Dolphin stock and fishery
  - Internationally exploited
    - Data-limited, precluding full stock assessment
    - Limited management capacity
  - Static catch limit
    - Environmentally-driven productivity
- Proposing a more adaptive approach
  - Empirical (non-model based / indicator-based) management procedure for dolphin in the South Atlantic
- Full stakeholder Management Strategy Evaluation process

Management Procedure (Harvest Strategy) Approach



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Management Procedure (Harvest Strategy) Approach

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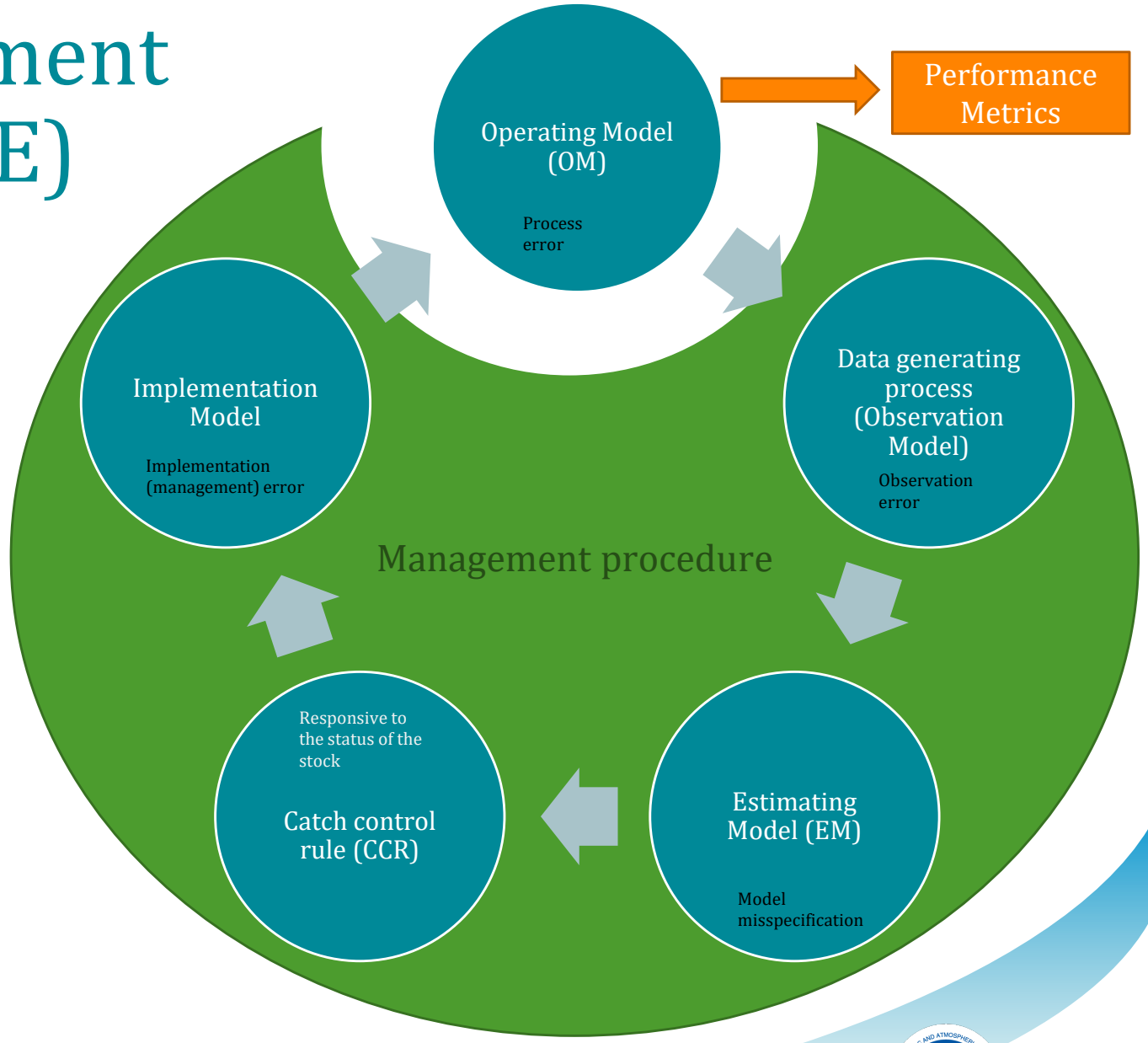
Background on Management Strategy Evaluation (MSE)

