Standing, Reef Fish, Mackerel, Shrimp, Ecosystem, and Socioeconomic SSC Webinar Meeting Summary August 9 – 11, 2021

The webinar meeting of the Gulf of Mexico (Gulf) Fishery Management Council's (Council) Standing, Reef Fish, Ecosystem, and Socioeconomic Scientific and Statistical Committees (SSC) was convened at 8:30 AM EDT on August 9, 2021. The agenda for this webinar meeting, and the minutes from the May 3 – 4, 2021, webinar meeting were approved. Verbatim minutes from past SSC meetings can be reviewed here.

Election of the Chair and Vice Chair

Dr. Jim Nance was elected as Chair, and Dr. Luiz Barbieri as Vice Chair.

SSC Representative to the August 2021 Council Meeting

Dr. Nance will serve as the SSC Representative at the Council's August 23 – 26, 2021, hybrid meeting in San Antonio, Texas.

Discussion Document: SSC's Best Practices and Voting Procedures

Mr. Ryan Rindone (Council staff) reviewed the draft of the SSC's best practices and voting procedures, which are designed to guide the SSC's adherence to National Standard 2 (NS2) of the Magnuson-Stevens Fishery Conservation and Management Act. NS2 specifically addresses the peer-review process for the SSC, and its recommendation of the best scientific information available (BSIA). The draft was developed in consultation with NOAA General Counsel, and was drafted to provide flexibility while also being explicit with respect to when SSC members should recuse themselves from voting on whether a stock assessment or research project constitutes BSIA, and is appropriate for management advice.

Specifically, an SSC member should abstain from voting on a motion to that effect if they have served as the analytical lead, as a principal or co-principal investigator, or had direct participation as a key member of the analytical team. Staff will assist SSC members by helping identify more obvious instances for when an SSC member should consider recusal; however, SSC members may abstain from voting whenever they think that approach is necessary. After the determination of BSIA is made, the recused SSC members may participate and vote as normal. SSC members serving as workshop panelists in Southeast Data, Assessment, and Review (SEDAR) assessments, or those providing data to that assessment, need not recuse themselves during SSC deliberations once the assessment comes to the SSC for review.

SSC members also discussed the method of voting, and whether the SSC should be voting as they have or by consensus. For split votes, and SSC member added that having majority and minority positions provided with the meeting summary would be enlightening for understanding the votes. Many other regional management Councils' SSCs use a blend of both approaches; the SSC suggested taking the topic of voting by consensus approach up at a future meeting.

> **Motion: To accept the edits to the SSC's Best Practices and Voting Procedures as written:**
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> When the SSC is acting as the peer review body for a stock assessment or other study, an SSC member(s) should abstain from any motions and voting on the issue of BSIA if they have served as the analytical lead, or principal or co-principal investigator or had any direct participation as a member of the analytical team. During the BSIA deliberations the SSC member(s) is free to participate in the discussion, answer questions, and provide pertinent expertise and feedback to the SSC. After a decision has been reached on BSIA, the SSC member(s) is at liberty to motion and vote on remaining management advice (e.g., catch limits, appropriateness of allocation calculations, decision tools developed to inform management action).
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> ***Motion carried without opposition*.**

Discussion of Research Track and Operational Assessment Process Guidance Document

Dr. Julie Neer (SEDAR) detailed the assessment process as facilitated by the SEDAR process. SEDAR was developed to create a way to generate robust, transparent, and inclusive stock assessments that generate reliable and scientifically rigorous assessments. Generally, it is difficult to be thorough, transparent, and timely; often, managers and scientists must pick two of these goals to achieve. The SEDAR process uses two main approaches. The research track process is both transparent and thorough, while the operational assessment process is thorough and timely.

The research track process allows for the development of models and methods, testing of new hypotheses, implementation of new methods, and inclusion of new data. No management advice is given by the research track process, and while flexible, it is not open ended and follows a somewhat flexible project schedule. SSC members are involved in all stages of a research track assessment, which have four main stages: stock identification, data review and preparation, assessment modeling, and peer-review. An assessment development team composed of SSC members is formed for each research track that guides the process from start to finish, participating in all workshops and webinars, and contributing to analyses and report writing. The stock identification process is tasked with looking at life history, movement, and genetics workgroups to determine a recommendation for the stock structure to be used in the research track process.

The operational assessment process is designed to provide management advice based on the model and methods developed in the previous research track or, formerly, benchmark stock assessment. In comparison to research tracks, this process is expected to completed faster and conclude with

management advice. However, the operational assessment is more constrained in the types of modifications to model structure or other information that can be modified from previous assessments. Topical working groups can be populated as necessary to address high priority issues during operational assessments and the review of the completed assessments is completed by the SSC. An SSC member asked how the issues taken up by topical working groups can avoid becoming research projects. Dr. Neer stated that the terms of reference are critical for this and that overall, this process is still being developed. She reminded the SSC that the objective of operational assessments is to improve throughput and thus, limitations on the timing and scope of all aspects of the operational assessment are necessary and some topics may require a research track approach to more fully consider particular topics.

An SSC member asked about the incorporation of fishing behavior and other socioeconomic data into the stock assessments. Council staff replied that fishermen, Council members, and Council staff participate throughout the SEDAR process to inform patterns in fisher behavior, preferences, and anecdotal information that can help better explain curious observations in the data and model-predicted parameters.

An SSC member asked about the incorporation of ecosystem components and indicators in the stock assessment process. Council staff replied that data informing ecosystem components for a species are initially considered in the data preparation phase, and their incorporation into the model is further considered and explored in the assessment phase. Another SSC member added that including an additional ecosystem component to the research track process may benefit the exploration of these ecosystem data to a greater degree, thereby increasing opportunity for their consideration.

