Snapper-Grouper MSE 2024 Work Plan

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Project Main Objective:

Develop and apply an MSE framework to evaluate the performance of alternative management options for stocks within the snapper-grouper complex.

2024 Timeline:

1. May: Technical Team agree on 2024 Work Plan
2. June: Present brief update of Work Plan to Council and finalize Management Options to explore
3. June - October: run MSE analyses, write draft manuscript for publication
4. October: Present preliminary results to AP and SSC
5. October & November: modify analyses based on feedback from AP
6. December: Present final results to Council
7. December: Revise analysis based on feedback from Council
8. December: Submit mss for publication
9. December: Submit project report to Council

Management Strategy Evaluation

Case Study Stocks

- Red Snapper & Gag are currently in MSE framework
- Interest in adding a third species Black Sea Bass

***Key Question**:*
Include Black Sea Bass at this stage - ie for 2024 report and mss - or later?

- *Staff would like to see Black Sea Bass included in the report for 2024 but this will require getting additional information from Snapper Grouper AP.*

If included in this stage:

- Need info on spatial distribution of stock similar to what we have for RS and gag.
- Need discussion with AP on key uncertainties with Black Sea Bass (if different from RS and Gag).

Operating Models

Code for importing BAM assessments is working, but currently being revised to simplify and accommodate Black Sea Bass.

Base Case

- For each stock, OM built directly from corresponding SEDAR BAM output.

Uncertainty OMs:

Re-run assessment models with alternative assumptions based on uncertainties identified by AP.

1. Uncertainty in reported landings/discards for Recreational fleet

- Currently assuming a scenario where Recreational Landings & Discards were over-reported by 40% in all historical years (both RS and Gag)
    - *Technical Team - recommend including other scenarios for recreational data including potentially increasing recreational data.*

***Key Questions**:*

- More specific details on hypothesis of over-reporting of Recreational catch
- Landings and Discards over-reported?
- Same over-reporting for all stocks?
- Year range?
- Hypothesized range of over-reporting? (currently assuming 40% over-reporting of landings)

2. Recruitment scenarios

- Base Case: Assume recruitment deviations in projection period follow same distribution as those estimated in assessments
    - *Technical team – consider recruitment as independent in the base case and use negative correlation between Gag and Red Snapper as a sensitivity*.
- Uncertainty: Projection recruitment deviations continues to follow recent trend (i.e., higher/lower than average)
- Uncertainty: Increased recruitment variability in projection years
    - *Technical Team – may need to expand uncertainty to account for climate change and nonstationarity in projections. May need to use dynamic reference points and confirm that adjustments to reference points are built in the MSE.*

3. Assessment Sensitivity Tests

- Re-run assessment model with lower and upper values of M included in the sensitivity tests.

4. Effort creep for Recreational Fleet

- Currently a scenario where Recreational effort is assumed to increase by 2% per year in the projection period.
    - *Technical Team - May need to include efficiency creep and may need to be more than 2% given the technology advancement.*

Management Options

Results of Shertzer et al (2024) used to identify key management options. Focus on options that end overfishing and achieve rebuilding by 2044 for Red Snapper and rebuilding Gag by 2032.

Main focus on four dimensions:

1. Season length: Fraction of catch that is retained - ie open season all year = no general discards: modify maximum value of retention curve to simulate different season lengths.
2. Reduction of Recreational Effort: explore options ranging from 5% to 90% relative to current levels.
3. Size limits: species specific minimum size limits.
    - Range of values based on existing or historical size limits.
4. Discard mortality: hypothesized reductions in discard mortality.

- *Technical Team – need more details on how management approaches would be implemented.*
- *Technical Team – consider aggregate bag limits, full retention, and spatial management. Also add in SSC feedback (below):*
    i. *Low priority – size limits, Red Snapper species specific season length, area closures (may be effective for rebuilding stocks), gear modifications, ACLs, bag limits. Demonstrate they have been explore and show relative effectiveness.*
    ii. *Areas to focus on - effort control strategy, methods to implement effort control, variable compliance with management strategy, best fishing practices, combined strategies and additive benefits, spatial and seasonal area closures*

Fishing effort for all fleets in the projection years will be fixed to the mean of the last 3 historical years, except where modified by the management procedure (e.g., reduction in effort for Recreational Fleet).

The management options are currently static: i.e., fixed modifications to effort, retention, and discard mortality, that are not updated in the projection period based on observed fishery data.

- *Technical team – may need to consider adaptive management procedures. Further test with closed-feedback loop.*

Performance Measures

For each operating model and management option, report by stock:

1. The expected time to rebuild stock to target level
2. The level of fishing mortality relative to reference level (F30% or F40%).
3. Average stock biomass relative to target
4. The % change in fishing effort by fleet relative to last 3 historical years
5. The % change in landings by fleet relative to last 3 historical years
6. The % change in discards by fleet relative to last 3 historical years
7. The overall landings and discards
8. Average age of population
9. Average length of catch
10. Recreational season length
    - *Technical Team – the operating model may need to be developed by region for different performance measures. Performance measures should be able to justify to stakeholders why a certain management procedures would be advantageous, even if resulting in some short-term pain and/or negative trade offs*
    - *Technical Team - may need to reduce the number of performance measures with must pays (status, F, rebuilding), day fishing, ratio of catch to discards, and overall yield.*
    - *Technical Team – may need to change performance measure 1 to focus on probability to rebuild by end of rebuilding period.*

Results

- Figures/tables showing the relative performance of different management options.
- Identify the combinations of 4 management dimensions that provide the best overall performance.
- Identification of key trade-offs for Base Case OM.
- Examine if Uncertainty OM change the qualitative ranking of the management options.
- Examine if Uncertainty OMs significantly change the quantitative recommendations; e.g % reduction in Recreational Effort, or value of minimum size limit(s).

Manuscript

- Currently drafting manuscript describing project.
- Will share mss with the Technical Team once the first round of results are complete.
- All TT members invited to contribute as co-authors if they wish.
- Plan to submit mss for publication December 2024.