Standing and Special Reef Fish SSC Meeting Summary
Renaissance Tampa International Plaza Hotel
Tampa, Florida
May 29-31, 2013

The reef fish session of the SSC meeting was convened at 11:10 am on May 29, 2013. The summary minutes of the October 10-11, 2012 Standing, Socioeconomic, South Atlantic, and Special Reef Fish SSC meeting, and the November 8, 2012 Standing and Special Reef Fish SSC webinar were approved as written.

SEDAR 31 Red Snapper Benchmark Assessment

A Review Workshop Report was produced for this assessment, but due to the timeline on which the assessment material was provided to the Review Workshop Panel, the adequacy of the documentation, and the completeness of the assessment at the end of the Review Workshop, the Review Workshop Panel determined that it could not either accept or reject the findings of this assessment. Although the Review Workshop Panel commended the performance of the Analytical Team, it found that the Assessment Workshop report was incomplete, contained errors, and the documentation of the model was inadequate for a thorough review. An addendum to the assessment was prepared that addressed the concerns and contained additional analyses requested by the Review Workshop Panel, and was attached as an appendix to the Review Workshop report. However, the addendum was not reviewed by the Review Workshop Panel. Therefore, an extensive description of the assessment was provided by the lead analyst so that the SSC could conduct the peer review.

Presentations on Description of Model

Jakob Tetzlaff made the following series of presentations to the SSC:

Data Inputs
Model Configuration
Model Fit
Model Diagnostics
Model Sensitivities
Model Results

These presentations required most of the first two days of the reef fish session of the SSC meeting, and are discussed in the Review Workshop Report Addendum. The following is a summary of pertinent comments made by SSC members.

In the Data Inputs presentation, an SSC member noted that the shrimp effort used for bycatch estimates included pink shrimp trips from the south Florida area, and questioned whether those trips were pertinent to the shrimp trawl bycatch estimates. Dr. Clay Porch responded that red snapper are now being found in that part of the Gulf, and therefore those trips were pertinent.

An SSC member noted that the sample sizes used when discussing age-composition were in terms of effective N. He asked what the difference was between observed N and effective N. Mr. Tetzlaff explained that effective N was a sample size calculated by the Stock Synthesis model that can be used to gauge the model's ability to fit the data through an iterative re-weighting process. However, effective sample size was not used for the base model. Only the observed sample size was used in the age composition negative log-likelihood.

An SSC member commented that historical recreational landings data were presented back to 1950, while MRFSS/MRIP data only go back to 1981. Furthermore, the SSC member stated that earlier estimates were based on data collected by the US Fish and Wildlife Service (USFWS) based on a smaller number of trips, and contained a lot of error. Dr. Porch generally agreed with the comments, but stated that the red snapper Assessment Panel discussions indicated that these were the best data available to use. He noted that the number of USFWS trips was scaled so that it was comparable to the MRFSS/MRIP data.

Dr. Pamela Dana asked if the analysts were comfortable using iSnapper data to estimate the depth distribution of recreational effort for estimating recreational discard mortality. She noted that the iSnapper program consisted of just 28 charter boats, and charter boats tend to fish in deeper waters than private vessels. Dr. Porch responded that at this time, iSnapper offers the most comprehensive data set available. In addition, during the Data Workshop, fishermen in attendance were asked if they agreed with the estimates, and they felt that the estimates were generally consistent with their experience. The recreational discard mortality rate was estimated to be 10% - 11% with venting or 21% - 22% without venting. The commercial discard mortality rate was estimated to be 55% - 88% with venting or 74% - 95% without venting.

During the Model Configuration presentation, an SSC member asked if selectivity was adjusted for the implementation of circle hook requirements in 2008. Mr. Tetzlaff responded that the size-selectivity of the recreational fleets changed in the model in 2008 to account for circle hook requirements.

During the Model Diagnostics presentation, an SSC member commented that the retrospective analysis showed a substantial difference in biomass estimates, particularly in the west. Mr. Tetzlaff agreed that removing the last few years of data changed the projected biomass in the west. He explained that this was because the model gets much of the information for estimating selectivities from the size distribution data collected by observers in the last four years, and is sensitive to estimated selectivity patterns of some of the fishery segments, particularly closed season fisheries in the west. Those size distributions have changed in the last few years, so the removal of one of those years of data changes the estimated selectivity pattern. The retrospective analysis was more sensitive in the west than in the east because there are fewer observer data in the west. Another SSC member commented that the changes in retrospective patterns were relatively small and should not be a concern.

