SOUTH ATLANTIC FISHERY MANAGMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

SSC ORCS WORKSHOP REPORT

August 1-3, 2012

Crowne Plaza
North Charleston, SC

PURPOSE

This workshop was convened to:

- Apply the ORCS approach to unassessed SAFMC stocks

CONTENTS

1. Introduction

1.1. Documents

Agenda

1.2. Action

Introductions
Review and Approve Agenda

The ORCS meeting was called to order at 3:00 pm, as scheduled. The agenda was adopted without change. Workshop participants (*see Section 3 below*) were introduced and their affiliations noted for the administrative record. The Chair reviewed the agenda and outlined meeting format and process.

2. Workshop Terms of Reference

The SSC ORCS sub-Committee developed Terms of Reference to guide the workshop.

1. Review and update the ORCS Table of Stock Attributes (Table 4 in the ORCS report) to better suit SAFMC-managed stocks.
2. Develop a scoring method for assigning stocks to exploitation categories (develop criteria for addressing missing values, weighting, range of scores for exploitation categories etc.). Consider developing a new exploitation category for 'special case' stocks or stocks with no reliable catch data. Assign stocks to exploitation categories.
3. Determine the appropriate catch statistic for OFL (e.g., mean, median, maximum, minimum, percentile, etc.). Identify the proper OFL scalar range to be applied to different exploitation categories.
4. Recommend a range of scalar values (to apply to OFL) that captures the Council's risk tolerance level for assigning ABC values for low risk (high productivity), moderate risk (moderate productivity), and high risk (low productivity) stocks.
5. Create a report to summarize and document work group findings.

3. Apply the ORCS Approach

3.1. Action

Address Workshop Terms of Reference

WORKSHOP MEETING SUMMARY:

To better address the Terms of Reference workshop participants were assigned to 3 breakout groups:

Life History and Ecology:
Jim Berkson (leader)
Eric Johnson (rapporteur)
Churchill Grimes
George Sedberry
Jeffrey Buckel
Luiz Barbieri
David Cupka (Chair, SAFMC)
John Jolley (member, SAFMC)

Fisheries Landings and Surveys:
Marcel Reichert (leader)
Chip Collier (rapporteur)
Carolyn Belcher
Yan Jiao
Doug Vaughan
Michelle Duval (member, SAFMC)

Fishery Characteristics:
Steve Cadrin (leader)
Anne Lange (rapporteur)
Sherry Larkin
Robert Johnson (Chair, Snapper-Grouper AP)
David Harter (Chair, Dolphin-Wahoo AP)
Bob Pelosi (Chair, Mackerel AP)
Ben Hartig (Vice Chair, SAFMC)
Charlie Philips (Member, SAFMC)

The first Term of Reference dealt with customizing the ORCS Table of Attributes to better suit SAFMC stocks. Points addressed by the 3 breakout groups and further discussed during plenary included:

- Levels for attributes reflect the risk of overfishing, not the exploitation level of the stock. Change 'Stock Status' heading to 'Risk of Over-Exploitation'. Also, sub-headings were changed to reflect above modification: Low, Medium, and High.
- It may be advisable to combine attribute 2 (managed refugia) with effectiveness of fishery regulations.

- Consensus was to keep attribute 4 (morphology), contrary to the Life History and Ecology group's suggestion, because this attribute reflects capture probability and therefore, as suggested by the Fishery Characteristics group, has information value.
- The 'Discard Mortality' attribute was modified to read discard mortality instead of discard mortality rate so that the attribute encompasses the mortality rate plus the magnitude of discards. Categories were modified to read Low, Medium, and High. , which could include some catchability issues (e.g. changes in technology).
- Habitat loss or alteration should stay as is. The time period applicable for this attribute should be based on the period of landings being considered.
- Concerning the effectiveness of regulations attribute, the working group felt that other ways should be developed to incorporate this attribute into the table since it affects several of the other criteria. The suggestion was made to modify this attribute to read 'Impacts of Regulations' in order to capture regulations that impact a species even though they were meant to regulate a different species.
- The working group felt that consideration should be given to modification of the fleet stability attribute to fleet productivity to capture some economic issues such as some catchability issues (e.g. changes in technology) as well as fishing efficiency. This attribute also needs to reflect changes in effort. Some of this information can be captured in the 'targeted fishery or bycatch' criteria.

