Standing and Reef Fish SSC
Meeting Summary
Tampa, Florida
May 31-June 1, 2018

The meeting of the Standing and Reef Fish SSC was convened at 8:30 am on May 31, 2018. The agenda was approved with the addition of a discussion of research track SEDAR assessments under Other Business. The summary minutes of the March 26-27, 2018 Standing, Shrimp, Socioeconomic, and Reef Fish SSC were approved as written.

Luiz Barbieri agreed to serve as the SSC representative at the June 18-21, 2018 Council meeting in Key West, Florida.

SEDAR 37 Update (FWC hogfish assessment)

Mr. Dustin Addis presented a summary of the SEDAR 37 hogfish update assessment of the Gulf stock of hogfish. The assessment used the same life history and conversion factors as the SEDAR 37 assessment, and the Stock Synthesis 3 model configuration was the same except for changes made to correct for model warnings and parameter bounding issues. In addition, the steepness of the spawner-recruit curve was estimated at a slightly greater value (from 0.847 to 0.867).

The update assessment results indicated a higher total biomass estimate over time than the original benchmark assessment. The retrospective patterns within the assessment indicated that the results were highly influenced by the terminal years used, thus suggesting undesirable increased uncertainty about the results.

Following the presentation, the Committee passed the following motions.

> **Motion: The Committee recommends that the SEDAR 37 hogfish update assessment is considered the best scientific information available.**
> Motion carried unanimously.
>
> **Motion: The Committee considers the SEDAR 37 hogfish update assessment suitable for management advice.**
> Motion carried with one opposition.

Stock status estimates were presented using both the assessment calculated MSY and an MSY proxy of the yield at $F_{30\% SPR}$. The Committee felt that, due to uncertainty about the spawner-recruit relationship, the calculated MSY should not be used. The Committee decided to base is findings on the 30% SPR proxy.

Using an MSY proxy based on the yield at 30% SPR, the fishing mortality ratio of $F_{CURRENT}/F_{30\% SPR}$ was 0.51 indicating that overfishing was not occurring. With MSST set to 50% of the biomass at $F_{30\% SPR}$, the ratio of current (2016) spawning stock biomass to MSST ($SSB_{CURRENT}$/MSST) was 4.71, indicating that the stock was not overfished.

Motion: The Committee estimates that the Gulf hogfish stock is neither overfished nor currently experiencing overfishing.
Motion carried unanimously.

OFL and ABC projections through 2026 were provided. OFL was based on the yield from a probability distribution function (PDF) with a P* = 0.50 and a Coefficient of Variation (CV) = 0.37 in keeping with the previous assessment. Due to increasing uncertainties with long-range projections, the SSC limited their OFL and ABC recommendations to three years.

Motion: The Committee recommends that for the years 2019 – 2021 the yield at that F 30% SPR using a P* of 0.5 applied to the OFL PDF for Gulf hogfish be the OFL per the table below.

Year	OFL (1,000s lbs ww)
2019	151.5
2020	163.7
2021	172.5

Motion carried unanimously.

ABC projections were initially provided based on the yield from a PDF with a P* = 0.40 and a CV = 0.37, also in keeping with the previous assessment. However, due to the increased uncertainty resulting from the retrospective analysis, the Committee decided to set ABC based on the yield at a fishing mortality level equal to 75% of $F_{30\% \text{ SPR}}$. The Committee passed the following motion.

Motion: The Committee recommends that ABC for the Gulf hogfish stock be set at the yield at 0.75 x $F_{30\% \text{ SPR}}$ for the projection time period 2019-2021.

Year	ABC (1,000s lbs ww)
2019	129.5
2020	141.3
2021	150.4

Motion carried with one opposed and one abstention.

Committee members felt that, due to the uncertainties in the update assessment, as exemplified by the retrospective analysis, plus the fact that since the last benchmark assessment hogfish in the southeast have been divided into three stocks, with the Gulf hogfish now considered a separate stock, the next hogfish assessment should be a benchmark assessment.

Motion: The Committee recommends that by 2021 that a benchmark assessment for Gulf Hogfish be performed.
Motion carried 10-5 with one abstention.

SEDAR 51 (gray snapper benchmark assessment)

Description of Data

Dr. Jeff Isely (SEFSC) presented an overview of the gray snapper SEDAR 51 benchmark stock assessment. This is the first stock assessment that has been completed for gray snapper in the Gulf of Mexico. The assessment included recreational (1981-2015) and commercial fishery (1962-2015) data as inputs. Estimates of recreational (1945-1980) and commercial (1945-1961) historical landings were calculated based on historical effort from the US Fish and Wildlife Survey of Hunters and Fishers. In total, the assessment included 6 indices based of harvest, 8 indices of abundance, 6 length composition indices, and 5 discard indices (Figure 1).

