

**Standing, Reef Fish, Shrimp,  
and Socioeconomic SSC  
Meeting Summary  
May 10 – 11, 2022**

The meeting of the Gulf of Mexico (Gulf) Fishery Management Council's (Council) Standing, Reef Fish, Shrimp, and Socioeconomic Scientific and Statistical Committees (SSC) was convened at 9:00 AM EDT on May 10, 2022. The agenda for this meeting was modified to include solicitation of Shrimp SSC members for an empirical dynamic modeling working group during Other Business. The amended agenda, and the minutes from the March 2022 SSC meeting, were approved as written. [Verbatim minutes from past SSC meetings can be reviewed here.](#)

Dr. Jim Nance will represent the SSC at the Council's June 21 – 24, 2022 meeting in Fort Myers, Florida.

*Presentation: National Standard 2 and the Best Scientific Information Available*

Dr. Patrick Lynch (NOAA Office of Science and Technology) presented on sustainable fisheries management and the use of the best scientific information available. National Standard 2 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) details the requirements for NMFS and the Council to use the "best scientific information available" (BSIA) when recommending management measures for fisheries. The models, research, and surveys used to inform management need to align with BSIA, the approval process for which should be established and followed by the Council and its commensurate NMFS regional office. Dr. Lynch noted that a survey may be appropriate for one species, but not another, perhaps due to sparse spatial coverage; thus, the survey itself may not be BSIA for a species for which spatial coverage is lacking. Rather, the analysis of the species, including (or not) the survey, which ultimately directly informs management, is considered for a BSIA determination. The Council and the Southeast Regional Office (SERO) are developing this Gulf of Mexico BSIA regional framework, which establishes the methods by which analyses are conducted (e.g., for stock assessments, the terms of reference) and peer-reviewed. The peer-review process may find the science supports all, some, or none of the decisions being considered (e.g., stock status, rebuilding timelines, changes to harvest strategies, sector allocations). The SSC makes recommendations about whether a stock assessment or other analysis represents BSIA, which NMFS uses in its ultimate determination and defense of such.

The SSC asked whether strict adherence to BSIA protocols is required, or whether the review of a scientific product (e.g., the work being conducted by the Marine Recreational Information Program [MRIP] Transition Team) is allowed some flexibility. Dr. Lynch replied that the transition and calibration process could be best explained by members of that team. An SSC member questioned that process, and noted the ongoing struggles to achieve the recommended modifications by the cooperating states that are participating in the MRIP Transition Team, while also achieving their own goals for their respective surveys. Another SSC member asked whether the SSC should be considering datasets or streams as BSIA. Dr. Lynch replied that the SSC could instead recommend

a dataset, survey, or other item as *consistent with BSIA*, as opposed to singularly representing BSIA. The SSC also asked about the ability to deviate from previously determined BSIA if other credible information is presented that may offer an alternative view of an issue, especially if a pending management action has not yet been implemented as law. Dr. Lynch replied that, in these circumstances, consultation with SERO and Southeast Fisheries Science Center (SEFSC) would be necessary, and that the Council and SERO should endeavor to consider their current processes in the formulation of their regional BSIA framework. Council staff noted its review of a draft of this BSIA framework, which currently requires further development before being reviewed by the SSC.

The SSC thought it would be beneficial for the NOAA Office of Science and Technology to present this information to the other southeastern SSCs and Councils. Council staff said they would involve the SSC in the development of the BSIA framework's development once the current draft is revised. An SSC member asked whether voting by individual members of the Gulf SSC, compared to consensus decisions, diminished the SSC's BSIA determination. Dr. Lynch did not think voting had a negative impact on the process.

### *Discussion: Acceptable Biological Catch Control Rule Modifications*

Dr. Shannon Cass-Calay (SEFSC) reviewed a May 2021 presentation which proposes an alternative approach to the Council's current Acceptable Biological Catch (ABC) Control Rule, used by the SSC for determining the scientific uncertainty between the overfishing limit (OFL) and the ABC. The current ABC Control Rule has been in place since 2011; however, SSC members have regularly expressed a desire to revisit the control rule due to its propensity for generating narrow buffers between the OFL and ABC that is not representative of the scientific uncertainty within the stock assessment. The difference between the ABC and annual catch limit (ACL) is intended to be representative of the management uncertainty and the ACL is set by the Council.

The determination of ABC is also informed by the probability of overfishing ( $P^*$ ) to set catch levels. The probability of overfishing cannot exceed 50% (MSA). Each regional Council must establish an ABC Control Rule based on scientific advice from its SSC. The ABC Control Rule is used by the SSC to provide catch advice and that catch level cannot be exceeded by the Council when setting the ACL. The SSC can deviate from the ABC Control Rule, but must provide rationale for its decision. An ABC Control Rule can apply to data-rich and data-limited assessments, and can generate varying estimates of uncertainty based on the quality and robustness of the data provided. Many Councils use a tiered approach for their ABC Control Rule. Tier 1 for the Gulf Council is conditioned on the stock assessment estimating maximum sustainable yield (MSY), or its proxy, and produces a probability density function (PDF) of the OFL. The OFL equals the yield at the maximum fishing mortality threshold (MFMT), and the ABC equals the yield at the  $P^*$  percentile which represents the acceptable risk of overfishing (risk tolerance), from the projection of MFMT (or  $F_{REBUILD}$  in the case of stocks subject to a rebuilding plan).