Dr. Katie Siegfried (Southeast Fisheries Science Center [SEFSC]) presented the expectations for the research track process for the edification of, and discussion by, the SSC. The Stock ID process is only employed for the research track process if requested in the assessment terms of reference. The stock structure is to be based on the best scientific information available, and determined by consensus. Completing multiple models with different stock structures is not currently possible for two reasons: first, there is no way to compare the appropriateness or level of parsimony of the models (e.g., Akaike's Information Criterion); second, the use of multiple stock structures creates a factorial design for the modeling team and data providers, resulting in an infeasible workload for the timeline of a research track assessment. Once the stock structure is identified, all the data are then structured with respect to that identified stock structure, including things like indices, age and length composition, catch and discards, selectivity and retention parameters, stock-recruit relationships, data weighting, and other various life history parameters. Another SSC member advised including this information explicitly in the provided guidance document.

An SSC member noted that, for red snapper, the totality of the data did not suggest a clear answer to stock structure, as evidenced in the multiple options initially offered to describe stock structure in the Stock ID workshops. Though consensus was reached, the SSC member argued that it was not overwhelming, and other opinions based on the types of data that were proffered. In this situation, there was no clear path that led the Stock ID panel to definitive stock boundaries. Perhaps another approach examining only certain aspects of the data under differing stock structures could be explored to better investigate the nuances of the various stock structure

possibilities. Currently, SEDAR does not come back to the SSC at the completion of each step of the research track process for SSC review- the Assessment Development Team (ADT) is comprised of SSC members, who can weigh in on every decision being made. If the process is interrupted at this stage, the schedule for the SEDAR 74 research track will need to be adjusted to accommodate any further changes or successive decision-making.

An SSC member expressed optimism for the data automation efforts by the SEFSC, and suggested that those efforts should result in faster data compilation ahead of the stock assessments. The SEFSC replied that changes in stock structure must be determined prior to automating data compilation techniques, which requires more time and effort by staff in advance.

Review of Updated Red Grouper Interim Analysis

Dr. Skyler Sagarese (SEFSC) provided an overview of the previous red grouper interim analysis (IA), completed in late 2019, and introduced a new methodology for adjusting recreational harvest weight estimates. The previous IA relied on the projected (forecasted) index of abundance from the SEDAR 61 assessment model. SEDAR 61 had a terminal year of 2017; however, red grouper experienced a major red tide event in 2018 that likely increased natural mortality in that year for most age classes. To incorporate this episodic disturbance and reduce the influence of factors associated with COVID in 2020, another set of projections beginning in 2021 were generated through the IA process. A variety of projections simulating a range of severity of red tide effects on the population were generated to produce several catch limit values.

Dr. Sagarese also introduced a proposed change to the IA approach for red grouper. She stated that since the terminal of SEDAR 61 was 2017, it would be advantageous to inform new projections using an index-based harvest control rather than the forecasted index generated based on the inherent assumptions of SEDAR 61. She proposed using the NMFS Bottom Longline Survey (NMFS BBL) as the index of abundance and stated that the index estimates had been spatially adjusted in 2020 to account for the reduced sampling effort due to the COVID pandemic. This index-based harvest control rule has performed well in accounting for episodic natural mortality events in red snapper and gray triggerfish (Huynh *et al*. 2020). The approach considers a buffer for tolerance in observed and reference index value using a three- or five-year moving average. This calculation was performed using the allocation scenario currently selected as preferred in Amendment 53 as 59.3% commercial and 40.7% recreational for the simulation of overfishing limit (OFL) and acceptable biological catch (ABC) projections.

Recently, the SEFSC has also begun exploring the discrepancies between modeled weight estimates and those reported in the Annual Catch Limit (ACL) Monitoring Dataset in the recreational landings. Recreational landings data are input in stock assessment models as numbers of fish but need to be converted to weight to calculate catch advice. Investigations into red grouper-specific recreational landings indicated that the stock assessment model underestimated the average weight of an individual by approximately 2 pounds. This underestimation was likely the result of using an external growth curve and deciding to change from an age-based to a length-based selectivity in the model. To remedy this disparity, a ratio of the average annual mean weights for the modeled predictions and the ACL Monitoring Dataset was calculated and the

weights converted. This adjustment improved the fit between the IA model results to the SERO ACL Monitoring Dataset.

Dr. Sagarese indicated that the SEFSC was looking into adding checks in the stock assessment process to compare mean weights in the future including for discards. She indicated that, as expected, red grouper discards had smaller mean weights than retained fish likely due to size limits regulations. Dr. Tom Frazer (Council Chair) inquired whether the summary graphs comparing recreational landings since 2004 against the current quota incorporated the weight adjustment. Dr. Sagarese stated that those landings were obtained from the Southeast Regional Office (SERO) and she was not sure whether they incorporated that modification. The SSC accepted the method for recreational harvest weight adjustment.

MOTION: The SSC accepts the new mean weight estimation methodology to estimate the weight of recreationally caught red grouper.

***Motion carried without opposition*.**

Dr. Sagarese presented options for adjusting the Annual Biological Catch (ABC) advice based on a three or five-year reference period, beginning with the year following the terminal year of data in the last stock assessment (2018). Thus, the three-year reference period would use data from 2018 – 2020, and the five-year moving average would use 2016 – 2020, since data beyond 2020 are not available. This moving average approach helps smooth interannual variability, which may be influenced by episodic mortality events like red tide. The revised allocation-informed projections resulted in an OFL of 5.99 mp gw. Using the three-year moving average, the revised ABC would be 4.96 mp gw, and the five-year moving average would result in an ABC of 5.07 mp gw. Dr. Sagarese reiterated that the previous IA approach that has been used in years past has not been simulation tested like the proposed approach.

