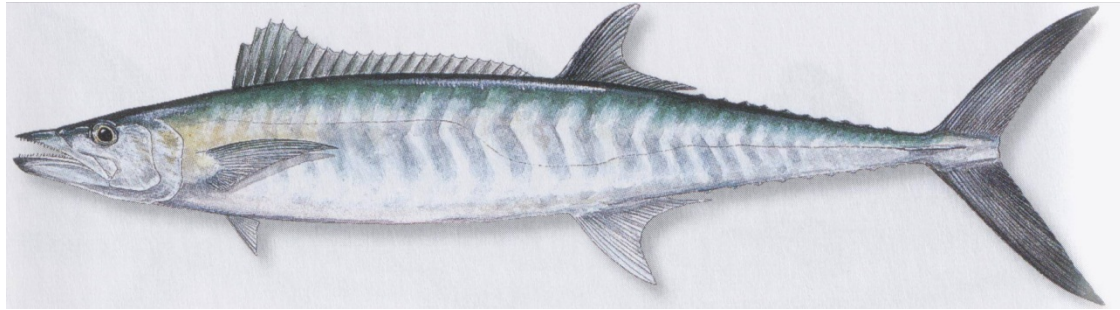


# MSE on the East Coast



Mike Wilberg

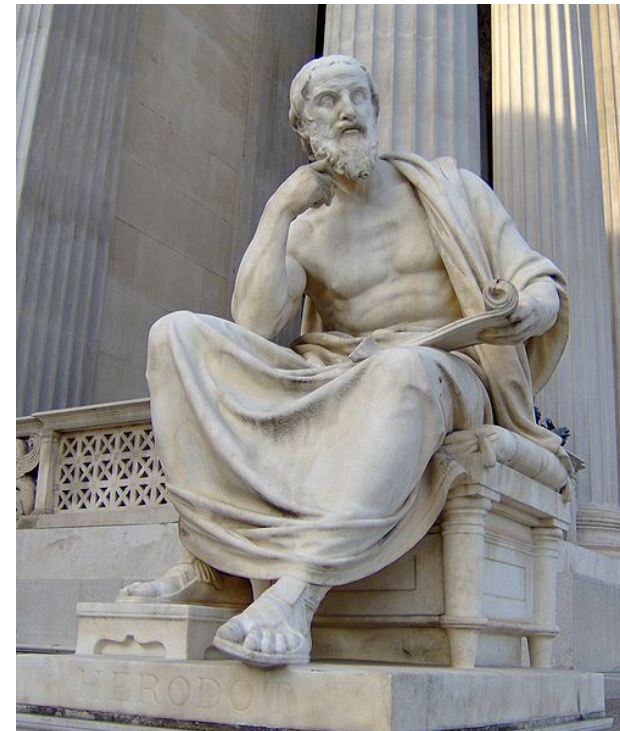
Chesapeake Biological Laboratory  
University of Maryland Center for  
Environmental Science

May 8, 2015

# What makes a plan good?

The man who has planned badly, if fortune is on his side, may have had a stroke of luck; but his plan was a bad one nonetheless.