Under the Council's present ABC Control Rule, the choice of  $P^*$  is informed by the performance of the stock assessment to encapsulate the true level of uncertainty in sustainable catch levels. A risk determination table is used to categorize criteria for selecting a  $P^*$  value which incorporates

results from the stock assessment, the use of  $F_{MSY}$  (or its proxy; e.g.,  $F_{SPR30\%}$ ,  $F_{0.1}$ ), the characterization of uncertainty (e.g., fully integrated, sensitivity runs, none), the severity of any retrospective patterns, and the incorporation of environmental covariates. When an assessment is determined to underestimate true uncertainty, the table produces a lower value of  $P^*$  (reducing risk tolerance) which conflates the characterization of scientific uncertainty with the level of risk tolerance (a management consideration).

The SEFSC proposes that the risk of overfishing ( $P^*$ ) and scientific uncertainty (width of the PDF;  $\sigma$ ) be considered separately. Currently,  $\sigma$  calculations tends to underestimate the true scientific uncertainty (because some model variables are fixed without error, and the variance of some data inputs is predetermined), resulting in buffers between the OFL and ABC that are narrower than the true uncertainty would otherwise suggest. To address this issue, a comparison analysis of multiple stock assessments results can be performed to quantify scientific uncertainty over time and this method has been proposed by Ralston et al. 2011<sup>1</sup>, hereafter referred to as the Ralston method, for 17 Pacific stocks. Results from the Ralston method indicate a minimum  $\sigma$  ( $\sigma_{min}$ ) of 0.36 is appropriate for data-rich Tier 1 stocks and allows for  $\sigma$  to increase as data quality/quantity declines, resulting in larger buffers between OFL and ABC for lower tiers. This is in stark contrast to results from the Gulf Council's ABC Control Rule which often generates  $\sigma$  values of 0.1 for many Gulf stocks.

Dr. Cass-Calay noted that the ABC Control Rule could reduce fishing mortality ( $F$ ) below MFMT proportionally as stock size declines below  $B_{MSY}$ . It should also reduce  $F$  to zero at some level of depletion to prevent stocks from reaching a level below which successful reproduction becomes unlikely. Previously, the minimum stock size threshold (MSST) was based on natural mortality ( $M$ ). Rebuilding plans were required when the biomass of the stock ( $B$ ) was less than  $(1-M)*B_{MSY}$ . MSST is now set to 50% of  $B_{MSY}$  for many popular reef fish species (see Reef Fish Amendment 44). The stock may then be reduced to a point well below the level that produces MSY before any action is taken to reduce  $F$ . This can result in the need to enact large reductions in  $F$  (and catch) and long rebuilding plans whereas, if management action had been taken sooner, a less drastic reduction would be required. To reduce the likelihood of long and/or harsh rebuilding plans, the SSC could consider reducing  $F$  when  $B < B_{MSY}$ , and consider this level of depletion when setting ABC.

An update to Ralston et al. 2011 has since been published by Privitera-Johnson and Punt (2020<sup>2</sup>), which suggests using probability-based harvest control rules to incorporate scientific uncertainty and risk tolerance when setting catch limits by scaling buffers between catch limits with scientific uncertainty. This revised approach bases the calculation of scientific uncertainty on projected spawning stock biomass (SSB) and OFLs, accounting for uncertainty in recruitment and among-assessment variation. OFL projections yielded a higher estimate of uncertainty, assuming a deterministic stock-recruitment relationship, and assuming a stochastic stock-recruitment relationship produced smaller estimates of uncertainty. Results from this updated method would result in a  $\sigma_{min}$  value of 0.5 for Tier 1 stocks. The SEFSC proposed using the Ralston method results for calculating  $\sigma_{min}$  and assigning a default of 0.4 for  $P^*$  for Tier 1 Gulf stocks (see Table

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<sup>1</sup> <https://media.fisheries.noaa.gov/dam-migration/ns1-ralston-et-al-2011.pdf>

<sup>2</sup> <https://academic.oup.com/icesjms/article/77/2/515/5675586?login=false>

2.4.1 GMFMC Generic ACL Amendment 2011<sup>3</sup>) Tiers 2 and 3, for less robust data quality, would subsequently increase the  $\sigma_{\min}$  as uncertainty increases.

An SSC member asked if using the CVs from the models was a viable option. Dr. Cass-Calay replied that the lack of fit to some data in the model could confound the ability to estimate catch from the model as a whole. Further, some variables are fixed, which artificially constrains the uncertainty. Even if the scientific uncertainty for a given model was able to be completely and quantitatively estimated for the inputs examined, there could still be an ensemble approach that may allow for the consideration of even more factors and input data.