The SSC noted, that based on recent landings, harvest did not seem to be constrained and inquired as to what biological, environmental, or human behavior explanations could be proffered. Dr. Sagarese explained that red grouper appeared susceptible to large periodic natural mortality events but that in some years these mortality events were ameliorated by large recruitment pulses. She encouraged further exploration of red tide effects on target as well as forage species using an ecosystem analysis approach. Dr. John Froeschke (Council Deputy Director) reminded the SSC that the current recreational catch limits are measured in Marine Recreational Information Program Coastal Household Telephone Survey (MRIP-CHTS) rather than MRIP-Fishing Effort Survey (MRIP-FES) and it is likely that harvest measured and monitored using MRIP-FES will accumulate at a more rapid rate. He cited the closure analysis reported in Reef Fish Amendment 53 and suggested future harvest may be closer to the quota than in the recent past. Both Council and SEFSC staff also identified several human dimension factors that could be attributing to less harvest. Recreational fishers value species open to harvest and would like target a number of available species in a single trip and commercial fishers likely target fish based on economic factors and/or access to allocation within the Individual Fishing Quota program. Additionally, Council and SEFSC staff both reported recent public input which indicated that fishers in both sectors are having success harvesting red grouper relative to past years, perhaps signaling an

increase in stock health. However, these fisher-reported observations of increased abundance of red grouper in 2020 are not observed in the NMFS Bottom Longline Survey or the IA.

An SSC member asked about the ability to account monitor known strong year classes moving through the fishery with time. Dr. Sagarese replied that recruitment is fixed for the projection period in the IA. Thus, the representative index of relative abundance used for red grouper (NMFS BLL) selects for adults and detecting a strong year class of fish would be with a temporal lag. Dr. Sagarese added that looking at other indices has merit, especially when those other indices can provide contrasting observations to the main index being used in the IA.

The OFL is based on the recreational weight adjustments approach for red grouper. Next the SSC discussed the merits of either a three- or five-year moving average for adjusting the ABC from the OFL. While an average using more years of data provides some stability in catch advice, a shorter temporal focus would allow for a more 'real time' approach to management. Since the Council has a standing request for an annual red grouper IA report from the SEFSC, using a shorter time series could more accurately address management objectives for the stock. Dr. Sagarese provided another option of waiting until the 2021 IA is reviewed at the January 2022 SSC meeting to set catch limits to incorporate any effects of the 2021 red tide event, and to include 2021 NMFS BLL and SEAMAP data in the IA. The SSC decided to act upon the analysis and information on red grouper provided, and to let the Council decide if waiting was necessary.

> **MOTION: The SSC accepts the updated methodology and interim analysis results for red grouper and sets the OFL at 5.99 mp gw and the ABC at 4.96 mp gw using the 3-year moving average for setting the ABC relative to the OFL. These values are in MRIP-FES units.**
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> ***Motion carried 21-2, with one abstention and one absent***.

Scope of Work for Red Grouper Operational Assessment

SSC members discussed the scope of work for the planned 2024 operational assessment for red grouper. SSC members added items specifically addressing red tide mortality, consideration of historical landings data, consideration of the Florida State Reef Fish Survey (SRFS), and other items. The SSC thought that topical working groups for red tide, the revised mean weight estimation procedure, and recreational catch and effort data would be needed.

The SSC thought a procedural workshop to evaluate the differences between the SRFS and MRIP surveys for species only found off Florida (e.g., hogfish, gag, red grouper, yellowtail snapper, mutton snapper, black grouper) may be beneficial. The SSC also discussed greater efforts to monitor and model the effects of red tide for those species for which episodic mortality is understood.

> **MOTION: To approve the edits to the Red Grouper Operational Assessment Scope of Work**.

Motion carried without opposition.

Determination of Topical Working Groups for SEDAR 75: Gulf of Mexico Gray Snapper Operational Assessment

Mr. Rindone advised the SSC of the participants currently listed for the SEDAR 75 operational assessment of Gulf gray snapper, and noted that two topical working groups have thus far been identified: life history, and recreational catch and effort data. Based on the makeup and expertise of the participants for SEDAR 75, all will be appointed to each of the topical working groups.

Scope of Work for Vermilion Snapper Operational Assessment

SSC members discussed the scope of work for the planned 2024 operational assessment for vermilion snapper. An SSC member asked whether the index-based adjustments using an HCR in the IA process were within the scope of possibilities for a SEDAR operational assessment, which the SEFSC indicated it was. Another SSC member asked whether other state-specific surveys needed to be considered, as was noted for red grouper. Council staff replied that the SRFS does not presently include vermilion snapper; thus, the recreational catch and effort surveys that would be considered for vermilion snapper would include those from Texas Parks and Wildlife Department, Louisiana Department of Wildlife and Fisheries (LA Creel), and MRIP.

MOTION: To accept the Vermilion Snapper Operational Assessment Scope of Work.

Motion carried without opposition.

