

**Standing and Special Reef Fish SSC  
Meeting Summary  
Tampa, Florida  
September 1-2, 2015**

The meeting of the Standing and Special Reef Fish SSC was convened at 1:00 pm on September 1, 2015. The agenda and the minutes of the May 20, 2015 Standing and Special Reef Fish SSC meeting were approved as written. Elections were held for a new Chair and Vice-Chair. The following were elected:

Chair: Luiz Barbieri  
Vice-Chair: Joe Powers

Luiz Barbieri agreed to be the SSC representative at the October 5-8, 2015 Council meeting in Galveston, Texas.

**Discussion of Best Practices for Constant Catch ABC Projections**

Luiz Barbieri presented an overview of options for developing a standardized method to calculate constant catch ABCs:

1. Use equilibrium yield at  $F_{ABC}$
2. Average ABCs over the projection period
3. Pick an ABC value from the ABCs in the projection stream

*Method 1* would produce the most conservative ABC if the yield stream projections under a constant  $F$  are in a declining trend. This would also make it unlikely that future reductions in ABC would be needed, but at a cost of foregone short-term yield. If the yield stream projections are increasing, this method would not be viable because it would set ABC at a high equilibrium level that may not be sustainable at current spawning stock biomass levels.

*Method 2* was suggested as a possibility at the May SSC meeting. Preliminary analysis by the SEFSC suggests that this method would produce an ABC close to what would be obtained from running the projection model in an iterative process. This has the advantage of allowing the SSC to determine a constant catch ABC for any length time period they feel is appropriate (e.g., 3 years, 5 years, 10 years). If this method is used, a constant catch OFL would also need to be calculated, otherwise, the ABC would exceed the OFL in at least one year. This method could be used with either a declining or increasing trend. Some SSC members were hesitant to endorse this method because they felt it was not scientific.

*Method 3* would select to lowest ABC of the three methods considered here in the constant  $F$  yield stream projections for the projection period being considered. This would allow a higher constant catch ABC than under Method 1, but would still result in some forgone yield. This method could be used with either a declining or increasing trend.

Shannon Cass-Calay stated that the SEFSC could produce a constant catch ABC using an iterative projection process, but only after the SSC had selected a base assessment model to use for management. In addition, to run the projections, the SEFSC would need to know what reference points to use (e.g.,  $P^*$ , coefficient of variance, number of years under constant catch), any allocation changes, and how bycatch and discard mortality should be handled. This means that the constant catch projections would need to be brought back to the SSC at a subsequent meeting.

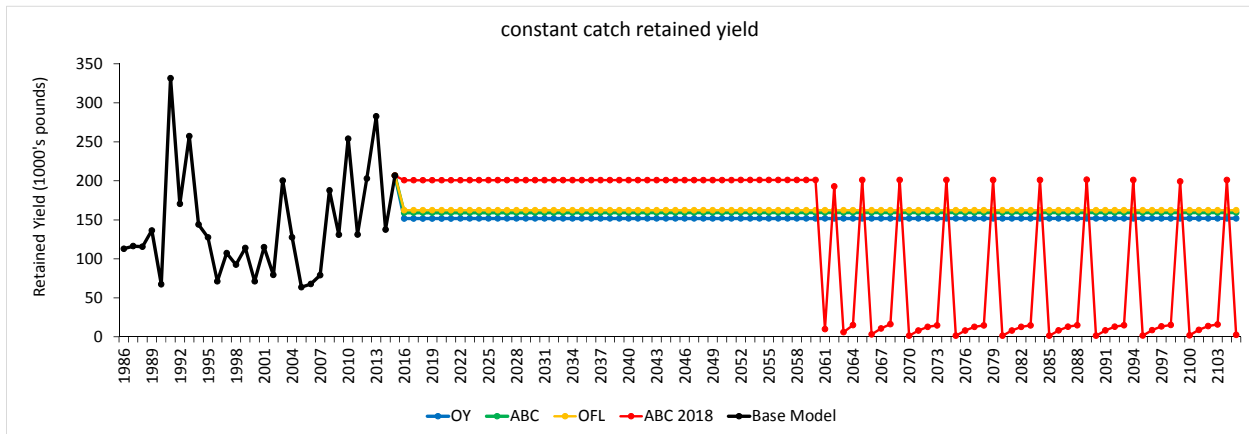
After reviewing the alternative methods and Dr. Cass-Calay's comments, the SSC members agreed that the iterative process described by Dr. Cass-Calay was the most scientifically defensible way to calculate a constant catch ABC and they passed the following motion.