An SSC member proposed divorcing the process of setting buffers based on stock status to focus the determination of ABC to scientific uncertainty. Another SSC member stated that a review of individual stock characterization by Tier was warranted if values of  $\sigma_{\min}$  were to be assigned to Tier levels. Conceptually, the buffers for the Tier 1 stocks should be the same; however, stocks within Tier 1, while considered data-rich, have varied associated uncertainty with their assessments (e.g. vermillion snapper versus greater amberjack) and an assigned  $\sigma_{\min}$  across any given Tier designation may not be appropriate. Additionally, the SSC member indicated that the Council should also consider reexamining its determinations for P\* if the Tier characterization for stocks is updated to accommodate potential changes to the ABC Control Rule.

An SSC member noted that the Council's definition of MSST as 50% of  $B_{MSY}$  is lower than the historical scientific definition of an overfished status ( $B_{Current} < B_{MSY}$ ). The SSC member argued that if a stock is depleted below MSY, fishing mortality should be reduced until such a time that the biomass level recovers. The SSC member proposed reducing the ABC from the OFL by the percentage of  $B_{Current}$  to  $B_{MSY}$ , down to the MSST, with the Ralston multiplier only applied when  $B_{Current}/B_{MSY}$  is greater than or equal to 1.

An SSC member noted that the Ralston et al. 2011 method was a retrospective analysis designed to produce a measure of uncertainty based on modeling error, as opposed to looking at the uncertainty from different and/or new data sources. He also noted that the SEFSC proposed approach using results of the Ralston method would apply a static 9% OFL/ABC buffer and that should be communicated to the Council as such. The SSC member advocated for examining the Privitera-Johnson and Punt approach of a projection-based analysis using Gulf stocks may be more appropriate. The Restrepo et al. approach from 1998<sup>4</sup>, instead of reducing the ABC from the OFL, reduces  $F_{MSY}$  to  $F_{OY}$ , with  $F_{OY}$  being set as the ABC, and  $F_{MSY}$  being set at MFMT. In this approach, the difference between OFL and ABC reduces as the stock biomass increases towards  $B_{MSY}$ . The SSC member thought that the issue as presented was being recommended as more of a percentage reduction in yield, when a reduction in F would achieve a similar result that may better scale to the difference between  $B_{Current}$  and  $B_{MSY}$ .

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<sup>3</sup> [https://gulfcouncil.org/docs/amendments/Final%20Generic%20ACL\\_AM\\_Amendment-September%209%202011%20v.pdf](https://gulfcouncil.org/docs/amendments/Final%20Generic%20ACL_AM_Amendment-September%209%202011%20v.pdf)

<sup>4</sup> <https://www.st.nmfs.noaa.gov/Assets/stock/documents/Tech-Guidelines.pdf>

Dr. Cass-Calay verified that the Ralston approach does produce fixed buffers at a given standard deviation, which increases as the standard deviation increases. An SSC member preferred a reduction in  $F$  or an increase in buffer that scaled linearly with the difference between  $B_{\text{Current}}$  and  $B_{\text{MSY}}$ . The SSC member thought it would be useful to quantify what constitutes a “narrow” buffer and suggested tasking the determination to the ABC Control Rule interdisciplinary planning team. Council staff discussed presenting the difference between the OFL and ABC for a given stock versus the interannual variation in the directed fleet landings for that stock. The purpose would be to qualitatively characterize the historical probability of exceeding the ABC relative to the OFL, based on a given buffer. An SSC member asked whether this would simply inform management uncertainty and Council staff indicated that such an examination could be informative for stocks with little fishery independent data.

An SSC member thought the relationship between OFL and ABC could be fixed when  $B_{\text{Current}}$  is greater than  $B_{\text{MSY}}$ , and then scaled to a standard deviation when  $B_{\text{Current}}$  is less than  $B_{\text{MSY}}$ . This flat reduction scaled to a standard deviation would simplify the approach. Another SSC member thought a dedicated effort by the Council, SERO, and/or the SEFSC or their divisions to fund and support the development of a meta-analysis of Gulf stocks to examine the implications of the Ralston approach and estimate a Gulf-informed  $\sigma_{\text{min}}$  would be quite beneficial to the revision of the ABC Control Rule. They also noted the poor understanding of the stock-recruit relationship may make informing the Privitera-Johnson and Punt method problematic due to assumptions needed in the projections approach about those data. Other SSC members supported this work, but questioned how much funding would be required, what group would be available to conduct the research, and how quickly the project could be completed.

An SSC member noted that the penalties of not accounting for stock status when determining catch limits may not have been adequately communicated to the Council in the past. In addition to recommending catch levels, he advocated for also presenting harvest estimations based on a healthy stock ( $B_{\text{Current}} \geq B_{\text{MSY}}$ ) to highlight how levels are affected by available spawning stock biomass.

The SSC discussed convening a sub-group of its membership to work on development of options to the ABC Control Rule. Creating an ABC Control Rule workgroup has been explored in the past but has ultimately proved difficult to complete due to workload. Dr. Cass-Calay indicated that the SEFSC could complete an analysis using the Ralston method for Gulf Tier 1 stocks to determine an estimate of  $\sigma_{\text{min}}$ . This work could be completed in time for the September 2022 SSC meeting. However, exploring the update of the Ralston method outlined in Privitera-Johnson and Punt 2020 would be more time consuming and would likely take a year to complete. Conducting a Ralston-style analysis of Gulf stocks to produce a Gulf-specific  $\sigma_{\text{min}}$  would require additional time and staff resources beyond what could be delivered to the SSC for review by September 2022. The SEFSC added that the stocks which are assessed most frequently would be best for developing a Gulf-centric  $\sigma_{\text{min}}$  for informing a revised ABC Control Rule.