According to the comments and suggestions discussed above the following table of attributes was produced:

Attribute	Risk of Overexploitation		
	Low (1)	**Moderate (2)**	**High (3)**
Overall fishery exploitation based on assessed stocks	All known stocks are either moderately or lightly exploited. No overfished stocks.	Most stocks are moderately exploited. No more than a few overfished stocks.	Many stocks are overfished.
Presence of natural or managed refugia	Less than 50% of habitat is accessible to fishing	50%-75% of habitat is accessible to fishing	>75% of habitat is accessible to fishing
Schooling, aggregation, or other behavior responses affecting capture	Low susceptibility to capture (specific behaviors depend on gear type)	Average susceptibility to capture (specific behaviors depend on gear type)	High susceptibility to capture (specific behaviors depend on gear type)
Morphological characteristics affecting capture	Low susceptibility to capture (specific characteristics depend on gear type)	Average susceptibility to capture (specific characteristics depend on gear type)	High susceptibility to capture (specific characteristics depend on gear type)
Discard mortality rate	Low	Medium	High
Bycatch or actively targeted by the fishery	No targeted fishery	Occasionally targeted, but occurs in a mix with other species in catches	Actively sought after
Natural mortality compared to dominant species in the fishery	Natural mortality higher or approximately equal to dominant species ($M \geq \overline{M}$)	Natural mortality higher or equal to dominant species ($M \approx \overline{M}$)	Natural mortality less than dominant species ($M < \overline{M}$)
Rarity	Sporadic occurrence in catch	Not uncommon, mostly pure catches are possible with targeting	Frequent occurrence in catch
Value or desirability	Low value, often not retained (<$1/lb)	Moderate value, usually retained ($1-$2.25/lb)	Very valuable or desirable (trophy fish or >$2.25/lb)
Trend in catches (use only when effort is stable)	Catch trend increasing or stable (assign score of 1.5)	Catches trend increasing or stable (assign score of 1.5)	Decreasing catches
Loss or alteration of habitat	No loss or alteration of habitat, or habitat is increasing	Habitat is being lost or altered and the rate is declining or staying constant	Habitat is being lost or altered and the rate is increasing
Fleet stability	Fleet/# of trips/effort decreasing	Fleet/# of trips/effort stable	Fleet/# of trips/effort increasing
Fishery Independent CPUE	Increasing in most recent years	stable in most recent years,	Decreasing in most recent years.
Effectiveness of regulations (other than ACLs) to limit exploitation	Most of the resource is protected from harvest (closed areas, size limits, seasons)	Considerable portions of the resource are protected	The resource is fully vulnerable to the fishery

In addressing Term of Reference #2 workshop participants came to the following consensus decisions:

- The ORCS table of attributes will be scored with equal weights.
- Missing values (i.e., unscored attributes) will be left as 'blanks' and not used in calculating the stock's final mean score.
- Stocks with no reliable catch data, i.e., stocks with very low landings that show very high variability in catch estimates (mostly caused by the high degree of uncertainty in recreational landings estimates), or stocks that have species identification issues that may cause unreliable landings estimates, will be removed from this exercise and moved to a new ABC control rule Tier 5 (unassessed stocks that do not qualify as ORCS). The table below lists SAFMC stocks removed from this ORCS application exercise. Table headings indicate the reason for considering these stocks as not having reliable catch.

