**Standing, Reef Fish, Ecosystem,
and Socioeconomic SSC
Hybrid Meeting Summary
November 18, 2021**

The hybrid 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 November 18, 2021. The agenda for this meeting was approved as written. [Verbatim minutes from past SSC meetings can be reviewed here](.).

Evaluation of SEDAR 70 Projections for Gulf Greater Amberjack

Dr. Katie Siegfried from the Southeast Fisheries Science Center (SEFSC) gave an updated SEDAR 70 projection presentation for Gulf greater amberjack, highlighting model corrections, modified projections based on the SSC specifications, and reviewing various requested allocation scenarios. Projections presented at the January 2021 SSC meeting had two misspecifications: spawning stock biomass ($SSB_{30\%}$) was used instead of the spawning potential ratio of 30% ($SPR_{30\%}$) as a proxy for the SSB at maximum sustainable yield (MSY), and the long-term average of recruitment was used for benchmarks and projections instead of the recent estimated mean. Also, interim landings changed to accommodate recent 2019 landings that had been updated since the last SSC meeting. These updated interim landings reduced the assumed harvest estimates from the 2019 – 2021 fishing years. Dr. Siegfried reminded the SSC of the base run projection settings: $SPR_{30\%}$ was used as the SSB_{MSY} proxy, the spawner-recruit curve was used to calculate recruitment for determining management benchmarks, the recent low recruitment rate was used for the projection period (assuming low recruitment will continue in the short term), and overfishing limit (OFL), acceptable biological catch (ABC) and rebuilding projections were made in order to rebuild the stock by 2027 to $SSB_{SPR30\%}$.

Recent average recruitment (2009 – 2018) is the lowest of the entire time period (1970 – 2018) and this lower recruitment is assumed into the future. An SSC member asked why the ABC was not set equal to the yield at $F_{REBUILD,}$ considering the stock is in a rebuilding plan. Dr. Siegfried responded that the SSC could make that change, but the assumption is that it would not allow for the stock to rebuild by 2027. Dr. Siegfried postulated that this is not the first time that a rebuilding plan has been set and not achieved within the prescribed timeframe. Overfishing was occurring in 2018 (terminal year of stock assessment) and the stock is considered to be overfished.

The OFL, ABC, and updated rebuilding projections were provided using results from runs using four additional allocation scenarios requested by the Council. It was clarified by Council staff that the model inputs were the allocation percentages for the fleets and explained the Council's rationale for the range of years for each scenario. These allocation scenarios, collectively, resulted in OFL values that differed from one another by 5% or less. Low ABC and annual catch limit (ACL) levels (in millions of pounds, whole weight) resulted across all allocation scenarios for rebuilding; a sharp increase in yields is then projected in 2028 after the stock is estimated to have recovered. Dr. Siegfried suggested focusing on the early years prior to stock rebuild in 2027, because projected allowable catch does decrease again after 2028.

An SSC member asked how the Council would interpret the results of the allocation scenarios based on the SSC discussion and clarified by saying that fishing at 75% of the fishing mortality rate at an SPR of 30% ($F_{SPR30\%}$) did not achieve the rebuilding target; however, fishing at the yield stream of $F_{REBUILD}$ would achieve the rebuilding goal and is therefore the only valid option. Dr. Siegfried noted that the stock status changed when benchmarks were re-estimated using the updated projection code from September 2021, along with the assumed low level of recruitment in the near-term. This low recruitment scenario, based on a decrease in the historic estimate of recruitment derived in the base model, also leads to a lower rebuilding biomass target than initially projected in January 2021. She also noted that it is worthwhile for the SEFSC to closely monitor stock recruits each year, and the recruitment trend, with the anticipation that future recruitment will respond to an increase in SSB as the stock rebuilds. She explained that even with the model assuming different allocation scenarios, the stock will not rebuild until 2027. An SSC member expressed concern about sensitivities in rebuilding scenarios based on the steepness level. Dr. Siegfried answered that the steepness was fixed at global minimum log likelihood profile. The SSC agreed that an SSC member made a valid point to note the continued use of the spawner-recruit curve and increased projections for a rebuilding timeline but to assume catch levels at a low recruitment scenario until evidence suggests higher recruitment levels are again plausible.