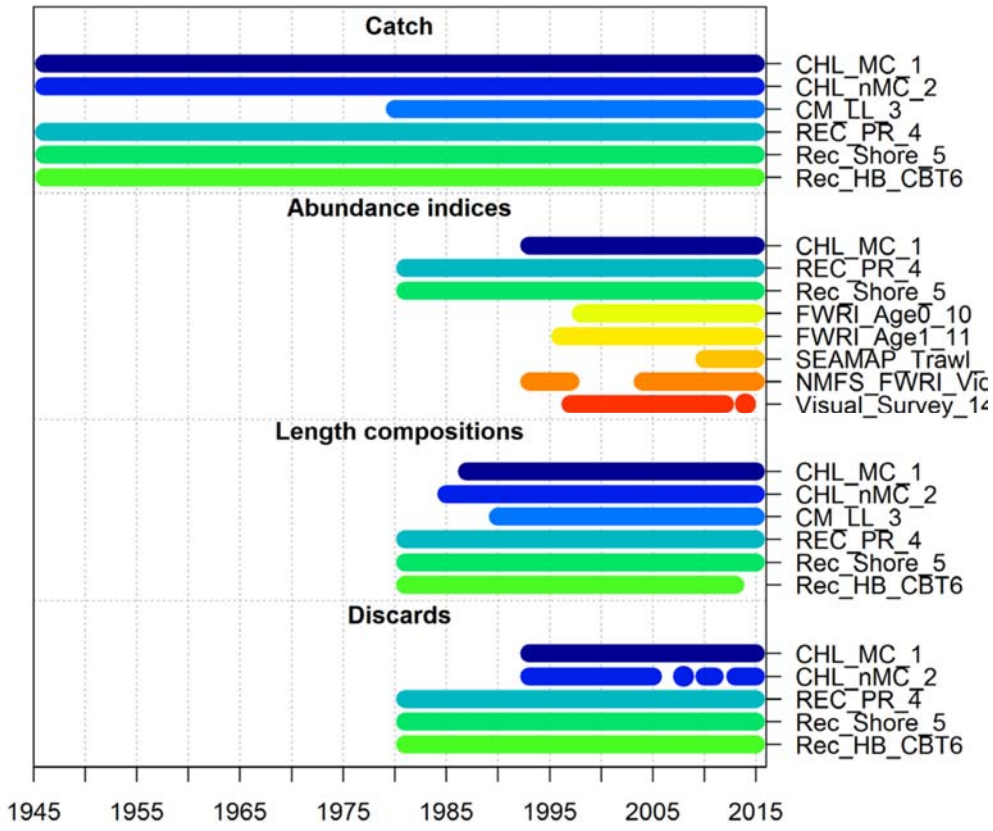

Figure 1. Summary of inputs into SEDAR 51 benchmark stock assessment for Gulf gray snapper.

Model Configuration

The start year of the SEDAR 51 benchmark assessment was 1945 and the terminal year of the assessment was 2015. The SEDAR 51 benchmark assessment used a length-based, age-structured, forward projecting population model and was used to assess the status of the gray snapper stock and provide guidance for future harvest levels. The model was implemented using "Stock Synthesis 3" (Methot 2013)[1].

[1] Methot Jr., R. D. 2013. User Manual for Stock Synthesis Model Version 3.24s NOAA Fisheries, Seattle, WA. http://nft.nefsc.noaa.gov/Stock_Synthesis_3.htm

Model Outputs

The final configuration of the stock assessment model outputs fit closely to the observed length composition and indices of abundance. However, the model output did not align well with the estimated discard abundance and the model fit could not be improved without degrading the fit to the length composition and abundance information.

After review and discussion the SSC made a motion declaring this benchmark stock assessment to be the best scientific information available for Gulf gray snapper and a second motion indicating that the results of this assessment are suitable for providing management advice.

> **Motion: The Committee recommends that the SEDAR 51 Gray Snapper benchmark assessment be considered the best scientific information available.**
> Motion carried unanimously.

> **Motion: The Committee considers the SEDAR 51 Gray Snapper benchmark assessment suitable for management advice**.
> Motion carried unanimously.

Stock Status

The annual estimates of spawning stock biomass (SSB) and exploitation rate relative to the management reference points indicate that gray snapper is currently experiencing overfishing, and it may be overfished depending upon the level of the minimum stock size threshold (MSST) (Table 1). The maximum fishing mortality threshold (MFMT) is defined as $F_{30\%SPR}$ and based on a current fishing mortality rate calculated as the geometric mean of the fishing mortality rates for 2013-2015, the stock is experiencing overfishing (i.e., $F_{current}/F_{30\%SPR}$ =1.2), and overfishing has occurred most years since 1976 (Figure 2). The SSC discussed two alternative metrics to evaluate stock overfished status. Reef Fish Amendment 44 (Gulf Council, 2017) standardized the MSST at 50% of B_{MSY} for 7 reef fish species (gag, red grouper, red snapper, vermillion snapper, gray triggerfish, greater amberjack, and hogfish), but gray snapper was not considered in this document. Based on this definition, gray snapper would not be considered overfished as the biomass is currently above this level for MSST (Figure 3 [gray line]). However, as gray snapper was not included in the amendment that established MSST for several reef fish species, the SSC considered the default definition where MSST = (1-M) * $B_{SPR30\%}$ to be the appropriate metric. For gray snapper, M = 0.15 and the current biomass estimate is below MSST (Figure 3 [orange line]).

