

Peer Review

Review of: "Association of Franciscana (*Pontoporia blainvillei*) Occurrence with the Doce River Plume"

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Dear Authors and Editor,

Thank you for the opportunity to review this manuscript. I believe this paper has the potential to make a valuable contribution to the literature on the endangered franciscana dolphin, particularly in light of the 2015 mining dam collapse in Mariana. The study offers a unique opportunity to correlate and extrapolate the impacts of human-induced disasters on marine mammal populations. Overall, the manuscript is well-written, with a logical flow suitable for a short communication.

That said, I believe the discussion and caveats sections could benefit from additional depth and clarity. Below, I provide some constructive suggestions that I hope will strengthen the manuscript:

Discussion and Caveats:

Please expand on the implications for the franciscana population since the dam collapse, including predictions for the future if the enhanced sediment plume persists. While you suggest the dolphins may use the plume as a natural barrier to fish, this seems more of an adaptation to a problem rather than a true ecological benefit. Beyond acoustics, what other risks could these high-sediment areas pose to the species? For example, are pollutants present in the sediment? Incorporating a measure of water pollutants would provide valuable insights, especially since you mention in the introduction that habitat contamination is a significant threat to franciscana survival. Addressing this would enhance the paper's relevance and rigor.

Figures and Visualization:

If you are limited to one figure due to the short communication format, I recommend prioritizing a schematic of the study area and design. This would help readers better understand the sampling

protocol, as I found it challenging to visualize based solely on the text. A multi-panel figure could be particularly effective for clarity. Regarding the graph, if you decide to retain it, please revise the Y-axis formatting by replacing commas with periods for consistency.

Statistical Analysis:

If your primary goal is to test whether the overall distribution of sightings (inside vs. outside) differs from what might be expected by chance, a Chi-square (or Fisher's Exact) test for proportions is a simple and direct approach. You can form a 2×k contingency table (e.g., inside vs. outside by quarter) and test whether the proportion of inside vs. outside sightings is significantly different.

However, a more nuanced approach would be to model the data as proportions (or counts) of sightings inside vs. outside the plume by quarter. A Generalized Linear Model (GLM) for binomial data would be a better fit. If you wish to account for repeated measures across quarters and incorporate additional predictors (e.g., environmental covariates, seasonality, pollutant levels as I mentioned earlier), a Generalized Linear Mixed Model (GLMM) with "quarter" as a random effect would provide even greater robustness. This approach would allow you to model the probability of a sighting occurring "inside" (vs. "outside") the plume as a function of various factors, yielding richer ecological insights.

Specific Comments:

Abstract and Introduction: Consider rephrasing the structure to "The franciscana (*Pontoporia blainvillei*)" in the abstract to avoid repetition between the abstract and introduction.

Contaminants (Introduction): You mention that contaminants affect franciscana dolphins, but it would strengthen the manuscript to specify what these effects are, as supported by the cited literature.

Knowledge Gaps: The phrase "To address these knowledge gaps" needs clarification. Clearly state the gaps, such as the franciscana dolphins' limited behavioral repertoire at the surface and the challenges in observing them in the wild, that you mentioned in the previous paragraph.

Data Collection: Define "sighting" more precisely. This is critical to ensure clarity and address potential issues of data independence.

Detection Probability: Were detection probabilities comparable inside and outside the plume? Please clarify.

Seasonal Adaptations: The statement "organisms that have evolved in these environments are adapted to seasonal variations in sediment discharge" requires a supporting reference.

Acoustics (Discussion): When discussing the study by Paitach et al., include more context, such as where Santa Catarina is located, to aid readers unfamiliar with the region.

I hope these suggestions help enhance the quality and impact of the manuscript. I look forward to seeing the revised version.

Best regards,

João Valle-Pereira

Declarations

Potential competing interests: No potential competing interests to declare.