NOAA FISHERIES

Prioritizing Fish Stock Assessments

Beginning the Process for SAFMC Stocks

Richard D. Methot
NOAA Fisheries Senior Scientist for Stock Assessments

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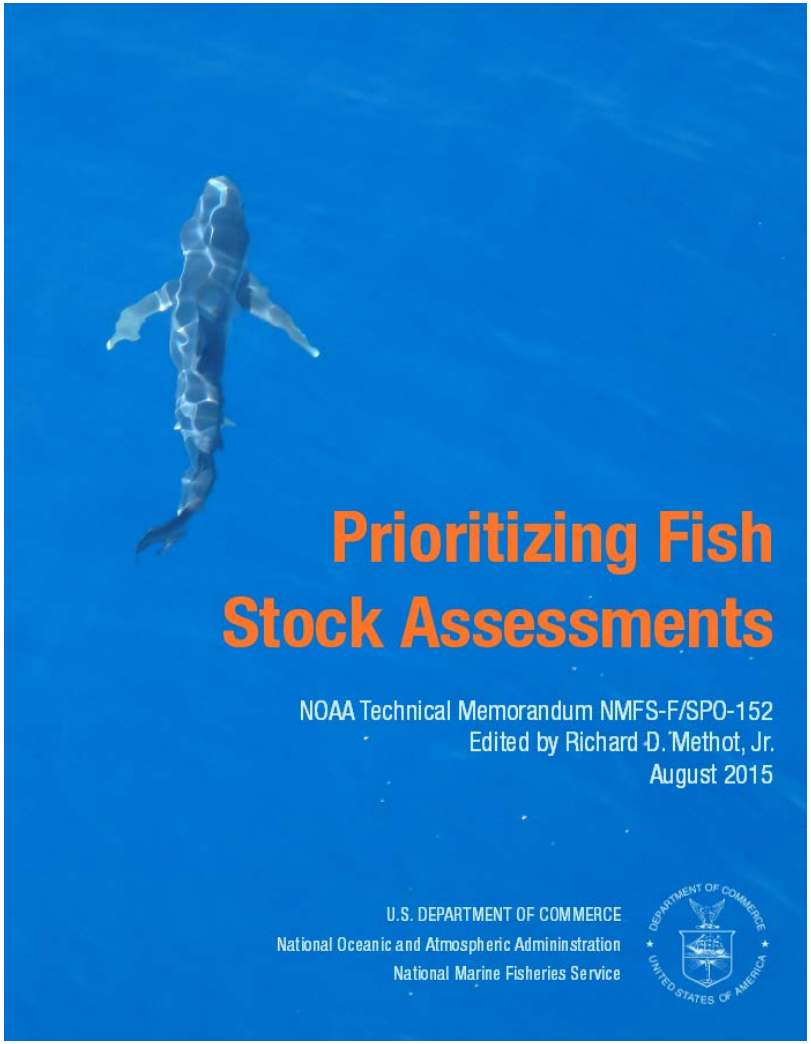
SAFMC Meeting

Overview

- History of prioritization
- Prioritization goals
- Process and factor overview
- Discuss roles and potential timeline