Table 1. Management advice from the SEDAR 51 benchmark stock assessment model for gray snapper.

Criteria	Definitions	SEDAR 51 Values	Status
M		0.15	
Steepness		1.0	
Virgin Recruitment	1,000s	10,683	

SSB Unfished	metric tons	22,200	
Mortality Rate Criteria			
F_{MSY} or proxy	$F_{SPR30\%}$	0.115	
MFMT	$F_{SPR30\%}$	0.115	
$F_{CURRENT}$	geometric mean ($F_{2013\text{-}2015}$)	0.138	
$F_{CURRENT}$/MFMT		**1.2**	**Overfishing**
Biomass Criteria			
SSB_{MSY} or proxy (metric tons)	$SSB_{SPR30\%}$	6,621	
MSST (metric tons) @ (1-M)	(1-M)*$SSB_{SPR30\%}$	5,627	
MSST (metric tons) @ 50%	0.50*$SSB_{SPR30\%}$	3,310	
$SSB_{CURRENT}$ (metric tons)	SSB_{2015}	4,660	
$SSB_{CURRENT}/SSB_{SPR30\%}$	SSB_{2015}	0.704	
$SSB_{CURRENT}$/MSST @ (1-M)	**MSST = (1-M)* $SSB_{SPR30\%}$**	**0.827**	**Overfished**
$SSB_{CURRENT}$/MSST @ 50%	MSST = 0.50* $SSB_{SPR30\%}$	1.408	Not Overfished

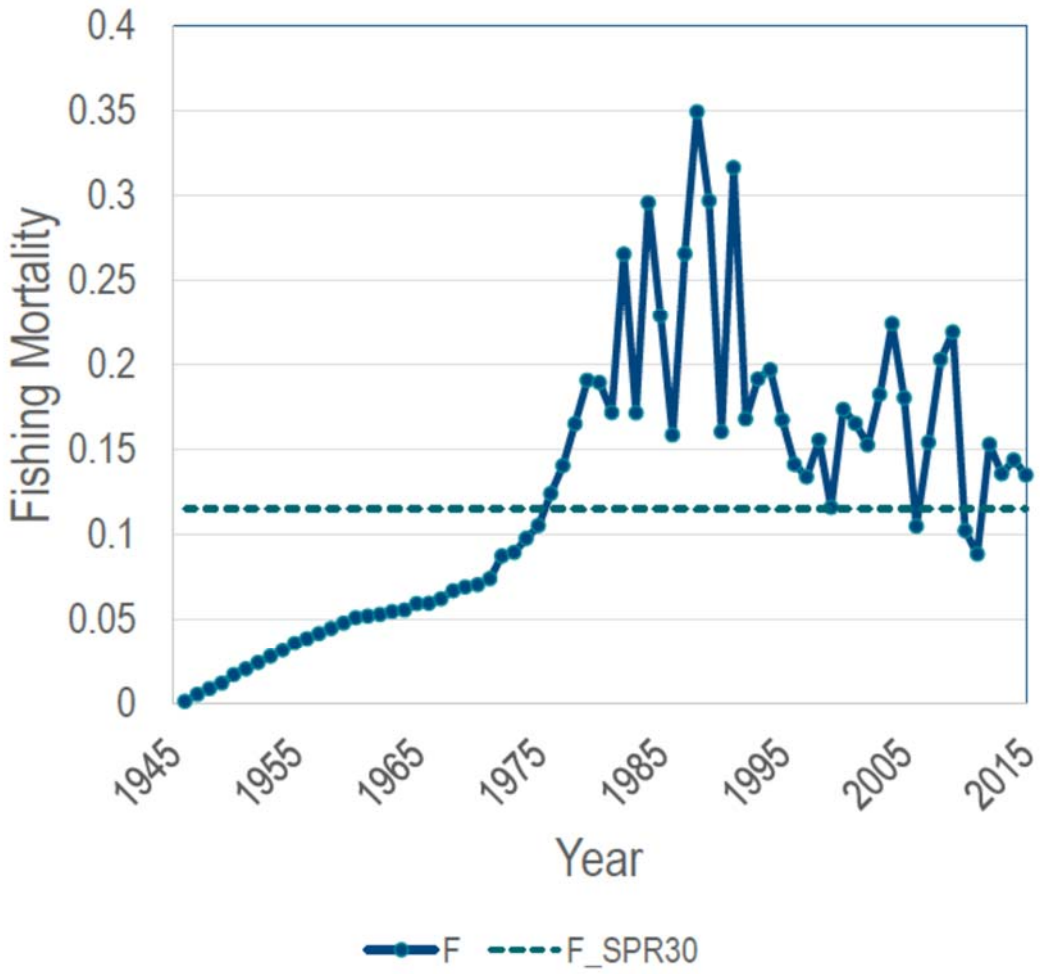

Figure 2. Estimates of fishing mortality from 1945 through 2015. Fishing mortality has been above MFMT (i.e., experiencing overfishing) for most years since 1976 and the stock is currently experiencing overfishing.