During the Model Sensitivities presentation, an SSC member suggested that, even though the venting requirement was implemented in 2008, it was likely that not all fishermen complied or properly vented fish to maximize survival. Dr. Barbieri noted that some of the studies used during the SEDAR 31 assessment included mortality estimates for intermittent venting. However, in terms of model sensitivity, this was not a significant factor. Mr. Atran noted that the Council had recently submitted a proposal to repeal the venting tool requirement, which is currently under review by NMFS. Mr. Bob Zales addressed the SSC to add that the rationale for repealing the venting requirement was to allow fishermen the opportunity to use other, potentially more effective catch-and-release methodologies which have been shown to reduce survival when improperly used.

Discussion on Explosive Oil Rig Removals

Following the Modeling Sensitivities presentation, Dr. John Froeschke led a discussion on mortality from explosive petroleum rig removals. Dr. Froeschke explained that the Council had requested in April for staff to draft a letter to BOEMRE objecting to explosive rig removals. He asked if the SSC had suggestions about which factors should be considered in this regard. It was noted during the Model Sensitivities discussion that results of a sensitivity run in which petroleum rig removals were modeled indicated model results were insensitive to this additional source of mortality. However, several SSC members felt that the base estimate of 515 red snapper killed per removal was probably too low, even if that estimate was subsequently scaled to currently estimated population size. One SSC member stated that his research on rigs has observed up to 800 fish in a single transect. The point was made by several SSC members during this discussion that despite the model's apparent lack of sensitivity to rig removals, the image of wasting red snapper biomass in this fashion was difficult for constituents to understand, and should still be taken into consideration.

SSC members also commented that loss of artificial habitat and its impact on red snapper carrying capacity is an issue that should be investigated further. The number of fish on a given rig depends on both the size and the design of the rig. Older rigs often have a more complex structure that may support more fish. Results reported in Gitschlag et al. (2001) indicated the impact of explosive rig removals on red snapper rebuilding trajectories was not significant. However, some SSC members felt that because of changes in the size, design and number of rigs, further research into this issue was warranted. An SSC member noted that Drew Hunger, manager of decommissioning for Apache Corporation and a member of the Council's Ad Hoc Artificial Substrate AP, had recently given a presentation on rigs-to-reefs programs and issues involved with decommissioning rigs. A suggestion was made to invite Dr. Hunger to give his presentation to the SSC.

In summary, the SSC's concerns with explosive rig removals were:

- Resulting fish kills, even if small relative to the population, should be taken into consideration.
- The impact of rig removals on loss of habitat is currently unknown but should be investigated further.
- The need for better knowledge of the current status and impacts of rigs and their removal necessitates research studies and possibly observer programs to sample fish impacted during removals.

Assessment Model Results

Mr. Tetzlaff presented the model results. Under the base model, it is estimated that the red snapper stock has been overfished since the 1960s. Current (2011) stock status was estimated relative to two possible proxies for F_{MSY}: $F_{SPR26\%}$ (i.e., the fishing mortality rate that would produce an equilibrium SPR of 26%) and F_{MAX}, which corresponded to $F_{SPR20.4\%}$ (i.e., the fishing mortality rate that would produce an equilibrium SPR 20.4%). Although the red snapper stock continues to recover, spawning stock biomass is estimated to remain below both the minimum stock size threshold (MSST) and the spawning stock size associated with maximum sustainable yield ($SSB_{MSY\ proxy}$) using either proxy described above. Therefore, the SSC concluded that the stock remains overfished.

Table 1. Estimated spawning stock biomass status relative to reference points for the base model run. Biomass units are eggs.

Proxy for F_{MSY}	**$F_{SPR26\%}$**	**F_{MAX}**
$SSB_{current}$ (2011)	4.46E+11	
MSST	1.11E+12	8.72E+11
$SSB_{MSY\ proxy}$	1.22E+12	9.54E+11
Ratios		
$SSB_{current}$/MSST	0.40	0.51
$SSB_{current}/SSB_{MSY\ proxy}$	0.37	0.47

When $SSB_{current}$ is below MSST, the stock is classified as overfished. When $SSB_{current}$ is above MSST but below $SSB_{MSY\ proxy}$, the stock is classified as rebuilding but not rebuilt.

With respect to overfishing, the current fishing mortality rate (geometric mean of 2009-2011) is estimated to be below both F_{MSY} proxies. Therefore, the SSC estimated the stock is not currently experiencing overfishing.

Table 2. Fishing mortality rate relative to overfishing reference points for the base model run.

	F_{MSY} Proxy	
Parameter	**$F_{SPR26\%}$**	**F_{MAX}**
Value for proxy	0.078	0.094
$F_{current}$ (2009-2011 geom. mean)	0.054	
$F_{current}/F_{MSY\ proxy}$	0.69	0.57

End of presentations.

Discussion of Model

During discussions after completion of the presentations, the SSC noted the following:

Results from sensitivity analyses indicated the inputs to which the model was most sensitive were the steepness value of the spawner-recruit curve and whether steepness was fixed or allowed to time-vary. The model was also sensitive to assumptions about natural mortality (M).