Management Strategy Evaluation (MSE) – process designed to develop management procedures (MPs) that are robust to uncertainty

1. Identify fishery-specific, stakeholder-defined management objectives
2. Identify relevant uncertainties over which MP should be robust
3. Develop operating models, 'true' states of nature, and condition operating models
4. Identify management procedures that are responsive to stock dynamics (feedback loop)
5. Simulation exercise; summarize and present resulting performance statistics



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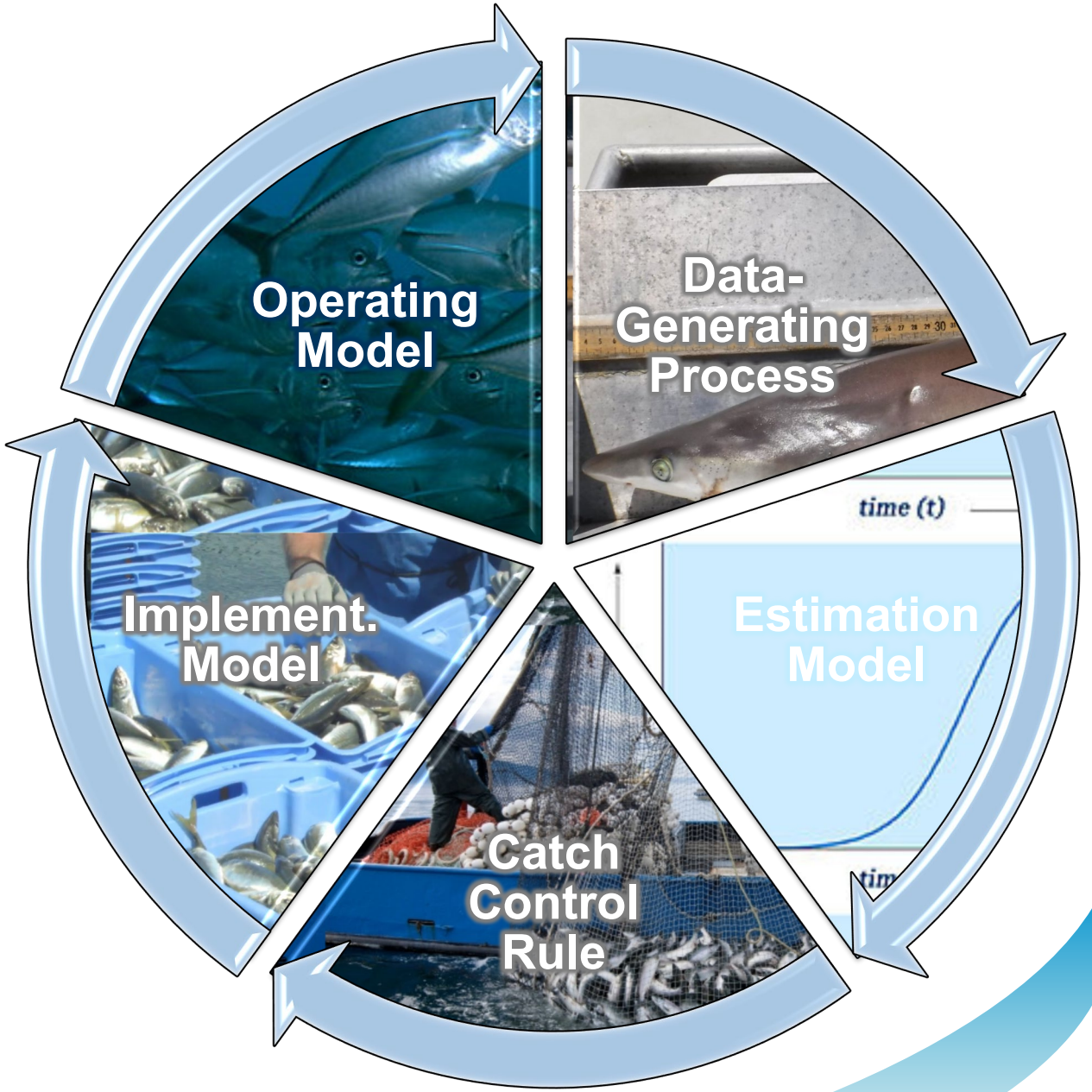
MSE Ancillary Benefits