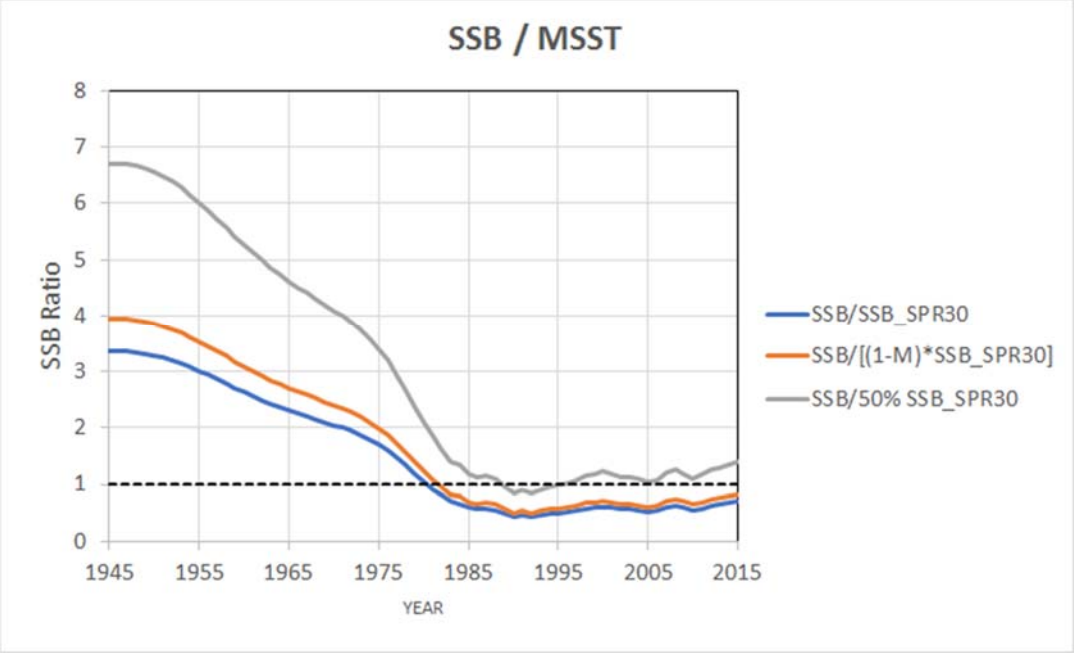

Figure 3. Ratio of SSB to MSST for three definitions of MSST. The SSC selected (1-M)*$SSB_{SPR30\%}$ as MSST (orange line) and based on this definition gray snapper is currently overfished.

Based on this discussion, the SSC passed the following motion:

> **Motion: The Committee estimates that the Gulf gray snapper stock is currently experiencing overfishing and, based on a stock status criterion of MSST = (1-M)*B_{MSY} proxy, where M=0.15, the stock is estimated to be overfished.**
> Motion carried unanimously.

OFL and ABC Projections

Stochastic projections were carried out to yield for the years 2019 – 2021. The OFL was calculated using $F_{30\% SPR}$ using a P* of 0.5 and the ABC was calculated using $F_{30\% SPR}$ using a P* of 0.4. Based on these calculations the SSC recommended OFL and ABC yield streams for 2019-2021 fishing years.

> **Motion: The Committee recommends that for the years 2019 – 2021 the yield at that F 30% SPR using a P* of 0.5 applied to the OFL PDF for Gulf gray snapper be the OFL per the table below. The ABC using a P* of 0.4 is recommended.**

Year	OFL (mp ww)	ABC (mp ww)

2019	**2.31**	**2.37**
2020	**2.33**	**2.29**
2021	**2.36**	**2.32**

Motion carried unanimously.

SEDAR 52 (red snapper standard assessment)

Dr. Matt Smith and Dr. Dan Goethel (SEFSC) presented the SEDAR 52 stock assessment results for Gulf of Mexico red snapper. The assessment process was delayed at key points due to data deadlines which were not met. SEDAR 52 was a standard assessment, which utilized the agreed upon model parametrizations and data inputs from the SEDAR 31 benchmark assessment (and the 2014 Update of the SEDAR 31 benchmark). Data inputs were updated through 2016. New data and minor model changes were explored per the TORs developed through the SEDAR process.

Life history parameters were largely unchanged from the 2014 SEDAR 31 update assessment. Additional samples were added to the age and length composition data, which were used in fleet-specific age-length keys in the assessment. Based on recent studies, the discard mortality rate for the recreational fleets was increased from 10% to 11.8%.