An SSC member said that there is not currently a target harvest level or fraction used by management that allows for the setting of catch limits that truly prevent overfishing. If properly set and managed, stocks should never drop below MSST, yet they still do as a result of unknown or underestimated scientific and management uncertainty. The SSC member contended that the

SSC should work to identify whether these issues were one of precision or bias resulting from those sources of uncertainty that have not yet been identified.

An SSC member thought continuing discussions should be considerate of the application of management strategy evaluation (MSE) tools to inform the management risk, while moving forward within the SSC with a straw man revised ABC Control Rule to test the decisions and preferences the SSC mentioned thus far at this meeting. The SEFSC will work with Dr. Kristin Privitera-Johnson, who is willing to provide the R scripts of her analysis, to explore comparisons between the Ralston method with the recent update.

**Motion: The SSC recommends that the Council request that the SEFSC develop the  $\sigma_{\min}$  using the Ralston et al. 2011 method for Gulf of Mexico Tier 1 (data rich) stocks.**

*Motion carried without opposition, and with two absent.*

An SSC member discussed setting the ABC at a value not directly informed by the current ABC Control Rule, such as 75% of  $F_{MSY}$ . In the past, there have existed circumstances where the ABC, when set at the equilibrium yield at optimum year ( $F_{OY}$ ), exceeds  $F_{MSY}$ . They reasoned that setting ABC in this way may more appropriately account for unknown scientific uncertainty, especially in scenarios where this imbalance exists. Another SSC member thought that expanding the analysis from Restrepo to Ralston and Privitera-Johnson and Punt would allow for a larger evaluation for the SSC to consider. An SSC member thought a blanket application of 75% of  $F_{MSY}$  was less appropriate, since some stocks may be more data rich than others, and such an approach would discount the quality of the data used in those circumstances. Another SSC member asked whether management uncertainty could also be evaluated; an SSC member thought it better for the Council to specifically request analyses of management uncertainty from its own body.

**Motion: The SSC recommends that the Council request that the SEFSC evaluate the potential for setting ABC at 75% of  $F_{MSY}$ , or its proxy, without exceeding OFL, as outlined in Appendix A of the Restrepo et al. 1998 report for Tier 1 stocks.**

*Motion carried with one opposed and four absent.*

**Motion: The SSC recommends the Gulf Council to request a management strategy evaluation to better account for scientific uncertainty, including imprecision and bias issues, in reducing ABC from OFL estimated or projected from data-rich Gulf stock assessments. Approaches to be considered should include those of Restrepo et al. (1998), Ralston et al. (2011), and Privitera-Johnson and Punt (2020) among others.**

*Motion carried with two abstentions and four absent.*

The SSC discussed next steps for revising the ABC Control Rule. Specifically, the SSC has acknowledged and addressed how to analyze and define  $\sigma_{\min}$ . The tiers (and sub-tiers) of the ABC Control Rule could also be discussed, as there may be varying levels of “data rich” with respect to

stock assessment designations. Another option would be to forego the use of  $B_{\text{critical}}$  and direct the development of a rebuilding plan whenever a stock biomass goes below MSST (or some other threshold). The SSC noted it would need to justify to the Council how an evaluation of MSST before the biomass reaches a level equivalent to 50% of  $B_{\text{MSY}}$  would better constrain harvest to prevent that biomass from falling below 50% of  $B_{\text{MSY}}$ . The SSC member further discussed defining  $B_{\text{MAX}}$ , with it being set equal to  $B_{\text{MSY}}$  or some fraction thereof; however, considerate of total mortality (natural and fishing), the SSC was divided on options for defining this parameter. An SSC member recalled that the SSC has considered  $P^*$  as a characterization of how well the stock is described by the stock assessment; thus, using  $P^*$  as a fixed value for all Tier 1 stocks differs considerably from the SSC's current approach. While the SSC acknowledged the importance of the ability to harvest a stock to social and economic considerations, they also thought it pragmatic to recognize the effect of underestimating those factors which can affect harvests that are biologically and ecologically important. The SSC inquired as to other regional estimates of  $\sigma$ . Dr. Cass-Calay indicated that the Caribbean Council has generally used a  $\sigma$  of approximately 1 since so many stocks are considered data-poor. The SSC generally agreed that allowing some flexibility in assigning values of  $\sigma$  based on data availability would be beneficial.

At future meetings, the SSC will discuss new approaches to the tiered system for the ABC Control Rule, including examples from other regions, and a presentation on the differences between the OFL and ABC and recent landings for some Council-managed species. Additionally, the SSC will be given a presentation from the SEFSC in September on preliminary work for estimating  $\sigma_{\text{min}}$  using the Ralston method for Gulf stocks. In the long-term (approximately 1 year), the SSC agreed that contracted work should be conducted to explore the updates to the Ralston method to assess whether that method may also be appropriate for generating  $\sigma_{\text{min}}$  values for Gulf stocks. Another aspect of the Caribbean ABC Control Rule is the consistent use of a  $P^*$  of 0.4; however, the  $\sigma$  used there is near 1 due to the data poor nature of the Caribbean assessments. The SEFSC recalled that the  $\sigma$  controls the width of the PDF, with the  $P^*$  determining the yield from the corresponding point on that PDF in relation to MSY (OFL) or its proxy.

