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Interim Assessment of Gulf of Mexico Red Snapper: Proposal for utilizing GRSC results to adjust ABC

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Proposed Interim Approach (Variant 1)

- $ABC_{NEW} = \Sigma (F@age_{SEDAR52} * N@age_{GRSC})$
 - $F@age$ – vector of fishing mortality rates at age derived from **SEDAR 52 Frebuild projection**.
 - $N@age$ – vector of numbers at age derived from the **GRSC** estimates of 2+ abundance and composition data from **GRSC** and other sources.
- Differs from previously reviewed interim approaches as ABC_{NEW} is not a derivative of ABC_{OLD}

Proposed Interim Approach (Variant 2)

Natural Reef



F_A	$N_{A,NAT}$	$C_{A,NAT}$
F2	$N_{2,NAT}$	$C_{2,NAT}$
F3	$N_{3,NAT}$	$C_{3,NAT}$
F4	$N_{4,NAT}$	$C_{4,NAT}$
...

Artificial Reef

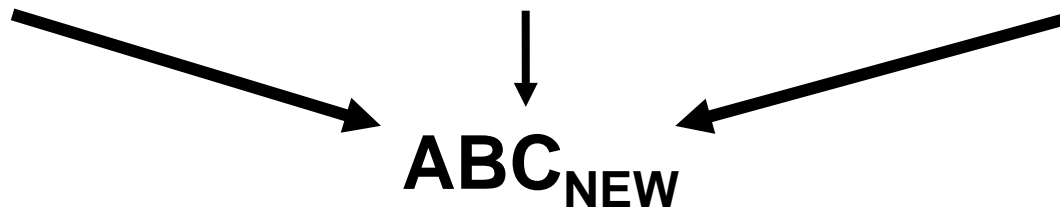


F_A	$N_{A,ART}$	$C_{A,ART}$
F2	$N_{2,ART}$	$C_{2,ART}$
F3	$N_{3,ART}$	$C_{3,ART}$
F4	$N_{4,ART}$	$C_{4,ART}$
...

Uncharacterized Bottom



F_A	$N_{A,UNC}$	$C_{A,UNC}$
F2	$N_{2,UNC}$	$C_{2,UNC}$
F3	$N_{3,UNC}$	$C_{3,UNC}$
F4	$N_{4,UNC}$	$C_{4,UNC}$
...



- More appropriately captures fishery impact on population if composition differs by habitat.

Sensitivity and Exploratory Runs

- SEFSC analysts will consider the following:
 - ABC_{NEW} produced using:
 - All $N@age$
 - $N@age$ from structure (GRSC #'s on artificial and natural bottom)
 - $N@age$ from structure plus %'s of uncharacterized bottom
- The SEFSC proposes to test the implications of the GRSC results and ABC_{NEW} using sensitivity analyses of the SEDAR 52 assessment model
 - To evaluate the effect of fitting to the GRSC abundance estimates within the model
 - To demonstrate the effect fishing at ABC_{NEW} would have on stock trajectories under currently modeled assumptions
 - Explore the effect of a higher reference point (e.g. SPR40%).

Caveats and Concerns

- Comprehensive documentation of GRSC methodologies, assumptions and uncertainties is not yet available.
- The GRSC suggests abundance is ~3X higher than SEDAR 52 estimates. Although both estimates are quite similar on high relief and structure, GRSC suggests a large amount of “cryptic biomass” on unconsolidated bottom. Historic removals may also be higher than previously assumed (e.g. CHTS to FES). These factors could change perceptions of productivity in future assessments of red snapper. Reference points may need to be revisited (e.g. SPR26% could be revised upward if stock is less productive than previously assumed).
- Biomass on unconsolidated bottom may be substantially less accessible to fishing. Therefore, increasing ABC, while sustainable, could lead to local depletion in more heavily fished areas.