Standing, Reef Fish, Ecosystem, and Socioeconomic SSC Meeting Summary January 11 – 13, 2022

The 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 9:00 AM EDT on January 11, 2022. The agenda for this meeting was modified to include daily public comment, and discussion of SEDAR 68 terms of reference during Other Business. The amended agenda, and the minutes from the September and November 2021 SSC meetings, were approved as written. Verbatim minutes from past SSC meetings can be reviewed here.

Drs. Jim Nance and Luiz Barbieri will represent the SSC at the Council's January 24 – 27, 2022 meeting.

Review: Absolute Abundance Estimates for Red Snapper, Greater Amberjack, and Other Federally Managed Fish on Offshore Petroleum Platforms in the Gulf of Mexico

Dr. Scott Raborn (LGL Ecological Research Associates, Inc.) presented completed research on the potential impacts from explosive removals of oil production platforms (OPPs) for the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE). The study area included western and central U.S. Gulf waters out to depths of 300 meters (m). Effects were assessed across four depth zones, by state, between May and October in 2017 and 2018, with 30 platforms sampled in each year. Generally, the number of OPPs has steadily declined since the early 2000s, particularly in the 10-17m, 18-30m, and 31-90m depth ranges. The study characterized the relative abundance of federally managed reef fish species on OPPs occurring within the calculated blast radius during the platform removal process. This would allow development of a method to estimate mortality of reef fish from explosive removals, to compare findings with those from contemporary stock assessments to estimate effects of explosive removals, and to develop actionable recommendations for BOEM and BSEE.

While many species were observed, only cobia, gray triggerfish, greater amberjack, red snapper, and vermilion snapper were selected for impact analysis. Hydroacoustic surveys were combined with submersible rotating video cameras (SRVs) to estimate the total number of fish present, and the species composition at all 60 OPP study sites. Hook and line sampling at each site allowed identification of species, sex, weight, and collection of hard parts for age data. Mark-recapture efforts were conducted at a subset of 10 OPPS to obtain independent population estimates of red snapper on OPPs. Further, acoustic telemetry studies were completed at seven OPPs to determine

site fidelity, along with vertical profiling of physical oceanographic characteristics. A detailed account of the methods used can be reviewed in the published manuscript for the study[1].

Findings included observations of the proportion of fish occupying OPPs by depth, with mean fish density decreasing with depth. OPPs were found to be home to a more substantial biomass of study species than initially anticipated. Survey methods showed that, for red snapper, most of the biomass occurred between 18-30m on OPPs, with estimated population size varying by platform. Acoustic telemetry tracking of red snapper suggested that most tagged fish remained in close proximity to the platform, with 84% of recorded positions occurring within 95m of the OPP. Additional modeling indicated that red snapper around shallow water OPPs were subject to high fishing and total mortality, but likely low natural mortality.

Abundance estimation modeled from the data collected suggested that most of the observed red snapper biomass (approximately 9 million pounds; approximately 4.9% of total Gulf-wide estimated biomass) occurs off Louisiana on OPPs in depths from 31-90m. Similarly, vermilion snapper, gray triggerfish, and greater amberjack biomass appears concentrated in the same depth zone off Louisiana. However, when converting the estimated number of greater amberjack to weight based on data from the last stock assessment on the species (SEDAR 33 Update 2016[2]), approximately 45.1% of the total greater amberjack stock occurs on OPPs in the western and central Gulf. Thus, the study authors contend that either the stock assessment is biased low, the study's estimate biased high, or some combination. The majority of cobia observed occurred in the shallowest depths (10-17m), followed by the 31-90m depth range, and primarily off Louisiana.

To evaluate broad scale mortality estimates from the explosive platform removal process, 47 platforms removed using explosives were compared during the 2017 – 2018 time period. Over 10 removals were observed in the 10-17m, 18-30m, and 31-90m depth zones; only two explosive removals were observed in the 91-300m depth zone. Abundance data were binned by horizontal distance from the platform by vertical depth. All fish in bins shallower than each platform's water depth were placed in the deepest available bin for that site, with the exact number of fish and their locations simulated and selected 10,000 times to ensure representative distributions. "Conservative" inputs of explosive effects, as described by Dr. Raborn, still resulted in all fish exposed to lethal peak pressures from explosions at all 47 sites in the simulation. Limited survival was estimated at the deepest depths. The simulation suggested that, even at deeper water sites, all fish were expected to die when less than 157 meters from the explosions.

When evaluating actual explosive removals and estimated populations of federally managed reef fish on the corresponding OPPs, effects were expected to be negligible on the total populations of red snapper, vermilion snapper, gray triggerfish, and cobia. However, effects were largest for greater amberjack. Further, the study contends that if all standing platforms were removed with explosives, the study estimates the mortality of approximately 45% of the Gulf greater amberjack stock, based on the estimated biomass from the study against the estimated biomass from the SEDAR 33 Update stock assessment.

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[1] https://gulfcouncil.org/wp-content/uploads/5b-NAJFM-2021-Gallaway-Absolute-Abundance-Estimates-for-Red-Snapper-Greater-Amberjack-and-Other.pdf

[2] http://sedarweb.org/docs/suar/GAJ_S33_2016%20Update_Final.pdf

Dr. Raborn noted that local fishermen routinely target species on OPPs: especially the recreational sector in the western Gulf. These explosive removals are predicted to have removed the equivalent of approximately 35% of total red snapper landings in 2016. It is expected that these explosive removals diminish fishing opportunities in the areas in which the removals occur. The habitat composition in these areas is often mud bottom, with artificial structures often comprising the only vertical relief over substantial distances.

Particular to greater amberjack, some SSC members thought the large biomass estimates were more the result of fish behavior and response to sampling gear than indicative of the abundance estimates presented in the study. Dr. Raborn acknowledged some bias due to fish behavior in response to the sampling gear; other members of his study team agreed, but could not quantify that bias. Dr. Raborn added that the concurrence of multiple sampling methods provided some support for biomass estimates; he also noted the potential for screen saturation using the SRVs, which could bias biomass estimates to more curious species. An SSC member noted that if greater amberjack is being overestimated in the study, some other species are being underestimated. Dr. Raborn contended that the attraction bias was likely not having as great an effect on the estimate as some may think. The SSC member noted that greater amberjack will follow moving sampling gear to some degree.

An SSC member asked whether there was any interest from anglers about these explosive removals, and whether these anglers more heavily targeted OPPs about to be removed. The SSC member also asked whether these explosive removals were displacing fish. Dr. Raborn noted that safety boats exclude other vessels from approaching an OPP when preparing to initiate an explosive removal. He added that simulation modeling estimated extremely high mortality from explosive removals; thus, emigration from OPPs post-explosive removals is expected to be negligible. Other SSC members added that explosive removals have been occurring for some time; however, explosive removals have been decreasing with the decreasing number of platforms, the advent of floating platforms, and the introduction of alternative removal methods.

