



# **Tautog Risk & Uncertainty Decision Tools: Hypothetical Scenarios**

Report to the Tautog Management Board  
ASMFC Winter Meeting 2022

# Background



- The draft Risk and Uncertainty Policy & Decision Tool provide a method for arriving at the appropriate **risk tolerance** level for a stock, given management priorities and characteristics of the species and fishery
  - This risk tolerance level can then be used to select a harvest level based on projections
  - It is **not** a tool for assessing the varying risk levels of different management approaches, this could be done using other tools such as an MSE

# Background



Technical inputs characterize factors relevant to R&U for a fishery:

- Stock status
- Model uncertainty
- Management uncertainty
- Environmental uncertainty
- Ecosystem importance
- Socioeconomic considerations

**Technical Inputs**

x

**Weightings**

**Decision Tool**

**Risk Tolerance Level**

Weightings are based on how important each technical input is to risk decision-making for managers

Risk tolerance level = **goal probability of achieving the reference points**

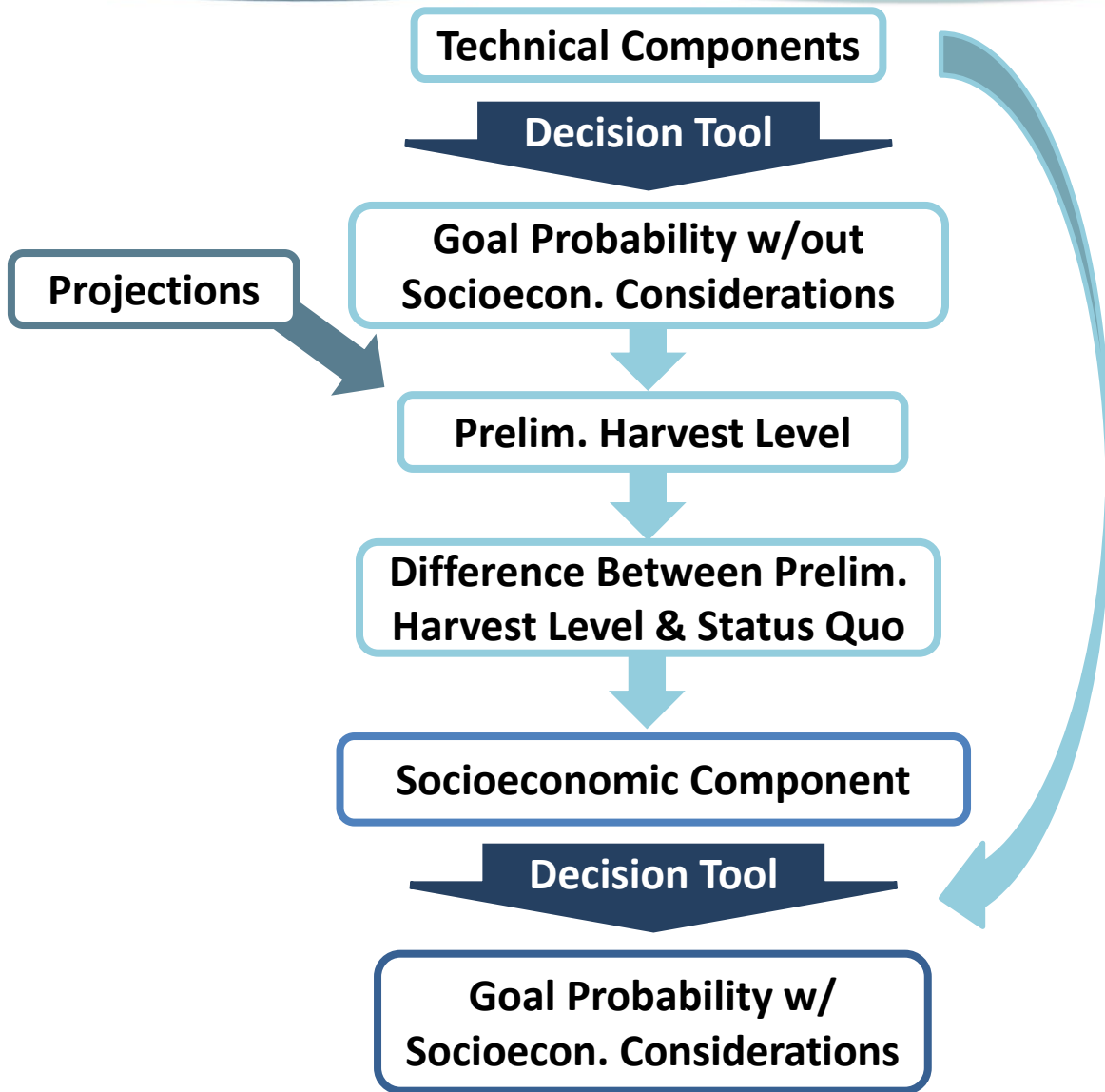
This probability will be used with projections to ID a harvest level