### *Update on Royal Red Shrimp Landings and Market Information, Gulf Shrimp Permits, Economic Returns Estimates for Permitted Vessels*

Dr. Mike Travis (SERO) presented on Gulf royal red shrimp landings from 1962-2020. He noted that landings peaked in the mid to late 1990s. He commented that, since royal red shrimp is not an annual crop species, the fishery has an ACL, which is set at 337,000 pounds of tails, and the fishery also has an accountability measure.

Dr. Travis stated that Gulf royal red shrimp landings at Atlantic ports have been less than 3,400 pounds in total from 2015-2017, with none from 2018-2019. He reviewed the inflation-adjusted ex-vessel price, for both heads-on and heads-off, for 2015-2019 for Gulf landed royal red shrimp; he could only provide prices for 2015 and 2017 as the other three years had confidential data. He added that royal red shrimp tends to get higher prices than penaeid shrimp. However, price data from 2015 and preliminary data from 2020 suggests a decline of roughly 14.4%. One SSC member inquired where the participants' effort was shifting to, as landings decreased. Dr. Travis responded that it is not a year-round fishery, and participants would already harvest penaeid

shrimp in addition to royal red shrimp. So, they are likely harvesting penaeid shrimp more now than they previously were. Another SSC member requested catch-per-unit-effort information for royal red shrimp.

Next, Dr. Travis reviewed shrimp imports from Argentina and stated that the imports had tripled from 2015-2020, with a slight reduction in 2021; however, species are not identified in the NMFS' import data. He stated that the vast majority are warm-water shrimp, which may compete with Gulf royal red shrimp. Beginning in July 2021, NMFS can determine wild from farmed product. For July-December 2021, about 23.3% of the total pounds were farmed product. Farmed product would not be red shrimp and would not directly compete with Gulf royal red. Dr. Travis noted that the increase in shrimp imports from Argentina might be contributing to the price decline of Gulf royal red shrimp. One SSC member commented that, compared to shrimp imports from Argentina, the Gulf royal red shrimp is minor noise in the total supply in the U.S. Another SSC member inquired if there was any way to track the shrimp import prices. Dr. Travis responded that it was possible and that he could examine that data for a future meeting. An SSC member asked which ports the imports may be coming into. Dr. Travis replied that he could look into that, but he would guess into Miami, since that is the primary port in the southeastern U.S. for seafood imports.

Dr. Travis next reviewed the number of valid permits and the number of active permits for 2015-2019. He stated that both groups of permits have shown a slight decline over that timeframe. However, the number of active permits may be an underestimate, since data from the historical Gulf shrimp landings dataset (dealer reports) were used, rather than a combination of that data with the annual landings form data. Dr. Travis commented that the 2015-2019 estimates are based on SERO's current, official approach for counting valid permits in a year, where a permit is counted as valid for at least one day even if later terminated in that same year, as they could have legally fished under the permit. Dr. Travis asked the SSC for its view on what data should be used for amendments and related purposes going forward. Dr. Travis inquired whether only the information from dealer reports be used to determine active permits, or if that information should be used in conjunction with reporting from vessel owners. One SSC member asked what would lead to a permit no longer being valid. Dr. Travis responded that permits could be valid, expired, or terminated. If a permit has not been renewed at a specific date, the permit is expired, and permit holders are allowed a year to renew the permit. Beyond that year, the permit, if not renewed, is then terminated.

Dr. Travis discussed the economic performance of the Gulf shrimp fishery from 2014-2019, with the note that this information would be incorporated into the current draft shrimp framework action. He noted that the 2015-2019 average may be more indicative of baseline data, as performance declined after 2014. He commented that, in 2014, shrimp price and fuel price were both high and had decreased following 2014. Dr. Travis also noted that the difference between the shrimp price and fuel price is an indicator of profitability (i.e., the greater that difference, the greater is profitability). That difference decreased noticeably after 2014. Likewise, net cash flow (excluding taxes) and net revenue from fishing operations were also notably higher in 2014 than in 2015-2019. Dr. Travis stated that 2014 appears to be an outlier for the Gulf shrimp industry. One SSC member noted that, from his memory, 2013 as well as 2014 appeared to be outliers and could relate to reduced imports. Another SSC member asked the purpose of determining baseline data. Dr. Travis explained that, for amendments, baseline economic data is needed for analysis. Council



staff stated that the Shrimp Advisory Panel had concurred with the idea of 2014 being an outlier in the data. One SSC member commented that the numbers of active permits and valid permits from 2015-2019 only showed a slight decrease, despite the economic return estimates presented. Dr. Travis responded that returns are marginal but still positive and not low enough for most participants to leave the industry.

