Standing, Reef Fish, Mackerel, Ecosystem, and Socioeconomic SSC Summary
MRIP Workshop
Webinar Meeting
July 8-9, 2020

The webinar meeting of the Gulf of Mexico (Gulf) Fishery Management Council's (Council) Standing, Reef Fish, Mackerel, Ecosystem, and Socioeconomic Scientific and Statistical Committees (SSC) was convened at 8:30 AM on July 8, 2020. This webinar served as a workshop for the SSC on the Marine Recreational Information Program's (MRIP) calibrations based on MRIP's Fishing Effort Survey (FES). The agenda for this webinar was approved. Verbatim minutes from past SSC meetings can be reviewed here.

Fishing Effort Survey – Presentation and Questions

CHTS versus FES Primer

Mr. Rob Andrews from the National Oceanic and Atmospheric Administration (NOAA) Office of Science and Technology (OST) gave a presentation explaining the differences in methodology and outcomes between the fishing effort estimates produced by the Marine Recreational Information Program's (MRIP) Coastal Household Telephone Survey (CHTS) and the recently implemented Fishing Effort Survey (FES). He provided a comparison of the CHTS and FES designs, described the declining efficiency of the CHTS including coverage error and the gatekeeper effect where a single household member, not necessarily the intended angler, would respond to the telephone survey. He concluded with a review of the FES estimates and inquiry about the plausibility of these estimates.

The CHTS was a random digit telephone survey of residential coastal households with landlines. The survey was stratified by state and county and simple random sampling was used to select respondents in each stratum. This survey was administered from 1981 through 2017. In comparison, the FES is a self-administered mail survey based on a directory of residential addresses from the United States Postal Service. This survey is also stratified by state and proximity to the coast, but is also matched to the federal National Saltwater Angler Registry to refine the population of potential respondents. As with CHTS, sample selection for the FES follows a simple random selection approach with each stratum. After a period of benchmarking with the CHTS, the FES replaced the CHTS in 2018. A migration to a new survey design was necessary to address sources of potential bias that were identified in the CHTS as well as the declining percentage of households with landlines in the U.S., which reduced the sampling efficiency and created a mismatch between the population sampled in the survey and the population of anglers (the "wireless effect"). In general, the U.S. population with landline phones is older in age and less likely to engage in recreational fishing than the population of anglers that more closely aligns with the age distribution of the U.S. This mismatch is a source of bias in the CHTS that likely underestimated fishing effort and has been addressed with changes in the

sampling design with the FES. A second problem with the CHTS was the "gatekeeper effect", where female household members were most likely to answer the phone but male household members were more likely to have engaged in fishing activities that may have been unknown or unreported by the respondent on the phone. This bias could also lead to an underestimation of fishing effort and is thought to be addressed by the sampling methodology in the FES. Because the FES is self-administered, it is more likely to be directed to the appropriate household member(s) for completion. Under-coverage and the gatekeeper effect account for about 60% of the difference in shore effort between the CHTS and the FES.

To evaluate the plausibility of the estimates produced by the FES, those estimates were compared to the Recreational Boating and Fishing Foundation national estimates and resulted in similar effort estimates; whereas, the CHTS produced much lower estimates. Overall, the FES is expected to produce more accurate surveys than the CHTS legacy survey methods because it addresses some important biases that were identified in the CHTS.

An SSC member asked if there are concerns about recall bias with FES as the respondents are supposed to report all trips over a two-month period and 12-month. Mr. Andrews stated that this potential exists but it also existed in the CHTS. As the FES allows more time to consider all trips as opposed to a phone interview, the FES approach may mitigate some potential causes of recall bias. Another SSC member asked if the comparison effort estimation between CHTS and the proportion of FES respondents with a landline could be compared over a longer time period than just the 2017 comparison. Mr. Andrews suggested that this was possible as more years of data become available.

Calibration Process

Dr. Jay Breidt gave a presentation outlining the justification and methodology for generating calibrated effort estimates collected between the CHTS and the FES. This calibration is critical as outdated survey techniques reliant on telephone land lines used in CHTS became more obsolete and required a shift towards mail survey methodology used by FES. Calibrations are necessary to answer the question, "What would historical recreational fishing efforts look like had FES been implemented in the past?".

