



# 2022 NATIONAL SALTWATER RECREATIONAL FISHERIES SUMMIT



**NOAA**  
**FISHERIES**



March 30, 2022

Plenary



# **ASMFC's Ecosystem Approach to Atlantic Menhaden Management: From Idea to Reality**

Spud Woodward

Chair, Atlantic States Marine Fisheries Commission

# Atlantic Menhaden



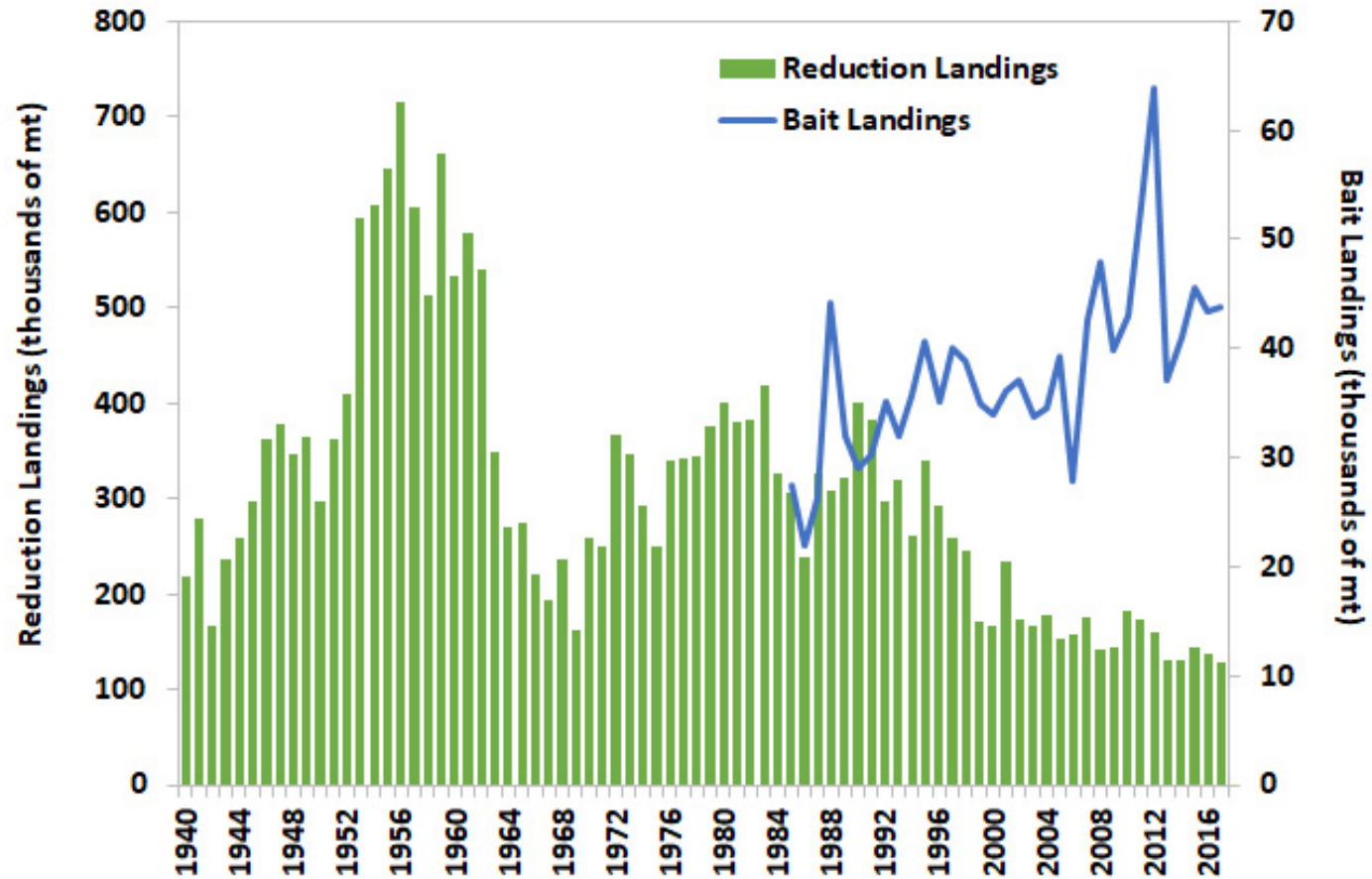
- A planktivore which is an important forage fish for many aquatic, terrestrial and avian species:
  - Striped bass, bluefish, weakfish, red drum, king mackerel, etc.
  - Pelicans, osprey, dolphins, whales, etc.



