Implementing an Assessment Prioritization Process

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Why Prioritize?

- Some stocks need very good and timely assessments, but no assessment will ever provide perfect information, real-time

- All managed stocks need some level of assessment, but costs could exceed benefits for some low-valued stocks

- The goal is a prioritized portfolio of right-sized assessments for each stock

- Achieved through facilitation and standardization of each regional prioritization process

- Nationally, gaps in capability will be more apparent and can be considered for future investments

Assessment Goal

- Assessment goal is to provide scientific information needed to prevent overfishing (through forecast of annual catch limits), rebuild overfished stocks and achieve optimum yield

- How good does each stock's assessment need to be to achieve this goal?

- How frequently must it be updated?

- These stock-specific assessment goals allow us to quantify priorities among stocks

Assessment Prioritization History

- Currently, stock assessment scheduling is region-specific under a national umbrella. Each region has a process (e.g. NRCC) involving the local NMFS Science Center, Fishery Management Council and Commission;

- OMB requested that NMFS develop a prioritization system for fish stock assessments

- Some regions, particularly NE and SE, have worked on assessment scheduling and prioritization in recent years

- A NMFS working group was formed in 2011 to develop a prioritization system

- In 2013, call for prioritization appeared in Congressionally requested GAO review of stock assessments, and in an introduced bill on improved science for MSA

Data Needed for Prioritization

- **Commercial Fishery Importance**

- **Recreational Fishery Importance**

- **Ecosystem Importance**

- **Stock biology (principally: natural mortality rate and recruitment variability)**

- **Stock Status info from previous assessments**

- **Assessment history, unresolved uncertainties**

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Factors Considered

FACTOR	First-time assessments	Target assessment level	Target Assessment frequency	Priority for assessment	Priority for benchmark
Fishery importance	Yes	Yes	Yes	Yes	
Ecosystem importance	Yes	Yes	Yes		
Stock status	Yes, from ORCS & PSA			Yes	
Stock biology		Yes	Primary		
Assessment history; Due or overdue?				Primary	
New data indicates drift from forecast				Yes	
New data can raise level or resolve uncertainty					Yes

Factors In Fishery Importance

- Log(commercial catch value) scaled to max of 5.0 nationally
- Log(recreational catch amount) scaled to max of 5.0 nationally
- +1.0 for stocks on rebuilding plans because their recent catch value is depressed below long-term potential;
- +1.0 for stocks that have a particularly high constituent demand for excellence in stock assessment. For example, stocks that are in catch shares programs or stocks that are in a multi-stock fishery and their status is limiting the fishery's ability to harvest more productive stocks in that multi-stock fishery. In this case, good assessment of the smaller, less valuable stock is important to prevent undue restriction on harvesting of the more valuable stock. A cap on the percentage of stocks that can receive this bonus will need to be established to prevent excessive usage rendering it meaningless.
- +1.0 for stocks that have a high non-catch value (for example underwater viewing of reef fish).
- +1.0 for stocks important to subsistence fishing.

Stock Status Scoring

F Category	Score		Abundance Category	Score
LOW IMPACT $F_C \leq 0.25 * F_{MSY}$	1		ABOVE TARGET $SB_C > 1.25 * SB_{MSY}$	1
MODERATE IMPACT $0.25 * F_{MSY} < F_C \leq 0.9 * F_{MSY}$	2		NEAR TARGET $MSST < SB_C < = 1.25 * SB_{MSY}$	2
CAUTION or UNKNOWN $F_C <> F_{MSY}$ is unknown	3		CAUTION or UNKNOWN $SB_C <> MSST$ is unknown	3
HIGH IMPACT $F_C > 0.9 * F_{MSY}$	4		OVERFISHED $SB_C \leq MSST$	4
			On Rebuilding Plan	" +1"