Another SSC member added that previous studies have estimated that explosive removals of OPPs likely had a negligible effect on the red snapper stock over time. They added that, even though artificial reef association of red snapper is considerable, it does not comprise a majority of the biomass of the red snapper stock. Most red snapper are likely over natural bottom habitats, as evidenced by the findings of the Great Red Snapper Count (GRSC). Factors such as high catch-per-unit-effort (CPUE) on OPPs versus over natural bottom need to be considered when evaluating the effects and impacts of OPPs as habitat. An SSC member added that artificial reefs increase the CPUE, and the agencies responsible for OPPs do not prioritize fishery management in the same way as NMFS, which does not have authority over the placement and management of OPPs. Other SSC members contended that the effects of explosive removals of OPPs for greater amberjack seems to require more investigation, based on the findings of this study. They further stated that there is clear use of these OPPs as habitats by commercially and recreationally important finfish, and the effects of these removals on those resources seems to not be similarly accounted for with other drivers for explosive removals.

An SSC member stated that it was informative to note why an artificial structure like an OPP is "important". In the case of red snapper, OPPs have been demonstrated to have little effect on the overall spawning stock biomass, but likely are of considerable importance to fishing communities.

Evaluation of APAIS Intercepts for Yellowtail Snapper in the Gulf of Mexico

Council staff summarized the status of Snapper Grouper Amendment 44 / Reef Fish Amendment 55, which is a joint amendment to both fishery management plans for the Gulf and South Atlantic Councils' management of southeastern U.S. yellowtail snapper. The yellowtail snapper stock was found to be healthy during the Councils' SSC review of the SEDAR 64 stock assessment, which used data through 2017 and incorporated recreational catch and effort data from the Marine Recreational Information Program-Fishing Effort Survey (MRIP-FES). At its December 2021 meeting, the South Atlantic Council recommended updating the SEDAR 64 stock assessment with data through 2020 to ensure that subsequent actions considered by the Councils were using the most recent data available; the Gulf Council will consider the same decision at its January 2022 meeting.

Review: Spatial Coverage and Severity of the 2020/2021 Red Tide on the West Florida Shelf

Dr. Brendan Turley characterized collaborative research to estimate the severity and extent of the 2020/2021 red tide harmful algal bloom on the west Florida shelf. Dr. Turley noted commensurate findings from this study with ecosystem modeling conducted by Dr. Dave Chagaris. Red tide began blooming in the region in late November of 2020 and persisted through the winter of 2021. This was unusual, because blooms usually degrade in winter months. By early spring of 2021, the red tide bloom crept up into Tampa Bay, and was exacerbated by the Piney Point discharge event in April 2021. Monitoring of red tide was done in collaboration with handheld sampling gear by fishermen. In offshore waters off Tampa Bay, sampling did not observe fish kills, and fishing remained generally good north of 27.8 degrees latitude; south of that line, gag grouper was reported to be difficult to catch. Environmental data from the sampling area did not show unusual physical oceanographic conditions. Additional surveys by NMFS found similar results, but did not include nearshore coverage. Hypoxia was detected in research cruises by the NOAA Atlantic Oceanographic and Meteorological Laboratory (AOML) off Charlotte Harbor between July 31 and August 6, 2021, and more so between October 5 – 11, 2021. Further, fisherman sampling in October 2021 also found hypoxia in the same locations as the AOML research cruises. In September and October 2021, remote sensing detected the presence of red tide in the Florida Panhandle; fishermen also reported not seeing stone crabs during this time in southwest Florida. By December 2021, no bloom activity was detected, and hypoxic conditions had resolved.

Dr. Turley noted that hypoxia forms when red tide persists over summer months (e.g., 2005, 2014, 2018, and 2021 blooms). Areas of particular concern for these effects, based on the historical occurrence of red tide, are in the Big Bend region and off Sanibel Island. Future research efforts aim to expand fisherman water quality monitoring, to update the online dashboard showing environmental conditions, integration of Florida Fish and Wildlife Conservation Commission

(FWC) and NOAA data, improved red tide remote sensing, development of a seasonal hypoxia forecast, and refine the communication and outreach of data to better inform fishermen.

Dr. Chagaris noted that hypoxia was not included as a data layer in the Ecospace model, which could be biasing estimates of red tide severity in that model. He added that the continued development of both the ecosystem modeling and the in-situ sampling of hypoxia during and around red tide events would be expected to greatly improve red tide forecasting with time. Dr. Turley thought additional integration of hypoxia into ecosystem modeling was possible, but will require more development. He added that the goal of the forecasting effort was to describe the likelihood of red tide effects in the form of a published bulletin for stakeholders to consider. Another SSC member remarked on the necessity for these data and modeling in Texas, which is also subject to severe red tide blooms. SSC members agreed that the involvement of fishermen in the collection of environmental data is admirable and to be encouraged, perhaps through NOAA SeaGrant offices. Dr. Turley added that the expansion of citizen science and similar programs would certainly benefit red tide monitoring, and likely in other areas also; however, he acknowledged funding limitations as a notable obstacle. Another SSC member stated that it may be of interest to assess the social and economic effects of red tide blooms on fishing communities.

> **Motion:** The SSC endorses the collaboration between the Florida Commercial Waterman's Conservation (FCWC) group, NOAA Fisheries, and the Florida Fish and Wildlife Conservation Commission in monitoring red tide distribution, density, and effects on water quality parameters. Effort should be made to understand current limitations to expanding the FCWC's efforts and to potentially recruit participation by other stakeholder groups into similar research and monitoring efforts. The benefits of this form of cooperative research and monitoring are likely to be immense, as stakeholders on the water can often respond more quickly and efficiently than agency or academic scientists when environmental events, such as red tides, occur. Cooperative research also facilitates data exchange and enhances communication among stakeholders, researchers, agency scientists, and managers, thus improving the efficiency of the research, assessment, and management system.
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> ***Motion carried with no opposition***.

Review: National Academies of Science Report on the Impacts of Limited Access Privilege Programs in Mixed-use Fisheries

Dr. Lee Anderson presented the National Academies of Sciences, Engineering, and Medicine (NAS) study on the Use of Limited Access Privilege Programs (LAPP) in Mixed-Use Fisheries, as a member of the study's Committee. The study was mandated by the Modernizing Recreational Fisheries Act. Dr. Anderson noted that the presentation is the same as the one given to the Council at its October, 2021 meeting. Dr. Anderson highlighted the debatable nature of LAPPs and stated up front that he supports their consideration in overcapitalized fisheries.

Dr. Anderson explained how the NAS selects Committee members for a particular study, noting that they are unpaid volunteers. He identified his fellow Committee member who also sits on the

SSC, Dr. Sean Powers, and the other Committee members who have served on Council committees, such as the socio-economic panel. Dr. Anderson explained that NAS Committee members are instructed to serve as scientists and must ensure they have evidence to support expressed views.

Dr. Anderson noted that LAPPs alter the incentive structure of a fishery, which should lead to greater efficiency depending on how the program is designed. However, this restructuring can have effects elsewhere in a fishery, which is what this study investigated. The Committee was tasked with examining the influences of LAPPs on other aspects of the fishery, and ultimately found little discernable effects on recreational and for-hire stakeholders. Dr. Anderson discussed the Committee's focus on identifying other causational aspects, noting that there may be numerous external factors to LAPPs that cause or contribute to change.