To address this, a number of considerations related to explaining the spatio-temporal variance must be evaluated. Broadly, these considerations are accounting for changes in human population trends, identifying seasonal patterns in fishing effort, modeling irregular variation that cannot be contributed to population or seasonal effects, and accounting for sampling method effects. All of these considerations are used to create sample estimates of true effort and quantifying method effects between the two surveys can inform calibration calculations. To ascertain these method differences, both CHTS and FES were run concurrently for three years. The purpose of this was to identify particular covariates that had strong explanatory power of the method effects that were consistent through space and time so calibrations could be applied between the two survey designs and to historical estimates of effort.

Initial modeling efforts indicated an increase in use of wireless service explained some of the variation in the method effects but not all. Additionally, initial modeling exploration indicated that

the model was robust to the assumption of normality for the irregular error term. To examine method effects further, a linear mixed modeling approach closely related to the Fay-Herriot model of survey statistics was used. This model is able to account for interactions between potential explanatory covariates. A suite of models containing various combinations of explanatory variables were run and compared using Akaike Information Criteria for determining modeling selection. The results indicated that a model containing all variables except for two interaction terms between mail and population as well as mail and state was deemed the best model for both shore and private boat modes.

The SSC asked whether smaller states provided enough data to generate effort estimates and therefore accurate calibration calculations. Dr. Breidt indicated that even the smallest states provided a sample size large enough to generate sample estimates of effort that would reflect true effort. The SSC inquired as to whether other factors could contribute to differences in method effects between survey designs. Method effect differences related to covariates such as the "gatekeeper" effect where one household member answered the majority of household calls likely remained the same after time but are difficult to directly measure. Even when accounting for the wireless method effect, the proportion of that effect cannot be contributed to one survey or another and is instead aggregated. The SSC asked if the wireless effect changed over time. Dr. Breidt stated that the wireless effect was less prominent on the effort estimates after 2000. The SSC asked if wireless phones were ever included during any portion of CHTS; NOAA OST indicated that CHTS surveyed only landline phones.

Mr. John Foster (NOAA OST) presented information detailing the approaches to adjusting for various methodology updates to the Angler Point Intercept Access Survey (APAIS). A number of changes in the angler intercept survey design in 2004 and 2013 required the development of an adjustment procedure to ensure these effort estimates were comparable across the entire time series. Changes in the survey design were focused on providing better information related to area fished, household state, for-hire status, and sub-state region. Unlike calibrating methods used to adjust between CHTS and FES, it was not cost effective to run concurrent APAIS effort survey designs and would overburden survey participants.

Instead, a temporal backward stepwise examination in ten-year increments or raking approach was used. This sequential adjustment approach allowed for exploring a variety of sample weight values informed by population size data that would eventually converge and result in a final adjustment value. Results of these raking adjustments caused effort estimates in the early part of the timeseries to shift up as well as disperse the variance about the estimates. Additionally, the weighting of effort based on day of week (weekday versus weekend) and time of day (more highly weighting fishing effort in the afternoon) was also accounted for in the later part of the time series. To avoid over-smoothing during the raking procedure and potentially eliminating a true trend in fishing effort, linear regression analysis was conducted for the last three years for each ten-year period window to identify any potential signal. In summary, the APAIS adjustment process resulted, on average, in a 2.7 times increase in recreational fishing effort.

The SSC asked why a ten-year window was selected for the raking adjustment procedure. Mr. Foster stated that sample size constraints required a larger time window for raking and indicated that the subsequent linear regression analysis was performed to identify any potential effort trends

that may occur within that ten-year time period. A question was asked about sample weighting as a function of the primary stage unit (PSU). Mr. Foster indicated that the raking was performed at the area fished level of PSU to better ascertain estimates of inland or offshore trips and that angler trip weights remained the same. A follow up question was asked regarding whether APAIS had any mechanism for intercepting anglers at private dock and if not, how were program managers working to include those trips in effort estimation. APAIS currently does not have a way to sample private docks; however, a previous pilot study had been conducted to try and address the issue but was ultimately uninformative. Efforts are being made to better identify fishing trips that may be taken by anglers using personal craft such as kayaks and paddleboards in FES. The SSC asked at what level of temporal precision was effort data collected by APAIS analyzed. Mr. Foster indicated that all MRIP data are analyzed in two-month waves and that oversampling a particular strata may occur during that time period but can be accounted for during the estimate weighting process.