> **Motion: The SSC determined that the projection methods presented for the SEDAR 70 Gulf Greater Amberjack stock represent the best scientific information available and are appropriate for consideration by the Council. Based on these projection settings the stock is overfished and undergoing overfishing.**
>
> *Motion carried with no opposition.*

Council staff requested that stock status be addressed when making catch level recommendations in motions. The SSC asked how often projections would be revisited and if stock status would change frequently as a result. Council staff stated interim analyses could be used to inform changes in catch levels or update yearly management advice, but that stock status would not change until another stock assessment is completed.

The SSC advised they would make a motion to accept the methodology used to make the projections on the different allocations, but would leave the decision to the Council to choose an allocation based on the scenarios provided.

> <u>**Motion**</u>**: Based on the projection settings accepted by the SSC for the SEDAR 70 operational assessment the SSC recommends the following catch level recommendations for Gulf Greater Amberjack: OFL be set as the yield (million pounds whole weight) at $F_{30\%SPR}$ and ABC at the yield (mp ww) at $F_{rebuild}$ through the end of the projected rebuilding period of 2027.**

Start Year of Projections	Year	OFL	ABC	Allocation	Source
2022	2022	2.102	0.521	73-27	Table 9/11
2022	2023	2.236	0.649	73-27	Table 9/11
2022	2024	2.343	0.77	73-27	Table 9/11
2022	2025	2.419	0.875	73-27	Table 9/11
2022	2026	2.472	0.964	73-27	Table 9/11
2022	2027	2.507	1.035	73-27	Table 9/11
2022	2022	1.996	0.497	84-16	Table 12/14
2022	2023	2.13	0.621	84-16	Table 12/14
2022	2024	2.234	0.739	84-16	Table 12/14
2022	2025	2.305	0.842	84-16	Table 12/14
2022	2026	2.354	0.929	84-16	Table 12/14
2022	2027	2.387	0.999	84-16	Table 12/14
2022	2022	2.052	0.509	78-22	Table 15-17
2022	2023	2.186	0.636	78-22	Table 15-17
2022	2024	2.292	0.756	78-22	Table 15-17
2022	2025	2.365	0.86	78-22	Table 15-17
2022	2026	2.417	0.947	78-22	Table 15-17
2022	2027	2.451	1.018	78-22	Table 15-17
2022	2022	2.033	0.505	80-20	Table 18-20
2022	2023	2.167	0.631	80-20	Table 18-20
2022	2024	2.272	0.75	80-20	Table 18-20
2022	2025	2.345	0.854	80-20	Table 18-20
2022	2026	2.395	0.941	80-20	Table 18-20
2022	2027	2.429	1.012	80-20	Table 18-20
2022	2022	2.028	0.641	fixed com	Table 21-23
2022	2023	2.16	0.757	fixed com	Table 21-23
2022	2024	2.265	0.87	fixed com	Table 21-23
2022	2025	2.339	0.97	fixed com	Table 21-23
2022	2026	2.389	1.055	fixed com	Table 21-23
2022	2027	2.423	1.124	fixed com	Table 21-23

Motion carried with 1 abstention and 4 absent.