### *Review: SEFSC Analysis of Red Grouper Stock Assessments using Alternative Marine Recreational Information Program Landings Data*

Dr. Skyler Sagarese (SEFSC) reviewed an analysis of the SEDAR 42 (2015) stock assessment which applied the MRIP-FES adjusted recreational catch and effort data for Gulf red grouper to SEDAR 42 to compare the results to the original version of the model. This analysis first corrected for an identified error in SEDAR 42 related to the model's initial conditions (virgin total and spawning stock biomass, and virgin recruitment), and also updated the estimate of red tide mortality from 2005. Recreational landings data informed by MRIP-FES through SEDAR 42's terminal year of 2013 were then used to supplant historically used MRIP recreational data informed by the former Coastal Household Telephone Survey (CHTS). Catch limits for these versions of SEDAR 42 were then projected and compared. The result is an examination of the probable catch limits resulting from these model variants. Generally, the corrected version of the SEDAR 42 base model estimated a lower SSB compared to the original, with the updated version incorporating MRIP-FES private vessel landings estimating an SSB level below the original but above that from the corrected version of SEDAR 42 using CHTS. Ultimately, after accounting for the additional recreational catch and effort, the estimated catch limits that would have resulted from SEDAR 42 (corrected, and with MRIP-FES) would have been marginally higher than those generated from the original SEDAR 42 projections, and substantially greater than those generated from the corrected SEDAR 42 projections using CHTS.

The SSC discussed the projection of the catch limits for the model variants, understanding that the intent was to explore the effects of MRIP-FES on the catch limits as parameterized under SEDAR 42. Other assessment functions like selectivity, retention, and discards are affected largely by sector allocations; thus, had the projections for SEDAR 42 been run reflective of an alternative allocation scenario, the projected catch limits would also be affected by the changes assumed to occur for selectivity, retention, and discards. An SSC member asked how the modified results compared to the continuity run of SEDAR 42 from the SEDAR 61 stock assessment process. Dr. Sagarese noted that several changes occurred between SEDAR 42 and SEDAR 61, and that a full model run with diagnostics is not typically conducted for a continuity run.

### *Discussion of Goliath Grouper Council Motion and Available Data*

Council staff began by reviewing the management history of goliath grouper. Amendment 1 to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico (Reef Fish FMP) was implemented in 1990, and set a 50-inch total length (TL) minimum size limit on goliath grouper, which was not included as part of the shallow- or deep-water grouper complexes. Amendment 2, implemented later in 1990, prohibited the harvest of goliath grouper to provide complete

protection for this species in federal waters in response to indications that the stock biomass was depleted throughout its range. Amendment 18B included a rebuilding plan for goliath grouper, based on the then-pending results of the SEDAR 6 (2004) stock assessment, and would have set total allowable catch, MSST, and MFMT for the stock. When the stock assessment was not accepted for use in management, the development of the amendment was stopped. Successive SEDAR assessments of goliath grouper (SEDAR 23, 2010; SEDAR 47, 2015) also were not accepted for informing fisheries management.

Dr. Luiz Barbieri (Florida Fish and Wildlife Research Institute [FWRI]) summarized recent management-related developments concerning goliath grouper. He stated that with the setting of OFL equal to 0 lbs, any harvest, even in state waters, could be seen as an overfishing action on that stock. SERO has stated that the FWC state waters limited harvest of goliath grouper is outside of the federal management purview. The South Atlantic Fishery Management Council's SSC has also considered the management of goliath grouper in the past, and has formally declared the OFL for goliath grouper to be "unknown", since the data are unavailable to determine what the OFL should be. Dr. Barbieri noted that this finding has been determined to be in keeping with National Standard 1 by NOAA General Counsel.

Next, Dr. Barbieri summarized a limited harvest program for goliath grouper in state waters that was approved by the Florida Fish and Wildlife Conservation Commission (FWC) in the spring of 2022. Only 200 harvest permits will be issued, with each harvested fish being tagged. Permits will be awarded via lottery, and tags are limited to one per person per year. One permit begets one tag, and tags must be immediately attached to each fish. Permit holders may only harvest goliath grouper between 24 inches and 36 inches TL, with the purpose of targeting sub-adults and avoiding the spawning stock biomass (those goliath grouper greater than 43 inches TL). Dr. Barbieri reviewed standardized catch rates from the Everglades National Park Sport Angler Survey and the MRIP catch-per-unit-effort (CPUE) per trip, which both show an increase in CPUE through 2010, after which CPUE drops in response to cold snaps in that year. After 2010, CPUE begins increasing again in both indices. Harvest is not permitted from Martin County south through the Atlantic coast of Monroe County and Dry Tortugas National Park to protect goliath grouper in areas known to have important spawning aggregations, and to prevent disruptions to dive ecotourism. FWC does not have the authority to allow goliath grouper harvest in federal waters; therefore, larger, older goliath grouper in federal waters are excluded from harvest.

Dr. Barbieri recounted that the previous stock assessments on goliath grouper have not been successful, and as such, the stock status has not been able to be revised or new catch limits established. Previous attempts have explored using a catch-free model, which does not adequately model the stock dynamics. An SSC member thought exploring what was feasible for goliath grouper would be a useful exercise, as it may be informative not only for goliath grouper management, but also for other species which have been closed to harvest for extended time periods. Dr. Barbieri replied that the South Atlantic SSC came to a similar conclusion. The SSC member asked whether it would be productive to form a working group between the Councils' SSCs to further consider this issue.