After reviewing the economic, ecological, and social impacts of LAPPs, Dr. Anderson noted that there is no direct evidence of effects on communities, but that the lack of identified impacts relates to the Committee's inability to determine causation and the lack of data. This lack of data hampered the Committee's work, and Dr. Anderson emphasized the need to prioritize the collection of human dimensions data. He also noted the need for more interdisciplinary work to examine the impacts and functioning of the Gulf's LAPPs. Other SSC members noted the need for more research on labor and crew to enable examination of how crew and hired captains can enter the fishery, and the importance of having a well-functioning quota market. Dr. Anderson reiterated the importance of carefully considering the initial allocation and access for future generations when designing a LAPP.

Dr. Anderson requested that the SSC be afforded the opportunity to review allocation decisions, even in the case of an indirect reallocation, as in the recent case of red grouper.

In terms of market power, Dr. Anderson stated that the Committee did not find any evidence of market power, although that does not mean it may not occur. Dr. Mike Travis (SERO) described a recent social network analysis on the LAPP quota market, which suggests there may be some vertical integration occurring: warranting a revisit to market power research.

SSC members requested clarification about their role in responding to the study, which produced several recommendations. The SSC reviewed two of these, the first of which is directed to the SSC and encourages interdisciplinarity to better integrate qualitative and quantitative data to generate hypotheses and discern and test policy impacts. Next, Dr. Woodward reiterated the need for research and support for examining the impacts of LAPPs, and asked if the Committee considered the use of incentive-based programs in the recreational sector. The SSC reviewed a related recommendation, calling for the review of both private recreational and for-hire fishery management for species shared under LAPPs in mixed-use fisheries and reforms that foster accountability while enhancing fishing experiences and opportunities for heterogeneous groups of anglers. The SSC decided to wait to provide recommendations until its members can further explore the study's recommendations at an upcoming meeting, with the intention of considering how they may be advanced or operationalized. SSC members also requested more specific guidance from the Council on its request to the SSC regarding the study report.

Review: Simulation of the Effect of MRIP-FES Data on Catch Advice for a Historical King Mackerel Stock Assessment

Council staff presented Southeast Fishery Science Center (SEFSC) sensitivity runs from the Gulf king mackerel stock assessment to examine the extent to which changes made to the recreational catch and discard data (from MRIP-Coastal Household Telephone Survey [CHTS] to FES) had on management advice, specifically impacts to the acceptable biological catch (ABC) and overfishing limit (OFL). These sensitivity runs also included changes to shrimp bycatch. Four sensitivity runs were configured, with each model varying use of MRIP-CHTS and FES units, terminal year, and shrimp bycatch data. It was also noted that models 2 and 3 now have the correct data presented, fixing an error from a previous presentation of this information. Comparing results from each model, the increases in the OFL and ABC from SEDAR 38 to SEDAR 38U, are primarily due to the change from MRIP-CHTS to FES. The SSC Chair commented that this presentation was strictly for informational purposes and clarified that his SSC summary to the Council at the last meeting used the corrected data.

Discussion of Draft Essential Fish Habitat Amendment and Data

Mr. David Dale from the NOAA Habitat Conservation Division (HCD) provided a detailed history and review of the consultation process including considerations for Essential Fish Habitat (EFH) which was defined in the 1996 reauthorization of the Magnuson-Stevens Act. There has been a decades-long history of consultations for conserving marine resources and the HCD is not limited to EFH when initiating consultations. However, there are a few requirements unique to EFH consultations. EFH consultations require the permit applicant to provide a description of the action and analyze the effects on EFH. The HCD provides a response regarding those effects and the permit applicant must reply with a mitigation plan or provide rationale for not altering planning. Mr. Dale indicated that projects involving the Army Corps of Engineers represented the majority of the consultations conducted by the HCD. The Council created an amendment to identify and describe EFH in the Gulf in 2005 and has completed two 5-year reviews (2010 and 2016). Mr. Dale then described a subset categorization of EFH denoted as Habitat Areas of Particular Concern (HAPC). These areas exhibit one or more of the following traits: rare, stressed by development, provide an important ecological function for federally managed species, or are especially vulnerable to anthropogenic degradation. Proposed work in these areas receive extra scrutiny during the consultation process and do not necessarily require the implementation of fishing restrictions. Currently, HAPCs in the Gulf have been assigned to areas with high abundances of coral species.

Dr. Lisa Hollensead (Council staff) reviewed the draft Generic Amendment to modify current EFH identifications and descriptions for all Gulf managed species, excluding corals. The document includes alternatives to update spatial habitat layers and species life history tables to more contemporary sources and provides options for two more quantitative approaches for species with more data availability. An SSC member inquired about the next steps for the document. Dr. Hollensead responded that the revised draft will be presented to the Council in January. To better visualize the raw spatial data and interpret model outputs, Council staff is generating a webpage

that would allow SSC members to better explore the data sources being used to inform the Generic Amendment alternatives. The SSC member was supportive of the proposed future direction and indicated that the SSC would likely be able to provide input on decision points for the document when those data are made readily available for review at a future SSC meeting.

Status Update on Red Snapper Management and Outstanding Council Motion

Dr. Carrie Simmons (Council staff) briefly reviewed the recent motions and actions by the Council for red snapper in response to the GRSC. The Council has transmitted framework actions to modify the red snapper catch limits, and to implement ratio calibrations to the state data collection programs in 2021; yet, neither of these framework actions have been implemented by NMFS. Also, the Council passed a motion to ask the SSC to reconsider the catch limits for red snapper, using the revised and finalized GRSC project report.

An SSC member asked about the delay in the implementation of the framework actions, and inquired about the current red snapper catch limits. SERO staff noted that they are currently working through the rulemaking process on these actions. Further, the current OFL is 15.5 million pounds whole weight (mp ww), and the ABC is 15.1 mp ww. Council staff added that any new catch limit recommendations would supersede those either currently in place or transmitted to the agency.

Summary of SSC Discussion and Recommendations on GRSC Report from March/April 2020 and September 2020 Meetings

Mr. Ryan Rindone (Council staff) briefly summarized the decisions and recommendations by the SSC during its March/April and September 2021 meetings. The original GRSC report was independently peer-reviewed at the SSC's March/April meeting, followed by a final review by the SSC at its September meeting. The SSC set the OFL using the GRSC at 25.6 mp ww, and the ABC at 15.4 mp ww using the NMFS Bottom Longline Survey. An SSC member asked whether any modifications to the red snapper catch limits would be accounted for in the stock's rebuilding plan. Council staff replied that all projections from interim catch advice would be constrained to meet the stock's rebuilding timeline, which is currently set for 2032.

