

Peer Review

Review of: "A Review of Grouper Fisheries Management in the Southeastern and Caribbean U.S.: Challenges, Successes, and Future Directions"

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The manuscript is well organized and covers a great expanse of grouper management information that hasn't previously been presented in this light. I hope these brief comments will improve the final product and be of interest to a wide audience. To provide a timely update, it would be good to review a few details that pertain to the CAB. For example, the information in Table 1 should include species that were previously not managed in some of the islands (i.e., *H. mystacinus* & *M. interstitialis* in Puerto Rico), but now, with Island-based FMP, are. There is also an amendment to require descender devices proposed towards the CAB plans that may be good to include. Also, need to include the fact that SEDAR 14 for the US Caribbean of *M. venenosa* was completed. Another update is that the critical habitat for Nassau grouper under the Endangered Species Act was designated and may change that section of the results.

In order to better demonstrate the challenges and successes by area, it would be pertinent to mention the differences in the regional context of the spatial application of federal fisheries management, as there are many layers to the way these regulations are applied in these regions. For example, in SA, GOM, and the USVI portion of CAB, federal fisheries regulations apply beyond 3 nautical miles from shore; however, in the Puerto Rico portion of the CAB, they only apply beyond 9 nautical miles. The lack of compatible regulations between jurisdictions (as noted in the case of Nassau grouper) is a significant 'challenge' to the species recovery, in addition to the limited capacity in law enforcement and differences in governance that reduce compliance.

At the end of section 3.1, the term 'allocation' should be defined, as it might not be easily understood by the non-US public. When specifically discussing MPAs, it is important to explain that there are many types of MPAs and any success, or lack thereof, may also be due to some being seasonal, only limiting certain gears, or not being designed as a network to increase grouper spawning stock or recruitment. For example, the size and no-take regulation of the Red Hind MCD south of St. Thomas, USVI, cannot be compared to a much smaller seasonal MPA where fishing is prohibited for three months in this context.

Applying fisheries management strategies to protogynous grouper species merits a bit more discussion in the light of Lowerre-Barbieri, S., DeCelles, G., Pepin, P., Catalán, I. A., Muhling, B., Erisman, B., Cadrin, S. X., Alós, J., Ospina-Alvarez, A., Stachura, M. M., Tringali, M. D., Burnsed, S. W., & Paris, C. B. (2017). Reproductive resilience: a paradigm shift in understanding spawner–recruit systems in exploited marine fish. *Fish and Fisheries*, 18(2), 285–312. What are the risks of not including these particular considerations in stock assessments or MPA monitoring schemes of protogynous species to their sustainability? I suppose this is important to consider when discussing potential solutions moving forward.

Section 3.3 seems to lack any data on deepwater groupers in the CAB; at least the species that are reported by local small-scale fisheries should be mentioned. Even though there haven't been SEDARs yet, there are reported landings and fishery-independent data that shed light on the need for EBFM, MPAs, and multiple species management strategies, particularly in this data-limited region.

Figure 7 indicates quotas, whereas the rest of the text mentions allocations; these need to be better defined for non-US readers to better grasp the intention of using these terms.

Section 4.1 would benefit from better resolution given the incompatibility of local and federal rules in the history of the decline in Nassau grouper populations. The MPA context is very important here as the fishery-independent data are demonstrating recruitment of spawners and more fish at the spawning aggregation. This MPA and the Grammanik Bank (seasonal MPA) are completely in federal waters, but the migrations of the spawners cross boundaries of MPAs and jurisdictions without standardized protection due to the lack of a 4-d rule under the Endangered Species Act, despite it being designated as threatened almost a decade ago. Within the same discussion, I would include the 'secondary benefits' of this no-take marine reserve as it pertains to red hind, as per Rosemond, R. C., Nemeth, R. S., & Heppell, S. A. (2022). Demographic Recovery of a Reef Fish Population Over 30 Years of Spawning Aggregation Site Protection. *Frontiers in Marine Science*, 9.

In the CAB, there have been recent publications of the perceptions towards fisheries management in the region that may add some CAB data to the manuscript. Seara T, Williams SM, Acevedo K, Garcia-Molliner G, Tzadik O, Duval M, et al. (2024) Development and analyses of stakeholder-driven conceptual models to support the implementation of ecosystem-based fisheries management in the U.S. Caribbean. *PLoS ONE* 19(5): e0304101.(PDF) *Development and analyses of stakeholder-driven conceptual models to support the implementation of ecosystem-based fisheries management in the U.S. Caribbean*.

In the conclusions, I would recommend citing the regional FMP created for WECAFC (FAO) regarding fish spawning aggregations since it was designed specifically for the conservation of spawning aggregations (Nassau grouper and Mutton Snapper).

Declarations

Potential competing interests: No potential competing interests to declare.