

Interactive comment on “Opportunistic feeding on various organic food sources by the cold-water coral *Lophelia pertusa*” by C. E. Mueller et al.

Anonymous Referee #1

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This paper by Mueller et al. represents the first thorough attempt to get a handle on what *Lophelia pertusa* actually will consume, and how what is consumed may be incorporated into the animal. This is a key question when trying to build predictive distribution models for the species and also of interest when legislating for reef protection. The paper further raises the possibility that the cold-water coral community is currently making erroneous conclusions on coral diet when considering particular biomarkers as indications of diet, presenting the case for de novo synthesis of some fatty acids by the species. This is an interesting addition to an interesting study on carbon capture and incorporation.

If there is a weakness in the work it is probably the small number of coral branches available for the study. This is almost always the case with cold-water coral studies and

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I think should not be a bar to publication. The statistical tests used are well described and the authors do not shy away from the fact that conclusions drawn from them should be considered with caution.

The manuscript is generally well written and I can make few suggestions. The in text references are not given in chronological order, and 2001b refs occur in the text prior to 2001a references. There are occasional uses of terms I personally would not use, such as 'harvested' for collection of the corals (P11379 and elsewhere) but perhaps these are of no matter. The occasional sentence is a little awkward with the English, such as that commencing 'However looking more detailed in...' on line 7, page 11390. A swift final check by an English native speaker would polish these very minor points out.

I wish the authors luck in getting this paper published in 'Biogeosciences'- I think the approach is interesting and the cold-water coral community will benefit from both knowledge of these results and the presentation of a methodology which can be used with corals elsewhere (such as with the Mediterranean canyon corals or coral communities off the America's), possibly with these indicating a different mode of feeding given the different ambient environmental parameters.

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