Capping the observed N used for the age-composition data at 200 forced the model to fit the indices of abundance more closely than when the age-composition data was capped at 1000. The sensitivity analysis revealed there is some discrepancy in the signal of stock recovery between the age-composition data and indices of abundance. Higher weight given to the indices of abundance increased the estimated rate of stock recovery of the stock, while the opposite was true when greater weight was given to the age-composition data. Dr. Porch observed that the discrepancy between the signal from the age-composition data and indices of abundance was not as strong as occurred in the previous stock assessment.

The SSC also noted that the model estimated higher productivity since the 1970s, a phenomenon that was also apparent in results from SEDAR 7 and which Porch (2007) indicated could be attributed to several potential factors. An SSC member questioned whether this was related to an increase in artificial reefs. Dr. Porch responded that, based on previous experience with the stock, the Assessment Workshop Panel expected higher productivity in later years, but did not offer a specific explanation for the increase. Spawning stock biomass benchmark levels are based on the more recent productivity (1984-2011).

Dr. Dana expressed concern that the model assumed that selectivity in the recreational fishery is the same in the closed season as in the open season. She noted that fishermen try to avoid red snapper during the closed season. Dr. Porch noted that the model did incorporate changes in catch rates during the closed season, but acknowledged that closed season selectivity was assumed to be the same as in the open season. He agreed that this was a gap in our knowledge of the fisheries that needed to be filled. However, no data were available from which to create an alternative closed-season selectivity pattern. An SSC member suggested that this was unlikely to have much impact on the model results since the model does account for changes in removals during open and closed seasons and removals during the closed season are a small fraction of removals during the open season.

Following discussion of the assessment, the SSC passed the following motion.

> **By a vote of 17-0, the SSC moves to accept the SEDAR 31 stock assessment as documented through the addendum provided by the SEFSC staff following the review panel report for GOM red snapper as the best available science.**

It was noted during the discussion of the motion that his language was meant to convey that the SSC was basing scientific advice on the material up to and including the addendum constructed by SEFSC staff following the SEDAR 31 Review Workshop

Discussion of MSY Proxy

The National Standard 1 guidelines state that when data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential, based on the best scientific information available, that can serve as reasonable proxies for MSY, F_{MSY}, and B_{MSY}. The Assessment and Review Panels evaluated two possible proxies for F_{MSY}; F_{MAX} (which corresponded to an equilibrium SPR of 20.4%) and $F_{SPR26\%}$. The selection of which proxy to use does not change the estimated current status of the stock, but it does affect projected yield and the spawning stock biomass rebuilding target.

Previously, the Council had selected $F_{SPR26\%}$ as the F_{MSY} proxy in Amendment 27. This proxy was used as the overfishing and MSY proxy in SEDAR 7 and the SEDAR 7 update assessment in 2009. It was developed from an analysis that showed that this level of F produced the highest yield when fishing mortality in the directed fishery, closed season bycatch fishery, and shrimp trawl bycatch fishery were reduced proportionately (linked scenario). However, as a result of reductions in shrimping effort since Hurricane Katrina in 2005 combined with the recent economic recession, shrimp trawl bycatch has recently been reduced disproportionately compared to the directed fishery.

A comparison of the two proxies in terms of equivalent SPR levels, point value of the fishing mortality rate, and estimated of overfishing level (OFL) yield in 2013 is shown in Table 3.

Table 3. Comparison of proxies for F_{MSY}. SPR is in terms of stock egg production relative to an unfished stock

Proxy	Equivalent SPR	F value	OFL in 2013
F_{MAX}	20.4% SPR	0.094	19.2 mp
$F_{SPR26\%}$	26.0% SPR	0.078	15.9 mp
$F_{current}$	n/a	0.054	n/a

As shown in Figure 1, F_{MAX} at equilibrium produces a higher estimated yield-per recruit, but at a lower SPR, than $F_{SPR26\%}$. At high spawner-recruit steepness values near 1.0, such as the value of 0.99 fixed in the red snapper assessment, F_{MAX} approximates the actual estimate of F_{MSY}. However, since the steepness estimate used in the model was fixed at 0.99, the SSC did not have confidence in using the direct F_{MSY} estimate due to the fact that the spawner-recruit function is poorly estimated and data exist for a very limited range of potential SSB for the stock. In addition, the SSC felt that the equivalent SPR for F_{MAX} (20.4%) was inappropriately low for species with life history parameters similar to red snapper.

SSC members expressed further reservations due to the F_{MAX} yield function being dependent on the selectivities at age from the model, which could vary with the incorporation of additional years of information. This could result in a changing estimate of F_{MAX} as it relates to SPR. That would mean that the target SPR could vary, while the rebuilding plan has a fixed end date, leading to potentially drastic changes in allowable F as the time-line for rebuilding shortens.

