Statements of Work for 2027-2028 SEDAR Stock Assessments

SEDAR Committee
September 2025
Developed by Council Staff

Statements of work (SoW) are developed by Council staff and used by the Southeast Fishery Science Center (SEFSC) to estimate workload associated with assessments projects. Staff are proposing to continue to use SoWs to develop SEDAR projects. The SoWs will be sent to the SEFSC for negotiations. If no significant changes are recommended in the statements of work, staff will develop terms of reference from the SoWs for the stock assessments, as needed. The SSC and Council will review terms of reference before they are finalized.

Draft SoWs are provided for 2027-2028 SEDAR assessments for Spanish Mackerel, Greater Amberjack, and Red Porgy. Staff developed this document to consolidate research recommendations from the SAFMC Research and Monitoring Plan, the most recent stock assessment, and SSC review including a list major uncertainties. The Committee is asked to discuss and modify the draft SoW for 2027-2028 assessments.

Three projects are proposed for consideration:

- Spanish Mackerel with a Data Workshop via webinar
- Greater Amberjack with a Data Workshop and/or Topical Working Group.
- Red Porgy with a Topical Working Group.

Species:
Spanish Mackerel

Model and Additional Data Years:

- Prior Assessment: South Atlantic Spanish Mackerel SEDAR 78 (2022)
- Prior Terminal Year: 2020
- Data providers should provide all new and recent available data sufficient for use in the stock assessment through 2026. Data providers may decide to include preliminary or partial data for more recent years that could be used in stock assessment models or projection analyses. Data inclusion for the stock assessment models and projection analyses will be determined by the lead analyst based on quantity and quality of the most recent data.
- Model Type: Update current BAM configuration with Data Workshop and/or Topical Working Group.

Requested Data Updates (Please be as specific as possible):

- Review any new and updated information to determine if it warrants consideration for modifying existing assumptions to life history, natural mortality, discard mortality, and the stock-recruit relationship.
- Following NMFS Procedure 01-101-11, provide a model run using the SEDAR 78 configuration including recent years data.
- Incorporate fishery dependent and fishery independent data streams north of Cape Hatteras, NC.
    - Work with state agencies, NEFSC and GARFO to gather data on Spanish Mackerel from observer programs

Requested Model Modification to previously approved assessment (Please be as specific as possible):

- Indices of Abundance:
    - Update existing indices of abundance as needed.
    - Investigate the use of a fishery independent data/index from north of Cape Hatteras.
- Use MRIP recommended approaches for recreational catch to reduce PSEs below 50%; Investigate extreme values (high or low) for wave specific estimates of catch throughout the time series.
- Evaluate different methods to estimate commercial discards considering observer program and commercial discard logbook information along with coverage of the programs (federally permitted and state permitted vessels).
- Evaluate a plausible range of SPR proxies
    - Explore use of long-term average or recent average recruitment stanzas.
- Consider using different methods for estimating natural mortality including a subset of Then et al. 2015, Hammel and Cope 2022, and other research.
- Address recommendations from the Catch Level Projections workgroup report in the assessment report.
- Address recommendations from the Spanish Mackerel SSC workgroup report (see SSC workgroup bullets below).

- Recommend splitting catch by sector to develop an acceptable biological catch before splitting removals into landings and discards.
    - Council will need to develop allocation by sector that includes landings and discards.

Is a Data Workshop Needed?
Yes, webinar recommended. Webinar more suitable for inclusion of NEFSC staff and personnel from other agencies in Mid-Atlantic region.

Is a Topical Working Group Needed?
No

Is an Assessment Technical Team Needed?
Yes

Potential Schedule:
- Start in January 2027.
- Target Final Report Completion: October 2027 SAFMC SSC Meeting.

Spanish Mackerel Research Recommendations and Uncertainties Identified in SAFMC Research and Monitoring Plan and Review of SEDAR 78.

Below are research recommendations included in the SAFMC Research and Monitoring Plan, SEDAR 78 (2022), as well as SSC comments on addressing uncertainty in the assessment and research recommendations during the SSC review of SEDAR 78 (August 2022). Staff used this information to develop the proposed SoW following the background information.