– Herotodus ~480 BC



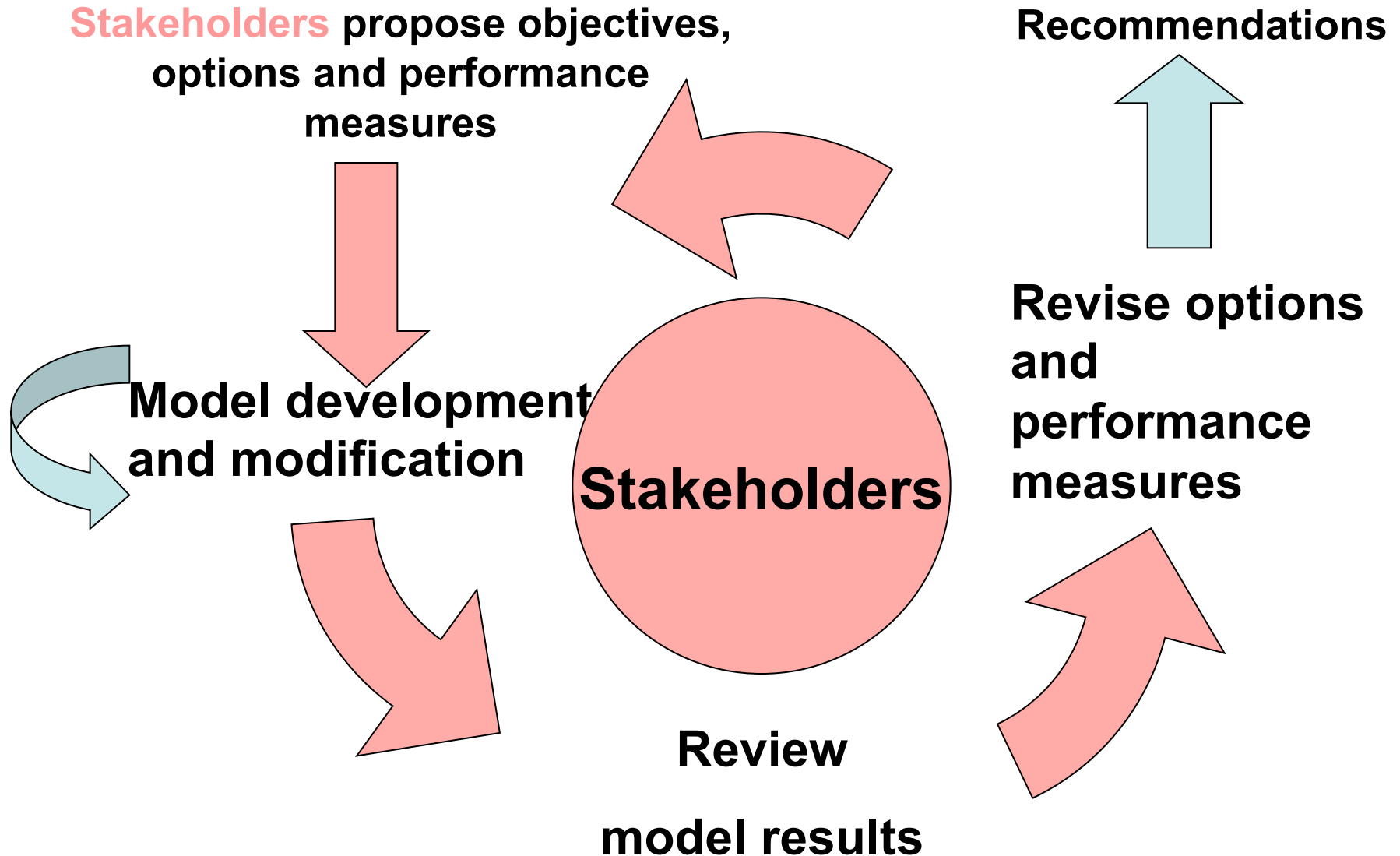
# Case Study 1:

## King mackerel (*Scomberomorus cavalla*)

- How do we improve management and performance of recreational fisheries?
  - Benefits from stakeholder knowledge
  - Is scientifically-based
  - Results in increased acceptance and compliance with management and improved stakeholder-management interactions



# Stakeholder-centered approach



# Stakeholders

- Recreational anglers
- For-hire operators
- Commercial fishermen
- Environmental NGO representatives
- Managers and biologists
- Tackle shop owners
- Tournament organizers



# Stakeholders' goals

- Achieve the vision (population, fishery, ecosystem)
- While simultaneously
  - Maximizing access
  - Reducing/simplifying regulations
  - Improving stakeholder interactions with management and each other
  - Improving stakeholder education

