



**NOAA  
FISHERIES**

# Building a Fishery Ecosystem Plan for the Gulf of Mexico

Mandy Karnauskas

Gulf Council Ecosystem Technical Committee Meeting  
Mar 2, 2020



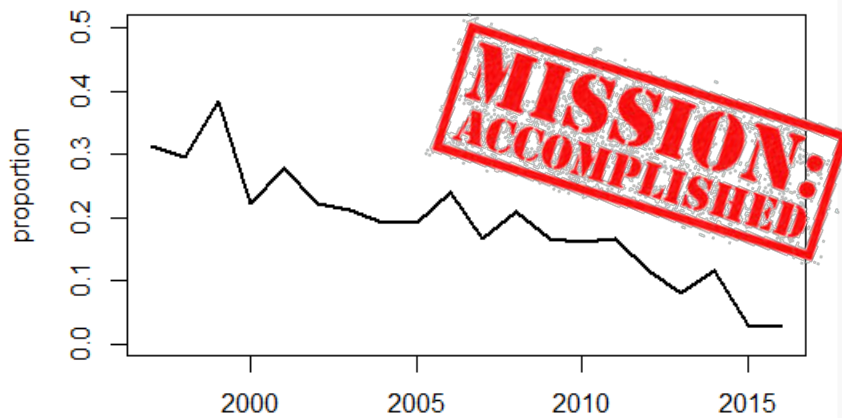
**NOAA FISHERIES**

# Outline

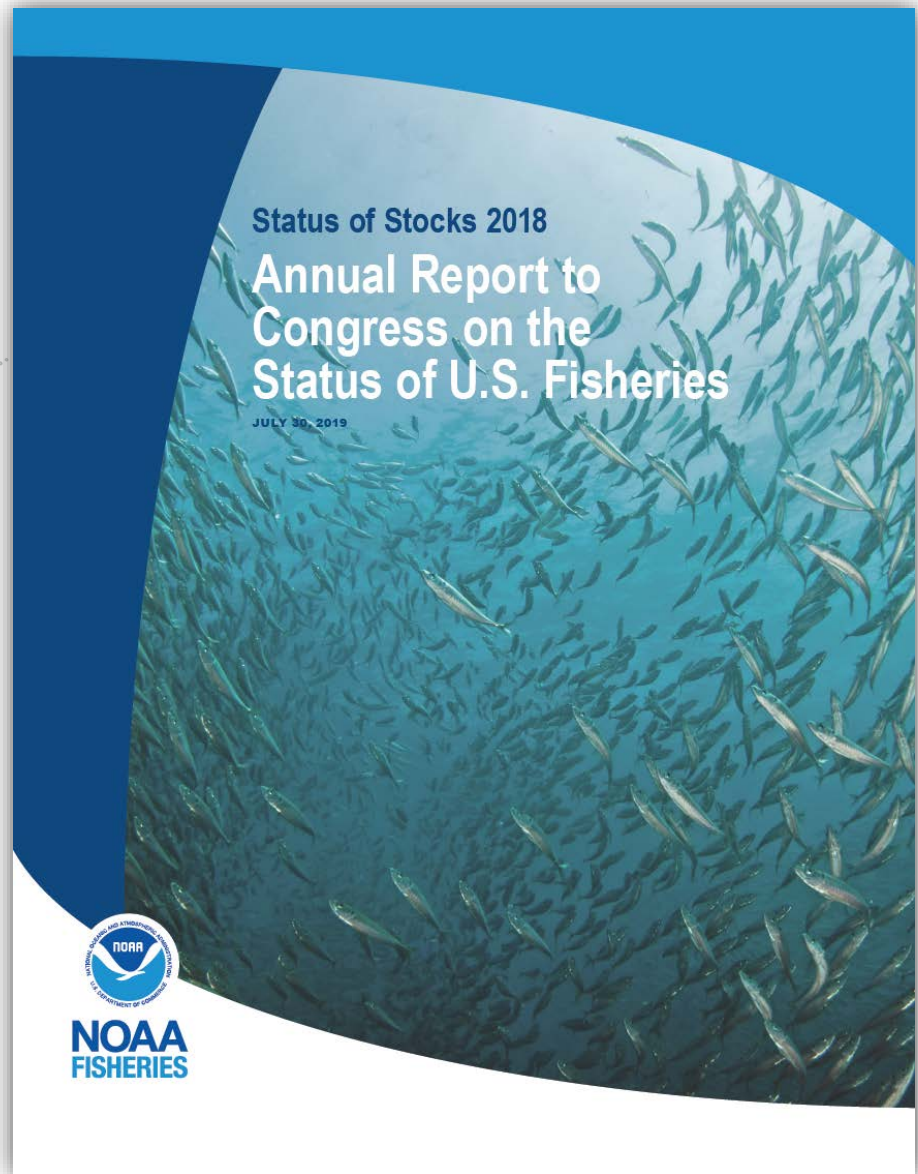
- Why bother?
- What's our vision?
- What's our end goal?
- What's the process?
- Foundational steps and future potential

# Why bother?

Proportion of stocks undergoing overfishing

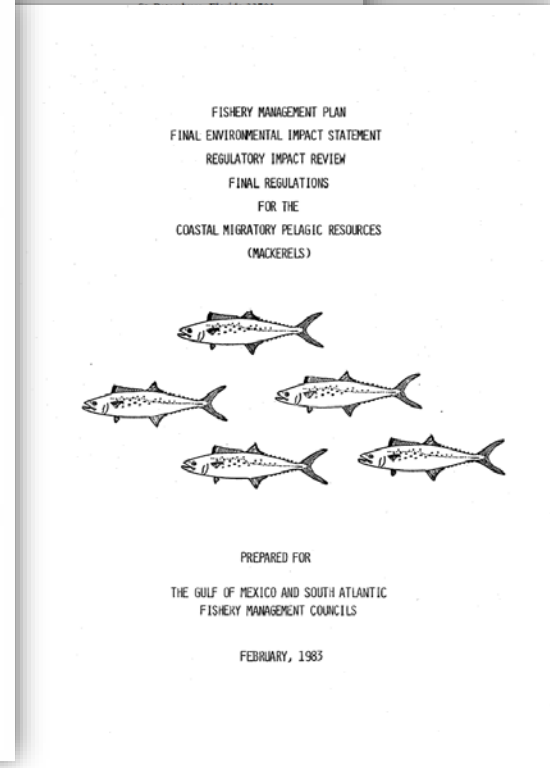
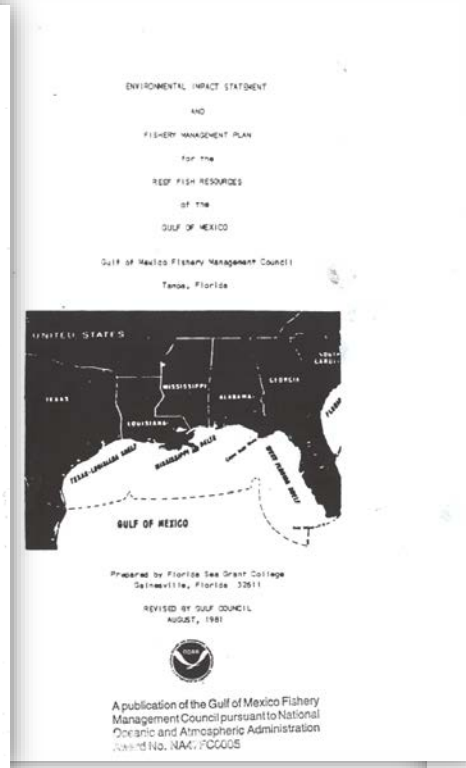
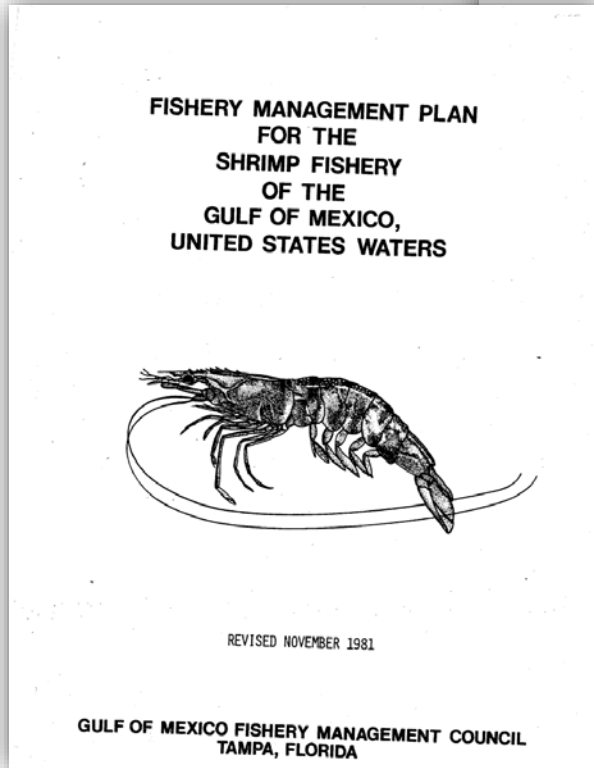
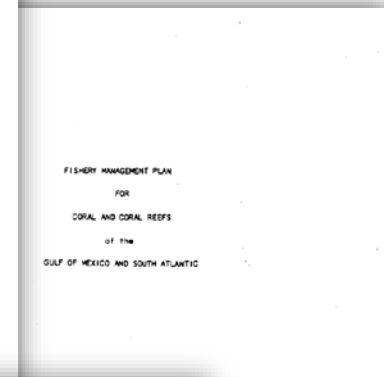
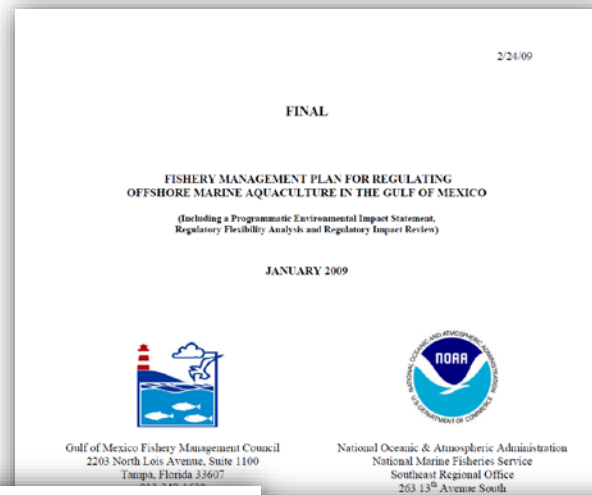