Prioritization Set-Up

- **Among stocks that never have been assessed:**

  - *Identify those OK with baseline monitoring, and*

  - *Those needing priority for first-time assessment*

- **Among previously assessed stocks, set medium-term assessment goals**

  - *target assessment level for each stock; this drives the data requirements*

  - *Set target assessment update frequency for each stock*
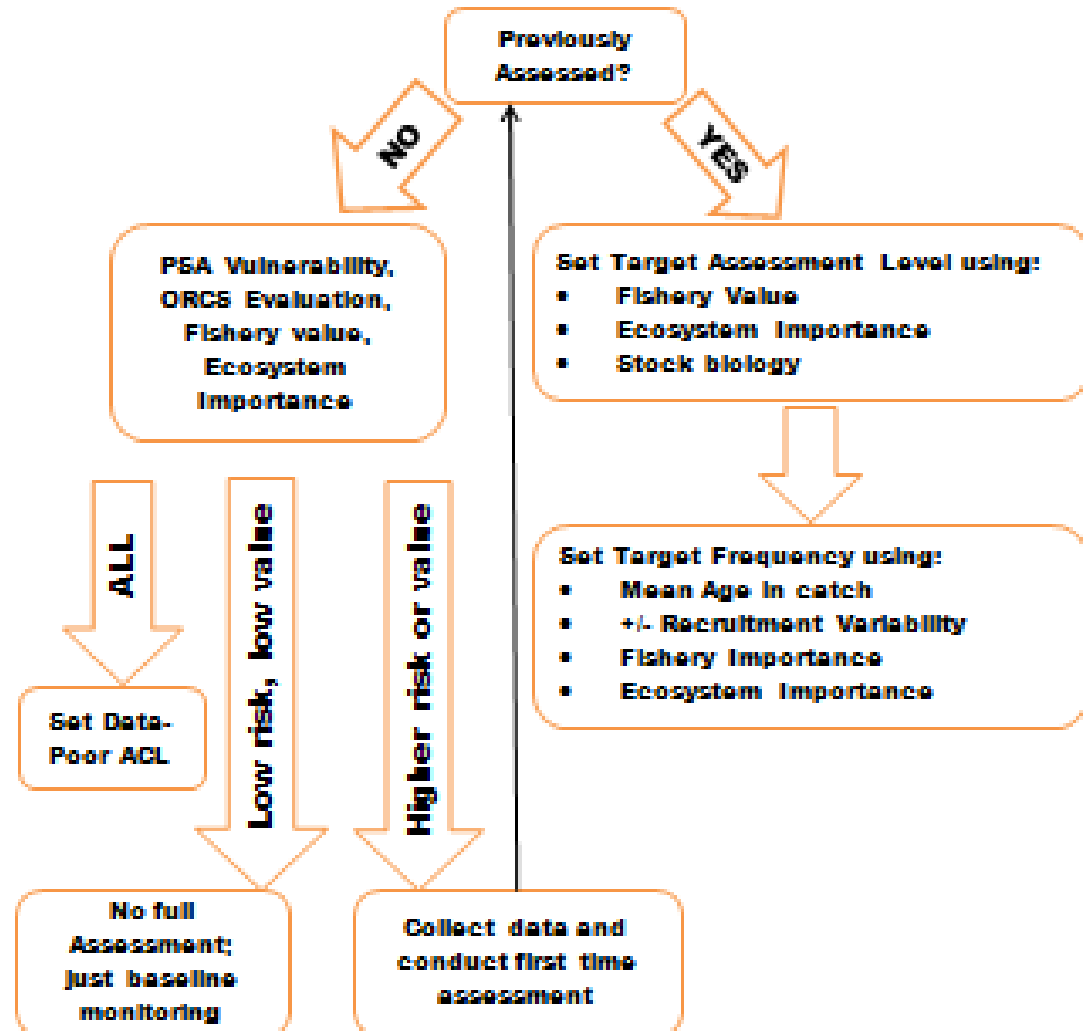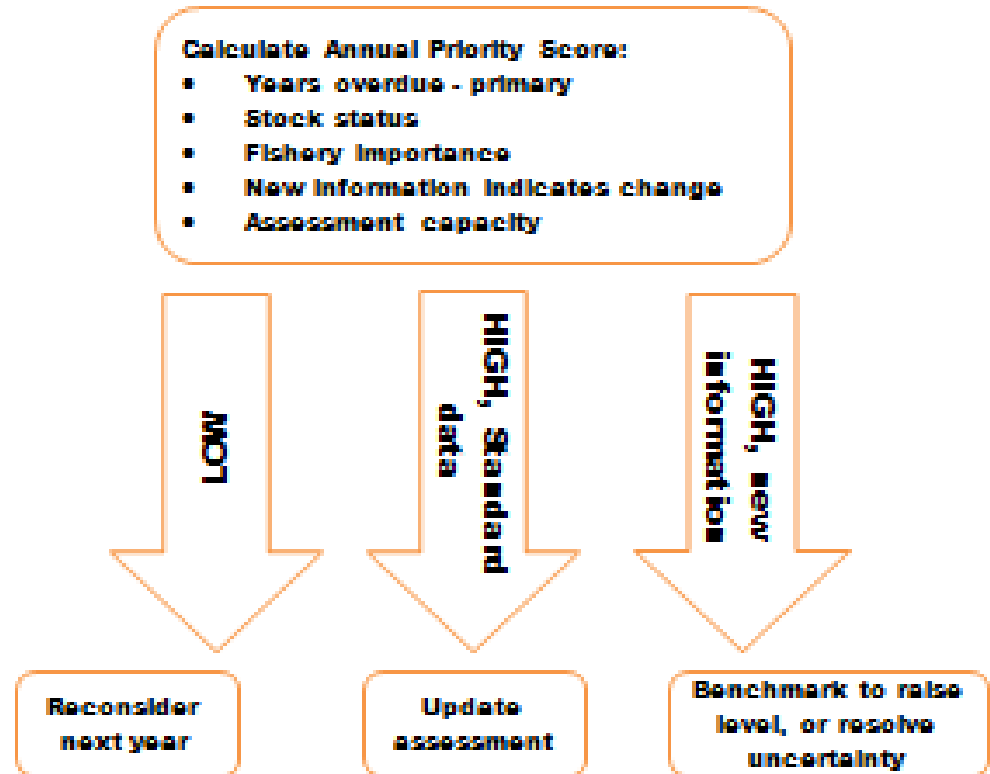
Setting Assessment Frequency