**Without opposition, the Committee recommends that for future stock assessments reviewed by the SSC, once a base model is selected and projection parameters, including  $P^*$  are determined, the SSC will ask for both constant F and constant catch OFL and ABC projections to be computed.**

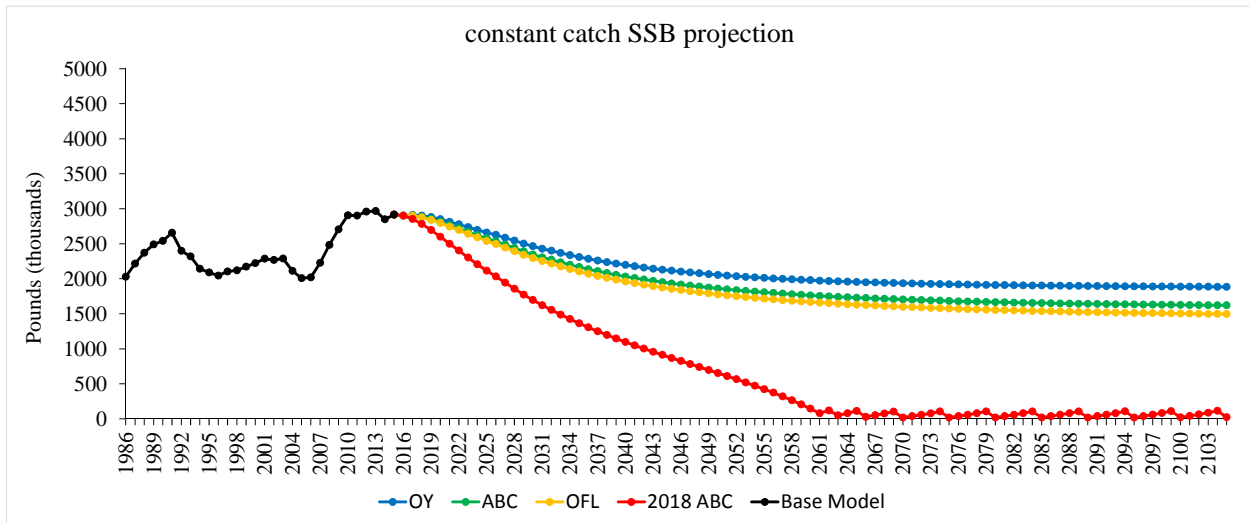
### **Constant Catch ABC for West Florida Shelf Stock of Hogfish**

Dustin Addis presented an analysis of a constant catch projection for the West Florida Shelf Stock of Hogfish based on OFL being set at the equilibrium yield at F30% SPR, and a constant catch ABC from the ABC control rule using a  $P^* = 0.4$  and  $CV = 0.37$ . He noted that these parameters were borrowed from red snapper as the SSC had not developed control rule parameters for hogfish. The results indicated an equilibrium OFL of about 162,000 pounds whole weight, and an equilibrium ABC of about 159,000 pounds whole weight. However, since the SSC had agreed to use the iterative process to calculate a constant catch OFL and ABC, the Committee decided to wait until that analysis becomes available at the next SSC meeting before making a recommendation.