Proportion of stocks in overfished state



# Why bother?

- Interactions, tradeoffs
- Broader objectives



# Why bother?

- Interactions, tradeoffs
- Broader objectives
  - Maximizing efficiency
  - Reducing conflict, bycatch, waste
  - Sustaining productivity in the face of stressors
  - Being prepared in the face of change
  - Preserving community, culture, heritage
  - Maintaining access, equality, social justice

# Why bother?

From the Lenfest FEP report:

1. FEPs provide a structured process for translating goals and principles into action.
2. FEPs provide a coordinated way to simultaneously consider ecological, economical, and social goals.
3. FEPs create a process of identifying and transparently addressing trade-offs.
4. FEPs provide a framework to consider cumulative impacts.





# What is our vision?

A long, abstract process requires a strong vision

**Southwest**

To become the world's most loved, most flown, and most profitable airline.

**Google**

To provide access to the world's information in one click.

**Disney**

To be the world's leading producer and provider of entertainment and information.

**TESLA**

To create the most compelling electric car company of the 21st century.

**M**

To be the world's best quick service restaurant experience.

**S**

To establish Starbucks as the premier purveyor of the finest coffee in the world.

[www.ebaqdesign.com/blog/vision-statements](http://www.ebaqdesign.com/blog/vision-statements)

