SAFMC Stock Assessment Prioritization Proposal

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The SEDAR Steering Committee requested that each Council identify how each stock under its jurisdiction should be assessed and recommend how frequently such assessments should be conducted. Identifying desired assessment types and intervals is considered critical to developing a Southeast Region assessment workload plan and securing the necessary assessment capability to meet each Councils expectations and needs under the Reauthorized Magnuson-Stevens Act. The Steering Committee intends to review Council assessment recommendations in Fall 2010.

This document provides a first step in developing an assessment plan for stocks managed by the South Atlantic Council. As such, the criteria and categorizations proposed herein are intended to generate Council discussion and it is expected that Council will modify the criteria and rankings. Stocks may be promoted or demoted in both assessment type and assessment interval.

Fishery Management Unit Modifications

The Council selected preferred alternatives for removing stocks from the Snapper-Grouper FMP that include removing those with average landings less than 10,000 pounds, those with 80% of the landings coming from state waters, and those covered under Florida's Marine Life Species Rule. Stocks listed in Table 1 are removed from the Snapper-Grouper FMP under these 3 preferred alternatives and therefore are not included in this evaluation. In addition, the Council recommended removing cero and little tunny from the CMP FMP based on their initial inclusion in the management unit for data collection purposes only. Forty-six stocks remain within management units of the South Atlantic Council after making these adjustments.

Table 1. Stocks proposed for removal from the Snapper-Grouper FMU.

Atlantic spadefish	grass porgy	rock sea bass
bar jack	graysby	sailors choice
black margate	hogfish	sand tilefish
black snapper	lesser amberjack	saucereye porgy
blackfin snapper	longspine porgy	schoolmaster
blue runner	mahogany snapper	scup
bluestripe grunt	margate	sheepshead
coney	misty grouper	smallmouth grunt
cottonwick	ocean triggerfish	Spanish grunt
crevalle jack	porkfish	tiger grouper
cubera snapper	puddingwife	yellow jack
dog snapper	queen snapper	yellowfin grouper
French grunt	queen triggerfish	yellowmouth grouper

Assessment Prioritization

The approach used here to prioritize assessment efforts is based on categorizing stocks by assessment type and the interval between assessments. Assessment types range from full statistical catch age assessments to fishery-dependent trends analysis, and intervals range from 2 to 5 years. The intent is to develop a long-term plan for each stock managed by the Council. As a result, special assessment needs, such as stocks currently under rebuilding plans that may require assessment in a particular year to evaluate whether rebuilding is complete, are not considered. Similarly, no attempt is made to specify a date for completing an initial assessment for stocks not currently assessed. Such circumstances should be addressed on a case by case basis when determining specific annual assessment plans.

Data available for each stock include current SEDAR assessment status, determination of whether the stock is addressed in previous "Trends[1]" reports or covered by MARMAP surveys, whether a pre-SEDAR assessment exists, and a measure of productivity based on estimated MSY when available and median landings when MSY is unavailable (Table 6).

Once stocks are assigned an assessment type and interval, the overall workload can be evaluated. Annual workload was determined by dividing the number of stocks in each interval category by the number of years in that interval and summing across all interval periods. For example, if 12 stocks are to be assessed at an interval of 3 years, the annual assessment work load will be 4 stocks. Workload can be calculated overall, and also by assessment category.

Assessment Type

Each stock is categorized by the desired assessment level or type (Table 2). The primary determination of the appropriate assessment type for a stock is its contribution to the overall fishery, as evidenced by landings or MSY estimate if available. The landings category for each level is noted in the level description, along with any exceptions.

1. Catch at Age
   This category includes the standard statistical catch-age models that are the current standard for most benchmark assessments. These models are also the most time and data intensive, and therefore may not be appropriate for all stocks given reasonable expectations regarding resources.

