Standing, Reef Fish, Mackerel, and
Socioeconomic SSC Meeting Summary
September 17-18, 2019

The meeting of the Standing, Reef Fish, Mackerel, and Socioeconomic Scientific and Statistical Committees (SSC) was convened at 8:30 a.m. on September 17, 2019. The agenda for this meeting, and the meeting summary and verbatim minutes from the July 30-31, 2019 SSC meeting, were approved as written.

Dr. Luiz Barbieri agreed to serve as the SSC representative at the October 2019 Gulf of Mexico (Gulf) Fishery Management Council (Council) meeting in Galveston, Texas.

Discussion of Variability in Yield Projections from Stock Assessments

The SSC expressed interest in this topic under Other Business at its July 2019 meeting. Typically, in the projections resulting from stock assessments, the projected yields spike in the years following the conclusion of the assessment. Dr. Michael Drexler produced an examination of this observation, with consideration of whether the projections underestimate scientific uncertainty.

Large discrepancies between landings and projected catch limits in a given year suggest a possibility of underestimation of either management or scientific uncertainty. A study by Punt et al. (2011) examined uncertainty in projections for fish stocks in southeastern Australia, and suggested several alternatives to the classical approach, such as an analytic correction applied directly to biomass estimates. Dr. Drexler examined Gulf SEDAR assessments, conducting a qualitative analysis of discrepancies and/or patterns between landings and projections over time; and a quantitative comparison of projected catch limits over time. Strong spikes in projections following the terminal year of a stock assessment begin in 2015. These spikes in projected catch limits are much greater in magnitude than the buffer (uncertainty) applied between overfishing limit (OFL) and acceptable biological catch (ABC) through the Council's ABC Control Rule.

Dr. Drexler proffered several examples which demonstrated this trend between projections and landings, whereby projected harvest values are not realized in landings data, concluding that the assessment may be overestimating productivity. Examples include greater amberjack, gag, gray triggerfish, red grouper, Spanish mackerel, and cobia. An exception to this trend is red snapper, for which stock productivity appears to be regularly underestimated.

The SSC asked whether the spikes observed in the projections were related to the estimation of OFL. Historically, differences have been considerable between codified OFLs and projections in overlapping years. An approach which considers historical performance to better estimate uncertainty may be a path forward for considering these historical differences in future projections. The SSC added that current estimates of uncertainty in the OFL are likely too small to be realistic, and that it may be worth considering historical differences when revising the Council's ABC Control Rule.

The Southeast Fisheries Science Center (SEFSC) noted that projections are done at the fishing mortality level at maximum sustainable yield (F_{MSY}) or proxy. They pointed out several reasons

why fishing effort may be below F_{MSY} (species availability versus effort, market conditions, weather, etc.). The SSC agreed that scientific uncertainty is likely underrepresented in the projections; however, many sources for uncertainty exist that may be hard to characterize. The SEFSC stated that it was willing to collaborate with Dr. Drexler to further develop this analysis.

Stock Assessment Review: SEDAR 61 – Gulf of Mexico Red Grouper – Presentation of Model, Results, and Projections; Stock Status Determination, OFL and ABC Recommendation

Dr. Skyler Sagarese provided an overview presentation of the Gulf of Mexico Red Grouper Stock Assessment SEDAR 61 including data, continuity model, base model, diagnostics, and sensitivity runs.

Data Review

For SEDAR 61, many data inputs were similar to those used in SEDAR 42. However, the previous red grouper stock assessment (SEDAR 42) model for red grouper had difficulty fitting the magnitude and length composition of commercial discards. One resolution was to change the start date of the model from 1986 to 1993, when the data were more robust and the discard data were more consistent. After the SEDAR 42 review, the 1993 start date was considered inappropriate, since it did not provide a suitable amount of contrast between past and present data. Bootstrapping indicated that substantial uncertainty existed around initial estimates of stock size, productivity, and recruitment. Age and growth data were updated to produce a new growth curve. Fecundity was measured as batch fecundity in SEDAR 42 (proportion female * proportion sexually mature * batch fecundity per individual), while fecundity in SEDAR 61 was estimated as female spawning stock biomass measured as a relative number of eggs. Batch fecundity was input as a function of length-at-age using the updated growth curve. Commercial landings data were similar to those used in SEDAR 42, with data from 2010 – 2017 taken from the red grouper individual fishing quota (IFQ) database as opposed to the Accumulated Landings System. Commercial discards have been modified to use the "number of sets" for the commercial longline fleet, and "fishing days" for the commercial vertical line fleet. Estimated landings from the catch-per-unit-effort catch expansion closely follow logbook-reported landings, and are much lower than those reported and used in SEDAR 42. Recreational landings in SEDAR 61 used the fully-calibrated MRIP time series incorporating the Access Point Angler Intercept Survey (APAIS) and Fishing Effort Survey (FES) adjustments, with the recreational fleets again being combined as a single index. Private vessel landings were most influenced by the changes in MRIP (much larger compared to SEDAR 42), followed by the charter fleet. Recreational discards are self-reported, with charter and private vessel discards estimated to be higher in the new MRIP calibrated data than those data used in SEDAR 42.