Evaluation of SEDAR 72 Projections for Gulf Gag Grouper

Dr. Lisa Ailloud (SEFSC) provided context for the use of the maximum fishing mortality (F_{MAX}) proxy for the fishing mortality rate at maximum sustainable yield (F_{MSY}) for Gulf gag grouper. The F_{MAX} proxy originated in the 2001 Reef Fish Stock Assessment Panel assessment of gag grouper. The stock was originally assessed considering only female SSB. At that time, F_{MAX} was providing an SPR proxy equivalent of approximately 43 – 65% SPR, which was greater than $F_{30\%SPR}$. When looking at female-only SSB for a protogynous hermaphrodite like gag grouper, there was less concern for the proportion of males in the population; it is in this scenario that F_{MAX} was determined to be appropriate. However, males generally represent the oldest and largest

individuals in the population, so the inclusion of males now seems more appropriate to better conserve and rebuild the gag grouper stock structure and status.

Dr. Ailloud reviewed the projections settings for Gulf gag as determined by the SSC during its September 2021 review of the SEDAR 72 stock assessment. The Ecospace model, which is used to inform episodic mortality from red tide, was updated since the September 2021 SSC meeting to include data through mid-October 2021; the new proportional severity estimates for the low, medium, and high severity designations are 6% of the strength of the 2005 red tide, 24%, and 68%, respectively. Dr. Ailloud reviewed the corresponding projections under both $F_{30\%SPR}$ and F_{MAX} for the low, medium, and high red tide severity designations. Under F_{MAX}, the Gulf gag grouper stock rebuilds in just under 10 years with no fishing mortality; whereas, under $F_{30\%SPR}$, rebuilding takes 10 – 12 years, depending on the red tide severity assumed. Rebuilding under F_{MAX} would rebuild the Gulf gag grouper stock to a lower level of SSB than under $F_{30\%SPR}$.

Under the Magnuson-Stevens Fishery Conservation and Management Act, if a stock can be rebuilt in 10 years or less (T_{min}), then the Council is required to select that rebuilding scenario. However, if the stock cannot be rebuilt in 10 years, then there are three options to consider for a rebuilding timeline: 20 years ($T_{min} * 2$), T_{min} + one generation period (8 years for Gulf gag grouper), or the time needed to rebuild the stock at 75% of the maximum fishing mortality threshold. The SSC discussed these options, including recommending a change in the F_{MSY} proxy for gag grouper from F_{MAX} to $F_{30\%SPR}$. Council staff clarified that changing the F_{MSY} proxy is a Council prerogative and requires a plan amendment to modify. The SSC was advised to provide recommendations under both the F_{MAX} and $F_{SPR30\%}$ scenarios. Since F_{MAX} is projected to rebuild Gulf gag grouper to an SPR equivalent of only 13%, compared to 30% for rebuilding under $F_{30\%SPR}$, the SSC thought F_{MAX} was representative of a harvest strategy that was too aggressive to support optimum yield. Further, given the low proportion of males in the Gulf gag grouper population (less than 2%), the SSC reaffirmed the value in considering the males in the rebuilding strategy. The SSC also reaffirmed its estimation of a medium severity index of red tide, as estimated by the Ecospace model. It was also noted that the age-specific estimates of episodic mortality from red tide are higher for younger ages; however, in the SEDAR 72 model, this mortality is averaged across all ages. A more explicit application of the Ecospace model should be considered in the next Gulf gag grouper research track assessment.

Ms. Emily Muehlstein reviewed the findings of the Council's Something's Fishy tool for Gulf gag grouper. A total of 423 responses on the condition of the stock were collected directly from fishermen, with 418 responses directly analyzed. The majority of respondents were from the private angling fleet, with smaller portions comprised of the remaining fleets. Generally, respondents were more likely to report that the Gulf gag grouper stock was in good condition, followed by neutral or poor condition responses. The commercial and for-hire fleets were more likely to report a negative stock condition, while the private angling fleet was more likely to report a positive stock condition. The vast majority of responses were from western central Florida. Common themes indicated a large number of juveniles, and larger fish being found nearshore in the Big Bend off Florida. Respondents also noted increased depredation by dolphins and sharks, that some fish were "more skinny" than in the past, and that Gulf gag grouper were being outcompeted by red snapper. Ms. Muehlstein clarified that Something's Fishy does not represent an independent scientific survey, or a representative sample of anglers targeting gag; the tool is not

expected to have a quantitative effect on the stock assessments, but rather to help inform patterns and trends that may go otherwise unexplained. The SSC noted the higher proportion of positive responses in the Big Bend region of west Florida, which is also where the larger proportion of the Gulf gag grouper biomass is thought to occur. Presently, the Gulf gag grouper SSB is estimated to be 16% of the SSB at the minimum stock size threshold (MSST), and 8% of the SSB at MSY.

