

Interactive comment on “Age structure, carbonate production and shell loss rate in an Early Miocene reef of the giant oyster *Crassostrea gryphoides*” by M. Harzhauser et al.

Anonymous Referee #3

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The manuscript tried to apply novel measurement methods, both terrestrial laser scanning and orthophotographic methods, for measuring individual and community sizes of fossil oysters bed that were found from the Miocene strata of the Vienna basin. The authors analysed statistically sizes of the oyster fossil population and then recognized four cohorts in the fossil assemblages. From the methodological points of view, the work has been quite successful and gave impact for bio-geoscience.

However, there are some questions and discussions.

1. Autochthon or allochthon? The most important point for this work should be getting a proof that fossil oyster bed show either autochthonous or allochthonous populations from

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field evidences. As far as we refer in the knowledge from modern ecology of oysters in the world, most of oysters found in soft mud show everytime stick perpendicular to muddy flat. In contrast, this outcrop show stormy sedimentary features and thus far fossil oysters are thought to show allochthonous mode of occurrences. Because, all big oyster shells with max. 40cm lie parallel to bed even though the thickness of fossil bed is not so thick, only 20 cm. However, the authors said that oyster beds should be keeping population structure that is able to analyse as in-situ colonies. I feel that it still should add more clear field evidences why oysters beds are autochthonous.

2. Purpose and goal of this paper is still unclear. What kind of questions the authors raise and want to solve through this research? In the text, the authors measured shell length and widths. Using these data, the authors analysed statistically. For instance, they did not give meanings of measurements why they need oyster dimension or size classes. Please show what kind of questions do the authors try to answer through this work.

3. Structuring of the article should be re-arranged somewhat. Please try to separate material and methods part and results part. In this moment, measuring result data were found in several different chapters.

4. Please refer series of works by Kiyotaka Chinzei, who is continuously working on both modern and fossil oyster colonies.

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