   Stocks with median landings (or MSY) exceeding 250,000 pounds are included in the catch at age category. Stocks currently assessed with catch at age models are also included in this category, regardless of their landings or MSY values. Warsaw grouper

[1] "Trends" report refers to the series of documents titled "Trends in Catch Data and Estimated Static SPR Values for Fifteen Species of Reef Fish Landed Along the Southeastern United States" prepared by the SEFSC Beaufort Laboratory and various authors.

and speckled hind are included here, as their recent median landings are impacted by restrictive regulations.

2. Production Model
   This category refers to general production models that rely on survey or effort and measures of catch. It could also include stage-based approaches that make some allowance for life history stages. Such approaches do not require the extensive effort age sampling and age structure interpretation. Production model approaches may prove useful for stock where typical ageing is problematic. However, production models simplify population dynamics and can be overly optimistic, especially with regard to rebuilding times for overfished stocks.

   Stocks with median landings between 100,000 and 250,000 pounds are included in this category. A notable exception is dolphin, which is included here because age based methods do not appear promising at this time given its life history and the challenge of collecting and interpreting ageing structures. It is anticipated that some of the stocks listed under the catch-age category, which are as of yet un-assessed, may be moved into this category once they are evaluated through the assessment process.

3. Fishery Independent or Dependent Trends Analysis
   This category includes stocks with landings below 100,000 pounds that may be evaluated through examination and monitoring of fishery independent or dependent trends. Drawbacks of this category are that population parameters and reference points cannot be estimated. Relative measures of stock status may be feasible.

4. Special Situations
   This category includes stocks that do not adequately meet the criteria above or that demand special assessment consideration. Examples include shellfish (shrimp, golden crab, and spiny lobster) and corals that require unique and atypical assessment approaches. It also includes stocks that are under management regimes that prohibit traditional catch-based assessment methods (e.g., Nassau, Goliath, and Warsaw groupers; speckled hind). These stocks will likely require consideration on an individual basis, and may require initial assessment efforts before a long-term characterization can be provided.

Table 2. Assessment category poundage criteria and number of stocks per category.

TYPE	Catch-Age	Production	Trends	Special
Poundage	> 250,000	100,000-250,000 lbs	<100,000	varying
# Stocks	22	4	8	12
Stocks	wreckfish white grunt tilefish snowy grouper scamp red porgy gray triggerfish gray snapper Cobia blueline tilefish black grouper wahoo vermilion snapper red grouper mutton snapper gag grouper yellowtail snapper spanish mackerel red snapper King Mackerel greater amberjack black sea bass	lane snapper banded rudderfish almaco jack dolphin	yellowedge grouper whitebone porgy tomtate silk snapper rock hind red hind knobbed porgy jolthead porgy	warsaw grouper speckled hind sargassum nassau grouper goliath grouper Coral Fed + State white shrimp spiny lobster rock shrimp pink shrimp golden crab brown shrimp

Assessment Frequency

Assessment frequency refers to the interval of time between each assessments. The approach applied here in developing frequency recommendations is that those stocks supporting the primary fisheries, based on pounds landed, should be assessed with the greatest frequency. Ranking within the fishery is based primarily on contribution to overall landings or potential equilibrium MSY if estimates are available. These initial rankings are just a starting point. Timing can be, and in fact should be, modified based on other information which establishes a stock's importance in the fishery, including anecdotal comment and staff or Council judgment.

Intervals range from 2 to 5 years (Table 3). Prior NMFS assessment planning efforts established 5 years as the maximum age for which an assessment can be considered 'adequate', and the ASMFC established a maximum interval of 5 years between assessments. No stocks are proposed for annual assessments for several reasons. First, the overall management system is currently unable to respond fast enough to take advantage of annual assessments. Second, annual assessments can often result in knee-jerk management actions in response to highly uncertain

terminal year findings. Third, annual assessments impose an incredible burden on assessment and data resources that is arguably disproportionate to their value when the previous two comments are considered.

