

**Standing and Special Reef Fish SSC Meeting Summary**  
**Gulf Council Conference Room**  
**Tampa, Florida**  
**October 12-13, 2011**

The agenda was adopted with the review of the gray triggerfish update assessment deferred until the last day of the meeting (later deferred to the next SSC meeting). The summary minutes of the July 26-29, 2011 Standing and Special Reef Fish SSC meeting were adopted as written.

**Review of the SEDAR Assessment Schedule**

Doug Gregory noted that the SSC had earlier set ABC for king mackerel through 2013 based on the 2008 benchmark assessment and with the understanding that a king mackerel benchmark assessment was on the SEDAR schedule for 2012. However, the 2012 assessment has been removed from the SEDAR schedule and has not been rescheduled. He noted that the 2008 assessment had treated the Gulf and South Atlantic king mackerel groups separately, and had excluded age data taken from the mixing zone. He noted that one of the recommendations of the SEDAR Review Panel was for king mackerel could be modeled as a single population (at least as an alternative to the 2-stock approach) similar to how black grouper was modeled. This would require a new benchmark assessment since it would involve a new model for the stock. Luiz Barbieri stated that the 2-stock model currently used utilized a VPA procedure in which the ability to evaluate uncertainty was limited. However, Shannon Calay responded that new technology has been developed to evaluate uncertainty regarding the number of fish at age and the fishing mortality rate in the terminal year.

Doug Gregory reminded the SSC that they had prioritized the assessments currently scheduled for 2013 at their last meeting. Gray snapper was given a low priority, scamp, Spanish mackerel and cobia were given medium priority, and red grouper and gag were given high priority. Clay Porch suggested that a benchmark assessment for king mackerel would be appropriate given the movement toward using Stock Synthesis, but he felt that 2014 would be more doable than 2013.

**The SSC moves to have SEDAR conduct a Gulf and Atlantic king mackerel benchmark assessment in 2013 or 2014.**

Motion passed 13-0 with two abstentions.

Will Patterson asked if the SEDAR Steering Committee had considered the SSC's request to have an SSC representative on the SEDAR Steering Committee. Steve Bortone responded that he had brought the request to the SEDAR Steering Committee, but the Committee was not agreeable to the suggestion. Ryan Rindone added that the Committee has discussed forming a technical advisory committee that would include the SSC Chair or designee, to project assessment needs for the next two years.

A question came up regarding the inclusion of "DWH issues" in 2012 on the tentative SEDAR schedule. Ryan Rindone explained that there are plans to hold a procedural workshop on how the Deepwater Horizon spill is affecting stock assessments, and that the Science Center is being consulted on how the workshop should be conducted.

Clay Porch noted that while not all stock assessments would be converted to the Stock Synthesis model, about 50% of the Gulf of Mexico stocks were moving toward the use of Stock Synthesis for future stock assessments. The SSC asked for a list of stocks that would be converted to Stock Synthesis. That list was later provided by Dr. Porch via e-mail as follows:

These are the stocks we plan to migrate to Stock Synthesis at the next benchmark. We have already assessed tilefish and yellowedge grouper using Stock Synthesis. We may also experiment with Stock Synthesis for red snapper and other stocks, but it is not clear that we will make that leap for a variety of technical reasons.

Stock	Current model	Next benchmark
Gray triggerfish	SSASPM	?
Vermilion snapper	SSASPM	?
Gag	CASAL	2013
Red grouper	ASAP	2013
Cobia	BAM	2012
Spanish mackerel	BAM/VPA	2012
King mackerel	VPA	2014

### **Review of Vermilion Snapper Update Assessment**

Brian Linton presented the vermilion snapper update assessment, which consisted of three runs. A continuity run using SSASPM was conducted using exactly the same data inputs and methodology used in the 2009 SEDAR benchmark assessment (except for updating of data streams). One concern about this methodology is that shrimp bycatch is set at the annual value for 1981-2010. This ignores recent declines in shrimp effort. Therefore, a second run, referred to as the alternative shrimp bycatch run, included shrimp fishery effort data in the model which allows a decline in effort and identifies shrimp effort specifically for depths greater than 10 fathoms. This alternative run explored using Gulfwide shrimp effort vs. using shrimp effort from the eastern Gulf. A third run was made using the Stock Synthesis model, but this was exploratory in nature and not considered part of the update assessment. Stock Synthesis will be used as the base model in the next benchmark assessment.