# Updates

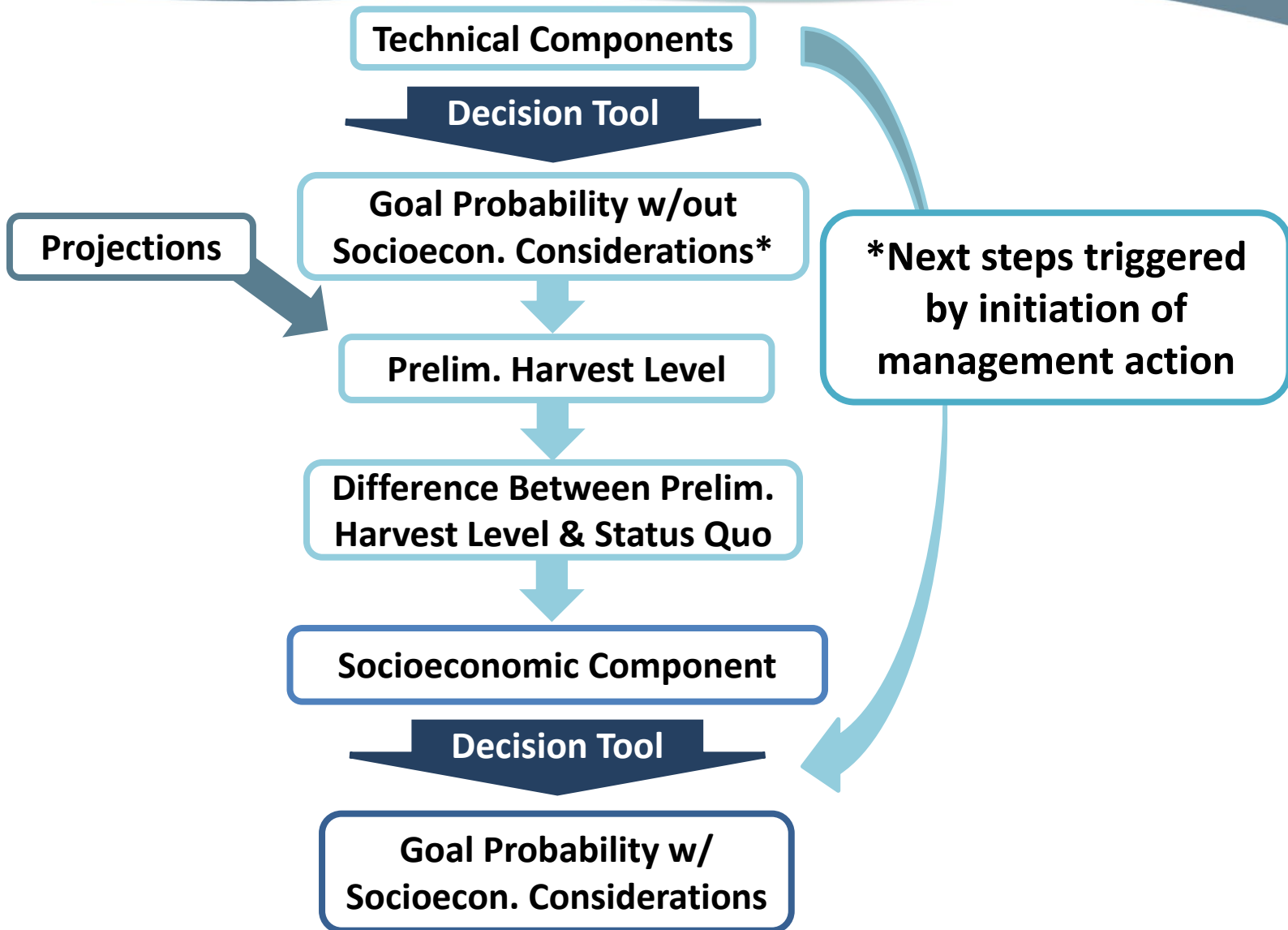


- Tautog was selected as a pilot case for the policy
  - The Tautog TC & CESS provided technical inputs
  - The Tautog Board provided input on weightings
  - These were combined to develop 4 regional Tautog Risk & Uncertainty Decision Tools
- Fall 2021 Meeting
  - Tautog Board reviewed the preliminary Decision Tools
  - The Board did not initiate a management action
  - Board requested hypothetical scenarios to improve understanding of the Decision Tools & their use