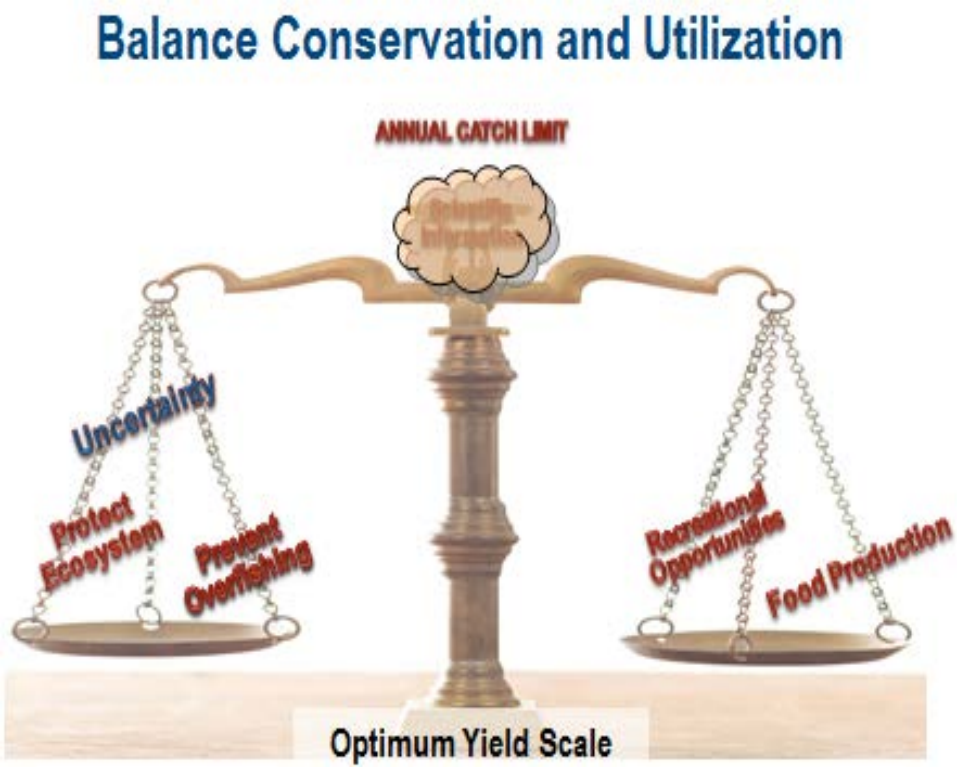


Prioritization History

2011	• Initiate development in response to budget inquiries
2013	• Needs discussed in proposed MSA reauthorization
Feb 2014	• Draft process presented to CCC and open for public comment
June 2014	• Public comments summarized for CCC
Sept 2014	• GAO report endorses draft plan
June 2015	• Process revised based on comments • Presented to CCC
Aug 2015	• Prioritization document released to public • Implementation initiated in cooperation with FMCs