# Performance measures

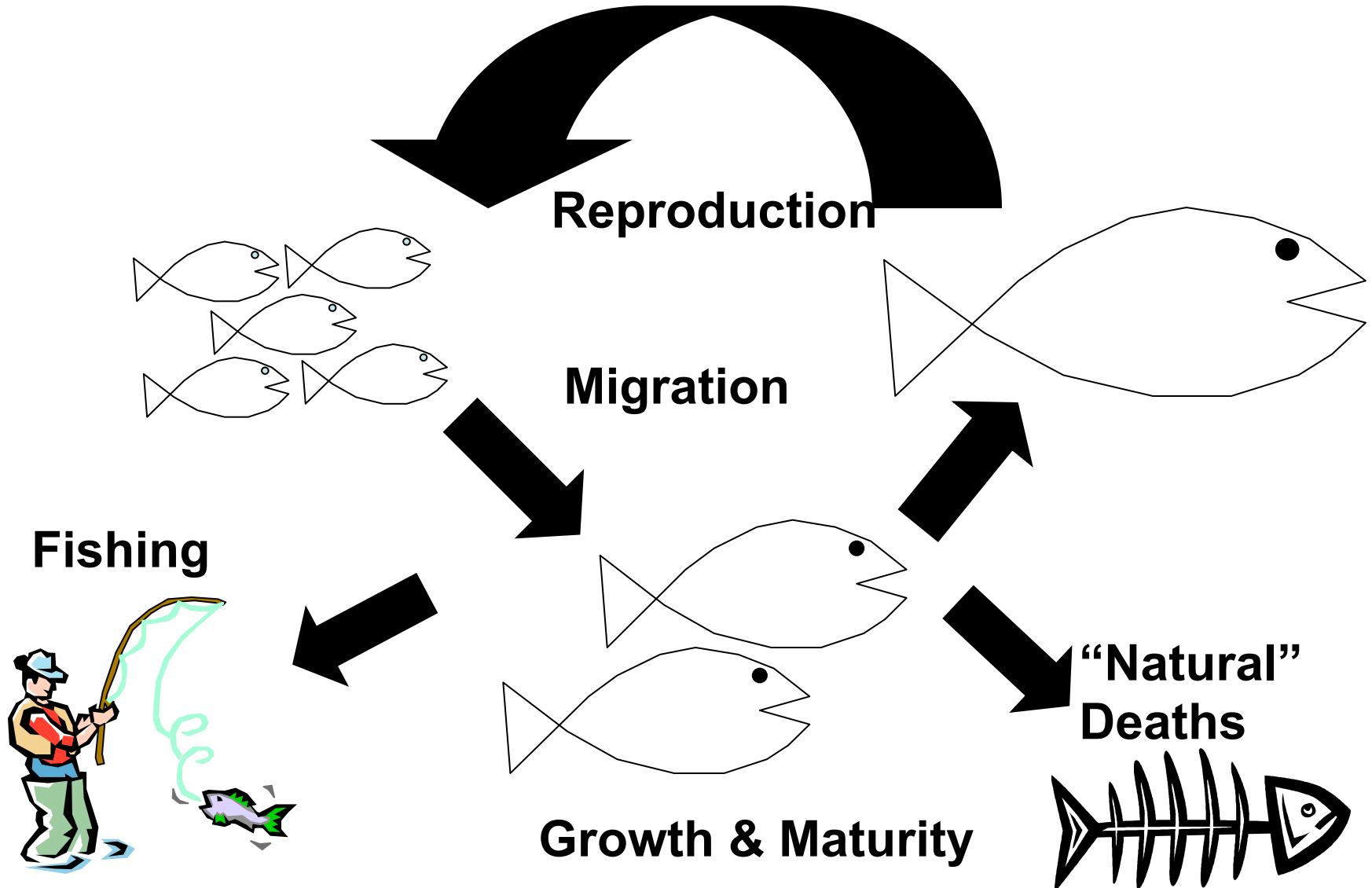
- Spawning stock biomass (biomass of mature females)
- Proportion of the population older than 15 years
- Average age of spawners
- Harvest (numbers & biomass)
- Harvest in preferred size categories
- Average size in harvest
- Proportion of year fishery is closed
- Number of dead fish due to release mortality
- Fishing mortality rate