Once the final year of a yield stream projection has been reached, if there is no new assessment or reevaluation of ABC, the ABC stays at the level of the final year of the projection. For a declining yield stream, or one where the equilibrium yield at  $F_{ABC}$  is below that final year, this could eventually lead to overfishing. Mr. Addis also presented the results of exploratory projection runs that assumed the ABC would remain at the levels previously recommended by the SSC for 2016-2018 under a constant F projection. The 2018 ABC recommendation under a constant F scenario is 200,800 pounds whole weight. If that ABC were continued as a constant catch ABC for 2019 and beyond, and the ABC catch level was taken each year, the analysis projects that the stock would collapse in 2061. Thereafter, catches would fluctuate between near-zero and the ABC level (the fluctuations may be an artifact of the model), while spawning stock biomass remains at extremely low overfished levels (Figures 1 and 2).



**Figure 1. Projected retained yields if hogfish ABC remains at the constant F 2018 level of 200,800 pounds whole weight. (Black line is actual retained yield from 1986 – 2014)**



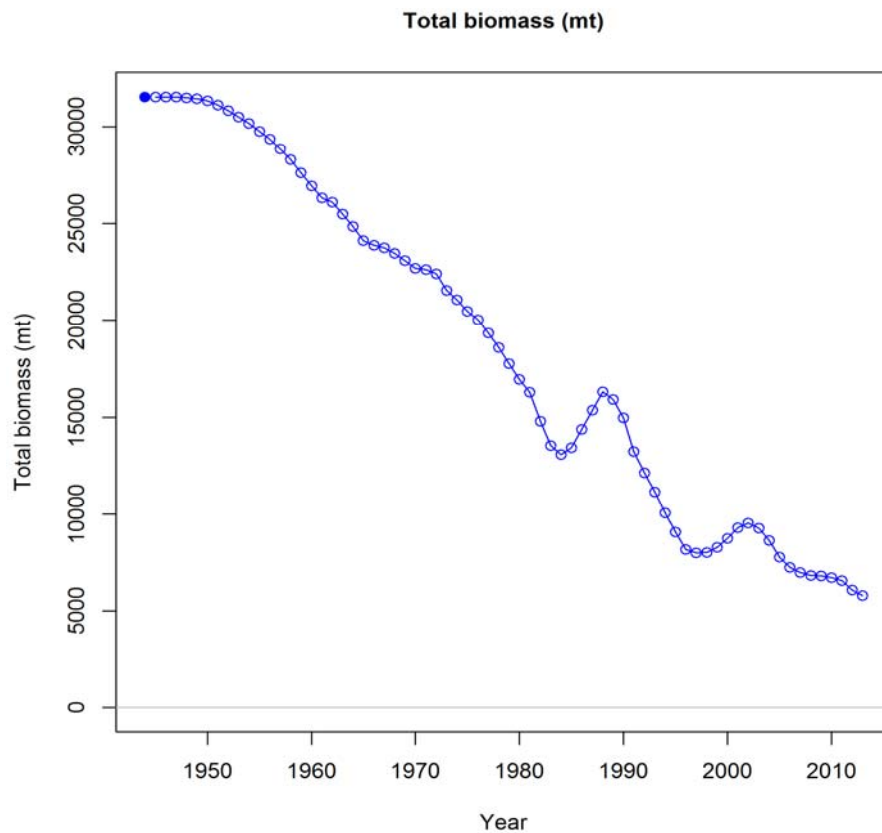
**Figure 2. Projected spawning stock biomass if hogfish ABC remains at the constant F 2018 level of 200,800 pounds whole weight.**

In light of the above concerns, a motion was made to have the ABC revert to the equilibrium yield at  $F_{ABC}$  under such conditions. Some SSC members felt that this would result in wild fluctuations from one constant catch period to the next, or may not be appropriate under some scenarios. Others felt that this would provide an incentive to get an update assessment conducted in a timely manner. The following motion is a recommendation to apply to all short-term ABC projections with a declining yield, not just hogfish.