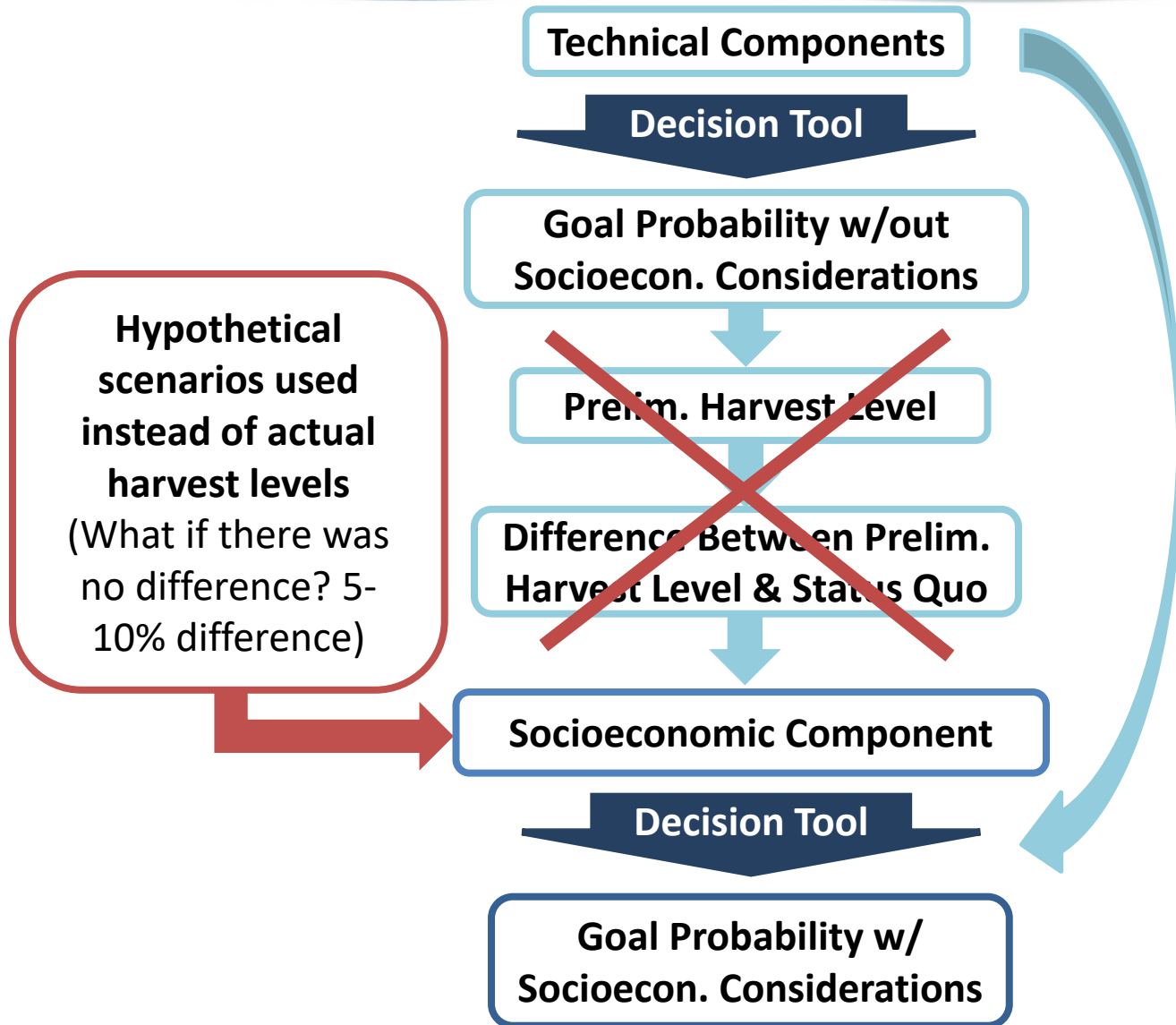
# R&U Process



# R&U Process



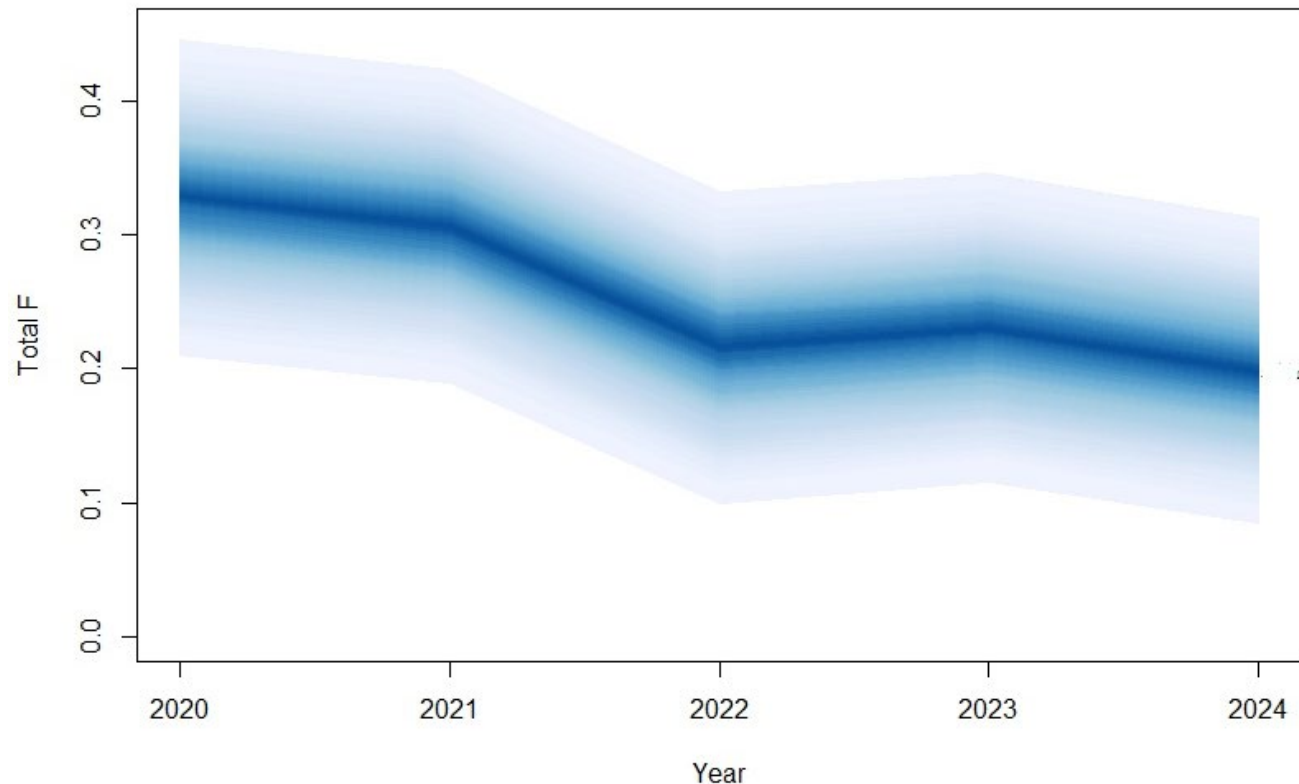
# R&U Process



# Probability Illustration



- Stock assessment projections take into account uncertainty: conduct 1,000 runs with different starting abundance, recruitment, etc. which gives you a range of projected F values in the terminal year