Both the base continuity run and the alternative shrimp bycatch runs showed a good fit to the data, and nearly identical estimates of current spawning stock biomass and  $F_{MSY}$ . However, the alternative shrimp bycatch runs produced a smaller spawning stock biomass at  $MSY$ , and a smaller estimate of  $F_{current}$ . All of the model runs showed the  $F_{current}/F_{MSY}$  ratio to be below the overfishing threshold, and the  $SSB_{current}$  to be above  $SSB_{MSY}$  and above the overfished threshold.

SSC members felt that the alternative shrimp bycatch run was the more realistic model, but questioned whether they could use it since it did not meet the definition of a strict update. SSC members felt that enough information was presented to justify moving away from the continuity model. However, Clay Porch cautioned that there has not been a full review of the changes in the alternative run. He also noted that the distribution of vermilion snapper recruits relative to shrimp effort or depth range has not been examined.

The SSC accepts the 2011 vermilion snapper update assessment, recommends that the preferred model be the alternative shrimp effort gulf-wide model configuration, and use that as the base run for the 2011 vermilion snapper update assessment.

Motion passed 13-2.

The SSC applied Tier 1 of the new ABC Control Rule to the assessment. After assigning scores to the elements of the P\* table, a score of P\* = 0.398 resulted, indicating that, within a range of 30% to 50%, a probability of 39.8% was an appropriate level of risk of overfishing due to scientific uncertainty in assessment.

Vermilion Snapper - October 2011									
				$P^* = \exp \left[ -a - b \sum_{i=Dimension} Dimension\ score_i \right]$		<b>P* = 0.398</b>			
				$S_M = 3.998$					
Maximum Risk <b>0.50</b>				a = <b>0.693</b>		$a = -\ln(0.45)$		Element scores are scaled from zero to a maximum.	
Minimum Risk <b>0.30</b>				b = <b>0.1277703</b>		$b = -\frac{a + \ln(0.15)}{S_M}$		In this example the maximum is 2.00, but this can be changed	
				$S_M = \text{highest possible score}$					
Dimension	Dimension Wt	Tier No.	Tier Wt	Element Score	Element	Score it	Element Result	Tier Result	Dimension Result
Assessment Information	1	1	1	0.00	Quantitative, age-structured assessment that provides estimates of exploitation and biomass; includes MSY-derived benchmarks.		0.67	0.67	0.67
				0.67	Quantitative, age-structured assessment provides estimates of either exploitation or biomass, but requires proxy reference points.	x			
				1.33	Quantitative, non-age-structured assessment. Reference points may be based on proxy.				
				2.00	Quantitative assessment that provides relative reference points (absolute measures of status are unavailable) and require proxies.				
Characterization of Uncertainty	1	1	.333	0.0	The OFL pdf provided by the assessment model includes an appropriate characterization of "within model" and "between model/model structure" error. The uncertainty in important inputs (such as natural mortality, discard rates, discard mortality, age and growth parameters, landings before consistent reporting) has been described with using Bayesian priors and/or bootstrapping and/or Monte Carlo simulation and the full uncertainty has been carried forward into the projections.		1.33	0.4429	1.11
				0.67	The OFL pdf provided by the assessment model includes an approximation of observation and process error. The uncertainty in important inputs (such as natural mortality, discard rates, discard mortality, age and growth parameters, landings before consistent reporting) has been described with SENSITIVITY RUNS and the full uncertainty has been carried forward into the projections.				
				1.33	The OFL pdf provided by the assessment model includes an incomplete approximation of observation and process error. The uncertainty in important inputs (such as natural mortality, discard rates, discard mortality, age and growth parameters, landings before consistent reporting) has been described with SENSITIVITY RUNS but the full uncertainty HAS NOT been carried forward into the projections.	x			
				2.0	The OFL provided by the assessment DOES NOT include uncertainty in important inputs and parameters.				
		2	.333	0.0	Retrospective patterns have been described, and are not significant.	x	0.0	0	
				1.0	Retrospective patterns have been described and are moderately significant.				
				2.0	Retrospective patterns have not been described or are large.				
		3	0		NOT USED		0	0	
						z			
		4	.333	0.0	Known environmental covariates are accounted for in the assessment.		2.0	0.666	
				1.0	Known environmental covariates are partially accounted for in the assessment.				
				2.0	Known environmental covariates are not accounted for in the assessment.	x			