**By a vote of 18 to 2, the Committee recommends that if at the end of the projection period no new assessment is available, and the equilibrium ABC is below the ABC of the constant catch yield stream, ABC should revert to the equilibrium ABC.**

**SEDAR 43 Gray Triggerfish Standard Assessment**

Jeff Isely presented a review of the gray triggerfish assessment. This assessment was conducted using Stock Synthesis 3, and used data updated through 2013. Rather than use a fixed natural mortality rate (M) for all age groups, this assessment used a Lorenzen function in which M varies with age, averaging  $M = 0.28$ . A new growth curve was calculated, which resulted in larger fish at age-0, a faster growth rate than previously calculated and maximum size achieved at a young age. The assessment used coefficient of variation at age of  $CV = 0.22$ . There was little relationship between age and length beyond age-2. Because of the variable growth, there is no fecundity-age relationship, but there is a length-fecundity relationship which was used in the assessment. Ages were calculated from annual age-length keys. Consistent with previous assessments, landings and indices were calculated for eastern and western regions, but one population model was constructed for the entire Gulf of Mexico. Shrimp effort was used as a proxy for shrimp trawl bycatch. Size composition data from gray triggerfish captured in shrimp trawls suggested that > 90% of fish were age-0. The annual fraction of age-1 fish could not be determined accurately, so all shrimp trawl bycatch fish were entered as age-0. Modeled landings were fit to observed landings using an assumed coefficient of variance of 0.05. Landings showed a good fit to the model, but discards showed a high variability. Most indices of abundance showed a general downward trend, as did the estimate of total biomass (Figure 3).



**Figure 3. Estimated biomass (metric tons) of gray triggerfish by year.**

The fishing mortality rate has been below the overfishing threshold since 2008 (Figure 4), but the spawning stock biomass has continued to be at or below the minimum stock size threshold, and below the MSY biomass level, since at least 1993 (Figure 5).

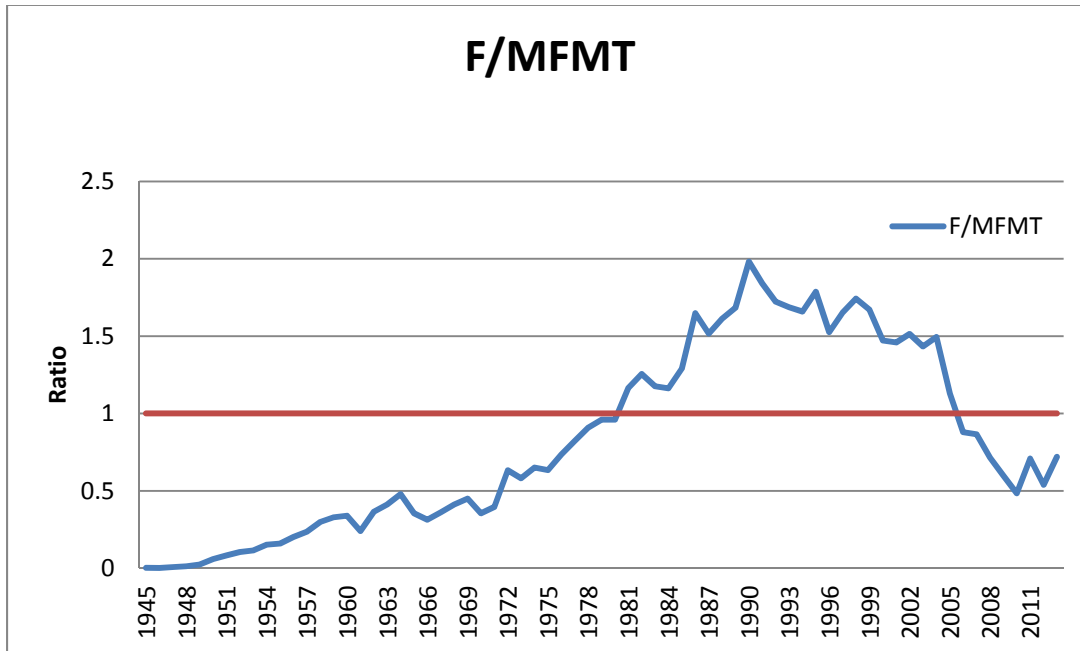


Figure 4. Gray triggerfish fishing mortality rate relative to maximum fishing mortality threshold, 1945-2013.