# Options

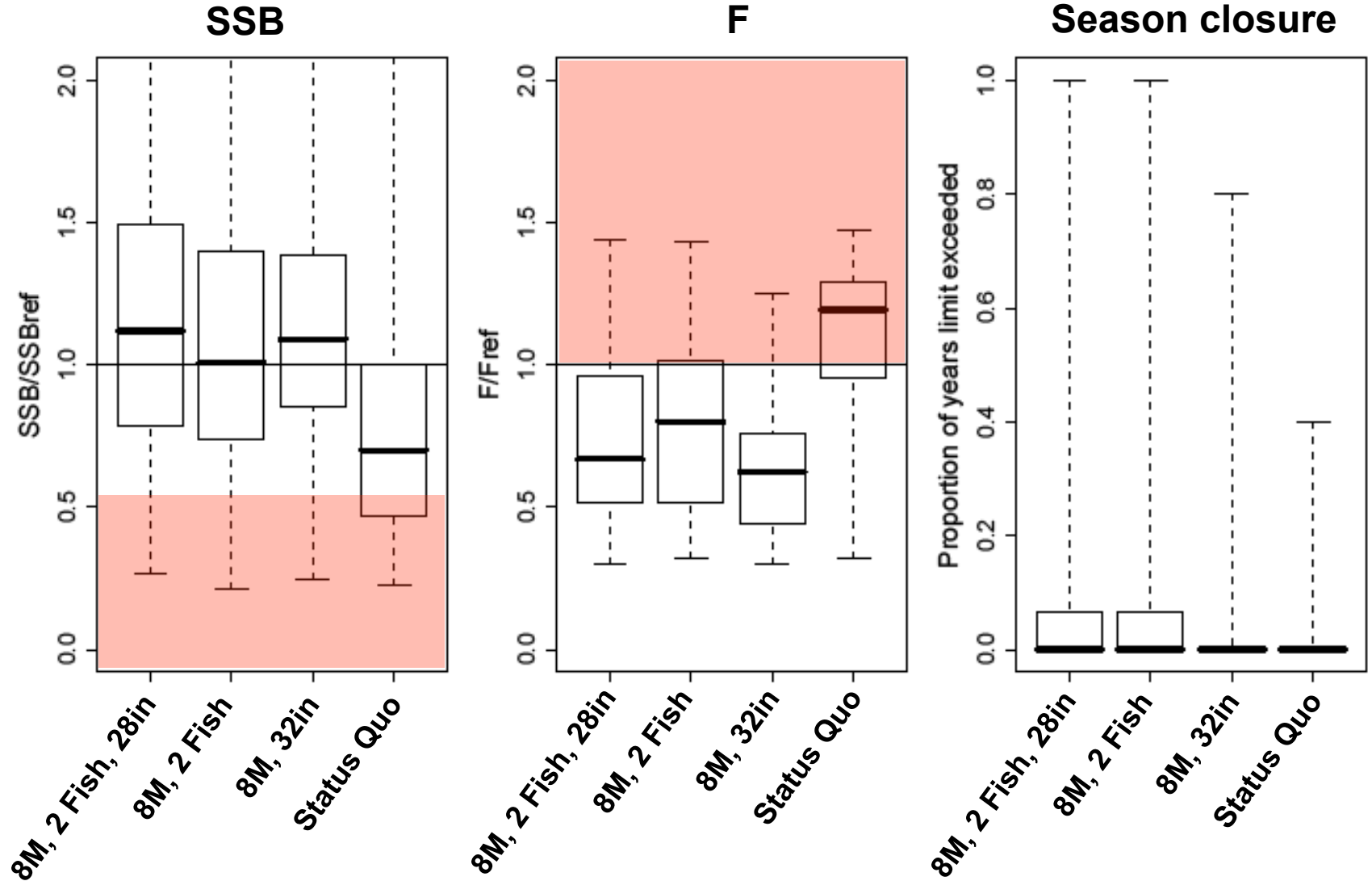
- *Management*
  - Size limits
  - Bag/creel limits
  - Season limits
  - Constant quota control rule
  - Area closures
- *Voluntary*
  - Increased catch and release fishing
  - Reduction of catch and release mortality




# Model Schematic



# Recommended options



# Case 2: Evaluation of approaches for setting ABCs



- After the 2006 reauthorization of the MSA, methods were required to set ABCs
- Determine expected performance of alternative ABC control rules

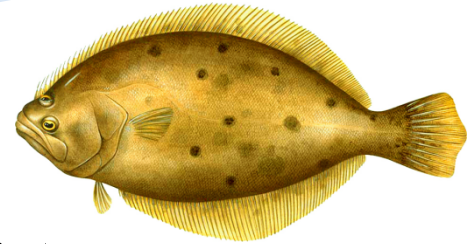
# Stakeholder Involvement



- MAFMC Council members
- MAFMC staff
- NEFSC
- NMFS

# MSE Description

**Stock/fishery  
dynamics**



**Catch limit  
implementation**

**Sampling**

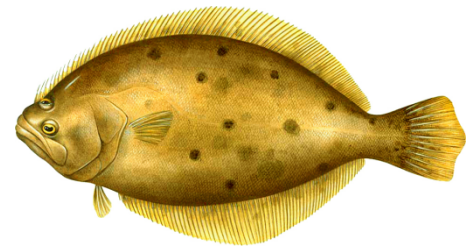
**Stock  
assessment**

**Management  
submodel**



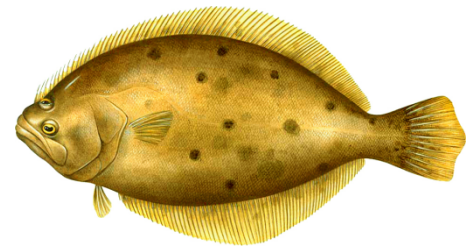
# Uncertainty

- Population dynamics
  - Recruitment
  - Selectivity
  - Natural mortality
- Sampling
- Stock assessment