The SSC discussed making changes to the elements for environmental covariates. However, it was noted that the ABC control rule has been accepted by the Council in its current format and forwarded to NMFS for approval. Therefore, any changes now need to be made through the framework procedure.

The assessment projections for OFL and the probability distribution functions for determining yield at a given P\* were initially presented in terms of total removals, including shrimp bycatch.

In order to provide OFL and ABC for the directed fishery, bycatch removals needed to be excluded from the probability distribution functions. Since the alternative model run with declining shrimp effort was used, bycatch removals had to be calculated separately for each year. The SSC deferred making a recommendation for OFL and ABC until the NMFS/SEFSC staff was able to do the calculations and provide revised outputs for just the directed fishery removals. This occurred on the second day, and revised status determination criteria were provided for the directed fishery (Table 1). After applying the  $P^*$  of 39.8% to the revised probability function, the SSC passed the following motion.

**The SSC moves to set the ABC for vermilion snapper at the  $P^*$  level of 0.398, which corresponds to a probability of overfishing of 39.8% as applied to the OFL PDFs for years 2012-2014. Thereafter, OFL will be set at equilibrium MSY (equilibrium yield at  $F_{30\% SPR}$ ).**

	OFL	ABC ( $P^* = 39.8\%$ )
<b>2012</b>	<b>6.66mp</b>	<b>6.48mp</b>
<b>2013</b>	<b>5.60mp</b>	<b>5.37mp</b>
<b>2014</b>	<b>5.02mp</b>	<b>4.78mp</b>

Motion passed unanimously.

The value for “equilibrium MSY (equilibrium yield at  $F_{30\% SPR}$ )” is 4.27 million pounds.

