

**Gulf of Mexico Fishery Management Council  
Standing and Special Reef Fish SSC Meeting Summary  
Review of 2011 SEDAR 9 Update Assessment – Gray Triggerfish  
Tampa, Florida  
January 9-11, 2012**

**Discussion of Gray Triggerfish Update**

Steven Saul reviewed the gray triggerfish update assessment. The assessment updated fishery dependent and independent data through 2010. One change from the original inputs was that updated age and growth data from the Panama City laboratory was used in two alternative runs based on recommendations for revisions to the age analysis process made during SEDAR 9. The original age and growth data, which was used in the continuity run, had come from several different labs, and there were questions about the standardization of the methodology and experience of those doing the aging. The new data resulted in a von Bertalanffy growth equation and age-length key that moved fish at a given length into younger age classes, but provided a better fit to the data. Other changes included re-estimation of Texas recreational catch data over the entire catch history, and addition of mis-classified commercial landings in 1992 and 1999. In addition, three approaches were considered to estimate the number of age one fish in the shrimp trawl bycatch. A continuity model run and two alternative runs were made:

- Continuity Run: exact model parameter configuration, data treatment, and data preparation as in 2006 benchmark assessment.
- New Age-Length Key and Growth Curve: incorporated new age-length key and von Bertalanffy growth function estimated from recent Panama City gray triggerfish age data and alternative estimation of annually varying shrimp bycatch.
- Gulfwide Shrimp Effort: used new age-length key and growth curve as above, recreational landings input as numbers of fish, shrimp bycatch entered as the median each year (rather than annually varying), and incorporated shrimp effort time series for the entire Gulf of Mexico.

The results of all of the model runs indicated that overfishing was occurring, and spawning stock biomass levels (measured in terms of egg production) were substantially lower than in the SEDAR 9 assessment.

Projection runs were made with fishing effort set to  $F_{SPR\ 30\%}$  (proxy for  $F_{MSY}$ ), 75% of  $F_{SPR\ 30\%}$  (proxy for  $F_{OY}$ ), and  $F = 0$ .

After reviewing the presentation, SSC members asked for the following additional analyses:

1. Calculate apical F by fishery over time: currently not printed out by a state-space age-structured production model (SSASPM).
2. Provide a table of age at selectivity (by sector/gear).
3. Plot F at age across the entire assessment.

4. Plot new phase plot using  $F_{SPR\ 30\%}$ .
5. Adjust plots of the rebuilding time based on the start of rebuilding plan in 2008.
6. Plot the stock recruitment data.
7. Look into the difference between the parameterization of the gray trigger SSASPM model and that from vermilion snapper.
8. Evaluate age comp before and after 2008 implementation of circle hooks.
9. Check numbers in the  $F/F_{MSY}$  and  $F/F_{SPR\ 30\%}$  plots – they are correct

Mr. Saul provided responses to the above requests except for items 1, 7, and 8, which would require more analyses than could be done during the SSC meeting.

Estimates of both  $F_{MSY}$  and the  $F_{SPR\ 30\%}$  proxy were evaluated in the assessment. In order to decide whether to use the actual estimate of  $F_{MSY}$  or the proxy for management advice, the SSC examined the stock-recruit curve. The data did not provide a strong fit to the curve, and as a result the SSC concluded that they did not have confidence in using the actual  $F_{MSY}$  estimate. Therefore, management advice was based on the proxy.

After evaluating the continuity run and two alternative model runs, the SSC moved to accept the Gulfwide shrimp effort model run.

**The SSC moves to accept the Gulf-wide shrimp effort alternative run as the best scientific information available to evaluate the stock status of Gulf Gray Triggerfish.**

Motion passed 15 to 0 (1 absent).

The SSC's rationale for accepting the alternative run rather than the strict update (continuity run) was as follows:

- Median shrimp bycatch was used to scale the magnitude of the bycatch and the shrimp effort to inform the trend in bycatch over time.
- New age-length data was collected and aged based on the recommendations compiled during the last benchmark assessment.
- Recreational catches were in numbers rather than weight, eliminating the uncertainty produced by estimating the weight of the catch.