Indices of abundance show declines in more recent years, which corresponds with observations from landings data for the same years. The fishery-independent regional video surveys were combined and modified to gain a better understanding of the stock over a greater spatial domain. Age composition data were available for each fleet, with strong year-classes observable in the data at corresponding fleet selectivities. These age data were used as a complete dataset with sample weighting conducted to reweight the age composition data. Length composition data for

commercial discards correspond to the minimum size limits, with the regulatory change in 2010 to 18 inches from 20 inches total length. A new fishery-independent index from the Florida Fish and Wildlife Research Institute (FWRI) called the Repetitive Time Drop Survey (a vertical line survey) was also incorporated into the model.

Red tide is modeled within SEDAR 61, and can account for a substantial amount of episodic mortality in a given year. Combined video survey data show a decrease in abundance in 2014, with a progressive recovery evident by 2017. An ecosystem analysis of red tide mortality showed the total mortality from the perspective of both total biomass and age stanza. The 2005 red tide was predicted to be a much greater source of episodic mortality for both total biomass and age stanza (age-0, age-1 to age-3, and age 4+) than the 2014 red tide. Red tide associated morality was inversely related to age.

The outlier observed in the 1990 recreational landings data was noted to not be due to the institution of the minimum size limit. Outliers in general are being considered in greater detail by the MRIP calibration team. For commercial discards, data post-IFQ have been difficult to use to create catch-per-unit-effort (CPUE) indices for the commercial fleets. Currently, commercial observer program data are used to estimate discards; further, indices of abundance may be able to be generated from those same data.

SEDAR 61 Continuity Model *(SEDAR 61C)*

This continuity model mimics the model developed for SEDAR 42. Some methodological improvements have been made for several datasets, making some previously used approaches statistically unsupported. The differences between the SEDAR 42 and SEDAR 61 are largely explained by the newly calibrated MRIP data (with APAIS and FES adjustments). Changing the start date from 1986 to 1993 in the SEDAR 42 model resulted in an increase in the projected OFL.

SEDAR 61 Base Model *(SEDAR 61B)*

The SEDAR 61B base model time series began in 1986 with 2017 as the terminal year. The square root of the sample size for composition data was used to iteratively reweight effective sample sizes for those composition datasets. Steepness was fixed at 0.99 and red tide was modeled only in years when red tide was reported (i.e., 2005 and 2014). Length-based selectivity was modeled by fishing fleets and fishery-independent surveys. Age composition data go back to 1991.

The SEDAR 61B model fits the landings data similarly, if not better in some cases, than the SEADR 42 model. Fits to the commercial discard data are much improved. Fits to the recreational discards are also better; however, with the use of the new MRIP data, the magnitude of the recreational discards has increased considerably. Declines are seen in the recreational indices in recent years, with similar fits for overlapping years between SEDAR 61B and SEDAR 42. Fits to fishery-independent indices also show low abundance in recent years, with similar fits for overlapping years between the models. Fits to length composition data are much improved in SEDAR 61B than SEDAR 42. Fits to age composition data are fairly similar in SEDAR 61B

compared to SEDAR 42, indicating that the gains in the fits to the length composition data did not result in a substantial tradeoff in model fit between composition data types.

SEDAR 61B is estimating a lower total biomass and a lower estimate of spawning stock biomass than SEDAR 42. Declines in 2005 and 2014 are attributed to red tide episodic mortality. Strong recruitment events were observed in 1995, 1998, 2001, 2005, and 2013. Recruitment remains highly variable for red grouper. Coefficients of variance (CVs) for the recent recruitment data are more uncertain in SEDAR 61B compared to SEDAR 42. A function of using Stock Synthesis requires that recruitment deviations sum to zero, meaning that the CVs for the years of recruitment data must balance out to zero. Total fishing mortality follows a generally similar trend, with spikes in 2005 and 2014 resulting from for red tide which is treated as "fishing" fleet in the model. Except for red tide years, the commercial bottom longline fleet remains the dominant source of fleet-specific fishing mortality; however, the recalibrated MRIP data (APAIS/FES) show the recreational fleets removing a comparable amount of biomass comprised mostly of younger individuals.

Model Diagnostics and Sensitivities

Model diagnostics tested model performance against variations in data and parameterization. The jitter analysis varies model parameters by 10% above and below each parameter estimate, and yielded consistent results which indicated a stable model. Bootstrapping runs showed consistency in most respects, except for recruitment in the terminal year (2017) which is expected. Also, initial estimates of fishing mortality showed variability outside the upper and lower quartiles, which may be an artifact of a 1986 start date, as opposed to some point further in the past (pre-1986). Retrospective analyses did not reveal any systematic retrospective patterns by removing consecutive years of data from the terminal year back. Model sensitivity was checked by removing a single index at a time. The model showed stability regardless of the index removed. Likelihood profiling indicated an ability of the model to estimate some parameters. Data weighting may be informing the model to more strongly consider the recreational data than in SEDAR 42; however, the CVs around the index weighting are larger for the commercial data, which is contrary to the assumption that commercial landings data known with a greater degree of precision than the recreational data.

Many sensitivity runs were done for both satisfying the terms of reference and potential review questions. Red tide analyses showed that 2015 was not distinguishable from 2014 as a separate episodic mortality event. A "leave one out" sensitivity analysis, and the total removal of fishery-dependent indices, indicated little permutation in model output suggesting model resiliency. Sensitivity runs estimated steepness at approximately 0.73; however, steepness was fixed at 0.99 indicating, there was not a strong stock-recruitment relationship.