# Atlantic Menhaden



- Support the largest fishery by volume on the Atlantic coast
  - Reduction fishery for fish meal & oil
  - Bait fishery
- Used both live and dead as bait by recreational anglers



# Evolution of Menhaden Management



- 1981: First FMP adopted; no quota or regulatory requirements
- 2012: First coast-wide quota implemented, after overfishing finding in 2011 assessment
- Ecological role of menhaden has long been recognized
  - Single species assessments used output from MSVPA to scale M
  - 2006: Chesapeake Bay cap implemented to restrict the quantity of menhaden removed from an important predator nursery ground

# Ecosystem Management Objectives



EMO Workshop (September 2015) identified fundamental objectives for ecosystem management of Atlantic menhaden

- Sustain menhaden to provide for fisheries
- Sustain menhaden to provide for predators
- Provide stability for all types of fisheries
- Minimize risk to sustainability due to changing environment

# Evolution of Menhaden Management



- 2017: Amendment 3, response to 2015 assessment indicating good stock status relative to single-species reference points
  - Slight increase in quota, but more conservative than single-species reference points would have allowed: ***ad hoc* buffer for ecosystem services**
  - Use single-species reference points until ERP WG delivered quantitative advice
  - ERPs can be adopted through Board action, no need for an addendum or amendment to the FMP

# Recommended Model



- Northwest Atlantic Continental Shelf (NWACS) Model of Intermediate Complexity for Ecosystems (NWACS-MICE)
- Can illustrate the tradeoffs between menhaden F and predator F/biomass
- Found striped bass was the most sensitive predator to menhaden harvest, so ERPs that sustain striped bass should also sustain the less sensitive predators