SAFMC Research and Monitoring Plan

- Conduct more frequent stock assessments for coastal migratory pelagic species.
    - Consider conducting a management strategy evaluation (MSE) for Atlantic Spanish mackerel.
    - Explore moving away from age-based distribution models in future stock assessments for Atlantic king mackerel and Atlantic Spanish mackerel.
- Fishery-Independent Data Collection:
    - Develop a standardized fishery independent survey for coastal migratory pelagics.
    - Improve methods to track abundance along the Atlantic Coast by developing calibration between NEAMAP and SEAMAP.
    - Develop methods to integrate data collected through multiple surveys collected by state and federal agencies.
    - Conduct surveys in estuarine and nearshore nursery habitats for juvenile recruitment monitoring.

    - Investigate an index of abundance of juvenile recruitment for the Atlantic Coast based on multiple surveys.
- Use data from the Northeast Fishery Science Center observer program to expand bycatch observations in the gillnet fishery.
- Improve estimates of shore-based catches for Atlantic Spanish mackerel.
- Conduct studies to describe migration and stock structure.
- Investigate state-space models and non-stationarity as shifting stocks or changing distribution could impact estimates of productivity, catchability, and selectivity.

Research Recommendations from SEDAR 78 (2022)

- Development of a fishery-independent survey for pelagic species would decrease reliance on a fishery-dependent index of abundance that has unexplained trends in residual values in recent years.
- Examine how schooling or migratory dynamics may influence the catchability of the species. In particular, research the assumption of the hyperstability of indices that sample the schooling portion of the stock.
- Age-dependent natural mortality was estimated by indirect methods (Lorenzen) for this assessment. Telemetry and conventional-tagging programs can provide alternative estimates of natural mortality. Investigate new methods for determining point estimates for natural mortality.
- Limited information is available for shrimp bycatch in the Atlantic. Comprehensive observer coverage across space and time are needed to adequately capture the scale and size distribution of bycatch for Spanish mackerel and other species.
- The general recreational discards have increased dramatically in the last 2 years of this assessment. A better understanding of the size composition and mortality of discarded fish would improve the assessment, especially if discards continue to increase due to effort or future management changes.
- Implement systematic age sampling for the general recreational and commercial sectors. Age samples were important for this assessment for determining key parameters, but sample sizes were limited, particularly for the general recreational sector, commercial handline and commercial cast net sectors, which account for the majority of the recent landings.

Research Recommendations from SSC Review of SEDAR 78 (Aug 2022)

- The research recommendations that will most likely reduce risk and uncertainty in the next assessment include those that address the issues with SEDAR 78 described below (e.g. steepness, natural mortality, age comps).
- Based on public comments from commercial fishermen, the stock may be moving northward, so research on potential changes in stock distribution is warranted.
- Better characterization of age/size composition and mortality of discarded fish in the recreational sector.

Uncertainties identified by SSC during review of SEDAR 78 (Aug 2022)

- Age comps and state/federal harvest breakdown is not accounted for in the assessment for all sectors (e.g. lack of age comps for commercial cast net). Substantial regional differences in how fishery is prosecuted, the lack of adequate sample sizes across sector type create large data gaps in the assessment, and the need to pool age comps across years create high levels of uncertainty with the assessment.
    - Lack of adequate representation of length and age samples from each fishery (most fleets) to inform fishing mortality.
    - Uncertainty of the Shrimp bycatch estimates was high. The observer coverage is extremely sparse and effort data are questionable.
    - Lack of a pelagic fishery independent index of adult abundance
    - Commercial Handline index fits were poor (severe underfitting/overfitting)
    - Model ignored initial year of MRIP CPUE index (which was a relatively extreme value).
- Several data (e.g. MRIP data) and model inputs (e.g. natural mortality, steepness, selectivity) need to be explored more thoroughly [in the next assessment]:
    - Steepness was not estimable and was fixed from previous assessment – SEDAR 28. There was no signal from data to inform steepness. The stock-recruitment data did not allow for an updated estimate of steepness in SEDAR 78; the steepness value used in the SEDAR 78 (same as SEDAR 28) has high uncertainty as indicated by likelihood profiles.
    - Natural mortality was fixed from previous assessment – SEDAR 28. Natural mortality was found to have a significant impact on stock status. Likelihood profiles showed that natural mortality could be much higher (>0.5), which, if true, would indicate stock size is higher than currently estimated. Changes in these parameters can change stock status as indicated by sensitivity analyses.
    - MRIP data shows high PSEs and high uncertainty in terminal year estimate. Given the concern with this assessment, more attention should be paid to 2021-2022 MRIP estimates used in projections given the large sudden change in magnitude. This represents a major source of uncertainty in setting catch levels and would indicate a large increase in shore-based effort, which may or may not be realistic. During COVID years, perhaps more shore-based angler effort occurred, but in 2022 inflation may have decreased angler effort. More investigation is needed.
    - High uncertainty due to imputations used by MRIP to account for reduced sampling in 2020. The influence of the lack of SEAMAP 2020 data and the value of 2020 MRIP data will be difficult to determine until additional years of data are collected. We must evaluate the congruencies or incongruencies of these data to previous or future years' data.
    - The revised MRIP estimates increase uncertainty. The model's estimates of stock size are going down in recent years while the observed landings are increasing. The increased landings could be driving the population down but there is uncertainty if this is the case given information provided during public input that suggests the potential for an increased stock size that could promote greater landings with no change in effort (e.g. questions about the accuracy of recent MRIP data, commercial quotas being met earlier in year during recent years).