- Identify management objectives of system
- Foster increased communication and transparency with stakeholders
- Understand stock-specific trade-offs inherent in management of system
- Highlight future research priorities and improve understanding of system uncertainties
- Clearly identify management approaches that will not work
- Take a short-, mid-, and long-term view of the resource
- Improve overall understanding of the management system



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Degree of stakeholder involvement

Full stakeholder MSE	Intermediate MSE	Desk MSE	Not MSE
• Full iterative stakeholder involvement • MSE intended to result in management action • Where management objectives are not fully developed • Expensive and time consuming	• Spectrum between full stakeholder MSE and desk MSE • To moderate resource requirements	• No stakeholder input • General research questions • To develop MPs where management objectives are known	• Simulation exercises where the full feedback-loop characterizing the MSE is not necessary • Consider other less resource-intensive approaches

Walter, Peterson, Marshall, Deroba, Gaichas, Williams, Stochs, Tommasi, Ahrens (2023) When to conduct, and when not to conduct, management strategy evaluations. ICES Journal of Marine Science.

Stakeholder Workshops

Workshops designed to:

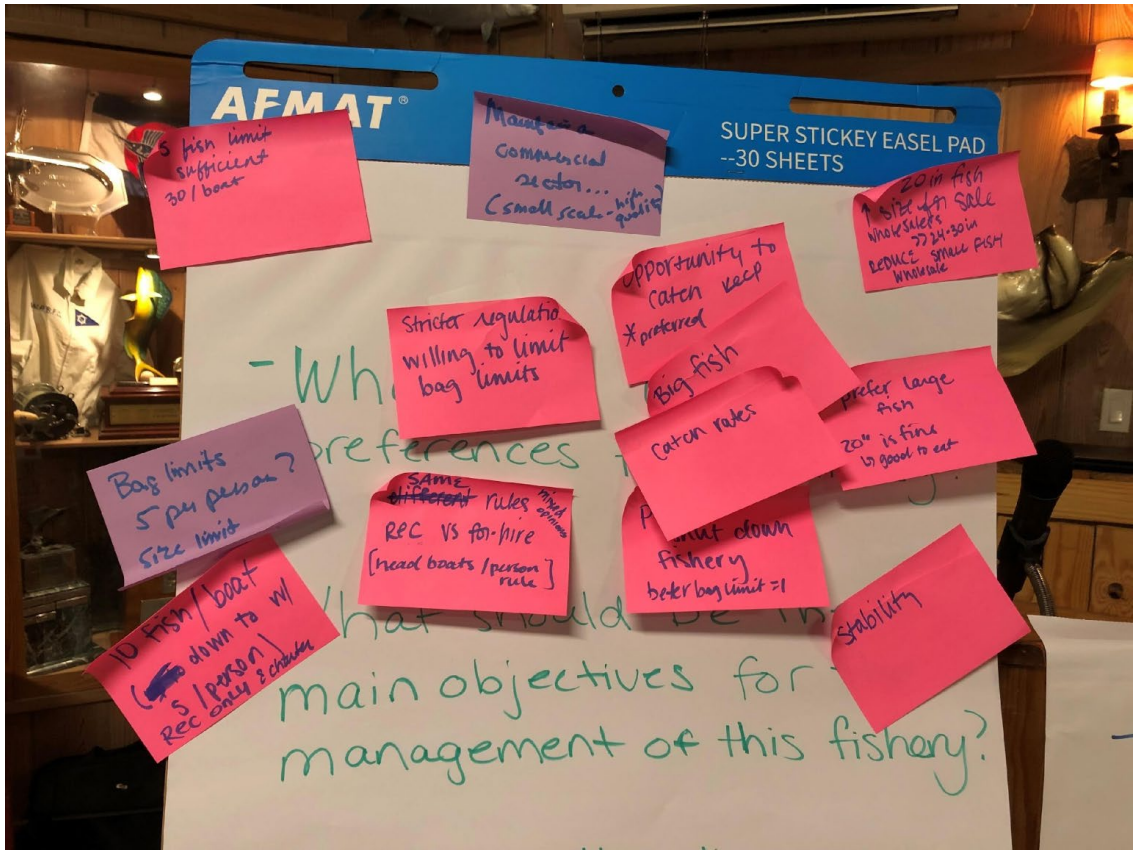
- Introduce the management procedures and management strategy evaluation
- To develop conceptual management objectives
- Understand uncertainties that the management procedure should be robust to
- Identify key participants for continued involvement in the process