Stock Status and Projections

Based on SEDAR 61B, as of the end of 2017, Gulf red grouper is not overfished (SSB_{2017}/MSST [minimum stock size threshold] = 1.64; MSST = $0.5*B_{MSY}$) and is not undergoing overfishing ($F_{Current\ (2015-2017)}$/MFMT [maximum fishing mortality threshold] = 0.784; MFMT = $F_{30\%SPR}$). However, this determination does not account for the 2018 red tide episodic mortality event, which was known to be a significant mortality event in the eastern Gulf.

A time period of 2010 – 2017 was used for mean recruitment, selectivity, retention, and discard mortality when creating yield projections. Catch allocations are set at 76% commercial and 24% recreational. Final landings estimates from 2018, and the revised annual catch limit (ACL) for 2019, are included and assumed to be harvested. Projections use the FES-adjusted MRIP recreational calibrated landings data.

Without including a red tide event in 2018, and assuming a start year of 2020, fishing at $F_{30\%SPR}$ would result in an initial increase (spike) in allowable catch above 8 million pounds (mp) gutted weight (gw). This spike in 2020 is being informed by low estimates of apical fishing mortality, meaning the model is assuming too few red grouper are being removed compared to the predicted available biomass. This is due to the 2005 and 2013 cohorts moving through the fisheries as age-7 and age-15 fish. Caution was expressed for not considering the 2018 red tide event, given the recent trends in catch for the recreational and commercial fleets, and the observations of abundance from fishery-independent indices in recent years following the 2014 red tide event. If an event in 2018 was similar in magnitude to the red tide events in 2014, or 2005, then some substantial decrease in biomass should be expected. Further caution was expressed about relying on the SEAMAP seasonal groundfish surveys as the only index of recruitment without a corroborating index.

The Council's "Something's Fishy" data collection tool identified general trends in abundance and stock health as reported by recreational and commercial anglers. These anglers generally noted decreases in the number of larger red grouper, but also reported a large preponderance of smaller fish appearing in recent catches. Further, a separate study in southwestern Florida queried anglers about the severity of the 2018 red tide event compared to the 2005 and 2014 events. Generally, these anglers determined that the 2018 red tide event was "devastating", too many samples coming from the same portion of the area surveyed (reporting bias). However, this perception could be a function of recall bias as an ecosystem analysis estimated that red grouper mortality was higher during the 2014 event.

Catch Recommendations

The SSC noted that under the old definition of MSST ($1-M*B_{MSY}$), red grouper would be considered overfished as of 2017 (SSB_{2017}/$MSST_{OLD}$ = 0.96). However, the stock has decreased to almost 50% of B_{MSY} in the past; therefore, the new definition of MSST ($0.5*B_{MSY}$) may be appropriate for this stock. The SSC acknowledged that there appear to be unknown factors which could be driving stock biomass down beyond just red tide. Future assessments should consider spawning stock biomass using both sexes combined, further evaluation of red tide episodic mortality, and other improvements and considerations already noted by the analytical team.

Motion: The SSC agrees with the SEDAR 61 assessment that overfishing is not occurring for Gulf red grouper as of 2017.

Motion carried without opposition.

Motion: The SSC agrees with the SEDAR 61 assessment that Gulf red grouper is not overfished as of 2017.

Motion carried without opposition.

The SSC recommended that the decision table from the assessment presentation (Table 1) be conveyed to the Council to illustrate the probabilistic risk of a given catch level, given an assumption about the severity of the 2018 red tide.

Table 1. Catch limits and their corresponding probabilities of resulting in overfishing, given certain assumptions about the severity of the 2018 red tide event relative to past red tide events, and using a P* of 0.427 from the ABC Control Rule. Catch is in gutted weight. These data incorporate Fishing Effort Survey-adjusted recreational MRIP data.

Scenario	2020-2024 Mean Catch (Pounds)	No 2018 Red Tide	Half 2014	2014	2005	Double 2005
Equilibrium yield at F_{MSY} proxy ($F_{SPR30\%}$)	7,643,329	**0.50**	0.82	0.98	1.00	1.00
F at Optimum Yield (F_{OY} = 75% $F_{SPR30\%}$)	6,423,319	0.15	0.40	0.74	0.90	1.00
Landings fixed at 2017 target	4,305,711	0.00	0.01	0.05	0.11	0.83

Data from FWRI's red tide monitoring program indicated that the spatial extent, intensity, and duration of the 2018 red tide was similar in scale to the 2005 red tide event. The SSC agreed that due consideration of the effects of the 2018 red tide event was necessary. One proposal was to consider the slope of a line from the assumed 2019 landings to a point when the equilibrium yield is achieved. The SSC could then select a certain number of years of catch projections to recommend to the Council. The SSC also agreed that annual interim analyses would be necessary to monitor the stock.

The SEFSC produced additional analyses reflecting an assumption of the 2018 red tide event being equivalent to the 2005 event, based on the information from FWRI's red tide monitoring unit. These analyses are shown in Table 2, and are based on the current sector allocations of 76% commercial and 24% recreational.

Table 2. Update to the projections decision table for SEDAR 61 using the proposed OFL and ABC for the 2005 red tide scenario. Catch is in gutted weight. These data incorporate Fishing Effort Survey-adjusted recreational MRIP data.

