

Red Grouper

Research and Monitoring Plan 2025-2029

1.1.2 Short-term Research and Monitoring Needs for Stock Assessment for 2025-2027

Red Grouper

- Conduct a stock assessment for Red Grouper with a stock identification workshop and data workshop in 2027.
 - Develop models to evaluate the current rebuilding plan for the single stock.
 - Evaluate the frequency and magnitude of recruitment coming from other regions such as the Gulf or areas to the south.
 - Identify factors contributing to decreased recruitment.
 - Update reproductive biology parameters and evaluate potential latitudinal variation in spawning characteristics.
 - Incorporate index of abundance of South Florida Red Grouper.

8.5 Life History and Stock Structure Research

Growth, Maturity, and Reproduction

- Conduct life history sampling for Tier 1 species and for species showing latitudinal variation (e.g., Black Sea Bass, Hogfish, **Red Grouper**, White Grunt).

Stock Structure and Movement

- Use tagging, otolith microchemistry, and genetic markers to resolve regional stock structure for species that have spatially separated fishery-dependent or fishery-independent catches (e.g., **Red Grouper**).

SEDAR 86: Red Grouper Operational Assessment – SSC Review, September 2023

Provide recommendations and input on the need to investigate alternative model structures (i.e., besides coastwide continuity model).

- *The SSC is open to alternative data treatments and/or modeling approaches to incorporate spatial structure in the red grouper stock assessment and that the data treatment/approach would be dependent on the available data. This would also address the CIE and SSC comments provided on the previous assessment.*

- *The SSC recognizes the data challenges involved in using a two-area modeling approach (e.g. fishery-independent index for southern region). Red Grouper was a relatively data poor species and separating into two stocks likely increase the data challenges.*
- *The SSC recommends a Benchmark Assessment because of multiple considerations that exceed the operational assessment framework. This would also address the need for a more open and transparent process.*
- *Given that Red Grouper is in a rebuilding plan, there is a substantial length of time between the last assessment and next recommended benchmark results. Some interim information (e.g. FI surveys) may be available to serve as a stock health check - but how this information is used may depend upon the new modeling structure.*

Would the SSC endorse a SEDAR 86 assessment that differs from the operational assessment?

Yes, the SSC recommends a Benchmark Assessment.

- Willingness to review such an assessment?
 - Yes
- What additional oversight procedures (e.g., TWGs, revised TORs) are required?
 - *For the Benchmark assessment, new TORs will be developed and participants appointed.*

Snowy Grouper

Research and Monitoring Plan 2025-2029

1.1.2 Short-term Research and Monitoring Needs for Stock Assessment for 2025-2027

- Conduct a stock assessment for Snowy Grouper with a topical working group to discuss South Atlantic Deepwater Longline Survey in 2027.
 - The SSC noted two major uncertainties for the next assessment:
 - Uncertainties regarding maximum age assumptions and resulting estimation of natural mortality.
 - Estimation of a Beverton-Holt stock recruitment curve with fixed steepness. Consider not specifying the stock recruitment (SR) relationship and model recruitment as an average value with random residuals. Rather than calculating MSY and BMSY from the SR curve, consider alternative proxies.
 - Explore the effect of different methods used to develop indices of abundance.
 - Explore MRIP data in greater detail to:
 - understand what causes outliers (e.g., 2012),
 - determine potential for bias in discard estimates, and
 - determine how best to treat these data in the assessment.

8.6 Ecosystem and Bycatch Research

- Quantify bycatch of managed and non-managed species in deep-drop fisheries targeting **Snowy Grouper**, Yellowedge Grouper, Tilefish, and Wreckfish.

SEDAR 36 Update: Snowy Grouper Standard Assessment – SSC Review, September 2020

List (in order of the greatest contribution to risk and overall assessment uncertainty) and comment on the effects of those assessment factors that most contribute to risk and impact status determinations and future yield predictions.

- Major Uncertainties:
 - *Uncertainties regarding maximum age assumptions and resulting estimation of natural mortality.*
 - *Estimation of a Beverton-Holt stock recruitment curve with fixed steepness.*

- Minor Uncertainties:
 - *Abundance indices:*
 - *Abundance indices were not well fit in the current model configuration.*
 - *Abundance index residuals appear temporally autocorrelated and that autocorrelation was not accounted for in the current model configuration.*
 - *Large uncertainty in estimated annual values for abundance indices, including unexplained shift in the peak year of the Chevron Trap Index (now 2000)*
 - *Estimate of 2012 recreational landings is a potential outlier.*
 - *The stock may be in a different productivity regime than implied by current biological reference points given it has been stable but well below biological reference points since 1984.*
 - *Stock dynamics may be more controlled by natural processes than fishery processes given low recent fishing mortality relative to natural mortality.*

Provide any additional research recommendations the SSC believes will improve future stock assessments.

- Major
 - *Reduce uncertainty in natural mortality assumptions:*
 - *Subset species used in Then et al. analysis to include only grouper, snapper, or species with similar life histories*
 - *Use empirical studies (tagging etc.) to come up with field-based natural mortality estimates at age*
 - *Conduct a simulation study to examine which factors may reduce uncertainty in the choice of natural mortality in the BAM.*
 - *Consider not specifying the stock recruitment relationship and model recruitment as an average value with random residuals. Rather than calculating MSY and BSY from the SR curve, consider alternative proxies.*
- Minor
 - *Abundance indices:*
 - *Explore the effect of different methods used to develop indices of abundance (delta lognormal versus zero-inflated negative binomial). Determine why they generate different trends and peaks/valleys and how best to treat these data.*
 - *Overall low catches of Snowy Grouper in fishery independent surveys used to generate indices of abundance. A deep water survey is highly desirable.*
 - *Evaluate the use of inverse sampling methods for analysis for generating indices of abundance.*
 - *Explore MRIP data in greater detail to a) understand what causes outliers*

(e.g., 2012), b) determine potential for bias in discard estimates, and c) determine how best to treat these data in the assessment.

- *Examine temporal autocorrelation in both abundance index residuals and recruitment estimates and explore ways to account for that within the model.*
- *Investigate shore mode captures of Snowy Groupers in MRIP.*
- *Explore the effect of plus group definition up to a max age of 80.*
- *Explore alternative methods for addressing recruitment assumptions in projections.*
- *Evaluate the efficacy of recruitment estimation by subdividing the dataset and projecting forward using a shorter time series. Compare with recruitment estimates generated using the complete time series.*
- *Explore the prevalence of use of descending devices in the Snowy Grouper fishery.*
- *Consider the use of the South Atlantic Fishery Management Council EwE model to explore hypotheses regarding Snowy Grouper and its ecological relationships with other species (e.g., exploration of why recruitment has been low, predator-prey relationships, dietary overlap, etc.).*