Determination of Approach to Assess Gulf of Mexico Tilefish Complex

Mr. Rindone began the discussion of how to approach a future assessment of the Gulf tilefish species by reviewing some of the findings of the last assessment of the tilefish complex, which was in SEDAR 22 (2011), using data through 2009. Little data exist on any one species included in the complex (i.e., golden tilefish, blueline tilefish, and goldface tilefish). Consistent popularity exists for commercial exploitation of the complex, and there is growing popularity with recreational fishermen with improvements in technology (e.g., electric reels, more powerful transducers, larger and faster boats). He noted the Council is interested in how to approach assessing the Gulf tilefish complex: that is, should SEDAR assess the tilefish species individually or as complex? Substantial uncertainty exists in commercial landings estimates prior to the implementation of the individual fishing quota (IFQ) program, and the precision of the recreational landings are very uncertain. Further, the recreational vessels equipped to fish for tilefish in the span of a single fishing day (large center consoles or sport fishing vessels) are highly unlikely to be using public boat ramps or public marinas, making intercept and effort data collected by MRIP largely uninformative.

Council staff noted that golden tilefish accounts for 80% of commercial landings historically, but some shift to blueline tilefish in recent years based on the recent IFQ program review report. An SSC member commented on there being some possibility of hybridization between tilefish species. A recent study by Kang (2019[1]) details four polymerase chain reaction (PCR) methods for differentiating tilefish species, techniques which may be helpful in the Gulf for investigating any interbreeding of Gulf tilefish species. The SSC member concluded that the possibility for hybridization among the tilefish species in the Gulf seems to exist; thus, managing as tilefishes as a complex seems most reasonable.

Council and SEFSC staff noted that the SEFSC's modeling technology and methods have improved greatly since the completion of SEDAR 22 in 2011, including ways to model species using only catch and length composition data in Stock Synthesis. Also, when employing the NOAA Data-limited Toolkit, use of a reference period of catch with an index can provide enough data to model a stock using certain methods, as was done for lane snapper in the Gulf. The SEFSC proposed a data triage to determine the best approach given the data available, and to determine how best to model the Gulf tilefish species. An SSC member recommended investigating the NMFS Bottom Longline survey to determine whether that survey could serve as a representative index of relative abundance. The SEFSC said that survey would need to be investigated for this purpose, and that the IFQ program landings may also be of value in trying to assess the complex. An SSC member added that there was a need to look at spatial information tied to tilefish landings to better understand what species are being landed and where. The NMFS Pascagoula Lab has more data available on some deep-water species now than in years past, and may be able to resolve some previous gaps in knowledge. Also, a National Academy of Sciences report on recreational catch and effort recommended identifying the universe of angler effort. Identification of this effort universe may help better understand recreational fishing effort on "deep drop" species like tilefishes.

SEDAR staff noted that an operational assessment is currently scheduled for tilefishes in 2024. If a change in the model becomes necessary, then the Council will need a research track to assess the species. However, a research track assessment doesn't have to take two years, and can be tailored to meet the needs of the assessment as prescribed. Council staff asked SEDAR to note this as a discussion item at the next SEDAR Steering Committee meeting in the fall of 2021.

> **Motion: The SSC recommends a data triage report be generated by the SEFSC for the tilefishes complex as a guide to the selection of the model environment for the next stock assessment.**
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> ***Motion carried without opposition*.**

Interim Analysis Schedule (update)

Mr. Rindone reviewed the Interim Analysis (IA) schedule with the SSC, noting that the IAs are done separate from the SEDAR assessments, and are coordinated directly between the Council and

[1] Kang, T.S. 2019. Development of four PCR-based methods to differentiate tilefish species (*Branchiostegus japonicus* and *B. albus*). Food Chemistry 271: 1-8. https://doi.org/10.1016/j.foodchem.2018.07.138

the SEFSC. An SSC member asked about the general purpose of the IAs provided to the Council. Council staff replied that the IAs served two general purposes: first, to allow the SSC to recommend updated catch advice to the Council when appropriate; and second, to allow the SSC and Council to perform a "health check" on a species in between assessments, which can be useful for determining the directionality of the efficacy of recently implemented management actions.

An SSC member suggested adding the SEAMAP Groundfish Trawl Survey for red grouper in successive IAs since it had been expanded into the eastern Gulf. Another SSC member asked about the terminal year of data generally to be used for the SEAMAP Combined Video Survey, noting the processing time for that index. The SEFSC noted that the SEAMAP Combined Video Survey processing time was longer, and that at present, the survey would not be used for gag. The SEFSC added that the time necessary for completing IAs varies depending on the representative index of relative abundance, with some indices requiring more processing time than others.

An SSC member noted that each IA was only considering a single index. Indices like the NMFS Bottom Longline index are certainly appropriate for investigating the fish that are actually part of the fishery. Other indices may better describe other portions of a species population, and may be worth concurrently investigating with the listed indices by species. Council staff replied that including additional indices in an IA greatly increases the workload, and at a certain point, the request for that IA could essentially evolve into a request for an additional stock assessment. The SSC member countered that some of the data require far less preparatory time, and may still be informative as a potential source of contrast to the data currently being considered.

Revised SEDAR Stock Assessment Schedule

Mr. Rindone reviewed the SEDAR schedule. An SSC member noted that the last vermilion snapper stock assessment (SEDAR 67 2020) showed the stock was healthy, and seemed to be of less concern at present. The SSC member asked if it would be appropriate to use the IA process instead of full stock assessments, especially given SEFSC workloads. Council staff replied that full stock assessments are needed to update all parameters of the stock, like growth, recruitment, reproduction, and more. It is the SSC's prerogative to advise the Council on how best to pace out the stock assessments needed, considerate of previous stock status and the SSC's expertise about the stocks being considered. Council staff noted that the assessment schedule is considered final two years out from the current date, and that changes within that finalized period can only be made to respond to a stock status emergency for a species.