Catch (Lbs)	No 2018 Red Tide	Half 2014	2014	2005	Double 2005
5,348,324	0.025	0.100	0.299	**0.500**	0.997
5,190,960	0.018	0.075	0.242	0.427	0.993
5,130,000	0.016	0.067	0.222	0.399	0.990
4,900,000	0.009	0.043	0.155	0.300	0.975

Modifying the treatment of recruitment deviations in the projections was also offered as a way to smooth the characteristic spike in the projected yields. Doing so assumes no recruitment deviations from the mean, and yields less pronounced increases from 2019 to 2020 and beyond. The revised yields still increase over time to the equilibrium yield.

The SSC discussed the difference between using the lowest yield for a five-year projection period (2020 – 2024) versus the mean of the annual yields for the same period. The SSC thought that using the average of the annual yields would better encompass uncertainty in the projections, and provide more stability for the proffered time period, than using the lowest annual yield. The SSC noted that their OFL and ABC advice is based on the data and projections from the SEDAR 61 stock assessment; however, the Council should consider input from the fishermen and trends in landings when determining at what level to set the ACL. The SSC added that red grouper is not considered overfished under the new definition of MSST; under the old definition, red grouper would be considered overfished as of 2017. Given these factors, the SSC determined that red grouper constituted a special circumstance, since the SEDAR 61 assessment did not appear to be capturing the decline in abundance observed by the fisheries.

> **Motion: The SSC moves that for Gulf of Mexico Red Grouper, the OFL is 5.35 million pounds gutted weight. The OFL is based on the average yield from projections in SEDAR 61 using the current sector allocations (76% Comm / 24% Rec) and assuming the impact of the 2018 red tide is approximately the same as the 2005 red tide on the red grouper stock.**

> *Motion carried 15-6.*

The SSC asked if it was possible to back-calculate from FES-adjusted MRIP catch recommendations to APAIS-only adjusted MRIP catch recommendations. The SEFSC indicated it was possible; however, a method for doing so has not yet been developed and vetted. In making a recommendation for ABC, the SSC indicated an inclination to decrease the P* value to 0.3 to account for the decline in landings and abundance in the stock. Using the status quo P* value of 0.427 may actually be a higher risk than calculated by the current ABC Control Rule, as there is no metric to incorporate known unknowns.

Motion: The SSC moves for Gulf of Mexico Red Grouper to have an ABC of 4.9 million pounds gutted weight.

Motion carried 15-5 with 1 absent and 1 abstention.

Draft Format of Executive Summary using SEDAR 61 as an Example

SEFSC staff presented a draft executive summary with new abbreviated formatting for the SSC's consideration using SEDAR 61 as an example. The goal of the new formatting is to report pertinent SEDAR results that highlight key figures and findings along with stock considerations and stock status. The SSC stated that the intended audience for the summaries should be the Council and fisheries stakeholders. The SSC emphasized the importance of prominently presenting the stock status at the beginning of the document, making the document searchable, and keeping SEDAR executive summary formatting consistent across species. The SEFSC agreed and indicated they would continue to welcome future input on the executive summary draft from the SSC.

Update of Itarget Model and Projections for Gulf Lane Snapper including OFL and ABC Recommendations

On June 6, 2019, in response to notification from NMFS that Gulf lane snapper experienced overfishing in 2017 and 2018, the Council requested that the SEFSC provide an update to the Itarget model used to assess the species in SEDAR 49 (2016). SEFSC staff presented an update of the Itarget model, which was rerun to incorporate four more years of collected headboat landings data, which were presented in APAIS-adjusted MRIP values. FES-adjusted MRIP values were not used, but are available. The update resulted in higher suggested catch advice than what was proposed in SEDAR 49. The SSC inquired why increased headboat effort had not yielded increased landings. The SEFSC indicated that the Itarget method standardizes CPUE as an index of abundance which was informing the stock increase. It was noted that when the ABC for lane snapper is exceeded, the fishery is subject to an in-season closure in the following year if harvest is projected to again exceed the ABC. The SEFSC also stated that several sensitivity runs conducted during SEDAR 49 indicated that the model was sensitive to changes in the Itarget scalar, and so a scalar of 0.7 was retained for the update. The model outputs a distribution of potential harvest relative to the chance of overfishing, where a 50% probability of overfishing is set as the OFL. The SSC recommended that the lane snapper stock continue to be monitored frequently, since the stock is considered "data-limited" and updates to the stock assessment are easily completed.

Motion: The SEDAR 49 update for lane snapper is the best scientific information available. The OFL at 50% is 603,195 lbs and the ABC at 30% is 588,965 lbs.

Motion carried with 1 opposed.

Review of SEFSC Key Stocks Analysis and Review Gulf Stocks Suitable for Interim Analysis

Interim Analyses (IA) can be used adjust ACLs between stock assessments using current data, help track trends in abundance, and are based on a combination of analyses of indices and management procedures. Additionally, IA could serve as tool to monitor stock abundance to discrete disturbance events such as red tide or oil spills. For an IA, indices for the species of interest are evaluated to select those that better track trends in harvest data. These indices can be fishery-dependent or -independent, although fishery-independent indices are preferred. Indices don't always follow the data; therefore, when selecting an index(s), it is recommended that the data are robust. Examples of fishery-independent and -dependent indices for three fish species in the Gulf (red snapper, red grouper, and gray triggerfish) were presented. The SSC recommended becoming familiarized with this process, and that user input should be used to fine-tune observations.

Review of South Atlantic Council SSC Recommendations for MRIP APAIS/FES Survey Methods

Previously, the SSC had agreed to the conduction of abbreviated update assessments designed to incorporate updated and recalibrated MRIP data, which would have been calibrated to account for modifications from APAIS and FES. Ultimately, analytical delays resulted in the SSC withdrawing its support for the conduction of those abbreviated update assessments for Gulf stocks.