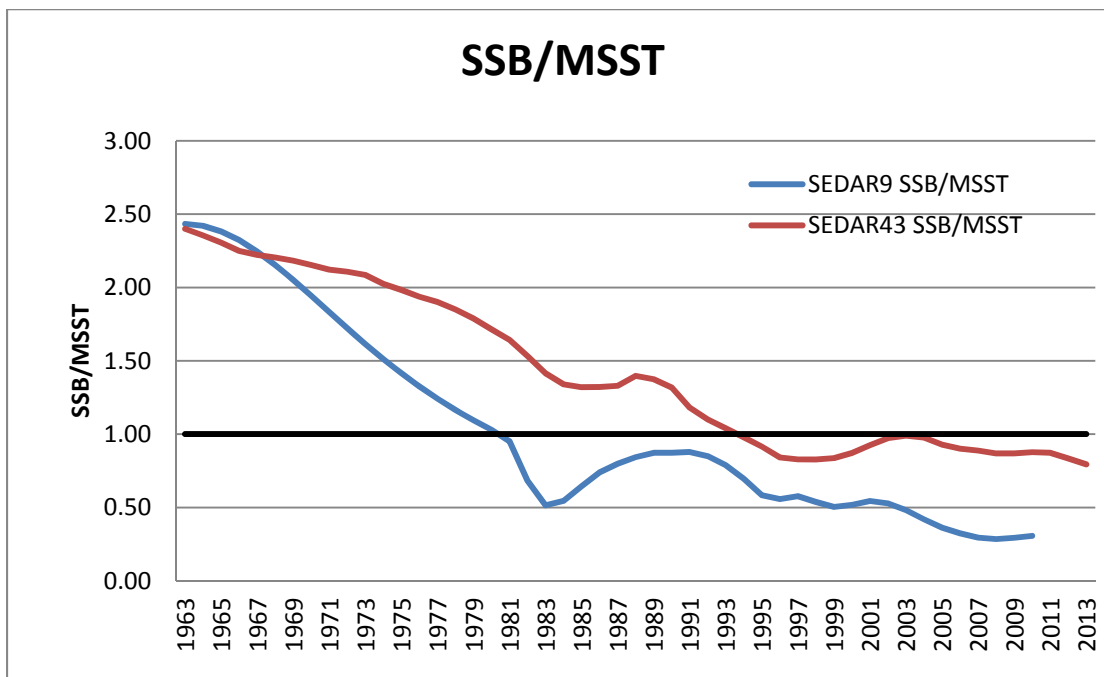


Figure 5. Gray triggerfish spawning stock biomass estimates from both SEDAR 9 and SEDAR 43 relative to minimum stock size threshold.

During and after the stock assessment presentation, several concerns were brought up by SSC members.

- A pooled growth rate was used for male and female gray triggerfish combined, but the sexes have different growth rates. The combined growth rate may be overestimating SSB. As sex is not determined in the field by port samplers, there is little that can be done to correct this.
- Stock-recruit steepness was estimated at 0.45. However, the likelihood profiles suggest that any values above 0.4 are equally likely.
- Shrimp trawl bycatch mortality was assigned entirely to age-0 fish, but age-0 fish are still in the pelagic environment and are closely associated with *Sargassum* habitat. The age-0 assumption for shrimp trawl bycatch may be overestimating the proportion of discard mortality occurring on age-0 fish and underestimating age-1 mortality.
- Shrimp trawl bycatch estimates assumed 100% mortality, but this may be an overestimate. Texas estimates a 50% mortality rate from shrimp trawls, but these data were unavailable at the time of the assessment. However, when using a Lorenzen mortality curve, the natural mortality on age-0 fish is so high that the bycatch mortality should not have much additional impact.
- The minimum size limit from 1999 to 2008 was 12 inches total length, but in 2008 it was changed to 14 inches fork length. The assessment assumed that all size limits were in fork length (this was later determined not to be a significant source of error).
- There are questions as to how long the recent low recruitment from the six previous years will continue. Due to the unique life history of gray triggerfish spending 4 to 7 months up in the pelagic environment before recruiting the benthic reefs and the neuston plankton tow information stopping in 2007 little information about recruitment is available for the model. Some SSC members suggested a regime shift in recruitment could be occurring, possibly attributed to predation by increasing populations of red snapper and lionfish.
- The stock-recruit relationship assumes the spawning stock is 50% female:50% male based on sampling from commercial sources, but the assessment document states that 56% female based upon histology and 64% female based upon macroscopic observation. Gray triggerfish are known to form harem groups when spawning with one dominant male and up to three females on active nests. The fishery-dependent landings may not be accurately capturing the ratio of males to females in the population. However, as the proportion females is used as a scalar, it has little effect on conclusions drawn from the assessment.

