TERMS OF REFERENCE

For the 2027 ASMFC Cobia Stock Assessment

Board Approved February 2026

Terms of Reference for the Cobia Assessment

1. Identify relevant ecosystem influences on the stock, including impacts to range shifts and/or expansions. Consider findings, as appropriate, in addressing other TORs. Report how the findings were considered under impacted TORs.

2. Investigate all available life history data, including but not limited to age, growth and reproductive characteristics, stock structure, and natural mortality. Describe the spatial and temporal distribution of the data. Characterize the uncertainty and error in the data. Discuss strengths and weaknesses of the data sources and justify inclusion or elimination of datasets.

3. Investigate available fishery-independent and -dependent data sets. Characterize precision, accuracy, and uncertainty in available abundance indices, as well as commercial and recreational landings and discards. Include estimation of length and age distribution of landings and discards and discard mortality, as feasible. Characterize the uncertainty in the data and spatial distribution of the fisheries. Review new MRIP estimates of catch and effort for use in the assessment, if available. Discuss strengths and weaknesses of the data sources and justify inclusion or elimination of datasets.

4. Develop model(s) used to estimate population parameters (e.g., F, abundance) and reference points and analyze model performance. Provide comparisons between the current assessment and the prior benchmark assessment (SEDAR 58), where feasible. Provide model diagnostics, sensitivity analyses, retrospective analysis of the model results, and historical retrospective.

5. Update or redefine biological reference points (BRPs; for example, point estimates or proxies for BMSY, SSBMSY, FMSY, MSY). Define stock status based on BRPs where possible. Compare reference points derived in this assessment with what is known about the general life history of the exploited stock. Explain any inconsistencies. Compare and contrast BRPs and time series estimates in this assessment with values from previous benchmark (SEDAR 58) assessment, as feasible, and comment on the impacts of changes in data, assumptions, or assessment methods on estimated population conditions.

6. If a minority report has been filed, explain majority reasoning against adopting approach suggested in that report. The minority report should explain reasoning against adopting approach suggested by the majority.

7. Develop detailed short and long-term prioritized lists of recommendations for future research, data collection, and assessment methodology.

8. Recommend timing of next benchmark assessment and intermediate updates, if necessary, relative to biology and current management of Cobia.

Terms of Reference for the Cobia Peer Review

1. Evaluate the summary and analyses, if available, that were completed to explore the impact of environmental conditions on the stock, including range shifts and/or expansions.

2. Evaluate life history analyses and the age, growth, reproduction, and natural mortality information used in the assessment. Evaluate the stock structure and geographic scale at which the population was assessed. Evaluate the justification for inclusion or elimination of available data sources.

3. Evaluate the thoroughness of data collection and the presentation and treatment of fishery-dependent and fishery-independent data in the assessment, including the following but not limited to:
    a. Presentation of data source variance (e.g., standard errors).
    b. Justification for inclusion or elimination of available data sources.
    c. Consideration of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, aging accuracy, sample size).
    d. Calculation and/or standardization of abundance indices.

4. Evaluate the methods and model(s) used to estimate population parameters (e.g., F, abundance) and reference points, including but not limited to:
    a. Evaluate the choice and justification of the preferred model(s). Was the most appropriate model (or model averaging approach) chosen given available data and life history of Cobia?
    b. Evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of M, stock-recruitment relationship, choice of time-varying parameters, plus group treatment).
    c. Evaluate the diagnostic analyses performed, including but not limited to:

- Sensitivity analyses to determine model stability and potential consequences of major model assumptions.
- Retrospective analysis.

d. Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure the implications of uncertainty in technical conclusions are clearly stated.

5. Recommend best estimates of stock biomass, abundance, and exploitation from the assessment for use in management, if possible, or specify alternative estimation methods. Evaluate the choice of reference points and the methods used to estimate them. Recommend stock status determination from the assessment, or, if appropriate, specify alternative methods/measures.

6. If a minority report has been filed, review minority opinion and any associated analyses. If possible, make recommendation on current or future use of alternative assessment approach presented in minority report.

7. Review the research, data collection, and assessment methodology recommendations provided by the TC and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment and provide recommendations to improve the reliability of future assessments.

8. Review the recommended timeframe for future assessments provided by the TC and recommend any necessary changes.

9. Prepare a peer review panel terms of reference and advisory report summarizing the panel's evaluation of the stock assessment and addressing each peer review term of reference. Develop a list of tasks to be completed following the workshop. Complete and submit the report within 4 weeks of workshop conclusion.