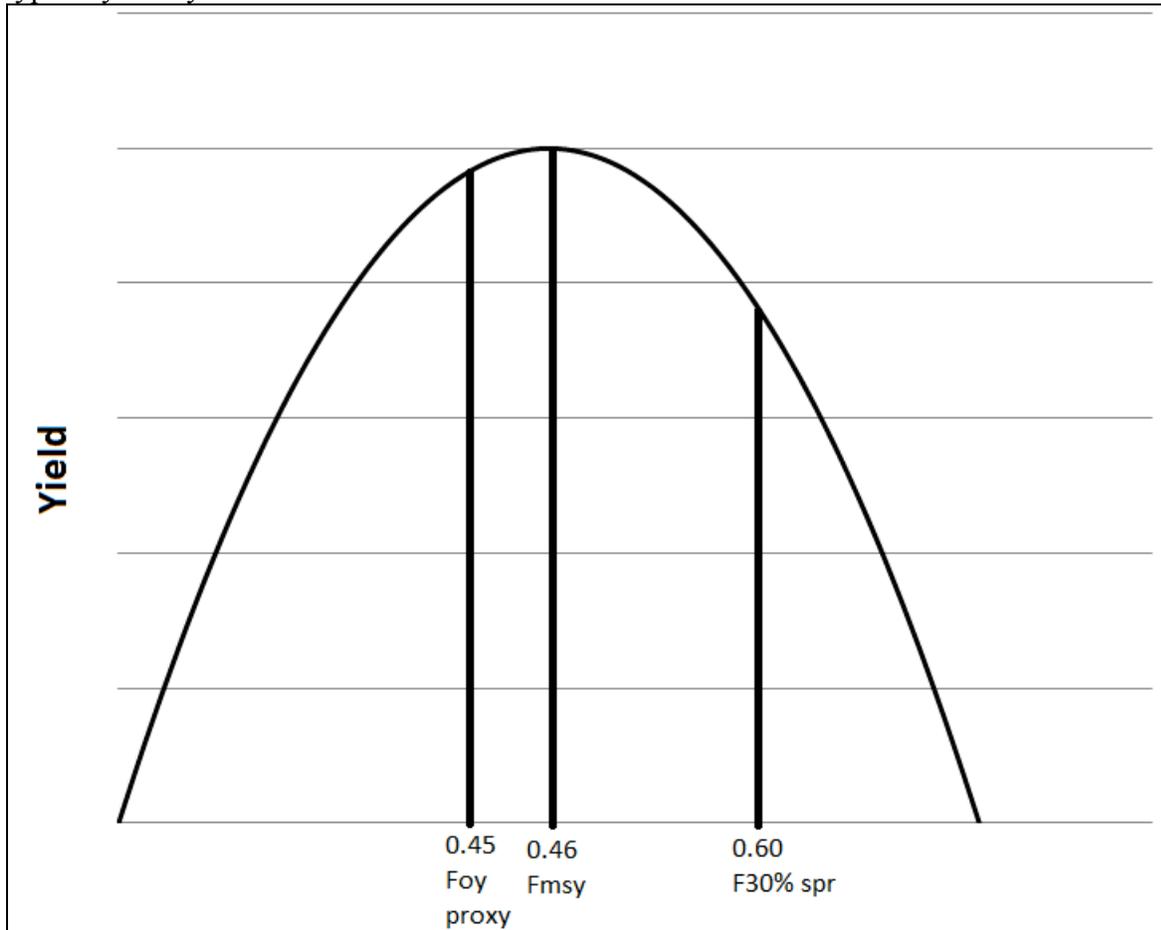
*Note: The vermilion snapper OFL and ABC proposed in the Generic Annual Catch Limits/Accountability Measures Amendment, based on Tier 3a, are OFL = 4.08 million pounds, and ABC = 3.42 million pounds. These values would be replaced by the OFLs and ABCs in the above motion.*

The SSC noted that the yield stream resulted in declining ABCs over time. This is because the stock is currently above its OY biomass level. If fished at the ABC yield each year, the stock would be fished down to its equilibrium ABC level. However, the annual catch of vermilion snapper has never been higher than about 3.5 million pounds.

It was noted that the directed fishery values for equilibrium OY and equilibrium MSY in Table 1 show OY at a higher value than MSY (4.56 mp vs. 4.27 mp), the opposite of what would be expected. It was explained by Brian Linton that this was because of a difference between the proxies used for  $F_{MSY}$  and  $F_{OY}$ , and the estimate of true  $F_{MSY}$  from the assessment model. The proxy for  $F_{MSY}$  is  $F_{30\% SPR}$ , which is a numerical value of 0.60. The  $F_{OY}$  proxy is 75% of that, or 0.45. The estimate of true  $F_{MSY}$  in the assessment model is 0.46, which is much closer to the  $F_{OY}$  proxy than the  $F_{30\% SPR}$ . Thus, the  $F_{OY}$  proxy is higher on the calculated yield curve and results in a higher yield than  $F_{30\% SPR}$  (Figure 1). This brought up a question of whether the actual estimate of  $F_{MSY}$  should have been used rather than the  $F_{30\% SPR}$  proxy. The SSC rejected the use of the actual estimate for two reasons. First, changing from a proxy to the actual  $F_{MSY}$  estimate changes the input parameters and is not allowed under a strict update assessment. Second, the estimate of  $F_{MSY}$  is dependent on the steepness value used in the spawner-recruit curve. The model had produced an unusually high steepness value, bringing into question the accuracy of

the  $F_{MSY}$  estimate. The high steepness allows the model to better fit the input data, but it is an issue that should be reevaluated in the next benchmark assessment.

Figure 1. Relative yields for  $F_{30\% SPR}$  ( $F_{MSY}$  proxy), estimate of true  $F_{MSY}$ , and  $F_{OY}$  proxy. The yield curve shown is a hypothetical example for illustrative purposes. Actual yield curves are typically not symmetrical.