The method for estimating discard fractions for the recreational headboat and commercial longline and handline fisheries was improved to produce more realistic estimates based on SEDAR best practices and recommendations by the data providers (and approved by the SEDAR 52 panel). The MRIP discard estimates matched up well with the previous assessment. It was noted that there were differences between Louisiana-specific private recreational discard estimates, and those estimated by LA Creel. The SEFSC staff clarified that the SEDAR 52 method did not parse data apart by state, but rather extrapolated discard data Gulf-wide.

Catch-per-unit-effort (CPUE) indices for the commercial handline fleets were truncated in 2006 (per the SEDAR 31 benchmark assessment methods) to exclude IFQ years. A missed management regulation was discovered in the CPUE standardization code for the MRFSS index in the eastern Gulf and was fixed resulting a slight change in trend (from declining to steady) for the last few years; the same data for the western Gulf were unchanged. No change was observed after updating the headboat CPUE data either.

The continuity model used data from 1872 – 2016, assuming that red snapper were unfished prior to 1872. Recruitment was apportioned into eastern and western components resulting in essentially independent recruitment streams for the two regions. The scale of shrimp bycatch was determined by fitting the median value of the observed values, while year-to-year variation in bycatch levels was determined by fitting the shrimp effort index in the model. A seven step model building approach with was utilized to bridge from the 2014 Update model to the final continuity/update model for SEDAR 52, which examined scaling the standard error of indices to a common mean of 0.2, changing the methods for calculating headboat and commercial discards, and updating the recreational CPUE indices. The western Gulf was largely unaffected by these changes. The eastern Gulf saw an increase in biomass compared to the 2014 Update assessment primarily due to scaling the index standard error to a common mean (due to equal weighting now be given to all indices and avoiding undue influence from a single index).

The base model structure was generally the same as the final SEDAR 52 continuity/update model, except that selectivity parameters were estimated as double-normal as opposed to using a random walk approach and an iterative reweighting scheme was utilized to adjust the effective sample size of the age composition to avoid overfitting these data sources at the expense of fit to the abundance indices. . Indices which select for the youngest (SEAMAP Larval Trawl; Groundfish Trawl) and largest (NMFS Bottom Longline) individuals still used the random walk approach. Biomass estimates show the western Gulf continues to rebuild, while the eastern Gulf has leveled off over the last few years. Both sides of the Gulf are seeing increases in the number of older fish present indicating rebuilding age structure. Recruitment continues to have no observed correlation to spawning stock biomass; as such, steepness was fixed at 0.99 as in previous assessments, suggesting no stock-recruitment relationship. Most indices were fit well to observed data by the model, with the exception of those indices with shorter time series or fewer samples. Due to the use of the median of the shrimp CPUE data, the model was forced to fit the observed data from the shrimp effort index.

Several model diagnostic approaches were used. A jitter analysis of the starting parameters by 10% illustrated tension in the model (i.e., because different jitter runs illustrated varying log-likelihood values) between fits to discards/indices and age composition, but for several tested parameters the estimated values did not change across these runs. Model bootstrapping (700 runs) showed normal distributions, with the widest intervals around the virgin biomass and virgin recruitment estimates. No retrospective patterns were observed, and index elimination (jackknifing) did not destabilize the model. Tests on recruitment variance showed steepness trending lower towards 1.0, which the analysts thought lent some credibility to the decision to fix steepness at 0.99. Generally, sensitivity runs resulted in little change in model estimates of total or spawning stock biomass.

The stock is not considered to be overfished (SSB/MSST = 1.41) or undergoing overfishing (F/MFMT = 0.823), but will not be rebuilt until 2032. The analysts noted that the change in the MSST value from (1-M) * $SSB_{SPR26\%}$ to 0.5*$SSB_{SPR26\%}$ from the 2014 Update to SEDAR 52 was the primary reason for the change in stock status from overfished to not overfished between the two assessments. Under the new MSST definition the stock would not have been overfished in 2014, while under the old MSST definition the stock would still be overfished in 2016. The stock is currently (as of 2016) estimated by SEDAR 52 to be at 18% SPR Gulf-wide, an increase from 14% SPR in 2014 under SEDAR 31. The Committee noted that without spikes in recruitment (assuming constant recruitment into the future), the eastern Gulf was projected to decline under current conditions (i.e., lower proportions of recruitment and higher removals, particularly due to the recreational closed season fleet, compared to the western region). The western Gulf appears to be carrying the bulk of the rebuilding effort for the stock. Analysts added that projections beyond three years into the future are highly uncertain, and should be updated at appropriate intervals.

