Gulf of Mexico Fishery Management Council
Managing Fishery Resources in the U.S. Federal Waters of the Gulf of Mexico

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Gulf of Mexico Migratory Group King Mackerel
Assessment Scope of Work
September 24, 2024

1. Utilize the approved 2020 SEDAR 38 Update base model for Gulf of Mexico migratory group of king mackerel with data through 2024, where possible. Update model configurations to update model configurations using current best practices.

2. Document any changes or corrections to the SEDAR 38 Update base model in detail and provide rationale for decisions on how to address these issues made to model and input datasets and provide updated input data tables.
   - Describe any annual differences in the magnitude of landings from the previous assessment greater than 10%, with assistance from the NOAA Office of Science and Technology.
   - Update life history data (e.g., growth, reproduction, mortality) if warranted. Evaluate any new data on discard mortality.
   - Explore any possible changes in age-structure, including time-varying growth. If stock structure has changed substantially, describe how this will be addressed.
   - Revise the shrimp bycatch estimates based on the CIE-reviewed methodology, considering the updated shrimp effort estimation reviewed during previous SEDAR assessments (e.g. 87 and 98).
   - Revisit sex-specific data provision and whether said data improves model estimates when included.
   - Explore available landings of king mackerel from Mexico.

3. Update model parameter estimates and their variances, model uncertainties, estimates of population benchmarks or management criteria consistent with available data
   - Evaluate existing or proposed management criteria as specified in the management summary.
   - Recommend additional proxy values when necessary.
   - Provide commercial and recreational landings and discards in **pounds and numbers**.
   - Use the following status determination criteria (SDC):
     - MSY proxy = yield at F_{MSY} or proxy ($F_{SPR30\%}$)
     - If overfished, MSY = $F_{Rebuild}$
     - MSST = (1-M)*SSB_{MSY}
     - MFMT = F_{MSY} and $F_{Rebuild}$ (if overfished)
     - OY = 0.85 * MSY or its proxy, currently $F_{30\%SPR}$
     - If different SDC are recommended, provide outputs for both the current and recommended SDC.
   - Unless otherwise recommended, use the geometric mean of the previous three years' fishing mortality to determine $F_{Current}$. If an alternative approach is recommended, provide justification and outputs for the current and alternative approach.

- Provide yield and spawning stock biomass streams for the overfishing limit and acceptable biological catch in pounds:
    - Annually for five years
    - Under a "constant catch" scenario for both three and five years
    - For the equilibrium yield at F_{MSY}, when estimable

4. Develop a stock assessment report to address these TORS and fully document the input data and results of the stock assessment model.

Topical Working Group

A topical working group **is** recommended for this assessment to cover shrimp bycatch estimation methodology, sex-specific data issues, and selectivity and retention function specifications and fitting. (virtual).

Potential second topical working group to explore other factors that may be contributing to the landings decline. This could, but is not limited to, anthropogenic effects (loss of waterfront, graying of fleet, high fishing mortality in Mexico) and/or environmental effects (change in water temperature, red tide, etc.).