To determine ABC, Mr. Saul provided a spreadsheet that could provide the yield at any given probability of exceeding  $F_{SPR30\%}$  (OFL proxy). The SSC evaluated yield streams at both 30% and 10% probability levels. Initially, a motion was made to recommend ABC for 2012 and 2013 at the 10% probability level. Although this was below the range of 30% to 50% probability that would be considered in a Tier 1 ABC control rule, it was noted that there is a fair amount of uncertainty in the assessment, and that this would set the ABC at approximately the 2010 catch levels. It was also noted that OFL was defined as the MSY proxy and not the yield at  $F_{rebuild}$ , which was unknown. However, due to concerns that the ABC was more conservative than what the ABC control rule would call for, the motion failed on a tie vote.

The SSC moves to recommend the OFL in 2012 & 2013 be set at 348,000 lbs for the Gulf Gray Triggerfish directed fishery.

Motion failed 8-8

A motion was then made to recommend ABC for 2012 and 2013 at the 30% probability level. However, this motion was withdrawn after SSC members indicated that they would first like to see projection reruns that used average recruitment during 2005-2009. This request was made because the recruitment graphs showed wide fluctuations in recruitment over time. There was concern that the stock might have dropped to very low levels where depensatory mortality rather than compensatory mortality might be in effect. If recruitment has changed over time, then a recent average might be more representative of recruitment in future years. There were also concerns that the assessment had not captured some portions of gray triggerfish life history resulting in the large variation in recruitment.

Mr. Saul provided the results of the reruns the next day. In addition to evaluating the use of average recruitment vs. the spawner-recruit curve originally used in the SSASPM model, Mr. Saul also provided runs comparing gear selectivity values from 2007-2009 vs. 2010 in order to evaluate whether there was an impact in selectivity from the 2010 Deepwater Horizon oil spill. Thus, four variations on the model rerun were presented. The selectivity scenarios showed no significant differences in selectivity, but the reruns that used the gear selectivity values from 2007-2009 did not exclude shrimp trawl bycatch from the amount of harvestable catch. Therefore, the SSC selected the model run that used recruitment average of 2005-2009 with 2010 selectivity. The SSC also accepted the recommendation of the assessment scientists to estimate 2011 catches as the average catch from 2007-2009.

OFL, defined as the yield at  $F_{SPR\ 30\%}$  (proxy for  $F_{MSY}$ ) was calculated as 401,600 pounds whole weight for 2012.

The SSC returned to a discussion of setting ABC based on a selected  $P^*$  probability of overfishing level. However, some SSC members felt that there was too much uncertainty in the model to apply this method. One SSC member suggested that the probability distribution function should be based on a weighted average of the PDFs from all of the model runs, with the selected model run having a higher weighting. This would help to account for intra-model uncertainty. Eventually, SSC members decided that use of the  $P^*$  approach was inappropriate until a new benchmark assessment is produced. The SSC decided instead to set ABC at the level corresponding to the yield at 75% of the  $F_{MSY}$  proxy ( $F_{SPR\ 30\%}$ ), which is consistent with the approach used to set red snapper ABC. SSC members were also concerned that the stock did not appear to be responding to the original rebuilding plan that was implemented in 2008, and decided that ABC should remain at the 2012 level until a new stock assessment is produced rather than increase annually with increases in OFL. In addition, a suggestion was made that the Council consider setting the annual catch limit (ACL) below the ABC due to uncertainty about the effectiveness of management measures. Mr. Saul calculated the directed yield for 2012 at 75% of the  $F_{SPR\ 30\%}$  to be 305,300 pounds whole weight.

**The SSC moves to recommend the ABC for Gulf Gray Triggerfish be 305,300lbs (whole weight) for 2012 and 2013. This ABC is based on the projected yield of 2012 at 75% of  $F_{SPR\ 30\%}$  for the model run, assuming recruitment is the average of 2005-2009 with the 2010 selectivities.**

Motion passed 15-0, with one abstention.

SSC members felt that, given that gray triggerfish is in a rebuilding plan, and a benchmark assessment is not scheduled until 2015, annual evaluations of projection reruns and stock status should be conducted to determine if any change in the trend of the stock biomass has occurred.

**The SSC moves to request an annual report on the status of Gulf Gray Triggerfish.**

Motion passed *unanimously*.

The evaluation of the gray triggerfish update assessment was completed with a very brief summary of an experimental run of the Stock Synthesis 3 (SS3) assessment model. The purpose of the run was to determine if the SS3 model could be used to replicate the results of the SEDAR 9 assessment that used SSASPM. The results were consistent with SEDAR 9. Since the SS3 model can replicate earlier results, but is more flexible than SSASPM, it will likely be used in future gray triggerfish assessments.