# What is our vision?

**NOAA's vision:** Healthy ecosystems,  
communities and economies that are resilient in the  
face of change



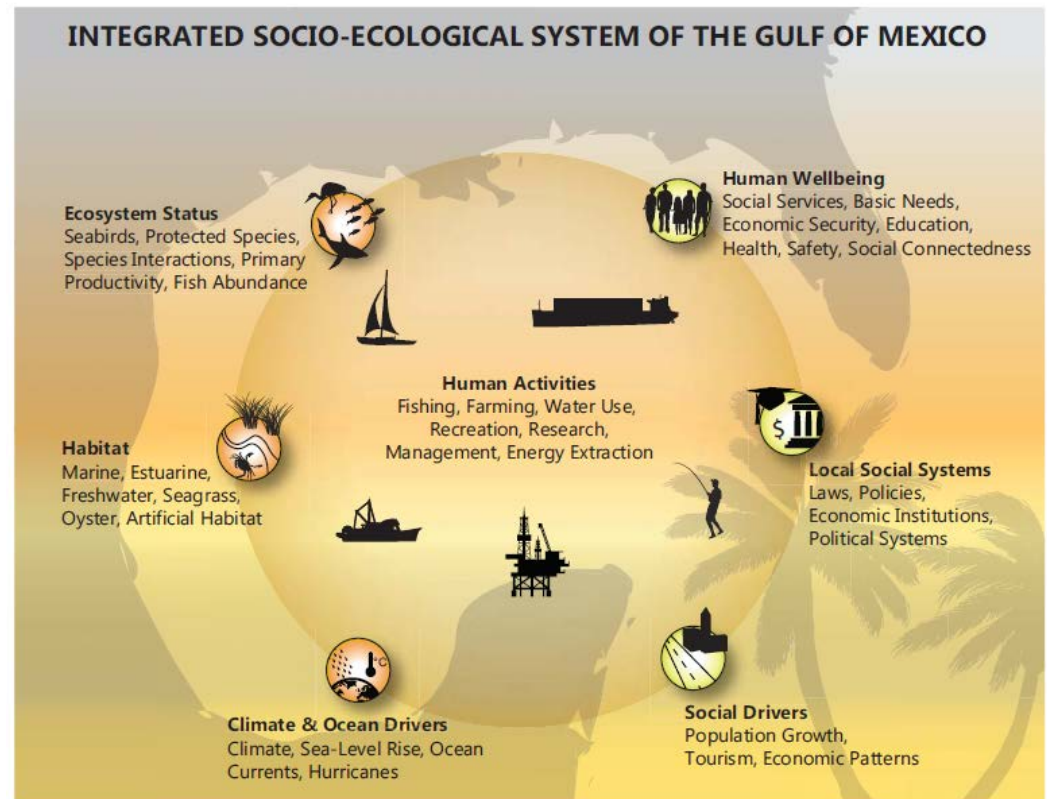


# What is our vision?

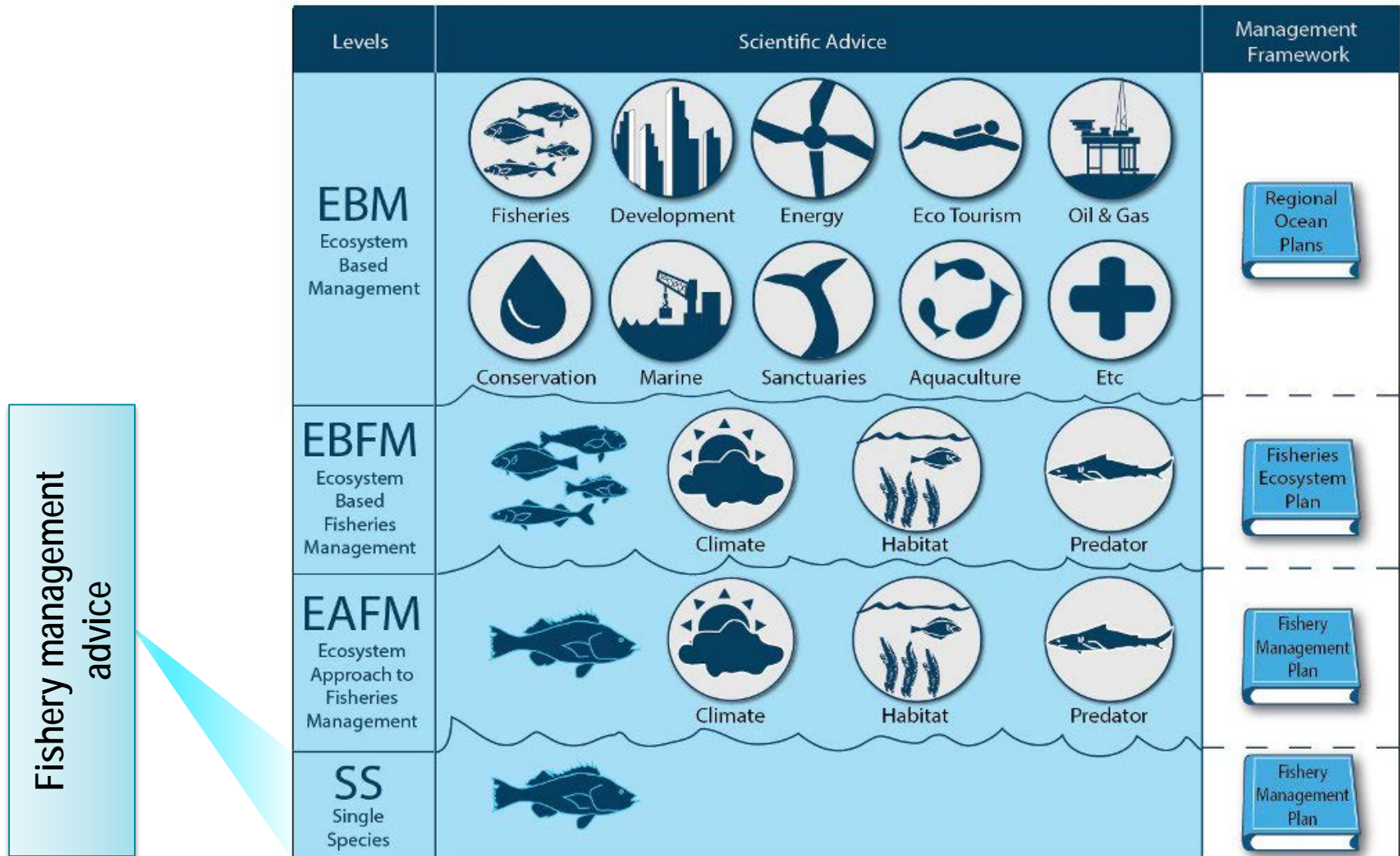
## Gulf of Mexico Integrated Ecosystem Assessment

### Program vision:

Balancing the needs of nature and society through integrated science for current and future generations in the Gulf of Mexico

