

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

**C. E. Mueller et al.**

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Response to Dr. Davies

We thank Dr. Davies for his constructive feedback and respond to the numbered comments below.

(1) During the pre-experimental time the corals were fed with larvae (nauplii) of the Brine Shrimp *Artemia* spp. every 3 to 4 days. For a total of 3 months, the coral were fed an unmixed, single source food supply of *Artemia*? How does this affect your study? Will the coral be more likely to better process this food over others as it has had no acclimation of them?

We understand Dr. Davies' concerns about this issue. In addition to the feeding mo-  
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ments with *Artemia*, that were added every 3-4 days to the maintenance flow through aquaria, the coral had also access to particulate and dissolved organic matter from the water supply. The supplied water was only sand-filtered (line 17, page 11379, BGD manuscript) during which only larger particles were removed (sand particle size 1-2mm). Hence, microalgae, bacteria and dissolved organic matter remaining were still present in the water supply and available to the coral during the pre-experimental time next to deliberately added *Artemia*. We therefore do not think that the maintenance under these conditions had any effect on the processing of the different food sources.

(2) Why the very long wait before the experimentation. Should a batch of fresh (frozen immediately after collection) have been analyzed for lipid content to contrast with your experimentally fed individuals?

We agree with Dr. Davies that the pre-experimental time was long, but due to technical problems with the ROV we were not able to obtain fresh coral samples for our experiment. Although changes in coral lipid content due to the time in the aquaria are possible, as was explicitly mentioned in the discussion (page 11387, line 24, BGD manuscript), we could still directly observe the processing of different food sources that were enriched in  $^{13}\text{C}$  and  $^{15}\text{N}$ , which was the focus of this paper.

(3) *Artemia* have been used in feeding/ capture rate experiments, but has *Artemia* been shown to be processed in the same way as in situ zooplankton by the corals? Does it have the same nutritional value? This questions translates to all of the chosen food supply items, are these both morphologically and nutritionally similar to what corals will be exposed to in the field?

This is an important issue indeed and we address these questions in the discussion of the revised manuscript under conclusions and implications (paragraph 5).

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