Post-processing of MRIP estimates

Mr. Foster gave a presentation on MRIP weight estimation methods for total catch, landings and discards. The APAIS design incorporates in-person dockside sampling at the end of anglers' trips to collect detailed information on catch rates and trip-level characteristics. These data are provided as estimates in two-month waves (6 waves per year). Coverage adjustments are made for the private recreational out-of-state effort component and for-hire vessels not covered on state vessel frames. The APAIS accounts for spatial and temporal strata by using a stratified clustered multi-stage design. The probability of selection is unequal because it is based on fishing pressure values per sample site; therefore, high activity sites have a greater chance of being selected. Three types of catch are recorded: type A is directly observed by the sampler; type B1 is unobserved catch; and, type B2 is live discards. Total catch is landings combined with discards in numbers of fish. When data are missing, various standard survey methodologies are used to fill in data gaps. Standard weight-length relationship models are employed when missing length or weight. "Hot" and "cold deck" imputation paradigms are used when missing both length and weight data for a point estimate. Length and weight imputations always start with the most detailed current sampling cell and always remain within species and subregion. Sample weights are not currently included in the imputation process as they could lead to bias, but may be considered in the future. Imputations do not exceed five rounds; at that point, no additional attempts are made to fill in missing data. Mr. Foster explained basic weighted estimation for MRIP estimates as the catch per angler trip multiplied by an effort estimate of total angler trips, which equals the total catch estimate. The three components of catch rate correspond to sample weights to calculate a standard weighted mean estimator. The effort portion includes an initial effort survey from the FES or the for-hire survey, combined with additional adjustment factors from APAIS. Effort adjustments are made to account for out-of-state angler trips and partitioned by area fished. A nonresponse adjustment is made to minimize response bias and a post-stratification adjustment to improve the representativeness of the sample. After estimates are calculated, the data and estimates go through a rigorous quality control and quality assurance (QA/QC) process prior to public release. In the near future, this process will be modified to fit a shift in the MRIP sampling process as it transitions from paper surveys to electronic data collection. Discussion focused on improvements made by state samplers to size-frequency sampling to decrease the use of imputations to fill in data gaps. Several SSC members asked Mr. Foster to give more details on calculations used in the

estimation process. It was also confirmed by Mr. Foster that no size information is collected on discarded fish. Some SSC members were wary of the combination of the information collected from the mailed FES survey on area fished, which includes private and public access sites, with the APAIS dockside intercept surveys that only occur at public access sites. A pilot project is planned to use a FES-type design to collect area fished information to test response rate and compare area fished data between FES and APAIS.

Ms. Vivian Matter (Southeast Fisheries Science Center; SEFSC) summarized the SEFSC weight estimation procedure that follows the calibration process. A separate weight estimation is done to include data from the Texas Parks and Wildlife Department, which does not measure landings in weight. The SEFSC weight estimation procedure is used to maintain a consistent weight estimation methodology across the timeseries. Average weight is calculated by strata and uses the new MRIP size and weights datasets. As of fall of 2019, the minimum sample size for weight estimation has been reduced from 30 to 15 fish. The SEFSC determined this sample size reduction still adequately captured the required level of estimate precision. Ms. Matter then proceeded to show plots of weight estimate comparisons for gray snapper and Gulf king fish. The plots compared estimated total pounds between MRIP, SEFSC sample size of 30, and the recent SEFSC sample size of 15. The data included in the plots represents the data available for all Gulf States.

Ms. Matter also summarized the changes that apply to the For-Hire Survey (FHS) estimates. The data collection method changed from CHTS to FHS in 2000 for the Gulf, and 2004 for the Atlantic. Ms. Matter indicated the FHS provides more precise charter angler effort estimates than CHTS. It was also noted that the APAIS impacts for-hire estimates, so a generalized linear model was created to correct for the overlap in data collected by CHTS and FHS, as documented on SEDAR 61. Ms. Matter presented plots comparing landings and discards estimates between the CHTS and the FHS for gray snapper and Gulf king mackerel.