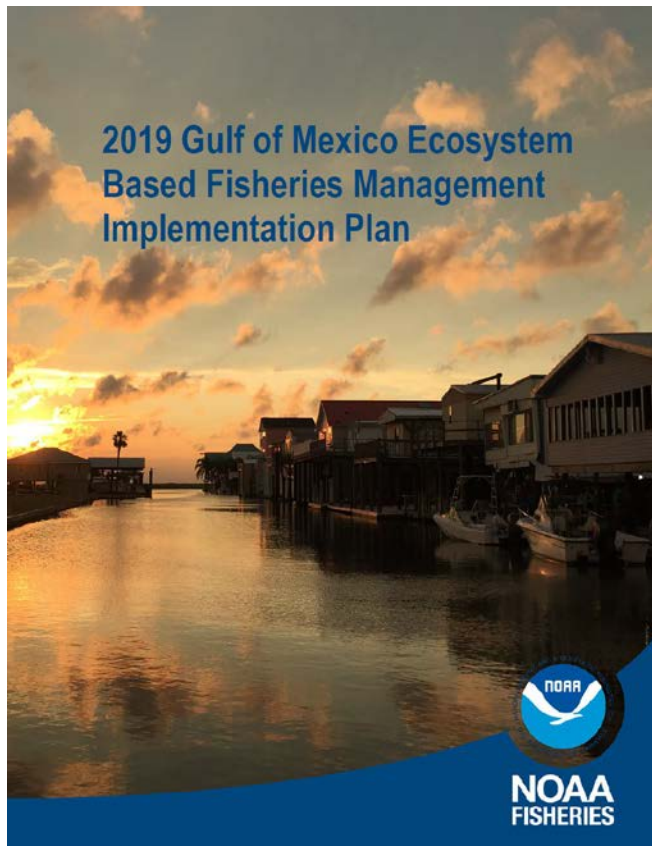


# What's our end goal?

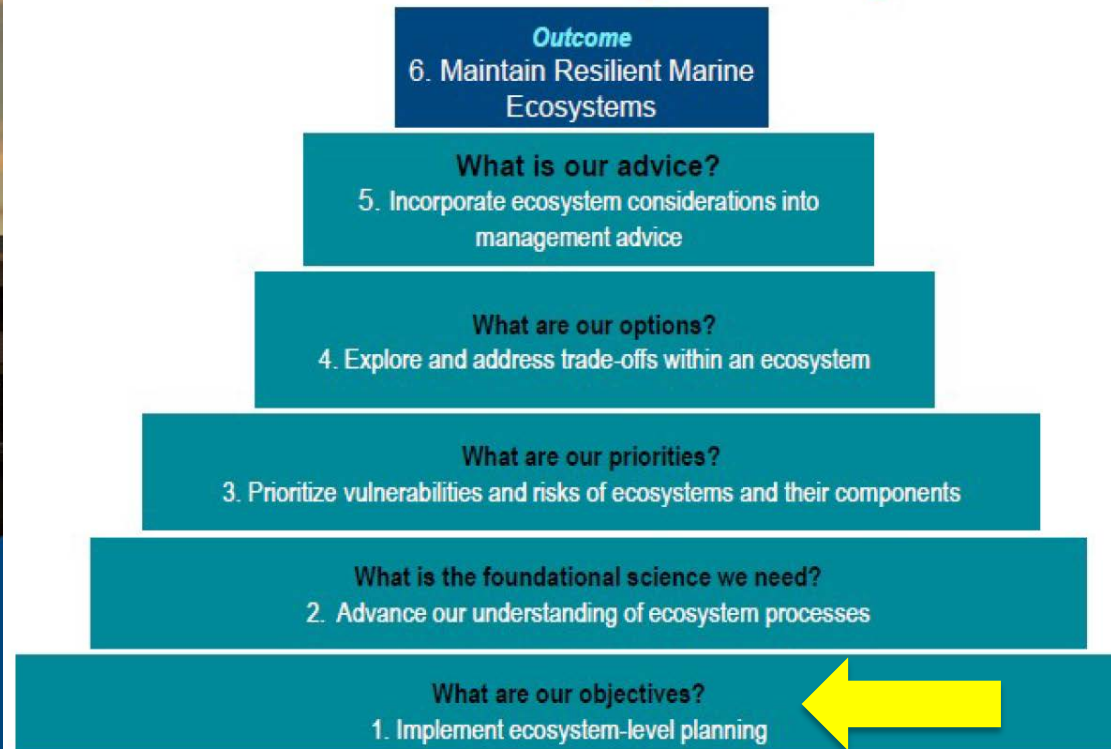


# What's our end goal?

The FEP is a means to an end, not an end in itself

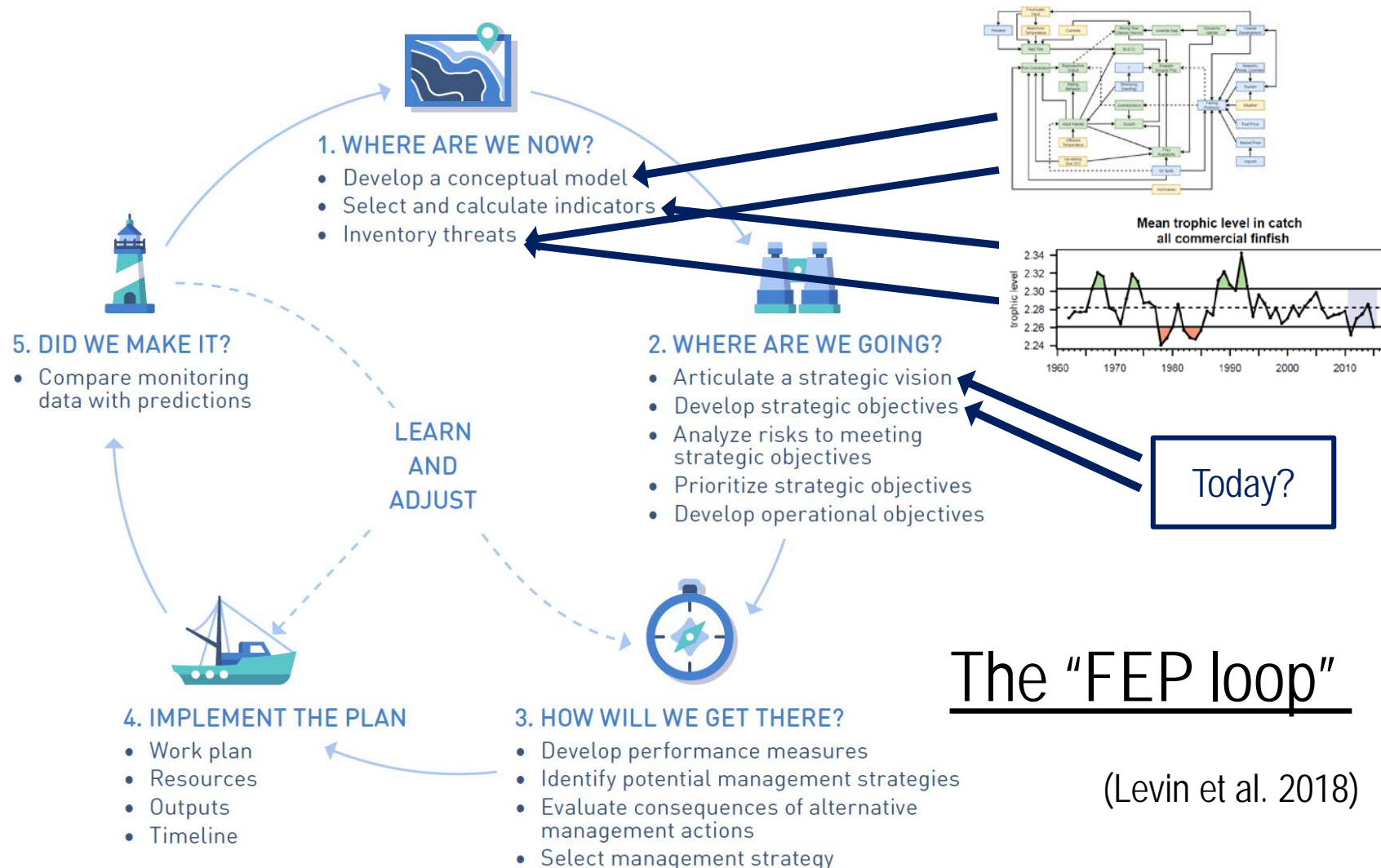


## EBFM Guiding Principles





# What's the process?



## The “FEP loop”

(Levin et al. 2018)

# What's the process?

Participatory system  
dynamics modeling  
EBFM scoping workshops

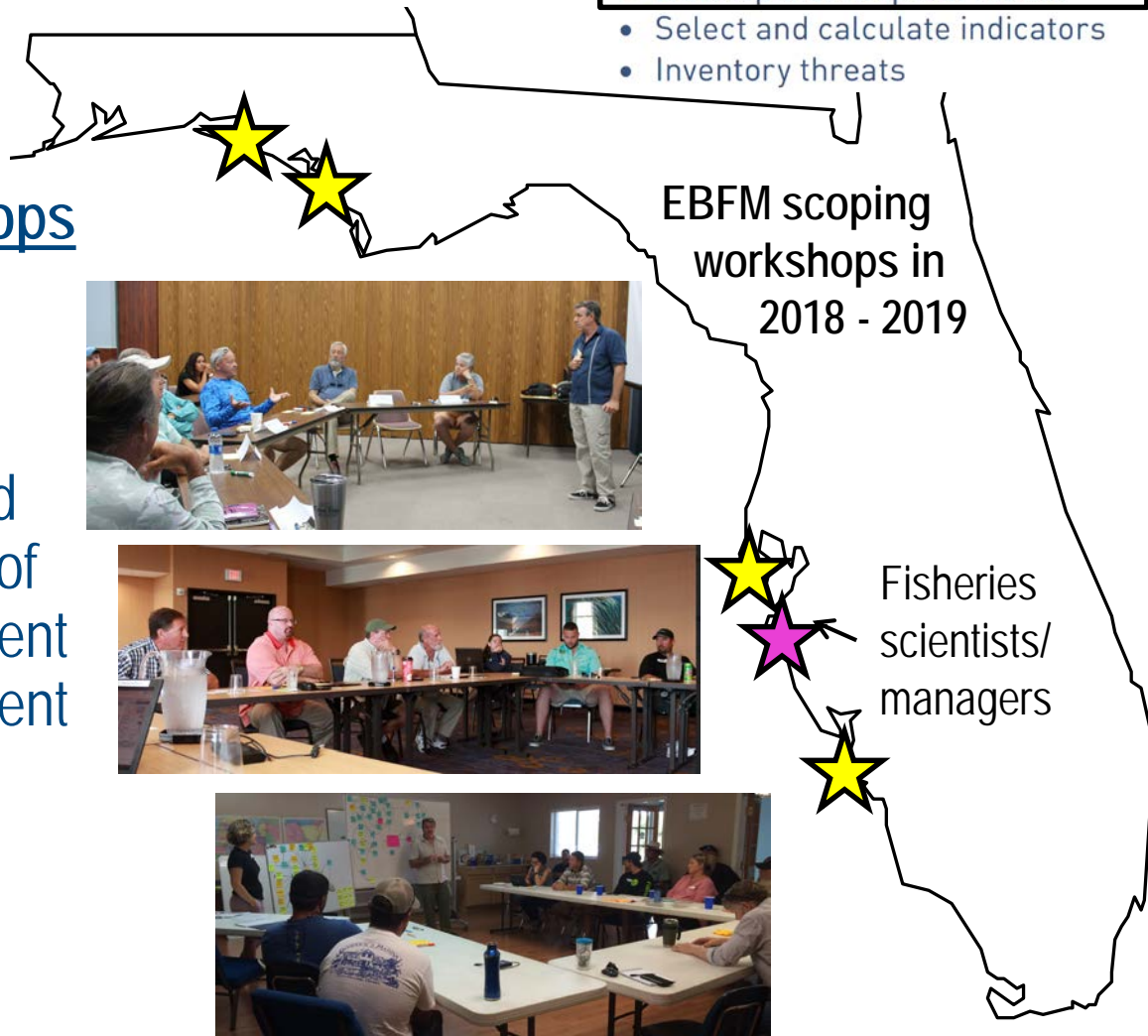
Goal: To increase information flow between scientists, managers, and stakeholders, in support of improved stock assessment and ecosystem assessment in the Gulf of Mexico.