An SSC member asked why the SSC decided to treat the LGL study examining absolute abundance of red snapper off Louisiana, and the GRSC, as separate studies, not to be directly compared to one another. Another SSC member noted that the GRSC data for Louisiana were largely imputed by data collected in Texas waters; whereas, the LGL study collected empirical data directly from waters off Louisiana. At this time, the LGL study team still needs to respond to SSC comments. Further, the time periods during which the data were collected are staggered. The SSC continued to acknowledge the differences in the LGL and GRSC studies, and that the subject of what estimate to use for the absolute abundance for Louisiana remained outstanding. Another SSC member asked about the purpose of the LGL study. Council staff replied that the LGL study was requested by and appropriated by the Louisiana State Legislature for the edification of the state's knowledge on the species for its own management purposes. An SSC member commented

that it is also possible to use the data generated by both the GRSC and LGL studies in SEDAR 74 (red snapper research track assessment) to inform management, despite the studies not being directly comparable. Other SSC members agreed that both studies should be considered as part of SEDAR 74, in keeping with the SSC's motion to that effect during its September 2021 meeting. Dr. Tom Frazer (Council representative) added that the Council supports consideration of all available data in the stock assessment; however, the Council's motion was specific to the data requested therein. An SSC member noted that all results from these studies are estimates; however, reconciliation of these differences in precision and accuracy can be addressed in the stock assessment process. Further, the differences in the studies do not mean that the studies are unilaterally inaccurate. These studies use empirical observations to inform model-generated estimates of absolute abundance.

Great Red Snapper Count Report: Re-analysis of the Florida Natural/Unconsolidated Bottom-type Data to Include the Random Forest Design Stratification

Dr. Greg Stunz discussed the re-analysis of the natural and uncharacterized bottom (UCB) types off Florida surveyed by the GRSC, which were included in the random forest survey design stratification. The finalized GRSC report, submitted to NOAA Sea Grant in June 2021, resulted in an estimate of 118 million age-2+ red snapper in the Gulf, with a coefficient of variation (CV) of 15%. The subsequent provided addendum to that final GRSC report results in a decrease in the estimate of absolute abundance of age-2+ fish from 118 million fish to 96.7 million fish. The changes in that addendum were in direct response to modifications requested by the SEFSC, and include the random forest approach for Florida; a fourth estimate of 92 million fish was generated as a "validation estimate" for the SEFSC, and includes the random forest application for Florida. Dr. Stunz noted that the GRSC was designed in part to survey for red snapper in areas not previously surveyed by federal programs. He added that post-stratification of the original study design was certainly possible, but cautioned modifying the study beyond its originally designed scope, at the risk of violating certain statistical assumptions inherent to the original design. Dr. Stunz stated that the GRSC team will continue to be involved and support its work; however, the study has been completed in the eyes of the GRSC team and its funding agency, and if further analyses are expected, a responsible party for that work will need to be identified.

Discussion of Results of Post-stratification Analysis by SEFSC, FWC, and GRSC Teams for Florida Absolute Abundance Data

Dr. Katie Siegfried (SEFSC) presented a preliminary comparison of observed red snapper occurrence off the west coast of Florida between surveys conducted by the SEFSC, FWC, and the GRSC. The SEFSC expressed some initial concern that the estimate of red snapper in the shallow water areas (10 m) off the Florida big bend (middle Florida) region was too high compared to its own surveys and those by the FWC, and may be skewing the final abundance estimate when extrapolated. The SEFSC contended that those GRSC results are in conflict with a number of fishery-independent camera surveys, research bottom longline and trawl surveys, and fishery-dependent sources. The SEFSC, in collaboration with other agency and academic partners,

proposed the use of post-stratification analyses on the categorized depth contours used in the GRSC to explore how these permutations affect abundance estimates for the region.

Several SSC members inquired about the first GRSC and FWC's Fish and Wildlife Research Institute (FWRI) comparison maps presented. The discussion resulted in the determination that the maps were not presented at the same spatial extent: only the GRSC map included bathymetry information; the GRSC data observed was for 2018 – 2019, while the FWRI map was a composite of several years, and the sampling protocols between the camera survey studies were different (GRSC: random selection of sampling sites based on a random forest model to ascertain probability of red snapper occurrence; FWRI: focused examination on natural and artificial structured habitat). A second series of maps illustrated at-sea-observer data of red snapper catch in the for-hire sector ranging from 2015 – 2020. FWC staff indicated that the locational positions of these data were not categorized by habitat type or standardized for effort (number of anglers or fishing time). FWC staff continued that these data represented only observations of red snapper for-hire harvest or discards, and that fewer for-hire trips occur in the Big Bend region due to the remoteness of the area.

Another comparison of the GRSC to the Karnauskas *et al*. 2017[3] study indicated that the GRSC determined the majority of the red snapper biomass to be located in the eastern Gulf, while Karnauskas *et al*. stated the opposite with higher abundance of red snapper in the western Gulf. An SSC member stated that there is evidence that a distribution shift has occurred since the Karnauskas *et al*. study was conducted in the early 2010s towards the east. Additionally, they stated that red snapper observed in the east in the GRSC were mostly young, small fish that had not yet recruited to the fishery, and the Karnauskas *et al*. study focused on fishery-dependent indices for an abundance estimate that would skew towards observing larger fish. The SSC member continued that perhaps lagging the observations of red snapper captured in the NMFS trawling survey may help relate those results to other surveys that encounter larger individuals. Dr. Siegfried indicated that the trawl survey does observe fish 2 years and older (the ages of focus in the GRSC), but that the NMFS Bottom Longline (BLL) survey does generally encounter older ages (8-10 years).

An SSC member hypothesized that the difference between surveys was likely driven by gear bias and inquired about the future work outlined in the presentation. They asked about who would be appointed as head investigator of a post-stratification research team and how would the work be funded. Dr. Siegfried indicated that, at this time, no principal investigator or funding source had been identified.

Fishery-Independent Indices Updates for Red Snapper

Dr. Ted Switzer (FWC) provided a developmental history of three collaborative reef video surveys throughout the Gulf. The SEAMAP reef fish video survey was initiated in 1992; the NMFS Panama City survey began in 2006; the FWRI survey started surveying midwestern Florida waters in 2014 and then expanded state-wide. Few differences exist between the surveys and they have

[3] https://afspubs.onlinelibrary.wiley.com/doi/epdf/10.1080/19425120.2016.1255684

been designed to be directly comparable; therefore, they are standardized in the camera sampling gear and analyzed using the same abundance metric (MaxN: maximum count in a single screen shot). Recently, a paper has been published[4] to combine the three surveys into a single index for use in stock assessments.

The surveys collect detailed habitat information including ledge, hard bottom (fragmented, mixed, low relief), and pot hole areas. This allows for directed sampling efforts, extrapolation estimates of habitat availability, and has potential utility in abundance estimation. Fish are attracted to spherical camera arrays using baited traps and individual fish can be measured using a laser. Beginning in 2021, survey integration was completed for all three surveys and used to create the Gulf Fishery-Independent Survey of Habitat and Ecosystem Resources unified design. Dr. Switzer presented how the new design will modify the habitat and spatial sampling proportions.

