

Peer Review

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

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General Comments

This manuscript presents a novel and valuable contribution to the study of hawksbill turtle (*Eretmochelys imbricata*) behavior and diet, leveraging onboard video recording devices ("critter-cams"). The combination of in situ video observations and habitat-based prey sampling is innovative and relatively underutilized in marine ecology, particularly in studies of critically endangered species. The research is timely and important, considering the growing need to understand the trophic dynamics and habitat use of marine megafauna under conservation concern.

However, several aspects of the manuscript require improvement to enhance its scientific clarity, structural coherence, and accessibility. The suggestions below are intended to help the authors strengthen the manuscript's logical flow and focus.

Introduction

The introduction should articulate the study's aims more clearly within the first two paragraphs. A sentence such as:

"The activity budget and diet of hawksbill turtles in Martinique remain poorly understood, particularly in light of the recent and substantial increase in sponge abundance as a dominant benthic component"

would help contextualize the study early and guide readers on its relevance.

The current presentation of sponges in the introduction is somewhat disjointed. If the main goal is to investigate turtle behavior via critter-cam, sponge-related content should either be better integrated or moved to the discussion unless explicitly part of the study's aims.

The authors should explicitly state the **general and specific objectives** of the study by the end of the introduction.

A brief literature review contextualizing this study within the broader body of work using critter-cams, especially in marine turtles, would add relevance.

The logic of the introduction needs improvement. Some ideas are scattered and weakly linked (e.g., from the keystone species concept to breeding strategies to sponge evolution). These should be reorganized and more tightly connected to the study's core focus.

Statements such as "*They may be capital or income breeders*" and "*Although most sea turtles are known to be capital breeders*" are vague without supportive citations or relevance to the study objectives. Their inclusion should be more deliberate or omitted.

Some content (e.g., sponge biochemistry, coral-algae dynamics, evolutionary traits of sponges) appears peripheral and would be better suited for the **Discussion**, not the **Introduction**.

Abstract and Title

The **title** could better reflect the methodology, highlighting the innovative use of onboard video technology.

In the **Abstract**, phrases like:

"Video recordings (selected prey) and habitat samples (potential prey) were compared to indicate prey selection" are misleading. The connection between method and prey status (selected/potential) should be stated more clearly.

The mention of "*spongin content and brominated metabolites*" in the Abstract requires at least a brief mention of how this hypothesis was developed. Otherwise, it feels disjointed from the study's primary data.

Methods

The ethical protocols are described, but the **experience of handlers**, including qualifications of "expertly trained free divers," should be specified.

The rationale for the **sex ratio** of sampled turtles (5M:1F) should be explained.

Clarify whether behaviors were classified manually by observers or inferred by software. The claim that the software "*identified behaviors*" may overstate its function.

The incorporation of **external video material from diving centers** is intriguing, but further details are needed (e.g., spatial coverage, validation, analysis protocols).

The section titled “**Prey selection**” is slightly redundant and could be more clearly labeled (e.g., “Habitat-based confirmation of prey availability”).

Results

Clarify what constitutes a **deployment** and how multiple deployments from the same individual were treated.

Tables and figures need improved titles and captions for clarity (e.g., Figure 4: specify that it shows turtle bite counts, not just “number of bites”).

Define **behavioral sequences** in the Results or Methods.

Clearly state whether behaviors like “swimming” were distinguished based on directionality or function (e.g., horizontal vs. vertical).

Percentages should accompany time-based measurements when possible (e.g., “*Surfacing time was 2.34 min/hr*” could also include % of time budget).

Clarify discrepancies between reported sample sizes (6 turtles vs. 7 individuals in Table 1).

Many references to **n-values** (e.g., $n = 644$) lack context—what exactly does the number refer to? Bites? Prey observations?

Discussion

The Discussion is overly long (9 pages) and should be **streamlined** by focusing on core results.

The first paragraph should summarize the **main findings clearly and succinctly**, rather than offering vague statements like “*key findings were highlighted.*”

The discussion of **individual size** and **sex** appears early but was not a stated objective. This section should be repositioned or minimized.

The **V-Net model** and **transfer learning** sections, while interesting, may be too technical and peripheral to the main findings unless central to the methodology.

Avoid speculative content unless strongly tied to findings (e.g., microbial symbionts, symbiotic shrimp cleaning, gut microbiota-temperature links). Much of this adds noise rather than value.

Statements like “ghost nets are a major threat” should be substantiated if claimed as a new finding of the study. As currently presented, this appears anecdotal and unexpected.

The statement “this study provides new data, never before collected” is redundant and should be rephrased to emphasize novelty more meaningfully.

Figures such as prey selection (Fig. 5) need clearer legends—explain what the colors or bars represent, don’t assume familiarity.

Conclusion and Recommendations

The concluding remarks and future research recommendations are informative but can be significantly shortened.

Proposals for integrating stable isotope analysis, biochemical profiling, or advanced biologging are useful but could be relegated to a single paragraph on *future directions*.

The manuscript would benefit from tighter **scientific storytelling**: clear objectives, concise results, and focused interpretation.

Many **speculative statements** could be reserved for a short “*Future Work*” section or omitted altogether.

Declarations

Potential competing interests: No potential competing interests to declare.