The $F_{SPR26\%}$ proxy results in a slightly lower estimated yield-per-recruit and overall yield at OFL and acceptable biological catch (ABC), but results in a higher equilibrium SPR level. Although an SPR of 26% may be considered somewhat low for species with life history parameters similar to red snapper, the SSC felt that this was more realistic than the 20.4% SPR associated with $F_{MAX.}$ Furthermore, the SPR26% proxy is consistent with the current FMP and rebuilding plan for red snapper.

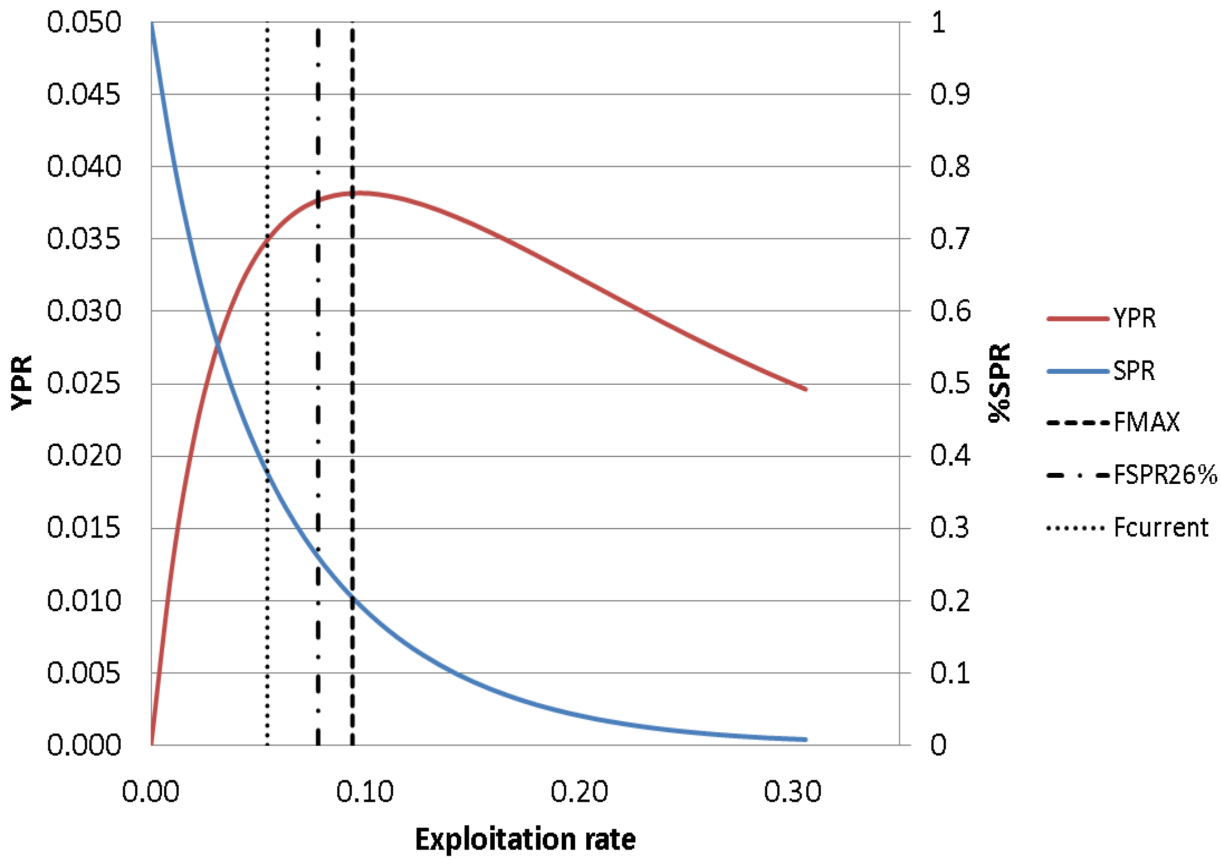

Figure 1. Comparison of F_{MAX} and $F_{SPR26\%}$ proxies to estimated yield-per-recruit and spawning potential ratio. Yield per recruit is in metric tons.

For the above reasons, the SSC passed the following motion. Although the motion is expressed in terms of the B_{MSY} proxy, it also applies to the F_{MSY} proxy.