Workshop Dates:

- South Florida (Oct 2022)
  - West Palm Beach, FL
  - Fort Lauderdale, FL
  - Islamorada, FL
- Southern North East (Nov 2022)
  - Montauk, NY
  - Narragansett, RI
- Greater Carolinas (Jan 2023)
  - Charleston, SC
  - Wilmington, NC
  - Wanchese / Outer Banks, NC
  - Virginia Beach, VA
- Virtual (May, 30 2023)

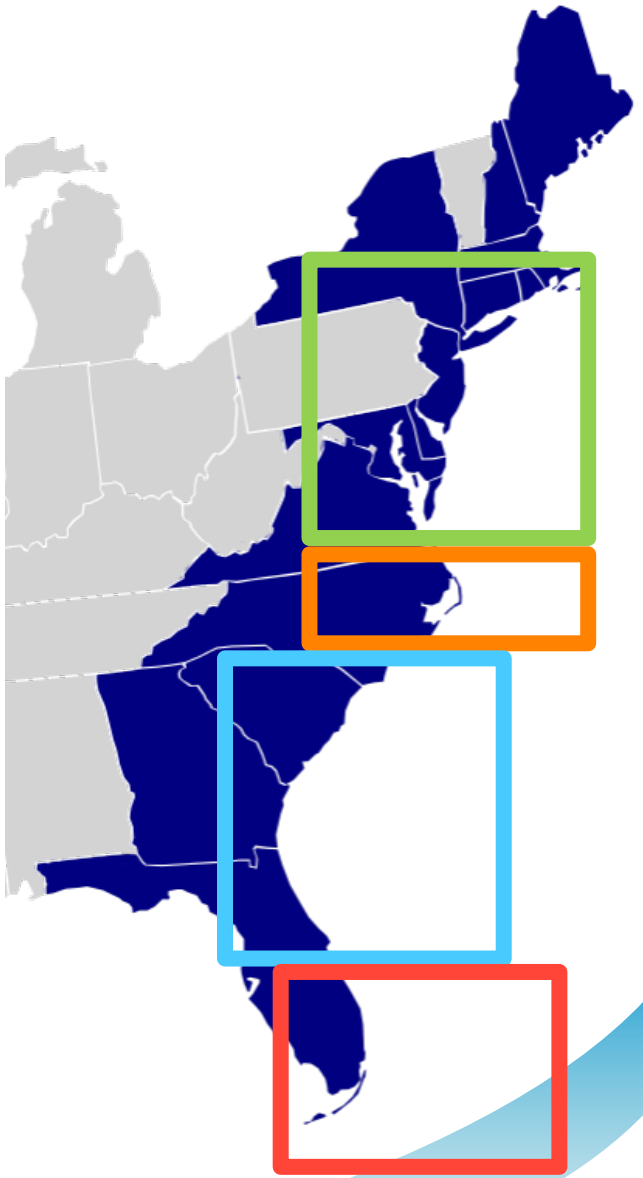
Feedback: Objectives

- Conceptual management objectives:
  - Ensure opportunity / access to fishery
  - Prevent fishery closures
  - Large sizes preferred
  - Stability in regulations preferred*
    - *Except Wilmington, NC
  - Regional & sector differences in fishery goals and objectives

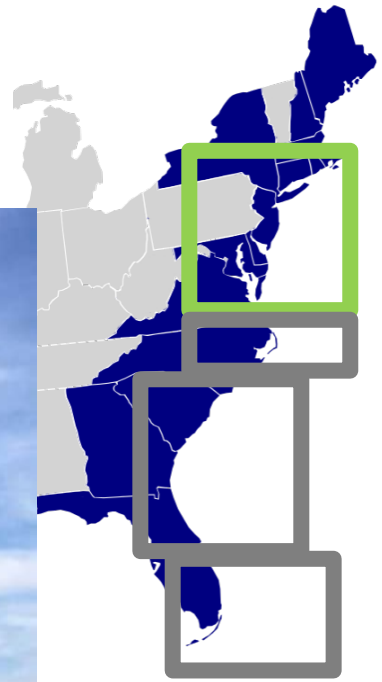


Feedback: Regional Trends

- VA – northern Mid-Atlantic
  - Virginia Beach, Montauk, Providence
- Northern NC
  - Wanchese
- SC – southern NC
  - Charleston, Wilmington
- South FL
  - Islamorada, Ft. Lauderdale, West Palm Beach



Feedback: Regional Trends



VA – northern Mid-Atlantic (VA Beach, Montauk, Providence)