Supporting Sustainable Fisheries

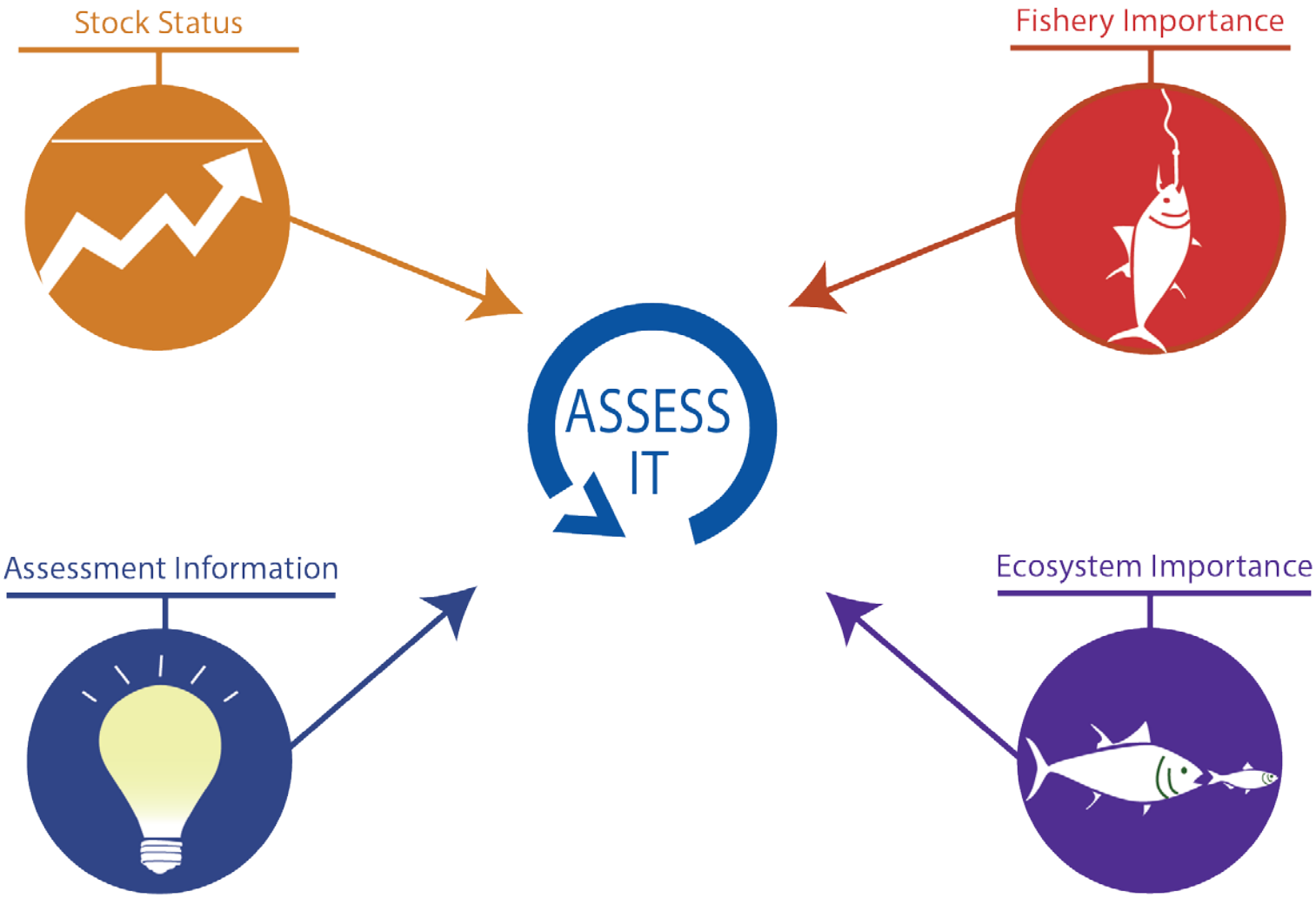
- Limited number & complexity of assessments that can be completed each year
- How complete/precise does a stock's assessment need to be to provide management advice?
- How frequently should assessments be updated to stay on track and implement improvements?



Why Prioritize?

- All managed stocks need some level of assessment
- Some stocks need higher level or more frequent assessments, and/or ecosystem/climate linkages
- Costs may exceed benefits for some low-value stocks
- Goal is a prioritized portfolio of right-sized assessments for each stock
- Achieved through facilitated and standardized regional prioritization processes
- Nationally, gaps in capability will be more visible and can be considered for future investments

Which Stocks Need Assessments?



Prioritization Process

Factor scores for each stock for each of the 12 prioritization factors

	Stock 1	Stock 2	...	Stock X
Factor 1				
Factor 2				
...				
Factor 12				

Factor weights (importance to region)

	Weight
Factor 1	
Factor 2	
...	
Factor 12	

1. Define stock list (~FMP)
2. Assemble data for 12 factor scores
3. Assign target level for each stock
4. Assign target frequency
5. Science experts assign scores, regional managers assign weights
6. Stock rank = sum(scores times weights)
7. Ranks are objective advice, not rigid prescription

Collaborative Roles in Prioritization Process

NMFS	Collates data from databases and past assessments
NMFS, Council Committees, Invited Experts	Provide scores for each stock for the other factors
NMFS, Councils	Assigns weights within ranges to each factor
NMFS, Councils	Uses the proposed list, upcoming management cycle, data availability, and assessment capacity to determine set of assessments to do

Step 1: Organize Stocks for Prioritization

- Best to include all stocks in a region for which there are shared data sources, constituencies, assessment resources
- Separate prioritization group where there are very distinct separations in one of the above
- Where there are species-rich complexes, consider where to include each potentially assessable stock in prioritization