The lack of annual assessments in no way implies that there should be no inter-assessment evaluation of fishery trends. In fact, it is anticipated that annual SAFE reports, as required under the Magnuson Act, will be provided for all managed stocks. Such information is crucial for both the Council and SSC to evaluate ACLs, act upon AMs when appropriate, and consider ABCs. Moreover, annual SAFE reports that include landings and evaluations of research and monitoring programs will provide the backbone data necessary for subsequent stock assessments and thereby enable an increase in overall assessment productivity. Data tabulation and evaluation steps for update assessments will be greatly simplified if supported by annual SAFE reports.

1. 2 year intervals
   Stocks having landings or MSY estimates that exceed 2 million pounds are proposed for assessment every 2 years. Six stocks representing over 17 million pounds of annual yield are included.

2. 3 year intervals
   Finfish stocks having landings or MSY estimates between 1 and 2 million pounds are proposed for assessment every 3 years. Six finfish stocks representing 7 million pounds of annual yield are included. Dolphin are also proposed for a 3 year interval, accounting for 11 million pounds. Shellfish stocks (4 shrimp, golden crab, and spiny lobster) regardless of landings level are included in the 3 year interval.

3. 4 year intervals
   Stocks with landings between 250,000 and 1 million pounds are included in the 4 year interval.

4. 5 year intervals
   Stocks with landings below 250,000 pounds are included in the 5 year interval. This category also includes sargassum and coral. Finfish stocks with low landings due to restrictive regulations are included here, although such stocks could elevate to more frequent assessment if the management regime changes in the future.

Table 3. Assessment interval criteria, number of stocks per category, and stocks in each category.

Interval (Y)	2	3	4	5
Poundage	> 2 mpds	1-2 mpds	250k – 1 mpds	< 250k
# Stocks	6	12	10	18
Stocks	King Mackerel Spanish mackerel black sea bass yellowtail snapper red snapper greater amberjack	white shrimp spiny lobster rock shrimp pink shrimp golden crab brown shrimp dolphin wahoo vermilion snapper red grouper mutton snapper gag grouper	white grunt tilefish snowy grouper *scamp* red porgy *gray triggerfish* gray snapper (mangrv) Cobia blueline tilefish black grouper	warsaw grouper speckled hind sargassum nassau grouper goliath grouper Coral Fed + State yellowedge grouper whitebone porgy *tomtate* silk snapper rock hind red hind knobbed porgy jolthead porgy lane snapper banded rudderfish almaco jack wreckfish

Combined Assessment Tiers

Assessment categories and intervals can be combined to allocate each stock into a combined category that provides a series of Tiers (Table 4). These tiers are numbered in order of decreasing information availability, with the highest (Tier 1) representing stocks assessed every 2 years through catch-age assessments. Presentation in this manner may facilitate Council efforts to promote stocks to a tier providing increased information, either by elevating its assessment type or reducing the interval between assessments.

Table 4. Stocks allocated into assessment Tiers based on assessment type and interval.

TIER	1	2	3	4	5	6
Interval	2	3	4	5	5	3 to 5
Assess	CAA	CAA & Prod	CAA	CAA & Prod	Trends	Special
% Land	41.7%	45.5%	10.6%	1.7%	0.6%	0.0%
#	6	8	10	6	8	8
Stocks	yellowtail snapper Spanish mackerel red snapper King Mackerel greater amberjack black sea bass	wahoo vermilion snapper red grouper mutton snapper gag grouper Dolphin[1] spiny lobster golden crab	white grunt tilefish snowy grouper scamp red porgy gray triggerfish gray snapper Cobia blueline tilefish black grouper	wreckfish lane snapper[1] banded rudderfish[1] almaco jack[1] Warsaw grouper speckled hind	yellowedge grouper whitebone porgy tomtate silk snapper rock hind red hind knobbed porgy jolthead porgy	white shrimp rock shrimp pink shrimp brown shrimp sargassum Coral Nassau grouper goliath grouper

1. Production Model Stocks

Overall Assessment Workload

Dividing the number of stocks in an assessment type cell by the interval for the cell gives a measure of the annual assessment workload required for each type, and summing these values across all types gives an indication of the overall assessment workload required to provide the information necessary for adequate management (Table 5). Approximately 8 Catch-Age assessments and 1 production model will be required each year to meet the plan as described in this document. In addition, accounting for the 'special' circumstances stocks and the trends evaluation stocks adds another 5 annual units.