SSC members were in agreement that the results of the assessment were not useful for management. However, the assessment was conducted properly and produced the best results

possible given the uncertainties of the data inputs. The SSC was split on whether to accept the assessment as the best available science, but passed the following motion.

**By a vote of 12 to 8, the Committee accepts the SEDAR 43 Gray Triggerfish Assessment as the best available science.**

Although the SEFSC provided OFL and ABC projections based on the assessment, SSC members felt that they could not use the assessment to make recommendations. However, the SSC was concerned about several negative trends in the assessment, including the continuing decline in SSB despite the fishing mortality rate being below MFMT (i.e., overfishing is not occurring).

**By a vote of 19 to 1, the Committee expressed concerns about continued estimated low gray triggerfish recruitment, declining or level indices of abundance, and declining SSB estimates, despite nearly a decade of F being well below MFMT. Therefore, the Committee recommends OFL and ABC to continue at the current rebuilding levels and not based on assessment results that would produce much higher levels.**

Finally, the SSC voted on status determination.

**With one opposed, the Committee concludes that the gray triggerfish stock is not experiencing overfishing, but is overfished. The Committee further notes that the stock does not appear to be recovering under the current rebuilding plan.**

The SSC noted that gray triggerfish is projected to miss its rebuilding deadline of 2017 even if the stock is closed to fishing. With the caveat that the yield projections were not accepted by the SSC, and are provided for reference only, projections from the SEFSC indicate that, if the stock is closed to all fishing, it will rebuild to the SSB at 30% SPR between 2020 and 2023. If fished at the maximum rate allowed under Amendment 37 (the yield when fishing at 75% of  $F_{30\% SPR}$ ), the stock is projected to rebuild between 2028 and 2035. This fishing rate is also consistent with the guidance in the National Standard 1 guidelines for stocks that have missed their rebuilding target date.

SSC members suggested that the most appropriate course of action is to establish a new rebuilding schedule. However, in order to provide OFL and ABC guidance, the SSC needs a benchmark assessment that produces credible reference points that adequately capture the productivity and dynamics of the stock. An alternative might be to use Tier 3b of the ABC control rule. This would set the OFL at the recent average catch level, and would set ABC at some level below the recent level. The SSC would like guidance from the Council on how to proceed.

### **SEDAR 47 Goliath Grouper Benchmark Assessment Preliminaries**

Staff reviewed the Terms of Reference and schedule for the goliath grouper assessment SEDAR review panel workshop. Since this assessment is being conducted by the Florida FWC, SEDAR

is only responsible for the review workshop part of the assessment process. The assessment will use a catch-free model that is being modified from an earlier model by FWC and SEFSC staff. The Terms of Reference have also been modified to reflect that the catch-free model produces relative reference points rather than the MSY-based reference points that are produced by traditional methods. SEDAR is also requesting two volunteers from the SSC, one to act as the Review Panel Chair, and one to act as a reviewer on the Panel.

The following SSC members volunteered to serve as either the Chair or as a reviewer. The SEDAR Steering Committee will decide which SSC member will serve in which capacity.

