

## **Interactive comment on “Effect of increased $p\text{CO}_2$ on early shell development in great scallop (*Pecten maximus* Lamarck) larvae” by S. Andersen et al.**

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The authors thank M. Byrne for useful comments.

We will state that this is the first study of effects of OA on scallops Abstract Line 5: “the” will be changed to “a” Introduction – changed to “considered to be the most sensitive”, and citations will be added The potential effect of initial flux in pH will be acknowledged in the abstract A table with overview of methodological differences of bivalve work will be included, and also overview of the interpopulation and interspecies variation will be addressed Parker et al., Byrne et al. 2011 and the paper by the Reis group will be included 3284 top – A citation will be included here, or the sentence will be deleted. A

C2011

citation for the dissolution of ACC will be included, or the paragraph will be changed. Methods Fertilization was not conducted at different pH, and this will be included in the text Sperm concentration was approximately 100 sperm per egg, and this will be included in the text. Slow bubbling with air in all tanks, and this will be included in the text. The work was conducted in flow-to-waste system and not a recirculation system- This will be clarified in the Material and Methods Only control larvae were stained with calcein, and this will be clarified in the text pH of calcein solution 3287 was adjusted to 7.00 by the use of Sodium bicarbonate 2.4 ml of calcein stock solution was used in 400 ml of seawater containing larvae. We assume that the pH of ambient seawater was not affected, but this was not recorded - and this will be included in the text Yes it was 4% buffered formalin Survival was based on initial numbers of fertilized eggs placed in originally – this will be added in the Material and Method All linear regressions will be deleted and the statistics will be revised

Shell deformations: More information will be added to describe the categories and basis of shell deformities The text in discussion (His et al 1997) will be moved to methods Larvae deformities described by His et al. 1997 was described for mussel (*Mytilus* spp.) and oyster (*Crassostrea gigas*); His et al. 1999 described larval bioassay for oyster (*C. gigas*) and sea urchin (*Paracentrotus lividus*); Geffard et al. 2001 used *C. gigas* and *M. galloprovincialis* for larval bioassay.. We have not found citations for scallops, so this will be addressed in the text.

Results: The calcein will be placed in better context: the work was done to find how early the larvae start to incorporate calcium into their shells – it may explain findings of shell deformities before veliger larvae are developed Fig.7 – will state that this is control larvae Fig. 4a will be corrected, and arrows included to the shell deformities.

Discussion First paragraph will be shortened and incorporated below. P 3293 line 25-28 (protruded velum) will be deleted. P 3294 line 26 will be followed by citations, and line 27-29, P3295 line 1-5 (Text on self-fertilization) will be deleted

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