Shore-mode landings (these were higher than private boat mode which doesn't match on the water observations) appear to be important and driving changes in increased recreational landings.

Recommendations of the SSC workgroup (Jan 2023)

- Use a more contemporary M estimation method (e.g., Hamel and Cope 2022) to obtain a point estimate. Alternatively, take the average M estimated for congeners within other regions worldwide.
- Consider applying a uniform distribution (non-truncated?) on M with a range of values corresponding to a maximum age +/- 2 with the mean equal to the chosen point estimate when conducting the MCB ensemble uncertainty analysis Monte Carlo draws.
- Consider a sensitivity run with the most recent 3-year (2018-2020) (geometric) average representing 2020 data point. Alternatively, consider a sensitivity run with the most recent 3-year (2018-2020) (geometric) average weighted by reverse-CV representing 2020 data point. Evaluate and note in the report any particular concerns or problems with the MRIP data collected in 2020.
- Use a recent average recruitment instead of model-derived recruitment from the stock-recruit relationship. Determine an appropriate MSY proxy and timeseries for average recruitment.

Species:
South Atlantic Greater Amberjack

Model and Additional Data Years:

- Prior Assessment: South Atlantic Greater Amberjack SEDAR 59 (2020)
- Prior Terminal Year: 2017
- Data providers should provide all new and recent available data sufficient for use in the stock assessment through 2026 or 2027 depending on the start of the assessment. Data providers may decide to include preliminary or partial data for more recent years that could be used in stock assessment models or projection analyses. Data inclusion for the stock assessment models and projection analyses will be determined by the lead analyst based on quantity and quality of the most recent data.
- Model Type: Update current BAM configuration with a Data Workshop and/or Topical Working Group.

Requested Data Updates (Please be as specific as possible):

- Review any new and updated information to determine if it warrants consideration for modifying existing assumptions to life history, discard mortality, and the stock-recruit relationship.
- Following NMFS Procedure 01-101-11, provide a model run using the SEDAR 59 configuration including recent years data.
- Consider Florida's State Reef Fish Survey data for estimating recreational catch off Florida.
- Incorporate data from the Greater Amberjack Independent Research Project.

Requested Model Modification to previously approved assessment (Please be as specific as possible):

- Indices of Abundance:
    - Update indices of abundance as needed.
- Consider length and age composition of Greater Amberjack observed on videos from the SERFS fishery-independent survey to supplement trap survey data, if possible.
- Use MRIP recommended approaches for recreational catch to reduce PSEs below 50%.
- Consider estimating commercial discards with observer program vs commercial discard logbook.
- Evaluate a plausible range of SPR proxies
    - Explore use of long-term average or recent average recruitment stanzas.
- Consider using different methods for estimating natural mortality including a subset of Then et al. 2015, Hammel and Cope 2022, Lorenzen 2022 and other research.
- Address recommendations from the Catch Level Projections Workgroup Report in the assessment report.
- Recommend splitting catch by sector to develop an acceptable biological catch before splitting removals into landings and discards.
    - Council will need to develop allocation by sector that includes landings and discards.

Is a Data Workshop Needed?
Yes, to incorporate findings of the Greater Amberjack Research Project.

Is a Topical Working Group Needed?
Yes, Assessment TWG to aid in the inclusion of the findings of the Greater Amberjack Research Project.

Is an Assessment Technical Team Needed?
Yes.

Potential Schedule:

- Start in April 2028.
- Target Final Report Completion: April 2029 SSC Meeting.

Greater Amberjack Research Recommendations and Uncertainties Identified in SAFMC Research and Monitoring Plan and Review of SEDAR 59

Below are research recommendations included in the SAFMC Research and Monitoring Plan, SEDAR 59 (2020), as well as SSC comments on addressing uncertainty in the assessment and research recommendations during the SSC review of SEDAR 59 (April 2020). Staff used this information to develop the proposed SoW following the background information.