- Opportunistic bycatch fishery
  - Meat fishery
  - Necessary to supplement tuna / swordfish charters
  - **Underexploited**
- Lower quality fish
- Sporadic availability
  - No overall trend
  - Shifting seasonal availability
- Smaller market

Fishery Management Objectives:

- Sentiment that **fish aren't really accessible to manage**
- More consistent / reliable fishery
- Maintain current regulations
- Maintain fishery access
- Area-based management

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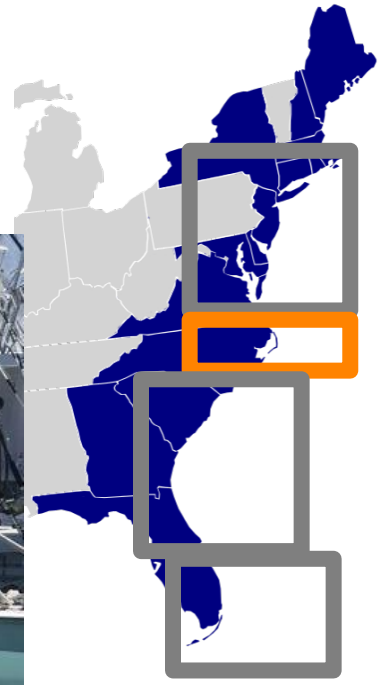
Feedback: Regional Trends



Northern NC (Wanchese*)

- Meat fishery
- Highly important fishery
- Mixed reports of abundance trend
  - Smaller fish
  - Sporadic availability – no abundance pattern
  - Changes in seasonal availability
- Increased private rec effort & constant charter effort
- Depredation

Fishery Management Objectives:

- **Reduce regulations: "The ocean regulates us"**
  - High bag/trip limits – needed to sell trips
  - No size limit
  - Lack of enforcement