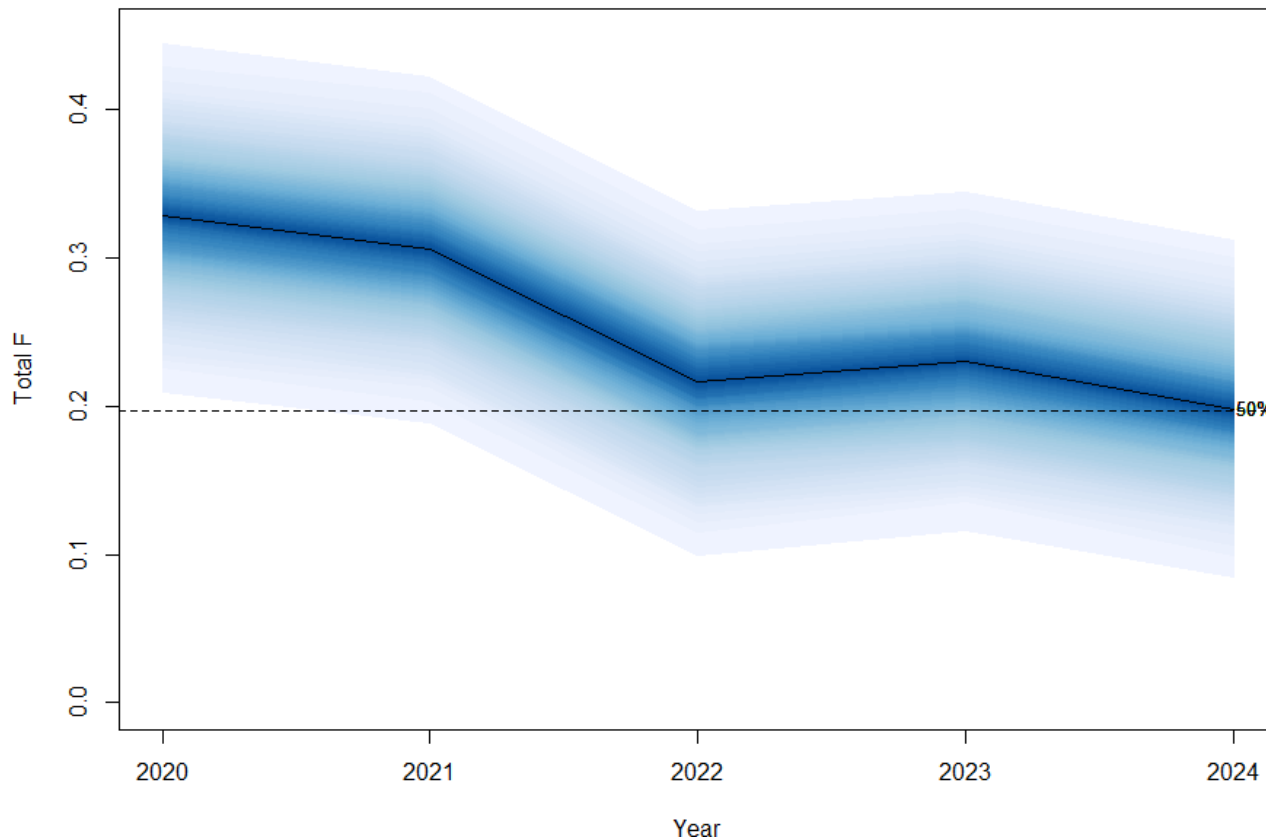




# Probability Illustration



- What is better, a higher or lower probability?
  - In the case of  $F$ , the higher the probability you set, the more conservative your management will be