> **By a vote of 16 to 1, the SSC recommends that the proxy for Gulf of Mexico red snapper B_{MSY} be set at $B_{SPR26\%}$**

Overfished and Overfishing Status Determination

In addition to the base run, for each of the proxy reference points, model runs were performed under high M (natural mortality on age-0 and age-1 set at double the base values), low M (natural mortality on age-0 and age-1 set at half the base values) scenarios, plus several sensitivity runs in which specific input parameters were varied to investigate the sensitivity of the model to changes in those inputs. SSC members agreed that the base run presented the most appropriate input parameters and therefore should be the run used for status determination and management advice. As shown above in Tables 1 and 2, the base run shows that the stock remains overfished (current spawning stock biomass is below MSST), but that the stock is not experiencing overfishing (current fishing mortality rate is below the F_{MSY} proxy)

By a vote of 16 to 0, the SSC recommends that the SEDAR 31 stock assessment base run be accepted for status determination. Using an MSY proxy of 26%SPR, the SSC concludes overfishing is not occurring, but the stock remains overfished.

Construction of a Probability Density Function

The probability density function (PDF) is a distribution of yields that relates a specific yield level to the probability of overfishing (P*). In the past, PDFs constructed from a single model run have resulted in a narrow range of yields over a wide range of P* values. This was because those PDFs did not fully account for uncertainty in assessment projections. In an attempt to incorporate a greater amount of the scientific uncertainty into the OFL PDF, the SSC constructed the PDF by weighting projections from three model runs: low M (25% weight), high M (25% weight), and base run (50% weight). This approach was adopted given the distribution observed among plausible model runs (Figure 2), the majority of SSC members agreed that this weighted average incorporated a major source of uncertainty associated with the parameter inputs.

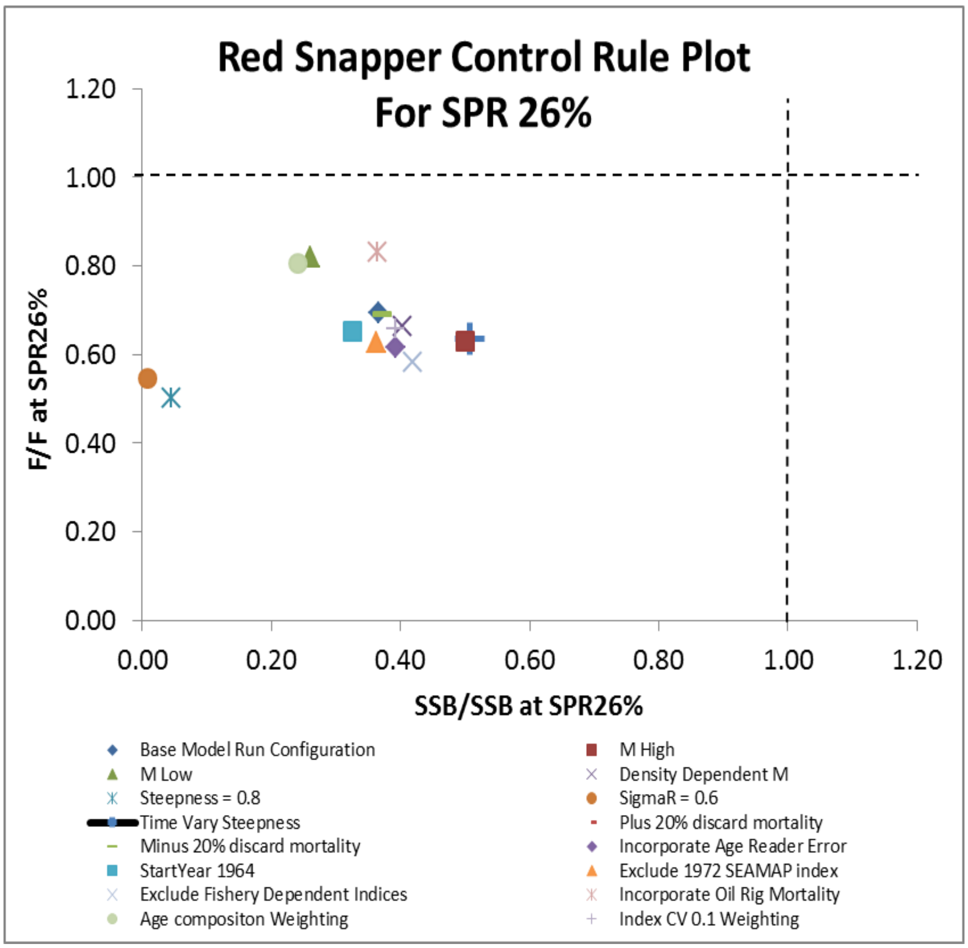

Figure 2. Results of model base run and sensitivity runs with respect to overfished and overfishing status. When applied to the 26% SPR proxy, all runs concluded that the stock was overfished ($SSB/SSB_{SPR26\%}$ below 1) but not experiencing overfishing ($F/F_{SPR26\%}$ below 1).

