SEDAR
SouthEast Data, Assessment, and Review

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SEDAR 87 Gulf of Mexico White, Pink, and Brown Shrimp Research Track
Terms of Reference
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Data Workshop Terms of Reference

1. Gather data through 2022 (where possible) for Gulf of Mexico White, Pink, and Brown shrimp.

2. Review, discuss, and tabulate available life history information for each stock being assessed.
   - Evaluate growth data where available. Determine the adequacy of available life history information for different types of assessment or population model
   - Evaluate and discuss the sources of uncertainty and error, and data limitations (such as temporal and spatial coverage) for each data source.

3. Create a conceptual model based on feedback from a variety of industry representatives in the Data Workshop to capture their institutional knowledge.

4. Provide measures of population abundance that are appropriate for stock assessment.
   - Consider all available and relevant fishery-dependent and -independent data sources
   - Document all programs evaluated; address program objectives, methods, coverage, sampling intensity, and other relevant characteristics.
   - Provide maps of fishery and independent survey coverage, where possible.
   - Develop fishery and survey CPUE indices by appropriate strata (e.g., area) and include measures of precision and accuracy.
   - Provide appropriate measures of uncertainty for the abundance indices to be used in stock assessment models.
   - Document pros and cons of available indices regarding their ability to represent abundance.
   - For recommended indices, document any known or suspected temporal patterns in catchability not accounted for by standardization.
   - Provide appropriate measures of uncertainty for the abundance indices.

5. Provide commercial catch statistics for each stock where possible. Document species-specific issues.
   - Provide maps io fishery effort and harvest by sector and/or gear by species, where possible.
   - Provide estimates of uncertainty around each set of landings and effort estimates.

6. Describe any known evidence regarding ecosystem, climate, species interactions, habitat considerations, species range modifications and/or episodic events that would reasonably be expected to affect shrimp population dynamics, and the effectiveness of reference points.

    - Provide species envelopes, i.e. minimum and maximum values of environmental boundaries (e.g. depth, temperature, substrate, relief) based on observations of occurrence.
    - Develop hypotheses to link the ecosystem and climatic events identified in addressing this TOR to population and fishery parameters that can be evaluated and modeled.

7. Integrate economists into the stock assessment model development process in order to explore models that can address questions such as benefits of seasonal/spatial closures, impacts of fuel prices on total effort, and ex-vessel prices of different market categories, if possible.
    - Detail the early 2000 industry consolidation and impacts of ex-vessel price on effort

8. Provide recommendations for future research in areas such as sampling, fishery monitoring, and stock assessment.

9. Prepare a Data Workshop report providing complete documentation of workshop actions and decisions in accordance with project schedule deadlines.

Assessment Terms of Reference

1. Review any changes in data or analyses following the Data Workshop. Summarize data as used in each assessment model. Provide justification for any deviations from Data Workshop recommendations.

2. Develop a management advice framework. Consider data availability (e.g., landings and CPUE) and management needs (e.g., harvest controls, stock status), and particular needs of the fishery and the biology of the resource.

3. Examine the impacts of social science factors on biological reference points as informed by stakeholders through industry input.

4. Recommend biological reference points for use in management
   - Consider how reference points could be affected by management, ecosystem, climate, species interactions, habitat considerations, social or economic drivers, and/or episodic events.

5. Provide estimates of stock population parameters, including: Fishing mortality, biomass, selectivity, and/or other parameters as necessary to describe the population.

6. Characterize uncertainty in the assessment and estimated values.
   - Consider uncertainty in input data, modeling approach, and model configuration.
   - Provide appropriate measures of model performance, reliability, and 'goodness of fit'.
   - Provide measures of uncertainty for estimated parameters and derived quantities such as biological reference points and stock status if feasible.

7. Provide recommendations for future research and data collection. Emphasize items that will improve future assessment capabilities and reliability. Consider data, monitoring, and assessment needs.

8. Complete an Assessment Workshop Report in accordance with project schedule deadlines.

Review Workshop Terms of Reference

1. Evaluate the degree to which the terms of reference from the Data and Assessment processes were addressed.

2. Evaluate the data used in the assessment, including discussion of the strengths and weaknesses of data sources and decisions. Consider the following:
   - Are data decisions made by the Data and Assessment processes justified?
   - Are data uncertainties acknowledged, reported, and within normal or expected levels?
   - Is the appropriate model(s) applied properly to the available data?
   - Are input data series sufficient to support the assessment approach?

3. Evaluate and discuss the strengths and weaknesses of the methods used to assess the stock, given the available data. Consider the following:
   - Are methods scientifically sound and robust?
   - Are priority modeling issues clearly stated and addressed?
   - Are the methods appropriate for the available data?
   - Are assessment models configured properly and used in a manner consistent with standard practices?

4. Consider how uncertainties in the assessment, and their potential consequences, are addressed.
   - Comment on the degree to which methods used to evaluate uncertainty reflect and capture the significant sources of uncertainty in the population, data sources, and assessment methods.
   - Comment on the likely relationship of this variability with possible ecosystem or climate factors and possible mechanisms for including this into management reference points.

5. Provide, or comment on, recommendations to improve the assessment
   - Consider the research recommendations provided by the Data and Assessment processes in the context of overall improvement to the assessment, and make any additional research recommendations warranted.
   - If applicable, provide recommendations for improvement or for addressing any inadequacies identified in the data or assessment modeling. These recommendations should be described in sufficient detail for application, and should be practical for short-term implementation (e.g., achievable within ~6 months). Longer-term recommendations should instead be listed as research recommendations above.

6. Provide recommendations on possible ways to improve the Research Track Assessment process.

7. Prepare a Review Workshop Summary Report describing the Panel's evaluation of the Research Track stock assessment and addressing each Term of Reference.