The next vermilion snapper assessment is tentatively on the SEDAR schedule for 2013, but with the type of assessment to be determined. In order to proceed with the plans to convert the vermilion snapper assessment to the Stock Synthesis model, the next assessment will have to be a benchmark assessment since standard and update assessments do not allow a change in the model used.

**The SSC moves that the vermilion snapper assessment currently scheduled for 2013 should be a benchmark assessment.**

Motion passed 14-1.

## Discussion of Red Snapper Update

Sean Powers stated that the SSC was being asked to review its ABC recommendations at its next meeting in light of new information that the Southeast Fisheries Science Center will present. Steven Atran added that the reason for the review is because there was an overage in 2011, and the Regional Office has stated that they will not authorize an increase in the TAC for 2012 until the effects of the overage have been evaluated by the SSC. The SSC has recommended increases in TAC through 2014, but that is currently on hold. Clay Porch reviewed the types of information that the Science Center planned to provide:

- Updated CPUE indices of abundance at least through 2010, and possibly most of 2011
- Updated survey indices of abundance at least through 2010, and possibly most of 2011
- Updated catch histories
- Updated age composition data for the commercial and recreational fisheries
- Probability density functions using model averages
- A possible update of the Catchem model

It was suggested that one way in which the SSC could use this information is to compare projections from the updated data with earlier projections for 2010 and onward.

### **Review of Greater Amberjack OFL and ABC Recommendations**

The NMFS Regional Office and the Council have asked for clarification as to whether the SSC accepted or rejected the greater amberjack assessment in March, given that the SSC stated that the assessment was the best scientific information available, but then not using to to set OFL and ABC. To assist the SSC in reviewing its decision, the Regional Office provided three questions for the SSC to consider.

1. Based on the most recent greater amberjack stock assessment, did the SSC conclude that fishing mortality and biomass estimates were appropriate for determining the status of the stock? If yes, is the stock overfished and undergoing overfishing?

SSC members noted that in March 2011 they passed a motion that the 2011 SEDAR Greater Amberjack update presented is the best scientific information available. However, that motion was made before receiving guidance from NOAA General Counsel on when and how to use the finding of best scientific information. Some SSC members felt that the SSC's intent in making the motion had been to state that the information was the best available, but that it was not intended to reflect on whether the information was adequate for making specific inferences. The SSC did not have agreement on this issue however. One SSC member felt that they should have rejected the assessment as not useful to generate management advice. Other SSC members felt that with their motion they had in fact accepted the assessment with respect to stock status, but they had not accepted the yield projections which were done with a different program. Other SSC members felt that the assessment was adequate to determine that the stock was overfished and undergoing overfishing, but that there was not a high degree of confidence as to the degree of overfished/overfishing status.

It was suggested that the motion on page 4 of the March 2011 SSC summary minutes made it clear that the SSC considered the stock to be overfished, since the motion stated in part, “Given that the Greater Amberjack assessment reports that we are currently in an overfished position”.

Shepherd Grimes felt that the summary report did not provide the whole picture, noting that there were discussions about mortality and other factors that were not in the report. He felt that this pointed out the need for verbatim minutes of SSC meetings.

2. The SSC recommended using Tier 3b from the ABC control rule for setting greater amberjack ABC. Tier 3b states:

<b>Tier 3b Acceptable Biological Catch Control Rule</b>	
Condition for Use <sup>Note 1</sup>	No assessment is available, but landings data exist. Based on expert evaluation of the best scientific information available, recent landings may be unsustainable.
OFL	Set the overfishing limit equal to the mean of landings. A time series of at least ten years is recommended to compute the mean of recent landings, but a different number of years may be used to attain a representative level of variance in the landings.
ABC	Set acceptable biological catch using a buffer from the overfishing limit that represents an acceptable level of risk due to scientific uncertainty. The buffer will be predetermined for each stock or stock complex by the Council with advice from its SSC as: <ol style="list-style-type: none"> <li>a. ABC = 100% of OFL</li> <li>b. ABC = 85% of OFL</li> <li>c. ABC = 75% of OFL (default)</li> <li>d. ABC = 65% of OFL</li> </ol>

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ven that the SSC accepted the GAJ stock assessment update as the best available information, is it appropriate to use Tier 3b given that it states 'no assessment was conducted'?