- Mary Christman
- Robert Ellis

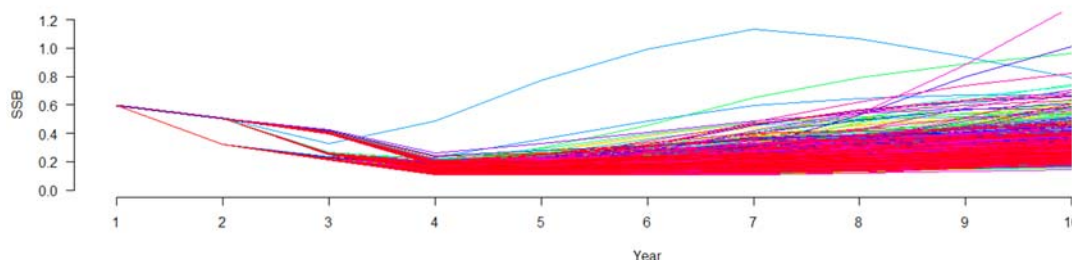
*Note: Staff recommends that Mary Christman be the reviewer and that Robert Ellis be the Chair.*

**By acclamation, the SSC accepts the SEDAR 47 Review Workshop Terms of Reference as written.**

The SSC had no opposition to the proposed assessment schedule

### **Integrated Ecosystem Assessment – Management Strategy Evaluation – Single Species**

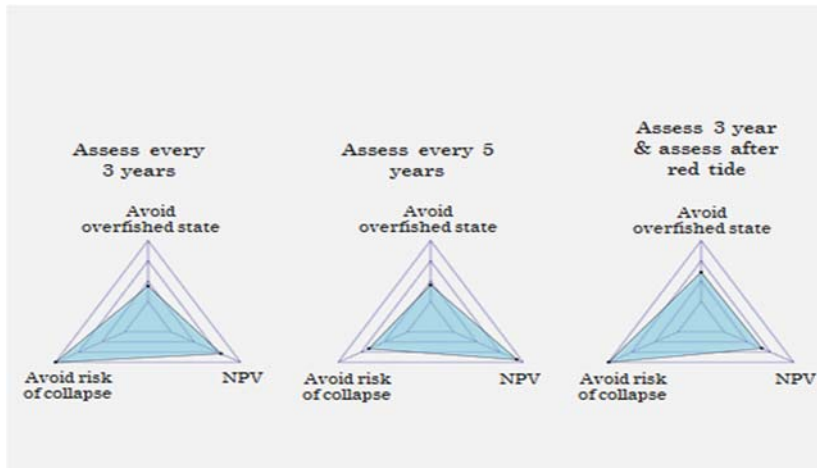
Bill Harford presented a demonstration of how Management Strategy Evaluation (MSE) could be applied to an ecosystem model to evaluate the impacts of various management strategies on single-species management. This process can incorporate simulations of a random episodic event such as a red tide event. By varying not only whether such an event occurs, but also when it occurs, MSE can provide a dynamic evaluation of possible management outcomes (Figure 6).



**Figure 6. An example of applying multiple simulations to determine the likelihood that a specific management objective will be achieved. Each line in this spaghetti plot is an iteration of the simulation run (n = 1,000)**

MSE can be used to evaluate the effect of different harvest control rules on multiple objectives by plotting the results relative to each objective on a radar graph (Figure 7).





**Figure 7. Example of evaluating various harvest control rules on multiple objectives. This example shows radar graphs with three objectives (net present value, avoid overfished state, avoid collapse), but the process is not limited to that number.**

Examples of additional dimensions that could be incorporated into the evaluation include:

- Red tide magnitude & frequency
- Stock assessment uncertainty (imprecision)
- Frequency of assessment
- Alternative HCRs and scalar levels
- Relevant performance measures
- Implementation uncertainty (i.e. ACLs)

The presentation was not intended to be a comprehensive evaluation of the MSE process, but rather an introduction for which Dr. Harford was seeking feedback.

SSC members suggested that, in terms of determining relevant objectives to include, input from user groups and stakeholders should be a part of the process, and that more of the human element should be considered. Other factors were also noted for inclusion including the time lag between an ecological event and the ability of an assessment to capture the impact of the event on the stock. One suggestion was made to collaborate with the Reef Fish AP to determine relevant performance factors. However, it was noted that there will be tradeoffs between management needs and stakeholder needs.