Operationalizing FES Data

FES estimates as used for quota monitoring and management

Mr. Ryan Rindone (Council Staff) discussed the use of FES-adjusted landings estimates for quota monitoring to demonstrate the linkage of the science to its end use in fisheries management. The many species managed by the Gulf Council may have their quota managed by two different data currencies: either using the Marine Recreational Fishing Statistical Survey (MRFSS) or MRIP-CHTS. Reef Fish Amendment 53 considers updating the catch limits for red grouper using MRIP-FES, which if implemented, would formally make red grouper the first species in the Gulf to have its quota managed using MRIP-FES directly. Making these and other management changes is not a fast process, and can take several years between when an action is initiated to when it is implemented.

Another consideration is the time necessary to receive data that have completed quality control and quality assurance (QA/QC) processes. For MRIP-FES data, the processing time is at least 45 days following the end of a wave, meaning that the data from wave 1 (January-February) will not be available for use until mid-April at the earliest. Further, changes in weight estimation procedures and/or changes in QA/QC processes for these data can result in changes to otherwise previously

finalized data years. Thus, the time necessary to complete QA/QC processes and any modifications therein, coupled with the time necessary to exact management action on a species, means that management decisions may need to be made using uncertain data points in the most recent years. In these cases, either preliminary data or an assumption about unknown data can be used to fill in gaps.

Recently, a stock assessment for red grouper was conducted and used FES derived recreational harvest estimates to generate projections and recreational catch limits. However, red grouper is currently monitored in values related to the CHTS and catch limits generated from the stock assessment require a calibration step to be directly comparable to the established monitoring values. Mr. Jeff Pulver (NOAA Southeast Regional Office) outlined how the various FES adjusted catch limits presented in Amendment 53 would influence the recreational season duration. Mr. Rindone stated that red grouper catch limits were also adjusted to account for the recent red tide event and that consideration should also be accounted for when interpreting the catch limit values.

There was general consensus from the SSC that values used for monitoring recreational harvest should be in the same units as the survey collecting the recreational data. The SSC asked whether the calibration ratios between CHTS and FES were robust over time. Mr. Foster indicated that those calibrations would become less robust as result of moving away from the time period when the two surveys were conducted simultaneously. Dr. Shannon Cass-Calay reminded the SSC that NOAA had determined FES as best available science for recreational data collection, and FES data would be directly input into future stock assessment models. Dr. Joe Powers stated that neither rerunning stock assessments for all species to account for FES data or adjusting established catch limits to FES for other species was ideal. However, he agreed that a move towards collecting and monitoring recreational FES was preferable to CHTS and stated that ideally these updates could be completed in about three years.

Mr. Rindone described the calibration of historical landings from MRIP-CHTS to MRIP-FES and its effect on sector allocations. As an example, Mr. Rindone provided allocation scenarios of red grouper as allocated under Reef Fish Amendment 30B. SEDAR 45 used CHTS with an APAIS adjustment, and the most recent SEDAR 61 evaluation used FES calibrated landings. These landings, when calibrated back to 1981, contributed a majority of total landings to the private recreational sector with a large spike in landings attributable to these anglers and a minimum total length change to 18 inches. Another notable change could be seen when comparing the landings from SEDAR 12 to current landings: it showed that the commercial fleet was harvesting more red grouper prior to sector allocation. After the FES calibration, and using SERO ACL monitoring, the pounds of fish harvested increased considerably overall with more pounds being caught by the recreational sector. Although estimates of discards are highly uncertain, the number of discards increased dramatically from SEDAR 42 to SEDAR 61; discards were largely associated with the private recreational sector and pointed to recreational fleet selectivity when fishing for red grouper. Collectively, recreational anglers tend to fish for smaller red grouper than the commercial fleet, moving the selectivity curve toward smaller fish which also presumes that the recreational fleet tends to discard smaller fish than the minimum size limit. This increases the number of discards coming from the bulk of the current red grouper biomass. Allocation is now being revisited after the MRIP-FES data calibration in the stock assessment. When examining time series for allocation revisions, the critical issue becomes which year range to choose because both sectors allocation

percentages may vary substantially. Calibration from CHTS to FES has resulted in an increase of the estimated red grouper historical biomass. This increase will also affect the commercial IFQ. Presuming the recreational fleet caught more of the historical biomass than previously estimated, the difference can be attributed to the recreational fleet and therefore, the proportion of fish allocated to the commercial sector may be proportionally less. Without reallocation, the commercial quota will increase. With the FES and status-quo allocation formula, the pounds allocated to the commercial quota will remain unchanged; however, deviating from the status quo formula would have different results.