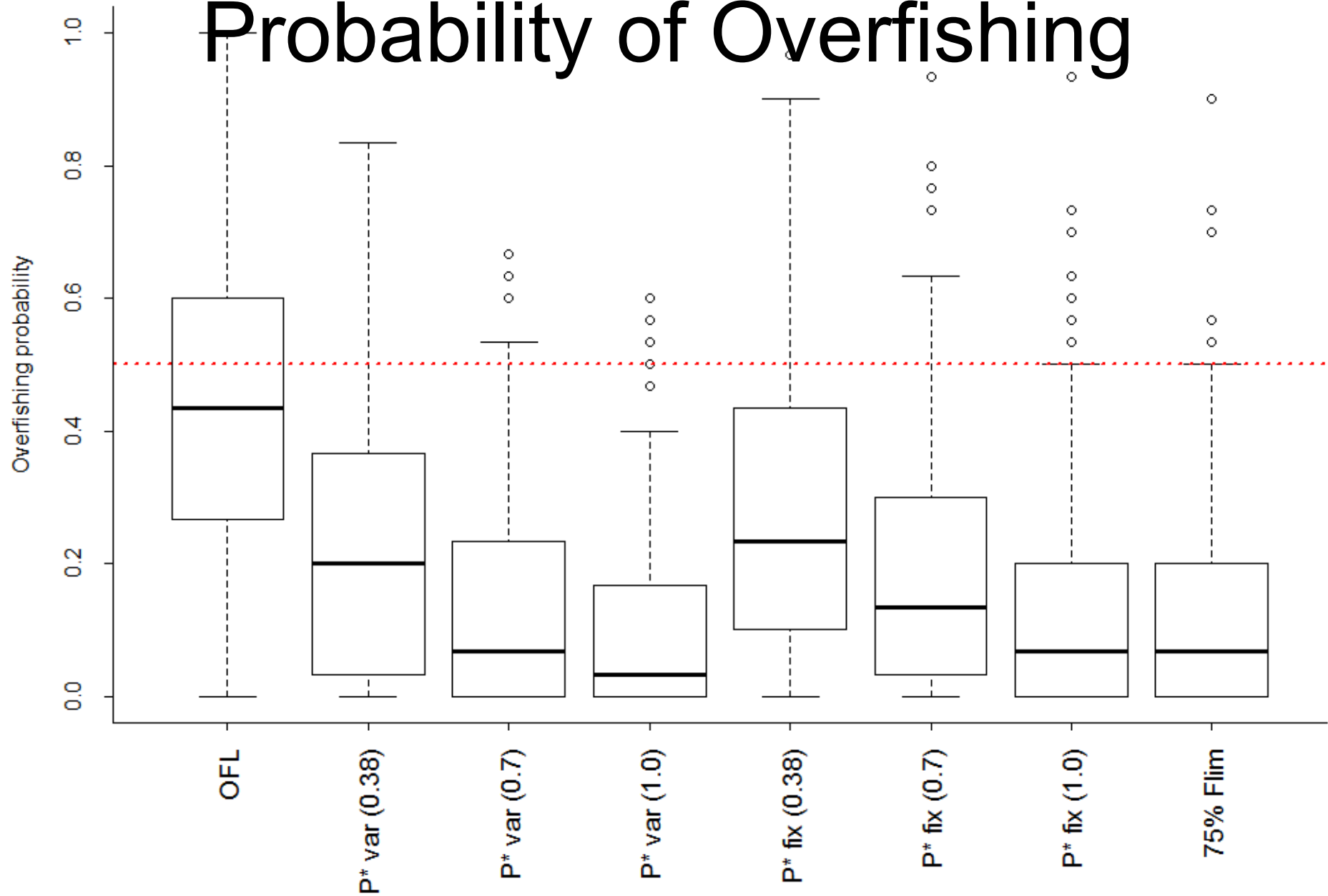


# Performance metrics

- Average catch (short and long term)
- Average biomass (short and long term)
- Probability of overfishing
- Ability for populations to rebuild
- Average annual variability of the catch



# Probability of Overfishing





# Final Thoughts



- Opportunity to test before implementation
  - MSEs can be good for identifying strategies that will not work
  - MSEs require control rules to test
  - Time requirement can be long
- Process is important
- Not all important uncertainties and objectives can be explicitly included
- MSE results can be highly dependent on the assumed dynamics

# Support



**NOAA** NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION  
UNITED STATES DEPARTMENT OF COMMERCE

**All of the participants!**

# Questions?