Focus: West Florida snapper-group complex



## 1. WHERE ARE WE NOW?

- Develop a conceptual model
- Select and calculate indicators
- Inventory threats



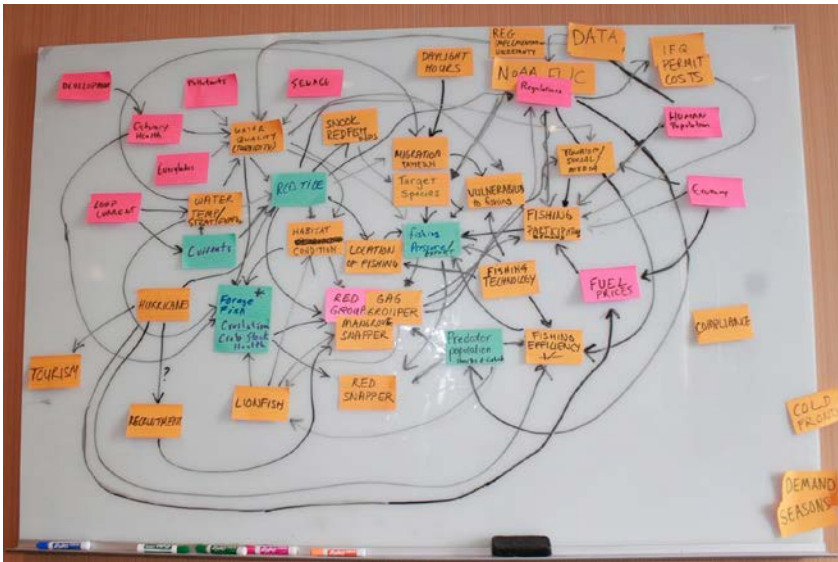


# What's the process?



## 1. WHERE ARE WE NOW?

- Develop a conceptual model
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- What are the major factors affecting your fishery?
- Where do the major risks in the fisheries system lie?
- How do changes in ecosystems affect your businesses and communities?
- What do you value in the ecosystem?

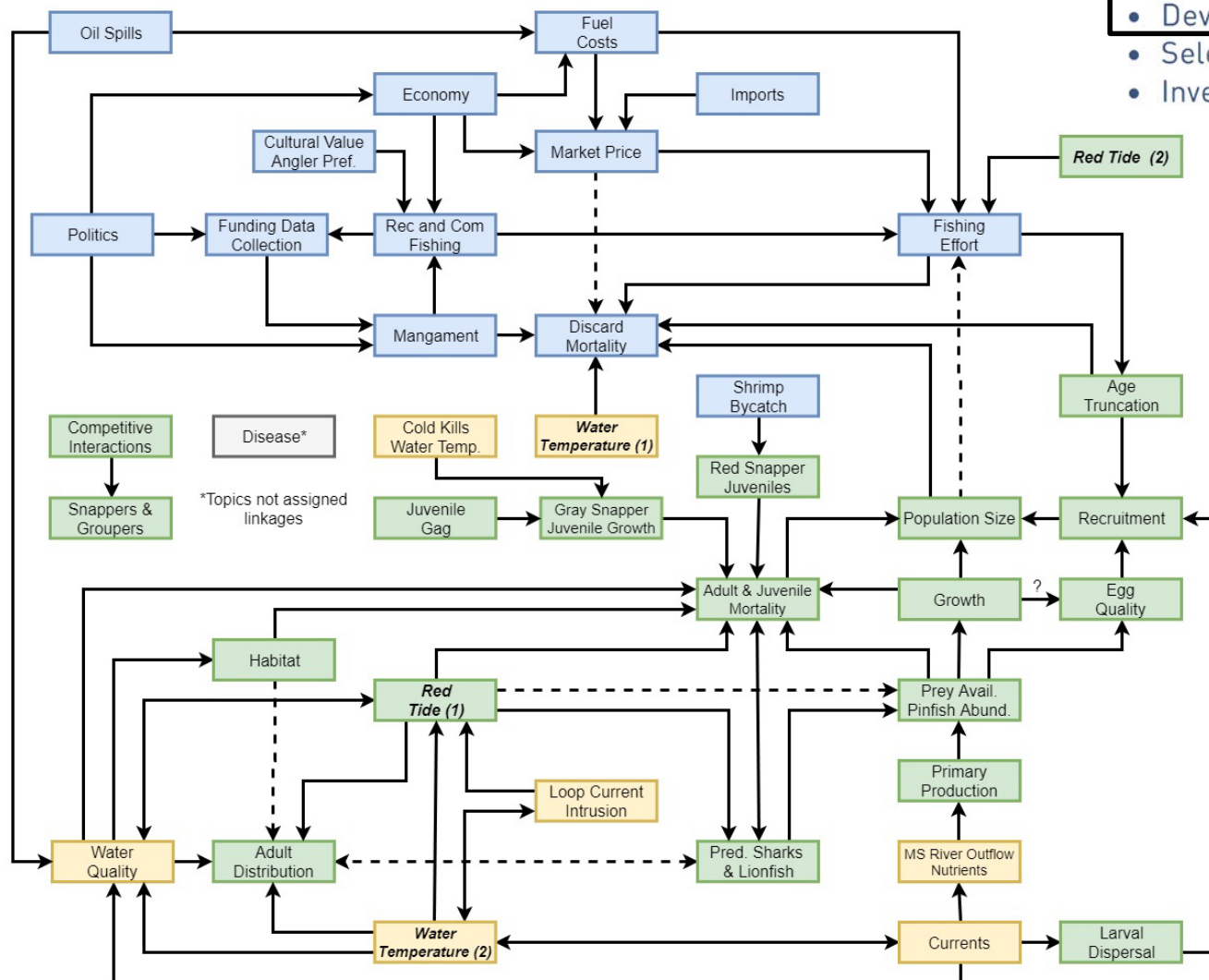
# What's the process?



## 1. WHERE ARE WE NOW?

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**COLOR LEGEND**  
 Human Related  
 Physical Components  
 Biological Components



# What's the process?



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- **Select and calculate indicators**
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NOAA Technical Memorandum NMFS-SEFSC-706

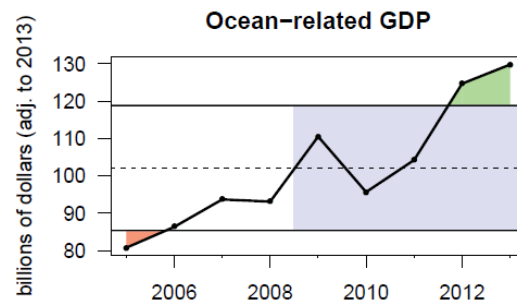
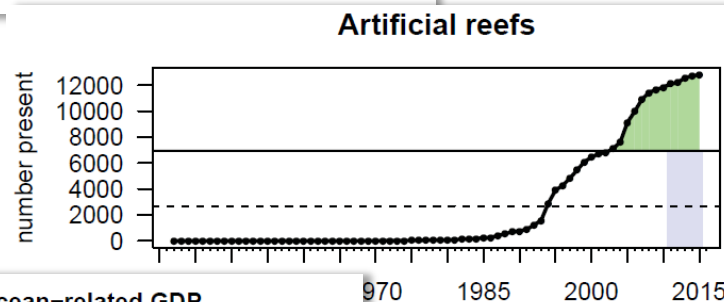
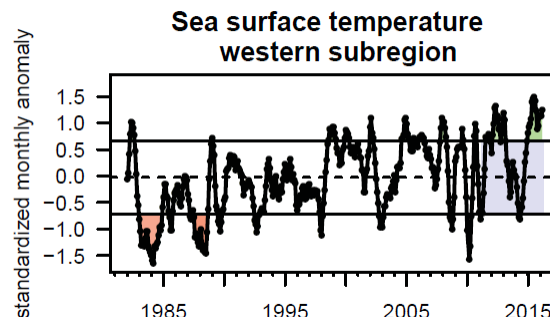
### 2017 ECOSYSTEM STATUS REPORT UPDATE FOR THE GULF OF MEXICO