An SSC member asked what biological data could be gleaned from the slot limit allowed for harvest. Dr. Barbieri clarified that the decision to harvest was exclusively a policy decision by the

FWC. He added that there are not many data needs that could not be achieved in the length class of fish allowed for harvest. Importantly, FWC thought that although an open access fishery was not practical for goliath grouper, a non-zero harvest level was acceptable, so long as it was properly constrained; as parameterized, FWC thinks that its limited harvest program will not result in deleterious effects to the goliath grouper SSB. An SSC member thought it would be prudent to maximize the scientific products to be collected and produced by this limited harvest program. Dr. Barbieri agreed and said he would reach out to interested collaborators as appropriate.

An SSC member postulated using an escapement rate approach to managing harvest of goliath grouper in the future, if the requisite data are, or may become available. They further asked whether the limited harvest program was expected to be expanded in the future. Mr. CJ Sweetman (FWC) replied that there were no future intentions to expand the program. An SSC member thought there was potential to study economic data related to the willingness to pay for a harvest permit for the species.

The SSC discussed the formation of a joint workgroup to look at establishing a method for evaluating catch limits for federally managed species currently closed to harvest, including goliath grouper. An SSC member asked what the specific charge would be for this workgroup. Dr. Judd Curtis (South Atlantic Council Staff) noted that the South Atlantic SSC has been charged with looking specifically at stocks which have OFLs that are currently set at 0 lbs, or are otherwise undefined. Further, the workgroup would be expected to deal mostly with stocks that lack a contemporary stock assessment. An SSC member asked whether an exempted fishing permit (EFP) would be required for the FWC's limited harvest program. Dr. Barbieri replied that an EFP was not needed in this circumstance.

**Motion: For the Council to consider adding representatives from the Gulf SSC to the South Atlantic SSC workgroup in an effort to develop a cooperative workgroup focused on establishing a method for evaluating catch limits for federally managed species currently closed to harvest, including southeastern U.S. goliath grouper.**

*Motion carried without opposition and with one absent.*

### *Review: Terms of Reference for State Reef Fish Survey Run of SEDAR 72 Model for Gulf Gag Grouper*

Council staff reviewed the Council's requested State Reef Fish Survey (SRFS) run using the SEDAR 72 base model for gag grouper. This additional model run, with complete diagnostics and projections, will be conducted in 2022, using data through 2019, and will substitute the MRIP-FES data in the original and approved SEDAR 72 base model with SRFS landings data for the private vessel directed fleet. SEDAR 72 found gag grouper to be overfished and undergoing overfishing as of 2019, and the Council has initiated work on a rebuilding plan for the stock, which will need to be implemented by 2024. Dr. Barbieri reviewed the SRFS calibration process for historical landings, which is currently being peer-reviewed in conjunction with the NOAA Office of Science and Technology. The expectation is ultimately that the SSC will determine which model run (the original or SRFS-modified version of the SEDAR 72 base model) more precisely models the

dynamics of the gag grouper stock. The SSC thought it appropriate for it to also review the calibration when the model run is complete. An SSC member asked why the original SEDAR 72 base model, using MRIP-FES, was not also being updated with the most contemporary data to compare to this modified SRFS run. The SEFSC replied that the intent was not to conduct competing models which may be difficult to compare. When the SSC sees the updated SRFS-informed SEDAR 72 base model in July 2022, it will expect to review it in a manner similar to how the SSC reviews operational assessments conducted as part of the SEDAR process. Projections can be modified to include actual landings for 2020 and 2021, and a mean of the 2019 – 2021 landings assumed for 2022, to provide more contemporary management advice for use in the proposed emergency rule to reduce fishing mortality on gag grouper in 2023.

The SSC recommended specifying the SSC-proposed  $F_{MSY}$  proxy from its review of SEDAR 72,  $F_{30\%SPR}$ , and the original  $F_{MSY}$  proxy of  $F_{MAX}$ . The SSC thought its review of this alternative run should be manageable, given that the landings data from only one fleet (private vessels) and the associated age and length composition data were being supplanted for the data originally used in SEDAR 72. An SSC member thought it important to maintain the same review approach as has been applied to previous analyses. An SSC member asked which years of overlap between MRIP and SRFS are being considered for the calibration. Dr. Barbieri replied that overlapping data from May 2015 through December 2019 are informing the historical calibration of SRFS landings data. A Council member asked about the possibility of performing the same analyses for gag grouper as were performed for red grouper, for both MRIP and SRFS, and whether revised catch estimates would also be provided for this alternative model run. The SEFSC clarified that the realized landings and the assumed sector allocation from the landings data during the historical period could be summarized and presented; for the projections, however, the sector allocation must be assumed as defined by the Council for forecasting future yields. However, to repeat for gag grouper, the analysis that was performed for red grouper, to examine the historical effects of MRIP-FES level catch and effort cannot be performed without further compromising the SEDAR schedule.

The SSC commented that it was not expecting the same suite of sensitivity runs as was performed for the original SEDAR 72 base model. Further, the SEFSC noted that this alternative model run is only possible because the landings come primarily from a single state, which has a spatially comprehensive survey for estimating landings for this directed fleet. The SSC also recommended modifying the first term of reference to say, "...once historical landings have been calibrated and certified by the NOAA Office of Science and Technology."