Concurrently, the South Atlantic Fishery Management Council proceeded with these abbreviated update assessments for five species (red porgy, greater amberjack, king mackerel, golden tilefish, and gag). Ultimately, due to the lack of review and clarity on the recalibration of the recreational data used in those assessments, the South Atlantic SSC rejected those assessments for use in management. Concerns were expressed with regard to the variability in the data over time, the magnitude of differences in landings and effort after calibration of the landings data, the identification and treatment of outliers, and other factors.

The NMFS Office of Science and Technology provided a workshop for the South Atlantic SSC in August 2019 to detail the sampling, calibration, and methodologies behind the APAIS and FES adjustments to MRIP. Questions remained about the selection of data calibrated to MRIP FES for a stock assessment. Further, the ability to simulation-test the methods for accuracy and precision against a known environment appears to be difficult, since whatever artificial effort environment is created for simulation testing will bias the results by its design. Also, the South Atlantic SSC was not able to discuss the effect of the new data on catch recommendations and their use in the South Atlantic SSC's ABC Control Rule.

The SSC thought it could be very informative to receive a presentation similar to those received by the South Atlantic SSC. Understanding the differences in the data pre- and post-recalibration would help inform future SSC recommendations to the Council.

Review of Recommended Use of the Current Gulf of Mexico Surveys of Marine Recreational Fishing in Stock Assessments

Beginning in 2013, the Gulf states began working on developing independent recreational data collection programs, primarily for red snapper. Each of the five Gulf states developed general or supplemental surveys, with certification of those surveys by MRIP. The initial understanding by the states was that certification by MRIP would mean the use of the data generated by that survey for assessment and quota monitoring purposes. It became clear that there would need to be some method for combining the data from the different states, which were tantamount to different data "currencies" compared to APAIS/FES-adjusted MRIP. Calibration methods now exist for some but not all state surveys.

Because of a lack of uniform calibration methods for including these additional surveys, NMFS proposed using only MRIP data calibrated for APAIS and FES for informing stock assessments. This is Option 1a in the document. Once calibration methods are available for all state surveys, back-calibration from MRIP data used for the assessment can be done to provide catch advice to each state based on that state's data collection program. The ultimate goal is to integrate both general and supplemental surveys from the states to inform the stock assessment process for all species covered by a given survey, with state-specific catch recommendations generated by state for monitoring landings for the applicable species. This is Option 1c in the document.

Targeted sampling will be more effective with the inclusion of supplemental surveys compared to MRIP data alone, largely due to differences in sample coverage within survey-specific sample frames. These surveys have the capacity to reduce overall scientific uncertainty in recreational data by decreasing gaps in coverage over both space and time. Concerns remain with differences between the "currencies" under which the data are initially collected and reported, those used in the assessment, and then those ultimately used for quota monitoring. Resolving a method for seamlessly transitioning between currencies will be of paramount importance to moving forward with both MRIP and the state-specific surveys.

SSC members discussed how to proceed with using state-specific surveys, and encouraged more cohesive methods and including as much data as possible. The SSC also endorsed ensuring that comparisons of recreational data, pre- and post-recalibration, are included in the terms of reference for all future assessments for which APAIS/FES-adjusted MRIP data are used.

Discussion of Council Research and Monitoring Priorities for 2020 – 2024

The SSC reviewed the Council's proposed research and monitoring priorities for 2020 – 2024. The updated document has modified the original list of species-specific recommendations to avoid duplicating efforts by SEDAR to track those research recommendations. The SSC had no additional comments or changes.

Update to Revisions of Status Determination Criteria Amendment

Action 1 (Defining maximum sustainable yield proxies)

Council staff gave a presentation on considerations for the revised document. These revisions include reorganizing sub-actions 1.1 – 1.3 into a single action with 4 alternatives, each with options for setting MSY proxies for reef fish stocks, complexes, and red drum. The revised action also included an alternative to streamline the procedure in future assessments of reef fish stocks and complexes. The Council decided not to use indicator species, and so this was removed from the document. The SSC stated that the previous recommendation of yield at $SPR_{30\%}$ as the MSY proxies for the reef species and complexes should remain the same. Additionally, language was added in Action 1, Alternative 4 to better define an MSY proxy for red drum as related to escapement. The SSC recommended that the MSY proxy for red drum based on the current 30% escapement rate strategy as the preferred option in Alternative 4.

> **Motion: That the preferred option for the MSY proxy for red drum be Option 4a.**
>
> **Alternative 4: For red drum, the MSY proxy is:**
> > **Option 4a: the yield that provides for an escapement rate of juvenile fish equivalent to 30% of those that would have escaped had there been no inshore fishery.**
>
> *Motion carried without opposition.*

Action 2 (Defining maximum fishing mortality threshold)

For Action 2, a modified summary diagram was presented to better illustrate the management implications of Alternatives 2 and 3. Council staff indicated that Alternative 3 was more conservative than required by the Magnuson-Stevens Act, as it would set the MFMT equal to the ABC and $F_{REBUILD}$ for stocks that are overfished and in a rebuilding plan. The SSC stated that this more conservative approach might not allow flexibility for future management considerations when setting MFMT.