Mandy Karnauskas, Christopher R. Kelble, Seann Regan, Charline Quenée, Rebecca Allee, Michael Jepson, Amy Freitag, J. Kevin Craig, Cristina Carollo, Leticia Barbero, Neda Trifonova, David Hanisko, and Glenn Zapfe



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southeast Fisheries Science Center  
75 Virginia Beach Drive  
Miami, Florida 33149

March 2017



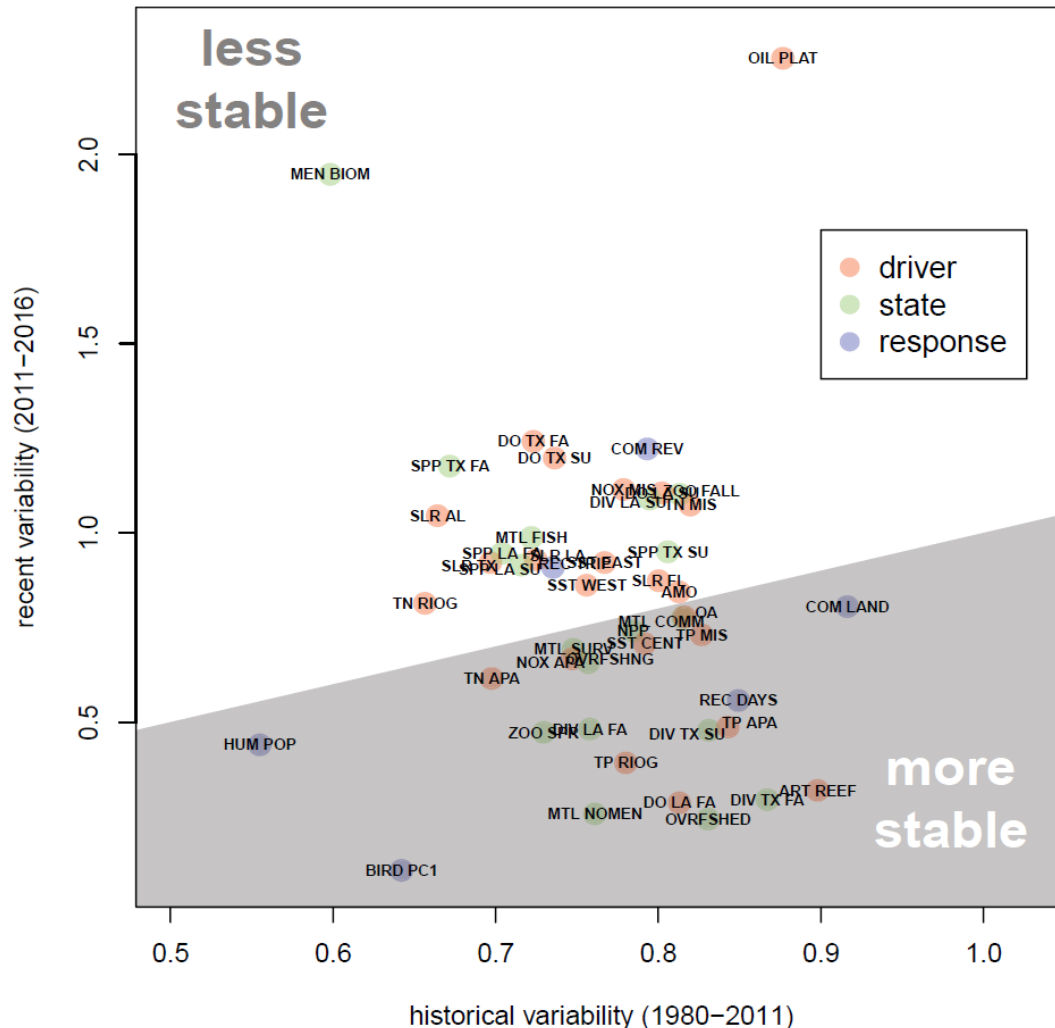
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# What's the process?

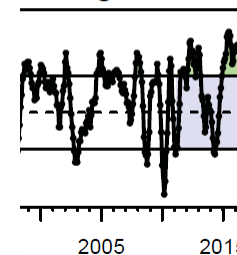


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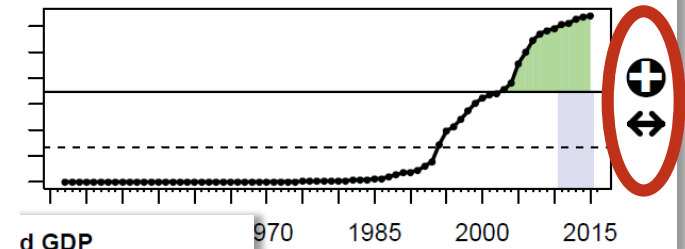
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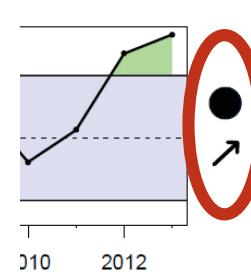
temperature subregion



Artificial reefs



d GDP



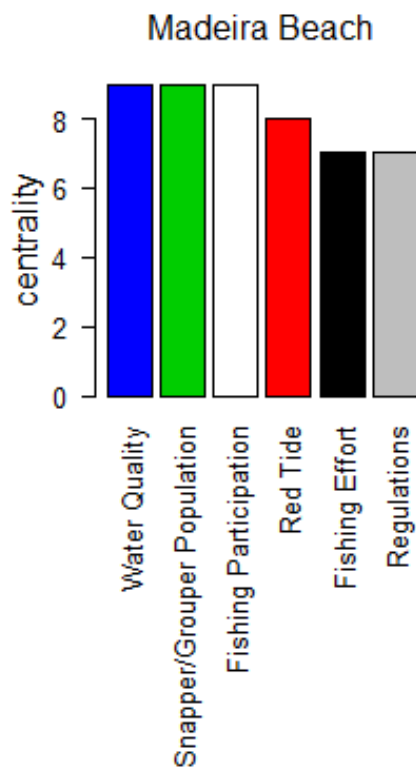
# What's the process?