* Primarily charter fishers

Feedback: Regional Trends

SC – southern NC (Charleston, Wilmington)

- Opportunistic fishery
- Meat fishery
- **Losing accessibility**
  - Fish further offshore
- Fewer rec v. commercial conflicts

<u>Fishery Management Objectives:</u>

- Conservation-minded
  - Open to reducing trip/bag limits
  - Pro (or mixed) size limits
  - **Cost-benefit analysis to explore what is viable for the charter fishery**
- Area- and sector-specific management
- Maintain accessibility / consistency
- Stability & Maximize catches

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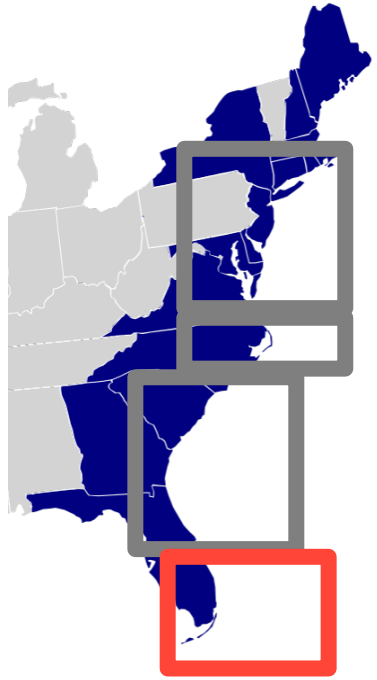
Feedback: Regional Trends



South FL (Islamorada, Ft. Lauderdale, West Palm Beach)

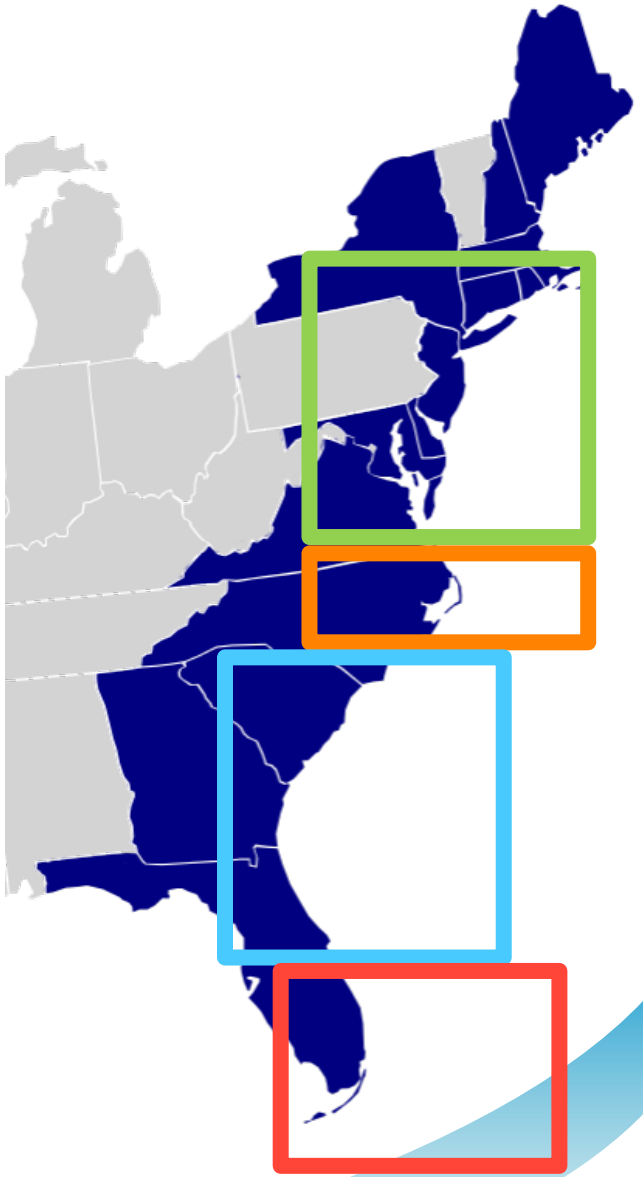
- Easy access to fishing grounds
- Sport / recreation
- Reduced availability
- Increased effort