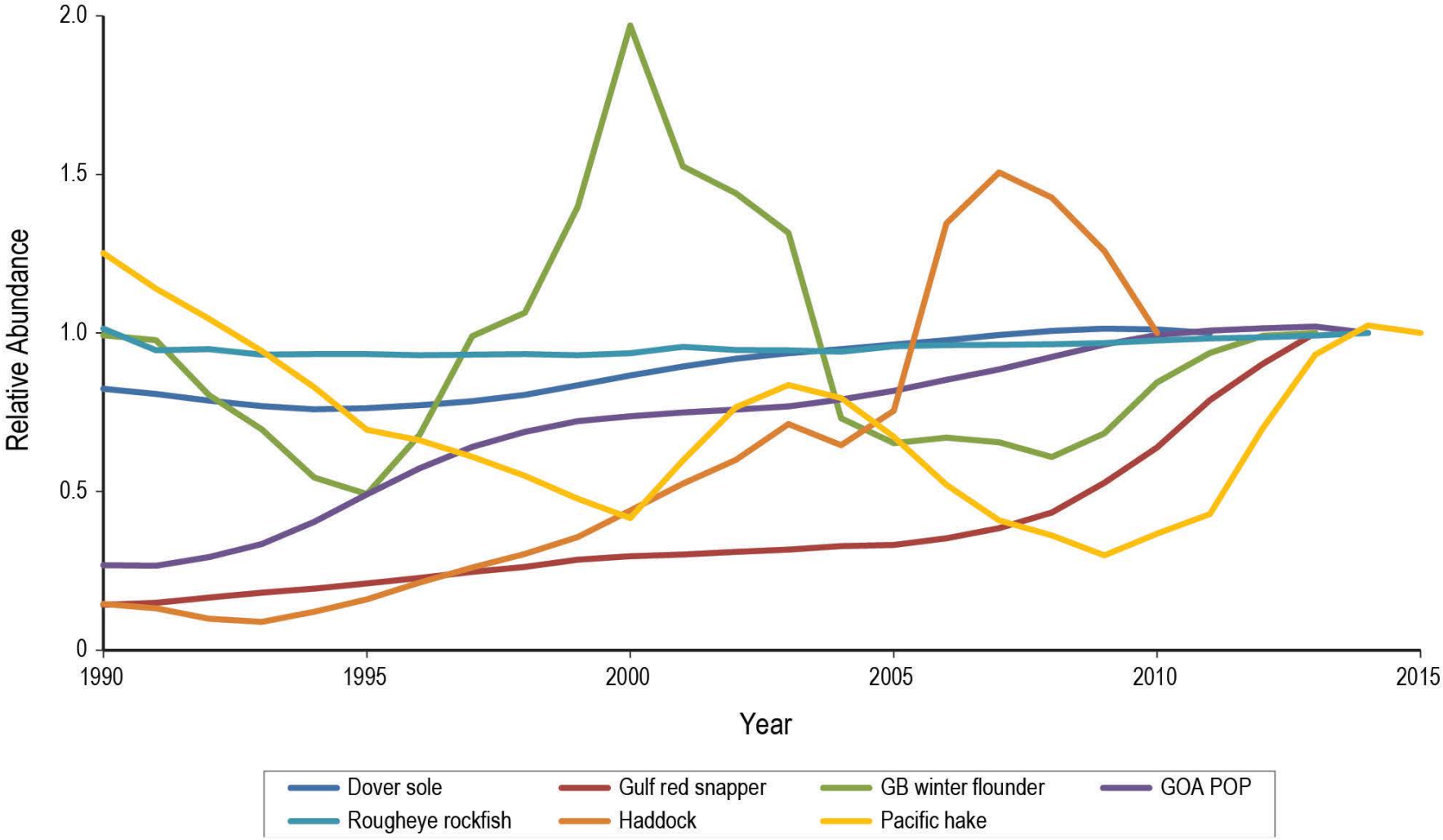
Step 2: Get Values/Scores for each Factor