> **Motion: The SSC finds that the SEDAR 72 based GoM gag projections are the best scientific information available, and are suitable for use in management.**

> *Motion carried without opposition.*

The SSC noted the continued importance of maintaining fishery-dependent data collection which would be disrupted if the fishery experienced a closure.

> **Motion: The SSC finds, based on the new scientific information that F_{MAX} for Gulf of Mexico gag is no longer appropriate for use as a proxy for MSY, and the SSC recommends that $F_{30\%SPR}$ be the MSY proxy and the basis for status determination criteria. The SSC recommends that projections based on $F_{30\%SPR}$, and the "medium" red tide scenario, be used to establish OFL, ABC, and rebuilding schedules. Projections based on F_{MAX} are scientifically valid and suitable for analytical purposes, excluding the setting of catch levels for rebuilding purposes.**

> *Motion carried without opposition.*

Review of SEDAR 68: Gulf of Mexico Scamp Research Track Assessment

Dr. Skyler Sagarese reviewed the outstanding issues from the first research track assessment, which was performed for the previously unassessed Gulf and South Atlantic scamp. These concerns centered mostly in age composition data and methods. Scamp is a protogynous hermaphrodite, and the Gulf and South Atlantic populations are considered separate stocks with a division at the Council jurisdictional boundary. Further, there were several challenges identified with differentiating between scamp and yellowmouth grouper. It was determined that due to very similar morphology and life history information, both species would be assessed together; however, the vast preponderance of data in SEDAR 68 are for scamp. Gulf scamp was considered by the assessment team as a "data-moderate species", in that there are many types of data available; however, there are not the same amount and types of data as some other groupers, like red grouper. Abundances indices included the commercial vertical and longline fleets, the combined recreational charter for-hire and private angling fleets, the headboat fleet, and the fishery-independent combined video survey and Reef Fish Observer Program (RFOP).

Growth for scamp was modeled using the Von Bertalanffy growth curve (L_{inf} approximately 70 cm fork length [FL]), which was size-modified for both sexes to account for non-random sampling due to minimum size restrictions, and then fixed within the model with a constant coefficient of variance (CV) on the mean length-at-age. The maximum observed length was 129 cm FL but this

was determined to be an anomaly and L_{inf} was modeled to a smaller size. A probabilistic approach was used to inform sex transition timing. Approximately 50% of female scamp are thought to be sexually mature by age 3.4 years. Sexual transition to male begins at age 3, with the age at which 50% of females were transitioning to male being 10.8 years. The sex ratio for females and males is not thought to be 1:1; thus, both sexes are included in estimates of SSB. Natural mortality was adjusted to account for peak spawning in mid-April; this adjustment was removed by the Review Workshop, but further analyses support the decision. The SSC asked about the difficulty of aging scamp. Dr. Sagarese summarized an aging workshop for scamp (and yellowmouth grouper), noting that fish older than 10 years are very difficult to age. Discard mortality was estimated at 68% for the commercial longline fleet, 47% for the commercial vertical line fleet, and 26% for the headboat, charter, and private fleets.