> **Motion: For Action 2 the Committee recommends Alternative 2.**
>
> **Alternative 2: For stock where an MSY proxy has not been defined, set the MFMT equal to the fishing mortality at the MSY proxy for each stock or stock complex as determined in Action 1.**
>
> *Motion carried without opposition.*

Action 3 (Defining minimum stock size threshold)

In Action 3, Alternative 5 was modified to explicitly account for stocks that are also managed by the South Atlantic Council. The SSC reiterated results from a study conducted by the SEFSC which indicated that fish stocks generally do not fall below 75% of B_{MSY} under natural

environmental variation. However, it was noted that the red grouper assessment did estimate some reductions in biomass of about 30% due to red tide, which would be an exception to this generality. The SSC decided to recommend Alternative 3 as the preferred. The SSC previously recommended that the MSST not be set at the **MSST = 0.50*B$_{MSY}$** proxy, noting that the rebuilding period and required reductions in fishing mortality are likely to be more rigorous in situations where the stock biomass is below 50% of B$_{MSY}$.

> **Motion: In Action 3, make Alternative 3 the preferred.**
>
> **Alternative 3: MSST = 0.75*B$_{MSY}$ proxy.**
>
> *Motion carried 16-3.*

The SSC recognized that having different definitions for species managed by both the Gulf and South Atlantic Council could be problematic, ultimately favoring consistency between the regions.

> **Motion: In Action 3, make Alternative 5 preferred.**
>
> **Alternative 5: For stocks assessed across the South Atlantic and Gulf Councils' jurisdictions (Goliath grouper, mutton snapper, yellowtail snapper, and black grouper), MSST for these species would use existing definitions of MSST defined by the South Atlantic Council.**

Table 2.2.1. South Atlantic Council MSST definitions for four snapper-grouper stocks and South Atlantic: Gulf allocations for three stocks.

Species	MSST
Mutton snapper	$0.75*SSB_{30\%SPR}$
Yellowtail snapper	$0.75*SSB_{30\%SPR}$
Black grouper	$0.75*SSB_{30\%SPR}$
Goliath grouper	$(1-M)*B_{MSY}$

> *Motion carried without opposition.*

Action 4 (Defining optimum yield)

Council staff presented a number of potential approaches to structuring the document action for defining optimum yield (OY), including collapsing the considerations for all reef species and red drum into a single alternative with several options, with the goal of streamlining the definition for all reef fish stocks and stock complexes along with red drum. The SSC reiterated previous discussions where OY is difficult to define because of the lack of quantitative socioeconomic data. The SSC stated that it was imperative to convey all extensive discussions the group has had on defining OY, and that the Council consider these discussions in their management decisions for OY.

Motion: In Action 4, any values in the range presented under Alternative 2 are acceptable.

Alternative 2: For reef fish stocks and red drum where OY is undefined, OY, implicitly accounting for relevant economic, social, or ecological factors, would be the yield from fishing at:
> **Option 2a. 50% of F_{MSY} proxy.**
> **Option 2b. 75% of F_{MSY} proxy.**
> **Option 2c. 90% of F_{MSY} proxy.**

Motion carried 17-2 with 1 absent and 1 abstention.

Discussion of the Gulf SEDAR Assessment Schedule

Council staff reviewed the SEDAR schedule for assessing Gulf stocks, and clarified that a 2021 assessment of gray triggerfish had been removed to accommodate a research track assessment for red snapper and an operational assessment for gray snapper. The SEFSC added that the stock assessments for Spanish mackerel and yellowedge grouper are now almost 10 years old.

Scope of Work: Gray Snapper Operational Assessment

Council staff worked with SEFSC staff to revise the gray snapper operational assessment statement of work. Under term of reference #3, "or" was changed to "and" for the request for projections for MFMT. Mr. Gregory identified an issue with the length at which 50% of females are sexually mature (L_{50}), noting that the estimated size from the literature (253 mm fork length [FL]) differed from the size ultimately recommended for use in the assessment (300 mm FL). Another issue identified was that the equation for determining the proportion of mature individuals for a given size (mm FL) always yields >99% maturity, regardless of the size fish used in the calculation. Mr. Gregory identified several ranges of size-at-maturity estimates, and questioned why no sensitivity analyses for L_{50} were conducted in the previous stock assessment (SEDAR 51 2018).

The SEFSC expressed an opposition to requests for alternative base case models as a method for answering research questions of this type, stating that a base case requires a considerable workload to produce the requisite biomass estimates, model diagnostics, projections, and more. Further, the prescriptive nature of detailing the parameter estimates for the model *a priori* should be avoided, with the working groups involved in the data process making recommendations based on examinations of contemporary data. The SEFSC ultimately suggested that a sensitivity run for L_{50} would capture the interest in an alternative state of nature. Traditionally, the preferred approach for SEDAR assessments has been to use the estimate of L_{50} from the life history working group developed during the Data Workshop portion of the assessment. Most SSC members agreed with letting L_{50} be determined in this manner, and disagreed with being prescriptive with how to parameterize key functions of the base case model.

Motion: Consider SEDAR 51 recommendations, and any new information, for reproduction.

Motion carried without opposition.

Inclusion of state survey data for the upcoming gray snapper operational assessment was discussed, with the SSC expressing an interest in the differences in the catch and effort estimates collected by the general state surveys which currently monitor gray snapper (LA Creel and TPWD Sport Fish Survey). The SSC recognized that much work remained to be able to compare FES-adjusted MRIP data and state survey data, and agreed that it would be preferable to examine the differences in the various surveys against MRIP-FES for a suite of species simultaneously. The SEFSC cautioned that additional considerations under the terms of reference extends the project timeline, and that tradeoffs may be necessary with respect to throughput of other assessments for a region.