Council staff asked about adding gag back to the SEDAR schedule in the place of lane snapper in 2025. The SEFSC agreed, given the contemporary concerns associated with gag. The SSC also asked about concerns associated with the Gulf migratory group of cobia. Council staff replied that data may not be available to answer outstanding research questions to merit a research track assessment for cobia; however, increasing angler concern has been expressed Gulf-wide, but specifically in the northeastern Gulf and Florida Panhandle. The SSC also discussed data availability for understanding the relationship between juvenile mortality and juvenile recruitment of red snapper on the West Florida Shelf.

The SEFSC thought that the Gulf cobia stock should be considered a higher priority compared to the vermilion snapper stock. The Council is currently working on major changes to management of the cobia stock in response to the last stock assessment, which found Gulf cobia to be undergoing overfishing; those management changes will likely be implemented in 2022. The Council will consider the timing of the vermilion snapper, cobia, and gag assessments for the next SEDAR Steering Committee meeting in the fall of 2021.

NS1 Technical Guidance Presentation: Managing with ACLs for data-limited stocks in federal fishery management plans – Review and recommendations for implementing 50 CFR 600.310(h)(2) flexibilities for data limited stocks

Ms. Marian Macpherson (NOAA Office of Science and Technology [OST]) reviewed the description of ACL as stated in the Magnuson-Steven Act (MSA). The ACL is used as a metric to prevent overharvest and is associated with accountability measures. Since 2007, the standard ACL is expressed in as amounts of fish in either number or weight. However, there are occasions where data limitations for a stock result in the inability to set an ACL, and technical memo has recently been developed to address this issue.

The technical memo considered legal context, data-limited methods, and management advice. Under 50 CFP 600.310 (h)(2) of the MSA flexibility in setting the ACL (other than amounts of fish) for data-limited species is allowed but still requires that the alternative approach complies with MSA and that justifiable rationale for the alternative be documented in the fishery management plan (FMP). Ms. Macpherson provided a decision flow chart to illustrate when an alternative approach to setting an ACL would be practicable. She highlighted that an ACL expressed as a rate could be used when a stock assessment provides an estimate of fishing mortality (F) and a maximum fishing mortality threshold has been defined. If this approach is taken, the ACL would be expressed in F instead of an amount of fish. An indicator-based approach using length data was proposed by Ms. Macpherson as a way to use mean length of catch as a way indirectly inform a rate description for the ACL. For management considerations, any alternative to describing ACL must be monitored in some way and also be enforceable.

An SSC member inquired as to how fisheries dependent data sources would be incorporated when exploring ACL alternatives for data-limited stocks and asked if any Bayesian approaches have been explored to date. Dr. Jason Cope (NOAA contractor) replied that fishery dependent data are critical as these data are often the only available sources for data-limited stocks. He also stated that Bayesian methods or informing priors with available data were being considered. Council staff asked for clarification of how the indicator-based approach would work should a big recruitment event result in observations of larger fish which may be expected in a recovering stock. Dr. Cope responded that a recruitment spike could occur and would require careful interpretation.

The SSC inquired whether the workgroup had provided any case studies that the SSC could review. Ms. Macpherson indicated that work had not been completed yet. Considering the length-based approach, the SSC agreed that spiny lobster would make a good candidate species for

exploring these approaches since the stock is largely managed using only a size limit. Additionally, a few deep-water species may benefit from an alternative ACL description.

Review of King Mackerel Historical Harvest and Catch Limits

Dr. Shannon Cass-Calay (SEFSC) reviewed a simulation for the Gulf migratory group of king mackerel (Gulf king mackerel) to demonstrate the effects of the migration from the MRIP-CHTS to MRIP-FES recreational catch and effort data on the catch advice resulting from the SEDAR 38 (2014) stock assessment. Also considered in this simulation was the updated shrimp fishery bycatch as input in the SEDAR 38 Update (2020) stock assessment (SEDAR 38U). These considerations were modeled as sensitivity runs to the SEDAR 38 base model, and compared to the SEDAR 38U base model.

Four model scenarios were compared: Model 1 is the original SEDAR 38 base model (2012/2013 fishing year as the terminal year, using MRIP-CHTS, and the 2012 shrimp bycatch estimates); Model 2 is the SEDAR 38U base model (2012/2013 fishing year as the terminal year, using MRIP-FES, and the 2012 shrimp bycatch estimates); Model 3 is the SEDAR 38U base model (2012/2013 fishing year as the terminal year, using MRIP-FES, and the 2020 shrimp bycatch estimates); Model 4 is the finalized SEDAR 38U base model (2017/2018 fishing year as the terminal year, using MRIP-FES, and the 2020 shrimp bycatch estimates). Differences between Models 1 and 2 are thought to be largely due to changes in the headboat statistics; however, the SSC thought it counterintuitive that the ABC predicted by Model 2 would be smaller than Model 1. The SEFSC noted that when the new MRIP-FES statistics are introduced in Model 2, which is the new SEDAR 38U model, other parameter estimates are also re-estimated, which can affect model outputs. Council staff later verified that the predicted ABC for Model 2 was in fact the highest of the four models, according to the report on the simulation provided by the SEFSC in March 2021; this suggests that the discrepancy is isolated to the presentation. Another SSC member asked about the effect of the updated shrimp bycatch estimates from 2020 on the model by itself; the SEFSC noted that this was not modeled as part of this simulation, but may be clarified in the SEDAR 38U report. Model 3 demonstrates a large increase in the ABC projected compared to Model 1, and is generally comparable to Model 4 in this regard.