Case Studies

Gulf of Mexico Migratory Group King Mackerel and Gray Snapper

Mr. Foster presented comparisons of the effects of the calibrations on Gulf migratory group king mackerel and gray snapper using three scenarios: the BASE scenario represents uncalibrated data predating APAIS; the ACAL scenario represents the data as calibrated under APAIS; and the FCAL scenario represents the data as fully calibrated for both APAIS and FES. For Gulf migratory group king mackerel landings, FCAL estimates were higher than ACAL and BASE, which were similar. However, when the estimates from all three scenarios were indexed to their mean, the trends observed for each scenario aligned well with each other, with some noise at the beginning of the time series in the early 1980s. For discard estimates of Gulf migratory group king mackerel, FCAL estimates were much higher than ACAL and BASE. The ratios describing the magnitude of change from the BASE scenario to the FCAL scenario were consistent over time, aligning with the bulk of the overall distribution for the private boat mode, with some deviation above the mean for the shore mode. The change ratios between the BASE and ACAL scenarios were even closer to the mean for each time block.

Mr. Foster highlighted four instances of point estimates for landings (1982 and 2009) and discards (1989 and 2016) of Gulf migratory group king mackerel that could be considered atypical, or outliers, and detailed the investigative work done for each data point. Landings in 2009 demonstrated a considerable increase from the BASE to FCAL scenario (about 70%), coming largely from west Florida and due to a change in weighting by area fished and an accounting for expanded sampling hours with APAIS. Landings in 1982 showed a considerable reduction in landings between the BASE and ACAL scenarios, attributable to the Alabama private boat mode, with the BASE scenario substantially under-representing coastal angler trips and over-representing king mackerel trips, resulting in an overestimation of landings that was corrected in APAIS. Discards in 2016 almost doubled from BASE to FCAL, attributable to the shore mode in west Florida which was four times higher between scenarios. Discards in 1989 almost doubled from BASE to FCAL, also attributable to the shore mode in west Florida.

A systematic increase in landings and discards estimates for gray snapper were observed between ACAL and FCAL, but like king mackerel, when indexed to the mean, showed a consistent trend between scenarios. Discards were considerably higher for FCAL compared to ACAL and BASE. Change ratios for gray snapper were generally in line with the bulk of the distribution for overall MRIP change ratios by time block for landings and discards. Mr. Foster reviewed four possible

outliers for gray snapper: two for landings (2012 and 1984) and two for discards (2017 and 2008). Landings in 2012 increased fourfold from BASE to FCAL, largely attributable to the west Florida private boat mode and the APAIS adjustment to upweight offshore trips and down-weight inland trips. Landings in 1984 increased from BASE to FCAL largely due to the FES calibration, with most of the increase due to the west Florida private boat mode in wave 6 (approximately a threefold increase). Increases in gray snapper discard estimates in 2017 were attributable wholly to FES, and almost entirely to FES in 2008, showing a doubling or more than doubling of discards in those years from the west Florida private boat and shore modes.

The SSC discussed how the west Florida private boat mode appeared to be driving many of the increases for gray snapper. The over 300% increase for landings for 1984, attributable to one mode in one MRIP wave of one year, seemed suspect, and the SSC asked about the review for such point estimates. Mr. Foster replied that early years of the recreational catch and effort survey (1981-1985, 1986) may contain outliers that need more exploration. Resources are not available to investigate every cell of data; there are hundreds of thousands of cells per species. Mr. Foster recommended examining the proportional standard error for each year and the trends in landings or discards to discern whether an outlier is reasonable or not. An SSC member recommended exploring down-weighting using MRIP landings from early years (1981-1985). If the Council is looking to use these data for allocation adjustments and, if these data need further investigation, they may need to be avoided until any outliers are resolved.