Projections assumed constant recruitment from the recent time period, along with selectivity, retention, and discard mortality. Provisional combined 2017 landings of 15.36 million pounds were also used, and 2018 landings were assumed to be equal to the ACL (13.045 million pounds) based on the 2014 Update projections and catch level recommendations made by the SSC in 2015. For projections of OFL and ABC, fishing mortality ($F_{rebuild}$) and associated yield was constrained

to reach a spawning potential ratio of 26% by 2032. Previous projections (2014) were more pessimistic than the current estimates due to apparent underestimation of recent strong recruitment events. . SSC members agreed that a more thorough look at the productivity of the red snapper stock was warranted.

Per the SEDAR 52 base model, overfishing did not occur in 2017, because the recommended OFL for that year would have been 20.71 million pounds (based on SEDAR 52 reference point projections, i.e., 2017 F/MFMT = 0.93). Regionally, the SPR level in the eastern Gulf is predicted to decrease under current fishing mortality trends, while the western Gulf is predicted to increase.

SSC members asked what could be done to increase data timeliness. Analysts replied that all data outlined in the SEDAR 52 TORs were considered by the SEDAR 52 panel, but that many partners (academic, state, federal) are relied upon for providing data for red snapper. The SEFSC is also investing in automating many aspects of its data retrieval and index construction process to make those efforts timelier. SSC members remarked that data providers also need to be realistic about what it takes for data to be used in an assessment. Data sets which are too narrow from a spatial, temporal, or sample size perspective, and cannot be combined with other data, may not ultimately be used in an assessment. SSC members discussed the utility of providing a set of assignments for SSC members participating in SEDAR Standard Assessments, as the SSC serves as the review body for these assessments, rather than CIE. There is currently no formal method for documenting the SSC review process.

> **Motion: The Committee recommends that the SEDAR 52 red snapper standard assessment be considered the best scientific information available.**
> Motion carried unanimously.

> **Motion: The Committee considers the SEDAR 52 red snapper standard assessment suitable for management advice.**
> Motion carried unanimously.

The Committee used a P* of 0.50 applied to the probability distribution function (PDF) for calculating the OFL. Based on the tier 1 ABC Control Rule spreadsheet, the Committee determined that a P* of 0.40 should be applied to the PDF for calculating the ABC. Values are in millions of pounds.

The Committee endorsed two possible choices for setting OFL and ABC. The first choice sets OFL and ABC annually for each year 2019-2021. This results in a declining yield stream, which is the result of the projections being constrained to achieve an SPR of 26% by 2032. The second choice sets a constant catch OFL and ABC for the period 2019-2021, consisting of the average of the annual values. Some Committee members expressed concern that the constant catch ABC exceeded the annual OFL in 2021, but after discussion, Committee members agreed that the two methods of calculating OFL and ABC were equivalent within the three-year period.

> **Motion: The Committee recommends that for the years 2019 – 2021 the yield at $F_{26\% SPR}$ using a P* of 0.5 applied to the OFL PDF for Gulf red snapper be the OFL per the table below. The ABC using a P* of 0.4 is recommended.**

Year	OFL (mp ww)	ABC (mp ww)
2019	**16.6**	**16.0**
2020	**15.4**	**15.0**
2021	**14.6**	**14.3**

Under a constant catch scenario OFL would be 15.5 mp and ABC would be 15.1 mp for years 2019-2021. The Committee recognizes these two options as equivalent.
Motion carried unanimously

Dr. Julie Neer (SEDAR) noted that a research track assessment for red snapper is scheduled to begin in 2020. This will be followed by an operational assessment that will provide management advice by the end of 2021. Staff indicated at the SEDAR Steering Committee Meeting that, given the length of the research/operational assessment process, the Council may request an interim assessment in 2021 to provide more timely projections beyond the end of 2021.

Reducing Discard Mortality with Descending Devices

Dr. Nathan Vaughan (CIMAS) gave a presentation on potential implications on ABCs and on the number of discarded dead fish in the recreational red snapper fisheries as a result of reductions in discard mortality from the currently assumed 11.8%. The 11.8% is the current value used in the stock assessment for private recreational, charter and headboat anglers and is based on the Campbell et al (2014) meta-analysis assuming an average depth of fishing of 25 meters and the use of venting tools. The analyses were based on the use of a recently-developed stock assessment decision tool and considered two hypothetical scenarios: a 50% and a 100% reduction in discard mortality (corresponding to 6% and 0% discard mortality respectively). The reductions in mortality represent potential combined impacts of venting and/or descending device mortality reduction and compliance rates. These are hypothetical reductions, intended to provide insight into the scope of benefits that could accrue from reductions in discard mortality. The results indicated that slight increases in yields ranging from 1-8% may be possible assuming decreases in discard mortality down to 6% (half of the current discard mortality used in the assessment) or 0%, though discard mortality rates of 0% are unachievable. The analysis used simple reductions in the percent discard rate and made no explicit assumptions about how descender devices might work or about their utilization in the fishery. The absolute amount of any decrease in discard mortality resulting from using descending devices is currently unknown, though studies of the effects of descender devices are ongoing.