Terms of Reference and Participants: SEDAR 70: Gulf of Mexico Greater Amberjack

The terms of reference for SEDAR 70: Gulf of Mexico Greater Amberjack, which is an operational assessment, were based on the earlier statement of work approved by the SSC. Under term of reference #3, "or" was changed to "and" for the request for projections for MFMT. Consideration of supplemental state survey-collected recreational data to augment MRIP data in the assessment was discussed; however, the methods necessary to make the appropriate conversions have not yet been finalized. The SSC asked about any anticipated effects of the recent reduction of the commercial trip limit from 1,500 pounds to 1,000 pounds gutted weight per trip. Council staff clarified that no effects were expected, since the regulations have not yet been implemented.

> **Motion: To approve the terms of reference for SEDAR 70: Gulf Greater Amberjack as modified.**
>
> *Motion carried without opposition.*

Drs. Benny Gallaway, Jim Tolan, and Kai Lorenzen volunteered to participate in SEDAR 70 on behalf of the SSC.

Terms of Reference and Participants: SEDAR 72: Gulf of Mexico Gag

The terms of reference for SEDAR 72: Gulf of Mexico Gag, which is an operational assessment, were based on the earlier statement of work approved by the SSC. Under term of reference #3, "or" was changed to "and" for the request for projections for MFMT.

> **Motion: To approve the terms of reference for SEDAR 70: Gulf Greater Amberjack as modified.**
>
> *Motion carried without opposition.*

Drs. Dave Chagaris, Jim Nance, Luiz Barbieri, and Mr. Bob Gill volunteered to participate in SEDAR 72 on behalf of the SSC.

Discussion of Allocation Review

Staff gave a presentation on the timing and frequency of sector allocation reviews in the Gulf. Staff discussed the evaluation of fisheries allocation options (FMP amendment) as defined by the NMFS Allocation Review Policy. Staff provided an overview of the allocation review policy and discussed the adaptive management suggested by the policy. The three types of review triggers, i.e., criteria for initiating allocation reviews were discussed. Staff noted that the Gulf Council selected time-based triggers and the Council's public comment process as primary and secondary allocation review triggers, respectively. The expected start dates for the initial reviews of Gulf allocations were then presented. A Council motion requesting the establishment of an allocation review workgroup and the current membership of the workgroup were provided. Staff presented review procedures and steps listed by the allocation review workgroup, including: a notice indicating the allocations to be reviewed, the determination of the review panel membership, SSC and advisory panels' recommendations on the review, and Council input. Review criteria suggested by the workgroup include changes to FMP goals and objectives, ABCs, ACLs, ACL and quota utilization rates, discards and discard mortality rates, effort trends, economic efficiency, and, distributional effects. Staff also discussed a tiered allocation review approach.

SSC members inquired about the timing of Gulf and South Atlantic Councils' allocation reviews of stocks with interjurisdictional apportionment. Staff indicated that the two Councils have adopted the same time interval for these reviews. SSC members inquired about opportunities to conduct additional reviews. Staff noted that in addition to the reviews based on the time triggers, the Council could initiate as many reviews as it deems necessary. SSC members asked about the completion of the document on procedures and criteria for Gulf allocation reviews. Staff noted that the Gulf document would be a draft until the Council reviews the findings of the GAO report on allocation reviews scheduled to be finalized in December 2019. The SSC noted that, in determining a suite of criteria to include in allocation reviews, the Council should consider that some of these criteria are not readily available and would require time and resource consuming studies to be developed. SSC members expressed support for a tiered approach to allocation review, with tiers of increasing complexity as warranted by the allocation under review.

Review of Draft Technical Memo: "National Standard 1 Technical Guidance for Designing, Evaluating, and Implementing Carry-over and Phase-in Provisions within ABC Control Rules"

Dr. Dan Holland, an economist with the Northwest Fisheries Science Center and member of the Pacific SSC, chaired Subgroup 2 of the National Standard 1 (NS1) Technical Guidance Workgroup, which was responsible for providing guidance for designing, evaluating and implementing carryover and phase-in provisions within Council ABC Control Rules. The NS1 guidelines were last revised in 2016, after which the technical guidance subgroups were formed to address reference points, carryover and phase-in, and data-limited stocks.

Phase-in allows for a decrease of the ABC relative to the OFL to be affected over a longer time period (up to three years), as opposed to a more substantial decrease in the first year, thereby reducing negative social and economic effects following an assessment. Carryover allows for the transfer of uncaught quota in one fishing year to be transferred to the following fishing year, and

allows for the modification of the appropriate catch limits (ACL, ABC) up to the OFL to carry over that additional quota. However, the ABC still cannot exceed the OFL when applying either phase-in or carryover.

Subgroup 2 discussed changes to Council ABC control rules to facilitate the inclusion of carryover and phase-in. Several benefits of carryover were noted by the subgroup: improved safety at sea by reducing the race for fish through making uncaught quota available in the following year; improving economic stability to avoid an end-of-year market glut of fish; improved management stability against variations in fishing effort; and, stability for multispecies catch share fisheries.