## Influence of conceptual model components

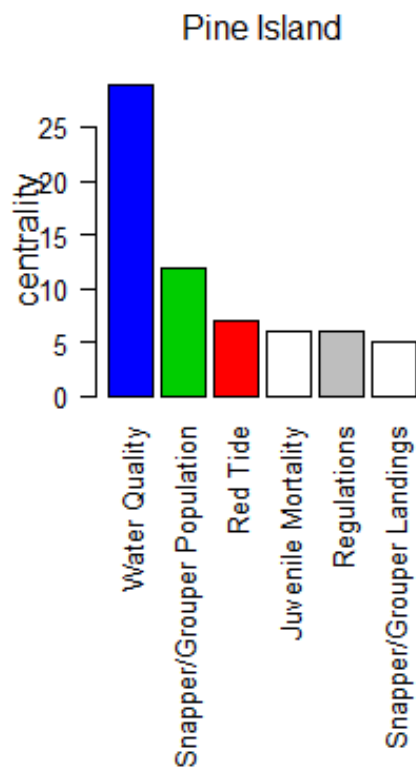


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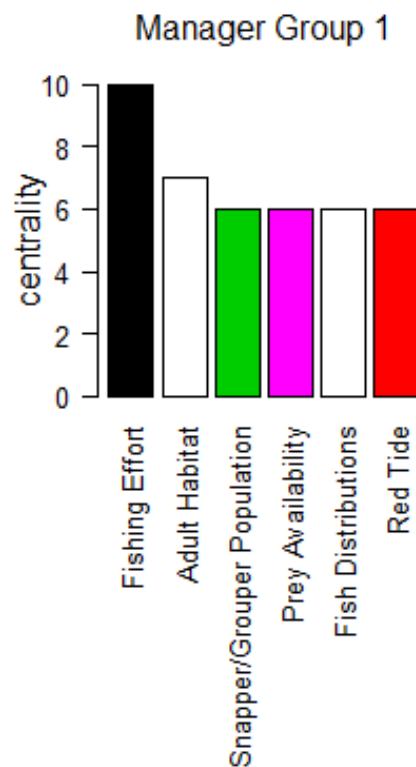
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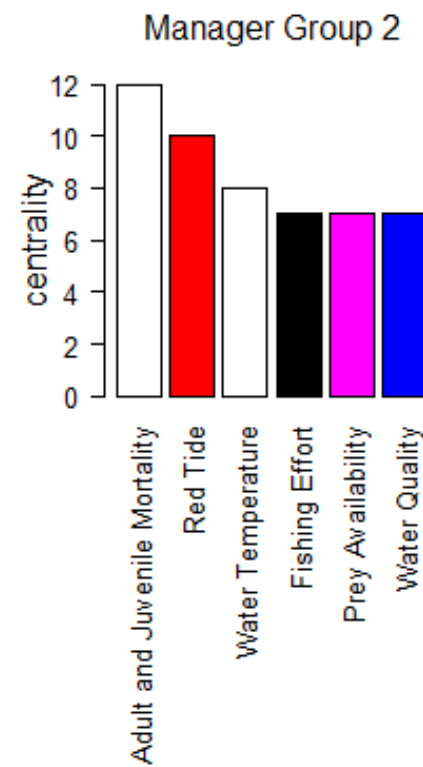
model component



model component



model component



model component





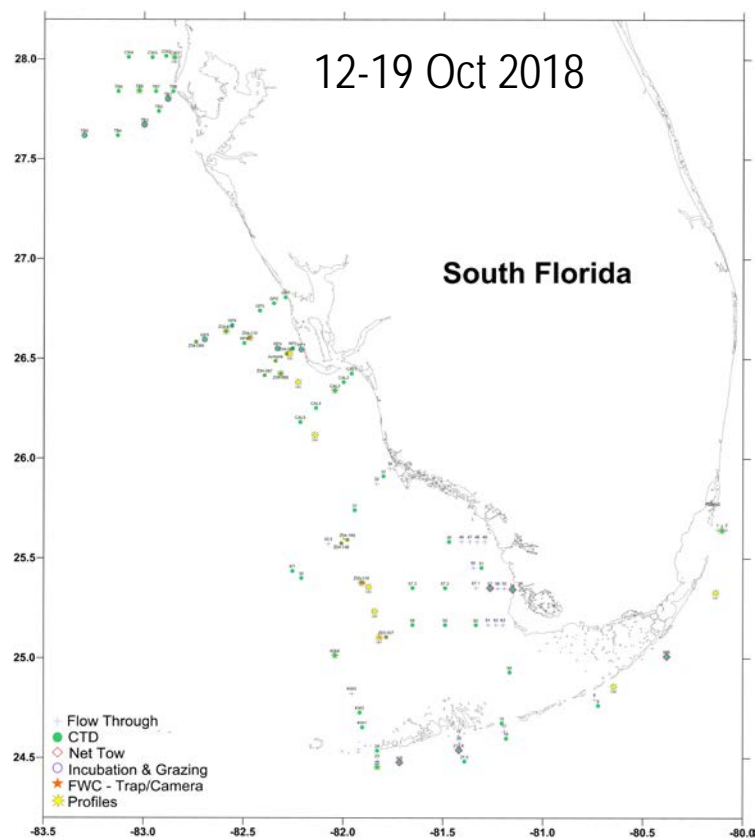
# Foundational steps and future potential

We can  
LEARN AND  
ADJUST,  
even in early  
phases

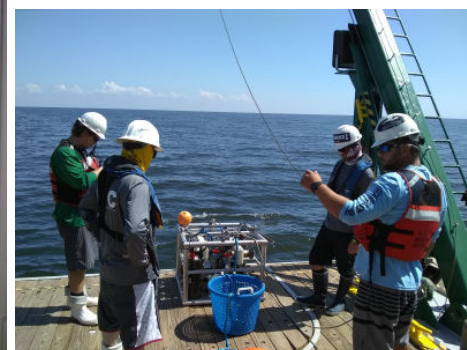
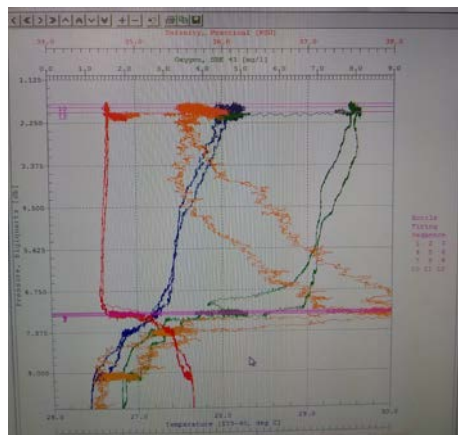
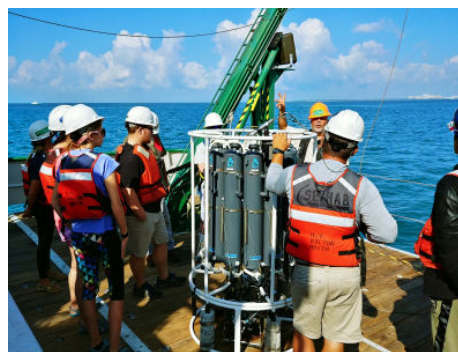
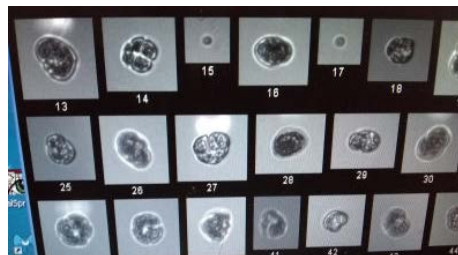


# Foundational steps and future potential

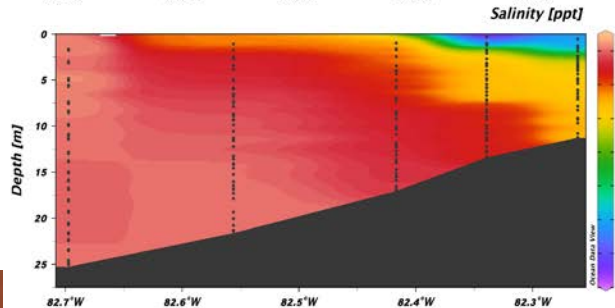
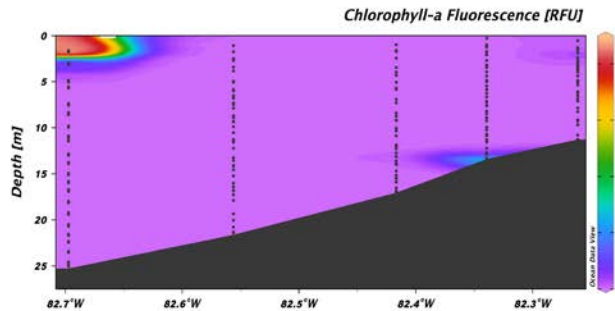
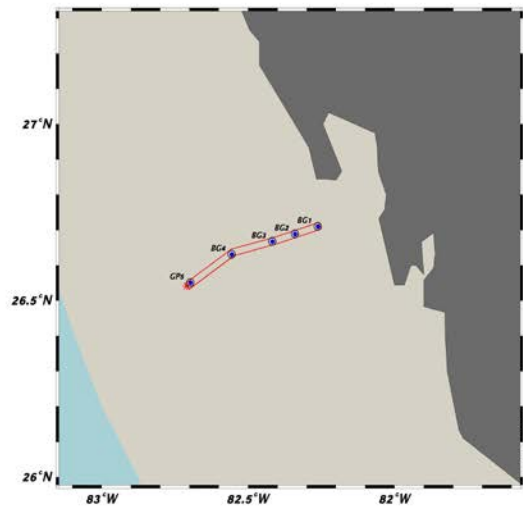
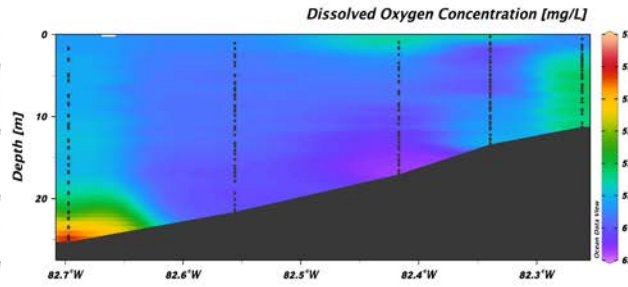
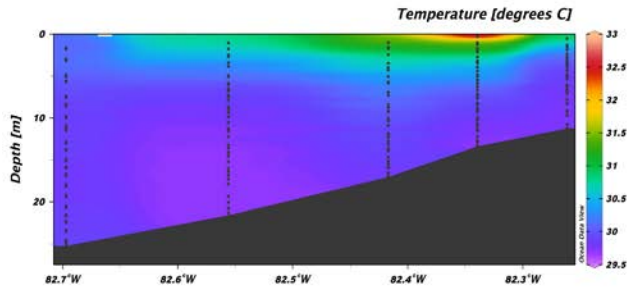
## Red tide response cruise