Fishery Management Objectives:

- **Conservation**
  - Reduce trip/bag limits
  - Mixed size limit
- Stability
- Maintain opportunity
- **Reduce commercial LL**

Feedback: Patterns

- Conservation-minded in southern NC & South; exploitation-minded in OBX & North
- Correlation between fishing expense and desire to take home meat
- Reduction in local abundance in SFL – SC; less clear patterns where fisheries are more sporadic
- Under-exploitation where fish are less accessible (in Wilmington and northern mid-Atlantic)
- Increased effort in recreational sector
- Increased fishing cost
- Opportunistic / bycatch dolphin fisheries more likely to highlight ecosystem role



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Feedback: Uncertainties

- Removals
  - Recreational catch uncertainty
  - International exploitation
- Post-release mortality & Depredation
- Enforcement challenges
- Economic drivers of fishery
- Alternate movement patterns
- Changing availability & catchability
  - Temperature relationship
  - Shift in Gulf Stream
  - Sargassum health and availability
- Anthropogenic impacts:
  - lobster pot buoys; ropeless technology?
  - offshore wind
- Unique, area-based fishery dynamics

Feedback: Management Recommendations

Some of what we heard – not consensus:

- Expand minimum size limit
- Area-specific management
- Sector- or Gear-specific management
  - Private recreational versus for-hire
- Collaborate across Gulf, Caribbean, and New England Councils
- Regulate importing

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Feedback: Noteworthy

- Link between weather in South America & Puerto Rico and availability of fish in SFL
- Loose regulations sell charter trips
- Provide carrots – focus on what management can give back to fishers