50%

Probability:

} Half of projections are above  $F$  target

} Half are below  $F$  target

# Probability Illustration



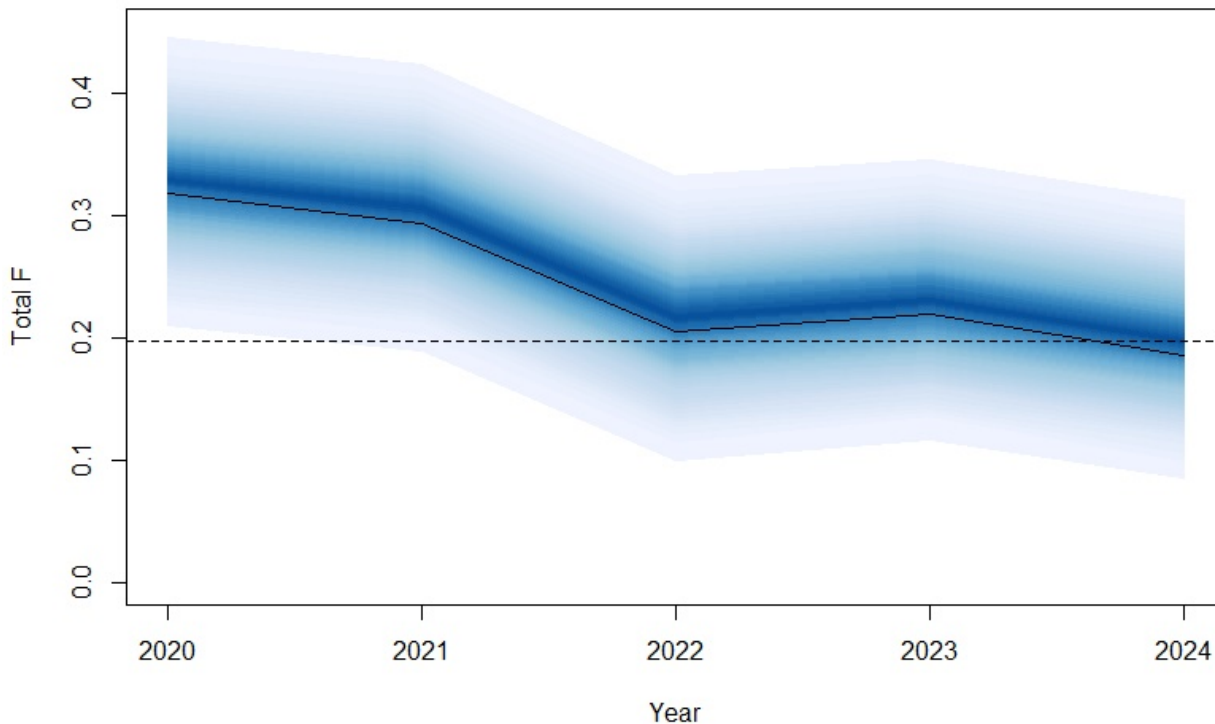
- What is better, a higher or lower probability?
  - In the case of  $F$ , the higher the probability you set, the more conservative your management will be

**60% Probability:**

(harvest level for 60% prob. < harvest level for 50%)

40% of projections are above  $F$  target

60% are below  $F$  target



# Goal Probabilities



- Using the technical inputs from the TC and weightings from the Board, the decision tools can produce regional goal probabilities without socioeconomic considerations
  - This includes everything except the socioeconomic component (stock status, model/management/environmental uncertainty, and ecosystem importance components)
  - The following are the regional goal probabilities without socioeconomic considerations:

MARI	LIS	NJ-NYB	DelMarVa
54%	59%	61%	56%

- For reference, Amendment 1: min. 50% of  $F$  target

# Hypothetical Scenarios



- Hypothetical differences between preliminary harvest level and status quo harvest level:
  - No difference
  - 5-10% difference
- Alternate weightings for the socioeconomic components were also included in the scenarios, to further illustrate the potential effects of different harvest levels
  - With the current weightings & scores the short-term (ST) and long-term (LT) socioeconomic components cancel each other out
- Hypothetical changes to the socioeconomic component weightings:
  - No change (weightings based on Board input)
  - ST socioeconomic scored as most important (5), with LT as least important (1), and vice-versa
  - Extra-high weighting to ST socioeconomic. (10), with LT least important (1), and vice-versa