One SSC member requested that the Ecosystem team provide the SSC with progress report presentations once or twice per year. A suggestion was made to form a working group. Dr. Cass-Calay noted that each of the regional Science Centers will be hiring an MSE expert. Dr. Cass-Calay added that the SEFSC was forming an MSE Advisory Committee, and suggested that perhaps there could be a Council representative on that committee.

Dr. Harford indicated that he would use the feedback that he received from the SSC to help further the development of the MSE process.

### **Review of SEDAR Assessment Schedule**

Staff reviewed the proposed SEDAR assessment schedule for 2015-2018. Some SSC members questioned the limited number of species included in the Data Poor Workshop scheduled for 2016. Staff noted that the number of species included was the most that the Science Center felt it could handle. A suggestion was made to postpone the 2016 greater amberjack update assessment for year in order to get more landings data under the current regulations. Another suggestion was to make a gag standard assessment a priority rather than the gag update assessment currently scheduled for 2016. However, Julie Neer informed the SSC that the 2016 schedule has been finalized. In addition, while 2017 and 2018 are still proposed schedules, the major emphasis for those years will be to update existing assessments with the MRIP adjusted recreational catch data.

*(Note: Part of the reason for requesting a gag standard assessment was so the SSC could consider changing some of the output parameters such as using total SSB rather than female SSB to determine stock status. However, in discussions with Dr. Neer after the meeting, it appears that this may be possible within the context of an update assessment.)*

### **Tentative 2016 SSC Meeting Dates**

Staff reviewed the tentative dates for the 2016 SSC meetings. Meetings are generally scheduled three weeks before each Council meeting. A suggestion was made to consider moving the January 6-8, 2016 SSC meeting to December so it would occur before the holidays rather than afterwards. However, more SSC members have meeting conflicts in December than in January, so it was decided to keep the January meeting as scheduled.

One SSC member asked that we consider holding some of the SSC meetings in locations other than Tampa, noting that due to the size of the SSC, meetings can no longer be held in the Council's conference room.

### **Other Business**

Council staff noted that it was working on an options paper for revising the ABC control rule based on the previous work of the SSC and the previous ABC Control Rule Working Group. The Executive Director has suggested that the ABC Control Rule Working Group, which has not met for some time, be reconstituted, consisting only of selected SSC members and staff, to assist staff in the preparation of the options paper. The SSC Chair requested that staff come back in January with more detailed information as to what issues and objectives are to be addressed by the proposed working group.

**SSC Members Present**

**Standing SSC**

Luiz Barbieri, Chair  
Joe Powers, V. Chair  
Harry Blanchet  
Benjamin Blount  
Mary Christman  
Bob Gill  
David Griffith  
Jack Isaacs  
Jeff Isely

Walter Keithly  
Kai Lorenzen  
Paul Mickle  
William Patterson  
Sean Powers  
Ken Roberts  
Steven Scyphers  
Robert Shipp  
James Tolan

**Special Reef Fish SSC**

Jason Adriance  
James Drymon  
Robert Ellis  
Jennifer Herbig  
John Mareska

**Council Staff**

Steven Atran  
John Froeschke  
Doug Gregory  
Ryan Rindone  
Charlotte Schiaffo  
Carrie Simmons

**Others**

Dustin Addis, FWCC/FWRI  
Shannon Calay, NMFS/SEFSC  
Michael Drexler, Ocean Conservancy  
Emily Dudash, UF  
Claudia Friess, UF  
Alicia Frudakis, UF  
Arnaud Gruss, NMFS/SEFSC  
Chad Hanson, Pew Environment Group  
Bill Harford, NMFS/SEFSC  
Holden Harris, UF  
Susana Hervas, UF  
Paul Manoval, UF  
Julie Neer, SEDAR  
Charlotte Nowak, UF  
Melanie Rider, UF  
Matthew Smith, NMFS/SEFSC  
Chris Swanson, UF  
Courtney Stachowiak, UF

**Council Representative**

John Greene