MSE Modeling Dynamics

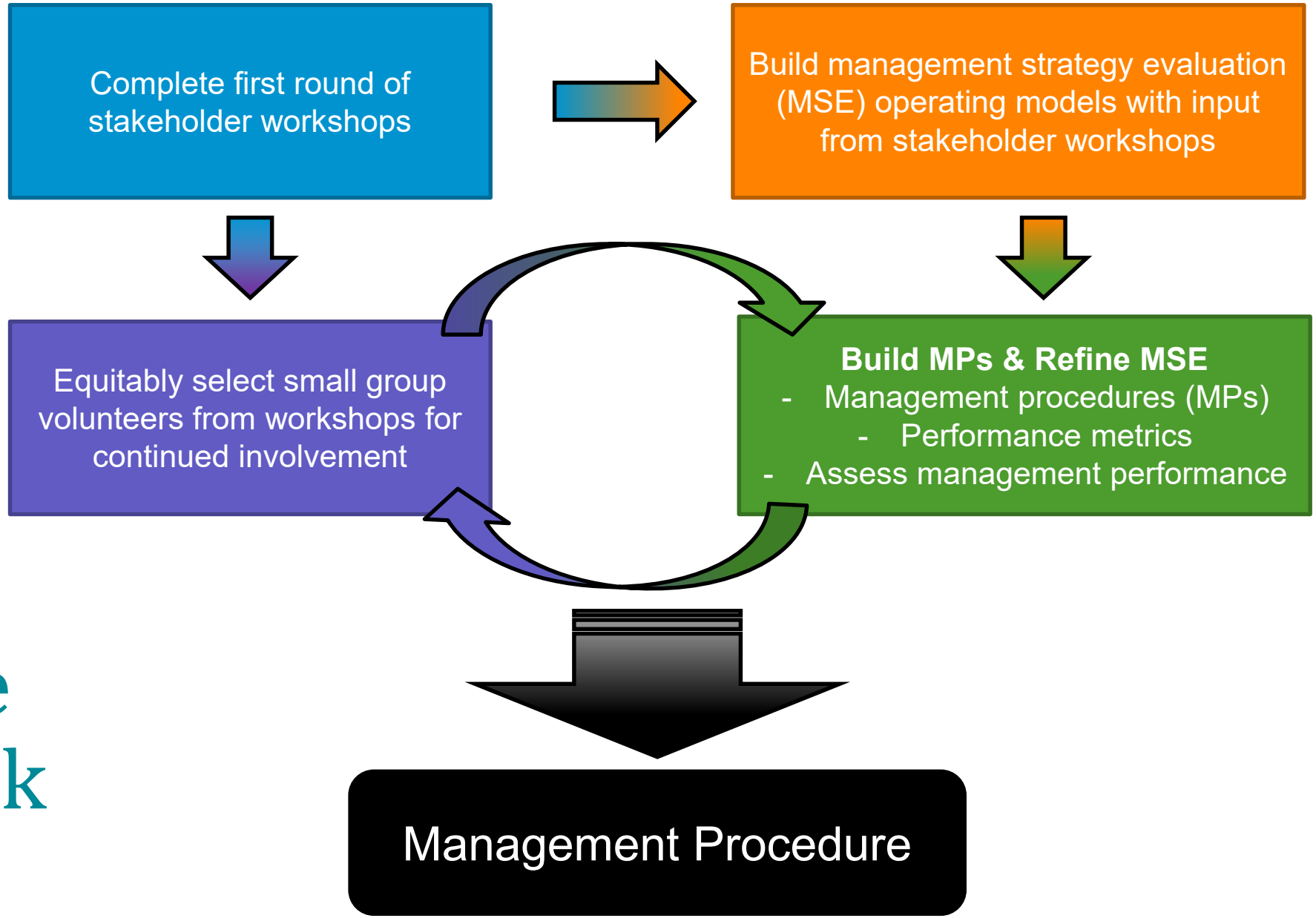
Modeling Dynamics

- Spatial, seasonal, length-based operating model
- Empirical management procedure

Progress to date

- Currently developing operating model
- Gather data and exploring indices for predictive ability
- Build and refine indicators
- Developing movement matrices
- Shiny app developer

Future outlook



Dolphin MSE Stakeholder Small Group Application

We are looking for volunteers who will continue to advise on the Management Strategy Evaluation during 2024 as part of a small stakeholder working group.

Working group is:

- Small (less than 20 stakeholders)
- Committing to 5–10 meetings via webinar for at least an hour at a time throughout 2024
- Selected through the SAFMC appointment process
- Appointed in December 2023

Participants should serve as representatives for their regions and industry sector, and agree to:

- Represent their colleagues to the best of their ability
- Do their best to attend all virtual working group meetings
- Invest in learning and understanding the Management Strategy Evaluation process.

Apply here (by Nov 17):
https://forms.gle/WsZi8oYZTbaRZy3W7.

Email cassidy.peterson@noaa.gov

Tentative timeline

Time	Activity
January 2023	Complete stakeholder workshops
Summer – Winter 2023	Build MSE modeling framework
Winter 2023 - 2024	Develop simple candidate management procedures
Spring – Winter 2024	•Analysis team works with stakeholder working group to refine management objectives and management procedures •Iterative engagement with the SAFMC and SSC
Spring - Summer 2025	Report out on results

Then what?

	Stakeholders	Modeling team	SSC	Council
Operating models	Advise on OM structure and key uncertainties	Construct	Adopt	Advise
Management objectives	Advise	Quantify	Advise on biological 'must-pays' e.g. not overfishing and rebuilding	Adopt
Management Procedures	Advise	Test and refine	Advise	Adopt and implement management procedure based on performance

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https://www.fisheries.noaa.gov/event/workshops-discuss-dolphinfish-mahi-mahi-management-strategy

https://www.fisheries.noaa.gov/feature-story/scientists-consider-more-adaptive-approaches-atlantic-dolphinfish-management

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