Once model averaging was decided as an approach for constructing the OFL PDF, the SSC discussed the most appropriate relative weighting among low M, high M, and base model runs. Most SSC members agreed that since the base run was considered the most likely, it should receive at least a 50% weighting, with low and high M runs receiving a lower weighting (e.g., 25%). An evaluation of various weighting scenarios presented by the assessment analysts (i.e., 20:60:20, 10:80:10), concluded that as long as the weightings were symmetrical, different weighting scenarios produced little difference in the shape of the PDF distribution. Therefore, the SSC decided the weighted PDF (as described in the motion below) represented the most appropriate source of information from which to develop management advice at this time.

> **By a vote of 13 to 3, the SSC recommends that the PDF for the estimation of OFL and ABC for Gulf of Mexico red snapper be constructed using the following weightings:**
>
> > **Base run 50%,**
> > **Low M 25%,**
> > **High M 25%.**

Selection of P for determining ABC*

The SSC worked through the Tier 1 spreadsheet of the ABC control rule (Figure 3). This table assigns numerical scores to several "tiers" representing sources of scientific uncertainty in the assessment. For each of the tiers, the top choice among the options represents the least uncertainty while the bottom choice represents the highest uncertainty. These tier scores are combined and scaled to a P* value between 0.30 and 0.50. The SSC's selection for each of the tiers was as follows.

Assessment information: The SSC concluded that the assessment provides quantitative, age-structured assessment provides estimates of either exploitation or biomass, but requires proxy reference points (i.e. $F_{SPR26\%}$). This is the second of the four choices in this tier.

Inclusion of uncertainty in the PDF: The SSC considered selecting the third choice in this tier, which states that uncertainty in important inputs has been described with sensitivity runs but the full uncertainty was not carried forward into projections. However, the plot of model run results (Figure 2) shows that the three model runs selected for the weighted PDF (low M, base, and high M) bracket the full range of what the SSC considered to be plausible results. Therefore, the SSC concluded that the uncertainty shown in the sensitivity runs was incorporated into the weighted average PDF, and selected the second of the four choices.

Retrospective patterns: A retrospective analysis was conducted and was available in the SEDAR 31 addendum. Although there were small differences in the resulting biomass estimates, the SSC did not consider them to be significant. Therefore the first choice of this tier was selected.

Known environmental covariates: There was robust discussion among SSC members about this final tier of the ABC control rule table. Some members argued that known environmental covariates (i.e. red tide, Deepwater Horizon oil spill) are, to some extent, implicitly accounted for in the model input data, particularly the abundance indices, and therefore, the model accounted for known environmental covariates. Other members argued that environmental covariates such as the Deepwater Horizon oil spill or red tide, while mentioned in the assessment, were not directly accounted for since there was no attempt to model their effects explicitly. After much deliberation, the SSC reached consensus and selected the middle option that known environmental covariates are partially accounted for in the assessment.

With the above selections in the ABC control rule spreadsheet, the resulting P* was 0.427.

One SSC member noted that the PDFs developed from several recent stocks assessments (e.g. yellowedge grouper, Spanish mackerel, cobia, red snapper) were unexpectedly narrow, and that the buffer between OFL and ABC developed with the ABC Control Rule did not fully account for scientific uncertainty. Another SSC member noted that the OFL yield stream when using the unweighted PDF for the accepted base model run was substantially higher than the yield stream when using the weighted PDF despite the assumption that the weighted PDF accounted for more of the scientific uncertainty. It was recommended that the ABC Control Rule Working Group be reconvened as soon as possible to evaluate ways to incorporate scientific uncertainty into OFL PDFs more appropriately.

$$P^* = \exp\left[-a - b \sum_{i\ \text{dimension}} Dimension\ score_i\right]$$

P* = 0.427

S_{hi}= 3.998

Maximum Risk **0.50** a= 0.693

Minimum Risk **0.30** b= 0.1277703

$$a = -\ln(0.50) \qquad b = -\frac{a + \ln(0.30)}{S_{hi}} \qquad S_{hi} = highest\ possible\ score$$

Element scores are scaled from zero to a maximum. In this example the maximum is 2.00, but this can be changed

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	Quantitative, age-structured assessment provides estimates of either exploitation or biomass, but requires proxy reference points.	x		0.67	
				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.		0.67		0.56
				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.	x		0.223	
				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.				
				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		
				1.0	Retrospective patterns have been described and are moderately significant.			0	
				2.0	Retrospective patterns ***have not*** been described ***or*** are large.				
		3	0				0		
					NOT USED			0	
						z			
		4	.333	0.0	Known environmental covariates are accounted for in the assessment.		1.0		
				1.0	Known environmental covariates are **partially** accounted for in the assessment.	x		0.333	
				2.0	Known environmental covariates ***are not*** accounted for in the assessment.				

