

Interactive comment on “Symbiosis increases coral tolerance to ocean acidification” by S. Ohki et al.

Anonymous Referee #2

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This paper addresses a very interesting topic of coral calcification under ocean acidification conditions. However, the title of the paper “Symbiosis increases coral tolerance to ocean acidification (OA),” misleads the reader. Instead the paper really addresses the effects of ocean acidification on the calcification of coral recruits. The implied “tolerance” isn’t really addressed but instead calcification rates of coral recruits with and without symbionts is the focus of the study. Increased tolerance would imply the effects of OA were diminished for symbiotic recruits relative to aposymbiotic recruits. However, there was no statistical difference between aposymbiotic recruits in OA treatments. The differences in calcification are still noteworthy and there is a large body of work pertaining to light enhanced calcification to aid in this discussion. Overall, this paper is still a valuable addition to the field of coral physiology and climate change. In addition to the above issue, I recommend the following changes:

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1. Page 7015 line 8-10 – A recent paper (Comeau et al 2013b) would be a valuable addition to the discussion of carbon source utilized during coral calcification.
2. Page 7016 line 22 – Were any in situ light measurements taken from the reef flat where the adult colonies were collected? Dufault et al. 2013 found contrasting effects of pCO₂ on calcification and survival of newly settled coral recruits at various light intensities.
3. Page 7015 line 23 – I would argue that the use of bubbling CO₂ is now standard in published ocean acidification studies. The discussion of acid vs gas bubbling doesn’t really benefit the introduction.
4. Page 7018 line 1 – Similar to the previous comment, were any in-situ pCO₂ measurements taken where the adult colonies were collected? Several studies (Ohde and Van Woesik 1999, Kayanne et al. 2008, Bates et al. 2001) have documented large shifts in pCO₂ reefs, some of which were taken within the Ryukyu Islands. Knowledge of current reef conditions may inform the growth trends presented in Fig. 2.
5. Page 7022 line 1-2 – Dufault et al. 2012 found similar results of coral recruits being unaffected by high levels of pCO₂ in experimental treatments.
6. Page 7022 line 10-13 – There is a growing body of literature addressing the effects of ocean acidification on newly settled coral recruits, none of which were discussed (Albright et al. 2008, Albright and Langdon 2011, Albright 2011, Cohen et al. 2009, de Putron et al. 2011, Dufault et al. 2012, Dufault et al. 2013). Comparing your results to some of these would greatly aid the discussion.
7. Fig. 2. Is it possible to use standardized rates of measuring calcification? The relative values limit the reader comparing your results to other published rates.

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