One SSC member stated that the logic for the SSC’s recommendations was laid out in the SSC summary report motions. The SSC neither accepted nor rejected the assessment’s usefulness for management advice, but evaluated it with respect to whether the information could be applied to the ABC control rule on a tier by tier basis. Neither Tier 1 nor Tier 2 could be applied because both of those tiers require a probability distribution function, and the SSC did not have confidence in the probability distribution functions generated for the assessment. That left Tier 3.

The statement in the above question that Tier 3b states “no assessment was conducted” is incorrect. Both Tier 3a and Tier 3b state in their condition for use that “no assessment is available”. An assessment was conducted, but the probability distribution function generated was not useful for management purposes. Therefore, the assessment was not available for application to Tiers 1 or 2. SSC members felt that, under the expert evaluation provisions of Tiers 3a and 3b, recent landings may be unsustainable, making Tier 3b the appropriate tier to work with.

SSC members acknowledged that there are problems with the wording in the ABC control rule and that revisions will be needed. Tier 2, in particular, is not useful as currently written.

3. If the assessment was accepted and concluded overfishing was occurring, is it appropriate to use 75% of recent average landings during a time period when overfishing was occurring?

Under Tier 3b of the ABC control rule, the Council selected 75% of recent average landings as the default level of risk to use, unless there is rationale for using a different level. This is a policy decision that was made by the Council, not the SSC.

However, one SSC member felt that the ABC that resulted from the Tier 3b control rule is not consistent with overfishing. She noted that OFL, which is set at the mean of recent years, was based on years when overfishing was already occurring.

After reviewing and discussing the Regional Office questions, the SSC passed the following motions in order to clarify its position.

**The SSC moves to accept the current stock status results from the 2011 update of greater amberjack, including the  $F/F_{MSY}$  and  $B/B_{MSY}$ .**

Motion passed 7-6 with 2 abstentions.

**The SSC moves to reject the projections from the 2011 greater amberjack update for the purposes of developing management advice, specifically setting OFL and ABC.**

Motion passed 14-0 with 1 abstention.

### **SERO Methodology for Calculating the Recreational Red Snapper Season**

Nick Farmer gave a presentation reviewing the methods used for determining the length of the recreational red snapper season. He described two models. One is based only on previous landings rates and average weight of a red snapper. This model assumes that the pace of red snapper landings (in numbers) will remain consistent with 2009 levels, but that the average weight landed per day will increase. The other model adds trends in fishing effort. It allows effort to either saturate at peak historic levels or continue to increase as the season length is reduced beyond the shortest observed. Landings data for 2011 is not yet complete. However, at a projected average weight of 6.22 pounds per fish, the first model is currently projecting a 36 day season. The second model is projecting a 38 day season if there is no increase in fishing effort, or 36 days if fishing effort increases in response to the shortened season. The models are subject to a number of challenges including:

- Reliance on historical landings/effort
- Increasing TAC...and CPUE
- Increasing average size
- Changes in participation
- Effort compression

State compatibility  
No 'in-season' data  
Effect of the 2010 Deepwater Horizon oil spill

Following the presentation several comments were made by SSC members.

- A suggestion was made to include the variance of the red snapper weights in the calculations in order to show the uncertainty in the results.
- A suggestion was made to compare the number of trips during the closed season to the number when that time of year was open, on the basis that it could show if effort has always been high during that period.
- It was noted that the red snapper stock has an expanding range, creating new opportunities for anglers. Thus, CPUE changes may not occur all over the distribution area.
- Setting the closing date in advance may have an effect of the amount of fishing effort.
- It was noted that fishing to target red snapper is different from fishing that catches red snapper without being targeted.
- Commercial fishing behavior has not been incorporated into the analysis.
- A suggestion was made to evaluate the eastern and western Gulf separately since that is how the stock assessment is done.
- A suggestion was made to see if the number of anglers per vessel changes between open and closed seasons.
- A suggestion was made to look at external factors such as the average price of fuel, or the accumulated cyclone index.