The SSC discussed the proportional changes in the removals versus the proportional change to the predicted ABC values, and the proportional changes to the models due to the introduction of new information in the SEDAR 38U assessment (MRIP-FES, updated headboat index, and updated shrimp fishery bycatch estimation). The SEFSC concluded that the increases in the catch advice are due to changes in the stock assessment model parameterization to improve model stability. Due to the other changes in the model configuration, the effect of using MRIP-FES data instead of MRIP-CHTS is less clear than in assessment efforts for other recently examined species.

The SSC thought it perplexing that increasing recreational catch and effort by itself did not result in some proportional increase in the catch limits. The SEFSC reiterated that this transition from model 1 to model 2 included additional model changes to improve stability. Although the removals under MRIP-FES are greater, along with the other changes made to the model, the estimate of virgin biomass is also greater which, along with recent estimates of lower recruitment

and lower shrimp bycatch in recent years, indicates a depleted stock condition in recent years. Nonetheless, the Gulf king mackerel stock is not overfished or undergoing overfishing; although the spawning stock biomass (SSB) is below the SSB at maximum sustainable yield (SSB_{MSY}). Thus, the catch limits recommended by the SSC for Gulf king mackerel, based on the SEDAR 38U model, increase with time as the stock theoretically rebuilds to SSB_{MSY}.

An SSC member asked about the ability of the commercial fleet to land more fish. Council staff replied that, based on the history of the commercial king mackerel fishery, the fleets did not appear to be limited by anything other than the commercial ACL. If given more fish, the presumption would be that the commercial fleets would catch those king mackerel. Table 2 in the simulation report (Item XVIIIb) shows projections of OFL and ABC under the different model scenarios, and would have resulted in an increase in the ACL for the commercial sector. The SSC identified discrepancies in the data presented between the simulation report (Item XVIIIb) and the presentation (Item XVIIIa), where the former shows much larger estimated values for the projected ABC for model 2, and is more congruent with the notion of the increased catch and effort estimated by MRIP-FES data resulting in larger estimated future yields. The SEFSC indicated that they would investigate this discrepancy.

Review of King Mackerel Historical Commercial Harvest Differences

Dr. Cass-Calay described an analysis of a table of questioned commercial Gulf king mackerel landings from the June 2021 Council meeting. The data shown in the Council table contained errors attributable to differences in how data were presented in the stock assessment report and used in the assessment; however, when summarized in a consistent manner, the commercial data were essentially identical in both assessments. Commercial data were summarized in different ways at different points in the SEDAR 38 process (in the Data Workshop [DW] versus in the Assessment Workshop [AW]). While the underlying commercial data were essentially identical, data were summarized in ways that made comparison between tables inappropriate (e.g. fishing year versus calendar year, total catch versus gear- or region-specific catch). The SEFSC confirmed that the final assessment data were virtually unchanged between the SEDAR 38 AW and SEDAR 38U. The SEFSC is working on a standardized documentation procedure to homogenize the documentation between stock assessments, and welcomed the SSC's input in that process. The SEFSC maintains that it is well-equipped and willing to address any data issues or questions.

Review of Greater Amberjack Historical Harvest and Catch Limits

Mr. Matt Smith (SEFSC) presented projections of the of OFL and ABC for Gulf greater amberjack using the SEDAR 33 Update (2016) assessment model (SEDAR 33U) and MRIP-FES derived recreational catch statistics, as requested by the Council for comparison with the SEDAR 70 (2020) projections in MRIP-FES. The SEDAR 33U model was used as the basis for projections, and was unchanged except for the private/charter and headboat landings, and discards were replaced with the FES-based statistics produced for SEDAR 70. The projection settings were as follows: 3-year average relative F's (2013-2015); recruitment derived from the stock-recruitment

curve; selectivity, retention, and biological parameters were derived from the most recent time period; and, 2016 landings were fixed using the MRIP-FES update for recreational fleets. Generally, using MRIP-FES data to generate yields using SEDAR 33U results in an approximately 40% increase in the estimated stock ABC for greater amberjack from the SEDAR 33U model, compared to the same using MRIP-CHTS recreational catch statistics.

An SSC member noted that greater amberjack is another species for which the MRIP-FES catch statistics are substantially higher than in MRIP-CHTS. Mr. Smith replied that the median difference between the recreational catch statistics for greater amberjack between MRIP-CHTS and MRIP-FES was approximately 84%.

The SSC expressed concern that greater amberjack has continued to be depleted despite repeated intervention by fishery managers to abate fishing mortality and rebuild the stock. An SSC member discussed the degree to which the stock has been depleted relative to the virgin SSB (approximately 25% of the virgin SSB). Another SSC member noted angler concern for the health of greater amberjack, and asked if the Council or SEFSC has noticed anything in particular. The SEFSC noted that they have not received any unprompted mentions about greater amberjack. Council staff noted that recreational anglers have commented on an increasing difficulty in finding legal-sized greater amberjack. An SSC member noted a study out for publication on Gulf reef fish populations on offshore oil and gas platforms, which may be informative for the next greater amberjack stock assessment. Another SSC member expanded on the idea of including these new data, and asked the SEFSC whether thought had been put into how to better consider these new absolute abundance data sources. The SEFSC replied that incorporating some of the new data for red snapper, as an example, that some of the data will pose greater challenges with respect to inclusion in the model. Continuing to use red snapper as an example, the SEFSC added that participation by the principal investigators for the Great Red Snapper Count in the SEDAR 74 Data Workshop is critical.