Discussion of Best Scientific Information Available

Mr. Atran presented a review of the National Standard 2 guidelines as revised in 2013, with an emphasis on the sections dealing with best scientific information available, peer review process, and role of the SSC. Mr. Gregory then reviewed a draft "Framework for Determining that Stock Status Determinations and Harvest Specifications are based on the Best Scientific Information Available (BSIA)". This framework is being developed to help specify how to determine what is the best scientific information available from a national perspective. The framework will clarify how to

evaluate how good the scientific information is. A peer review (by the SSC) of data should evaluate whether the BSIA supports the following four points which are used to inform Council decisions.

1. Stock status relative to the overfishing status determination criteria (SDC) specified in the FMP;
2. Stock status relative to the overfished SDC specified in the FMP;
3. Implementation of established harvest control rules;
4. Any proposed revisions to SDCs, harvest control rules, or other management actions.

The SSC was asked to comment on the following questions regarding the framework include: 1) Does the revised white paper address your concerns? 2) Does the white paper sufficiently provide clarity and increase transparency in how BSIA is achieved? And 3) How much more detail is needed in this framework, and in each regional documentation of its implementation?

Mr. Gregory reviewed comments that NMFS has received to date on the draft framework from the Regional Fishery Management Councils.
The Council has until the end of July to provide additional input. With respect to the draft framework, one Committee member referred to paragraph 4b (SSC and NOAA Fisheries steps), and suggested that it be clarify whether, in meeting the NS2 guidelines, the agency find information to be "necessary and sufficient" or "necessary but not necessarily sufficient". Another Committee member suggested that there may be times when additional information beyond the assessment is needed to provide management advice.
Staff noted that there have occasionally been joint AP/SSC meetings, and during SSC meetings fishermen who attend are welcome to provide relevant input. Committee members and Science Center staff added a discussion of other times when public input is used.

One Committee member noted that, when reviewing assessments, the SSC typically makes two motions, one on whether the assessment is BSIA, and a second on whether the assessment was suitable for management advice. NOAA General Counsel has opined that those motions are essentially the same, but the SSC feels that there are times when it may consider the assessment to be BSIA, but not suitable for management advice. Dr. Rick Methot responded that he felt that once advice is determined to be the best available, it cannot be ignored, but it may have a lot of uncertainty. He noted that even if an assessment is identified as BSIA, time lags in the data may mean that it is not timely enough to make catch projections, and some other method may be required.

Mr. Gregory suggested that it might be helpful if the SSC evaluated the information using the bulleted items at the beginning of this summary as separate components.

A Committee member referred to page 6 of the draft white paper, under Scientific and Statistical Committee responsibilities. The section states in part: "Each scientific and statistical committee shall provide its Council ongoing scientific advice for fishery management decisions, including … reports on … social and economic impacts of management measures". He felt that this is where the need for inclusiveness under the NS2 guidelines applies, and would like to know how the framework will assure that inclusiveness is addressed. This should include not only the magnitude

of the social and economic effects, but also the spatial aspects of where the effects of the scientific advice will occur.

Chairman Luiz Barbieri suggested that a more in-depth discussion of NS2 be scheduled for a future SSC meeting, and asked that either Rick Methot or Deb Lambert be available, either in person or via the web.

SEDAR 64 (yellowtail snapper benchmark assessment) TOR, schedule, and workgroup appointments

The SSC reviewed the schedule and terms of reference for SEDAR 64, which will be a benchmark assessment of the southeastern US stock of yellowtail snapper. The analytical team for SEDAR 64 will be the Florida FWC, and the workshops will all be based in St. Petersburg, Florida. The SSC noted that staff had added a request for an equilibrium yield stream in the projections in the assessment workshop terms of reference. Both the terms of reference and the schedule were approved as presented. Since the SSC is scheduled to be repopulated in the near future, the SSC chose to defer selecting participants for the respective SEDAR 64 workshops until the next SSC meeting in July.

Draft Reef Fish Amendment 48/Red Drum Amendment 5

Dr. Dan Goethel (SEFSC) reviewed a recently published paper he co-authored titled, *Establishing Stock Status Determination Criteria for Fisheries with High Discards and Uncertain Recruitment*[2]. This paper described several alternative methods for calculating MSY using red snapper as an example. The methods differed in their assumption of the steepness value used in the spawner-recruit relationship (values of 1.0, 0.85. and 0.7 were examined), and in the way discards were treated and distributed among various fleets in the model. A "global MSY" in which red snapper were all harvested at an optimal age (age 10, 11, or 13 depending upon steepness value) with no discards was achieved at SPR levels of 24%, 29%, or 38% depending upon steepness value. The remaining analysis examined various "conditional MSYs" in which the selectivity and fleet distribution of dead discards were varied. These produced MSY at SPRs ranging from 12% to 42%.

Under a global MSY, the MSY yield cannot be achieved in real life since the optimal selectivity cannot be achieved. However, the authors felt that the global MSY approach produced the most inherently sustainable spawning stock biomass, which suggested that the appropriate MSY proxy for red snapper was in the range of 24% to 38% SPR.