Commercial landings (in gutted weight) begin in 1986, when the Accumulated Landings System (Alabama to Texas) and Trip Ticket system (Florida) were implemented. Commercial data through 2009 are considered known with a CV of 0.05; a CV of 0.01 is used for 2010 forward, as these years represent management under the individual fishing quota (IFQ) program. Recreational landings (in numbers of fish or whole weight) come from MRIP for 1986 – 2017, the Louisiana Creel Survey for 2014 – 2017, Texas Parks and Wildlife Department for 1986 – 2017, and the Southeast Region Headboat Survey for 1986 – 2017. The CV for these data was fixed at 0.3 to account for more uncertainty inherent to recreational landings data. Traditionally, recreational landings are input into the model as numbers of fish. However, the catch limits are measured in weight, so a weight estimation approach was developed. Because fewer weights and lengths are concurrently collected in dockside sampling, uncertainty about the recreational landings in weight was greater than the estimate in numbers of fish for SEDAR 68. As such, recreational landings were input as numbers of fish, with the assessment model predicting the recreational landings in weight internally. Generally, the mean weights for the headboat and charter/private fleets have marginally increased over time; however, the CVs for those annual point estimates are considerably large. Council staff pointed out that treating the observed and derived data the same may be contributing to this large CV, and may not be appropriate. When comparing the magnitude of landings between fleets, historical landings come primarily from the commercial fleets, with a shift to the charter and private vessel fleets in more recent years.

Commercial discards come from the catch-per-unit-effort (CPUE) expansion approach, based on the RFOP and commercial logbooks. Commercial discards, while subject to a higher discard mortality rate, account for a very small proportion of total discards (hundreds of fish annually) and total catch (retained fish plus dead discards). Recreational discards are not reported for Louisiana and Texas, and are self-reported through MRIP for Mississippi, Alabama, and Florida, and for the Southeast Region Headboat Survey. Recreational discards are highly variable and uncertain (CV = 0.57), and can oscillate between tens to hundreds of thousands of fish. Headboat discards are also variable, but annually total less than 2000 fish (CV = 0.5). Discards are generally due to regulations (i.e., minimum size limit); commercial trips in the IFQ time period (post-2010) do include some legal-size discards.

During the assessment, the Assessment Development Team proposed including length composition data for both retained and discarded scamp, using length-based selectivity for all fleets. Conditional age-at-length composition data were used for commercial fleets, and nominal age

composition data for the recreational fleets. After the conclusion of the assessment, concerns were identified about the representativeness of the conditional age-at-length data, leading to the preference for using nominal age composition data for all fleets. Indices of relative abundance were generated for CPUE for the commercial vertical line fleet for the pre-IFQ years (before 2010), and for the headboat fleet. The commercial vertical line fleet index remained relatively stable over time; however, the headboat survey decreased somewhat in recent years. Fishery-independent surveys included the combined video index (SEAMAP Pascagoula, Panama City, and Florida Fish and Wildlife Research Institute) and the RFOP. While the headboat and commercial vertical line indices decreased in recent years, the RFOP index increased in the same years. The RFOP was retained despite this difference, as it comprises direct observations.

Dr. Sagarese reviewed a conceptual ecosystem model which identified many plausible hypotheses regarding scamp's relationship with the ecosystem. Among these was the treatment of red tide. These data show limited overlap between regions of the Gulf known to be habitat for scamp and red tide, suggesting that red tide may have a negligible deleterious effect on scamp.

Dr. Sagarese described the base model, which was a one area, one season model with two sexes. Maturity and protogyny were modeled as a function of age, and SSB was estimated inclusive of both males and females. Growth and natural mortality were externally estimated and fixed in the model. The stock was not assumed to begin at an unexploited level, since landings were known to have occurred prior to the model start year of 1986. Thus, equilibrium for all fleets except the headboat fleet (having very low historical landings) were informed by their respective means from 1986 – 1990. A continuous estimate of F was used instead of instantaneous F, due to lower precision with which catches are known. Catchability was held constant. Ages ranged from 1-34, with ages older than 20 included in a "plus" group (< 4% of all age data). Virgin recruitment, the standard deviation of the recruitment, and recruitment deviations were all internally estimated. Steepness could not be estimated, and was inferred from two commensurate estimates using a weighted mean of 0.69. Length-based constant selectivity was used for all fleets and surveys, with management biases assumed to affect retention and not selectivity. Time blocks were used to accommodate these variations in retention. Full retention was assumed for the commercial fleet until the IFQ period; recreational retention was capped based on the bag limit.