Review of Updated Greater Amberjack Projections

Greater amberjack is managed using sector allocations and the current catch levels are in MRIP-CHTS units. Thus, the Council requested a number of projection scenarios that would be informed from SEDAR 70 to consider reallocation between the commercial and recreational sectors to account for the integration of MRIP-FES recreational statistics into catch monitoring and management. SEFSC staff additionally introduced an approach to generate projections that had not been previously used for greater amberjack. Historically, projections are estimated independent of the base model and are difficult to constrain to static targets (e.g., $F_{SPR30\%}$), consistent annual removals, and a fixed sector allocation using Stock Synthesis (SS) software. The additional approach uses R statistical software to perform an iterative search between catches until all the three targets are satisfied, and then re-runs the base model in SS to generate estimates of uncertainty. The resulting uncertainty decreases with time, since F and recruitment are fixed, leaving only model variability remaining. A consequence of this method is that in addition to providing catch advice, model parameters and benchmarks are re-estimated in the base model as part of the projections. Historically, the base model has not been modified once the SEDAR process has been completed for a given stock.

An SSC member asked why the projected equilibrium yield in 2030, which would be an indication of a rebuilt stock, was lower than the yield in 2016 when the stock was considered overfished. Dr. Nathan Vaughn indicated that there were some changes in how SS was interpreting the previous forecast and steepness. The previous approach was built on the assumption of a steepness of 1, which was revised under the new method. Several SSC members observed that the new method indicated that the stock was in better condition than thought based on the results presented from SEDAR 70 at the January 2021 SSC meeting, which indicated that the stock was overfished and experiencing overfishing.

Without an explicit description of the revised methodology used to generate the projections, it was not possible for the SSC to fully interpret the results and make a revised recommendation of BSIA to the Council. Recommendations of BSIA with respect to stock assessments are made by the SSC on the totality of information presented, and include both the base model and the resulting yield projections. In this case, the SEFSC's revised projection method effected a change in the management benchmarks generated by the previously reviewed base model. Because this change in the management benchmarks is in effect a change to the base model outside of the SEDAR process, the SEDAR 70 base model, including this new projection method, will have to be re-evaluated. Thus, the SSC suggested that any further consideration of these SEDAR 70 projections be postponed at this time. In light of the changes to the stock status criteria resulting from the application of the new projections method to greater amberjack, the SSC requested that the SEFSC come back to the SSC at its September 2021 meeting to thoroughly present this new projection method. The SSC also requested that the SEFSC investigate the projections performed for other species for which the SSC has recently approved revised catch limits: greater amberjack, southeastern U.S. yellowtail snapper, and Gulf king mackerel (which have sector allocations); and, vermilion snapper and Gulf cobia (which do not have sector allocations). The SEFSC is asked to provide a presentation and report detailing the new projection method for review by the SSC, and the results of investigating the previously approved projections used for the aforementioned species. In addition, since an error was stated to have been identified in the SEDAR 70 assessment of greater amberjack (model iteration of $F_{Rebuild}$ at virgin biomass [R_0], instead of at $SSB_{SPR30\%}$), that assessment along with the new projection method applied is also requested to be presented to the SSC at its September 2021 meeting for evaluation in total, and to determine if it constitutes BSIA and is suitable for management advice. Specific to greater amberjack, an SSC member asked about the change in SSB_{MSY} from $F_{SPR30\%}$ to $F_{SPR13\%}$, finding that perplexing, and asked that the change be clarified. SEFSC staff noted that this new projection method was used for red grouper, for which no errors were found; therefore, the SEDAR 61 stock assessment does not need to be revisited at this time.

Review of Draft Options: Generic Essential Fish Habitat Amendment 5

A brief management history of essential fish habitat (EFH), rationale for Generic Amendment 5, as well as pros and cons for three proposed methodologies for describing EFH were presented by Dr. Lisa Hollensead (Council staff). The Magnuson-Stevens Act (MSA) requires EFH descriptions for all federally managed species, by life stage. The MSA also stipulates that a review of the Council's identification and description of EFH be conducted every 5 years. Since the creation of Generic EFH Amendment 3 in 2004, two 5-year reviews have been completed with the next

review scheduled for 2021. Discussions between Council staff and the NOAA Habitat Division determined that combining efforts of the 5-year review and developing a generic amendment to formally update identifications and descriptions of EFH for all the Council's Fishery Management Plans would be practicable.

The Council is considering three approaches to update EFH for managed species. The first would retain the current methodology of qualitatively joining spatial layers by 5 eco-regions, 12 habitat types, and 3 depth zones with species habitat attributes tables informed by a comprehensive literature review. However, this approach often results in very broad descriptions of EFH. An alternative in the draft options document would retain this methodology but would update benthic habitat data sources and life history tables based on information available through 2020. The second method uses a non-parametric kernel density estimation[2] approach that would only consider species presence to inform descriptions of EFH. This model is simple to construct and results in a more refined description of EFH; however, the formal linkage between habitat function is less apparent relative to the currently implemented approach. The third proposed method would use boosted regression tree modeling[3] to identify and describe EFH. This complex quantitative approach would better measure the linkages between species observations and habitat function. However, this method is complicated, time consuming to perform, and at times can generate results that are difficult to interpret. Data needed to implement the two more quantitative approaches are only available for a few species and life stages, so most EFH for most managed species will be updated using the current method.

