

Interactive comment on “Inter- and intra-specimen variability masks reliable temperature control on shell Mg/Ca ratios in laboratory and field cultured *Mytilus edulis* and *Pecten maximus* (bivalvia)” by P. S. Freitas et al.

Anonymous Referee #2

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The paper is well-written and substantiated and the technical/experimental background is well designed to provide reliable data. The paper clearly demonstrates the slight relationship between temperature and the relation Mg/Ca. It clearly shows its unreliability, particularly when applied to the fossil record, since the changing oceanic Mg/Ca relationship can easily mask such thermal effect. In my opinion, the manuscript is significant enough and deserves publication.

I have only a few minor comments: - In the 2.1 Subsection, nothing is said about mortality rates of specimens. - P. 539, last line: “as described in section”;

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something is missing. - P. 540, lines 8-9: why at 200 μm ? how can the authors determine this depth under the binocular? - P. 540, line 25: "has"; instead of "have"? - P. 542, line 4: "0t25mmol", is this right? - Regarding preparation methods, a photo showing the growth ruptures would help. Have the authors taken into account that the growth margins of both species are different, i.e., acute wedge-like in *Mytilus* and abrupt in *Pecten*? - P. 544: there is no comment to figure 4b. - P. 547: line 10: "Records"; in lower case (records). - P. 547: line 15, Fig. 4b is referred, but not commented on earlier. - P. 553, paragraph beginning in line 3: when speaking of salinity, which is exactly meant, Mg/Ca? or salt concentration? May be the papers of Stanley & Hardie, 1998, *Palaeo*-3, 144, 3-19, and Stanley et al, 2002, *PNAS* 99, 15323-15326, should be cited in this context. - P. 555, lines 18-19: where are the data backing this conclusion provided? - P. 557: Elderfield 2002 appears as 2001 in p. 534. - Figure 5: Wanamaker appears incorrectly as Wanamaker in the figure and in its caption. - Figure 8a is exactly the same as 6a. One of them should be removed.

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