

Review file for "Ninmarooceras gen. nov., a unique cephalopod from the Cambrian-Ordovician transition of Australia" by Alexander Pohle, Peter A. Jell and Christian Klug, published in Open Palaeontology.

This file contains the editorial and reviewer comments for the unique round of review for this manuscript. Answers from the authors to the reviewers' comments are in *blue italics*. Confidential comments to the editor and marked up/tracked changes documents are not included.

Pohle et al. 2026 "Ninmarooceras gen. nov., a unique cephalopod from the Cambrian-Ordovician transition of Australia"

Thank you for the reviews of our manuscript entitled "Ninmarooceras gen. nov., a unique cephalopod from the Cambrian-Ordovician transition of Australia" and for considering it for publication in Open Palaeontology. We revised the manuscript incorporating the suggestions by the reviewers. Please see our replies to their comments below in blue.

Reviewer #1: Marcela Cichowolski

The topic of this paper is a new genus of Cephalopoda from the latest Cambrian Ninmaroo Formation of Australia. The manuscript develops a revision of every trouble cephalopodologists have to face when studying early cephalopods, those of the order Ellesmeroceratida in particular. The preservation state and the previous studies accomplished through the analysis of thin sections of doubtful orientations about this group are mentioned as part of this problem. The manuscript discusses possible implications of the new genus on the evolution of the Endoceratoidea, as well as the functional possibilities of the diaphragms as a structure. The taxonomic background of the early cephalopods needs revision, and Pohle has been working on that (e.g. Pohle et al., 2024), with this work as part of that project. Mary Wade's unstudied collection in Queensland is an excellent opportunity to advance this proposal. Therefore, this paper is of scientific interest to potential readers. The ideas and data proposed here have not been published elsewhere.

The authors present a table of measurements and high-quality images to interpret the morphology of the new genus. The manuscript is appropriately referenced and well written. The title is suitable given the results, and the abstract reflects well the manuscript content. The manuscript followed the appropriate Codes of Nomenclature, and the new taxa have been registered on ZooBank. The conclusions and the discussion are supported by the results. The figures display the results.

I have added a few comments and suggestions directly in the text so the authors can see them. I recommend publishing this paper after these minor revisions.

Thank you very much for your kind review. We accepted all of your suggestions and incorporated them into the manuscript.

Reviewer #2: Björn Kröger

The manuscript is a report of two new Cambrian cephalopod species of a genus new to science. The specimens record a unique set of characters that have a potential to solve problems in the reconstruction of the phylogeny of early Palaeozoic cephalopods.

This is a succinctly and well written manuscript. The illustrations are excellent. The new taxa are well documented with quantitative data and diagrams are provided to evaluate the ontogenetic trends of crucial characters. The introduction and discussion chapters are well informed and give the reader an excellent overview on the topic and problematic and additionally give suggestions for further research directions.

In my opinion, the manuscript can almost be accepted as is. I have only very few very minor suggestions / comments which can be found in the annotated manuscript.

Thank you very much for your kind review. We accepted all of your suggestions and incorporated them into the manuscript.

One thought that comes into my mind post-review:

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The apically branching diaphragm pattern could in my opinion also simply be the result of the siphuncle detaching irregularly as the cephalopod grows, so that sometimes only the apical part has detached and sometimes the entire area of the former diaphragm. Hence, the pattern is just the result of a (programmed) irregular detachment without any functional or adaptional value.

Thank you for this suggestion, this is of course another possibility. We added another sentence to the discussion.