### **Review of Greater Amberjack Decision Tools for Commercial and Recreational Management Measures**

Nick Farmer presented a review of the Excel spreadsheet decision tools developed to evaluate management measures for the commercial and recreational greater amberjack fisheries. In addition, John Froeschke presented an alternative decision spreadsheet for the commercial fishery that estimated uncertainty of the model projections and incorporated longer historical time series into projection models. Mike Larkin also presented a report on evaluating changes in yield per recruit and spawning potential ratio to changes in size limits or fishing mortality. He evaluated minimum size limits of 30 to 36 inches, and found that yield per recruit is highest at the smallest size limit (30 inches), but SPR is highest at the largest size limit (36 inches). The decision models assume that past performance is good predictor of future trends, but have several sources of uncertainty, including extrapolated time periods, changes in economic conditions, weather events, changes in CPUE, response of fishers to changes, effort shifting, non-compliance, and changes in average size of red snapper.

SSC members had limited responses to the presentations. Comments were directed toward using annual catch targets, having a safety factor to prevent overages, and concerns over the application of a deterministic growth function with uncertain parameters as input. A suggestion was made to put consideration of these approaches into the agenda for the next SSC meeting, because they felt they had not had adequate time to review the decision tools and the supplementary reports.

## **Preliminary 2012 SSC schedule**

Steven Atran reviewed the tentative SSC schedule for 2012. There are five meetings scheduled, each held three weeks before a Council meeting:

January 10 -13           (2 SSC members report conflicts as of 10/19/11)  
March 27 – 29           (2 SSC members report conflicts as of 10/19/11)  
May 29 – 31  
July 31 – August 2      (1 SSC member reports conflict as of 10/19/11)  
October 9 – 11

All meetings will be held at the Council office in Tampa, Florida. Each meeting is scheduled to run for 3 days (Tuesday – Thursday), and from 1:00 pm on the first day to noon on the last day. If a longer meeting is needed, Friday will be added.

Some SSC members reported conflicts as shown above. A final decision has not been made except for the January 2012 dates.

SSC members felt that, even with a 1:00 start, some members have to come in the night before or get up very early in order to make connections for a 1:00 meeting, and suggested that it would be more efficient to start meetings in the morning rather than at mid-day. Members agreed with ending the meeting at noon on the last day. If the meeting is extended too far into the afternoon, options for return flights become limited.

**By consensus the SSC requests that meetings start at 8:30 or 9:00 on the first day rather than 1:00.**

**Several SSC members stated that they are not receiving their travel authorizations far enough in advance, and they need to receive them earlier.**

**One SSC member noted that the SSCs of other Councils travel from city to city for their meetings, and suggested that the Council SSC do the same.** Steven Atran responded that such travel would probably not be possible due to budget constraints.

SSC members felt that the January meeting will likely be in the format of a workshop, and felt that it would be more effective for Science Center staff to be able to go back to their offices to work on analysis requests from the SSC. If it would save money on rental cars, the meeting could be held in a hotel meeting room rather than at the Miami Laboratory. Steven Atran said that he would ask for a cost analysis, but was doubtful it would be approved.

**By consensus, the SSC requests that the January SSC meeting be held in Miami.**

## **Other Business**

Steven Atran reviewed a memo from the South Atlantic Council asking that the Gulf Council consider forming a joint committee to develop data collection for an informative goliath grouper

assessment, and a joint committee to consider creating a joint South Florida FMP. One SSC member noted that the goliath grouper SEDAR assessment report included a list of recommendations. Luiz Barbieri stated that Florida FWC is considering formation of a working group to evaluate where to go regarding goliath grouper. He observed that some of the data limitations will be costly to resolve. He added that FWC would work with the Southeast Fisheries Science Center and with the Councils to collect input from experts and from stakeholders.

Doug Gregory stated that the purpose of a South Florida FMP would be to manage trans-boundary stocks such as black grouper.

The SSC did not address the following agenda items.

Review of Gray Triggerfish Update Assessment – This agenda item was deferred until the next Reef Fish SSC meeting because the assessment was not received in advance of the SSC meeting, and because there was insufficient time to review the assessment during the meeting.