Variability	Landings or Data Collection issues	Species ID
Black Snapper	Black Snapper	Almaco Jack
	Blackfin Snapper	Lesser Amberjack
	Sand Tilefish	Sailor's Choice
	Mahogany	Banded Rudderfish
	Dog Snapper	Yellowmouth Grouper
	Misty Grouper	Scup
	Sailor's Choice	Saucereye Porgy
	Coney	Jolthead Porgy
	Graysby	Knobbed Porgy
	Saucereye Porgy	Whitebone Porgy
	Scup	
	Queen Snapper	
	Warsaw grouper	
	Speckled hind	

Application of the revised and upgraded ORCS table of attributes to remaining stocks (i.e., after the non-ORCS stocks were removed from the analysis) resulted in the assignment of all stocks to the 'Moderate' risk of exploitation category.

To refine the analysis and achieve better resolution in assigning stocks to risk of exploitation categories (i.e., to better differentiate between risk levels for different stocks) workshop participants reviewed individual criteria and attributes discussed by the 3 breakout groups (Life History and Ecology, Landings and Surveys, and Fishery Characteristics). Then, based on group consensus and expert judgment the group assigned each stock to a final risk of exploitation category. Results are summarized on the table below (Qualitative Categorization column).

Species	MEAN	Exploitation Category	Life History	Fishery Characteristics	Fishery Surveys and Trends	Qualitative Categorization
bar jack	1.50	Moderate	Moderate	Low	Low	Low
margate	1.65	Moderate	Moderate	Low	Moderate	Moderate
rock hind	1.65	Moderate	Moderate	Low	Moderate	Mod High
red hind	1.73	Moderate	Moderate	Low	Moderate	Moderate
cubera snapper	1.79	Moderate	Moderate	Moderate	Low	Moderate
wahoo	1.80	Moderate	Low	Moderate	Moderate	Moderate
tomtate	1.83	Moderate	Low	Moderate	High	Mod High
blue runner	1.88	Moderate	Moderate	Moderate	Moderate	Moderate
yellowedge grouper	2.05	Moderate	Moderate	Moderate	Moderate	Moderate
hogfish	2.03	Moderate	High*	Moderate	Moderate	Mod High
blueline tilefish	1.94	Moderate	Moderate	Moderate	High	Moderate
silk snapper	2.00	Moderate	Moderate	Moderate	Moderate	Moderate
white grunt north			Moderate	Moderate	High	Mod High
white grunt south	2.08	Moderate	Moderate	Moderate	High	Moderate
atlantic spadefish	2.09	Moderate	Moderate	Moderate	Moderate	Moderate
gray snapper	2.10	Moderate	High	Moderate	Moderate	Moderate
dolphin	2.10	Moderate	Low*	High	Moderate	Mod Low
lane snapper	2.06	Moderate	High	Moderate	Low	Moderate
scamp	2.16	Moderate	Moderate	Moderate	Moderate	Mod High
gray triggerfish	2.25	Moderate	Moderate	Moderate (High)	Moderate (High)	Mod High

Unfortunately, we ran out of time and were not able to address Terms of Reference 3-5 at this workshop. The workgroup recommended meeting again in the spring of 2013 to complete application of the ORCS approach and finalize the report.

The group discussed the fact that several of the stocks included in this analysis (e.g., gray snapper, dolphin, white grunt) should have enough data to have stock assessments based on more traditional quantitative assessment methods—i.e., based on the data available they likely fall under higher tiers of our ABC control rule (the ORCS approach is tier 4). The SSC will discuss this issue in more detail at its October meeting.

Workshop adjourned.

SOUTH ATLANTIC FISHERY MANAGMENT COUNCIL

SCIENTIFIC AND STATISTICAL COMMITTEE

SSC ORCS WORKSHOP

August 1-3, 2012

SSC ORCS WORKSHOP II
April 8-9, 2013

Crowne Plaza
North Charleston, SC

Draft 1

PURPOSE

This workshop is convened to:

- Complete application of the ORCS approach to unassessed SAFMC stocks

CONTENTS

1. Introduction

1.1. Documents

Agenda
ORCS Workshop I Final Report

1.2. Action

Introductions
Review and Approve Agenda

The ORCS meeting was called to order at 1:00 pm, as scheduled. The agenda was adopted without change. Workshop participants were introduced and their affiliations noted for the administrative record. The Chair reviewed the agenda and outlined meeting format and process.