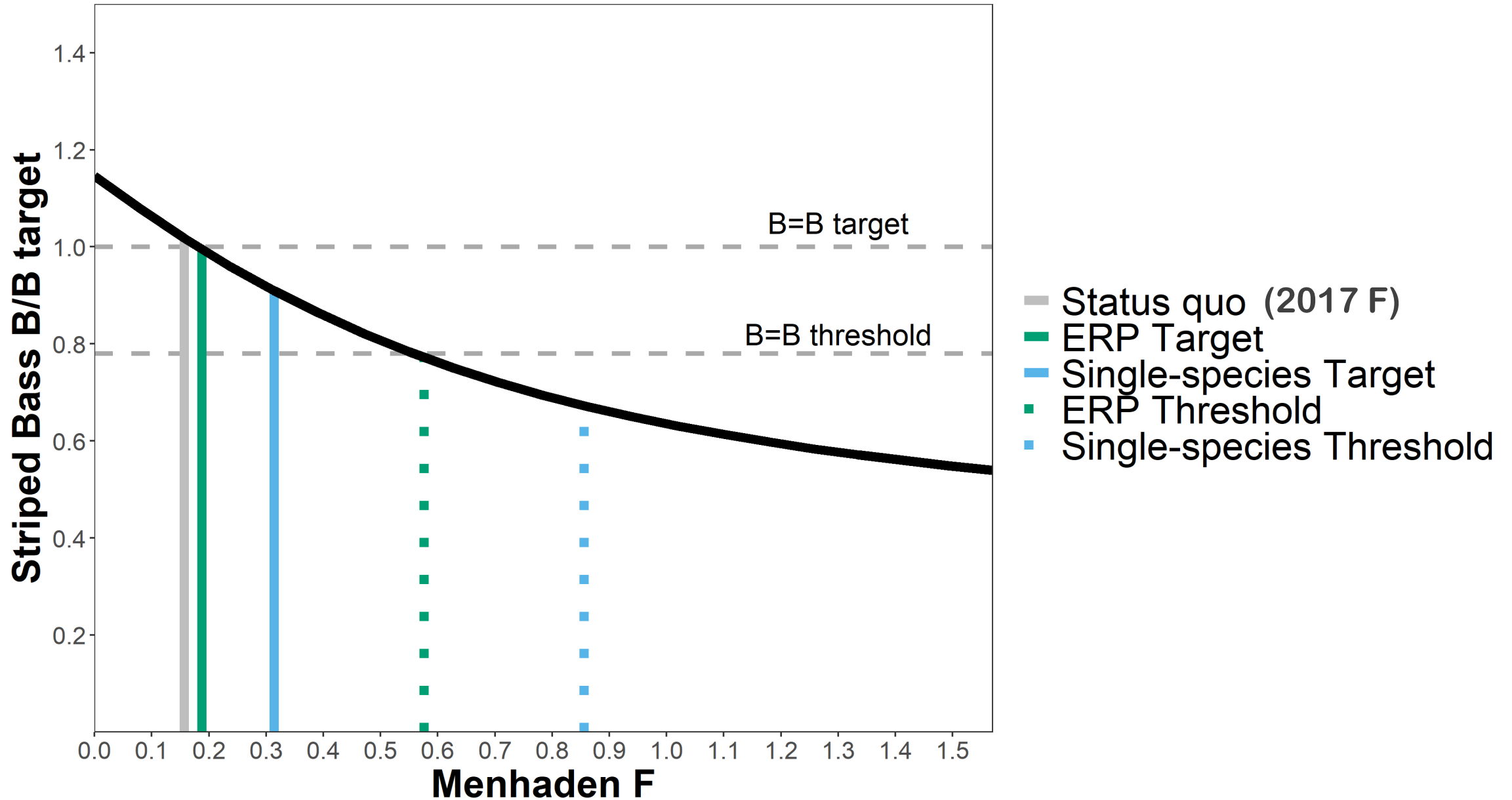


# ERP Target & Threshold



- **ERP target:** maximum F on menhaden that sustains striped bass at their B target when striped bass are fished at their F target
- **ERP threshold:** maximum F on menhaden that keeps striped bass at their B threshold when striped bass are fished at their F target

# ERP Target & Threshold



# ERP Target & Threshold



Reference Point	ERP	Single Species	F 2017
F Target	0.19	0.31	0.16
F Threshold	0.57	0.86	

- NWACS-MICE tool: evaluate trade-offs and set F reference point
- Single-species model: evaluate status relative to F reference point, set TAC to achieve F target
- ASMFC Menhaden Board adopted these ERPs in August 2020

# Setting the TAC



- Menhaden TC conducted projections using the single-species model to evaluate the probability of exceeding the F target and threshold

TAC	Probability of Exceeding ERP Target		Probability of Exceeding ERP Threshold	
	2021	2022	2021	2022
194,400 mt (-10%)	58.5%	52.5%	0%	0%
205,200 mt (-5%)	63.5%	56.5%	0%	0%
216,000 mt (current TAC)	66%	60%	0%	0%
226,800 mt (+5%)	68.5%	62.5%	0%	0.5%
237,600 mt (+10%)	70.5%	65%	0.5%	0.5%

# Setting the TAC



- Board set the TAC at 194,400 mt for 2021 and 2022

TAC	Probability of Exceeding ERP Target		Probability of Exceeding ERP Threshold	
	2021	2022	2021	2022
194,400 mt (-10%)	58.5%	52.5%	0%	0%

**Atlantic menhaden is the first fishery on the Atlantic coast to be managed with reference points from a quantitative ecosystem model**

# Team Effort



## Ecological Reference Point Working Group

Matt Cieri (Chair), Maine Department of Marine Resources  
Kristen Anstead, Atlantic States Marine Fisheries Commission  
Jason Boucher, Delaware Division of Fish and Wildlife  
Mike Celestino, New Jersey Division of Fish and Wildlife  
David Chagaris, University of Florida  
Micah Dean, Massachusetts Division of Marine Fisheries  
Katie Drew, Atlantic States Marine Fisheries Commission  
Shanna Madsen, New Jersey Division of Fish and Wildlife  
Jason McNamee, Rhode Island Division of Marine Fisheries  
Sarah Murray, Atlantic States Marine Fisheries Commission  
Amy Schueller, National Marine Fisheries Service  
Alexei Sharov, Maryland Department of Natural Resources  
Howard Townsend, National Marine Fisheries Service  
Jim Uphoff, Maryland Department of Natural Resources  
In collaboration with  
Andre Buchheister, Humboldt State University  
Joana Brito, University of the Azores  
Max Grezlik, Humboldt State University  
Genevieve Nesslage, University of Maryland Center for Environmental Science  
Mike Wilberg, University of Maryland Center for Environmental Science

## Menhaden Technical Committee and Stock Assessment Subcommittee

Joseph Ballenger (TC Chair), South Carolina Department of Natural Resources  
Amy Schueller (SAS Chair), National Marine Fisheries Service  
Kristen Anstead, Atlantic States Marine Fisheries Commission  
Max Appelman, Atlantic States Marine Fisheries Commission  
Jeffrey Brust, New Jersey Division of Fish and Wildlife  
Matt Cieri, Maine Department of Marine Resources  
Ellen Cosby, Potomac River Fisheries Commission  
Caitlin Craig, New York Department of Environmental Conservation  
Micah Dean, Massachusetts Division of Marine Fisheries  
Katie Drew, Atlantic States Marine Fisheries Commission  
Corrin Flora, North Carolina Department of Environmental Quality  
Kurt Gottschall, Connecticut Department of Energy and Environmental Protection  
Robert Latour, Virginia Institute of Marine Science  
Eddie Leonard, Georgia Department of Natural Resources  
Jason McNamee, Rhode Island Department of Environmental Management  
Ray Mroch, National Marine Fisheries Service  
Josh Newhard, US Fish and Wildlife Service  
Derek Orner, National Marine Fisheries Service  
Amy Schueller, National Marine Fisheries Service  
Alexei Sharov, Maryland Department of Natural Resources  
Chris Swanson, Florida Fish and Wildlife Research Institute  
Jeff Tinsman, Delaware Division of Fish and Wildlife