Results from the FWC survey in the Big Bend region indicate that red snapper are observed mostly between depths of 30-50 meters and generally range between 275 – 525 mm fork length. Red snapper mean relative abundance in the region appears to have declined in recent years. Future FWC survey work will focus on examining spatiotemporal dynamics of red snapper and continue the collection of habitat and fishery data for the next 5 – 10 years.

The SSC asked about how combining the surveys would affect the interpretation of results and asked for clarification on how turbidity affects abundance estimates. Dr. Switzer responded that effort will continue to refine experimental designs so that combining surveys will be appropriate for determining how abundance trends, rather than differences in survey design, are informing the interpretation of survey results. He continued that a qualitative determination of turbidity is assigned during the video review process. He also indicated that many species, attracted by the baited array, are drawn to the camera and that this behavior can reduce the influence of turbidity effects on fish counts. In the case of stations near the Mississippi River outflow, samples may be discarded due to high turbidity.

Updated NMFS BLL Survey Data through 2021

Mr. Adam Pollack presented a review of the NMFS BLL survey design and methodology and provide a Gulf-wide relative abundance of red snapper from 2001 through 2020. Additionally, a complementary BLL design organized by the Dauphin Island Sea Laboratory (DISL) has been conducted since 2010. Sampling in 2020 was limited due to COVID-19 and was restricted offshore of Florida. Quantitative analyses of potential explanatory environmental variables collected from the survey indicate that year, data source, area, and depth contribute to the probability of observing red snapper. Results from the surveys indicate that Gulf-wide red snapper relative abundance has generally increased since 2001 and fluctuated in recent years.

An SSC member observed that results indicated relatively fewer red snapper were encountered in Florida and Mr. Pollack stated that red snapper are not generally encountered until sampling in Alabama. Mr. Pollack also indicated that the age/size distributions of captured red snapper has remained similar during the course of the time series. Another SSC member inquired about the variety of habitat types sampled by the survey, and Mr. Pollack answered that all habitat type areas

[4] https://www.sciencedirect.com/science/article/pii/S0165783621003064?via%3Dihub

were sampled except for marine protected areas or locations within a mile of offshore oil rigs. An SSC member asked about the demarcation line between Texas and Louisiana. Mr. Pollack answered that the survey uses the 94° W longitudinal line, reflecting the NOAA statistical grids, for Texas and Louisiana. An SSC member asked about the sampling overlap between the two surveys. Mr. Pollack responded that there is sampling overlap, but that DISL concentrates effort more in the area off Alabama than the NMFS BLL.

An SSC member asked how red snapper abundance trends compared east and west of the Mississippi River. Mr. Pollack showed results indicating increases abundance trends in the western Gulf relative to the eastern region. The SSC questioned the potential drivers for the downward abundance trends in the east and hypothesized that estimates from Alabama may explain the phenomena. Additionally, recent trend declines have been described in the literature and are thought to be attributable to a number of factors (e.g., *Deepwater Horizon* oil spill, red tide, increased fishing removals).

Review of Estimated Commercial and Recreational Effort over Uncharacterized Bottom in the Gulf of Mexico

Dr. John Walter (SEFSC) presented on the spatial distribution of commercial and recreational red snapper catch to determine a fraction of 'fishable' biomass. The GRSC has identified a large cryptic biomass of red snapper over the UCB, but it is unlikely that the totality of the UCB is subject to exploitation by the directed fleets. Spatial mapping of biomass suggests differences between a study completed by Karnauskas *et al.* (2017[5]) which used data collected in 2011, and the GRSC, which collected data in 2018 and 2019, in terms of densities of red snapper by region and depth in the Gulf. To evaluate the use of the UCB by the directed fleets, the SEFSC analysis used the GRSC 92 million fish estimate to map commercial (using vessel monitoring service [VMS] data from the vertical line fleet) and recreational catch (using MRIP and Florida's State Reef Fish Survey data) over the UCB. These data are overlaid to identify the fraction of 'fished' biomass in the UCB.

VMS data provide time-stamped "pings" that show location, speed, course, vessel characteristics, and more, with the ability to differentiate between fishing and steaming between spots[6]. Analysis of UCB use by commercial fleets was restricted to the vertical line fleet, which accounts for approximately 96% of 2019 commercial red snapper landings. These data needed to be differentiated between effort over natural and artificial bottom to better parse out effort over potential UCB; thus, these data were merged with GIS data of habitat type. An SSC member questioned the inclusion of trips in regions known to be mostly mud, and also in coastal bays. Dr. Walter noted that the distribution of VMS effort may be including some transiting of regions such as bays and over muddy bottom. The analysis matched VMS data with dockside Trip Interview Program (TIP) landings, calculated trip level CPUE, and applied that CPUE to individual fishing points in 10x10 km blocks. Commercial landings were then estimated by the proportion of a trip

[5] https://www.tandfonline.com/doi/full/10.1080/19425120.2016.1255684

[6] Gardner *et al*. 2021. Artificial Attraction: Linking Vessel Monitoring System and Habitat Data to Assess Commercial Exploitation on Artificial Structures in the Gulf of Mexico. Frontiers in Marine Science. *In press*.

per block. Dr. Walter presented a table estimating that approximately 54% of commercial harvest was occurring over natural bottom, with the remaining 46% occurring over artificial structure.

For determining the percent use of the UCB by the recreational fleet, state-specific estimates and variables for the proportion of catch, such as distance from the nearest pass, depth, and region, were analyzed for all Gulf states for 2019. An SSC member observed that landings estimates presented from recreational fleets were shown to be higher than inferred in the post-stratification presentation in the Big Bend region, in the 10-20m depth strata. SSC members discussed this mismatch, and Dr. Walter indicated that while recreational trips do occur in the shallower depths of the Big Bend region, and that red snapper landings therein are low. It was also noted that the data presented reflect harvest, and do not include recreational discards.

When recreational and commercial fleet harvests from 2019 are combined, the highest concentrations of fishing effort appear in the Panhandle of Florida, off the mouth of the Mississippi River in Louisiana, and eastern Texas. For the sake of this analysis, Dr. Walter described a cell of the UCB to be 'fishable' if exploitation of biomass therein was assumed greater than 0.01%. SSC members questioned using inferences about distance from pass traveled by the recreational fleets in Texas to inform the same for Louisiana. SSC members from Louisiana noted that the estimates of recreational landings off Louisiana may not match where the landings are actually coming from, and do not appear considerate of seasonal hypoxia events in nearshore areas. Another SSC member from Mississippi described differences in fishing behavior by the recreational fleets for Mississippi and Alabama, and contended that it may not be appropriate to combine those two states with respect to assumptions about angler behavior.

When examining relative exploitation rates, most commercial exploitation appears in east Texas and off the Florida Panhandle, with similar but more distributed patterns including the Alabama Reef Zone for the recreational fleets. Proportionally, less than 50% of the total biomass is vulnerable to fishing in Florida, Louisiana, and Texas, and greater than 80% for Mississippi and Alabama. Gulf-wide, the total proportion of the red snapper biomass subject to exploitation is approximately 37.6%.

