

## ***Interactive comment on “Food availability and $p\text{CO}_2$ impacts on planulation, juvenile survival, and calcification of the azooxanthellate scleractinian coral, *Balanophyllia elegans*” by E. D. Crook et al.***

**Anonymous Referee #1**

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This paper on the effects of  $p\text{CO}_2$  and food provisioning on the coral *B. elegans* by Crook et al. presents an interesting dataset on the responses of an azooxanthellate coral species to  $\text{CO}_2$ , and warrants publication. Much of the raw data is included in the supplement which is a definite improvement over many acidification studies, however, a number of details are still lacking and should be included prior to publication. In addition there may be better ways to present some of the data and the paper requires editing.

Section 2.2

C3132

Give the concentration or other estimation of quantity of artemia used.

What material was used for the airtight screw cap?

Give details on the paddle used – size, movement rate, etc.

Were individual larvae tracked such that growth parameters can be expressed relative to age? – since the planulation season went from Oct.-Dec, planulae had a range of post-planulation ages which could in-turn give variation in apparent growth rates if a fixed time point was used for assessing final growth.

Section 2.3

Are the pH values presented in the supplementary table based on DIC and Alk? or are they the measured pH values? If the daily pH values are not given, give them, also discuss if values differed between replicate containers and specify how the electrode was calibrated.

At what time point were the alk/DIC samples taken relative to the cleaning/water replacement schedule? Do they capture the true variability to which corals were exposed in each container or just input water? I suggest including Alk and DIC values in the supplementary materials since these were measured parameters.

No mention of the constants used for calculations is given.

2.4

I suggest a figure for crystal growth measurements – there are various potential means of estimating the start and end of an individual crystal still contained within the skeleton, and it should be clear where/how measurements were made (since it often isn't clear where a crystal ends versus being masked by other crystals – a figure would make this clearer).

2.5

C3133

Were there differences between replicate containers? was this assessed in the statistics?

#### Data presentation

Please give a table with statistical results and not just p values in the results. Also consider adding significance to figures

Figure 2 – was planula release by individual (female) adults quantified? If so, could the data be expressed as such and error bars added? If planula cannot be linked to parent coral, could the number of females in each container be specified and data expressed relative to females – otherwise variations in male/female ratio may affect interpretation of the data. If data were collected on males v females, this might be of interest as well given work suggesting differences in growth between males and females of some coral species.

Figure 3 & 4 – reduce # of different symbols to just high and low food

4c – plot against external omega or pH, discuss CF omega in the text

#### Other comments

7772 line 15 I suspect measuring calcification and normalizing it to surface area is at least as common.

The text requires editing, for instance, I think +/- is often meant in place of +, abbreviations are not necessarily given next to the term which is being abbreviated etc.

The authors may wish to reference the following paper on a related topic:

Drenkard, E., Cohen, A.L., McCorkle D.C., de Putron S.J., Zicht, A., Starzcak, V. (2013) The Impact of Heterotrophic Feeding on the Coral Calcification Response to Ocean Acidification. *Coral Reefs*, DOI 10.1007/s00338-013-1021-5

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