SAFMC Research and Monitoring Plan

- Supplement collection of age sampling, maturity data, and discard information using Citizen Science approaches.
- Tagging and tracking studies for EFH-dependent species (e.g., dolphinfish, jacks, triggerfish, snappers, groupers, amberjacks).

Research Recommendations from SEDAR 59 (2020)

- Develop methods to characterize length and age composition of greater amberjack observed on videos from the SERFS fishery-independent survey. Trap sampling of greater amberjack was limited and potentially biased due to size selectivity of the gear.
- Implement a systematic age sampling program for both the general recreational and commercial sectors. Age samples were important in this assessment for identifying strong year classes, but sample sizes were relatively small and disparate in time and space.
- Better characterize reproductive parameters including age at maturity, batch fecundity, spawning seasonality, and spawning frequency. Mature female biomass was the measure of reproductive potential for greater amberjack in the assessment but may be biased if reproductive parameters vary signicantly with size or age.

- Age-dependent natural mortality was estimated by indirect methods for this assessment of greater amberjack. Telemetry- and conventional-tag programs may be possible for greater amberjack to improve estimates of mortality.
- Better characterize the migratory dynamics of the stock and the potential for distribution shifts.

Research Recommendations from SSC Review of SEDAR 59 (April 2020)

- The SSC recommends the investigation of the use of Sargassum spp. by juvenile Greater Amberjack as a nursery habitat and the relationship between the areal extent of Sargassum and Greater Amberjack recruitment.
- The SSC recommends the investigation of the association between Greater Amberjack and reef habitat, whether natural or man-made, with respect to the degree of dependency on such reefs for spawning, shelter, and foraging use.
- Given the progress made in mapping benthic habitats within the South Atlantic, the SSC recommends that the next assessment investigate the potential for developing a habitat/production relationship for Greater Amberjack, should it be determined that the species life history is clearly dependent upon Sargassum spp. for juvenile recruitment, and upon reef habitat for adult shelter, foraging and/or spawning use.
- The SSC recommends that the findings of the South Atlantic Climate Vulnerability Assessment for Greater Amberjack be taken into consideration during the next assessment, with respect to whether anticipated climate change impacts could affect recruitment, timing of migration, and distribution of all life stages of the species within the South Atlantic and beyond.

Uncertainties identified by SSC during review of SEDAR 59 (April 2020)

- Sensitivity analyses indicated that the model was most sensitive to natural mortality (M). The choice of Charnov M over Lorenzen M had a large impact on the stock status results of the assessment, as was shown by the sensitivity runs. The method chosen to estimate M in the assessment has a significant impact on stock status determination and future yield projections
- Projected catch and ABC values are dependent on the assumption about future recruitment. The projections assumed that the estimated level of recruitment applies in the future. In this assessment, recruitment was above average for most years since the mid-2000s but has declined to near average recruitment in the last three years. If this decline continues to recruitment levels characteristic of the 1990s and early 2000s, then stock projections may be overly optimistic.

Species:
Red Porgy

Model and Additional Data Years:

- Prior Assessment: South Atlantic Red Porgy SEDAR 60 (2020)
- Prior Terminal Year: 2017
- Data providers should provide all new and recent available data sufficient for use in the stock assessment through 2027. Data providers may decide to include preliminary or partial data for more recent years that could be used in stock assessment models or projection analyses. Data inclusion for the stock assessment models and projection analyses will be determined by the lead analyst based on quantity and quality of the most recent data.
- Model Type: Update current BAM configuration with Topical Working Group.

Requested Data Updates (Please be as specific as possible):

- Review any new and updated information to determine if it warrants consideration for modifying existing assumptions to life history, discard mortality, and the stock-recruit relationship.
- Following NMFS Procedure 01-101-11, provide a model run using the SEDAR 60 configuration including recent years data.

Requested Model Modification to previously approved assessment (Please be as specific as possible):

- Indices of Abundance:
    - Update indices of abundance as needed.
- Use MRIP recommended approaches for recreational catch to reduce PSEs below 50%.
- Consider estimating commercial discards with observer program vs commercial discard logbook.
- Evaluate a plausible range of SPR proxies
    - Explore use of long-term average or recent average recruitment stanzas
    - Investigate reasons for low recruitment.
- Consider using different methods for estimating natural mortality including a subset of Then et al. 2015, Hammel and Cope 2022, and other research.
    - Investigate information on potential predators (e.g. Red Lionfish and Red Snapper) of Red Porgy impacting natural mortality of Red Porgy.
- Address recommendations from the Catch Level Projections Workgroup Report in the assessment report.
- Recommend splitting catch by sector to develop an acceptable biological catch before splitting removals into landings and discards.
    - Council will need to develop allocation by sector that includes landings and discards.