Report on October 4-6, 2011 National SSC meeting in Williamsburg, VA – There was insufficient time for this agenda item.

Summary of September 15, 2011 Ecosystem SSC Webinar - There was insufficient time for this agenda item. However, the Ecosystem SSC Strategic Report was placed in the meeting folder on the FTP server for SSC members to review.

**Standing SSC Members**

Sean Powers, Chair  
Benjamin Blount, Vice-chair  
Luiz Barbieri  
Harry Blanchet  
Shannon Cass-Calay  
Douglas Gregory

Walter Keithly  
Kai Lorenzen  
Will Patterson  
Greg Stunz  
John Ward

**Special Reef Fish SSC**

Jason Adriance  
Barbara Dorf  
Bill Lindberg  
John Mareska

**Council Members**

Douglas Boyd  
Bob Gill

**Council Staff**

Steven Atran  
Charlotte Schiaffo  
Steve Bortone  
Karen Burns  
John Froeschke  
Rick Leard  
Ryan Rindone  
Carrie Simmons

**Others Present**

Shepherd Grimes, NMFS  
Nick Farmer, NMFS/SERO  
Mike Larkin, NMFS/SERO  
Rich Malinowski, NMFS/SERO  
Jeff Isely, NMFS/SEFSC  
Brian Linton, NMFS/SEFSC  
Clay Porch, NMFS/SEFSC  
Chelsey Campbell  
Michael Dickson  
Claudia Friess  
Frank Helies  
Christopher Monk

Kimberly Orren  
Marie Pascale  
Taryn Rainer  
Jason Seitz

Table 1. Required SFA and MSRA evaluations for alternative run with Gulfwide shrimp effort. SSB measures are in eggs.

Criteria	Definition	Total Removals	Directed Yield
<b>Mortality Rate Criteria</b>			
$F_{MSY}$	SEDAR 9 used $F_{SPR30\%}$ as proxy	0.76	0.60
MFMT (Amend 23)	$F_{SPR30\%}$	0.76	0.60
$F_{OY}$ (Amend 23)	75% of $F_{SPR30\%}$	0.57	0.45
$F_{CURRENT}$	$F_{2010}$ (Total Removals), 2007-2009 mean F (Directed Yield)	0.24	0.34
$F_{CURRENT}/MFMT$	$F_{2010}/F_{SPR30\%}$ (Total Removals), 2007-2009 mean F/ $F_{SPR30\%}$ (Total Removals)	0.32	0.57
Base M	$M = 0.25$ all ages	0.25	0.25
<b>Biomass Criteria</b>			
$SSB_{MSY}$	Equil. egg production @ $F_{SPR30\%}$	6.73E+13	9.32E+13
MSST	$(1-M) * SSB_{SPR30\%}$ where $M=0.25$	5.05E+13	6.99E+13
$SSB_{CURRENT}$	$SSB_{2010}$	1.08E+14	1.08E+14
$SSB_{CURRENT}/SSB_{MSY}$	$SSB_{2010}/SSB_{SPR30\%}$	1.60	1.16
$SSB_{CURRENT}/MSST$		2.14	1.54
Equilibrium MSY	Equilibrium Yield @ $F_{SPR30\%}$	7.35 mp (WW)	4.27 mp (WW)
Equilibrium OY	Equilibrium Yield @ 75% of $F_{SPR30\%}$	7.31 mp (WW)	4.56 mp (WW)
OFL (Total Removals)	Annual Yield @ MFMT		
	2012	13.55 mp	6.66 mp
	2013	10.84 mp	5.60 mp
	2014	9.32 mp	5.02 mp
	2015	8.40 mp	4.69 mp
	2016	7.91 mp	4.51 mp
	2017	7.65 mp	4.40 mp
Annual OY (Total Removals)	Annual Yield @ $F_{OY}$		
	2012	10.84 mp	5.28 mp
	2013	9.46 mp	4.88 mp
	2014	8.63 mp	4.73 mp
	2015	8.08 mp	4.66 mp
	2016	7.75 mp	4.62 mp
	2017	7.57 mp	4.59 mp