### *Public Comment*

Mike Drexler stated that modifications to the ABC Control Rule is the single most important issue that the SSC can tackle and that he appreciates all the SSC discussion on this topic. He understands that the matter can be very technical and complex in its handling of sigma and uncertainty. However, the certainty with which stocks are managed has been unrealistic, and catch advice and other management policies have been extremely risky. Dr. Drexler provided gag, cobia, gray triggerfish and greater amberjack as examples. He emphasized that these risky management measures impact fishermen; the outlook is bleak for them outside of targeting red

snapper. If MSA and the Council process were to be condensed into one target, that target would be to achieve optimum yield. The state of Gulf stocks currently is far from it. He also expressed concern over SEDAR projections and historical uncertainty and reminded the SSC that he compiled SEDAR projections in September of 2019 to create an overlay of combined historical uncertainty. It was common to find differences from 25-50% but as high as 200% noting that this uncertainty aligns more closely with a sigma of 0.5. He also requested the SSC explore uncertainty with respect to time within the projection window as he has noticed a trend of increasing uncertainty with the projections as the assessment ages.

Bob Zales remarked that the status determination criteria seem to change every few years and noted that discussion now on ABC Control Rule modifications will make it even more confusing. He thinks it will be difficult to get the Council and stakeholders to grasp how the SSC is suggesting more conservative measures on fisheries that have largely been less restricted in harvest. In reference to the SSC's discussion on the ABC and the buffer between it and the OFL, Mr. Zales recommended giving the Council a small range of ABCs to choose from, allowing them more flexibility to determine what they will do with management buffers. Regarding red grouper, he asked if SEDAR 61 included the data from SEDAR 42, and if the changes to SEDAR 42 through the inclusion of MRIP-FES, had any impact on SEDAR 61. Council staff answered that the changes to SEDAR 42 had no impact on the results of SEDAR 61. Mr. Zales stated that goliath grouper needs some manner of catch data in order to provide a basic stock status of the fishery, especially since it has been closed for so long. Having the animal on which to conduct research would be beneficial. He also remarked that he assumes catch and release fishing of goliath grouper currently is illegal based on legal discussions with NOAA General Counsel on the definition of possession.

Eric Schmidt commented that he believed Ft. Myers to be the third largest shrimp port in the Gulf of Mexico at one point in time, but all the shrimp boats there are currently tied to the dock because they can't afford to go fishing, due in part to the record high diesel prices. Mr. Schmidt also commented on the recent FWC rule allowing limited harvest of goliath grouper, stating that he does not want goliath grouper to be reopened. Although they have become a nuisance in South Florida, fishermen have adapted by not fishing certain wrecks. Recent management measures (closing red grouper and lane snapper in 2021) have led to restrictions that have created a new occupation, namely, selling trips on catch and release of extremely large goliath grouper. These fish can be caught multiple times. The fish are worth more money in the water than when extracted. He does believe that the goliath grouper population has exploded and that there is certainly no shortage of the fish; however, he still does not want the fishery to open. He did agree with an SSC member who suggested that this may be an opportunity to explore appropriate methods to reopen closed federal fisheries.

Steven Atran remarked that the current stock status of goliath grouper is unknown (overfished status), and not undergoing overfishing. However, if Florida allows for limited harvest of goliath, NMFS may have to reclassify the stock as undergoing overfishing. This would require the Council to respond in some manner. He also suggested that the joint Gulf and South Atlantic working group consider some innovative ways to manage limited harvest of species such as escapement-based management programs or tropical marine life rules that restrict harvest to juveniles through a maximum length limit.

## *Other Business*

### Volunteers for the Development of Empirical Dynamic Models for Shrimp Assessments

Council staff discussed a motion from the April 2022 Council meeting to convey to the Science Center support for the formal inclusion of the appropriate SSC members, Council staff, and shrimp industry representatives in the development of the shrimp empirical dynamic models outside of formal SSC review and prior to the SEDAR research track. Council staff then requested 2-3 volunteers, whose names would be included in the request letter to the Science Center. Jim Nance, Benny Gallaway, and David Chagaris volunteered to participate.

**The meeting was adjourned at 2:30 pm eastern time on May 11, 2022.**

## *Meeting Participants*

### **Standing SSC**

Jim Nance, *Chair*  
Luiz Barbieri, *Vice Chair*  
Lee Anderson  
Harry Blanchet  
Dave Chagaris  
Roy Crabtree  
Benny Gallaway  
Doug Gregory  
David Griffith  
Paul Mickle  
Trevor Moncrief  
Will Patterson  
Sean Powers  
Steven Scyphers  
Jim Tolan  
Richard Woodward

### **Special Reef Fish SSC**

Jason Adriance  
Mike Allen  
John Mareska

### **Special Shrimp SSC**

Don Behringer  
Peyton Cagle  
Jason Saucier

### **Special Socioeconomic SSC**

Luke Fairbanks  
Cindy Grace-McCaskey  
Jack Isaacs

### **Council Representative**

Tom Frazer