2. Workshop Terms of Reference

The SSC ORCS sub-Committee developed Terms of Reference to guide the workshop.

1. Review and update the ORCS Table of Stock Attributes (Table 4 in the ORCS report) to better suit SAFMC-managed stocks.
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3. Determine the appropriate catch statistic for OFL (e.g., mean, median, maximum, minimum, percentile, etc.). Identify the proper OFL scalar range to be applied to different exploitation categories.
4. Recommend a range of scalar values (to apply to OFL) that captures the Council's risk tolerance level for assigning ABC values for low risk (high productivity), moderate risk (moderate productivity), and high risk (low productivity) stocks.
5. Create a report to summarize and document workgroup findings.

3. Apply the ORCS Approach

3.1. Documents

Attachment 1. April 2012 SSC Report
Attachment 2. ORCS Report
Attachment 3. ABC Control Rule
Attachment 4. ABC Recommendations
Attachment 5. SSC ORCS Group Summary
Attachment 6. Preliminary ORCS Application
Attachment 7. Preliminary ORCS Application Details
Attachment 8. MRAG PSA results
Attachment 9. NMFS PSA results
Attachment 10. MRAG PSA Gulf Results
Attachment 11. ORCS Application Workshop Draft
Attachment 12. ORCS Application Workshop Draft worksheet
Attachment 13. Preliminary evaluation of effort trends

3.2. Overview

The objective of the second workshop was to address Terms of Reference 3 and 4, which were not considered during the first workshop. Since there have been no changes in the ORCS method since the first workshop, and the intent of the workshop is to continue the work started previously we ask readers to refer to the ORCS workshop 1 report for details and full documentation on how Terms of Reference 1 and 2 were addressed.

4. WORKSHOP MEETING SUMMARY:

The workgroup reviewed progress and results from the first workshop and proceeded to address the remaining Terms of Reference:

3. ***Determine the appropriate catch statistic for OFL (e.g., mean, median, maximum, minimum, percentile, etc.). Identify the proper OFL scalar range to be applied to different exploitation categories.***

The group had an extensive discussion regarding the difficulties associated with choosing a catch statistic that would be appropriate for the full suite of stocks being considered for application of the ORCS method. Initial suggestions focused on using the median landings over a set time period. However, after further inspection the median was considered inadequate to represent the high fluctuation in landings—i.e., to appropriately capture the range of occasional high landings—and the group reached consensus on using the maximum catch over the period 1999-2007. The time period was chosen to (1) be consistent with the period of landings used in the Council's Comprehensive ACL Amendment, and (2) to minimize the impact of recent regulations and the economic down turn on the landings time series.

A few special case stocks had different landings time periods used for the catch statistic. Please refer to the table below for the time periods used for these stocks and to the April 2010 SSC meeting report for a description of the rationale used to choose the time periods.

Stock	Landings Period
Wahoo	1994-2003
Tomtate	1999-2007
Dolphin	1994-1997

The group also had extensive discussion regarding selection of a scalar to be associated with the catch statistic. Scalars should help capture the range of variability in landings so managers do not take action on random landings fluctuations or measurement error by interpreting them as overexploitation.

After much debate the group reached consensus on a scalar scheme consistent with the Risk of Overexploitation categories assigned to stocks in the first ORCS workshop:

Risk of Overexploitation	Scalar Value
Low	2
Moderate Low	1.75
Moderate	1.5
Moderate High	1.25

<u>Important Note</u>: given characteristics specific to South Atlantic stocks the group agreed that the "catch statistic × scalar" metric developed in this stage of the process may not represent a reliable proxy for OFL and, therefore, would not be called OFL or used as such.