The SSC asked why the bulk distribution of the change ratios over time didn't appear to change with the increasing magnitude of the wireless effect over time. Mr. Foster described the effect as a modest increase, but not what would otherwise be expected based on the increasing magnitude of the wireless effect. The National Health Survey that is the source of the wireless effect data uses U.S. Census data, which showed that the southeastern U.S. exhibited the fastest increase in wireless phone adoption and use over time. This rapid adoption may have resulted in less of a discernible effect because the changes in wireless phone adoption and use during survey benchmarking (2015-2017) were already plateauing near an upper asymptote. A longer benchmarking period may have yielded different ratios over time, and additional data may have helped identify other explanatory variables to explain differences in survey results.

Acknowledging that these data are being used by the SSC to recommend management advice to the Council, the SSC asked how often weighting adjustments are made to the landings and effort data. Mr. Foster replied that data corrections are made very infrequently, and are driven by the data QA/QC perspective. NOAA OST doesn't make adjustments based on external information or subjective observation. Obvious corrections will be made, and unreliable data points removed or resolved, but NOAA OST doesn't smooth data due to lack of context. The SSC followed this response with stating a clear need for a method for addressing outliers formally. Mr. Foster described a "rare event species working group" that is looking at ways to address peculiarities, which could also be used to investigate outliners in landings and release data. This working group will soon be able to recommend some methodology for investigations, such as a small area estimation approach, that could be baked into the current standard approach.

A Council member asked whether state license sales were examined to look at the ratios of inshore and nearshore trips. Mr. Andrews replied affirmatively, but added that requirements for licensing

have changed over time due to National Saltwater Angler Registry requirements. No documentation has been produced to describe the use of these data, and the proportion of trips (inshore versus offshore) by state are not discerned by MRIP; rather, MRIP produces only a distribution of effort by area fished.

Dr. Cass-Calay (SEFSC) illustrated how FES adjustments incorporated into stock assessments affect catch limits relative to established values. She reviewed some initial outputs for king mackerel noting that finalized results from the stock assessment (to be reviewed on July 21, 2020 by the SSC) may differ. For king mackerel, FES increased recreational discard estimates, resulting in the model offsetting those losses by increasing the theorized unfished spawning stock biomass (SSB). This adjustment in the SSB estimation results in an increase in the overfishing limit (OFL) and acceptable biological catch (ABC) ranging between 17 and 21%. Similarly, catch limits for gray snapper were affected by implementing FES-derived recreational data into the stock assessment model. While the proportion of discards for the shore mode was similar between the FES-adjusted estimates and those used in SEDAR 51, the magnitude of the increase from FES-derived shore-based discards was substantial. Again, the model accounted for this discard increase by increasing the estimate of the unfished SSB, which resulted in increases to the gray snapper OFL and ABC from 61 to 95%. However, Dr. Cass-Calay reminded the SSC that these FES values for gray snapper are in different units compared to the established CHTS catch limit values from SEDAR 51. Dr. Cass-Calay also stated that outliers in the recreational data exist for gray snapper and associated coefficient of variation (CV) error about those annual estimates are not available. Therefore, an averaging of estimates in neighboring years is required. New updates to the Stock Synthesis modeling software will be able to quantify annual CVs in some cases which can help inform outlier determination. Regardless, catch limits are expected to be the most influenced by the transition from CHTS to FES for species primarily harvested by the recreational sector.

The SSC inquired as what pathways were available by the OST to help explain outliers in the recreational data. Dr. Cass-Calay indicated that it would be helpful to have a standardized approach to identify and address outliers, as attempting to do so on a species-specific case can result in inconsistent methodologies. While identifying outliers with high CVs can be down weighted in the model, it is more difficult to determine what to do with outliers that do not have high CVs but appear to be anomalies as these could be the result of data accuracy issues or a potential true trend that should be included. The SSC asked whether the modeled minimum stock size threshold (MSST) also shifts along with SSB. The MSST does shift but to a lesser degree because it is generally a proxy estimate. An SSC member asked if adjustments made to the 1989 spike in red grouper recreational landings had any effect on the catch limit advice. Dr. Cass-Calay mentioned that it could be examined.

