

Interactive comment on “Salinity-depending carbon and nitrogen uptake of two intertidal foraminifera (*Ammonia tepida* and *Haynesina germanica*)” by Michael Lintner et al.

Anonymous Referee #1

Received and published: 1 October 2019

Lintner et al. reported about the experimental results to investigate salinity effects on foraminiferal feeding activities using two foraminiferal species from German Wadden Sea. They found different responses to salinity between species, partly attributing to their salinity adaptation and kleptoplasty. The effects of salinity on foraminiferal feeding have not been reported abundantly, so thier results add interesting insights. The manuscript is generally clear and well written, however, I suggest two major points to revise before its acceptance.

1. Food uptake rates. Line 214: Because foraminifera excrete ingested C and N with time, it is not appropriate to divide pC with time in particular for long period incubation,

C1

as authors discussed in lines 308 to 316. The “exponentially decreasing rate” may be due to “apparent” decrease of pC due to excretion/mineralization. I strongly suggest to compare C and N uptake rates between different salinity only between 1 day after.

2. According to Fig. 1, pC accounts only ~0.1% of the biomass of *Ammonia* and much less for *H. germanica*. It is important to add some discussions to compare these values to other studies, and speculate why the uptake rate is so low in this experiments.

Other specific comments.

Title: There may be no discrimination of C and N during food uptake, but occur during assimilation/metabolisms afterwards. I therefore suggest to change “Salinity-depending algae uptake and subsequent carbon and nitrogen metabolisms of two. . .”.

Lines 74 to 75: Please indicate temperature ranges they tested.

Line 94: Why do you specifically state as “salt content of 24PSU” rather than “salinity of 24”?

Line 108: Why did the authors freeze-dried the isotopically labeled algae? Was “frozen and thawed before offering to foraminifera” not appropriate? If so, why??

Line 124: Did you mix the lyophilized algae with seawater before its addition?

Line 135: I think washing with distilled water makes damages on foraminiferal cytoplasm by osmotic shock. Please mention potential effects of this to the discussion.

Line 229: How about to plot N uptake next to C uptake (Figs 3 and 1 together), making easier comparison between them.

Line 275: Please indicate the C:N ratios of *Dunaliella* as well. This is very important information for interpretation.

Line 310: metabolism and of isotope “labeling” patterns.

Line 317: Is this sentence grammatically correct?

C2

Line 326: 37, not 33?

Line 338: Are these authors actually used d13C as a proxy of salinity? Or did they use d13C to estimate the origin of OM, either marine phytoplankton or terrestrial plants??

Line 341: Lighter or lower d13C values.

Line 349: It is better to separate citations into two parenthesis; one after “fauna and flora (food)” and the other after “organisms themselves”.

Line 367: I would quantify Chlorophyll directly rather than Mg quantification, although Mg is of course important element to understand foraminiferal physiology, in particular responses to salinity changes.

Line 371: New chapter from this paragraph?

Line 377: Furthermore”,

395: Sunlight?

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-359>, 2019.