Is a Data Workshop Needed?
No

Is a Topical Working Group Needed?

Yes (could be done external to SEDAR):

- Investigate trends in life history changes; describe potential changes in natural mortality due to changes in predation (e.g. Red Lionfish and Red Snapper); investigate reasons for low recruitment.

Potential Schedule:

- Start in April 2028.
- Target Final Report Completion: Oct 2028 SSC Meeting.

Red Porgy Research Recommendations and Uncertainties Identified in SAFMC Research and Monitoring Plan and Review of SEDAR 60

Below are research recommendations included in the SAFMC Research and Monitoring Plan, SEDAR 60 (2020), as well as SSC comments on addressing uncertainty in the assessment and research recommendations during the SSC review of SEDAR 60 (April 2020). Staff used this information to develop the proposed SoW following the background information.

SAFMC Research and Monitoring Plan

- Investigate trends in life history changes; describe potential changes in abundance due to changes in predation (e.g. Red Lionfish and Red Snapper); investigate reasons for low recruitment.
- Research needs for protogynous stocks:
    - Investigate effects of hermaphroditism on the steepness parameter.
    - Investigate temporal patterns in sexual transition and develop explanations for any patterns identified.
    - Investigate methods for incorporating the dynamics of sexual transition in assessment models.
- Supplement collection of maturity data and discard information using Citizen Science.

Research Recommendations from SEDAR 60 (2020)

- Investigate temporal trends in growth, sex at age, and female maturity at age. In the previous assessments, female maturity at age was estimated for several time blocks and included in the model as a time-varying relationship. During the [SEDAR 60] process, the basis for modeling only female maturity as time-varying was called into question, given that life history parameters are often linked. The decision was made to use only a single female maturity at age relationship. However, the panel judged this to be an important area of future research.

Research Recommendations from SSC Review of SEDAR 60 (April 2020)

- Investigate potential factors that may be contributing to the continued low recruitment of Red Porgy, including egg production, egg quality, fertilization rate, juvenile survival, sex ratio, and size/age of sex transition.
- Investigate whether Red Porgy males establish and maintain territories as part of their spawning behavior (although territorial behavior has not previously been observed, the SSC deemed the question worthy of further investigation).
- Investigate the potential impact(s) on Red Porgy of increased abundance of Red Lionfish and Red Snapper (or other piscivores found to have recent increased abundance) in the South Atlantic, including:
    - Predation of juvenile Red Porgy by Red Lionfish and Red Snapper and its potential impact on the apparent recruitment failure of Red Porgy.
    - Competition for prey between Red Snapper and Red Porgy (e.g., diet composition and size range overlaps).
    - Exploring to what extent the resurgence in the South Atlantic Red Snapper population co-occurred with the decline in the South Atlantic Red Porgy population.

Uncertainties identified by SSC during review of SEDAR 60 (April 2020)

- The recruitment pattern used in the projections has a large effect on the projected catches and rebuilding status.
- Fishery-dependent and -independent data have shown there to be fluctuations in age/size at maturity and growth rate, which can constrain the ability of the stock to rebuild.
- The greatest contributor to risk for this assessment is recruitment and the uncertainty surrounding future recruitment values. Status determination is unlikely to be affected by this recruitment uncertainty (i.e. still likely to be overfished), but the potential for future yield will be impacted by the recruitment time series.
- The SSC had a difficult time implementing the ABC control rule because Red Porgy is under a rebuilding plan that has made little to no progress given low recruitment in recent years.
    - Rebuilding progress has been stifled by a steady decline in recruitment since the early 1990s.
    - Projections provided at the SSC's request using recent (2015-2017) mean recruitment suggest the probability of rebuilding is zero even if fishing mortality is reduced to zero. Although reducing directed fishing and minimizing discards may not guarantee rebuilding, it would allow for maximum rebuilding potential for the stock should conditions improve.
    - Note that while the SSC recommends an ABC based on F=75%Fmsy to end overfishing, projections indicate this ABC will have only a very minor impact on stock rebuilding.
    - If recruitment continues to be low, there will be a need to reevaluate the productivity of the stock and the benchmark reference points.