During public testimony a question was asked regarding the use of interpreting recreational data estimates generated from MRIP as it is only implemented in the eastern Gulf (Mississippi, Alabama, and Florida). Currently, most of the focus has been generating calibrations within MRIP in APAIS and transitioning from CHTS to FES. NOAA is working with state agencies to develop comparable state-specific calibrations, specifically for red snapper, that would allow for conversion between MRIP and the certified state surveys. The advice published in the white paper (*Recommended Use of the Current Gulf of Mexico Surveys of Marine Recreational Fishing in*

Stock Assessments) does outline a pathway for updating methods used in collecting recreational fisheries data to include state surveys. A workshop will be convened on August 5th and hosted by the Gulf States Marine Fishery Commission to address some of these issues.

Red Grouper 1989 Data Outlier

Dr. Skyler Sagarese described the spike in private recreational landings in 1989 in SEDAR 61, which is less pronounced in the previous stock assessment for red grouper (SEDAR 42). To investigate the effect of this point estimate, Dr. Sagarese ran two sensitivity analyses: using the mean of 1988 and 1990 to inform the 1989 data point; and, using the mean of 1988-1990 to inform the 1989 data point. A slight change on virgin SSB and early SSB trends was observed under both sensitivity runs, with no discernible effect on terminal SSB. Further, no alteration was observed on recruitment deviations, and only a minor influence was observed on virgin recruitment and fishing mortality (F) in early years (but no impact on terminal F). Overall, the 1989 data point had a minor effect on model results. Dr. Sagarese recommended incorporating annual error estimates for landings and discards at the conclusion of SEDAR 61; this recommendation is being further explored in the current stock assessment of Gulf and South Atlantic scamp (SEDAR 68).

SSC Recommendations

The SSC was concerned that recreational catch-per-unit-effort (CPUE) rates are not comparable as aggregated through MRIP-FES and not akin to the actual CPUE from a vessel. The SSC stressed the need to do the best possible job of characterizing harvest and discards from shore, and doesn't think this is happening under current MRIP methods, noting that private boat mode trips may be either offshore or nearshore trips, and are not currently being differentiated.

> **Motion:** One of the differences with the FES estimates is the increased proportion of the overall effort that is shore-based, compared to prior methods. The shore-based harvest estimates are based on catch rates from publicly available sampling locations, combined with those effort estimates. Due to the increased significance of the shore mode, on overall harvest and discard estimates, the SSC recommends that an examination (pilot program, other method) be used to examine whether those publicly-available sampling location catch rates are appropriate for application to the full shore effort, or whether an alternative method is (more appropriate / preferable / possible) for private access locations.
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> *Motion passed without objection.*

The SSC recommended that the Council wait for an accepted stock assessment before adopting a different data currency for quota monitoring, to better understand the effects of such a transition on the stock from all perspectives.

> **Motion:** The SSC recommends that management actions (e.g., ACL monitoring) stay consistent with the recreational landings time series used in the stock assessment and reviewed by the SSC to generate the OFL and ABC's for each stock.

Motion passed without objection.

The SSC stressed the critical need for methods by which outliers in MRIP-FES catch and effort data can be identified and evaluated, with due consideration for the time and resources necessary and available to perform such work.

Motion: The SSC recommends that the OST prioritize development of a protocol and automated check programs to detect and flag extreme or unusual values in MRIP/FES catch estimates and determine the source of those extreme values, such as input data or calibration procedures.

Motion passed without objection.

Motion: That a workgroup composed of SSC members, Council staff, SERO and SEFSC staff review the annual stock landings for Tier 3a and 3b of the ABC Control Rule to reevaluate original assumptions regarding reference periods and the appropriateness of those reference periods.

Motion passed without objection.

Failed Motions:

Motion: The SSC recommends that the FES calibration of the MRIP survey be used in stock assessments unless other credible landings information is available on a stock basis. In these latter cases, the SSC should be consulted at the initial stages of the assessment as to which time series of landings to use in the stock assessment. The SSC requests further review of state landings to MRIP calibrations as a means of verifying the accuracy of landings derived with the calibration to the FES.

Motion failed 11-11 with 2 abstentions

Other Business

Written public comment was provided to the SSC; no additional public testimony was given.

The meeting was adjourned at 4:00 pm on July 9, 2020.

A list of all meeting participants can be viewed here.