1. Mean Age of Fish in Catch * Scaling Factor
2. Adjust for recruitment variability:
a. -1 year (e.g. more frequent) for stocks with high recruitment variability;
b. + 1 year for stocks with low recruitment variability
3. Adjust for fishery value:
a. – 1 year for stocks with commercial or recreational score above a level to be specified
b. + 1 year for stocks with commercial and recreational score below a level to be specified
4. Adjust for ecosystem importance similarly to fishery value

EXAMPLE:
1. Mean age in catch is 4.5 years and scaling factor is 1.0;
2. Recruitment variability is high (so subtract 1 year);
3. Fishery value is high for commercial but low for recreational (so subtract 1 year);
4. Ecosystem importance is moderate (so no change to target);
5. Target Assessment Frequency = 4.5*1.0 -1 -1 +0 = 2.5 years
6. Round down to 2 years.

Setting Priorities

- **Annually update priorities for conducting assessments (includes traffic light)**

- **Pass on stocks with low score**

- **Update assessments for stocks that are at or exceed their target update period**

- **Benchmark assessments for stocks for which new data or methods will allow resolving uncertainties or advancing to higher level**

Calculate Annual Priority Score:
- Years overdue - primary
- Stock status
- Fishery Importance
- New Information Indicates change
- Assessment capacity

LOW

HIGH, Standard data

HIGH, new information

Reconsider next year

Update assessment

Benchmark to raise level, or resolve uncertainty

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Prioritizing Assessments

1.   Years overdue relative to target frequency;

2.   Add stock status score divided by 10;

3.   Add up to 1.0 if there is new information that indicates a chance from the past assessment;

4.   Add fishery importance divided by 10;

EXAMPLE:

1.   Assessment is 2 years past its target date for updating;

2.   Stock status score is 6;

3.   There is no new information that indicates an obvious change

4.   Commercial value score is 3.5 and recreational score is 1.4 and no additional fishery importance factors;

5.   Priority score = 2.0 + 6.0/10 + 0.0 + (3.5+1.4)/10 = 3.09

Prioritization Outcome

- The whole portfolio of assessment needs will be transparent to all participants in assessment process;

- Important assessments will get done when they need to get done, not sooner and not a lot later;

- This "right-sizing" of the assessment frequency for important stocks may help release some assessment effort for currently under-assessed stocks.

Implementation Steps

1. Distribute draft to Fishery Management Councils, NMFS Regional Offices, Fishery Commissions and to public via website – February 2014;

2. Create database of needed information as an added table in the Species Information System – begin winter 2014;

3. Receive comments from Council by May 1, 2014 and summarize to the May CCC;

4. Each region begins work on comprehensive Productivity-Susceptibility Analysis and Only Reliable Catch Analysis to serve as baseline for determining which stocks need assessments – begin spring 2014;

5. Test prioritization system to determine if adjustments to scaling factors are needed to achieve reasonable results – summer 2014;

6. Make database available to regional coordinating committees charged with setting priorities for regional assessments – fall 2014; Create access through SIS public portal;

7. Commission Management Strategy Evaluations to test the expected performance of this prioritization system over time – 2015;

8. Explore Decision Support System facilitators to guide regional coordinating committees through application of the prioritization process – 2016.