

Interactive comment on “Ideas and Perspectives: When ocean acidification experiments are not the same, reproducibility is not tested” by Phillip Williamson et al.

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This manuscript highlights important messages:

- only a combination of approaches can provide an answer to a complex question such as the biological impact of ocean Acidification
- no experiment can fully capture the complexity of the problem and fully replicate an experiment is anyway impossible.

More importantly, it addresses the importance of constructive discussion in the imperfect world of experimental biology.

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I have a few suggestions:

- I would tone down the first sentence of the Abstract. I do not think that Clark et al. is addressing such a general question. They were rather focusing on the work by Munday and colleagues.

- I would make the point that NO ocean acidification experiment can anyway simulate what is happening in the real world. So nobody is completely right or wrong if the experiment is well conducted (no fraud or big flaws) and honest with its limitations. You cannot design an experiment that will include the complexity of the real work and the time scale. This is another argument for a combination of experiments using different approaches (to answer different questions and then different part of the puzzle).

- The manuscript focusses on the Munday vs. Clark et al. recent disagreement. Maybe it would be beneficial to can also include another example. A similar discussion on the relevance of experimental studies occurred after the publication of the paper of Cornwall & Hurd (2015) highlighting the use of suboptimal experimental practices in many published articles in the field of ocean acidification. The article was covered by a short text in Nature entitled: ‘Seawater studies come up short’ (Nature 524, 18–19; 2015) and followed by several media articles concluding that ocean acidification research was flawed. In a short response to Nature (“Laboratory seawater studies are justified”, Hurd et al. 2015), we made similar points as this manuscript and highlighted the fact that laboratory studies are not ideal but one of the many tools (together with paleo studies, field work, models) that allow to capture the biological impact of ocean acidification.

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