

## Review of Edgar et al., „Reviews and Syntheses: Trait-based approach to constrain controls on planktic foraminiferal ecology: key trade-offs and current knowledge gaps“

### Evaluation of the revised manuscript

In the revised version of their manuscript, the authors thoroughly address all the comments and issues I raised in my first review. The suggestions for future research are now much clearer, and both the abstract and the conclusions (now: suggestions for future research) fit seamlessly into the overall narrative of the article. In addition, the argumentation is now much more balanced and complete, as the challenges associated with trait-based modeling have been included. Overall, the narrative of the article has improved notably in my opinion. The language has improved as well, making the argumentation much easier to follow. However, there are still a few typos and grammatical, wording, and punctuation issues that should be addressed before final acceptance of the article. I suggest some technical corrections below.

### Technical corrections

Line numbers refer to the manuscript version without track of changes.

- L. 23: hypotheses testable in the field or testable hypotheses for the field
- L. 24: will help to fill
- L. 25: planktic foraminiferal ecology, and allow us
- L. 35, 70, 74, 76 (before the comma in l. 77), 80, 91, 316, 352 (before the period in l. 353), 510: remove space
- L. 35: best fossil records of ~~any~~ all plankton groups
- L. 37: our understanding of the possible impacts of future climate
- L. 53: essential ~~to~~ for generating
- L. 63: However, a key challenge is ~~identifying~~ to identify the trade-offs between traits
- L. 77: trait-based modeling to explore
- L. 82: may vary by environment, impacting generalization
- L. 105: studies, while most biological studies ~~until recently~~, have until recently, been from seminal papers
- L. 112-113: I think the current formulation is still a bit misleading, maybe start a new sentence: ~~, which results in their absence~~ Planktic foraminifera are absent in shallow marine seas
- L. 119: fitness, and observed
- L. 120: species)
- L. 131: Group/Species- should be written with lowercase letters
- L. 146: growth is an example for metabolic rates, so I would use parentheses to make this clear and improve readability: metabolic rates, (e.g., growth),
- L. 178: the spines in spinose species) provide
- L. 185: biomineralisation, and foraminifera
- L. 202: I would start a new sentence here, otherwise the grammar seems odd: carbon subsidy, ~~while~~ While non-spinose species
- L. 212: calcification costs
- L. 229: extracellular, with calcification
- L. 230: via endocytosis, based on analogy to benthic foraminifera
- L. 231: foraminiferal plasma membrane
- L. 233: foraminiferal cytoplasm

- L. 239: Understanding those drivers
- L. 242: foraminifera ~~weight~~ weighing
- L. 246: identifying what controls
- L. 257, l. 296, l. 354 (grew slowly), l. 537, l. 569 (dynamic trait): Space is missing
- L. 258: and potentially
- L. 259: size<sub>2</sub> reducing
- L. 259: ~~individual's fitness~~ the fitness of individuals
- L. 260: etc., which ~~that~~ may prove
- L. 266: challenges ~~facing~~ faced by marine plankton
- L. 289: active prey<sub>2</sub> facilitating
- L. 291: shifts from a herbivorous diet during its early and juvenile phase<sub>2</sub> to a carnivorous diet
- L. 292: foraminifera<sub>2</sub> including
- L. 299: encounters<sub>2</sub> because
- L. 312: cannibalism<sub>2</sub> but whether they cannibalise in the natural habitat is unknown and considered unlikely due to the very low
- L. 315-316: species<sub>2</sub> influencing
- L. 317: Lombard et al. (2011) is not in your reference list. Do you mean Lombard et al. (2010)?
- L. 329: taxa<sub>2</sub> such as
- L. 330: (Meilland et al., 2022)<sub>2</sub> to explore
- L. 332: juveniles<sub>2</sub> or the role of bacteria and organic matter in foraminiferal<sub>s</sub> diet.
- L. 335: relatives<sub>2</sub> the
- L. 341: quickly<sub>2</sub> but
- L. 345: the number of gametes
- L. 346: *Neogloboquadrina pachyderma*<sub>2</sub> with growth
- L. 351: (2008)<sub>2</sub> ~~→~~ is observed
- L. 352: reproduce~~→~~
- L. 353: one comma too much after psu
- L. 357: salinities<sub>2</sub> but also that specimens are less active
- L. 359: “that appeared dead” does not really fit into the sentence
- L. 364: circumstances<sub>2</sub> but also<sub>2</sub> provides a rich food source for when conditions are favourable<sub>2</sub> and
- L. 374: to the benthic
- L. 381: (Hemleben, 1989)<sub>2</sub> but potentially also via
- L. 383: I would start a new sentence here: exceptions. For example, ~~e.g.,~~ *G. bulloides* IId
- L. 384: ~~Whereas~~ Some
- L. 402: of the Chlorophyll-a content
- L. 431: group<sub>2</sub> particularly
- L. 432: this group<sub>s</sub>
- L. 432-433: acquire or lose
- L. 433: incorporated into the model
- L. 434: abundances<sub>2</sub>
- L. 434: combined<sub>2</sub> there
- L. 435: that the facultative group overall

- L. 438: period is missing
- L. 440: are; that [1]
- L. 453: types;
- L. 464-465: This sentence seems odd, I suggest: ~~With m~~Most shallow dwelling planktic foraminifera reproduceing on a semi-lunar or lunar synodic cycle (~2-4 weeks), whereas intermediate
- L. 467: Notably,
- L. 483: I don't understand what "as such" is supposed to mean in this context. Maybe use different wording?
- L. 496: the number of offspring
- L. 498: reproduction; hence, this reproductive mode
- L. 499: survival ~~of~~ and rapid
- L. 500-502: This sentence seems odd; please check and revise.
- L. 504: The ability of; at least some species; of planktic foraminifera
- L. 509: foraminifera; in a way
- L. 510: ~~trades~~ traits
- L. 520: but still lacks direct evidence
- L. 524: carbonate chemistry; limits our ability
- L. 529: Maybe include some examples?
- L. 531: feeding; by providing
- L. 540: provides to its host
- L. 542: cycle; through understanding
- L. 543: uptake, ~~and~~ reproduction, and importantly, which species
- L. 544: ~~All of which~~ All these new insights
- L. 547: sediment; or water
- L. 551: increased the known diversity
- L. 553: ~~But~~ Thus, eDNA
- L. 557: 2020), but can also contribute much more broadly; ~~F~~, for instance, by providing insights
- L. 562: by the eDNA technique
- L. 563: but not found
- L. 566: Maybe include some examples?
- L. 569: I wouldn't use quantify; theoretical frameworks for estimating/assessing
- L. 570: scales and beyond
- L. 571: quantify estimate/assess
- L. 572: ~~both are~~ which are both poorly constrained
- L. 575: difficulties in
- L. 576: ~~realistic~~ suitable
- L. 584: Lombard et al. (2009) is not included in the reference list; do you mean Lombard et al. (2010)?
- L. 585: by most plankton functional type models to parameterize foraminiferal physiology
- L. 590: data ~~of~~ on fundamental parameters
- L. 598: reporting; will improve
- L. 600: ~~to understand~~ for understanding how environmental factor's structure