Category	Factor	Source	Raw Scores
FISHERY	Commercial Fishery Importance - rescaled log(ex-vessel value)	SIS- ACL	0-5
	Recreational Fishery Importance - from regional input	Experts	0-5
	Importance to Subsistence	Experts	0-5
	Non-Catch Value	Experts	0-5
	Constituent Demand/Choke Stock	Experts	0-5
	Rebuilding Status	SIS	0-1
STOCK	Relative Stock Abundance	SIS	1-5
	Relative Fishing Mortality	SIS	1-5
ECO	Key Role in Ecosystem	Experts	1-5
ASMT	Unexpected Changes in Stock Indicators	Experts	0-5
	Relevant New Type of Information Available	Experts	0-5
	Years Assessment Overdue - relative to Target Frequency	SIS	0-10
TARGET FREQ	Mean Age in Catch	Experts	Value
	Stock Variability	Asmt	-1 to +1

Step 3: Identify Target Levels

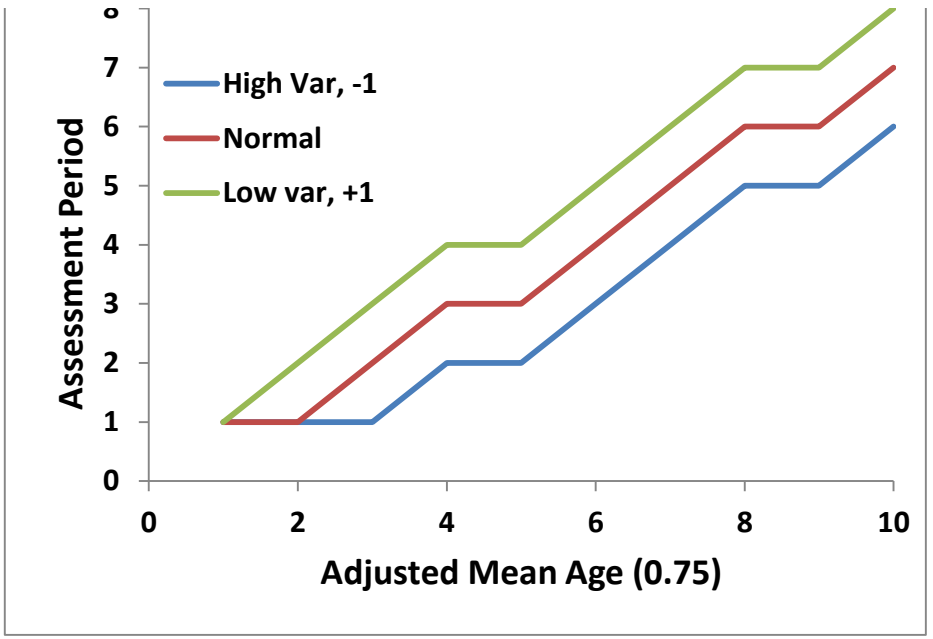
1. For now, we'll just assume that each stock needs a somewhat more data-rich and "better" assessment
2. In a year, the updated Stock Assessment Improvement Plan will describe an approach to identify gaps between current and species-specific target levels of assessment
3. Will consider where better surveys, age data, ecosystem-linkages, etc. are:
   - needed, feasible, good benefit/cost
   - pie-in-the-sky is not useful

Goal: Assess Variable Stocks More Frequently



Step 4: Target Assessment Frequency

- Mean age x regional scaling factor
- 1 year earlier for:
  - Variable stocks
  - High fishery importance
  - High ecosystem importance
- 1 year later for:
  - Stable stocks
  - Low fishery importance
  - Low ecosystem importance



- Allows calculation of the number of years an assessment is overdue, which is a prioritization factor

Step 5 & 6: Assign Scores and Weights, then Calculate Rank

Factor scores for each stock for each of the 12 prioritization factors

	Stock 1	Stock 2	…	Stock X
Factor 1				
Factor 2				
…				
Factor 12				

Factor weights (importance to region)

	Weight
Factor 1	
Factor 2	
…	
Factor 12	

Rank = Product of scores and weights are summed across all 12 factors for each stock

Sorted list of Ranks provides guidance on assessment priorities for upcoming cycle