Figure 3. ABC control rule Tier 1 spreadsheet for determining P* for red snapper.

Selection of OFL and ABC

Using the base run, a weighted average PDF, an F_{MSY} proxy of $F_{SPR26\%}$, and a P* of 0.427, the following yield streams were produced (Table 4 and Figure 4). The OFL yield stream is the landed catch in the directed fishery when fishing at a fishing mortality rate that is projected to have a 50% probability of achieving a Gulf wide SPR of 26% by 2032. The ABC yield stream is the landed catch when fishing at a fishing mortality rate that is projected to have a 57.3% probability (100% - 42.7%) of achieving the target. Bycatch and discard mortality has been calculated in the assessment and taken into account in determining these yield projections.

The projected yield streams show an unusual pattern beginning with a peak in 2013, and then decreasing each year from 2014 to 2017 before resuming an upward trend. This is due to a few strong year-classes moving through the fisheries combined with lower recruitment estimates in more recent years. These strong year classes are supporting the current increase in stock abundance. However, for the two most recent years in the assessment model, 2010 and 2011, the model estimates below-average recruitment, particularly in the eastern Gulf of Mexico. As the strong year-classes become fished out and are replaced by these weaker year-classes beginning in 2014, the OFL and ABC yields associated with rebuilding will decrease until the weak year-classes exit the fishery and future recruitment is projected at mean recruitment between 1984-2011.

Table 4. Red snapper OFL and ABC projections in pounds whole weight, using the base run and a PDF constructed from a weighted average of the base run, high M, and low M runs

Year	Model Run OFL	Model Run ABC
2013	13,686,840	13,497,296
2014	12,042,656	11,906,008
2015	10,720,256	10,579,200
2016	9,992,936	9,838,656
2017	9,891,552	9,693,192
2018	10,037,016	9,803,392
2019	10,142,808	9,882,736
2020	10,367,616	10,094,320
2021	10,508,672	10,222,152
2022	10,557,160	10,266,232

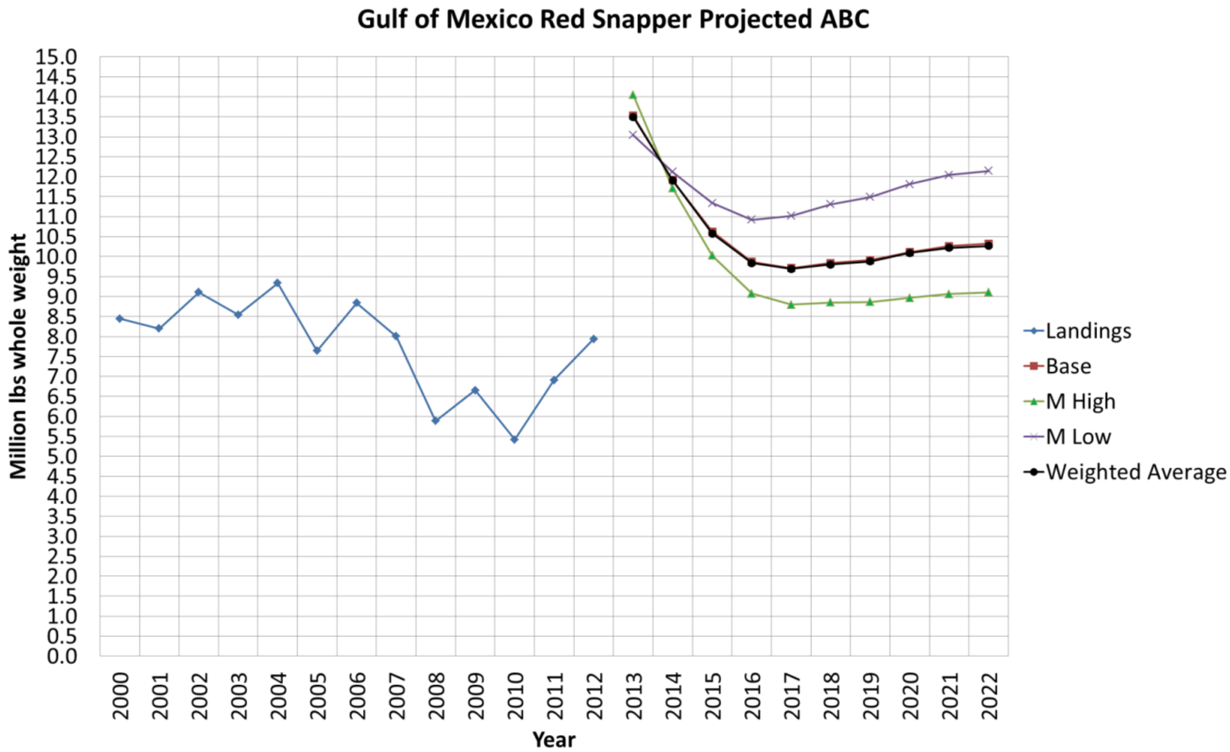

Figure 4. Historical landings from 2000-2012 and projected ABC yield streams under scenarios of the base run, High M, Low M, and weighted average of PDFs. The weighted average of PDFs run (middle projection) was used to set ABC.