# Hypothetical Scenarios



Scenario	Socioecon. Weightings				Goal Probabilities (w/ socioecon.)			
	Comm.		Rec.		MARI	LIS	NJ-NYB	DelMar Va
	ST	LT	ST	LT				
<b>Scenario 1: No change to harvest level</b>								
<b>1: Any weightings</b>	*	*	*	*	54%	59%	61%	56%
<b>Scenario 2: 5-10% change to harvest level</b>								
<b>2a: No change to weightings</b>	0.09	0.09	0.1	0.1	54%	59%	61%	56%
<b>2b: ST most important (5); LT least important (1)</b>	0.16	0.03	0.16	0.03	52%	56%	59%	54%
<b>2c: ST most important w/ extra high weighting (10); LT least (1)</b>	0.25	0.03	0.25	0.03	50%	55%	57%	52%
<b>2d: ST least important (1); LT most (5)</b>	0.03	0.16	0.03	0.16	56%	61%	63%	58%
<b>2e: ST least important (1), LT most w/ extra high weighting (10)</b>	0.03	0.25	0.03	0.25	58%	62%	65%	60%

Any questions?



# LEC Feedback on Commercial Tagging Program



Tautog Management Board  
January 25, 2021

# Background



- August: Board was presented initial reports (TC, Industry, LEC) on implementation of tagging program
  - Focus was general
  - Assessing compliance & reducing illegal harvest has not been done in-depth
- October: Board considered questions for the LEC to answer to help assess;
  - 1) compliance with tagging program
  - 2) impact of the program in reducing illegal harvest and markets



# Today



- Summary of LEC feedback on each of the Board questions

# Questions



- 1. Are there any areas of concern (ex. specific fisheries or markets) where compliance with tautog tagging requirements remains a significant issue? Please be as specific as possible.**

# LEC Feedback Q#1



- A few Commercial Harvesters in possession of fish above the trip limit upon returning to the dock or penning fish up at sea.
  - Cite need to avoid multiple trips in bad weather
- Generally good compliance in the commercial fishery, primary concern is recreational trips
  - Harvest above the trip limits, coordination among bad actors makes monitoring difficult
- LEC challenged by limited staff and competing priorities in monitoring illegal harvest

# Questions



**2. Is there a practical way for Agencies to collect information on non-compliance with tagging requirements in the fishery or markets that could inform and improve the efficiency and effectiveness of law enforcement efforts?**

**Examples might include specific types of advance information gathered by agency biologists or by partner organizations. Please be as specific as possible.**

# LEC Feedback Q#2



- Using other agencies or organizations to monitor markets is challenging
  - Distrust of outsiders from the community
  - Inspections need to be synced, otherwise illegal sales move else where
- Again, most commercial harvesters and markets appear compliant. It is unclear if collecting non-compliance information would help more
  - Best approach is LEC meeting regularly, exchanging updates
- Primary area of concern is recreational fishery, but increasing monitoring is challenged by limited staff

# Questions



**3. Any additional thoughts or recommendations for improving the efficiency and effectiveness of enforcement of the tagging program?**

# LEC Feedback Q#3



- A few LEC members have heard frustration from commercial harvesters about the tag type
- Best way to strength compliance with the tagging program is to have full buy-in from commercial sector
- Continuing to test and evaluate tag types may improve compliance

# Questions



**4. Now that the tagging program has been underway for a couple of years, what is your expectation on if the program will ultimately be successful at reducing illegal fishing and markets?**



# LEC Feedback Q#4



- Overall, the LEC is in agreement that the tagging program has reduced the illegal harvest
- The big change is that illegal harvest seems to primarily be in the recreational fishery
  - When harvest is above the possession limit, it is difficult to determine if the extra fish are intended for private consumption or illegal sales



**Questions?**