Factor Weights

- Weights allow for regional tailoring of the contribution of each factor to the overall score
  - For example, the factor for subsistence is expected to be high for insular species
- Factor weights will be the same for all stocks in a prioritization group
- Intended to be developed by regional NMFS and Council leaders
  - Prototype factor weights will be provided

Factor scores for each stock for each of the 12 prioritization factors

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Factor weights (importance to region)

	Weight
Factor 1	
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...	
Factor 12	

Final Steps

- The sorted list of ranks is intended as strong, objective guidance
- Final decisions can deviate from this list for various practical reasons
- Documentation of rationale for these final changes will provide transparent process and aid improved future process

Next Steps for SAFMC

1. Identify a feasible timeline for implementation

   a. Began discussion with SEDAR in Sept 2015

   b. Continued with SAFMC SSC in Oct

   c. Seek agreement to proceed at this meeting

2. Design collaborative process to assemble factor scores; some may need specific workshops to do a complete job

How Different from Current Process?

Probably not much! Example: PFMC

Key Info Considered in Recent Planning Cycles:

- Years since last asmt
- Asmt category
- Depletion ratio from last asmt
- Rebuilding status
- PSA score
- Commercial value
- Recreational value
- Total mortality ratio to ABC, OFL
- Availability of data

Similar Scoring Factors Used for Prioritization:

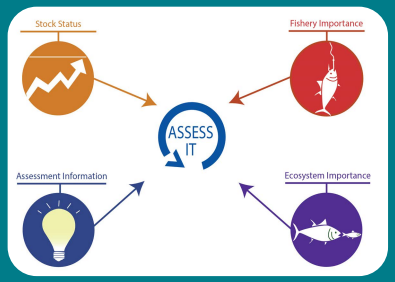
- Years Assessment Overdue

- Relative Stock Abundance
- Rebuilding Status
- PSA used for unassessed stocks
- Commercial Fishery Importance
- Recreational Fishery Importance
- Relative Fishing Mortality
- New Type of Information

Potential Changes:

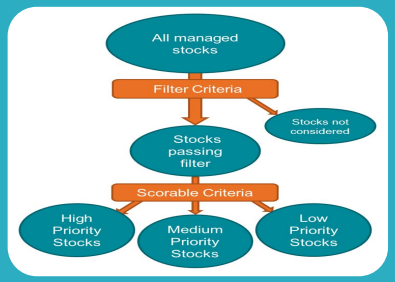
1. Additional factors considered in Prioritization (e.g. Ecosystem Importance) – data availability may limit impact of these factors initially
2. More nuanced consideration of fishing sectors in previous cycles – results are advisory, and process may evolve over time

Three Regional Science Activities



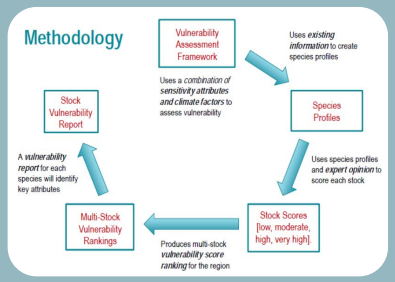
Stock Assessment Prioritization (http://goo.gl/8pQ898)

- Objective and transparent process to prioritize stocks for assessment
- Establishes target assessment level and frequency for each stock
- Cooperative process between NMFS, FMCs and other stakeholders



Habitat Assessment Prioritization (http://goo.gl/ZPNxbn)

- Process to develop regional habitat science priorities
- Uses criteria to score stocks appropriate to prioritizing habitat science
- Recently completed for West Coast stocks



Climate Vulnerability Assessment (http://goo.gl/0sARjR)

- Estimates relative vulnerability of fish stocks to potential climate change
- Based on existing information on species distributions and life history
- Results help managers identify ways to reduce risks/impacts to fisheries

Future Directions

- Management Strategy Evaluations for select stocks can better inform setting of target assessment level and frequency
- Gaps between current and target assessment levels, and the number of overdue assessments, informs future investments in capacity
- The simple “factor score x weight” approach evolves to calculate a portfolio of assessments that achieve the greatest overall benefits

Questions?