The SEFSC's original estimate of the proportion of the weighted average of the overall proportion of the population vulnerable to exploitation was 22%; however, this estimate did not include more recent recreational data. The revised estimate is now 37.6%, based on the summed commercial and recreational harvest. Dr. Walter thought that this estimate likely represents an upper limit, given that recreational effort was not explicitly allocated to artificial structures. He added that the spatial mapping from the GRSC does not match the mapping in Karnauskas *et al.*; however, SSC members thought that understandable, given observed changes in the density and distribution of red snapper throughout the Gulf from 2011 to 2018/2019. It is possible to estimate exploitation rates based on the GRSC mapping; however, low catches occur in areas (Big Bend, 10-40m depth strata) from where a large fraction of the GRSC estimate of red snapper occurs. Substantial fishing effort occurs here, but does not generate a commensurate level of red snapper landings.

An SSC member recalled that commercial effort may have been tempered in recent years by availability of, and cost of, fish to lease in the Individual Fishing Quota (IFQ) program, thereby influencing the economics of commercial fishing. An SSC member asked whether virtually all

artificial reef structure was being considered included in the proportion of exploitable biomass, given differences in the distances required to travel to the fish; no answer was given. An SSC member asked how the reduction in the estimate of absolute abundance from 118 million fish to 92 million fish affected the estimate of the exploitable biomass estimate (now, 37.6%). Dr. Walter replied that differences in the estimate of absolute abundance would change the proportion of the total biomass vulnerable to exploitation, which is also subject to the effect of sector allocation. The SSC member postulated that heavy exploitation in certain areas may be leading to growth overfishing, as the average lengths of red snapper in some regions of high exploitation appear to be decreasing. The SSC member then asked about the potential shifts in spatial estimates of the red snapper population between the Karnauskas *et al.* study, which used data from 2011, and the GRSC, which used data from 2018 and 2019. Dr. Walter replied that differences in the spatially-explicit estimates of abundance could vary between the studies to the extent that the red snapper stock changed between 2011 and 2018 and 2019. Dr. Walter also noted that, in the Big Bend region, due to the near-zero level of red snapper exploitation, that region is not included in the estimate of the exploitable biomass. Council staff asked whether the Karnauskas *et al.* estimate of the spatial distribution of red snapper could have changed since 2011. Dr. Mandy Karnauskas (SEFSC) affirmed that it could now be different than described by the 2011 data.

An SSC member commented that the assumption presented is that the 2011 estimate of the spatial distribution of red snapper from Karnauskas *et al.* is more accurate than the GRSC estimate from 2018 and 2019; however, red snapper densities and spatial distributions have likely changed since 2011. Dr. Walter replied that the Karnauskas *et al.* estimate was designed to estimate spatial abundance, while the GRSC was designed to address absolute abundance. An SSC member thought that the Karnauskas *et al.* estimate from 2011 focused on larger fish due to gear selectivity, and was likely not capturing the smaller fish in the population, which the GRSC was designed to observe (age-2+). Another SSC member noted observations from the video surveys, which do observe smaller and younger fish, and the NMFS BLL survey, which observes larger and older fish; he remarked that these surveys also suggest that the distribution of biomass of red snapper today does likely differ from that represented by Karnauskas *et al.* SSC members thought the assumed spatial distribution of biomass was important to the understanding of the percent use of the UCB by the directed fleets.

An SSC member asked whether the SSC would be in a position to review these completed materials, including the post-stratification analysis, in time for the March 2022 SSC meeting. Dr. Walter replied that once an estimate of absolute abundance is agreed upon by the SSC, guidance would be needed with respect to how to address the ABC. The previous OFL recommendation used 13% of the UCB; a future analysis could use a revised estimate based on the analyses presented, with some decremented amount then used for informing the ABC. Dr. Walter reminded the SSC about the differences observed in the spatial distribution of red snapper from the GRSC versus the SEFSC's fishery-independent surveys. The SSC member remarked on the difficulty of using the ABC Control Rule for informing ABC in this instance, adding that such a risk analysis may not adequately capture the uncertainty of the abundance estimates.

Summary Discussion and Potential Requests for Updated SEFSC Red Snapper Interim Analysis for Catch Advice for the March 2022 SSC Meeting

Initial SSC discussions focused on the history of SSC recommendations informed by the GRSC. Results from the GRSC have been used for an OFL recommendation, which has been transmitted to, and is being considered by the Secretary of Commerce for final rule making. The final rule will modify the OFL from 15.5 to 25.6 mp ww based on results of the GRSC, and an ABC of 15.1 to 15.4 mp ww based on the 2021 interim analysis using the NMFS BLL survey. The SSC also discussed the timeline for considering the red snapper absolute abundance estimates generated by the LGL study. LGL staff indicated they are working on addressing the SSC's comments on the study that were provided during the September 2021 meeting. The SSC decided to discuss LGL's responses to its review at the March 2022 meeting before considering those data for informing any red snapper catch advice.

The SSC reviewed the previous GRSC inputs for the red snapper interim analysis from its March 2021 meeting. Since March 2021, the finalized GRSC abundance estimate has been revised as the result of an independent review and the Council has requested that the SSC considered this finalized estimate in setting red snapper catch limits. Similar to what was done in March 2021 and to help guide the SEFSC in developing the catch analysis, the SSC was considering two decision points to generate an OFL: which GRSC absolute abundance estimate to use and what proportion of UCB would be considered.

The SSC discussed the revisions to the GRSC absolute abundance estimate. Dr. William Patterson (a GRSC principal investigator) clarified that an initial value of 110 million fish had been reported. After independent peer-review, the random forest model used to assign spatial probabilities of red snapper occurrence off the coast of Florida was removed and resulted in an estimate of 118 million. Subsequent examination determined that inclusion of the random forest modeling approach with Florida was appropriate. Re-analysis of the Florida natural/uncharacterized bottom-type data to include the random forest design stratification resulted in a decrease of approximately 21 million fish (all from the state of Florida) from the previous estimate of 118 million red snapper, resulting in the finalized estimate of 96.7 million fish. Given the rigorous level of review and the response by GRSC investigators, the SSC decided the finalized abundance estimate of 96.7 million fish was the most appropriate estimate available.

> **<u>Substitute Motion</u>: The SSC recommends the SEFSC use the 96.7 million age 2+ red snapper from the GRSC estimate of absolute abundance for catch analyses to be considered at the March 2022 meeting, to enable the SSC to consider new management advice for OFL and ABC.**
>
> ***Substitute Motion carried 19 to 3 with 2 abstentions and 1 absent by roll call vote.***

The SSC then discussed the merits of exploring a post-stratification analysis Gulf-wide rather just for the state of Florida for calculating an absolute abundance estimate. An SSC member alerted the Committee that a few states had very low sample sizes within their shallow water areas, which would impede the ability to conduct the analysis Gulf-wide. Additionally, due to the high level of

observed hypoxia in 10-20 m depth in Texas and Louisiana, that area is not commonly exploited. SEFSC staff and Dr. Patterson reiterated that the post-stratification of the Florida depth strata was a continued and ongoing collaborative effort to better revise the abundance estimate. The SSC then decided that only consideration of post-stratification for Florida was appropriate, but decided that a Gulf-wide examination was warranted if possible considering data availability.