NOAA-AOML in collaboration with NOAA-SEFSC, NOAA-NESDIS, CIMAS, FWC-Fish and Wildlife Res. Institute, Mote Marine Lab, Univ. of South Florida, NCCOS



# Foundational steps and future potential



## Gulf of Mexico Harmful Algal Bloom Bulletin

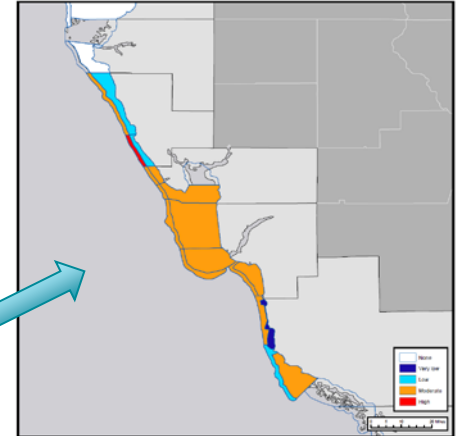
Monday, November 18, 2019

NOAA National Ocean Service

NOAA Satellite and Information Service

NOAA National Weather Service

Instructions for viewing this geospatial pdf are available at: <https://go.usa.gov/mf2>



The image above is the top layer in a series of maps for 11-18-19 to 11-21-19 displaying the highest level of potential respiratory irritation forecasts in each region.



Seasonal forecast?

Coordinated monitoring effort



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# Foundational steps and future potential

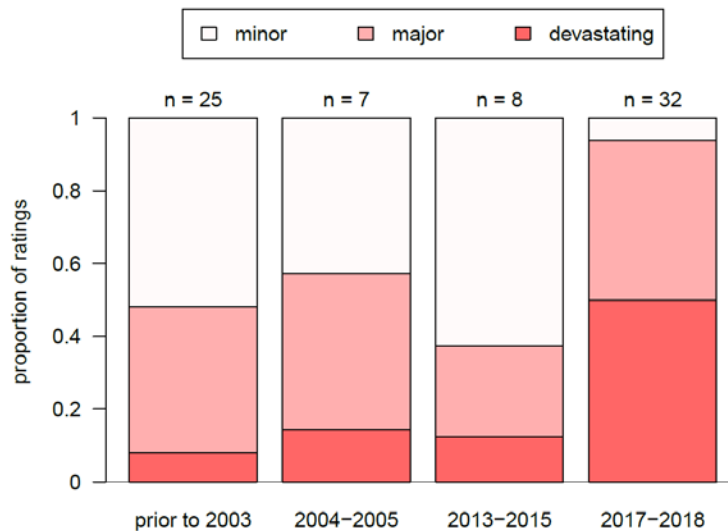
## Local ecological knowledge (LEK) assessment

- How has red tide varied historically, and what have been the impacts on fish populations, habitats and humans?
- How have fishermen and coastal communities adapted to red tide?



# Foundational steps and future potential

## Real-time information in stock assessment



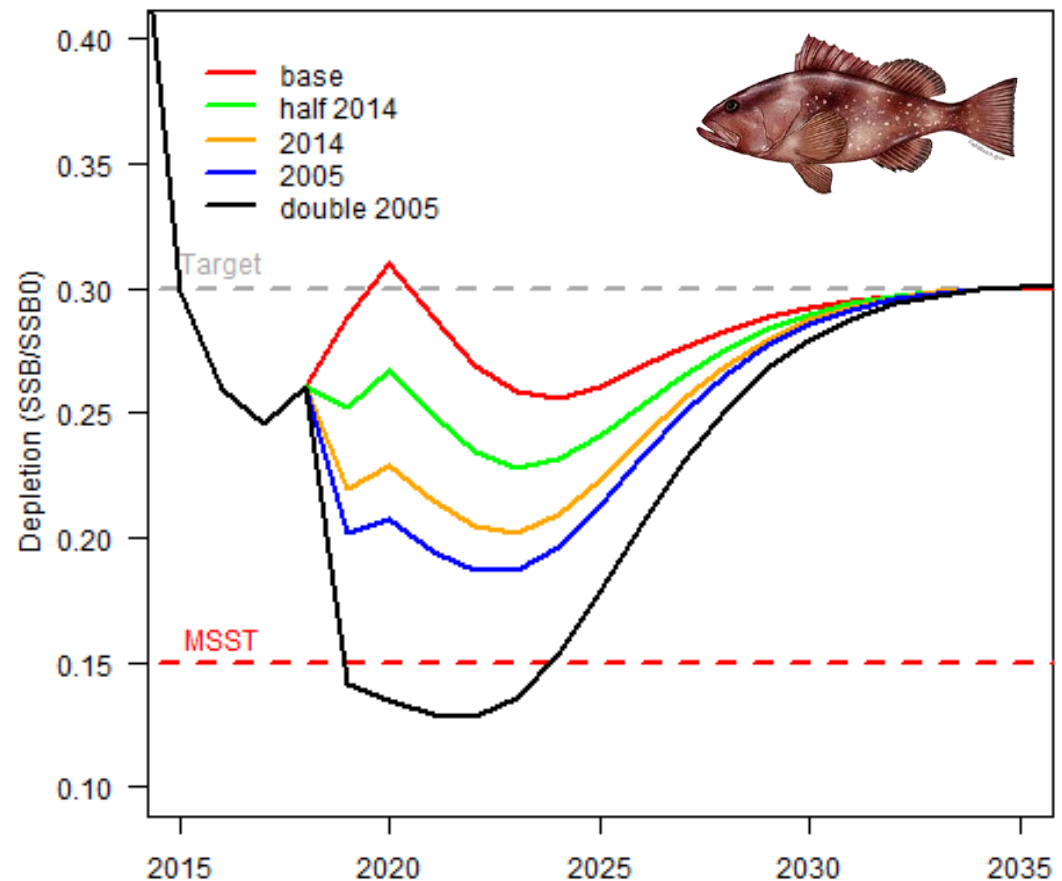
red tide event  
4055 Faber Place Drive, Suite 201  
North Charleston, SC 29405

SEDAR 61 SAR SECTION I

1

Introduction

## 2018 red grouper stock assessment projections





# Closing thoughts

- Long, abstract process – needs a strong vision
- Stakeholder scoping and support are critical
- There are recipes we can follow
- Foundational pieces are largely in place
- Progress has been made without an FEP
- Large body of science waiting to be actionable