

Biogeosciences Discuss., referee comment RC2  
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## Comment on bg-2021-138

Marcelle BouDagher-Fadel (Referee)

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Referee comment on "Photosynthetic activity in Devonian Foraminifera" by Zofia Dubicka et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-138-RC2>, 2021

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This paper is an interesting, well-written contribution to the study of the Photosynthetically- active foraminifera. The conclusion and discussion are speculative. The mode of life concentrate mainly on morphological and habitat comparison with the recent photosymbiont-bearing *Peneroplis* and the conclusion of *Semitextularia* being kleptoplastic is based on the the  $\delta^{13}\text{C}$  enrichment in relation to rock matrix samples.

Endosymbiosis however is a more complex co-evolutionary process and should be discussed involving also different factors such as the temperature during the Devonian; the composition and wall structure of *Semitextularia* (a thin section of a specimen is important to illustrate in this article); the presence of any remains of plastids. It is also important to discuss the different life strategy adopted by *Semitextularia*. In this article it is confirmed that they were living in the photic zone and are mixotrophs. Could they have used, however, different sources of energy and carbon, instead of having a single trophic mode.

What is also missing in the manuscript the listing of the foraminiferal assemblages co-existing with *vSemitextularia*. In order to study accurately the mode of life and plaeoenvironment of this taxon you have to take into account the whole foraminiferal and floral assemblages in the studied thin section/rock sample. For instance, what other foraminifera are also found? Would the shape of their tests implies that they are also kleptoplastic; were fragments of algae found in the rocks? etc..

In my opinion adding all of these information could improve vastly this manuscript and would enrich the conclusion.

Some recent literature are not referred to.

Some extra comments are also in the manuscript.

Best wishes

Marcelle BouDagher-Fadel

Please also note the supplement to this comment:

<https://bg.copernicus.org/preprints/bg-2021-138/bg-2021-138-RC2-supplement.pdf>