> **<u>Motion</u>: The SSC requests the SEFSC proceed with the post stratification analysis of the Gulf of Mexico shallow water stratum (10-40 meters, per the GRSC) where possible, and present the results at the March 2022 SSC meeting along with a second catch analysis incorporating these post stratification results.**
>
> ***Motion carried 20 to 0 with 5 abstentions*.**

Several SSC members expressed concern that deviation from the normal process was being considered for red snapper. The GRSC posed a novel situation where catch advice would be informed by a Gulf-wide independent measure of absolute abundance, while historical use of an interim analysis is driven by a long-term index of relative abundance and used for catch advice and/or a stock "health check". Council staff indicated that this process was unique and indicated that the SEFSC would be presenting a catch analysis in March 2022. The SSC asked for clarification on whether any catch advice coming from the results of the catch analysis would affect the rebuilding plan, or how those yields would compare to current stock status determination criteria (SDC). Council staff responded that outputs from the catch analysis would not change the parameters of the rebuilding plan or its timing to have red snapper rebuilt by 2032. Additionally, the catch analysis would not be able to generate new SDC and projections would continue to be constrained to rebuild the stock by 2032. Changes to a rebuilding plan, rebuilding time line, or modifications to SDC require a stock assessment. A research track assessment began for red snapper in 2021, which will consider as much contemporary data (life history, landings information, fishery-dependent and -independent data) as determined appropriate. After the research track, an operational assessment accounting for all the new information will be completed and used to determine the condition of the stock and generate SDC that will be used to inform the status of the rebuilding plan. The Council has used interim analyses in the recent past for red grouper and gray triggerfish to set catch advice between operational assessments.

The SSC then discussed various scenarios that accounted for some portion of the UBC that would be exploited to fishing effort. Upon reviewing the GRSC finalized estimate results, the SSC discussed how to handle the differing habitat categorization in the report. Florida has a combined abundance estimate for natural and UCB habitat types while all other states have these two categories separated. Mr. Matthew Smith (SEFSC) indicated he had received a table apportioning those estimates by habitat type from Dr. Robert Ahrens. He had used this information in a previous analysis, but was not involved in determining how those estimates were separated.

An SSC member asked for clarification on whether the proportion of exploitation was in relation to area or fish biomass in the SEFSC analysis. Dr. Walter indicated the analysis estimates a proportion of exploitation based on biomass across all habitat types. The SSC member followed up and asked if the SEFSC could use their analysis to determine an analogous proportion of UCB

similar to what had been performed and presented to the SSC in March 2021. Dr. Walter indicated that he would have investigate whether that was possible. He also indicated that, using this recent analysis, it was reproducible, documented, and could produce uncertainty estimates that could potentially be used to inform a buffer from the OFL.

The SSC further discussed how spatial distribution of the stock would be affected by a modification to catch limits. There is evidence to suggest that the UCB contains a large but highly dispersed biomass of large red snapper that may serve as a *de facto* spawning reserve. Also, red snapper tends to aggregate about nearshore structured habitat that is particularly vulnerable to fishing. For these reasons, increasing catch limits could lead to localized depletion but not necessarily affect overall stock status. This could create a situation leading to shortened seasons for fishing sectors that rely on these habitats. An SSC member indicated that VMS data in the commercial sector could aid in quantifying changes in fishing behavior related to changes in catch limits. The SSC acknowledged these factors and recommended sources of data required to address these questions be explored.

> **Motion: The SSC encourages the SEFSC to analyze how catch level increases could impact different fishing sectors, with respect to the ability to redistribute fishing effort according to localized abundance and depletion patterns. If sufficient social and economic data are not available for these analyses, the SSC encourages the SEFSC to identify specific data gaps and needs for assessing the impacts of changes in catch limits.**
>
> ***Motion carried 19 to 1 with 5 abstentions***.

The SSC discussed a reasonable range of scenarios to account for the UCB when generating an OFL value. An SSC member suggested the proportion of UCB considered should be similar to the March 2021 interim analysis. There was discussion that also using a small proportion of the UCB (10%) would represent a more conservative OFL and offset some of the inherent uncertainty surrounding the GRSC estimate. Additionally, Dr. Walter stated an OFL could be calculated using a novel analysis, and that a point estimate could be associated with an uncertainty value which could potentially be used as an ABC value. The SSC agreed to include another scenario for generating an OFL based on the proposed SEFSC analysis. Dr. Walter asked for clarification on whether red snapper abundance estimates off the coast of Louisiana should also be modeled using results from the LGL study. The SSC agreed that the SEFSC, for the March 2022 meeting, should primarily focus efforts on using data from the GRSC. However, if during the March 2022 meeting, the LGL study is vetted and considered as more appropriate for abundance estimates off Louisiana than the GRSC, then the SEFSC should be prepared to run the analysis using the LGL study during that week.

> **Motion: The SSC requests the SEFSC catch analysis of the OFL look at the following scenarios:**
>
> 1. **All structure**
> 2. **All structure +10% Uncharacterized Bottom (UCB)**
> 3. **All structure +15% UCB**

4. **Incorporate two key uncertainties regarding (A) the total biomass that might be accessible to the fishery and (B) potential impacts to the stock from localized fishing.**

Motion carried 19 to 1 with 2 absent and 3 abstentions by roll call vote

Several SSC members voiced concern about the path being pursued by the SSC. They contended the process being discussed deviates from the regular stock assessment process. They were concerned that if a large increase in catch limits was implemented that it could possibly hinder the stock's recovery, and requested that a stock assessment analysis be completed by the SEFSC for the March 2022 meeting. Another SSC member inquired whether SEDAR 52 could be rerun but scaled using GRSC abundance estimates. Other SSC members agreed that knowing how the current status of the stock related to the SDC and recovery plan would be ideal. They further stated new information from the GRSC could be used at this time so long as a substantial buffer between the OFL and ABC was implemented. Council staff indicated that any catch limits selected by the SSC would be in the short-term (approximately two years) with the new catch limits being generated after the completion of SEDAR 74 and a subsequent operational assessment. Council staff continued that running a scaled version of SEDAR 52 would be problematic, as the terminal year for that assessment was over five years ago (2016), did not account for differing seasons associated with state management of the fishery, and did not incorporate much data associated with the IFQ program, sector separation, and regional management of the private recreational fleet. SESFC staff also stated that workload entailed in running a stock assessment would make fulfilling the request impossible.