Carryover is currently used around the world, including in the U.S. for a number of species. Incorporating carryover into Council ABC control rules may require consideration of: eligibility factors; when to/not to use carryover; how much remaining quota to carry over to the following year; whether carryover can apply to overfished or rebuilding stocks; how to modify ACL/ABC; using management strategy evaluations (MSE) to evaluate the robustness of management decisions; and consultation with the SSC and the applicable NMFS Science Center. Carryover can be evaluated on a case-by-case basis, combined with rerunning yield projections to generate new catch estimates when carryover is to be applied.

Several benefits of phase-in were noted by the subgroup: greater stability and less variability in ACLs over time; reduce socioeconomic strain from large changes in catch limits; and, decreased management uncertainty by reducing the magnitude of catch limit changes. Like carryover, phase-in is used around the world and within the U.S. Implementation of phase-in may require consideration of: revision of ABC control rules; describing when to use/not use phase-in; analyses to validate the prevention of overfishing in each applicable year (not to exceed three years); stock eligibility; use of phase-in for increases and/or decreases in catch limits; establishment of minimum buffers; the generation time of the stock; assessment precision; and MSE to test the robustness of the management decision.

Factors that may vary risk for implementing carryover or phase-in include the life history of the species, stock structure, spatial dynamics, fishing fleet selectivities, assessment availability and frequency, ACL monitoring accuracy, and catch uncertainty.

NMFS is looking for feedback on the technical memorandum by January 15th, 2020. The finalized technical memorandum will be published and distributed by May 2020. The regional fishery management councils are not required to use carryover or phase-in.

SSC Discussion

Data lags exist between finalized landings data and the present year. Some management decisions can be made based on preliminary data, but regardless, data must be very timely for carryover or phase-in to operate safely. Carryover may work best in fisheries where landings data are known with a high degree of precision, and are very timely in delivery. The SSC asked about coping with exogenous effects on stocks, such as episodic mortality from red tide. Dr. Holland noted that the technical guidance is generic, so that it may be applicable to multiple regions. Each region should

consider its situation individually, based on the characteristics of a species (effort, life history, external forces, etc.).

If catches exceed catch limits regularly, payback provisions would be necessary to reduce the risk of depleting the stock at a rate above that calculated through yield projections from the previous assessment, upon which the current catch limits are based. Multisector fisheries tend to make quota monitoring more difficult; better control over ACL monitoring and payback provisions may be necessary for stocks with poorer ACL monitoring control. The SSC asked about the effects of carryover on quota markets. Dr. Holland noted that no formal analysis has been completed; however, in British Columbia, individual transferable quota markets can show increased quota trading towards the end of the fishing year to fully capitalize on available quota. Carryover could reduce transaction costs if shareholders do not need to acquire additional quota in a fishing year due to carryover from the previous year.

Other Business

Winter 2019 Webinar

The Council was asked to provide comment on a draft report to Congress on recreational data collection (per the Modern Fish Act) by the end of 2019, and needs SSC input on this report. The Fisheries Social Impact Assessment Handbook may also benefit from SSC feedback prior to the end of the year. Both of these items were received shortly before the SSC meeting; therefore; the Council will review these items first, followed by the SSC. A webinar meeting would be necessary to meet these deadlines. Staff will distribute a doodle poll and draft agenda.

Recreational Data

The SSC identified a need to find pathways forward for incorporating state survey data into or alongside MRIP data in the stock assessment process, and for quota monitoring purposes. The SSC would like to determine how exactly the state data would ultimately be able to be used in stock assessments.

> **Motion: The SSC recommends an In-Person Workshop to address MRIP and FES data stream conversions and their calibration with State survey data collections as they relate to inclusion into future stock assessments.**

> *Motion carried without opposition.*

ABC Control Rule Working Group

Council staff have provided a recommendation for how to proceed with convening the ABC Control Rule Working Group. Dr. Powers will work with Council staff and other SSC members to finalize a plan, and a schedule for convening the group.

The meeting was adjourned at 4:00 pm on September 18, 2019.

Participants (*webinar*)

<u>Standing SSC</u>
Joe Powers, *Chair*
Kai Lorenzen, *Vice Chair*
Lee Anderson
Luiz Barbieri
Harry Blanchet
David Chagaris
Benny Gallaway
Bob Gill
Doug Gregory
Jeff Isely
Walter Keithly
Robert Leaf
Jim Nance
Ken Roberts
Steven Scyphers
Will Patterson
Sean Powers
James Tolan

<u>Reef Fish SSC</u>
Jason Adriance
Judson Curtis

John Mareska

<u>Mackerel SSC</u>
Jason Adriance
Kari Maclauchlin Buck
John Mareska

<u>Socioeconomic SSC</u>
Jack Isaacs
Kari Maclauchlin Buck
Andrew Ropicki

<u>Council Staff</u>
Assane Diagne
John Froeschke
Lisa Hollensead
Ava Lasseter
Jessica Matos
Natasha Mendez-Ferrer
Ryan Rindone
Carrie Simmons

<u>Presenters</u>
Michael Drexler, OC
Dan Holland, NMFS
Skyler Sagarese, NMFS
Matt Smith, NMFS

<u>Council Member</u>
Leann Bosarge

<u>Others</u>
Steven Atran
Roy Crabtree, NMFS
Kenneth Daniels
Jason Delacruz
Sue Gerhart, NMFS
Rich Malinowski, NMFS
Peter Hood, NMFS
Julie Neer, SEDAR
Molly Stevens, NMFS
Beverly Sauls, FWRI
Bob Zales II
Colin Frank, UF