Table 5. Summarized total and annual assessment workload by type and interval.

Assessment Type	Frequency				TOTAL
	2	**3**	**4**	**5**	
CAA	6	5	10	1	22
Production		1		3	4
Trends				8	8
SPECIALS		6		6	12
TOTAL	**6**	**12**	**10**	**18**	
Annual Workload by Assessment Type					Total per Year
CAA	3.0	1.7	2.5	0.2	7.4
PROD		0.3	0.0	0.6	0.9
All Types	3.0	4	2.5	3.6	13.1

Table 6. Summary of assessment status, proposed assessment levels, and data availability for SAFMC Stocks.

FMP	Stock	SEDAR	Trends	MARMAP	Pre-SEDAR	Productivity
CMP	King Mackerel	1	N	N	Y	6,888,000
CMP	spanish mackerel	1	N	N	Y	3,243,736
Snap-Grp	black sea bass	1	Y	Y	Y	2,777,000
Snap-Grp	yellowtail snapper	1	N	N	Y	2,537,500
Spiny Lob	spiny lobster	1	N	N	Y	2,486,956
Snap-Grp	red snapper	1	Y	N	Y	2,314,000
Snap-Grp	greater amberjack	1	Y	Y	N	2,005,000
Snap-Grp	gag grouper	1	Y	N	N	1,774,000
Snap-Grp	vermilion snapper	1	Y	Y	N	1,665,000
Snap-Grp	mutton snapper	1	N	N	N	1,516,780
Snap-Grp	red grouper	1	Y	Y	N	1,110,000
Snap-Grp	red porgy	1	Y	Y	Y	625,000
Snap-Grp	black grouper	1	Y	N	N	520,000
Snap-Grp	tilefish	1	Y	Y	Y	457,099
Snap-Grp	snowy grouper	1	Y	Y	N	313,056
Snap-Grp	goliath grouper	1	N	N	N	327
Dol-Wahoo	dolphin	2	N	N	Y	11,400,000
Dol-Wahoo	wahoo	2	N	N	N	1,101,231
CMP	Cobia	2	N	N	N	857,714
Gold Crab	golden crab	2	N	N	Y	518,316
Snap-Grp	*scamp*	2	Y	Y	N	482,290
Snap-Grp	white grunt	2	Y	Y	N	376,578
Snap-Grp	wreckfish	2	N	N	Y	250,000
Snap-Grp	warsaw grouper	2	N	N	Y	58,793
Snap-Grp	speckled hind	2	Y	N	N	5,805
Snap-Grp	gray snapper	3	N	N	N	799,438
Snap-Grp	*gray triggerfish*	3	Y	Y	N	307,417
Snap-Grp	blueline tilefish	3	N	N	N	273,799
Snap-Grp	*tomtate*	3	N	Y	N	66,314
Snap-Grp	nassau grouper	4	N	N	N	1,399
Shrimp	white shrimp	4	N	N	Y	
Shrimp	rock shrimp	4	N	N	N	
Shrimp	pink shrimp	4	N	N	Y	
Coral/CEBA	Coral Fed + State	4	N	N	N	
Shrimp	brown shrimp	4	N	N	Y	
Snap-Grp	almaco jack		N	N	N	227,087
Snap-Grp	banded rudderfish		N	N	N	125,894
Snap-Grp	lane snapper		N	N	N	125,331
Snap-Grp	knobbed porgy		N	N	N	50,101
Snap-Grp	jolthead porgy		N	N	N	36,672

Snap-Grp	silk snapper	N	N	N	33,854
Snap-Grp	rock hind	N	N	N	31,916
Snap-Grp	yellowedge grouper	Y	N	N	29,972
Snap-Grp	red hind	N	N	N	22,974
Snap-Grp	whitebone porgy	N	N	N	22,814
Sargassum	sargassum	N	N	Y	