The SSC then discussed whether the committee should provide guidance to the SEFSC on setting an ABC. Many SSC members agreed that the P* approach has likely greatly underestimated the amount of scientific uncertainty in the past when setting an ABC. Given the uniqueness of the catch analysis being conducted, the P* approach will not be considered. An SSC member suggested using primary literature sources to inform some fraction of the OFL to generate the ABC which could easily be calculated during the March meeting. Additionally, some examination of a range of percent spawning potential ratio could also be considered. The SSC discussed how stock identification would affect uncertainty. Council staff responded that three separate regions within the Gulf have been identified in the stock identification process for SEDAR 74. The SSC agreed that the heterogenous distribution and possible spatial delineation of the stock would be another source of uncertainty that would need to be considered when setting a buffer between the OFL and ABC. The SSC decided to defer on deciding on a possible mechanism for setting and ABC until seeing the analysis results for OFL at its March meeting.

Review: NMFS Standardized Bycatch Reporting Methodology

Mr. Dan Luers (SERO) presented a 5-year review of the Standardized Bycatch Reporting Methodology (SBRM), noting that this review must be examined by the Council by February 21, 2022. SBRMs are consistent procedures used to collect, record and report bycatch data in a fishery; an SBRM is available for each FMP. Mr. Luers clarified that bycatch is composed of

discarded species and therefore does not include recreational catch-and-release or incidental catch. The term "bycatch" does include regulatory and economic discards, and "fish" bycatch includes turtles but not marine mammals or seabirds. Mr. Luers requested that the SSC assess the adequacy of the current SBRMs for each fishery based on four criteria: characteristics of bycatch occurring in the fishery; feasibility of the methodology from cost, technical and operational perspectives; uncertainty of the data based on current methodology; and, how the data are used to assess bycatch in fisheries. Gulf Council FMPs include reef fish, shrimp, coastal migratory pelagics, spiny lobster, red drum and corals; although, there is no allowable harvest for corals or red drum in federal waters, but this does not mean that bycatch does not occur.

Several bycatch reporting methodologies are available in the Reef Fish FMP, including logbooks and the observer program in the commercial sector, and MRIP dockside (APAIS) and mail-out surveys (FES) in the recreational sector. The review indicates that the Reef Fish FMP SBRMs appear feasible; however, some modernization is possible and the utility of supplemental discard data should be questioned. Red grouper and red snapper are in the top-ten bycatch species landed on commercial trips; discard to landing ratios are highest in the private recreational sector for gag, gray triggerfish, and red grouper. An apparent level of uncertainty is evident in certain reporting methodologies; many discard CVs in commercial logbook data exceed 100% and the Reef Fish Observer Program has a less than 2% coverage, making it less accurate in estimating capture of rare species. Many discards in the recreational sector are self-reported. Bycatch is not reported in Texas Parks and Wildlife Department Creel estimates, but Louisiana's LA Creel survey does provide discard data on some species. SBRM data are used in stock assessments to incorporate bycatch into estimates of total fishing mortality, in the review of stock status and development of ABC recommendations, and to determine if new management measures are necessary.

An SSC member asked why recreational red snapper discards appear to be so much higher than commercial discards. Mr. Luers responded that effort in the recreational fishery is substantially higher, but data from the recreational fishery is also self-reported; there have been few attempts to check the validity of those self-reported data. Another SSC member added that the commercial sector's smaller minimum size limit is meant to mitigate discards. An SSC member asked if there is any concern about species misidentification or not identifying discards to species level. Mr. Luers responded that it is always a concern with self-reported data but in the commercial fleet, validation occurs with observer programs.

Bycatch reporting methodologies in the shrimp fleet include electronic logbooks, an observer program and other non-SRBM programs such as cooperation with states to monitor fishing effort. The feasibility of these methodologies seems reasonable; however, modification of the current cellular electronic logbook (cELB) program is being discussed by the Council. The Gulf Shrimp Observer Program is the best method for estimating discard rates and species but generally, overall uncertainty is low. Unspecified fish represents a large portion of shrimp fishery bycatch.

An SSC member remarked that "seatrout" accounts for approximately 5% of the observed penaeid bycatch and asked if the multiple species of trout included spotted seatrout (*Cynoscion nebulosus)* or was that species always recorded separately. If discard data are available for species with state-level assessments, that data could be helpful for state assessments. A comment was also made that discard data for blue crab should be specified. Dr. Walter answered that bycatch data are focused

on federal species but noted the concern about the unspecified group of species and will work to get more resolution.

Mr. Luers described SBRMs in the remaining FMPs: coastal migratory pelagics (CMPs), spiny lobster, red drum, and corals. He noted the similarities between the CMP and reef fish SBRMs; the commercial sector characterized by low discards and the recreational, again, having the greater number of discards. Spiny lobster bycatch is monitored by the FWC. Discards there appear to be low, within 8 – 15% of landings by weight. "Ghost fishing," or lost or abandoned traps, account for some discards as they are estimated to fish for one year after loss. There are no red drum or coral SBRMs because harvest within the federal exclusive economic zone (EEZ) is prohibited. Any bycatch related to these may be captured in other SBRMs.

> **Substitute Motion: The SSC requests the SEFSC consider the collection of bycatch data on specific states' managed species identified by GSMFC TCC Data Management Subcommittee be added to the appropriate bycatch data programs.**
>
> ***Substitute Motion carried with no opposition***.

The SSC also expressed concern about the validity and lack of data verifying the accuracy of bycatch in the recreational sector. Dr. Nance stated that he will update the Council about this concern.

Public Comment

Public commenters supported the change to the public comment process, which now allows for comments to be heard at the end of each day of the meeting. Dr. Mike Drexler asked for the SSC to carefully weigh any decisions made by the Committee on two items: 1) red snapper is still in a rebuilding plan; the SSC needs to make sure the ABCs are in line with requirements of the Magnuson-Stevens Fishery Conservation and Management Act and 2) the GRSC is not an interim analysis and classification as an interim analysis is not appropriate. There are still valid concerns with some of the resulting estimates. Ms. Ashford Rosenberg (Gulf Reef Fish Shareholders' Alliance) expressed appreciation for the review of the LAPP report and supports further economic analyses. She was also glad to hear discussion on cooperative research and collaborative efforts amongst sectors and fisheries managers. Capt. Bob Zales, representing the Southern Offshore Fishing Association and National Association of Charter Boat Operators, commented on the LAPP discussion stating that there are internal issues within the commercial sector, not just between the recreational and commercial fisheries. He said problems began with the start of red snapper IFQs and have become more problematic. The IFQ program restricts regular fishermen from entering the fishery, discard mortality has increased over time, and lease prices have decreased the value of red snapper making it impractical to fish for them. He emphasized that the program needs to get rid of shareholders who aren't active in the fishery so that fair representation can be given back to fishermen.

Other Business

Council staff reviewed SSC-requested revisions to the proposed terms of reference for the SEDAR 68 operational assessment of Gulf scamp. The SSC had no further revisions. Council staff will transmit these terms of reference to SEDAR and the SEFSC.

The meeting was adjourned at 5:00 pm eastern time on January 13, 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 Ecosystem SSC
Mandy Karnauskas
Josh Kilborn
Steve Saul

Special Socioeconomic SSC
Luke Fairbanks
Cindy Grace-McCaskey
Jack Isaacs

Council Representative
Tom Frazer

A list of all meeting participants can be viewed here.