Several SSC members encouraged the use of more computational methods for identifying and describing EFH. However, the SSC agreed that extensive consideration needs to be taken to ensure habitat and species presence data inputs are spatial comprehensive and as complete as possible. SSC members stressed that misinterpretation of EFH descriptions could arise if basic assumptions were violated, causing areas of non-use to be included (committing a Type II error) or that including incomplete survey data would exclude areas of use (committing a Type I error). Dr. Karnauskas stated she could provide some information on *Sargassum* data layers that could be beneficial in constructing EFH habitat maps for species/life stages that are known to associated with floating algal mats. Several members inquired as to the status of artificial reefs as EFH and were informed that, while certain anthropogenic structures are constructed on EFH (oil platforms on soft bottom) and usually require an EFH consultation for their removal, artificial reefs themselves are not considered EFH. The SSC suggested that a representative from the NOAA Habitat Division provide a presentation outlining the EFH consultation process at a future meeting. Overall, the SSC recommended that a hierarchical approach based on available data by species and life stage be used to inform action alternative selection.

Discussion of Topic Leaders for Agenda Items

[2] Getz, W.M. and Wilmers, C.C. 2004. A local nearest-neighbor convex-hull construction of home ranges and utilization distributions. Ecography 27: 489-505. https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.0906-7590.2004.03835.x

[3] Elith, J., Leathwick, J.R., Hastie, T. 2008. A working guide to boosted regression trees. Journal of Animal Ecology 77: 802-813. https://doi.org/10.1111/j.1365-2656.2008.01390.x

Generally, the SSC acknowledged the merits of having SSC members lead discussion for certain agenda items; however, the SSC thought that this could be done on a more voluntary basis, based on the agenda items put before the SSC. The chair requested SSC members interested in serving in this capacity to contact him.

Public Comment

The SSC received public comment from two members of the public. The first stated that creating a more defined framework for integrating new research into stock assessments and the generation of catch advice should be established otherwise there could be strain on the SSC's ability to provide that catch advice.

The second commenter stated deep concerns with regard to the grouper species, noting that red grouper commercial landings are subject to many variables, both biological and economic. The commenter asked whether the SSC had heard any information about the market manipulation for the leasing of red grouper allocation in the IFQ program. The commenter also asked whether the SSC had considered increases in population density with respect to commercial access to the fisheries.

Other Business

Timeliness of Materials Submitted to the SSC Briefing Book

Mr. Rindone notified the SSC and public that, in the future, all materials must be submitted to the SSC on time. Further, submissions of, and edits to, materials within 7 days of the beginning of the meeting will not be permitted. If materials are not received on time, or if materials need to be edited in a critical manner, then that agenda item will be moved to a subsequent meeting. The only exception to this rule will be for items that the Council needs to consider final action at the following Council meeting. Council staff will work with presenters to ensure appropriate timelines and lead times are established for materials requests.

SEDAR 74 Stock Identification Process

An SSC member remarked on the desire by members of the SSC involved in the stock identification process for the SEDAR 74 research track assessment for Gulf red snapper to see additional explorations done on alternative stock structures for modeling red snapper. Another SSC member remarked on the disproportionate plausibility of the different stock structure hypotheses, acknowledging that many of the SSC members who are not on the SEDAR 74 Stock ID panel may be unfamiliar with the issue. Further, it may be more prudent to request the ability to explore alternate stock structures under the research track approach.

An SSC member noted the use of the ADT as part of the SEDAR research track process, which is responsible for continually providing oversight to the direction of that process. Another SSC member countered that given how the SEDAR process continually builds on the progress made

previously in the development of each assessment, that making any modifications to that progress would need to happen earlier rather than later, at which the assessment may be too far along to resolve a concern. Some SSC members expressed concern about procedural concerns with revisiting the framework of how the research track process is supposed to function after that process has already begun. Further, additional explorations into how to structure the data are expected to constitute a significant increase in workload for the analytical team.

An SSC member asked about the possibility of the SSC reviewing the completed Stock ID report for SEDAR 74 prior to additional progress being made in the assessment. Another SSC member expressed support for that approach, and for revisiting the idea of incorporating the ability to evaluate multiple hypotheses for stock structure under a research track assessment. Council staff clarified that the research track process was not designed to accommodate SSC review after the completion of each stage; doing so, and/or altering the timing of the process through intermittent reviews, may have significant effects on the timing and workloads of the many contributors to the stock assessment process, as well as the Council and its expectations of when it may receive actionable management advice for the species.

Some SSC members expressed concern about the recent guidance for the research track process, noting disappointment in the constraints on the process that have recently been experienced with respect to evaluating alternative stock structures. SEDAR staff noted that in the case of evaluating alternative stock structures, a hurdle to overcome would be how to select the most appropriate model, given that typical model selection tools don't apply in the same way to these models. An SSC member countered that the SSC possessed valuable expertise to be able to discern the appropriateness of various models based on their overall performance. SSC members discussed different aspects of the life history and distribution of red snapper in the Gulf, with some comments on the evolution of that understanding with time.

Dr. Tom Frazer (Council representative) said that clarity on the scope of the research track process would be requested of the SEFSC, and would be made available to the SSC. If necessary, a one-day SSC meeting could be convened to resolve the issue with the flexibility of the research track process and specifically, with respect to the decisions made thus far in the Stock ID process for SEDAR 74.

The meeting was adjourned at 12:30 pm eastern time on August 11, 2021.

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 Ecosystem SSC
Mandy Karnauskas
Josh Kilborn
Steve Saul

Special Socioeconomic SSC
Luke Fairbanks
Jack Isaacs

Council Representative
Tom Frazer

A list of all meeting participants can be viewed here.