

Peer Review

Review of: "Feeding Ecology and Activity Rhythms of the Critically Endangered Hawksbill Turtle"

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Thanks for the opportunity to review this work, which is very interesting and a very important first step to fill in a key knowledge gap on the trophic ecology of Caribbean *E. imbricata* populations and the role foraging sites can have on population dynamics and structure, and therefore, their persistence.

The research is a good first step, but given the limited number of individuals tagged and the limitations imposed by the sampling method (CATs) on getting a good taxonomic resolution of diet composition, I would suggest presenting it as a note or letter rather than an extended Research article. As it is, it requires extensive revision to improve clarity and structure in the introduction and discussion, addressing limitations of methodological and analytical approaches in both methods and results, and revising consistency and terminology across the manuscript.

Below are my detailed comments and suggestions, which I hope are helpful to improve it.

Introduction

Overall:

Paragraph structure and improved grammar are needed. It is too long, with information that is quite general and at a somewhat lay level. Several points are unnecessarily made several times throughout. It can be improved and shortened, but the structure requires careful revision. It is not clear to me after reading only the Introduction whether the authors have a hypothesis regarding how, for Caribbean hawksbills whose diet is disproportionately dominated by sponges, resource-rich foraging sites like these in Martinique could play an important role in population dynamics and structure at all life stages. If that is not the case, then all the information related to reproductive behaviour and biology should not be included.

Examples:

“The hawksbill’s worldwide population has decreased by 90% in the last century” = “The global population of hawksbills has decreased...”

Trophic relationships = trophic interactions

P1: Paragraph coherence requires revision. This paragraph singles out the disparity of population status for RMU only to come back to the global population and broad threats (based on IUCN assessment).

P2:

- Revise sentence structure throughout. Example of improvement for the first one: “The French West Indies harbour preferential areas for a large population of hawksbills in the Caribbean.”
- The second sentence requires naming and/or referencing the Action Plan. Not sure the term “conservation structures” is clear to the reader.

P3 and P4

- P3: Focus, and therefore the topical sentence of the paragraph, should be on diet and the proportion that sponges represent in the diet for Caribbean populations compared with evidence for other populations/regions.
- P4: Likewise, the main idea the authors seem to be wanting to convey is very diluted by sentences supporting the main argument/statement/idea, which should be clear and front to improve clarity for readers: previously identified local foraging grounds in Martinique appear to be able to support a multi-age population (of male?) hawksbills. Paired with the strong site fidelity shown by foraging individuals, including adults, these sites could therefore be essential for the population’s persistence. However, there is a lack of information on the trophic ecology of the species on the island.

P5: This seems disconnected, though I can see the hypothesis the authors are trying to develop. But as it is, this paragraph reduces clarity.

P6: This returns to the point that was briefly started to be developed in P3, but again requires revision of structure to improve clarity. Currently, it is cohesive but not coherent enough. The focus should be on the role of sponges as good benthic competitors and the importance of hawksbills as predators to modulate competition. Also, please revise terminology throughout: grazing vs. foraging vs. predating.

Fig 1 is too general to add information to what has already been said/explained in the text. I suggest not including it and instead developing one that illustrates the hypothesis the authors develop in the

Introduction regarding the role of these resource-rich foraging sites.

P7: There are just a few aspects provided that have not been mentioned before and, for the sake of brevity, should be stated where the sponge-dominated diet of Caribbean sponges is first mentioned and expanded upon.

P8: The study aim provided to this point is not specific enough for the reader to know what the research's objectives are and how the methodological approach mentioned here is relevant.

P9: Objectives and aim should be stated earlier (see previous comments) with the last paragraph describing - in a more specific manner - the potential implications of the knowledge/outputs.

Materials and Methods

Clear and sufficiently detailed, but it is lacking some key aspects, including acknowledging and addressing some limitations (see specific comments) as well as data analysis in a more detailed manner (what questions/hypotheses were specifically tested?).

2.1.

P1: "francais" should be capitalised as "Francais".

2.2

Fig 2: Increase the size of Martinique and the study area and reduce the regional map. The caption would also benefit from more detail, including the source (bathymetry).

P2: Not clear if the male that was equipped twice was the only individual with more than 1 48-h data.

P3-P5: Minor revisions to improve grammar. A picture of the CATs attached to an individual would be important here.

2.3

P6: Consistency across MS.PM-AM or 18:00.

Please cite R and the rblt package appropriately.

P7: This information should not be in the methods.

P8: Please explain briefly what the criteria were to class a food item as Unknown.

P9: How was this data incorporated into the dataset given that individuals were not identifiable without scanning PIT tags? A drawback authors mentioned about other studies/techniques.

2.5

P1: I can see how this data could complement the research, but authors do not address the limitations mentioned above about the confidence of taxonomic resolution of prey items from videos, especially considering the phenotypic plasticity of some sponge species. I would suggest authors not include this dataset in this manuscript as it is part of a future publication already (Labalme et al in prep).

Results

- Suggest using a bar chart instead of a pie chart, clarifying these are diurnal behaviours, and using frequency. Alternatively, add a plot with stacked bars per individual turtle or average time engaged per behaviour.
- Was the analysis done considering individual turtles as replicates and behaviours exhibited by each as not independent? This is not clarified in the methods, and considering N and the test statistic reported, it seems it was not. Limitations arising from this should be acknowledged and addressed.
- Should first describe composition and then bite frequency by item group/taxa.
- Fig 4 lacks an x-axis with the number of bites or proportion. Not clear without an axis. Was this consistent across individuals?
- The benthic composition of the foraging site is important information, but considering the vast majority of prey items observed in the video were classed within the “Unknown” category, the results of a habitat assessment done with random sampling should not be used to infer prey selection. This whole subsection should be reframed from the perspective of resource availability.

Discussion

Most should be reframed once the aspects highlighted above are revised. Limitations are not fully discussed, and overarching links to higher-order dimensions that pertain to conservation and policy are not properly augmented and evidenced.

Declarations

Potential competing interests: No potential competing interests to declare.