Although the analysts presented yield projections through 2022, uncertainty increases with each projection year. A red snapper update assessment is scheduled for 2014, which should provide updated OFL and ABC values beyond 2015. Therefore, the SSC felt that is was appropriate to recommend OFL and ABC for only the three years, 2013-2015. In keeping with past practice, the OFL and ABC yield recommendations were made in millions of pounds whole weight, and rounded to three digits.

> **By a vote of 16 to 0, the SSC recommends that the OFL value for Gulf of Mexico red snapper be equal to yield stream at the 50th percentile of the weighted PDF and the ABC be set using a P* of 0.427.**

	OFL	**ABC**
2013	**13.7mp**	**13.5mp**
2014	**12.0mp**	**11.9mp**
2015	**10.7mp**	**10.6mp**

Following the above motion, one SSC member expressed concern that the above yield stream results in a spike in landings following by annual declines over the next several years. He attempted to make a motion to reconsider so that an alternative ABC yield stream could be considered. To avoid having to reduce quotas after 2013, some SSC members suggested that ABC be fixed at either the 11.9 or 10.6 mp level through 2015. This would still allow an increase in ABC for 2013, but avoid the need for a subsequent reduction pending the red snapper update assessment scheduled for 2014. Also, this approach would conserve spawning stock biomass, thereby increasing the speed of the rebuilding plan and reducing the likelihood that later reductions in yield would be required.

Dr. Porch agreed that constant yield projections over the near-term would prevent the need to greatly reduce fishing effort in 2014, noting that stock sizes were projected to increase. He also agreed that constant catches of 11.9 mp in 2013-2015 were unlikely to cause overfishing, but noted the need to run that particular projection scenario to be certain.

Dr. Porch expressed strong concerns regarding the extremely narrow buffer between OFL and ABC (i.e. 1-2% of yield). He noted that in other regions of the country, the buffer between OFL and ABC is based on the scientific uncertainty across the available historical stock assessments among the suite of assessed species (i.e. all available stock assessment on species in the FMP). This leads to an estimate of uncertainty much higher than that obtained using the Gulf Council's ABC Control Rule (e.g. coefficient of variance ≈ 0.4 compared to ≈ 0.1 in the current buffer). He recommended that the PDF developed for red snapper be re-evaluated using a similar uncertainty estimate to more appropriately quantify scientific uncertainty. Furthermore, he expressed concern that the ABC as estimated by the ABC control rule provided too narrow a buffer from OFL to provide a sufficient margin of error against overfishing.

Mr. Atran noted that the National Standard 1 Guidelines state that "an SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must explain why". However, some SSC members noted that the Council has the authority to set ACL and ACT at any level below the ABC, and felt that any decision of this type was a management decision, and therefore should be left up to the Council. Although there was ample discussion of alternative methods to set ABC, the motion to reconsider the ABC failed by a vote of 5 to 10. Therefore, the above OFL and ABC recommendation stood.

SSC Members Present

Standing SSC

William Patterson, Chair
Luiz Barbieri, V. Chair
Benjamin Blount
Harry Blanchet
Shannon Cass-Calay
Bob Gill
Walter Keithly
Sean Powers (days 1 & 2 only)
Greg Stunz
Jim Tolan
John Ward
Elbert Whorton

Special Reef Fish SSC

Jason Adriance
Erik Broussard
Robert Ellis
John Mareska
Brooke Shipley-Lozano

Council Members

Pamella Dana

Council Staff

Steven Atran
John Froeschke
Doug Gregory
Emily Muehlstein
Ryan Rindone
Charlotte Schiaffo

Carrie Simmons

Others Present
Clay Porch, NMFS/SEFSC
Jakob Tetzlaff, NMFS/SEFSC
Nick Farmer, NMFS/SERO
Sue Gerhart, NMFS/SERO
Peter Hood, NMFS/SERO
Rich Malinowski, NMFS/SERO
Andy Strelcheck, NMFS/SERO
Pam Anderson, Capt. Anderson's Marina in Panama City
Gretchen Bath-Martin, EDF
Jason Delacruz
Libby Fetherston, Ocean Conservancy
Martin Fisher
Chad Hanson, PEW Environmental Group
Russell Nelson, CCA
Dennis O'Hern, FRA
Andy Radford, American Petroleum Institute
Bob Zales, II, Panama City Boatmen Association