Selectivity estimated in the model for the headboat fleet was greater than 1, which will be explored further in the operational assessment. No commercial selectivity or retention parameters were estimated with CVs greater than 1. Commercial landings were treated as known, and so predicted landings lined up well with observed landings. Predicted recreational landings varied from observed data, likely due to higher CVs (0.3). Fits to commercial discards were generally good, while fits to recreational discards were poor. Patterns in the residuals were observed in the retained and discarded catch for the commercial vertical line fleet, which may have been due to confusion about minimum size limits, which differed between the federal and Florida limit from 1999 – 2002. Residual patterns were also evident in the commercial vertical and longline age composition data which will need to be further explored in the operational assessment. Recreational selectivity and retention parameters demonstrated CVs greater that 1 for select time periods, with residual patterns evident in length composition data for the charter/private and headboat fleets; these patterns will also need to be explored further in the operational assessment. Generally, the base model underestimated observed ages for commercial fleets and overestimated

ages for the recreational fleets. Fits to indices of relative abundance were fair to poor, with the model drawing heavily on the headboat index. Recruitment was highest in 1999 and 2001, and has been below or near the mean since; however, relatively low sample sizes may be hindering the ability to detect strong year classes. The spawner-recruit relationship was poorly defined, and recruitment deviations demonstrated CVs greater than 1 in several annual point estimates.

Dr. Sagarese summarized trends in SSB and total biomass, both of which were estimated to have declined over the last decade. Females averaged 2 – 3 years old, while males averaged 10 – 13 years old. Fishing mortality was estimated to have increased over the last decade, driven primarily by the charter/private fleets.

Model diagnostics were summarized, with the jitter analysis showing variance in model outputs as key parameters are varied by up to 10%. Minimum likelihood profiling suggested a virgin recruitment value of 7.4, while indices in the base model supported a higher value. Profiling of recruitment variability suggested a value of 0.445, but with less certainty (CV = 0.128). Profiling of initial Fs converged near base model estimates. Profiling of the Von Bertalanffy growth rate (k) converged on a value of 0.13, with age and length data suggesting slightly lower values. Jackknife runs to determine index influence on the base model showed that SSB decreases slightly with the removal of the RFOP data. A large degree of retrospective bias was evident and outside acceptable thresholds for long-lived species like groupers, and fell outside 95% confidence intervals. The divergence of some of these parameters, and the retrospective bias, will need to be further explored in the operational assessment. Additional diagnostics were discussed by the Review Panel, including identification of non-random patterns and poor predictive skill. Non-random patterns were evident in the residuals, especially in the age data. Further the fishery-independent data demonstrated poor predictive skill for determining future removals. The base model remained sensitive to estimated growth parameters.

Dr. Sagarese summarized other remaining modeling issues, including:
- Age and growth
  - Re-evaluate maximum size and asymptotic size in light of modeling issues noted during RW
  - 2003-2012 age data and re-estimation of growth curve
  - Re-evaluate representativeness of length and age data
  - Update ageing error matrix for Gulf samples only
- Selectivity and retention
  - Consider using priors or fixing some selectivity and retention parameters to stabilize model
- Investigate retrospective bias