The SSC next reviewed a reference sheet prepared by staff to assist the Council in understanding the concepts in Reef Fish Amendment 48/Red Drum 5. Several suggestions were made to improve the "stock status" graphic. However, Committee members had several concerns about the graphic showing the relationship between MSY proxy, MSST, MFMT, and OY. Several members felt that

[2] Goethel, D.R., M.W. Smith, S.L. Cass-Calay, and C.E. Porch. 2018. Establishing Stock Status Determination Criteria for Fisheries with High Discards and Uncertain Recruitment. North American Journal of Fisheries Management 38:120-139.

the relationships were unclear as presented, and Science Center staff disagreed with the premise that the overfishing threshold (MFMT) could be set below F_{MSY} under certain conditions.

The Committee began to review the actions and alternatives in Reef Fish Amendment 48/Red Drum Amendment 5. However, the Committee did not get further than Action 1 – MSY proxies. Many Committee members objected to having the MSY proxy set by the Council. They felt it is a biological decision and should be up to the SSC. They also felt that the SSC should have the ability to change the MSY proxy whenever such change seems appropriate based on the most recent assessment or biological information, without the need to go through a plan amendment. One suggestion was made to, rather than explicitly define specific MSY proxies in the FMP, have the FMP state that the MSY proxy for each stock is the proxy recommended by the SSC. Another suggestion was made to have the FMP define a range of MSY proxies within which the SSC would make its selection or change when new information or stock assessment becomes available. Some Committee members objected to using the term MSY or MSY proxy with data-limited stocks where the proxy would be set based on some average catch level over time. In the Caribbean region the term, Sustainable Yield Level (SYL) is used instead of MSY because the reference yield, while considered to be sustainable, is not necessarily the maximum sustainable.

At this point, the meeting was adjourned due to time constraints.

Other Business

SEDAR Research Track

Dr. Julie Neer provided an update on SEDAR activities toward preparing for a SEDAR research track assessment for scamp. A planning committee is being formed with representatives from Council staff, Science Center, SEDAR Coordinator, and one member of the SSC. This planning team will draft the TOR, schedule, and what type of members (i.e., expertise) are needed. Ryan Rindone will serve as the Council staff representative. Jeff Isely volunteered to be the SSC representative.

Red Grouper Indices and Interim Analysis

Dr. Simmons noted that in January 2018 the SSC reviewed updated indices of abundance for red grouper. These indices showed a decline, but the SSC indicated that, without more information, they had no basis to recommend a change in the ABC. Dr. Simmons asked what additional information would be needed for a red grouper interim analysis in August. Dr. Shannon Cass-Calay responded that they could use the results of the last assessment and the more recent indices of abundance to adjust the ACL based on their revised perception of the stock. That process could be described at the next SSC meeting, but a management strategy evaluation (MSE) analysis would be required to confirm that the procedure is robust and produces useable information. It's unlikely that the MSE could be conducted in time for the August SSC meeting, but it could be available by the subsequent meeting. A Committee member noted that a red grouper standard assessment is currently in progress, but Dr. Cass-Calay responded that, due to MRIP calibration issues, that assessment was approximately 6 months behind schedule. Other Committee members

noted that fishermen are not catching their quotas now, so reducing the ACL may not have much impact.

The meeting adjourned at 2:45 p.m. on June 1, 2018.

SSC Members Present

Standing SSC
Luiz Barbieri, Chair
Joe Powers, Vice-chair
Lee Anderson
Harry Blanchet
Mary Christman[1]
Bob Gill
Jack Isaacs
Jeff Isely
Kai Lorenzen
Will Patterson
Sean Powers
Ken Roberts
Steven Scyphers
James Tolan

Reef Fish SSC
Jason Adriance
Marcus Drymon[2]
Robert Ellis
John Mareska

Council Staff
Steven Atran
John Froeschke
Doug Gregory
Morgan Kilgour
Ryan Rindone
Charlotte Schiaffo
Carrie Simmons

Presenters
Dustin Addis, FWC
Matt Smith, NMFS/SEFSC
Dan Goethel, NMFS/SEFSC
Julie Neer, SEDAR

Council Member
Leann Bosarge

Legend for SSC attendance
1 – Attended via webinar, day 1 and 2
2 – Attended via webinar, day 1 only

Others
Shannon Cass-Calay, NMFS/SEFSC
Michael Drexler, Ocean Conservancy
Kelsi Furman, Northeastern University
Sue Gerhart, NMFS/SERO
Elizabeth Herdter, FWC
Peter Hood, NMFS/SERO
Joshua Kilborn, USF-CMS
Mara Levy, NOAA/GC
Rich Malinowski, NMFS/SERO
Kelly O'Donnell, NMFS/SERO
Dennis Ohern
Chris Swanson, FWC
Nathan Vaughan, NMFS/SEFSC
Lauren Waters, NMFS/SERO