The resulting values of "catch statistic × scalar" metric for the South Atlantic stocks in question can be found in the table below:

			Scalar X Catch Stats			
Stock	Risk of OverExpl.	Max. Catch	2	1.75	1.5	1.25
Bar Jack	Low	2.303442733	4.61			
Dolphin	Mod Low	1.54699779		2.71		
Margate	Moderate	2.731488304			4.1	
Red Hind	Moderate	1.131450531			1.7	
Cubera Snapper	Moderate	1.440948167			2.16	
Wahoo	Moderate	1.993493971			2.99	
Blue runner	Moderate	1.807000846			2.71	
Yellowedge Grouper	Moderate	1.648473237			2.47	
Blueline tilefish	Moderate	1.908467571			2.86	
Silk snapper	Moderate	2.124247472			3.19	
White Grunt (South)	Moderate	0.990796505			1.49	
Atlantic Spadefish	Moderate	2.743772279			4.12	
Gray snapper	Moderate	1.525352698			2.29	
Lane snapper	Moderate	1.460420169			2.19	
Rock Hind	Mod High	2.377527761				2.97
Tomtate	Mod HIgh	1.334877919				1.67
Hogfish	Mod HIgh	1.340823933				1.68
White Grunt (North)	Mod HIgh	0.990796505				1.24
Scamp	Mod High	1.332317715				1.67
Gray triggerfish	Mod HIgh	1.325207325				1.66

4. Recommend a range of scalar values (to apply to OFL) that captures the Council's risk tolerance level for assigning ABC values for low risk (high productivity), moderate risk (moderate productivity), and high risk (low productivity) stocks.

The next step in the process involves obtaining ABC values for each stock by multiplying the "catch statistic × scalar" metric (*here not being called OFL*) by a range of scalar values that reflects the SAFMC's risk tolerance level. After much discussion and input from the Council members participating in the workshop the group consensus was to follow the risk level described by Alternative A in the table below:

Risk level	**Alternative A**	**Alternative B**	**Alternative C**	**Alternative D**
Low risk (high productivity)	0.75 x OFL	0.75 x OFL	0.90 x OFL	0.90 x OFL
Moderate risk (moderate productivity)	0.75 x OFL	0.75 x OFL	0.75 x OFL	0.80 x OFL
High risk (low productivity)	0.75 x OFL	0.50 x OFL	0.50 x OFL	0.70 x OFL

The resulting interim ABC values obtained (i.e., catch statistic × scalar × 0.75) for each stock can be found in the table below:

		ORCS
Stock	Risk of OverExpl.	ABC
Bar Jack	Low	3.4552
Dolphin	Mod Low	2.0304
Margate	Moderate	3.0729
Red Hind	Moderate	1.2729
Cubera Snapper	Moderate	1.6211
Wahoo	Moderate	2.2427
Blue runner	Moderate	2.0329
Yellowedge Grouper	Moderate	1.8545
Blueline tilefish	Moderate	2.1470
Silk snapper	Moderate	2.3898
White Grunt (South)	Moderate	1.1146
Atlantic Spadefish	Moderate	3.0867
Gray snapper	Moderate	1.7160
Lane snapper	Moderate	1.6430
Rock Hind	Mod High	2.2289
Tomtate	Mod HIgh	1.2514
Hogfish	Mod HIgh	1.2570
White Grunt (North)	Mod HIgh	0.9289
Scamp	Mod High	1.2490
Gray triggerfish	Mod HIgh	1.2424

However, the group also recognized that further input from the full Council would be necessary before a final decision on ABC scalar values could be obtained. The group proposes the Alternative A risk tolerance scheme as a starting value but suggests that the Council evaluate this issue in more detail at its June meeting and provide further guidance to the SSC on the risk tolerance level to be adopted.

Workshop adjourned.