An SSC member stated that it seemed like there were many outstanding issues with the SEDAR 68 base model, which the research track was supposed to be able to address prior to the operational assessment. The SEFSC replied that the Center for Independent Experts, which was involved in the Review Workshop, did not think the model was unworkable. Since the research track approach was first conducted for a previously unassessed species, it is confounding to differentiate whether assessment results are hindered by the new assessment procedure or affected by the limited knowledge of scamp. Other SSC members agreed that there appeared to be many unanswered

questions, but also complimented the body of work that had been performed. An SSC member thought it was necessary for the SSC to strongly consider how to handle assessments with this degree of uncertainty. Another SSC member asked when ecosystem considerations would be evaluated, given that doing to was not feasible in the two and a half years during which SEDAR 68 was underway. Council staff noted that because the majority of model parameters were internally estimated, the Council's ABC Control Rule would likely perform better, as it was designed with model estimated parameters in mind.

> **Motion: The SSC determined that the Review Workshop-approved base model developed during the SEDAR 68 Research Track Assessment of Gulf of Mexico scamp represents the best scientific information available, and is appropriate for use in the subsequent SEDAR 68 Operational Assessment.**
>
> *Motion carried without opposition.*

Ms. Carly Somerset reviewed the findings of the Council's Something's Fishy tool for Gulf scamp. A total of 36 responses on the condition of the stock were collected directly from fishermen, with 32 responses directly analyzed. The majority of respondents were private recreational anglers, with the majority of respondents describing a negative trend in the stock. Most responses were from west central Florida. Fishermen acknowledged that scamp were not as prolific as some other reef fish species, and wondered whether red tide had affected scamp nursery grounds.

Terms of Reference for SEDAR 68: Gulf of Mexico Scamp Operational Assessment

Dr. John Froeschke reviewed the terms of reference for the operational assessment for Gulf scamp. This operational assessment is intended to address some outstanding issues from the research track assessment and result in actionable management advice for consideration by the SSC and the Council. This operational assessment is expected to be completed in time to be reviewed by the SSC in the early fall of 2022. The SSC asked whether it was necessary to have another topical working group to address model diagnostics. The SEFSC replied that resolving these issues with the model diagnostics were expected to be continually addressed throughout the operational assessment. The SSC accepted the first term of reference pertaining to the data in the assessment, so that data scoping can begin as soon as possible. The second term of reference, which addresses reference points, will be reviewed and revisited by the SSC in January 2022.

Public Comment

A member of the public noted that greater amberjack has not responded to management actions, and that SEDAR 72 suggests that there has been an issue with gag grouper also for some time. They wondered how and why these stocks weren't being effectively assessed and managed, noting that the reductions expected from these stock assessments are anticipated to be substantial. They added that closing fisheries would be detrimental on many levels, and doing so must be avoided.

A member of the public noted fewer and smaller gag landed south of Sarasota, and an increase in red snapper in the same places. They added that the 2017/2018 red tide in Charlotte Harbor killed many juvenile gag, but added that the stock appears to be recovering. They said that closing the gag fishery would be detrimental to the commercial and recreational fisheries. When asked by an SSC member about any observations on the water that could explain the reduction in gag grouper being landed, they responded that it may not be that the fish are not present. Rather, it may be that red snapper are outcompeting gag grouper when fishing with hook-and-line gear.

A member of the public who fishes around Boca Grande recalled a greater abundance of gag in the early 2000s compared to today. They noted observing many small gag recently, and added that it seemed that the Big Bend region may have been less affected by the recent red tide events.

Other Business

Dr. Jim Nance asked about any submissions for suggested topics for the 2022 National SSC Meeting in Sitka, Alaska. Dr. Dave Chagaris thought that modeling red tide in the Gulf was a pertinent and timely topic for consideration as a case study for the 2022 National SSC Meeting.

The meeting was adjourned at 5:00 pm eastern time on November 18, 2021.

Meeting Participants

Standing SSC
Jim Nance, *Chair*
Luiz Barbieri, *Vice Chair*
Lee Anderson
Harry Blanchet
Dave Chagaris
Roy Crabtree
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
Leann Bosarge

A list of all meeting participants can be viewed here.